

कार्यकारी संक्षेप साठी वाळू घाट पर्यावरण व्यवस्थापन योजना

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३८ रेंती घाटांसाठी सार्वजनिक सुनावणी

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संक्षेप नाव	
संक्षिप्त रूप	पूर्ण रूप
DMO	जिल्हा खनिकर्म अधिकारी
GSDA	भूजल सर्वेक्षण आणि विकास संस्था
MPCB	महाराष्ट्र प्रदूषण नियंत्रण मंडळ
PPE	वैयक्तिक संरक्षणात्मक उपकरणे
EC	पर्यावरणीय मंजूरी
MoEFCC	पर्यावरण वन आणि हवामान बदल मंत्रालय

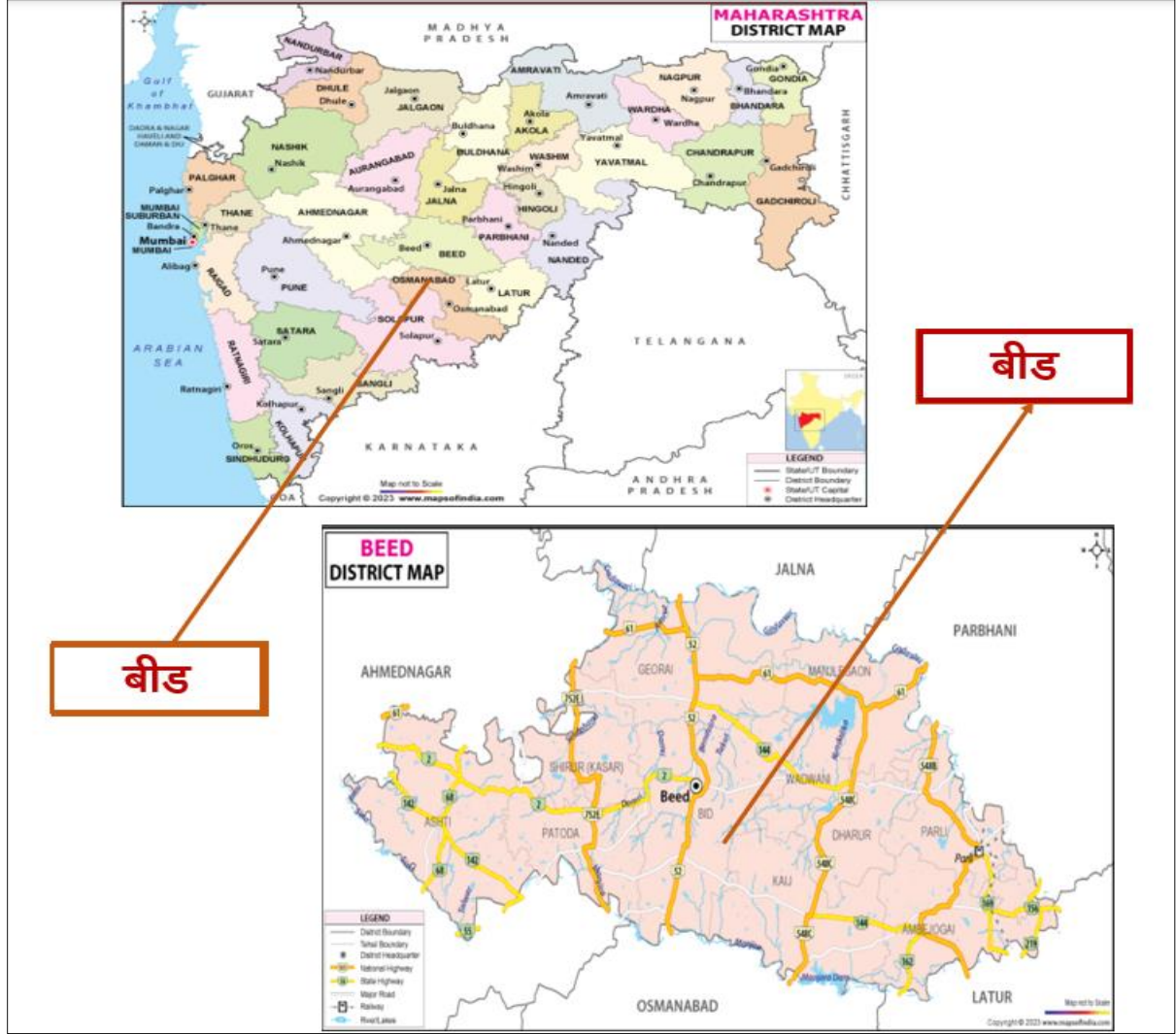
कार्यकारी संक्षेप

प्रस्तावना

जिल्हाधिकारी, बीड यांचा रेती घाटांचा लिलाव करण्याची मान्यता आहे आणि प्रकल्प प्रस्तावक म्हणून नियुक्त जिल्हा खनिकर्म अधिकारी (DMO), बीड तहसीलदार आणि उपअभियंता यांच्या अध्यक्षतेखालील तालुकास्तरीय तांत्रिक समितीने एकूण ३८ रेती घाटांची ओळख पटवली आहे. अभियंता पाटबंधारे आणि कनिष्ठ भूवैज्ञानिक, भूविज्ञान आणि खाण संचालनालय, कनिष्ठ भूवैज्ञानिक भूजल सर्वेक्षण आणि विकास संस्था (GSDA), महाराष्ट्र प्रदूषण नियंत्रण मंडळ (MPCB) चे प्रतिनिधी मॅन्युअल पद्धतीने वाळूचे स्कोपिंग करण्यासाठी.

- बीड जिल्ह्यातील माजलगाव , परळी वे , गेवराई आणि बीड तालुक्यात असलेल्या ३८ रेती घाटांसाठी पर्यावरणीय मंजूरीचा प्रयत्न केला जातो.
- महाराष्ट्र शासनाचे पत्र क्रमांक: संकिरण- 2019/P.K.01/Ta.K.3 दिनांक 03/12/2019 नुसार, 5 हेक्टरपेक्षा कमी खाणींसाठी सार्वजनिक सुनावणी आयोजित करणे आवश्यक आहे.
- महाबळ एन्व्हायरो इंजिनियर प्रा. लि. ला जिल्हाधिकारी कार्यालय, बीड यांच्याकडून बीडतील वाळूच्या ठिकाणांसाठी पर्यावरणीय मंजूरी मिळविण्यासाठी काम देण्यात आले.

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छायाचित्र 1 बीडचे ठिकाण

३८ रेती घाट बीडसाठी कार्यकारी संक्षेप

रेती घाटांची यादी

तक्ता क्रमांक १ - मंजूर ३८ रेती घाटांची यादी

अनु.	रेती घाटाचे नाव	तहसील	नदीचे नाव	गट क्र.	क्षेत्र (हेक्टर मध्ये)	क्षेत्रफळ (मी)			उपलब्ध वाळू (बास)	GSDA फंडबँक	ग्रामसभेचा ठाव	वाळूचा लिलाव होय/नाही
						हॉरी	व्.मि	छोली				
१	रिधारी	माजलगाव	गोदावरी	१७७/१, ३, १२, १३, १५ ते १८, ३९	४.५०	९००	५०	१.०	१५९०१	होकार	होकार	होकार
२	गव्हनथडी	माजलगाव	गोदावरी	२२ ते २९, ३ ते ३५, ३९, ४०	२.५०	५००	५०	०.८०	७०६७	होकार	होकार	होकार
३	हिवरा १	माजलगाव	गोदावरी	७५, ७४, ६८, ६७, ५६ ते ५८	२.०	५००	४०	१.०	७०६७	होकार	होकार	होकार
४	हिवरा २	माजलगाव	गोदावरी	५४, ३९ ते ४२, २२ ते २९, ३० ते ३५	४.४१	६३०	७०	१.०	१५५८३	होकार	होकार	होकार
५	हिवरा ३	माजलगाव	गोदावरी	१ ते ३, ५, ६, १६, १७	१.७५	३५०	५०	१.१०	६८०२	होकार	होकार	होकार
६	डुब्बाथडी	माजलगाव	गोदावरी	६१, ६२, ३ ते ८	४.९५	११००	४५	१.१०	१९२४०	होकार	होकार	होकार
७	पुरुषोत्तमपुरी.	माजलगाव	गोदावरी	१२ ते २१, २४ ते २६, ३१, ३२, ३६, ३७	३.७५	७५०	५०	१.००	१३२५१	होकार	होकार	होकार
८	मांजरत १	माजलगाव	गोदावरी	३६ ते ४०, ४३, ४९, ५०, ५२, ५५	४.५	९००	५०	१.०	१५९०१	होकार	होकार	होकार
९	मांजरत २	माजलगाव	गोदावरी	२१ ते २४, २६, २७, ३१, ३२, ३४	४.५	९००	५०	१.२०	१९०८१	होकार	होकार	होकार
१०	मांजरत ३	माजलगाव	गोदावरी	४८४, ४८६ ते ४८८, ४९५, ४९७	४.२	६००	७०	१.०	१४८४१	होकार	होकार	होकार
११	आंबेगाव	माजलगाव	गोदावरी	४८५ ते ४८७, २८९, १, ४ ते ६	४.८८	१२२०	४०	१.१	१८९६८	होकार	होकार	होकार
१२	सरवार पिंपळगाव	माजलगाव	गोदावरी	१२४, १३४, १३७ ते १४०, १४५, १५३, १५४, १५६	४.५५	१३००	३५	१.०	१६०७८	होकार	होकार	होकार
१३	कवडगाव थंडी	माजलगाव	गोदावरी	२१, १२, ३७, १५, २१६	३.७५	१२५०	३०	०.६०	७९५१	होकार	होकार	होकार
१४	गंगामसला	माजलगाव	गोदावरी	१७८, १७४, १७३	४.९	१४००	३५	१.५०	२५९७२	होकार	होकार	होकार
१५	अडोला	माजलगाव	गोदावरी	२६, १२, ७२, २८, ५२, ८७, २८८	०.९	३००	३०	१.००	३१८०	होकार	होकार	होकार
१६	सणडास चिंचोली	माजलगाव	गोदावरी	३७, ४६, ५०, ५१, ५४, ५५	०.७	१७५	४०	०.४५	११९३	होकार	होकार	होकार
१७	तेलसमुख १	परळी वे	गोदावरी	१, १२ ते १८, ८४ ते ९०, ८२	४.९०	१४००	३५	१.०	१७३१४	होकार	होकार	होकार
१८	तेलसमुख २	परळी वे	गोदावरी	१०, १६, १३, १४, ३, ४	२.७०	३००	९०	१.३०	१२४०३	होकार	होकार	होकार
१९	बोरगाव बु १	गेवराई	गोदावरी	४, १, १७६, १७४	१.८०	४५०	४०	०.८०	५०८८	होकार	होकार	होकार
२०	बोरगाव बु २	गेवराई	गोदावरी	१५९, १६६, १६७, ११०, १७२, १७३	४.८०	१२००	४०	१.०	१६९६१	होकार	होकार	होकार

३८ रेती घाट बीडसाठी कार्यकारी संक्षेप

अनु.	रेती घाटाचे नाव	तहसील	नदीचे नाव	गत क्र.	क्षेत्र (हेक्टर मध्ये)	क्षेत्रफळ (मी)			अपलव्थ वाळू (त्रास)	GSDA फाईलबुक	ग्रामसभेचा ठराव	वाळूची लिलालव होला नाही
२१	पाथरवाला खु	गेवराई	गोदावरी	१, २, ३, ४, ६०	२.४०	६००	४०	०.५०	४२४०	होकार	होकार	होकार
२२	गुंतेगाव	गेवराई	गोदावरी	१०, ११, १२, १३	३.६०	६००	६०	०.५०	६३६०	होकार	होकार	होकार
२३	सुरलेगाव १	गेवराई	गोदावरी	१३६, १३८, १, २/३, ४	४.००	८००	५०	१.०	१४१३४	होकार	होकार	होकार
२४	राक्षसभुवन १	गेवराई	गोदावरी	१८७ ते १९२, १९४ ते १९७, १ ते ३	४.३४	१२४०	३५	१.२०	१८४०२	होकार	होकार	होकार
२५	सावरगाव नी	गेवराई	गोदावरी	२८, २९, ३, ४, ८, ९	३.३८	७५०	५०	१.१०	१३११८	होकार	होकार	होकार
२६	हिंगणगाव १	गेवराई	गोदावरी	४, २, ५१ ते ५४, ७	४.७५	९५०	५०	१.०	१६७८४	होकार	होकार	होकार
२७	हिंगणगाव २	गेवराई	गोदावरी	१३ ते १५, १७, १८	३.५०	७००	४०	१.०	१२३६७	होकार	होकार	होकार
२८	गोडी खु	गेवराई	गोदावरी	१९, ३७, ३८, ४१, १, २	३.२५	६५०	७०	१.०	११४८४	होकार	होकार	होकार
२९	राझेगाव	बीड	सिंधफणा	१	१.५७५	४५०	५०	१.०	५५६५	होकार	होकार	होकार
३०	रामगाव अ	बीड	सिंधफणा	१९ ते १०९	१.२५	५००	४५	१.०	४४१७	होकार	होकार	होकार
३१	रामगाव ब	बीड	सिंधफणा	१७	१.२५	५००	५०	१.०	४४१७	होकार	होकार	होकार
३२	बन्हाणपुर	बीड	तुकडमोनदी	६, ७, ९	१.२५	२५०	५०	०.७०	३०९२	होकार	होकार	होकार
३३	आनंदगाव	बीड	सिंधफणा	१२०, १२१, १२२, १२३ ते १३१	१.२०	४००	५०	१.०	४२४०	होकार	होकार	होकार
३४	कुक्कडगाव १	बीड	सिंधफणा	३५७, ३५८, ३५९	१.००	४००	७०	१.०	३५३४	होकार	होकार	होकार
३५	कुक्कडगाव २	बीड	सिंधफणा	१३२, १३३, १३७, १४२	१.००	२५०	४०	१.०	३५३४	होकार	होकार	होकार
३६	खुदरस	बीड	सिंधफणा	७, ६, ४, ३, २, १	१.१०	५००	३५	१.०	३८८७	होकार	होकार	होकार
३७	बहादूर	बीड	सिंधफणा	१६८, १६९, १७०, १६०, १६१, १६२, १६३, १६४, १६५, १६६, १६७	१.१०	५००	३०	३.०	११६६१	होकार	होकार	होकार
३८	साक्षालपिंपरी	बीड	सिंधफणा	७७४ आणि ७८८	१.१०	५५०	३५	२.०	७७७४	होकार	होकार	होकार

३८ रेती घाट बीडसाठी कार्यकारी संक्षेप

वैधानिक मंजूरीची स्थिती

रेती घाटासाठी वैधानिक मंजूरीची स्थिती तक्ता क्रमांक २ मध्ये खाली दर्शविली आहे

तक्ता क्रमांक २ रेती घाटासाठी वैधानिक मंजूरीची स्थिती

अनु	विशेष	तपशील
१	प्रकल्प प्रवात्रक	जिल्हा खनिकर्म अधिकारी, बीड
२	प्रकल्प स्थित	नवीन
३	उत्खनन करवायचे खनिज	नदीच्या पात्रातील वाळू
४	रेतीघाट प्रस्तावित करणारी समिती	तालुकास्तरीय तांत्रिक समितीच्या अध्यक्षतेखाली तहसीलदार व उप अभियंता पाटबंधारे, कनिष्ठ भूवैज्ञानिक, भूविज्ञान आणि खाण संचालनालय, कनिष्ठ भूवैज्ञानिक भूजल सर्वेक्षण आणि विकास संस्था (GSDA), महाराष्ट्र प्रदूषण नियंत्रण मंडळाचे प्रतिनिधी.
५	ग्रामपंचायत नाहरकत दाखला	महाराष्ट्र राज्याच्या वाळू उत्खनन धोरणानुसार ग्रामपंचायतीकडून प्राप्त.
६	उत्खनन ठराऊन देलेला कालावधी	रेती घाट वाटप झाल्यापासून एक वर्षापर्यंत

३८ रेती घाट बीडसाठी कार्यकारी संक्षेप

खाणकाम पद्धती

खाणकामाची पद्धत

वाळू उत्खननासाठी ड्रिलिंग आणि ब्लास्टिंगशिवाय ओपनकास्ट मॅन्युअल पद्धत वापरली जाईल. कुदळ आणि घमेला यांसारख्या हाताच्या साधनांसह मजुरांचा वापर केला जाईल. कोरड्या नदीपात्रातूनच वाळूचे उत्खनन केले जाते. रेती घाटातील रेतीचा अंदाज घेण्यासाठी पुढील प्रक्रिया अवलंबली जाते.

१) रेती घाटाचे सीमांकन आणि बेंचमार्किंग १०m x १०m अंतराने केले जाते.

२) प्रत्येक ग्रीडमधील वाळूची खोली शोधण्यासाठी ऑगर ड्रिलरचा वापर केला जातो.

३) १०m x १०m ग्रिड पॅटर्नचा वापर करून रेती घाटात छिद्र तयार करण्यासाठी ऑगर ड्रिलर चा वापर केला जातो.

४) मापन टेप वापरून छिद्रांची खोली मोजली जाते.

५) सर्व रीडिंग घेतल्यानंतर नदीच्या रेती घाटाची सरासरी खोली मीटरमध्ये मोजली जाते.

आवश्यक यंत्रसामग्री / उपकरणे

ट्रॉली, घमेला आणि ट्रॅक्टर ही वाळू उत्खननासाठी वापरली जाणारी यंत्रे/उपकरणे आहेत.

वाहतूक

वाळूच्या ठिकाणाहून स्टॉकयार्डपर्यंत ट्रॅक्टर ट्रॉलीद्वारे वाहतूक केली जाईल.

पुनर्प्राप्ती

मान्सूननंतर उत्खनन केलेले क्षेत्र आपोआप भरले जाईल. नदीकाठच्या बाजूने आणि वाहतूक रस्त्यालगत वृक्षारोपण करण्यात येणार आहे.

पर्यावरणीय व्यवस्थापन योजना

तक्ता क्रमांक ३-अपेक्षित प्रभाव आणि व्यवस्थापन योजना

अनु .	प्रभाव	व्यवस्थापन योजना
१	वायू प्रदूषण	<ul style="list-style-type: none"> ■ धूळ दाबण्यासाठी १ .00 किमी पर्यंतच्या रस्त्यांवर पाणी शिंपडले जाईल. ■ ट्रॅक्टरचा वेग मर्यादित असेल. ■ रस्त्यांची देखभाल नियमित केली जाईल. ■ रस्त्यांचे कॉम्पॅक्शन केले जाईल. ■ वाळूची वाहतूक ट्रॅक्टरने आणि ताडपत्रीने झाकलेल्या ट्रॉलीद्वारे केली जाईल. ■ ट्रॅक्टर ट्रॉली ओव्हरलोड होणार नाहीत. ■ धूळ दाबण्यासाठी १ .00 किमी पर्यंतच्या रस्त्यांवर पाणी शिंपडले जाईल. ■ ट्रॅक्टरचा वेग मर्यादित असेल. ■ रस्त्यांची देखभाल नियमित केली जाईल. ■ वाळूची वाहतूक ट्रॅक्टरने आणि ताडपत्रीने झाकलेल्या ट्रॉलीद्वारे केली जाईल. ■ ट्रॅक्टर ट्रॉली ओव्हरलोड होणार नाहीत.
२	ध्वनी प्रदूषण	<ul style="list-style-type: none"> ■ मजुरांना इअर मफ आणि इअर प्लग दिले जातील. ■ ट्रॅक्टर ट्रॉलीव्यतिरिक्त जड आवाज निर्माण करणारी यंत्रे तैनात केली जाणार नाहीत. ■ लोड करताना ट्रॅक्टर इंजिन बंद केले जातील. ■ ध्वनी निर्मिती कमी करण्यासाठी ग्रीनबेल्ट विकसित केला जाईल.
३	जल प्रदूषण	<ul style="list-style-type: none"> ■ पावसाळ्यात खाणकाम बंद केले जाईल, जेणेकरून वाळू पुन्हा भरून

३८ रेती घाट बीडसाठी कार्यकारी संक्षेप

अनु .	प्रभाव	व्यवस्थापन योजना
		<p>काढता येईल.</p> <ul style="list-style-type: none"> ■ मजुरांसाठी खाणीच्या ठिकाणी फिरती शौचालये दिली जातील. ■ वाळूचे उत्खनन केवळ कोरड्या नदीच्या पात्रातच केले जाईल. ■ पॉलिथिन पिशव्या, ज्यूटच्या पिशव्या इत्यादी टाकाऊ पदार्थ नदीपात्रात राहू/सांडू दिले जाणार नाहीत.
४	जमीन पर्यावरण	<ul style="list-style-type: none"> ■ झीज टाळण्यासाठी नदीच्या दोन्ही बाजूंपासून किमान ७.५ मीटर किंवा नदीच्या रुंदीच्या १/४ वा सुरक्षित अंतर ठेवावे. ■ वाळूच्या उपलब्धतेनुसार खाणकामाची खोली कमाल ३ मीटर असेल.
५	जैविक पर्यावरण	<ul style="list-style-type: none"> ■ खाणकाम कोरड्या पलंगावर केले जाणार असल्याने जैविक पर्यावरणावर कोणताही परिणाम होणार नाही.
६	सामाजिक - आर्थिक पर्यावर	<ul style="list-style-type: none"> ■ या खाणकामामुळे रोजगार निर्मिती. स्थानिक ग्रामस्थांना रोजगारासाठी प्राधान्य दिले जाईल.
७	कचरा/ओव्हरबर्डन व्यवस्थापन	<ul style="list-style-type: none"> ■ या खाणकामामुळे कचऱ्याची निर्मिती होणार नाही किंवा जास्त भार होणार नाही.

३८ रेती घाट बीडसाठी कार्यकारी संक्षेप

व्यवसाय, आरोग्य आणि सेवा

व्यावसायिक आरोग्य आणि सेवांचा सारांश खाली दिला आहे

- सेफ्टी हेल्मेट, इअर प्लग, इअरमफ, गम बूट, फेसमास्क इत्यादी सारख्या वैयक्तिक संरक्षणात्मक उपकरणे (पीपीई) सह कामगार पुरविले जातील.
- धूळीपासून संरक्षणासाठी फेसमास्क दिले जावेत.
- मजुरांना पिण्याचे पाणी आणि शौचालयाची सुविधा पुरविली जाईल
- खाण क्षेत्रात प्रथमोपचारला लगणारी सामग्री उपलब्ध करून देण्यात येईल.
- मजुरांसाठी फिरती शौचालये दिली जातील.
- कचरा गोळा करण्यासाठी आणि स्थानिक प्राधिकरणाद्वारे त्याची विल्हेवाट लावण्यासाठी डस्ट बिन प्रदान केले जातील

३८ रेती घाट बीडसाठी कार्यकारी संक्षेप

वृक्षारोपण अहवाल

पावसाळ्यात नदीच्या काठावर आणि गावातील रस्त्यांवर स्थानिक प्रजातींची लागवड करण्याचा प्रस्ताव आहे.

तक्ता क्रमांक ४ -ग्रीन बेल्ट तपशील

विशेष	तपशील
ग्रीनबेल्टचे स्थान	अप्रोच रस्त्याच्या दोन्ही बाजू, नदीकाठच्या वाळूचे ठिकाण आणि जवळपासचे मोकळे क्षेत्र. नदीपात्राच्या बाहेरचा रस्ता
लागवड करायच्या रोपांची संख्या	२००० प्रति हेक्टर
वनस्पतींचे अंतर	२ मीटर ग्रिड अंतराल
प्रजाती निवडल्या	मूळ प्रजाती

तक्ता क्रमांक ५ -लागवडीसाठी शिफारस केलेल्या झाडांच्या प्रजातींची यादी

अनु	वनस्पति नाव	स्थानिक नाव	महत्व
१	आझादिरचित इंडिका	कडुलिंब	कडुलिंबाचे तेल आणि कडुलिंबाचे पदार्थ
२	टेक्टोना ग्रॅंडिस	सागवान	बॅक्टेरियाच्या वाढीस प्रतिबंध करणारा पदार्थ, अँटीफंगल, अँटी अल्सर
३	फिक्स रिलिजिओसा	पिपळ	औषधी उपयोग, फळे आणि अंजीर
४	बांबुसा वल्गारिस	बांबू	अँथेलमिंटिक दाहक-विरोधी, तुरट गुणधर्म
५	मधुका लाँगीफोलिया	महुआ	उत्तेजक आणि खोकला आराम म्हणून कार्य करते

निष्कर्ष

१ बीड जिल्ह्यातील माजलगाव , परळी वे , गेवराई आणि बीड तालुक्यातील ३८ वाळूच्या ठिकाणांसाठी पर्यावरण मंजूरी (EC) लागू केली आहे. पर्यावरण वने आणि हवामान बदल मंत्रालयाच्या (MoEFCC) मार्गदर्शक तत्वांनुसार ५ हेक्टरपेक्षा कमी क्षेत्रफळ असलेले महाराष्ट्र B2 श्रेणीत येते.

२ खाणकामाच्या प्रायोगिक पद्धतीमुळे शेतजमिनीवर पाणी पसरण्यापासून आणि जवळपासच्या वस्तीमध्ये पूरस्थिती निर्माण होण्यापासून नियंत्रित होईल.

३ खाणकामामुळे सरकारला रॉयल्टीच्या रूपात फायदा होईल

४ खाणकामामुळे स्थानिक ग्रामस्थांसाठी व्यवसायाच्या संधी निर्माण होतील

५ प्रस्तावित प्रकल्प सामाजिक पायाभूत सुविधा आणि प्रदेशाच्या सर्वांगीण विकासासाठी देखील आशावादी योगदान देईल.

३८ रेती घाट बीडसाठी कार्यकारी संक्षेप

६ हवा, पाणी, आवाज, माती, घनकचरा व्यवस्थापन इत्यादी सर्व पर्यावरणीय समस्या MoEFCC मार्गदर्शक तत्वांनुसार हाताळल्या जातील.

END

EXECUTIVE SUMMARY
ENVIRONMENT MANAGEMENT PLAN

for

SAND GHATS

at

**BEED DISTRICT, STATE
MAHARASHTRA**

for

**PUBLIC HEARING
FOR 38 SAND GHATS**

**PROJECT PROPONENT
DISTRICT MINING OFFICER,
COLLECTOR OFFICE, BEED**

Environment consultant

MAHABAL ENVIRO ENGINEERS PVT.LTD.

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ABBREVIATIONS

Short Form	Long Form
DMO	District Mining Officer
GSDA	Groundwater Surveys & Development Agency
MPCB	Maharashtra Pollution Control Board
PPE	Personal Protective Equipment
EC	Environmental Clearance
MoEFCC	Ministry of Environment Forest and Climate Change

EXECUTIVE SUMMARY

INTRODUCTION

The District Collector, Beed intends to auction sand ghats and designated District Mining Officer (¹DMO), Beed as a project proponent.

A total of 38 sand ghats are identified by Taluka level technical committee chaired by Tehsildar and Dy. Engineer, Irrigation and Junior Geologist, Directorate of Geology and Mining, Junior Geologist Groundwater Surveys & Development Agency (²GSDA)., representative of Maharashtra Pollution Control Board (³MPCB) for scoping of sand by manual method.

1. Environmental Clearance is attempted for 38 Sand ghats located in Majalgaon, Parli Ve, Gevrai and Beed Talukas in Beed District.
2. As Per the Government of Maharashtra Letter No: Sankirn- 2019/P.K.01/Ta.K.3 dated 03/12/2019, a Public Hearing must be conducted for mines less than 5 Hectares.
3. Mahabal Enviro Engineer Pvt. Ltd. was awarded work to obtain Environmental Clearances for Sand Spots of Beed by the Collector Office, Beed.

¹ District Mining officer

² Groundwater Surveys & Development Agency

³ Maharashtra Pollution Control Board

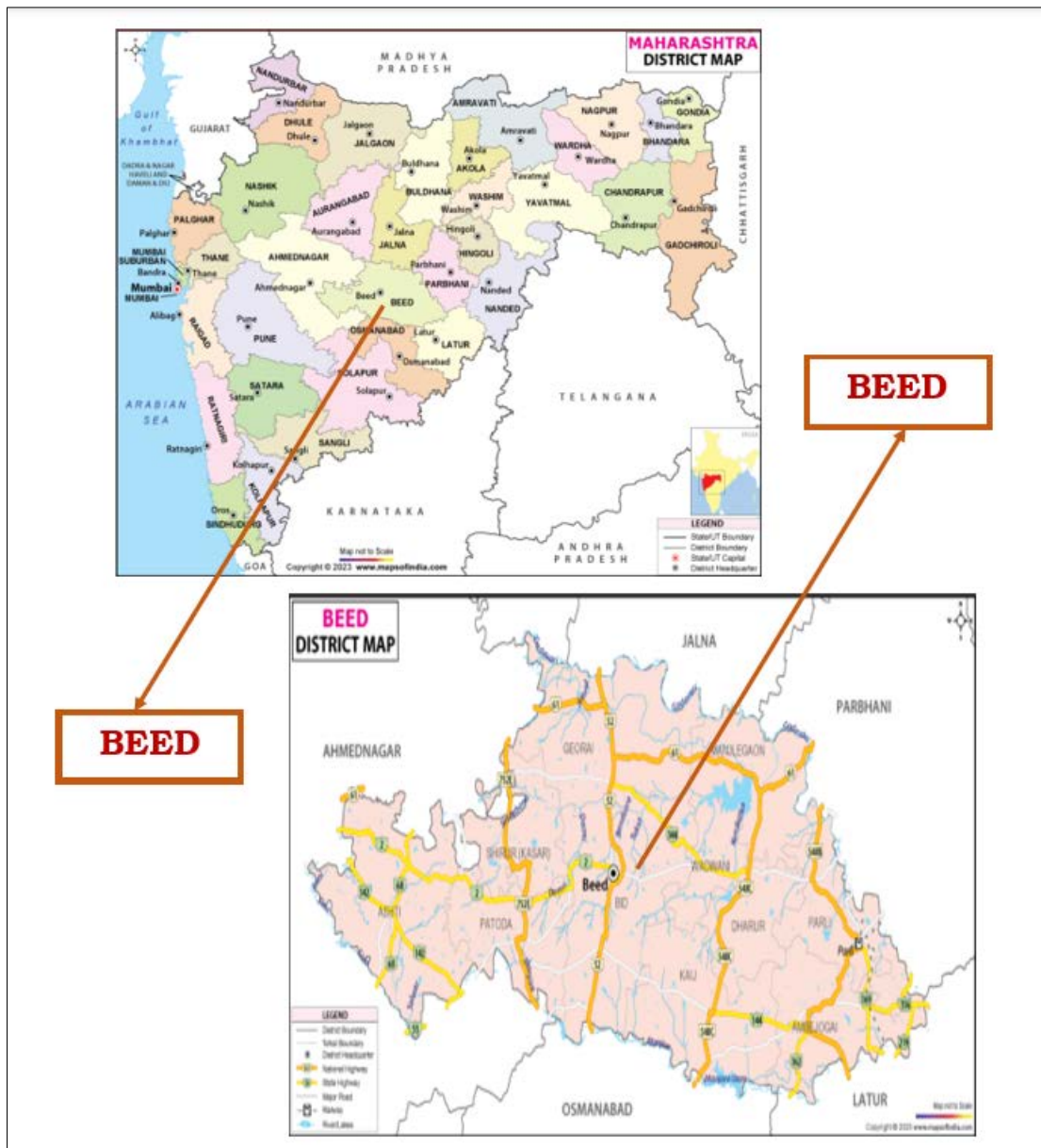


Fig 1 Location of Beed

LIST OF SAND GHAT IN BEED

TABLE 1 - List of approved 38 sand ghats list.

Sr	Village	Taluka	River	Gut No.	Area	Lenth	Width	Depth	Brass
1	Ridhori	Majalga on	Godavari	177/1, 3,12,13,15 to 18,39	4.50	900	50	1.0	15901.06
2	Gavhant hadi	Majalga on	Godavari	22 to 29,33 to 35, 39 , 40	2.50	500	50	0.80	7067.138
3	Hivra 1	Majalga on	Godavari	75,74,68,67,56 to 58	2.0	500	40	1.0	7067.138
4	Hivra 2	Majalga on	Godavari	54,39 to 42,22 to 29, 30 to 35	4.41	630	70	1.0	15583.04
5	Hivra 3	Majalga on	Godavari	1 to 3,5,6,16,17	1.75	350	50	1.10	6802.12
6	Dubbat hadi 3	Majalga on	Godavari	61,62,3 to 8	4.95	1100	45	1.10	19240.28
7	Purshott ampuri	Majalga on	Godavari	12 to 21, 24 to 26, 31,32,36,37	3.75	750	50	1.00	13250.88
8	Manjrat h 1	Majalga on	Godavari	36 to 40, 43, 49,50,52,55	4.5	900	50	1.0	15901.06
9	Manjrat h 2	Majalga on	Godavari	21 to 24,26,27,31,32,34	4.5	900	50	1.20	19081.27
10	Manjrat h 3	Majalga on	Godavari	484,486 to 488,495 , 497	4.2	600	70	1.0	14840.99
11	Abegaon	Majalga on	Godavari	485 to 487, 289, 1,4 to 6	4.88	1220	40	1.1	18968.2
12	Sarvar Pimpalg aon	Majalga on	Godavari	124, 134, 137 to 140, 145, 153, 154 , 156	4.55	1300	35	1.0	16077.74
13	Kaau dg aon Thadi	Majalga on	Godavari	21,12,21,37,15,216	3.75	1250	30	0.60	7950.53

Executive Summary for 38 Sand ghats Beed

Sr	Village	Taluka	River	Gut No.	Area	Lenth	Width	Depth	Brass
14	Ganga masla	Majalga on	Godavari	178,174,173	4.9	1400	35	1.50	2592
15	Adola	Majalga on	Godavari	26,12,72,28,52,87,288	0.9	300	30	1.00	3180
16	Sandas chincholi	Majalga on	Godavari	37,46,50,51,54,55	0.7	175	40	0.45	1113
17	Telasmukh 1	Parti Ve.	Godavari	1,92 to 98, 84 to 90, 82	4.90	1400	35	1.0	17314.49
18	Telasmukh 2	Parti Ve.	Godavari	10,16,13,14,3,4	2.70	300	90	1.30	12402.83
19	Borgaav Bu. 1	Gevrai	Godavari	4,1,176,174	1.80	450	40	0.80	5088.339
20	Borgaav Bu. 2	Gevrai	Godavari	159,166,167,110,172,173	4.80	1200	40	1.0	16961.13
21	Patharwala Khu.	Gevrai	Godavari	1,2,3,4,60	2.40	600	40	0.50	4240.283
22	Guntegav	Gevrai	Godavari	10,11,12,13	3.60	600	60	0.50	6360.424
23	Surlegav 1	Gevrai	Godavari	136,138,1,2/3,4	4.00	800	50	1.0	14134.28
24	Rakshasbhuvan 1	Gevrai	Godavari	187 to 192, 194 to 197, 1 to 3	4.34	1240	35	1.20	18402.83
25	Sawargav Ni.	Gevrai	Godavari	28,29,3,4,8,9	3.38	750	45	1.10	13118.37
26	Hingangaon 1	Gevrai	Godavari	4,2,51 to 54,7	4.75	950	50	1.0	16784.45
27	Hingangaon 2	Gevrai	Godavari	13 to 15, 17,18	3.50	700	50	1.0	12367.49

Executive Summary for 38 Sand ghats Beed

Sr	Village	Taluka	River	Gut No.	Area	Lenth	Width	Depth	Brass
28	Godi Khu.	Gevrai	Godavari	19,37,38,41,1,2	3.25	650	50	1.0	11484.1
29	Ranjegaon	Beed	Sindhphana	1	1.575	450	35	1.0	5565.371
30	Rangao nA	Beed	Sindhphana	99 to 109	1.25	500	25	1.0	4416.961
31	Rangao nB	Beed	Sindhphana	17	1.25	500	25	1.0	4416.961
32	Barhanpur	Beed	Tukadmodnadi	6,7,9	1.25	250	50	0.70	3091.873
33	Anandgaon	Beed	Sindhphana	120,121,122,123 to 131	1.20	400	30	1.0	4240.283
34	Kukkadgaon 1	Beed	Sindhphana	357,358,359	1.00	400	25	1.0	3533.569
35	Kukkadgaon 2	Beed	Sindhphana	132,133,137,142	1.00	250	40	1.0	3533.569
36	Khudras	Beed	Sindhphana	7,6,4,3,2,1	1.10	500	22	1.0	3886.926
37	Bahadarpur	Beed	Sindhphana	168,169,170,160,161,162,163,164,165,166,167	1.10	500	22	3.0	11660.78
38	Sakshalpimpri 1	Beed	Sindhphana	774 & 788	1.10	550	20	2.0	7773.852

STATUS OF STATUARY CLEARANCES FOR SAND GHAT

The status of statutory clearance for sand ghat is shown below in Table No, 2

TABLE 2 Status of Statuary Clearances for Sand Ghat

Sr	Particulars	Details
1	Name and address of Allottee	District Mining Officer, Beed
2.	Status of lease	New
3.	Mineral for which the lessee intends to mine	River bed sand
4.	Name and Address of Prospecting Agency	Taluka Level Technical Committee chaired by Tehsildar and Dy. Engineer Irrigation, Junior Geologist, Directorate of Geology and Mining, Junior Geologist Groundwater Surveys & Development Agency (GSDA)., representative of Maharashtra Pollution Control Board.
5.	Gram Panchayat NOC	Received from Gram Panchayat as per Sand Mining Policy of Maharashtra State.
6.	Plan Period for activity	Up to one year from the date of allocation of the sand ghat.

MINING METHODOLOGY

Method of Mining

Opencast manual method without drilling & blasting will be used for sand mining. Labours with hand tools such as Spade, and Ghamelas will be used. Excavation of sand is done from dry riverbeds only.

The following process is followed for the estimation of sand in the sand ghat:

- 1) The demarcation and benchmarking of the sand ghat are done at 10m x 10m intervals.
- 2) Auger driller is used to find out the depth of sand in each grid.
- 3) Auger driller is used to create the holes in sand ghat using a 10mx10m grid pattern.
- 4) The depth of holes is measured by using a measuring tape.
- 5) After taking all the readings the average depth of sand ghat of the river is calculated in meters.

Machinery / Equipment required

Spades, Ghamelas, and Tractors with trolleys are the machinery/equipment used for sand mining.

Transportation

Transportation will be done by tractor trolley from the sand spot to the stockyard & to consumers.

Reclamation

The mined-out area will be replenished automatically after the monsoon. Plantation will be carried out along the riverbank and along the transport road.

ENVIRONMENTAL MANAGEMENT PLAN

TABLE 3-Anticipated Impact and Management Plan

Sr	Impact	Management Plan
1.	Air Pollution	<ul style="list-style-type: none"> ▪ Water Sprinkling will be done on approach roads up to 1.00km for dust suppression. ▪ Speed of the tractors will be within limits. ▪ Road maintenance will be done regularly. ▪ Compaction of roads will be done. ▪ Sand will be transported by tractor, and trolleys covered with tarpaulin sheets. ▪ Tractor trolleys will not be overloaded.
2.	Noise Pollution	<ul style="list-style-type: none"> ▪ Ear muffs and ear plugs will be provided to labours. ▪ Heavy noise-generating machines will not be deployed other than tractor trolleys. ▪ Tractor engines will be shut down while loading. ▪ Greenbelt shall be developed to reduce noise generation.
3.	Water Pollution	<ul style="list-style-type: none"> ▪ Mining activity will be closed during the monsoon, so that replenishment of sand can take place. ▪ Mobile toilets will be provided at the mine site for labours. ▪ Sand mining will be carried out in dry river beds only. ▪ Waste material like polythene bags, jute bags, etc. will not be allowed to remain/spill in the

Sr	Impact	Management Plan
		riverbed.
4.	Land Environment	<ul style="list-style-type: none"> ▪ Minimum safe distance of 7.5m or 1/4th of the width of the river shall be kept from both sides of the bank to avoid erosion ▪ Depth of mining will be a maximum of 3m depending upon the availability of sand.
5.	Biological Environment	<ul style="list-style-type: none"> ▪ Since the mining activity will be done on a dry bed, hence there will not be any impact on the biological environment.
6.	Socio-Economic Environment	<ul style="list-style-type: none"> ▪ Employment generation due to this mining activity. Local villagers will be given priority for employment.
7.	Waste/Overburden Management	<ul style="list-style-type: none"> ▪ There will not be any generation of waste or overburden due to this mining activity.

OCCUPATION, HEALTH AND SERVICES

A summary of Occupational Health and Services is given below

1. Labour will be provided with Personal Protective Equipment (⁴PPE) like a safety helmet, ear plugs, earmuffs, gum boot, facemasks, etc.
2. Facemasks shall be provided for protection from dust.
3. Drinking water and toilet facility shall be provided to labours
4. First aid kit shall be made available in the mining area.
5. Mobile toilets shall be provided for the labours.
6. Dust bins shall be provided for waste collection and disposed of by the local authority

⁴ Personal Protective Equipment

PLANTATION PROGRAM

It is proposed to plant local species during the monsoon period along the bank of the river and village roads.

TABLE 4-Green belt details

Particular	Details
Location of greenbelt	Both sides of the approach road, On the riverbanks of the sand spot & nearby open areas. Haul Road outside the riverbed
No. of plants to be planted	2000 Per Hectare
Spacing of plants	2 m grid interval
Species selected	Native species

TABLE 5-List of tree species recommended for Plantation

Sr	Botanical name	Local name	Importance
1.	Azadirachta Indica	Neem	Neem oil & neem products
2.	Tectona Grandis	Teak	Antibacterial, Antifungal, Antiulcer
3.	Ficus Religiosa	Peepal	Medicinal use, Fruits & figs
5.	Bambusa Vulgaris	Bamboo	Anthelmintic Anti-inflammatory, Astringent Properties
6.	Madhuca Longifolia	Mahua	Acts as a Stimulant & cough relief

CONCLUSION

1. Environmental Clearance (⁵EC) is applied for 38 Sand spots located in Majalgaon, Parli Ve, Gevrai and Beed Talukas in Beed District. Maharashtra having a lease area of less than 5ha, fall under the B2 category as per Ministry of Environment Forest and Climate Change (⁶MoEFCC) guidelines.
2. Empirical method of mining will control water from spreading on agricultural land and in nearby habitation creating a flood situation
3. Government will be benefitted in the form of royalty due to the mining activity
4. Business opportunities will be generated for local villagers due to mining
5. The proposed project will also make an optimistic contribution to the social infrastructure and overall development of the region.
6. All environmental issues like air, water, noise, soil, solid waste management, etc. will be dealt with as per the MoEFCC guidelines.

*** END ***

⁵ Environmental Clearance

⁶ Ministry of Environment Forest and Climate Change

Environmental Management Plan

As per Rules 23 & 26 of MMME (D & R) RULE 2013 & Section 15 of MMDR Act 1957, MoEFCC Notification 2006, S.O. 141(E) dated 15. 01. 2016; MoEFCC, Sustainable Sand Mining Management Guidelines 2016, Guidelines for Mining Policy 2020)

For

ENVIRONMENTAL CLEARANCE

of

SAND MINING (MINOR MINERAL)

for

Abegaon– A Riverbed Sand Mine / Sand Ghat
Khasra No. GSDA approved 485 to 487, 289, 1, 4 to 6
Area (4.88ha)

Village Abegaon, Taluka Majalgaon, District Beed

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ABBREVIATION

Short Form	Long Form
EMP	Environmental Management Plan
MoEFCC	Ministry of Environment Forest and Climate Change
DSR	District-level Survey Report
EC	Environmental Coordinator
OM	Operations Manager
GSDA	Groundwater Surveys & Development Agency
MPCB	Maharashtra Pollution Control Board
MSL	Mean Sea Level
MS	Maharashtra State
PUC	Pollution Under Control
R&R	Rehabilitation and Resettlement
DLTF	Distance Learning Task Force
TP	Transport Permission/Permits
IBA	Indian Bank Association
MICR	Magnetic Ink Character Recognition Code
QR	Quick Response Code
GPS	Global Positioning System

CCTV	Closed-Circuit Television
DGPS	Differential Global Positioning System
RL	Reduced Levels
CER	Corporate Environment Responsibility

CHAPTER 1

INTRODUCTION

The Environmental Management Plan (¹EMP) plays a vital connection uniting forecast impacts and mitigation measures during implementation and operational activities. EMP stipulates the mitigation, monitoring and conventional measures to be taken during project implementation and operation. EMP is to escape or mitigate adverse environmental impacts, and to implement these measures.

This Environmental Management Plan (EMP) has been prepared as part of the Scoping Report which will be compiled in terms of the Environmental Assessment for the sand mining activities.

Considering the Ministry of Environment and Forest Climate Change (²MoEFCC) Notification 2006 and Sustainable Sand Mining Management Guidelines 2016, the Govt. of Maharashtra had mapped out the Minor Mineral Extraction Rules 2013. These rules are to extract all minor minerals in a scientific way so that there is no unfavourable impact on Environment and Climate. To extract every minor mineral from any land (either Government or Private) there is provision for a Mining Plan. These plans need to be approved by a competent authority. For long-term leased minor minerals (5-10 years period) and sand excavation from the riverbed, Senior Deputy Director of Directorate of Geology and Mining is the competent authority. These plans are for short term temporary permits which are valid for one year.

According to Enforcement & Monitoring Guidelines for Sand Mining 2020, Sustainable Sand Mining Management Guidelines 2016, Standard Environment conditions for sand mining and sustainable mining practices, District level Survey Report (³DSR) should be prepared and are suitable for mining and area prohibited for mining must be recognized.

¹ Environmental Management Plan

² Ministry of Environment Forest and Climate Change

³ District Survey Report

Objectives of EMP

- To provide overall conservation of the environment.
- To minimize waste generation and pollution.
- To regulate the precise use of natural resources and water.
- To provide Safety, Welfare, and Good health for the workforce and populace.
- To regulate the effective operation of all control measures.
- To ensure alertness against probable disasters and accidents.
- To monitor cumulative and long-term impacts.
- To regulate the effective operation of all control measures.

Roles and Responsibilities concerning the implementation of the EMP

The roles and responsibilities of all parties involved in successfully managing the environment are mentioned below.

Environmental Coordinator

The Environmental Coordinator will inspect operational areas on a quarterly basis and at the onset of mining any new island, to ensure that all specifications are met. The duties of the environmental coordinator will be the following.

- Guide the operations team in respect of the implementation of the environmental specifications.
- Lead the visits to ensure all work is aligned with the EMP.
- The environmental coordinator must examine the site during the three-monthly visits. All rehabilitation results will be Comprised in the quarterly report.
- Examination of the rehabilitation area and giving guidance regarding rehabilitation measures if any.

The Operations Manager

The responsibilities of the Operations Manager (4OM) or his nominated authority are as follows.

1. Familiarize themselves with the requirements of the EMP.
2. Monitor employees' and contractor's compliance with the environmental specifications; and enforce adherence.

⁴ Operations Manager

3. Communicate all environment-related incidents with the Environmental Coordinator and distribute them internally to avoid repetition.
4. Maintain a record of activities relevant to Environmental Management.
5. The Operations Manager shall be responsible for monitoring and the enforcement of the Environmental Management specifications on a day-to-day basis. Any violation of the environmental specifications shall be recorded, and the agreed disciplinary measures are taken.

Senior personnel and contractors

The roles of the senior personnel/contractors are as follows:

- Familiarize themselves with the requirements of the EMP.
- Comply with the environmental management specifications.
- Ensure that all team members are familiar with the environmental management specifications.

Details of the project

The Abegaon sand ghat area has been selected in perspective of its subsisting demand for building-grade sand for the area in and around Majalgaon Taluka. The District Mining Officer Beed has put forward the proposal for Environmental Clearance for mining. The ghat has a production of 18968 brass sand within an area of 4.88ha. The proposed proposal follows an organized mining process for Environmental Clearance.

Further Chapter informs about the in-depth details of the Sand Ghat, its geographical structure, and a Google map of the ghat with its approach road for contractors and workers to reach to sand ghat from the village.

CHAPTER 2

DETAILS OF THE PROJECT

Abegaon village is located in Majalgaon Taluka of Beed district, Maharashtra. Majalgaon is well connected with all nearby cities. The National highway NH-52, it traverses through the states of Punjab, Haryana, Rajasthan, Madhya Pradesh, Maharashtra, Karnataka in India. NH-52 is the National Highway passing through the district, covering a total distance of 73.60km. Majalgaon has situated about 51.22km by road from Beed. The district has road links to adjoining districts Ahmednagar District to the west, Jalna District to the North, Latur District to the East, Osmanabad District to the South, Parbhani District to the East. The district is well connected by roads.

Abegaon village is 66.72km away from Collector office headquarters Beed. The Geographical area of the Beed is around 10693km². The nearest Railway station to Abegaon village is Dhengli Pimpalgaon Railway station. The nearest Airport to Beed District is Aurangabad Airport, Aurangabad Airport is 104km from Beed city, 118.31km from Abegaon.

Honourable Collector Beed intends to auction Sand Ghats and appointed District Mining Officer as Project Proponent. A total of 38 sand ghats are identified by Tahsildar Majalgaon, Parli Ve., Gevrai, Beed along with District Mining Officer, Beed. The 38 sand ghats were jointly surveyed by Taluka level technical committee headed by respective Tahsildar with Dy. Engineer Irrigation Department, Junior Geologist Directorate of Geology and Mining Govt. of Maharashtra, Junior Geologist, Groundwater Surveys & Development Agency (⁵GSDA). DMO Beed and a representative of the Maharashtra Pollution Control Board (⁶MPCB), as per the procedure defined in Sand Auction Rules 2019 dated 3/09/2019 formed a Taluka-level technical committee, which explored the sand ghats for an available quantity of sand for scooping. Revenue of Rs.25 Crore is expected from the auction of these sand ghats. Abegaon Sand Ghat proposed over river Godavari in Majalgaon

⁵ Groundwater Surveys & Development Agency

⁶ Maharashtra Pollution Control Board

Taluka is proposed to cater to the infrastructural requirement of sand in the Taluka of Beed and adjoining areas of other talukas.

Table 2. 1 Details of AbegaonSand ghat

Name of Village	Taluka	River/ Nallah	Nearest survey No.	Area (ha)	Proposed Depth for excavation (m)	Quantity Permitted for mining of Sand in Brass	Method of Mining
Abegaon	Majalgaon	Godavari	485 to 487, 289, 1, 4 to 6	4.88	1.1	18968	Open-cast manual mining

Table 2. 2 Salient features of the project

Particulars	Details		
Location	Village-Abegaon, Taluka-Majalgaon, District-Beed, Maharashtra.		
Latitude and Longitude	Boundary points of Abegaon sand spot	Latitude	Longitude
	BP1	19°15'50.94"N	76°18'30.19"E
	BP2	19°15'52.13"N	76°18'30.63"E
	BP3	19°15'26.84"N	76°19'2.61"E
	BP4	19°15'25.60"N	76°19'1.91"E
Sand spot area (In ha)	4.88ha		
Proposed production capacity (in Brass)	18968		
Infrastructure Requirement (As per Govt Resolution 3rd January 2018)	<ol style="list-style-type: none"> 1. Room / Hut for Official records 2. Electricity / Battery for Running CCTV 24x7 daily. 3. One Computer / Android-based Mobile for the online generation of Invoice numbers. 		

Particulars	Details
Distance of project site from nearest rail or road bridge over the concerned River, Nallah, etc.	5.98km
Distance from infrastructural facilities	
Railway line	24.17km
National Highway	5.31km (NH-61)
State Highway	42.57km (SH-144)
Major District Road	61.17km
Any Other Road	11.71km
Electric transmission line pole or tower	
Canal or check dam or reservoirs or lake or ponds	
In-take for drinking water pump house	
Intake for Irrigation canal pumps	

Particulars	Details
Areas already subjected to pollution or environmental damage. (those where existing legal environmental standards are exceeded)	None
Areas susceptible to natural hazards which could cause the project to Present environmental problems (earthquakes, subsidence, landslides, erosion, flooding, or extreme or adverse climatic conditions)	No. Sand Ghat is at safe distances from natural hazards like earthquake prone area, subsidence, landslide, erosion, flooding prone area and extreme or adverse climatic conditions

Particulars	Details
<p>Whether the proposal involves approval or clearance under the following Regulations or Acts, namely: - (a) The Forest (Conservation) Act, 1980. (b) The Wildlife (Protection) Act, 1972. (c) The Coastal Regulation Zone Notification, 2011. If yes, details of the same and their status are to be given.</p>	<p>None</p>
<p>Forest land involved (hectares)</p>	<p>None</p>

The below figure shows the google image of Abegaon sand ghat.

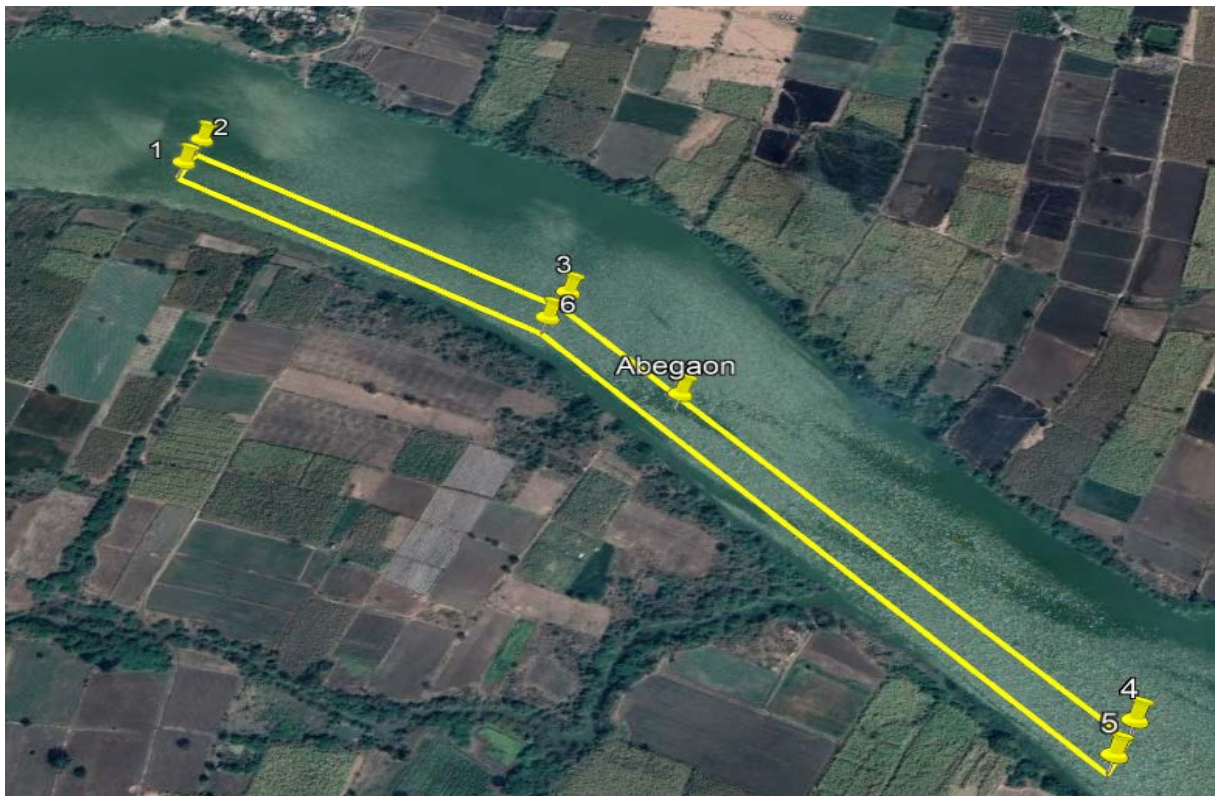


Fig 2.1-Google image of Abegaon sand ghat

Approach road along with google location is as shown below.

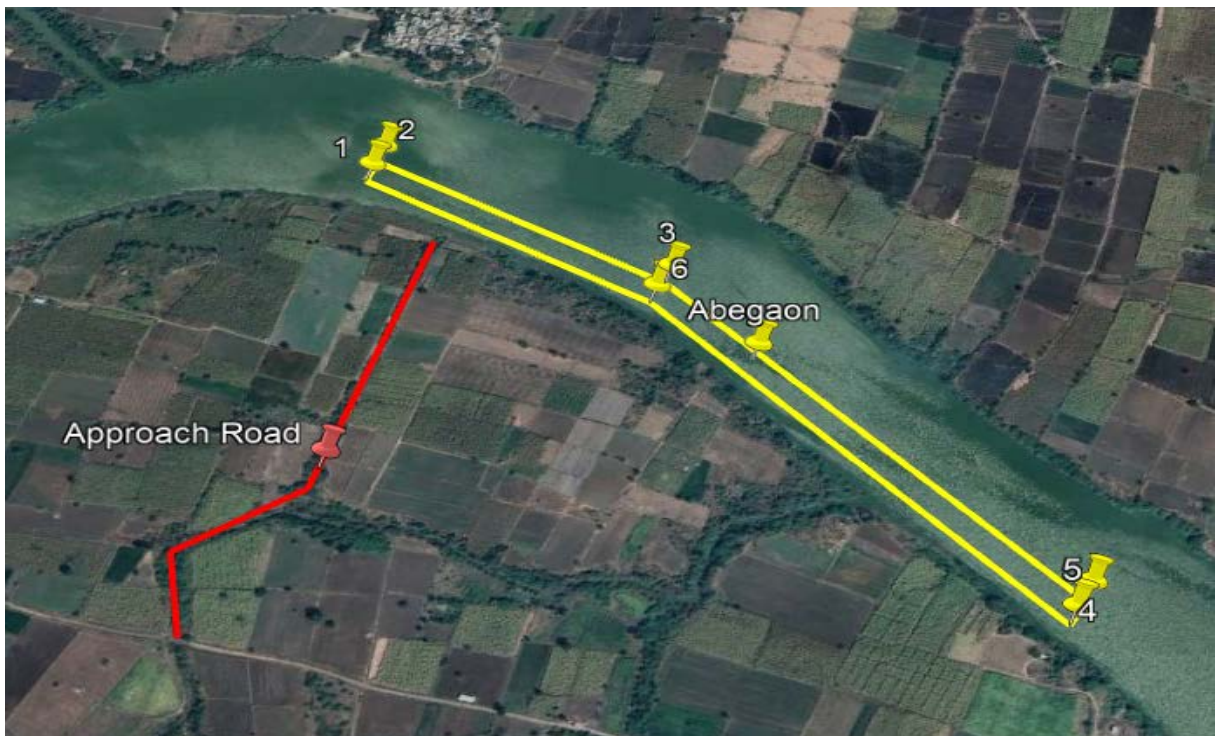


Fig 2.2-Approach Road for sand ghat

Next chapter 3 is Baseline Environmental Status in which the entire Topography, Climate, Soil Environment, Land use, water Environment, Hydrology, Biological environment, and Socio-economic Environment are briefly explained for the Beed district.

CHAPTER 3

BASELINE ENVIRONMENT STATUS

Topography

The Sand Ghat area as per the survey is the riverbed of the Godavari River of the Beed district. The maximum elevation is 419m MSL, average elevation is 415m MSL, & minimum elevation is 409m (⁷MSL) Mean Sea Level. The slope of the Sand Ghat area towards the Southwest to Northeast side. The flow of Godavari River is from Southeast direction.

Presently, there is neither any infrastructure within the riverbed nor are proposed.

Hydrology

There will be no change in the Water Table during the mining operation, as the depth of mining shall be restricted to 1.1m water level, which is less likely to affect the surface level or Groundwater Table. There is no proposal of any stream modification/diversion due to this mining activity hence there will be not any impact on the flow of water.

Soil Environment

The riverbed consists of sand /gravel. There is no topsoil. The depth of mining shall be restricted to 1.1m. There is no crucial impact on the soil forecasted due to mining activities.

Land Use Land Cover

Land use shows that agriculture land use is predominant. The proposed site is 4.88ha having adjoined Khasara No 485 to 487, 289, 1, 4 to 6. The land doesn't cover any human habitation, forest, etc. Any change in the scope of the approved Mining Plan will lead to riverbank erosion/cutting and thereby river channel shifting, degradation of land, causing loss of properties and degradation of the surrounding landscape.

⁷ Mean sea level

Water Environment

While transporting sand there may be fugitive dust. There will be water requirement for spraying for dust suppression purposes. This water will be supplied from the borewell from nearby villages through tankers as well as from surface water sources. The water source may vary from village to village.

Climate

During summer May is the hottest month of the year in this area. The temperature rises to 42°C in the month of May. The average rainfall in this region is 600mm to 700mm About 50% of rainfall precipitates between June to September. December is the coldest month with temperatures falling down to 18°C. Overall the proposed site area has sub-tropical conditions.

Biological Environment

Flora

The agricultural area is seen near the Sand Ghat. Few trees and thorny bushes are seen on the banks of the river.

Fauna

As there is no forest cover, no endangered species of wildlife are seen in this area.

Socio-Economic Environment

This project may create constructive impacts of the sand mining that are stated below:

1. The mining operations will provide direct & indirect employment to village people.
2. The villages and their inhabitants & domestic animals will not be disturbed due to mining, as the quarry is far from their settlements.
3. Local workforce will be given first preference for employment.
4. Mining activities will benefit the local people due to the provision of more infrastructural facilities (developments of approach routes within the village area).

The next chapter describes all possible impacts on the Environment due to this project along with its mitigation measure to overcome these impacts.

CHAPTER 4

IMPACT ASSESSMENT REPORT ALONG WITH PROPOSED MITIGATION MEASURES

1. Land Environment

Anticipated Impact

Movement of vehicles can create issues for agricultural land, human habitations, noise, and risk for public and cause traffic hazards. The impacts include damage to the riverbank due to access ramps to the riverbed, soil erosion because of extraction of sand, micro disturbance to groundwater, possible stimulation of the changed river course, and contamination of sand aquifer water due to ponding. There might be surface degradation due to the road network.

The quality of soil will not be affected due to transportation or any other activity of mining.

Mitigation measure

1. Mining depth should be restricted to 3 meters and distance from the bank should be $\frac{1}{4}$ th or river width and should not be less than 7.5 meters as per “Sustainable Sand Mining Guidelines 2020” ■ Page 23, Point no 4.3 (m).
2. There will be a minimal number of access roads to riverbeds. Cutting of riverbanks will be avoided and ramp with smooth slope will be maintained. Access points to the riverbed will be decided based on the least steepness of the riverbank and the least human activity at that location.
3. No foreign material like polythene bags, jute bags, and useless articles should be allowed to remain/spill in the riverbed and catchment area, or no pits/pockets will be allowed to be filled with such material.
4. Mining at the concave side of the river channel should be avoided to prevent bank erosion. Similarly, a tortuous segment of a river is to be selected for mining in such a way as to ignore the natural eroding of banks.
5. Ensure that ponding is not created in the riverbed.
6. Transportation route should be such that it gives minimum

damage to the environment.

7. Green belt will be developed along the haul road and the bank of rivers of mine premises and near the sand mining site. While selecting the plant species, preference will be given for planting native species of the area.

2. Water environment

Anticipated Impact

The project activity will be carried out in the dry part of the riverbed. Care will be taken to ensure that neither of the project activities will affect the water environment or riverbank habitats. During the lean months, the proposed Sand Mining will not expose the base flow of the river and hence there will not be any inauspicious impact on surface hydrology and groundwater regime due to this project. Project activities will not have any adverse consequences on the physical components of the environment and therefore may not have any effect on the recharge of ground waters or affect the water quality. Monitoring of water quality will be checked yearly.

Mitigation measures

1. Mining is avoided during the monsoon season and at the time of floods. This will help in the replenishment of sand in the riverbed.
2. Mining below the subterranean water level will be avoided as a safeguard against environmental contamination and over-exploitation of resources.
3. River stream will not be transferred to create active channels.
4. Mining schedule is synchronized with the river flow direction and the gradient of the land.
5. Mining at the concave side of the river channel will be avoided to prevent bank erosion.
6. Tortuous segment of the river will be selected for mining in such a way as to avoid naturally eroding banks and to promote mining on naturally building meander components.
7. Mining depth shall be maintained as per the guidelines and

rules of the Sand Mining Policy dated 03/09/2019 and recommendations of Maharashtra State (⁸M.S.). State Ground Water Department for extraction of sand during the lease period.

8. Water Quality Monitoring for the ground waters, river water, and other surface waters shall be carried out seasonally to ensure that the water quality is not affected by the project activities.
9. Utmost care will be taken to minimize or control leaking vehicles to be used for sand transportation.
10. The washing of tractor trolleys in the river will not be done.
11. The contractor will follow all guidelines and rules for proper and scientific methods of mining during the period of extracting the sand.

3. Air Environment

Anticipated Impacts

Plying of tractor trolleys from the public road to river sand collection points needs access roads. The majority of such access roads are the already existing roads/tracks being used by pedestrians/cart owners. The movement of heavy vehicles sometimes causes problems for cattle, agricultural land, and human habitations due to dust, noise, and the movement of the public. These environmental problems are felt more as the area is rural in nature.

Air pollution is likely to be caused at various stages of Sand Mining operations such as excavation, loading & transportation of material. Most of the fugitive dust emissions will be generated from loading & transportation. This dust becomes airborne and spreads away to surrounding areas.

The impact on air is mainly localized in nature as the dust particles of 100 μ in size are not carried to farther distances beyond 100m and the effect is felt within the core zone of the project involving active Sand Mining operations.

⁸ Maharashtra State

Mitigation measures

1. Movement of the vehicles on the road will be increased; however, the unmetalled road in the mining area will be sprinkled with water at regular intervals.
2. In addition to preventing spillage from tractor trolleys, overloading shall be controlled to 1-brass/tractor trolley. The speed limit will be <20 km/hr.
3. Maintenance of the haul road will be done on a regular basis.
4. To avoid fugitive dust emissions at the time of excavation, a regular sprinkling of water will be done on regular basis.
5. Sand is transported to the sites by road through tractor trolleys. The sand-carrying vehicles shall be covered by tarpaulin sheets.
6. The Green belt development will be prepared along the haul roads, which will act as a pollution sink.
7. To minimize vehicular pollution from the sand transporting vehicles, the following conditions will be insisted upon to permit the vehicles of the transporters.
8. The vehicles should be Bharat-IV stage compliant and should have a Pollution Under Control (⁹PUC) Certificate issued by appropriate authorities.
9. Regular maintenance of transport vehicles and monitoring of vehicular emission levels at periodical intervals.

4. Noise Environment

Anticipated Impact

The noise environment in this project will be overdone by the equipment at the site and vehicular transportation. A slight increase in noise levels of <10dB(A) can be expected up to a distance of 100m.

Mitigation measures.

1. Minimum use of horns in the village area.
2. Timely maintenance of vehicles and their silencers to

⁹ Pollution Under Control

- minimize vibration and sound.
3. Phasing out old and worn-out tractor trolleys.
 4. Provision of green belts along the road networks.
 5. Care will be taken to produce minimum sound during sand loading.
 6. Backhoe loader excavator will be used
 7. Earplugs may be provided to protect the labourers working at the site.

5. Socio-economic Environment

Anticipated Impacts and Evaluation

1. The project activities shall not have any adverse impacts on any of the common property resources of the village communities, as the Sand Mine lease area is not being used for any purpose by any section of the society in this region.
2. There is no Resettlement and Rehabilitation (¹⁰R&R) involvement in this project.
3. There is no land acquisition in this project.
4. A major portion of the houses in the study area is semi-pucca-type structures.
5. The water source to these areas is from the Grampanchayat /Nagar Parishad connection and private bore wells and wells.
6. People living around the project area need the project for the purpose of employment and economic benefits.
7. The awareness level regarding the proposed mining activity is very towering. The proposed mining activity is expected to provide stimulus to socio-economic activities in the region and thereby accelerate further development processes.

Social and Demographic Profile

The workers are from local villages. These people have been provided welfare benefits from the lessee like medical benefits,

¹⁰ Rehabilitation and Resettlement

insurance, fees for children's education, etc. They have some land and cattle for their daily earnings. Additional revenue earned from the Sand Mining work will improve their living standard. The group of quarries in and around will help to have infrastructure facilities like roads, schools, shops, etc. This will enhance their social life.

Occupational Health and Safety

This is a riverbed Sand Mine. So, the mining activities are comparatively smaller because the production is not on a high scale. Workers do not come across any extreme conditions like excessive heat, moisture, etc. Workers working around it may come across this dusty environment. But the impact on health will be within the limit.

Human Settlement

1. There are no houses in and around the lease area. Blasting is the only activity, which may affect the settlement, which is not done. The settlement is more than 1-km from the sand mine.
2. Appropriate precautions will be taken during mining. Transportation of finished products is through the villages. There will be an effect of traffic on the local people. However, the intensity of traffic is 70-80/day.

Health and Hygiene

In general, the health of villagers is moderately good. In the rainy season, the atmospheric condition is unhygienic due to a lack of proper drainage and sanitation in the village habitation. Villagers are working in agricultural fields and work as labourers.

Education

Most education of 70% young <20 years, is up to the 5th to 9th. Economic condition is in general moderate. So, after this project, the standard of education will increase.

Socio-Economic Benefits Arising Out of Mining

1. Generation of employment in rural areas.
2. Upgradation in the living standards of rural people.
3. Creating infrastructural facilities like roads, electricity, shops, schools, etc.
4. Upgrading literacy in the area by exploiting natural minerals so the generation of revenue.

5. Helping to sustain construction activity.
6. Improving the greenery of the area, which is otherwise poor.

Liquid Effluent

Not applicable, because these activities do not generate effluent from operation or process.

Solid Waste

Not applicable, because small mines and impacts are negligible.

Project benefits due to the sand mining of Abegaon are explained in the next Chapter.

CHAPTER 5

PROJECT BENEFITS

The proposed Sand Mining project of Abegaon village, Majalgaon Taluka, Beed District will lead to the following benefits:

1. Increase in the revenue of the district will ultimately increase the revenue of the village, which in return can be used to improve the infrastructure of the village.
2. Sand is available for building construction work and by systematic separation of sand, there is no possibility of a flood. Providing smooth movement of water of the river.
3. This project will contribute additional revenue to the state Exchequer in the form of revenue.
4. The project will conclude with employment opportunities for unskilled/skilled local people.
5. Standard of living of employed people will increase.

CHAPTER 6

SITE-SPECIFIC ENFORCEMENT & MONITORING PLAN

Sand Ghat Site specific enforcement & monitoring plan

(as per guidelines stipulated in the Enforcement and Monitoring Guidelines for sand mining issued by MoEFCC in January 2020.)

District administration shall deliver information on its website about the Sand Mines in the district for public information. The objective is to extend all information into the public domain so that the citizens are aware of the mining activities. People can also report to the district administration any deviation observed. Suitable feedback and its composition shall also be made operational.

Details shall include, but not be limited to, lease area, geo-coordinates of lease area and mineable area, transport routes, permitted capacity, regulatory conditions for operation including mining, environmental and social commitments, etc.

An Independent Committee of experts constituted by the Distance Learning Task Force (¹¹DLTF) will assess the environmental or ecological damage caused due to illegal mining and recommend recovery of environmental compensation from the concerned miners.

The recommendation may also include action under the provision of the Environment (Protection) Act 1986 u/s.15 read with s.19.

¹¹ Distance Learning Task Force

CHAPTER 7

SECURITY FEATURES

Security features are included in the Transport Permission/Permits (TP)

It will be ensured that the following security features are included in the Transport Permission/Permits (¹²TP) so that duplicate/fraudulent/forged TPs for transport, not accounted for in the IT-based system, is not possible:

1. Printed on Indian Bank Association (¹³IBA) Approved letterhead with account details
2. Magnetic Ink Character Recognition Code (¹⁴MICR) paper
3. Unique Barcode
4. Unique Quick Response Code (¹⁵QR)
5. Fugitive Ink Background
6. Invisible Ink Mark
7. Void Pantograph Watermark
8. Global Positioning System (¹⁶GPS) based vehicle tracking system
9. Closed-Circuit Television (¹⁷CCTV) Camera

¹² Transport Permission

¹³ Indian Bank Association

¹⁴ Magnetic Ink Character Recognition Code

¹⁵ Quick Response Code

¹⁶ Global Positioning System

¹⁷ Closed Circuit Television

CHAPTER 8

REPLENISHMENT

Replenishment study is the most important part of Sand Mining as it is the only basis to carry out sand mining. Without a Replenishment Study, we cannot understand the amount of deposition of sand. Following points to be followed for the replenishment study.

1. Area of deposition and erosion will be calculated for each cross-section after giving due regard to the stability & safety of active channel banks & other features of importance.
2. Differential Global Positioning System (¹⁸DGPS) and other survey tools will be used to define the topography, contours, and offsets of the lease area.
3. Contour & elevation benchmarks will provide baseline data for assessing pre- and post-study period scenario.
4. Physical benchmarks will be fixed at appropriate intervals (preferably 1 in 30m) & Reduced levels (¹⁹RL) shall be validated from a nearby standard RL.
5. These RL will be engraved on a steel plate (Bench Plate) & will be fixed & placed at locations that are free from any damages & are available in the pre-and post-study period.
6. Bench plates will be available for use during the mining period as a reference for all mining activity.
7. Baseline data on elevation status for a grid of 10m x 10m is preferred to have accuracy in the assessment.
8. It is expected that two consecutive cross-sections in longitudinal and lateral directions will not be more than a 10m distance apart.
9. Changes observed in the elevation in pre and post-scenario at each node, will be depicted in graphical forms with an appropriate scale to estimate the area of deposition & erosion.

¹⁸ Differential global positioning system

¹⁹ Reduced levels

10. Elevation level will be in reference to the nearest bench plates established for the purpose.
11. The levels (MSL & RL) of the corner point of each grid will be identifiable and safety barriers (non-Mining) demarcated as restricted in consensus with the Mineral Concession Rules of the respective State, and the provision mentioned in this Sustainable Sand Mining Management Guidelines.
12. A clear identification will be highlighted between grids under the mineable and grids under the non-mineable area.
13. These baseline data (pre and post) be subjected to stimulation with the help of data mine software to derive the replenishment area and corresponding volume and estimated weight.
14. The database will be structured in a tabulated form clearly depicting the nomenclature of the section lines, latitude and longitude of the starting point, chainage, and respective levels of all the points taken on that section line.
15. Net area shall be derived after summation of an area of deposition minus the area of erosion for each cross-section.
16. Volume will be estimated by multiplying the distance between two cross-sections with the average of the net area of these two consecutive cross-sections.
17. One sample per 900m² (30m x 30m) will be the preferred sample density for the assessment of bulk density for the estimation of deposition rate.
18. Care will be taken that the sample for assessment of Bulk Density is taken from the deposition zone & not from erosion.

Methodology for Sand Mining:

The following methodology should be followed for the Replenishment study.

1. The Demarcation and benchmark of the Sand Ghat are done at 10m x 10m intervals.
2. The use of the Auger Driller is to find out the depth of sand in each grid.
3. Auger Driller has created the holes in sand ghat by 10mx10m grid pattern.
4. Measured the depth of holes by using a measuring tape.

5. After taking all the readings average depth of sand is calculated.
6. The average depth of Abegaon at Godavari is measured.

Replenishment study of sand in the proposed ghat along with details of the methodology, technology used to identify the existing reserve & replenishment of the same

Dandy Bolton Equation

For runoff less than 2 inches

$$S = 1280 \times (Q) \times 0.46 \times (1.46 - 0.26 \log(A)) \times F$$

For runoff more than 2 inches

$$S = 1958 \times (Q) \times (e^{-0.055 \times Q}) \times (1.43 - 0.26 \log(A))$$

Where,

S = sediment yield of stream (t/yr/km²),

Q = average annual runoff (m³),

A = net drainage area in sq.mile.

CHAPTER 9

PROPOSED PLANTATION PLAN

The Project Proponent must take care of the plantation around the site. This will not only enhance the beautification of the area but also there will be the reduction of pollution, not some extent.

Details of the plantation and Tree species recommended for the plantation are shown below.

Table 9. 1 Details of green belt

Location of greenbelt	Both sides of the approach road, On the riverbanks of both sides of the sand spot & nearby open areas. Haul Road outside the riverbed
No. of plants to be planted	2000 per Hectare
Spacing of plants	2m grid interval
Species selected	Native species

Table 9. 2 Trees species for plantation

Botanical Name	Local Name	Importance
Azadirachta Indica	Neem	Neem oil & neem products
Tectona Grandis	Teek	Antibacterial, Antifungal, Antiulcer
Ficus religiosaa	Peepal	Medicinal use, Fruits & figs
Bambusa vulgaris	Bamboo	Anthelmintic Anti-inflammatory, Astringent Properties
Madhuca longifolia	Mahua	Acts as a Stimulant & cough relief,

CHAPTER 10

ENVIRONMENTAL MANAGEMENT PLAN

A total capital cost of Rs.5.97 Lakhs has been kept in the project cost towards the environmental protection, control, mitigation measures, and implementation of the Environmental Management Plan (EMP). This cost is borne by the bidder/leaseholder. The budgetary cost estimate for the EMP is given in Table.

Table 10. 1 Budgetary cost of EMP

Sr	Impact Source	Impact	Control Measure	Cost (Rs)
1	Transport Road	On Air Quality	Compaction, gradation, and drainage on both sides.	90000
		On Land, the Stability of the Road and degradation of road	Proper maintenance	80000
			Regular water spraying	40000
			The air quality will be monitored at the impacted village. (For One Day Monitoring)	5000
			Health Check-up of Employees	5000
2	Truck/ Tractor Movement	Air Quality	Sand-carrying trucks will be effectively covered by tarpaulin to avoid the escape of fines to the atmosphere. (2 Tarpaulin)	25000
			Regular monitoring of the exhaust fumes	5000

Sr	Impact Source	Impact	Control Measure	Cost (Rs)
			Barriers & Traffic Management Expenses. (Excluding Manpower Salary which is included in labour costs)	10000
3	Ramp and Sand Reach	Mining Operation	Regular ramp Inspection and Ramp maintenance. (Excluding Manpower Salary which is included in labour costs)	20000
			Provision of dust masks	10000
4	Bank Management	Bank Erosion/Flood Plain management	The green belt along the bank (For Green Belt Development)	280000
			Plantation of wide leaf tall trees on banks and grass along a slanting portion of the bank	
5	Transportation on Village Roads	Dust Control	The green belt along village Rd (For Green Belt Development)	
6	Final Mine Closure Plan implementation	Replenishment of Sand	Gabions/ boulders will be arranged as per guidelines	15000
7	Mobile toilet, sewage handling & treatment		Mobile toilet, sewage handling & treatment	130000
8	CCTV Monitoring			120000
Total				835000

Budget For Corporate Environment Responsibility (²⁰CER)

About 2% fund of the project cost is allocated for Corporate Environment Responsibility (CER) activities as presented in below Table

Table 10.2 Budget for CER

Sr.	Description	Cost (Rs)
1.	Village Schools (separate toilet for girls and boys)	20000
2.	Solar panels over Gram Panchayat buildings	30000
3.	Solar panels over Public Health Centers	30000
	Total	80000

²⁰ Corporate Environment Responsibility

CHAPTER 11

SUMMARY AND CONCLUSION

The Roles and Responsibilities of the Environmental coordinator, the Operation Manager, and the senior personnel contractor are essential in EMP.

The environmental status of the project site and study area of 10km radius is delineated with respect to air, noise, water, land, biological and socio-economic environment the different project activities in the construction and operation phases are identified.

To identify the impacts, the interaction between the project activities and different components of the environment is classified phase-wise. A summary of the recognized impacts is given in the following paragraphs.

- During the operational phase, the transportation of sand could cause a temporary disturbance to the local environment which will be prevented with the proposed mitigation measures.
- Proposed project will not have any major significant negative impacts. The minor impacts arising during Excavation and Transportation phases can be mitigated with the help of the proposed Environmental Management Plan.
- In general, sand excavation from Abegaon sand spot will be useful to the developmental work in the district and generate employment opportunities.

From this project, it is concluded that the district revenue will increase in return minimum of 2% of funds are utilized for the development of the village. The project will also grab employment which will improve the standard of life of villagers.

*** END ***

Environmental Management Plan

As per Rules 23 & 26 of MMME (D & R) RULE 2013 & Section 15 of MMDR Act 1957, MoEFCC Notification 2006, S.O. 141(E) dated 15. 01. 2016; MoEFCC, Sustainable Sand Mining Management Guidelines 2016, Guidelines for Mining Policy 2020)

For

ENVIRONMENTAL CLEARANCE

of

SAND MINING (MINOR MINERAL)

for

Hivra 1 – A Riverbed Sand Mine / Sand Ghat
Khasra No. GSDA approved 75, 74, 68, 67, 56 to 58
Area (2.00ha)

Village Hivra, Taluka Majalgaon, District Beed

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ABBREVIATION

Short Form	Long Form
EMP	Environmental Management Plan
MoEFCC	Ministry of Environment Forest and Climate Change
DSR	District-level Survey Report
EC	Environmental Coordinator
OM	Operations Manager
GSDA	Groundwater Surveys & Development Agency
MPCB	Maharashtra Pollution Control Board
MSL	Mean Sea Level
MS	Maharashtra State
PUC	Pollution Under Control
R&R	Rehabilitation and Resettlement
DLTF	Distance Learning Task Force
TP	Transport Permission/Permits
IBA	Indian Bank Association
MICR	Magnetic Ink Character Recognition Code
QR	Quick Response Code
GPS	Global Positioning System

CCTV	Closed-Circuit Television
DGPS	Differential Global Positioning System
RL	Reduced Levels
CER	Corporate Environment Responsibility

CHAPTER 1

INTRODUCTION

The Environmental Management Plan (¹EMP) plays a vital connection uniting forecast impacts and mitigation measures during implementation and operational activities. EMP stipulates the mitigation, monitoring and conventional measures to be taken during project implementation and operation. EMP is to escape or mitigate adverse environmental impacts, and to implement these measures.

This Environmental Management Plan (EMP) has been prepared as part of the Scoping Report which will be compiled in terms of the Environmental Assessment for the sand mining activities.

Considering the Ministry of Environment and Forest Climate Change (²MoEFCC) Notification 2006 and Sustainable Sand Mining Management Guidelines 2016, the Govt. of Maharashtra had mapped out the Minor Mineral Extraction Rules 2013. These rules are to extract all minor minerals in a scientific way so that there is no unfavourable impact on Environment and Climate. To extract every minor mineral from any land (either Government or Private) there is provision for a Mining Plan. These plans need to be approved by a competent authority. For long-term leased minor minerals (5-10 years period) and sand excavation from the riverbed, Senior Deputy Director of Directorate of Geology and Mining is the competent authority. These plans are for short term temporary permits which are valid for one year.

According to Enforcement & Monitoring Guidelines for Sand Mining 2020, Sustainable Sand Mining Management Guidelines 2016, Standard Environment conditions for sand mining and sustainable mining practices, District level Survey Report (³DSR) should be prepared and are suitable for mining and area prohibited for mining must be recognized.

¹ Environmental Management Plan

² Ministry of Environment Forest and Climate Change

³ District Survey Report

Objectives of EMP

- To provide overall conservation of the environment.
- To minimize waste generation and pollution.
- To regulate the precise use of natural resources and water.
- To provide Safety, Welfare, and Good health for the workforce and populace.
- To regulate the effective operation of all control measures.
- To ensure alertness against probable disasters and accidents.
- To monitor cumulative and long-term impacts.
- To regulate the effective operation of all control measures.

Roles and Responsibilities concerning the implementation of the EMP

The roles and responsibilities of all parties involved in successfully managing the environment are mentioned below.

Environmental Coordinator

The Environmental Coordinator will inspect operational areas on a quarterly basis and at the onset of mining any new island, to ensure that all specifications are met. The duties of the environmental coordinator will be the following.

- Guide the operations team in respect of the implementation of the environmental specifications.
- Lead the visits to ensure all work is aligned with the EMP.
- The environmental coordinator must examine the site during the three-monthly visits. All rehabilitation results will be Comprised in the quarterly report.
- Examination of the rehabilitation area and giving guidance regarding rehabilitation measures if any.

The Operations Manager

The responsibilities of the Operations Manager (4OM) or his nominated authority are as follows.

1. Familiarize themselves with the requirements of the EMP.
2. Monitor employees' and contractor's compliance with the environmental specifications; and enforce adherence.

⁴ Operations Manager

3. Communicate all environment-related incidents with the Environmental Coordinator and distribute them internally to avoid repetition.
4. Maintain a record of activities relevant to Environmental Management.
5. The Operations Manager shall be responsible for monitoring and the enforcement of the Environmental Management specifications on a day-to-day basis. Any violation of the environmental specifications shall be recorded, and the agreed disciplinary measures are taken.

Senior personnel and contractors

The roles of the senior personnel/contractors are as follows:

- Familiarize themselves with the requirements of the EMP.
- Comply with the environmental management specifications.
- Ensure that all team members are familiar with the environmental management specifications.

Details of the project

The Hivra 1 sand ghat area has been selected in perspective of its subsisting demand for building-grade sand for the area in and around Majalgaon Taluka. The District Mining Officer Beed has put forward the proposal for Environmental Clearance for mining. The ghat has a production of 7067 brass sand within an area of 2.00ha. The proposed proposal follows an organized mining process for Environmental Clearance.

Further Chapter informs about the in-depth details of the Sand Ghat, its geographical structure, and a Google map of the ghat with its approach road for contractors and workers to reach to sand ghat from the village.

CHAPTER 2

DETAILS OF THE PROJECT

Hivra village is located in Majalgaon Taluka of Beed district, Maharashtra. Majalgaon is well connected with all nearby cities. The National highway NH-52, it traverses through the states of Punjab, Haryana, Rajasthan, Madhya Pradesh, Maharashtra, Karnataka in India. NH-52 is the National Highway passing through the district, covering a total distance of 73.60km. Majalgaon has situated about 51.22km by road from Beed. The district has road links to adjoining districts Ahmednagar District to the west, Jalna District to the North, Latur District to the East, Osmanabad District to the South, Parbhani District to the East. The district is well connected by roads.

Hivra village is 46.12km away from Collector office headquarters Beed. The Geographical area of the Beed is around 10693km². The nearest Railway station to Hivra 1 village is Usamanpur Railway station. The nearest Airport to Beed District is Aurangabad Airport, Aurangabad Airport is 104km from Beed city, 97.12km from Hivra 1

Honourable Collector Beed intends to auction Sand Ghats and appointed District Mining Officer as Project Proponent. A total of 38 sand ghats are identified by Tahsildar Majalgaon, Parli Ve., Gevrai, Beed along with District Mining Officer, Beed. The 38 sand ghats were jointly surveyed by Taluka level technical committee headed by respective Tahsildar with Dy. Engineer Irrigation Department, Junior Geologist Directorate of Geology and Mining Govt. of Maharashtra, Junior Geologist, Groundwater Surveys & Development Agency (⁵GSDA). DMO Beed and a representative of the Maharashtra Pollution Control Board (⁶MPCB), as per the procedure defined in Sand Auction Rules 2019 dated 3/09/2019 formed a Taluka-level technical committee, which explored the sand ghats for an available quantity of sand for scooping. Revenue of Rs.25 Crore is expected from the auction of these sand ghats. Hivra 1 Sand Ghat proposed over river Godavari in Majalgaon

⁵ Groundwater Surveys & Development Agency

⁶ Maharashtra Pollution Control Board

Taluka is proposed to cater to the infrastructural requirement of sand in the Taluka of Beed and adjoining areas of other talukas.

Table 2. 1 Details of Hivra 1 Sand ghat

Name of Village	Taluka	River/ Nallah	Nearest survey No.	Area (ha)	Proposed Depth for excavation (m)	Quantity Permitted for mining of Sand in Brass	Method of Mining
Hivra	Majalgaon	Godavari	75, 74, 68, 67, 56 to 58	2.00	1.0	7067	Open-cast manual mining

Table 2. 2 Salient features of the project

Particulars	Details															
Location	Village-Hivra, Taluka-Majalgaon, District-Beed, Maharashtra.															
Latitude and Longitude	<table border="1"> <thead> <tr> <th>Boundary points of Hivra 1 sand spot</th> <th>Latitude</th> <th>Longitude</th> </tr> </thead> <tbody> <tr> <td>BP1</td> <td>19°17'24.09"N</td> <td>76°5'35.75"E</td> </tr> <tr> <td>BP2</td> <td>19°17'24.46"N</td> <td>76°5'34.50"E</td> </tr> <tr> <td>BP3</td> <td>19°17'40.15"N</td> <td>76°5'38.16"E</td> </tr> <tr> <td>BP4</td> <td>19°17'39.92"N</td> <td>76°5'39.49"E</td> </tr> </tbody> </table>	Boundary points of Hivra 1 sand spot	Latitude	Longitude	BP1	19°17'24.09"N	76°5'35.75"E	BP2	19°17'24.46"N	76°5'34.50"E	BP3	19°17'40.15"N	76°5'38.16"E	BP4	19°17'39.92"N	76°5'39.49"E
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BP3	19°17'40.15"N	76°5'38.16"E														
BP4	19°17'39.92"N	76°5'39.49"E														
Sand spot area (In ha)	2.00ha															
Proposed production capacity (in Brass)	7067															
Infrastructure Requirement (As per Govt Resolution 3rd January 2018)	<ol style="list-style-type: none"> 1. Room / Hut for Official records 2. Electricity / Battery for Running CCTV 24x7 daily. 3. One Computer / Android-based Mobile for the online generation of Invoice numbers. 															

Particulars	Details
Distance of project site from nearest rail or road bridge over the concerned River, Nallah, etc.	4.82km
Distance from infrastructural facilities	
Railway line	32.59km
National Highway	37.56km(NH-52)
State Highway	km(SH-144)
Major District Road	31.04km
Any Other Road	
Electric transmission line pole or tower	1km
Canal or check dam or reservoirs or lake or ponds	
In-take for drinking water pump house	
Intake for Irrigation canal pumps	
Areas already subjected to pollution or environmental damage. (those where existing legal environmental standards are exceeded)	None

Particulars	Details
<p>Areas susceptible to natural hazards which could cause the project to Present environmental problems (earthquakes, subsidence, landslides, erosion, flooding, or extreme or adverse climatic conditions)</p>	<p>No. Sand Ghat is at safe distances from natural hazards like earthquake prone area, subsidence, landslide, erosion, flooding prone area and extreme or adverse climatic conditions</p>
<p>Whether the proposal involves approval or clearance under the following Regulations or Acts, namely: - (a) The Forest (Conservation) Act, 1980. (b) The Wildlife (Protection) Act, 1972. (c) The Coastal Regulation Zone Notification, 2011. If yes, details of the same and their status are to be given.</p>	<p>None</p>
<p>Forest land involved (hectares)</p>	<p>None</p>

The below figure shows the google image of Hivra 1 sand ghat.



Fig 2.1-Google image of Hivra 1 sand ghat

Approach roach along with google location is as shown below.

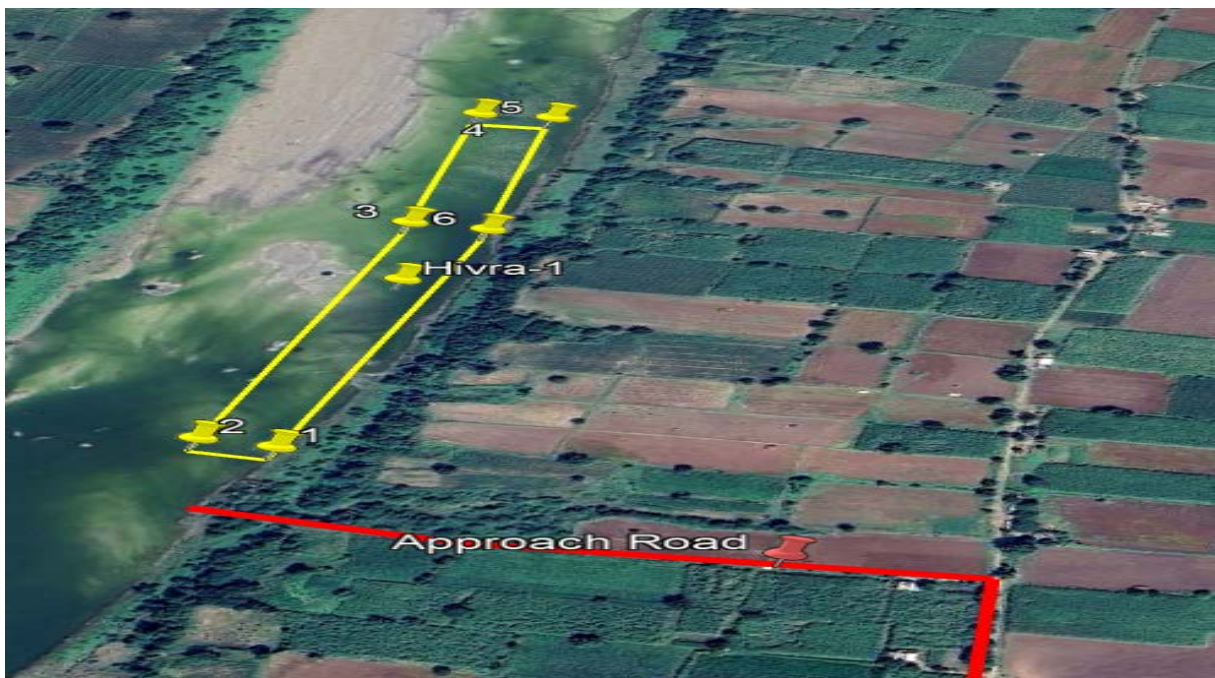


Fig 2.2-Approach Road for sand ghat

Next chapter 3 is Baseline Environmental Status in which the entire Topography, Climate, Soil Environment, Land use, water Environment, Hydrology, Biological environment, and Socio-economic Environment are briefly explained for the Beed district.

CHAPTER 3

BASELINE ENVIRONMENT STATUS

Topography

The Sand Ghat area as per the survey is the riverbed of the Godavari River of the Beed district. The maximum elevation is 428m MSL, average elevation is 425m MSL, & minimum elevation is 423m (⁷MSL) Mean Sea Level. The slope of the Sand Ghat area towards the Southwest to Northeast side. The flow of Godavari River is from Southeast direction.

Presently, there is neither any infrastructure within the riverbed nor are proposed.

Hydrology

There will be no change in the Water Table during the mining operation, as the depth of mining shall be restricted to 1.00m water level, which is less likely to affect the surface level or Groundwater Table. There is no proposal of any stream modification/diversion due to this mining activity hence there will be not any impact on the flow of water.

Soil Environment

The riverbed consists of sand /gravel. There is no topsoil. The depth of mining shall be restricted to 1.00m. There is no crucial impact on the soil forecasted due to mining activities.

Land Use Land Cover

Land use shows that agriculture land use is predominant. The proposed site is 2.00ha having adjoined Khasara No 75, 74, 68, 67, 56 to 58. The land doesn't cover any human habitation, forest, etc. Any change in the scope of the approved Mining Plan will lead to riverbank erosion/cutting and thereby river channel shifting, degradation of land, causing loss of properties and degradation of the surrounding landscape.

⁷ Mean sea level

Water Environment

While transporting sand there may be fugitive dust. There will be water requirement for spraying for dust suppression purposes. This water will be supplied from the borewell from nearby villages through tankers as well as from surface water sources. The water source may vary from village to village.

Climate

During summer May is the hottest month of the year in this area. The temperature rises to 42°C in the month of May. The average rainfall in this region is 600mm to 700mm About 50% of rainfall precipitates between June to September. December is the coldest month with temperatures falling down to 18°C. Overall the proposed site area has sub-tropical conditions.

Biological Environment

Flora

The agricultural area is seen near the Sand Ghat. Few trees and thorny bushes are seen on the banks of the river.

Fauna

As there is no forest cover, no endangered species of wildlife are seen in this area.

Socio-Economic Environment

This project may create constructive impacts of the sand mining that are stated below:

1. The mining operations will provide direct & indirect employment to village people.
2. The villages and their inhabitants & domestic animals will not be disturbed due to mining, as the quarry is far from their settlements.
3. Local workforce will be given first preference for employment.
4. Mining activities will benefit the local people due to the provision of more infrastructural facilities (developments of approach routes within the village area).

The next chapter describes all possible impacts on the Environment due to this project along with its mitigation measure to overcome these impacts.

CHAPTER 4

IMPACT ASSESSMENT REPORT ALONG WITH PROPOSED MITIGATION MEASURES

1. Land Environment

Anticipated Impact

Movement of vehicles can create issues for agricultural land, human habitations, noise, and risk for public and cause traffic hazards. The impacts include damage to the riverbank due to access ramps to the riverbed, soil erosion because of extraction of sand, micro disturbance to groundwater, possible stimulation of the changed river course, and contamination of sand aquifer water due to ponding. There might be surface degradation due to the road network.

The quality of soil will not be affected due to transportation or any other activity of mining.

Mitigation measure

1. Mining depth should be restricted to 3 meters and distance from the bank should be ¼th or river width and should not be less than 7.5 meters as per “Sustainable Sand Mining Guidelines 2020” ■ Page 23, Point no 4.3 (m).
2. There will be a minimal number of access roads to riverbeds. Cutting of riverbanks will be avoided and ramp with smooth slope will be maintained. Access points to the riverbed will be decided based on the least steepness of the riverbank and the least human activity at that location.
3. No foreign material like polythene bags, jute bags, and useless articles should be allowed to remain/spill in the riverbed and catchment area, or no pits/pockets will be allowed to be filled with such material.
4. Mining at the concave side of the river channel should be avoided to prevent bank erosion. Similarly, a tortuous segment of a river is to be selected for mining in such a way as to ignore the natural eroding of banks.
5. Ensure that ponding is not created in the riverbed.
6. Transportation route should be such that it gives minimum

damage to the environment.

7. Green belt will be developed along the haul road and the bank of rivers of mine premises and near the sand mining site. While selecting the plant species, preference will be given for planting native species of the area.

2. Water environment

Anticipated Impact

The project activity will be carried out in the dry part of the riverbed. Care will be taken to ensure that neither of the project activities will affect the water environment or riverbank habitats. During the lean months, the proposed Sand Mining will not expose the base flow of the river and hence there will not be any inauspicious impact on surface hydrology and groundwater regime due to this project. Project activities will not have any adverse consequences on the physical components of the environment and therefore may not have any effect on the recharge of ground waters or affect the water quality. Monitoring of water quality will be checked yearly.

Mitigation measures

1. Mining is avoided during the monsoon season and at the time of floods. This will help in the replenishment of sand in the riverbed.
2. Mining below the subterranean water level will be avoided as a safeguard against environmental contamination and over-exploitation of resources.
3. River stream will not be transferred to create active channels.
4. Mining schedule is synchronized with the river flow direction and the gradient of the land.
5. Mining at the concave side of the river channel will be avoided to prevent bank erosion.
6. Tortuous segment of the river will be selected for mining in such a way as to avoid naturally eroding banks and to promote mining on naturally building meander components.
7. Mining depth shall be maintained as per the guidelines and

rules of the Sand Mining Policy dated 03/09/2019 and recommendations of Maharashtra State (⁸M.S.). State Ground Water Department for extraction of sand during the lease period.

8. Water Quality Monitoring for the ground waters, river water, and other surface waters shall be carried out seasonally to ensure that the water quality is not affected by the project activities.
9. Utmost care will be taken to minimize or control leaking vehicles to be used for sand transportation.
10. The washing of tractor trolleys in the river will not be done.
11. The contractor will follow all guidelines and rules for proper and scientific methods of mining during the period of extracting the sand.

3. Air Environment

Anticipated Impacts

Plying of tractor trolleys from the public road to river sand collection points needs access roads. The majority of such access roads are the already existing roads/tracks being used by pedestrians/cart owners. The movement of heavy vehicles sometimes causes problems for cattle, agricultural land, and human habitations due to dust, noise, and the movement of the public. These environmental problems are felt more as the area is rural in nature.

Air pollution is likely to be caused at various stages of Sand Mining operations such as excavation, loading & transportation of material. Most of the fugitive dust emissions will be generated from loading & transportation. This dust becomes airborne and spreads away to surrounding areas.

The impact on air is mainly localized in nature as the dust particles of 100 μ in size are not carried to farther distances beyond 100m and the effect is felt within the core zone of the project involving active Sand Mining operations.

⁸ Maharashtra State

Mitigation measures

1. Movement of the vehicles on the road will be increased; however, the unmetalled road in the mining area will be sprinkled with water at regular intervals.
2. In addition to preventing spillage from tractor trolleys, overloading shall be controlled to 1-brass/tractor trolley. The speed limit will be <20 km/hr.
3. Maintenance of the haul road will be done on a regular basis.
4. To avoid fugitive dust emissions at the time of excavation, a regular sprinkling of water will be done on regular basis.
5. Sand is transported to the sites by road through tractor trolleys. The sand-carrying vehicles shall be covered by tarpaulin sheets.
6. The Green belt development will be prepared along the haul roads, which will act as a pollution sink.
7. To minimize vehicular pollution from the sand transporting vehicles, the following conditions will be insisted upon to permit the vehicles of the transporters.
8. The vehicles should be Bharat-IV stage compliant and should have a Pollution Under Control (⁹PUC) Certificate issued by appropriate authorities.
9. Regular maintenance of transport vehicles and monitoring of vehicular emission levels at periodical intervals.

4. Noise Environment

Anticipated Impact

The noise environment in this project will be overdone by the equipment at the site and vehicular transportation. A slight increase in noise levels of <10dB(A) can be expected up to a distance of 100m.

Mitigation measures.

1. Minimum use of horns in the village area.
2. Timely maintenance of vehicles and their silencers to

⁹ Pollution Under Control

- minimize vibration and sound.
3. Phasing out old and worn-out tractor trolleys.
 4. Provision of green belts along the road networks.
 5. Care will be taken to produce minimum sound during sand loading.
 6. Backhoe loader excavator will be used
 7. Earplugs may be provided to protect the labourers working at the site.

5. Socio-economic Environment

Anticipated Impacts and Evaluation

1. The project activities shall not have any adverse impacts on any of the common property resources of the village communities, as the Sand Mine lease area is not being used for any purpose by any section of the society in this region.
2. There is no Resettlement and Rehabilitation (¹⁰R&R) involvement in this project.
3. There is no land acquisition in this project.
4. A major portion of the houses in the study area is semi-pucca-type structures.
5. The water source to these areas is from the Grampanchayat /Nagar Parishad connection and private bore wells and wells.
6. People living around the project area need the project for the purpose of employment and economic benefits.
7. The awareness level regarding the proposed mining activity is very towering. The proposed mining activity is expected to provide stimulus to socio-economic activities in the region and thereby accelerate further development processes.

Social and Demographic Profile

The workers are from local villages. These people have been provided welfare benefits from the lessee like medical benefits,

¹⁰ Rehabilitation and Resettlement

insurance, fees for children's education, etc. They have some land and cattle for their daily earnings. Additional revenue earned from the Sand Mining work will improve their living standard. The group of quarries in and around will help to have infrastructure facilities like roads, schools, shops, etc. This will enhance their social life.

Occupational Health and Safety

This is a riverbed Sand Mine. So, the mining activities are comparatively smaller because the production is not on a high scale. Workers do not come across any extreme conditions like excessive heat, moisture, etc. Workers working around it may come across this dusty environment. But the impact on health will be within the limit.

Human Settlement

1. There are no houses in and around the lease area. Blasting is the only activity, which may affect the settlement, which is not done. The settlement is more than 1-km from the sand mine.
2. Appropriate precautions will be taken during mining. Transportation of finished products is through the villages. There will be an effect of traffic on the local people. However, the intensity of traffic is 70-80/day.

Health and Hygiene

In general, the health of villagers is moderately good. In the rainy season, the atmospheric condition is unhygienic due to a lack of proper drainage and sanitation in the village habitation. Villagers are working in agricultural fields and work as labourers.

Education

Most education of 70% young <20 years, is up to the 5th to 9th. Economic condition is in general moderate. So, after this project, the standard of education will increase.

Socio-Economic Benefits Arising Out of Mining

1. Generation of employment in rural areas.
2. Upgradation in the living standards of rural people.
3. Creating infrastructural facilities like roads, electricity, shops, schools, etc.
4. Upgrading literacy in the area by exploiting natural minerals so the generation of revenue.

5. Helping to sustain construction activity.
6. Improving the greenery of the area, which is otherwise poor.

Liquid Effluent

Not applicable, because these activities do not generate effluent from operation or process.

Solid Waste

Not applicable, because small mines and impacts are negligible.

Project benefits due to the sand mining of Hivra 1 are explained in the next Chapter.

CHAPTER 5

PROJECT BENEFITS

The proposed Sand Mining project of Hivra village, Majalgaon Taluka, Beed District will lead to the following benefits:

1. Increase in the revenue of the district will ultimately increase the revenue of the village, which in return can be used to improve the infrastructure of the village.
2. Sand is available for building construction work and by systematic separation of sand, there is no possibility of a flood. Providing smooth movement of water of the river.
3. This project will contribute additional revenue to the state Exchequer in the form of revenue.
4. The project will conclude with employment opportunities for unskilled/skilled local people.
5. Standard of living of employed people will increase.

CHAPTER 6

SITE-SPECIFIC ENFORCEMENT & MONITORING PLAN

Sand Ghat Site specific enforcement & monitoring plan

(as per guidelines stipulated in the Enforcement and Monitoring Guidelines for sand mining issued by MoEFCC in January 2020.)

District administration shall deliver information on its website about the Sand Mines in the district for public information. The objective is to extend all information into the public domain so that the citizens are aware of the mining activities. People can also report to the district administration any deviation observed. Suitable feedback and its composition shall also be made operational.

Details shall include, but not be limited to, lease area, geo-coordinates of lease area and mineable area, transport routes, permitted capacity, regulatory conditions for operation including mining, environmental and social commitments, etc.

An Independent Committee of experts constituted by the Distance Learning Task Force (¹¹DLTF) will assess the environmental or ecological damage caused due to illegal mining and recommend recovery of environmental compensation from the concerned miners.

The recommendation may also include action under the provision of the Environment (Protection) Act 1986 u/s.15 read with s.19.

¹¹ Distance Learning Task Force

CHAPTER 7

SECURITY FEATURES

Security features are included in the Transport Permission/Permits (TP)

It will be ensured that the following security features are included in the Transport Permission/Permits (¹²TP) so that duplicate/fraudulent/forged TPs for transport, not accounted for in the IT-based system, is not possible:

1. Printed on Indian Bank Association (¹³IBA) Approved letterhead with account details
2. Magnetic Ink Character Recognition Code (¹⁴MICR) paper
3. Unique Barcode
4. Unique Quick Response Code (¹⁵QR)
5. Fugitive Ink Background
6. Invisible Ink Mark
7. Void Pantograph Watermark
8. Global Positioning System (¹⁶GPS) based vehicle tracking system
9. Closed-Circuit Television (¹⁷CCTV) Camera

¹² Transport Permission

¹³ Indian Bank Association

¹⁴ Magnetic Ink Character Recognition Code

¹⁵ Quick Response Code

¹⁶ Global Positioning System

¹⁷ Closed Circuit Television

CHAPTER 8

REPLENISHMENT

Replenishment study is the most important part of Sand Mining as it is the only basis to carry out sand mining. Without a Replenishment Study, we cannot understand the amount of deposition of sand. Following points to be followed for the replenishment study.

1. Area of deposition and erosion will be calculated for each cross-section after giving due regard to the stability & safety of active channel banks & other features of importance.
2. Differential Global Positioning System (¹⁸DGPS) and other survey tools will be used to define the topography, contours, and offsets of the lease area.
3. Contour & elevation benchmarks will provide baseline data for assessing pre- and post-study period scenario.
4. Physical benchmarks will be fixed at appropriate intervals (preferably 1 in 30m) & Reduced levels (¹⁹RL) shall be validated from a nearby standard RL.
5. These RL will be engraved on a steel plate (Bench Plate) & will be fixed & placed at locations that are free from any damages & are available in the pre-and post-study period.
6. Bench plates will be available for use during the mining period as a reference for all mining activity.
7. Baseline data on elevation status for a grid of 10m x 10m is preferred to have accuracy in the assessment.
8. It is expected that two consecutive cross-sections in longitudinal and lateral directions will not be more than a 10m distance apart.
9. Changes observed in the elevation in pre and post-scenario at each node, will be depicted in graphical forms with an appropriate scale to estimate the area of deposition & erosion.

¹⁸ Differential global positioning system

¹⁹ Reduced levels

10. Elevation level will be in reference to the nearest bench plates established for the purpose.
11. The levels (MSL & RL) of the corner point of each grid will be identifiable and safety barriers (non-Mining) demarcated as restricted in consensus with the Mineral Concession Rules of the respective State, and the provision mentioned in this Sustainable Sand Mining Management Guidelines.
12. A clear identification will be highlighted between grids under the mineable and grids under the non-mineable area.
13. These baseline data (pre and post) be subjected to stimulation with the help of data mine software to derive the replenishment area and corresponding volume and estimated weight.
14. The database will be structured in a tabulated form clearly depicting the nomenclature of the section lines, latitude and longitude of the starting point, chainage, and respective levels of all the points taken on that section line.
15. Net area shall be derived after summation of an area of deposition minus the area of erosion for each cross-section.
16. Volume will be estimated by multiplying the distance between two cross-sections with the average of the net area of these two consecutive cross-sections.
17. One sample per 900m² (30m x 30m) will be the preferred sample density for the assessment of bulk density for the estimation of deposition rate.
18. Care will be taken that the sample for assessment of Bulk Density is taken from the deposition zone & not from erosion.

Methodology for Sand Mining:

The following methodology should be followed for the Replenishment study.

1. The Demarcation and benchmark of the Sand Ghat are done at 10m x 10m intervals.
2. The use of the Auger Driller is to find out the depth of sand in each grid.
3. Auger Driller has created the holes in sand ghat by 10mx10m grid pattern.
4. Measured the depth of holes by using a measuring tape.

5. After taking all the readings average depth of sand is calculated.
6. The average depth of Hivra 1 at Godavari is measured.

Replenishment study of sand in the proposed ghat along with details of the methodology, technology used to identify the existing reserve & replenishment of the same

Dandy Bolton Equation

For runoff less than 2 inches

$$S = 1280 \times (Q) \times 0.46 \times (1.46 - 0.26 \log(A)) \times F$$

For runoff more than 2 inches

$$S = 1958 \times (Q) \times (e^{-0.055 \times Q}) \times (1.43 - 0.26 \log(A))$$

Where,

S = sediment yield of stream (t/yr/km²),

Q = average annual runoff (m³),

A = net drainage area in sq.mile.

CHAPTER 9

PROPOSED PLANTATION PLAN

The Project Proponent must take care of the plantation around the site. This will not only enhance the beautification of the area but also there will be the reduction of pollution, not some extent.

Details of the plantation and Tree species recommended for the plantation are shown below.

Table 9. 1 Details of green belt

Location of greenbelt	Both sides of the approach road, On the riverbanks of both sides of the sand spot & nearby open areas. Haul Road outside the riverbed
No. of plants to be planted	2000 per Hectare
Spacing of plants	2m grid interval
Species selected	Native species

Table 9. 2 Trees species for plantation

Botanical Name	Local Name	Importance
Azadirachta Indica	Neem	Neem oil & neem products
Tectona Grandis	Teek	Antibacterial, Antifungal, Antiulcer
Ficus religiosaa	Peepal	Medicinal use, Fruits & figs
Bambusa vulgaris	Bamboo	Anthelmintic Anti-inflammatory, Astringent Properties
Madhuca longifolia	Mahua	Acts as a Stimulant & cough relief,

CHAPTER 10

ENVIRONMENTAL MANAGEMENT PLAN

A total capital cost of Rs.5.97 Lakhs has been kept in the project cost towards the environmental protection, control, mitigation measures, and implementation of the Environmental Management Plan (EMP). This cost is borne by the bidder/leaseholder. The budgetary cost estimate for the EMP is given in Table.

Table 10. 1 Budgetary cost of EMP

Sr	Impact Source	Impact	Control Measure	Cost (Rs.)
1	Transport Road	On Air Quality	Compaction, gradation, and drainage on both sides.	40000
		On Land, the Stability of the Road and degradation of road	Proper maintenance	30000
			Regular water spraying	30000
			The air quality will be monitored at the impacted village. (For One Day Monitoring)	5000
			Health Check-up of Employees	5000
2	Truck/ Tractor Movement	Air Quality	Sand-carrying trucks will be effectively covered by tarpaulin to avoid the escape of fines to the atmosphere. (2 Tarpaulin)	25000
			Regular monitoring of the exhaust fumes	5000

Sr	Impact Source	Impact	Control Measure	Cost (Rs.)
			Barriers & Traffic Management Expenses. (Excluding Manpower Salary which is included in labour costs)	10000
3	Ramp and Sand Reach	Mining Operation	Regular ramp Inspection and Ramp maintenance. (Excluding Manpower Salary which is included in labour costs)	50000
			Provision of dust masks	10000
4	Bank Management	Bank Erosion/Flood Plain management	The green belt along the bank (For Green Belt Development)	150000
			Plantation of wide leaf tall trees on banks and grass along a slanting portion of the bank	
5	Transportation on Village Roads	Dust Control	The green belt along village Rd (For Green Belt Development)	
6	Final Mine Closer Plan implementation	Replenishment of Sand	Gabions/ boulders will be arranged as per guidelines	15000
7	Mobile toilet, sewage handling & treatment		Mobile toilet, sewage handling & treatment	80000
8	CCTV Monitoring			80000
Total				535000

Budget For Corporate Environment Responsibility (²⁰CER)

About 2% fund of the project cost is allocated for Corporate Environment Responsibility (CER) activities as presented in below Table

Table 10.2 Budget for CER

Sr.	Description	Cost (Rs)
1.	Village Schools (separate toilet for girls and boys)	15000
2.	Solar panels over Gram Panchayat buildings	15000
3.	Solar panels over Public Health Centers	20000
	Total	50000

²⁰ Corporate Environment Responsibility

CHAPTER 11

SUMMARY AND CONCLUSION

The Roles and Responsibilities of the Environmental coordinator, the Operation Manager, and the senior personnel contractor are essential in EMP.

The environmental status of the project site and study area of 10km radius is delineated with respect to air, noise, water, land, biological and socio-economic environment the different project activities in the construction and operation phases are identified.

To identify the impacts, the interaction between the project activities and different components of the environment is classified phase-wise. A summary of the recognized impacts is given in the following paragraphs.

- During the operational phase, the transportation of sand could cause a temporary disturbance to the local environment which will be prevented with the proposed mitigation measures.
- Proposed project will not have any major significant negative impacts. The minor impacts arising during Excavation and Transportation phases can be mitigated with the help of the proposed Environmental Management Plan.
- In general, sand excavation from Hivra 1 sand spot will be useful to the developmental work in the district and generate employment opportunities.

From this project, it is concluded that the district revenue will increase in return minimum of 2% of funds are utilized for the development of the village. The project will also grab employment which will improve the standard of life of villagers.

*** END ***

Environmental Management Plan

As per Rules 23 & 26 of MMME (D & R) RULE 2013 & Section 15 of MMDR Act 1957, MoEFCC Notification 2006, S.O. 141(E) dated 15. 01. 2016; MoEFCC, Sustainable Sand Mining Management Guidelines 2016, Guidelines for Mining Policy 2020)

for

ENVIRONMENTAL CLEARANCE

of

SAND MINING (MINOR MINERAL)

for

Hivra 2 – A Riverbed Sand Mine / Sand Ghat
Khasra No. GSDA approved 54, 39 to 42, 22 to 29, 30 to 35
Area (4.41ha)

Village Hivra, Taluka Majalgaon, District Beed

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ABBREVIATION

Short Form	Long Form
EMP	Environmental Management Plan
MoEFCC	Ministry of Environment Forest and Climate Change
DSR	District-level Survey Report
EC	Environmental Coordinator
OM	Operations Manager
GSDA	Groundwater Surveys & Development Agency
MPCB	Maharashtra Pollution Control Board
MSL	Mean Sea Level
MS	Maharashtra State
PUC	Pollution Under Control
R&R	Rehabilitation and Resettlement
DLTF	Distance Learning Task Force
TP	Transport Permission/Permits
IBA	Indian Bank Association
MICR	Magnetic Ink Character Recognition Code
QR	Quick Response Code
GPS	Global Positioning System

CCTV	Closed-Circuit Television
DGPS	Differential Global Positioning System
RL	Reduced Levels
CER	Corporate Environment Responsibility

CHAPTER 1

INTRODUCTION

The Environmental Management Plan (¹EMP) plays a vital connection uniting forecast impacts and mitigation measures during implementation and operational activities. EMP stipulates the mitigation, monitoring and conventional measures to be taken during project implementation and operation. EMP is to escape or mitigate adverse environmental impacts, and to implement these measures.

This Environmental Management Plan (EMP) has been prepared as part of the Scoping Report which will be compiled in terms of the Environmental Assessment for the sand mining activities.

Considering the Ministry of Environment and Forest Climate Change (²MoEFCC) Notification 2006 and Sustainable Sand Mining Management Guidelines 2016, the Govt. of Maharashtra had mapped out the Minor Mineral Extraction Rules 2013. These rules are to extract all minor minerals in a scientific way so that there is no unfavourable impact on Environment and Climate. To extract every minor mineral from any land (either Government or Private) there is provision for a Mining Plan. These plans need to be approved by a competent authority. For long-term leased minor minerals (5-10 years period) and sand excavation from the riverbed, Senior Deputy Director of Directorate of Geology and Mining is the competent authority. These plans are for short term temporary permits which are valid for one year.

According to Enforcement & Monitoring Guidelines for Sand Mining 2020, Sustainable Sand Mining Management Guidelines 2016, Standard Environment conditions for sand mining and sustainable mining practices, District level Survey Report (³DSR) should be prepared and are suitable for mining and area prohibited for mining must be recognized.

¹ Environmental Management Plan

² Ministry of Environment Forest and Climate Change

³ District Survey Report

Objectives of EMP

- To provide overall conservation of the environment.
- To minimize waste generation and pollution.
- To regulate the precise use of natural resources and water.
- To provide Safety, Welfare, and Good health for the workforce and populace.
- To regulate the effective operation of all control measures.
- To ensure alertness against probable disasters and accidents.
- To monitor cumulative and long-term impacts.
- To regulate the effective operation of all control measures.

Roles and Responsibilities concerning the implementation of the EMP

The roles and responsibilities of all parties involved in successfully managing the environment are mentioned below.

Environmental Coordinator

The Environmental Coordinator will inspect operational areas on a quarterly basis and at the onset of mining any new island, to ensure that all specifications are met. The duties of the environmental coordinator will be the following.

- Guide the operations team in respect of the implementation of the environmental specifications.
- Lead the visits to ensure all work is aligned with the EMP.
- The environmental coordinator must examine the site during the three-monthly visits. All rehabilitation results will be Comprised in the quarterly report.
- Examination of the rehabilitation area and giving guidance regarding rehabilitation measures if any.

The Operations Manager

The responsibilities of the Operations Manager (4OM) or his nominated authority are as follows.

1. Familiarize themselves with the requirements of the EMP.
2. Monitor employees' and contractor's compliance with the environmental specifications; and enforce adherence.

⁴ Operations Manager

3. Communicate all environment-related incidents with the Environmental Coordinator and distribute them internally to avoid repetition.
4. Maintain a record of activities relevant to Environmental Management.
5. The Operations Manager shall be responsible for monitoring and the enforcement of the Environmental Management specifications on a day-to-day basis. Any violation of the environmental specifications shall be recorded, and the agreed disciplinary measures are taken.

Senior personnel and contractors

The roles of the senior personnel/contractors are as follows:

- Familiarize themselves with the requirements of the EMP.
- Comply with the environmental management specifications.
- Ensure that all team members are familiar with the environmental management specifications.

Details of the project

The Hivra 2 sand ghat area has been selected in perspective of its subsisting demand for building-grade sand for the area in and around Majalgaon Taluka. The District Mining Officer Beed has put forward the proposal for Environmental Clearance for mining. The ghat has a production of 15583 brass sand within an area of 4.41ha. The proposed proposal follows an organized mining process for Environmental Clearance.

Further Chapter informs about the in-depth details of the Sand Ghat, its geographical structure, and a Google map of the ghat with its approach road for contractors and workers to reach to sand ghat from the village.

CHAPTER 2

DETAILS OF THE PROJECT

Hivra village is located in Majalgaon Taluka of Beed district, Maharashtra. Majalgaon is well connected with all nearby cities. The National highway NH-52, it traverses through the states of Punjab, Haryana, Rajasthan, Madhya Pradesh, Maharashtra, Karnataka in India. NH-52 is the National Highway passing through the district, covering a total distance of 73.60km. Majalgaon has situated about 51.22km by road from Beed. The district has road links to adjoining districts Ahmednagar District to the west, Jalna District to the North, Latur District to the East, Osmanabad District to the South, Parbhani District to the East. The district is well connected by roads.

Hivra village is 46.12km away from Collector office headquarters Beed. The Geographical area of the Beed is around 10693km². The nearest Railway station to Hivra village is Usamanpur Railway station. The nearest Airport to Beed District is Aurangabad Airport, Aurangabad Airport is 104km from Beed city, 97.12km from Hivra.

Honourable Collector Beed intends to auction Sand Ghats and appointed District Mining Officer as Project Proponent. A total of 38 sand ghats are identified by Tahsildar Majalgaon, Parli Ve., Gevrai, Beed along with District Mining Officer, Beed. The 38 sand ghats were jointly surveyed by Taluka level technical committee headed by respective Tahsildar with Dy. Engineer Irrigation Department, Junior Geologist Directorate of Geology and Mining Govt. of Maharashtra, Junior Geologist, Groundwater Surveys & Development Agency (⁵GSDA). DMO Beed and a representative of the Maharashtra Pollution Control Board (⁶MPCB), as per the procedure defined in Sand Auction Rules 2019 dated 3/09/2019 formed a Taluka-level technical committee, which explored the sand ghats for an available quantity of sand for scooping. Revenue of Rs.25 Crore is expected from the auction of these sand ghats. Hivra 3 Sand Ghat proposed over river Godavari in Majalgaon Taluka is proposed to cater to the infrastructural requirement of sand in the Taluka of Beed and adjoining areas of other talukas.

⁵ Groundwater Surveys & Development Agency

⁶ Maharashtra Pollution Control Board

Table 2. 1 Details of Hivra 2 Sand ghat

Name of Village	Taluka	River/ Nallah	Nearest survey No.	Area (ha)	Proposed Depth for excavation (m)	Quantity Permitted for mining of Sand in Brass	Method of Mining
Hivra	Majalgaon	Godavari	54, 39 to 42, 22 to 29, 30 to 35	4.41	1	15583	Open-cast manual mining

Table 2. 2 Salient features of the project

Particulars	Details															
Location	Village-Hivra 2, Taluka-Majalgaon, District-Beed, Maharashtra.															
Latitude and Longitude	<table border="1"> <thead> <tr> <th>Boundary points of Hivra 2 sand spot</th> <th>Latitude</th> <th>Longitude</th> </tr> </thead> <tbody> <tr> <td>BP1</td> <td>19°18'16.58"N</td> <td>76°5'46.31"E</td> </tr> <tr> <td>BP2</td> <td>19°18'15.77"N</td> <td>76°5'48.55"E</td> </tr> <tr> <td>BP3</td> <td>19°17'56.54"N</td> <td>76°5'41.41"E</td> </tr> <tr> <td>BP4</td> <td>19°17'57.16"N</td> <td>76°5'39.12"E</td> </tr> </tbody> </table>	Boundary points of Hivra 2 sand spot	Latitude	Longitude	BP1	19°18'16.58"N	76°5'46.31"E	BP2	19°18'15.77"N	76°5'48.55"E	BP3	19°17'56.54"N	76°5'41.41"E	BP4	19°17'57.16"N	76°5'39.12"E
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BP3	19°17'56.54"N	76°5'41.41"E														
BP4	19°17'57.16"N	76°5'39.12"E														
Sand spot area (In ha)	4.41ha															
Proposed production capacity (in Brass)	15583															
Infrastructure Requirement (As per Govt Resolution 3rd January 2018)	<ol style="list-style-type: none"> 1. Room / Hut for Official records 2. Electricity / Battery for Running CCTV 24x7 daily. 3. One Computer / Android-based Mobile for the online generation of Invoice numbers. 															
Distance of project site from nearest rail or road bridge over the concerned River, Nallah, etc.	5.40km															

Particulars	Details
Distance from infrastructural facilities	
Railway line	30.80km
National Highway	38km (NH-52)
State Highway	32.40km (SH-144)
Major District Road	38km
Any Other Road	0.50km
Electric transmission line pole or tower	
Canal or check dam or reservoirs or lake or ponds	
In-take for drinking water pump house	
Intake for Irrigation canal pumps	
Areas already subjected to pollution or environmental damage. (those where existing legal environmental standards are exceeded)	None

Particulars	Details
<p>Areas susceptible to natural hazards which could cause the project to Present environmental problems (earthquakes, subsidence, landslides, erosion, flooding, or extreme or adverse climatic conditions)</p>	<p>No. Sand Ghat is at safe distances from natural hazards like earthquake prone area, subsidence, landslide, erosion, flooding prone area and extreme or adverse climatic conditions</p>
<p>Whether the proposal involves approval or clearance under the following Regulations or Acts, namely: - (a) The Forest (Conservation) Act, 1980. (b) The Wildlife (Protection) Act, 1972. (c) The Coastal Regulation Zone Notification, 2011. If yes, details of the same and their status are to be given.</p>	<p>None</p>
<p>Forest land involved (hectares)</p>	<p>None</p>

The below figure shows the google image of Hivra 2 sand ghat.

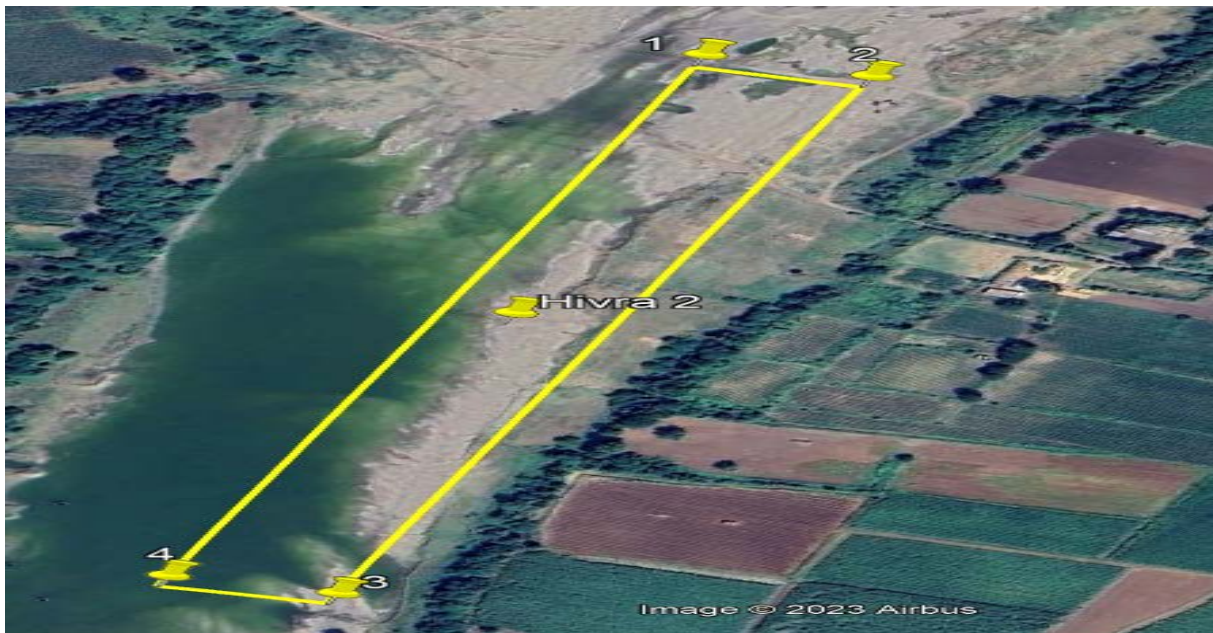


Fig 2.1-Google image of Hivra 2 sand ghat

Approach road along with google location is as shown below.

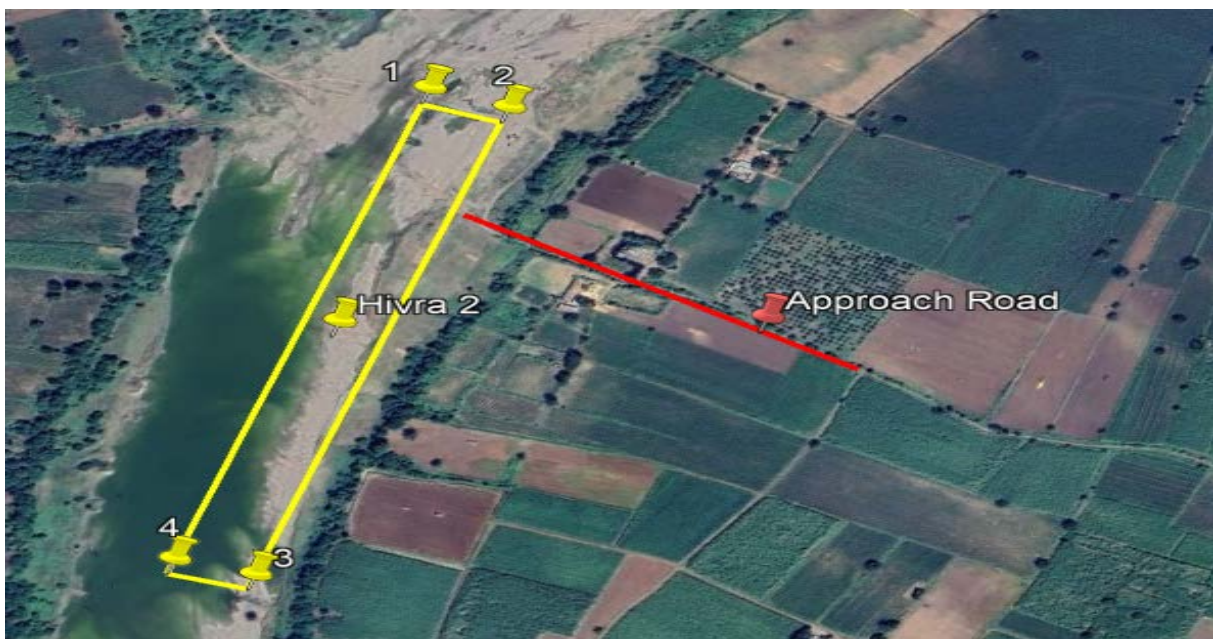


Fig 2.2-Approach Road for sand ghat

Next chapter 3 is Baseline Environmental Status in which the entire Topography, Climate, Soil Environment, Land use, water Environment, Hydrology, Biological environment, and Socio-economic Environment are briefly explained for the Beed district.

CHAPTER 3

BASELINE ENVIRONMENT STATUS

Topography

The Sand Ghat area as per the survey is the riverbed of the Godavari River of the Beed district. The maximum elevation is 429m MSL, average elevation is 424m MSL, & minimum elevation is 421m (7MSL) Mean Sea Level. The slope of the Sand Ghat area towards the Southwest to Northeast side. The flow of Godavari River is from Southeast direction.

Presently, there is neither any infrastructure within the riverbed nor are proposed.

Hydrology

There will be no change in the Water Table during the mining operation, as the depth of mining shall be restricted to 1.0m water level, which is less likely to affect the surface level or Groundwater Table. There is no proposal of any stream modification/diversion due to this mining activity hence there will be not any impact on the flow of water.

Soil Environment

The riverbed consists of sand /gravel. There is no topsoil. The depth of mining shall be restricted to 1.0m. There is no crucial impact on the soil forecasted due to mining activities.

Land Use Land Cover

Land use shows that agriculture land use is predominant. The proposed site is 4ha having adjoined Khasara No 54, 39 to 42, 22 to 29, 30 to 39. The land doesn't cover any human habitation, forest, etc. Any change in the scope of the approved Mining Plan will lead to riverbank erosion/cutting and thereby river channel shifting, degradation of land, causing loss of properties and degradation of the surrounding landscape.

⁷ Mean sea level

Water Environment

While transporting sand there may be fugitive dust. There will be water requirement for spraying for dust suppression purposes. This water will be supplied from the borewell from nearby villages through tankers as well as from surface water sources. The water source may vary from village to village.

Climate

During summer May is the hottest month of the year in this area. The temperature rises to 42°C in the month of May. The average rainfall in this region is 600mm to 700mm About 50% of rainfall precipitates between June to September. December is the coldest month with temperatures falling down to 18°C. Overall the proposed site area has sub-tropical conditions.

Biological Environment

Flora

The agricultural area is seen near the Sand Ghat. Few trees and thorny bushes are seen on the banks of the river.

Fauna

As there is no forest cover, no endangered species of wildlife are seen in this area.

Socio-Economic Environment

This project may create constructive impacts of the sand mining that are stated below:

1. The mining operations will provide direct & indirect employment to village people.
2. The villages and their inhabitants & domestic animals will not be disturbed due to mining, as the quarry is far from their settlements.
3. Local workforce will be given first preference for employment.
4. Mining activities will benefit the local people due to the provision of more infrastructural facilities (developments of approach routes within the village area).

The next chapter describes all possible impacts on the Environment due to this project along with its mitigation measure to overcome these impacts.

CHAPTER 4

IMPACT ASSESSMENT REPORT ALONG WITH PROPOSED MITIGATION MEASURES

1. Land Environment

Anticipated Impact

Movement of vehicles can create issues for agricultural land, human habitations, noise, and risk for public and cause traffic hazards. The impacts include damage to the riverbank due to access ramps to the riverbed, soil erosion because of extraction of sand, micro disturbance to groundwater, possible stimulation of the changed river course, and contamination of sand aquifer water due to ponding. There might be surface degradation due to the road network.

The quality of soil will not be affected due to transportation or any other activity of mining.

Mitigation measure

1. Mining depth should be restricted to 3 meters and distance from the bank should be ¼th or river width and should not be less than 7.5 meters as per “Sustainable Sand Mining Guidelines 2020” ■ Page 23, Point no 4.3 (m).
2. There will be a minimal number of access roads to riverbeds. Cutting of riverbanks will be avoided and ramp with smooth slope will be maintained. Access points to the riverbed will be decided based on the least steepness of the riverbank and the least human activity at that location.
3. No foreign material like polythene bags, jute bags, and useless articles should be allowed to remain/spill in the riverbed and catchment area, or no pits/pockets will be allowed to be filled with such material.
4. Mining at the concave side of the river channel should be avoided to prevent bank erosion. Similarly, a tortuous segment of a river is to be selected for mining in such a way as to ignore the natural eroding of banks.
5. Ensure that ponding is not created in the riverbed.
6. Transportation route should be such that it gives minimum

damage to the environment.

7. Green belt will be developed along the haul road and the bank of rivers of mine premises and near the sand mining site. While selecting the plant species, preference will be given for planting native species of the area.

2. Water environment

Anticipated Impact

The project activity will be carried out in the dry part of the riverbed. Care will be taken to ensure that neither of the project activities will affect the water environment or riverbank habitats. During the lean months, the proposed Sand Mining will not expose the base flow of the river and hence there will not be any inauspicious impact on surface hydrology and groundwater regime due to this project. Project activities will not have any adverse consequences on the physical components of the environment and therefore may not have any effect on the recharge of ground waters or affect the water quality. Monitoring of water quality will be checked yearly.

Mitigation measures

1. Mining is avoided during the monsoon season and at the time of floods. This will help in the replenishment of sand in the riverbed.
2. Mining below the subterranean water level will be avoided as a safeguard against environmental contamination and over-exploitation of resources.
3. River stream will not be transferred to create active channels.
4. Mining schedule is synchronized with the river flow direction and the gradient of the land.
5. Mining at the concave side of the river channel will be avoided to prevent bank erosion.
6. Tortuous segment of the river will be selected for mining in such a way as to avoid naturally eroding banks and to promote mining on naturally building meander components.
7. Mining depth shall be maintained as per the guidelines and

rules of the Sand Mining Policy dated 03/09/2019 and recommendations of Maharashtra State (⁸M.S.). State Ground Water Department for extraction of sand during the lease period.

8. Water Quality Monitoring for the ground waters, river water, and other surface waters shall be carried out seasonally to ensure that the water quality is not affected by the project activities.
9. Utmost care will be taken to minimize or control leaking vehicles to be used for sand transportation.
10. The washing of tractor trolleys in the river will not be done.
11. The contractor will follow all guidelines and rules for proper and scientific methods of mining during the period of extracting the sand.

3. Air Environment

Anticipated Impacts

Plying of tractor trolleys from the public road to river sand collection points needs access roads. The majority of such access roads are the already existing roads/tracks being used by pedestrians/cart owners. The movement of heavy vehicles sometimes causes problems for cattle, agricultural land, and human habitations due to dust, noise, and the movement of the public. These environmental problems are felt more as the area is rural in nature.

Air pollution is likely to be caused at various stages of Sand Mining operations such as excavation, loading & transportation of material. Most of the fugitive dust emissions will be generated from loading & transportation. This dust becomes airborne and spreads away to surrounding areas.

The impact on air is mainly localized in nature as the dust particles of 100 μ in size are not carried to farther distances beyond 100m and the effect is felt within the core zone of the project involving active Sand Mining operations.

⁸ Maharashtra State

Mitigation measures

1. Movement of the vehicles on the road will be increased; however, the unmetalled road in the mining area will be sprinkled with water at regular intervals.
2. In addition to preventing spillage from tractor trolleys, overloading shall be controlled to 1-brass/tractor trolley. The speed limit will be <20 km/hr.
3. Maintenance of the haul road will be done on a regular basis.
4. To avoid fugitive dust emissions at the time of excavation, a regular sprinkling of water will be done on regular basis.
5. Sand is transported to the sites by road through tractor trolleys. The sand-carrying vehicles shall be covered by tarpaulin sheets.
6. The Green belt development will be prepared along the haul roads, which will act as a pollution sink.
7. To minimize vehicular pollution from the sand transporting vehicles, the following conditions will be insisted upon to permit the vehicles of the transporters.
8. The vehicles should be Bharat-IV stage compliant and should have a Pollution Under Control (⁹PUC) Certificate issued by appropriate authorities.
9. Regular maintenance of transport vehicles and monitoring of vehicular emission levels at periodical intervals.

4. Noise Environment

Anticipated Impact

The noise environment in this project will be overdone by the equipment at the site and vehicular transportation. A slight increase in noise levels of <10dB(A) can be expected up to a distance of 100m.

Mitigation measures.

1. Minimum use of horns in the village area.
2. Timely maintenance of vehicles and their silencers to

⁹ Pollution Under Control

- minimize vibration and sound.
3. Phasing out old and worn-out tractor trolleys.
 4. Provision of green belts along the road networks.
 5. Care will be taken to produce minimum sound during sand loading.
 6. Backhoe loader excavator will be used
 7. Earplugs may be provided to protect the laborers working at the site.

5. Socio-economic Environment

Anticipated Impacts and Evaluation

1. The project activities shall not have any adverse impacts on any of the common property resources of the village communities, as the Sand Mine lease area is not being used for any purpose by any section of the society in this region.
2. There is no Resettlement and Rehabilitation (¹⁰R&R) involvement in this project.
3. There is no land acquisition in this project.
4. A major portion of the houses in the study area is semi-pucca-type structures.
5. The water source to these areas is from the Grampanchayat /Nagar Parishad connection and private bore wells and wells.
6. People living around the project area need the project for the purpose of employment and economic benefits.
7. The awareness level regarding the proposed mining activity is very towering. The proposed mining activity is expected to provide stimulus to socio-economic activities in the region and thereby accelerate further development processes.

Social and Demographic Profile

The workers are from local villages. These people have been provided welfare benefits from the lessee like medical benefits,

¹⁰ Rehabilitation and Resettlement

insurance, fees for children's education, etc. They have some land and cattle for their daily earnings. Additional revenue earned from the Sand Mining work will improve their living standard. The group of quarries in and around will help to have infrastructure facilities like roads, schools, shops, etc. This will enhance their social life.

Occupational Health and Safety

This is a riverbed Sand Mine. So, the mining activities are comparatively smaller because the production is not on a high scale. Workers do not come across any extreme conditions like excessive heat, moisture, etc. Workers working around it may come across this dusty environment. But the impact on health will be within the limit.

Human Settlement

1. There are no houses in and around the lease area. Blasting is the only activity, which may affect the settlement, which is not done. The settlement is more than 1-km from the sand mine.
2. Appropriate precautions will be taken during mining. Transportation of finished products is through the villages. There will be an effect of traffic on the local people. However, the intensity of traffic is 70-80/day.

Health and Hygiene

In general, the health of villagers is moderately good. In the rainy season, the atmospheric condition is unhygienic due to a lack of proper drainage and sanitation in the village habitation. Villagers are working in agricultural fields and work as labourers.

Education

Most education of 70% young <20 years, is up to the 5th to 9th. Economic condition is in general moderate. So, after this project, the standard of education will increase.

Socio-Economic Benefits Arising Out of Mining

1. Generation of employment in rural areas.
2. Upgradation in the living standards of rural people.
3. Creating infrastructural facilities like roads, electricity, shops, schools, etc.
4. Upgrading literacy in the area by exploiting natural minerals so the generation of revenue.

5. Helping to sustain construction activity.
6. Improving the greenery of the area, which is otherwise poor.

Liquid Effluent

Not applicable, because these activities do not generate effluent from operation or process.

Solid Waste

Not applicable, because small mines and impacts are negligible.

Project benefits due to the sand mining of Hivra 2 are explained in the next Chapter.

CHAPTER 5

PROJECT BENEFITS

The proposed Sand Mining project of Hivra 2 village, Majalgaon Taluka, Beed District will lead to the following benefits:

1. Increase in the revenue of the district will ultimately increase the revenue of the village, which in return can be used to improve the infrastructure of the village.
2. Sand is available for building construction work and by systematic separation of sand, there is no possibility of a flood. Providing smooth movement of water of the river.
3. This project will contribute additional revenue to the state Exchequer in the form of revenue.
4. The project will conclude with employment opportunities for unskilled/skilled local people.
5. Standard of living of employed people will increase.

CHAPTER 6

SITE-SPECIFIC ENFORCEMENT & MONITORING PLAN

Sand Ghat Site specific enforcement & monitoring plan

(as per guidelines stipulated in the Enforcement and Monitoring Guidelines for sand mining issued by MoEFCC in January 2020.)

District administration shall deliver information on its website about the Sand Mines in the district for public information. The objective is to extend all information into the public domain so that the citizens are aware of the mining activities. People can also report to the district administration any deviation observed. Suitable feedback and its composition shall also be made operational.

Details shall include, but not be limited to, lease area, geo-coordinates of lease area and mineable area, transport routes, permitted capacity, regulatory conditions for operation including mining, environmental and social commitments, etc.

An Independent Committee of experts constituted by the Distance Learning Task Force (¹¹DLTF) will assess the environmental or ecological damage caused due to illegal mining and recommend recovery of environmental compensation from the concerned miners.

The recommendation may also include action under the provision of the Environment (Protection) Act 1986 u/s.15 read with s.19.

¹¹ Distance Learning Task Force

CHAPTER 7

SECURITY FEATURES

Security features are included in the Transport Permission/Permits (TP)

It will be ensured that the following security features are included in the Transport Permission/Permits (¹²TP) so that duplicate/fraudulent/forged TPs for transport, not accounted for in the IT-based system, is not possible:

1. Printed on Indian Bank Association (¹³IBA) Approved letterhead with account details
2. Magnetic Ink Character Recognition Code (¹⁴MICR) paper
3. Unique Barcode
4. Unique Quick Response Code (¹⁵QR)
5. Fugitive Ink Background
6. Invisible Ink Mark
7. Void Pantograph Watermark
8. Global Positioning System (¹⁶GPS) based vehicle tracking system
9. Closed-Circuit Television (¹⁷CCTV) Camera

¹² Transport Permission

¹³ Indian Bank Association

¹⁴ Magnetic Ink Character Recognition Code

¹⁵ Quick Response Code

¹⁶ Global Positioning System

¹⁷ Closed Circuit Television

CHAPTER 8

REPLENISHMENT

Replenishment study is the most important part of Sand Mining as it is the only basis to carry out sand mining. Without a Replenishment Study, we cannot understand the amount of deposition of sand. Following points to be followed for the replenishment study.

1. Area of deposition and erosion will be calculated for each cross-section after giving due regard to the stability & safety of active channel banks & other features of importance.
2. Differential Global Positioning System (¹⁸DGPS) and other survey tools will be used to define the topography, contours, and offsets of the lease area.
3. Contour & elevation benchmarks will provide baseline data for assessing pre- and post-study period scenario.
4. Physical benchmarks will be fixed at appropriate intervals (preferably 1 in 30m) & Reduced levels (¹⁹RL) shall be validated from a nearby standard RL.
5. These RL will be engraved on a steel plate (Bench Plate) & will be fixed & placed at locations that are free from any damages & are available in the pre-and post-study period.
6. Bench plates will be available for use during the mining period as a reference for all mining activity.
7. Baseline data on elevation status for a grid of 10m x 10m is preferred to have accuracy in the assessment.
8. It is expected that two consecutive cross-sections in longitudinal and lateral directions will not be more than a 10m distance apart.
9. Changes observed in the elevation in pre and post-scenario at each node, will be depicted in graphical forms with an appropriate scale to estimate the area of deposition & erosion.

¹⁸ Differential global positioning system

¹⁹ Reduced levels

10. Elevation level will be in reference to the nearest bench plates established for the purpose.
11. The levels (MSL & RL) of the corner point of each grid will be identifiable and safety barriers (non-Mining) demarcated as restricted in consensus with the Mineral Concession Rules of the respective State, and the provision mentioned in this Sustainable Sand Mining Management Guidelines.
12. A clear identification will be highlighted between grids under the mineable and grids under the non-mineable area.
13. These baseline data (pre and post) be subjected to stimulation with the help of data mine software to derive the replenishment area and corresponding volume and estimated weight.
14. The database will be structured in a tabulated form clearly depicting the nomenclature of the section lines, latitude and longitude of the starting point, chainage, and respective levels of all the points taken on that section line.
15. Net area shall be derived after summation of an area of deposition minus the area of erosion for each cross-section.
16. Volume will be estimated by multiplying the distance between two cross-sections with the average of the net area of these two consecutive cross-sections.
17. One sample per 900m² (30m x 30m) will be the preferred sample density for the assessment of bulk density for the estimation of deposition rate.
18. Care will be taken that the sample for assessment of Bulk Density is taken from the deposition zone & not from erosion.

Methodology for Sand Mining:

The following methodology should be followed for the Replenishment study.

1. The Demarcation and benchmark of the Sand Ghat are done at 10m x 10m intervals.
2. The use of the Auger Driller is to find out the depth of sand in each grid.
3. Auger Driller has created the holes in sand ghat by 10mx10m grid pattern.
4. Measured the depth of holes by using a measuring tape.

5. After taking all the readings average depth of sand is calculated.
6. The average depth of Hivra 2 at Godavari is measured.

Replenishment study of sand in the proposed ghat along with details of the methodology, technology used to identify the existing reserve & replenishment of the same

Dandy Bolton Equation

For runoff less than 2 inches

$$S = 1280 \times (Q) \times 0.46 \times (1.46 - 0.26 \log(A)) \times F$$

For runoff more than 2 inches

$$S = 1958 \times (Q) \times (e^{-0.055 \times Q}) \times (1.43 - 0.26 \log(A))$$

Where,

S = sediment yield of stream (t/yr/km²),

Q = average annual runoff (m³),

A = net drainage area in sq.mile.

CHAPTER 9

PROPOSED PLANTATION PLAN

The Project Proponent must take care of the plantation around the site. This will not only enhance the beautification of the area but also there will be the reduction of pollution, not some extent.

Details of the plantation and Tree species recommended for the plantation are shown below.

Table 9. 1 Details of green belt

Location of greenbelt	Both sides of the approach road, On the riverbanks of both sides of the sand spot & nearby open areas. Haul Road outside the riverbed
No. of plants to be planted	2000 per Hectare
Spacing of plants	2m grid interval
Species selected	Native species

Table 9. 2 Trees species for plantation

Botanical Name	Local Name	Importance
Azadirachta Indica	Neem	Neem oil & neem products
Tectona Grandis	Teek	Antibacterial, Antifungal, Antiulcer
Ficus religiosaa	Peepal	Medicinal use, Fruits & figs
Bambusa vulgaris	Bamboo	Anthelmintic Anti-inflammatory, Astringent Properties
Madhuca longifolia	Mahua	Acts as a Stimulant & cough relief,

CHAPTER 10

ENVIRONMENTAL MANAGEMENT PLAN

A total capital cost of Rs.5.97 Lakhs has been kept in the project cost towards the environmental protection, control, mitigation measures, and implementation of the Environmental Management Plan (EMP). This cost is borne by the bidder/leaseholder. The budgetary cost estimate for the EMP is given in Table.

Table 10. 1 Budgetary cost of EMP

Sr	Impact Source	Impact	Control Measure	Cost (Rs.)
1	Transport Road	On Air Quality	Compaction, gradation, and drainage on both sides.	90000
		On Land, the Stability of the Road and degradation of road	Proper maintenance	40000
			Regular water spraying	43000
			The air quality will be monitored at the impacted village. (For One Day Monitoring)	5000
			Health Check-up of Employees	5000
2	Truck/ Tractor Movement	Air Quality	Sand-carrying trucks will be effectively covered by tarpaulin to avoid the escape of fines to the atmosphere. (2 Tarpaulin)	25000
			Regular monitoring of the exhaust fumes	5000

Sr	Impact Source	Impact	Control Measure	Cost (Rs.)
			Barriers & Traffic Management Expenses. (Excluding Manpower Salary which is included in labour costs)	10000
3	Ramp and Sand Reach	Mining Operation	Regular ramp Inspection and Ramp maintenance. (Excluding Manpower Salary which is included in labour costs)	50000
			Provision of dust masks	10000
4	Bank Management	Bank Erosion/Flood Plain management	The green belt along the bank (For Green Belt Development)	230000
			Plantation of wide leaf tall trees on banks and grass along a slanting portion of the bank	
5	Transportation on Village Roads	Dust Control	The green belt along village Rd (For Green Belt Development)	
6	Final Mine Closure Plan implementation	Replenishment of Sand	Gabions/ boulders will be arranged as per guidelines	15000
7	Mobile toilet, sewage handling & treatment		Mobile toilet, sewage handling & treatment	100000
8	CCTV Monitoring			100000
Total				728000

Budget For Corporate Environment Responsibility (²⁰CER)

About 2% fund of the project cost is allocated for Corporate Environment Responsibility (CER) activities as presented in below Table

Table 10.2 Budget for CER

Sr.	Description	Cost (Rs)
1.	Village Schools (separate toilet for girls and boys)	25000
2.	Solar panels over Gram Panchayat buildings	25000
3.	Solar panels over Public Health Centers	20000
	Total	70000

²⁰ Corporate Environment Responsibility

CHAPTER 11

SUMMARY AND CONCLUSION

The Roles and Responsibilities of the Environmental coordinator, the Operation Manager, and the senior personnel contractor are essential in EMP.

The environmental status of the project site and study area of 10km radius is delineated with respect to air, noise, water, land, biological and socio-economic environment the different project activities in the construction and operation phases are identified.

To identify the impacts, the interaction between the project activities and different components of the environment is classified phase-wise. A summary of the recognized impacts is given in the following paragraphs.

- During the operational phase, the transportation of sand could cause a temporary disturbance to the local environment which will be prevented with the proposed mitigation measures.
- Proposed project will not have any major significant negative impacts. The minor impacts arising during Excavation and Transportation phases can be mitigated with the help of the proposed Environmental Management Plan.
- In general, sand excavation from Hivra 2 sand spot will be useful to the developmental work in the district and generate employment opportunities.

From this project, it is concluded that the district revenue will increase in return minimum of 2% of funds are utilized for the development of the village. The project will also grab employment which will improve the standard of life of villagers.

*** END ***

Environmental Management Plan

As per Rules 23 & 26 of MMME (D & R) RULE 2013 & Section 15 of MMDR Act 1957, MoEFCC Notification 2006, S.O. 141(E) dated 15. 01. 2016; MoEFCC, Sustainable Sand Mining Management Guidelines 2016, Guidelines for Mining Policy 2020)

for

ENVIRONMENTAL CLEARANCE

of

SAND MINING (MINOR MINERAL)

for

Rakshasbhuwan Satha. 1- A Riverbed Sand Mine / Sand Ghat
Khasra No. GSDA approved 187 to 192, 194 to 197, 1 to 3
Area (4.34ha)

Village Rakshasbhuwan, Tehsil Gevrai, District Beed

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ABBREVIATION

Short Form	Long Form
EMP	Environmental Management Plan
MoEFCC	Ministry of Environment Forest and Climate Change
DSR	District-level Survey Report
EC	Environmental Coordinator
OM	Operations Manager
GSDA	Groundwater Surveys & Development Agency
MPCB	Maharashtra Pollution Control Board
MSL	Mean Sea Level
MS	Maharashtra State
PUC	Pollution Under Control
R&R	Rehabilitation and Resettlement
DLTF	Distance Learning Task Force
TP	Transport Permission/Permits
IBA	Indian Bank Association
MICR	Magnetic Ink Character Recognition Code
QR	Quick Response Code
GPS	Global Positioning System

CCTV	Closed-Circuit Television
DGPS	Differential Global Positioning System
RL	Reduced Levels
CER	Corporate Environment Responsibility

CHAPTER 1

INTRODUCTION

The Environmental Management Plan (¹EMP) plays a vital connection uniting forecast impacts and mitigation measures during implementation and operational activities. EMP stipulates the mitigation, monitoring and conventional measures to be taken during project implementation and operation. EMP is to escape or mitigate adverse environmental impacts, and to implement these measures.

This Environmental Management Plan (EMP) has been prepared as part of the Scoping Report which will be compiled in terms of the Environmental Assessment for the sand mining activities.

Considering the Ministry of Environment and Forest Climate Change (²MoEFCC) Notification 2006 and Sustainable Sand Mining Management Guidelines 2016, the Govt. of Maharashtra had mapped out the Minor Mineral Extraction Rules 2013. These rules are to extract all minor minerals in a scientific way so that there is no unfavourable impact on Environment and Climate. To extract every minor mineral from any land (either Government or Private) there is provision for a Mining Plan. These plans need to be approved by a competent authority. For long-term leased minor minerals (5-10 years period) and sand excavation from the riverbed, Senior Deputy Director of Directorate of Geology and Mining is the competent authority. These plans are for short term temporary permits which are valid for one year.

According to Enforcement & Monitoring Guidelines for Sand Mining 2020, Sustainable Sand Mining Management Guidelines 2016, Standard Environment conditions for sand mining and sustainable mining practices, District level Survey Report (³DSR) should be prepared and are suitable for mining and area prohibited for mining must be recognized.

¹ Environmental Management Plan

² Ministry of Environment Forest and Climate Change

³ District Survey Report

Objectives of EMP

- To provide overall conservation of the environment.
- To minimize waste generation and pollution.
- To regulate the precise use of natural resources and water.
- To provide Safety, Welfare, and Good health for the workforce and populace.
- To regulate the effective operation of all control measures.
- To ensure alertness against probable disasters and accidents.
- To monitor cumulative and long-term impacts.
- To regulate the effective operation of all control measures.

Roles and Responsibilities concerning the implementation of the EMP

The roles and responsibilities of all parties involved in successfully managing the environment are mentioned below.

Environmental Coordinator

The Environmental Coordinator will inspect operational areas on a quarterly basis and at the onset of mining any new island, to ensure that all specifications are met. The duties of the environmental coordinator will be the following.

- Guide the operations team in respect of the implementation of the environmental specifications.
- Lead the visits to ensure all work is aligned with the EMP.
- The environmental coordinator must examine the site during the three-monthly visits. All rehabilitation results will be Comprised in the quarterly report.
- Examination of the rehabilitation area and giving guidance regarding rehabilitation measures if any.

The Operations Manager

The responsibilities of the Operations Manager (4OM) or his nominated authority are as follows.

1. Familiarize themselves with the requirements of the EMP.
2. Monitor employees' and contractor's compliance with the environmental specifications; and enforce adherence.

⁴ Operations Manager

3. Communicate all environment-related incidents with the Environmental Coordinator and distribute them internally to avoid repetition.
4. Maintain a record of activities relevant to Environmental Management.
5. The Operations Manager shall be responsible for monitoring and the enforcement of the Environmental Management specifications on a day-to-day basis. Any violation of the environmental specifications shall be recorded, and the agreed disciplinary measures are taken.

Senior personnel and contractors

The roles of the senior personnel/contractors are as follows:

- Familiarize themselves with the requirements of the EMP.
- Comply with the environmental management specifications.
- Ensure that all team members are familiar with the environmental management specifications.

Details of the project

The Rakshasbhuwan Satha 1 sand ghat area has been selected in perspective of its subsisting demand for building-grade sand for the area in and around Gevrai Taluka. The District Mining Officer Beed has put forward the proposal for Environmental Clearance for mining. The ghat has a production of 18403 brass sand within an area of 4.34ha. The proposed proposal follows an organized mining process for Environmental Clearance.

Further Chapter informs about the in-depth details of the Sand Ghat, its geographical structure, and a Google map of the ghat with its approach road for contractors and workers to reach to sand ghat from the village.

CHAPTER 2

DETAILS OF THE PROJECT

Rakshasbhuwan village is located in Gevrai Taluka of Beed district, Maharashtra. Beed is well connected with all nearby cities. The National highway NH-52, it traverses through the states of Punjab, Haryana, Rajasthan, Madhya Pradesh, Maharashtra and Karnataka, Telangana and Andhra Pradesh in India. NH-52 is the National Highway passing through the district, covering a total distance of 73.60km. Gevrai has situated about 31.3km by road from Beed. The district has road links to adjoining districts Ahmednagar District to the west, Jalna District to the North, Latur District to the East, Osmanabad District to the South, Parbhani District to the East The district is well connected by roads.

Rakshasbhuwan village is 54.1km away from headquarters Beed. The Geographical area of the Beed is around 10693km². The nearest Railway station to Rakshasbhuwan village is Sarwari Railway station. The nearest Airport to Beed District is Aurangabad Airport, Aurangabad Airport is 104km away from beed.

Honourable Collector Beed intends to auction Sand Ghats and appointed District Mining Officer as Project Proponent. A total of 38 sand ghats are identified by Tahsildar Majalgaon, Gevrai, Parli Ve., Beed, along with District Mining Officer, Beed. The 38 sand ghats were jointly surveyed by Taluka level technical committee headed by respective tahsildar with Dy. Engineer Irrigation Department, Junior Geologist Directorate of Geology and Mining Govt. of Maharashtra, Junior Geologist, Groundwater Surveys & Development Agency (⁵GSDA). DMO Beed and a representative of the Maharashtra Pollution Control Board (⁶MPCB), as per the procedure defined in Sand Auction Rules 2019 dated 3/09/2019 formed a Taluka-level technical committee, which explored the sand ghats for an available quantity of sand for scooping. Revenue of Rs.25 Crore is expected from the auction of these sand ghats. Rakshasbhuwan Satha 1 Sand Ghat proposed over river Godavari in Gevrai Taluka is proposed to cater to the infrastructural

⁵ Groundwater Surveys & Development Agency

⁶ Maharashtra Pollution Control Board

requirement of sand in the Tehsil of Beed and adjoining areas of other talukas.

Table 2. 1 Details of Rakshasbhuwan Satha 1 Sand ghat

Name of Village	Tahsil	River/ Nallah	Nearest survey No.	Area (ha)	Proposed Depth for excavation (m)	Quantity Permitted for mining of Sand in Brass	Method of Mining
Rakshasbhuwan	Gevrai	Godavari	187 to 192, 194 to 197, 1 to 3	4.34	1.20	18403	Open-cast manual mining

Table 2. 2 Salient features of the project

Particulars	Details		
Location	Village- Rakshasbhuwan (Satha 1), Tehsil- Gevrai, District-Beed, Maharashtra.		
Latitude and Longitude	Boundary points of Rakshasbhuwan Satha No. 1 sand spot	Latitude	Longitude
	BP1	19°22'41.44"N	75°38'3.21"E
	BP2	19°22'41.48"N	75°38'4.51"E
	BP3	19°22'24.01"N	75°37'30.51"E
	BP4	19°22'25.17"N	75°37'30.38"E
Sand spot area (In ha)	4.34ha		
Proposed production capacity (in Brass)	18403		
Infrastructure Requirement (As per Govt Resolution 3rd January 2018)	<ol style="list-style-type: none"> 1. Room / Hut for Official records 2. Electricity / Battery for Running CCTV 24x7 daily. 3. One Computer / Android-based Mobile for the online generation of Invoice numbers. 		

Particulars	Details
Distance of project site from nearest rail or road bridge over the concerned River, Nallah, etc.	8.48km
Distance from infrastructural facilities	
Railway line	Sarwari railway station-53.21km
National Highway	NH52-10.97km
State Highway	MSH71-10.24km
Major District Road	8.16km
Any Other Road	-
Electric transmission line pole or tower	-
Canal or check dam or reservoirs or lake or ponds	-
In-take for drinking water pump house	-
Intake for Irrigation canal pumps	-
Areas already subjected to pollution or environmental damage. (those where existing legal environmental standards are exceeded)	None

Particulars	Details
<p>Areas susceptible to natural hazards which could cause the project to Present environmental problems (earthquakes, subsidence, landslides, erosion, flooding, or extreme or adverse climatic conditions)</p>	<p>No. Sand Ghat is at safe distances from natural hazards like earthquake prone area, subsidence, landslide, erosion, flooding prone area and extreme or adverse climatic conditions</p>
<p>Whether the proposal involves approval or clearance under the following Regulations or Acts, namely: - (a) The Forest (Conservation) Act, 1980. (b) The Wildlife (Protection) Act, 1972. (c) The Coastal Regulation Zone Notification, 2011. If yes, details of the same and their status are to be given.</p>	<p>None</p>
<p>Forest land involved (hectares)</p>	<p>None</p>

The below figure shows the google image of Rakshasbhuwan Satha 1 sand ghat.

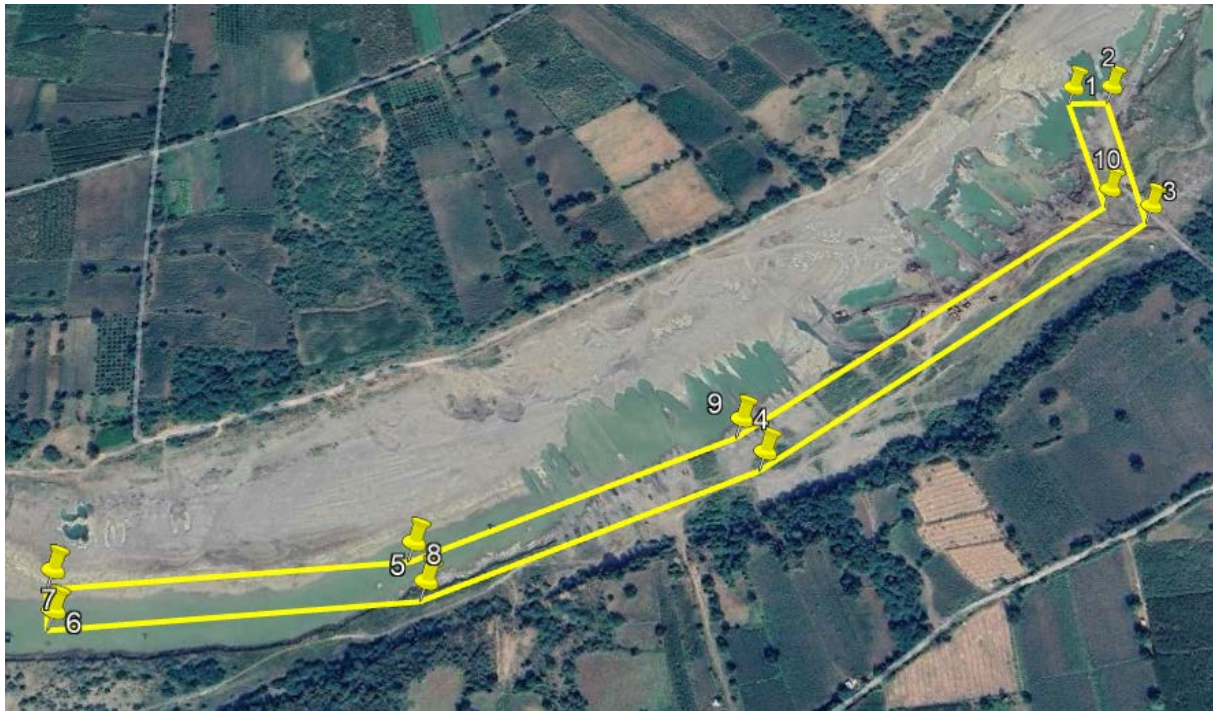


Fig 2.1- 1Google image of Rakshasbhuwan Satha 1 sand ghat

Approach roach along with google location is as shown below.

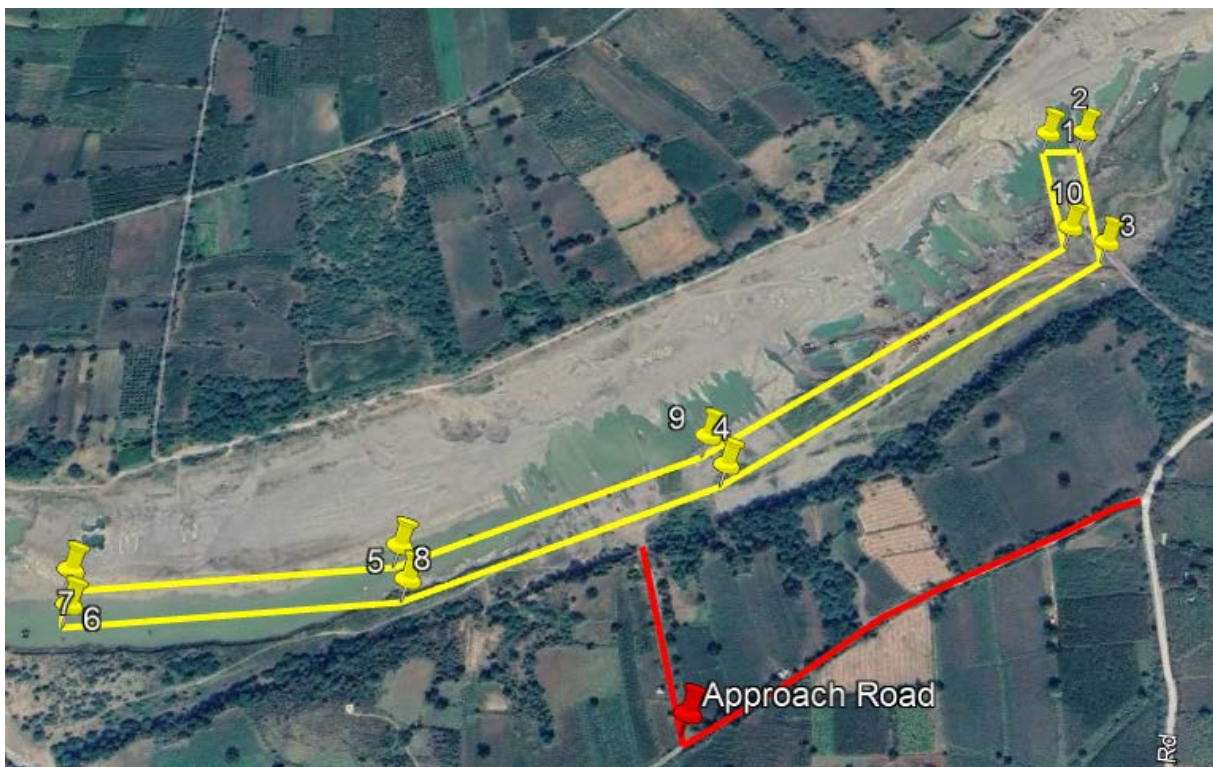


Fig 2.2-Approach Road for sand ghat

Next chapter 3 is Baseline Environmental Status in which the entire Topography, Climate, Soil Environment, Land use, water Environment, Hydrology, Biological environment, and Socio-economic Environment are briefly explained for the Beed district.

CHAPTER 3

BASELINE ENVIRONMENT STATUS

Topography

The Sand Ghat area as per the survey is the riverbed of the Godavari River of the Beed district. The maximum elevation is 444m MSL, average elevation is 442m MSL, & minimum elevation is 440m (⁷MSL) Mean Sea Level. The slope of the Sand Ghat area towards the Northeast to Southwest side. The flow of Godavari River is from Southeast direction.

Presently, there is neither any infrastructure within the riverbed nor are proposed.

Hydrology

There will be no change in the Water Table during the mining operation, as the depth of mining shall be restricted to 1.20m water level, which is less likely to affect the surface level or Groundwater Table. There is no proposal of any stream modification/diversion due to this mining activity hence there will be not any impact on the flow of water.

Soil Environment

The riverbed consists of sand /gravel. There is no topsoil. The depth of mining shall be restricted to 1.20m. There is no crucial impact on the soil forecasted due to mining activities.

Land Use Land Cover

Land use shows that agriculture land use is predominant. The proposed site is 4.34ha having adjoined Khasara No 187 to 192, 194 to 197, 1 to 3 The land doesn't cover any human habitation, forest, etc. Any change in the scope of the approved Mining Plan will lead to riverbank erosion/cutting and thereby river channel shifting, degradation of land, causing loss of properties and degradation of the surrounding landscape.

⁷ Mean sea level

Water Environment

While transporting sand there may be fugitive dust. There will be water requirement for spraying for dust suppression purposes. This water will be supplied from the borewell from nearby villages through tankers as well as from surface water sources. The water source may vary from village to village.

Climate

During summer May is the hottest month of the year in this area. The temperature rises to 42°C in the month of May. The average rainfall in this region is 600-700mm About 50% of rainfall precipitates between June to September. December is the coldest month with temperature falling down to 18°C. Overall the proposed site area has sub-tropical conditions.

Biological Environment

Flora

The agricultural area is seen near the Sand Ghat. Few trees and thorny bushes are seen on the banks of the river.

Fauna

As there is no forest cover, no endangered species of wildlife are seen in this area.

Socio-Economic Environment

This project may create constructive impacts of the sand mining that are stated below:

1. The mining operations will provide direct & indirect employment to village people.
2. The villages and their inhabitants & domestic animals will not be disturbed due to mining, as the quarry is far from their settlements.
3. Local workforce will be given first preference for employment.
4. Mining activities will benefit the local people due to the provision of more infrastructural facilities (developments of approach routes within the village area).

The next chapter describes all possible impacts on the Environment due to this project along with its mitigation measure to overcome these impacts.

CHAPTER 4

IMPACT ASSESSMENT REPORT ALONG WITH PROPOSED MITIGATION MEASURES

1. Land Environment

Anticipated Impact

Movement of vehicles can create issues for agricultural land, human habitations, noise, and risk for public and cause traffic hazards. The impacts include damage to the riverbank due to access ramps to the riverbed, soil erosion because of extraction of sand, micro disturbance to groundwater, possible stimulation of the changed river course, and contamination of sand aquifer water due to ponding. There might be surface degradation due to the road network.

The quality of soil will not be affected due to transportation or any other activity of mining.

Mitigation measure

1. Mining depth should be restricted to 3 meters and distance from the bank should be $\frac{1}{4}$ th or river width and should not be less than 7.5 meters as per “Sustainable Sand Mining Guidelines 2020” Page 23, Point no 4.3 (m).
2. There will be a minimal number of access roads to riverbeds. Cutting of riverbanks will be avoided and ramp with smooth slope will be maintained. Access points to the riverbed will be decided based on the least steepness of the riverbank and the least human activity at that location.
3. No foreign material like polythene bags, jute bags, and useless articles should be allowed to remain/spill in the riverbed and catchment area, or no pits/pockets will be allowed to be filled with such material.
4. Mining at the concave side of the river channel should be avoided to prevent bank erosion. Similarly, a tortuous segment of a river is to be selected for mining in such a way as to ignore the natural eroding of banks.
5. Ensure that ponding is not created in the riverbed.
6. Transportation route should be such that it gives minimum

damage to the environment.

7. Green belt will be developed along the haul road and the bank of rivers of mine premises and near the sand mining site. While selecting the plant species, preference will be given for planting native species of the area.

2. Water environment

Anticipated Impact

The project activity will be carried out in the dry part of the riverbed. Care will be taken to ensure that neither of the project activities will affect the water environment or riverbank habitats. During the lean months, the proposed Sand Mining will not expose the base flow of the river and hence there will not be any inauspicious impact on surface hydrology and groundwater regime due to this project. Project activities will not have any adverse consequences on the physical components of the environment and therefore may not have any effect on the recharge of ground waters or affect the water quality. Monitoring of water quality will be checked yearly.

Mitigation measures

1. Mining is avoided during the monsoon season and at the time of floods. This will help in the replenishment of sand in the riverbed.
2. Mining below the subterranean water level will be avoided as a safeguard against environmental contamination and over-exploitation of resources.
3. River stream will not be transferred to create active channels.
4. Mining schedule is synchronized with the river flow direction and the gradient of the land.
5. Mining at the concave side of the river channel will be avoided to prevent bank erosion.
6. Tortuous segment of the river will be selected for mining in such a way as to avoid naturally eroding banks and to promote mining on naturally building meander components.
7. Mining depth shall be maintained as per the guidelines and

rules of the Sand Mining Policy dated 03/09/2019 and recommendations of Maharashtra State (⁸M.S.). State Ground Water Department for extraction of sand during the lease period.

8. Water Quality Monitoring for the ground waters, river water, and other surface waters shall be carried out seasonally to ensure that the water quality is not affected by the project activities.
9. Utmost care will be taken to minimize or control leaking vehicles to be used for sand transportation.
10. The washing of tractor trolleys in the river will not be done.
11. The contractor will follow all guidelines and rules for proper and scientific methods of mining during the period of extracting the sand.

3. Air Environment

Anticipated Impacts

Plying of tractor trolleys from the public road to river sand collection points needs access roads. The majority of such access roads are the already existing roads/tracks being used by pedestrians/cart owners. The movement of heavy vehicles sometimes causes problems for cattle, agricultural land, and human habitations due to dust, noise, and the movement of the public. These environmental problems are felt more as the area is rural in nature.

Air pollution is likely to be caused at various stages of Sand Mining operations such as excavation, loading & transportation of material. Most of the fugitive dust emissions will be generated from loading & transportation. This dust becomes airborne and spreads away to surrounding areas.

The impact on air is mainly localized in nature as the dust particles of 100 μ in size are not carried to farther distances beyond 100m and the effect is felt within the core zone of the project involving active Sand Mining operations.

⁸ Maharashtra State

Mitigation measures

1. Movement of the vehicles on the road will be increased; however, the unmetalled road in the mining area will be sprinkled with water at regular intervals.
2. In addition to preventing spillage from tractor trolleys, overloading shall be controlled to 1-brass/tractor trolley. The speed limit will be <20 km/hr.
3. Maintenance of the haul road will be done on a regular basis.
4. To avoid fugitive dust emissions at the time of excavation, a regular sprinkling of water will be done on regular basis.
5. Sand is transported to the sites by road through tractor trolleys. The sand-carrying vehicles shall be covered by tarpaulin sheets.
6. The Green belt development will be prepared along the haul roads, which will act as a pollution sink.
7. To minimize vehicular pollution from the sand transporting vehicles, the following conditions will be insisted upon to permit the vehicles of the transporters.
8. The vehicles should be Bharat-IV stage compliant and should have a Pollution Under Control (⁹PUC) Certificate issued by appropriate authorities.
9. Regular maintenance of transport vehicles and monitoring of vehicular emission levels at periodical intervals.

4. Noise Environment

Anticipated Impact

The noise environment in this project will be overdone by the equipment at the site and vehicular transportation. A slight increase in noise levels of <10dB(A) can be expected up to a distance of 100m.

Mitigation measures.

1. Minimum use of horns in the village area.
2. Timely maintenance of vehicles and their silencers to

⁹ Pollution Under Control

minimize vibration and sound.

3. Phasing out old and worn-out tractor trolleys.
4. Provision of green belts along the road networks.
5. Care will be taken to produce minimum sound during sand loading.
6. Backhoe loader excavator will be used
7. Earplugs may be provided to protect the laborers working at the site.

5. Socio-economic Environment

Anticipated Impacts and Evaluation

1. The project activities shall not have any adverse impacts on any of the common property resources of the village communities, as the Sand Mine lease area is not being used for any purpose by any section of the society in this region.
2. There is no Resettlement and Rehabilitation (¹⁰R&R) involvement in this project.
3. There is no land acquisition in this project.
4. A major portion of the houses in the study area is semi-pucca-type structures.
5. The water source to these areas is from the Gram panchayat /Nagar Parishad connection and private bore wells and wells.
6. People living around the project area need the project for the purpose of employment and economic benefits.
7. The awareness level regarding the proposed mining activity is very towering. The proposed mining activity is expected to provide stimulus to socio-economic activities in the region and thereby accelerate further development processes.

Social and Demographic Profile

The workers are from local villages. These people have been provided welfare benefits from the lessee like medical benefits,

¹⁰ Rehabilitation and Resettlement

insurance, fees for children's education, etc. They have some land and cattle for their daily earnings. Additional revenue earned from the Sand Mining work will improve their living standard. The group of quarries in and around will help to have infrastructure facilities like roads, schools, shops, etc. This will enhance their social life.

Occupational Health and Safety

This is a riverbed Sand Mine. So, the mining activities are comparatively smaller because the production is not on a high scale. Workers do not come across any extreme conditions like excessive heat, moisture, etc. Workers working around it may come across this dusty environment. But the impact on health will be within the limit.

Human Settlement

1. There are no houses in and around the lease area. Blasting is the only activity, which may affect the settlement, which is not done. The settlement is more than 1-km from the sand mine.
2. Appropriate precautions will be taken during mining. Transportation of finished products is through the villages. There will be an effect of traffic on the local people. However, the intensity of traffic is 70-80/day.

Health and Hygiene

In general, the health of villagers is moderately good. In the rainy season, the atmospheric condition is unhygienic due to a lack of proper drainage and sanitation in the village habitation. Villagers are working in agricultural fields and work as labourers.

Education

Most education of 70% young <20 years, is up to the 5th to 9th. Economic condition is in general moderate. So, after this project, the standard of education will increase.

Socio-Economic Benefits Arising Out of Mining

1. Generation of employment in rural areas.
2. Upgradation in the living standards of rural people.
3. Creating infrastructural facilities like roads, electricity, shops, schools, etc.
4. Upgrading literacy in the area by exploiting natural minerals so the generation of revenue.

5. Helping to sustain construction activity.
6. Improving the greenery of the area, which is otherwise poor.

Liquid Effluent

Not applicable, because these activities do not generate effluent from operation or process.

Solid Waste

Not applicable, because small mines and impacts are negligible.

Project benefits due to the sand mining of Rakshasbhuwan Satha 1 are explained in the next Chapter.

CHAPTER 5

PROJECT BENEFITS

The proposed Sand Mining project of Rakshasbhuwan village Gevrai Tehsil, Beed District will lead to the following benefits:

1. Increase in the revenue of the district will ultimately increase the revenue of the village, which in return can be used to improve the infrastructure of the village.
2. Sand is available for building construction work and by systematic separation of sand, there is no possibility of a flood. Providing smooth movement of water of the river.
3. This project will contribute additional revenue to the state Exchequer in the form of revenue.
4. The project will conclude with employment opportunities for unskilled/skilled local people.
5. Standard of living of employed people will increase.

CHAPTER 6

SITE-SPECIFIC ENFORCEMENT & MONITORING PLAN

Sand Ghat Site specific enforcement & monitoring plan

(as per guidelines stipulated in the Enforcement and Monitoring Guidelines for sand mining issued by MoEFCC in January 2020.)

District administration shall deliver information on its website about the Sand Mines in the district for public information. The objective is to extend all information into the public domain so that the citizens are aware of the mining activities. People can also report to the district administration any deviation observed. Suitable feedback and its composition shall also be made operational.

Details shall include, but not be limited to, lease area, geo-coordinates of lease area and mineable area, transport routes, permitted capacity, regulatory conditions for operation including mining, environmental and social commitments, etc.

An Independent Committee of experts constituted by the Distance Learning Task Force (¹¹DLTF) will assess the environmental or ecological damage caused due to illegal mining and recommend recovery of environmental compensation from the concerned miners.

The recommendation may also include action under the provision of the Environment (Protection) Act 1986 u/s.15 read with s.19.

¹¹ Distance Learning Task Force

CHAPTER 7

SECURITY FEATURES

Security features are included in the Transport Permission/Permits (TP)

It will be ensured that the following security features are included in the Transport Permission/Permits (¹²TP) so that duplicate/fraudulent/forged TPs for transport, not accounted for in the IT-based system, is not possible:

1. Printed on Indian Bank Association (¹³IBA) Approved letterhead with account details
2. Magnetic Ink Character Recognition Code (¹⁴MICR) paper
3. Unique Barcode
4. Unique Quick Response Code (¹⁵QR)
5. Fugitive Ink Background
6. Invisible Ink Mark
7. Void Pantograph Watermark
8. Global Positioning System (¹⁶GPS) based vehicle tracking system
9. Closed-Circuit Television (¹⁷CCTV) Camera

¹² Transport Permission

¹³ Indian Bank Association

¹⁴ Magnetic Ink Character Recognition Code

¹⁵ Quick Response Code

¹⁶ Global Positioning System

¹⁷ Closed Circuit Television

CHAPTER 8

REPLENISHMENT

Replenishment study is the most important part of Sand Mining as it is the only basis to carry out sand mining. Without a Replenishment Study, we cannot understand the amount of deposition of sand. Following points to be followed for the replenishment study.

1. Area of deposition and erosion will be calculated for each cross-section after giving due regard to the stability & safety of active channel banks & other features of importance.
2. Differential Global Positioning System (¹⁸DGPS) and other survey tools will be used to define the topography, contours, and offsets of the lease area.
3. Contour & elevation benchmarks will provide baseline data for assessing pre- and post-study period scenario.
4. Physical benchmarks will be fixed at appropriate intervals (preferably 1 in 30m) & Reduced levels (¹⁹RL) shall be validated from a nearby standard RL.
5. These RL will be engraved on a steel plate (Bench Plate) & will be fixed & placed at locations that are free from any damages & are available in the pre-and post-study period.
6. Bench plates will be available for use during the mining period as a reference for all mining activity.
7. Baseline data on elevation status for a grid of 10m x 10m is preferred to have accuracy in the assessment.
8. It is expected that two consecutive cross-sections in longitudinal and lateral directions will not be more than a 10m distance apart.
9. Changes observed in the elevation in pre and post-scenario at each node, will be depicted in graphical forms with an appropriate scale to estimate the area of deposition & erosion.

¹⁸ Differential global positioning system

¹⁹ Reduced levels

10. Elevation level will be in reference to the nearest bench plates established for the purpose.
11. The levels (MSL & RL) of the corner point of each grid will be identifiable and safety barriers (non-Mining) demarcated as restricted in consensus with the Mineral Concession Rules of the respective State, and the provision mentioned in this Sustainable Sand Mining Management Guidelines.
12. A clear identification will be highlighted between grids under the mineable and grids under the non-mineable area.
13. These baseline data (pre and post) be subjected to stimulation with the help of data mine software to derive the replenishment area and corresponding volume and estimated weight.
14. The database will be structured in a tabulated form clearly depicting the nomenclature of the section lines, latitude and longitude of the starting point, chainage, and respective levels of all the points taken on that section line.
15. Net area shall be derived after summation of an area of deposition minus the area of erosion for each cross-section.
16. Volume will be estimated by multiplying the distance between two cross-sections with the average of the net area of these two consecutive cross-sections.
17. One sample per 900m² (30m x 30m) will be the preferred sample density for the assessment of bulk density for the estimation of deposition rate.
18. Care will be taken that the sample for assessment of Bulk Density is taken from the deposition zone & not from erosion.

Methodology for Sand Mining:

The following methodology should be followed for the Replenishment study.

1. The Demarcation and benchmark of the Sand Ghat are done at 10m x 10m intervals.
2. The use of the Auger Driller is to find out the depth of sand in each grid.
3. Auger Driller has created the holes in sand ghat by 10mx10m grid pattern.
4. Measured the depth of holes by using a measuring tape.

5. After taking all the readings average depth of sand is calculated.
6. The average depth of Rakshasbhuwan Satha 1 at Godavari is measured.

Replenishment study of sand in the proposed ghat along with details of the methodology, technology used to identify the existing reserve & replenishment of the same

Dandy Bolton Equation

For runoff less than 2 inches

$$S = 1280 \times (Q) \times 0.46 \times (1.46 - 0.26 \log(A)) \times F$$

For runoff more than 2 inches

$$S = 1958 \times (Q) \times (e^{-0.055 \times Q}) \times (1.43 - 0.26 \log(A))$$

Where,

S = sediment yield of stream (t/yr/km²),

Q = average annual runoff (m³),

A = net drainage area in sq.mile.

CHAPTER 9

PROPOSED PLANTATION PLAN

The Project Proponent must take care of the plantation around the site. This will not only enhance the beautification of the area but also there will be the reduction of pollution, not some extent.

Details of the plantation and Tree species recommended for the plantation are shown below.

Table 9. 1 Details of green belt

Location of greenbelt	Both sides of the approach road, On the riverbanks of both sides of the sand spot & nearby open areas. Haul Road outside the riverbed
No. of plants to be planted	2000 per Hectare
Spacing of plants	2m grid interval
Species selected	Native species

Table 9. 2 Trees species for plantation

Botanical Name	Local Name	Importance
Azadirachta Indica	Neem	Neem oil & neem products
Tectona Grandis	Teek	Antibacterial, Antifungal, Antiulcer
Ficus religiosaa	Peepal	Medicinal use, Fruits & figs
Bambusa vulgaris	Bamboo	Anthelmintic Anti-inflammatory, Astringent Properties
Madhuca longifolia	Mahua	Acts as a Stimulant & cough relief,

CHAPTER 10

ENVIRONMENTAL MANAGEMENT PLAN

A total capital cost of Rs.5.97 Lakhs has been kept in the project cost towards the environmental protection, control, mitigation measures, and implementation of the Environmental Management Plan (EMP). This cost is borne by the bidder/leaseholder. The budgetary cost estimate for the EMP is given in Table.

Table 10. 1 Budgetary cost of EMP

Sr	Impact Source	Impact	Control Measure	Cost (Rs)
1	Transport Road	On Air Quality	Compaction, gradation, and drainage on both sides.	90000
		On Land, the Stability of the Road and degradation of road	Proper maintenance	80000
			Regular water spraying	40000
			The air quality will be monitored at the impacted village. (For One Day Monitoring)	5000
			Health Check-up of Employees	5000
2	Truck/ Tractor Movement	Air Quality	Sand-carrying trucks will be effectively covered by tarpaulin to avoid the escape of fines to the atmosphere. (2 Tarpaulin)	25000
			Regular monitoring of the exhaust fumes	5000

Sr	Impact Source	Impact	Control Measure	Cost (Rs)
			Barriers & Traffic Management Expenses. (Excluding Manpower Salary which is included in labour costs)	10000
3	Ramp and Sand Reach	Mining Operation	Regular ramp Inspection and Ramp maintenance. (Excluding Manpower Salary which is included in labour costs)	20000
			Provision of dust masks	10000
4	Bank Management	Bank Erosion/Flood Plain management	The green belt along the bank (For Green Belt Development)	280000
			Plantation of wide leaf tall trees on banks and grass along a slanting portion of the bank	
5	Transportation on Village Roads	Dust Control	The green belt along village Rd (For Green Belt Development)	
6	Final Mine Closer Plan implementation	Replenishment of Sand	Gabions/ boulders will be arranged as per guidelines	15000
7	Mobile toilet, sewage handling & treatment		Mobile toilet, sewage handling & treatment	130000
8	CCTV Monitoring			120000
Total				835000

Budget For Corporate Environment Responsibility (²⁰CER)

About 2% fund of the project cost is allocated for Corporate Environment Responsibility (CER) activities as presented in below Table

Table 10.2 Budget for CER

Sr.	Description	Cost (Rs)
1.	Village Schools (separate toilet for girls and boys)	20000
2.	Solar panels over Gram Panchayat buildings	30000
3.	Solar panels over Public Health Centers	30000
	Total	80000

²⁰ Corporate Environment Responsibility

CHAPTER 11

SUMMARY AND CONCLUSION

The Roles and Responsibilities of the Environmental coordinator, the Operation Manager, and the senior personnel contractor are essential in EMP.

The environmental status of the project site and study area of 10km radius is delineated with respect to air, noise, water, land, biological and socio-economic environment the different project activities in the construction and operation phases are identified.

To identify the impacts, the interaction between the project activities and different components of the environment is classified phase-wise. A summary of the recognized impacts is given in the following paragraphs.

- During the operational phase, the transportation of sand could cause a temporary disturbance to the local environment which will be prevented with the proposed mitigation measures.
- Proposed project will not have any major significant negative impacts. The minor impacts arising during Excavation and Transportation phases can be mitigated with the help of the proposed Environmental Management Plan.
- In general, sand excavation from Rakshasbhuwan Satha 1 sand spot will be useful to the developmental work in the district and generate employment opportunities.

From this project, it is concluded that the district revenue will increase in return minimum of 2% of funds are utilized for the development of the village. The project will also grab employment which will improve the standard of life of villagers.

*** END ***

Environmental Management Plan

As per Rules 23 & 26 of MMME (D & R) RULE 2013 & Section 15 of MMDR Act 1957, MoEFCC Notification 2006, S.O. 141(E) dated 15. 01. 2016; MoEFCC, Sustainable Sand Mining Management Guidelines 2016, Guidelines for Mining Policy 2020)

for

ENVIRONMENTAL CLEARANCE

of

SAND MINING (MINOR MINERAL)

for

Barhanpur– A Riverbed Sand Mine / Sand Ghat
Khasra No. GSDA approved 6, 7, 9
Area (1.25ha)

Village Barhanpur, Tehsil Beed, District Beed

0

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ABBREVIATION

Short Form	Long Form
EMP	Environmental Management Plan
MoEFCC	Ministry of Environment Forest and Climate Change
DSR	District-level Survey Report
EC	Environmental Coordinator
OM	Operations Manager
GSDA	Groundwater Surveys & Development Agency
MPCB	Maharashtra Pollution Control Board
MSL	Mean Sea Level
MS	Maharashtra State
PUC	Pollution Under Control
R&R	Rehabilitation and Resettlement
DLTF	Distance Learning Task Force
TP	Transport Permission/Permits
IBA	Indian Bank Association
MICR	Magnetic Ink Character Recognition Code
QR	Quick Response Code
GPS	Global Positioning System

CCTV	Closed-Circuit Television
DGPS	Differential Global Positioning System
RL	Reduced Levels
CER	Corporate Environment Responsibility

CHAPTER 1

INTRODUCTION

The Environmental Management Plan (¹EMP) plays a vital connection uniting forecast impacts and mitigation measures during implementation and operational activities. EMP stipulates the mitigation, monitoring and conventional measures to be taken during project implementation and operation. EMP is to escape or mitigate adverse environmental impacts, and to implement these measures.

This Environmental Management Plan (EMP) has been prepared as part of the Scoping Report which will be compiled in terms of the Environmental Assessment for the sand mining activities.

Considering the Ministry of Environment and Forest Climate Change (²MoEFCC) Notification 2006 and Sustainable Sand Mining Management Guidelines 2016, the Govt. of Maharashtra had mapped out the Minor Mineral Extraction Rules 2013. These rules are to extract all minor minerals in a scientific way so that there is no unfavourable impact on Environment and Climate. To extract every minor mineral from any land (either Government or Private) there is provision for a Mining Plan. These plans need to be approved by a competent authority. For long-term leased minor minerals (5-10 years period) and sand excavation from the riverbed, Senior Deputy Director of Directorate of Geology and Mining is the competent authority. These plans are for short term temporary permits which are valid for one year.

According to Enforcement & Monitoring Guidelines for Sand Mining 2020, Sustainable Sand Mining Management Guidelines 2016, Standard Environment conditions for sand mining and sustainable mining practices, District level Survey Report (³DSR) should be prepared and are suitable for mining and area prohibited for mining must be recognized.

¹ Environmental Management Plan

² Ministry of Environment Forest and Climate Change

³ District Survey Report

Objectives of EMP

- To provide overall conservation of the environment.
- To minimize waste generation and pollution.
- To regulate the precise use of natural resources and water.
- To provide Safety, Welfare, and Good health for the workforce and populace.
- To regulate the effective operation of all control measures.
- To ensure alertness against probable disasters and accidents.
- To monitor cumulative and long-term impacts.
- To regulate the effective operation of all control measures.

Roles and Responsibilities concerning the implementation of the EMP

The roles and responsibilities of all parties involved in successfully managing the environment are mentioned below.

Environmental Coordinator

The Environmental Coordinator will inspect operational areas on a quarterly basis and at the onset of mining any new island, to ensure that all specifications are met. The duties of the environmental coordinator will be the following.

- Guide the operations team in respect of the implementation of the environmental specifications.
- Lead the visits to ensure all work is aligned with the EMP.
- The environmental coordinator must examine the site during the three-monthly visits. All rehabilitation results will be Comprised in the quarterly report.
- Examination of the rehabilitation area and giving guidance regarding rehabilitation measures if any.

The Operations Manager

The responsibilities of the Operations Manager (4OM) or his nominated authority are as follows.

1. Familiarize themselves with the requirements of the EMP.
2. Monitor employees' and contractor's compliance with the environmental specifications; and enforce adherence.

⁴ Operations Manager

3. Communicate all environment-related incidents with the Environmental Coordinator and distribute them internally to avoid repetition.
4. Maintain a record of activities relevant to Environmental Management.
5. The Operations Manager shall be responsible for monitoring and the enforcement of the Environmental Management specifications on a day-to-day basis. Any violation of the environmental specifications shall be recorded, and the agreed disciplinary measures are taken.

Senior personnel and contractors

The roles of the senior personnel/contractors are as follows:

- Familiarize themselves with the requirements of the EMP.
- Comply with the environmental management specifications.
- Ensure that all team members are familiar with the environmental management specifications.

Details of the project

The Barhanpur sand ghat area has been selected in perspective of its subsisting demand for building-grade sand for the area in and around Beed Taluka. The District Mining Officer Beed has put forward the proposal for Environmental Clearance for mining. The ghat has a production of 3092 brass sand within an area of 1.25ha. The proposed proposal follows an organized mining process for Environmental Clearance.

Further Chapter informs about the in-depth details of the Sand Ghat, its geographical structure, and a Google map of the ghat with its approach road for contractors and workers to reach to sand ghat from the village.

CHAPTER 2

DETAILS OF THE PROJECT

Barhanpur village is located in Beed Taluka of Beed district, Maharashtra. Beed is well connected with all nearby cities. The National highway NH-52, it traverses through the states of Punjab, Haryana, Rajasthan, Madhya Pradesh and Maharashtra in India. NH-52 is the National Highway passing through the district, covering a total distance of 73.60km. Beed has situated about 0km by road from Beed. The district has road links to adjoining districts Ahmednagar District to the west, Jalna District to the North, Latur District to the East, Osmanabad District to the South, Parbhani District to the East The district is well connected by roads.

Barhanpur village is 13.05km away from Collector Office headquarters Beed. The Geographical area of the Beed is around 10693km². The nearest Railway station to Barhanpur village is Partur Railway station. The nearest Airport to Beed District is Aurangabad Airport, Aurangabad Airport is 104km away from beed.

Honourable Collector Beed intends to auction Sand Ghats and appointed District Mining Officer as Project Proponent. A total of 38 sand ghats are identified by Tahsildar Majalgaon, Parli Ve, Gevrai, Beed along with District Mining Officer, Beed. The 38 sand ghats were jointly surveyed by Taluka level technical committee headed by respective tahsildar with Dy. Engineer Irrigation Department, Junior Geologist Directorate of Geology and Mining Govt. of Maharashtra, Junior Geologist, Groundwater Surveys & Development Agency (⁵GSDA). DMO Beed and a representative of the Maharashtra Pollution Control Board (⁶MPCB), as per the procedure defined in Sand Auction Rules 2019 dated 3/09/2019 formed a Taluka-level technical committee, which explored the sand ghats for an available quantity of sand for scooping. Revenue of Rs.25 Crore is expected from the auction of these sand ghats. Barhanpur Sand Ghat proposed over river Tukadmonadi in Beed Taluka is proposed to cater to the infrastructural requirement of sand in the Tehsil of Beed and adjoining areas of other talukas.

⁵ Groundwater Surveys & Development Agency

⁶ Maharashtra Pollution Control Board

Table 2. 1 Details of Barhanpur Sand ghat

Name of Village	Tahsil	River/ Nallah	Nearest survey No.	Area (ha)	Proposed Depth for excavation (m)	Quantity Permitted for mining of Sand in Brass	Method of Mining
Barhanpur.	Beed	Tukadmonadi	6, 7, 9	1.25	0.70	3092	Open-cast manual mining

Table 2. 2 Salient features of the project

Particulars	Details															
Location	Village- Barhanpur, Taluka- Beed, District-Beed, Maharashtra.															
Latitude and Longitude	<table border="1"> <thead> <tr> <th>Boundary points of Barhanpur sand spot</th> <th>Latitude</th> <th>Longitude</th> </tr> </thead> <tbody> <tr> <td>BP1</td> <td>19°4'7.66"N</td> <td>75°50'29.49"E</td> </tr> <tr> <td>BP2</td> <td>19°4'8.11"N</td> <td>75°50'31.09"E</td> </tr> <tr> <td>BP3</td> <td>19°4'0.13"N</td> <td>75°50'33.00"E</td> </tr> <tr> <td>BP4</td> <td>19° 3'59.77"N</td> <td>75°50'31.31"E</td> </tr> </tbody> </table>	Boundary points of Barhanpur sand spot	Latitude	Longitude	BP1	19°4'7.66"N	75°50'29.49"E	BP2	19°4'8.11"N	75°50'31.09"E	BP3	19°4'0.13"N	75°50'33.00"E	BP4	19° 3'59.77"N	75°50'31.31"E
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BP3	19°4'0.13"N	75°50'33.00"E														
BP4	19° 3'59.77"N	75°50'31.31"E														
Sand spot area (In ha)	1.25ha															
Proposed production capacity (in Brass)	3092															
Infrastructure Requirement (As per Govt Resolution 3rd January 2018)	<ol style="list-style-type: none"> 1. Room / Hut for Official records 2. Electricity / Battery for Running CCTV 24x7 daily. 3. One Computer / Android-based Mobile for the online generation of Invoice numbers. 															
Distance of project site from nearest rail or road bridge over the concerned River, Nallah, etc.	Bindusara River Bridge-5.08km															

Particulars	Details
Distance from infrastructural facilities Railway line National Highway State Highway Major District Road Any Other Road Electric transmission line pole or tower Canal or check dam or reservoirs or lake or ponds In-take for drinking water pump house Intake for Irrigation canal pumps	Partur railway station-68.49km NH52-10.24km MSH144-6.50km 2.70km 1km
Areas already subjected to pollution or environmental damage. (those where existing legal environmental standards are exceeded)	None
Areas susceptible to natural hazards which could cause the project to Present environmental problems (earthquakes, subsidence, landslides, erosion, flooding, or extreme or adverse climatic conditions)	No. Sand Ghat is at safe distances from natural hazards like earthquake prone area, subsidence, landslide, erosion, flooding prone area and extreme or adverse climatic conditions

Particulars	Details
Whether the proposal involves approval or clearance under the following Regulations or Acts, namely: - (a) The Forest (Conservation) Act, 1980. (b) The Wildlife (Protection) Act, 1972. (c) The Coastal Regulation Zone Notification, 2011. If yes, details of the same and their status are to be given.	None
Forest land involved (hectares)	None

The below figure shows the google image of Barhanpur sand ghat.



Fig 2.1-Google image of Barhanpur sand ghat

Approach road along with google location is as shown below.



Fig 2.2-Approach Road for sand ghat

Next chapter 3 is Baseline Environmental Status in which the entire Topography, Climate, Soil Environment, Land use, water Environment, Hydrology, Biological environment, and Socio-economic Environment are briefly explained for the Beed district.

CHAPTER 3

BASELINE ENVIRONMENT STATUS

Topography

The Sand Ghat area as per the survey is the riverbed of the Tukadmonadi River of the Beed district. The maximum elevation is 480m MSL, average elevation is 478m MSL, & minimum elevation is 476m (⁷MSL) Mean Sea Level. The slope of the Sand Ghat area towards the Northwest to Southeast side. The flow of Tukadmonadi River is from West to East direction.

Presently, there is neither any infrastructure within the riverbed nor are proposed.

Hydrology

There will be no change in the Water Table during the mining operation, as the depth of mining shall be restricted to 0.70m water level, which is less likely to affect the surface level or Groundwater Table. There is no proposal of any stream modification/diversion due to this mining activity hence there will be not any impact on the flow of water.

Soil Environment

The riverbed consists of sand /gravel. There is no topsoil. The depth of mining shall be restricted to 0.70m. There is no crucial impact on the soil forecasted due to mining activities.

Land Use Land Cover

Land use shows that agriculture land use is predominant. The proposed site is 1.25ha having adjoined Khasara No 6, 7, 9. The land doesn't cover any human habitation, forest, etc. Any change in the scope of the approved Mining Plan will lead to riverbank erosion/cutting and thereby river channel shifting, degradation of land, causing loss of properties and degradation of the surrounding landscape.

⁷ Mean sea level

Water Environment

While transporting sand there may be fugitive dust. There will be water requirement for spraying for dust suppression purposes. This water will be supplied from the borewell from nearby villages through tankers as well as from surface water sources. The water source may vary from village to village.

Climate

During summer May is the hottest month of the year in this area. The temperature rises to 42°C in the month of May. The average rainfall in this region is 600-700mm About 50% of rainfall precipitates between June to September. December is the coldest month with temperature falling down to 18°C. Overall the proposed site area has sub-tropical conditions.

Biological Environment

Flora

The agricultural area is seen near the Sand Ghat. Few trees and thorny bushes are seen on the banks of the river.

Fauna

As there is no forest cover, no endangered species of wildlife are seen in this area.

Socio-Economic Environment

This project may create constructive impacts of the sand mining that are stated below:

1. The mining operations will provide direct & indirect employment to village people.
2. The villages and their inhabitants & domestic animals will not be disturbed due to mining, as the quarry is far from their settlements.
3. Local workforce will be given first preference for employment.
4. Mining activities will benefit the local people due to the provision of more infrastructural facilities (developments of approach routes within the village area).

The next chapter describes all possible impacts on the Environment due to this project along with its mitigation measure to overcome these impacts.

CHAPTER 4

IMPACT ASSESSMENT REPORT ALONG WITH PROPOSED MITIGATION MEASURES

1. Land Environment

Anticipated Impact

Movement of vehicles can create issues for agricultural land, human habitations, noise, and risk for public and cause traffic hazards. The impacts include damage to the riverbank due to access ramps to the riverbed, soil erosion because of extraction of sand, micro disturbance to groundwater, possible stimulation of the changed river course, and contamination of sand aquifer water due to ponding. There might be surface degradation due to the road network.

The quality of soil will not be affected due to transportation or any other activity of mining.

Mitigation measure

1. Mining depth should be restricted to 3 meters and distance from the bank should be $\frac{1}{4}$ th or river width and should not be less than 7.5 meters as per “Sustainable Sand Mining Guidelines 2020” Page 23, Point no 4.3 (m).
2. There will be a minimal number of access roads to riverbeds. Cutting of riverbanks will be avoided and ramp with smooth slope will be maintained. Access points to the riverbed will be decided based on the least steepness of the riverbank and the least human activity at that location.
3. No foreign material like polythene bags, jute bags, and useless articles should be allowed to remain/spill in the riverbed and catchment area, or no pits/pockets will be allowed to be filled with such material.
4. Mining at the concave side of the river channel should be avoided to prevent bank erosion. Similarly, a tortuous segment of a river is to be selected for mining in such a way as to ignore the natural eroding of banks.
5. Ensure that ponding is not created in the riverbed.
6. Transportation route should be such that it gives minimum

damage to the environment.

7. Green belt will be developed along the haul road and the bank of rivers of mine premises and near the sand mining site. While selecting the plant species, preference will be given for planting native species of the area.

2. Water environment

Anticipated Impact

The project activity will be carried out in the dry part of the riverbed. Care will be taken to ensure that neither of the project activities will affect the water environment or riverbank habitats. During the lean months, the proposed Sand Mining will not expose the base flow of the river and hence there will not be any inauspicious impact on surface hydrology and groundwater regime due to this project. Project activities will not have any adverse consequences on the physical components of the environment and therefore may not have any effect on the recharge of ground waters or affect the water quality. Monitoring of water quality will be checked yearly.

Mitigation measures

1. Mining is avoided during the monsoon season and at the time of floods. This will help in the replenishment of sand in the riverbed.
2. Mining below the subterranean water level will be avoided as a safeguard against environmental contamination and over-exploitation of resources.
3. River stream will not be transferred to create active channels.
4. Mining schedule is synchronized with the river flow direction and the gradient of the land.
5. Mining at the concave side of the river channel will be avoided to prevent bank erosion.
6. Tortuous segment of the river will be selected for mining in such a way as to avoid naturally eroding banks and to promote mining on naturally building meander components.
7. Mining depth shall be maintained as per the guidelines and

rules of the Sand Mining Policy dated 03/09/2019 and recommendations of Maharashtra State (⁸M.S.). State Ground Water Department for extraction of sand during the lease period.

8. Water Quality Monitoring for the ground waters, river water, and other surface waters shall be carried out seasonally to ensure that the water quality is not affected by the project activities.
9. Utmost care will be taken to minimize or control leaking vehicles to be used for sand transportation.
10. The washing of tractor trolleys in the river will not be done.
11. The contractor will follow all guidelines and rules for proper and scientific methods of mining during the period of extracting the sand.

3. Air Environment

Anticipated Impacts

Plying of tractor trolleys from the public road to river sand collection points needs access roads. The majority of such access roads are the already existing roads/tracks being used by pedestrians/cart owners. The movement of heavy vehicles sometimes causes problems for cattle, agricultural land, and human habitations due to dust, noise, and the movement of the public. These environmental problems are felt more as the area is rural in nature.

Air pollution is likely to be caused at various stages of Sand Mining operations such as excavation, loading & transportation of material. Most of the fugitive dust emissions will be generated from loading & transportation. This dust becomes airborne and spreads away to surrounding areas.

The impact on air is mainly localized in nature as the dust particles of 100 μ in size are not carried to farther distances beyond 100m and the effect is felt within the core zone of the project involving active Sand Mining operations.

⁸ Maharashtra State

Mitigation measures

1. Movement of the vehicles on the road will be increased; however, the unmetalled road in the mining area will be sprinkled with water at regular intervals.
2. In addition to preventing spillage from tractor trolleys, overloading shall be controlled to 1-brass/tractor trolley. The speed limit will be <20 km/hr.
3. Maintenance of the haul road will be done on a regular basis.
4. To avoid fugitive dust emissions at the time of excavation, a regular sprinkling of water will be done on regular basis.
5. Sand is transported to the sites by road through tractor trolleys. The sand-carrying vehicles shall be covered by tarpaulin sheets.
6. The Green belt development will be prepared along the haul roads, which will act as a pollution sink.
7. To minimize vehicular pollution from the sand transporting vehicles, the following conditions will be insisted upon to permit the vehicles of the transporters.
8. The vehicles should be Bharat-IV stage compliant and should have a Pollution Under Control (⁹PUC) Certificate issued by appropriate authorities.
9. Regular maintenance of transport vehicles and monitoring of vehicular emission levels at periodical intervals.

4. Noise Environment

Anticipated Impact

The noise environment in this project will be overdone by the equipment at the site and vehicular transportation. A slight increase in noise levels of <10dB(A) can be expected up to a distance of 100m.

Mitigation measures.

1. Minimum use of horns in the village area.
2. Timely maintenance of vehicles and their silencers to

⁹ Pollution Under Control

minimize vibration and sound.

3. Phasing out old and worn-out tractor trolleys.
4. Provision of green belts along the road networks.
5. Care will be taken to produce minimum sound during sand loading.
6. Backhoe loader excavator will be used
7. Earplugs may be provided to protect the laborers working at the site.

5. Socio-economic Environment

Anticipated Impacts and Evaluation

1. The project activities shall not have any adverse impacts on any of the common property resources of the village communities, as the Sand Mine lease area is not being used for any purpose by any section of the society in this region.
2. There is no Resettlement and Rehabilitation (¹⁰R&R) involvement in this project.
3. There is no land acquisition in this project.
4. A major portion of the houses in the study area is semi-pucca-type structures.
5. The water source to these areas is from the Grampanchayat /Nagar Parishad connection and private bore wells and wells.
6. People living around the project area need the project for the purpose of employment and economic benefits.
7. The awareness level regarding the proposed mining activity is very towering. The proposed mining activity is expected to provide stimulus to socio-economic activities in the region and thereby accelerate further development processes.

Social and Demographic Profile

The workers are from local villages. These people have been provided welfare benefits from the lessee like medical benefits,

¹⁰ Rehabilitation and Resettlement

insurance, fees for children's education, etc. They have some land and cattle for their daily earnings. Additional revenue earned from the Sand Mining work will improve their living standard. The group of quarries in and around will help to have infrastructure facilities like roads, schools, shops, etc. This will enhance their social life.

Occupational Health and Safety

This is a riverbed Sand Mine. So, the mining activities are comparatively smaller because the production is not on a high scale. Workers do not come across any extreme conditions like excessive heat, moisture, etc. Workers working around it may come across this dusty environment. But the impact on health will be within the limit.

Human Settlement

1. There are no houses in and around the lease area. Blasting is the only activity, which may affect the settlement, which is not done. The settlement is more than 1-km from the sand mine.
2. Appropriate precautions will be taken during mining. Transportation of finished products is through the villages. There will be an effect of traffic on the local people. However, the intensity of traffic is 70-80/day.

Health and Hygiene

In general, the health of villagers is moderately good. In the rainy season, the atmospheric condition is unhygienic due to a lack of proper drainage and sanitation in the village habitation. Villagers are working in agricultural fields and work as labourers.

Education

Most education of 70% young <20 years, is up to the 5th to 9th. Economic condition is in general moderate. So, after this project, the standard of education will increase.

Socio-Economic Benefits Arising Out of Mining

1. Generation of employment in rural areas.
2. Upgradation in the living standards of rural people.
3. Creating infrastructural facilities like roads, electricity, shops, schools, etc.
4. Upgrading literacy in the area by exploiting natural minerals so the generation of revenue.

5. Helping to sustain construction activity.
6. Improving the greenery of the area, which is otherwise poor.

Liquid Effluent

Not applicable, because these activities do not generate effluent from operation or process.

Solid Waste

Not applicable, because small mines and impacts are negligible.

Project benefits due to the sand mining of Barhanpur are explained in the next Chapter.

CHAPTER 5

PROJECT BENEFITS

The proposed Sand Mining project of Barhanpur Village, Beed Tehsil, Beed District will lead to the following benefits:

1. Increase in the revenue of the district will ultimately increase the revenue of the village, which in return can be used to improve the infrastructure of the village.
2. Sand is available for building construction work and by systematic separation of sand, there is no possibility of a flood. Providing smooth movement of water of the river.
3. This project will contribute additional revenue to the state Exchequer in the form of revenue.
4. The project will conclude with employment opportunities for unskilled/skilled local people.
5. Standard of living of employed people will increase.

CHAPTER 6

SITE-SPECIFIC ENFORCEMENT & MONITORING PLAN

Sand Ghat Site specific enforcement & monitoring plan

(as per guidelines stipulated in the Enforcement and Monitoring Guidelines for sand mining issued by MoEFCC in January 2020.)

District administration shall deliver information on its website about the Sand Mines in the district for public information. The objective is to extend all information into the public domain so that the citizens are aware of the mining activities. People can also report to the district administration any deviation observed. Suitable feedback and its composition shall also be made operational.

Details shall include, but not be limited to, lease area, geo-coordinates of lease area and mineable area, transport routes, permitted capacity, regulatory conditions for operation including mining, environmental and social commitments, etc.

An Independent Committee of experts constituted by the Distance Learning Task Force (¹¹DLTF) will assess the environmental or ecological damage caused due to illegal mining and recommend recovery of environmental compensation from the concerned miners.

The recommendation may also include action under the provision of the Environment (Protection) Act 1986 u/s.15 read with s.19.

¹¹ Distance Learning Task Force

CHAPTER 7

SECURITY FEATURES

Security features are included in the Transport Permission/Permits (TP)

It will be ensured that the following security features are included in the Transport Permission/Permits (¹²TP) so that duplicate/fraudulent/forged TPs for transport, not accounted for in the IT-based system, is not possible:

1. Printed on Indian Bank Association (¹³IBA) Approved letterhead with account details
2. Magnetic Ink Character Recognition Code (¹⁴MICR) paper
3. Unique Barcode
4. Unique Quick Response Code (¹⁵QR)
5. Fugitive Ink Background
6. Invisible Ink Mark
7. Void Pantograph Watermark
8. Global Positioning System (¹⁶GPS) based vehicle tracking system
9. Closed-Circuit Television (¹⁷CCTV) Camera

¹² Transport Permission

¹³ Indian Bank Association

¹⁴ Magnetic Ink Character Recognition Code

¹⁵ Quick Response Code

¹⁶ Global Positioning System

¹⁷ Closed Circuit Television

CHAPTER 8

REPLENISHMENT

Replenishment study is the most important part of Sand Mining as it is the only basis to carry out sand mining. Without a Replenishment Study, we cannot understand the amount of deposition of sand. Following points to be followed for the replenishment study.

1. Area of deposition and erosion will be calculated for each cross-section after giving due regard to the stability & safety of active channel banks & other features of importance.
2. Differential Global Positioning System (¹⁸DGPS) and other survey tools will be used to define the topography, contours, and offsets of the lease area.
3. Contour & elevation benchmarks will provide baseline data for assessing pre- and post-study period scenario.
4. Physical benchmarks will be fixed at appropriate intervals (preferably 1 in 30m) & Reduced levels (¹⁹RL) shall be validated from a nearby standard RL.
5. These RL will be engraved on a steel plate (Bench Plate) & will be fixed & placed at locations that are free from any damages & are available in the pre-and post-study period.
6. Bench plates will be available for use during the mining period as a reference for all mining activity.
7. Baseline data on elevation status for a grid of 10m x 10m is preferred to have accuracy in the assessment.
8. It is expected that two consecutive cross-sections in longitudinal and lateral directions will not be more than a 10m distance apart.
9. Changes observed in the elevation in pre and post-scenario at each node, will be depicted in graphical forms with an appropriate scale to estimate the area of deposition & erosion.

¹⁸ Differential global positioning system

¹⁹ Reduced levels

10. Elevation level will be in reference to the nearest bench plates established for the purpose.
11. The levels (MSL & RL) of the corner point of each grid will be identifiable and safety barriers (non-Mining) demarcated as restricted in consensus with the Mineral Concession Rules of the respective State, and the provision mentioned in this Sustainable Sand Mining Management Guidelines.
12. A clear identification will be highlighted between grids under the mineable and grids under the non-mineable area.
13. These baseline data (pre and post) be subjected to stimulation with the help of data mine software to derive the replenishment area and corresponding volume and estimated weight.
14. The database will be structured in a tabulated form clearly depicting the nomenclature of the section lines, latitude and longitude of the starting point, chainage, and respective levels of all the points taken on that section line.
15. Net area shall be derived after summation of an area of deposition minus the area of erosion for each cross-section.
16. Volume will be estimated by multiplying the distance between two cross-sections with the average of the net area of these two consecutive cross-sections.
17. One sample per 900m² (30m x 30m) will be the preferred sample density for the assessment of bulk density for the estimation of deposition rate.
18. Care will be taken that the sample for assessment of Bulk Density is taken from the deposition zone & not from erosion.

Methodology for Sand Mining:

The following methodology should be followed for the Replenishment study.

1. The Demarcation and benchmark of the Sand Ghat are done at 10m x 10m intervals.
2. The use of the Auger Driller is to find out the depth of sand in each grid.
3. Auger Driller has created the holes in sand ghat by 10mx10m grid pattern.
4. Measured the depth of holes by using a measuring tape.

5. After taking all the readings average depth of sand is calculated.
6. The average depth of Barhanpur at Tukadmonadi is measured.

Replenishment study of sand in the proposed ghat along with details of the methodology, technology used to identify the existing reserve & replenishment of the same

Dandy Bolton Equation

For runoff less than 2 inches

$$S = 1280 \times (Q) \times 0.46 \times (1.46 - 0.26 \log(A)) \times F$$

For runoff more than 2 inches

$$S = 1958 \times (Q) \times (e^{-0.055 \times Q}) \times (1.43 - 0.26 \log(A))$$

Where,

S = sediment yield of stream (t/yr/km²),

Q = average annual runoff (m³),

A = net drainage area in sq.mile.

CHAPTER 9

PROPOSED PLANTATION PLAN

The Project Proponent must take care of the plantation around the site. This will not only enhance the beautification of the area but also there will be the reduction of pollution, not some extent.

Details of the plantation and Tree species recommended for the plantation are shown below.

Table 9. 1 Details of green belt

Location of greenbelt	Both sides of the approach road, On the riverbanks of both sides of the sand spot & nearby open areas. Haul Road outside the riverbed
No. of plants to be planted	2000 per Hectare
Spacing of plants	2m grid interval
Species selected	Native species

Table 9. 2 Trees species for plantation

Botanical Name	Local Name	Importance
Azadirachta Indica	Neem	Neem oil & neem products
Tectona Grandis	Teek	Antibacterial, Antifungal, Antiulcer
Ficus religiosaa	Peepal	Medicinal use, Fruits & figs
Bambusa vulgaris	Bamboo	Anthelmintic Anti-inflammatory, Astringent Properties
Madhuca longifolia	Mahua	Acts as a Stimulant & cough relief,

CHAPTER 10

ENVIRONMENTAL MANAGEMENT PLAN

A total capital cost of Rs.5.97 Lakhs has been kept in the project cost towards the environmental protection, control, mitigation measures, and implementation of the Environmental Management Plan (EMP). This cost is borne by the bidder/leaseholder. The budgetary cost estimate for the EMP is given in Table.

Table 10. 1 Budgetary cost of EMP

Sr	Impact Source	Impact	Control Measure	Cost(Rs)
1	Transport Road	On Air Quality	Compaction, gradation, and drainage on both sides.	35000
		On Land, the Stability of the Road and degradation of road	Proper maintenance	20000
			Regular water spraying	25000
			The air quality will be monitored at the impacted village. (For One Day Monitoring)	3000
			Health Check-up of Employees	3000
2	Truck/ Tractor Movement	Air Quality	Sand-carrying trucks will be effectively covered by tarpaulin to avoid the escape of fines to the atmosphere. (2 Tarpaulin)	20000
			Regular monitoring of the exhaust fumes	3000

Sr	Impact Source	Impact	Control Measure	Cost(Rs)
			Barriers & Traffic Management Expenses. (Excluding Manpower Salary which is included in labour costs)	8000
3	Ramp and Sand Reach	Mining Operation	Regular ramp Inspection and Ramp maintenance. (Excluding Manpower Salary which is included in labour costs)	40000
			Provision of dust masks	8000
4	Bank Management	Bank Erosion/Flood Plain management	The green belt along the bank (For Green Belt Development)	100000
			Plantation of wide leaf tall trees on banks and grass along a slanting portion of the bank	
5	Transportation on Village Roads	Dust Control	The green belt along village Rd (For Green Belt Development)	
6	Final Mine Closures Plan implementation	Replenishment of Sand	Gabions/ boulders will be arranged as per guidelines	10000
7	Mobile toilet, sewage handling & treatment		Mobile toilet, sewage handling & treatment	70000
8	CCTV Monitoring			70000
Total				415000

Budget For Corporate Environment Responsibility (²⁰CER)

About 2% fund of the project cost is allocated for Corporate Environment Responsibility (CER) activities as presented in below Table

Table 10.2 Budget for CER

Sr.	Description	Cost (Rs)
1.	Village Schools (separate toilet for girls and boys)	10000
2.	Solar panels over Gram Panchayat buildings	10000
3.	Solar panels over Public Health Centers	15000
	Total	35000

²⁰ Corporate Environment Responsibility

CHAPTER 11

SUMMARY AND CONCLUSION

The Roles and Responsibilities of the Environmental coordinator, the Operation Manager, and the senior personnel contractor are essential in EMP.

The environmental status of the project site and study area of 10km radius is delineated with respect to air, noise, water, land, biological and socio-economic environment the different project activities in the construction and operation phases are identified.

To identify the impacts, the interaction between the project activities and different components of the environment is classified phase-wise. A summary of the recognized impacts is given in the following paragraphs.

- During the operational phase, the transportation of sand could cause a temporary disturbance to the local environment which will be prevented with the proposed mitigation measures.
- Proposed project will not have any major significant negative impacts. The minor impacts arising during Excavation and Transportation phases can be mitigated with the help of the proposed Environmental Management Plan.
- In general, sand excavation from Barhanpur sand spot will be useful to the developmental work in the district and generate employment opportunities.

From this project, it is concluded that the district revenue will increase in return minimum of 2% of funds are utilized for the development of the village. The project will also grab employment which will improve the standard of life of villagers.

*** END ***

Environmental Management Plan

As per Rules 23 & 26 of MMME (D & R) RULE 2013 & Section 15 of MMDR Act 1957, MoEFCC Notification 2006, S.O. 141(E) dated 15. 01. 2016; MoEFCC, Sustainable Sand Mining Management Guidelines 2016, Guidelines for Mining Policy 2020)

for

ENVIRONMENTAL CLEARANCE

of

SAND MINING (MINOR MINERAL)

for

Borgaav Bu. Satha 1– A Riverbed Sand Mine / Sand Ghat
Khasra No. GSDA approved 4, 1, 176, 174
Area (1.80ha)

Village Borgaav, Tehsil Gevrai, District Beed

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ABBREVIATION

Short Form	Long Form
EMP	Environmental Management Plan
MoEFCC	Ministry of Environment Forest and Climate Change
DSR	District-level Survey Report
EC	Environmental Coordinator
OM	Operations Manager
GSDA	Groundwater Surveys & Development Agency
MPCB	Maharashtra Pollution Control Board
MSL	Mean Sea Level
MS	Maharashtra State
PUC	Pollution Under Control
R&R	Rehabilitation and Resettlement
DLTF	Distance Learning Task Force
TP	Transport Permission/Permits
IBA	Indian Bank Association
MICR	Magnetic Ink Character Recognition Code
QR	Quick Response Code
GPS	Global Positioning System

CCTV	Closed-Circuit Television
DGPS	Differential Global Positioning System
RL	Reduced Levels
CER	Corporate Environment Responsibility

CHAPTER 1

INTRODUCTION

The Environmental Management Plan (¹EMP) plays a vital connection uniting forecast impacts and mitigation measures during implementation and operational activities. EMP stipulates the mitigation, monitoring and conventional measures to be taken during project implementation and operation. EMP is to escape or mitigate adverse environmental impacts, and to implement these measures.

This Environmental Management Plan (EMP) has been prepared as part of the Scoping Report which will be compiled in terms of the Environmental Assessment for the sand mining activities.

Considering the Ministry of Environment and Forest Climate Change (²MoEFCC) Notification 2006 and Sustainable Sand Mining Management Guidelines 2016, the Govt. of Maharashtra had mapped out the Minor Mineral Extraction Rules 2013. These rules are to extract all minor minerals in a scientific way so that there is no unfavourable impact on Environment and Climate. To extract every minor mineral from any land (either Government or Private) there is provision for a Mining Plan. These plans need to be approved by a competent authority. For long-term leased minor minerals (5-10 years period) and sand excavation from the riverbed, Senior Deputy Director of Directorate of Geology and Mining is the competent authority. These plans are for short term temporary permits which are valid for one year.

According to Enforcement & Monitoring Guidelines for Sand Mining 2020, Sustainable Sand Mining Management Guidelines 2016, Standard Environment conditions for sand mining and sustainable mining practices, District level Survey Report (³DSR) should be prepared and are suitable for mining and area prohibited for mining must be recognized.

¹ Environmental Management Plan

² Ministry of Environment Forest and Climate Change

³ District Survey Report

Objectives of EMP

- To provide overall conservation of the environment.
- To minimize waste generation and pollution.
- To regulate the precise use of natural resources and water.
- To provide Safety, Welfare, and Good health for the workforce and populace.
- To regulate the effective operation of all control measures.
- To ensure alertness against probable disasters and accidents.
- To monitor cumulative and long-term impacts.
- To regulate the effective operation of all control measures.

Roles and Responsibilities concerning the implementation of the EMP

The roles and responsibilities of all parties involved in successfully managing the environment are mentioned below.

Environmental Coordinator

The Environmental Coordinator will inspect operational areas on a quarterly basis and at the onset of mining any new island, to ensure that all specifications are met. The duties of the environmental coordinator will be the following.

- Guide the operations team in respect of the implementation of the environmental specifications.
- Lead the visits to ensure all work is aligned with the EMP.
- The environmental coordinator must examine the site during the three-monthly visits. All rehabilitation results will be Comprised in the quarterly report.
- Examination of the rehabilitation area and giving guidance regarding rehabilitation measures if any.

The Operations Manager

The responsibilities of the Operations Manager (4OM) or his nominated authority are as follows.

1. Familiarize themselves with the requirements of the EMP.
2. Monitor employees' and contractor's compliance with the environmental specifications; and enforce adherence.

⁴ Operations Manager

3. Communicate all environment-related incidents with the Environmental Coordinator and distribute them internally to avoid repetition.
4. Maintain a record of activities relevant to Environmental Management.
5. The Operations Manager shall be responsible for monitoring and the enforcement of the Environmental Management specifications on a day-to-day basis. Any violation of the environmental specifications shall be recorded, and the agreed disciplinary measures are taken.

Senior personnel and contractors

The roles of the senior personnel/contractors are as follows:

- Familiarize themselves with the requirements of the EMP.
- Comply with the environmental management specifications.
- Ensure that all team members are familiar with the environmental management specifications.

Details of the project

The Borgaav Bu. Satha 1 sand ghat area has been selected in perspective of its subsisting demand for building-grade sand for the area in and around Gevrai Taluka. The District Mining Officer Beed has put forward the proposal for Environmental Clearance for mining. The ghat has a production of 5088brass sand within an area of 1.80ha. The proposed proposal follows an organized mining process for Environmental Clearance.

Further Chapter informs about the in-depth details of the Sand Ghat, its geographical structure, and a Google map of the ghat with its approach road for contractors and workers to reach to sand ghat from the village.

CHAPTER 2

DETAILS OF THE PROJECT

Borgaav village is located in Gevrai Taluka of Beed district, Maharashtra. Beed is well connected with all nearby cities. The National highway NH-52, it traverses through the states of Punjab, Haryana, Rajasthan, Madhya Pradesh and Maharashtra in India. NH-52 is the National Highway passing through the district, covering a total distance of 73.60km. Gevrai has situated about 31.3km by road from Beed. The district has road links to adjoining districts Ahmednagar District to the west, Jalna District to the North, Latur District to the East, Osmanabad District to the South, Parbhani District to the East The district is well connected by roads.

Borgaav village is 52.63km away from Collector Office headquarters Beed. The Geographical area of the Beed is around 10693km². The nearest Railway station to Borgaav village is Sarwari Railway station. The nearest Airport to Beed District is Aurangabad Airport, Aurangabad Airport is 104km away from beed.

Honourable Collector Beed intends to auction Sand Ghats and appointed District Mining Officer as Project Proponent. A total of 38 sand ghats are identified by Tahsildar Majalgaon, Parli Ve, Gevrai, Beed along with District Mining Officer, Beed. The 38 sand ghats were jointly surveyed by Taluka level technical committee headed by respective tahsildar with Dy. Engineer Irrigation Department, Junior Geologist Directorate of Geology and Mining Govt. of Maharashtra, Junior Geologist, Groundwater Surveys & Development Agency (⁵GSDA). DMO Beed and a representative of the Maharashtra Pollution Control Board (⁶MPCB), as per the procedure defined in Sand Auction Rules 2019 dated 3/09/2019 formed a Taluka-level technical committee, which explored the sand ghats for an available quantity of sand for scooping. Revenue of Rs.25 Crore is expected from the auction of these sand ghats. Borgaav Bu. Satha 1 Sand Ghat proposed over river Godavari in Gevrai Taluka is proposed to cater to the infrastructural

⁵ Groundwater Surveys & Development Agency

⁶ Maharashtra Pollution Control Board

requirement of sand in the Tehsil of Beed and adjoining areas of other talukas.

Table 2. 1 Details of Borgaav Bu. Satha 1 Sand ghat

Name of Village	Tahsil	River/ Nallah	Nearest survey No.	Area (ha)	Proposed Depth for excavation (m)	Quantity Permitted for mining of Sand in Brass	Method of Mining
Borgaav Bu.	Gevrai	Godavari	4, 1, 176, 174	1.80	0.80	5088	Open-cast manual mining

Table 2. 2 Salient features of the project

Particulars	Details		
Location	Village- Borgaav Bu. (Satha 1), Taluka- Gevrai, District-Beed, Maharashtra.		
Latitude and Longitude	Boundary points of Borgaav Bu. Satha 1 sand spot	Latitude	Longitude
	BP1	19°24'40.12"N	75°30'57.43"E
	BP2	19°24'39.80"N	75°30'58.76"E
	BP3	19°24'25.62"N	75°30'55.31"E
	BP4	19°24'25.87"N	75°30'54.05"E
Sand spot area (In ha)	1.80ha		
Proposed production capacity (in Brass)	5088		
Infrastructure Requirement (As per Govt Resolution 3rd January 2018)	<ol style="list-style-type: none"> 1. Room / Hut for Official records 2. Electricity / Battery for Running CCTV 24x7 daily. 3. One Computer / Android-based Mobile for the online generation of Invoice numbers. 		

Particulars	Details										
Distance of project site from nearest rail or road bridge over the concerned River, Nallah, etc.	Godavari River Bridge-4.71km										
<table border="1"> <tr> <td>Distance from infrastructural facilities</td> <td rowspan="10"> Sarwari railway station-59.27km NH52-21.02km MSH148-13.81km 7.61km 1.67km </td> </tr> <tr> <td>Railway line</td> </tr> <tr> <td>National Highway</td> </tr> <tr> <td>State Highway</td> </tr> <tr> <td>Major District Road</td> </tr> <tr> <td>Any Other Road</td> </tr> <tr> <td>Electric transmission line pole or tower</td> </tr> <tr> <td>Canal or check dam or reservoirs or lake or ponds</td> </tr> <tr> <td>In-take for drinking water pump house</td> </tr> <tr> <td>Intake for Irrigation canal pumps</td> </tr> </table>	Distance from infrastructural facilities	Sarwari railway station-59.27km NH52-21.02km MSH148-13.81km 7.61km 1.67km	Railway line	National Highway	State Highway	Major District Road	Any Other Road	Electric transmission line pole or tower	Canal or check dam or reservoirs or lake or ponds	In-take for drinking water pump house	Intake for Irrigation canal pumps
Distance from infrastructural facilities	Sarwari railway station-59.27km NH52-21.02km MSH148-13.81km 7.61km 1.67km										
Railway line											
National Highway											
State Highway											
Major District Road											
Any Other Road											
Electric transmission line pole or tower											
Canal or check dam or reservoirs or lake or ponds											
In-take for drinking water pump house											
Intake for Irrigation canal pumps											
Areas already subjected to pollution or environmental damage. (those where existing legal environmental standards are exceeded)	None										
Areas susceptible to natural hazards which could cause the project to Present environmental problems (earthquakes, subsidence, landslides, erosion, flooding, or extreme or adverse climatic conditions)	No. Sand Ghat is at safe distances from natural hazards like earthquake prone area, subsidence, landslide, erosion, flooding prone area and extreme or adverse climatic conditions										

Particulars	Details
Whether the proposal involves approval or clearance under the following Regulations or Acts, namely: - (a) The Forest (Conservation) Act, 1980. (b) The Wildlife (Protection) Act, 1972. (c) The Coastal Regulation Zone Notification, 2011. If yes, details of the same and their status are to be given.	None
Forest land involved (hectares)	None

The below figure shows the google image of Borgaav Bu. Satha 1 sand ghat.



Fig 2.1-Google image of Borgaav Bu. Satha 1 sand ghat

Approach roach along with google location is as shown below.



Fig 2.2-Approach Road for sand ghat

Next chapter 3 is Baseline Environmental Status in which the entire Topography, Climate, Soil Environment, Land use, water Environment, Hydrology, Biological environment, and Socio-economic Environment are briefly explained for the Beed district.

CHAPTER 3

BASELINE ENVIRONMENT STATUS

Topography

The Sand Ghat area as per the survey is the riverbed of the Godavari River of the Beed district. The maximum elevation is 451m MSL, average elevation is 448m MSL, & minimum elevation is 444m (⁷MSL) Mean Sea Level. The slope of the Sand Ghat area towards the Northeast to Southwest side. The flow of Godavari River is from Southeast direction.

Presently, there is neither any infrastructure within the riverbed nor are proposed.

Hydrology

There will be no change in the Water Table during the mining operation, as the depth of mining shall be restricted to 0.80m water level, which is less likely to affect the surface level or Groundwater Table. There is no proposal of any stream modification/diversion due to this mining activity hence there will be not any impact on the flow of water.

Soil Environment

The riverbed consists of sand /gravel. There is no topsoil. The depth of mining shall be restricted to 0.80m. There is no crucial impact on the soil forecasted due to mining activities.

Land Use Land Cover

Land use shows that agriculture land use is predominant. The proposed site is 1.80ha having adjoined Khasara No 4, 1, 176, 174. The land doesn't cover any human habitation, forest, etc. Any change in the scope of the approved Mining Plan will lead to riverbank erosion/cutting and thereby river channel shifting, degradation of land, causing loss of properties and degradation of the surrounding landscape.

⁷ Mean sea level

Water Environment

While transporting sand there may be fugitive dust. There will be water requirement for spraying for dust suppression purposes. This water will be supplied from the borewell from nearby villages through tankers as well as from surface water sources. The water source may vary from village to village.

Climate

During summer May is the hottest month of the year in this area. The temperature rises to 42°C in the month of May. The average rainfall in this region is 600-700mm About 50% of rainfall precipitates between June to September. December is the coldest month with temperature falling down to 18°C. Overall the proposed site area has sub-tropical conditions.

Biological Environment

Flora

The agricultural area is seen near the Sand Ghat. Few trees and thorny bushes are seen on the banks of the river.

Fauna

As there is no forest cover, no endangered species of wildlife are seen in this area.

Socio-Economic Environment

This project may create constructive impacts of the sand mining that are stated below:

1. The mining operations will provide direct & indirect employment to village people.
2. The villages and their inhabitants & domestic animals will not be disturbed due to mining, as the quarry is far from their settlements.
3. Local workforce will be given first preference for employment.
4. Mining activities will benefit the local people due to the provision of more infrastructural facilities (developments of approach routes within the village area).

The next chapter describes all possible impacts on the Environment due to this project along with its mitigation measure to overcome these impacts.

CHAPTER 4

IMPACT ASSESSMENT REPORT ALONG WITH PROPOSED MITIGATION MEASURES

1. Land Environment

Anticipated Impact

Movement of vehicles can create issues for agricultural land, human habitations, noise, and risk for public and cause traffic hazards. The impacts include damage to the riverbank due to access ramps to the riverbed, soil erosion because of extraction of sand, micro disturbance to groundwater, possible stimulation of the changed river course, and contamination of sand aquifer water due to ponding. There might be surface degradation due to the road network.

The quality of soil will not be affected due to transportation or any other activity of mining.

Mitigation measure

1. Mining depth should be restricted to 3 meters and distance from the bank should be $\frac{1}{4}$ th or river width and should not be less than 7.5 meters as per “Sustainable Sand Mining Guidelines 2020” Page 23, Point no 4.3 (m).
2. There will be a minimal number of access roads to riverbeds. Cutting of riverbanks will be avoided and ramp with smooth slope will be maintained. Access points to the riverbed will be decided based on the least steepness of the riverbank and the least human activity at that location.
3. No foreign material like polythene bags, jute bags, and useless articles should be allowed to remain/spill in the riverbed and catchment area, or no pits/pockets will be allowed to be filled with such material.
4. Mining at the concave side of the river channel should be avoided to prevent bank erosion. Similarly, a tortuous segment of a river is to be selected for mining in such a way as to ignore the natural eroding of banks.
5. Ensure that ponding is not created in the riverbed.
6. Transportation route should be such that it gives minimum

damage to the environment.

7. Green belt will be developed along the haul road and the bank of rivers of mine premises and near the sand mining site. While selecting the plant species, preference will be given for planting native species of the area.

2. Water environment

Anticipated Impact

The project activity will be carried out in the dry part of the riverbed. Care will be taken to ensure that neither of the project activities will affect the water environment or riverbank habitats. During the lean months, the proposed Sand Mining will not expose the base flow of the river and hence there will not be any inauspicious impact on surface hydrology and groundwater regime due to this project. Project activities will not have any adverse consequences on the physical components of the environment and therefore may not have any effect on the recharge of ground waters or affect the water quality. Monitoring of water quality will be checked yearly.

Mitigation measures

1. Mining is avoided during the monsoon season and at the time of floods. This will help in the replenishment of sand in the riverbed.
2. Mining below the subterranean water level will be avoided as a safeguard against environmental contamination and over-exploitation of resources.
3. River stream will not be transferred to create active channels.
4. Mining schedule is synchronized with the river flow direction and the gradient of the land.
5. Mining at the concave side of the river channel will be avoided to prevent bank erosion.
6. Tortuous segment of the river will be selected for mining in such a way as to avoid naturally eroding banks and to promote mining on naturally building meander components.
7. Mining depth shall be maintained as per the guidelines and

rules of the Sand Mining Policy dated 03/09/2019 and recommendations of Maharashtra State (⁸M.S.). State Ground Water Department for extraction of sand during the lease period.

8. Water Quality Monitoring for the ground waters, river water, and other surface waters shall be carried out seasonally to ensure that the water quality is not affected by the project activities.
9. Utmost care will be taken to minimize or control leaking vehicles to be used for sand transportation.
10. The washing of tractor trolleys in the river will not be done.
11. The contractor will follow all guidelines and rules for proper and scientific methods of mining during the period of extracting the sand.

3. Air Environment

Anticipated Impacts

Plying of tractor trolleys from the public road to river sand collection points needs access roads. The majority of such access roads are the already existing roads/tracks being used by pedestrians/cart owners. The movement of heavy vehicles sometimes causes problems for cattle, agricultural land, and human habitations due to dust, noise, and the movement of the public. These environmental problems are felt more as the area is rural in nature.

Air pollution is likely to be caused at various stages of Sand Mining operations such as excavation, loading & transportation of material. Most of the fugitive dust emissions will be generated from loading & transportation. This dust becomes airborne and spreads away to surrounding areas.

The impact on air is mainly localized in nature as the dust particles of 100 μ in size are not carried to farther distances beyond 100m and the effect is felt within the core zone of the project involving active Sand Mining operations.

⁸ Maharashtra State

Mitigation measures

1. Movement of the vehicles on the road will be increased; however, the unmetalled road in the mining area will be sprinkled with water at regular intervals.
2. In addition to preventing spillage from tractor trolleys, overloading shall be controlled to 1-brass/tractor trolley. The speed limit will be <20 km/hr.
3. Maintenance of the haul road will be done on a regular basis.
4. To avoid fugitive dust emissions at the time of excavation, a regular sprinkling of water will be done on regular basis.
5. Sand is transported to the sites by road through tractor trolleys. The sand-carrying vehicles shall be covered by tarpaulin sheets.
6. The Green belt development will be prepared along the haul roads, which will act as a pollution sink.
7. To minimize vehicular pollution from the sand transporting vehicles, the following conditions will be insisted upon to permit the vehicles of the transporters.
8. The vehicles should be Bharat-IV stage compliant and should have a Pollution Under Control (⁹PUC) Certificate issued by appropriate authorities.
9. Regular maintenance of transport vehicles and monitoring of vehicular emission levels at periodical intervals.

4. Noise Environment

Anticipated Impact

The noise environment in this project will be overdone by the equipment at the site and vehicular transportation. A slight increase in noise levels of <10dB(A) can be expected up to a distance of 100m.

Mitigation measures.

1. Minimum use of horns in the village area.
2. Timely maintenance of vehicles and their silencers to

⁹ Pollution Under Control

minimize vibration and sound.

3. Phasing out old and worn-out tractor trolleys.
4. Provision of green belts along the road networks.
5. Care will be taken to produce minimum sound during sand loading.
6. Backhoe loader excavator will be used
7. Earplugs may be provided to protect the laborers working at the site.

5. Socio-economic Environment

Anticipated Impacts and Evaluation

1. The project activities shall not have any adverse impacts on any of the common property resources of the village communities, as the Sand Mine lease area is not being used for any purpose by any section of the society in this region.
2. There is no Resettlement and Rehabilitation (¹⁰R&R) involvement in this project.
3. There is no land acquisition in this project.
4. A major portion of the houses in the study area is semi-pucca-type structures.
5. The water source to these areas is from the Grampanchayat /Nagar Parishad connection and private bore wells and wells.
6. People living around the project area need the project for the purpose of employment and economic benefits.
7. The awareness level regarding the proposed mining activity is very towering. The proposed mining activity is expected to provide stimulus to socio-economic activities in the region and thereby accelerate further development processes.

Social and Demographic Profile

The workers are from local villages. These people have been provided welfare benefits from the lessee like medical benefits,

¹⁰ Rehabilitation and Resettlement

insurance, fees for children's education, etc. They have some land and cattle for their daily earnings. Additional revenue earned from the Sand Mining work will improve their living standard. The group of quarries in and around will help to have infrastructure facilities like roads, schools, shops, etc. This will enhance their social life.

Occupational Health and Safety

This is a riverbed Sand Mine. So, the mining activities are comparatively smaller because the production is not on a high scale. Workers do not come across any extreme conditions like excessive heat, moisture, etc. Workers working around it may come across this dusty environment. But the impact on health will be within the limit.

Human Settlement

1. There are no houses in and around the lease area. Blasting is the only activity, which may affect the settlement, which is not done. The settlement is more than 1-km from the sand mine.
2. Appropriate precautions will be taken during mining. Transportation of finished products is through the villages. There will be an effect of traffic on the local people. However, the intensity of traffic is 70-80/day.

Health and Hygiene

In general, the health of villagers is moderately good. In the rainy season, the atmospheric condition is unhygienic due to a lack of proper drainage and sanitation in the village habitation. Villagers are working in agricultural fields and work as labourers.

Education

Most education of 70% young <20 years, is up to the 5th to 9th. Economic condition is in general moderate. So, after this project, the standard of education will increase.

Socio-Economic Benefits Arising Out of Mining

1. Generation of employment in rural areas.
2. Upgradation in the living standards of rural people.
3. Creating infrastructural facilities like roads, electricity, shops, schools, etc.
4. Upgrading literacy in the area by exploiting natural minerals so the generation of revenue.

5. Helping to sustain construction activity.
6. Improving the greenery of the area, which is otherwise poor.

Liquid Effluent

Not applicable, because these activities do not generate effluent from operation or process.

Solid Waste

Not applicable, because small mines and impacts are negligible.

Project benefits due to the sand mining of Borgaav Bu. Satha 1 are explained in the next Chapter.

CHAPTER 5

PROJECT BENEFITS

The proposed Sand Mining project of Borgaav Bu. Village, Gevrai Tehsil, Beed District will lead to the following benefits:

1. Increase in the revenue of the district will ultimately increase the revenue of the village, which in return can be used to improve the infrastructure of the village.
2. Sand is available for building construction work and by systematic separation of sand, there is no possibility of a flood. Providing smooth movement of water of the river.
3. This project will contribute additional revenue to the state Exchequer in the form of revenue.
4. The project will conclude with employment opportunities for unskilled/skilled local people.
5. Standard of living of employed people will increase.

CHAPTER 6

SITE-SPECIFIC ENFORCEMENT & MONITORING PLAN

Sand Ghat Site specific enforcement & monitoring plan

(as per guidelines stipulated in the Enforcement and Monitoring Guidelines for sand mining issued by MoEFCC in January 2020.)

District administration shall deliver information on its website about the Sand Mines in the district for public information. The objective is to extend all information into the public domain so that the citizens are aware of the mining activities. People can also report to the district administration any deviation observed. Suitable feedback and its composition shall also be made operational.

Details shall include, but not be limited to, lease area, geo-coordinates of lease area and mineable area, transport routes, permitted capacity, regulatory conditions for operation including mining, environmental and social commitments, etc.

An Independent Committee of experts constituted by the Distance Learning Task Force (¹¹DLTF) will assess the environmental or ecological damage caused due to illegal mining and recommend recovery of environmental compensation from the concerned miners.

The recommendation may also include action under the provision of the Environment (Protection) Act 1986 u/s.15 read with s.19.

¹¹ Distance Learning Task Force

CHAPTER 7

SECURITY FEATURES

Security features are included in the Transport Permission/Permits (TP)

It will be ensured that the following security features are included in the Transport Permission/Permits (¹²TP) so that duplicate/fraudulent/forged TPs for transport, not accounted for in the IT-based system, is not possible:

1. Printed on Indian Bank Association (¹³IBA) Approved letterhead with account details
2. Magnetic Ink Character Recognition Code (¹⁴MICR) paper
3. Unique Barcode
4. Unique Quick Response Code (¹⁵QR)
5. Fugitive Ink Background
6. Invisible Ink Mark
7. Void Pantograph Watermark
8. Global Positioning System (¹⁶GPS) based vehicle tracking system
9. Closed-Circuit Television (¹⁷CCTV) Camera

¹² Transport Permission

¹³ Indian Bank Association

¹⁴ Magnetic Ink Character Recognition Code

¹⁵ Quick Response Code

¹⁶ Global Positioning System

¹⁷ Closed Circuit Television

CHAPTER 8

REPLENISHMENT

Replenishment study is the most important part of Sand Mining as it is the only basis to carry out sand mining. Without a Replenishment Study, we cannot understand the amount of deposition of sand. Following points to be followed for the replenishment study.

1. Area of deposition and erosion will be calculated for each cross-section after giving due regard to the stability & safety of active channel banks & other features of importance.
2. Differential Global Positioning System (¹⁸DGPS) and other survey tools will be used to define the topography, contours, and offsets of the lease area.
3. Contour & elevation benchmarks will provide baseline data for assessing pre- and post-study period scenario.
4. Physical benchmarks will be fixed at appropriate intervals (preferably 1 in 30m) & Reduced levels (¹⁹RL) shall be validated from a nearby standard RL.
5. These RL will be engraved on a steel plate (Bench Plate) & will be fixed & placed at locations that are free from any damages & are available in the pre-and post-study period.
6. Bench plates will be available for use during the mining period as a reference for all mining activity.
7. Baseline data on elevation status for a grid of 10m x 10m is preferred to have accuracy in the assessment.
8. It is expected that two consecutive cross-sections in longitudinal and lateral directions will not be more than a 10m distance apart.
9. Changes observed in the elevation in pre and post-scenario at each node, will be depicted in graphical forms with an appropriate scale to estimate the area of deposition & erosion.

¹⁸ Differential global positioning system

¹⁹ Reduced levels

10. Elevation level will be in reference to the nearest bench plates established for the purpose.
11. The levels (MSL & RL) of the corner point of each grid will be identifiable and safety barriers (non-Mining) demarcated as restricted in consensus with the Mineral Concession Rules of the respective State, and the provision mentioned in this Sustainable Sand Mining Management Guidelines.
12. A clear identification will be highlighted between grids under the mineable and grids under the non-mineable area.
13. These baseline data (pre and post) be subjected to stimulation with the help of data mine software to derive the replenishment area and corresponding volume and estimated weight.
14. The database will be structured in a tabulated form clearly depicting the nomenclature of the section lines, latitude and longitude of the starting point, chainage, and respective levels of all the points taken on that section line.
15. Net area shall be derived after summation of an area of deposition minus the area of erosion for each cross-section.
16. Volume will be estimated by multiplying the distance between two cross-sections with the average of the net area of these two consecutive cross-sections.
17. One sample per 900m² (30m x 30m) will be the preferred sample density for the assessment of bulk density for the estimation of deposition rate.
18. Care will be taken that the sample for assessment of Bulk Density is taken from the deposition zone & not from erosion.

Methodology for Sand Mining:

The following methodology should be followed for the Replenishment study.

1. The Demarcation and benchmark of the Sand Ghat are done at 10m x 10m intervals.
2. The use of the Auger Driller is to find out the depth of sand in each grid.
3. Auger Driller has created the holes in sand ghat by 10mx10m grid pattern.
4. Measured the depth of holes by using a measuring tape.

5. After taking all the readings average depth of sand is calculated.
6. The average depth of Borgaav Bu. Satha 1 at Godavari is measured.

Replenishment study of sand in the proposed ghat along with details of the methodology, technology used to identify the existing reserve & replenishment of the same

Dandy Bolton Equation

For runoff less than 2 inches

$$S = 1280 \times (Q) \times 0.46 \times (1.46 - 0.26 \log(A)) \times F$$

For runoff more than 2 inches

$$S = 1958 \times (Q) \times (e^{-0.055 \times Q}) \times (1.43 - 0.26 \log(A))$$

Where,

S = sediment yield of stream (t/yr/km²),

Q = average annual runoff (m³),

A = net drainage area in sq.mile.

CHAPTER 9

PROPOSED PLANTATION PLAN

The Project Proponent must take care of the plantation around the site. This will not only enhance the beautification of the area but also there will be the reduction of pollution, not some extent.

Details of the plantation and Tree species recommended for the plantation are shown below.

Table 9. 1 Details of green belt

Location of greenbelt	Both sides of the approach road, On the riverbanks of both sides of the sand spot & nearby open areas. Haul Road outside the riverbed
No. of plants to be planted	2000 per Hectare
Spacing of plants	2m grid interval
Species selected	Native species

Table 9. 2 Trees species for plantation

Botanical Name	Local Name	Importance
Azadirachta Indica	Neem	Neem oil & neem products
Tectona Grandis	Teek	Antibacterial, Antifungal, Antiulcer
Ficus religiosaa	Peepal	Medicinal use, Fruits & figs
Bambusa vulgaris	Bamboo	Anthelmintic Anti-inflammatory, Astringent Properties
Madhuca longifolia	Mahua	Acts as a Stimulant & cough relief,

CHAPTER 10

ENVIRONMENTAL MANAGEMENT PLAN

A total capital cost of Rs.5.97 Lakhs has been kept in the project cost towards the environmental protection, control, mitigation measures, and implementation of the Environmental Management Plan (EMP). This cost is borne by the bidder/leaseholder. The budgetary cost estimate for the EMP is given in Table.

Table 10. 1 Budgetary cost of EMP

Sr	Impact Source	Impact	Control Measure	Cost (Rs.)
1	Transport Road	On Air Quality	Compaction, gradation, and drainage on both sides.	40000
		On Land, the Stability of the Road and degradation of road	Proper maintenance	30000
			Regular water spraying	30000
			The air quality will be monitored at the impacted village. (For One Day Monitoring)	5000
			Health Check-up of Employees	5000
2	Truck/ Tractor Movement	Air Quality	Sand-carrying trucks will be effectively covered by tarpaulin to avoid the escape of fines to the atmosphere. (2 Tarpaulin)	25000
			Regular monitoring of the exhaust fumes	5000

Sr	Impact Source	Impact	Control Measure	Cost (Rs.)
			Barriers & Traffic Management Expenses. (Excluding Manpower Salary which is included in labour costs)	10000
3	Ramp and Sand Reach	Mining Operation	Regular ramp Inspection and Ramp maintenance. (Excluding Manpower Salary which is included in labour costs)	50000
			Provision of dust masks	10000
4	Bank Management	Bank Erosion/Flood Plain management	The green belt along the bank (For Green Belt Development)	150000
			Plantation of wide leaf tall trees on banks and grass along a slanting portion of the bank	
5	Transportation on Village Roads	Dust Control	The green belt along village Rd (For Green Belt Development)	
6	Final Mine Closures Plan implementation	Replenishment of Sand	Gabions/ boulders will be arranged as per guidelines	15000
7	Mobile toilet, sewage handling & treatment		Mobile toilet, sewage handling & treatment	80000
8	CCTV Monitoring			80000
Total				535000

Budget For Corporate Environment Responsibility (²⁰CER)

About 2% fund of the project cost is allocated for Corporate Environment Responsibility (CER) activities as presented in below Table

Table 10.2 Budget for CER

Sr.	Description	Cost (Rs)
1.	Village Schools (separate toilet for girls and boys)	15000
2.	Solar panels over Gram Panchayat buildings	15000
3.	Solar panels over Public Health Centers	20000
	Total	50000

²⁰ Corporate Environment Responsibility

CHAPTER 11

SUMMARY AND CONCLUSION

The Roles and Responsibilities of the Environmental coordinator, the Operation Manager, and the senior personnel contractor are essential in EMP.

The environmental status of the project site and study area of 10km radius is delineated with respect to air, noise, water, land, biological and socio-economic environment the different project activities in the construction and operation phases are identified.

To identify the impacts, the interaction between the project activities and different components of the environment is classified phase-wise. A summary of the recognized impacts is given in the following paragraphs.

- During the operational phase, the transportation of sand could cause a temporary disturbance to the local environment which will be prevented with the proposed mitigation measures.
- Proposed project will not have any major significant negative impacts. The minor impacts arising during Excavation and Transportation phases can be mitigated with the help of the proposed Environmental Management Plan.
- In general, sand excavation from Borgaav Bu. Satha 1 sand spot will be useful to the developmental work in the district and generate employment opportunities.

From this project, it is concluded that the district revenue will increase in return minimum of 2% of funds are utilized for the development of the village. The project will also grab employment which will improve the standard of life of villagers.

*** END ***

Environmental Management Plan

As per Rules 23 & 26 of MMME (D & R) RULE 2013 & Section 15 of MMDR Act 1957, MoEFCC Notification 2006, S.O. 141(E) dated 15. 01. 2016; MoEFCC, Sustainable Sand Mining Management Guidelines 2016, Guidelines for Mining Policy 2020)

for

ENVIRONMENTAL CLEARANCE

of

SAND MINING (MINOR MINERAL)

for

Godi Khu– A Riverbed Sand Mine / Sand Ghat
Khasra No. GSDA approved 19, 37, 38, 41, 1, 2
Area (3.25ha)

Village Godi Khu, Tehsil Gevrai, District Beed

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ABBREVIATION

Short Form	Long Form
EMP	Environmental Management Plan
MoEFCC	Ministry of Environment Forest and Climate Change
DSR	District-level Survey Report
EC	Environmental Coordinator
OM	Operations Manager
GSDA	Groundwater Surveys & Development Agency
MPCB	Maharashtra Pollution Control Board
MSL	Mean Sea Level
MS	Maharashtra State
PUC	Pollution Under Control
R&R	Rehabilitation and Resettlement
DLTF	Distance Learning Task Force
TP	Transport Permission/Permits
IBA	Indian Bank Association
MICR	Magnetic Ink Character Recognition Code
QR	Quick Response Code
GPS	Global Positioning System

CCTV	Closed-Circuit Television
DGPS	Differential Global Positioning System
RL	Reduced Levels
CER	Corporate Environment Responsibility

CHAPTER 1

INTRODUCTION

The Environmental Management Plan (¹EMP) plays a vital connection uniting forecast impacts and mitigation measures during implementation and operational activities. EMP stipulates the mitigation, monitoring and conventional measures to be taken during project implementation and operation. EMP is to escape or mitigate adverse environmental impacts, and to implement these measures.

This Environmental Management Plan (EMP) has been prepared as part of the Scoping Report which will be compiled in terms of the Environmental Assessment for the sand mining activities.

Considering the Ministry of Environment and Forest Climate Change (²MoEFCC) Notification 2006 and Sustainable Sand Mining Management Guidelines 2016, the Govt. of Maharashtra had mapped out the Minor Mineral Extraction Rules 2013. These rules are to extract all minor minerals in a scientific way so that there is no unfavourable impact on Environment and Climate. To extract every minor mineral from any land (either Government or Private) there is provision for a Mining Plan. These plans need to be approved by a competent authority. For long-term leased minor minerals (5-10 years period) and sand excavation from the riverbed, Senior Deputy Director of Directorate of Geology and Mining is the competent authority. These plans are for short term temporary permits which are valid for one year.

According to Enforcement & Monitoring Guidelines for Sand Mining 2020, Sustainable Sand Mining Management Guidelines 2016, Standard Environment conditions for sand mining and sustainable mining practices, District level Survey Report (³DSR) should be prepared and are suitable for mining and area prohibited for mining must be recognized.

¹ Environmental Management Plan

² Ministry of Environment Forest and Climate Change

³ District Survey Report

Objectives of EMP

- To provide overall conservation of the environment.
- To minimize waste generation and pollution.
- To regulate the precise use of natural resources and water.
- To provide Safety, Welfare, and Good health for the workforce and populace.
- To regulate the effective operation of all control measures.
- To ensure alertness against probable disasters and accidents.
- To monitor cumulative and long-term impacts.
- To regulate the effective operation of all control measures.

Roles and Responsibilities concerning the implementation of the EMP

The roles and responsibilities of all parties involved in successfully managing the environment are mentioned below.

Environmental Coordinator

The Environmental Coordinator will inspect operational areas on a quarterly basis and at the onset of mining any new island, to ensure that all specifications are met. The duties of the environmental coordinator will be the following.

- Guide the operations team in respect of the implementation of the environmental specifications.
- Lead the visits to ensure all work is aligned with the EMP.
- The environmental coordinator must examine the site during the three-monthly visits. All rehabilitation results will be Comprised in the quarterly report.
- Examination of the rehabilitation area and giving guidance regarding rehabilitation measures if any.

The Operations Manager

The responsibilities of the Operations Manager (4OM) or his nominated authority are as follows.

1. Familiarize themselves with the requirements of the EMP.
2. Monitor employees' and contractor's compliance with the environmental specifications; and enforce adherence.

⁴ Operations Manager

3. Communicate all environment-related incidents with the Environmental Coordinator and distribute them internally to avoid repetition.
4. Maintain a record of activities relevant to Environmental Management.
5. The Operations Manager shall be responsible for monitoring and the enforcement of the Environmental Management specifications on a day-to-day basis. Any violation of the environmental specifications shall be recorded, and the agreed disciplinary measures are taken.

Senior personnel and contractors

The roles of the senior personnel/contractors are as follows:

- Familiarize themselves with the requirements of the EMP.
- Comply with the environmental management specifications.
- Ensure that all team members are familiar with the environmental management specifications.

Details of the project

The Godi Khu sand ghat area has been selected in perspective of its subsisting demand for building-grade sand for the area in and around Gevrai Taluka. The District Mining Officer Beed has put forward the proposal for Environmental Clearance for mining. The ghat has a production of 11484 brass sand within an area of 3.25ha. The proposed proposal follows an organized mining process for Environmental Clearance.

Further Chapter informs about the in-depth details of the Sand Ghat, its geographical structure, and a Google map of the ghat with its approach road for contractors and workers to reach to sand ghat from the village.

CHAPTER 2

DETAILS OF THE PROJECT

Godi Khu village is located in Gevrai Taluka of Beed district, Maharashtra. Beed is well connected with all nearby cities. The National highway NH-52, it traverses through the states of Punjab, Haryana, Rajasthan, Madhya Pradesh and Maharashtra in India. NH-52 is the National Highway passing through the district, covering a total distance of 73.60km. Gevrai has situated about 31.3km by road from Beed. The district has road links to adjoining districts Ahmednagar District to the west, Jalna District to the North, Latur District to the East, Osmanabad District to the South, Parbhani District to the East The district is well connected by roads.

Godi Khu village is 45.14km away from Collector Office headquarters Beed. The Geographical area of the Beed is around 10693km². The nearest Railway station to Godi Khu village is Kodi Railway station. The nearest Airport to Beed District is Aurangabad Airport, Aurangabad Airport is 104km away from beed.

Honourable Collector Beed intends to auction Sand Ghats and appointed District Mining Officer as Project Proponent. A total of 38 sand ghats are identified by Tahsildar Majalgaon, Parli Ve, Gevrai, Beed along with District Mining Officer, Beed. The 38 sand ghats were jointly surveyed by Taluka level technical committee headed by respective tahsildar with Dy. Engineer Irrigation Department, Junior Geologist Directorate of Geology and Mining Govt. of Maharashtra, Junior Geologist, Groundwater Surveys & Development Agency (⁵GSDA). DMO Beed and a representative of the Maharashtra Pollution Control Board (⁶MPCB), as per the procedure defined in Sand Auction Rules 2019 dated 3/09/2019 formed a Taluka-level technical committee, which explored the sand ghats for an available quantity of sand for scooping. Revenue of Rs.25 Crore is expected from the auction of these sand ghats. Godi Khu Sand Ghat proposed over river Godavari in Gevrai Taluka is proposed to cater to the infrastructural requirement of sand in the Tehsil of Beed and adjoining areas of other talukas.

⁵ Groundwater Surveys & Development Agency

⁶ Maharashtra Pollution Control Board

Table 2. 1 Details of Godi Khu Sand ghat

Name of Village	Tahsil	River/ Nallah	Nearest survey No.	Area (ha)	Proposed Depth for excavation (m)	Quantity Permitted for mining of Sand in Brass	Method of Mining
Godi Khu.	Gevrai	Godavari	19, 37, 38, 41, 1, 2	3.25	1.0	11484	Open-cast manual mining

Table 2. 2 Salient features of the project

Particulars	Details															
Location	Village- Godi Khu, Taluka-Gevrai, District-Beed, Maharashtra.															
Latitude and Longitude	<table border="1"> <thead> <tr> <th>Boundary points of Godi Khu sand spot</th> <th>Latitude</th> <th>Longitude</th> </tr> </thead> <tbody> <tr> <td>BP1</td> <td>19°23'45.84"N</td> <td>75°46'46.72"E</td> </tr> <tr> <td>BP2</td> <td>19°23'44.45"N</td> <td>75°46'47.67"E</td> </tr> <tr> <td>BP3</td> <td>19°23'56.47"N</td> <td>75°47'5.12"E</td> </tr> <tr> <td>BP4</td> <td>19°23'57.33"N</td> <td>75°47'3.56"E</td> </tr> </tbody> </table>	Boundary points of Godi Khu sand spot	Latitude	Longitude	BP1	19°23'45.84"N	75°46'46.72"E	BP2	19°23'44.45"N	75°46'47.67"E	BP3	19°23'56.47"N	75°47'5.12"E	BP4	19°23'57.33"N	75°47'3.56"E
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BP3	19°23'56.47"N	75°47'5.12"E														
BP4	19°23'57.33"N	75°47'3.56"E														
Sand spot area (In ha)	3.25ha															
Proposed production capacity (in Brass)	11484															
Infrastructure Requirement (As per Govt Resolution 3rd January 2018)	<ol style="list-style-type: none"> 1. Room / Hut for Official records 2. Electricity / Battery for Running CCTV 24x7 daily. 3. One Computer / Android-based Mobile for the online generation of Invoice numbers. 															
Distance of project site from nearest rail or road bridge over the concerned River, Nallah, etc.	Godavari River Bridge-12.57km															

Particulars	Details
Distance from infrastructural facilities Railway line National Highway State Highway Major District Road Any Other Road Electric transmission line pole or tower Canal or check dam or reservoirs or lake or ponds In-take for drinking water pump house Intake for Irrigation canal pumps	Kodi railway station-41.70km NH52-8.64km MSH-8.64km 7.61km 1.08km
Areas already subjected to pollution or environmental damage. (those where existing legal environmental standards are exceeded)	None
Areas susceptible to natural hazards which could cause the project to Present environmental problems (earthquakes, subsidence, landslides, erosion, flooding, or extreme or adverse climatic conditions)	No. Sand Ghat is at safe distances from natural hazards like earthquake prone area, subsidence, landslide, erosion, flooding prone area and extreme or adverse climatic conditions

Particulars	Details
Whether the proposal involves approval or clearance under the following Regulations or Acts, namely: - (a) The Forest (Conservation) Act, 1980. (b) The Wildlife (Protection) Act, 1972. (c) The Coastal Regulation Zone Notification, 2011. If yes, details of the same and their status are to be given.	None
Forest land involved (hectares)	None

The below figure shows the google image of Godi Khu sand ghat.

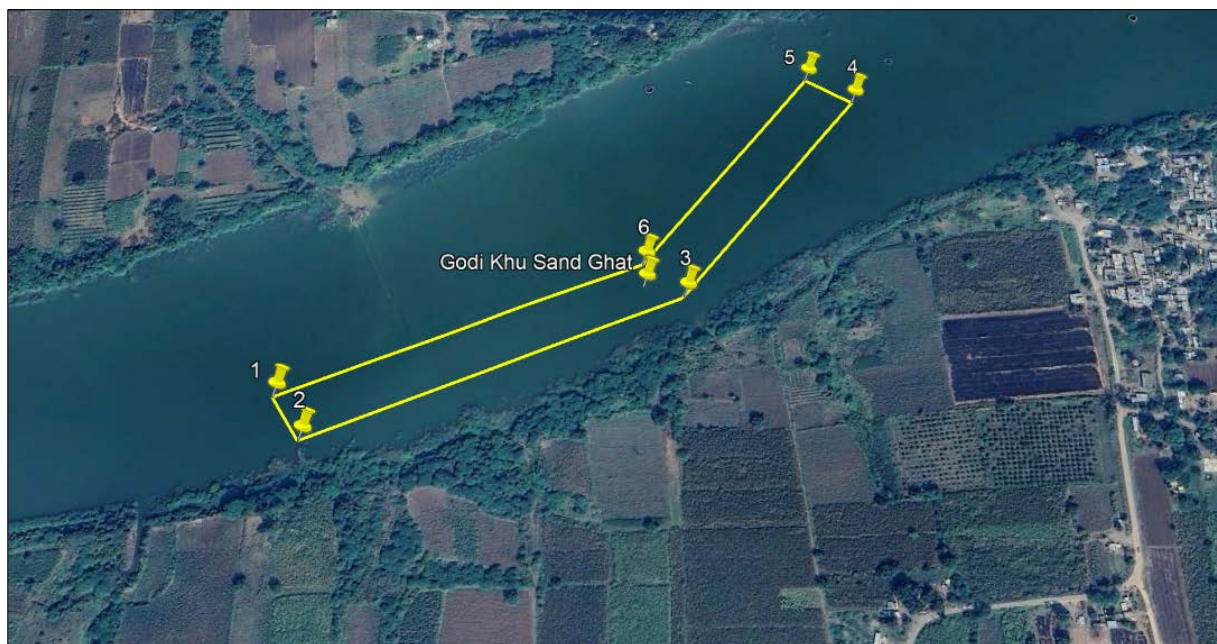


Fig 2.1-Google image of Godi Khu sand ghat

Approach roach along with google location is as shown below.

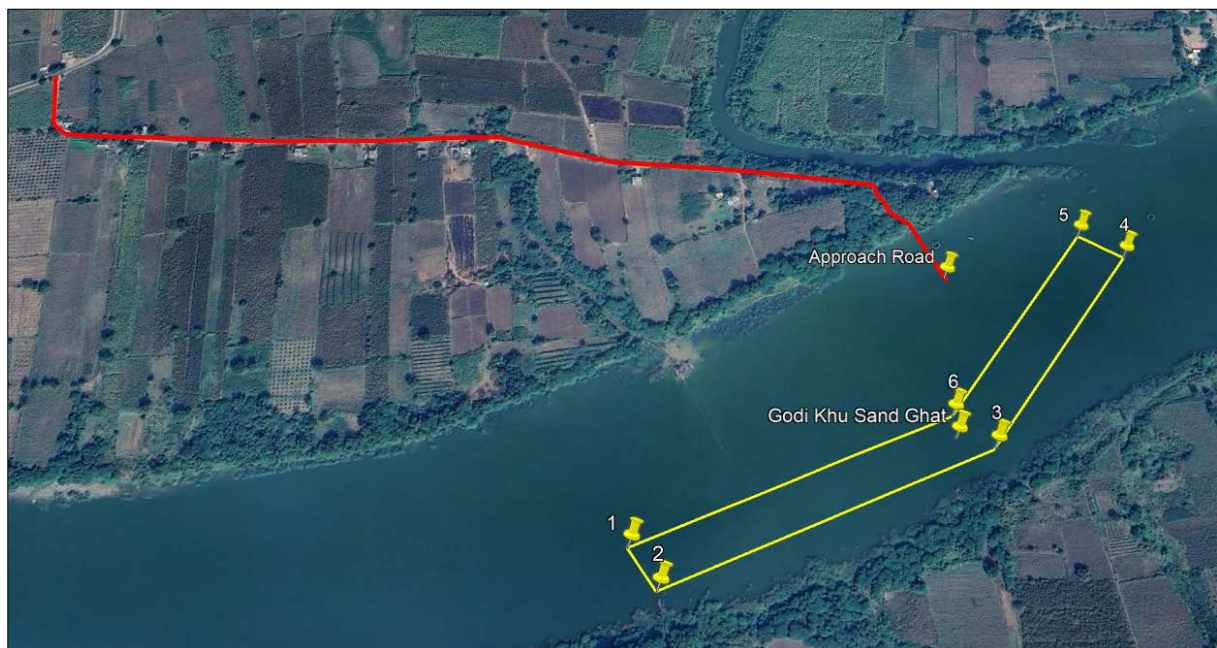


Fig 2.2-Approach Road for sand ghat

Next chapter 3 is Baseline Environmental Status in which the entire Topography, Climate, Soil Environment, Land use, water Environment, Hydrology, Biological environment, and Socio-economic Environment are briefly explained for the Beed district.

CHAPTER 3

BASELINE ENVIRONMENT STATUS

Topography

The Sand Ghat area as per the survey is the riverbed of the Godavari River of the Beed district. The maximum elevation is 446m MSL, average elevation is 441m MSL, & minimum elevation is 439m (⁷MSL) Mean Sea Level. The slope of the Sand Ghat area towards the Northeast to Southwest side. The flow of Godavari River is from Southeast direction.

Presently, there is neither any infrastructure within the riverbed nor are proposed.

Hydrology

There will be no change in the Water Table during the mining operation, as the depth of mining shall be restricted to 1.0m water level, which is less likely to affect the surface level or Groundwater Table. There is no proposal of any stream modification/diversion due to this mining activity hence there will be not any impact on the flow of water.

Soil Environment

The riverbed consists of sand /gravel. There is no topsoil. The depth of mining shall be restricted to 1.0m. There is no crucial impact on the soil forecasted due to mining activities.

Land Use Land Cover

Land use shows that agriculture land use is predominant. The proposed site is 3.25ha having adjoined Khasara No 19, 37, 38, 41, 1, 2. The land doesn't cover any human habitation, forest, etc. Any change in the scope of the approved Mining Plan will lead to riverbank erosion/cutting and thereby river channel shifting, degradation of land, causing loss of properties and degradation of the surrounding landscape.

⁷ Mean sea level

Water Environment

While transporting sand there may be fugitive dust. There will be water requirement for spraying for dust suppression purposes. This water will be supplied from the borewell from nearby villages through tankers as well as from surface water sources. The water source may vary from village to village.

Climate

During summer May is the hottest month of the year in this area. The temperature rises to 42°C in the month of May. The average rainfall in this region is 600-700mm About 50% of rainfall precipitates between June to September. December is the coldest month with temperature falling down to 18°C. Overall the proposed site area has sub-tropical conditions.

Biological Environment

Flora

The agricultural area is seen near the Sand Ghat. Few trees and thorny bushes are seen on the banks of the river.

Fauna

As there is no forest cover, no endangered species of wildlife are seen in this area.

Socio-Economic Environment

This project may create constructive impacts of the sand mining that are stated below:

1. The mining operations will provide direct & indirect employment to village people.
2. The villages and their inhabitants & domestic animals will not be disturbed due to mining, as the quarry is far from their settlements.
3. Local workforce will be given first preference for employment.
4. Mining activities will benefit the local people due to the provision of more infrastructural facilities (developments of approach routes within the village area).

The next chapter describes all possible impacts on the Environment due to this project along with its mitigation measure to overcome these impacts.

CHAPTER 4

IMPACT ASSESSMENT REPORT ALONG WITH PROPOSED MITIGATION MEASURES

1. Land Environment

Anticipated Impact

Movement of vehicles can create issues for agricultural land, human habitations, noise, and risk for public and cause traffic hazards. The impacts include damage to the riverbank due to access ramps to the riverbed, soil erosion because of extraction of sand, micro disturbance to groundwater, possible stimulation of the changed river course, and contamination of sand aquifer water due to ponding. There might be surface degradation due to the road network.

The quality of soil will not be affected due to transportation or any other activity of mining.

Mitigation measure

1. Mining depth should be restricted to 3 meters and distance from the bank should be $\frac{1}{4}$ th or river width and should not be less than 7.5 meters as per “Sustainable Sand Mining Guidelines 2020” Page 23, Point no 4.3 (m).
2. There will be a minimal number of access roads to riverbeds. Cutting of riverbanks will be avoided and ramp with smooth slope will be maintained. Access points to the riverbed will be decided based on the least steepness of the riverbank and the least human activity at that location.
3. No foreign material like polythene bags, jute bags, and useless articles should be allowed to remain/spill in the riverbed and catchment area, or no pits/pockets will be allowed to be filled with such material.
4. Mining at the concave side of the river channel should be avoided to prevent bank erosion. Similarly, a tortuous segment of a river is to be selected for mining in such a way as to ignore the natural eroding of banks.
5. Ensure that ponding is not created in the riverbed.
6. Transportation route should be such that it gives minimum

damage to the environment.

7. Green belt will be developed along the haul road and the bank of rivers of mine premises and near the sand mining site. While selecting the plant species, preference will be given for planting native species of the area.

2. Water environment

Anticipated Impact

The project activity will be carried out in the dry part of the riverbed. Care will be taken to ensure that neither of the project activities will affect the water environment or riverbank habitats. During the lean months, the proposed Sand Mining will not expose the base flow of the river and hence there will not be any inauspicious impact on surface hydrology and groundwater regime due to this project. Project activities will not have any adverse consequences on the physical components of the environment and therefore may not have any effect on the recharge of ground waters or affect the water quality. Monitoring of water quality will be checked yearly.

Mitigation measures

1. Mining is avoided during the monsoon season and at the time of floods. This will help in the replenishment of sand in the riverbed.
2. Mining below the subterranean water level will be avoided as a safeguard against environmental contamination and over-exploitation of resources.
3. River stream will not be transferred to create active channels.
4. Mining schedule is synchronized with the river flow direction and the gradient of the land.
5. Mining at the concave side of the river channel will be avoided to prevent bank erosion.
6. Tortuous segment of the river will be selected for mining in such a way as to avoid naturally eroding banks and to promote mining on naturally building meander components.
7. Mining depth shall be maintained as per the guidelines and

rules of the Sand Mining Policy dated 03/09/2019 and recommendations of Maharashtra State (⁸M.S.). State Ground Water Department for extraction of sand during the lease period.

8. Water Quality Monitoring for the ground waters, river water, and other surface waters shall be carried out seasonally to ensure that the water quality is not affected by the project activities.
9. Utmost care will be taken to minimize or control leaking vehicles to be used for sand transportation.
10. The washing of tractor trolleys in the river will not be done.
11. The contractor will follow all guidelines and rules for proper and scientific methods of mining during the period of extracting the sand.

3. Air Environment

Anticipated Impacts

Plying of tractor trolleys from the public road to river sand collection points needs access roads. The majority of such access roads are the already existing roads/tracks being used by pedestrians/cart owners. The movement of heavy vehicles sometimes causes problems for cattle, agricultural land, and human habitations due to dust, noise, and the movement of the public. These environmental problems are felt more as the area is rural in nature.

Air pollution is likely to be caused at various stages of Sand Mining operations such as excavation, loading & transportation of material. Most of the fugitive dust emissions will be generated from loading & transportation. This dust becomes airborne and spreads away to surrounding areas.

The impact on air is mainly localized in nature as the dust particles of 100 μ in size are not carried to farther distances beyond 100m and the effect is felt within the core zone of the project involving active Sand Mining operations.

⁸ Maharashtra State

Mitigation measures

1. Movement of the vehicles on the road will be increased; however, the unmetalled road in the mining area will be sprinkled with water at regular intervals.
2. In addition to preventing spillage from tractor trolleys, overloading shall be controlled to 1-brass/tractor trolley. The speed limit will be <20 km/hr.
3. Maintenance of the haul road will be done on a regular basis.
4. To avoid fugitive dust emissions at the time of excavation, a regular sprinkling of water will be done on regular basis.
5. Sand is transported to the sites by road through tractor trolleys. The sand-carrying vehicles shall be covered by tarpaulin sheets.
6. The Green belt development will be prepared along the haul roads, which will act as a pollution sink.
7. To minimize vehicular pollution from the sand transporting vehicles, the following conditions will be insisted upon to permit the vehicles of the transporters.
8. The vehicles should be Bharat-IV stage compliant and should have a Pollution Under Control (⁹PUC) Certificate issued by appropriate authorities.
9. Regular maintenance of transport vehicles and monitoring of vehicular emission levels at periodical intervals.

4. Noise Environment

Anticipated Impact

The noise environment in this project will be overdone by the equipment at the site and vehicular transportation. A slight increase in noise levels of <10dB(A) can be expected up to a distance of 100m.

Mitigation measures.

1. Minimum use of horns in the village area.
2. Timely maintenance of vehicles and their silencers to

⁹ Pollution Under Control

minimize vibration and sound.

3. Phasing out old and worn-out tractor trolleys.
4. Provision of green belts along the road networks.
5. Care will be taken to produce minimum sound during sand loading.
6. Backhoe loader excavator will be used
7. Earplugs may be provided to protect the laborers working at the site.

5. Socio-economic Environment

Anticipated Impacts and Evaluation

1. The project activities shall not have any adverse impacts on any of the common property resources of the village communities, as the Sand Mine lease area is not being used for any purpose by any section of the society in this region.
2. There is no Resettlement and Rehabilitation (¹⁰R&R) involvement in this project.
3. There is no land acquisition in this project.
4. A major portion of the houses in the study area is semi-pucca-type structures.
5. The water source to these areas is from the Grampanchayat /Nagar Parishad connection and private bore wells and wells.
6. People living around the project area need the project for the purpose of employment and economic benefits.
7. The awareness level regarding the proposed mining activity is very towering. The proposed mining activity is expected to provide stimulus to socio-economic activities in the region and thereby accelerate further development processes.

Social and Demographic Profile

The workers are from local villages. These people have been provided welfare benefits from the lessee like medical benefits,

¹⁰ Rehabilitation and Resettlement

insurance, fees for children's education, etc. They have some land and cattle for their daily earnings. Additional revenue earned from the Sand Mining work will improve their living standard. The group of quarries in and around will help to have infrastructure facilities like roads, schools, shops, etc. This will enhance their social life.

Occupational Health and Safety

This is a riverbed Sand Mine. So, the mining activities are comparatively smaller because the production is not on a high scale. Workers do not come across any extreme conditions like excessive heat, moisture, etc. Workers working around it may come across this dusty environment. But the impact on health will be within the limit.

Human Settlement

1. There are no houses in and around the lease area. Blasting is the only activity, which may affect the settlement, which is not done. The settlement is more than 1-km from the sand mine.
2. Appropriate precautions will be taken during mining. Transportation of finished products is through the villages. There will be an effect of traffic on the local people. However, the intensity of traffic is 70-80/day.

Health and Hygiene

In general, the health of villagers is moderately good. In the rainy season, the atmospheric condition is unhygienic due to a lack of proper drainage and sanitation in the village habitation. Villagers are working in agricultural fields and work as labourers.

Education

Most education of 70% young <20 years, is up to the 5th to 9th. Economic condition is in general moderate. So, after this project, the standard of education will increase.

Socio-Economic Benefits Arising Out of Mining

1. Generation of employment in rural areas.
2. Upgradation in the living standards of rural people.
3. Creating infrastructural facilities like roads, electricity, shops, schools, etc.
4. Upgrading literacy in the area by exploiting natural minerals so the generation of revenue.

5. Helping to sustain construction activity.
6. Improving the greenery of the area, which is otherwise poor.

Liquid Effluent

Not applicable, because these activities do not generate effluent from operation or process.

Solid Waste

Not applicable, because small mines and impacts are negligible.

Project benefits due to the sand mining of Godi Khu are explained in the next Chapter.

CHAPTER 5

PROJECT BENEFITS

The proposed Sand Mining project of Godi Khu Village, Gevrai Tehsil, Beed District will lead to the following benefits:

1. Increase in the revenue of the district will ultimately increase the revenue of the village, which in return can be used to improve the infrastructure of the village.
2. Sand is available for building construction work and by systematic separation of sand, there is no possibility of a flood. Providing smooth movement of water of the river.
3. This project will contribute additional revenue to the state Exchequer in the form of revenue.
4. The project will conclude with employment opportunities for unskilled/skilled local people.
5. Standard of living of employed people will increase.

CHAPTER 6

SITE-SPECIFIC ENFORCEMENT & MONITORING PLAN

Sand Ghat Site specific enforcement & monitoring plan

(as per guidelines stipulated in the Enforcement and Monitoring Guidelines for sand mining issued by MoEFCC in January 2020.)

District administration shall deliver information on its website about the Sand Mines in the district for public information. The objective is to extend all information into the public domain so that the citizens are aware of the mining activities. People can also report to the district administration any deviation observed. Suitable feedback and its composition shall also be made operational.

Details shall include, but not be limited to, lease area, geo-coordinates of lease area and mineable area, transport routes, permitted capacity, regulatory conditions for operation including mining, environmental and social commitments, etc.

An Independent Committee of experts constituted by the Distance Learning Task Force (¹¹DLTF) will assess the environmental or ecological damage caused due to illegal mining and recommend recovery of environmental compensation from the concerned miners.

The recommendation may also include action under the provision of the Environment (Protection) Act 1986 u/s.15 read with s.19.

¹¹ Distance Learning Task Force

CHAPTER 7

SECURITY FEATURES

Security features are included in the Transport Permission/Permits (TP)

It will be ensured that the following security features are included in the Transport Permission/Permits (¹²TP) so that duplicate/fraudulent/forged TPs for transport, not accounted for in the IT-based system, is not possible:

1. Printed on Indian Bank Association (¹³IBA) Approved letterhead with account details
2. Magnetic Ink Character Recognition Code (¹⁴MICR) paper
3. Unique Barcode
4. Unique Quick Response Code (¹⁵QR)
5. Fugitive Ink Background
6. Invisible Ink Mark
7. Void Pantograph Watermark
8. Global Positioning System (¹⁶GPS) based vehicle tracking system
9. Closed-Circuit Television (¹⁷CCTV) Camera

¹² Transport Permission

¹³ Indian Bank Association

¹⁴ Magnetic Ink Character Recognition Code

¹⁵ Quick Response Code

¹⁶ Global Positioning System

¹⁷ Closed Circuit Television

CHAPTER 8

REPLENISHMENT

Replenishment study is the most important part of Sand Mining as it is the only basis to carry out sand mining. Without a Replenishment Study, we cannot understand the amount of deposition of sand. Following points to be followed for the replenishment study.

1. Area of deposition and erosion will be calculated for each cross-section after giving due regard to the stability & safety of active channel banks & other features of importance.
2. Differential Global Positioning System (¹⁸DGPS) and other survey tools will be used to define the topography, contours, and offsets of the lease area.
3. Contour & elevation benchmarks will provide baseline data for assessing pre- and post-study period scenario.
4. Physical benchmarks will be fixed at appropriate intervals (preferably 1 in 30m) & Reduced levels (¹⁹RL) shall be validated from a nearby standard RL.
5. These RL will be engraved on a steel plate (Bench Plate) & will be fixed & placed at locations that are free from any damages & are available in the pre-and post-study period.
6. Bench plates will be available for use during the mining period as a reference for all mining activity.
7. Baseline data on elevation status for a grid of 10m x 10m is preferred to have accuracy in the assessment.
8. It is expected that two consecutive cross-sections in longitudinal and lateral directions will not be more than a 10m distance apart.
9. Changes observed in the elevation in pre and post-scenario at each node, will be depicted in graphical forms with an appropriate scale to estimate the area of deposition & erosion.

¹⁸ Differential global positioning system

¹⁹ Reduced levels

10. Elevation level will be in reference to the nearest bench plates established for the purpose.
11. The levels (MSL & RL) of the corner point of each grid will be identifiable and safety barriers (non-Mining) demarcated as restricted in consensus with the Mineral Concession Rules of the respective State, and the provision mentioned in this Sustainable Sand Mining Management Guidelines.
12. A clear identification will be highlighted between grids under the mineable and grids under the non-mineable area.
13. These baseline data (pre and post) be subjected to stimulation with the help of data mine software to derive the replenishment area and corresponding volume and estimated weight.
14. The database will be structured in a tabulated form clearly depicting the nomenclature of the section lines, latitude and longitude of the starting point, chainage, and respective levels of all the points taken on that section line.
15. Net area shall be derived after summation of an area of deposition minus the area of erosion for each cross-section.
16. Volume will be estimated by multiplying the distance between two cross-sections with the average of the net area of these two consecutive cross-sections.
17. One sample per 900m² (30m x 30m) will be the preferred sample density for the assessment of bulk density for the estimation of deposition rate.
18. Care will be taken that the sample for assessment of Bulk Density is taken from the deposition zone & not from erosion.

Methodology for Sand Mining:

The following methodology should be followed for the Replenishment study.

1. The Demarcation and benchmark of the Sand Ghat are done at 10m x 10m intervals.
2. The use of the Auger Driller is to find out the depth of sand in each grid.
3. Auger Driller has created the holes in sand ghat by 10mx10m grid pattern.
4. Measured the depth of holes by using a measuring tape.

5. After taking all the readings average depth of sand is calculated.
6. The average depth of Godi Khu at Godavari is measured.

Replenishment study of sand in the proposed ghat along with details of the methodology, technology used to identify the existing reserve & replenishment of the same

Dandy Bolton Equation

For runoff less than 2 inches

$$S = 1280 \times (Q) \times 0.46 \times (1.46 - 0.26 \log(A)) \times F$$

For runoff more than 2 inches

$$S = 1958 \times (Q) \times (e^{-0.055 \times Q}) \times (1.43 - 0.26 \log(A))$$

Where,

S = sediment yield of stream (t/yr/km²),

Q = average annual runoff (m³),

A = net drainage area in sq.mile.

CHAPTER 9

PROPOSED PLANTATION PLAN

The Project Proponent must take care of the plantation around the site. This will not only enhance the beautification of the area but also there will be the reduction of pollution, not some extent.

Details of the plantation and Tree species recommended for the plantation are shown below.

Table 9. 1 Details of green belt

Location of greenbelt	Both sides of the approach road, On the riverbanks of both sides of the sand spot & nearby open areas. Haul Road outside the riverbed
No. of plants to be planted	2000 per Hectare
Spacing of plants	2m grid interval
Species selected	Native species

Table 9. 2 Trees species for plantation

Botanical Name	Local Name	Importance
Azadirachta Indica	Neem	Neem oil & neem products
Tectona Grandis	Teek	Antibacterial, Antifungal, Antiulcer
Ficus religiosaa	Peepal	Medicinal use, Fruits & figs
Bambusa vulgaris	Bamboo	Anthelmintic Anti-inflammatory, Astringent Properties
Madhuca longifolia	Mahua	Acts as a Stimulant & cough relief,

CHAPTER 10

ENVIRONMENTAL MANAGEMENT PLAN

A total capital cost of Rs.5.97 Lakhs has been kept in the project cost towards the environmental protection, control, mitigation measures, and implementation of the Environmental Management Plan (EMP). This cost is borne by the bidder/leaseholder. The budgetary cost estimate for the EMP is given in Table.

Table 10. 1 Budgetary cost of EMP

Sr	Impact Source	Impact	Control Measure	Cost (Rs.)
1	Transport Road	On Air Quality	Compaction, gradation, and drainage on both sides.	90000
		On Land, the Stability of the Road and degradation of road	Proper maintenance	40000
			Regular water spraying	43000
			The air quality will be monitored at the impacted village. (For One Day Monitoring)	5000
			Health Check-up of Employees	5000
2	Truck/ Tractor Movement	Air Quality	Sand-carrying trucks will be effectively covered by tarpaulin to avoid the escape of fines to the atmosphere. (2 Tarpaulin)	25000
			Regular monitoring of the exhaust fumes	5000

Sr	Impact Source	Impact	Control Measure	Cost (Rs.)
			Barriers & Traffic Management Expenses. (Excluding Manpower Salary which is included in labour costs)	10000
3	Ramp and Sand Reach	Mining Operation	Regular ramp Inspection and Ramp maintenance. (Excluding Manpower Salary which is included in labour costs)	50000
			Provision of dust masks	10000
4	Bank Management	Bank Erosion/Flood Plain management	The green belt along the bank (For Green Belt Development)	230000
			Plantation of wide leaf tall trees on banks and grass along a slanting portion of the bank	
5	Transportation on Village Roads	Dust Control	The green belt along village Rd (For Green Belt Development)	
6	Final Mine Closures Plan implementation	Replenishment of Sand	Gabions/ boulders will be arranged as per guidelines	15000
7	Mobile toilet, sewage handling & treatment		Mobile toilet, sewage handling & treatment	100000
8	CCTV Monitoring			100000
Total				728000

Budget For Corporate Environment Responsibility (²⁰CER)

About 2% fund of the project cost is allocated for Corporate Environment Responsibility (CER) activities as presented in below Table

Table 10.2 Budget for CER

Sr.	Description	Cost (Rs)
1.	Village Schools (separate toilet for girls and boys)	25000
2.	Solar panels over Gram Panchayat buildings	25000
3.	Solar panels over Public Health Centers	20000
	Total	70000

²⁰ Corporate Environment Responsibility

CHAPTER 11

SUMMARY AND CONCLUSION

The Roles and Responsibilities of the Environmental coordinator, the Operation Manager, and the senior personnel contractor are essential in EMP.

The environmental status of the project site and study area of 10km radius is delineated with respect to air, noise, water, land, biological and socio-economic environment the different project activities in the construction and operation phases are identified.

To identify the impacts, the interaction between the project activities and different components of the environment is classified phase-wise. A summary of the recognized impacts is given in the following paragraphs.

- During the operational phase, the transportation of sand could cause a temporary disturbance to the local environment which will be prevented with the proposed mitigation measures.
- Proposed project will not have any major significant negative impacts. The minor impacts arising during Excavation and Transportation phases can be mitigated with the help of the proposed Environmental Management Plan.
- In general, sand excavation from Godi Khu sand spot will be useful to the developmental work in the district and generate employment opportunities.

From this project, it is concluded that the district revenue will increase in return minimum of 2% of funds are utilized for the development of the village. The project will also grab employment which will improve the standard of life of villagers.

*** END ***

Environmental Management Plan

As per Rules 23 & 26 of MMME (D & R) RULE 2013 & Section 15 of MMDR Act 1957, MoEFCC Notification 2006, S.O. 141(E) dated 15. 01. 2016; MoEFCC, Sustainable Sand Mining Management Guidelines 2016, Guidelines for Mining Policy 2020)

for

ENVIRONMENTAL CLEARANCE

of

SAND MINING (MINOR MINERAL)

for

Hingangaon Satha 2– A Riverbed Sand Mine / Sand Ghat
Khasra No. GSDA approved 13 to 15, 17, 18
Area (3.50ha)

Village Hingangaon, Tehsil Gevrai, District Beed

Prepared By

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ABBREVIATION

Short Form	Long Form
EMP	Environmental Management Plan
MoEFCC	Ministry of Environment Forest and Climate Change
DSR	District-level Survey Report
EC	Environmental Coordinator
OM	Operations Manager
GSDA	Groundwater Surveys & Development Agency
MPCB	Maharashtra Pollution Control Board
MSL	Mean Sea Level
MS	Maharashtra State
PUC	Pollution Under Control
R&R	Rehabilitation and Resettlement
DLTF	Distance Learning Task Force
TP	Transport Permission/Permits
IBA	Indian Bank Association
MICR	Magnetic Ink Character Recognition Code
QR	Quick Response Code
GPS	Global Positioning System

CCTV	Closed-Circuit Television
DGPS	Differential Global Positioning System
RL	Reduced Levels
CER	Corporate Environment Responsibility

CHAPTER 1

INTRODUCTION

The Environmental Management Plan (¹EMP) plays a vital connection uniting forecast impacts and mitigation measures during implementation and operational activities. EMP stipulates the mitigation, monitoring and conventional measures to be taken during project implementation and operation. EMP is to escape or mitigate adverse environmental impacts, and to implement these measures.

This Environmental Management Plan (EMP) has been prepared as part of the Scoping Report which will be compiled in terms of the Environmental Assessment for the sand mining activities.

Considering the Ministry of Environment and Forest Climate Change (²MoEFCC) Notification 2006 and Sustainable Sand Mining Management Guidelines 2016, the Govt. of Maharashtra had mapped out the Minor Mineral Extraction Rules 2013. These rules are to extract all minor minerals in a scientific way so that there is no unfavourable impact on Environment and Climate. To extract every minor mineral from any land (either Government or Private) there is provision for a Mining Plan. These plans need to be approved by a competent authority. For long-term leased minor minerals (5-10 years period) and sand excavation from the riverbed, Senior Deputy Director of Directorate of Geology and Mining is the competent authority. These plans are for short term temporary permits which are valid for one year.

According to Enforcement & Monitoring Guidelines for Sand Mining 2020, Sustainable Sand Mining Management Guidelines 2016, Standard Environment conditions for sand mining and sustainable mining practices, District level Survey Report (³DSR) should be prepared and are suitable for mining and area prohibited for mining must be recognized.

¹ Environmental Management Plan

² Ministry of Environment Forest and Climate Change

³ District Survey Report

Objectives of EMP

- To provide overall conservation of the environment.
- To minimize waste generation and pollution.
- To regulate the precise use of natural resources and water.
- To provide Safety, Welfare, and Good health for the workforce and populace.
- To regulate the effective operation of all control measures.
- To ensure alertness against probable disasters and accidents.
- To monitor cumulative and long-term impacts.
- To regulate the effective operation of all control measures.

Roles and Responsibilities concerning the implementation of the EMP

The roles and responsibilities of all parties involved in successfully managing the environment are mentioned below.

Environmental Coordinator

The Environmental Coordinator will inspect operational areas on a quarterly basis and at the onset of mining any new island, to ensure that all specifications are met. The duties of the environmental coordinator will be the following.

- Guide the operations team in respect of the implementation of the environmental specifications.
- Lead the visits to ensure all work is aligned with the EMP.
- The environmental coordinator must examine the site during the three-monthly visits. All rehabilitation results will be Comprised in the quarterly report.
- Examination of the rehabilitation area and giving guidance regarding rehabilitation measures if any.

The Operations Manager

The responsibilities of the Operations Manager (4OM) or his nominated authority are as follows.

1. Familiarize themselves with the requirements of the EMP.
2. Monitor employees' and contractor's compliance with the environmental specifications; and enforce adherence.

⁴ Operations Manager

3. Communicate all environment-related incidents with the Environmental Coordinator and distribute them internally to avoid repetition.
4. Maintain a record of activities relevant to Environmental Management.
5. The Operations Manager shall be responsible for monitoring and the enforcement of the Environmental Management specifications on a day-to-day basis. Any violation of the environmental specifications shall be recorded, and the agreed disciplinary measures are taken.

Senior personnel and contractors

The roles of the senior personnel/contractors are as follows:

- Familiarize themselves with the requirements of the EMP.
- Comply with the environmental management specifications.
- Ensure that all team members are familiar with the environmental management specifications.

Details of the project

The Hingangaon Satha 2 sand ghat area has been selected in perspective of its subsisting demand for building-grade sand for the area in and around Gevrai Taluka. The District Mining Officer Beed has put forward the proposal for Environmental Clearance for mining. The ghat has a production of 12367 brass sand within an area of 3.50ha. The proposed proposal follows an organized mining process for Environmental Clearance.

Further Chapter informs about the in-depth details of the Sand Ghat, its geographical structure, and a Google map of the ghat with its approach road for contractors and workers to reach to sand ghat from the village.

CHAPTER 2

DETAILS OF THE PROJECT

Hingangaon village is located in Gevrai Taluka of Beed district, Maharashtra. Beed is well connected with all nearby cities. The National highway NH-52, it traverses through the states of Punjab, Haryana, Rajasthan, Madhya Pradesh and Maharashtra in India. NH-52 is the National Highway passing through the district, covering a total distance of 73.60km. Gevrai has situated about 31.3km by road from Beed. The district has road links to adjoining districts Ahmednagar District to the west, Jalna District to the North, Latur District to the East, Osmanabad District to the South, Parbhani District to the East The district is well connected by roads.

Hingangaon village is 44.78km away from Collector Office headquarters Beed. The Geographical area of the Beed is around 10693km². The nearest Railway station to Hingangaon village is Kodi Railway station. The nearest Airport to Beed District is Aurangabad Airport, Aurangabad Airport is 104km away from beed.

Honourable Collector Beed intends to auction Sand Ghats and appointed District Mining Officer as Project Proponent. A total of 38 sand ghats are identified by Tahsildar Majalgaon, Parli Ve, Gevrai, Beed along with District Mining Officer, Beed. The 38 sand ghats were jointly surveyed by Taluka level technical committee headed by respective tahsildar with Dy. Engineer Irrigation Department, Junior Geologist Directorate of Geology and Mining Govt. of Maharashtra, Junior Geologist, Groundwater Surveys & Development Agency (⁵GSDA). DMO Beed and a representative of the Maharashtra Pollution Control Board (⁶MPCB), as per the procedure defined in Sand Auction Rules 2019 dated 3/09/2019 formed a Taluka-level technical committee, which explored the sand ghats for an available quantity of sand for scooping. Revenue of Rs.25 Crore is expected from the auction of these sand ghats. Hingangaon Satha 2 Sand Ghat proposed over river Godavari in Gevrai Taluka is proposed to cater to the infrastructural

⁵ Groundwater Surveys & Development Agency

⁶ Maharashtra Pollution Control Board

requirement of sand in the Tehsil of Beed and adjoining areas of other talukas.

Table 2. 1 Details of Hingangaon Satha 2 Sand ghat

Name of Village	Tahsil	River/ Nallah	Nearest survey No.	Area (ha)	Proposed Depth for excavation (m)	Quantity Permitted for mining of Sand in Brass	Method of Mining
Hingangaon.	Gevrai	Godavari	13 to 15, 17, 18	3.50	1.0	12367	Open-cast manual mining

Table 2. 2 Salient features of the project

Particulars	Details															
Location	Village- Hingangaon (Satha 2), Tehsil- Gevrai, District-Beed, Maharashtra..															
Latitude and Longitude	<table border="1"> <thead> <tr> <th>Boundary points of Hingangaon Satha 2 sand spot</th> <th>Latitude</th> <th>Longitude</th> </tr> </thead> <tbody> <tr> <td>BP1</td> <td>19°23'37.27"N</td> <td>75°46'5.33"E</td> </tr> <tr> <td>BP2</td> <td>19°23'38.81"N</td> <td>75°46'4.75"E</td> </tr> <tr> <td>BP3</td> <td>19°23'44.29"N</td> <td>75°46'28.37"E</td> </tr> <tr> <td>BP4</td> <td>19°23'42.72"N</td> <td>75°46'28.64"E</td> </tr> </tbody> </table>	Boundary points of Hingangaon Satha 2 sand spot	Latitude	Longitude	BP1	19°23'37.27"N	75°46'5.33"E	BP2	19°23'38.81"N	75°46'4.75"E	BP3	19°23'44.29"N	75°46'28.37"E	BP4	19°23'42.72"N	75°46'28.64"E
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BP3	19°23'44.29"N	75°46'28.37"E														
BP4	19°23'42.72"N	75°46'28.64"E														
Sand spot area (In ha)	3.50ha															
Proposed production capacity (in Brass)	12367															
Infrastructure Requirement (As per Govt Resolution 3rd January 2018)	<ol style="list-style-type: none"> 1. Room / Hut for Official records 2. Electricity / Battery for Running CCTV 24x7 daily. 3. One Computer / Android-based Mobile for the online generation of Invoice numbers. 															

Particulars	Details										
Distance of project site from nearest rail or road bridge over the concerned River, Nallah, etc.	Godavari River Bridge-13.78km										
<table border="1"> <tr> <td>Distance from infrastructural facilities</td> <td rowspan="10"> Kodi railway station-42.65 NH52-7.83km MSH-7.83km 6.40km 1km </td> </tr> <tr> <td>Railway line</td> </tr> <tr> <td>National Highway</td> </tr> <tr> <td>State Highway</td> </tr> <tr> <td>Major District Road</td> </tr> <tr> <td>Any Other Road</td> </tr> <tr> <td>Electric transmission line pole or tower</td> </tr> <tr> <td>Canal or check dam or reservoirs or lake or ponds</td> </tr> <tr> <td>In-take for drinking water pump house</td> </tr> <tr> <td>Intake for Irrigation canal pumps</td> </tr> </table>	Distance from infrastructural facilities	Kodi railway station-42.65 NH52-7.83km MSH-7.83km 6.40km 1km	Railway line	National Highway	State Highway	Major District Road	Any Other Road	Electric transmission line pole or tower	Canal or check dam or reservoirs or lake or ponds	In-take for drinking water pump house	Intake for Irrigation canal pumps
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Railway line											
National Highway											
State Highway											
Major District Road											
Any Other Road											
Electric transmission line pole or tower											
Canal or check dam or reservoirs or lake or ponds											
In-take for drinking water pump house											
Intake for Irrigation canal pumps											
Areas already subjected to pollution or environmental damage. (those where existing legal environmental standards are exceeded)	None										
Areas susceptible to natural hazards which could cause the project to Present environmental problems (earthquakes, subsidence, landslides, erosion, flooding, or extreme or adverse climatic conditions)	No. Sand Ghat is at safe distances from natural hazards like earthquake prone area, subsidence, landslide, erosion, flooding prone area and extreme or adverse climatic conditions										

Particulars	Details
Whether the proposal involves approval or clearance under the following Regulations or Acts, namely: - (a) The Forest (Conservation) Act, 1980. (b) The Wildlife (Protection) Act, 1972. (c) The Coastal Regulation Zone Notification, 2011. If yes, details of the same and their status are to be given.	None
Forest land involved (hectares)	None

The below figure shows the google image of Hingangaon Satha 2 sand ghat.



Fig 2.1-Google image of Hingangaon Satha 2 sand ghat

Approach roach along with google location is as shown below.

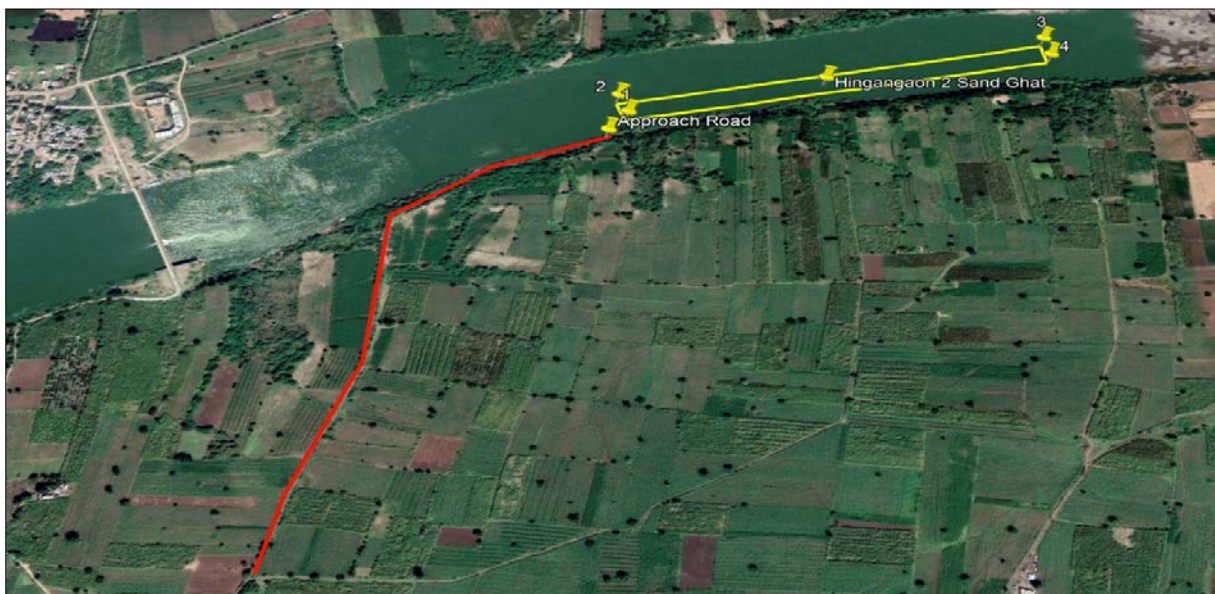


Fig 2.2-Approach Road for sand ghat

Next chapter 3 is Baseline Environmental Status in which the entire Topography, Climate, Soil Environment, Land use, water Environment, Hydrology, Biological environment, and Socio-economic Environment are briefly explained for the Beed district.

CHAPTER 3

BASELINE ENVIRONMENT STATUS

Topography

The Sand Ghat area as per the survey is the riverbed of the Godavari River of the Beed district. The maximum elevation is 443m MSL, average elevation is 440m MSL, & minimum elevation is 439m (⁷MSL) Mean Sea Level. The slope of the Sand Ghat area towards the Northeast to Southwest side. The flow of Godavari River is from Southeast direction.

Presently, there is neither any infrastructure within the riverbed nor are proposed.

Hydrology

There will be no change in the Water Table during the mining operation, as the depth of mining shall be restricted to 1.0m water level, which is less likely to affect the surface level or Groundwater Table. There is no proposal of any stream modification/diversion due to this mining activity hence there will be not any impact on the flow of water.

Soil Environment

The riverbed consists of sand /gravel. There is no topsoil. The depth of mining shall be restricted to 1.0m. There is no crucial impact on the soil forecasted due to mining activities.

Land Use Land Cover

Land use shows that agriculture land use is predominant. The proposed site is 3.50ha having adjoined Khasara No 13 to 15, 17, 18. The land doesn't cover any human habitation, forest, etc. Any change in the scope of the approved Mining Plan will lead to riverbank erosion/cutting and thereby river channel shifting, degradation of land, causing loss of properties and degradation of the surrounding landscape.

⁷ Mean sea level

Water Environment

While transporting sand there may be fugitive dust. There will be water requirement for spraying for dust suppression purposes. This water will be supplied from the borewell from nearby villages through tankers as well as from surface water sources. The water source may vary from village to village.

Climate

During summer May is the hottest month of the year in this area. The temperature rises to 42°C in the month of May. The average rainfall in this region is 600-700mm About 50% of rainfall precipitates between June to September. December is the coldest month with temperature falling down to 18°C. Overall the proposed site area has sub-tropical conditions.

Biological Environment

Flora

The agricultural area is seen near the Sand Ghat. Few trees and thorny bushes are seen on the banks of the river.

Fauna

As there is no forest cover, no endangered species of wildlife are seen in this area.

Socio-Economic Environment

This project may create constructive impacts of the sand mining that are stated below:

1. The mining operations will provide direct & indirect employment to village people.
2. The villages and their inhabitants & domestic animals will not be disturbed due to mining, as the quarry is far from their settlements.
3. Local workforce will be given first preference for employment.
4. Mining activities will benefit the local people due to the provision of more infrastructural facilities (developments of approach routes within the village area).

The next chapter describes all possible impacts on the Environment due to this project along with its mitigation measure to overcome these impacts.

CHAPTER 4

IMPACT ASSESSMENT REPORT ALONG WITH PROPOSED MITIGATION MEASURES

1. Land Environment

Anticipated Impact

Movement of vehicles can create issues for agricultural land, human habitations, noise, and risk for public and cause traffic hazards. The impacts include damage to the riverbank due to access ramps to the riverbed, soil erosion because of extraction of sand, micro disturbance to groundwater, possible stimulation of the changed river course, and contamination of sand aquifer water due to ponding. There might be surface degradation due to the road network.

The quality of soil will not be affected due to transportation or any other activity of mining.

Mitigation measure

1. Mining depth should be restricted to 3 meters and distance from the bank should be $\frac{1}{4}$ th or river width and should not be less than 7.5 meters as per “Sustainable Sand Mining Guidelines 2020” Page 23, Point no 4.3 (m).
2. There will be a minimal number of access roads to riverbeds. Cutting of riverbanks will be avoided and ramp with smooth slope will be maintained. Access points to the riverbed will be decided based on the least steepness of the riverbank and the least human activity at that location.
3. No foreign material like polythene bags, jute bags, and useless articles should be allowed to remain/spill in the riverbed and catchment area, or no pits/pockets will be allowed to be filled with such material.
4. Mining at the concave side of the river channel should be avoided to prevent bank erosion. Similarly, a tortuous segment of a river is to be selected for mining in such a way as to ignore the natural eroding of banks.
5. Ensure that ponding is not created in the riverbed.
6. Transportation route should be such that it gives minimum

damage to the environment.

7. Green belt will be developed along the haul road and the bank of rivers of mine premises and near the sand mining site. While selecting the plant species, preference will be given for planting native species of the area.

2. Water environment

Anticipated Impact

The project activity will be carried out in the dry part of the riverbed. Care will be taken to ensure that neither of the project activities will affect the water environment or riverbank habitats. During the lean months, the proposed Sand Mining will not expose the base flow of the river and hence there will not be any inauspicious impact on surface hydrology and groundwater regime due to this project. Project activities will not have any adverse consequences on the physical components of the environment and therefore may not have any effect on the recharge of ground waters or affect the water quality. Monitoring of water quality will be checked yearly.

Mitigation measures

1. Mining is avoided during the monsoon season and at the time of floods. This will help in the replenishment of sand in the riverbed.
2. Mining below the subterranean water level will be avoided as a safeguard against environmental contamination and over-exploitation of resources.
3. River stream will not be transferred to create active channels.
4. Mining schedule is synchronized with the river flow direction and the gradient of the land.
5. Mining at the concave side of the river channel will be avoided to prevent bank erosion.
6. Tortuous segment of the river will be selected for mining in such a way as to avoid naturally eroding banks and to promote mining on naturally building meander components.
7. Mining depth shall be maintained as per the guidelines and

rules of the Sand Mining Policy dated 03/09/2019 and recommendations of Maharashtra State (⁸M.S.). State Ground Water Department for extraction of sand during the lease period.

8. Water Quality Monitoring for the ground waters, river water, and other surface waters shall be carried out seasonally to ensure that the water quality is not affected by the project activities.
9. Utmost care will be taken to minimize or control leaking vehicles to be used for sand transportation.
10. The washing of tractor trolleys in the river will not be done.
11. The contractor will follow all guidelines and rules for proper and scientific methods of mining during the period of extracting the sand.

3. Air Environment

Anticipated Impacts

Plying of tractor trolleys from the public road to river sand collection points needs access roads. The majority of such access roads are the already existing roads/tracks being used by pedestrians/cart owners. The movement of heavy vehicles sometimes causes problems for cattle, agricultural land, and human habitations due to dust, noise, and the movement of the public. These environmental problems are felt more as the area is rural in nature.

Air pollution is likely to be caused at various stages of Sand Mining operations such as excavation, loading & transportation of material. Most of the fugitive dust emissions will be generated from loading & transportation. This dust becomes airborne and spreads away to surrounding areas.

The impact on air is mainly localized in nature as the dust particles of 100 μ in size are not carried to farther distances beyond 100m and the effect is felt within the core zone of the project involving active Sand Mining operations.

⁸ Maharashtra State

Mitigation measures

1. Movement of the vehicles on the road will be increased; however, the unmetalled road in the mining area will be sprinkled with water at regular intervals.
2. In addition to preventing spillage from tractor trolleys, overloading shall be controlled to 1-brass/tractor trolley. The speed limit will be <20 km/hr.
3. Maintenance of the haul road will be done on a regular basis.
4. To avoid fugitive dust emissions at the time of excavation, a regular sprinkling of water will be done on regular basis.
5. Sand is transported to the sites by road through tractor trolleys. The sand-carrying vehicles shall be covered by tarpaulin sheets.
6. The Green belt development will be prepared along the haul roads, which will act as a pollution sink.
7. To minimize vehicular pollution from the sand transporting vehicles, the following conditions will be insisted upon to permit the vehicles of the transporters.
8. The vehicles should be Bharat-IV stage compliant and should have a Pollution Under Control (⁹PUC) Certificate issued by appropriate authorities.
9. Regular maintenance of transport vehicles and monitoring of vehicular emission levels at periodical intervals.

4. Noise Environment

Anticipated Impact

The noise environment in this project will be overdone by the equipment at the site and vehicular transportation. A slight increase in noise levels of <10dB(A) can be expected up to a distance of 100m.

Mitigation measures.

1. Minimum use of horns in the village area.
2. Timely maintenance of vehicles and their silencers to

⁹ Pollution Under Control

minimize vibration and sound.

3. Phasing out old and worn-out tractor trolleys.
4. Provision of green belts along the road networks.
5. Care will be taken to produce minimum sound during sand loading.
6. Backhoe loader excavator will be used
7. Earplugs may be provided to protect the laborers working at the site.

5. Socio-economic Environment

Anticipated Impacts and Evaluation

1. The project activities shall not have any adverse impacts on any of the common property resources of the village communities, as the Sand Mine lease area is not being used for any purpose by any section of the society in this region.
2. There is no Resettlement and Rehabilitation (¹⁰R&R) involvement in this project.
3. There is no land acquisition in this project.
4. A major portion of the houses in the study area is semi-pucca-type structures.
5. The water source to these areas is from the Grampanchayat /Nagar Parishad connection and private bore wells and wells.
6. People living around the project area need the project for the purpose of employment and economic benefits.
7. The awareness level regarding the proposed mining activity is very towering. The proposed mining activity is expected to provide stimulus to socio-economic activities in the region and thereby accelerate further development processes.

Social and Demographic Profile

The workers are from local villages. These people have been provided welfare benefits from the lessee like medical benefits,

¹⁰ Rehabilitation and Resettlement

insurance, fees for children's education, etc. They have some land and cattle for their daily earnings. Additional revenue earned from the Sand Mining work will improve their living standard. The group of quarries in and around will help to have infrastructure facilities like roads, schools, shops, etc. This will enhance their social life.

Occupational Health and Safety

This is a riverbed Sand Mine. So, the mining activities are comparatively smaller because the production is not on a high scale. Workers do not come across any extreme conditions like excessive heat, moisture, etc. Workers working around it may come across this dusty environment. But the impact on health will be within the limit.

Human Settlement

1. There are no houses in and around the lease area. Blasting is the only activity, which may affect the settlement, which is not done. The settlement is more than 1-km from the sand mine.
2. Appropriate precautions will be taken during mining. Transportation of finished products is through the villages. There will be an effect of traffic on the local people. However, the intensity of traffic is 70-80/day.

Health and Hygiene

In general, the health of villagers is moderately good. In the rainy season, the atmospheric condition is unhygienic due to a lack of proper drainage and sanitation in the village habitation. Villagers are working in agricultural fields and work as labourers.

Education

Most education of 70% young <20 years, is up to the 5th to 9th. Economic condition is in general moderate. So, after this project, the standard of education will increase.

Socio-Economic Benefits Arising Out of Mining

1. Generation of employment in rural areas.
2. Upgradation in the living standards of rural people.
3. Creating infrastructural facilities like roads, electricity, shops, schools, etc.
4. Upgrading literacy in the area by exploiting natural minerals so the generation of revenue.

5. Helping to sustain construction activity.
6. Improving the greenery of the area, which is otherwise poor.

Liquid Effluent

Not applicable, because these activities do not generate effluent from operation or process.

Solid Waste

Not applicable, because small mines and impacts are negligible.

Project benefits due to the sand mining of Hingangaon Satha 2 are explained in the next Chapter.

CHAPTER 5

PROJECT BENEFITS

The proposed Sand Mining project of Hingangaon Village, Gevrai Tehsil, Beed District will lead to the following benefits:

1. Increase in the revenue of the district will ultimately increase the revenue of the village, which in return can be used to improve the infrastructure of the village.
2. Sand is available for building construction work and by systematic separation of sand, there is no possibility of a flood. Providing smooth movement of water of the river.
3. This project will contribute additional revenue to the state Exchequer in the form of revenue.
4. The project will conclude with employment opportunities for unskilled/skilled local people.
5. Standard of living of employed people will increase.

CHAPTER 6

SITE-SPECIFIC ENFORCEMENT & MONITORING PLAN

Sand Ghat Site specific enforcement & monitoring plan

(as per guidelines stipulated in the Enforcement and Monitoring Guidelines for sand mining issued by MoEFCC in January 2020.)

District administration shall deliver information on its website about the Sand Mines in the district for public information. The objective is to extend all information into the public domain so that the citizens are aware of the mining activities. People can also report to the district administration any deviation observed. Suitable feedback and its composition shall also be made operational.

Details shall include, but not be limited to, lease area, geo-coordinates of lease area and mineable area, transport routes, permitted capacity, regulatory conditions for operation including mining, environmental and social commitments, etc.

An Independent Committee of experts constituted by the Distance Learning Task Force (¹¹DLTF) will assess the environmental or ecological damage caused due to illegal mining and recommend recovery of environmental compensation from the concerned miners.

The recommendation may also include action under the provision of the Environment (Protection) Act 1986 u/s.15 read with s.19.

¹¹ Distance Learning Task Force

CHAPTER 7

SECURITY FEATURES

Security features are included in the Transport Permission/Permits (TP)

It will be ensured that the following security features are included in the Transport Permission/Permits (¹²TP) so that duplicate/fraudulent/forged TPs for transport, not accounted for in the IT-based system, is not possible:

1. Printed on Indian Bank Association (¹³IBA) Approved letterhead with account details
2. Magnetic Ink Character Recognition Code (¹⁴MICR) paper
3. Unique Barcode
4. Unique Quick Response Code (¹⁵QR)
5. Fugitive Ink Background
6. Invisible Ink Mark
7. Void Pantograph Watermark
8. Global Positioning System (¹⁶GPS) based vehicle tracking system
9. Closed-Circuit Television (¹⁷CCTV) Camera

¹² Transport Permission

¹³ Indian Bank Association

¹⁴ Magnetic Ink Character Recognition Code

¹⁵ Quick Response Code

¹⁶ Global Positioning System

¹⁷ Closed Circuit Television

CHAPTER 8

REPLENISHMENT

Replenishment study is the most important part of Sand Mining as it is the only basis to carry out sand mining. Without a Replenishment Study, we cannot understand the amount of deposition of sand. Following points to be followed for the replenishment study.

1. Area of deposition and erosion will be calculated for each cross-section after giving due regard to the stability & safety of active channel banks & other features of importance.
2. Differential Global Positioning System (¹⁸DGPS) and other survey tools will be used to define the topography, contours, and offsets of the lease area.
3. Contour & elevation benchmarks will provide baseline data for assessing pre- and post-study period scenario.
4. Physical benchmarks will be fixed at appropriate intervals (preferably 1 in 30m) & Reduced levels (¹⁹RL) shall be validated from a nearby standard RL.
5. These RL will be engraved on a steel plate (Bench Plate) & will be fixed & placed at locations that are free from any damages & are available in the pre-and post-study period.
6. Bench plates will be available for use during the mining period as a reference for all mining activity.
7. Baseline data on elevation status for a grid of 10m x 10m is preferred to have accuracy in the assessment.
8. It is expected that two consecutive cross-sections in longitudinal and lateral directions will not be more than a 10m distance apart.
9. Changes observed in the elevation in pre and post-scenario at each node, will be depicted in graphical forms with an appropriate scale to estimate the area of deposition & erosion.

¹⁸ Differential global positioning system

¹⁹ Reduced levels

10. Elevation level will be in reference to the nearest bench plates established for the purpose.
11. The levels (MSL & RL) of the corner point of each grid will be identifiable and safety barriers (non-Mining) demarcated as restricted in consensus with the Mineral Concession Rules of the respective State, and the provision mentioned in this Sustainable Sand Mining Management Guidelines.
12. A clear identification will be highlighted between grids under the mineable and grids under the non-mineable area.
13. These baseline data (pre and post) be subjected to stimulation with the help of data mine software to derive the replenishment area and corresponding volume and estimated weight.
14. The database will be structured in a tabulated form clearly depicting the nomenclature of the section lines, latitude and longitude of the starting point, chainage, and respective levels of all the points taken on that section line.
15. Net area shall be derived after summation of an area of deposition minus the area of erosion for each cross-section.
16. Volume will be estimated by multiplying the distance between two cross-sections with the average of the net area of these two consecutive cross-sections.
17. One sample per 900m² (30m x 30m) will be the preferred sample density for the assessment of bulk density for the estimation of deposition rate.
18. Care will be taken that the sample for assessment of Bulk Density is taken from the deposition zone & not from erosion.

Methodology for Sand Mining:

The following methodology should be followed for the Replenishment study.

1. The Demarcation and benchmark of the Sand Ghat are done at 10m x 10m intervals.
2. The use of the Auger Driller is to find out the depth of sand in each grid.
3. Auger Driller has created the holes in sand ghat by 10mx10m grid pattern.
4. Measured the depth of holes by using a measuring tape.

5. After taking all the readings average depth of sand is calculated.
6. The average depth of Hingangaon Satha 2 at Godavari is measured.

Replenishment study of sand in the proposed ghat along with details of the methodology, technology used to identify the existing reserve & replenishment of the same

Dandy Bolton Equation

For runoff less than 2 inches

$$S = 1280 \times (Q) \times 0.46 \times (1.46 - 0.26 \log(A)) \times F$$

For runoff more than 2 inches

$$S = 1958 \times (Q) \times (e^{-0.055 \times Q}) \times (1.43 - 0.26 \log(A))$$

Where,

S = sediment yield of stream (t/yr/km²),

Q = average annual runoff (m³),

A = net drainage area in sq.mile.

CHAPTER 9

PROPOSED PLANTATION PLAN

The Project Proponent must take care of the plantation around the site. This will not only enhance the beautification of the area but also there will be the reduction of pollution, not some extent.

Details of the plantation and Tree species recommended for the plantation are shown below.

Table 9. 1 Details of green belt

Location of greenbelt	Both sides of the approach road, On the riverbanks of both sides of the sand spot & nearby open areas. Haul Road outside the riverbed
No. of plants to be planted	2000 per Hectare
Spacing of plants	2m grid interval
Species selected	Native species

Table 9. 2 Trees species for plantation

Botanical Name	Local Name	Importance
Azadirachta Indica	Neem	Neem oil & neem products
Tectona Grandis	Teek	Antibacterial, Antifungal, Antiulcer
Ficus religiosaa	Peepal	Medicinal use, Fruits & figs
Bambusa vulgaris	Bamboo	Anthelmintic Anti-inflammatory, Astringent Properties
Madhuca longifolia	Mahua	Acts as a Stimulant & cough relief,

CHAPTER 10

ENVIRONMENTAL MANAGEMENT PLAN

A total capital cost of Rs.5.97 Lakhs has been kept in the project cost towards the environmental protection, control, mitigation measures, and implementation of the Environmental Management Plan (EMP). This cost is borne by the bidder/leaseholder. The budgetary cost estimate for the EMP is given in Table.

Table 10. 1 Budgetary cost of EMP

Sr	Impact Source	Impact	Control Measure	Cost (Rs.)
1	Transport Road	On Air Quality	Compaction, gradation, and drainage on both sides.	90000
		On Land, the Stability of the Road and degradation of road	Proper maintenance	40000
			Regular water spraying	43000
			The air quality will be monitored at the impacted village. (For One Day Monitoring)	5000
			Health Check-up of Employees	5000
2	Truck/ Tractor Movement	Air Quality	Sand-carrying trucks will be effectively covered by tarpaulin to avoid the escape of fines to the atmosphere. (2 Tarpaulin)	25000
			Regular monitoring of the exhaust fumes	5000

Sr	Impact Source	Impact	Control Measure	Cost (Rs.)
			Barriers & Traffic Management Expenses. (Excluding Manpower Salary which is included in labour costs)	10000
3	Ramp and Sand Reach	Mining Operation	Regular ramp Inspection and Ramp maintenance. (Excluding Manpower Salary which is included in labour costs)	50000
			Provision of dust masks	10000
4	Bank Management	Bank Erosion/Flood Plain management	The green belt along the bank (For Green Belt Development)	230000
			Plantation of wide leaf tall trees on banks and grass along a slanting portion of the bank	
5	Transportation on Village Roads	Dust Control	The green belt along village Rd (For Green Belt Development)	
6	Final Mine Closures Plan implementation	Replenishment of Sand	Gabions/ boulders will be arranged as per guidelines	15000
7	Mobile toilet, sewage handling & treatment		Mobile toilet, sewage handling & treatment	100000
8	CCTV Monitoring			100000
Total				728000

Budget For Corporate Environment Responsibility (²⁰CER)

About 2% fund of the project cost is allocated for Corporate Environment Responsibility (CER) activities as presented in below Table

Table 10.2 Budget for CER

Sr.	Description	Cost (Rs)
1.	Village Schools (separate toilet for girls and boys)	25000
2.	Solar panels over Gram Panchayat buildings	25000
3.	Solar panels over Public Health Centers	20000
	Total	70000

²⁰ Corporate Environment Responsibility

CHAPTER 11

SUMMARY AND CONCLUSION

The Roles and Responsibilities of the Environmental coordinator, the Operation Manager, and the senior personnel contractor are essential in EMP.

The environmental status of the project site and study area of 10km radius is delineated with respect to air, noise, water, land, biological and socio-economic environment the different project activities in the construction and operation phases are identified.

To identify the impacts, the interaction between the project activities and different components of the environment is classified phase-wise. A summary of the recognized impacts is given in the following paragraphs.

- During the operational phase, the transportation of sand could cause a temporary disturbance to the local environment which will be prevented with the proposed mitigation measures.
- Proposed project will not have any major significant negative impacts. The minor impacts arising during Excavation and Transportation phases can be mitigated with the help of the proposed Environmental Management Plan.
- In general, sand excavation from Hingangaon Satha 2 sand spot will be useful to the developmental work in the district and generate employment opportunities.

From this project, it is concluded that the district revenue will increase in return minimum of 2% of funds are utilized for the development of the village. The project will also grab employment which will improve the standard of life of villagers.

*** END ***

Environmental Management Plan

As per Rules 23 & 26 of MMME (D & R) RULE 2013 & Section 15 of MMDR Act 1957, MoEFCC Notification 2006, S.O. 141(E) dated 15. 01. 2016; MoEFCC, Sustainable Sand Mining Management Guidelines 2016, Guidelines for Mining Policy 2020)

for

ENVIRONMENTAL CLEARANCE

of

SAND MINING (MINOR MINERAL)

for

Kukkadgaon Satha 1– A Riverbed Sand Mine / Sand Ghat
Khasra No. GSDA approved 357, 358, 359
Area (1.00ha)

Village Kukkadgaon, Tehsil Beed, District Beed

0

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ABBREVIATION

Short Form	Long Form
EMP	Environmental Management Plan
MoEFCC	Ministry of Environment Forest and Climate Change
DSR	District-level Survey Report
EC	Environmental Coordinator
OM	Operations Manager
GSDA	Groundwater Surveys & Development Agency
MPCB	Maharashtra Pollution Control Board
MSL	Mean Sea Level
MS	Maharashtra State
PUC	Pollution Under Control
R&R	Rehabilitation and Resettlement
DLTF	Distance Learning Task Force
TP	Transport Permission/Permits
IBA	Indian Bank Association
MICR	Magnetic Ink Character Recognition Code
QR	Quick Response Code
GPS	Global Positioning System

CCTV	Closed-Circuit Television
DGPS	Differential Global Positioning System
RL	Reduced Levels
CER	Corporate Environment Responsibility

CHAPTER 1

INTRODUCTION

The Environmental Management Plan (¹EMP) plays a vital connection uniting forecast impacts and mitigation measures during implementation and operational activities. EMP stipulates the mitigation, monitoring and conventional measures to be taken during project implementation and operation. EMP is to escape or mitigate adverse environmental impacts, and to implement these measures.

This Environmental Management Plan (EMP) has been prepared as part of the Scoping Report which will be compiled in terms of the Environmental Assessment for the sand mining activities.

Considering the Ministry of Environment and Forest Climate Change (²MoEFCC) Notification 2006 and Sustainable Sand Mining Management Guidelines 2016, the Govt. of Maharashtra had mapped out the Minor Mineral Extraction Rules 2013. These rules are to extract all minor minerals in a scientific way so that there is no unfavourable impact on Environment and Climate. To extract every minor mineral from any land (either Government or Private) there is provision for a Mining Plan. These plans need to be approved by a competent authority. For long-term leased minor minerals (5-10 years period) and sand excavation from the riverbed, Senior Deputy Director of Directorate of Geology and Mining is the competent authority. These plans are for short term temporary permits which are valid for one year.

According to Enforcement & Monitoring Guidelines for Sand Mining 2020, Sustainable Sand Mining Management Guidelines 2016, Standard Environment conditions for sand mining and sustainable mining practices, District level Survey Report (³DSR) should be prepared and are suitable for mining and area prohibited for mining must be recognized.

¹ Environmental Management Plan

² Ministry of Environment Forest and Climate Change

³ District Survey Report

Objectives of EMP

- To provide overall conservation of the environment.
- To minimize waste generation and pollution.
- To regulate the precise use of natural resources and water.
- To provide Safety, Welfare, and Good health for the workforce and populace.
- To regulate the effective operation of all control measures.
- To ensure alertness against probable disasters and accidents.
- To monitor cumulative and long-term impacts.
- To regulate the effective operation of all control measures.

Roles and Responsibilities concerning the implementation of the EMP

The roles and responsibilities of all parties involved in successfully managing the environment are mentioned below.

Environmental Coordinator

The Environmental Coordinator will inspect operational areas on a quarterly basis and at the onset of mining any new island, to ensure that all specifications are met. The duties of the environmental coordinator will be the following.

- Guide the operations team in respect of the implementation of the environmental specifications.
- Lead the visits to ensure all work is aligned with the EMP.
- The environmental coordinator must examine the site during the three-monthly visits. All rehabilitation results will be Comprised in the quarterly report.
- Examination of the rehabilitation area and giving guidance regarding rehabilitation measures if any.

The Operations Manager

The responsibilities of the Operations Manager (4OM) or his nominated authority are as follows.

1. Familiarize themselves with the requirements of the EMP.
2. Monitor employees' and contractor's compliance with the environmental specifications; and enforce adherence.

⁴ Operations Manager

3. Communicate all environment-related incidents with the Environmental Coordinator and distribute them internally to avoid repetition.
4. Maintain a record of activities relevant to Environmental Management.
5. The Operations Manager shall be responsible for monitoring and the enforcement of the Environmental Management specifications on a day-to-day basis. Any violation of the environmental specifications shall be recorded, and the agreed disciplinary measures are taken.

Senior personnel and contractors

The roles of the senior personnel/contractors are as follows:

- Familiarize themselves with the requirements of the EMP.
- Comply with the environmental management specifications.
- Ensure that all team members are familiar with the environmental management specifications.

Details of the project

The Kukkadgaon Satha 1 sand ghat area has been selected in perspective of its subsisting demand for building-grade sand for the area in and around Beed Taluka. The District Mining Officer Beed has put forward the proposal for Environmental Clearance for mining. The ghat has a production of 3534 brass sand within an area of 1.00ha. The proposed proposal follows an organized mining process for Environmental Clearance.

Further Chapter informs about the in-depth details of the Sand Ghat, its geographical structure, and a Google map of the ghat with its approach road for contractors and workers to reach to sand ghat from the village.

CHAPTER 2

DETAILS OF THE PROJECT

Kukkadgaon village is located in Beed Taluka of Beed district, Maharashtra. Beed is well connected with all nearby cities. The National highway NH-52, it traverses through the states of Punjab, Haryana, Rajasthan, Madhya Pradesh and Maharashtra in India. NH-52 is the National Highway passing through the district, covering a total distance of 73.60km. Beed has situated about 0km by road from Beed. The district has road links to adjoining districts Ahmednagar District to the west, Jalna District to the North, Latur District to the East, Osmanabad District to the South, Parbhani District to the East The district is well connected by roads.

Kukkadgaon village is 16.79km away from Collector Office headquarters Beed. The Geographical area of the Beed is around 10693km². The nearest Railway station to Kukkadgaon village is Partur Railway station. The nearest Airport to Beed District is Aurangabad Airport, Aurangabad Airport is 104km away from beed.

Honourable Collector Beed intends to auction Sand Ghats and appointed District Mining Officer as Project Proponent. A total of 38 sand ghats are identified by Tahsildar Majalgaon, Parli Ve, Gevrai, Beed along with District Mining Officer, Beed. The 38 sand ghats were jointly surveyed by Taluka level technical committee headed by respective tahsildar with Dy. Engineer Irrigation Department, Junior Geologist Directorate of Geology and Mining Govt. of Maharashtra, Junior Geologist, Groundwater Surveys & Development Agency (⁵GSDA). DMO Beed and a representative of the Maharashtra Pollution Control Board (⁶MPCB), as per the procedure defined in Sand Auction Rules 2019 dated 3/09/2019 formed a Taluka-level technical committee, which explored the sand ghats for an available quantity of sand for scooping. Revenue of Rs.25 Crore is expected from the auction of these sand ghats. Kukkadgaon Satha 1 Sand Ghat proposed over river Sindhphana in Beed Taluka is proposed to cater to the infrastructural

⁵ Groundwater Surveys & Development Agency

⁶ Maharashtra Pollution Control Board

requirement of sand in the Tehsil of Beed and adjoining areas of other talukas.

Table 2. 1 Details of Kukkadgaon Satha 1 Sand ghat

Name of Village	Tahsil	River/ Nallah	Nearest survey No.	Area (ha)	Proposed Depth for excavation (m)	Quantity Permitted for mining of Sand in Brass	Method of Mining
Kukkadgaon	Beed	Sindhphana	357, 358, 359	1.00	1.0	3534	Open-cast manual mining

Table 2. 2 Salient features of the project

Particulars	Details															
Location	Village- Kukkadgaon (Satha 1), Taluka- Beed, District-Beed, Maharashtra.															
Latitude and Longitude	<table border="1"> <thead> <tr> <th>Boundary points of Kukkadgaon Satha 1 sand spot</th> <th>Latitude</th> <th>Longitude</th> </tr> </thead> <tbody> <tr> <td>BP1</td> <td>19°6'5.99"N</td> <td>75°51'13.18"E</td> </tr> <tr> <td>BP2</td> <td>19°6'6.62"N</td> <td>75°51'12.67"E</td> </tr> <tr> <td>BP3</td> <td>19°6'15.15"N</td> <td>75°51'22.86"E</td> </tr> <tr> <td>BP4</td> <td>19°6'14.59"N</td> <td>75°51'23.47"E</td> </tr> </tbody> </table>	Boundary points of Kukkadgaon Satha 1 sand spot	Latitude	Longitude	BP1	19°6'5.99"N	75°51'13.18"E	BP2	19°6'6.62"N	75°51'12.67"E	BP3	19°6'15.15"N	75°51'22.86"E	BP4	19°6'14.59"N	75°51'23.47"E
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BP2	19°6'6.62"N	75°51'12.67"E														
BP3	19°6'15.15"N	75°51'22.86"E														
BP4	19°6'14.59"N	75°51'23.47"E														
Sand spot area (In ha)	1.00ha															
Proposed production capacity (in Brass)	3534															
Infrastructure Requirement (As per Govt Resolution 3rd January 2018)	<ol style="list-style-type: none"> 1. Room / Hut for Official records 2. Electricity / Battery for Running CCTV 24x7 daily. 3. One Computer / Android-based Mobile for the online generation of Invoice numbers. 															

Particulars	Details
Distance of project site from nearest rail or road bridge over the concerned River, Nallah, etc.	Bindusara River Bridge-12.18km
Distance from infrastructural facilities Railway line National Highway State Highway Major District Road Any Other Road Electric transmission line pole or tower Canal or check dam or reservoirs or lake or ponds In-take for drinking water pump house Intake for Irrigation canal pumps	Partur railway station-63.25km NH52-12.32km MSH144-2.33km 1.61km 1km
Areas already subjected to pollution or environmental damage. (those where existing legal environmental standards are exceeded)	None
Areas susceptible to natural hazards which could cause the project to Present environmental problems (earthquakes, subsidence, landslides, erosion, flooding, or extreme or adverse climatic conditions)	No. Sand Ghat is at safe distances from natural hazards like earthquake prone area, subsidence, landslide, erosion, flooding prone area and extreme or adverse climatic conditions

Particulars	Details
Whether the proposal involves approval or clearance under the following Regulations or Acts, namely: - (a) The Forest (Conservation) Act, 1980. (b) The Wildlife (Protection) Act, 1972. (c) The Coastal Regulation Zone Notification, 2011. If yes, details of the same and their status are to be given.	None
Forest land involved (hectares)	None

The below figure shows the google image of Kukkadgaon Satha 1 sand ghat.



Fig 2.1-Google image of Kukkadgaon Satha 1 sand ghat

Approach roach along with google location is as shown below.

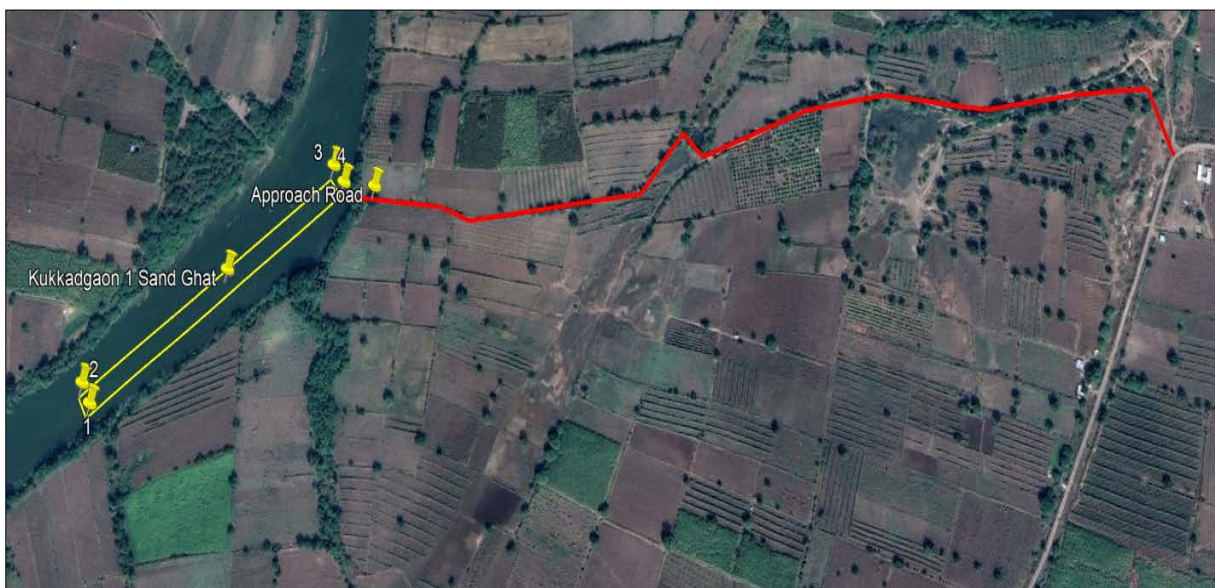


Fig 2.2-Approach Road for sand ghat

Next chapter 3 is Baseline Environmental Status in which the entire Topography, Climate, Soil Environment, Land use, water Environment, Hydrology, Biological environment, and Socio-economic Environment are briefly explained for the Beed district.

CHAPTER 3

BASELINE ENVIRONMENT STATUS

Topography

The Sand Ghat area as per the survey is the riverbed of the Sindhphana River of the Beed district. The maximum elevation is 468m MSL, average elevation is 467m MSL, & minimum elevation is 466m (⁷MSL) Mean Sea Level. The slope of the Sand Ghat area towards the Northeast to Southwest side. The flow of Sindhphana River is from West to East direction.

Presently, there is neither any infrastructure within the riverbed nor are proposed.

Hydrology

There will be no change in the Water Table during the mining operation, as the depth of mining shall be restricted to 1.0m water level, which is less likely to affect the surface level or Groundwater Table. There is no proposal of any stream modification/diversion due to this mining activity hence there will be not any impact on the flow of water.

Soil Environment

The riverbed consists of sand /gravel. There is no topsoil. The depth of mining shall be restricted to 1.0m. There is no crucial impact on the soil forecasted due to mining activities.

Land Use Land Cover

Land use shows that agriculture land use is predominant. The proposed site is 1.00ha having adjoined Khasara No 357, 358, 359. The land doesn't cover any human habitation, forest, etc. Any change in the scope of the approved Mining Plan will lead to riverbank erosion/cutting and thereby river channel shifting, degradation of land, causing loss of properties and degradation of the surrounding landscape.

⁷ Mean sea level

Water Environment

While transporting sand there may be fugitive dust. There will be water requirement for spraying for dust suppression purposes. This water will be supplied from the borewell from nearby villages through tankers as well as from surface water sources. The water source may vary from village to village.

Climate

During summer May is the hottest month of the year in this area. The temperature rises to 42°C in the month of May. The average rainfall in this region is 600-700mm About 50% of rainfall precipitates between June to September. December is the coldest month with temperature falling down to 18°C. Overall the proposed site area has sub-tropical conditions.

Biological Environment

Flora

The agricultural area is seen near the Sand Ghat. Few trees and thorny bushes are seen on the banks of the river.

Fauna

As there is no forest cover, no endangered species of wildlife are seen in this area.

Socio-Economic Environment

This project may create constructive impacts of the sand mining that are stated below:

1. The mining operations will provide direct & indirect employment to village people.
2. The villages and their inhabitants & domestic animals will not be disturbed due to mining, as the quarry is far from their settlements.
3. Local workforce will be given first preference for employment.
4. Mining activities will benefit the local people due to the provision of more infrastructural facilities (developments of approach routes within the village area).

The next chapter describes all possible impacts on the Environment due to this project along with its mitigation measure to overcome these impacts.

CHAPTER 4

IMPACT ASSESSMENT REPORT ALONG WITH PROPOSED MITIGATION MEASURES

1. Land Environment

Anticipated Impact

Movement of vehicles can create issues for agricultural land, human habitations, noise, and risk for public and cause traffic hazards. The impacts include damage to the riverbank due to access ramps to the riverbed, soil erosion because of extraction of sand, micro disturbance to groundwater, possible stimulation of the changed river course, and contamination of sand aquifer water due to ponding. There might be surface degradation due to the road network.

The quality of soil will not be affected due to transportation or any other activity of mining.

Mitigation measure

1. Mining depth should be restricted to 3 meters and distance from the bank should be $\frac{1}{4}$ th or river width and should not be less than 7.5 meters as per “Sustainable Sand Mining Guidelines 2020” Page 23, Point no 4.3 (m).
2. There will be a minimal number of access roads to riverbeds. Cutting of riverbanks will be avoided and ramp with smooth slope will be maintained. Access points to the riverbed will be decided based on the least steepness of the riverbank and the least human activity at that location.
3. No foreign material like polythene bags, jute bags, and useless articles should be allowed to remain/spill in the riverbed and catchment area, or no pits/pockets will be allowed to be filled with such material.
4. Mining at the concave side of the river channel should be avoided to prevent bank erosion. Similarly, a tortuous segment of a river is to be selected for mining in such a way as to ignore the natural eroding of banks.
5. Ensure that ponding is not created in the riverbed.
6. Transportation route should be such that it gives minimum

damage to the environment.

7. Green belt will be developed along the haul road and the bank of rivers of mine premises and near the sand mining site. While selecting the plant species, preference will be given for planting native species of the area.

2. Water environment

Anticipated Impact

The project activity will be carried out in the dry part of the riverbed. Care will be taken to ensure that neither of the project activities will affect the water environment or riverbank habitats. During the lean months, the proposed Sand Mining will not expose the base flow of the river and hence there will not be any inauspicious impact on surface hydrology and groundwater regime due to this project. Project activities will not have any adverse consequences on the physical components of the environment and therefore may not have any effect on the recharge of ground waters or affect the water quality. Monitoring of water quality will be checked yearly.

Mitigation measures

1. Mining is avoided during the monsoon season and at the time of floods. This will help in the replenishment of sand in the riverbed.
2. Mining below the subterranean water level will be avoided as a safeguard against environmental contamination and over-exploitation of resources.
3. River stream will not be transferred to create active channels.
4. Mining schedule is synchronized with the river flow direction and the gradient of the land.
5. Mining at the concave side of the river channel will be avoided to prevent bank erosion.
6. Tortuous segment of the river will be selected for mining in such a way as to avoid naturally eroding banks and to promote mining on naturally building meander components.
7. Mining depth shall be maintained as per the guidelines and

rules of the Sand Mining Policy dated 03/09/2019 and recommendations of Maharashtra State (⁸M.S.). State Ground Water Department for extraction of sand during the lease period.

8. Water Quality Monitoring for the ground waters, river water, and other surface waters shall be carried out seasonally to ensure that the water quality is not affected by the project activities.
9. Utmost care will be taken to minimize or control leaking vehicles to be used for sand transportation.
10. The washing of tractor trolleys in the river will not be done.
11. The contractor will follow all guidelines and rules for proper and scientific methods of mining during the period of extracting the sand.

3. Air Environment

Anticipated Impacts

Plying of tractor trolleys from the public road to river sand collection points needs access roads. The majority of such access roads are the already existing roads/tracks being used by pedestrians/cart owners. The movement of heavy vehicles sometimes causes problems for cattle, agricultural land, and human habitations due to dust, noise, and the movement of the public. These environmental problems are felt more as the area is rural in nature.

Air pollution is likely to be caused at various stages of Sand Mining operations such as excavation, loading & transportation of material. Most of the fugitive dust emissions will be generated from loading & transportation. This dust becomes airborne and spreads away to surrounding areas.

The impact on air is mainly localized in nature as the dust particles of 100 μ in size are not carried to farther distances beyond 100m and the effect is felt within the core zone of the project involving active Sand Mining operations.

⁸ Maharashtra State

Mitigation measures

1. Movement of the vehicles on the road will be increased; however, the unmetalled road in the mining area will be sprinkled with water at regular intervals.
2. In addition to preventing spillage from tractor trolleys, overloading shall be controlled to 1-brass/tractor trolley. The speed limit will be <20 km/hr.
3. Maintenance of the haul road will be done on a regular basis.
4. To avoid fugitive dust emissions at the time of excavation, a regular sprinkling of water will be done on regular basis.
5. Sand is transported to the sites by road through tractor trolleys. The sand-carrying vehicles shall be covered by tarpaulin sheets.
6. The Green belt development will be prepared along the haul roads, which will act as a pollution sink.
7. To minimize vehicular pollution from the sand transporting vehicles, the following conditions will be insisted upon to permit the vehicles of the transporters.
8. The vehicles should be Bharat-IV stage compliant and should have a Pollution Under Control (⁹PUC) Certificate issued by appropriate authorities.
9. Regular maintenance of transport vehicles and monitoring of vehicular emission levels at periodical intervals.

4. Noise Environment

Anticipated Impact

The noise environment in this project will be overdone by the equipment at the site and vehicular transportation. A slight increase in noise levels of <10dB(A) can be expected up to a distance of 100m.

Mitigation measures.

1. Minimum use of horns in the village area.
2. Timely maintenance of vehicles and their silencers to

⁹ Pollution Under Control

minimize vibration and sound.

3. Phasing out old and worn-out tractor trolleys.
4. Provision of green belts along the road networks.
5. Care will be taken to produce minimum sound during sand loading.
6. Backhoe loader excavator will be used
7. Earplugs may be provided to protect the laborers working at the site.

5. Socio-economic Environment

Anticipated Impacts and Evaluation

1. The project activities shall not have any adverse impacts on any of the common property resources of the village communities, as the Sand Mine lease area is not being used for any purpose by any section of the society in this region.
2. There is no Resettlement and Rehabilitation (¹⁰R&R) involvement in this project.
3. There is no land acquisition in this project.
4. A major portion of the houses in the study area is semi-pucca-type structures.
5. The water source to these areas is from the Grampanchayat /Nagar Parishad connection and private bore wells and wells.
6. People living around the project area need the project for the purpose of employment and economic benefits.
7. The awareness level regarding the proposed mining activity is very towering. The proposed mining activity is expected to provide stimulus to socio-economic activities in the region and thereby accelerate further development processes.

Social and Demographic Profile

The workers are from local villages. These people have been provided welfare benefits from the lessee like medical benefits,

¹⁰ Rehabilitation and Resettlement

insurance, fees for children's education, etc. They have some land and cattle for their daily earnings. Additional revenue earned from the Sand Mining work will improve their living standard. The group of quarries in and around will help to have infrastructure facilities like roads, schools, shops, etc. This will enhance their social life.

Occupational Health and Safety

This is a riverbed Sand Mine. So, the mining activities are comparatively smaller because the production is not on a high scale. Workers do not come across any extreme conditions like excessive heat, moisture, etc. Workers working around it may come across this dusty environment. But the impact on health will be within the limit.

Human Settlement

1. There are no houses in and around the lease area. Blasting is the only activity, which may affect the settlement, which is not done. The settlement is more than 1-km from the sand mine.
2. Appropriate precautions will be taken during mining. Transportation of finished products is through the villages. There will be an effect of traffic on the local people. However, the intensity of traffic is 70-80/day.

Health and Hygiene

In general, the health of villagers is moderately good. In the rainy season, the atmospheric condition is unhygienic due to a lack of proper drainage and sanitation in the village habitation. Villagers are working in agricultural fields and work as labourers.

Education

Most education of 70% young <20 years, is up to the 5th to 9th. Economic condition is in general moderate. So, after this project, the standard of education will increase.

Socio-Economic Benefits Arising Out of Mining

1. Generation of employment in rural areas.
2. Upgradation in the living standards of rural people.
3. Creating infrastructural facilities like roads, electricity, shops, schools, etc.
4. Upgrading literacy in the area by exploiting natural minerals so the generation of revenue.

5. Helping to sustain construction activity.
6. Improving the greenery of the area, which is otherwise poor.

Liquid Effluent

Not applicable, because these activities do not generate effluent from operation or process.

Solid Waste

Not applicable, because small mines and impacts are negligible.

Project benefits due to the sand mining of Kukkadgaon Satha 1 are explained in the next Chapter.

CHAPTER 5

PROJECT BENEFITS

The proposed Sand Mining project of Kukkadgaon Village, Beed Tehsil, Beed District will lead to the following benefits:

1. Increase in the revenue of the district will ultimately increase the revenue of the village, which in return can be used to improve the infrastructure of the village.
2. Sand is available for building construction work and by systematic separation of sand, there is no possibility of a flood. Providing smooth movement of water of the river.
3. This project will contribute additional revenue to the state Exchequer in the form of revenue.
4. The project will conclude with employment opportunities for unskilled/skilled local people.
5. Standard of living of employed people will increase.

CHAPTER 6

SITE-SPECIFIC ENFORCEMENT & MONITORING PLAN

Sand Ghat Site specific enforcement & monitoring plan

(as per guidelines stipulated in the Enforcement and Monitoring Guidelines for sand mining issued by MoEFCC in January 2020.)

District administration shall deliver information on its website about the Sand Mines in the district for public information. The objective is to extend all information into the public domain so that the citizens are aware of the mining activities. People can also report to the district administration any deviation observed. Suitable feedback and its composition shall also be made operational.

Details shall include, but not be limited to, lease area, geo-coordinates of lease area and mineable area, transport routes, permitted capacity, regulatory conditions for operation including mining, environmental and social commitments, etc.

An Independent Committee of experts constituted by the Distance Learning Task Force (¹¹DLTF) will assess the environmental or ecological damage caused due to illegal mining and recommend recovery of environmental compensation from the concerned miners.

The recommendation may also include action under the provision of the Environment (Protection) Act 1986 u/s.15 read with s.19.

¹¹ Distance Learning Task Force

CHAPTER 7

SECURITY FEATURES

Security features are included in the Transport Permission/Permits (TP)

It will be ensured that the following security features are included in the Transport Permission/Permits (¹²TP) so that duplicate/fraudulent/forged TPs for transport, not accounted for in the IT-based system, is not possible:

1. Printed on Indian Bank Association (¹³IBA) Approved letterhead with account details
2. Magnetic Ink Character Recognition Code (¹⁴MICR) paper
3. Unique Barcode
4. Unique Quick Response Code (¹⁵QR)
5. Fugitive Ink Background
6. Invisible Ink Mark
7. Void Pantograph Watermark
8. Global Positioning System (¹⁶GPS) based vehicle tracking system
9. Closed-Circuit Television (¹⁷CCTV) Camera

¹² Transport Permission

¹³ Indian Bank Association

¹⁴ Magnetic Ink Character Recognition Code

¹⁵ Quick Response Code

¹⁶ Global Positioning System

¹⁷ Closed Circuit Television

CHAPTER 8

REPLENISHMENT

Replenishment study is the most important part of Sand Mining as it is the only basis to carry out sand mining. Without a Replenishment Study, we cannot understand the amount of deposition of sand. Following points to be followed for the replenishment study.

1. Area of deposition and erosion will be calculated for each cross-section after giving due regard to the stability & safety of active channel banks & other features of importance.
2. Differential Global Positioning System (¹⁸DGPS) and other survey tools will be used to define the topography, contours, and offsets of the lease area.
3. Contour & elevation benchmarks will provide baseline data for assessing pre- and post-study period scenario.
4. Physical benchmarks will be fixed at appropriate intervals (preferably 1 in 30m) & Reduced levels (¹⁹RL) shall be validated from a nearby standard RL.
5. These RL will be engraved on a steel plate (Bench Plate) & will be fixed & placed at locations that are free from any damages & are available in the pre-and post-study period.
6. Bench plates will be available for use during the mining period as a reference for all mining activity.
7. Baseline data on elevation status for a grid of 10m x 10m is preferred to have accuracy in the assessment.
8. It is expected that two consecutive cross-sections in longitudinal and lateral directions will not be more than a 10m distance apart.
9. Changes observed in the elevation in pre and post-scenario at each node, will be depicted in graphical forms with an appropriate scale to estimate the area of deposition & erosion.

¹⁸ Differential global positioning system

¹⁹ Reduced levels

10. Elevation level will be in reference to the nearest bench plates established for the purpose.
11. The levels (MSL & RL) of the corner point of each grid will be identifiable and safety barriers (non-Mining) demarcated as restricted in consensus with the Mineral Concession Rules of the respective State, and the provision mentioned in this Sustainable Sand Mining Management Guidelines.
12. A clear identification will be highlighted between grids under the mineable and grids under the non-mineable area.
13. These baseline data (pre and post) be subjected to stimulation with the help of data mine software to derive the replenishment area and corresponding volume and estimated weight.
14. The database will be structured in a tabulated form clearly depicting the nomenclature of the section lines, latitude and longitude of the starting point, chainage, and respective levels of all the points taken on that section line.
15. Net area shall be derived after summation of an area of deposition minus the area of erosion for each cross-section.
16. Volume will be estimated by multiplying the distance between two cross-sections with the average of the net area of these two consecutive cross-sections.
17. One sample per 900m² (30m x 30m) will be the preferred sample density for the assessment of bulk density for the estimation of deposition rate.
18. Care will be taken that the sample for assessment of Bulk Density is taken from the deposition zone & not from erosion.

Methodology for Sand Mining:

The following methodology should be followed for the Replenishment study.

1. The Demarcation and benchmark of the Sand Ghat are done at 10m x 10m intervals.
2. The use of the Auger Driller is to find out the depth of sand in each grid.
3. Auger Driller has created the holes in sand ghat by 10mx10m grid pattern.
4. Measured the depth of holes by using a measuring tape.

5. After taking all the readings average depth of sand is calculated.
6. The average depth of Kukkadgaon Satha 1 at Sindhphana is measured.

Replenishment study of sand in the proposed ghat along with details of the methodology, technology used to identify the existing reserve & replenishment of the same

Dandy Bolton Equation

For runoff less than 2 inches

$$S = 1280 \times (Q) \times 0.46 \times (1.46 - 0.26 \log(A)) \times F$$

For runoff more than 2 inches

$$S = 1958 \times (Q) \times (e^{-0.055 \times Q}) \times (1.43 - 0.26 \log(A))$$

Where,

S = sediment yield of stream (t/yr/km²),

Q = average annual runoff (m³),

A = net drainage area in sq.mile.

CHAPTER 9

PROPOSED PLANTATION PLAN

The Project Proponent must take care of the plantation around the site. This will not only enhance the beautification of the area but also there will be the reduction of pollution, not some extent.

Details of the plantation and Tree species recommended for the plantation are shown below.

Table 9. 1 Details of green belt

Location of greenbelt	Both sides of the approach road, On the riverbanks of both sides of the sand spot & nearby open areas. Haul Road outside the riverbed
No. of plants to be planted	2000 per Hectare
Spacing of plants	2m grid interval
Species selected	Native species

Table 9. 2 Trees species for plantation

Botanical Name	Local Name	Importance
Azadirachta Indica	Neem	Neem oil & neem products
Tectona Grandis	Teek	Antibacterial, Antifungal, Antiulcer
Ficus religiosaa	Peepal	Medicinal use, Fruits & figs
Bambusa vulgaris	Bamboo	Anthelmintic Anti-inflammatory, Astringent Properties
Madhuca longifolia	Mahua	Acts as a Stimulant & cough relief,

CHAPTER 10

ENVIRONMENTAL MANAGEMENT PLAN

A total capital cost of Rs.5.97 Lakhs has been kept in the project cost towards the environmental protection, control, mitigation measures, and implementation of the Environmental Management Plan (EMP). This cost is borne by the bidder/leaseholder. The budgetary cost estimate for the EMP is given in Table.

Table 10. 1 Budgetary cost of EMP

Sr	Impact Source	Impact	Control Measure	Cost(Rs)
1	Transport Road	On Air Quality	Compaction, gradation, and drainage on both sides.	35000
		On Land, the Stability of the Road and degradation of road	Proper maintenance	20000
			Regular water spraying	25000
			The air quality will be monitored at the impacted village. (For One Day Monitoring)	3000
			Health Check-up of Employees	3000
2	Truck/ Tractor Movement	Air Quality	Sand-carrying trucks will be effectively covered by tarpaulin to avoid the escape of fines to the atmosphere. (2 Tarpaulin)	20000
			Regular monitoring of the exhaust fumes	3000

Sr	Impact Source	Impact	Control Measure	Cost(Rs)
			Barriers & Traffic Management Expenses. (Excluding Manpower Salary which is included in labour costs)	8000
3	Ramp and Sand Reach	Mining Operation	Regular ramp Inspection and Ramp maintenance. (Excluding Manpower Salary which is included in labour costs)	40000
			Provision of dust masks	8000
4	Bank Management	Bank Erosion/Flood Plain management	The green belt along the bank (For Green Belt Development)	100000
			Plantation of wide leaf tall trees on banks and grass along a slanting portion of the bank	
5	Transportation on Village Roads	Dust Control	The green belt along village Rd (For Green Belt Development)	
6	Final Mine Closures Plan implementation	Replenishment of Sand	Gabions/ boulders will be arranged as per guidelines	10000
7	Mobile toilet, sewage handling & treatment		Mobile toilet, sewage handling & treatment	70000
8	CCTV Monitoring			70000
Total				415000

Budget For Corporate Environment Responsibility (²⁰CER)

About 2% fund of the project cost is allocated for Corporate Environment Responsibility (CER) activities as presented in below Table

Table 10.2 Budget for CER

Sr.	Description	Cost (Rs)
1.	Village Schools (separate toilet for girls and boys)	10000
2.	Solar panels over Gram Panchayat buildings	10000
3.	Solar panels over Public Health Centers	15000
	Total	35000

²⁰ Corporate Environment Responsibility

CHAPTER 11

SUMMARY AND CONCLUSION

The Roles and Responsibilities of the Environmental coordinator, the Operation Manager, and the senior personnel contractor are essential in EMP.

The environmental status of the project site and study area of 10km radius is delineated with respect to air, noise, water, land, biological and socio-economic environment the different project activities in the construction and operation phases are identified.

To identify the impacts, the interaction between the project activities and different components of the environment is classified phase-wise. A summary of the recognized impacts is given in the following paragraphs.

- During the operational phase, the transportation of sand could cause a temporary disturbance to the local environment which will be prevented with the proposed mitigation measures.
- Proposed project will not have any major significant negative impacts. The minor impacts arising during Excavation and Transportation phases can be mitigated with the help of the proposed Environmental Management Plan.
- In general, sand excavation from Kukkadgaon Satha 1 sand spot will be useful to the developmental work in the district and generate employment opportunities.

From this project, it is concluded that the district revenue will increase in return minimum of 2% of funds are utilized for the development of the village. The project will also grab employment which will improve the standard of life of villagers.

*** END ***

Environmental Management Plan

As per Rules 23 & 26 of MMME (D & R) RULE 2013 & Section 15 of MMDR Act 1957, MoEFCC Notification 2006, S.O. 141(E) dated 15. 01. 2016; MoEFCC, Sustainable Sand Mining Management Guidelines 2016, Guidelines for Mining Policy 2020)

for

ENVIRONMENTAL CLEARANCE

of

SAND MINING (MINOR MINERAL)

for

Kukkadgaon Satha 2- A Riverbed Sand Mine / Sand Ghat
Khasra No. GSDA approved 132, 133, 137, 142
Area (1.00ha)

Village Kukkadgaon, Tehsil Beed, District Beed

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ABBREVIATION

Short Form	Long Form
EMP	Environmental Management Plan
MoEFCC	Ministry of Environment Forest and Climate Change
DSR	District-level Survey Report
EC	Environmental Coordinator
OM	Operations Manager
GSDA	Groundwater Surveys & Development Agency
MPCB	Maharashtra Pollution Control Board
MSL	Mean Sea Level
MS	Maharashtra State
PUC	Pollution Under Control
R&R	Rehabilitation and Resettlement
DLTF	Distance Learning Task Force
TP	Transport Permission/Permits
IBA	Indian Bank Association
MICR	Magnetic Ink Character Recognition Code
QR	Quick Response Code
GPS	Global Positioning System

CCTV	Closed-Circuit Television
DGPS	Differential Global Positioning System
RL	Reduced Levels
CER	Corporate Environment Responsibility

CHAPTER 1

INTRODUCTION

The Environmental Management Plan (¹EMP) plays a vital connection uniting forecast impacts and mitigation measures during implementation and operational activities. EMP stipulates the mitigation, monitoring and conventional measures to be taken during project implementation and operation. EMP is to escape or mitigate adverse environmental impacts, and to implement these measures.

This Environmental Management Plan (EMP) has been prepared as part of the Scoping Report which will be compiled in terms of the Environmental Assessment for the sand mining activities.

Considering the Ministry of Environment and Forest Climate Change (²MoEFCC) Notification 2006 and Sustainable Sand Mining Management Guidelines 2016, the Govt. of Maharashtra had mapped out the Minor Mineral Extraction Rules 2013. These rules are to extract all minor minerals in a scientific way so that there is no unfavourable impact on Environment and Climate. To extract every minor mineral from any land (either Government or Private) there is provision for a Mining Plan. These plans need to be approved by a competent authority. For long-term leased minor minerals (5-10 years period) and sand excavation from the riverbed, Senior Deputy Director of Directorate of Geology and Mining is the competent authority. These plans are for short term temporary permits which are valid for one year.

According to Enforcement & Monitoring Guidelines for Sand Mining 2020, Sustainable Sand Mining Management Guidelines 2016, Standard Environment conditions for sand mining and sustainable mining practices, District level Survey Report (³DSR) should be prepared and are suitable for mining and area prohibited for mining must be recognized.

¹ Environmental Management Plan

² Ministry of Environment Forest and Climate Change

³ District Survey Report

Objectives of EMP

- To provide overall conservation of the environment.
- To minimize waste generation and pollution.
- To regulate the precise use of natural resources and water.
- To provide Safety, Welfare, and Good health for the workforce and populace.
- To regulate the effective operation of all control measures.
- To ensure alertness against probable disasters and accidents.
- To monitor cumulative and long-term impacts.
- To regulate the effective operation of all control measures.

Roles and Responsibilities concerning the implementation of the EMP

The roles and responsibilities of all parties involved in successfully managing the environment are mentioned below.

Environmental Coordinator

The Environmental Coordinator will inspect operational areas on a quarterly basis and at the onset of mining any new island, to ensure that all specifications are met. The duties of the environmental coordinator will be the following.

- Guide the operations team in respect of the implementation of the environmental specifications.
- Lead the visits to ensure all work is aligned with the EMP.
- The environmental coordinator must examine the site during the three-monthly visits. All rehabilitation results will be Comprised in the quarterly report.
- Examination of the rehabilitation area and giving guidance regarding rehabilitation measures if any.

The Operations Manager

The responsibilities of the Operations Manager (4OM) or his nominated authority are as follows.

1. Familiarize themselves with the requirements of the EMP.
2. Monitor employees' and contractor's compliance with the environmental specifications; and enforce adherence.

⁴ Operations Manager

3. Communicate all environment-related incidents with the Environmental Coordinator and distribute them internally to avoid repetition.
4. Maintain a record of activities relevant to Environmental Management.
5. The Operations Manager shall be responsible for monitoring and the enforcement of the Environmental Management specifications on a day-to-day basis. Any violation of the environmental specifications shall be recorded, and the agreed disciplinary measures are taken.

Senior personnel and contractors

The roles of the senior personnel/contractors are as follows:

- Familiarize themselves with the requirements of the EMP.
- Comply with the environmental management specifications.
- Ensure that all team members are familiar with the environmental management specifications.

Details of the project

The Kukkadgaon Satha 2 sand ghat area has been selected in perspective of its subsisting demand for building-grade sand for the area in and around Beed Taluka. The District Mining Officer Beed has put forward the proposal for Environmental Clearance for mining. The ghat has a production of 3534 brass sand within an area of 1.00ha. The proposed proposal follows an organized mining process for Environmental Clearance.

Further Chapter informs about the in-depth details of the Sand Ghat, its geographical structure, and a Google map of the ghat with its approach road for contractors and workers to reach to sand ghat from the village.

CHAPTER 2

DETAILS OF THE PROJECT

Kukkadgaon village is located in Beed Taluka of Beed district, Maharashtra. Beed is well connected with all nearby cities. The National highway NH-52, it traverses through the states of Punjab, Haryana, Rajasthan, Madhya Pradesh and Maharashtra in India. NH-52 is the National Highway passing through the district, covering a total distance of 73.60km. Beed has situated about 0km by road from Beed. The district has road links to adjoining districts Ahmednagar District to the west, Jalna District to the North, Latur District to the East, Osmanabad District to the South, Parbhani District to the East The district is well connected by roads.

Kukkadgaon village is 16.79km away from Collector Office headquarters Beed. The Geographical area of the Beed is around 10693km². The nearest Railway station to Kukkadgaon village is Partur Railway station. The nearest Airport to Beed District is Aurangabad Airport, Aurangabad Airport is 104km away from beed.

Honourable Collector Beed intends to auction Sand Ghats and appointed District Mining Officer as Project Proponent. A total of 38 sand ghats are identified by Tahsildar Majalgaon, Parli Ve, Gevrai, Beed along with District Mining Officer, Beed. The 38 sand ghats were jointly surveyed by Taluka level technical committee headed by respective tahsildar with Dy. Engineer Irrigation Department, Junior Geologist Directorate of Geology and Mining Govt. of Maharashtra, Junior Geologist, Groundwater Surveys & Development Agency (⁵GSDA). DMO Beed and a representative of the Maharashtra Pollution Control Board (⁶MPCB), as per the procedure defined in Sand Auction Rules 2019 dated 3/09/2019 formed a Taluka-level technical committee, which explored the sand ghats for an available quantity of sand for scooping. Revenue of Rs.25 Crore is expected from the auction of these sand ghats. Kukkadgaon Satha 2 Sand Ghat proposed over river Sindhphana in Beed Taluka is proposed to cater to the infrastructural

⁵ Groundwater Surveys & Development Agency

⁶ Maharashtra Pollution Control Board

requirement of sand in the Tehsil of Beed and adjoining areas of other talukas.

Table 2. 1 Details of Kukkadgaon Satha 2 Sand ghat

Name of Village	Tahsil	River/ Nallah	Nearest survey No.	Area (ha)	Proposed Depth for excavation (m)	Quantity Permitted for mining of Sand in Brass	Method of Mining
Kukkadgaon	Beed	Sindhphana	132, 133, 137, 142	1.00	1.0	3534	Open-cast manual mining

Table 2. 2 Salient features of the project

Particulars	Details															
Location	Village- Kukkadgaon (Satha 2), Taluka- Beed, District-Beed, Maharashtra.															
Latitude and Longitude	<table border="1"> <thead> <tr> <th>Boundary points of Kukkadgaon Satha 2 sand spot</th> <th>Latitude</th> <th>Longitude</th> </tr> </thead> <tbody> <tr> <td>BP1</td> <td>19°7'25.82"N</td> <td>75°52'52.57"E</td> </tr> <tr> <td>BP2</td> <td>19°7'26.50"N</td> <td>75°52'51.86"E</td> </tr> <tr> <td>BP3</td> <td>19°7'34.00"N</td> <td>75°53'1.55"E</td> </tr> <tr> <td>BP4</td> <td>19°7'33.25"N</td> <td>75°53'2.09"E</td> </tr> </tbody> </table>	Boundary points of Kukkadgaon Satha 2 sand spot	Latitude	Longitude	BP1	19°7'25.82"N	75°52'52.57"E	BP2	19°7'26.50"N	75°52'51.86"E	BP3	19°7'34.00"N	75°53'1.55"E	BP4	19°7'33.25"N	75°53'2.09"E
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BP2	19°7'26.50"N	75°52'51.86"E														
BP3	19°7'34.00"N	75°53'1.55"E														
BP4	19°7'33.25"N	75°53'2.09"E														
Sand spot area (In ha)	1.00ha															
Proposed production capacity (in Brass)	3534															
Infrastructure Requirement (As per Govt Resolution 3rd January 2018)	<ol style="list-style-type: none"> 1. Room / Hut for Official records 2. Electricity / Battery for Running CCTV 24x7 daily. 3. One Computer / Android-based Mobile for the online generation of Invoice numbers. 															

Particulars	Details
Distance of project site from nearest rail or road bridge over the concerned River, Nallah, etc.	Bindusara River Bridge-12.18km
Distance from infrastructural facilities Railway line National Highway State Highway Major District Road Any Other Road Electric transmission line pole or tower Canal or check dam or reservoirs or lake or ponds In-take for drinking water pump house Intake for Irrigation canal pumps	Partur railway station-63.25km NH52-12.32km MSH144-2.33km 1.61km 1km
Areas already subjected to pollution or environmental damage. (those where existing legal environmental standards are exceeded)	None
Areas susceptible to natural hazards which could cause the project to Present environmental problems (earthquakes, subsidence, landslides, erosion, flooding, or extreme or adverse climatic conditions)	No. Sand Ghat is at safe distances from natural hazards like earthquake prone area, subsidence, landslide, erosion, flooding prone area and extreme or adverse climatic conditions

Particulars	Details
Whether the proposal involves approval or clearance under the following Regulations or Acts, namely: - (a) The Forest (Conservation) Act, 1980. (b) The Wildlife (Protection) Act, 1972. (c) The Coastal Regulation Zone Notification, 2011. If yes, details of the same and their status are to be given.	None
Forest land involved (hectares)	None

The below figure shows the google image of Kukkadgaon Satha 2 sand ghat.



Fig 2.1-Google image of Kukkadgaon Satha 2 sand ghat

Approach roach along with google location is as shown below.

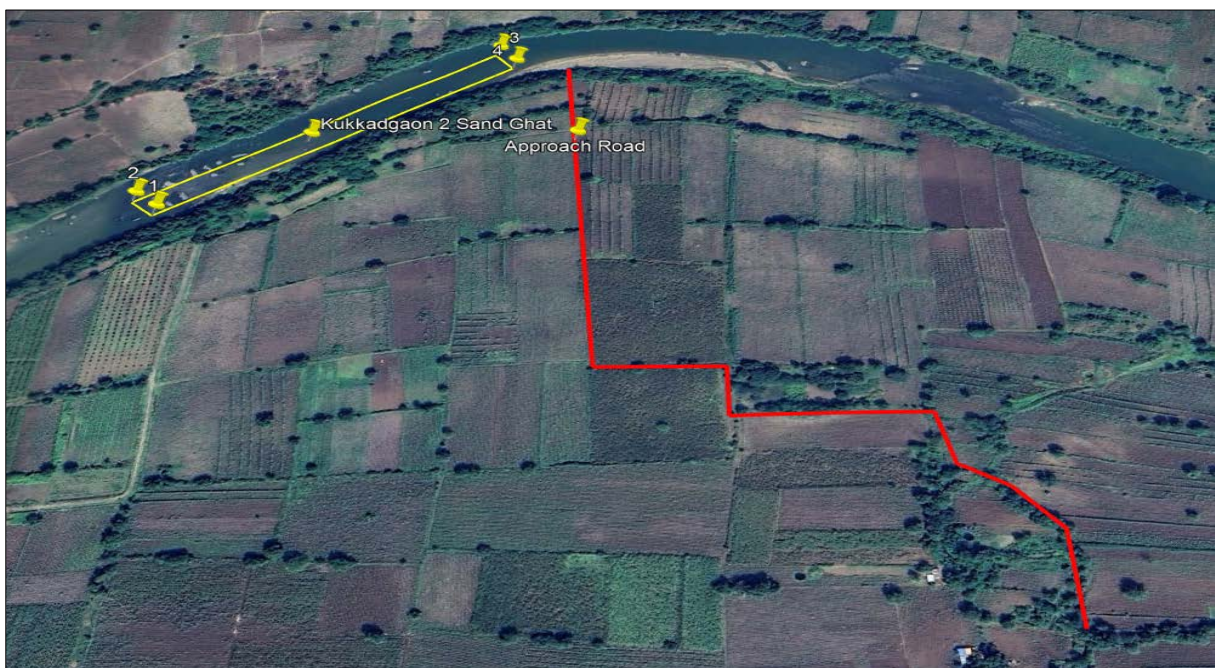


Fig 2.2-Approach Road for sand ghat

Next chapter 3 is Baseline Environmental Status in which the entire Topography, Climate, Soil Environment, Land use, water Environment, Hydrology, Biological environment, and Socio-economic Environment are briefly explained for the Beed district.

CHAPTER 3

BASELINE ENVIRONMENT STATUS

Topography

The Sand Ghat area as per the survey is the riverbed of the Sindhphana River of the Beed district. The maximum elevation is 466m MSL, average elevation is 464m MSL, & minimum elevation is 463m (7MSL) Mean Sea Level. The slope of the Sand Ghat area towards the Northeast to Southwest side. The flow of Sindhphana River is from West to East direction.

Presently, there is neither any infrastructure within the riverbed nor are proposed.

Hydrology

There will be no change in the Water Table during the mining operation, as the depth of mining shall be restricted to 1.0m water level, which is less likely to affect the surface level or Groundwater Table. There is no proposal of any stream modification/diversion due to this mining activity hence there will be not any impact on the flow of water.

Soil Environment

The riverbed consists of sand /gravel. There is no topsoil. The depth of mining shall be restricted to 1.0m. There is no crucial impact on the soil forecasted due to mining activities.

Land Use Land Cover

Land use shows that agriculture land use is predominant. The proposed site is 1.00ha having adjoined Khasara No 132, 133, 137, 142. The land doesn't cover any human habitation, forest, etc. Any change in the scope of the approved Mining Plan will lead to riverbank erosion/cutting and thereby river channel shifting, degradation of land, causing loss of properties and degradation of the surrounding landscape.

⁷ Mean sea level

Water Environment

While transporting sand there may be fugitive dust. There will be water requirement for spraying for dust suppression purposes. This water will be supplied from the borewell from nearby villages through tankers as well as from surface water sources. The water source may vary from village to village.

Climate

During summer May is the hottest month of the year in this area. The temperature rises to 42°C in the month of May. The average rainfall in this region is 600-700mm About 50% of rainfall precipitates between June to September. December is the coldest month with temperature falling down to 18°C. Overall the proposed site area has sub-tropical conditions.

Biological Environment

Flora

The agricultural area is seen near the Sand Ghat. Few trees and thorny bushes are seen on the banks of the river.

Fauna

As there is no forest cover, no endangered species of wildlife are seen in this area.

Socio-Economic Environment

This project may create constructive impacts of the sand mining that are stated below:

1. The mining operations will provide direct & indirect employment to village people.
2. The villages and their inhabitants & domestic animals will not be disturbed due to mining, as the quarry is far from their settlements.
3. Local workforce will be given first preference for employment.
4. Mining activities will benefit the local people due to the provision of more infrastructural facilities (developments of approach routes within the village area).

The next chapter describes all possible impacts on the Environment due to this project along with its mitigation measure to overcome these impacts.

CHAPTER 4

IMPACT ASSESSMENT REPORT ALONG WITH PROPOSED MITIGATION MEASURES

1. Land Environment

Anticipated Impact

Movement of vehicles can create issues for agricultural land, human habitations, noise, and risk for public and cause traffic hazards. The impacts include damage to the riverbank due to access ramps to the riverbed, soil erosion because of extraction of sand, micro disturbance to groundwater, possible stimulation of the changed river course, and contamination of sand aquifer water due to ponding. There might be surface degradation due to the road network.

The quality of soil will not be affected due to transportation or any other activity of mining.

Mitigation measure

1. Mining depth should be restricted to 3 meters and distance from the bank should be $\frac{1}{4}$ th or river width and should not be less than 7.5 meters as per “Sustainable Sand Mining Guidelines 2020” Page 23, Point no 4.3 (m).
2. There will be a minimal number of access roads to riverbeds. Cutting of riverbanks will be avoided and ramp with smooth slope will be maintained. Access points to the riverbed will be decided based on the least steepness of the riverbank and the least human activity at that location.
3. No foreign material like polythene bags, jute bags, and useless articles should be allowed to remain/spill in the riverbed and catchment area, or no pits/pockets will be allowed to be filled with such material.
4. Mining at the concave side of the river channel should be avoided to prevent bank erosion. Similarly, a tortuous segment of a river is to be selected for mining in such a way as to ignore the natural eroding of banks.
5. Ensure that ponding is not created in the riverbed.
6. Transportation route should be such that it gives minimum

damage to the environment.

7. Green belt will be developed along the haul road and the bank of rivers of mine premises and near the sand mining site. While selecting the plant species, preference will be given for planting native species of the area.

2. Water environment

Anticipated Impact

The project activity will be carried out in the dry part of the riverbed. Care will be taken to ensure that neither of the project activities will affect the water environment or riverbank habitats. During the lean months, the proposed Sand Mining will not expose the base flow of the river and hence there will not be any inauspicious impact on surface hydrology and groundwater regime due to this project. Project activities will not have any adverse consequences on the physical components of the environment and therefore may not have any effect on the recharge of ground waters or affect the water quality. Monitoring of water quality will be checked yearly.

Mitigation measures

1. Mining is avoided during the monsoon season and at the time of floods. This will help in the replenishment of sand in the riverbed.
2. Mining below the subterranean water level will be avoided as a safeguard against environmental contamination and over-exploitation of resources.
3. River stream will not be transferred to create active channels.
4. Mining schedule is synchronized with the river flow direction and the gradient of the land.
5. Mining at the concave side of the river channel will be avoided to prevent bank erosion.
6. Tortuous segment of the river will be selected for mining in such a way as to avoid naturally eroding banks and to promote mining on naturally building meander components.
7. Mining depth shall be maintained as per the guidelines and

rules of the Sand Mining Policy dated 03/09/2019 and recommendations of Maharashtra State (⁸M.S.). State Ground Water Department for extraction of sand during the lease period.

8. Water Quality Monitoring for the ground waters, river water, and other surface waters shall be carried out seasonally to ensure that the water quality is not affected by the project activities.
9. Utmost care will be taken to minimize or control leaking vehicles to be used for sand transportation.
10. The washing of tractor trolleys in the river will not be done.
11. The contractor will follow all guidelines and rules for proper and scientific methods of mining during the period of extracting the sand.

3. Air Environment

Anticipated Impacts

Plying of tractor trolleys from the public road to river sand collection points needs access roads. The majority of such access roads are the already existing roads/tracks being used by pedestrians/cart owners. The movement of heavy vehicles sometimes causes problems for cattle, agricultural land, and human habitations due to dust, noise, and the movement of the public. These environmental problems are felt more as the area is rural in nature.

Air pollution is likely to be caused at various stages of Sand Mining operations such as excavation, loading & transportation of material. Most of the fugitive dust emissions will be generated from loading & transportation. This dust becomes airborne and spreads away to surrounding areas.

The impact on air is mainly localized in nature as the dust particles of 100 μ in size are not carried to farther distances beyond 100m and the effect is felt within the core zone of the project involving active Sand Mining operations.

⁸ Maharashtra State

Mitigation measures

1. Movement of the vehicles on the road will be increased; however, the unmetalled road in the mining area will be sprinkled with water at regular intervals.
2. In addition to preventing spillage from tractor trolleys, overloading shall be controlled to 1-brass/tractor trolley. The speed limit will be <20 km/hr.
3. Maintenance of the haul road will be done on a regular basis.
4. To avoid fugitive dust emissions at the time of excavation, a regular sprinkling of water will be done on regular basis.
5. Sand is transported to the sites by road through tractor trolleys. The sand-carrying vehicles shall be covered by tarpaulin sheets.
6. The Green belt development will be prepared along the haul roads, which will act as a pollution sink.
7. To minimize vehicular pollution from the sand transporting vehicles, the following conditions will be insisted upon to permit the vehicles of the transporters.
8. The vehicles should be Bharat-IV stage compliant and should have a Pollution Under Control (⁹PUC) Certificate issued by appropriate authorities.
9. Regular maintenance of transport vehicles and monitoring of vehicular emission levels at periodical intervals.

4. Noise Environment

Anticipated Impact

The noise environment in this project will be overdone by the equipment at the site and vehicular transportation. A slight increase in noise levels of <10dB(A) can be expected up to a distance of 100m.

Mitigation measures.

1. Minimum use of horns in the village area.
2. Timely maintenance of vehicles and their silencers to

⁹ Pollution Under Control

minimize vibration and sound.

3. Phasing out old and worn-out tractor trolleys.
4. Provision of green belts along the road networks.
5. Care will be taken to produce minimum sound during sand loading.
6. Backhoe loader excavator will be used
7. Earplugs may be provided to protect the laborers working at the site.

5. Socio-economic Environment

Anticipated Impacts and Evaluation

1. The project activities shall not have any adverse impacts on any of the common property resources of the village communities, as the Sand Mine lease area is not being used for any purpose by any section of the society in this region.
2. There is no Resettlement and Rehabilitation (¹⁰R&R) involvement in this project.
3. There is no land acquisition in this project.
4. A major portion of the houses in the study area is semi-pucca-type structures.
5. The water source to these areas is from the Grampanchayat /Nagar Parishad connection and private bore wells and wells.
6. People living around the project area need the project for the purpose of employment and economic benefits.
7. The awareness level regarding the proposed mining activity is very towering. The proposed mining activity is expected to provide stimulus to socio-economic activities in the region and thereby accelerate further development processes.

Social and Demographic Profile

The workers are from local villages. These people have been provided welfare benefits from the lessee like medical benefits,

¹⁰ Rehabilitation and Resettlement

insurance, fees for children's education, etc. They have some land and cattle for their daily earnings. Additional revenue earned from the Sand Mining work will improve their living standard. The group of quarries in and around will help to have infrastructure facilities like roads, schools, shops, etc. This will enhance their social life.

Occupational Health and Safety

This is a riverbed Sand Mine. So, the mining activities are comparatively smaller because the production is not on a high scale. Workers do not come across any extreme conditions like excessive heat, moisture, etc. Workers working around it may come across this dusty environment. But the impact on health will be within the limit.

Human Settlement

1. There are no houses in and around the lease area. Blasting is the only activity, which may affect the settlement, which is not done. The settlement is more than 1-km from the sand mine.
2. Appropriate precautions will be taken during mining. Transportation of finished products is through the villages. There will be an effect of traffic on the local people. However, the intensity of traffic is 70-80/day.

Health and Hygiene

In general, the health of villagers is moderately good. In the rainy season, the atmospheric condition is unhygienic due to a lack of proper drainage and sanitation in the village habitation. Villagers are working in agricultural fields and work as labourers.

Education

Most education of 70% young <20 years, is up to the 5th to 9th. Economic condition is in general moderate. So, after this project, the standard of education will increase.

Socio-Economic Benefits Arising Out of Mining

1. Generation of employment in rural areas.
2. Upgradation in the living standards of rural people.
3. Creating infrastructural facilities like roads, electricity, shops, schools, etc.
4. Upgrading literacy in the area by exploiting natural minerals so the generation of revenue.

5. Helping to sustain construction activity.
6. Improving the greenery of the area, which is otherwise poor.

Liquid Effluent

Not applicable, because these activities do not generate effluent from operation or process.

Solid Waste

Not applicable, because small mines and impacts are negligible.

Project benefits due to the sand mining of Kukkadgaon Satha 2 are explained in the next Chapter.

CHAPTER 5

PROJECT BENEFITS

The proposed Sand Mining project of Kukkadgaon Village, Beed Tehsil, Beed District will lead to the following benefits:

1. Increase in the revenue of the district will ultimately increase the revenue of the village, which in return can be used to improve the infrastructure of the village.
2. Sand is available for building construction work and by systematic separation of sand, there is no possibility of a flood. Providing smooth movement of water of the river.
3. This project will contribute additional revenue to the state Exchequer in the form of revenue.
4. The project will conclude with employment opportunities for unskilled/skilled local people.
5. Standard of living of employed people will increase.

CHAPTER 6

SITE-SPECIFIC ENFORCEMENT & MONITORING PLAN

Sand Ghat Site specific enforcement & monitoring plan

(as per guidelines stipulated in the Enforcement and Monitoring Guidelines for sand mining issued by MoEFCC in January 2020.)

District administration shall deliver information on its website about the Sand Mines in the district for public information. The objective is to extend all information into the public domain so that the citizens are aware of the mining activities. People can also report to the district administration any deviation observed. Suitable feedback and its composition shall also be made operational.

Details shall include, but not be limited to, lease area, geo-coordinates of lease area and mineable area, transport routes, permitted capacity, regulatory conditions for operation including mining, environmental and social commitments, etc.

An Independent Committee of experts constituted by the Distance Learning Task Force (¹¹DLTF) will assess the environmental or ecological damage caused due to illegal mining and recommend recovery of environmental compensation from the concerned miners.

The recommendation may also include action under the provision of the Environment (Protection) Act 1986 u/s.15 read with s.19.

¹¹ Distance Learning Task Force

CHAPTER 7

SECURITY FEATURES

Security features are included in the Transport Permission/Permits (TP)

It will be ensured that the following security features are included in the Transport Permission/Permits (¹²TP) so that duplicate/fraudulent/forged TPs for transport, not accounted for in the IT-based system, is not possible:

1. Printed on Indian Bank Association (¹³IBA) Approved letterhead with account details
2. Magnetic Ink Character Recognition Code (¹⁴MICR) paper
3. Unique Barcode
4. Unique Quick Response Code (¹⁵QR)
5. Fugitive Ink Background
6. Invisible Ink Mark
7. Void Pantograph Watermark
8. Global Positioning System (¹⁶GPS) based vehicle tracking system
9. Closed-Circuit Television (¹⁷CCTV) Camera

¹² Transport Permission

¹³ Indian Bank Association

¹⁴ Magnetic Ink Character Recognition Code

¹⁵ Quick Response Code

¹⁶ Global Positioning System

¹⁷ Closed Circuit Television

CHAPTER 8

REPLENISHMENT

Replenishment study is the most important part of Sand Mining as it is the only basis to carry out sand mining. Without a Replenishment Study, we cannot understand the amount of deposition of sand. Following points to be followed for the replenishment study.

1. Area of deposition and erosion will be calculated for each cross-section after giving due regard to the stability & safety of active channel banks & other features of importance.
2. Differential Global Positioning System (¹⁸DGPS) and other survey tools will be used to define the topography, contours, and offsets of the lease area.
3. Contour & elevation benchmarks will provide baseline data for assessing pre- and post-study period scenario.
4. Physical benchmarks will be fixed at appropriate intervals (preferably 1 in 30m) & Reduced levels (¹⁹RL) shall be validated from a nearby standard RL.
5. These RL will be engraved on a steel plate (Bench Plate) & will be fixed & placed at locations that are free from any damages & are available in the pre-and post-study period.
6. Bench plates will be available for use during the mining period as a reference for all mining activity.
7. Baseline data on elevation status for a grid of 10m x 10m is preferred to have accuracy in the assessment.
8. It is expected that two consecutive cross-sections in longitudinal and lateral directions will not be more than a 10m distance apart.
9. Changes observed in the elevation in pre and post-scenario at each node, will be depicted in graphical forms with an appropriate scale to estimate the area of deposition & erosion.

¹⁸ Differential global positioning system

¹⁹ Reduced levels

10. Elevation level will be in reference to the nearest bench plates established for the purpose.
11. The levels (MSL & RL) of the corner point of each grid will be identifiable and safety barriers (non-Mining) demarcated as restricted in consensus with the Mineral Concession Rules of the respective State, and the provision mentioned in this Sustainable Sand Mining Management Guidelines.
12. A clear identification will be highlighted between grids under the mineable and grids under the non-mineable area.
13. These baseline data (pre and post) be subjected to stimulation with the help of data mine software to derive the replenishment area and corresponding volume and estimated weight.
14. The database will be structured in a tabulated form clearly depicting the nomenclature of the section lines, latitude and longitude of the starting point, chainage, and respective levels of all the points taken on that section line.
15. Net area shall be derived after summation of an area of deposition minus the area of erosion for each cross-section.
16. Volume will be estimated by multiplying the distance between two cross-sections with the average of the net area of these two consecutive cross-sections.
17. One sample per 900m² (30m x 30m) will be the preferred sample density for the assessment of bulk density for the estimation of deposition rate.
18. Care will be taken that the sample for assessment of Bulk Density is taken from the deposition zone & not from erosion.

Methodology for Sand Mining:

The following methodology should be followed for the Replenishment study.

1. The Demarcation and benchmark of the Sand Ghat are done at 10m x 10m intervals.
2. The use of the Auger Driller is to find out the depth of sand in each grid.
3. Auger Driller has created the holes in sand ghat by 10mx10m grid pattern.
4. Measured the depth of holes by using a measuring tape.

5. After taking all the readings average depth of sand is calculated.
6. The average depth of Kukkadgaon Satha 2 at Sindhphana is measured.

Replenishment study of sand in the proposed ghat along with details of the methodology, technology used to identify the existing reserve & replenishment of the same

Dandy Bolton Equation

For runoff less than 2 inches

$$S = 1280 \times (Q) \times 0.46 \times (1.46 - 0.26 \log(A)) \times F$$

For runoff more than 2 inches

$$S = 1958 \times (Q) \times (e^{-0.055 \times Q}) \times (1.43 - 0.26 \log(A))$$

Where,

S = sediment yield of stream (t/yr/km²),

Q = average annual runoff (m³),

A = net drainage area in sq.mile.

CHAPTER 9

PROPOSED PLANTATION PLAN

The Project Proponent must take care of the plantation around the site. This will not only enhance the beautification of the area but also there will be the reduction of pollution, not some extent.

Details of the plantation and Tree species recommended for the plantation are shown below.

Table 9. 1 Details of green belt

Location of greenbelt	Both sides of the approach road, On the riverbanks of both sides of the sand spot & nearby open areas. Haul Road outside the riverbed
No. of plants to be planted	2000 per Hectare
Spacing of plants	2m grid interval
Species selected	Native species

Table 9. 2 Trees species for plantation

Botanical Name	Local Name	Importance
Azadirachta Indica	Neem	Neem oil & neem products
Tectona Grandis	Teek	Antibacterial, Antifungal, Antiulcer
Ficus religiosaa	Peepal	Medicinal use, Fruits & figs
Bambusa vulgaris	Bamboo	Anthelmintic Anti-inflammatory, Astringent Properties
Madhuca longifolia	Mahua	Acts as a Stimulant & cough relief,

CHAPTER 10

ENVIRONMENTAL MANAGEMENT PLAN

A total capital cost of Rs.5.97 Lakhs has been kept in the project cost towards the environmental protection, control, mitigation measures, and implementation of the Environmental Management Plan (EMP). This cost is borne by the bidder/leaseholder. The budgetary cost estimate for the EMP is given in Table.

Table 10. 1 Budgetary cost of EMP

Sr	Impact Source	Impact	Control Measure	Cost(Rs)
1	Transport Road	On Air Quality	Compaction, gradation, and drainage on both sides.	35000
		On Land, the Stability of the Road and degradation of road	Proper maintenance	20000
			Regular water spraying	25000
			The air quality will be monitored at the impacted village. (For One Day Monitoring)	3000
			Health Check-up of Employees	3000
2	Truck/ Tractor Movement	Air Quality	Sand-carrying trucks will be effectively covered by tarpaulin to avoid the escape of fines to the atmosphere. (2 Tarpaulin)	20000
			Regular monitoring of the exhaust fumes	3000

Sr	Impact Source	Impact	Control Measure	Cost(Rs)
			Barriers & Traffic Management Expenses. (Excluding Manpower Salary which is included in labour costs)	8000
3	Ramp and Sand Reach	Mining Operation	Regular ramp Inspection and Ramp maintenance. (Excluding Manpower Salary which is included in labour costs)	40000
			Provision of dust masks	8000
4	Bank Management	Bank Erosion/Flood Plain management	The green belt along the bank (For Green Belt Development)	100000
			Plantation of wide leaf tall trees on banks and grass along a slanting portion of the bank	
5	Transportation on Village Roads	Dust Control	The green belt along village Rd (For Green Belt Development)	
6	Final Mine Closure Plan implementation	Replenishment of Sand	Gabions/ boulders will be arranged as per guidelines	10000
7	Mobile toilet, sewage handling & treatment		Mobile toilet, sewage handling & treatment	70000
8	CCTV Monitoring			70000
Total				415000

Budget For Corporate Environment Responsibility (²⁰CER)

About 2% fund of the project cost is allocated for Corporate Environment Responsibility (CER) activities as presented in below Table

Table 10.2 Budget for CER

Sr.	Description	Cost (Rs)
1.	Village Schools (separate toilet for girls and boys)	10000
2.	Solar panels over Gram Panchayat buildings	10000
3.	Solar panels over Public Health Centers	15000
	Total	35000

²⁰ Corporate Environment Responsibility

CHAPTER 11

SUMMARY AND CONCLUSION

The Roles and Responsibilities of the Environmental coordinator, the Operation Manager, and the senior personnel contractor are essential in EMP.

The environmental status of the project site and study area of 10km radius is delineated with respect to air, noise, water, land, biological and socio-economic environment the different project activities in the construction and operation phases are identified.

To identify the impacts, the interaction between the project activities and different components of the environment is classified phase-wise. A summary of the recognized impacts is given in the following paragraphs.

- During the operational phase, the transportation of sand could cause a temporary disturbance to the local environment which will be prevented with the proposed mitigation measures.
- Proposed project will not have any major significant negative impacts. The minor impacts arising during Excavation and Transportation phases can be mitigated with the help of the proposed Environmental Management Plan.
- In general, sand excavation from Kukkadgaon Satha 2 sand spot will be useful to the developmental work in the district and generate employment opportunities.

From this project, it is concluded that the district revenue will increase in return minimum of 2% of funds are utilized for the development of the village. The project will also grab employment which will improve the standard of life of villagers.

*** END ***

Environmental Management Plan

As per Rules 23 & 26 of MMME (D & R) RULE 2013 & Section 15 of MMDR Act 1957, MoEFCC Notification 2006, S.O. 141(E) dated 15. 01. 2016; MoEFCC, Sustainable Sand Mining Management Guidelines 2016, Guidelines for Mining Policy 2020)

for

ENVIRONMENTAL CLEARANCE

of

SAND MINING (MINOR MINERAL)

for

Ramgaon A– A Riverbed Sand Mine / Sand Ghat
Khasra No. GSDA approved 99 to 109
Area (1.25ha)

Village Ramgaon A, Tehsil Beed, District Beed

0

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ABBREVIATION

Short Form	Long Form
EMP	Environmental Management Plan
MoEFCC	Ministry of Environment Forest and Climate Change
DSR	District-level Survey Report
EC	Environmental Coordinator
OM	Operations Manager
GSDA	Groundwater Surveys & Development Agency
MPCB	Maharashtra Pollution Control Board
MSL	Mean Sea Level
MS	Maharashtra State
PUC	Pollution Under Control
R&R	Rehabilitation and Resettlement
DLTF	Distance Learning Task Force
TP	Transport Permission/Permits
IBA	Indian Bank Association
MICR	Magnetic Ink Character Recognition Code
QR	Quick Response Code
GPS	Global Positioning System

CCTV	Closed-Circuit Television
DGPS	Differential Global Positioning System
RL	Reduced Levels
CER	Corporate Environment Responsibility

CHAPTER 1

INTRODUCTION

The Environmental Management Plan (¹EMP) plays a vital connection uniting forecast impacts and mitigation measures during implementation and operational activities. EMP stipulates the mitigation, monitoring and conventional measures to be taken during project implementation and operation. EMP is to escape or mitigate adverse environmental impacts, and to implement these measures.

This Environmental Management Plan (EMP) has been prepared as part of the Scoping Report which will be compiled in terms of the Environmental Assessment for the sand mining activities.

Considering the Ministry of Environment and Forest Climate Change (²MoEFCC) Notification 2006 and Sustainable Sand Mining Management Guidelines 2016, the Govt. of Maharashtra had mapped out the Minor Mineral Extraction Rules 2013. These rules are to extract all minor minerals in a scientific way so that there is no unfavourable impact on Environment and Climate. To extract every minor mineral from any land (either Government or Private) there is provision for a Mining Plan. These plans need to be approved by a competent authority. For long-term leased minor minerals (5-10 years period) and sand excavation from the riverbed, Senior Deputy Director of Directorate of Geology and Mining is the competent authority. These plans are for short term temporary permits which are valid for one year.

According to Enforcement & Monitoring Guidelines for Sand Mining 2020, Sustainable Sand Mining Management Guidelines 2016, Standard Environment conditions for sand mining and sustainable mining practices, District level Survey Report (³DSR) should be prepared and are suitable for mining and area prohibited for mining must be recognized.

¹ Environmental Management Plan

² Ministry of Environment Forest and Climate Change

³ District Survey Report

Objectives of EMP

- To provide overall conservation of the environment.
- To minimize waste generation and pollution.
- To regulate the precise use of natural resources and water.
- To provide Safety, Welfare, and Good health for the workforce and populace.
- To regulate the effective operation of all control measures.
- To ensure alertness against probable disasters and accidents.
- To monitor cumulative and long-term impacts.
- To regulate the effective operation of all control measures.

Roles and Responsibilities concerning the implementation of the EMP

The roles and responsibilities of all parties involved in successfully managing the environment are mentioned below.

Environmental Coordinator

The Environmental Coordinator will inspect operational areas on a quarterly basis and at the onset of mining any new island, to ensure that all specifications are met. The duties of the environmental coordinator will be the following.

- Guide the operations team in respect of the implementation of the environmental specifications.
- Lead the visits to ensure all work is aligned with the EMP.
- The environmental coordinator must examine the site during the three-monthly visits. All rehabilitation results will be Comprised in the quarterly report.
- Examination of the rehabilitation area and giving guidance regarding rehabilitation measures if any.

The Operations Manager

The responsibilities of the Operations Manager (4OM) or his nominated authority are as follows.

1. Familiarize themselves with the requirements of the EMP.
2. Monitor employees' and contractor's compliance with the environmental specifications; and enforce adherence.

⁴ Operations Manager

3. Communicate all environment-related incidents with the Environmental Coordinator and distribute them internally to avoid repetition.
4. Maintain a record of activities relevant to Environmental Management.
5. The Operations Manager shall be responsible for monitoring and the enforcement of the Environmental Management specifications on a day-to-day basis. Any violation of the environmental specifications shall be recorded, and the agreed disciplinary measures are taken.

Senior personnel and contractors

The roles of the senior personnel/contractors are as follows:

- Familiarize themselves with the requirements of the EMP.
- Comply with the environmental management specifications.
- Ensure that all team members are familiar with the environmental management specifications.

Details of the project

The Ramgaon A sand ghat area has been selected in perspective of its subsisting demand for building-grade sand for the area in and around Beed Taluka. The District Mining Officer Beed has put forward the proposal for Environmental Clearance for mining. The ghat has a production of 4417 brass sand within an area of 1.25ha. The proposed proposal follows an organized mining process for Environmental Clearance.

Further Chapter informs about the in-depth details of the Sand Ghat, its geographical structure, and a Google map of the ghat with its approach road for contractors and workers to reach to sand ghat from the village.

CHAPTER 2

DETAILS OF THE PROJECT

Ramgaon A village is located in Beed Taluka of Beed district, Maharashtra. Beed is well connected with all nearby cities. The National highway NH-52, it traverses through the states of Punjab, Haryana, Rajasthan, Madhya Pradesh and Maharashtra in India. NH-52 is the National Highway passing through the district, covering a total distance of 73.60km. Beed has situated about 0km by road from Beed. The district has road links to adjoining districts Ahmednagar District to the west, Jalna District to the North, Latur District to the East, Osmanabad District to the South, Parbhani District to the East The district is well connected by roads.

Ramgaon A village is 24.37km away from Collector Office headquarters Beed. The Geographical area of the Beed is around 10693km². The nearest Railway station to Ramgaon A village is Partur Railway station. The nearest Airport to Beed District is Aurangabad Airport, Aurangabad Airport is 104km away from beed.

Honourable Collector Beed intends to auction Sand Ghats and appointed District Mining Officer as Project Proponent. A total of 38 sand ghats are identified by Tahsildar Majalgaon, Parli Ve, Gevrai, Beed along with District Mining Officer, Beed. The 38 sand ghats were jointly surveyed by Taluka level technical committee headed by respective tahsildar with Dy. Engineer Irrigation Department, Junior Geologist Directorate of Geology and Mining Govt. of Maharashtra, Junior Geologist, Groundwater Surveys & Development Agency (⁵GSDA). DMO Beed and a representative of the Maharashtra Pollution Control Board (⁶MPCB), as per the procedure defined in Sand Auction Rules 2019 dated 3/09/2019 formed a Taluka-level technical committee, which explored the sand ghats for an available quantity of sand for scooping. Revenue of Rs.25 Crore is expected from the auction of these sand ghats. Ramgaon A Sand Ghat proposed over river Sindhphana in Beed Taluka is proposed to cater to the infrastructural requirement of sand in the Tehsil of Beed and adjoining areas of other talukas.

⁵ Groundwater Surveys & Development Agency

⁶ Maharashtra Pollution Control Board

Table 2. 1 Details of Ramgaon A Sand ghat

Name of Village	Tahsil	River/ Nallah	Nearest survey No.	Area (ha)	Proposed Depth for excavation (m)	Quantity Permitted for mining of Sand in Brass	Method of Mining
Ramgaon A.	Beed	Sindhphana	99 to 109	1.25	1.0	4417	Open-cast manual mining

Table 2. 2 Salient features of the project

Particulars	Details															
Location	Village- Ramgaon A, Taluka- Beed, District-Beed, Maharashtra.															
Latitude and Longitude	<table border="1"> <thead> <tr> <th>Boundary points of Ramgaon A sand spot</th> <th>Latitude</th> <th>Longitude</th> </tr> </thead> <tbody> <tr> <td>BP1</td> <td>19°7'23.14"N</td> <td>75°55'48.57"E</td> </tr> <tr> <td>BP2</td> <td>19°7'23.89"N</td> <td>75°55'48.27"E</td> </tr> <tr> <td>BP3</td> <td>19°7'28.71"N</td> <td>75°56'4.61"E</td> </tr> <tr> <td>BP4</td> <td>19°7'27.91"N</td> <td>75°56'4.86"E</td> </tr> </tbody> </table>	Boundary points of Ramgaon A sand spot	Latitude	Longitude	BP1	19°7'23.14"N	75°55'48.57"E	BP2	19°7'23.89"N	75°55'48.27"E	BP3	19°7'28.71"N	75°56'4.61"E	BP4	19°7'27.91"N	75°56'4.86"E
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BP3	19°7'28.71"N	75°56'4.61"E														
BP4	19°7'27.91"N	75°56'4.86"E														
Sand spot area (In ha)	1.25ha															
Proposed production capacity (in Brass)	4417															
Infrastructure Requirement (As per Govt Resolution 3rd January 2018)	<ol style="list-style-type: none"> 1. Room / Hut for Official records 2. Electricity / Battery for Running CCTV 24x7 daily. 3. One Computer / Android-based Mobile for the online generation of Invoice numbers. 															
Distance of project site from nearest rail or road bridge over the concerned River, Nallah, etc.	Godavari River Bridge-19.74km															

Particulars	Details
Distance from infrastructural facilities Railway line National Highway State Highway Major District Road Any Other Road Electric transmission line pole or tower Canal or check dam or reservoirs or lake or ponds In-take for drinking water pump house Intake for Irrigation canal pumps	Partur railway station-57.15km NH61-10.13km MSH144-9.70km 3.87km 1km
Areas already subjected to pollution or environmental damage. (those where existing legal environmental standards are exceeded)	None
Areas susceptible to natural hazards which could cause the project to Present environmental problems (earthquakes, subsidence, landslides, erosion, flooding, or extreme or adverse climatic conditions)	No. Sand Ghat is at safe distances from natural hazards like earthquake prone area, subsidence, landslide, erosion, flooding prone area and extreme or adverse climatic conditions

Particulars	Details
<p>Whether the proposal involves approval or clearance under the following Regulations or Acts, namely: - (a) The Forest (Conservation) Act, 1980. (b) The Wildlife (Protection) Act, 1972. (c) The Coastal Regulation Zone Notification, 2011. If yes, details of the same and their status are to be given.</p>	<p>None</p>
<p>Forest land involved (hectares)</p>	<p>None</p>

The below figure shows the google image of Ramgaon A sand ghat.



Fig 2.1-Google image of Ramgaon A sand ghat

Approach roach along with google location is as shown below.

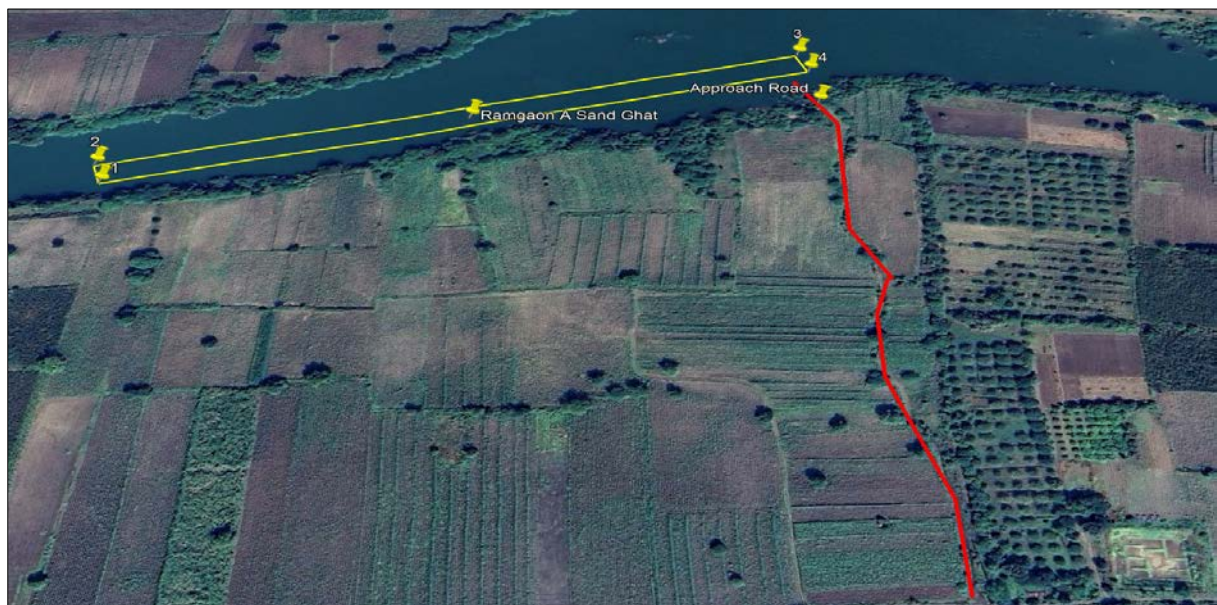


Fig 2.2-Approach Road for sand ghat

Next chapter 3 is Baseline Environmental Status in which the entire Topography, Climate, Soil Environment, Land use, water Environment, Hydrology, Biological environment, and Socio-economic Environment are briefly explained for the Beed district.

CHAPTER 3

BASELINE ENVIRONMENT STATUS

Topography

The Sand Ghat area as per the survey is the riverbed of the Sindhphana River of the Beed district. The maximum elevation is 460m MSL, average elevation is 458m MSL, & minimum elevation is 457m (7MSL) Mean Sea Level. The slope of the Sand Ghat area towards the Northeast to Southwest side. The flow of Sindhphana River is from West to East direction.

Presently, there is neither any infrastructure within the riverbed nor are proposed.

Hydrology

There will be no change in the Water Table during the mining operation, as the depth of mining shall be restricted to 1.0m water level, which is less likely to affect the surface level or Groundwater Table. There is no proposal of any stream modification/diversion due to this mining activity hence there will be not any impact on the flow of water.

Soil Environment

The riverbed consists of sand /gravel. There is no topsoil. The depth of mining shall be restricted to 1.0m. There is no crucial impact on the soil forecasted due to mining activities.

Land Use Land Cover

Land use shows that agriculture land use is predominant. The proposed site is 1.25ha having adjoined Khasara No 99 to 109. The land doesn't cover any human habitation, forest, etc. Any change in the scope of the approved Mining Plan will lead to riverbank erosion/cutting and thereby river channel shifting, degradation of land, causing loss of properties and degradation of the surrounding landscape.

⁷ Mean sea level

Water Environment

While transporting sand there may be fugitive dust. There will be water requirement for spraying for dust suppression purposes. This water will be supplied from the borewell from nearby villages through tankers as well as from surface water sources. The water source may vary from village to village.

Climate

During summer May is the hottest month of the year in this area. The temperature rises to 42°C in the month of May. The average rainfall in this region is 600-700mm About 50% of rainfall precipitates between June to September. December is the coldest month with temperature falling down to 18°C. Overall the proposed site area has sub-tropical conditions.

Biological Environment

Flora

The agricultural area is seen near the Sand Ghat. Few trees and thorny bushes are seen on the banks of the river.

Fauna

As there is no forest cover, no endangered species of wildlife are seen in this area.

Socio-Economic Environment

This project may create constructive impacts of the sand mining that are stated below:

1. The mining operations will provide direct & indirect employment to village people.
2. The villages and their inhabitants & domestic animals will not be disturbed due to mining, as the quarry is far from their settlements.
3. Local workforce will be given first preference for employment.
4. Mining activities will benefit the local people due to the provision of more infrastructural facilities (developments of approach routes within the village area).

The next chapter describes all possible impacts on the Environment due to this project along with its mitigation measure to overcome these impacts.

CHAPTER 4

IMPACT ASSESSMENT REPORT ALONG WITH PROPOSED MITIGATION MEASURES

1. Land Environment

Anticipated Impact

Movement of vehicles can create issues for agricultural land, human habitations, noise, and risk for public and cause traffic hazards. The impacts include damage to the riverbank due to access ramps to the riverbed, soil erosion because of extraction of sand, micro disturbance to groundwater, possible stimulation of the changed river course, and contamination of sand aquifer water due to ponding. There might be surface degradation due to the road network.

The quality of soil will not be affected due to transportation or any other activity of mining.

Mitigation measure

1. Mining depth should be restricted to 3 meters and distance from the bank should be $\frac{1}{4}$ th or river width and should not be less than 7.5 meters as per “Sustainable Sand Mining Guidelines 2020” Page 23, Point no 4.3 (m).
2. There will be a minimal number of access roads to riverbeds. Cutting of riverbanks will be avoided and ramp with smooth slope will be maintained. Access points to the riverbed will be decided based on the least steepness of the riverbank and the least human activity at that location.
3. No foreign material like polythene bags, jute bags, and useless articles should be allowed to remain/spill in the riverbed and catchment area, or no pits/pockets will be allowed to be filled with such material.
4. Mining at the concave side of the river channel should be avoided to prevent bank erosion. Similarly, a tortuous segment of a river is to be selected for mining in such a way as to ignore the natural eroding of banks.
5. Ensure that ponding is not created in the riverbed.
6. Transportation route should be such that it gives minimum

damage to the environment.

7. Green belt will be developed along the haul road and the bank of rivers of mine premises and near the sand mining site. While selecting the plant species, preference will be given for planting native species of the area.

2. Water environment

Anticipated Impact

The project activity will be carried out in the dry part of the riverbed. Care will be taken to ensure that neither of the project activities will affect the water environment or riverbank habitats. During the lean months, the proposed Sand Mining will not expose the base flow of the river and hence there will not be any inauspicious impact on surface hydrology and groundwater regime due to this project. Project activities will not have any adverse consequences on the physical components of the environment and therefore may not have any effect on the recharge of ground waters or affect the water quality. Monitoring of water quality will be checked yearly.

Mitigation measures

1. Mining is avoided during the monsoon season and at the time of floods. This will help in the replenishment of sand in the riverbed.
2. Mining below the subterranean water level will be avoided as a safeguard against environmental contamination and over-exploitation of resources.
3. River stream will not be transferred to create active channels.
4. Mining schedule is synchronized with the river flow direction and the gradient of the land.
5. Mining at the concave side of the river channel will be avoided to prevent bank erosion.
6. Tortuous segment of the river will be selected for mining in such a way as to avoid naturally eroding banks and to promote mining on naturally building meander components.
7. Mining depth shall be maintained as per the guidelines and

rules of the Sand Mining Policy dated 03/09/2019 and recommendations of Maharashtra State (⁸M.S.). State Ground Water Department for extraction of sand during the lease period.

8. Water Quality Monitoring for the ground waters, river water, and other surface waters shall be carried out seasonally to ensure that the water quality is not affected by the project activities.
9. Utmost care will be taken to minimize or control leaking vehicles to be used for sand transportation.
10. The washing of tractor trolleys in the river will not be done.
11. The contractor will follow all guidelines and rules for proper and scientific methods of mining during the period of extracting the sand.

3. Air Environment

Anticipated Impacts

Plying of tractor trolleys from the public road to river sand collection points needs access roads. The majority of such access roads are the already existing roads/tracks being used by pedestrians/cart owners. The movement of heavy vehicles sometimes causes problems for cattle, agricultural land, and human habitations due to dust, noise, and the movement of the public. These environmental problems are felt more as the area is rural in nature.

Air pollution is likely to be caused at various stages of Sand Mining operations such as excavation, loading & transportation of material. Most of the fugitive dust emissions will be generated from loading & transportation. This dust becomes airborne and spreads away to surrounding areas.

The impact on air is mainly localized in nature as the dust particles of 100 μ in size are not carried to farther distances beyond 100m and the effect is felt within the core zone of the project involving active Sand Mining operations.

⁸ Maharashtra State

Mitigation measures

1. Movement of the vehicles on the road will be increased; however, the unmetalled road in the mining area will be sprinkled with water at regular intervals.
2. In addition to preventing spillage from tractor trolleys, overloading shall be controlled to 1-brass/tractor trolley. The speed limit will be <20 km/hr.
3. Maintenance of the haul road will be done on a regular basis.
4. To avoid fugitive dust emissions at the time of excavation, a regular sprinkling of water will be done on regular basis.
5. Sand is transported to the sites by road through tractor trolleys. The sand-carrying vehicles shall be covered by tarpaulin sheets.
6. The Green belt development will be prepared along the haul roads, which will act as a pollution sink.
7. To minimize vehicular pollution from the sand transporting vehicles, the following conditions will be insisted upon to permit the vehicles of the transporters.
8. The vehicles should be Bharat-IV stage compliant and should have a Pollution Under Control (⁹PUC) Certificate issued by appropriate authorities.
9. Regular maintenance of transport vehicles and monitoring of vehicular emission levels at periodical intervals.

4. Noise Environment

Anticipated Impact

The noise environment in this project will be overdone by the equipment at the site and vehicular transportation. A slight increase in noise levels of <10dB(A) can be expected up to a distance of 100m.

Mitigation measures.

1. Minimum use of horns in the village area.
2. Timely maintenance of vehicles and their silencers to

⁹ Pollution Under Control

minimize vibration and sound.

3. Phasing out old and worn-out tractor trolleys.
4. Provision of green belts along the road networks.
5. Care will be taken to produce minimum sound during sand loading.
6. Backhoe loader excavator will be used
7. Earplugs may be provided to protect the laborers working at the site.

5. Socio-economic Environment

Anticipated Impacts and Evaluation

1. The project activities shall not have any adverse impacts on any of the common property resources of the village communities, as the Sand Mine lease area is not being used for any purpose by any section of the society in this region.
2. There is no Resettlement and Rehabilitation (¹⁰R&R) involvement in this project.
3. There is no land acquisition in this project.
4. A major portion of the houses in the study area is semi-pucca-type structures.
5. The water source to these areas is from the Grampanchayat /Nagar Parishad connection and private bore wells and wells.
6. People living around the project area need the project for the purpose of employment and economic benefits.
7. The awareness level regarding the proposed mining activity is very towering. The proposed mining activity is expected to provide stimulus to socio-economic activities in the region and thereby accelerate further development processes.

Social and Demographic Profile

The workers are from local villages. These people have been provided welfare benefits from the lessee like medical benefits,

¹⁰ Rehabilitation and Resettlement

insurance, fees for children's education, etc. They have some land and cattle for their daily earnings. Additional revenue earned from the Sand Mining work will improve their living standard. The group of quarries in and around will help to have infrastructure facilities like roads, schools, shops, etc. This will enhance their social life.

Occupational Health and Safety

This is a riverbed Sand Mine. So, the mining activities are comparatively smaller because the production is not on a high scale. Workers do not come across any extreme conditions like excessive heat, moisture, etc. Workers working around it may come across this dusty environment. But the impact on health will be within the limit.

Human Settlement

1. There are no houses in and around the lease area. Blasting is the only activity, which may affect the settlement, which is not done. The settlement is more than 1-km from the sand mine.
2. Appropriate precautions will be taken during mining. Transportation of finished products is through the villages. There will be an effect of traffic on the local people. However, the intensity of traffic is 70-80/day.

Health and Hygiene

In general, the health of villagers is moderately good. In the rainy season, the atmospheric condition is unhygienic due to a lack of proper drainage and sanitation in the village habitation. Villagers are working in agricultural fields and work as labourers.

Education

Most education of 70% young <20 years, is up to the 5th to 9th. Economic condition is in general moderate. So, after this project, the standard of education will increase.

Socio-Economic Benefits Arising Out of Mining

1. Generation of employment in rural areas.
2. Upgradation in the living standards of rural people.
3. Creating infrastructural facilities like roads, electricity, shops, schools, etc.
4. Upgrading literacy in the area by exploiting natural minerals so the generation of revenue.

5. Helping to sustain construction activity.
6. Improving the greenery of the area, which is otherwise poor.

Liquid Effluent

Not applicable, because these activities do not generate effluent from operation or process.

Solid Waste

Not applicable, because small mines and impacts are negligible.

Project benefits due to the sand mining of Ramgaon A are explained in the next Chapter.

CHAPTER 5

PROJECT BENEFITS

The proposed Sand Mining project of Ramgaon A Village, Beed Tehsil, Beed District will lead to the following benefits:

1. Increase in the revenue of the district will ultimately increase the revenue of the village, which in return can be used to improve the infrastructure of the village.
2. Sand is available for building construction work and by systematic separation of sand, there is no possibility of a flood. Providing smooth movement of water of the river.
3. This project will contribute additional revenue to the state Exchequer in the form of revenue.
4. The project will conclude with employment opportunities for unskilled/skilled local people.
5. Standard of living of employed people will increase.

CHAPTER 6

SITE-SPECIFIC ENFORCEMENT & MONITORING PLAN

Sand Ghat Site specific enforcement & monitoring plan

(as per guidelines stipulated in the Enforcement and Monitoring Guidelines for sand mining issued by MoEFCC in January 2020.)

District administration shall deliver information on its website about the Sand Mines in the district for public information. The objective is to extend all information into the public domain so that the citizens are aware of the mining activities. People can also report to the district administration any deviation observed. Suitable feedback and its composition shall also be made operational.

Details shall include, but not be limited to, lease area, geo-coordinates of lease area and mineable area, transport routes, permitted capacity, regulatory conditions for operation including mining, environmental and social commitments, etc.

An Independent Committee of experts constituted by the Distance Learning Task Force (¹¹DLTF) will assess the environmental or ecological damage caused due to illegal mining and recommend recovery of environmental compensation from the concerned miners.

The recommendation may also include action under the provision of the Environment (Protection) Act 1986 u/s.15 read with s.19.

¹¹ Distance Learning Task Force

CHAPTER 7

SECURITY FEATURES

Security features are included in the Transport Permission/Permits (TP)

It will be ensured that the following security features are included in the Transport Permission/Permits (¹²TP) so that duplicate/fraudulent/forged TPs for transport, not accounted for in the IT-based system, is not possible:

1. Printed on Indian Bank Association (¹³IBA) Approved letterhead with account details
2. Magnetic Ink Character Recognition Code (¹⁴MICR) paper
3. Unique Barcode
4. Unique Quick Response Code (¹⁵QR)
5. Fugitive Ink Background
6. Invisible Ink Mark
7. Void Pantograph Watermark
8. Global Positioning System (¹⁶GPS) based vehicle tracking system
9. Closed-Circuit Television (¹⁷CCTV) Camera

¹² Transport Permission

¹³ Indian Bank Association

¹⁴ Magnetic Ink Character Recognition Code

¹⁵ Quick Response Code

¹⁶ Global Positioning System

¹⁷ Closed Circuit Television

CHAPTER 8

REPLENISHMENT

Replenishment study is the most important part of Sand Mining as it is the only basis to carry out sand mining. Without a Replenishment Study, we cannot understand the amount of deposition of sand. Following points to be followed for the replenishment study.

1. Area of deposition and erosion will be calculated for each cross-section after giving due regard to the stability & safety of active channel banks & other features of importance.
2. Differential Global Positioning System (¹⁸DGPS) and other survey tools will be used to define the topography, contours, and offsets of the lease area.
3. Contour & elevation benchmarks will provide baseline data for assessing pre- and post-study period scenario.
4. Physical benchmarks will be fixed at appropriate intervals (preferably 1 in 30m) & Reduced levels (¹⁹RL) shall be validated from a nearby standard RL.
5. These RL will be engraved on a steel plate (Bench Plate) & will be fixed & placed at locations that are free from any damages & are available in the pre-and post-study period.
6. Bench plates will be available for use during the mining period as a reference for all mining activity.
7. Baseline data on elevation status for a grid of 10m x 10m is preferred to have accuracy in the assessment.
8. It is expected that two consecutive cross-sections in longitudinal and lateral directions will not be more than a 10m distance apart.
9. Changes observed in the elevation in pre and post-scenario at each node, will be depicted in graphical forms with an appropriate scale to estimate the area of deposition & erosion.

¹⁸ Differential global positioning system

¹⁹ Reduced levels

10. Elevation level will be in reference to the nearest bench plates established for the purpose.
11. The levels (MSL & RL) of the corner point of each grid will be identifiable and safety barriers (non-Mining) demarcated as restricted in consensus with the Mineral Concession Rules of the respective State, and the provision mentioned in this Sustainable Sand Mining Management Guidelines.
12. A clear identification will be highlighted between grids under the mineable and grids under the non-mineable area.
13. These baseline data (pre and post) be subjected to stimulation with the help of data mine software to derive the replenishment area and corresponding volume and estimated weight.
14. The database will be structured in a tabulated form clearly depicting the nomenclature of the section lines, latitude and longitude of the starting point, chainage, and respective levels of all the points taken on that section line.
15. Net area shall be derived after summation of an area of deposition minus the area of erosion for each cross-section.
16. Volume will be estimated by multiplying the distance between two cross-sections with the average of the net area of these two consecutive cross-sections.
17. One sample per 900m² (30m x 30m) will be the preferred sample density for the assessment of bulk density for the estimation of deposition rate.
18. Care will be taken that the sample for assessment of Bulk Density is taken from the deposition zone & not from erosion.

Methodology for Sand Mining:

The following methodology should be followed for the Replenishment study.

1. The Demarcation and benchmark of the Sand Ghat are done at 10m x 10m intervals.
2. The use of the Auger Driller is to find out the depth of sand in each grid.
3. Auger Driller has created the holes in sand ghat by 10mx10m grid pattern.
4. Measured the depth of holes by using a measuring tape.

5. After taking all the readings average depth of sand is calculated.
6. The average depth of Ramgaon A at Sindhphana is measured.

Replenishment study of sand in the proposed ghat along with details of the methodology, technology used to identify the existing reserve & replenishment of the same

Dandy Bolton Equation

For runoff less than 2 inches

$$S = 1280 \times (Q) \times 0.46 \times (1.46 - 0.26 \log(A)) \times F$$

For runoff more than 2 inches

$$S = 1958 \times (Q) \times (e^{-0.055 \times Q}) \times (1.43 - 0.26 \log(A))$$

Where,

S = sediment yield of stream (t/yr/km²),

Q = average annual runoff (m³),

A = net drainage area in sq.mile.

CHAPTER 9

PROPOSED PLANTATION PLAN

The Project Proponent must take care of the plantation around the site. This will not only enhance the beautification of the area but also there will be the reduction of pollution, not some extent.

Details of the plantation and Tree species recommended for the plantation are shown below.

Table 9. 1 Details of green belt

Location of greenbelt	Both sides of the approach road, On the riverbanks of both sides of the sand spot & nearby open areas. Haul Road outside the riverbed
No. of plants to be planted	2000 per Hectare
Spacing of plants	2m grid interval
Species selected	Native species

Table 9. 2 Trees species for plantation

Botanical Name	Local Name	Importance
Azadirachta Indica	Neem	Neem oil & neem products
Tectona Grandis	Teek	Antibacterial, Antifungal, Antiulcer
Ficus religiosaa	Peepal	Medicinal use, Fruits & figs
Bambusa vulgaris	Bamboo	Anthelmintic Anti-inflammatory, Astringent Properties
Madhuca longifolia	Mahua	Acts as a Stimulant & cough relief,

CHAPTER 10

ENVIRONMENTAL MANAGEMENT PLAN

A total capital cost of Rs.5.97 Lakhs has been kept in the project cost towards the environmental protection, control, mitigation measures, and implementation of the Environmental Management Plan (EMP). This cost is borne by the bidder/leaseholder. The budgetary cost estimate for the EMP is given in Table.

Table 10. 1 Budgetary cost of EMP

Sr	Impact Source	Impact	Control Measure	Cost (Rs.)
1	Transport Road	On Air Quality	Compaction, gradation, and drainage on both sides.	40000
		On Land, the Stability of the Road and degradation of road	Proper maintenance	30000
			Regular water spraying	30000
			The air quality will be monitored at the impacted village. (For One Day Monitoring)	5000
			Health Check-up of Employees	5000
2	Truck/ Tractor Movement	Air Quality	Sand-carrying trucks will be effectively covered by tarpaulin to avoid the escape of fines to the atmosphere. (2 Tarpaulin)	25000
			Regular monitoring of the exhaust fumes	5000

Sr	Impact Source	Impact	Control Measure	Cost (Rs.)
			Barriers & Traffic Management Expenses. (Excluding Manpower Salary which is included in labour costs)	10000
3	Ramp and Sand Reach	Mining Operation	Regular ramp Inspection and Ramp maintenance. (Excluding Manpower Salary which is included in labour costs)	50000
			Provision of dust masks	10000
4	Bank Management	Bank Erosion/Flood Plain management	The green belt along the bank (For Green Belt Development)	150000
			Plantation of wide leaf tall trees on banks and grass along a slanting portion of the bank	
5	Transportation on Village Roads	Dust Control	The green belt along village Rd (For Green Belt Development)	
6	Final Mine Closure Plan implementation	Replenishment of Sand	Gabions/ boulders will be arranged as per guidelines	15000
7	Mobile toilet, sewage handling & treatment		Mobile toilet, sewage handling & treatment	80000
8	CCTV Monitoring			80000
Total				535000

Budget For Corporate Environment Responsibility (²⁰CER)

About 2% fund of the project cost is allocated for Corporate Environment Responsibility (CER) activities as presented in below Table

Table 10.2 Budget for CER

Sr.	Description	Cost (Rs)
1.	Village Schools (separate toilet for girls and boys)	15000
2.	Solar panels over Gram Panchayat buildings	15000
3.	Solar panels over Public Health Centers	20000
	Total	50000

²⁰ Corporate Environment Responsibility

CHAPTER 11

SUMMARY AND CONCLUSION

The Roles and Responsibilities of the Environmental coordinator, the Operation Manager, and the senior personnel contractor are essential in EMP.

The environmental status of the project site and study area of 10km radius is delineated with respect to air, noise, water, land, biological and socio-economic environment the different project activities in the construction and operation phases are identified.

To identify the impacts, the interaction between the project activities and different components of the environment is classified phase-wise. A summary of the recognized impacts is given in the following paragraphs.

- During the operational phase, the transportation of sand could cause a temporary disturbance to the local environment which will be prevented with the proposed mitigation measures.
- Proposed project will not have any major significant negative impacts. The minor impacts arising during Excavation and Transportation phases can be mitigated with the help of the proposed Environmental Management Plan.
- In general, sand excavation from Ramgaon A sand spot will be useful to the developmental work in the district and generate employment opportunities.

From this project, it is concluded that the district revenue will increase in return minimum of 2% of funds are utilized for the development of the village. The project will also grab employment which will improve the standard of life of villagers.

*** END ***

Environmental Management Plan

As per Rules 23 & 26 of MMME (D & R) RULE 2013 & Section 15 of MMDR Act 1957, MoEFCC Notification 2006, S.O. 141(E) dated 15. 01. 2016; MoEFCC, Sustainable Sand Mining Management Guidelines 2016, Guidelines for Mining Policy 2020)

for

ENVIRONMENTAL CLEARANCE

of

SAND MINING (MINOR MINERAL)

for

Ranjegaon– A Riverbed Sand Mine / Sand Ghat
Khasra No. GSDA approved 1
Area (1.575ha)

Village Ranjegaon, Tehsil Beed, District Beed

Prepared By

MAHABAL ENVIRO ENGINEERS PVT.LTD.

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ABBREVIATION

Short Form	Long Form
EMP	Environmental Management Plan
MoEFCC	Ministry of Environment Forest and Climate Change
DSR	District-level Survey Report
EC	Environmental Coordinator
OM	Operations Manager
GSDA	Groundwater Surveys & Development Agency
MPCB	Maharashtra Pollution Control Board
MSL	Mean Sea Level
MS	Maharashtra State
PUC	Pollution Under Control
R&R	Rehabilitation and Resettlement
DLTF	Distance Learning Task Force
TP	Transport Permission/Permits
IBA	Indian Bank Association
MICR	Magnetic Ink Character Recognition Code
QR	Quick Response Code
GPS	Global Positioning System

CCTV	Closed-Circuit Television
DGPS	Differential Global Positioning System
RL	Reduced Levels
CER	Corporate Environment Responsibility

CHAPTER 1

INTRODUCTION

The Environmental Management Plan (¹EMP) plays a vital connection uniting forecast impacts and mitigation measures during implementation and operational activities. EMP stipulates the mitigation, monitoring and conventional measures to be taken during project implementation and operation. EMP is to escape or mitigate adverse environmental impacts, and to implement these measures.

This Environmental Management Plan (EMP) has been prepared as part of the Scoping Report which will be compiled in terms of the Environmental Assessment for the sand mining activities.

Considering the Ministry of Environment and Forest Climate Change (²MoEFCC) Notification 2006 and Sustainable Sand Mining Management Guidelines 2016, the Govt. of Maharashtra had mapped out the Minor Mineral Extraction Rules 2013. These rules are to extract all minor minerals in a scientific way so that there is no unfavourable impact on Environment and Climate. To extract every minor mineral from any land (either Government or Private) there is provision for a Mining Plan. These plans need to be approved by a competent authority. For long-term leased minor minerals (5-10 years period) and sand excavation from the riverbed, Senior Deputy Director of Directorate of Geology and Mining is the competent authority. These plans are for short term temporary permits which are valid for one year.

According to Enforcement & Monitoring Guidelines for Sand Mining 2020, Sustainable Sand Mining Management Guidelines 2016, Standard Environment conditions for sand mining and sustainable mining practices, District level Survey Report (³DSR) should be prepared and are suitable for mining and area prohibited for mining must be recognized.

¹ Environmental Management Plan

² Ministry of Environment Forest and Climate Change

³ District Survey Report

Objectives of EMP

- To provide overall conservation of the environment.
- To minimize waste generation and pollution.
- To regulate the precise use of natural resources and water.
- To provide Safety, Welfare, and Good health for the workforce and populace.
- To regulate the effective operation of all control measures.
- To ensure alertness against probable disasters and accidents.
- To monitor cumulative and long-term impacts.
- To regulate the effective operation of all control measures.

Roles and Responsibilities concerning the implementation of the EMP

The roles and responsibilities of all parties involved in successfully managing the environment are mentioned below.

Environmental Coordinator

The Environmental Coordinator will inspect operational areas on a quarterly basis and at the onset of mining any new island, to ensure that all specifications are met. The duties of the environmental coordinator will be the following.

- Guide the operations team in respect of the implementation of the environmental specifications.
- Lead the visits to ensure all work is aligned with the EMP.
- The environmental coordinator must examine the site during the three-monthly visits. All rehabilitation results will be Comprised in the quarterly report.
- Examination of the rehabilitation area and giving guidance regarding rehabilitation measures if any.

The Operations Manager

The responsibilities of the Operations Manager (4OM) or his nominated authority are as follows.

1. Familiarize themselves with the requirements of the EMP.
2. Monitor employees' and contractor's compliance with the environmental specifications; and enforce adherence.

⁴ Operations Manager

3. Communicate all environment-related incidents with the Environmental Coordinator and distribute them internally to avoid repetition.
4. Maintain a record of activities relevant to Environmental Management.
5. The Operations Manager shall be responsible for monitoring and the enforcement of the Environmental Management specifications on a day-to-day basis. Any violation of the environmental specifications shall be recorded, and the agreed disciplinary measures are taken.

Senior personnel and contractors

The roles of the senior personnel/contractors are as follows:

- Familiarize themselves with the requirements of the EMP.
- Comply with the environmental management specifications.
- Ensure that all team members are familiar with the environmental management specifications.

Details of the project

The Ranjegaon sand ghat area has been selected in perspective of its subsisting demand for building-grade sand for the area in and around Beed Taluka. The District Mining Officer Beed has put forward the proposal for Environmental Clearance for mining. The ghat has a production of 5565 brass sand within an area of 1.575ha. The proposed proposal follows an organized mining process for Environmental Clearance.

Further Chapter informs about the in-depth details of the Sand Ghat, its geographical structure, and a Google map of the ghat with its approach road for contractors and workers to reach to sand ghat from the village.

CHAPTER 2

DETAILS OF THE PROJECT

Ranjegaon village is located in Beed Taluka of Beed district, Maharashtra. Beed is well connected with all nearby cities. The National highway NH-52, it traverses through the states of Punjab, Haryana, Rajasthan, Madhya Pradesh and Maharashtra in India. NH-52 is the National Highway passing through the district, covering a total distance of 73.60km. Beed has situated about 0km by road from Beed. The district has road links to adjoining districts Ahmednagar District to the west, Jalna District to the North, Latur District to the East, Osmanabad District to the South, Parbhani District to the East The district is well connected by roads.

Ranjegaon village is 29.67km away from Collector Office headquarters Beed. The Geographical area of the Beed is around 10693km². The nearest Railway station to Ranjegaon village is Partur Railway station. The nearest Airport to Beed District is Aurangabad Airport, Aurangabad Airport is 104km away from beed.

Honourable Collector Beed intends to auction Sand Ghats and appointed District Mining Officer as Project Proponent. A total of 38 sand ghats are identified by Tahsildar Majalgaon, Parli Ve, Gevrai, Beed along with District Mining Officer, Beed. The 38 sand ghats were jointly surveyed by Taluka level technical committee headed by respective tahsildar with Dy. Engineer Irrigation Department, Junior Geologist Directorate of Geology and Mining Govt. of Maharashtra, Junior Geologist, Groundwater Surveys & Development Agency (⁵GSDA). DMO Beed and a representative of the Maharashtra Pollution Control Board (⁶MPCB), as per the procedure defined in Sand Auction Rules 2019 dated 3/09/2019 formed a Taluka-level technical committee, which explored the sand ghats for an available quantity of sand for scooping. Revenue of Rs.25 Crore is expected from the auction of these sand ghats. Ranjegaon Sand Ghat proposed over river Sindhphana in Beed Taluka is proposed to cater to the infrastructural requirement of sand in the Tehsil of Beed and adjoining areas of other talukas.

⁵ Groundwater Surveys & Development Agency

⁶ Maharashtra Pollution Control Board

Table 2. 1 Details of Ranjegaon Sand ghat

Name of Village	Tahsil	River/ Nallah	Nearest survey No.	Area (ha)	Proposed Depth for excavation (m)	Quantity Permitted for mining of Sand in Brass	Method of Mining
Ranjegaon.	Beed	Sindhphana	1	1.575	1.0	5565	Open-cast manual mining

Table 2. 2 Salient features of the project

Particulars	Details															
Location	Village- Ranjegaon, Taluka- Beed, District-Beed, Maharashtra.															
Latitude and Longitude	<table border="1"> <thead> <tr> <th>Boundary points of Ranjegaon sand spot</th> <th>Latitude</th> <th>Longitude</th> </tr> </thead> <tbody> <tr> <td>BP1</td> <td>19°8'7.13"N</td> <td>75°59'1.08"E</td> </tr> <tr> <td>BP2</td> <td>19°8'8.05"N</td> <td>75°59'0.32"E</td> </tr> <tr> <td>BP3</td> <td>19°8'18.71"N</td> <td>75°59'9.71"E</td> </tr> <tr> <td>BP4</td> <td>19°8'18.15"N</td> <td>75°59'10.69"E</td> </tr> </tbody> </table>	Boundary points of Ranjegaon sand spot	Latitude	Longitude	BP1	19°8'7.13"N	75°59'1.08"E	BP2	19°8'8.05"N	75°59'0.32"E	BP3	19°8'18.71"N	75°59'9.71"E	BP4	19°8'18.15"N	75°59'10.69"E
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BP3	19°8'18.71"N	75°59'9.71"E														
BP4	19°8'18.15"N	75°59'10.69"E														
Sand spot area (In ha)	1.575ha															
Proposed production capacity (in Brass)	5565															
Infrastructure Requirement (As per Govt Resolution 3rd January 2018)	<ol style="list-style-type: none"> 1. Room / Hut for Official records 2. Electricity / Battery for Running CCTV 24x7 daily. 3. One Computer / Android-based Mobile for the online generation of Invoice numbers. 															
Distance of project site from nearest rail or road bridge over the concerned River, Nallah, etc.	Godavari River Bridge-18.34km															

Particulars	Details
Distance from infrastructural facilities Railway line National Highway State Highway Major District Road Any Other Road Electric transmission line pole or tower Canal or check dam or reservoirs or lake or ponds In-take for drinking water pump house Intake for Irrigation canal pumps	Partur railway station-52.60km NH61-7.38km MSH144-9.94km 2.88km 1km
Areas already subjected to pollution or environmental damage. (those where existing legal environmental standards are exceeded)	None
Areas susceptible to natural hazards which could cause the project to Present environmental problems (earthquakes, subsidence, landslides, erosion, flooding, or extreme or adverse climatic conditions)	No. Sand Ghat is at safe distances from natural hazards like earthquake prone area, subsidence, landslide, erosion, flooding prone area and extreme or adverse climatic conditions

Particulars	Details
Whether the proposal involves approval or clearance under the following Regulations or Acts, namely: - (a) The Forest (Conservation) Act, 1980. (b) The Wildlife (Protection) Act, 1972. (c) The Coastal Regulation Zone Notification, 2011. If yes, details of the same and their status are to be given.	None
Forest land involved (hectares)	None

The below figure shows the google image of Ranjegaon sand ghat.



Fig 2.1-Google image of Ranjegaon sand ghat

Approach roach along with google location is as shown below.

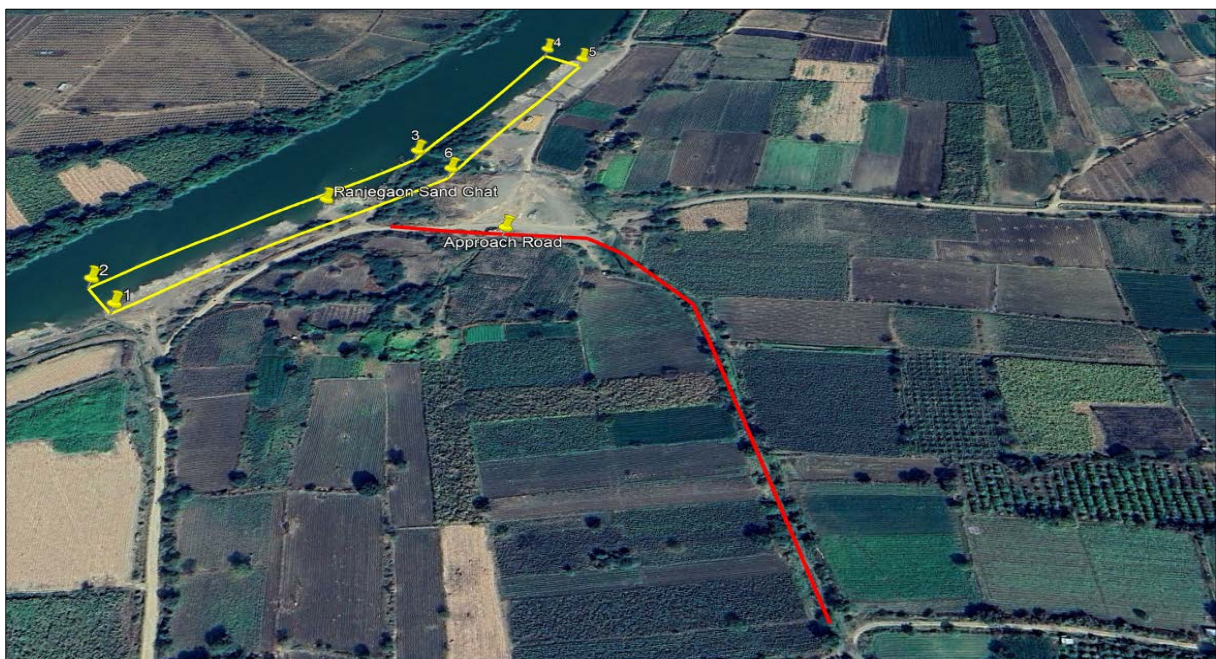


Fig 2.2-Approach Road for sand ghat

Next chapter 3 is Baseline Environmental Status in which the entire Topography, Climate, Soil Environment, Land use, water Environment, Hydrology, Biological environment, and Socio-economic Environment are briefly explained for the Beed district.

CHAPTER 3

BASELINE ENVIRONMENT STATUS

Topography

The Sand Ghat area as per the survey is the riverbed of the Sindhphana River of the Beed district. The maximum elevation is 458m MSL, average elevation is 455m MSL, & minimum elevation is 452m (⁷MSL) Mean Sea Level. The slope of the Sand Ghat area towards the Northeast to Southwest side. The flow of Sindhphana River is from West to East direction.

Presently, there is neither any infrastructure within the riverbed nor are proposed.

Hydrology

There will be no change in the Water Table during the mining operation, as the depth of mining shall be restricted to 1.0m water level, which is less likely to affect the surface level or Groundwater Table. There is no proposal of any stream modification/diversion due to this mining activity hence there will be not any impact on the flow of water.

Soil Environment

The riverbed consists of sand /gravel. There is no topsoil. The depth of mining shall be restricted to 1.0m. There is no crucial impact on the soil forecasted due to mining activities.

Land Use Land Cover

Land use shows that agriculture land use is predominant. The proposed site is 1.575ha having adjoined Khasara No 1. The land doesn't cover any human habitation, forest, etc. Any change in the scope of the approved Mining Plan will lead to riverbank erosion/cutting and thereby river channel shifting, degradation of land, causing loss of properties and degradation of the surrounding landscape.

⁷ Mean sea level

Water Environment

While transporting sand there may be fugitive dust. There will be water requirement for spraying for dust suppression purposes. This water will be supplied from the borewell from nearby villages through tankers as well as from surface water sources. The water source may vary from village to village.

Climate

During summer May is the hottest month of the year in this area. The temperature rises to 42°C in the month of May. The average rainfall in this region is 600-700mm About 50% of rainfall precipitates between June to September. December is the coldest month with temperature falling down to 18°C. Overall the proposed site area has sub-tropical conditions.

Biological Environment

Flora

The agricultural area is seen near the Sand Ghat. Few trees and thorny bushes are seen on the banks of the river.

Fauna

As there is no forest cover, no endangered species of wildlife are seen in this area.

Socio-Economic Environment

This project may create constructive impacts of the sand mining that are stated below:

1. The mining operations will provide direct & indirect employment to village people.
2. The villages and their inhabitants & domestic animals will not be disturbed due to mining, as the quarry is far from their settlements.
3. Local workforce will be given first preference for employment.
4. Mining activities will benefit the local people due to the provision of more infrastructural facilities (developments of approach routes within the village area).

The next chapter describes all possible impacts on the Environment due to this project along with its mitigation measure to overcome these impacts.

CHAPTER 4

IMPACT ASSESSMENT REPORT ALONG WITH PROPOSED MITIGATION MEASURES

1. Land Environment

Anticipated Impact

Movement of vehicles can create issues for agricultural land, human habitations, noise, and risk for public and cause traffic hazards. The impacts include damage to the riverbank due to access ramps to the riverbed, soil erosion because of extraction of sand, micro disturbance to groundwater, possible stimulation of the changed river course, and contamination of sand aquifer water due to ponding. There might be surface degradation due to the road network.

The quality of soil will not be affected due to transportation or any other activity of mining.

Mitigation measure

1. Mining depth should be restricted to 3 meters and distance from the bank should be $\frac{1}{4}$ th or river width and should not be less than 7.5 meters as per “Sustainable Sand Mining Guidelines 2020” Page 23, Point no 4.3 (m).
2. There will be a minimal number of access roads to riverbeds. Cutting of riverbanks will be avoided and ramp with smooth slope will be maintained. Access points to the riverbed will be decided based on the least steepness of the riverbank and the least human activity at that location.
3. No foreign material like polythene bags, jute bags, and useless articles should be allowed to remain/spill in the riverbed and catchment area, or no pits/pockets will be allowed to be filled with such material.
4. Mining at the concave side of the river channel should be avoided to prevent bank erosion. Similarly, a tortuous segment of a river is to be selected for mining in such a way as to ignore the natural eroding of banks.
5. Ensure that ponding is not created in the riverbed.
6. Transportation route should be such that it gives minimum

damage to the environment.

7. Green belt will be developed along the haul road and the bank of rivers of mine premises and near the sand mining site. While selecting the plant species, preference will be given for planting native species of the area.

2. Water environment

Anticipated Impact

The project activity will be carried out in the dry part of the riverbed. Care will be taken to ensure that neither of the project activities will affect the water environment or riverbank habitats. During the lean months, the proposed Sand Mining will not expose the base flow of the river and hence there will not be any inauspicious impact on surface hydrology and groundwater regime due to this project. Project activities will not have any adverse consequences on the physical components of the environment and therefore may not have any effect on the recharge of ground waters or affect the water quality. Monitoring of water quality will be checked yearly.

Mitigation measures

1. Mining is avoided during the monsoon season and at the time of floods. This will help in the replenishment of sand in the riverbed.
2. Mining below the subterranean water level will be avoided as a safeguard against environmental contamination and over-exploitation of resources.
3. River stream will not be transferred to create active channels.
4. Mining schedule is synchronized with the river flow direction and the gradient of the land.
5. Mining at the concave side of the river channel will be avoided to prevent bank erosion.
6. Tortuous segment of the river will be selected for mining in such a way as to avoid naturally eroding banks and to promote mining on naturally building meander components.
7. Mining depth shall be maintained as per the guidelines and

rules of the Sand Mining Policy dated 03/09/2019 and recommendations of Maharashtra State (⁸M.S.). State Ground Water Department for extraction of sand during the lease period.

8. Water Quality Monitoring for the ground waters, river water, and other surface waters shall be carried out seasonally to ensure that the water quality is not affected by the project activities.
9. Utmost care will be taken to minimize or control leaking vehicles to be used for sand transportation.
10. The washing of tractor trolleys in the river will not be done.
11. The contractor will follow all guidelines and rules for proper and scientific methods of mining during the period of extracting the sand.

3. Air Environment

Anticipated Impacts

Plying of tractor trolleys from the public road to river sand collection points needs access roads. The majority of such access roads are the already existing roads/tracks being used by pedestrians/cart owners. The movement of heavy vehicles sometimes causes problems for cattle, agricultural land, and human habitations due to dust, noise, and the movement of the public. These environmental problems are felt more as the area is rural in nature.

Air pollution is likely to be caused at various stages of Sand Mining operations such as excavation, loading & transportation of material. Most of the fugitive dust emissions will be generated from loading & transportation. This dust becomes airborne and spreads away to surrounding areas.

The impact on air is mainly localized in nature as the dust particles of 100 μ in size are not carried to farther distances beyond 100m and the effect is felt within the core zone of the project involving active Sand Mining operations.

⁸ Maharashtra State

Mitigation measures

1. Movement of the vehicles on the road will be increased; however, the unmetalled road in the mining area will be sprinkled with water at regular intervals.
2. In addition to preventing spillage from tractor trolleys, overloading shall be controlled to 1-brass/tractor trolley. The speed limit will be <20 km/hr.
3. Maintenance of the haul road will be done on a regular basis.
4. To avoid fugitive dust emissions at the time of excavation, a regular sprinkling of water will be done on regular basis.
5. Sand is transported to the sites by road through tractor trolleys. The sand-carrying vehicles shall be covered by tarpaulin sheets.
6. The Green belt development will be prepared along the haul roads, which will act as a pollution sink.
7. To minimize vehicular pollution from the sand transporting vehicles, the following conditions will be insisted upon to permit the vehicles of the transporters.
8. The vehicles should be Bharat-IV stage compliant and should have a Pollution Under Control (⁹PUC) Certificate issued by appropriate authorities.
9. Regular maintenance of transport vehicles and monitoring of vehicular emission levels at periodical intervals.

4. Noise Environment

Anticipated Impact

The noise environment in this project will be overdone by the equipment at the site and vehicular transportation. A slight increase in noise levels of <10dB(A) can be expected up to a distance of 100m.

Mitigation measures.

1. Minimum use of horns in the village area.
2. Timely maintenance of vehicles and their silencers to

⁹ Pollution Under Control

minimize vibration and sound.

3. Phasing out old and worn-out tractor trolleys.
4. Provision of green belts along the road networks.
5. Care will be taken to produce minimum sound during sand loading.
6. Backhoe loader excavator will be used
7. Earplugs may be provided to protect the laborers working at the site.

5. Socio-economic Environment

Anticipated Impacts and Evaluation

1. The project activities shall not have any adverse impacts on any of the common property resources of the village communities, as the Sand Mine lease area is not being used for any purpose by any section of the society in this region.
2. There is no Resettlement and Rehabilitation (¹⁰R&R) involvement in this project.
3. There is no land acquisition in this project.
4. A major portion of the houses in the study area is semi-pucca-type structures.
5. The water source to these areas is from the Grampanchayat /Nagar Parishad connection and private bore wells and wells.
6. People living around the project area need the project for the purpose of employment and economic benefits.
7. The awareness level regarding the proposed mining activity is very towering. The proposed mining activity is expected to provide stimulus to socio-economic activities in the region and thereby accelerate further development processes.

Social and Demographic Profile

The workers are from local villages. These people have been provided welfare benefits from the lessee like medical benefits,

¹⁰ Rehabilitation and Resettlement

insurance, fees for children's education, etc. They have some land and cattle for their daily earnings. Additional revenue earned from the Sand Mining work will improve their living standard. The group of quarries in and around will help to have infrastructure facilities like roads, schools, shops, etc. This will enhance their social life.

Occupational Health and Safety

This is a riverbed Sand Mine. So, the mining activities are comparatively smaller because the production is not on a high scale. Workers do not come across any extreme conditions like excessive heat, moisture, etc. Workers working around it may come across this dusty environment. But the impact on health will be within the limit.

Human Settlement

1. There are no houses in and around the lease area. Blasting is the only activity, which may affect the settlement, which is not done. The settlement is more than 1-km from the sand mine.
2. Appropriate precautions will be taken during mining. Transportation of finished products is through the villages. There will be an effect of traffic on the local people. However, the intensity of traffic is 70-80/day.

Health and Hygiene

In general, the health of villagers is moderately good. In the rainy season, the atmospheric condition is unhygienic due to a lack of proper drainage and sanitation in the village habitation. Villagers are working in agricultural fields and work as labourers.

Education

Most education of 70% young <20 years, is up to the 5th to 9th. Economic condition is in general moderate. So, after this project, the standard of education will increase.

Socio-Economic Benefits Arising Out of Mining

1. Generation of employment in rural areas.
2. Upgradation in the living standards of rural people.
3. Creating infrastructural facilities like roads, electricity, shops, schools, etc.
4. Upgrading literacy in the area by exploiting natural minerals so the generation of revenue.

5. Helping to sustain construction activity.
6. Improving the greenery of the area, which is otherwise poor.

Liquid Effluent

Not applicable, because these activities do not generate effluent from operation or process.

Solid Waste

Not applicable, because small mines and impacts are negligible.

Project benefits due to the sand mining of Ranjegaon are explained in the next Chapter.

CHAPTER 5

PROJECT BENEFITS

The proposed Sand Mining project of Ranjegaon Village, Beed Tehsil, Beed District will lead to the following benefits:

1. Increase in the revenue of the district will ultimately increase the revenue of the village, which in return can be used to improve the infrastructure of the village.
2. Sand is available for building construction work and by systematic separation of sand, there is no possibility of a flood. Providing smooth movement of water of the river.
3. This project will contribute additional revenue to the state Exchequer in the form of revenue.
4. The project will conclude with employment opportunities for unskilled/skilled local people.
5. Standard of living of employed people will increase.

CHAPTER 6

SITE-SPECIFIC ENFORCEMENT & MONITORING PLAN

Sand Ghat Site specific enforcement & monitoring plan

(as per guidelines stipulated in the Enforcement and Monitoring Guidelines for sand mining issued by MoEFCC in January 2020.)

District administration shall deliver information on its website about the Sand Mines in the district for public information. The objective is to extend all information into the public domain so that the citizens are aware of the mining activities. People can also report to the district administration any deviation observed. Suitable feedback and its composition shall also be made operational.

Details shall include, but not be limited to, lease area, geo-coordinates of lease area and mineable area, transport routes, permitted capacity, regulatory conditions for operation including mining, environmental and social commitments, etc.

An Independent Committee of experts constituted by the Distance Learning Task Force (¹¹DLTF) will assess the environmental or ecological damage caused due to illegal mining and recommend recovery of environmental compensation from the concerned miners.

The recommendation may also include action under the provision of the Environment (Protection) Act 1986 u/s.15 read with s.19.

¹¹ Distance Learning Task Force

CHAPTER 7

SECURITY FEATURES

Security features are included in the Transport Permission/Permits (TP)

It will be ensured that the following security features are included in the Transport Permission/Permits (¹²TP) so that duplicate/fraudulent/forged TPs for transport, not accounted for in the IT-based system, is not possible:

1. Printed on Indian Bank Association (¹³IBA) Approved letterhead with account details
2. Magnetic Ink Character Recognition Code (¹⁴MICR) paper
3. Unique Barcode
4. Unique Quick Response Code (¹⁵QR)
5. Fugitive Ink Background
6. Invisible Ink Mark
7. Void Pantograph Watermark
8. Global Positioning System (¹⁶GPS) based vehicle tracking system
9. Closed-Circuit Television (¹⁷CCTV) Camera

¹² Transport Permission

¹³ Indian Bank Association

¹⁴ Magnetic Ink Character Recognition Code

¹⁵ Quick Response Code

¹⁶ Global Positioning System

¹⁷ Closed Circuit Television

CHAPTER 8

REPLENISHMENT

Replenishment study is the most important part of Sand Mining as it is the only basis to carry out sand mining. Without a Replenishment Study, we cannot understand the amount of deposition of sand. Following points to be followed for the replenishment study.

1. Area of deposition and erosion will be calculated for each cross-section after giving due regard to the stability & safety of active channel banks & other features of importance.
2. Differential Global Positioning System (¹⁸DGPS) and other survey tools will be used to define the topography, contours, and offsets of the lease area.
3. Contour & elevation benchmarks will provide baseline data for assessing pre- and post-study period scenario.
4. Physical benchmarks will be fixed at appropriate intervals (preferably 1 in 30m) & Reduced levels (¹⁹RL) shall be validated from a nearby standard RL.
5. These RL will be engraved on a steel plate (Bench Plate) & will be fixed & placed at locations that are free from any damages & are available in the pre-and post-study period.
6. Bench plates will be available for use during the mining period as a reference for all mining activity.
7. Baseline data on elevation status for a grid of 10m x 10m is preferred to have accuracy in the assessment.
8. It is expected that two consecutive cross-sections in longitudinal and lateral directions will not be more than a 10m distance apart.
9. Changes observed in the elevation in pre and post-scenario at each node, will be depicted in graphical forms with an appropriate scale to estimate the area of deposition & erosion.

¹⁸ Differential global positioning system

¹⁹ Reduced levels

10. Elevation level will be in reference to the nearest bench plates established for the purpose.
11. The levels (MSL & RL) of the corner point of each grid will be identifiable and safety barriers (non-Mining) demarcated as restricted in consensus with the Mineral Concession Rules of the respective State, and the provision mentioned in this Sustainable Sand Mining Management Guidelines.
12. A clear identification will be highlighted between grids under the mineable and grids under the non-mineable area.
13. These baseline data (pre and post) be subjected to stimulation with the help of data mine software to derive the replenishment area and corresponding volume and estimated weight.
14. The database will be structured in a tabulated form clearly depicting the nomenclature of the section lines, latitude and longitude of the starting point, chainage, and respective levels of all the points taken on that section line.
15. Net area shall be derived after summation of an area of deposition minus the area of erosion for each cross-section.
16. Volume will be estimated by multiplying the distance between two cross-sections with the average of the net area of these two consecutive cross-sections.
17. One sample per 900m² (30m x 30m) will be the preferred sample density for the assessment of bulk density for the estimation of deposition rate.
18. Care will be taken that the sample for assessment of Bulk Density is taken from the deposition zone & not from erosion.

Methodology for Sand Mining:

The following methodology should be followed for the Replenishment study.

1. The Demarcation and benchmark of the Sand Ghat are done at 10m x 10m intervals.
2. The use of the Auger Driller is to find out the depth of sand in each grid.
3. Auger Driller has created the holes in sand ghat by 10mx10m grid pattern.
4. Measured the depth of holes by using a measuring tape.

5. After taking all the readings average depth of sand is calculated.
6. The average depth of Ranjegaon at Sindhphana is measured.

Replenishment study of sand in the proposed ghat along with details of the methodology, technology used to identify the existing reserve & replenishment of the same

Dandy Bolton Equation

For runoff less than 2 inches

$$S = 1280 \times (Q) \times 0.46 \times (1.46 - 0.26 \log(A)) \times F$$

For runoff more than 2 inches

$$S = 1958 \times (Q) \times (e^{-0.055 \times Q}) \times (1.43 - 0.26 \log(A))$$

Where,

S = sediment yield of stream (t/yr/km²),

Q = average annual runoff (m³),

A = net drainage area in sq.mile.

CHAPTER 9

PROPOSED PLANTATION PLAN

The Project Proponent must take care of the plantation around the site. This will not only enhance the beautification of the area but also there will be the reduction of pollution, not some extent.

Details of the plantation and Tree species recommended for the plantation are shown below.

Table 9. 1 Details of green belt

Location of greenbelt	Both sides of the approach road, On the riverbanks of both sides of the sand spot & nearby open areas. Haul Road outside the riverbed
No. of plants to be planted	2000 per Hectare
Spacing of plants	2m grid interval
Species selected	Native species

Table 9. 2 Trees species for plantation

Botanical Name	Local Name	Importance
Azadirachta Indica	Neem	Neem oil & neem products
Tectona Grandis	Teek	Antibacterial, Antifungal, Antiulcer
Ficus religiosaa	Peepal	Medicinal use, Fruits & figs
Bambusa vulgaris	Bamboo	Anthelmintic Anti-inflammatory, Astringent Properties
Madhuca longifolia	Mahua	Acts as a Stimulant & cough relief,

CHAPTER 10

ENVIRONMENTAL MANAGEMENT PLAN

A total capital cost of Rs.5.97 Lakhs has been kept in the project cost towards the environmental protection, control, mitigation measures, and implementation of the Environmental Management Plan (EMP). This cost is borne by the bidder/leaseholder. The budgetary cost estimate for the EMP is given in Table.

Table 10. 1 Budgetary cost of EMP

Sr	Impact Source	Impact	Control Measure	Cost (Rs.)
1	Transport Road	On Air Quality	Compaction, gradation, and drainage on both sides.	40000
		On Land, the Stability of the Road and degradation of road	Proper maintenance	30000
			Regular water spraying	30000
			The air quality will be monitored at the impacted village. (For One Day Monitoring)	5000
			Health Check-up of Employees	5000
2	Truck/ Tractor Movement	Air Quality	Sand-carrying trucks will be effectively covered by tarpaulin to avoid the escape of fines to the atmosphere. (2 Tarpaulin)	25000
			Regular monitoring of the exhaust fumes	5000

Sr	Impact Source	Impact	Control Measure	Cost (Rs.)
			Barriers & Traffic Management Expenses. (Excluding Manpower Salary which is included in labour costs)	10000
3	Ramp and Sand Reach	Mining Operation	Regular ramp Inspection and Ramp maintenance. (Excluding Manpower Salary which is included in labour costs)	50000
			Provision of dust masks	10000
4	Bank Management	Bank Erosion/Flood Plain management	The green belt along the bank (For Green Belt Development)	150000
			Plantation of wide leaf tall trees on banks and grass along a slanting portion of the bank	
5	Transportation on Village Roads	Dust Control	The green belt along village Rd (For Green Belt Development)	
6	Final Mine Closure Plan implementation	Replenishment of Sand	Gabions/ boulders will be arranged as per guidelines	15000
7	Mobile toilet, sewage handling & treatment		Mobile toilet, sewage handling & treatment	80000
8	CCTV Monitoring			80000
Total				535000

Budget For Corporate Environment Responsibility (²⁰CER)

About 2% fund of the project cost is allocated for Corporate Environment Responsibility (CER) activities as presented in below Table

Table 10.2 Budget for CER

Sr.	Description	Cost (Rs)
1.	Village Schools (separate toilet for girls and boys)	15000
2.	Solar panels over Gram Panchayat buildings	15000
3.	Solar panels over Public Health Centers	20000
	Total	50000

²⁰ Corporate Environment Responsibility

CHAPTER 11

SUMMARY AND CONCLUSION

The Roles and Responsibilities of the Environmental coordinator, the Operation Manager, and the senior personnel contractor are essential in EMP.

The environmental status of the project site and study area of 10km radius is delineated with respect to air, noise, water, land, biological and socio-economic environment the different project activities in the construction and operation phases are identified.

To identify the impacts, the interaction between the project activities and different components of the environment is classified phase-wise. A summary of the recognized impacts is given in the following paragraphs.

- During the operational phase, the transportation of sand could cause a temporary disturbance to the local environment which will be prevented with the proposed mitigation measures.
- Proposed project will not have any major significant negative impacts. The minor impacts arising during Excavation and Transportation phases can be mitigated with the help of the proposed Environmental Management Plan.
- In general, sand excavation from Ranjegaon sand spot will be useful to the developmental work in the district and generate employment opportunities.

From this project, it is concluded that the district revenue will increase in return minimum of 2% of funds are utilized for the development of the village. The project will also grab employment which will improve the standard of life of villagers.

*** END ***

Environmental Management Plan

As per Rules 23 & 26 of MMME (D & R) RULE 2013 & Section 15 of MMDR Act 1957, MoEFCC Notification 2006, S.O. 141(E) dated 15. 01. 2016; MoEFCC, Sustainable Sand Mining Management Guidelines 2016, Guidelines for Mining Policy 2020)

for

ENVIRONMENTAL CLEARANCE

of

SAND MINING (MINOR MINERAL)

for

Sawargaav Ni- A Riverbed Sand Mine / Sand Ghat
Khasra No. GSDA approved 28, 29, 3, 4, 8, 9
Area (3.38ha)

Village Sawargaav Ni, Tehsil Gevrai, District Beed

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ABBREVIATION

Short Form	Long Form
EMP	Environmental Management Plan
MoEFCC	Ministry of Environment Forest and Climate Change
DSR	District-level Survey Report
EC	Environmental Coordinator
OM	Operations Manager
GSDA	Groundwater Surveys & Development Agency
MPCB	Maharashtra Pollution Control Board
MSL	Mean Sea Level
MS	Maharashtra State
PUC	Pollution Under Control
R&R	Rehabilitation and Resettlement
DLTF	Distance Learning Task Force
TP	Transport Permission/Permits
IBA	Indian Bank Association
MICR	Magnetic Ink Character Recognition Code
QR	Quick Response Code
GPS	Global Positioning System

CCTV	Closed-Circuit Television
DGPS	Differential Global Positioning System
RL	Reduced Levels
CER	Corporate Environment Responsibility

CHAPTER 1

INTRODUCTION

The Environmental Management Plan (¹EMP) plays a vital connection uniting forecast impacts and mitigation measures during implementation and operational activities. EMP stipulates the mitigation, monitoring and conventional measures to be taken during project implementation and operation. EMP is to escape or mitigate adverse environmental impacts, and to implement these measures.

This Environmental Management Plan (EMP) has been prepared as part of the Scoping Report which will be compiled in terms of the Environmental Assessment for the sand mining activities.

Considering the Ministry of Environment and Forest Climate Change (²MoEFCC) Notification 2006 and Sustainable Sand Mining Management Guidelines 2016, the Govt. of Maharashtra had mapped out the Minor Mineral Extraction Rules 2013. These rules are to extract all minor minerals in a scientific way so that there is no unfavourable impact on Environment and Climate. To extract every minor mineral from any land (either Government or Private) there is provision for a Mining Plan. These plans need to be approved by a competent authority. For long-term leased minor minerals (5-10 years period) and sand excavation from the riverbed, Senior Deputy Director of Directorate of Geology and Mining is the competent authority. These plans are for short term temporary permits which are valid for one year.

According to Enforcement & Monitoring Guidelines for Sand Mining 2020, Sustainable Sand Mining Management Guidelines 2016, Standard Environment conditions for sand mining and sustainable mining practices, District level Survey Report (³DSR) should be prepared and are suitable for mining and area prohibited for mining must be recognized.

¹ Environmental Management Plan

² Ministry of Environment Forest and Climate Change

³ District Survey Report

Objectives of EMP

- To provide overall conservation of the environment.
- To minimize waste generation and pollution.
- To regulate the precise use of natural resources and water.
- To provide Safety, Welfare, and Good health for the workforce and populace.
- To regulate the effective operation of all control measures.
- To ensure alertness against probable disasters and accidents.
- To monitor cumulative and long-term impacts.
- To regulate the effective operation of all control measures.

Roles and Responsibilities concerning the implementation of the EMP

The roles and responsibilities of all parties involved in successfully managing the environment are mentioned below.

Environmental Coordinator

The Environmental Coordinator will inspect operational areas on a quarterly basis and at the onset of mining any new island, to ensure that all specifications are met. The duties of the environmental coordinator will be the following.

- Guide the operations team in respect of the implementation of the environmental specifications.
- Lead the visits to ensure all work is aligned with the EMP.
- The environmental coordinator must examine the site during the three-monthly visits. All rehabilitation results will be Comprised in the quarterly report.
- Examination of the rehabilitation area and giving guidance regarding rehabilitation measures if any.

The Operations Manager

The responsibilities of the Operations Manager (4OM) or his nominated authority are as follows.

1. Familiarize themselves with the requirements of the EMP.
2. Monitor employees' and contractor's compliance with the environmental specifications; and enforce adherence.

⁴ Operations Manager

3. Communicate all environment-related incidents with the Environmental Coordinator and distribute them internally to avoid repetition.
4. Maintain a record of activities relevant to Environmental Management.
5. The Operations Manager shall be responsible for monitoring and the enforcement of the Environmental Management specifications on a day-to-day basis. Any violation of the environmental specifications shall be recorded, and the agreed disciplinary measures are taken.

Senior personnel and contractors

The roles of the senior personnel/contractors are as follows:

- Familiarize themselves with the requirements of the EMP.
- Comply with the environmental management specifications.
- Ensure that all team members are familiar with the environmental management specifications.

Details of the project

The Sawargaav Ni sand ghat area has been selected in perspective of its subsisting demand for building-grade sand for the area in and around Gevrai Taluka. The District Mining Officer Beed has put forward the proposal for Environmental Clearance for mining. The ghat has a production of 13118 brass sand within an area of 3.38ha. The proposed proposal follows an organized mining process for Environmental Clearance.

Further Chapter informs about the in-depth details of the Sand Ghat, its geographical structure, and a Google map of the ghat with its approach road for contractors and workers to reach to sand ghat from the village.

CHAPTER 2

DETAILS OF THE PROJECT

Sawargaav Nivillage is located in Gevrai Taluka of Beed district, Maharashtra. Beed is well connected with all nearby cities. The National highway NH-52, it traverses through the states of Punjab, Haryana, Rajasthan, Madhya Pradesh and Maharashtra in India. NH-52 is the National Highway passing through the district, covering a total distance of 73.60km. Gevrai has situated about 31.3km by road from Beed. The district has road links to adjoining districts Ahmednagar District to the west, Jalna District to the North, Latur District to the East, Osmanabad District to the South, Parbhani District to the East The district is well connected by roads.

Sawargaav Ni village is 41.12km away from Collector Office headquarters Beed. The Geographical area of the Beed is around 10693km². The nearest Railway station to Sawargaav Ni village is Sarwari Railway station. The nearest Airport to Beed District is Aurangabad Airport, Aurangabad Airport is 104km away from beed.

Honourable Collector Beed intends to auction Sand Ghats and appointed District Mining Officer as Project Proponent. A total of 38 sand ghats are identified by Tahsildar Majalgaon, Parli Ve., Gevrai, Beed along with District Mining Officer, Beed. The 38 sand ghats were jointly surveyed by Taluka level technical committee headed by respective tahsildar with Dy. Engineer Irrigation Department, Junior Geologist Directorate of Geology and Mining Govt. of Maharashtra, Junior Geologist, Groundwater Surveys & Development Agency (⁵GSDA). DMO Beed and a representative of the Maharashtra Pollution Control Board (⁶MPCB), as per the procedure defined in Sand Auction Rules 2019 dated 3/09/2019 formed a Taluka-level technical committee, which explored the sand ghats for an available quantity of sand for scooping. Revenue of Rs.25 Crore is expected from the auction of these sand ghats. Sawargaav Ni Sand Ghat proposed over river Godavari in Gevrai

⁵ Groundwater Surveys & Development Agency

⁶ Maharashtra Pollution Control Board

Taluka is proposed to cater to the infrastructural requirement of sand in the Tehsil of Beed and adjoining areas of other talukas.

Table 2. 1 Details of Sawargaav Ni Sand ghat

Name of Village	Tahsil	River/ Nallah	Nearest survey No.	Area (ha)	Proposed Depth for excavation (m)	Quantity Permitted for mining of Sand in Brass	Method of Mining
Sawargaav Ni.	Gevrai	Godavari	28, 29, 3, 4, 8, 9	3.38	1.10	13118	Open-cast manual mining

Table 2. 2 Salient features of the project

Particulars	Details															
Location	Village- Sawargaav Ni, Tehsil- Gevrai, District-Beed, Maharashtra.															
Latitude and Longitude	<table border="1"> <thead> <tr> <th>Boundary points of Sawargaav Ni sand spot</th> <th>Latitude</th> <th>Longitude</th> </tr> </thead> <tbody> <tr> <td>BP1</td> <td>19°21'30.92"N</td> <td>75°42'6.96"E</td> </tr> <tr> <td>BP2</td> <td>19°21'29.31"N</td> <td>75°42'6.84"E</td> </tr> <tr> <td>BP3</td> <td>19°21'28.62"N</td> <td>75°41'41.85"E</td> </tr> <tr> <td>BP4</td> <td>19°21'30.06"N</td> <td>75°41'41.21"E</td> </tr> </tbody> </table>	Boundary points of Sawargaav Ni sand spot	Latitude	Longitude	BP1	19°21'30.92"N	75°42'6.96"E	BP2	19°21'29.31"N	75°42'6.84"E	BP3	19°21'28.62"N	75°41'41.85"E	BP4	19°21'30.06"N	75°41'41.21"E
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BP3	19°21'28.62"N	75°41'41.85"E														
BP4	19°21'30.06"N	75°41'41.21"E														
Sand spot area (In ha)	3.38ha															
Proposed production capacity (in Brass)	13118															
Infrastructure Requirement (As per Govt Resolution 3rd January 2018)	<ol style="list-style-type: none"> 1. Room / Hut for Official records 2. Electricity / Battery for Running CCTV 24x7 daily. 3. One Computer / Android-based Mobile for the online generation of Invoice numbers. 															

Particulars	Details											
Distance of project site from nearest rail or road bridge over the concerned River, Nallah, etc.	Godavari River Bridge-21.70km											
<table border="1"> <tr> <td>Distance from infrastructural facilities</td> <td rowspan="10"> Sarwari railway station-51.49 NH52-9.24km MSH44-6.64km 6.28km 1.21km </td> </tr> <tr> <td>Railway line</td> </tr> <tr> <td>National Highway</td> </tr> <tr> <td>State Highway</td> </tr> <tr> <td>Major District Road</td> </tr> <tr> <td>Any Other Road</td> </tr> <tr> <td>Electric transmission line pole or tower</td> </tr> <tr> <td>Canal or check dam or reservoirs or lake or ponds</td> </tr> <tr> <td>In-take for drinking water pump house</td> </tr> <tr> <td>Intake for Irrigation canal pumps</td> </tr> </table>	Distance from infrastructural facilities	Sarwari railway station-51.49 NH52-9.24km MSH44-6.64km 6.28km 1.21km	Railway line	National Highway	State Highway	Major District Road	Any Other Road	Electric transmission line pole or tower	Canal or check dam or reservoirs or lake or ponds	In-take for drinking water pump house	Intake for Irrigation canal pumps	
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Railway line												
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State Highway												
Major District Road												
Any Other Road												
Electric transmission line pole or tower												
Canal or check dam or reservoirs or lake or ponds												
In-take for drinking water pump house												
Intake for Irrigation canal pumps												
Areas already subjected to pollution or environmental damage. (those where existing legal environmental standards are exceeded)	None											
Areas susceptible to natural hazards which could cause the project to Present environmental problems (earthquakes, subsidence, landslides, erosion, flooding, or extreme or adverse climatic conditions)	No. Sand Ghat is at safe distances from natural hazards like earthquake prone area, subsidence, landslide, erosion, flooding prone area and extreme or adverse climatic conditions											

Particulars	Details
Whether the proposal involves approval or clearance under the following Regulations or Acts, namely: - (a) The Forest (Conservation) Act, 1980. (b) The Wildlife (Protection) Act, 1972. (c) The Coastal Regulation Zone Notification, 2011. If yes, details of the same and their status are to be given.	None
Forest land involved (hectares)	None

The below figure shows the google image of Sawargaav Ni sand ghat.



Fig 2.1-Google image of Sawargaav Ni sand ghat

Approach roach along with google location is as shown below.

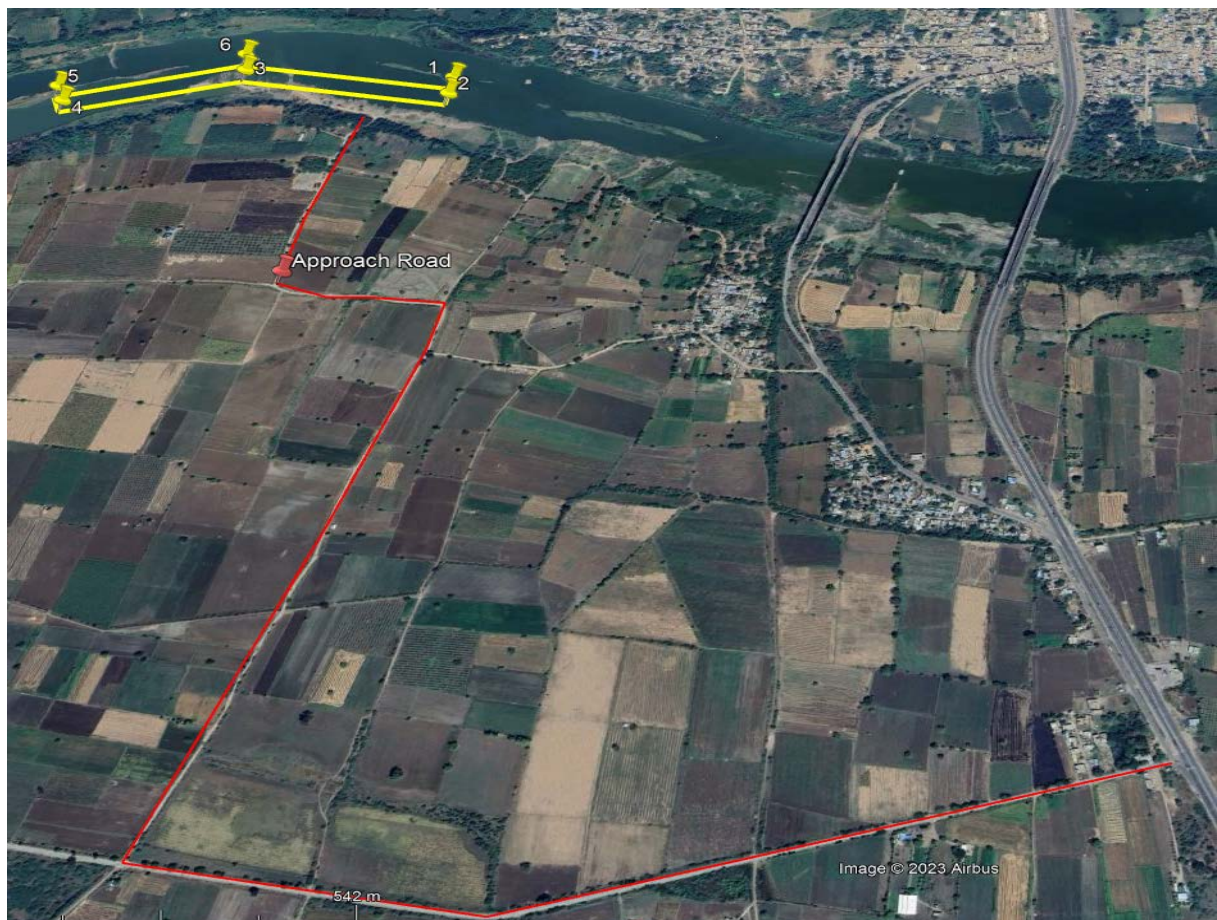


Fig 2.2-Approach Road for sand ghat

Next chapter 3 is Baseline Environmental Status in which the entire Topography, Climate, Soil Environment, Land use, water Environment, Hydrology, Biological environment, and Socio-economic Environment are briefly explained for the Beed district.

CHAPTER 3

BASELINE ENVIRONMENT STATUS

Topography

The Sand Ghat area as per the survey is the riverbed of the Godavari River of the Beed district. The maximum elevation is 445m MSL, average elevation is 442m MSL, & minimum elevation is 440m (⁷MSL) Mean Sea Level. The slope of the Sand Ghat area towards the Northwest to Southeast side. The flow of Godavari River is from Southeast direction.

Presently, there is neither any infrastructure within the riverbed nor are proposed.

Hydrology

There will be no change in the Water Table during the mining operation, as the depth of mining shall be restricted to 1.10m water level, which is less likely to affect the surface level or Groundwater Table. There is no proposal of any stream modification/diversion due to this mining activity hence there will be not any impact on the flow of water.

Soil Environment

The riverbed consists of sand /gravel. There is no topsoil. The depth of mining shall be restricted to 1.10m. There is no crucial impact on the soil forecasted due to mining activities.

Land Use Land Cover

Land use shows that agriculture land use is predominant. The proposed site is 3.38ha having adjoined Khasara No 28, 29, 3, 4, 8, 9. The land doesn't cover any human habitation, forest, etc. Any change in the scope of the approved Mining Plan will lead to riverbank erosion/cutting and thereby river channel shifting, degradation of land, causing loss of properties and degradation of the surrounding landscape.

⁷ Mean sea level

Water Environment

While transporting sand there may be fugitive dust. There will be water requirement for spraying for dust suppression purposes. This water will be supplied from the borewell from nearby villages through tankers as well as from surface water sources. The water source may vary from village to village.

Climate

During summer May is the hottest month of the year in this area. The temperature rises to 42°C in the month of May. The average rainfall in this region is 600-700mm About 50% of rainfall precipitates between June to September. December is the coldest month with temperature falling down to 18°C. Overall the proposed site area has sub-tropical conditions.

Biological Environment

Flora

The agricultural area is seen near the Sand Ghat. Few trees and thorny bushes are seen on the banks of the river.

Fauna

As there is no forest cover, no endangered species of wildlife are seen in this area.

Socio-Economic Environment

This project may create constructive impacts of the sand mining that are stated below:

1. The mining operations will provide direct & indirect employment to village people.
2. The villages and their inhabitants & domestic animals will not be disturbed due to mining, as the quarry is far from their settlements.
3. Local workforce will be given first preference for employment.
4. Mining activities will benefit the local people due to the provision of more infrastructural facilities (developments of approach routes within the village area).

The next chapter describes all possible impacts on the Environment due to this project along with its mitigation measure to overcome these impacts.

CHAPTER 4

IMPACT ASSESSMENT REPORT ALONG WITH PROPOSED MITIGATION MEASURES

1. Land Environment

Anticipated Impact

Movement of vehicles can create issues for agricultural land, human habitations, noise, and risk for public and cause traffic hazards. The impacts include damage to the riverbank due to access ramps to the riverbed, soil erosion because of extraction of sand, micro disturbance to groundwater, possible stimulation of the changed river course, and contamination of sand aquifer water due to ponding. There might be surface degradation due to the road network.

The quality of soil will not be affected due to transportation or any other activity of mining.

Mitigation measure

1. Mining depth should be restricted to 3 meters and distance from the bank should be $\frac{1}{4}$ th or river width and should not be less than 7.5 meters as per “Sustainable Sand Mining Guidelines 2020” Page 23, Point no 4.3 (m).
2. There will be a minimal number of access roads to riverbeds. Cutting of riverbanks will be avoided and ramp with smooth slope will be maintained. Access points to the riverbed will be decided based on the least steepness of the riverbank and the least human activity at that location.
3. No foreign material like polythene bags, jute bags, and useless articles should be allowed to remain/spill in the riverbed and catchment area, or no pits/pockets will be allowed to be filled with such material.
4. Mining at the concave side of the river channel should be avoided to prevent bank erosion. Similarly, a tortuous segment of a river is to be selected for mining in such a way as to ignore the natural eroding of banks.
5. Ensure that ponding is not created in the riverbed.
6. Transportation route should be such that it gives minimum

damage to the environment.

7. Green belt will be developed along the haul road and the bank of rivers of mine premises and near the sand mining site. While selecting the plant species, preference will be given for planting native species of the area.

2. Water environment

Anticipated Impact

The project activity will be carried out in the dry part of the riverbed. Care will be taken to ensure that neither of the project activities will affect the water environment or riverbank habitats. During the lean months, the proposed Sand Mining will not expose the base flow of the river and hence there will not be any inauspicious impact on surface hydrology and groundwater regime due to this project. Project activities will not have any adverse consequences on the physical components of the environment and therefore may not have any effect on the recharge of ground waters or affect the water quality. Monitoring of water quality will be checked yearly.

Mitigation measures

1. Mining is avoided during the monsoon season and at the time of floods. This will help in the replenishment of sand in the riverbed.
2. Mining below the subterranean water level will be avoided as a safeguard against environmental contamination and over-exploitation of resources.
3. River stream will not be transferred to create active channels.
4. Mining schedule is synchronized with the river flow direction and the gradient of the land.
5. Mining at the concave side of the river channel will be avoided to prevent bank erosion.
6. Tortuous segment of the river will be selected for mining in such a way as to avoid naturally eroding banks and to promote mining on naturally building meander components.
7. Mining depth shall be maintained as per the guidelines and

rules of the Sand Mining Policy dated 03/09/2019 and recommendations of Maharashtra State (⁸M.S.). State Ground Water Department for extraction of sand during the lease period.

8. Water Quality Monitoring for the ground waters, river water, and other surface waters shall be carried out seasonally to ensure that the water quality is not affected by the project activities.
9. Utmost care will be taken to minimize or control leaking vehicles to be used for sand transportation.
10. The washing of tractor trolleys in the river will not be done.
11. The contractor will follow all guidelines and rules for proper and scientific methods of mining during the period of extracting the sand.

3. Air Environment

Anticipated Impacts

Plying of tractor trolleys from the public road to river sand collection points needs access roads. The majority of such access roads are the already existing roads/tracks being used by pedestrians/cart owners. The movement of heavy vehicles sometimes causes problems for cattle, agricultural land, and human habitations due to dust, noise, and the movement of the public. These environmental problems are felt more as the area is rural in nature.

Air pollution is likely to be caused at various stages of Sand Mining operations such as excavation, loading & transportation of material. Most of the fugitive dust emissions will be generated from loading & transportation. This dust becomes airborne and spreads away to surrounding areas.

The impact on air is mainly localized in nature as the dust particles of 100 μ in size are not carried to farther distances beyond 100m and the effect is felt within the core zone of the project involving active Sand Mining operations.

⁸ Maharashtra State

Mitigation measures

1. Movement of the vehicles on the road will be increased; however, the unmetalled road in the mining area will be sprinkled with water at regular intervals.
2. In addition to preventing spillage from tractor trolleys, overloading shall be controlled to 1-brass/tractor trolley. The speed limit will be <20 km/hr.
3. Maintenance of the haul road will be done on a regular basis.
4. To avoid fugitive dust emissions at the time of excavation, a regular sprinkling of water will be done on regular basis.
5. Sand is transported to the sites by road through tractor trolleys. The sand-carrying vehicles shall be covered by tarpaulin sheets.
6. The Green belt development will be prepared along the haul roads, which will act as a pollution sink.
7. To minimize vehicular pollution from the sand transporting vehicles, the following conditions will be insisted upon to permit the vehicles of the transporters.
8. The vehicles should be Bharat-IV stage compliant and should have a Pollution Under Control (⁹PUC) Certificate issued by appropriate authorities.
9. Regular maintenance of transport vehicles and monitoring of vehicular emission levels at periodical intervals.

4. Noise Environment

Anticipated Impact

The noise environment in this project will be overdone by the equipment at the site and vehicular transportation. A slight increase in noise levels of <10dB(A) can be expected up to a distance of 100m.

Mitigation measures.

1. Minimum use of horns in the village area.
2. Timely maintenance of vehicles and their silencers to

⁹ Pollution Under Control

minimize vibration and sound.

3. Phasing out old and worn-out tractor trolleys.
4. Provision of green belts along the road networks.
5. Care will be taken to produce minimum sound during sand loading.
6. Backhoe loader excavator will be used
7. Earplugs may be provided to protect the labourers working at the site.

5. Socio-economic Environment

Anticipated Impacts and Evaluation

1. The project activities shall not have any adverse impacts on any of the common property resources of the village communities, as the Sand Mine lease area is not being used for any purpose by any section of the society in this region.
2. There is no Resettlement and Rehabilitation (¹⁰R&R) involvement in this project.
3. There is no land acquisition in this project.
4. A major portion of the houses in the study area is semi-pucca-type structures.
5. The water source to these areas is from the Grampanchayat /Nagar Parishad connection and private bore wells and wells.
6. People living around the project area need the project for the purpose of employment and economic benefits.
7. The awareness level regarding the proposed mining activity is very towering. The proposed mining activity is expected to provide stimulus to socio-economic activities in the region and thereby accelerate further development processes.

Social and Demographic Profile

The workers are from local villages. These people have been provided welfare benefits from the lessee like medical benefits,

¹⁰ Rehabilitation and Resettlement

insurance, fees for children's education, etc. They have some land and cattle for their daily earnings. Additional revenue earned from the Sand Mining work will improve their living standard. The group of quarries in and around will help to have infrastructure facilities like roads, schools, shops, etc. This will enhance their social life.

Occupational Health and Safety

This is a riverbed Sand Mine. So, the mining activities are comparatively smaller because the production is not on a high scale. Workers do not come across any extreme conditions like excessive heat, moisture, etc. Workers working around it may come across this dusty environment. But the impact on health will be within the limit.

Human Settlement

1. There are no houses in and around the lease area. Blasting is the only activity, which may affect the settlement, which is not done. The settlement is more than 1-km from the sand mine.
2. Appropriate precautions will be taken during mining. Transportation of finished products is through the villages. There will be an effect of traffic on the local people. However, the intensity of traffic is 70-80/day.

Health and Hygiene

In general, the health of villagers is moderately good. In the rainy season, the atmospheric condition is unhygienic due to a lack of proper drainage and sanitation in the village habitation. Villagers are working in agricultural fields and work as labourers.

Education

Most education of 70% young <20 years, is up to the 5th to 9th. Economic condition is in general moderate. So, after this project, the standard of education will increase.

Socio-Economic Benefits Arising Out of Mining

1. Generation of employment in rural areas.
2. Upgradation in the living standards of rural people.
3. Creating infrastructural facilities like roads, electricity, shops, schools, etc.
4. Upgrading literacy in the area by exploiting natural minerals so the generation of revenue.

5. Helping to sustain construction activity.
6. Improving the greenery of the area, which is otherwise poor.

Liquid Effluent

Not applicable, because these activities do not generate effluent from operation or process.

Solid Waste

Not applicable, because small mines and impacts are negligible.

Project benefits due to the sand mining of Sawargaav Ni are explained in the next Chapter.

CHAPTER 5

PROJECT BENEFITS

The proposed Sand Mining project of Sawargaav Ni. Village, Gevrai Tehsil, Beed District will lead to the following benefits:

1. Increase in the revenue of the district will ultimately increase the revenue of the village, which in return can be used to improve the infrastructure of the village.
2. Sand is available for building construction work and by systematic separation of sand, there is no possibility of a flood. Providing smooth movement of water of the river.
3. This project will contribute additional revenue to the state Exchequer in the form of revenue.
4. The project will conclude with employment opportunities for unskilled/skilled local people.
5. Standard of living of employed people will increase.

CHAPTER 6

SITE-SPECIFIC ENFORCEMENT & MONITORING PLAN

Sand Ghat Site specific enforcement & monitoring plan

(as per guidelines stipulated in the Enforcement and Monitoring Guidelines for sand mining issued by MoEFCC in January 2020.)

District administration shall deliver information on its website about the Sand Mines in the district for public information. The objective is to extend all information into the public domain so that the citizens are aware of the mining activities. People can also report to the district administration any deviation observed. Suitable feedback and its composition shall also be made operational.

Details shall include, but not be limited to, lease area, geo-coordinates of lease area and mineable area, transport routes, permitted capacity, regulatory conditions for operation including mining, environmental and social commitments, etc.

An Independent Committee of experts constituted by the Distance Learning Task Force (¹¹DLTF) will assess the environmental or ecological damage caused due to illegal mining and recommend recovery of environmental compensation from the concerned miners.

The recommendation may also include action under the provision of the Environment (Protection) Act 1986 u/s.15 read with s.19.

¹¹ Distance Learning Task Force

CHAPTER 7

SECURITY FEATURES

Security features are included in the Transport Permission/Permits (TP)

It will be ensured that the following security features are included in the Transport Permission/Permits (¹²TP) so that duplicate/fraudulent/forged TPs for transport, not accounted for in the IT-based system, is not possible:

1. Printed on Indian Bank Association (¹³IBA) Approved letterhead with account details
2. Magnetic Ink Character Recognition Code (¹⁴MICR) paper
3. Unique Barcode
4. Unique Quick Response Code (¹⁵QR)
5. Fugitive Ink Background
6. Invisible Ink Mark
7. Void Pantograph Watermark
8. Global Positioning System (¹⁶GPS) based vehicle tracking system
9. Closed-Circuit Television (¹⁷CCTV) Camera

¹² Transport Permission

¹³ Indian Bank Association

¹⁴ Magnetic Ink Character Recognition Code

¹⁵ Quick Response Code

¹⁶ Global Positioning System

¹⁷ Closed Circuit Television

CHAPTER 8

REPLENISHMENT

Replenishment study is the most important part of Sand Mining as it is the only basis to carry out sand mining. Without a Replenishment Study, we cannot understand the amount of deposition of sand. Following points to be followed for the replenishment study.

1. Area of deposition and erosion will be calculated for each cross-section after giving due regard to the stability & safety of active channel banks & other features of importance.
2. Differential Global Positioning System (¹⁸DGPS) and other survey tools will be used to define the topography, contours, and offsets of the lease area.
3. Contour & elevation benchmarks will provide baseline data for assessing pre- and post-study period scenario.
4. Physical benchmarks will be fixed at appropriate intervals (preferably 1 in 30m) & Reduced levels (¹⁹RL) shall be validated from a nearby standard RL.
5. These RL will be engraved on a steel plate (Bench Plate) & will be fixed & placed at locations that are free from any damages & are available in the pre-and post-study period.
6. Bench plates will be available for use during the mining period as a reference for all mining activity.
7. Baseline data on elevation status for a grid of 10m x 10m is preferred to have accuracy in the assessment.
8. It is expected that two consecutive cross-sections in longitudinal and lateral directions will not be more than a 10m distance apart.
9. Changes observed in the elevation in pre and post-scenario at each node, will be depicted in graphical forms with an appropriate scale to estimate the area of deposition & erosion.

¹⁸ Differential global positioning system

¹⁹ Reduced levels

10. Elevation level will be in reference to the nearest bench plates established for the purpose.
11. The levels (MSL & RL) of the corner point of each grid will be identifiable and safety barriers (non-Mining) demarcated as restricted in consensus with the Mineral Concession Rules of the respective State, and the provision mentioned in this Sustainable Sand Mining Management Guidelines.
12. A clear identification will be highlighted between grids under the mineable and grids under the non-mineable area.
13. These baseline data (pre and post) be subjected to stimulation with the help of data mine software to derive the replenishment area and corresponding volume and estimated weight.
14. The database will be structured in a tabulated form clearly depicting the nomenclature of the section lines, latitude and longitude of the starting point, chainage, and respective levels of all the points taken on that section line.
15. Net area shall be derived after summation of an area of deposition minus the area of erosion for each cross-section.
16. Volume will be estimated by multiplying the distance between two cross-sections with the average of the net area of these two consecutive cross-sections.
17. One sample per 900m² (30m x 30m) will be the preferred sample density for the assessment of bulk density for the estimation of deposition rate.
18. Care will be taken that the sample for assessment of Bulk Density is taken from the deposition zone & not from erosion.

Methodology for Sand Mining:

The following methodology should be followed for the Replenishment study.

1. The Demarcation and benchmark of the Sand Ghat are done at 10m x 10m intervals.
2. The use of the Auger Driller is to find out the depth of sand in each grid.
3. Auger Driller has created the holes in sand ghat by 10mx10m grid pattern.
4. Measured the depth of holes by using a measuring tape.

5. After taking all the readings average depth of sand is calculated.
6. The average depth of Sawargaav Ni at Godavari is measured.

Replenishment study of sand in the proposed ghat along with details of the methodology, technology used to identify the existing reserve & replenishment of the same

Dandy Bolton Equation

For runoff less than 2 inches

$$S = 1280 \times (Q) \times 0.46 \times (1.46 - 0.26 \log(A)) \times F$$

For runoff more than 2 inches

$$S = 1958 \times (Q) \times (e^{-0.055 \times Q}) \times (1.43 - 0.26 \log(A))$$

Where,

S = sediment yield of stream (t/yr/km²),

Q = average annual runoff (m³),

A = net drainage area in sq.mile.

CHAPTER 9

PROPOSED PLANTATION PLAN

The Project Proponent must take care of the plantation around the site. This will not only enhance the beautification of the area but also there will be the reduction of pollution, not some extent.

Details of the plantation and Tree species recommended for the plantation are shown below.

Table 9. 1 Details of green belt

Location of greenbelt	Both sides of the approach road, On the riverbanks of both sides of the sand spot & nearby open areas. Haul Road outside the riverbed
No. of plants to be planted	2000 per Hectare
Spacing of plants	2m grid interval
Species selected	Native species

Table 9. 2 Trees species for plantation

Botanical Name	Local Name	Importance
Azadirachta Indica	Neem	Neem oil & neem products
Tectona Grandis	Teek	Antibacterial, Antifungal, Antiulcer
Ficus religiosaa	Peepal	Medicinal use, Fruits & figs
Bambusa vulgaris	Bamboo	Anthelmintic Anti-inflammatory, Astringent Properties
Madhuca longifolia	Mahua	Acts as a Stimulant & cough relief,

CHAPTER 10

ENVIRONMENTAL MANAGEMENT PLAN

A total capital cost of Rs.5.97 Lakhs has been kept in the project cost towards the environmental protection, control, mitigation measures, and implementation of the Environmental Management Plan (EMP). This cost is borne by the bidder/leaseholder. The budgetary cost estimate for the EMP is given in Table.

Table 10. 1 Budgetary cost of EMP

Sr	Impact Source	Impact	Control Measure	Cost (Rs.)
1	Transport Road	On Air Quality	Compaction, gradation, and drainage on both sides.	90000
		On Land, the Stability of the Road and degradation of road	Proper maintenance	40000
			Regular water spraying	43000
			The air quality will be monitored at the impacted village. (For One Day Monitoring)	5000
			Health Check-up of Employees	5000
2	Truck/ Tractor Movement	Air Quality	Sand-carrying trucks will be effectively covered by tarpaulin to avoid the escape of fines to the atmosphere. (2 Tarpaulin)	25000
			Regular monitoring of the exhaust fumes	5000

Sr	Impact Source	Impact	Control Measure	Cost (Rs.)
			Barriers & Traffic Management Expenses. (Excluding Manpower Salary which is included in labour costs)	10000
3	Ramp and Sand Reach	Mining Operation	Regular ramp Inspection and Ramp maintenance. (Excluding Manpower Salary which is included in labour costs)	50000
			Provision of dust masks	10000
4	Bank Management	Bank Erosion/Flood Plain management	The green belt along the bank (For Green Belt Development)	230000
			Plantation of wide leaf tall trees on banks and grass along a slanting portion of the bank	
5	Transportation on Village Roads	Dust Control	The green belt along village Rd (For Green Belt Development)	
6	Final Mine Closer Plan implementation	Replenishment of Sand	Gabions/ boulders will be arranged as per guidelines	15000
7	Mobile toilet, sewage handling & treatment		Mobile toilet, sewage handling & treatment	100000
8	CCTV Monitoring			100000
Total				728000

Budget For Corporate Environment Responsibility (²⁰CER)

About 2% fund of the project cost is allocated for Corporate Environment Responsibility (CER) activities as presented in below Table

Table 10.2 Budget for CER

Sr.	Description	Cost (Rs)
1.	Village Schools (separate toilet for girls and boys)	25000
2.	Solar panels over Gram Panchayat buildings	25000
3.	Solar panels over Public Health Centers	20000
	Total	70000

²⁰ Corporate Environment Responsibility

CHAPTER 11

SUMMARY AND CONCLUSION

The Roles and Responsibilities of the Environmental coordinator, the Operation Manager, and the senior personnel contractor are essential in EMP.

The environmental status of the project site and study area of 10km radius is delineated with respect to air, noise, water, land, biological and socio-economic environment the different project activities in the construction and operation phases are identified.

To identify the impacts, the interaction between the project activities and different components of the environment is classified phase-wise. A summary of the recognized impacts is given in the following paragraphs.

- During the operational phase, the transportation of sand could cause a temporary disturbance to the local environment which will be prevented with the proposed mitigation measures.
- Proposed project will not have any major significant negative impacts. The minor impacts arising during Excavation and Transportation phases can be mitigated with the help of the proposed Environmental Management Plan.
- In general, sand excavation from Sawargaav Ni sand spot will be useful to the developmental work in the district and generate employment opportunities.

From this project, it is concluded that the district revenue will increase in return minimum of 2% of funds are utilized for the development of the village. The project will also grab employment which will improve the standard of life of villagers.

*** END ***

Environmental Management Plan

As per Rules 23 & 26 of MMME (D & R) RULE 2013 & Section 15 of MMDR Act 1957, MoEFCC Notification 2006, S.O. 141(E) dated 15. 01. 2016; MoEFCC, Sustainable Sand Mining Management Guidelines 2016, Guidelines for Mining Policy 2020)

for

ENVIRONMENTAL CLEARANCE

of

SAND MINING (MINOR MINERAL)

for

Surlegaav Satha 1– A Riverbed Sand Mine / Sand Ghat
Khasra No. GSDA approved 136, 138, 1, 2/3, 4
Area (4.00ha)

Village Surlegaav, Tehsil Gevrai, District Beed

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ABBREVIATION

Short Form	Long Form
EMP	Environmental Management Plan
MoEFCC	Ministry of Environment Forest and Climate Change
DSR	District-level Survey Report
EC	Environmental Coordinator
OM	Operations Manager
GSDA	Groundwater Surveys & Development Agency
MPCB	Maharashtra Pollution Control Board
MSL	Mean Sea Level
MS	Maharashtra State
PUC	Pollution Under Control
R&R	Rehabilitation and Resettlement
DLTF	Distance Learning Task Force
TP	Transport Permission/Permits
IBA	Indian Bank Association
MICR	Magnetic Ink Character Recognition Code
QR	Quick Response Code
GPS	Global Positioning System

CCTV	Closed-Circuit Television
DGPS	Differential Global Positioning System
RL	Reduced Levels
CER	Corporate Environment Responsibility

CHAPTER 1

INTRODUCTION

The Environmental Management Plan (¹EMP) plays a vital connection uniting forecast impacts and mitigation measures during implementation and operational activities. EMP stipulates the mitigation, monitoring and conventional measures to be taken during project implementation and operation. EMP is to escape or mitigate adverse environmental impacts, and to implement these measures.

This Environmental Management Plan (EMP) has been prepared as part of the Scoping Report which will be compiled in terms of the Environmental Assessment for the sand mining activities.

Considering the Ministry of Environment and Forest Climate Change (²MoEFCC) Notification 2006 and Sustainable Sand Mining Management Guidelines 2016, the Govt. of Maharashtra had mapped out the Minor Mineral Extraction Rules 2013. These rules are to extract all minor minerals in a scientific way so that there is no unfavourable impact on Environment and Climate. To extract every minor mineral from any land (either Government or Private) there is provision for a Mining Plan. These plans need to be approved by a competent authority. For long-term leased minor minerals (5-10 years period) and sand excavation from the riverbed, Senior Deputy Director of Directorate of Geology and Mining is the competent authority. These plans are for short term temporary permits which are valid for one year.

According to Enforcement & Monitoring Guidelines for Sand Mining 2020, Sustainable Sand Mining Management Guidelines 2016, Standard Environment conditions for sand mining and sustainable mining practices, District level Survey Report (³DSR) should be prepared and are suitable for mining and area prohibited for mining must be recognized.

¹ Environmental Management Plan

² Ministry of Environment Forest and Climate Change

³ District Survey Report

Objectives of EMP

- To provide overall conservation of the environment.
- To minimize waste generation and pollution.
- To regulate the precise use of natural resources and water.
- To provide Safety, Welfare, and Good health for the workforce and populace.
- To regulate the effective operation of all control measures.
- To ensure alertness against probable disasters and accidents.
- To monitor cumulative and long-term impacts.
- To regulate the effective operation of all control measures.

Roles and Responsibilities concerning the implementation of the EMP

The roles and responsibilities of all parties involved in successfully managing the environment are mentioned below.

Environmental Coordinator

The Environmental Coordinator will inspect operational areas on a quarterly basis and at the onset of mining any new island, to ensure that all specifications are met. The duties of the environmental coordinator will be the following.

- Guide the operations team in respect of the implementation of the environmental specifications.
- Lead the visits to ensure all work is aligned with the EMP.
- The environmental coordinator must examine the site during the three-monthly visits. All rehabilitation results will be Comprised in the quarterly report.
- Examination of the rehabilitation area and giving guidance regarding rehabilitation measures if any.

The Operations Manager

The responsibilities of the Operations Manager (4OM) or his nominated authority are as follows.

1. Familiarize themselves with the requirements of the EMP.
2. Monitor employees' and contractor's compliance with the environmental specifications; and enforce adherence.

⁴ Operations Manager

3. Communicate all environment-related incidents with the Environmental Coordinator and distribute them internally to avoid repetition.
4. Maintain a record of activities relevant to Environmental Management.
5. The Operations Manager shall be responsible for monitoring and the enforcement of the Environmental Management specifications on a day-to-day basis. Any violation of the environmental specifications shall be recorded, and the agreed disciplinary measures are taken.

Senior personnel and contractors

The roles of the senior personnel/contractors are as follows:

- Familiarize themselves with the requirements of the EMP.
- Comply with the environmental management specifications.
- Ensure that all team members are familiar with the environmental management specifications.

Details of the project

The Surlegaav Satha 1 sand ghat area has been selected in perspective of its subsisting demand for building-grade sand for the area in and around Gevrai Taluka. The District Mining Officer Beed has put forward the proposal for Environmental Clearance for mining. The ghat has a production of 14134 brass sand within an area of 4.00ha. The proposed proposal follows an organized mining process for Environmental Clearance.

Further Chapter informs about the in-depth details of the Sand Ghat, its geographical structure, and a Google map of the ghat with its approach road for contractors and workers to reach to sand ghat from the village.

CHAPTER 2

DETAILS OF THE PROJECT

Surlegaav village is located in Gevrai Taluka of Beed district, Maharashtra. Beed is well connected with all nearby cities. The National highway NH-52, it traverses through the states of Punjab, Haryana, Rajasthan, Madhya Pradesh and Maharashtra in India. NH-52 is the National Highway passing through the district, covering a total distance of 73.60km. Gevrai has situated about 31.3km by road from Beed. The district has road links to adjoining districts Ahmednagar District to the west, Jalna District to the North, Latur District to the East, Osmanabad District to the South, Parbhani District to the East The district is well connected by roads.

Surlegaav village is 46.40km away from Collector Office headquarters Beed. The Geographical area of the Beed is around 10693km². The nearest Railway station to Surlegaav village is Sarwari Railway station. The nearest Airport to Beed District is Aurangabad Airport, Aurangabad Airport is 104km away from beed.

Honourable Collector Beed intends to auction Sand Ghats and appointed District Mining Officer as Project Proponent. A total of 38 sand ghats are identified by Tahsildar Majalgaon, Parli Ve, Gevrai, Beed along with District Mining Officer, Beed. The 38 sand ghats were jointly surveyed by Taluka level technical committee headed by respective tahsildar with Dy. Engineer Irrigation Department, Junior Geologist Directorate of Geology and Mining Govt. of Maharashtra, Junior Geologist, Groundwater Surveys & Development Agency (⁵GSDA). DMO Beed and a representative of the Maharashtra Pollution Control Board (⁶MPCB), as per the procedure defined in Sand Auction Rules 2019 dated 3/09/2019 formed a Taluka-level technical committee, which explored the sand ghats for an available quantity of sand for scooping. Revenue of Rs.25 Crore is expected from the auction of these sand ghats. Surlegaav Satha 1 Sand Ghat proposed over river Godavari in Gevrai Taluka is proposed to cater to the infrastructural

⁵ Groundwater Surveys & Development Agency

⁶ Maharashtra Pollution Control Board

requirement of sand in the Tehsil of Beed and adjoining areas of other talukas.

Table 2. 1 Details of Surlegaav Satha 1 Sand ghat

Name of Village	Tahsil	River/ Nallah	Nearest survey No.	Area (ha)	Proposed Depth for excavation (m)	Quantity Permitted for mining of Sand in Brass	Method of Mining
Surlegaav	Gevrai	Godavari	136, 138, 1, 2/3, 4	4.00	1.0	14134	Open-cast manual mining

Table 2. 2 Salient features of the project

Particulars	Details		
Location	Village- Surlegaav. (Satha 1), Taluka- Gevrai, District-Beed, Maharashtra.		
Latitude and Longitude	Boundary points of Surlegaav Satha 1 sand spot	Latitude	Longitude
	BP1	19°22'59.56"N	75°35'38.77"E
	BP2	19°22'58.18"N	75°35'39.74"E
	BP3	19°23'3.25"N	75°36'5.26"E
	BP4	19°23'4.81"N	75°36'5.45"E
Sand spot area (In ha)	4.00ha		
Proposed production capacity (in Brass)	14134		
Infrastructure Requirement (As per Govt Resolution 3rd January 2018)	1. Room / Hut for Official records 2. Electricity / Battery for Running CCTV 24x7 daily. 3. One Computer / Android-based Mobile for the online generation of Invoice numbers.		

Particulars	Details
Distance of project site from nearest rail or road bridge over the concerned River, Nallah, etc.	Godavari River Bridge-31.93km
Distance from infrastructural facilities Railway line National Highway State Highway Major District Road Any Other Road Electric transmission line pole or tower Canal or check dam or reservoirs or lake or ponds In-take for drinking water pump house Intake for Irrigation canal pumps	Sarwari railway station-54.93km NH52-13.74km MSH44-9.49km 6.58km 1.05km
Areas already subjected to pollution or environmental damage. (those where existing legal environmental standards are exceeded)	None
Areas susceptible to natural hazards which could cause the project to Present environmental problems (earthquakes, subsidence, landslides, erosion, flooding, or extreme or adverse climatic conditions)	No. Sand Ghat is at safe distances from natural hazards like earthquake prone area, subsidence, landslide, erosion, flooding prone area and extreme or adverse climatic conditions

Particulars	Details
Whether the proposal involves approval or clearance under the following Regulations or Acts, namely: - (a) The Forest (Conservation) Act, 1980. (b) The Wildlife (Protection) Act, 1972. (c) The Coastal Regulation Zone Notification, 2011. If yes, details of the same and their status are to be given.	None
Forest land involved (hectares)	None

The below figure shows the google image of Surlegaav Satha 1 sand ghat.

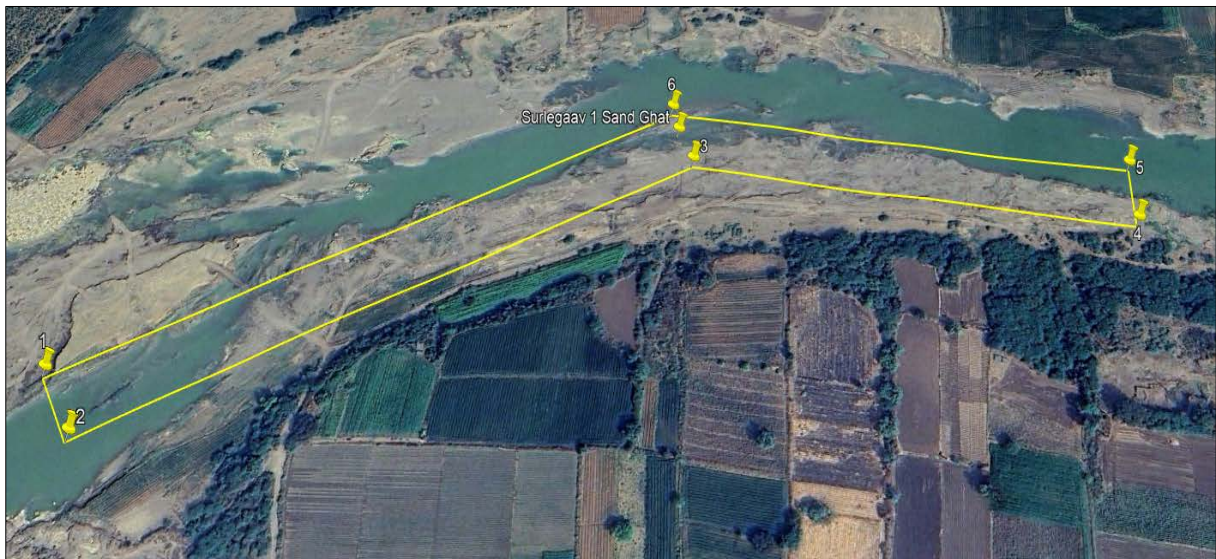


Fig 2.1-Google image of Surlegaav Satha 1 sand ghat

Approach road along with google location is as shown below.



Fig 2.2-Approach Road for sand ghat

Next chapter 3 is Baseline Environmental Status in which the entire Topography, Climate, Soil Environment, Land use, water Environment, Hydrology, Biological environment, and Socio-economic Environment are briefly explained for the Beed district.

CHAPTER 3

BASELINE ENVIRONMENT STATUS

Topography

The Sand Ghat area as per the survey is the riverbed of the Godavari River of the Beed district. The maximum elevation is 447m MSL, average elevation is 444m MSL, & minimum elevation is 442m (⁷MSL) Mean Sea Level. The slope of the Sand Ghat area towards the Southeast to Northwest side. The flow of Godavari River is from Southeast direction.

Presently, there is neither any infrastructure within the riverbed nor are proposed.

Hydrology

There will be no change in the Water Table during the mining operation, as the depth of mining shall be restricted to 1.0m water level, which is less likely to affect the surface level or Groundwater Table. There is no proposal of any stream modification/diversion due to this mining activity hence there will be not any impact on the flow of water.

Soil Environment

The riverbed consists of sand /gravel. There is no topsoil. The depth of mining shall be restricted to 1.0m. There is no crucial impact on the soil forecasted due to mining activities.

Land Use Land Cover

Land use shows that agriculture land use is predominant. The proposed site is 4.00ha having adjoined Khasara No 136, 138, 1, 2/3, 4. The land doesn't cover any human habitation, forest, etc. Any change in the scope of the approved Mining Plan will lead to riverbank erosion/cutting and thereby river channel shifting, degradation of land, causing loss of properties and degradation of the surrounding landscape.

⁷ Mean sea level

Water Environment

While transporting sand there may be fugitive dust. There will be water requirement for spraying for dust suppression purposes. This water will be supplied from the borewell from nearby villages through tankers as well as from surface water sources. The water source may vary from village to village.

Climate

During summer May is the hottest month of the year in this area. The temperature rises to 42°C in the month of May. The average rainfall in this region is 600-700mm About 50% of rainfall precipitates between June to September. December is the coldest month with temperature falling down to 18°C. Overall the proposed site area has sub-tropical conditions.

Biological Environment

Flora

The agricultural area is seen near the Sand Ghat. Few trees and thorny bushes are seen on the banks of the river.

Fauna

As there is no forest cover, no endangered species of wildlife are seen in this area.

Socio-Economic Environment

This project may create constructive impacts of the sand mining that are stated below:

1. The mining operations will provide direct & indirect employment to village people.
2. The villages and their inhabitants & domestic animals will not be disturbed due to mining, as the quarry is far from their settlements.
3. Local workforce will be given first preference for employment.
4. Mining activities will benefit the local people due to the provision of more infrastructural facilities (developments of approach routes within the village area).

The next chapter describes all possible impacts on the Environment due to this project along with its mitigation measure to overcome these impacts.

CHAPTER 4

IMPACT ASSESSMENT REPORT ALONG WITH PROPOSED MITIGATION MEASURES

1. Land Environment

Anticipated Impact

Movement of vehicles can create issues for agricultural land, human habitations, noise, and risk for public and cause traffic hazards. The impacts include damage to the riverbank due to access ramps to the riverbed, soil erosion because of extraction of sand, micro disturbance to groundwater, possible stimulation of the changed river course, and contamination of sand aquifer water due to ponding. There might be surface degradation due to the road network.

The quality of soil will not be affected due to transportation or any other activity of mining.

Mitigation measure

1. Mining depth should be restricted to 3 meters and distance from the bank should be ¼th or river width and should not be less than 7.5 meters as per “Sustainable Sand Mining Guidelines 2020” Page 23, Point no 4.3 (m).
2. There will be a minimal number of access roads to riverbeds. Cutting of riverbanks will be avoided and ramp with smooth slope will be maintained. Access points to the riverbed will be decided based on the least steepness of the riverbank and the least human activity at that location.
3. No foreign material like polythene bags, jute bags, and useless articles should be allowed to remain/spill in the riverbed and catchment area, or no pits/pockets will be allowed to be filled with such material.
4. Mining at the concave side of the river channel should be avoided to prevent bank erosion. Similarly, a tortuous segment of a river is to be selected for mining in such a way as to ignore the natural eroding of banks.
5. Ensure that ponding is not created in the riverbed.
6. Transportation route should be such that it gives minimum

damage to the environment.

7. Green belt will be developed along the haul road and the bank of rivers of mine premises and near the sand mining site. While selecting the plant species, preference will be given for planting native species of the area.

2. Water environment

Anticipated Impact

The project activity will be carried out in the dry part of the riverbed. Care will be taken to ensure that neither of the project activities will affect the water environment or riverbank habitats. During the lean months, the proposed Sand Mining will not expose the base flow of the river and hence there will not be any inauspicious impact on surface hydrology and groundwater regime due to this project. Project activities will not have any adverse consequences on the physical components of the environment and therefore may not have any effect on the recharge of ground waters or affect the water quality. Monitoring of water quality will be checked yearly.

Mitigation measures

1. Mining is avoided during the monsoon season and at the time of floods. This will help in the replenishment of sand in the riverbed.
2. Mining below the subterranean water level will be avoided as a safeguard against environmental contamination and over-exploitation of resources.
3. River stream will not be transferred to create active channels.
4. Mining schedule is synchronized with the river flow direction and the gradient of the land.
5. Mining at the concave side of the river channel will be avoided to prevent bank erosion.
6. Tortuous segment of the river will be selected for mining in such a way as to avoid naturally eroding banks and to promote mining on naturally building meander components.
7. Mining depth shall be maintained as per the guidelines and

rules of the Sand Mining Policy dated 03/09/2019 and recommendations of Maharashtra State (⁸M.S.). State Ground Water Department for extraction of sand during the lease period.

8. Water Quality Monitoring for the ground waters, river water, and other surface waters shall be carried out seasonally to ensure that the water quality is not affected by the project activities.
9. Utmost care will be taken to minimize or control leaking vehicles to be used for sand transportation.
10. The washing of tractor trolleys in the river will not be done.
11. The contractor will follow all guidelines and rules for proper and scientific methods of mining during the period of extracting the sand.

3. Air Environment

Anticipated Impacts

Plying of tractor trolleys from the public road to river sand collection points needs access roads. The majority of such access roads are the already existing roads/tracks being used by pedestrians/cart owners. The movement of heavy vehicles sometimes causes problems for cattle, agricultural land, and human habitations due to dust, noise, and the movement of the public. These environmental problems are felt more as the area is rural in nature.

Air pollution is likely to be caused at various stages of Sand Mining operations such as excavation, loading & transportation of material. Most of the fugitive dust emissions will be generated from loading & transportation. This dust becomes airborne and spreads away to surrounding areas.

The impact on air is mainly localized in nature as the dust particles of 100 μ in size are not carried to farther distances beyond 100m and the effect is felt within the core zone of the project involving active Sand Mining operations.

⁸ Maharashtra State

Mitigation measures

1. Movement of the vehicles on the road will be increased; however, the unmetalled road in the mining area will be sprinkled with water at regular intervals.
2. In addition to preventing spillage from tractor trolleys, overloading shall be controlled to 1-brass/tractor trolley. The speed limit will be <20 km/hr.
3. Maintenance of the haul road will be done on a regular basis.
4. To avoid fugitive dust emissions at the time of excavation, a regular sprinkling of water will be done on regular basis.
5. Sand is transported to the sites by road through tractor trolleys. The sand-carrying vehicles shall be covered by tarpaulin sheets.
6. The Green belt development will be prepared along the haul roads, which will act as a pollution sink.
7. To minimize vehicular pollution from the sand transporting vehicles, the following conditions will be insisted upon to permit the vehicles of the transporters.
8. The vehicles should be Bharat-IV stage compliant and should have a Pollution Under Control (⁹PUC) Certificate issued by appropriate authorities.
9. Regular maintenance of transport vehicles and monitoring of vehicular emission levels at periodical intervals.

4. Noise Environment

Anticipated Impact

The noise environment in this project will be overdone by the equipment at the site and vehicular transportation. A slight increase in noise levels of <10dB(A) can be expected up to a distance of 100m.

Mitigation measures.

1. Minimum use of horns in the village area.
2. Timely maintenance of vehicles and their silencers to

⁹ Pollution Under Control

minimize vibration and sound.

3. Phasing out old and worn-out tractor trolleys.
4. Provision of green belts along the road networks.
5. Care will be taken to produce minimum sound during sand loading.
6. Backhoe loader excavator will be used
7. Earplugs may be provided to protect the laborers working at the site.

5. Socio-economic Environment

Anticipated Impacts and Evaluation

1. The project activities shall not have any adverse impacts on any of the common property resources of the village communities, as the Sand Mine lease area is not being used for any purpose by any section of the society in this region.
2. There is no Resettlement and Rehabilitation (¹⁰R&R) involvement in this project.
3. There is no land acquisition in this project.
4. A major portion of the houses in the study area is semi-pucca-type structures.
5. The water source to these areas is from the Grampanchayat /Nagar Parishad connection and private bore wells and wells.
6. People living around the project area need the project for the purpose of employment and economic benefits.
7. The awareness level regarding the proposed mining activity is very towering. The proposed mining activity is expected to provide stimulus to socio-economic activities in the region and thereby accelerate further development processes.

Social and Demographic Profile

The workers are from local villages. These people have been provided welfare benefits from the lessee like medical benefits,

¹⁰ Rehabilitation and Resettlement

insurance, fees for children's education, etc. They have some land and cattle for their daily earnings. Additional revenue earned from the Sand Mining work will improve their living standard. The group of quarries in and around will help to have infrastructure facilities like roads, schools, shops, etc. This will enhance their social life.

Occupational Health and Safety

This is a riverbed Sand Mine. So, the mining activities are comparatively smaller because the production is not on a high scale. Workers do not come across any extreme conditions like excessive heat, moisture, etc. Workers working around it may come across this dusty environment. But the impact on health will be within the limit.

Human Settlement

1. There are no houses in and around the lease area. Blasting is the only activity, which may affect the settlement, which is not done. The settlement is more than 1-km from the sand mine.
2. Appropriate precautions will be taken during mining. Transportation of finished products is through the villages. There will be an effect of traffic on the local people. However, the intensity of traffic is 70-80/day.

Health and Hygiene

In general, the health of villagers is moderately good. In the rainy season, the atmospheric condition is unhygienic due to a lack of proper drainage and sanitation in the village habitation. Villagers are working in agricultural fields and work as labourers.

Education

Most education of 70% young <20 years, is up to the 5th to 9th. Economic condition is in general moderate. So, after this project, the standard of education will increase.

Socio-Economic Benefits Arising Out of Mining

1. Generation of employment in rural areas.
2. Upgradation in the living standards of rural people.
3. Creating infrastructural facilities like roads, electricity, shops, schools, etc.
4. Upgrading literacy in the area by exploiting natural minerals so the generation of revenue.

5. Helping to sustain construction activity.
6. Improving the greenery of the area, which is otherwise poor.

Liquid Effluent

Not applicable, because these activities do not generate effluent from operation or process.

Solid Waste

Not applicable, because small mines and impacts are negligible.

Project benefits due to the sand mining of Surlegaav Satha 1 are explained in the next Chapter.

CHAPTER 5

PROJECT BENEFITS

The proposed Sand Mining project of Surlegaav. Village, Gevrai Tehsil, Beed District will lead to the following benefits:

1. Increase in the revenue of the district will ultimately increase the revenue of the village, which in return can be used to improve the infrastructure of the village.
2. Sand is available for building construction work and by systematic separation of sand, there is no possibility of a flood. Providing smooth movement of water of the river.
3. This project will contribute additional revenue to the state Exchequer in the form of revenue.
4. The project will conclude with employment opportunities for unskilled/skilled local people.
5. Standard of living of employed people will increase.

CHAPTER 6

SITE-SPECIFIC ENFORCEMENT & MONITORING PLAN

Sand Ghat Site specific enforcement & monitoring plan

(as per guidelines stipulated in the Enforcement and Monitoring Guidelines for sand mining issued by MoEFCC in January 2020.)

District administration shall deliver information on its website about the Sand Mines in the district for public information. The objective is to extend all information into the public domain so that the citizens are aware of the mining activities. People can also report to the district administration any deviation observed. Suitable feedback and its composition shall also be made operational.

Details shall include, but not be limited to, lease area, geo-coordinates of lease area and mineable area, transport routes, permitted capacity, regulatory conditions for operation including mining, environmental and social commitments, etc.

An Independent Committee of experts constituted by the Distance Learning Task Force (¹¹DLTF) will assess the environmental or ecological damage caused due to illegal mining and recommend recovery of environmental compensation from the concerned miners.

The recommendation may also include action under the provision of the Environment (Protection) Act 1986 u/s.15 read with s.19.

¹¹ Distance Learning Task Force

CHAPTER 7

SECURITY FEATURES

Security features are included in the Transport Permission/Permits (TP)

It will be ensured that the following security features are included in the Transport Permission/Permits (¹²TP) so that duplicate/fraudulent/forged TPs for transport, not accounted for in the IT-based system, is not possible:

1. Printed on Indian Bank Association (¹³IBA) Approved letterhead with account details
2. Magnetic Ink Character Recognition Code (¹⁴MICR) paper
3. Unique Barcode
4. Unique Quick Response Code (¹⁵QR)
5. Fugitive Ink Background
6. Invisible Ink Mark
7. Void Pantograph Watermark
8. Global Positioning System (¹⁶GPS) based vehicle tracking system
9. Closed-Circuit Television (¹⁷CCTV) Camera

¹² Transport Permission

¹³ Indian Bank Association

¹⁴ Magnetic Ink Character Recognition Code

¹⁵ Quick Response Code

¹⁶ Global Positioning System

¹⁷ Closed Circuit Television

CHAPTER 8

REPLENISHMENT

Replenishment study is the most important part of Sand Mining as it is the only basis to carry out sand mining. Without a Replenishment Study, we cannot understand the amount of deposition of sand. Following points to be followed for the replenishment study.

1. Area of deposition and erosion will be calculated for each cross-section after giving due regard to the stability & safety of active channel banks & other features of importance.
2. Differential Global Positioning System (¹⁸DGPS) and other survey tools will be used to define the topography, contours, and offsets of the lease area.
3. Contour & elevation benchmarks will provide baseline data for assessing pre- and post-study period scenario.
4. Physical benchmarks will be fixed at appropriate intervals (preferably 1 in 30m) & Reduced levels (¹⁹RL) shall be validated from a nearby standard RL.
5. These RL will be engraved on a steel plate (Bench Plate) & will be fixed & placed at locations that are free from any damages & are available in the pre-and post-study period.
6. Bench plates will be available for use during the mining period as a reference for all mining activity.
7. Baseline data on elevation status for a grid of 10m x 10m is preferred to have accuracy in the assessment.
8. It is expected that two consecutive cross-sections in longitudinal and lateral directions will not be more than a 10m distance apart.
9. Changes observed in the elevation in pre and post-scenario at each node, will be depicted in graphical forms with an appropriate scale to estimate the area of deposition & erosion.

¹⁸ Differential global positioning system

¹⁹ Reduced levels

10. Elevation level will be in reference to the nearest bench plates established for the purpose.
11. The levels (MSL & RL) of the corner point of each grid will be identifiable and safety barriers (non-Mining) demarcated as restricted in consensus with the Mineral Concession Rules of the respective State, and the provision mentioned in this Sustainable Sand Mining Management Guidelines.
12. A clear identification will be highlighted between grids under the mineable and grids under the non-mineable area.
13. These baseline data (pre and post) be subjected to stimulation with the help of data mine software to derive the replenishment area and corresponding volume and estimated weight.
14. The database will be structured in a tabulated form clearly depicting the nomenclature of the section lines, latitude and longitude of the starting point, chainage, and respective levels of all the points taken on that section line.
15. Net area shall be derived after summation of an area of deposition minus the area of erosion for each cross-section.
16. Volume will be estimated by multiplying the distance between two cross-sections with the average of the net area of these two consecutive cross-sections.
17. One sample per 900m² (30m x 30m) will be the preferred sample density for the assessment of bulk density for the estimation of deposition rate.
18. Care will be taken that the sample for assessment of Bulk Density is taken from the deposition zone & not from erosion.

Methodology for Sand Mining:

The following methodology should be followed for the Replenishment study.

1. The Demarcation and benchmark of the Sand Ghat are done at 10m x 10m intervals.
2. The use of the Auger Driller is to find out the depth of sand in each grid.
3. Auger Driller has created the holes in sand ghat by 10mx10m grid pattern.
4. Measured the depth of holes by using a measuring tape.

5. After taking all the readings average depth of sand is calculated.
6. The average depth of Surlegaav Satha 1 at Godavari is measured.

Replenishment study of sand in the proposed ghat along with details of the methodology, technology used to identify the existing reserve & replenishment of the same

Dandy Bolton Equation

For runoff less than 2 inches

$$S = 1280 \times (Q) \times 0.46 \times (1.46 - 0.26 \log(A)) \times F$$

For runoff more than 2 inches

$$S = 1958 \times (Q) \times (e^{-0.055 \times Q}) \times (1.43 - 0.26 \log(A))$$

Where,

S = sediment yield of stream (t/yr/km²),

Q = average annual runoff (m³),

A = net drainage area in sq.mile.

CHAPTER 9

PROPOSED PLANTATION PLAN

The Project Proponent must take care of the plantation around the site. This will not only enhance the beautification of the area but also there will be the reduction of pollution, not some extent.

Details of the plantation and Tree species recommended for the plantation are shown below.

Table 9. 1 Details of green belt

Location of greenbelt	Both sides of the approach road, On the riverbanks of both sides of the sand spot & nearby open areas. Haul Road outside the riverbed
No. of plants to be planted	2000 per Hectare
Spacing of plants	2m grid interval
Species selected	Native species

Table 9. 2 Trees species for plantation

Botanical Name	Local Name	Importance
Azadirachta Indica	Neem	Neem oil & neem products
Tectona Grandis	Teek	Antibacterial, Antifungal, Antiulcer
Ficus religiosaa	Peepal	Medicinal use, Fruits & figs
Bambusa vulgaris	Bamboo	Anthelmintic Anti-inflammatory, Astringent Properties
Madhuca longifolia	Mahua	Acts as a Stimulant & cough relief,

CHAPTER 10

ENVIRONMENTAL MANAGEMENT PLAN

A total capital cost of Rs.5.97 Lakhs has been kept in the project cost towards the environmental protection, control, mitigation measures, and implementation of the Environmental Management Plan (EMP). This cost is borne by the bidder/leaseholder. The budgetary cost estimate for the EMP is given in Table.

Table 10. 1 Budgetary cost of EMP

Sr	Impact Source	Impact	Control Measure	Cost (Rs.)
1	Transport Road	On Air Quality	Compaction, gradation, and drainage on both sides.	90000
		On Land, the Stability of the Road and degradation of road	Proper maintenance	40000
			Regular water spraying	43000
			The air quality will be monitored at the impacted village. (For One Day Monitoring)	5000
			Health Check-up of Employees	5000
2	Truck/ Tractor Movement	Air Quality	Sand-carrying trucks will be effectively covered by tarpaulin to avoid the escape of fines to the atmosphere. (2 Tarpaulin)	25000
			Regular monitoring of the exhaust fumes	5000

Sr	Impact Source	Impact	Control Measure	Cost (Rs.)
			Barriers & Traffic Management Expenses. (Excluding Manpower Salary which is included in labour costs)	10000
3	Ramp and Sand Reach	Mining Operation	Regular ramp Inspection and Ramp maintenance. (Excluding Manpower Salary which is included in labour costs)	50000
			Provision of dust masks	10000
4	Bank Management	Bank Erosion/Flood Plain management	The green belt along the bank (For Green Belt Development)	230000
			Plantation of wide leaf tall trees on banks and grass along a slanting portion of the bank	
5	Transportation on Village Roads	Dust Control	The green belt along village Rd (For Green Belt Development)	
6	Final Mine Closure Plan implementation	Replenishment of Sand	Gabions/ boulders will be arranged as per guidelines	15000
7	Mobile toilet, sewage handling & treatment		Mobile toilet, sewage handling & treatment	100000
8	CCTV Monitoring			100000
Total				728000

Budget For Corporate Environment Responsibility (²⁰CER)

About 2% fund of the project cost is allocated for Corporate Environment Responsibility (CER) activities as presented in below Table

Table 10.2 Budget for CER

Sr.	Description	Cost (Rs)
1.	Village Schools (separate toilet for girls and boys)	25000
2.	Solar panels over Gram Panchayat buildings	25000
3.	Solar panels over Public Health Centers	20000
	Total	70000

²⁰ Corporate Environment Responsibility

CHAPTER 11

SUMMARY AND CONCLUSION

The Roles and Responsibilities of the Environmental coordinator, the Operation Manager, and the senior personnel contractor are essential in EMP.

The environmental status of the project site and study area of 10km radius is delineated with respect to air, noise, water, land, biological and socio-economic environment the different project activities in the construction and operation phases are identified.

To identify the impacts, the interaction between the project activities and different components of the environment is classified phase-wise. A summary of the recognized impacts is given in the following paragraphs.

- During the operational phase, the transportation of sand could cause a temporary disturbance to the local environment which will be prevented with the proposed mitigation measures.
- Proposed project will not have any major significant negative impacts. The minor impacts arising during Excavation and Transportation phases can be mitigated with the help of the proposed Environmental Management Plan.
- In general, sand excavation from Surlegaav Satha 1 sand spot will be useful to the developmental work in the district and generate employment opportunities.

From this project, it is concluded that the district revenue will increase in return minimum of 2% of funds are utilized for the development of the village. The project will also grab employment which will improve the standard of life of villagers.

*** END ***

Environmental Management Plan

As per Rules 23 & 26 of MMME (D & R) RULE 2013 & Section 15 of MMDR Act 1957, MoEFCC Notification 2006, S.O. 141(E) dated 15. 01. 2016; MoEFCC, Sustainable Sand Mining Management Guidelines 2016, Guidelines for Mining Policy 2020)

for

ENVIRONMENTAL CLEARANCE

of

SAND MINING (MINOR MINERAL)

for

Anandgaon – A Riverbed Sand Mine / Sand Ghat
Khasra No. GSDA approved 120, 121, 122, 123 to 131
Area (1.20ha)

Village Anandgaon, Taluka Beed, District Beed

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ABBREVIATION

Short Form	Long Form
EMP	Environmental Management Plan
MoEFCC	Ministry of Environment Forest and Climate Change
DSR	District-level Survey Report
EC	Environmental Coordinator
OM	Operations Manager
GSDA	Groundwater Surveys & Development Agency
MPCB	Maharashtra Pollution Control Board
MSL	Mean Sea Level
MS	Maharashtra State
PUC	Pollution Under Control
R&R	Rehabilitation and Resettlement
DLTF	Distance Learning Task Force
TP	Transport Permission/Permits
IBA	Indian Bank Association
MICR	Magnetic Ink Character Recognition Code
QR	Quick Response Code
GPS	Global Positioning System

CCTV	Closed-Circuit Television
DGPS	Differential Global Positioning System
RL	Reduced Levels
CER	Corporate Environment Responsibility

CHAPTER 1

INTRODUCTION

The Environmental Management Plan (¹EMP) plays a vital connection uniting forecast impacts and mitigation measures during implementation and operational activities. EMP stipulates the mitigation, monitoring and conventional measures to be taken during project implementation and operation. EMP is to escape or mitigate adverse environmental impacts, and to implement these measures.

This Environmental Management Plan (EMP) has been prepared as part of the Scoping Report which will be compiled in terms of the Environmental Assessment for the sand mining activities.

Considering the Ministry of Environment and Forest Climate Change (²MoEFCC) Notification 2006 and Sustainable Sand Mining Management Guidelines 2016, the Govt. of Maharashtra had mapped out the Minor Mineral Extraction Rules 2013. These rules are to extract all minor minerals in a scientific way so that there is no unfavourable impact on Environment and Climate. To extract every minor mineral from any land (either Government or Private) there is provision for a Mining Plan. These plans need to be approved by a competent authority. For long-term leased minor minerals (5-10 years period) and sand excavation from the riverbed, Senior Deputy Director of Directorate of Geology and Mining is the competent authority. These plans are for short term temporary permits which are valid for one year.

According to Enforcement & Monitoring Guidelines for Sand Mining 2020, Sustainable Sand Mining Management Guidelines 2016, Standard Environment conditions for sand mining and sustainable mining practices, District level Survey Report (³DSR) should be prepared and are suitable for mining and area prohibited for mining must be recognized.

¹ Environmental Management Plan

² Ministry of Environment Forest and Climate Change

³ District Survey Report

Objectives of EMP

- To provide overall conservation of the environment.
- To minimize waste generation and pollution.
- To regulate the precise use of natural resources and water.
- To provide Safety, Welfare, and Good health for the workforce and populace.
- To regulate the effective operation of all control measures.
- To ensure alertness against probable disasters and accidents.
- To monitor cumulative and long-term impacts.
- To regulate the effective operation of all control measures.

Roles and Responsibilities concerning the implementation of the EMP

The roles and responsibilities of all parties involved in successfully managing the environment are mentioned below.

Environmental Coordinator

The Environmental Coordinator will inspect operational areas on a quarterly basis and at the onset of mining any new island, to ensure that all specifications are met. The duties of the environmental coordinator will be the following.

- Guide the operations team in respect of the implementation of the environmental specifications.
- Lead the visits to ensure all work is aligned with the EMP.
- The environmental coordinator must examine the site during the three-monthly visits. All rehabilitation results will be Comprised in the quarterly report.
- Examination of the rehabilitation area and giving guidance regarding rehabilitation measures if any.

The Operations Manager

The responsibilities of the Operations Manager (4OM) or his nominated authority are as follows.

1. Familiarize themselves with the requirements of the EMP.
2. Monitor employees' and contractor's compliance with the environmental specifications; and enforce adherence.

⁴ Operations Manager

3. Communicate all environment-related incidents with the Environmental Coordinator and distribute them internally to avoid repetition.
4. Maintain a record of activities relevant to Environmental Management.
5. The Operations Manager shall be responsible for monitoring and the enforcement of the Environmental Management specifications on a day-to-day basis. Any violation of the environmental specifications shall be recorded, and the agreed disciplinary measures are taken.

Senior personnel and contractors

The roles of the senior personnel/contractors are as follows:

- Familiarize themselves with the requirements of the EMP.
- Comply with the environmental management specifications.
- Ensure that all team members are familiar with the environmental management specifications.

Details of the project

The Anandgaon sand ghat area has been selected in perspective of its subsisting demand for building-grade sand for the area in and around Beed Taluka. The District Mining Officer Beed has put forward the proposal for Environmental Clearance for mining. The ghat has a production of 4240 brass sand within an area of 1.20ha. The proposed proposal follows an organized mining process for Environmental Clearance.

Further Chapter informs about the in-depth details of the Sand Ghat, its geographical structure, and a Google map of the ghat with its approach road for contractors and workers to reach to sand ghat from the village.

CHAPTER 2

DETAILS OF THE PROJECT

Anandgaon village is located in Beed Taluka of Beed district, Maharashtra. Beed is well connected with all nearby cities. The National highway NH-52, it traverses through the states of Sangrur, Punjab, to Ankola, Karnataka in India. NH-52 is the National Highway passing through the district, covering a total distance of 73.60km. Beed has situated about 0km by road from Beed. The district has road links to adjoining districts Ahmednagar District to the west, Jalna District to the North, Latur District to the East, Osmanabad District to the South, Parbhani District to the East. The district is well connected by roads.

Anandgaon village is 32.22km away from headquarters Beed. The Geographical area of the Beed is around 10693km². The nearest Railway station to Anandgaon village is Partur Railway station. The nearest Airport to Beed District is Aurangabad Airport, Aurangabad Airport is 113km away from Beed.

Honourable Collector Beed intends to auction Sand Ghats and appointed District Mining Officer as Project Proponent. A total of 38 sand ghats are identified by Tahsildar Beed, Parli Ve., Gevrai, Beed along with District Mining Officer, Beed. The 38 sand ghats were jointly surveyed by Taluka level technical committee headed by respective tahsildar with Dy. Engineer Irrigation Department, Junior Geologist Directorate of Geology and Mining Govt. of Maharashtra, Junior Geologist, Groundwater Surveys & Development Agency (⁵GSDA). DMO Beed and a representative of the Maharashtra Pollution Control Board (⁶MPCB), as per the procedure defined in Sand Auction Rules 2019 dated 3/09/2019 formed a Taluka-level technical committee, which explored the sand ghats for an available quantity of sand for scooping. Revenue of Rs.25 Crore is expected from the auction of these sand ghats. Anandgaon Sand Ghat proposed over river Sindhphana in Beed Taluka is proposed to cater to the infrastructural requirement of sand in the Taluka of Beed and adjoining areas of other talukas.

⁵ Groundwater Surveys & Development Agency

⁶ Maharashtra Pollution Control Board

Table 2. 1 Details of Anandgaon Sand ghat

Name of Village	Taluka	River/ Nallah	Nearest survey No.	Area (ha)	Proposed Depth for excavation (m)	Quantity Permitted for mining of Sand in Brass	Method of Mining
Anandgaon	Beed	Sindhphana	120, 121, 122, 123 to 131	1.20	1	4240	Open-cast manual mining

Table 2. 2 Salient features of the project

Particulars	Details		
Location	Village-Anandgaon Taluka-Beed, District-Beed, Maharashtra.		
Latitude and Longitude	Boundary points of Anandgaon sand spot	Latitude	Longitude
	BP1	19°7'38.30"N	75°54'6.08"E
	BP2	19°7'39.14"N	75°54'6.61"E
	BP3	19°7'32.29"N	75°54'18.22"E
	BP4	19°7'31.47"N	75°54'17.76"E
Sand spot area (In ha)	1.20ha		
Proposed production capacity (in Brass)	4240		
Infrastructure Requirement (As per Govt Resolution 3rd January 2018)	<ol style="list-style-type: none"> 1. Room / Hut for Official records 2. Electricity / Battery for Running CCTV 24x7 daily. 3. One Computer / Android-based Mobile for the online generation of Invoice numbers. 		

Particulars	Details
Distance of project site from nearest rail or road bridge over the concerned River, Nallah, etc.	0.65km
Distance from infrastructural facilities	
Railway line	35.23km
National Highway	34km (NH-52)
State Highway	26km (SH-144)
Major District Road	35.02km
Any Other Road	1.16km
Electric transmission line pole or tower	
Canal or check dam or reservoirs or lake or ponds	
In-take for drinking water pump house	
Intake for Irrigation canal pumps	
Areas already subjected to pollution or environmental damage. (those where existing legal environmental standards are exceeded)	None

Particulars	Details
<p>Areas susceptible to natural hazards which could cause the project to Present environmental problems (earthquakes, subsidence, landslides, erosion, flooding, or extreme or adverse climatic conditions)</p>	<p>No. Sand Ghat is at safe distances from natural hazards like earthquake prone area, subsidence, landslide, erosion, flooding prone area and extreme or adverse climatic conditions</p>
<p>Whether the proposal involves approval or clearance under the following Regulations or Acts, namely: - (a) The Forest (Conservation) Act, 1980. (b) The Wildlife (Protection) Act, 1972. (c) The Coastal Regulation Zone Notification, 2011. If yes, details of the same and their status are to be given.</p>	<p>None</p>
<p>Forest land involved (hectares)</p>	<p>None</p>

The below figure shows the google image of Anandgaon sand ghat.



Fig 2.1-Google image of Anandgaon sand ghat

Approach road along with google location is as shown below.



Fig 2.2-Approach Road for sand ghat

Next chapter 3 is Baseline Environmental Status in which the entire Topography, Climate, Soil Environment, Land use, water Environment, Hydrology, Biological environment, and Socio-economic Environment are briefly explained for the Beed district.

CHAPTER 3

BASELINE ENVIRONMENT STATUS

Topography

The Sand Ghat area as per the survey is the riverbed of the Sindhphana River of the Beed district. The maximum elevation is 462m MSL, average elevation is 461m MSL, & minimum elevation is 460m (⁷MSL) Mean Sea Level. The slope of the Sand Ghat area towards the West to Southeast side. The flow of Sindhphana River is from south to west direction.

Presently, there is neither any infrastructure within the riverbed nor are proposed.

Hydrology

There will be no change in the Water Table during the mining operation, as the depth of mining shall be restricted to 1.0m water level, which is less likely to affect the surface level or Groundwater Table. There is no proposal of any stream modification/diversion due to this mining activity hence there will be not any impact on the flow of water.

Soil Environment

The riverbed consists of sand /gravel. There is no topsoil. The depth of mining shall be restricted to 1.0m. There is no crucial impact on the soil forecasted due to mining activities.

Land Use Land Cover

Land use shows that agriculture land use is predominant. The proposed site is 1.20ha having adjoined Khasara No 120, 121, 122, 123 to 131. The land doesn't cover any human habitation, forest, etc. Any change in the scope of the approved Mining Plan will lead to riverbank erosion/cutting and thereby river channel shifting, degradation of land, causing loss of properties and degradation of the surrounding landscape.

⁷ Mean sea level

Water Environment

While transporting sand there may be fugitive dust. There will be water requirement for spraying for dust suppression purposes. This water will be supplied from the borewell from nearby villages through tankers as well as from surface water sources. The water source may vary from village to village.

Climate

During summer May is the hottest month of the year in this area. The temperature rises to 42°C in the month of May. The average rainfall in this region is 600mm to 700mm About 50% of rainfall precipitates between June to September. December is the coldest month with temperatures falling down to 18°C. Overall the proposed site area has sub-tropical conditions.

Biological Environment

Flora

The agricultural area is seen near the Sand Ghat. Few trees and thorny bushes are seen on the banks of the river.

Fauna

As there is no forest cover, no endangered species of wildlife are seen in this area.

Socio-Economic Environment

This project may create constructive impacts of the sand mining that are stated below:

1. The mining operations will provide direct & indirect employment to village people.
2. The villages and their inhabitants & domestic animals will not be disturbed due to mining, as the quarry is far from their settlements.
3. Local workforce will be given first preference for employment.
4. Mining activities will benefit the local people due to the provision of more infrastructural facilities (developments of approach routes within the village area).

The next chapter describes all possible impacts on the Environment due to this project along with its mitigation measure to overcome these impacts.

CHAPTER 4

IMPACT ASSESSMENT REPORT ALONG WITH PROPOSED MITIGATION MEASURES

1. Land Environment

Anticipated Impact

Movement of vehicles can create issues for agricultural land, human habitations, noise, and risk for public and cause traffic hazards. The impacts include damage to the riverbank due to access ramps to the riverbed, soil erosion because of extraction of sand, micro disturbance to groundwater, possible stimulation of the changed river course, and contamination of sand aquifer water due to ponding. There might be surface degradation due to the road network.

The quality of soil will not be affected due to transportation or any other activity of mining.

Mitigation measure

1. Mining depth should be restricted to 3 meters and distance from the bank should be ¼th or river width and should not be less than 7.5 meters as per “Sustainable Sand Mining Guidelines 2020” ■ Page 23, Point no 4.3 (m).
2. There will be a minimal number of access roads to riverbeds. Cutting of riverbanks will be avoided and ramp with smooth slope will be maintained. Access points to the riverbed will be decided based on the least steepness of the riverbank and the least human activity at that location.
3. No foreign material like polythene bags, jute bags, and useless articles should be allowed to remain/spill in the riverbed and catchment area, or no pits/pockets will be allowed to be filled with such material.
4. Mining at the concave side of the river channel should be avoided to prevent bank erosion. Similarly, a tortuous segment of a river is to be selected for mining in such a way as to ignore the natural eroding of banks.
5. Ensure that ponding is not created in the riverbed.
6. Transportation route should be such that it gives minimum

damage to the environment.

7. Green belt will be developed along the haul road and the bank of rivers of mine premises and near the sand mining site. While selecting the plant species, preference will be given for planting native species of the area.

2. Water environment

Anticipated Impact

The project activity will be carried out in the dry part of the riverbed. Care will be taken to ensure that neither of the project activities will affect the water environment or riverbank habitats. During the lean months, the proposed Sand Mining will not expose the base flow of the river and hence there will not be any inauspicious impact on surface hydrology and groundwater regime due to this project. Project activities will not have any adverse consequences on the physical components of the environment and therefore may not have any effect on the recharge of ground waters or affect the water quality. Monitoring of water quality will be checked yearly.

Mitigation measures

1. Mining is avoided during the monsoon season and at the time of floods. This will help in the replenishment of sand in the riverbed.
2. Mining below the subterranean water level will be avoided as a safeguard against environmental contamination and over-exploitation of resources.
3. River stream will not be transferred to create active channels.
4. Mining schedule is synchronized with the river flow direction and the gradient of the land.
5. Mining at the concave side of the river channel will be avoided to prevent bank erosion.
6. Tortuous segment of the river will be selected for mining in such a way as to avoid naturally eroding banks and to promote mining on naturally building meander components.
7. Mining depth shall be maintained as per the guidelines and

rules of the Sand Mining Policy dated 03/09/2019 and recommendations of Maharashtra State (⁸M.S.). State Ground Water Department for extraction of sand during the lease period.

8. Water Quality Monitoring for the ground waters, river water, and other surface waters shall be carried out seasonally to ensure that the water quality is not affected by the project activities.
9. Utmost care will be taken to minimize or control leaking vehicles to be used for sand transportation.
10. The washing of tractor trolleys in the river will not be done.
11. The contractor will follow all guidelines and rules for proper and scientific methods of mining during the period of extracting the sand.

3. Air Environment

Anticipated Impacts

Plying of tractor trolleys from the public road to river sand collection points needs access roads. The majority of such access roads are the already existing roads/tracks being used by pedestrians/cart owners. The movement of heavy vehicles sometimes causes problems for cattle, agricultural land, and human habitations due to dust, noise, and the movement of the public. These environmental problems are felt more as the area is rural in nature.

Air pollution is likely to be caused at various stages of Sand Mining operations such as excavation, loading & transportation of material. Most of the fugitive dust emissions will be generated from loading & transportation. This dust becomes airborne and spreads away to surrounding areas.

The impact on air is mainly localized in nature as the dust particles of 100 μ in size are not carried to farther distances beyond 100m and the effect is felt within the core zone of the project involving active Sand Mining operations.

⁸ Maharashtra State

Mitigation measures

1. Movement of the vehicles on the road will be increased; however, the unmetalled road in the mining area will be sprinkled with water at regular intervals.
2. In addition to preventing spillage from tractor trolleys, overloading shall be controlled to 1-brass/tractor trolley. The speed limit will be <20 km/hr.
3. Maintenance of the haul road will be done on a regular basis.
4. To avoid fugitive dust emissions at the time of excavation, a regular sprinkling of water will be done on regular basis.
5. Sand is transported to the sites by road through tractor trolleys. The sand-carrying vehicles shall be covered by tarpaulin sheets.
6. The Green belt development will be prepared along the haul roads, which will act as a pollution sink.
7. To minimize vehicular pollution from the sand transporting vehicles, the following conditions will be insisted upon to permit the vehicles of the transporters.
8. The vehicles should be Bharat-IV stage compliant and should have a Pollution Under Control (⁹PUC) Certificate issued by appropriate authorities.
9. Regular maintenance of transport vehicles and monitoring of vehicular emission levels at periodical intervals.

4. Noise Environment

Anticipated Impact

The noise environment in this project will be overdone by the equipment at the site and vehicular transportation. A slight increase in noise levels of <10dB(A) can be expected up to a distance of 100m.

Mitigation measures.

1. Minimum use of horns in the village area.
2. Timely maintenance of vehicles and their silencers to

⁹ Pollution Under Control

- minimize vibration and sound.
3. Phasing out old and worn-out tractor trolleys.
 4. Provision of green belts along the road networks.
 5. Care will be taken to produce minimum sound during sand loading.
 6. Backhoe loader excavator will be used
 7. Earplugs may be provided to protect the laborers working at the site.

5. Socio-economic Environment

Anticipated Impacts and Evaluation

1. The project activities shall not have any adverse impacts on any of the common property resources of the village communities, as the Sand Mine lease area is not being used for any purpose by any section of the society in this region.
2. There is no Resettlement and Rehabilitation (¹⁰R&R) involvement in this project.
3. There is no land acquisition in this project.
4. A major portion of the houses in the study area is semi-pucca-type structures.
5. The water source to these areas is from the Grampanchayat /Nagar Parishad connection and private bore wells and wells.
6. People living around the project area need the project for the purpose of employment and economic benefits.
7. The awareness level regarding the proposed mining activity is very towering. The proposed mining activity is expected to provide stimulus to socio-economic activities in the region and thereby accelerate further development processes.

Social and Demographic Profile

The workers are from local villages. These people have been provided welfare benefits from the lessee like medical benefits,

¹⁰ Rehabilitation and Resettlement

insurance, fees for children's education, etc. They have some land and cattle for their daily earnings. Additional revenue earned from the Sand Mining work will improve their living standard. The group of quarries in and around will help to have infrastructure facilities like roads, schools, shops, etc. This will enhance their social life.

Occupational Health and Safety

This is a riverbed Sand Mine. So, the mining activities are comparatively smaller because the production is not on a high scale. Workers do not come across any extreme conditions like excessive heat, moisture, etc. Workers working around it may come across this dusty environment. But the impact on health will be within the limit.

Human Settlement

1. There are no houses in and around the lease area. Blasting is the only activity, which may affect the settlement, which is not done. The settlement is more than 1-km from the sand mine.
2. Appropriate precautions will be taken during mining. Transportation of finished products is through the villages. There will be an effect of traffic on the local people. However, the intensity of traffic is 70-80/day.

Health and Hygiene

In general, the health of villagers is moderately good. In the rainy season, the atmospheric condition is unhygienic due to a lack of proper drainage and sanitation in the village habitation. Villagers are working in agricultural fields and work as labourers.

Education

Most education of 70% young <20 years, is up to the 5th to 9th. Economic condition is in general moderate. So, after this project, the standard of education will increase.

Socio-Economic Benefits Arising Out of Mining

1. Generation of employment in rural areas.
2. Upgradation in the living standards of rural people.
3. Creating infrastructural facilities like roads, electricity, shops, schools, etc.
4. Upgrading literacy in the area by exploiting natural minerals so the generation of revenue.

5. Helping to sustain construction activity.
6. Improving the greenery of the area, which is otherwise poor.

Liquid Effluent

Not applicable, because these activities do not generate effluent from operation or process.

Solid Waste

Not applicable, because small mines and impacts are negligible.

Project benefits due to the sand mining of Anandgaon are explained in the next Chapter.

CHAPTER 5

PROJECT BENEFITS

The proposed Sand Mining project of Anandgaon village, Beed Taluka, Beed District will lead to the following benefits:

1. Increase in the revenue of the district will ultimately increase the revenue of the village, which in return can be used to improve the infrastructure of the village.
2. Sand is available for building construction work and by systematic separation of sand, there is no possibility of a flood. Providing smooth movement of water of the river.
3. This project will contribute additional revenue to the state Exchequer in the form of revenue.
4. The project will conclude with employment opportunities for unskilled/skilled local people.
5. Standard of living of employed people will increase.

CHAPTER 6

SITE-SPECIFIC ENFORCEMENT & MONITORING PLAN

Sand Ghat Site specific enforcement & monitoring plan

(as per guidelines stipulated in the Enforcement and Monitoring Guidelines for sand mining issued by MoEFCC in January 2020.)

District administration shall deliver information on its website about the Sand Mines in the district for public information. The objective is to extend all information into the public domain so that the citizens are aware of the mining activities. People can also report to the district administration any deviation observed. Suitable feedback and its composition shall also be made operational.

Details shall include, but not be limited to, lease area, geo-coordinates of lease area and mineable area, transport routes, permitted capacity, regulatory conditions for operation including mining, environmental and social commitments, etc.

An Independent Committee of experts constituted by the Distance Learning Task Force (¹¹DLTF) will assess the environmental or ecological damage caused due to illegal mining and recommend recovery of environmental compensation from the concerned miners.

The recommendation may also include action under the provision of the Environment (Protection) Act 1986 u/s.15 read with s.19.

¹¹ Distance Learning Task Force

CHAPTER 7

SECURITY FEATURES

Security features are included in the Transport Permission/Permits (TP)

It will be ensured that the following security features are included in the Transport Permission/Permits (¹²TP) so that duplicate/fraudulent/forged TPs for transport, not accounted for in the IT-based system, is not possible:

1. Printed on Indian Bank Association (¹³IBA) Approved letterhead with account details
2. Magnetic Ink Character Recognition Code (¹⁴MICR) paper
3. Unique Barcode
4. Unique Quick Response Code (¹⁵QR)
5. Fugitive Ink Background
6. Invisible Ink Mark
7. Void Pantograph Watermark
8. Global Positioning System (¹⁶GPS) based vehicle tracking system
9. Closed-Circuit Television (¹⁷CCTV) Camera

¹² Transport Permission

¹³ Indian Bank Association

¹⁴ Magnetic Ink Character Recognition Code

¹⁵ Quick Response Code

¹⁶ Global Positioning System

¹⁷ Closed Circuit Television

CHAPTER 8

REPLENISHMENT

Replenishment study is the most important part of Sand Mining as it is the only basis to carry out sand mining. Without a Replenishment Study, we cannot understand the amount of deposition of sand. Following points to be followed for the replenishment study.

1. Area of deposition and erosion will be calculated for each cross-section after giving due regard to the stability & safety of active channel banks & other features of importance.
2. Differential Global Positioning System (¹⁸DGPS) and other survey tools will be used to define the topography, contours, and offsets of the lease area.
3. Contour & elevation benchmarks will provide baseline data for assessing pre- and post-study period scenario.
4. Physical benchmarks will be fixed at appropriate intervals (preferably 1 in 30m) & Reduced levels (¹⁹RL) shall be validated from a nearby standard RL.
5. These RL will be engraved on a steel plate (Bench Plate) & will be fixed & placed at locations that are free from any damages & are available in the pre-and post-study period.
6. Bench plates will be available for use during the mining period as a reference for all mining activity.
7. Baseline data on elevation status for a grid of 10m x 10m is preferred to have accuracy in the assessment.
8. It is expected that two consecutive cross-sections in longitudinal and lateral directions will not be more than a 10m distance apart.
9. Changes observed in the elevation in pre and post-scenario at each node, will be depicted in graphical forms with an appropriate scale to estimate the area of deposition & erosion.

¹⁸ Differential global positioning system

¹⁹ Reduced levels

10. Elevation level will be in reference to the nearest bench plates established for the purpose.
11. The levels (MSL & RL) of the corner point of each grid will be identifiable and safety barriers (non-Mining) demarcated as restricted in consensus with the Mineral Concession Rules of the respective State, and the provision mentioned in this Sustainable Sand Mining Management Guidelines.
12. A clear identification will be highlighted between grids under the mineable and grids under the non-mineable area.
13. These baseline data (pre and post) be subjected to stimulation with the help of data mine software to derive the replenishment area and corresponding volume and estimated weight.
14. The database will be structured in a tabulated form clearly depicting the nomenclature of the section lines, latitude and longitude of the starting point, chainage, and respective levels of all the points taken on that section line.
15. Net area shall be derived after summation of an area of deposition minus the area of erosion for each cross-section.
16. Volume will be estimated by multiplying the distance between two cross-sections with the average of the net area of these two consecutive cross-sections.
17. One sample per 900m² (30m x 30m) will be the preferred sample density for the assessment of bulk density for the estimation of deposition rate.
18. Care will be taken that the sample for assessment of Bulk Density is taken from the deposition zone & not from erosion.

Methodology for Sand Mining:

The following methodology should be followed for the Replenishment study.

1. The Demarcation and benchmark of the Sand Ghat are done at 10m x 10m intervals.
2. The use of the Auger Driller is to find out the depth of sand in each grid.
3. Auger Driller has created the holes in sand ghat by 10mx10m grid pattern.
4. Measured the depth of holes by using a measuring tape.

5. After taking all the readings average depth of sand is calculated.
6. The average depth of Anandgaon at Sindhphana is measured.

Replenishment study of sand in the proposed ghat along with details of the methodology, technology used to identify the existing reserve & replenishment of the same

Dandy Bolton Equation

For runoff less than 2 inches

$$S = 1280 \times (Q) \times 0.46 \times (1.46 - 0.26 \log(A)) \times F$$

For runoff more than 2 inches

$$S = 1958 \times (Q) \times (e^{-0.055 \times Q}) \times (1.43 - 0.26 \log(A))$$

Where,

S = sediment yield of stream (t/yr/km²),

Q = average annual runoff (m³),

A = net drainage area in sq.mile.

CHAPTER 9

PROPOSED PLANTATION PLAN

The Project Proponent must take care of the plantation around the site. This will not only enhance the beautification of the area but also there will be the reduction of pollution, not some extent.

Details of the plantation and Tree species recommended for the plantation are shown below.

Table 9. 1 Details of green belt

Location of greenbelt	Both sides of the approach road, On the riverbanks of both sides of the sand spot & nearby open areas. Haul Road outside the riverbed
No. of plants to be planted	2000 per Hectare
Spacing of plants	2m grid interval
Species selected	Native species

Table 9. 2 Trees species for plantation

Botanical Name	Local Name	Importance
Azadirachta Indica	Neem	Neem oil & neem products
Tectona Grandis	Teek	Antibacterial, Antifungal, Antiulcer
Ficus religiosaa	Peepal	Medicinal use, Fruits & figs
Bambusa vulgaris	Bamboo	Anthelmintic Anti-inflammatory, Astringent Properties
Madhuca longifolia	Mahua	Acts as a Stimulant & cough relief,

CHAPTER 10

ENVIRONMENTAL MANAGEMENT PLAN

A total capital cost of Rs.5.97 Lakhs has been kept in the project cost towards the environmental protection, control, mitigation measures, and implementation of the Environmental Management Plan (EMP). This cost is borne by the bidder/leaseholder. The budgetary cost estimate for the EMP is given in Table.

Table 10. 1 Budgetary cost of EMP

Sr	Impact Source	Impact	Control Measure	Cost (Rs.)
1	Transport Road	On Air Quality	Compaction, gradation, and drainage on both sides.	40000
		On Land, the Stability of the Road and degradation of road	Proper maintenance	30000
			Regular water spraying	30000
			The air quality will be monitored at the impacted village. (For One Day Monitoring)	5000
			Health Check-up of Employees	5000
2	Truck/ Tractor Movement	Air Quality	Sand-carrying trucks will be effectively covered by tarpaulin to avoid the escape of fines to the atmosphere. (2 Tarpaulin)	25000
			Regular monitoring of the exhaust fumes	5000

Sr	Impact Source	Impact	Control Measure	Cost (Rs.)
			Barriers & Traffic Management Expenses. (Excluding Manpower Salary which is included in labour costs)	10000
3	Ramp and Sand Reach	Mining Operation	Regular ramp Inspection and Ramp maintenance. (Excluding Manpower Salary which is included in labour costs)	50000
			Provision of dust masks	10000
4	Bank Management	Bank Erosion/Flood Plain management	The green belt along the bank (For Green Belt Development)	150000
			Plantation of wide leaf tall trees on banks and grass along a slanting portion of the bank	
5	Transportation on Village Roads	Dust Control	The green belt along village Rd (For Green Belt Development)	
6	Final Mine Closure Plan implementation	Replenishment of Sand	Gabions/ boulders will be arranged as per guidelines	15000
7	Mobile toilet, sewage handling & treatment		Mobile toilet, sewage handling & treatment	80000
8	CCTV Monitoring			80000
Total				535000

Budget For Corporate Environment Responsibility (²⁰CER)

About 2% fund of the project cost is allocated for Corporate Environment Responsibility (CER) activities as presented in below Table

Table 10.2 Budget for CER

Sr.	Description	Cost (Rs)
1.	Village Schools (separate toilet for girls and boys)	15000
2.	Solar panels over Gram Panchayat buildings	15000
3.	Solar panels over Public Health Centers	20000
	Total	50000

²⁰ Corporate Environment Responsibility

CHAPTER 11

SUMMARY AND CONCLUSION

The Roles and Responsibilities of the Environmental coordinator, the Operation Manager, and the senior personnel contractor are essential in EMP.

The environmental status of the project site and study area of 10km radius is delineated with respect to air, noise, water, land, biological and socio-economic environment the different project activities in the construction and operation phases are identified.

To identify the impacts, the interaction between the project activities and different components of the environment is classified phase-wise. A summary of the recognized impacts is given in the following paragraphs.

- During the operational phase, the transportation of sand could cause a temporary disturbance to the local environment which will be prevented with the proposed mitigation measures.
- Proposed project will not have any major significant negative impacts. The minor impacts arising during Excavation and Transportation phases can be mitigated with the help of the proposed Environmental Management Plan.
- In general, sand excavation from Anandgaon sand spot will be useful to the developmental work in the district and generate employment opportunities.

From this project, it is concluded that the district revenue will increase in return minimum of 2% of funds are utilized for the development of the village. The project will also grab employment which will improve the standard of life of villagers.

*** END ***

Environmental Management Plan

As per Rules 23 & 26 of MMME (D & R) RULE 2013 & Section 15 of MMDR Act 1957, MoEFCC Notification 2006, S.O. 141(E) dated 15. 01. 2016; MoEFCC, Sustainable Sand Mining Management Guidelines 2016, Guidelines for Mining Policy 2020)

For

ENVIRONMENTAL CLEARANCE

of

SAND MINING (MINOR MINERAL)

for

Adola – A Riverbed Sand Mine / Sand Ghat
Khasra No. GSDA approved 26, 12, 72, 28, 52, 87, 288
Area (0.9ha)

Village Adola , Taluka Majalgaon, District Beed

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ABBREVIATION

Short Form	Long Form
EMP	Environmental Management Plan
MoEFCC	Ministry of Environment Forest and Climate Change
DSR	District-level Survey Report
EC	Environmental Coordinator
OM	Operations Manager
GSDA	Groundwater Surveys & Development Agency
MPCB	Maharashtra Pollution Control Board
MSL	Mean Sea Level
MS	Maharashtra State
PUC	Pollution Under Control
R&R	Rehabilitation and Resettlement
DLTF	Distance Learning Task Force
TP	Transport Permission/Permits
IBA	Indian Bank Association
MICR	Magnetic Ink Character Recognition Code
QR	Quick Response Code
GPS	Global Positioning System

CCTV	Closed-Circuit Television
DGPS	Differential Global Positioning System
RL	Reduced Levels
CER	Corporate Environment Responsibility

CHAPTER 1

INTRODUCTION

The Environmental Management Plan (¹EMP) plays a vital connection uniting forecast impacts and mitigation measures during implementation and operational activities. EMP stipulates the mitigation, monitoring and conventional measures to be taken during project implementation and operation. EMP is to escape or mitigate adverse environmental impacts, and to implement these measures.

This Environmental Management Plan (EMP) has been prepared as part of the Scoping Report which will be compiled in terms of the Environmental Assessment for the sand mining activities.

Considering the Ministry of Environment and Forest Climate Change (²MoEFCC) Notification 2006 and Sustainable Sand Mining Management Guidelines 2016, the Govt. of Maharashtra had mapped out the Minor Mineral Extraction Rules 2013. These rules are to extract all minor minerals in a scientific way so that there is no unfavourable impact on Environment and Climate. To extract every minor mineral from any land (either Government or Private) there is provision for a Mining Plan. These plans need to be approved by a competent authority. For long-term leased minor minerals (5-10 years period) and sand excavation from the riverbed, Senior Deputy Director of Directorate of Geology and Mining is the competent authority. These plans are for short term temporary permits which are valid for one year.

According to Enforcement & Monitoring Guidelines for Sand Mining 2020, Sustainable Sand Mining Management Guidelines 2016, Standard Environment conditions for sand mining and sustainable mining practices, District level Survey Report (³DSR) should be prepared and are suitable for mining and area prohibited for mining must be recognized.

¹ Environmental Management Plan

² Ministry of Environment Forest and Climate Change

³ District Survey Report

Objectives of EMP

- To provide overall conservation of the environment.
- To minimize waste generation and pollution.
- To regulate the precise use of natural resources and water.
- To provide Safety, Welfare, and Good health for the workforce and populace.
- To regulate the effective operation of all control measures.
- To ensure alertness against probable disasters and accidents.
- To monitor cumulative and long-term impacts.
- To regulate the effective operation of all control measures.

Roles and Responsibilities concerning the implementation of the EMP

The roles and responsibilities of all parties involved in successfully managing the environment are mentioned below.

Environmental Coordinator

The Environmental Coordinator will inspect operational areas on a quarterly basis and at the onset of mining any new island, to ensure that all specifications are met. The duties of the environmental coordinator will be the following.

- Guide the operations team in respect of the implementation of the environmental specifications.
- Lead the visits to ensure all work is aligned with the EMP.
- The environmental coordinator must examine the site during the three-monthly visits. All rehabilitation results will be Comprised in the quarterly report.
- Examination of the rehabilitation area and giving guidance regarding rehabilitation measures if any.

The Operations Manager

The responsibilities of the Operations Manager (4OM) or his nominated authority are as follows.

1. Familiarize themselves with the requirements of the EMP.
2. Monitor employees' and contractor's compliance with the environmental specifications; and enforce adherence.

⁴ Operations Manager

3. Communicate all environment-related incidents with the Environmental Coordinator and distribute them internally to avoid repetition.
4. Maintain a record of activities relevant to Environmental Management.
5. The Operations Manager shall be responsible for monitoring and the enforcement of the Environmental Management specifications on a day-to-day basis. Any violation of the environmental specifications shall be recorded, and the agreed disciplinary measures are taken.

Senior personnel and contractors

The roles of the senior personnel/contractors are as follows:

- Familiarize themselves with the requirements of the EMP.
- Comply with the environmental management specifications.
- Ensure that all team members are familiar with the environmental management specifications.

Details of the project

The Adola sand ghat area has been selected in perspective of its subsisting demand for building-grade sand for the area in and around Majalgaon Taluka. The District Mining Officer Beed has put forward the proposal for Environmental Clearance for mining. The ghat has a production of 3180 brass sand within an area of 0.9ha. The proposed proposal follows an organized mining process for Environmental Clearance.

Further Chapter informs about the in-depth details of the Sand Ghat, its geographical structure, and a Google map of the ghat with its approach road for contractors and workers to reach to sand ghat from the village.

CHAPTER 2

DETAILS OF THE PROJECT

Adola village is located in Majalgaon Taluka of Beed district, Maharashtra. Majalgaon is well connected with all nearby cities. The National highway NH-52, it traverses through the states of Punjab, Haryana, Rajasthan, Madhya Pradesh, Maharashtra, Karnataka in India. NH-52 is the National Highway passing through the district, covering a total distance of 73.60km. Majalgaon has situated about 51.22km by road from Beed. The district has road links to adjoining districts Ahmednagar District to the west, Jalna District to the North, Latur District to the East, Osmanabad District to the South, Parbhani District to the East. The district is well connected by roads.

Adola village is 69.21km away from Collector office headquarters Beed. The Geographical area of the Beed is around 10693km². The nearest Railway station to Adola village is Manwath Road Railway station. The nearest Airport to Beed District is Aurangabad Airport, Aurangabad Airport is 104km from Beed city, 124.56km from Adola.

Honourable Collector Beed intends to auction Sand Ghats and appointed District Mining Officer as Project Proponent. A total of 38 sand ghats are identified by Tahsildar Majalgaon, Parli Ve., Gevrai, Beed along with District Mining Officer, Beed. The 38 sand ghats were jointly surveyed by Taluka level technical committee headed by respective Tahsildar with Dy. Engineer Irrigation Department, Junior Geologist Directorate of Geology and Mining Govt. of Maharashtra, Junior Geologist, Groundwater Surveys & Development Agency (⁵GSDA). DMO Beed and a representative of the Maharashtra Pollution Control Board (⁶MPCB), as per the procedure defined in Sand Auction Rules 2019 dated 3/09/2019 formed a Taluka-level technical committee, which explored the sand ghats for an available quantity of sand for scooping. Revenue of Rs.25 Crore is expected from the auction of these sand ghats. Adola Sand Ghat proposed over river Godavari in Majalgaon Taluka

⁵ Groundwater Surveys & Development Agency

⁶ Maharashtra Pollution Control Board

is proposed to cater to the infrastructural requirement of sand in the Taluka of Beed and adjoining areas of other talukas.

Table 2. 1 Details of Adola Sand ghat

Name of Village	Taluka	River/ Nallah	Nearest survey No.	Area (ha)	Proposed Depth for excavation (m)	Quantity Permitted for mining of Sand in Brass	Method of Mining
Adola	Majalgaon	Godavari	26, 12, 72, 28, 52, 87, 288	0.9	1.00	3180	Open-cast manual mining

Table 2. 2 Salient features of the project

Particulars	Details		
Location	Village-Adola , Taluka-Majalgaon, District-Beed, Maharashtra.		
Latitude and Longitude	Boundary points of Adola sand spot	Latitude	Longitude
	BP1	19°13'5.47"N	76°21'47.03"E
	BP2	19°13'5.45"N	76°21'48.21"E
	BP3	19°12'54.20"N	76°21'47.85"E
	BP4	19°12'54.16"N	76°21'46.60"E
Sand spot area (In ha)	0.9ha		
Proposed production capacity (in Brass)	3180		
Infrastructure Requirement (As per Govt Resolution 3rd January 2018)	<ol style="list-style-type: none"> 1. Room / Hut for Official records 2. Electricity / Battery for Running CCTV 24x7 daily. 3. One Computer / Android-based Mobile for the online generation of Invoice numbers. 		

Particulars	Details
Distance of project site from nearest rail or road bridge over the concerned River, Nallah, etc.	3.79km
Distance from infrastructural facilities	
Railway line	23.78km
National Highway	1.24km (NH-61)
State Highway	40.08km (SH-144)
Major District Road	63.38km
Any Other Road	1.24km
Electric transmission line pole or tower	
Canal or check dam or reservoirs or lake or ponds	
In-take for drinking water pump house	
Intake for Irrigation canal pumps	

Particulars	Details
Areas already subjected to pollution or environmental damage. (those where existing legal environmental standards are exceeded)	None
Areas susceptible to natural hazards which could cause the project to Present environmental problems (earthquakes, subsidence, landslides, erosion, flooding, or extreme or adverse climatic conditions)	No. Sand Ghat is at safe distances from natural hazards like earthquake prone area, subsidence, landslide, erosion, flooding prone area and extreme or adverse climatic conditions

Particulars	Details
<p>Whether the proposal involves approval or clearance under the following Regulations or Acts, namely: - (a) The Forest (Conservation) Act, 1980. (b) The Wildlife (Protection) Act, 1972. (c) The Coastal Regulation Zone Notification, 2011. If yes, details of the same and their status are to be given.</p>	None
Forest land involved (hectares)	None

The below figure shows the google image of Adola sand ghat.



Fig 2.1-Google image of Adola sand ghat

Approach road along with google location is as shown below.

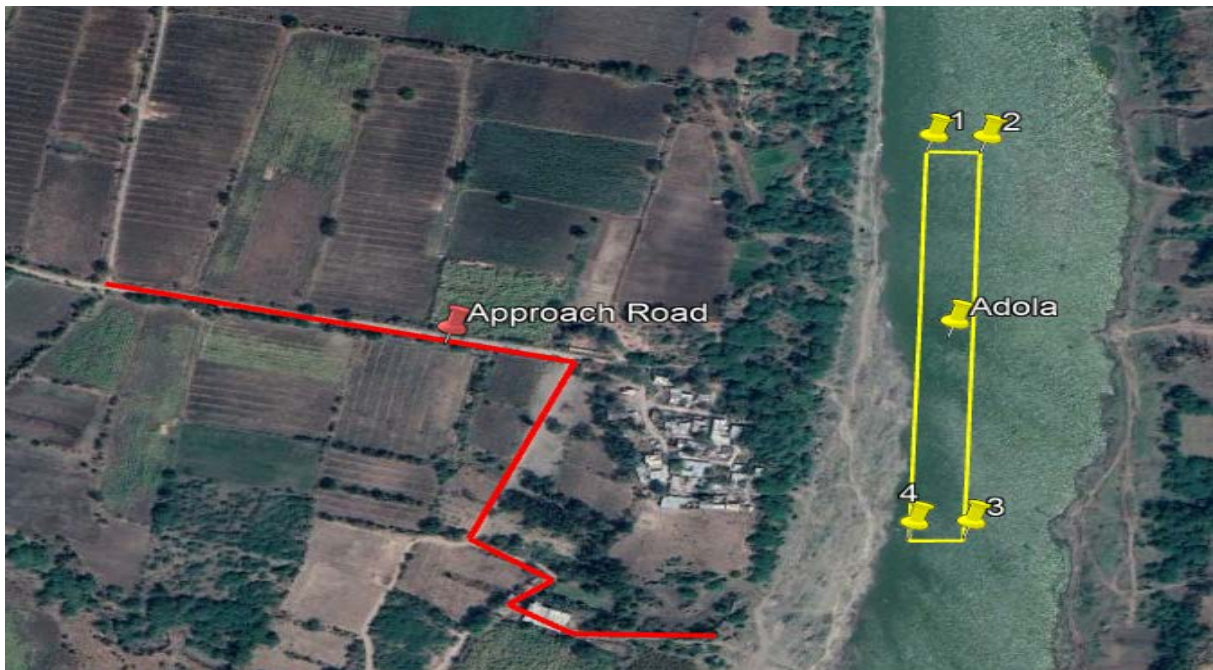


Fig 2.2-Approach Road for sand ghat

Next chapter 3 is Baseline Environmental Status in which the entire Topography, Climate, Soil Environment, Land use, water Environment, Hydrology, Biological environment, and Socio-economic Environment are briefly explained for the Beed district.

CHAPTER 3

BASELINE ENVIRONMENT STATUS

Topography

The Sand Ghat area as per the survey is the riverbed of the Godavari River of the Beed district. The maximum elevation is 411m MSL, average elevation is 414m MSL, & minimum elevation is 407m (⁷MSL) Mean Sea Level. The slope of the Sand Ghat area towards the Southwest to Northeast side. The flow of Godavari River is from Southeast direction.

Presently, there is neither any infrastructure within the riverbed nor are proposed.

Hydrology

There will be no change in the Water Table during the mining operation, as the depth of mining shall be restricted to 1.00m water level, which is less likely to affect the surface level or Groundwater Table. There is no proposal of any stream modification/diversion due to this mining activity hence there will be not any impact on the flow of water.

Soil Environment

The riverbed consists of sand /gravel. There is no topsoil. The depth of mining shall be restricted to 1.00m. There is no crucial impact on the soil forecasted due to mining activities.

Land Use Land Cover

Land use shows that agriculture land use is predominant. The proposed site is 0.9ha having adjoined Khasara No 26, 12, 72, 28, 52, 87, 288. The land doesn't cover any human habitation, forest, etc. Any change in the scope of the approved Mining Plan will lead to riverbank erosion/cutting and thereby river channel shifting, degradation of land, causing loss of properties and degradation of the surrounding landscape.

⁷ Mean sea level

Water Environment

While transporting sand there may be fugitive dust. There will be water requirement for spraying for dust suppression purposes. This water will be supplied from the borewell from nearby villages through tankers as well as from surface water sources. The water source may vary from village to village.

Climate

During summer May is the hottest month of the year in this area. The temperature rises to 42°C in the month of May. The average rainfall in this region is 600mm to 700mm About 50% of rainfall precipitates between June to September. December is the coldest month with temperatures falling down to 18°C. Overall the proposed site area has sub-tropical conditions.

Biological Environment

Flora

The agricultural area is seen near the Sand Ghat. Few trees and thorny bushes are seen on the banks of the river.

Fauna

As there is no forest cover, no endangered species of wildlife are seen in this area.

Socio-Economic Environment

This project may create constructive impacts of the sand mining that are stated below:

1. The mining operations will provide direct & indirect employment to village people.
2. The villages and their inhabitants & domestic animals will not be disturbed due to mining, as the quarry is far from their settlements.
3. Local workforce will be given first preference for employment.
4. Mining activities will benefit the local people due to the provision of more infrastructural facilities (developments of approach routes within the village area).

The next chapter describes all possible impacts on the Environment due to this project along with its mitigation measure to overcome these impacts.

CHAPTER 4

IMPACT ASSESSMENT REPORT ALONG WITH PROPOSED MITIGATION MEASURES

1. Land Environment

Anticipated Impact

Movement of vehicles can create issues for agricultural land, human habitations, noise, and risk for public and cause traffic hazards. The impacts include damage to the riverbank due to access ramps to the riverbed, soil erosion because of extraction of sand, micro disturbance to groundwater, possible stimulation of the changed river course, and contamination of sand aquifer water due to ponding. There might be surface degradation due to the road network.

The quality of soil will not be affected due to transportation or any other activity of mining.

Mitigation measure

1. Mining depth should be restricted to 3 meters and distance from the bank should be ¼th or river width and should not be less than 7.5 meters as per “Sustainable Sand Mining Guidelines 2020” ■ Page 23, Point no 4.3 (m).
2. There will be a minimal number of access roads to riverbeds. Cutting of riverbanks will be avoided and ramp with smooth slope will be maintained. Access points to the riverbed will be decided based on the least steepness of the riverbank and the least human activity at that location.
3. No foreign material like polythene bags, jute bags, and useless articles should be allowed to remain/spill in the riverbed and catchment area, or no pits/pockets will be allowed to be filled with such material.
4. Mining at the concave side of the river channel should be avoided to prevent bank erosion. Similarly, a tortuous segment of a river is to be selected for mining in such a way as to ignore the natural eroding of banks.
5. Ensure that ponding is not created in the riverbed.
6. Transportation route should be such that it gives minimum

damage to the environment.

7. Green belt will be developed along the haul road and the bank of rivers of mine premises and near the sand mining site. While selecting the plant species, preference will be given for planting native species of the area.

2. Water environment

Anticipated Impact

The project activity will be carried out in the dry part of the riverbed. Care will be taken to ensure that neither of the project activities will affect the water environment or riverbank habitats. During the lean months, the proposed Sand Mining will not expose the base flow of the river and hence there will not be any inauspicious impact on surface hydrology and groundwater regime due to this project. Project activities will not have any adverse consequences on the physical components of the environment and therefore may not have any effect on the recharge of ground waters or affect the water quality. Monitoring of water quality will be checked yearly.

Mitigation measures

1. Mining is avoided during the monsoon season and at the time of floods. This will help in the replenishment of sand in the riverbed.
2. Mining below the subterranean water level will be avoided as a safeguard against environmental contamination and over-exploitation of resources.
3. River stream will not be transferred to create active channels.
4. Mining schedule is synchronized with the river flow direction and the gradient of the land.
5. Mining at the concave side of the river channel will be avoided to prevent bank erosion.
6. Tortuous segment of the river will be selected for mining in such a way as to avoid naturally eroding banks and to promote mining on naturally building meander components.
7. Mining depth shall be maintained as per the guidelines and

rules of the Sand Mining Policy dated 03/09/2019 and recommendations of Maharashtra State (⁸M.S.). State Ground Water Department for extraction of sand during the lease period.

8. Water Quality Monitoring for the ground waters, river water, and other surface waters shall be carried out seasonally to ensure that the water quality is not affected by the project activities.
9. Utmost care will be taken to minimize or control leaking vehicles to be used for sand transportation.
10. The washing of tractor trolleys in the river will not be done.
11. The contractor will follow all guidelines and rules for proper and scientific methods of mining during the period of extracting the sand.

3. Air Environment

Anticipated Impacts

Plying of tractor trolleys from the public road to river sand collection points needs access roads. The majority of such access roads are the already existing roads/tracks being used by pedestrians/cart owners. The movement of heavy vehicles sometimes causes problems for cattle, agricultural land, and human habitations due to dust, noise, and the movement of the public. These environmental problems are felt more as the area is rural in nature.

Air pollution is likely to be caused at various stages of Sand Mining operations such as excavation, loading & transportation of material. Most of the fugitive dust emissions will be generated from loading & transportation. This dust becomes airborne and spreads away to surrounding areas.

The impact on air is mainly localized in nature as the dust particles of 100 μ in size are not carried to farther distances beyond 100m and the effect is felt within the core zone of the project involving active Sand Mining operations.

⁸ Maharashtra State

Mitigation measures

1. Movement of the vehicles on the road will be increased; however, the unmetalled road in the mining area will be sprinkled with water at regular intervals.
2. In addition to preventing spillage from tractor trolleys, overloading shall be controlled to 1-brass/tractor trolley. The speed limit will be <20 km/hr.
3. Maintenance of the haul road will be done on a regular basis.
4. To avoid fugitive dust emissions at the time of excavation, a regular sprinkling of water will be done on regular basis.
5. Sand is transported to the sites by road through tractor trolleys. The sand-carrying vehicles shall be covered by tarpaulin sheets.
6. The Green belt development will be prepared along the haul roads, which will act as a pollution sink.
7. To minimize vehicular pollution from the sand transporting vehicles, the following conditions will be insisted upon to permit the vehicles of the transporters.
8. The vehicles should be Bharat-IV stage compliant and should have a Pollution Under Control (⁹PUC) Certificate issued by appropriate authorities.
9. Regular maintenance of transport vehicles and monitoring of vehicular emission levels at periodical intervals.

4. Noise Environment

Anticipated Impact

The noise environment in this project will be overdone by the equipment at the site and vehicular transportation. A slight increase in noise levels of <10dB(A) can be expected up to a distance of 100m.

Mitigation measures.

1. Minimum use of horns in the village area.
2. Timely maintenance of vehicles and their silencers to

⁹ Pollution Under Control

- minimize vibration and sound.
- 3. Phasing out old and worn-out tractor trolleys.
- 4. Provision of green belts along the road networks.
- 5. Care will be taken to produce minimum sound during sand loading.
- 6. Backhoe loader excavator will be used
- 7. Earplugs may be provided to protect the labourers working at the site.

5. Socio-economic Environment

Anticipated Impacts and Evaluation

1. The project activities shall not have any adverse impacts on any of the common property resources of the village communities, as the Sand Mine lease area is not being used for any purpose by any section of the society in this region.
2. There is no Resettlement and Rehabilitation (¹⁰R&R) involvement in this project.
3. There is no land acquisition in this project.
4. A major portion of the houses in the study area is semi-pucca-type structures.
5. The water source to these areas is from the Grampanchayat /Nagar Parishad connection and private bore wells and wells.
6. People living around the project area need the project for the purpose of employment and economic benefits.
7. The awareness level regarding the proposed mining activity is very towering. The proposed mining activity is expected to provide stimulus to socio-economic activities in the region and thereby accelerate further development processes.

Social and Demographic Profile

The workers are from local villages. These people have been provided welfare benefits from the lessee like medical benefits,

¹⁰ Rehabilitation and Resettlement

insurance, fees for children's education, etc. They have some land and cattle for their daily earnings. Additional revenue earned from the Sand Mining work will improve their living standard. The group of quarries in and around will help to have infrastructure facilities like roads, schools, shops, etc. This will enhance their social life.

Occupational Health and Safety

This is a riverbed Sand Mine. So, the mining activities are comparatively smaller because the production is not on a high scale. Workers do not come across any extreme conditions like excessive heat, moisture, etc. Workers working around it may come across this dusty environment. But the impact on health will be within the limit.

Human Settlement

1. There are no houses in and around the lease area. Blasting is the only activity, which may affect the settlement, which is not done. The settlement is more than 1-km from the sand mine.
2. Appropriate precautions will be taken during mining. Transportation of finished products is through the villages. There will be an effect of traffic on the local people. However, the intensity of traffic is 70-80/day.

Health and Hygiene

In general, the health of villagers is moderately good. In the rainy season, the atmospheric condition is unhygienic due to a lack of proper drainage and sanitation in the village habitation. Villagers are working in agricultural fields and work as labourers.

Education

Most education of 70% young <20 years, is up to the 5th to 9th. Economic condition is in general moderate. So, after this project, the standard of education will increase.

Socio-Economic Benefits Arising Out of Mining

1. Generation of employment in rural areas.
2. Upgradation in the living standards of rural people.
3. Creating infrastructural facilities like roads, electricity, shops, schools, etc.
4. Upgrading literacy in the area by exploiting natural minerals so the generation of revenue.

5. Helping to sustain construction activity.
6. Improving the greenery of the area, which is otherwise poor.

Liquid Effluent

Not applicable, because these activities do not generate effluent from operation or process.

Solid Waste

Not applicable, because small mines and impacts are negligible.

Project benefits due to the sand mining of Adola are explained in the next Chapter.

CHAPTER 5

PROJECT BENEFITS

The proposed Sand Mining project of Adola village, Majalgaon Taluka, Beed District will lead to the following benefits:

1. Increase in the revenue of the district will ultimately increase the revenue of the village, which in return can be used to improve the infrastructure of the village.
2. Sand is available for building construction work and by systematic separation of sand, there is no possibility of a flood. Providing smooth movement of water of the river.
3. This project will contribute additional revenue to the state Exchequer in the form of revenue.
4. The project will conclude with employment opportunities for unskilled/skilled local people.
5. Standard of living of employed people will increase.

CHAPTER 6

SITE-SPECIFIC ENFORCEMENT & MONITORING PLAN

Sand Ghat Site specific enforcement & monitoring plan

(as per guidelines stipulated in the Enforcement and Monitoring Guidelines for sand mining issued by MoEFCC in January 2020.)

District administration shall deliver information on its website about the Sand Mines in the district for public information. The objective is to extend all information into the public domain so that the citizens are aware of the mining activities. People can also report to the district administration any deviation observed. Suitable feedback and its composition shall also be made operational.

Details shall include, but not be limited to, lease area, geo-coordinates of lease area and mineable area, transport routes, permitted capacity, regulatory conditions for operation including mining, environmental and social commitments, etc.

An Independent Committee of experts constituted by the Distance Learning Task Force (¹¹DLTF) will assess the environmental or ecological damage caused due to illegal mining and recommend recovery of environmental compensation from the concerned miners.

The recommendation may also include action under the provision of the Environment (Protection) Act 1986 u/s.15 read with s.19.

¹¹ Distance Learning Task Force

CHAPTER 7

SECURITY FEATURES

Security features are included in the Transport Permission/Permits (TP)

It will be ensured that the following security features are included in the Transport Permission/Permits (¹²TP) so that duplicate/fraudulent/forged TPs for transport, not accounted for in the IT-based system, is not possible:

1. Printed on Indian Bank Association (¹³IBA) Approved letterhead with account details
2. Magnetic Ink Character Recognition Code (¹⁴MICR) paper
3. Unique Barcode
4. Unique Quick Response Code (¹⁵QR)
5. Fugitive Ink Background
6. Invisible Ink Mark
7. Void Pantograph Watermark
8. Global Positioning System (¹⁶GPS) based vehicle tracking system
9. Closed-Circuit Television (¹⁷CCTV) Camera

¹² Transport Permission

¹³ Indian Bank Association

¹⁴ Magnetic Ink Character Recognition Code

¹⁵ Quick Response Code

¹⁶ Global Positioning System

¹⁷ Closed Circuit Television

CHAPTER 8

REPLENISHMENT

Replenishment study is the most important part of Sand Mining as it is the only basis to carry out sand mining. Without a Replenishment Study, we cannot understand the amount of deposition of sand. Following points to be followed for the replenishment study.

1. Area of deposition and erosion will be calculated for each cross-section after giving due regard to the stability & safety of active channel banks & other features of importance.
2. Differential Global Positioning System (¹⁸DGPS) and other survey tools will be used to define the topography, contours, and offsets of the lease area.
3. Contour & elevation benchmarks will provide baseline data for assessing pre- and post-study period scenario.
4. Physical benchmarks will be fixed at appropriate intervals (preferably 1 in 30m) & Reduced levels (¹⁹RL) shall be validated from a nearby standard RL.
5. These RL will be engraved on a steel plate (Bench Plate) & will be fixed & placed at locations that are free from any damages & are available in the pre-and post-study period.
6. Bench plates will be available for use during the mining period as a reference for all mining activity.
7. Baseline data on elevation status for a grid of 10m x 10m is preferred to have accuracy in the assessment.
8. It is expected that two consecutive cross-sections in longitudinal and lateral directions will not be more than a 10m distance apart.
9. Changes observed in the elevation in pre and post-scenario at each node, will be depicted in graphical forms with an appropriate scale to estimate the area of deposition & erosion.

¹⁸ Differential global positioning system

¹⁹ Reduced levels

10. Elevation level will be in reference to the nearest bench plates established for the purpose.
11. The levels (MSL & RL) of the corner point of each grid will be identifiable and safety barriers (non-Mining) demarcated as restricted in consensus with the Mineral Concession Rules of the respective State, and the provision mentioned in this Sustainable Sand Mining Management Guidelines.
12. A clear identification will be highlighted between grids under the mineable and grids under the non-mineable area.
13. These baseline data (pre and post) be subjected to stimulation with the help of data mine software to derive the replenishment area and corresponding volume and estimated weight.
14. The database will be structured in a tabulated form clearly depicting the nomenclature of the section lines, latitude and longitude of the starting point, chainage, and respective levels of all the points taken on that section line.
15. Net area shall be derived after summation of an area of deposition minus the area of erosion for each cross-section.
16. Volume will be estimated by multiplying the distance between two cross-sections with the average of the net area of these two consecutive cross-sections.
17. One sample per 900m² (30m x 30m) will be the preferred sample density for the assessment of bulk density for the estimation of deposition rate.
18. Care will be taken that the sample for assessment of Bulk Density is taken from the deposition zone & not from erosion.

Methodology for Sand Mining:

The following methodology should be followed for the Replenishment study.

1. The Demarcation and benchmark of the Sand Ghat are done at 10m x 10m intervals.
2. The use of the Auger Driller is to find out the depth of sand in each grid.
3. Auger Driller has created the holes in sand ghat by 10mx10m grid pattern.
4. Measured the depth of holes by using a measuring tape.

5. After taking all the readings average depth of sand is calculated.
6. The average depth of Adola at Godavari is measured.

Replenishment study of sand in the proposed ghat along with details of the methodology, technology used to identify the existing reserve & replenishment of the same

Dandy Bolton Equation

For runoff less than 2 inches

$$S = 1280 \times (Q) \times 0.46 \times (1.46 - 0.26 \log(A)) \times F$$

For runoff more than 2 inches

$$S = 1958 \times (Q) \times (e^{-0.055 \times Q}) \times (1.43 - 0.26 \log(A))$$

Where,

S = sediment yield of stream (t/yr/km²),

Q = average annual runoff (m³),

A = net drainage area in sq.mile.

CHAPTER 9

PROPOSED PLANTATION PLAN

The Project Proponent must take care of the plantation around the site. This will not only enhance the beautification of the area but also there will be the reduction of pollution, not some extent.

Details of the plantation and Tree species recommended for the plantation are shown below.

Table 9. 1 Details of green belt

Location of greenbelt	Both sides of the approach road, On the riverbanks of both sides of the sand spot & nearby open areas. Haul Road outside the riverbed
No. of plants to be planted	2000 per Hectare
Spacing of plants	2m grid interval
Species selected	Native species

Table 9. 2 Trees species for plantation

Botanical Name	Local Name	Importance
Azadirachta Indica	Neem	Neem oil & neem products
Tectona Grandis	Teek	Antibacterial, Antifungal, Antiulcer
Ficus religiosaa	Peepal	Medicinal use, Fruits & figs
Bambusa vulgaris	Bamboo	Anthelmintic Anti-inflammatory, Astringent Properties
Madhuca longifolia	Mahua	Acts as a Stimulant & cough relief,

CHAPTER 10

ENVIRONMENTAL MANAGEMENT PLAN

A total capital cost of Rs.5.97 Lakhs has been kept in the project cost towards the environmental protection, control, mitigation measures, and implementation of the Environmental Management Plan (EMP). This cost is borne by the bidder/leaseholder. The budgetary cost estimate for the EMP is given in Table.

Table 10. 1 Budgetary cost of EMP

Sr	Impact Source	Impact	Control Measure	Cost(Rs)
1	Transport Road	On Air Quality	Compaction, gradation, and drainage on both sides.	35000
		On Land, the Stability of the Road and degradation of road	Proper maintenance	20000
			Regular water spraying	25000
			The air quality will be monitored at the impacted village. (For One Day Monitoring)	3000
			Health Check-up of Employees	3000
2	Truck/ Tractor Movement	Air Quality	Sand-carrying trucks will be effectively covered by tarpaulin to avoid the escape of fines to the atmosphere. (2 Tarpaulin)	20000
			Regular monitoring of the exhaust fumes	3000

Sr	Impact Source	Impact	Control Measure	Cost(Rs)
			Barriers & Traffic Management Expenses. (Excluding Manpower Salary which is included in labour costs)	8000
3	Ramp and Sand Reach	Mining Operation	Regular ramp Inspection and Ramp maintenance. (Excluding Manpower Salary which is included in labour costs)	40000
			Provision of dust masks	8000
4	Bank Management	Bank Erosion/Flood Plain management	The green belt along the bank (For Green Belt Development)	100000
			Plantation of wide leaf tall trees on banks and grass along a slanting portion of the bank	
5	Transportation on Village Roads	Dust Control	The green belt along village Rd (For Green Belt Development)	
6	Final Mine Closure Plan implementation	Replenishment of Sand	Gabions/ boulders will be arranged as per guidelines	10000
7	Mobile toilet, sewage handling & treatment		Mobile toilet, sewage handling & treatment	70000
8	CCTV Monitoring			70000
Total				415000

Budget For Corporate Environment Responsibility (²⁰CER)

About 2% fund of the project cost is allocated for Corporate Environment Responsibility (CER) activities as presented in below Table

Table 10.2 Budget for CER

Sr.	Description	Cost (Rs)
1.	Village Schools (separate toilet for girls and boys)	10000
2.	Solar panels over Gram Panchayat buildings	10000
3.	Solar panels over Public Health Centers	15000
	Total	35000

²⁰ Corporate Environment Responsibility

CHAPTER 11

SUMMARY AND CONCLUSION

The Roles and Responsibilities of the Environmental coordinator, the Operation Manager, and the senior personnel contractor are essential in EMP.

The environmental status of the project site and study area of 10km radius is delineated with respect to air, noise, water, land, biological and socio-economic environment the different project activities in the construction and operation phases are identified.

To identify the impacts, the interaction between the project activities and different components of the environment is classified phase-wise. A summary of the recognized impacts is given in the following paragraphs.

- During the operational phase, the transportation of sand could cause a temporary disturbance to the local environment which will be prevented with the proposed mitigation measures.
- Proposed project will not have any major significant negative impacts. The minor impacts arising during Excavation and Transportation phases can be mitigated with the help of the proposed Environmental Management Plan.
- In general, sand excavation from Adola sand spot will be useful to the developmental work in the district and generate employment opportunities.

From this project, it is concluded that the district revenue will increase in return minimum of 2% of funds are utilized for the development of the village. The project will also grab employment which will improve the standard of life of villagers.

*** END ***

Environmental Management Plan

As per Rules 23 & 26 of MMME (D & R) RULE 2013 & Section 15 of MMDR Act 1957, MoEFCC Notification 2006, S.O. 141(E) dated 15. 01. 2016; MoEFCC, Sustainable Sand Mining Management Guidelines 2016, Guidelines for Mining Policy 2020)

for

ENVIRONMENTAL CLEARANCE

of

SAND MINING (MINOR MINERAL)

for

Bahadarpur – A Riverbed Sand Mine / Sand Ghat
Khasra No. GSDA approved 168, 169, 170, 160, 161, 162, 163,
164, 165, 166, 167
Area (1.10ha)

Village Bahadarpur, Taluka Beed, District Beed

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ABBREVIATION

Short Form	Long Form
EMP	Environmental Management Plan
MoEFCC	Ministry of Environment Forest and Climate Change
DSR	District-level Survey Report
EC	Environmental Coordinator
OM	Operations Manager
GSDA	Groundwater Surveys & Development Agency
MPCB	Maharashtra Pollution Control Board
MSL	Mean Sea Level
MS	Maharashtra State
PUC	Pollution Under Control
R&R	Rehabilitation and Resettlement
DLTF	Distance Learning Task Force
TP	Transport Permission/Permits
IBA	Indian Bank Association
MICR	Magnetic Ink Character Recognition Code
QR	Quick Response Code
GPS	Global Positioning System

CCTV	Closed-Circuit Television
DGPS	Differential Global Positioning System
RL	Reduced Levels
CER	Corporate Environment Responsibility

CHAPTER 1

INTRODUCTION

The Environmental Management Plan (¹EMP) plays a vital connection uniting forecast impacts and mitigation measures during implementation and operational activities. EMP stipulates the mitigation, monitoring and conventional measures to be taken during project implementation and operation. EMP is to escape or mitigate adverse environmental impacts, and to implement these measures.

This Environmental Management Plan (EMP) has been prepared as part of the Scoping Report which will be compiled in terms of the Environmental Assessment for the sand mining activities.

Considering the Ministry of Environment and Forest Climate Change (²MoEFCC) Notification 2006 and Sustainable Sand Mining Management Guidelines 2016, the Govt. of Maharashtra had mapped out the Minor Mineral Extraction Rules 2013. These rules are to extract all minor minerals in a scientific way so that there is no unfavourable impact on Environment and Climate. To extract every minor mineral from any land (either Government or Private) there is provision for a Mining Plan. These plans need to be approved by a competent authority. For long-term leased minor minerals (5-10 years period) and sand excavation from the riverbed, Senior Deputy Director of Directorate of Geology and Mining is the competent authority. These plans are for short term temporary permits which are valid for one year.

According to Enforcement & Monitoring Guidelines for Sand Mining 2020, Sustainable Sand Mining Management Guidelines 2016, Standard Environment conditions for sand mining and sustainable mining practices, District level Survey Report (³DSR) should be prepared and are suitable for mining and area prohibited for mining must be recognized.

¹ Environmental Management Plan

² Ministry of Environment Forest and Climate Change

³ District Survey Report

Objectives of EMP

- To provide overall conservation of the environment.
- To minimize waste generation and pollution.
- To regulate the precise use of natural resources and water.
- To provide Safety, Welfare, and Good health for the workforce and populace.
- To regulate the effective operation of all control measures.
- To ensure alertness against probable disasters and accidents.
- To monitor cumulative and long-term impacts.
- To regulate the effective operation of all control measures.

Roles and Responsibilities concerning the implementation of the EMP

The roles and responsibilities of all parties involved in successfully managing the environment are mentioned below.

Environmental Coordinator

The Environmental Coordinator will inspect operational areas on a quarterly basis and at the onset of mining any new island, to ensure that all specifications are met. The duties of the environmental coordinator will be the following.

- Guide the operations team in respect of the implementation of the environmental specifications.
- Lead the visits to ensure all work is aligned with the EMP.
- The environmental coordinator must examine the site during the three-monthly visits. All rehabilitation results will be Comprised in the quarterly report.
- Examination of the rehabilitation area and giving guidance regarding rehabilitation measures if any.

The Operations Manager

The responsibilities of the Operations Manager (4OM) or his nominated authority are as follows.

1. Familiarize themselves with the requirements of the EMP.
2. Monitor employees' and contractor's compliance with the environmental specifications; and enforce adherence.

⁴ Operations Manager

3. Communicate all environment-related incidents with the Environmental Coordinator and distribute them internally to avoid repetition.
4. Maintain a record of activities relevant to Environmental Management.
5. The Operations Manager shall be responsible for monitoring and the enforcement of the Environmental Management specifications on a day-to-day basis. Any violation of the environmental specifications shall be recorded, and the agreed disciplinary measures are taken.

Senior personnel and contractors

The roles of the senior personnel/contractors are as follows:

- Familiarize themselves with the requirements of the EMP.
- Comply with the environmental management specifications.
- Ensure that all team members are familiar with the environmental management specifications.

Details of the project

The Bahadarpur sand ghat area has been selected in perspective of its subsisting demand for building-grade sand for the area in and around Beed Taluka. The District Mining Officer Beed has put forward the proposal for Environmental Clearance for mining. The ghat has a production of 11661 brass sand within an area of 1.10ha. The proposed proposal follows an organized mining process for Environmental Clearance.

Further Chapter informs about the in-depth details of the Sand Ghat, its geographical structure, and a Google map of the ghat with its approach road for contractors and workers to reach to sand ghat from the village.

CHAPTER 2

DETAILS OF THE PROJECT

Bahadarpur village is located in Beed Taluka of Beed district, Maharashtra. Beed is well connected with all nearby cities. The National highway NH-52, it traverses through the states of Sangrur, Punjab, to Ankola, Karnataka in India. NH-52 is the National Highway passing through the district, covering a total distance of 73.60km. Beed has situated about 0km by road from Beed. The district has road links to adjoining districts Ahmednagar District to the west, Jalna District to the North, Latur District to the East, Osmanabad District to the South, Parbhani District to the East. The district is well connected by roads.

Bahadarpur village is 13.22km away from headquarters Beed. The Geographical area of the Beed is around 10693km². The nearest Railway station to Bahadarpur village is Partur Railway station. The nearest Airport to Beed District is Aurangabad Airport, Aurangabad Airport is 100.27km away from Beed.

Honourable Collector Beed intends to auction Sand Ghats and appointed District Mining Officer as Project Proponent. A total of 38 sand ghats are identified by Tahsildar Beed, Parli Ve., Gevrai, Beed along with District Mining Officer, Beed. The 38 sand ghats were jointly surveyed by Taluka level technical committee headed by respective tahsildar with Dy. Engineer Irrigation Department, Junior Geologist Directorate of Geology and Mining Govt. of Maharashtra, Junior Geologist, Groundwater Surveys & Development Agency (⁵GSDA). DMO Beed and a representative of the Maharashtra Pollution Control Board (⁶MPCB), as per the procedure defined in Sand Auction Rules 2019 dated 3/09/2019 formed a Taluka-level technical committee, which explored the sand ghats for an available quantity of sand for scooping. Revenue of Rs.25 Crore is expected from the auction of these sand ghats. Bahadarpur Sand Ghat proposed over river Sindhphana in Beed Taluka is proposed to cater to the infrastructural requirement of sand in the Taluka of Beed and adjoining areas of other talukas.

⁵ Groundwater Surveys & Development Agency

⁶ Maharashtra Pollution Control Board

Table 2. 1 Details of Bahadarpur Sand ghat

Name of Village	Taluka	River/ Nallah	Nearest survey No.	Area (ha)	Proposed Depth for excavation (m)	Quantity Permitted for mining of Sand in Brass	Method of Mining
Bahadarpur	Beed	Sindhphana	168, 169, 170, 160, 161, 162, 163, 164, 165, 166, 167	1.10	3.0	11661	Open- cast manual mining

Table 2. 2 Salient features of the project

Particulars	Details		
Location	Village-Bahadarpur Taluka-Beed, District-Beed, Maharashtra.		
Latitude and Longitude	Boundary points of Bahadarpur sand spot	Latitude	Longitude
	BP1	19°4'7.66"N	75°50'29.49"E
	BP2	19°4'8.11"N	75°50'31.09"E
	BP3	19°4'0.13"N	75°50'33.00"E
	BP4	19°3'59.77"N	75°50'31.31"E
Sand spot area (In ha)	1.10ha		
Proposed production capacity (in Brass)	11661		
Infrastructure Requirement (As per Govt Resolution 3rd January 2018)	1. Room / Hut for Official records 2. Electricity / Battery for Running CCTV 24x7 daily. 3. One Computer / Android-based Mobile for the online generation of Invoice numbers.		

Particulars	Details
Distance of project site from nearest rail or road bridge over the concerned River, Nallah, etc.	0.70km
Distance from infrastructural facilities	
Railway line	36km
National Highway	33.40km(NH-52)
State Highway	30.20km(SH-144)
Major District Road	36km 0.70km
Any Other Road	
Electric transmission line pole or tower	
Canal or check dam or reservoirs or lake or ponds	
In-take for drinking water pump house	
Intake for Irrigation canal pumps	
Areas already subjected to pollution or environmental damage. (those where existing legal environmental standards are exceeded)	None

Particulars	Details
<p>Areas susceptible to natural hazards which could cause the project to Present environmental problems (earthquakes, subsidence, landslides, erosion, flooding, or extreme or adverse climatic conditions)</p>	<p>No. Sand Ghat is at safe distances from natural hazards like earthquake prone area, subsidence, landslide, erosion, flooding prone area and extreme or adverse climatic conditions</p>
<p>Whether the proposal involves approval or clearance under the following Regulations or Acts, namely: - (a) The Forest (Conservation) Act, 1980. (b) The Wildlife (Protection) Act, 1972. (c) The Coastal Regulation Zone Notification, 2011. If yes, details of the same and their status are to be given.</p>	<p>None</p>
<p>Forest land involved (hectares)</p>	<p>None</p>

The below figure shows the google image of Bahadarpur sand ghat.



Fig 2.1-Google image of Bahadarpur sand ghat

Approach road along with google location is as shown below.

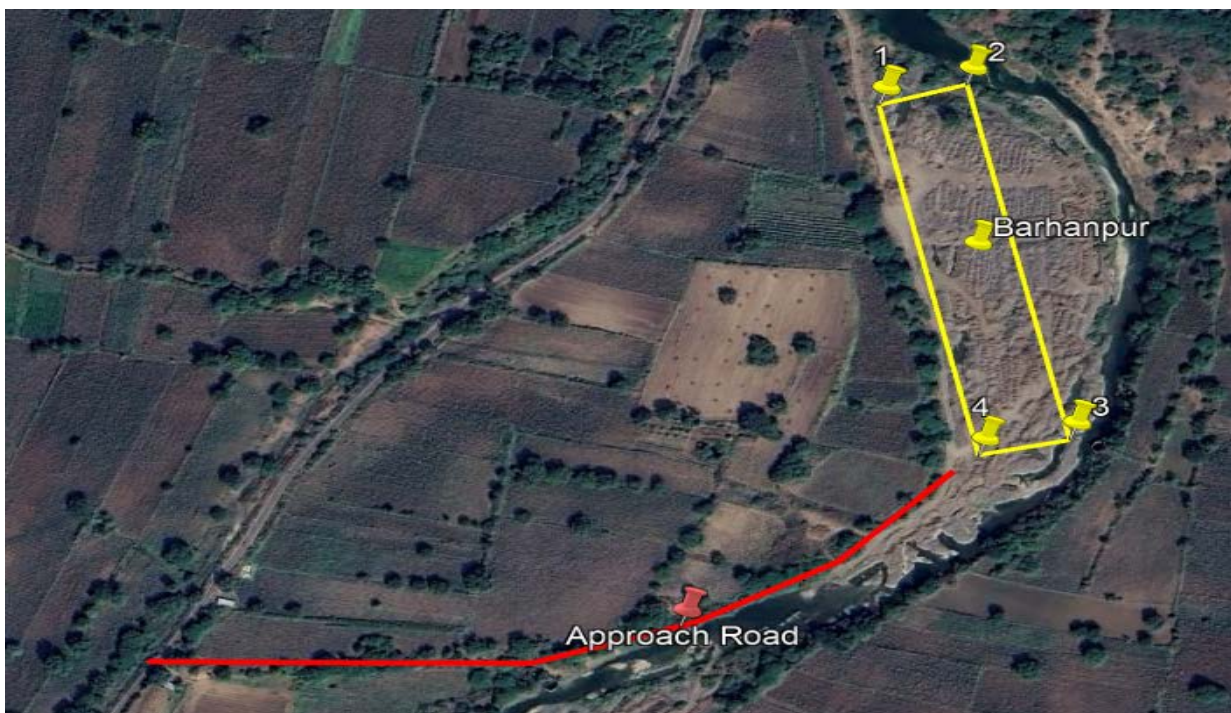


Fig 2.2-Approach Road for sand ghat

Next chapter 3 is Baseline Environmental Status in which the entire Topography, Climate, Soil Environment, Land use, water Environment, Hydrology, Biological environment, and Socio-economic Environment are briefly explained for the Beed district.

CHAPTER 3

BASELINE ENVIRONMENT STATUS

Topography

The Sand Ghat area as per the survey is the riverbed of the Sindhphana River of the Beed district. The maximum elevation is 480m MSL, average elevation is 478m MSL, & minimum elevation is 476m (⁷MSL) Mean Sea Level. The slope of the Sand Ghat area towards the West to Southeast side. The flow of Sindhphana River is from south to west direction.

Presently, there is neither any infrastructure within the riverbed nor are proposed.

Hydrology

There will be no change in the Water Table during the mining operation, as the depth of mining shall be restricted to 3.0m water level, which is less likely to affect the surface level or Groundwater Table. There is no proposal of any stream modification/diversion due to this mining activity hence there will be not any impact on the flow of water.

Soil Environment

The riverbed consists of sand /gravel. There is no topsoil. The depth of mining shall be restricted to 3.0m. There is no crucial impact on the soil forecasted due to mining activities.

Land Use Land Cover

Land use shows that agriculture land use is predominant. The proposed site is 1.10ha having adjoined Khasara No 168, 169, 170, 160, 161, 162, 163, 164, 165, 166, 167. The land doesn't cover any human habitation, forest, etc. Any change in the scope of the approved Mining Plan will lead to riverbank erosion/cutting and thereby river channel shifting, degradation of land, causing loss of properties and degradation of the surrounding landscape.

⁷ Mean sea level

Water Environment

While transporting sand there may be fugitive dust. There will be water requirement for spraying for dust suppression purposes. This water will be supplied from the borewell from nearby villages through tankers as well as from surface water sources. The water source may vary from village to village.

Climate

During summer May is the hottest month of the year in this area. The temperature rises to 42°C in the month of May. The average rainfall in this region is 600mm to 700mm About 50% of rainfall precipitates between June to September. December is the coldest month with temperatures falling down to 18°C. Overall the proposed site area has sub-tropical conditions.

Biological Environment

Flora

The agricultural area is seen near the Sand Ghat. Few trees and thorny bushes are seen on the banks of the river.

Fauna

As there is no forest cover, no endangered species of wildlife are seen in this area.

Socio-Economic Environment

This project may create constructive impacts of the sand mining that are stated below:

1. The mining operations will provide direct & indirect employment to village people.
2. The villages and their inhabitants & domestic animals will not be disturbed due to mining, as the quarry is far from their settlements.
3. Local workforce will be given first preference for employment.
4. Mining activities will benefit the local people due to the provision of more infrastructural facilities (developments of approach routes within the village area).

The next chapter describes all possible impacts on the Environment due to this project along with its mitigation measure to overcome these impacts.

CHAPTER 4

IMPACT ASSESSMENT REPORT ALONG WITH PROPOSED MITIGATION MEASURES

1. Land Environment

Anticipated Impact

Movement of vehicles can create issues for agricultural land, human habitations, noise, and risk for public and cause traffic hazards. The impacts include damage to the riverbank due to access ramps to the riverbed, soil erosion because of extraction of sand, micro disturbance to groundwater, possible stimulation of the changed river course, and contamination of sand aquifer water due to ponding. There might be surface degradation due to the road network.

The quality of soil will not be affected due to transportation or any other activity of mining.

Mitigation measure

1. Mining depth should be restricted to 3 meters and distance from the bank should be ¼th or river width and should not be less than 7.5 meters as per “Sustainable Sand Mining Guidelines 2020” ■ Page 23, Point no 4.3 (m).
2. There will be a minimal number of access roads to riverbeds. Cutting of riverbanks will be avoided and ramp with smooth slope will be maintained. Access points to the riverbed will be decided based on the least steepness of the riverbank and the least human activity at that location.
3. No foreign material like polythene bags, jute bags, and useless articles should be allowed to remain/spill in the riverbed and catchment area, or no pits/pockets will be allowed to be filled with such material.
4. Mining at the concave side of the river channel should be avoided to prevent bank erosion. Similarly, a tortuous segment of a river is to be selected for mining in such a way as to ignore the natural eroding of banks.
5. Ensure that ponding is not created in the riverbed.
6. Transportation route should be such that it gives minimum

damage to the environment.

7. Green belt will be developed along the haul road and the bank of rivers of mine premises and near the sand mining site. While selecting the plant species, preference will be given for planting native species of the area.

2. Water environment

Anticipated Impact

The project activity will be carried out in the dry part of the riverbed. Care will be taken to ensure that neither of the project activities will affect the water environment or riverbank habitats. During the lean months, the proposed Sand Mining will not expose the base flow of the river and hence there will not be any inauspicious impact on surface hydrology and groundwater regime due to this project. Project activities will not have any adverse consequences on the physical components of the environment and therefore may not have any effect on the recharge of ground waters or affect the water quality. Monitoring of water quality will be checked yearly.

Mitigation measures

1. Mining is avoided during the monsoon season and at the time of floods. This will help in the replenishment of sand in the riverbed.
2. Mining below the subterranean water level will be avoided as a safeguard against environmental contamination and over-exploitation of resources.
3. River stream will not be transferred to create active channels.
4. Mining schedule is synchronized with the river flow direction and the gradient of the land.
5. Mining at the concave side of the river channel will be avoided to prevent bank erosion.
6. Tortuous segment of the river will be selected for mining in such a way as to avoid naturally eroding banks and to promote mining on naturally building meander components.
7. Mining depth shall be maintained as per the guidelines and

rules of the Sand Mining Policy dated 03/09/2019 and recommendations of Maharashtra State (⁸M.S.). State Ground Water Department for extraction of sand during the lease period.

8. Water Quality Monitoring for the ground waters, river water, and other surface waters shall be carried out seasonally to ensure that the water quality is not affected by the project activities.
9. Utmost care will be taken to minimize or control leaking vehicles to be used for sand transportation.
10. The washing of tractor trolleys in the river will not be done.
11. The contractor will follow all guidelines and rules for proper and scientific methods of mining during the period of extracting the sand.

3. Air Environment

Anticipated Impacts

Plying of tractor trolleys from the public road to river sand collection points needs access roads. The majority of such access roads are the already existing roads/tracks being used by pedestrians/cart owners. The movement of heavy vehicles sometimes causes problems for cattle, agricultural land, and human habitations due to dust, noise, and the movement of the public. These environmental problems are felt more as the area is rural in nature.

Air pollution is likely to be caused at various stages of Sand Mining operations such as excavation, loading & transportation of material. Most of the fugitive dust emissions will be generated from loading & transportation. This dust becomes airborne and spreads away to surrounding areas.

The impact on air is mainly localized in nature as the dust particles of 100 μ in size are not carried to farther distances beyond 100m and the effect is felt within the core zone of the project involving active Sand Mining operations.

⁸ Maharashtra State

Mitigation measures

1. Movement of the vehicles on the road will be increased; however, the unmetalled road in the mining area will be sprinkled with water at regular intervals.
2. In addition to preventing spillage from tractor trolleys, overloading shall be controlled to 1-brass/tractor trolley. The speed limit will be <20 km/hr.
3. Maintenance of the haul road will be done on a regular basis.
4. To avoid fugitive dust emissions at the time of excavation, a regular sprinkling of water will be done on regular basis.
5. Sand is transported to the sites by road through tractor trolleys. The sand-carrying vehicles shall be covered by tarpaulin sheets.
6. The Green belt development will be prepared along the haul roads, which will act as a pollution sink.
7. To minimize vehicular pollution from the sand transporting vehicles, the following conditions will be insisted upon to permit the vehicles of the transporters.
8. The vehicles should be Bharat-IV stage compliant and should have a Pollution Under Control (⁹PUC) Certificate issued by appropriate authorities.
9. Regular maintenance of transport vehicles and monitoring of vehicular emission levels at periodical intervals.

4. Noise Environment

Anticipated Impact

The noise environment in this project will be overdone by the equipment at the site and vehicular transportation. A slight increase in noise levels of <10dB(A) can be expected up to a distance of 100m.

Mitigation measures.

1. Minimum use of horns in the village area.
2. Timely maintenance of vehicles and their silencers to

⁹ Pollution Under Control

minimize vibration and sound.

3. Phasing out old and worn-out tractor trolleys.
4. Provision of green belts along the road networks.
5. Care will be taken to produce minimum sound during sand loading.
6. Backhoe loader excavator will be used
7. Earplugs may be provided to protect the laborers working at the site.

5. Socio-economic Environment

Anticipated Impacts and Evaluation

1. The project activities shall not have any adverse impacts on any of the common property resources of the village communities, as the Sand Mine lease area is not being used for any purpose by any section of the society in this region.
2. There is no Resettlement and Rehabilitation (¹⁰R&R) involvement in this project.
3. There is no land acquisition in this project.
4. A major portion of the houses in the study area is semi-pucca-type structures.
5. The water source to these areas is from the Grampanchayat /Nagar Parishad connection and private bore wells and wells.
6. People living around the project area need the project for the purpose of employment and economic benefits.
7. The awareness level regarding the proposed mining activity is very towering. The proposed mining activity is expected to provide stimulus to socio-economic activities in the region and thereby accelerate further development processes.

Social and Demographic Profile

The workers are from local villages. These people have been provided welfare benefits from the lessee like medical benefits,

¹⁰ Rehabilitation and Resettlement

insurance, fees for children's education, etc. They have some land and cattle for their daily earnings. Additional revenue earned from the Sand Mining work will improve their living standard. The group of quarries in and around will help to have infrastructure facilities like roads, schools, shops, etc. This will enhance their social life.

Occupational Health and Safety

This is a riverbed Sand Mine. So, the mining activities are comparatively smaller because the production is not on a high scale. Workers do not come across any extreme conditions like excessive heat, moisture, etc. Workers working around it may come across this dusty environment. But the impact on health will be within the limit.

Human Settlement

1. There are no houses in and around the lease area. Blasting is the only activity, which may affect the settlement, which is not done. The settlement is more than 1-km from the sand mine.
2. Appropriate precautions will be taken during mining. Transportation of finished products is through the villages. There will be an effect of traffic on the local people. However, the intensity of traffic is 70-80/day.

Health and Hygiene

In general, the health of villagers is moderately good. In the rainy season, the atmospheric condition is unhygienic due to a lack of proper drainage and sanitation in the village habitation. Villagers are working in agricultural fields and work as labourers.

Education

Most education of 70% young <20 years, is up to the 5th to 9th. Economic condition is in general moderate. So, after this project, the standard of education will increase.

Socio-Economic Benefits Arising Out of Mining

1. Generation of employment in rural areas.
2. Upgradation in the living standards of rural people.
3. Creating infrastructural facilities like roads, electricity, shops, schools, etc.
4. Upgrading literacy in the area by exploiting natural minerals so the generation of revenue.

5. Helping to sustain construction activity.
6. Improving the greenery of the area, which is otherwise poor.

Liquid Effluent

Not applicable, because these activities do not generate effluent from operation or process.

Solid Waste

Not applicable, because small mines and impacts are negligible.

Project benefits due to the sand mining of Bahadarpur are explained in the next Chapter.

CHAPTER 5

PROJECT BENEFITS

The proposed Sand Mining project of Bahadarpur village, Beed Taluka, Beed District will lead to the following benefits:

1. Increase in the revenue of the district will ultimately increase the revenue of the village, which in return can be used to improve the infrastructure of the village.
2. Sand is available for building construction work and by systematic separation of sand, there is no possibility of a flood. Providing smooth movement of water of the river.
3. This project will contribute additional revenue to the state Exchequer in the form of revenue.
4. The project will conclude with employment opportunities for unskilled/skilled local people.
5. Standard of living of employed people will increase.

CHAPTER 6

SITE-SPECIFIC ENFORCEMENT & MONITORING PLAN

Sand Ghat Site specific enforcement & monitoring plan

(as per guidelines stipulated in the Enforcement and Monitoring Guidelines for sand mining issued by MoEFCC in January 2020.)

District administration shall deliver information on its website about the Sand Mines in the district for public information. The objective is to extend all information into the public domain so that the citizens are aware of the mining activities. People can also report to the district administration any deviation observed. Suitable feedback and its composition shall also be made operational.

Details shall include, but not be limited to, lease area, geo-coordinates of lease area and mineable area, transport routes, permitted capacity, regulatory conditions for operation including mining, environmental and social commitments, etc.

An Independent Committee of experts constituted by the Distance Learning Task Force (¹¹DLTF) will assess the environmental or ecological damage caused due to illegal mining and recommend recovery of environmental compensation from the concerned miners.

The recommendation may also include action under the provision of the Environment (Protection) Act 1986 u/s.15 read with s.19.

¹¹ Distance Learning Task Force

CHAPTER 7

SECURITY FEATURES

Security features are included in the Transport Permission/Permits (TP)

It will be ensured that the following security features are included in the Transport Permission/Permits (¹²TP) so that duplicate/fraudulent/forged TPs for transport, not accounted for in the IT-based system, is not possible:

1. Printed on Indian Bank Association (¹³IBA) Approved letterhead with account details
2. Magnetic Ink Character Recognition Code (¹⁴MICR) paper
3. Unique Barcode
4. Unique Quick Response Code (¹⁵QR)
5. Fugitive Ink Background
6. Invisible Ink Mark
7. Void Pantograph Watermark
8. Global Positioning System (¹⁶GPS) based vehicle tracking system
9. Closed-Circuit Television (¹⁷CCTV) Camera

¹² Transport Permission

¹³ Indian Bank Association

¹⁴ Magnetic Ink Character Recognition Code

¹⁵ Quick Response Code

¹⁶ Global Positioning System

¹⁷ Closed Circuit Television

CHAPTER 8

REPLENISHMENT

Replenishment study is the most important part of Sand Mining as it is the only basis to carry out sand mining. Without a Replenishment Study, we cannot understand the amount of deposition of sand. Following points to be followed for the replenishment study.

1. Area of deposition and erosion will be calculated for each cross-section after giving due regard to the stability & safety of active channel banks & other features of importance.
2. Differential Global Positioning System (¹⁸DGPS) and other survey tools will be used to define the topography, contours, and offsets of the lease area.
3. Contour & elevation benchmarks will provide baseline data for assessing pre- and post-study period scenario.
4. Physical benchmarks will be fixed at appropriate intervals (preferably 1 in 30m) & Reduced levels (¹⁹RL) shall be validated from a nearby standard RL.
5. These RL will be engraved on a steel plate (Bench Plate) & will be fixed & placed at locations that are free from any damages & are available in the pre-and post-study period.
6. Bench plates will be available for use during the mining period as a reference for all mining activity.
7. Baseline data on elevation status for a grid of 10m x 10m is preferred to have accuracy in the assessment.
8. It is expected that two consecutive cross-sections in longitudinal and lateral directions will not be more than a 10m distance apart.
9. Changes observed in the elevation in pre and post-scenario at each node, will be depicted in graphical forms with an appropriate scale to estimate the area of deposition & erosion.

¹⁸ Differential global positioning system

¹⁹ Reduced levels

10. Elevation level will be in reference to the nearest bench plates established for the purpose.
11. The levels (MSL & RL) of the corner point of each grid will be identifiable and safety barriers (non-Mining) demarcated as restricted in consensus with the Mineral Concession Rules of the respective State, and the provision mentioned in this Sustainable Sand Mining Management Guidelines.
12. A clear identification will be highlighted between grids under the mineable and grids under the non-mineable area.
13. These baseline data (pre and post) be subjected to stimulation with the help of data mine software to derive the replenishment area and corresponding volume and estimated weight.
14. The database will be structured in a tabulated form clearly depicting the nomenclature of the section lines, latitude and longitude of the starting point, chainage, and respective levels of all the points taken on that section line.
15. Net area shall be derived after summation of an area of deposition minus the area of erosion for each cross-section.
16. Volume will be estimated by multiplying the distance between two cross-sections with the average of the net area of these two consecutive cross-sections.
17. One sample per 900m² (30m x 30m) will be the preferred sample density for the assessment of bulk density for the estimation of deposition rate.
18. Care will be taken that the sample for assessment of Bulk Density is taken from the deposition zone & not from erosion.

Methodology for Sand Mining:

The following methodology should be followed for the Replenishment study.

1. The Demarcation and benchmark of the Sand Ghat are done at 10m x 10m intervals.
2. The use of the Auger Driller is to find out the depth of sand in each grid.
3. Auger Driller has created the holes in sand ghat by 10mx10m grid pattern.
4. Measured the depth of holes by using a measuring tape.

5. After taking all the readings average depth of sand is calculated.
6. The average depth of Bahadarpur at Sindhphana is measured.

Replenishment study of sand in the proposed ghat along with details of the methodology, technology used to identify the existing reserve & replenishment of the same

Dandy Bolton Equation

For runoff less than 2 inches

$$S = 1280 \times (Q) \times 0.46 \times (1.46 - 0.26 \log(A)) \times F$$

For runoff more than 2 inches

$$S = 1958 \times (Q) \times (e^{-0.055 \times Q}) \times (1.43 - 0.26 \log(A))$$

Where,

S = sediment yield of stream (t/yr/km²),

Q = average annual runoff (m³),

A = net drainage area in sq.mile.

CHAPTER 9

PROPOSED PLANTATION PLAN

The Project Proponent must take care of the plantation around the site. This will not only enhance the beautification of the area but also there will be the reduction of pollution, not some extent.

Details of the plantation and Tree species recommended for the plantation are shown below.

Table 9. 1 Details of green belt

Location of greenbelt	Both sides of the approach road, On the riverbanks of both sides of the sand spot & nearby open areas. Haul Road outside the riverbed
No. of plants to be planted	2000 per Hectare
Spacing of plants	2m grid interval
Species selected	Native species

Table 9. 2 Trees species for plantation

Botanical Name	Local Name	Importance
Azadirachta Indica	Neem	Neem oil & neem products
Tectona Grandis	Teek	Antibacterial, Antifungal, Antiulcer
Ficus religiosaa	Peepal	Medicinal use, Fruits & figs
Bambusa vulgaris	Bamboo	Anthelmintic Anti-inflammatory, Astringent Properties
Madhuca longifolia	Mahua	Acts as a Stimulant & cough relief,

CHAPTER 10

ENVIRONMENTAL MANAGEMENT PLAN

A total capital cost of Rs.5.97 Lakhs has been kept in the project cost towards the environmental protection, control, mitigation measures, and implementation of the Environmental Management Plan (EMP). This cost is borne by the bidder/leaseholder. The budgetary cost estimate for the EMP is given in Table.

Table 10. 1 Budgetary cost of EMP

Sr	Impact Source	Impact	Control Measure	Cost (Rs.)
1	Transport Road	On Air Quality	Compaction, gradation, and drainage on both sides.	90000
		On Land, the Stability of the Road and degradation of road	Proper maintenance	40000
			Regular water spraying	43000
			The air quality will be monitored at the impacted village. (For One Day Monitoring)	5000
			Health Check-up of Employees	5000
2	Truck/ Tractor Movement	Air Quality	Sand-carrying trucks will be effectively covered by tarpaulin to avoid the escape of fines to the atmosphere. (2 Tarpaulin)	25000
			Regular monitoring of the exhaust fumes	5000

Sr	Impact Source	Impact	Control Measure	Cost (Rs.)
			Barriers & Traffic Management Expenses. (Excluding Manpower Salary which is included in labour costs)	10000
3	Ramp and Sand Reach	Mining Operation	Regular ramp Inspection and Ramp maintenance. (Excluding Manpower Salary which is included in labour costs)	50000
			Provision of dust masks	10000
4	Bank Management	Bank Erosion/Flood Plain management	The green belt along the bank (For Green Belt Development)	230000
			Plantation of wide leaf tall trees on banks and grass along a slanting portion of the bank	
5	Transportation on Village Roads	Dust Control	The green belt along village Rd (For Green Belt Development)	
6	Final Mine Closure Plan implementation	Replenishment of Sand	Gabions/ boulders will be arranged as per guidelines	15000
7	Mobile toilet, sewage handling & treatment		Mobile toilet, sewage handling & treatment	100000
8	CCTV Monitoring			100000
Total				728000

Budget For Corporate Environment Responsibility (²⁰CER)

About 2% fund of the project cost is allocated for Corporate Environment Responsibility (CER) activities as presented in below Table

Table 10.2 Budget for CER

Sr.	Description	Cost (Rs)
1.	Village Schools (separate toilet for girls and boys)	25000
2.	Solar panels over Gram Panchayat buildings	25000
3.	Solar panels over Public Health Centers	20000
	Total	70000

²⁰ Corporate Environment Responsibility

CHAPTER 11

SUMMARY AND CONCLUSION

The Roles and Responsibilities of the Environmental coordinator, the Operation Manager, and the senior personnel contractor are essential in EMP.

The environmental status of the project site and study area of 10km radius is delineated with respect to air, noise, water, land, biological and socio-economic environment the different project activities in the construction and operation phases are identified.

To identify the impacts, the interaction between the project activities and different components of the environment is classified phase-wise. A summary of the recognized impacts is given in the following paragraphs.

- During the operational phase, the transportation of sand could cause a temporary disturbance to the local environment which will be prevented with the proposed mitigation measures.
- Proposed project will not have any major significant negative impacts. The minor impacts arising during Excavation and Transportation phases can be mitigated with the help of the proposed Environmental Management Plan.
- In general, sand excavation from Bahadarpur sand spot will be useful to the developmental work in the district and generate employment opportunities.

From this project, it is concluded that the district revenue will increase in return minimum of 2% of funds are utilized for the development of the village. The project will also grab employment which will improve the standard of life of villagers.

*** END ***

Environmental Management Plan

As per Rules 23 & 26 of MMME (D & R) RULE 2013 & Section 15 of MMDR Act 1957, MoEFCC Notification 2006, S.O. 141(E) dated 15. 01. 2016; MoEFCC, Sustainable Sand Mining Management Guidelines 2016, Guidelines for Mining Policy 2020)

for

ENVIRONMENTAL CLEARANCE

of

SAND MINING (MINOR MINERAL)

for

Borgaav Bu. Satha 2- A Riverbed Sand Mine / Sand Ghat
Khasra No. GSDA approved 159, 166, 167, 110, 172, 173
Area (4.80ha)

Village Borgaav, Tehsil Gevrai, District Beed

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ABBREVIATION

Short Form	Long Form
EMP	Environmental Management Plan
MoEFCC	Ministry of Environment Forest and Climate Change
DSR	District-level Survey Report
EC	Environmental Coordinator
OM	Operations Manager
GSDA	Groundwater Surveys & Development Agency
MPCB	Maharashtra Pollution Control Board
MSL	Mean Sea Level
MS	Maharashtra State
PUC	Pollution Under Control
R&R	Rehabilitation and Resettlement
DLTF	Distance Learning Task Force
TP	Transport Permission/Permits
IBA	Indian Bank Association
MICR	Magnetic Ink Character Recognition Code
QR	Quick Response Code
GPS	Global Positioning System

CCTV	Closed-Circuit Television
DGPS	Differential Global Positioning System
RL	Reduced Levels
CER	Corporate Environment Responsibility

CHAPTER 1

INTRODUCTION

The Environmental Management Plan (¹EMP) plays a vital connection uniting forecast impacts and mitigation measures during implementation and operational activities. EMP stipulates the mitigation, monitoring and conventional measures to be taken during project implementation and operation. EMP is to escape or mitigate adverse environmental impacts, and to implement these measures.

This Environmental Management Plan (EMP) has been prepared as part of the Scoping Report which will be compiled in terms of the Environmental Assessment for the sand mining activities.

Considering the Ministry of Environment and Forest Climate Change (²MoEFCC) Notification 2006 and Sustainable Sand Mining Management Guidelines 2016, the Govt. of Maharashtra had mapped out the Minor Mineral Extraction Rules 2013. These rules are to extract all minor minerals in a scientific way so that there is no unfavourable impact on Environment and Climate. To extract every minor mineral from any land (either Government or Private) there is provision for a Mining Plan. These plans need to be approved by a competent authority. For long-term leased minor minerals (5-10 years period) and sand excavation from the riverbed, Senior Deputy Director of Directorate of Geology and Mining is the competent authority. These plans are for short term temporary permits which are valid for one year.

According to Enforcement & Monitoring Guidelines for Sand Mining 2020, Sustainable Sand Mining Management Guidelines 2016, Standard Environment conditions for sand mining and sustainable mining practices, District level Survey Report (³DSR) should be prepared and are suitable for mining and area prohibited for mining must be recognized.

¹ Environmental Management Plan

² Ministry of Environment Forest and Climate Change

³ District Survey Report

Objectives of EMP

- To provide overall conservation of the environment.
- To minimize waste generation and pollution.
- To regulate the precise use of natural resources and water.
- To provide Safety, Welfare, and Good health for the workforce and populace.
- To regulate the effective operation of all control measures.
- To ensure alertness against probable disasters and accidents.
- To monitor cumulative and long-term impacts.
- To regulate the effective operation of all control measures.

Roles and Responsibilities concerning the implementation of the EMP

The roles and responsibilities of all parties involved in successfully managing the environment are mentioned below.

Environmental Coordinator

The Environmental Coordinator will inspect operational areas on a quarterly basis and at the onset of mining any new island, to ensure that all specifications are met. The duties of the environmental coordinator will be the following.

- Guide the operations team in respect of the implementation of the environmental specifications.
- Lead the visits to ensure all work is aligned with the EMP.
- The environmental coordinator must examine the site during the three-monthly visits. All rehabilitation results will be Comprised in the quarterly report.
- Examination of the rehabilitation area and giving guidance regarding rehabilitation measures if any.

The Operations Manager

The responsibilities of the Operations Manager (4OM) or his nominated authority are as follows.

1. Familiarize themselves with the requirements of the EMP.
2. Monitor employees' and contractor's compliance with the environmental specifications; and enforce adherence.

⁴ Operations Manager

3. Communicate all environment-related incidents with the Environmental Coordinator and distribute them internally to avoid repetition.
4. Maintain a record of activities relevant to Environmental Management.
5. The Operations Manager shall be responsible for monitoring and the enforcement of the Environmental Management specifications on a day-to-day basis. Any violation of the environmental specifications shall be recorded, and the agreed disciplinary measures are taken.

Senior personnel and contractors

The roles of the senior personnel/contractors are as follows:

- Familiarize themselves with the requirements of the EMP.
- Comply with the environmental management specifications.
- Ensure that all team members are familiar with the environmental management specifications.

Details of the project

The Borgaav Bu. Satha 2 sand ghat area has been selected in perspective of its subsisting demand for building-grade sand for the area in and around Gevrai Taluka. The District Mining Officer Beed has put forward the proposal for Environmental Clearance for mining. The ghat has a production of 16961 brass sand within an area of 4.80ha. The proposed proposal follows an organized mining process for Environmental Clearance.

Further Chapter informs about the in-depth details of the Sand Ghat, its geographical structure, and a Google map of the ghat with its approach road for contractors and workers to reach to sand ghat from the village.

CHAPTER 2

DETAILS OF THE PROJECT

Borgaav village is located in Gevrai Taluka of Beed district, Maharashtra. Beed is well connected with all nearby cities. The National highway NH-52, it traverses through the states of Punjab, Haryana, Rajasthan, Madhya Pradesh and Maharashtra in India. NH-52 is the National Highway passing through the district, covering a total distance of 73.60km. Gevrai has situated about 31.3km by road from Beed. The district has road links to adjoining districts Ahmednagar District to the west, Jalna District to the North, Latur District to the East, Osmanabad District to the South, Parbhani District to the East The district is well connected by roads.

Borgaav village is 52.63km away from Collector Office headquarters Beed. The Geographical area of the Beed is around 10693km². The nearest Railway station to Borgaav village is Chikalthan Railway station. The nearest Airport to Beed District is Aurangabad Airport, Aurangabad Airport is 104km away from beed.

Honourable Collector Beed intends to auction Sand Ghats and appointed District Mining Officer as Project Proponent. A total of 38 sand ghats are identified by Tahsildar Majalgaon, Gevrai, Parli Ve., Beed along with District Mining Officer, Beed. The 38 sand ghats were jointly surveyed by Taluka level technical committee headed by respective tahsildar with Dy. Engineer Irrigation Department, Junior Geologist Directorate of Geology and Mining Govt. of Maharashtra, Junior Geologist, Groundwater Surveys & Development Agency (⁵GSDA). DMO Beed and a representative of the Maharashtra Pollution Control Board (⁶MPCB), as per the procedure defined in Sand Auction Rules 2019 dated 3/09/2019 formed a Taluka-level technical committee, which explored the sand ghats for an available quantity of sand for scooping. Revenue of Rs.25 Crore is expected from the auction of these sand ghats. Borgaav Bu. Satha 2 Sand Ghat proposed over river Godavari in Gevrai Taluka is proposed to cater to the infrastructural

⁵ Groundwater Surveys & Development Agency

⁶ Maharashtra Pollution Control Board

requirement of sand in the Tehsil of Beed and adjoining areas of other talukas.

Table 2. 1 Details of Borgaav Bu. Satha 2 Sand ghat

Name of Village	Tahsil	River/ Nallah	Nearest survey No.	Area (ha)	Proposed Depth for excavation (m)	Quantity Permitted for mining of Sand in Brass	Method of Mining
Borgaav Bu.	Gevrai	Godavari	159, 166, 167, 110, 172, 173	4.80	1.0	16961	Open-cast manual mining

Table 2. 2 Salient features of the project

Particulars	Details		
Location	Village- Borgaav Bu. (Satha 1), Tehsil- Gevrai, District-Beed, Maharashtra.		
Latitude and Longitude	Boundary points of Borgaav Bu. Satha 2 sand spot	Latitude	Longitude
	BP1	19°25'21.31"N	75°30'26.22"E
	BP2	19°25'22.46"N	75°30'26.57"E
	BP3	19°25'0.56"N	75°30'59.13"E
	BP4	19°24'59.81"N	75°30'57.99"E
Sand spot area (In ha)	4.80ha		
Proposed production capacity (in Brass)	16961		
Infrastructure Requirement (As per Govt Resolution 3rd January 2018)	<ol style="list-style-type: none"> 1. Room / Hut for Official records 2. Electricity / Battery for Running CCTV 24x7 daily. 3. One Computer / Android-based Mobile for the online generation of Invoice numbers. 		

Particulars	Details										
Distance of project site from nearest rail or road bridge over the concerned River, Nallah, etc.	Godavari River Bridge-3.75km										
<table border="1"> <tr> <td>Distance from infrastructural facilities</td> <td rowspan="10"> Chikalthan railway station-49.44 NH52-21.25km MSH148-13.19km 7.45km 1.07km </td> </tr> <tr> <td>Railway line</td> </tr> <tr> <td>National Highway</td> </tr> <tr> <td>State Highway</td> </tr> <tr> <td>Major District Road</td> </tr> <tr> <td>Any Other Road</td> </tr> <tr> <td>Electric transmission line pole or tower</td> </tr> <tr> <td>Canal or check dam or reservoirs or lake or ponds</td> </tr> <tr> <td>In-take for drinking water pump house</td> </tr> <tr> <td>Intake for Irrigation canal pumps</td> </tr> </table>	Distance from infrastructural facilities	Chikalthan railway station-49.44 NH52-21.25km MSH148-13.19km 7.45km 1.07km	Railway line	National Highway	State Highway	Major District Road	Any Other Road	Electric transmission line pole or tower	Canal or check dam or reservoirs or lake or ponds	In-take for drinking water pump house	Intake for Irrigation canal pumps
Distance from infrastructural facilities	Chikalthan railway station-49.44 NH52-21.25km MSH148-13.19km 7.45km 1.07km										
Railway line											
National Highway											
State Highway											
Major District Road											
Any Other Road											
Electric transmission line pole or tower											
Canal or check dam or reservoirs or lake or ponds											
In-take for drinking water pump house											
Intake for Irrigation canal pumps											
Areas already subjected to pollution or environmental damage. (those where existing legal environmental standards are exceeded)	None										
Areas susceptible to natural hazards which could cause the project to Present environmental problems (earthquakes, subsidence, landslides, erosion, flooding, or extreme or adverse climatic conditions)	No. Sand Ghat is at safe distances from natural hazards like earthquake prone area, subsidence, landslide, erosion, flooding prone area and extreme or adverse climatic conditions										

Particulars	Details
Whether the proposal involves approval or clearance under the following Regulations or Acts, namely: - (a) The Forest (Conservation) Act, 1980. (b) The Wildlife (Protection) Act, 1972. (c) The Coastal Regulation Zone Notification, 2011. If yes, details of the same and their status are to be given.	None
Forest land involved (hectares)	None

The below figure shows the google image of Borgaav Bu. Satha 2 sand ghat.

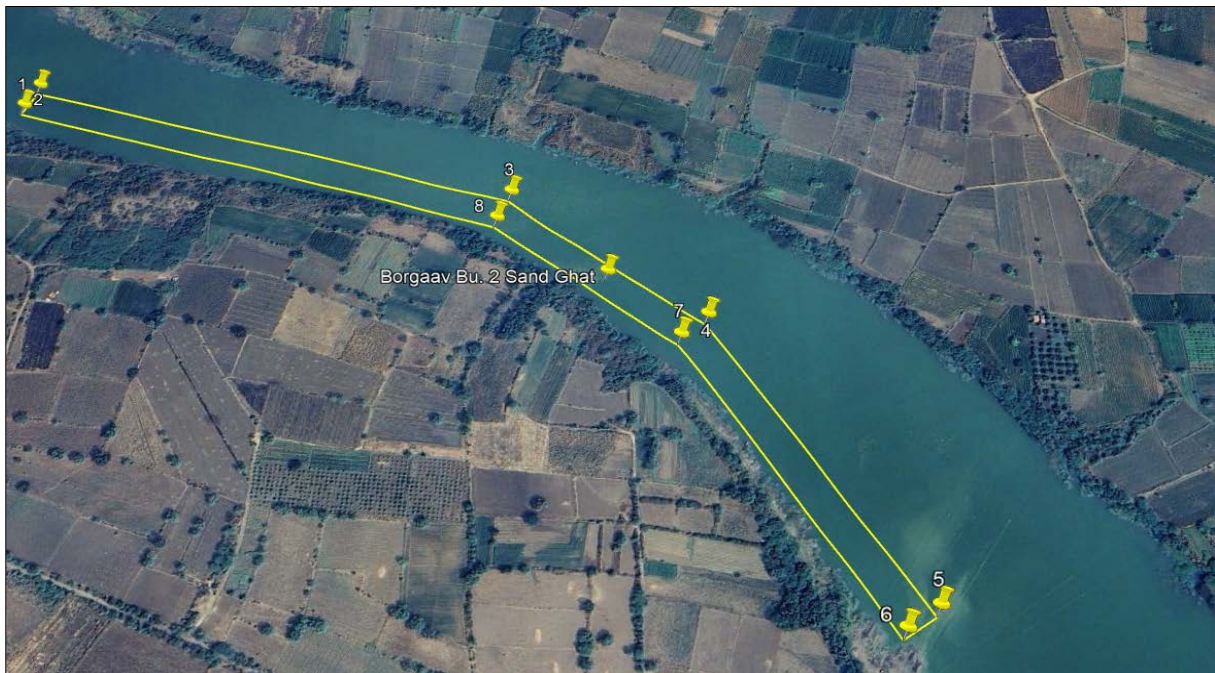


Fig 2.1-Google image of Borgaav Bu. Satha 2 sand ghat

Approach roach along with google location is as shown below.

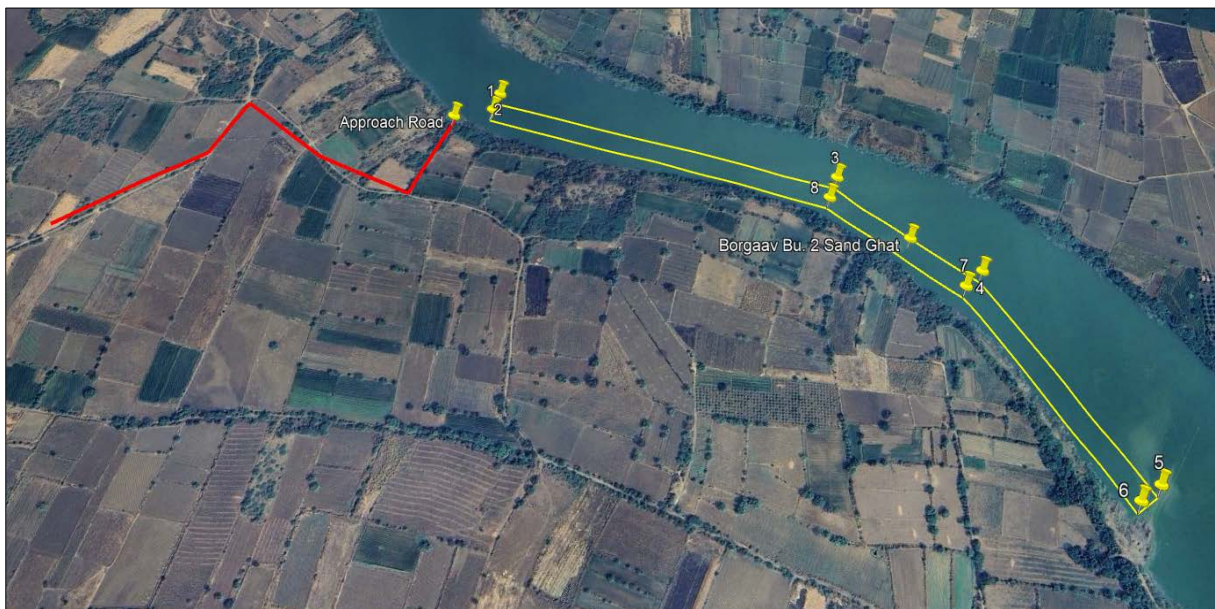


Fig 2.2-Approach Road for sand ghat

Next chapter 3 is Baseline Environmental Status in which the entire Topography, Climate, Soil Environment, Land use, water Environment, Hydrology, Biological environment, and Socio-economic Environment are briefly explained for the Beed district.

CHAPTER 3

BASELINE ENVIRONMENT STATUS

Topography

The Sand Ghat area as per the survey is the riverbed of the Godavari River of the Beed district. The maximum elevation is 455m MSL, average elevation is 450m MSL, & minimum elevation is 445m (⁷MSL) Mean Sea Level. The slope of the Sand Ghat area towards the Northwest to Southeast side. The flow of Godavari River is from Southeast direction.

Presently, there is neither any infrastructure within the riverbed nor are proposed.

Hydrology

There will be no change in the Water Table during the mining operation, as the depth of mining shall be restricted to 1.0m water level, which is less likely to affect the surface level or Groundwater Table. There is no proposal of any stream modification/diversion due to this mining activity hence there will be not any impact on the flow of water.

Soil Environment

The riverbed consists of sand /gravel. There is no topsoil. The depth of mining shall be restricted to 1.0m. There is no crucial impact on the soil forecasted due to mining activities.

Land Use Land Cover

Land use shows that agriculture land use is predominant. The proposed site is 4.80ha having adjoined Khasara No 159, 166, 167, 110, 172, 173. The land doesn't cover any human habitation, forest, etc. Any change in the scope of the approved Mining Plan will lead to riverbank erosion/cutting and thereby river channel shifting, degradation of land, causing loss of properties and degradation of the surrounding landscape.

⁷ Mean sea level

Water Environment

While transporting sand there may be fugitive dust. There will be water requirement for spraying for dust suppression purposes. This water will be supplied from the borewell from nearby villages through tankers as well as from surface water sources. The water source may vary from village to village.

Climate

During summer May is the hottest month of the year in this area. The temperature rises to 42°C in the month of May. The average rainfall in this region is 600-700mm About 50% of rainfall precipitates between June to September. December is the coldest month with temperature falling down to 18°C. Overall the proposed site area has sub-tropical conditions.

Biological Environment

Flora

The agricultural area is seen near the Sand Ghat. Few trees and thorny bushes are seen on the banks of the river.

Fauna

As there is no forest cover, no endangered species of wildlife are seen in this area.

Socio-Economic Environment

This project may create constructive impacts of the sand mining that are stated below:

1. The mining operations will provide direct & indirect employment to village people.
2. The villages and their inhabitants & domestic animals will not be disturbed due to mining, as the quarry is far from their settlements.
3. Local workforce will be given first preference for employment.
4. Mining activities will benefit the local people due to the provision of more infrastructural facilities (developments of approach routes within the village area).

The next chapter describes all possible impacts on the Environment due to this project along with its mitigation measure to overcome these impacts.

CHAPTER 4

IMPACT ASSESSMENT REPORT ALONG WITH PROPOSED MITIGATION MEASURES

1. Land Environment

Anticipated Impact

Movement of vehicles can create issues for agricultural land, human habitations, noise, and risk for public and cause traffic hazards. The impacts include damage to the riverbank due to access ramps to the riverbed, soil erosion because of extraction of sand, micro disturbance to groundwater, possible stimulation of the changed river course, and contamination of sand aquifer water due to ponding. There might be surface degradation due to the road network.

The quality of soil will not be affected due to transportation or any other activity of mining.

Mitigation measure

1. Mining depth should be restricted to 3 meters and distance from the bank should be $\frac{1}{4}$ th or river width and should not be less than 7.5 meters as per “Sustainable Sand Mining Guidelines 2020” Page 23, Point no 4.3 (m).
2. There will be a minimal number of access roads to riverbeds. Cutting of riverbanks will be avoided and ramp with smooth slope will be maintained. Access points to the riverbed will be decided based on the least steepness of the riverbank and the least human activity at that location.
3. No foreign material like polythene bags, jute bags, and useless articles should be allowed to remain/spill in the riverbed and catchment area, or no pits/pockets will be allowed to be filled with such material.
4. Mining at the concave side of the river channel should be avoided to prevent bank erosion. Similarly, a tortuous segment of a river is to be selected for mining in such a way as to ignore the natural eroding of banks.
5. Ensure that ponding is not created in the riverbed.
6. Transportation route should be such that it gives minimum

damage to the environment.

7. Green belt will be developed along the haul road and the bank of rivers of mine premises and near the sand mining site. While selecting the plant species, preference will be given for planting native species of the area.

2. Water environment

Anticipated Impact

The project activity will be carried out in the dry part of the riverbed. Care will be taken to ensure that neither of the project activities will affect the water environment or riverbank habitats. During the lean months, the proposed Sand Mining will not expose the base flow of the river and hence there will not be any inauspicious impact on surface hydrology and groundwater regime due to this project. Project activities will not have any adverse consequences on the physical components of the environment and therefore may not have any effect on the recharge of ground waters or affect the water quality. Monitoring of water quality will be checked yearly.

Mitigation measures

1. Mining is avoided during the monsoon season and at the time of floods. This will help in the replenishment of sand in the riverbed.
2. Mining below the subterranean water level will be avoided as a safeguard against environmental contamination and over-exploitation of resources.
3. River stream will not be transferred to create active channels.
4. Mining schedule is synchronized with the river flow direction and the gradient of the land.
5. Mining at the concave side of the river channel will be avoided to prevent bank erosion.
6. Tortuous segment of the river will be selected for mining in such a way as to avoid naturally eroding banks and to promote mining on naturally building meander components.
7. Mining depth shall be maintained as per the guidelines and

rules of the Sand Mining Policy dated 03/09/2019 and recommendations of Maharashtra State (⁸M.S.). State Ground Water Department for extraction of sand during the lease period.

8. Water Quality Monitoring for the ground waters, river water, and other surface waters shall be carried out seasonally to ensure that the water quality is not affected by the project activities.
9. Utmost care will be taken to minimize or control leaking vehicles to be used for sand transportation.
10. The washing of tractor trolleys in the river will not be done.
11. The contractor will follow all guidelines and rules for proper and scientific methods of mining during the period of extracting the sand.

3. Air Environment

Anticipated Impacts

Plying of tractor trolleys from the public road to river sand collection points needs access roads. The majority of such access roads are the already existing roads/tracks being used by pedestrians/cart owners. The movement of heavy vehicles sometimes causes problems for cattle, agricultural land, and human habitations due to dust, noise, and the movement of the public. These environmental problems are felt more as the area is rural in nature.

Air pollution is likely to be caused at various stages of Sand Mining operations such as excavation, loading & transportation of material. Most of the fugitive dust emissions will be generated from loading & transportation. This dust becomes airborne and spreads away to surrounding areas.

The impact on air is mainly localized in nature as the dust particles of 100 μ in size are not carried to farther distances beyond 100m and the effect is felt within the core zone of the project involving active Sand Mining operations.

⁸ Maharashtra State

Mitigation measures

1. Movement of the vehicles on the road will be increased; however, the unmetalled road in the mining area will be sprinkled with water at regular intervals.
2. In addition to preventing spillage from tractor trolleys, overloading shall be controlled to 1-brass/tractor trolley. The speed limit will be <20 km/hr.
3. Maintenance of the haul road will be done on a regular basis.
4. To avoid fugitive dust emissions at the time of excavation, a regular sprinkling of water will be done on regular basis.
5. Sand is transported to the sites by road through tractor trolleys. The sand-carrying vehicles shall be covered by tarpaulin sheets.
6. The Green belt development will be prepared along the haul roads, which will act as a pollution sink.
7. To minimize vehicular pollution from the sand transporting vehicles, the following conditions will be insisted upon to permit the vehicles of the transporters.
8. The vehicles should be Bharat-IV stage compliant and should have a Pollution Under Control (⁹PUC) Certificate issued by appropriate authorities.
9. Regular maintenance of transport vehicles and monitoring of vehicular emission levels at periodical intervals.

4. Noise Environment

Anticipated Impact

The noise environment in this project will be overdone by the equipment at the site and vehicular transportation. A slight increase in noise levels of <10dB(A) can be expected up to a distance of 100m.

Mitigation measures.

1. Minimum use of horns in the village area.
2. Timely maintenance of vehicles and their silencers to

⁹ Pollution Under Control

minimize vibration and sound.

3. Phasing out old and worn-out tractor trolleys.
4. Provision of green belts along the road networks.
5. Care will be taken to produce minimum sound during sand loading.
6. Backhoe loader excavator will be used
7. Earplugs may be provided to protect the laborers working at the site.

5. Socio-economic Environment

Anticipated Impacts and Evaluation

1. The project activities shall not have any adverse impacts on any of the common property resources of the village communities, as the Sand Mine lease area is not being used for any purpose by any section of the society in this region.
2. There is no Resettlement and Rehabilitation (¹⁰R&R) involvement in this project.
3. There is no land acquisition in this project.
4. A major portion of the houses in the study area is semi-pucca-type structures.
5. The water source to these areas is from the Grampanchayat /Nagar Parishad connection and private bore wells and wells.
6. People living around the project area need the project for the purpose of employment and economic benefits.
7. The awareness level regarding the proposed mining activity is very towering. The proposed mining activity is expected to provide stimulus to socio-economic activities in the region and thereby accelerate further development processes.

Social and Demographic Profile

The workers are from local villages. These people have been provided welfare benefits from the lessee like medical benefits,

¹⁰ Rehabilitation and Resettlement

insurance, fees for children's education, etc. They have some land and cattle for their daily earnings. Additional revenue earned from the Sand Mining work will improve their living standard. The group of quarries in and around will help to have infrastructure facilities like roads, schools, shops, etc. This will enhance their social life.

Occupational Health and Safety

This is a riverbed Sand Mine. So, the mining activities are comparatively smaller because the production is not on a high scale. Workers do not come across any extreme conditions like excessive heat, moisture, etc. Workers working around it may come across this dusty environment. But the impact on health will be within the limit.

Human Settlement

1. There are no houses in and around the lease area. Blasting is the only activity, which may affect the settlement, which is not done. The settlement is more than 1-km from the sand mine.
2. Appropriate precautions will be taken during mining. Transportation of finished products is through the villages. There will be an effect of traffic on the local people. However, the intensity of traffic is 70-80/day.

Health and Hygiene

In general, the health of villagers is moderately good. In the rainy season, the atmospheric condition is unhygienic due to a lack of proper drainage and sanitation in the village habitation. Villagers are working in agricultural fields and work as labourers.

Education

Most education of 70% young <20 years, is up to the 5th to 9th. Economic condition is in general moderate. So, after this project, the standard of education will increase.

Socio-Economic Benefits Arising Out of Mining

1. Generation of employment in rural areas.
2. Upgradation in the living standards of rural people.
3. Creating infrastructural facilities like roads, electricity, shops, schools, etc.
4. Upgrading literacy in the area by exploiting natural minerals so the generation of revenue.

5. Helping to sustain construction activity.
6. Improving the greenery of the area, which is otherwise poor.

Liquid Effluent

Not applicable, because these activities do not generate effluent from operation or process.

Solid Waste

Not applicable, because small mines and impacts are negligible.

Project benefits due to the sand mining of Borgaav Bu. Satha 2 are explained in the next Chapter.

CHAPTER 5

PROJECT BENEFITS

The proposed Sand Mining project of Borgaav Bu. Village, Gevrai Tehsil, Beed District will lead to the following benefits:

1. Increase in the revenue of the district will ultimately increase the revenue of the village, which in return can be used to improve the infrastructure of the village.
2. Sand is available for building construction work and by systematic separation of sand, there is no possibility of a flood. Providing smooth movement of water of the river.
3. This project will contribute additional revenue to the state Exchequer in the form of revenue.
4. The project will conclude with employment opportunities for unskilled/skilled local people.
5. Standard of living of employed people will increase.

CHAPTER 6

SITE-SPECIFIC ENFORCEMENT & MONITORING PLAN

Sand Ghat Site specific enforcement & monitoring plan

(as per guidelines stipulated in the Enforcement and Monitoring Guidelines for sand mining issued by MoEFCC in January 2020.)

District administration shall deliver information on its website about the Sand Mines in the district for public information. The objective is to extend all information into the public domain so that the citizens are aware of the mining activities. People can also report to the district administration any deviation observed. Suitable feedback and its composition shall also be made operational.

Details shall include, but not be limited to, lease area, geo-coordinates of lease area and mineable area, transport routes, permitted capacity, regulatory conditions for operation including mining, environmental and social commitments, etc.

An Independent Committee of experts constituted by the Distance Learning Task Force (¹¹DLTF) will assess the environmental or ecological damage caused due to illegal mining and recommend recovery of environmental compensation from the concerned miners.

The recommendation may also include action under the provision of the Environment (Protection) Act 1986 u/s.15 read with s.19.

¹¹ Distance Learning Task Force

CHAPTER 7

SECURITY FEATURES

Security features are included in the Transport Permission/Permits (TP)

It will be ensured that the following security features are included in the Transport Permission/Permits (¹²TP) so that duplicate/fraudulent/forged TPs for transport, not accounted for in the IT-based system, is not possible:

1. Printed on Indian Bank Association (¹³IBA) Approved letterhead with account details
2. Magnetic Ink Character Recognition Code (¹⁴MICR) paper
3. Unique Barcode
4. Unique Quick Response Code (¹⁵QR)
5. Fugitive Ink Background
6. Invisible Ink Mark
7. Void Pantograph Watermark
8. Global Positioning System (¹⁶GPS) based vehicle tracking system
9. Closed-Circuit Television (¹⁷CCTV) Camera

¹² Transport Permission

¹³ Indian Bank Association

¹⁴ Magnetic Ink Character Recognition Code

¹⁵ Quick Response Code

¹⁶ Global Positioning System

¹⁷ Closed Circuit Television

CHAPTER 8

REPLENISHMENT

Replenishment study is the most important part of Sand Mining as it is the only basis to carry out sand mining. Without a Replenishment Study, we cannot understand the amount of deposition of sand. Following points to be followed for the replenishment study.

1. Area of deposition and erosion will be calculated for each cross-section after giving due regard to the stability & safety of active channel banks & other features of importance.
2. Differential Global Positioning System (¹⁸DGPS) and other survey tools will be used to define the topography, contours, and offsets of the lease area.
3. Contour & elevation benchmarks will provide baseline data for assessing pre- and post-study period scenario.
4. Physical benchmarks will be fixed at appropriate intervals (preferably 1 in 30m) & Reduced levels (¹⁹RL) shall be validated from a nearby standard RL.
5. These RL will be engraved on a steel plate (Bench Plate) & will be fixed & placed at locations that are free from any damages & are available in the pre-and post-study period.
6. Bench plates will be available for use during the mining period as a reference for all mining activity.
7. Baseline data on elevation status for a grid of 10m x 10m is preferred to have accuracy in the assessment.
8. It is expected that two consecutive cross-sections in longitudinal and lateral directions will not be more than a 10m distance apart.
9. Changes observed in the elevation in pre and post-scenario at each node, will be depicted in graphical forms with an appropriate scale to estimate the area of deposition & erosion.

¹⁸ Differential global positioning system

¹⁹ Reduced levels

10. Elevation level will be in reference to the nearest bench plates established for the purpose.
11. The levels (MSL & RL) of the corner point of each grid will be identifiable and safety barriers (non-Mining) demarcated as restricted in consensus with the Mineral Concession Rules of the respective State, and the provision mentioned in this Sustainable Sand Mining Management Guidelines.
12. A clear identification will be highlighted between grids under the mineable and grids under the non-mineable area.
13. These baseline data (pre and post) be subjected to stimulation with the help of data mine software to derive the replenishment area and corresponding volume and estimated weight.
14. The database will be structured in a tabulated form clearly depicting the nomenclature of the section lines, latitude and longitude of the starting point, chainage, and respective levels of all the points taken on that section line.
15. Net area shall be derived after summation of an area of deposition minus the area of erosion for each cross-section.
16. Volume will be estimated by multiplying the distance between two cross-sections with the average of the net area of these two consecutive cross-sections.
17. One sample per 900m² (30m x 30m) will be the preferred sample density for the assessment of bulk density for the estimation of deposition rate.
18. Care will be taken that the sample for assessment of Bulk Density is taken from the deposition zone & not from erosion.

Methodology for Sand Mining:

The following methodology should be followed for the Replenishment study.

1. The Demarcation and benchmark of the Sand Ghat are done at 10m x 10m intervals.
2. The use of the Auger Driller is to find out the depth of sand in each grid.
3. Auger Driller has created the holes in sand ghat by 10mx10m grid pattern.
4. Measured the depth of holes by using a measuring tape.

5. After taking all the readings average depth of sand is calculated.
6. The average depth of Borgaav Bu. Satha 2 at Godavari is measured.

Replenishment study of sand in the proposed ghat along with details of the methodology, technology used to identify the existing reserve & replenishment of the same

Dandy Bolton Equation

For runoff less than 2 inches

$$S = 1280 \times (Q) \times 0.46 \times (1.46 - 0.26 \log(A)) \times F$$

For runoff more than 2 inches

$$S = 1958 \times (Q) \times (e^{-0.055 \times Q}) \times (1.43 - 0.26 \log(A))$$

Where,

S = sediment yield of stream (t/yr/km²),

Q = average annual runoff (m³),

A = net drainage area in sq.mile.

CHAPTER 9

PROPOSED PLANTATION PLAN

The Project Proponent must take care of the plantation around the site. This will not only enhance the beautification of the area but also there will be the reduction of pollution, not some extent.

Details of the plantation and Tree species recommended for the plantation are shown below.

Table 9. 1 Details of green belt

Location of greenbelt	Both sides of the approach road, On the riverbanks of both sides of the sand spot & nearby open areas. Haul Road outside the riverbed
No. of plants to be planted	2000 per Hectare
Spacing of plants	2m grid interval
Species selected	Native species

Table 9. 2 Trees species for plantation

Botanical Name	Local Name	Importance
Azadirachta Indica	Neem	Neem oil & neem products
Tectona Grandis	Teek	Antibacterial, Antifungal, Antiulcer
Ficus religiosaa	Peepal	Medicinal use, Fruits & figs
Bambusa vulgaris	Bamboo	Anthelmintic Anti-inflammatory, Astringent Properties
Madhuca longifolia	Mahua	Acts as a Stimulant & cough relief,

CHAPTER 10

ENVIRONMENTAL MANAGEMENT PLAN

A total capital cost of Rs.5.97 Lakhs has been kept in the project cost towards the environmental protection, control, mitigation measures, and implementation of the Environmental Management Plan (EMP). This cost is borne by the bidder/leaseholder. The budgetary cost estimate for the EMP is given in Table.

Table 10. 1 Budgetary cost of EMP

Sr	Impact Source	Impact	Control Measure	Cost (Rs.)
1	Transport Road	On Air Quality	Compaction, gradation, and drainage on both sides.	90000
		On Land, the Stability of the Road and degradation of road	Proper maintenance	40000
			Regular water spraying	43000
			The air quality will be monitored at the impacted village. (For One Day Monitoring)	5000
			Health Check-up of Employees	5000
2	Truck/ Tractor Movement	Air Quality	Sand-carrying trucks will be effectively covered by tarpaulin to avoid the escape of fines to the atmosphere. (2 Tarpaulin)	25000
			Regular monitoring of the exhaust fumes	5000

Sr	Impact Source	Impact	Control Measure	Cost (Rs.)
			Barriers & Traffic Management Expenses. (Excluding Manpower Salary which is included in labour costs)	10000
3	Ramp and Sand Reach	Mining Operation	Regular ramp Inspection and Ramp maintenance. (Excluding Manpower Salary which is included in labour costs)	50000
			Provision of dust masks	10000
4	Bank Management	Bank Erosion/Flood Plain management	The green belt along the bank (For Green Belt Development)	230000
			Plantation of wide leaf tall trees on banks and grass along a slanting portion of the bank	
5	Transportation on Village Roads	Dust Control	The green belt along village Rd (For Green Belt Development)	
6	Final Mine Closer Plan implementation	Replenishment of Sand	Gabions/ boulders will be arranged as per guidelines	15000
7	Mobile toilet, sewage handling & treatment		Mobile toilet, sewage handling & treatment	100000
8	CCTV Monitoring			100000
Total				728000

Budget For Corporate Environment Responsibility (²⁰CER)

About 2% fund of the project cost is allocated for Corporate Environment Responsibility (CER) activities as presented in below Table

Table 10.2 Budget for CER

Sr.	Description	Cost (Rs)
1.	Village Schools (separate toilet for girls and boys)	25000
2.	Solar panels over Gram Panchayat buildings	25000
3.	Solar panels over Public Health Centers	20000
	Total	70000

²⁰ Corporate Environment Responsibility

CHAPTER 11

SUMMARY AND CONCLUSION

The Roles and Responsibilities of the Environmental coordinator, the Operation Manager, and the senior personnel contractor are essential in EMP.

The environmental status of the project site and study area of 10km radius is delineated with respect to air, noise, water, land, biological and socio-economic environment the different project activities in the construction and operation phases are identified.

To identify the impacts, the interaction between the project activities and different components of the environment is classified phase-wise. A summary of the recognized impacts is given in the following paragraphs.

- During the operational phase, the transportation of sand could cause a temporary disturbance to the local environment which will be prevented with the proposed mitigation measures.
- Proposed project will not have any major significant negative impacts. The minor impacts arising during Excavation and Transportation phases can be mitigated with the help of the proposed Environmental Management Plan.
- In general, sand excavation from Borgaav Bu. Satha 2 sand spot will be useful to the developmental work in the district and generate employment opportunities.

From this project, it is concluded that the district revenue will increase in return minimum of 2% of funds are utilized for the development of the village. The project will also grab employment which will improve the standard of life of villagers.

*** END ***

Environmental Management Plan

As per Rules 23 & 26 of MMME (D & R) RULE 2013 & Section 15 of MMDR Act 1957, MoEFCC Notification 2006, S.O. 141(E) dated 15. 01. 2016; MoEFCC, Sustainable Sand Mining Management Guidelines 2016, Guidelines for Mining Policy 2020)

for

ENVIRONMENTAL CLEARANCE

of

SAND MINING (MINOR MINERAL)

for

Dubbathadi 3 – A Riverbed Sand Mine / Sand Ghat
Khasra No. GSDA approved 61,62,3 to 8
Area (4.95ha)

Village Dubbathadi 3, Taluka Majalgaon, District Beed

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ABBREVIATION

Short Form	Long Form
EMP	Environmental Management Plan
MoEFCC	Ministry of Environment Forest and Climate Change
DSR	District-level Survey Report
EC	Environmental Coordinator
OM	Operations Manager
GSDA	Groundwater Surveys & Development Agency
MPCB	Maharashtra Pollution Control Board
MSL	Mean Sea Level
MS	Maharashtra State
PUC	Pollution Under Control
R&R	Rehabilitation and Resettlement
DLTF	Distance Learning Task Force
TP	Transport Permission/Permits
IBA	Indian Bank Association
MICR	Magnetic Ink Character Recognition Code
QR	Quick Response Code
GPS	Global Positioning System

CCTV	Closed-Circuit Television
DGPS	Differential Global Positioning System
RL	Reduced Levels
CER	Corporate Environment Responsibility

CHAPTER 1

INTRODUCTION

The Environmental Management Plan (¹EMP) plays a vital connection uniting forecast impacts and mitigation measures during implementation and operational activities. EMP stipulates the mitigation, monitoring and conventional measures to be taken during project implementation and operation. EMP is to escape or mitigate adverse environmental impacts, and to implement these measures.

This Environmental Management Plan (EMP) has been prepared as part of the Scoping Report which will be compiled in terms of the Environmental Assessment for the sand mining activities.

Considering the Ministry of Environment and Forest Climate Change (²MoEFCC) Notification 2006 and Sustainable Sand Mining Management Guidelines 2016, the Govt. of Maharashtra had mapped out the Minor Mineral Extraction Rules 2013. These rules are to extract all minor minerals in a scientific way so that there is no unfavourable impact on Environment and Climate. To extract every minor mineral from any land (either Government or Private) there is provision for a Mining Plan. These plans need to be approved by a competent authority. For long-term leased minor minerals (5-10 years period) and sand excavation from the riverbed, Senior Deputy Director of Directorate of Geology and Mining is the competent authority. These plans are for short term temporary permits which are valid for one year.

According to Enforcement & Monitoring Guidelines for Sand Mining 2020, Sustainable Sand Mining Management Guidelines 2016, Standard Environment conditions for sand mining and sustainable mining practices, District level Survey Report (³DSR) should be prepared and are suitable for mining and area prohibited for mining must be recognized.

¹ Environmental Management Plan

² Ministry of Environment Forest and Climate Change

³ District Survey Report

Objectives of EMP

- To provide overall conservation of the environment.
- To minimize waste generation and pollution.
- To regulate the precise use of natural resources and water.
- To provide Safety, Welfare, and Good health for the workforce and populace.
- To regulate the effective operation of all control measures.
- To ensure alertness against probable disasters and accidents.
- To monitor cumulative and long-term impacts.
- To regulate the effective operation of all control measures.

Roles and Responsibilities concerning the implementation of the EMP

The roles and responsibilities of all parties involved in successfully managing the environment are mentioned below.

Environmental Coordinator

The Environmental Coordinator will inspect operational areas on a quarterly basis and at the onset of mining any new island, to ensure that all specifications are met. The duties of the environmental coordinator will be the following.

- Guide the operations team in respect of the implementation of the environmental specifications.
- Lead the visits to ensure all work is aligned with the EMP.
- The environmental coordinator must examine the site during the three-monthly visits. All rehabilitation results will be Comprised in the quarterly report.
- Examination of the rehabilitation area and giving guidance regarding rehabilitation measures if any.

The Operations Manager

The responsibilities of the Operations Manager (4OM) or his nominated authority are as follows.

1. Familiarize themselves with the requirements of the EMP.
2. Monitor employees' and contractor's compliance with the environmental specifications; and enforce adherence.

⁴ Operations Manager

3. Communicate all environment-related incidents with the Environmental Coordinator and distribute them internally to avoid repetition.
4. Maintain a record of activities relevant to Environmental Management.
5. The Operations Manager shall be responsible for monitoring and the enforcement of the Environmental Management specifications on a day-to-day basis. Any violation of the environmental specifications shall be recorded, and the agreed disciplinary measures are taken.

Senior personnel and contractors

The roles of the senior personnel/contractors are as follows:

- Familiarize themselves with the requirements of the EMP.
- Comply with the environmental management specifications.
- Ensure that all team members are familiar with the environmental management specifications.

Details of the project

The Dubbathadi 3 sand ghat area has been selected in perspective of its subsisting demand for building-grade sand for the area in and around Majalgaon Taluka. The District Mining Officer Beed has put forward the proposal for Environmental Clearance for mining. The ghat has a production of 19240 brass sand within an area of 4.95ha. The proposed proposal follows an organized mining process for Environmental Clearance.

Further Chapter informs about the in-depth details of the Sand Ghat, its geographical structure, and a Google map of the ghat with its approach road for contractors and workers to reach to sand ghat from the village.

CHAPTER 2

DETAILS OF THE PROJECT

Dubbathadi 3 village is located in Majalgaon Taluka of Beed district, Maharashtra. Majalgaon is well connected with all nearby cities. The National highway NH-52, it traverses through the states of Sangrur, Punjab, to Ankola, Karnataka in India. NH-52 is the National Highway passing through the district, covering a total distance of 73.60km. Majalgaon has situated about 51.22km by road from Beed. The district has road links to adjoining districts Ahmednagar District to the west, Jalna District to the North, Latur District to the East, Osmanabad District to the South, Parbhani District to the East. The district is well connected by roads.

Dubbathadi 3 village is 53km away from headquarters Beed. The Geographical area of the Beed is around 10693km². The nearest Railway station to Dubbathadi 3 village is Usmanpur Railway station. The nearest Airport to Beed District is Aurangabad Airport, Aurangabad Airport is 104km away from beed.

Honourable Collector Beed intends to auction Sand Ghats and appointed District Mining Officer as Project Proponent. A total of 38 sand ghats are identified by Tahsildar Majalgaon, Gevrai, Parli Ve., Beed along with District Mining Officer, Beed. The 38 sand ghats were jointly surveyed by Taluka level technical committee headed by respective tahsildar with Dy. Engineer Irrigation Department, Junior Geologist Directorate of Geology and Mining Govt. of Maharashtra, Junior Geologist, Groundwater Surveys & Development Agency (⁵GSDA). DMO Beed and a representative of the Maharashtra Pollution Control Board (⁶MPCB), as per the procedure defined in Sand Auction Rules 2019 dated 3/09/2019 formed a Taluka-level technical committee, which explored the sand ghats for an available quantity of sand for scooping. Revenue of Rs.25 Crore is expected from the auction of these sand ghats. Dubbathadi 3 Sand Ghat proposed over river Godavari in Majalgaon Taluka is proposed to cater to the infrastructural requirement of sand in the Taluka of Beed and adjoining areas of other talukas.

⁵ Groundwater Surveys & Development Agency

⁶ Maharashtra Pollution Control Board

Table 2. 1 Details of Dubbathadi 3 Sand ghat

Name of Village	Taluka	River/ Nallah	Nearest survey No.	Area (ha)	Proposed Depth for excavation (m)	Quantity Permitted for mining of Sand in Brass	Method of Mining
Dubbathadi 3	Majalgaon	Godavari	61,62,3 to 8	4.95	1.10	19240	Open-cast manual mining

Table 2. 2 Salient features of the project

Particulars	Details		
Location	Village-Dubbathadi 3, Taluka-Majalgaon, District-Beed, Maharashtra.		
Latitude and Longitude	Boundary points of Dubbathadi 3 sand spot	Latitude	Longitude
	BP1	19°17'54.98"N	76°7'5.79"E
	BP2	19°17'54.06"N	76°7'6.98"E
	BP3	19°18'9.17"N	76°7'35.62E
	BP4	19°18'8.00"N	76°7'35.67"E
Sand spot area (In ha)	4.95ha		
Proposed production capacity (in Brass)	19240		
Infrastructure Requirement (As per Govt Resolution 3rd January 2018)	<ol style="list-style-type: none"> 1. Room / Hut for Official records 2. Electricity / Battery for Running CCTV 24x7 daily. 3. One Computer / Android-based Mobile for the online generation of Invoice numbers. 		

Particulars	Details
Distance of project site from nearest rail or road bridge over the concerned River, Nallah, etc.	7.35km
Distance from infrastructural facilities	
Railway line	30km
National Highway	42km(NH-52)
State Highway	35km(\$H-144)
Major District Road	42km
Any Other Road	0.50km
Electric transmission line pole or tower	
Canal or check dam or reservoirs or lake or ponds	
In-take for drinking water pump house	
Intake for Irrigation canal pumps	
Areas already subjected to pollution or environmental damage. (those where existing legal environmental standards are exceeded)	None

Particulars	Details
<p>Areas susceptible to natural hazards which could cause the project to Present environmental problems (earthquakes, subsidence, landslides, erosion, flooding, or extreme or adverse climatic conditions)</p>	<p>No. Sand Ghat is at safe distances from natural hazards like earthquake prone area, subsidence, landslide, erosion, flooding prone area and extreme or adverse climatic conditions</p>
<p>Whether the proposal involves approval or clearance under the following Regulations or Acts, namely: - (a) The Forest (Conservation) Act, 1980. (b) The Wildlife (Protection) Act, 1972. (c) The Coastal Regulation Zone Notification, 2011. If yes, details of the same and their status are to be given.</p>	<p>None</p>
<p>Forest land involved (hectares)</p>	<p>None</p>

The below figure shows the google image of Dubbathadi 3 sand ghat.

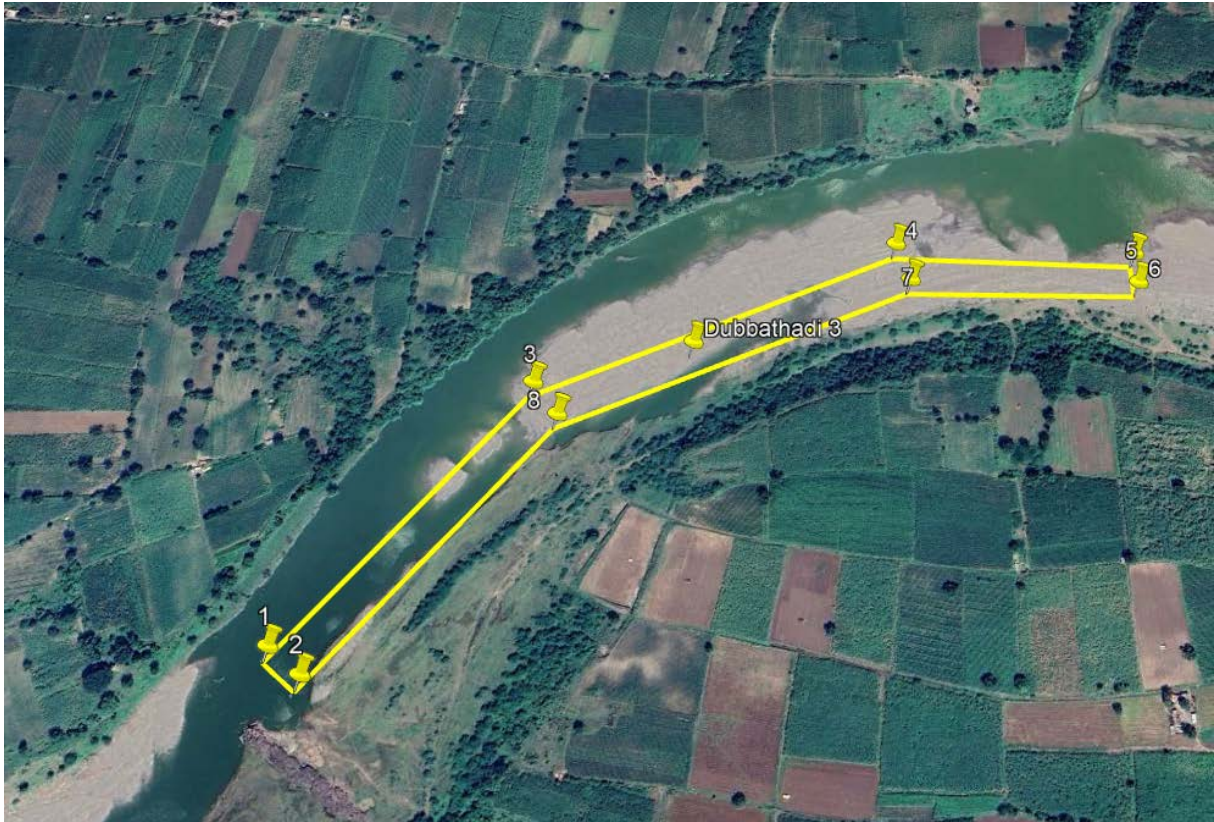


Fig 2.1- Google image of Dubbathadi 3 sand ghat

Approach roach along with google location is as shown below.

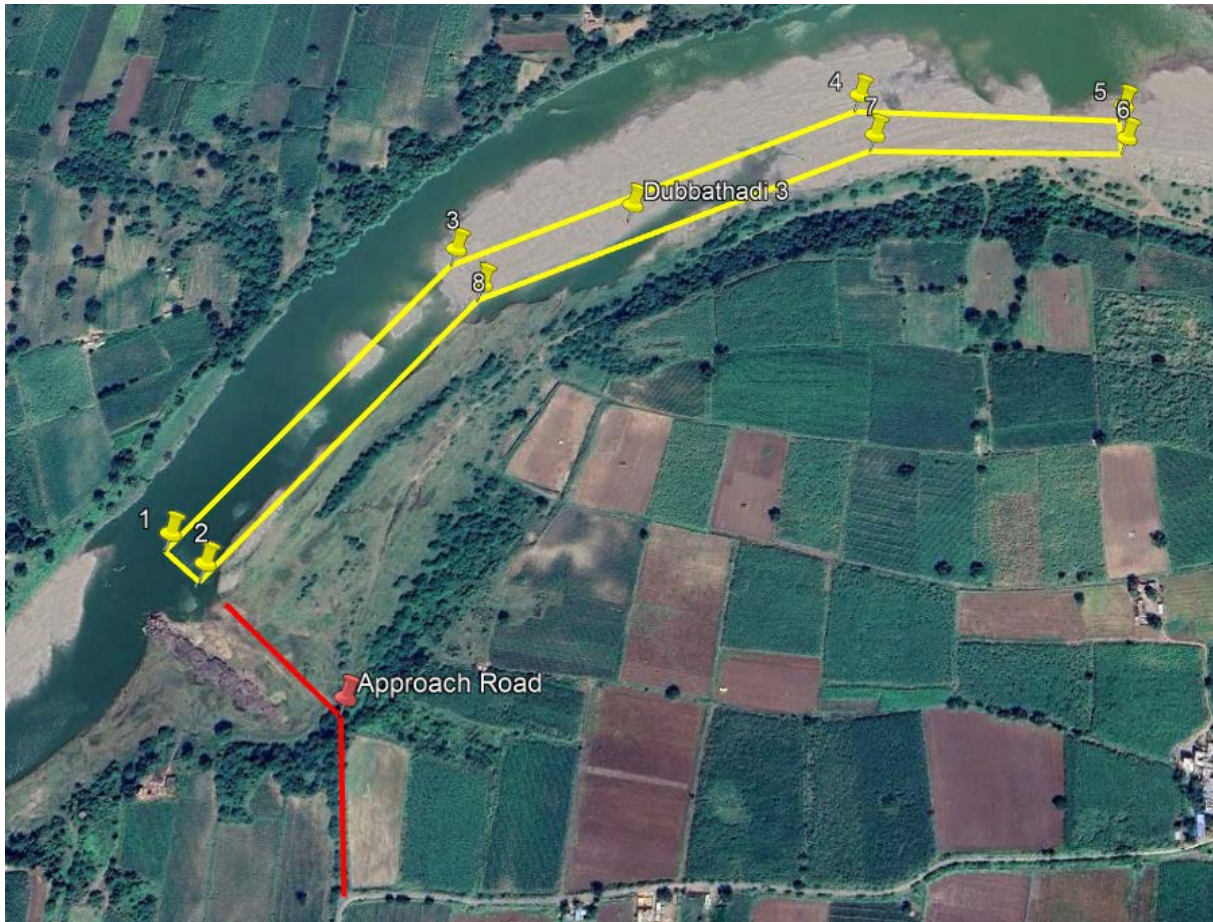


Fig 2.2 -Approach Road for sand ghat

Next chapter 3 is Baseline Environmental Status in which the entire Topography, Climate, Soil Environment, Land use, water Environment, Hydrology, Biological environment, and Socio-economic Environment are briefly explained for the Beed district.

CHAPTER 3

BASELINE ENVIRONMENT STATUS

Topography

The Sand Ghat area as per the survey is the riverbed of the Godavari River of the Beed district. The maximum elevation is 425m MSL, average elevation is 421m MSL, & minimum elevation is 418m (⁷MSL) Mean Sea Level. The slope of the Sand Ghat area towards the Northwest to Southeast side. The flow of Godavari River is from Southeast direction.

Presently, there is neither any infrastructure within the riverbed nor are proposed.

Hydrology

There will be no change in the Water Table during the mining operation, as the depth of mining shall be restricted to 1.1m water level, which is less likely to affect the surface level or Groundwater Table. There is no proposal of any stream modification/diversion due to this mining activity hence there will be not any impact on the flow of water.

Soil Environment

The riverbed consists of sand /gravel. There is no topsoil. The depth of mining shall be restricted to 1.1m. There is no crucial impact on the soil forecasted due to mining activities.

Land Use Land Cover

Land use shows that agriculture land use is predominant. The proposed site is 4.95ha having adjoined Khasara No 61,62,3 to 8. The land doesn't cover any human habitation, forest, etc. Any change in the scope of the approved Mining Plan will lead to riverbank erosion/cutting and thereby river channel shifting, degradation of land, causing loss of properties and degradation of the surrounding landscape.

⁷ Mean sea level

Water Environment

While transporting sand there may be fugitive dust. There will be water requirement for spraying for dust suppression purposes. This water will be supplied from the borewell from nearby villages through tankers as well as from surface water sources. The water source may vary from village to village.

Climate

During summer May is the hottest month of the year in this area. The temperature rises to 42°C in the month of May. The average rainfall in this region is 600mm to 700mm About 50% of rainfall precipitates between June to September. December is the coldest month with temperatures falling down to 18°C. Overall the proposed site area has sub-tropical conditions.

Biological Environment

Flora

The agricultural area is seen near the Sand Ghat. Few trees and thorny bushes are seen on the banks of the river.

Fauna

As there is no forest cover, no endangered species of wildlife are seen in this area.

Socio-Economic Environment

This project may create constructive impacts of the sand mining that are stated below:

1. The mining operations will provide direct & indirect employment to village people.
2. The villages and their inhabitants & domestic animals will not be disturbed due to mining, as the quarry is far from their settlements.
3. Local workforce will be given first preference for employment.
4. Mining activities will benefit the local people due to the provision of more infrastructural facilities (developments of approach routes within the village area).

The next chapter describes all possible impacts on the Environment due to this project along with its mitigation measure to overcome these impacts.

CHAPTER 4

IMPACT ASSESSMENT REPORT ALONG WITH PROPOSED MITIGATION MEASURES

1. Land Environment

Anticipated Impact

Movement of vehicles can create issues for agricultural land, human habitations, noise, and risk for public and cause traffic hazards. The impacts include damage to the riverbank due to access ramps to the riverbed, soil erosion because of extraction of sand, micro disturbance to groundwater, possible stimulation of the changed river course, and contamination of sand aquifer water due to ponding. There might be surface degradation due to the road network.

The quality of soil will not be affected due to transportation or any other activity of mining.

Mitigation measure

1. Mining depth should be restricted to 3 meters and distance from the bank should be $\frac{1}{4}$ th or river width and should not be less than 7.5 meters as per “Sustainable Sand Mining Guidelines 2020” Page 23, Point no 4.3 (m).
2. There will be a minimal number of access roads to riverbeds. Cutting of riverbanks will be avoided and ramp with smooth slope will be maintained. Access points to the riverbed will be decided based on the least steepness of the riverbank and the least human activity at that location.
3. No foreign material like polythene bags, jute bags, and useless articles should be allowed to remain/spill in the riverbed and catchment area, or no pits/pockets will be allowed to be filled with such material.
4. Mining at the concave side of the river channel should be avoided to prevent bank erosion. Similarly, a tortuous segment of a river is to be selected for mining in such a way as to ignore the natural eroding of banks.
5. Ensure that ponding is not created in the riverbed.
6. Transportation route should be such that it gives minimum

damage to the environment.

7. Green belt will be developed along the haul road and the bank of rivers of mine premises and near the sand mining site. While selecting the plant species, preference will be given for planting native species of the area.

2. Water environment

Anticipated Impact

The project activity will be carried out in the dry part of the riverbed. Care will be taken to ensure that neither of the project activities will affect the water environment or riverbank habitats. During the lean months, the proposed Sand Mining will not expose the base flow of the river and hence there will not be any inauspicious impact on surface hydrology and groundwater regime due to this project. Project activities will not have any adverse consequences on the physical components of the environment and therefore may not have any effect on the recharge of ground waters or affect the water quality. Monitoring of water quality will be checked yearly.

Mitigation measures

1. Mining is avoided during the monsoon season and at the time of floods. This will help in the replenishment of sand in the riverbed.
2. Mining below the subterranean water level will be avoided as a safeguard against environmental contamination and over-exploitation of resources.
3. River stream will not be transferred to create active channels.
4. Mining schedule is synchronized with the river flow direction and the gradient of the land.
5. Mining at the concave side of the river channel will be avoided to prevent bank erosion.
6. Tortuous segment of the river will be selected for mining in such a way as to avoid naturally eroding banks and to promote mining on naturally building meander components.
7. Mining depth shall be maintained as per the guidelines and

rules of the Sand Mining Policy dated 03/09/2019 and recommendations of Maharashtra State (⁸M.S.). State Ground Water Department for extraction of sand during the lease period.

8. Water Quality Monitoring for the ground waters, river water, and other surface waters shall be carried out seasonally to ensure that the water quality is not affected by the project activities.
9. Utmost care will be taken to minimize or control leaking vehicles to be used for sand transportation.
10. The washing of tractor trolleys in the river will not be done.
11. The contractor will follow all guidelines and rules for proper and scientific methods of mining during the period of extracting the sand.

3. Air Environment

Anticipated Impacts

Plying of tractor trolleys from the public road to river sand collection points needs access roads. The majority of such access roads are the already existing roads/tracks being used by pedestrians/cart owners. The movement of heavy vehicles sometimes causes problems for cattle, agricultural land, and human habitations due to dust, noise, and the movement of the public. These environmental problems are felt more as the area is rural in nature.

Air pollution is likely to be caused at various stages of Sand Mining operations such as excavation, loading & transportation of material. Most of the fugitive dust emissions will be generated from loading & transportation. This dust becomes airborne and spreads away to surrounding areas.

The impact on air is mainly localized in nature as the dust particles of 100 μ in size are not carried to farther distances beyond 100m and the effect is felt within the core zone of the project involving active Sand Mining operations.

⁸ Maharashtra State

Mitigation measures

1. Movement of the vehicles on the road will be increased; however, the unmetalled road in the mining area will be sprinkled with water at regular intervals.
2. In addition to preventing spillage from tractor trolleys, overloading shall be controlled to 1-brass/tractor trolley. The speed limit will be <20 km/hr.
3. Maintenance of the haul road will be done on a regular basis.
4. To avoid fugitive dust emissions at the time of excavation, a regular sprinkling of water will be done on regular basis.
5. Sand is transported to the sites by road through tractor trolleys. The sand-carrying vehicles shall be covered by tarpaulin sheets.
6. The Green belt development will be prepared along the haul roads, which will act as a pollution sink.
7. To minimize vehicular pollution from the sand transporting vehicles, the following conditions will be insisted upon to permit the vehicles of the transporters.
8. The vehicles should be Bharat-IV stage compliant and should have a Pollution Under Control (⁹PUC) Certificate issued by appropriate authorities.
9. Regular maintenance of transport vehicles and monitoring of vehicular emission levels at periodical intervals.

4. Noise Environment

Anticipated Impact

The noise environment in this project will be overdone by the equipment at the site and vehicular transportation. A slight increase in noise levels of <10dB(A) can be expected up to a distance of 100m.

Mitigation measures.

1. Minimum use of horns in the village area.
2. Timely maintenance of vehicles and their silencers to

⁹ Pollution Under Control

minimize vibration and sound.

3. Phasing out old and worn-out tractor trolleys.
4. Provision of green belts along the road networks.
5. Care will be taken to produce minimum sound during sand loading.
6. Backhoe loader excavator will be used
7. Earplugs may be provided to protect the laborers working at the site.

5. Socio-economic Environment

Anticipated Impacts and Evaluation

1. The project activities shall not have any adverse impacts on any of the common property resources of the village communities, as the Sand Mine lease area is not being used for any purpose by any section of the society in this region.
2. There is no Resettlement and Rehabilitation (¹⁰R&R) involvement in this project.
3. There is no land acquisition in this project.
4. A major portion of the houses in the study area is semi-pucca-type structures.
5. The water source to these areas is from the Grampanchayat /Nagar Parishad connection and private bore wells and wells.
6. People living around the project area need the project for the purpose of employment and economic benefits.
7. The awareness level regarding the proposed mining activity is very towering. The proposed mining activity is expected to provide stimulus to socio-economic activities in the region and thereby accelerate further development processes.

Social and Demographic Profile

The workers are from local villages. These people have been provided welfare benefits from the lessee like medical benefits,

¹⁰ Rehabilitation and Resettlement

insurance, fees for children's education, etc. They have some land and cattle for their daily earnings. Additional revenue earned from the Sand Mining work will improve their living standard. The group of quarries in and around will help to have infrastructure facilities like roads, schools, shops, etc. This will enhance their social life.

Occupational Health and Safety

This is a riverbed Sand Mine. So, the mining activities are comparatively smaller because the production is not on a high scale. Workers do not come across any extreme conditions like excessive heat, moisture, etc. Workers working around it may come across this dusty environment. But the impact on health will be within the limit.

Human Settlement

1. There are no houses in and around the lease area. Blasting is the only activity, which may affect the settlement, which is not done. The settlement is more than 1-km from the sand mine.
2. Appropriate precautions will be taken during mining. Transportation of finished products is through the villages. There will be an effect of traffic on the local people. However, the intensity of traffic is 70-80/day.

Health and Hygiene

In general, the health of villagers is moderately good. In the rainy season, the atmospheric condition is unhygienic due to a lack of proper drainage and sanitation in the village habitation. Villagers are working in agricultural fields and work as labourers.

Education

Most education of 70% young <20 years, is up to the 5th to 9th. Economic condition is in general moderate. So, after this project, the standard of education will increase.

Socio-Economic Benefits Arising Out of Mining

1. Generation of employment in rural areas.
2. Upgradation in the living standards of rural people.
3. Creating infrastructural facilities like roads, electricity, shops, schools, etc.
4. Upgrading literacy in the area by exploiting natural minerals so the generation of revenue.

5. Helping to sustain construction activity.
6. Improving the greenery of the area, which is otherwise poor.

Liquid Effluent

Not applicable, because these activities do not generate effluent from operation or process.

Solid Waste

Not applicable, because small mines and impacts are negligible.

Project benefits due to the sand mining of Dubbathadi 3 are explained in the next Chapter.

CHAPTER 5

PROJECT BENEFITS

The proposed Sand Mining project of Dubbathadi 3 Village, Majalgaon Taluka, Beed District will lead to the following benefits:

1. Increase in the revenue of the district will ultimately increase the revenue of the village, which in return can be used to improve the infrastructure of the village.
2. Sand is available for building construction work and by systematic separation of sand, there is no possibility of a flood. Providing smooth movement of water of the river.
3. This project will contribute additional revenue to the state Exchequer in the form of revenue.
4. The project will conclude with employment opportunities for unskilled/skilled local people.
5. Standard of living of employed people will increase.

CHAPTER 6

SITE-SPECIFIC ENFORCEMENT & MONITORING PLAN

Sand Ghat Site specific enforcement & monitoring plan

(as per guidelines stipulated in the Enforcement and Monitoring Guidelines for sand mining issued by MoEFCC in January 2020.)

District administration shall deliver information on its website about the Sand Mines in the district for public information. The objective is to extend all information into the public domain so that the citizens are aware of the mining activities. People can also report to the district administration any deviation observed. Suitable feedback and its composition shall also be made operational.

Details shall include, but not be limited to, lease area, geo-coordinates of lease area and mineable area, transport routes, permitted capacity, regulatory conditions for operation including mining, environmental and social commitments, etc.

An Independent Committee of experts constituted by the Distance Learning Task Force (¹¹DLTF) will assess the environmental or ecological damage caused due to illegal mining and recommend recovery of environmental compensation from the concerned miners.

The recommendation may also include action under the provision of the Environment (Protection) Act 1986 u/s.15 read with s.19.

¹¹ Distance Learning Task Force

CHAPTER 7

SECURITY FEATURES

Security features are included in the Transport Permission/Permits (TP)

It will be ensured that the following security features are included in the Transport Permission/Permits (¹²TP) so that duplicate/fraudulent/forged TPs for transport, not accounted for in the IT-based system, is not possible:

1. Printed on Indian Bank Association (¹³IBA) Approved letterhead with account details
2. Magnetic Ink Character Recognition Code (¹⁴MICR) paper
3. Unique Barcode
4. Unique Quick Response Code (¹⁵QR)
5. Fugitive Ink Background
6. Invisible Ink Mark
7. Void Pantograph Watermark
8. Global Positioning System (¹⁶GPS) based vehicle tracking system
9. Closed-Circuit Television (¹⁷CCTV) Camera

¹² Transport Permission

¹³ Indian Bank Association

¹⁴ Magnetic Ink Character Recognition Code

¹⁵ Quick Response Code

¹⁶ Global Positioning System

¹⁷ Closed Circuit Television

CHAPTER 8

REPLENISHMENT

Replenishment study is the most important part of Sand Mining as it is the only basis to carry out sand mining. Without a Replenishment Study, we cannot understand the amount of deposition of sand. Following points to be followed for the replenishment study.

1. Area of deposition and erosion will be calculated for each cross-section after giving due regard to the stability & safety of active channel banks & other features of importance.
2. Differential Global Positioning System (¹⁸DGPS) and other survey tools will be used to define the topography, contours, and offsets of the lease area.
3. Contour & elevation benchmarks will provide baseline data for assessing pre- and post-study period scenario.
4. Physical benchmarks will be fixed at appropriate intervals (preferably 1 in 30m) & Reduced levels (¹⁹RL) shall be validated from a nearby standard RL.
5. These RL will be engraved on a steel plate (Bench Plate) & will be fixed & placed at locations that are free from any damages & are available in the pre-and post-study period.
6. Bench plates will be available for use during the mining period as a reference for all mining activity.
7. Baseline data on elevation status for a grid of 10m x 10m is preferred to have accuracy in the assessment.
8. It is expected that two consecutive cross-sections in longitudinal and lateral directions will not be more than a 10m distance apart.
9. Changes observed in the elevation in pre and post-scenario at each node, will be depicted in graphical forms with an appropriate scale to estimate the area of deposition & erosion.

¹⁸ Differential global positioning system

¹⁹ Reduced levels

10. Elevation level will be in reference to the nearest bench plates established for the purpose.
11. The levels (MSL & RL) of the corner point of each grid will be identifiable and safety barriers (non-Mining) demarcated as restricted in consensus with the Mineral Concession Rules of the respective State, and the provision mentioned in this Sustainable Sand Mining Management Guidelines.
12. A clear identification will be highlighted between grids under the mineable and grids under the non-mineable area.
13. These baseline data (pre and post) be subjected to stimulation with the help of data mine software to derive the replenishment area and corresponding volume and estimated weight.
14. The database will be structured in a tabulated form clearly depicting the nomenclature of the section lines, latitude and longitude of the starting point, chainage, and respective levels of all the points taken on that section line.
15. Net area shall be derived after summation of an area of deposition minus the area of erosion for each cross-section.
16. Volume will be estimated by multiplying the distance between two cross-sections with the average of the net area of these two consecutive cross-sections.
17. One sample per 900m² (30m x 30m) will be the preferred sample density for the assessment of bulk density for the estimation of deposition rate.
18. Care will be taken that the sample for assessment of Bulk Density is taken from the deposition zone & not from erosion.

Methodology for Sand Mining:

The following methodology should be followed for the Replenishment study.

1. The Demarcation and benchmark of the Sand Ghat are done at 10m x 10m intervals.
2. The use of the Auger Driller is to find out the depth of sand in each grid.
3. Auger Driller has created the holes in sand ghat by 10mx10m grid pattern.
4. Measured the depth of holes by using a measuring tape.

5. After taking all the readings average depth of sand is calculated.
6. The average depth of Dubbathadi 3 at Godavari is measured.

Replenishment study of sand in the proposed ghat along with details of the methodology, technology used to identify the existing reserve & replenishment of the same

Dandy Bolton Equation

For runoff less than 2 inches

$$S = 1280 \times (Q) \times 0.46 \times (1.46 - 0.26 \log(A)) \times F$$

For runoff more than 2 inches

$$S = 1958 \times (Q) \times (e^{-0.055 \times Q}) \times (1.43 - 0.26 \log(A))$$

Where,

S = sediment yield of stream (t/yr/km²),

Q = average annual runoff (m³),

A = net drainage area in sq.mile.

CHAPTER 9

PROPOSED PLANTATION PLAN

The Project Proponent must take care of the plantation around the site. This will not only enhance the beautification of the area but also there will be the reduction of pollution, not some extent.

Details of the plantation and Tree species recommended for the plantation are shown below.

Table 9. 1 Details of green belt

Location of greenbelt	Both sides of the approach road, On the riverbanks of both sides of the sand spot & nearby open areas. Haul Road outside the riverbed
No. of plants to be planted	2000 per Hectare
Spacing of plants	2m grid interval
Species selected	Native species

Table 9. 2 Trees species for plantation

Botanical Name	Local Name	Importance
Azadirachta Indica	Neem	Neem oil & neem products
Tectona Grandis	Teek	Antibacterial, Antifungal, Antiulcer
Ficus religiosaa	Peepal	Medicinal use, Fruits & figs
Bambusa vulgaris	Bamboo	Anthelmintic Anti-inflammatory, Astringent Properties
Madhuca longifolia	Mahua	Acts as a Stimulant & cough relief,

CHAPTER 10

ENVIRONMENTAL MANAGEMENT PLAN

A total capital cost of Rs.5.97 Lakhs has been kept in the project cost towards the environmental protection, control, mitigation measures, and implementation of the Environmental Management Plan (EMP). This cost is borne by the bidder/leaseholder. The budgetary cost estimate for the EMP is given in Table.

Table 10. 1 Budgetary cost of EMP

Sr	Impact Source	Impact	Control Measure	Cost (Rs)
1	Transport Road	On Air Quality	Compaction, gradation, and drainage on both sides.	90000
		On Land, the Stability of the Road and degradation of road	Proper maintenance	80000
			Regular water spraying	40000
			The air quality will be monitored at the impacted village. (For One Day Monitoring)	5000
			Health Check-up of Employees	5000
2	Truck/ Tractor Movement	Air Quality	Sand-carrying trucks will be effectively covered by tarpaulin to avoid the escape of fines to the atmosphere. (2 Tarpaulin)	25000
			Regular monitoring of the exhaust fumes	5000

Sr	Impact Source	Impact	Control Measure	Cost (Rs)
			Barriers & Traffic Management Expenses. (Excluding Manpower Salary which is included in labour costs)	10000
3	Ramp and Sand Reach	Mining Operation	Regular ramp Inspection and Ramp maintenance. (Excluding Manpower Salary which is included in labour costs)	20000
			Provision of dust masks	10000
4	Bank Management	Bank Erosion/Flood Plain management	The green belt along the bank (For Green Belt Development)	280000
			Plantation of wide leaf tall trees on banks and grass along a slanting portion of the bank	
5	Transportation on Village Roads	Dust Control	The green belt along village Rd (For Green Belt Development)	
6	Final Mine Closures Plan implementation	Replenishment of Sand	Gabions/ boulders will be arranged as per guidelines	15000
7	Mobile toilet, sewage handling & treatment		Mobile toilet, sewage handling & treatment	130000
8	CCTV Monitoring			120000
Total				835000

Budget For Corporate Environment Responsibility (²⁰CER)

About 2% fund of the project cost is allocated for Corporate Environment Responsibility (CER) activities as presented in below Table

Table 10.2 Budget for CER

Sr.	Description	Cost (Rs)
1.	Village Schools (separate toilet for girls and boys)	20000
2.	Solar panels over Gram Panchayat buildings	30000
3.	Solar panels over Public Health Centers	30000
	Total	80000

²⁰ Corporate Environment Responsibility

CHAPTER 11

SUMMARY AND CONCLUSION

The Roles and Responsibilities of the Environmental coordinator, the Operation Manager, and the senior personnel contractor are essential in EMP.

The environmental status of the project site and study area of 10km radius is delineated with respect to air, noise, water, land, biological and socio-economic environment the different project activities in the construction and operation phases are identified.

To identify the impacts, the interaction between the project activities and different components of the environment is classified phase-wise. A summary of the recognized impacts is given in the following paragraphs.

- During the operational phase, the transportation of sand could cause a temporary disturbance to the local environment which will be prevented with the proposed mitigation measures.
- Proposed project will not have any major significant negative impacts. The minor impacts arising during Excavation and Transportation phases can be mitigated with the help of the proposed Environmental Management Plan.
- In general, sand excavation from Dubbathadi 3 sand spot will be useful to the developmental work in the district and generate employment opportunities.

From this project, it is concluded that the district revenue will increase in return minimum of 2% of funds are utilized for the development of the village. The project will also grab employment which will improve the standard of life of villagers.

*** END ***

Environmental Management Plan

As per Rules 23 & 26 of MMME (D & R) RULE 2013 & Section 15 of MMDR Act 1957, MoEFCC Notification 2006, S.O. 141(E) dated 15. 01. 2016; MoEFCC, Sustainable Sand Mining Management Guidelines 2016, Guidelines for Mining Policy 2020)

For

ENVIRONMENTAL CLEARANCE

of

SAND MINING (MINOR MINERAL)

for

Gangamasla – A Riverbed Sand Mine / Sand Ghat
Khasra No. GSDA approved 178, 174, 173
Area (4.9ha)

Village Gangamasla , Taluka Majalgaon, District Beed

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ABBREVIATION

Short Form	Long Form
EMP	Environmental Management Plan
MoEFCC	Ministry of Environment Forest and Climate Change
DSR	District-level Survey Report
EC	Environmental Coordinator
OM	Operations Manager
GSDA	Groundwater Surveys & Development Agency
MPCB	Maharashtra Pollution Control Board
MSL	Mean Sea Level
MS	Maharashtra State
PUC	Pollution Under Control
R&R	Rehabilitation and Resettlement
DLTF	Distance Learning Task Force
TP	Transport Permission/Permits
IBA	Indian Bank Association
MICR	Magnetic Ink Character Recognition Code
QR	Quick Response Code
GPS	Global Positioning System

CCTV	Closed-Circuit Television
DGPS	Differential Global Positioning System
RL	Reduced Levels
CER	Corporate Environment Responsibility

CHAPTER 1

INTRODUCTION

The Environmental Management Plan (¹EMP) plays a vital connection uniting forecast impacts and mitigation measures during implementation and operational activities. EMP stipulates the mitigation, monitoring and conventional measures to be taken during project implementation and operation. EMP is to escape or mitigate adverse environmental impacts, and to implement these measures.

This Environmental Management Plan (EMP) has been prepared as part of the Scoping Report which will be compiled in terms of the Environmental Assessment for the sand mining activities.

Considering the Ministry of Environment and Forest Climate Change (²MoEFCC) Notification 2006 and Sustainable Sand Mining Management Guidelines 2016, the Govt. of Maharashtra had mapped out the Minor Mineral Extraction Rules 2013. These rules are to extract all minor minerals in a scientific way so that there is no unfavourable impact on Environment and Climate. To extract every minor mineral from any land (either Government or Private) there is provision for a Mining Plan. These plans need to be approved by a competent authority. For long-term leased minor minerals (5-10 years period) and sand excavation from the riverbed, Senior Deputy Director of Directorate of Geology and Mining is the competent authority. These plans are for short term temporary permits which are valid for one year.

According to Enforcement & Monitoring Guidelines for Sand Mining 2020, Sustainable Sand Mining Management Guidelines 2016, Standard Environment conditions for sand mining and sustainable mining practices, District level Survey Report (³DSR) should be prepared and are suitable for mining and area prohibited for mining must be recognized.

¹ Environmental Management Plan

² Ministry of Environment Forest and Climate Change

³ District Survey Report

Objectives of EMP

- To provide overall conservation of the environment.
- To minimize waste generation and pollution.
- To regulate the precise use of natural resources and water.
- To provide Safety, Welfare, and Good health for the workforce and populace.
- To regulate the effective operation of all control measures.
- To ensure alertness against probable disasters and accidents.
- To monitor cumulative and long-term impacts.
- To regulate the effective operation of all control measures.

Roles and Responsibilities concerning the implementation of the EMP

The roles and responsibilities of all parties involved in successfully managing the environment are mentioned below.

Environmental Coordinator

The Environmental Coordinator will inspect operational areas on a quarterly basis and at the onset of mining any new island, to ensure that all specifications are met. The duties of the environmental coordinator will be the following.

- Guide the operations team in respect of the implementation of the environmental specifications.
- Lead the visits to ensure all work is aligned with the EMP.
- The environmental coordinator must examine the site during the three-monthly visits. All rehabilitation results will be Comprised in the quarterly report.
- Examination of the rehabilitation area and giving guidance regarding rehabilitation measures if any.

The Operations Manager

The responsibilities of the Operations Manager (4OM) or his nominated authority are as follows.

1. Familiarize themselves with the requirements of the EMP.
2. Monitor employees' and contractor's compliance with the environmental specifications; and enforce adherence.

⁴ Operations Manager

3. Communicate all environment-related incidents with the Environmental Coordinator and distribute them internally to avoid repetition.
4. Maintain a record of activities relevant to Environmental Management.
5. The Operations Manager shall be responsible for monitoring and the enforcement of the Environmental Management specifications on a day-to-day basis. Any violation of the environmental specifications shall be recorded, and the agreed disciplinary measures are taken.

Senior personnel and contractors

The roles of the senior personnel/contractors are as follows:

- Familiarize themselves with the requirements of the EMP.
- Comply with the environmental management specifications.
- Ensure that all team members are familiar with the environmental management specifications.

Details of the project

The Gangamasla sand ghat area has been selected in perspective of its subsisting demand for building-grade sand for the area in and around Majalgaon Taluka. The District Mining Officer Beed has put forward the proposal for Environmental Clearance for mining. The ghat has a production of 25972 brass sand within an area of 4.9ha. The proposed proposal follows an organized mining process for Environmental Clearance.

Further Chapter informs about the in-depth details of the Sand Ghat, its geographical structure, and a Google map of the ghat with its approach road for contractors and workers to reach to sand ghat from the village.

CHAPTER 2

DETAILS OF THE PROJECT

Gangamasla village is located in Majalgaon Taluka of Beed district, Maharashtra. Majalgaon is well connected with all nearby cities. The National highway NH-52, it traverses through the states of Punjab, Haryana, Rajasthan, Madhya Pradesh, Maharashtra, Karnataka in India. NH-52 is the National Highway passing through the district, covering a total distance of 73.60km. Majalgaon has situated about 51.22km by road from Beed. The district has road links to adjoining districts Ahmednagar District to the west, Jalna District to the North, Latur District to the East, Osmanabad District to the South, Parbhani District to the East. The district is well connected by roads.

Gangamasla village is 67.43km away from Collector office headquarters Beed. The Geographical area of the Beed is around 10693km². The nearest Railway station to Gangamasla village is Manwath Road Railway station. The nearest Airport to Beed District is Aurangabad Airport, Aurangabad Airport is 104km from Beed city, 124.97km from Gangamasla.

Honourable Collector Beed intends to auction Sand Ghats and appointed District Mining Officer as Project Proponent. A total of 38 sand ghats are identified by Tahsildar Majalgaon, Parli Ve., Gevrai, Beed along with District Mining Officer, Beed. The 38 sand ghats were jointly surveyed by Taluka level technical committee headed by respective Tahsildar with Dy. Engineer Irrigation Department, Junior Geologist Directorate of Geology and Mining Govt. of Maharashtra, Junior Geologist, Groundwater Surveys & Development Agency (⁵GSDA). DMO Beed and a representative of the Maharashtra Pollution Control Board (⁶MPCB), as per the procedure defined in Sand Auction Rules 2019 dated 3/09/2019 formed a Taluka-level technical committee, which explored the sand ghats for an available quantity of sand for scooping. Revenue of Rs.25 Crore is expected from the auction of these sand ghats. Gangamasla Sand Ghat proposed over river Godavari in Majalgaon

⁵ Groundwater Surveys & Development Agency

⁶ Maharashtra Pollution Control Board

Taluka is proposed to cater to the infrastructural requirement of sand in the Taluka of Beed and adjoining areas of other talukas.

Table 2. 1 Details of Gangamasla Sand ghat

Name of Village	Taluka	River/ Nallah	Nearest survey No.	Area (ha)	Proposed Depth for excavation (m)	Quantity Permitted for mining of Sand in Brass	Method of Mining
Gangamasla	Majalgaon	Godavari	178, 174, 173	4.9	1.50	25972	Open- cast manual mining

Table 2. 2 Salient features of the project

Particulars	Details		
Location	Village-Gangamasla , Taluka-Majalgaon, District-Beed, Maharashtra.		
Latitude and Longitude	Boundary points of Gangamasla sand spot	Latitude	Longitude
	BP1	19°11'35.08"N	76°21'1.99"E
	BP2	19°11'35.67"N	76°21'3.01"E
	BP3	19°10'55.22"N	76°21'25.32"E
	BP4	19°10'54.72"N	76°21'24.23"E
Sand spot area (In ha)	4.9ha		
Proposed production capacity (in Brass)	25972		
Infrastructure Requirement (As per Govt Resolution 3rd January 2018)	<ol style="list-style-type: none"> 1. Room / Hut for Official records 2. Electricity / Battery for Running CCTV 24x7 daily. 3. One Computer / Android-based Mobile for the online generation of Invoice numbers. 		

Particulars	Details
Distance of project site from nearest rail or road bridge over the concerned River, Nallah, etc.	3.79km
Distance from infrastructural facilities	
Railway line	26.62km
National Highway	1.07km (NH-61)
State Highway	40.08km (SH-144)
Major District Road	64.22km
Any Other Road	1.07km
Electric transmission line pole or tower	
Canal or check dam or reservoirs or lake or ponds	
In-take for drinking water pump house	
Intake for Irrigation canal pumps	

Particulars	Details
Areas already subjected to pollution or environmental damage. (those where existing legal environmental standards are exceeded)	None
Areas susceptible to natural hazards which could cause the project to Present environmental problems (earthquakes, subsidence, landslides, erosion, flooding, or extreme or adverse climatic conditions)	No. Sand Ghat is at safe distances from natural hazards like earthquake prone area, subsidence, landslide, erosion, flooding prone area and extreme or adverse climatic conditions

Particulars	Details
<p>Whether the proposal involves approval or clearance under the following Regulations or Acts, namely: - (a) The Forest (Conservation) Act, 1980. (b) The Wildlife (Protection) Act, 1972. (c) The Coastal Regulation Zone Notification, 2011. If yes, details of the same and their status are to be given.</p>	<p>None</p>
<p>Forest land involved (hectares)</p>	<p>None</p>

The below figure shows the google image of Gangamasla sand ghat.



Fig 2.1-Google image of Gangamasla sand ghat

Approach roach along with google location is as shown below.

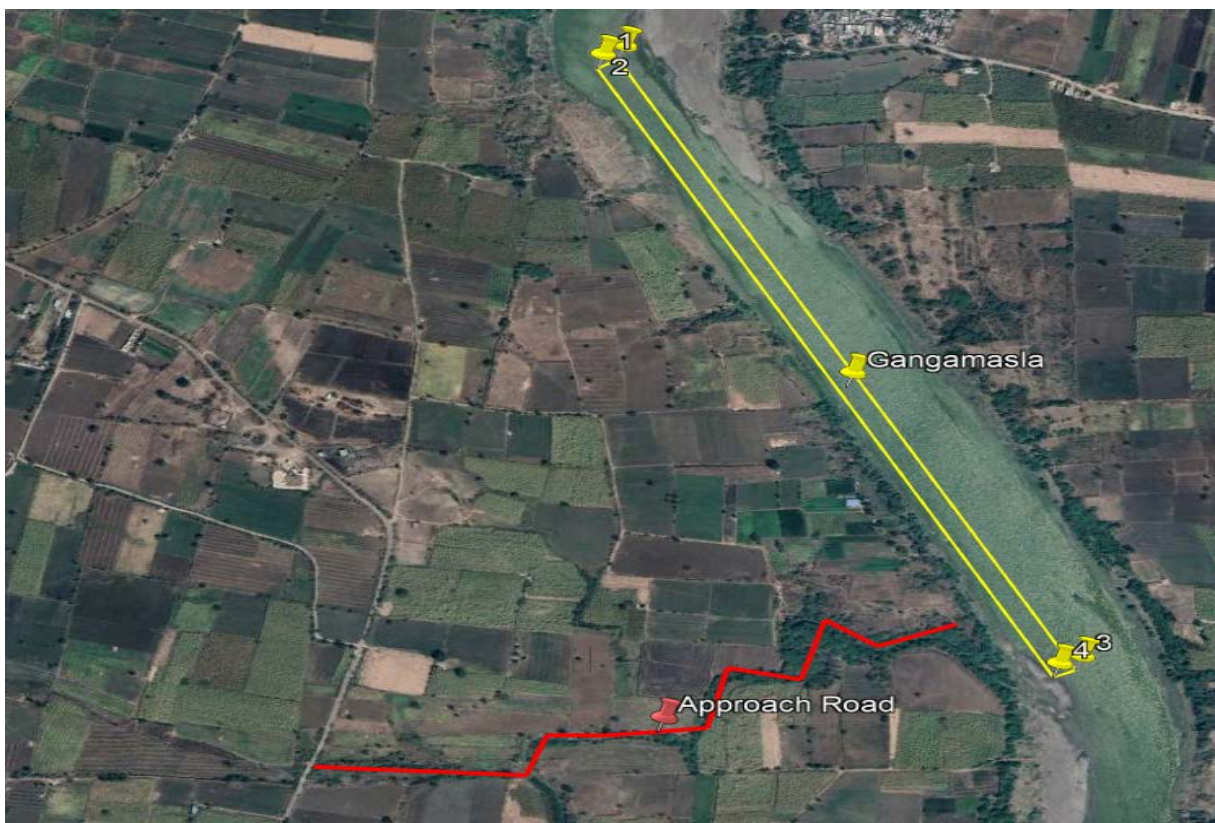


Fig 2.2-Approach Road for sand ghat

Next chapter 3 is Baseline Environmental Status in which the entire Topography, Climate, Soil Environment, Land use, water Environment, Hydrology, Biological environment, and Socio-economic Environment are briefly explained for the Beed district.

CHAPTER 3

BASELINE ENVIRONMENT STATUS

Topography

The Sand Ghat area as per the survey is the riverbed of the Godavari River of the Beed district. The maximum elevation is 415m MSL, average elevation is 410m MSL, & minimum elevation is 404m (⁷MSL) Mean Sea Level. The slope of the Sand Ghat area towards the Southwest to Northeast side. The flow of Godavari River is from Southeast direction.

Presently, there is neither any infrastructure within the riverbed nor are proposed.

Hydrology

There will be no change in the Water Table during the mining operation, as the depth of mining shall be restricted to 1.50m water level, which is less likely to affect the surface level or Groundwater Table. There is no proposal of any stream modification/diversion due to this mining activity hence there will be not any impact on the flow of water.

Soil Environment

The riverbed consists of sand /gravel. There is no topsoil. The depth of mining shall be restricted to 1.50m. There is no crucial impact on the soil forecasted due to mining activities.

Land Use Land Cover

Land use shows that agriculture land use is predominant. The proposed site is 4.9ha having adjoined Khasara No 178, 174, 173. The land doesn't cover any human habitation, forest, etc. Any change in the scope of the approved Mining Plan will lead to riverbank erosion/cutting and thereby river channel shifting, degradation of land, causing loss of properties and degradation of the surrounding landscape.

⁷ Mean sea level

Water Environment

While transporting sand there may be fugitive dust. There will be water requirement for spraying for dust suppression purposes. This water will be supplied from the borewell from nearby villages through tankers as well as from surface water sources. The water source may vary from village to village.

Climate

During summer May is the hottest month of the year in this area. The temperature rises to 42°C in the month of May. The average rainfall in this region is 600mm to 700mm About 50% of rainfall precipitates between June to September. December is the coldest month with temperatures falling down to 18°C. Overall the proposed site area has sub-tropical conditions.

Biological Environment

Flora

The agricultural area is seen near the Sand Ghat. Few trees and thorny bushes are seen on the banks of the river.

Fauna

As there is no forest cover, no endangered species of wildlife are seen in this area.

Socio-Economic Environment

This project may create constructive impacts of the sand mining that are stated below:

1. The mining operations will provide direct & indirect employment to village people.
2. The villages and their inhabitants & domestic animals will not be disturbed due to mining, as the quarry is far from their settlements.
3. Local workforce will be given first preference for employment.
4. Mining activities will benefit the local people due to the provision of more infrastructural facilities (developments of approach routes within the village area).

The next chapter describes all possible impacts on the Environment due to this project along with its mitigation measure to overcome these impacts.

CHAPTER 4

IMPACT ASSESSMENT REPORT ALONG WITH PROPOSED MITIGATION MEASURES

1. Land Environment

Anticipated Impact

Movement of vehicles can create issues for agricultural land, human habitations, noise, and risk for public and cause traffic hazards. The impacts include damage to the riverbank due to access ramps to the riverbed, soil erosion because of extraction of sand, micro disturbance to groundwater, possible stimulation of the changed river course, and contamination of sand aquifer water due to ponding. There might be surface degradation due to the road network.

The quality of soil will not be affected due to transportation or any other activity of mining.

Mitigation measure

1. Mining depth should be restricted to 3 meters and distance from the bank should be $\frac{1}{4}$ th or river width and should not be less than 7.5 meters as per “Sustainable Sand Mining Guidelines 2020” ■ Page 23, Point no 4.3 (m).
2. There will be a minimal number of access roads to riverbeds. Cutting of riverbanks will be avoided and ramp with smooth slope will be maintained. Access points to the riverbed will be decided based on the least steepness of the riverbank and the least human activity at that location.
3. No foreign material like polythene bags, jute bags, and useless articles should be allowed to remain/spill in the riverbed and catchment area, or no pits/pockets will be allowed to be filled with such material.
4. Mining at the concave side of the river channel should be avoided to prevent bank erosion. Similarly, a tortuous segment of a river is to be selected for mining in such a way as to ignore the natural eroding of banks.
5. Ensure that ponding is not created in the riverbed.
6. Transportation route should be such that it gives minimum

damage to the environment.

7. Green belt will be developed along the haul road and the bank of rivers of mine premises and near the sand mining site. While selecting the plant species, preference will be given for planting native species of the area.

2. Water environment

Anticipated Impact

The project activity will be carried out in the dry part of the riverbed. Care will be taken to ensure that neither of the project activities will affect the water environment or riverbank habitats. During the lean months, the proposed Sand Mining will not expose the base flow of the river and hence there will not be any inauspicious impact on surface hydrology and groundwater regime due to this project. Project activities will not have any adverse consequences on the physical components of the environment and therefore may not have any effect on the recharge of ground waters or affect the water quality. Monitoring of water quality will be checked yearly.

Mitigation measures

1. Mining is avoided during the monsoon season and at the time of floods. This will help in the replenishment of sand in the riverbed.
2. Mining below the subterranean water level will be avoided as a safeguard against environmental contamination and over-exploitation of resources.
3. River stream will not be transferred to create active channels.
4. Mining schedule is synchronized with the river flow direction and the gradient of the land.
5. Mining at the concave side of the river channel will be avoided to prevent bank erosion.
6. Tortuous segment of the river will be selected for mining in such a way as to avoid naturally eroding banks and to promote mining on naturally building meander components.
7. Mining depth shall be maintained as per the guidelines and

rules of the Sand Mining Policy dated 03/09/2019 and recommendations of Maharashtra State (⁸M.S.). State Ground Water Department for extraction of sand during the lease period.

8. Water Quality Monitoring for the ground waters, river water, and other surface waters shall be carried out seasonally to ensure that the water quality is not affected by the project activities.
9. Utmost care will be taken to minimize or control leaking vehicles to be used for sand transportation.
10. The washing of tractor trolleys in the river will not be done.
11. The contractor will follow all guidelines and rules for proper and scientific methods of mining during the period of extracting the sand.

3. Air Environment

Anticipated Impacts

Plying of tractor trolleys from the public road to river sand collection points needs access roads. The majority of such access roads are the already existing roads/tracks being used by pedestrians/cart owners. The movement of heavy vehicles sometimes causes problems for cattle, agricultural land, and human habitations due to dust, noise, and the movement of the public. These environmental problems are felt more as the area is rural in nature.

Air pollution is likely to be caused at various stages of Sand Mining operations such as excavation, loading & transportation of material. Most of the fugitive dust emissions will be generated from loading & transportation. This dust becomes airborne and spreads away to surrounding areas.

The impact on air is mainly localized in nature as the dust particles of 100 μ in size are not carried to farther distances beyond 100m and the effect is felt within the core zone of the project involving active Sand Mining operations.

⁸ Maharashtra State

Mitigation measures

1. Movement of the vehicles on the road will be increased; however, the unmetalled road in the mining area will be sprinkled with water at regular intervals.
2. In addition to preventing spillage from tractor trolleys, overloading shall be controlled to 1-brass/tractor trolley. The speed limit will be <20 km/hr.
3. Maintenance of the haul road will be done on a regular basis.
4. To avoid fugitive dust emissions at the time of excavation, a regular sprinkling of water will be done on regular basis.
5. Sand is transported to the sites by road through tractor trolleys. The sand-carrying vehicles shall be covered by tarpaulin sheets.
6. The Green belt development will be prepared along the haul roads, which will act as a pollution sink.
7. To minimize vehicular pollution from the sand transporting vehicles, the following conditions will be insisted upon to permit the vehicles of the transporters.
8. The vehicles should be Bharat-IV stage compliant and should have a Pollution Under Control (⁹PUC) Certificate issued by appropriate authorities.
9. Regular maintenance of transport vehicles and monitoring of vehicular emission levels at periodical intervals.

4. Noise Environment

Anticipated Impact

The noise environment in this project will be overdone by the equipment at the site and vehicular transportation. A slight increase in noise levels of <10dB(A) can be expected up to a distance of 100m.

Mitigation measures.

1. Minimum use of horns in the village area.
2. Timely maintenance of vehicles and their silencers to

⁹ Pollution Under Control

minimize vibration and sound.

3. Phasing out old and worn-out tractor trolleys.
4. Provision of green belts along the road networks.
5. Care will be taken to produce minimum sound during sand loading.
6. Backhoe loader excavator will be used
7. Earplugs may be provided to protect the labourers working at the site.

5. Socio-economic Environment

Anticipated Impacts and Evaluation

1. The project activities shall not have any adverse impacts on any of the common property resources of the village communities, as the Sand Mine lease area is not being used for any purpose by any section of the society in this region.
2. There is no Resettlement and Rehabilitation (¹⁰R&R) involvement in this project.
3. There is no land acquisition in this project.
4. A major portion of the houses in the study area is semi-pucca-type structures.
5. The water source to these areas is from the Grampanchayat /Nagar Parishad connection and private bore wells and wells.
6. People living around the project area need the project for the purpose of employment and economic benefits.
7. The awareness level regarding the proposed mining activity is very towering. The proposed mining activity is expected to provide stimulus to socio-economic activities in the region and thereby accelerate further development processes.

Social and Demographic Profile

The workers are from local villages. These people have been provided welfare benefits from the lessee like medical benefits,

¹⁰ Rehabilitation and Resettlement

insurance, fees for children's education, etc. They have some land and cattle for their daily earnings. Additional revenue earned from the Sand Mining work will improve their living standard. The group of quarries in and around will help to have infrastructure facilities like roads, schools, shops, etc. This will enhance their social life.

Occupational Health and Safety

This is a riverbed Sand Mine. So, the mining activities are comparatively smaller because the production is not on a high scale. Workers do not come across any extreme conditions like excessive heat, moisture, etc. Workers working around it may come across this dusty environment. But the impact on health will be within the limit.

Human Settlement

1. There are no houses in and around the lease area. Blasting is the only activity, which may affect the settlement, which is not done. The settlement is more than 1-km from the sand mine.
2. Appropriate precautions will be taken during mining. Transportation of finished products is through the villages. There will be an effect of traffic on the local people. However, the intensity of traffic is 70-80/day.

Health and Hygiene

In general, the health of villagers is moderately good. In the rainy season, the atmospheric condition is unhygienic due to a lack of proper drainage and sanitation in the village habitation. Villagers are working in agricultural fields and work as labourers.

Education

Most education of 70% young <20 years, is up to the 5th to 9th. Economic condition is in general moderate. So, after this project, the standard of education will increase.

Socio-Economic Benefits Arising Out of Mining

1. Generation of employment in rural areas.
2. Upgradation in the living standards of rural people.
3. Creating infrastructural facilities like roads, electricity, shops, schools, etc.
4. Upgrading literacy in the area by exploiting natural minerals so the generation of revenue.

5. Helping to sustain construction activity.
6. Improving the greenery of the area, which is otherwise poor.

Liquid Effluent

Not applicable, because these activities do not generate effluent from operation or process.

Solid Waste

Not applicable, because small mines and impacts are negligible.

Project benefits due to the sand mining of Gangamasla are explained in the next Chapter.

CHAPTER 5

PROJECT BENEFITS

The proposed Sand Mining project of Gangamasla village, Majalgaon Taluka, Beed District will lead to the following benefits:

1. Increase in the revenue of the district will ultimately increase the revenue of the village, which in return can be used to improve the infrastructure of the village.
2. Sand is available for building construction work and by systematic separation of sand, there is no possibility of a flood. Providing smooth movement of water of the river.
3. This project will contribute additional revenue to the state Exchequer in the form of revenue.
4. The project will conclude with employment opportunities for unskilled/skilled local people.
5. Standard of living of employed people will increase.

CHAPTER 6

SITE-SPECIFIC ENFORCEMENT & MONITORING PLAN

Sand Ghat Site specific enforcement & monitoring plan

(as per guidelines stipulated in the Enforcement and Monitoring Guidelines for sand mining issued by MoEFCC in January 2020.)

District administration shall deliver information on its website about the Sand Mines in the district for public information. The objective is to extend all information into the public domain so that the citizens are aware of the mining activities. People can also report to the district administration any deviation observed. Suitable feedback and its composition shall also be made operational.

Details shall include, but not be limited to, lease area, geo-coordinates of lease area and mineable area, transport routes, permitted capacity, regulatory conditions for operation including mining, environmental and social commitments, etc.

An Independent Committee of experts constituted by the Distance Learning Task Force (¹¹DLTF) will assess the environmental or ecological damage caused due to illegal mining and recommend recovery of environmental compensation from the concerned miners.

The recommendation may also include action under the provision of the Environment (Protection) Act 1986 u/s.15 read with s.19.

¹¹ Distance Learning Task Force

CHAPTER 7

SECURITY FEATURES

Security features are included in the Transport Permission/Permits (TP)

It will be ensured that the following security features are included in the Transport Permission/Permits (¹²TP) so that duplicate/fraudulent/forged TPs for transport, not accounted for in the IT-based system, is not possible:

1. Printed on Indian Bank Association (¹³IBA) Approved letterhead with account details
2. Magnetic Ink Character Recognition Code (¹⁴MICR) paper
3. Unique Barcode
4. Unique Quick Response Code (¹⁵QR)
5. Fugitive Ink Background
6. Invisible Ink Mark
7. Void Pantograph Watermark
8. Global Positioning System (¹⁶GPS) based vehicle tracking system
9. Closed-Circuit Television (¹⁷CCTV) Camera

¹² Transport Permission

¹³ Indian Bank Association

¹⁴ Magnetic Ink Character Recognition Code

¹⁵ Quick Response Code

¹⁶ Global Positioning System

¹⁷ Closed Circuit Television

CHAPTER 8

REPLENISHMENT

Replenishment study is the most important part of Sand Mining as it is the only basis to carry out sand mining. Without a Replenishment Study, we cannot understand the amount of deposition of sand. Following points to be followed for the replenishment study.

1. Area of deposition and erosion will be calculated for each cross-section after giving due regard to the stability & safety of active channel banks & other features of importance.
2. Differential Global Positioning System (¹⁸DGPS) and other survey tools will be used to define the topography, contours, and offsets of the lease area.
3. Contour & elevation benchmarks will provide baseline data for assessing pre- and post-study period scenario.
4. Physical benchmarks will be fixed at appropriate intervals (preferably 1 in 30m) & Reduced levels (¹⁹RL) shall be validated from a nearby standard RL.
5. These RL will be engraved on a steel plate (Bench Plate) & will be fixed & placed at locations that are free from any damages & are available in the pre-and post-study period.
6. Bench plates will be available for use during the mining period as a reference for all mining activity.
7. Baseline data on elevation status for a grid of 10m x 10m is preferred to have accuracy in the assessment.
8. It is expected that two consecutive cross-sections in longitudinal and lateral directions will not be more than a 10m distance apart.
9. Changes observed in the elevation in pre and post-scenario at each node, will be depicted in graphical forms with an appropriate scale to estimate the area of deposition & erosion.

¹⁸ Differential global positioning system

¹⁹ Reduced levels

10. Elevation level will be in reference to the nearest bench plates established for the purpose.
11. The levels (MSL & RL) of the corner point of each grid will be identifiable and safety barriers (non-Mining) demarcated as restricted in consensus with the Mineral Concession Rules of the respective State, and the provision mentioned in this Sustainable Sand Mining Management Guidelines.
12. A clear identification will be highlighted between grids under the mineable and grids under the non-mineable area.
13. These baseline data (pre and post) be subjected to stimulation with the help of data mine software to derive the replenishment area and corresponding volume and estimated weight.
14. The database will be structured in a tabulated form clearly depicting the nomenclature of the section lines, latitude and longitude of the starting point, chainage, and respective levels of all the points taken on that section line.
15. Net area shall be derived after summation of an area of deposition minus the area of erosion for each cross-section.
16. Volume will be estimated by multiplying the distance between two cross-sections with the average of the net area of these two consecutive cross-sections.
17. One sample per 900m² (30m x 30m) will be the preferred sample density for the assessment of bulk density for the estimation of deposition rate.
18. Care will be taken that the sample for assessment of Bulk Density is taken from the deposition zone & not from erosion.

Methodology for Sand Mining:

The following methodology should be followed for the Replenishment study.

1. The Demarcation and benchmark of the Sand Ghat are done at 10m x 10m intervals.
2. The use of the Auger Driller is to find out the depth of sand in each grid.
3. Auger Driller has created the holes in sand ghat by 10mx10m grid pattern.
4. Measured the depth of holes by using a measuring tape.

5. After taking all the readings average depth of sand is calculated.
6. The average depth of Gangamasla at Godavari is measured.

Replenishment study of sand in the proposed ghat along with details of the methodology, technology used to identify the existing reserve & replenishment of the same

Dandy Bolton Equation

For runoff less than 2 inches

$$S = 1280 \times (Q) \times 0.46 \times (1.46 - 0.26 \log(A)) \times F$$

For runoff more than 2 inches

$$S = 1958 \times (Q) \times (e^{-0.055 \times Q}) \times (1.43 - 0.26 \log(A))$$

Where,

S = sediment yield of stream (t/yr/km²),

Q = average annual runoff (m³),

A = net drainage area in sq.mile.

CHAPTER 9

PROPOSED PLANTATION PLAN

The Project Proponent must take care of the plantation around the site. This will not only enhance the beautification of the area but also there will be the reduction of pollution, not some extent.

Details of the plantation and Tree species recommended for the plantation are shown below.

Table 9. 1 Details of green belt

Location of greenbelt	Both sides of the approach road, On the riverbanks of both sides of the sand spot & nearby open areas. Haul Road outside the riverbed
No. of plants to be planted	2000 per Hectare
Spacing of plants	2m grid interval
Species selected	Native species

Table 9. 2 Trees species for plantation

Botanical Name	Local Name	Importance
Azadirachta Indica	Neem	Neem oil & neem products
Tectona Grandis	Teek	Antibacterial, Antifungal, Antiulcer
Ficus religiosaa	Peepal	Medicinal use, Fruits & figs
Bambusa vulgaris	Bamboo	Anthelmintic Anti-inflammatory, Astringent Properties
Madhuca longifolia	Mahua	Acts as a Stimulant & cough relief,

CHAPTER 10

ENVIRONMENTAL MANAGEMENT PLAN

A total capital cost of Rs.5.97 Lakhs has been kept in the project cost towards the environmental protection, control, mitigation measures, and implementation of the Environmental Management Plan (EMP). This cost is borne by the bidder/leaseholder. The budgetary cost estimate for the EMP is given in Table.

Table 10. 1 Budgetary cost of EMP

Sr	Impact Source	Impact	Control Measure	Cost(Rs)
1	Transport Road	On Air Quality	Compaction, gradation, and drainage on both sides.	100000
		On Land, the Stability of the Road and degradation of road	Proper maintenance	90000
			Regular water spraying	45000
			The air quality will be monitored at the impacted village. (For One Day Monitoring)	8000
			Health Check-up of Employees	8000
2	Truck/ Tractor Movement	Air Quality	Sand-carrying trucks will be effectively covered by tarpaulin to avoid the escape of fines to the atmosphere. (2 Tarpaulin)	30000
			Regular monitoring of the exhaust fumes	8000

Sr	Impact Source	Impact	Control Measure	Cost(Rs)
			Barriers & Traffic Management Expenses. (Excluding Manpower Salary which is included in labour costs)	20000
3	Ramp and Sand Reach	Mining Operation	Regular ramp Inspection and Ramp maintenance. (Excluding Manpower Salary which is included in labour costs)	25000
			Provision of dust masks	15000
4	Bank Management	Bank Erosion/Flood Plain management	The green belt along the bank (For Green Belt Development)	290000
			Plantation of wide leaf tall trees on banks and grass along a slanting portion of the bank	
5	Transportation on Village Roads	Dust Control	The green belt along village Rd (For Green Belt Development)	
6	Final Mine Closures Plan implementation	Replenishment of Sand	Gabions/ boulders will be arranged as per guidelines	20000
7	Mobile toilet, sewage handling & treatment		Mobile toilet, sewage handling & treatment	180000
8	CCTV Monitoring			150000
Total				989000

Budget For Corporate Environment Responsibility (²⁰CER)

About 2% fund of the project cost is allocated for Corporate Environment Responsibility (CER) activities as presented in below Table

Table 10.2 Budget for CER

Sr.	Description	Cost (Rs)
1.	Village Schools (separate toilet for girls and boys)	30000
2.	Solar panels over Gram Panchayat buildings	35000
3.	Solar panels over Public Health Centers	35000
	Total	100000

²⁰ Corporate Environment Responsibility

CHAPTER 11

SUMMARY AND CONCLUSION

The Roles and Responsibilities of the Environmental coordinator, the Operation Manager, and the senior personnel contractor are essential in EMP.

The environmental status of the project site and study area of 10km radius is delineated with respect to air, noise, water, land, biological and socio-economic environment the different project activities in the construction and operation phases are identified.

To identify the impacts, the interaction between the project activities and different components of the environment is classified phase-wise. A summary of the recognized impacts is given in the following paragraphs.

- During the operational phase, the transportation of sand could cause a temporary disturbance to the local environment which will be prevented with the proposed mitigation measures.
- Proposed project will not have any major significant negative impacts. The minor impacts arising during Excavation and Transportation phases can be mitigated with the help of the proposed Environmental Management Plan.
- In general, sand excavation from Gangamasla sand spot will be useful to the developmental work in the district and generate employment opportunities.

From this project, it is concluded that the district revenue will increase in return minimum of 2% of funds are utilized for the development of the village. The project will also grab employment which will improve the standard of life of villagers.

*** END ***

Environmental Management Plan

As per Rules 23 & 26 of MMME (D & R) RULE 2013 & Section 15 of MMDR Act 1957, MoEFCC Notification 2006, S.O. 141(E) dated 15. 01. 2016; MoEFCC, Sustainable Sand Mining Management Guidelines 2016, Guidelines for Mining Policy 2020)

For

ENVIRONMENTAL CLEARANCE

of

SAND MINING (MINOR MINERAL)

for

Gavhanthadi – A Riverbed Sand Mine / Sand Ghat
Khasra No. GSDA approved 22 to 29, 33 to 35, 39, 40
Area (2.50ha)

Village Gavhanthadi, Taluka Majalgaon, District Beed

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ABBREVIATION

Short Form	Long Form
EMP	Environmental Management Plan
MoEFCC	Ministry of Environment Forest and Climate Change
DSR	District-level Survey Report
EC	Environmental Coordinator
OM	Operations Manager
GSDA	Groundwater Surveys & Development Agency
MPCB	Maharashtra Pollution Control Board
MSL	Mean Sea Level
MS	Maharashtra State
PUC	Pollution Under Control
R&R	Rehabilitation and Resettlement
DLTF	Distance Learning Task Force
TP	Transport Permission/Permits
IBA	Indian Bank Association
MICR	Magnetic Ink Character Recognition Code
QR	Quick Response Code
GPS	Global Positioning System

CCTV	Closed-Circuit Television
DGPS	Differential Global Positioning System
RL	Reduced Levels
CER	Corporate Environment Responsibility

CHAPTER 1

INTRODUCTION

The Environmental Management Plan (¹EMP) plays a vital connection uniting forecast impacts and mitigation measures during implementation and operational activities. EMP stipulates the mitigation, monitoring and conventional measures to be taken during project implementation and operation. EMP is to escape or mitigate adverse environmental impacts, and to implement these measures.

This Environmental Management Plan (EMP) has been prepared as part of the Scoping Report which will be compiled in terms of the Environmental Assessment for the sand mining activities.

Considering the Ministry of Environment and Forest Climate Change (²MoEFCC) Notification 2006 and Sustainable Sand Mining Management Guidelines 2016, the Govt. of Maharashtra had mapped out the Minor Mineral Extraction Rules 2013. These rules are to extract all minor minerals in a scientific way so that there is no unfavourable impact on Environment and Climate. To extract every minor mineral from any land (either Government or Private) there is provision for a Mining Plan. These plans need to be approved by a competent authority. For long-term leased minor minerals (5-10 years period) and sand excavation from the riverbed, Senior Deputy Director of Directorate of Geology and Mining is the competent authority. These plans are for short term temporary permits which are valid for one year.

According to Enforcement & Monitoring Guidelines for Sand Mining 2020, Sustainable Sand Mining Management Guidelines 2016, Standard Environment conditions for sand mining and sustainable mining practices, District level Survey Report (³DSR) should be prepared and are suitable for mining and area prohibited for mining must be recognized.

¹ Environmental Management Plan

² Ministry of Environment Forest and Climate Change

³ District Survey Report

Objectives of EMP

- To provide overall conservation of the environment.
- To minimize waste generation and pollution.
- To regulate the precise use of natural resources and water.
- To provide Safety, Welfare, and Good health for the workforce and populace.
- To regulate the effective operation of all control measures.
- To ensure alertness against probable disasters and accidents.
- To monitor cumulative and long-term impacts.
- To regulate the effective operation of all control measures.

Roles and Responsibilities concerning the implementation of the EMP

The roles and responsibilities of all parties involved in successfully managing the environment are mentioned below.

Environmental Coordinator

The Environmental Coordinator will inspect operational areas on a quarterly basis and at the onset of mining any new island, to ensure that all specifications are met. The duties of the environmental coordinator will be the following.

- Guide the operations team in respect of the implementation of the environmental specifications.
- Lead the visits to ensure all work is aligned with the EMP.
- The environmental coordinator must examine the site during the three-monthly visits. All rehabilitation results will be Comprised in the quarterly report.
- Examination of the rehabilitation area and giving guidance regarding rehabilitation measures if any.

The Operations Manager

The responsibilities of the Operations Manager (4OM) or his nominated authority are as follows.

1. Familiarize themselves with the requirements of the EMP.
2. Monitor employees' and contractor's compliance with the environmental specifications; and enforce adherence.

⁴ Operations Manager

3. Communicate all environment-related incidents with the Environmental Coordinator and distribute them internally to avoid repetition.
4. Maintain a record of activities relevant to Environmental Management.
5. The Operations Manager shall be responsible for monitoring and the enforcement of the Environmental Management specifications on a day-to-day basis. Any violation of the environmental specifications shall be recorded, and the agreed disciplinary measures are taken.

Senior personnel and contractors

The roles of the senior personnel/contractors are as follows:

- Familiarize themselves with the requirements of the EMP.
- Comply with the environmental management specifications.
- Ensure that all team members are familiar with the environmental management specifications.

Details of the project

The Gavhanthadi sand ghat area has been selected in perspective of its subsisting demand for building-grade sand for the area in and around Majalgaon Taluka. The District Mining Officer Beed has put forward the proposal for Environmental Clearance for mining. The ghat has a production of 7067 brass sand within an area of 2.50ha. The proposed proposal follows an organized mining process for Environmental Clearance.

Further Chapter informs about the in-depth details of the Sand Ghat, its geographical structure, and a Google map of the ghat with its approach road for contractors and workers to reach to sand ghat from the village.

CHAPTER 2

DETAILS OF THE PROJECT

Gavhanthadi village is located in Majalgaon Taluka of Beed district, Maharashtra. Majalgaon is well connected with all nearby cities. The National highway NH-52, it traverses through the states of Punjab, Haryana, Rajasthan, Madhya Pradesh, Maharashtra, Karnataka in India. NH-52 is the National Highway passing through the district, covering a total distance of 73.60km. Majalgaon has situated about 51.22km by road from Beed. The district has road links to adjoining districts Ahmednagar District to the west, Jalna District to the North, Latur District to the East, Osmanabad District to the South, Parbhani District to the East. The district is well connected by roads.

Gavhanthadi village is 46.34km away from Collector office headquarters Beed. The Geographical area of the Beed is around 10693km². The nearest Railway station to Gavhanthadi village is Umanpur Railway station. The nearest Airport to Beed District is Aurangabad Airport, Aurangabad Airport is 104km from Beed city, 97.60km from Gavhanthadi

Honourable Collector Beed intends to auction Sand Ghats and appointed District Mining Officer as Project Proponent. A total of 38 sand ghats are identified by Tahsildar Majalgaon, Parli Ve., Gevrai, Beed along with District Mining Officer, Beed. The 38 sand ghats were jointly surveyed by Taluka level technical committee headed by respective Tahsildar with Dy. Engineer Irrigation Department, Junior Geologist Directorate of Geology and Mining Govt. of Maharashtra, Junior Geologist, Groundwater Surveys & Development Agency (⁵GSDA). DMO Beed and a representative of the Maharashtra Pollution Control Board (⁶MPCB), as per the procedure defined in Sand Auction Rules 2019 dated 3/09/2019 formed a Taluka-level technical committee, which explored the sand ghats for an available quantity of sand for scooping. Revenue of Rs.25 Crore is expected from the auction of these sand ghats. Gavhanthadi Sand Ghat proposed over river Godavari in Majalgaon

⁵ Groundwater Surveys & Development Agency

⁶ Maharashtra Pollution Control Board

Taluka is proposed to cater to the infrastructural requirement of sand in the Taluka of Beed and adjoining areas of other talukas.

Table 2. 1 Details of Gavhanthadi Sand ghat

Name of Village	Taluka	River/ Nallah	Nearest survey No.	Area (ha)	Proposed Depth for excavation (m)	Quantity Permitted for mining of Sand in Brass	Method of Mining
Gavhanthadi	Majalgaon	Godavari	22 to 29, 33 to 35, 39, 40	2.50	0.80	7067	Open- cast manual mining

Table 2. 2 Salient features of the project

Particulars	Details		
Location	Village-Gavhanthadi, Taluka-Majalgaon, District-Beed, Maharashtra.		
Latitude and Longitude	Boundary points of Gavhanthadi sand spot	Latitude	Longitude
	BP1	19°16'42.65"N	76°4'35.09"E
	BP2	19°16'44.27"N	76°4'34.95"E
	BP3	19°16'45.75"N	76°4'51.88"E
	BP4	19°16'44.29"N	76°4'52.10"E
Sand spot area (In ha)	2.50ha		
Proposed production capacity (in Brass)	7067		
Infrastructure Requirement (As per Govt Resolution 3rd January 2018)	<ol style="list-style-type: none"> 1. Room / Hut for Official records 2. Electricity / Battery for Running CCTV 24x7 daily. 3. One Computer / Android-based Mobile for the online generation of Invoice numbers. 		

Particulars	Details
Distance of project site from nearest rail or road bridge over the concerned River, Nallah, etc.	3.08km
Distance from infrastructural facilities	
Railway line	34.64km
National Highway	36.71km(NH-52)
State Highway	30.58km(SH-144)
Major District Road	36.56km
Any Other Road	12.00km
Electric transmission line pole or tower	
Canal or check dam or reservoirs or lake or ponds	
In-take for drinking water pump house	
Intake for Irrigation canal pumps	
Areas already subjected to pollution or environmental damage. (those where existing legal environmental standards are exceeded)	None

Particulars	Details
<p>Areas susceptible to natural hazards which could cause the project to Present environmental problems (earthquakes, subsidence, landslides, erosion, flooding, or extreme or adverse climatic conditions)</p>	<p>No. Sand Ghat is at safe distances from natural hazards like earthquake prone area, subsidence, landslide, erosion, flooding prone area and extreme or adverse climatic conditions</p>
<p>Whether the proposal involves approval or clearance under the following Regulations or Acts, namely: - (a) The Forest (Conservation) Act, 1980. (b) The Wildlife (Protection) Act, 1972. (c) The Coastal Regulation Zone Notification, 2011. If yes, details of the same and their status are to be given.</p>	<p>None</p>
<p>Forest land involved (hectares)</p>	<p>None</p>

The below figure shows the google image of Gavhanthadi sand ghat.



Fig 2.1-Google image of Gavhanthadi sand ghat

Approach roach along with google location is as shown below.

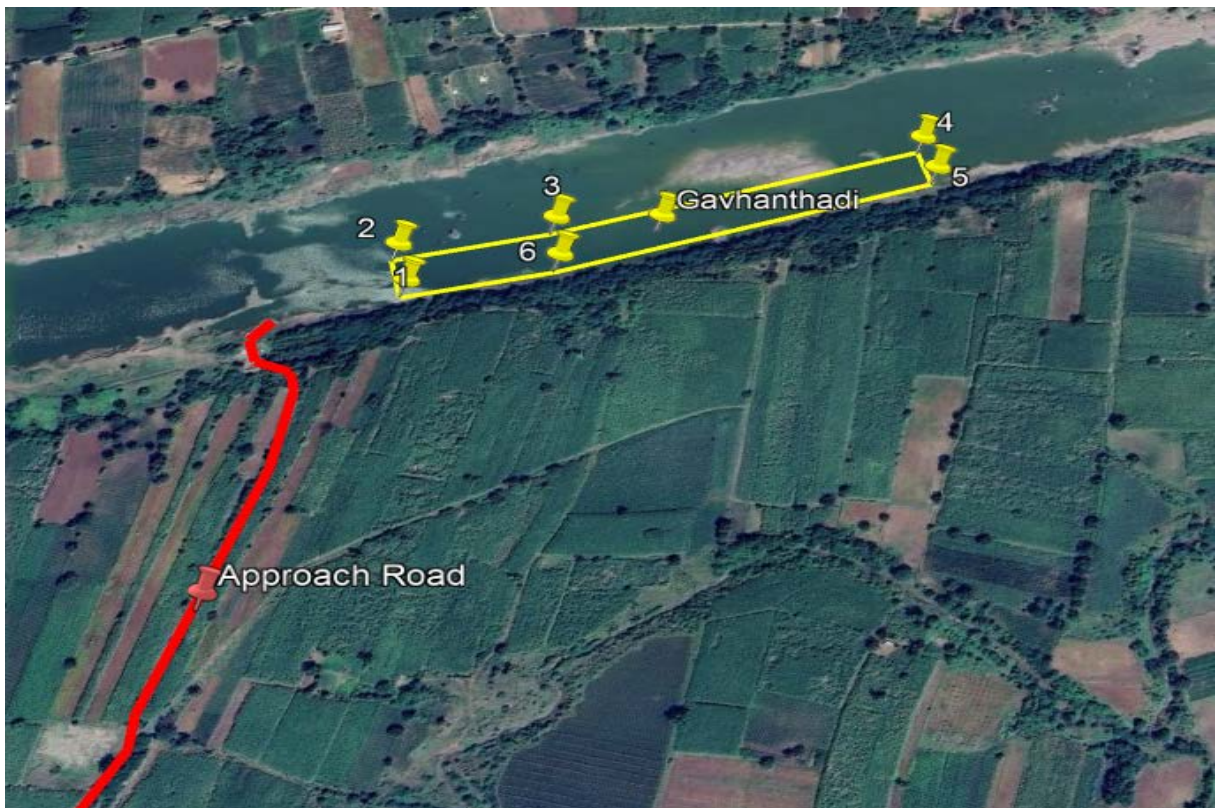


Fig 2.2-Approach Road for sand ghat

Next chapter 3 is Baseline Environmental Status in which the entire Topography, Climate, Soil Environment, Land use, water Environment, Hydrology, Biological environment, and Socio-economic Environment are briefly explained for the Beed district.

CHAPTER 3

BASELINE ENVIRONMENT STATUS

Topography

The Sand Ghat area as per the survey is the riverbed of the Godavari River of the Beed district. The maximum elevation is 428m MSL, average elevation is 424m MSL, & minimum elevation is 420m (⁷MSL) Mean Sea Level. The slope of the Sand Ghat area towards the Southwest to Northeast side. The flow of Godavari River is from Southeast direction.

Presently, there is neither any infrastructure within the riverbed nor are proposed.

Hydrology

There will be no change in the Water Table during the mining operation, as the depth of mining shall be restricted to 0.80m water level, which is less likely to affect the surface level or Groundwater Table. There is no proposal of any stream modification/diversion due to this mining activity hence there will be not any impact on the flow of water.

Soil Environment

The riverbed consists of sand /gravel. There is no topsoil. The depth of mining shall be restricted to 0.80m. There is no crucial impact on the soil forecasted due to mining activities.

Land Use Land Cover

Land use shows that agriculture land use is predominant. The proposed site is 2.50ha having adjoined Khasara No 22 to 29, 33 to 35,39,40. The land doesn't cover any human habitation, forest, etc. Any change in the scope of the approved Mining Plan will lead to riverbank erosion/cutting and thereby river channel shifting, degradation of land, causing loss of properties and degradation of the surrounding landscape.

⁷ Mean sea level

Water Environment

While transporting sand there may be fugitive dust. There will be water requirement for spraying for dust suppression purposes. This water will be supplied from the borewell from nearby villages through tankers as well as from surface water sources. The water source may vary from village to village.

Climate

During summer May is the hottest month of the year in this area. The temperature rises to 42°C in the month of May. The average rainfall in this region is 600mm to 700mm About 50% of rainfall precipitates between June to September. December is the coldest month with temperatures falling down to 18°C. Overall the proposed site area has sub-tropical conditions.

Biological Environment

Flora

The agricultural area is seen near the Sand Ghat. Few trees and thorny bushes are seen on the banks of the river.

Fauna

As there is no forest cover, no endangered species of wildlife are seen in this area.

Socio-Economic Environment

This project may create constructive impacts of the sand mining that are stated below:

1. The mining operations will provide direct & indirect employment to village people.
2. The villages and their inhabitants & domestic animals will not be disturbed due to mining, as the quarry is far from their settlements.
3. Local workforce will be given first preference for employment.
4. Mining activities will benefit the local people due to the provision of more infrastructural facilities (developments of approach routes within the village area).

The next chapter describes all possible impacts on the Environment due to this project along with its mitigation measure to overcome these impacts.

CHAPTER 4

IMPACT ASSESSMENT REPORT ALONG WITH PROPOSED MITIGATION MEASURES

1. Land Environment

Anticipated Impact

Movement of vehicles can create issues for agricultural land, human habitations, noise, and risk for public and cause traffic hazards. The impacts include damage to the riverbank due to access ramps to the riverbed, soil erosion because of extraction of sand, micro disturbance to groundwater, possible stimulation of the changed river course, and contamination of sand aquifer water due to ponding. There might be surface degradation due to the road network.

The quality of soil will not be affected due to transportation or any other activity of mining.

Mitigation measure

1. Mining depth should be restricted to 3 meters and distance from the bank should be ¼th or river width and should not be less than 7.5 meters as per “Sustainable Sand Mining Guidelines 2020” ■ Page 23, Point no 4.3 (m).
2. There will be a minimal number of access roads to riverbeds. Cutting of riverbanks will be avoided and ramp with smooth slope will be maintained. Access points to the riverbed will be decided based on the least steepness of the riverbank and the least human activity at that location.
3. No foreign material like polythene bags, jute bags, and useless articles should be allowed to remain/spill in the riverbed and catchment area, or no pits/pockets will be allowed to be filled with such material.
4. Mining at the concave side of the river channel should be avoided to prevent bank erosion. Similarly, a tortuous segment of a river is to be selected for mining in such a way as to ignore the natural eroding of banks.
5. Ensure that ponding is not created in the riverbed.
6. Transportation route should be such that it gives minimum

damage to the environment.

7. Green belt will be developed along the haul road and the bank of rivers of mine premises and near the sand mining site. While selecting the plant species, preference will be given for planting native species of the area.

2. Water environment

Anticipated Impact

The project activity will be carried out in the dry part of the riverbed. Care will be taken to ensure that neither of the project activities will affect the water environment or riverbank habitats. During the lean months, the proposed Sand Mining will not expose the base flow of the river and hence there will not be any inauspicious impact on surface hydrology and groundwater regime due to this project. Project activities will not have any adverse consequences on the physical components of the environment and therefore may not have any effect on the recharge of ground waters or affect the water quality. Monitoring of water quality will be checked yearly.

Mitigation measures

1. Mining is avoided during the monsoon season and at the time of floods. This will help in the replenishment of sand in the riverbed.
2. Mining below the subterranean water level will be avoided as a safeguard against environmental contamination and over-exploitation of resources.
3. River stream will not be transferred to create active channels.
4. Mining schedule is synchronized with the river flow direction and the gradient of the land.
5. Mining at the concave side of the river channel will be avoided to prevent bank erosion.
6. Tortuous segment of the river will be selected for mining in such a way as to avoid naturally eroding banks and to promote mining on naturally building meander components.
7. Mining depth shall be maintained as per the guidelines and

rules of the Sand Mining Policy dated 03/09/2019 and recommendations of Maharashtra State (⁸M.S.). State Ground Water Department for extraction of sand during the lease period.

8. Water Quality Monitoring for the ground waters, river water, and other surface waters shall be carried out seasonally to ensure that the water quality is not affected by the project activities.
9. Utmost care will be taken to minimize or control leaking vehicles to be used for sand transportation.
10. The washing of tractor trolleys in the river will not be done.
11. The contractor will follow all guidelines and rules for proper and scientific methods of mining during the period of extracting the sand.

3. Air Environment

Anticipated Impacts

Plying of tractor trolleys from the public road to river sand collection points needs access roads. The majority of such access roads are the already existing roads/tracks being used by pedestrians/cart owners. The movement of heavy vehicles sometimes causes problems for cattle, agricultural land, and human habitations due to dust, noise, and the movement of the public. These environmental problems are felt more as the area is rural in nature.

Air pollution is likely to be caused at various stages of Sand Mining operations such as excavation, loading & transportation of material. Most of the fugitive dust emissions will be generated from loading & transportation. This dust becomes airborne and spreads away to surrounding areas.

The impact on air is mainly localized in nature as the dust particles of 100 μ in size are not carried to farther distances beyond 100m and the effect is felt within the core zone of the project involving active Sand Mining operations.

⁸ Maharashtra State

Mitigation measures

1. Movement of the vehicles on the road will be increased; however, the unmetalled road in the mining area will be sprinkled with water at regular intervals.
2. In addition to preventing spillage from tractor trolleys, overloading shall be controlled to 1-brass/tractor trolley. The speed limit will be <20 km/hr.
3. Maintenance of the haul road will be done on a regular basis.
4. To avoid fugitive dust emissions at the time of excavation, a regular sprinkling of water will be done on regular basis.
5. Sand is transported to the sites by road through tractor trolleys. The sand-carrying vehicles shall be covered by tarpaulin sheets.
6. The Green belt development will be prepared along the haul roads, which will act as a pollution sink.
7. To minimize vehicular pollution from the sand transporting vehicles, the following conditions will be insisted upon to permit the vehicles of the transporters.
8. The vehicles should be Bharat-IV stage compliant and should have a Pollution Under Control (⁹PUC) Certificate issued by appropriate authorities.
9. Regular maintenance of transport vehicles and monitoring of vehicular emission levels at periodical intervals.

4. Noise Environment

Anticipated Impact

The noise environment in this project will be overdone by the equipment at the site and vehicular transportation. A slight increase in noise levels of <10dB(A) can be expected up to a distance of 100m.

Mitigation measures.

1. Minimum use of horns in the village area.
2. Timely maintenance of vehicles and their silencers to

⁹ Pollution Under Control

minimize vibration and sound.

3. Phasing out old and worn-out tractor trolleys.
4. Provision of green belts along the road networks.
5. Care will be taken to produce minimum sound during sand loading.
6. Backhoe loader excavator will be used
7. Earplugs may be provided to protect the labourers working at the site.

5. Socio-economic Environment

Anticipated Impacts and Evaluation

1. The project activities shall not have any adverse impacts on any of the common property resources of the village communities, as the Sand Mine lease area is not being used for any purpose by any section of the society in this region.
2. There is no Resettlement and Rehabilitation (¹⁰R&R) involvement in this project.
3. There is no land acquisition in this project.
4. A major portion of the houses in the study area is semi-pucca-type structures.
5. The water source to these areas is from the Grampanchayat /Nagar Parishad connection and private bore wells and wells.
6. People living around the project area need the project for the purpose of employment and economic benefits.
7. The awareness level regarding the proposed mining activity is very towering. The proposed mining activity is expected to provide stimulus to socio-economic activities in the region and thereby accelerate further development processes.

Social and Demographic Profile

The workers are from local villages. These people have been provided welfare benefits from the lessee like medical benefits,

¹⁰ Rehabilitation and Resettlement

insurance, fees for children's education, etc. They have some land and cattle for their daily earnings. Additional revenue earned from the Sand Mining work will improve their living standard. The group of quarries in and around will help to have infrastructure facilities like roads, schools, shops, etc. This will enhance their social life.

Occupational Health and Safety

This is a riverbed Sand Mine. So, the mining activities are comparatively smaller because the production is not on a high scale. Workers do not come across any extreme conditions like excessive heat, moisture, etc. Workers working around it may come across this dusty environment. But the impact on health will be within the limit.

Human Settlement

1. There are no houses in and around the lease area. Blasting is the only activity, which may affect the settlement, which is not done. The settlement is more than 1-km from the sand mine.
2. Appropriate precautions will be taken during mining. Transportation of finished products is through the villages. There will be an effect of traffic on the local people. However, the intensity of traffic is 70-80/day.

Health and Hygiene

In general, the health of villagers is moderately good. In the rainy season, the atmospheric condition is unhygienic due to a lack of proper drainage and sanitation in the village habitation. Villagers are working in agricultural fields and work as labourers.

Education

Most education of 70% young <20 years, is up to the 5th to 9th. Economic condition is in general moderate. So, after this project, the standard of education will increase.

Socio-Economic Benefits Arising Out of Mining

1. Generation of employment in rural areas.
2. Upgradation in the living standards of rural people.
3. Creating infrastructural facilities like roads, electricity, shops, schools, etc.
4. Upgrading literacy in the area by exploiting natural minerals so the generation of revenue.

5. Helping to sustain construction activity.
6. Improving the greenery of the area, which is otherwise poor.

Liquid Effluent

Not applicable, because these activities do not generate effluent from operation or process.

Solid Waste

Not applicable, because small mines and impacts are negligible.

Project benefits due to the sand mining of Gavhanthadi are explained in the next Chapter.

CHAPTER 5

PROJECT BENEFITS

The proposed Sand Mining project of Gavhanthadi village, Majalgaon Taluka, Beed District will lead to the following benefits:

1. Increase in the revenue of the district will ultimately increase the revenue of the village, which in return can be used to improve the infrastructure of the village.
2. Sand is available for building construction work and by systematic separation of sand, there is no possibility of a flood. Providing smooth movement of water of the river.
3. This project will contribute additional revenue to the state Exchequer in the form of revenue.
4. The project will conclude with employment opportunities for unskilled/skilled local people.
5. Standard of living of employed people will increase.

CHAPTER 6

SITE-SPECIFIC ENFORCEMENT & MONITORING PLAN

Sand Ghat Site specific enforcement & monitoring plan

(as per guidelines stipulated in the Enforcement and Monitoring Guidelines for sand mining issued by MoEFCC in January 2020.)

District administration shall deliver information on its website about the Sand Mines in the district for public information. The objective is to extend all information into the public domain so that the citizens are aware of the mining activities. People can also report to the district administration any deviation observed. Suitable feedback and its composition shall also be made operational.

Details shall include, but not be limited to, lease area, geo-coordinates of lease area and mineable area, transport routes, permitted capacity, regulatory conditions for operation including mining, environmental and social commitments, etc.

An Independent Committee of experts constituted by the Distance Learning Task Force (¹¹DLTF) will assess the environmental or ecological damage caused due to illegal mining and recommend recovery of environmental compensation from the concerned miners.

The recommendation may also include action under the provision of the Environment (Protection) Act 1986 u/s.15 read with s.19.

¹¹ Distance Learning Task Force

CHAPTER 7

SECURITY FEATURES

Security features are included in the Transport Permission/Permits (TP)

It will be ensured that the following security features are included in the Transport Permission/Permits (¹²TP) so that duplicate/fraudulent/forged TPs for transport, not accounted for in the IT-based system, is not possible:

1. Printed on Indian Bank Association (¹³IBA) Approved letterhead with account details
2. Magnetic Ink Character Recognition Code (¹⁴MICR) paper
3. Unique Barcode
4. Unique Quick Response Code (¹⁵QR)
5. Fugitive Ink Background
6. Invisible Ink Mark
7. Void Pantograph Watermark
8. Global Positioning System (¹⁶GPS) based vehicle tracking system
9. Closed-Circuit Television (¹⁷CCTV) Camera

¹² Transport Permission

¹³ Indian Bank Association

¹⁴ Magnetic Ink Character Recognition Code

¹⁵ Quick Response Code

¹⁶ Global Positioning System

¹⁷ Closed Circuit Television

CHAPTER 8

REPLENISHMENT

Replenishment study is the most important part of Sand Mining as it is the only basis to carry out sand mining. Without a Replenishment Study, we cannot understand the amount of deposition of sand. Following points to be followed for the replenishment study.

1. Area of deposition and erosion will be calculated for each cross-section after giving due regard to the stability & safety of active channel banks & other features of importance.
2. Differential Global Positioning System (¹⁸DGPS) and other survey tools will be used to define the topography, contours, and offsets of the lease area.
3. Contour & elevation benchmarks will provide baseline data for assessing pre- and post-study period scenario.
4. Physical benchmarks will be fixed at appropriate intervals (preferably 1 in 30m) & Reduced levels (¹⁹RL) shall be validated from a nearby standard RL.
5. These RL will be engraved on a steel plate (Bench Plate) & will be fixed & placed at locations that are free from any damages & are available in the pre-and post-study period.
6. Bench plates will be available for use during the mining period as a reference for all mining activity.
7. Baseline data on elevation status for a grid of 10m x 10m is preferred to have accuracy in the assessment.
8. It is expected that two consecutive cross-sections in longitudinal and lateral directions will not be more than a 10m distance apart.
9. Changes observed in the elevation in pre and post-scenario at each node, will be depicted in graphical forms with an appropriate scale to estimate the area of deposition & erosion.

¹⁸ Differential global positioning system

¹⁹ Reduced levels

10. Elevation level will be in reference to the nearest bench plates established for the purpose.
11. The levels (MSL & RL) of the corner point of each grid will be identifiable and safety barriers (non-Mining) demarcated as restricted in consensus with the Mineral Concession Rules of the respective State, and the provision mentioned in this Sustainable Sand Mining Management Guidelines.
12. A clear identification will be highlighted between grids under the mineable and grids under the non-mineable area.
13. These baseline data (pre and post) be subjected to stimulation with the help of data mine software to derive the replenishment area and corresponding volume and estimated weight.
14. The database will be structured in a tabulated form clearly depicting the nomenclature of the section lines, latitude and longitude of the starting point, chainage, and respective levels of all the points taken on that section line.
15. Net area shall be derived after summation of an area of deposition minus the area of erosion for each cross-section.
16. Volume will be estimated by multiplying the distance between two cross-sections with the average of the net area of these two consecutive cross-sections.
17. One sample per 900m² (30m x 30m) will be the preferred sample density for the assessment of bulk density for the estimation of deposition rate.
18. Care will be taken that the sample for assessment of Bulk Density is taken from the deposition zone & not from erosion.

Methodology for Sand Mining:

The following methodology should be followed for the Replenishment study.

1. The Demarcation and benchmark of the Sand Ghat are done at 10m x 10m intervals.
2. The use of the Auger Driller is to find out the depth of sand in each grid.
3. Auger Driller has created the holes in sand ghat by 10mx10m grid pattern.
4. Measured the depth of holes by using a measuring tape.

5. After taking all the readings average depth of sand is calculated.
6. The average depth of Gavhanthadi at Godavari is measured.

Replenishment study of sand in the proposed ghat along with details of the methodology, technology used to identify the existing reserve & replenishment of the same

Dandy Bolton Equation

For runoff less than 2 inches

$$S = 1280 \times (Q) \times 0.46 \times (1.46 - 0.26 \log(A)) \times F$$

For runoff more than 2 inches

$$S = 1958 \times (Q) \times (e^{-0.055 \times Q}) \times (1.43 - 0.26 \log(A))$$

Where,

S = sediment yield of stream (t/yr/km²),

Q = average annual runoff (m³),

A = net drainage area in sq.mile.

CHAPTER 9

PROPOSED PLANTATION PLAN

The Project Proponent must take care of the plantation around the site. This will not only enhance the beautification of the area but also there will be the reduction of pollution, not some extent.

Details of the plantation and Tree species recommended for the plantation are shown below.

Table 9. 1 Details of green belt

Location of greenbelt	Both sides of the approach road, On the riverbanks of both sides of the sand spot & nearby open areas. Haul Road outside the riverbed
No. of plants to be planted	2000 per Hectare
Spacing of plants	2m grid interval
Species selected	Native species

Table 9. 2 Trees species for plantation

Botanical Name	Local Name	Importance
Azadirachta Indica	Neem	Neem oil & neem products
Tectona Grandis	Teek	Antibacterial, Antifungal, Antiulcer
Ficus religiosaa	Peepal	Medicinal use, Fruits & figs
Bambusa vulgaris	Bamboo	Anthelmintic Anti-inflammatory, Astringent Properties
Madhuca longifolia	Mahua	Acts as a Stimulant & cough relief,

CHAPTER 10

ENVIRONMENTAL MANAGEMENT PLAN

A total capital cost of Rs.5.97 Lakhs has been kept in the project cost towards the environmental protection, control, mitigation measures, and implementation of the Environmental Management Plan (EMP). This cost is borne by the bidder/leaseholder. The budgetary cost estimate for the EMP is given in Table.

Table 10. 1 Budgetary cost of EMP

Sr	Impact Source	Impact	Control Measure	Cost (Rs.)
1	Transport Road	On Air Quality	Compaction, gradation, and drainage on both sides.	40000
		On Land, the Stability of the Road and degradation of road	Proper maintenance	30000
			Regular water spraying	30000
			The air quality will be monitored at the impacted village. (For One Day Monitoring)	5000
			Health Check-up of Employees	5000
2	Truck/ Tractor Movement	Air Quality	Sand-carrying trucks will be effectively covered by tarpaulin to avoid the escape of fines to the atmosphere. (2 Tarpaulin)	25000
			Regular monitoring of the exhaust fumes	5000

Sr	Impact Source	Impact	Control Measure	Cost (Rs.)
			Barriers & Traffic Management Expenses. (Excluding Manpower Salary which is included in labour costs)	10000
3	Ramp and Sand Reach	Mining Operation	Regular ramp Inspection and Ramp maintenance. (Excluding Manpower Salary which is included in labour costs)	50000
			Provision of dust masks	10000
4	Bank Management	Bank Erosion/Flood Plain management	The green belt along the bank (For Green Belt Development)	150000
			Plantation of wide leaf tall trees on banks and grass along a slanting portion of the bank	
5	Transportation on Village Roads	Dust Control	The green belt along village Rd (For Green Belt Development)	
6	Final Mine Closure Plan implementation	Replenishment of Sand	Gabions/ boulders will be arranged as per guidelines	15000
7	Mobile toilet, sewage handling & treatment		Mobile toilet, sewage handling & treatment	80000
8	CCTV Monitoring			80000
Total				535000

Budget For Corporate Environment Responsibility (²⁰CER)

About 2% fund of the project cost is allocated for Corporate Environment Responsibility (CER) activities as presented in below Table

Table 10.2 Budget for CER

Sr.	Description	Cost (Rs)
1.	Village Schools (separate toilet for girls and boys)	15000
2.	Solar panels over Gram Panchayat buildings	15000
3.	Solar panels over Public Health Centers	20000
	Total	50000

²⁰ Corporate Environment Responsibility

CHAPTER 11

SUMMARY AND CONCLUSION

The Roles and Responsibilities of the Environmental coordinator, the Operation Manager, and the senior personnel contractor are essential in EMP.

The environmental status of the project site and study area of 10km radius is delineated with respect to air, noise, water, land, biological and socio-economic environment the different project activities in the construction and operation phases are identified.

To identify the impacts, the interaction between the project activities and different components of the environment is classified phase-wise. A summary of the recognized impacts is given in the following paragraphs.

- During the operational phase, the transportation of sand could cause a temporary disturbance to the local environment which will be prevented with the proposed mitigation measures.
- Proposed project will not have any major significant negative impacts. The minor impacts arising during Excavation and Transportation phases can be mitigated with the help of the proposed Environmental Management Plan.
- In general, sand excavation from Gavhanthadi sand spot will be useful to the developmental work in the district and generate employment opportunities.

From this project, it is concluded that the district revenue will increase in return minimum of 2% of funds are utilized for the development of the village. The project will also grab employment which will improve the standard of life of villagers.

*** END ***

Environmental Management Plan

As per Rules 23 & 26 of MMME (D & R) RULE 2013 & Section 15 of MMDR Act 1957, MoEFCC Notification 2006, S.O. 141(E) dated 15. 01. 2016; MoEFCC, Sustainable Sand Mining Management Guidelines 2016, Guidelines for Mining Policy 2020)

for

ENVIRONMENTAL CLEARANCE

of

SAND MINING (MINOR MINERAL)

for

Guntegaav– A Riverbed Sand Mine / Sand Ghat
Khasra No. GSDA approved 10, 11, 12, 13
Area (3.60ha)

Village Guntegaav, Tehsil Gevrai, District Beed

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ABBREVIATION

Short Form	Long Form
EMP	Environmental Management Plan
MoEFCC	Ministry of Environment Forest and Climate Change
DSR	District-level Survey Report
EC	Environmental Coordinator
OM	Operations Manager
GSDA	Groundwater Surveys & Development Agency
MPCB	Maharashtra Pollution Control Board
MSL	Mean Sea Level
MS	Maharashtra State
PUC	Pollution Under Control
R&R	Rehabilitation and Resettlement
DLTF	Distance Learning Task Force
TP	Transport Permission/Permits
IBA	Indian Bank Association
MICR	Magnetic Ink Character Recognition Code
QR	Quick Response Code
GPS	Global Positioning System

CCTV	Closed-Circuit Television
DGPS	Differential Global Positioning System
RL	Reduced Levels
CER	Corporate Environment Responsibility

CHAPTER 1

INTRODUCTION

The Environmental Management Plan (¹EMP) plays a vital connection uniting forecast impacts and mitigation measures during implementation and operational activities. EMP stipulates the mitigation, monitoring and conventional measures to be taken during project implementation and operation. EMP is to escape or mitigate adverse environmental impacts, and to implement these measures.

This Environmental Management Plan (EMP) has been prepared as part of the Scoping Report which will be compiled in terms of the Environmental Assessment for the sand mining activities.

Considering the Ministry of Environment and Forest Climate Change (²MoEFCC) Notification 2006 and Sustainable Sand Mining Management Guidelines 2016, the Govt. of Maharashtra had mapped out the Minor Mineral Extraction Rules 2013. These rules are to extract all minor minerals in a scientific way so that there is no unfavourable impact on Environment and Climate. To extract every minor mineral from any land (either Government or Private) there is provision for a Mining Plan. These plans need to be approved by a competent authority. For long-term leased minor minerals (5-10 years period) and sand excavation from the riverbed, Senior Deputy Director of Directorate of Geology and Mining is the competent authority. These plans are for short term temporary permits which are valid for one year.

According to Enforcement & Monitoring Guidelines for Sand Mining 2020, Sustainable Sand Mining Management Guidelines 2016, Standard Environment conditions for sand mining and sustainable mining practices, District level Survey Report (³DSR) should be prepared and are suitable for mining and area prohibited for mining must be recognized.

¹ Environmental Management Plan

² Ministry of Environment Forest and Climate Change

³ District Survey Report

Objectives of EMP

- To provide overall conservation of the environment.
- To minimize waste generation and pollution.
- To regulate the precise use of natural resources and water.
- To provide Safety, Welfare, and Good health for the workforce and populace.
- To regulate the effective operation of all control measures.
- To ensure alertness against probable disasters and accidents.
- To monitor cumulative and long-term impacts.
- To regulate the effective operation of all control measures.

Roles and Responsibilities concerning the implementation of the EMP

The roles and responsibilities of all parties involved in successfully managing the environment are mentioned below.

Environmental Coordinator

The Environmental Coordinator will inspect operational areas on a quarterly basis and at the onset of mining any new island, to ensure that all specifications are met. The duties of the environmental coordinator will be the following.

- Guide the operations team in respect of the implementation of the environmental specifications.
- Lead the visits to ensure all work is aligned with the EMP.
- The environmental coordinator must examine the site during the three-monthly visits. All rehabilitation results will be Comprised in the quarterly report.
- Examination of the rehabilitation area and giving guidance regarding rehabilitation measures if any.

The Operations Manager

The responsibilities of the Operations Manager (4OM) or his nominated authority are as follows.

1. Familiarize themselves with the requirements of the EMP.
2. Monitor employees' and contractor's compliance with the environmental specifications; and enforce adherence.

⁴ Operations Manager

3. Communicate all environment-related incidents with the Environmental Coordinator and distribute them internally to avoid repetition.
4. Maintain a record of activities relevant to Environmental Management.
5. The Operations Manager shall be responsible for monitoring and the enforcement of the Environmental Management specifications on a day-to-day basis. Any violation of the environmental specifications shall be recorded, and the agreed disciplinary measures are taken.

Senior personnel and contractors

The roles of the senior personnel/contractors are as follows:

- Familiarize themselves with the requirements of the EMP.
- Comply with the environmental management specifications.
- Ensure that all team members are familiar with the environmental management specifications.

Details of the project

The Guntegaav sand ghat area has been selected in perspective of its subsisting demand for building-grade sand for the area in and around Gevrai Taluka. The District Mining Officer Beed has put forward the proposal for Environmental Clearance for mining. The ghat has a production of 6360 brass sand within an area of 3.60ha. The proposed proposal follows an organized mining process for Environmental Clearance.

Further Chapter informs about the in-depth details of the Sand Ghat, its geographical structure, and a Google map of the ghat with its approach road for contractors and workers to reach to sand ghat from the village.

CHAPTER 2

DETAILS OF THE PROJECT

Guntegaav village is located in Gevrai Taluka of Beed district, Maharashtra. Beed is well connected with all nearby cities. The National highway NH-52, it traverses through the states of Punjab, Haryana, Rajasthan, Madhya Pradesh and Maharashtra in India. NH-52 is the National Highway passing through the district, covering a total distance of 73.60km. Gevrai has situated about 31.3km by road from Beed. The district has road links to adjoining districts Ahmednagar District to the west, Jalna District to the North, Latur District to the East, Osmanabad District to the South, Parbhani District to the East The district is well connected by roads.

Guntegaav village is 50.51km away from Collector Office headquarters Beed. The Geographical area of the Beed is around 10693km². The nearest Railway station to Guntegaav village is Gevrai Railway station. The nearest Airport to Beed District is Aurangabad Airport, Aurangabad Airport is 104km away from beed.

Honourable Collector Beed intends to auction Sand Ghats and appointed District Mining Officer as Project Proponent. A total of 38 sand ghats are identified by Tahsildar Majalgaon, Parli Ve, Gevrai, Beed along with District Mining Officer, Beed. The 38 sand ghats were jointly surveyed by Taluka level technical committee headed by respective tahsildar with Dy. Engineer Irrigation Department, Junior Geologist Directorate of Geology and Mining Govt. of Maharashtra, Junior Geologist, Groundwater Surveys & Development Agency (⁵GSDA). DMO Beed and a representative of the Maharashtra Pollution Control Board (⁶MPCB), as per the procedure defined in Sand Auction Rules 2019 dated 3/09/2019 formed a Taluka-level technical committee, which explored the sand ghats for an available quantity of sand for scooping. Revenue of Rs.25 Crore is expected from the auction of these sand ghats. Guntegaav Sand Ghat proposed over river Godavari in Gevrai

⁵ Groundwater Surveys & Development Agency

⁶ Maharashtra Pollution Control Board

Taluka is proposed to cater to the infrastructural requirement of sand in the Tehsil of Beed and adjoining areas of other talukas.

Table 2. 1 Details of Guntegaav Sand ghat

Name of Village	Tahsil	River/ Nallah	Nearest survey No.	Area (ha)	Proposed Depth for excavation (m)	Quantity Permitted for mining of Sand in Brass	Method of Mining
Guntegaav.	Gevrai	Godavari	10, 11, 12, 13	3.60	0.50	6360	Open-cast manual mining

Table 2. 2 Salient features of the project

Particulars	Details															
Location	Village- Guntegaav, Taluka-Gevrai, District-Beed, Maharashtra.															
Latitude and Longitude	<table border="1"> <thead> <tr> <th>Boundary points of Guntegaav sand spot</th> <th>Latitude</th> <th>Longitude</th> </tr> </thead> <tbody> <tr> <td>BP1</td> <td>19°23'53.08"N</td> <td>75°31'43.25"E</td> </tr> <tr> <td>BP2</td> <td>19°23'55.00"N</td> <td>75°31'43.63"E</td> </tr> <tr> <td>BP3</td> <td>19°23'50.67"N</td> <td>75°32'3.61"E</td> </tr> <tr> <td>BP4</td> <td>19°23'48.81"N</td> <td>75°32'3.25"E</td> </tr> </tbody> </table>	Boundary points of Guntegaav sand spot	Latitude	Longitude	BP1	19°23'53.08"N	75°31'43.25"E	BP2	19°23'55.00"N	75°31'43.63"E	BP3	19°23'50.67"N	75°32'3.61"E	BP4	19°23'48.81"N	75°32'3.25"E
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BP3	19°23'50.67"N	75°32'3.61"E														
BP4	19°23'48.81"N	75°32'3.25"E														
Sand spot area (In ha)	3.60ha															
Proposed production capacity (in Brass)	6360															
Infrastructure Requirement (As per Govt Resolution 3rd January 2018)	<ol style="list-style-type: none"> 1. Room / Hut for Official records 2. Electricity / Battery for Running CCTV 24x7 daily. 3. One Computer / Android-based Mobile for the online generation of Invoice numbers. 															
Distance of project site from nearest rail or road bridge over the concerned River, Nallah, etc.	Godavari River Bridge-6.82km															

Particulars	Details
Distance from infrastructural facilities Railway line National Highway State Highway Major District Road Any Other Road Electric transmission line pole or tower Canal or check dam or reservoirs or lake or ponds In-take for drinking water pump house Intake for Irrigation canal pumps	Gevrai railway station-54.74km NH52-19.76km MSH148-15.57km 5.84km 1km
Areas already subjected to pollution or environmental damage. (those where existing legal environmental standards are exceeded)	None
Areas susceptible to natural hazards which could cause the project to Present environmental problems (earthquakes, subsidence, landslides, erosion, flooding, or extreme or adverse climatic conditions)	No. Sand Ghat is at safe distances from natural hazards like earthquake prone area, subsidence, landslide, erosion, flooding prone area and extreme or adverse climatic conditions

Particulars	Details
Whether the proposal involves approval or clearance under the following Regulations or Acts, namely: - (a) The Forest (Conservation) Act, 1980. (b) The Wildlife (Protection) Act, 1972. (c) The Coastal Regulation Zone Notification, 2011. If yes, details of the same and their status are to be given.	None
Forest land involved (hectares)	None

The below figure shows the google image of Guntegaav sand ghat.

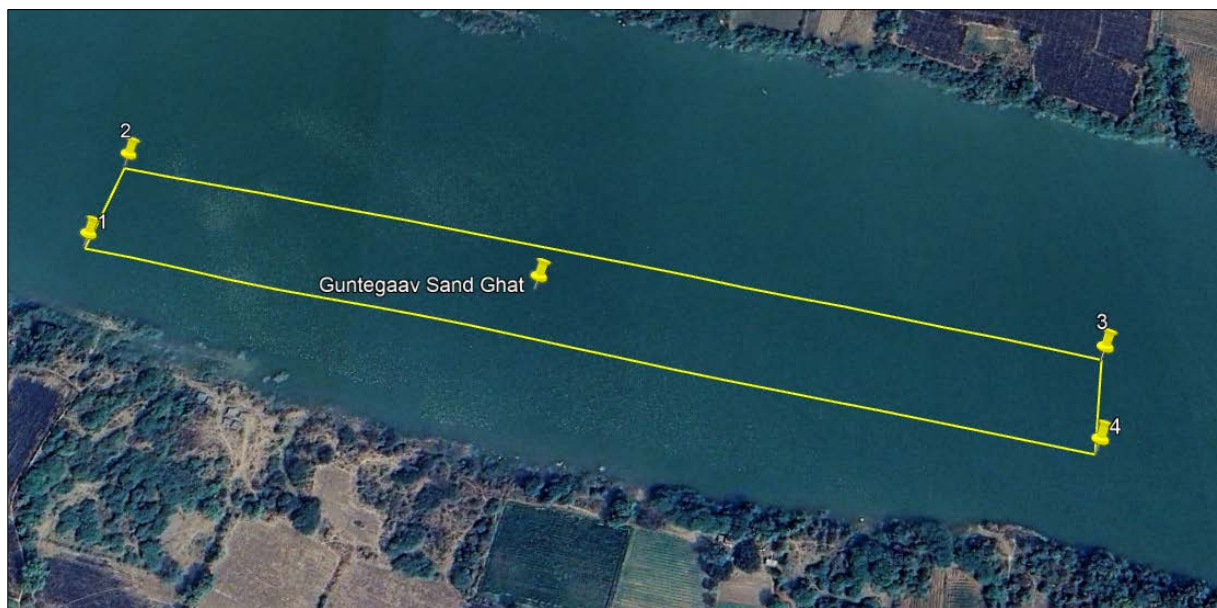


Fig 2.1-Google image of Guntegaav sand ghat

Approach roach along with google location is as shown below.

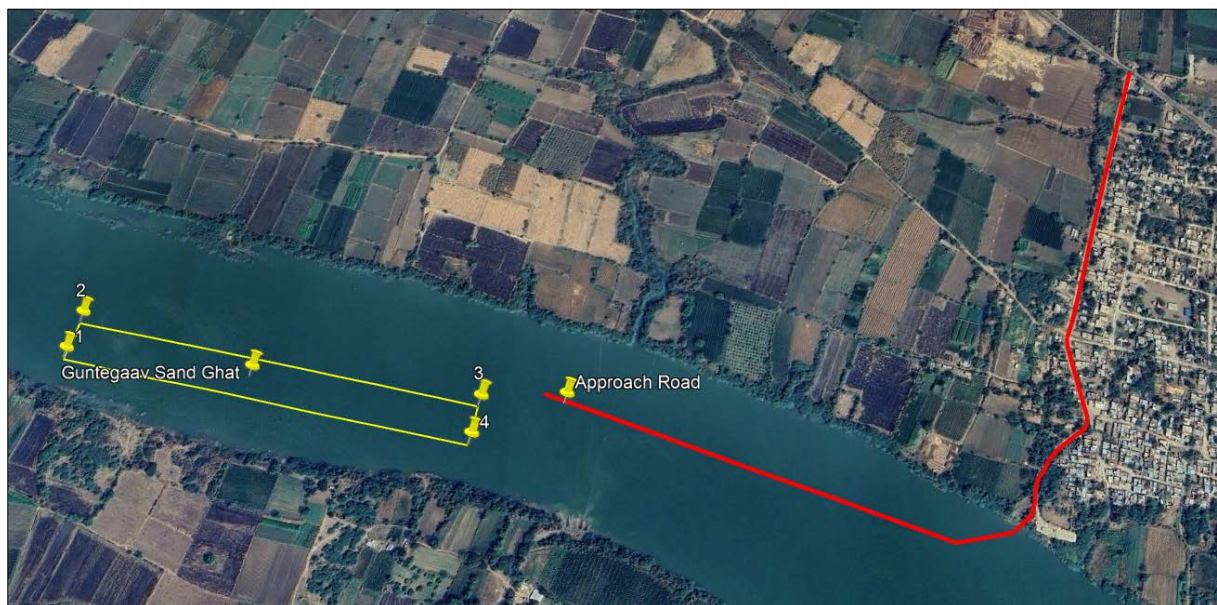


Fig 2.2-Approach Road for sand ghat

Next chapter 3 is Baseline Environmental Status in which the entire Topography, Climate, Soil Environment, Land use, water Environment, Hydrology, Biological environment, and Socio-economic Environment are briefly explained for the Beed district.

CHAPTER 3

BASELINE ENVIRONMENT STATUS

Topography

The Sand Ghat area as per the survey is the riverbed of the Godavari River of the Beed district. The maximum elevation is 450m MSL, average elevation is 447m MSL, & minimum elevation is 444m (⁷MSL) Mean Sea Level. The slope of the Sand Ghat area towards the Northeast to Southwest side. The flow of Godavari River is from Southeast direction.

Presently, there is neither any infrastructure within the riverbed nor are proposed.

Hydrology

There will be no change in the Water Table during the mining operation, as the depth of mining shall be restricted to 0.50m water level, which is less likely to affect the surface level or Groundwater Table. There is no proposal of any stream modification/diversion due to this mining activity hence there will be not any impact on the flow of water.

Soil Environment

The riverbed consists of sand /gravel. There is no topsoil. The depth of mining shall be restricted to 0.50m. There is no crucial impact on the soil forecasted due to mining activities.

Land Use Land Cover

Land use shows that agriculture land use is predominant. The proposed site is 3.60ha having adjoined Khasara No 10, 11, 12, 13. The land doesn't cover any human habitation, forest, etc. Any change in the scope of the approved Mining Plan will lead to riverbank erosion/cutting and thereby river channel shifting, degradation of land, causing loss of properties and degradation of the surrounding landscape.

⁷ Mean sea level

Water Environment

While transporting sand there may be fugitive dust. There will be water requirement for spraying for dust suppression purposes. This water will be supplied from the borewell from nearby villages through tankers as well as from surface water sources. The water source may vary from village to village.

Climate

During summer May is the hottest month of the year in this area. The temperature rises to 42°C in the month of May. The average rainfall in this region is 600-700mm About 50% of rainfall precipitates between June to September. December is the coldest month with temperature falling down to 18°C. Overall the proposed site area has sub-tropical conditions.

Biological Environment

Flora

The agricultural area is seen near the Sand Ghat. Few trees and thorny bushes are seen on the banks of the river.

Fauna

As there is no forest cover, no endangered species of wildlife are seen in this area.

Socio-Economic Environment

This project may create constructive impacts of the sand mining that are stated below:

1. The mining operations will provide direct & indirect employment to village people.
2. The villages and their inhabitants & domestic animals will not be disturbed due to mining, as the quarry is far from their settlements.
3. Local workforce will be given first preference for employment.
4. Mining activities will benefit the local people due to the provision of more infrastructural facilities (developments of approach routes within the village area).

The next chapter describes all possible impacts on the Environment due to this project along with its mitigation measure to overcome these impacts.

CHAPTER 4

IMPACT ASSESSMENT REPORT ALONG WITH PROPOSED MITIGATION MEASURES

1. Land Environment

Anticipated Impact

Movement of vehicles can create issues for agricultural land, human habitations, noise, and risk for public and cause traffic hazards. The impacts include damage to the riverbank due to access ramps to the riverbed, soil erosion because of extraction of sand, micro disturbance to groundwater, possible stimulation of the changed river course, and contamination of sand aquifer water due to ponding. There might be surface degradation due to the road network.

The quality of soil will not be affected due to transportation or any other activity of mining.

Mitigation measure

1. Mining depth should be restricted to 3 meters and distance from the bank should be $\frac{1}{4}$ th or river width and should not be less than 7.5 meters as per “Sustainable Sand Mining Guidelines 2020” Page 23, Point no 4.3 (m).
2. There will be a minimal number of access roads to riverbeds. Cutting of riverbanks will be avoided and ramp with smooth slope will be maintained. Access points to the riverbed will be decided based on the least steepness of the riverbank and the least human activity at that location.
3. No foreign material like polythene bags, jute bags, and useless articles should be allowed to remain/spill in the riverbed and catchment area, or no pits/pockets will be allowed to be filled with such material.
4. Mining at the concave side of the river channel should be avoided to prevent bank erosion. Similarly, a tortuous segment of a river is to be selected for mining in such a way as to ignore the natural eroding of banks.
5. Ensure that ponding is not created in the riverbed.
6. Transportation route should be such that it gives minimum

damage to the environment.

7. Green belt will be developed along the haul road and the bank of rivers of mine premises and near the sand mining site. While selecting the plant species, preference will be given for planting native species of the area.

2. Water environment

Anticipated Impact

The project activity will be carried out in the dry part of the riverbed. Care will be taken to ensure that neither of the project activities will affect the water environment or riverbank habitats. During the lean months, the proposed Sand Mining will not expose the base flow of the river and hence there will not be any inauspicious impact on surface hydrology and groundwater regime due to this project. Project activities will not have any adverse consequences on the physical components of the environment and therefore may not have any effect on the recharge of ground waters or affect the water quality. Monitoring of water quality will be checked yearly.

Mitigation measures

1. Mining is avoided during the monsoon season and at the time of floods. This will help in the replenishment of sand in the riverbed.
2. Mining below the subterranean water level will be avoided as a safeguard against environmental contamination and over-exploitation of resources.
3. River stream will not be transferred to create active channels.
4. Mining schedule is synchronized with the river flow direction and the gradient of the land.
5. Mining at the concave side of the river channel will be avoided to prevent bank erosion.
6. Tortuous segment of the river will be selected for mining in such a way as to avoid naturally eroding banks and to promote mining on naturally building meander components.
7. Mining depth shall be maintained as per the guidelines and

rules of the Sand Mining Policy dated 03/09/2019 and recommendations of Maharashtra State (⁸M.S.). State Ground Water Department for extraction of sand during the lease period.

8. Water Quality Monitoring for the ground waters, river water, and other surface waters shall be carried out seasonally to ensure that the water quality is not affected by the project activities.
9. Utmost care will be taken to minimize or control leaking vehicles to be used for sand transportation.
10. The washing of tractor trolleys in the river will not be done.
11. The contractor will follow all guidelines and rules for proper and scientific methods of mining during the period of extracting the sand.

3. Air Environment

Anticipated Impacts

Plying of tractor trolleys from the public road to river sand collection points needs access roads. The majority of such access roads are the already existing roads/tracks being used by pedestrians/cart owners. The movement of heavy vehicles sometimes causes problems for cattle, agricultural land, and human habitations due to dust, noise, and the movement of the public. These environmental problems are felt more as the area is rural in nature.

Air pollution is likely to be caused at various stages of Sand Mining operations such as excavation, loading & transportation of material. Most of the fugitive dust emissions will be generated from loading & transportation. This dust becomes airborne and spreads away to surrounding areas.

The impact on air is mainly localized in nature as the dust particles of 100 μ in size are not carried to farther distances beyond 100m and the effect is felt within the core zone of the project involving active Sand Mining operations.

⁸ Maharashtra State

Mitigation measures

1. Movement of the vehicles on the road will be increased; however, the unmetalled road in the mining area will be sprinkled with water at regular intervals.
2. In addition to preventing spillage from tractor trolleys, overloading shall be controlled to 1-brass/tractor trolley. The speed limit will be <20 km/hr.
3. Maintenance of the haul road will be done on a regular basis.
4. To avoid fugitive dust emissions at the time of excavation, a regular sprinkling of water will be done on regular basis.
5. Sand is transported to the sites by road through tractor trolleys. The sand-carrying vehicles shall be covered by tarpaulin sheets.
6. The Green belt development will be prepared along the haul roads, which will act as a pollution sink.
7. To minimize vehicular pollution from the sand transporting vehicles, the following conditions will be insisted upon to permit the vehicles of the transporters.
8. The vehicles should be Bharat-IV stage compliant and should have a Pollution Under Control (⁹PUC) Certificate issued by appropriate authorities.
9. Regular maintenance of transport vehicles and monitoring of vehicular emission levels at periodical intervals.

4. Noise Environment

Anticipated Impact

The noise environment in this project will be overdone by the equipment at the site and vehicular transportation. A slight increase in noise levels of <10dB(A) can be expected up to a distance of 100m.

Mitigation measures.

1. Minimum use of horns in the village area.
2. Timely maintenance of vehicles and their silencers to

⁹ Pollution Under Control

- minimize vibration and sound.
3. Phasing out old and worn-out tractor trolleys.
 4. Provision of green belts along the road networks.
 5. Care will be taken to produce minimum sound during sand loading.
 6. Backhoe loader excavator will be used
 7. Earplugs may be provided to protect the laborers working at the site.

5. Socio-economic Environment

Anticipated Impacts and Evaluation

1. The project activities shall not have any adverse impacts on any of the common property resources of the village communities, as the Sand Mine lease area is not being used for any purpose by any section of the society in this region.
2. There is no Resettlement and Rehabilitation (¹⁰R&R) involvement in this project.
3. There is no land acquisition in this project.
4. A major portion of the houses in the study area is semi-pucca-type structures.
5. The water source to these areas is from the Grampanchayat /Nagar Parishad connection and private bore wells and wells.
6. People living around the project area need the project for the purpose of employment and economic benefits.
7. The awareness level regarding the proposed mining activity is very towering. The proposed mining activity is expected to provide stimulus to socio-economic activities in the region and thereby accelerate further development processes.

Social and Demographic Profile

The workers are from local villages. These people have been provided welfare benefits from the lessee like medical benefits,

¹⁰ Rehabilitation and Resettlement

insurance, fees for children's education, etc. They have some land and cattle for their daily earnings. Additional revenue earned from the Sand Mining work will improve their living standard. The group of quarries in and around will help to have infrastructure facilities like roads, schools, shops, etc. This will enhance their social life.

Occupational Health and Safety

This is a riverbed Sand Mine. So, the mining activities are comparatively smaller because the production is not on a high scale. Workers do not come across any extreme conditions like excessive heat, moisture, etc. Workers working around it may come across this dusty environment. But the impact on health will be within the limit.

Human Settlement

1. There are no houses in and around the lease area. Blasting is the only activity, which may affect the settlement, which is not done. The settlement is more than 1-km from the sand mine.
2. Appropriate precautions will be taken during mining. Transportation of finished products is through the villages. There will be an effect of traffic on the local people. However, the intensity of traffic is 70-80/day.

Health and Hygiene

In general, the health of villagers is moderately good. In the rainy season, the atmospheric condition is unhygienic due to a lack of proper drainage and sanitation in the village habitation. Villagers are working in agricultural fields and work as labourers.

Education

Most education of 70% young <20 years, is up to the 5th to 9th. Economic condition is in general moderate. So, after this project, the standard of education will increase.

Socio-Economic Benefits Arising Out of Mining

1. Generation of employment in rural areas.
2. Upgradation in the living standards of rural people.
3. Creating infrastructural facilities like roads, electricity, shops, schools, etc.
4. Upgrading literacy in the area by exploiting natural minerals so the generation of revenue.

5. Helping to sustain construction activity.
6. Improving the greenery of the area, which is otherwise poor.

Liquid Effluent

Not applicable, because these activities do not generate effluent from operation or process.

Solid Waste

Not applicable, because small mines and impacts are negligible.

Project benefits due to the sand mining of Guntegaav are explained in the next Chapter.

CHAPTER 5

PROJECT BENEFITS

The proposed Sand Mining project of Guntegaav Village, Gevrai Tehsil, Beed District will lead to the following benefits:

1. Increase in the revenue of the district will ultimately increase the revenue of the village, which in return can be used to improve the infrastructure of the village.
2. Sand is available for building construction work and by systematic separation of sand, there is no possibility of a flood. Providing smooth movement of water of the river.
3. This project will contribute additional revenue to the state Exchequer in the form of revenue.
4. The project will conclude with employment opportunities for unskilled/skilled local people.
5. Standard of living of employed people will increase.

CHAPTER 6

SITE-SPECIFIC ENFORCEMENT & MONITORING PLAN

Sand Ghat Site specific enforcement & monitoring plan

(as per guidelines stipulated in the Enforcement and Monitoring Guidelines for sand mining issued by MoEFCC in January 2020.)

District administration shall deliver information on its website about the Sand Mines in the district for public information. The objective is to extend all information into the public domain so that the citizens are aware of the mining activities. People can also report to the district administration any deviation observed. Suitable feedback and its composition shall also be made operational.

Details shall include, but not be limited to, lease area, geo-coordinates of lease area and mineable area, transport routes, permitted capacity, regulatory conditions for operation including mining, environmental and social commitments, etc.

An Independent Committee of experts constituted by the Distance Learning Task Force (¹¹DLTF) will assess the environmental or ecological damage caused due to illegal mining and recommend recovery of environmental compensation from the concerned miners.

The recommendation may also include action under the provision of the Environment (Protection) Act 1986 u/s.15 read with s.19.

¹¹ Distance Learning Task Force

CHAPTER 7

SECURITY FEATURES

Security features are included in the Transport Permission/Permits (TP)

It will be ensured that the following security features are included in the Transport Permission/Permits (¹²TP) so that duplicate/fraudulent/forged TPs for transport, not accounted for in the IT-based system, is not possible:

1. Printed on Indian Bank Association (¹³IBA) Approved letterhead with account details
2. Magnetic Ink Character Recognition Code (¹⁴MICR) paper
3. Unique Barcode
4. Unique Quick Response Code (¹⁵QR)
5. Fugitive Ink Background
6. Invisible Ink Mark
7. Void Pantograph Watermark
8. Global Positioning System (¹⁶GPS) based vehicle tracking system
9. Closed-Circuit Television (¹⁷CCTV) Camera

¹² Transport Permission

¹³ Indian Bank Association

¹⁴ Magnetic Ink Character Recognition Code

¹⁵ Quick Response Code

¹⁶ Global Positioning System

¹⁷ Closed Circuit Television

CHAPTER 8

REPLENISHMENT

Replenishment study is the most important part of Sand Mining as it is the only basis to carry out sand mining. Without a Replenishment Study, we cannot understand the amount of deposition of sand. Following points to be followed for the replenishment study.

1. Area of deposition and erosion will be calculated for each cross-section after giving due regard to the stability & safety of active channel banks & other features of importance.
2. Differential Global Positioning System (¹⁸DGPS) and other survey tools will be used to define the topography, contours, and offsets of the lease area.
3. Contour & elevation benchmarks will provide baseline data for assessing pre- and post-study period scenario.
4. Physical benchmarks will be fixed at appropriate intervals (preferably 1 in 30m) & Reduced levels (¹⁹RL) shall be validated from a nearby standard RL.
5. These RL will be engraved on a steel plate (Bench Plate) & will be fixed & placed at locations that are free from any damages & are available in the pre-and post-study period.
6. Bench plates will be available for use during the mining period as a reference for all mining activity.
7. Baseline data on elevation status for a grid of 10m x 10m is preferred to have accuracy in the assessment.
8. It is expected that two consecutive cross-sections in longitudinal and lateral directions will not be more than a 10m distance apart.
9. Changes observed in the elevation in pre and post-scenario at each node, will be depicted in graphical forms with an appropriate scale to estimate the area of deposition & erosion.

¹⁸ Differential global positioning system

¹⁹ Reduced levels

10. Elevation level will be in reference to the nearest bench plates established for the purpose.
11. The levels (MSL & RL) of the corner point of each grid will be identifiable and safety barriers (non-Mining) demarcated as restricted in consensus with the Mineral Concession Rules of the respective State, and the provision mentioned in this Sustainable Sand Mining Management Guidelines.
12. A clear identification will be highlighted between grids under the mineable and grids under the non-mineable area.
13. These baseline data (pre and post) be subjected to stimulation with the help of data mine software to derive the replenishment area and corresponding volume and estimated weight.
14. The database will be structured in a tabulated form clearly depicting the nomenclature of the section lines, latitude and longitude of the starting point, chainage, and respective levels of all the points taken on that section line.
15. Net area shall be derived after summation of an area of deposition minus the area of erosion for each cross-section.
16. Volume will be estimated by multiplying the distance between two cross-sections with the average of the net area of these two consecutive cross-sections.
17. One sample per 900m² (30m x 30m) will be the preferred sample density for the assessment of bulk density for the estimation of deposition rate.
18. Care will be taken that the sample for assessment of Bulk Density is taken from the deposition zone & not from erosion.

Methodology for Sand Mining:

The following methodology should be followed for the Replenishment study.

1. The Demarcation and benchmark of the Sand Ghat are done at 10m x 10m intervals.
2. The use of the Auger Driller is to find out the depth of sand in each grid.
3. Auger Driller has created the holes in sand ghat by 10mx10m grid pattern.
4. Measured the depth of holes by using a measuring tape.

5. After taking all the readings average depth of sand is calculated.
6. The average depth of Guntegaav at Godavari is measured.

Replenishment study of sand in the proposed ghat along with details of the methodology, technology used to identify the existing reserve & replenishment of the same

Dandy Bolton Equation

For runoff less than 2 inches

$$S = 1280 \times (Q) \times 0.46 \times (1.46 - 0.26 \log(A)) \times F$$

For runoff more than 2 inches

$$S = 1958 \times (Q) \times (e^{-0.055 \times Q}) \times (1.43 - 0.26 \log(A))$$

Where,

S = sediment yield of stream (t/yr/km²),

Q = average annual runoff (m³),

A = net drainage area in sq.mile.

CHAPTER 9

PROPOSED PLANTATION PLAN

The Project Proponent must take care of the plantation around the site. This will not only enhance the beautification of the area but also there will be the reduction of pollution, not some extent.

Details of the plantation and Tree species recommended for the plantation are shown below.

Table 9. 1 Details of green belt

Location of greenbelt	Both sides of the approach road, On the riverbanks of both sides of the sand spot & nearby open areas. Haul Road outside the riverbed
No. of plants to be planted	2000 per Hectare
Spacing of plants	2m grid interval
Species selected	Native species

Table 9. 2 Trees species for plantation

Botanical Name	Local Name	Importance
Azadirachta Indica	Neem	Neem oil & neem products
Tectona Grandis	Teek	Antibacterial, Antifungal, Antiulcer
Ficus religiosaa	Peepal	Medicinal use, Fruits & figs
Bambusa vulgaris	Bamboo	Anthelmintic Anti-inflammatory, Astringent Properties
Madhuca longifolia	Mahua	Acts as a Stimulant & cough relief,

CHAPTER 10

ENVIRONMENTAL MANAGEMENT PLAN

A total capital cost of Rs.5.97 Lakhs has been kept in the project cost towards the environmental protection, control, mitigation measures, and implementation of the Environmental Management Plan (EMP). This cost is borne by the bidder/leaseholder. The budgetary cost estimate for the EMP is given in Table.

Table 10. 1 Budgetary cost of EMP

Sr	Impact Source	Impact	Control Measure	Cost (Rs.)
1	Transport Road	On Air Quality	Compaction, gradation, and drainage on both sides.	40000
		On Land, the Stability of the Road and degradation of road	Proper maintenance	30000
			Regular water spraying	30000
			The air quality will be monitored at the impacted village. (For One Day Monitoring)	5000
			Health Check-up of Employees	5000
2	Truck/ Tractor Movement	Air Quality	Sand-carrying trucks will be effectively covered by tarpaulin to avoid the escape of fines to the atmosphere. (2 Tarpaulin)	25000
			Regular monitoring of the exhaust fumes	5000

Sr	Impact Source	Impact	Control Measure	Cost (Rs.)
			Barriers & Traffic Management Expenses. (Excluding Manpower Salary which is included in labour costs)	10000
3	Ramp and Sand Reach	Mining Operation	Regular ramp Inspection and Ramp maintenance. (Excluding Manpower Salary which is included in labour costs)	50000
			Provision of dust masks	10000
4	Bank Management	Bank Erosion/Flood Plain management	The green belt along the bank (For Green Belt Development)	150000
			Plantation of wide leaf tall trees on banks and grass along a slanting portion of the bank	
5	Transportation on Village Roads	Dust Control	The green belt along village Rd (For Green Belt Development)	
6	Final Mine Closer Plan implementation	Replenishment of Sand	Gabions/ boulders will be arranged as per guidelines	15000
7	Mobile toilet, sewage handling & treatment		Mobile toilet, sewage handling & treatment	80000
8	CCTV Monitoring			80000
Total				535000

Budget For Corporate Environment Responsibility (²⁰CER)

About 2% fund of the project cost is allocated for Corporate Environment Responsibility (CER) activities as presented in below Table

Table 10.2 Budget for CER

Sr.	Description	Cost (Rs)
1.	Village Schools (separate toilet for girls and boys)	15000
2.	Solar panels over Gram Panchayat buildings	15000
3.	Solar panels over Public Health Centers	20000
	Total	50000

²⁰ Corporate Environment Responsibility

CHAPTER 11

SUMMARY AND CONCLUSION

The Roles and Responsibilities of the Environmental coordinator, the Operation Manager, and the senior personnel contractor are essential in EMP.

The environmental status of the project site and study area of 10km radius is delineated with respect to air, noise, water, land, biological and socio-economic environment the different project activities in the construction and operation phases are identified.

To identify the impacts, the interaction between the project activities and different components of the environment is classified phase-wise. A summary of the recognized impacts is given in the following paragraphs.

- During the operational phase, the transportation of sand could cause a temporary disturbance to the local environment which will be prevented with the proposed mitigation measures.
- Proposed project will not have any major significant negative impacts. The minor impacts arising during Excavation and Transportation phases can be mitigated with the help of the proposed Environmental Management Plan.
- In general, sand excavation from Guntegaav sand spot will be useful to the developmental work in the district and generate employment opportunities.

From this project, it is concluded that the district revenue will increase in return minimum of 2% of funds are utilized for the development of the village. The project will also grab employment which will improve the standard of life of villagers.

*** END ***

Environmental Management Plan

As per Rules 23 & 26 of MMME (D & R) RULE 2013 & Section 15 of MMDR Act 1957, MoEFCC Notification 2006, S.O. 141(E) dated 15. 01. 2016; MoEFCC, Sustainable Sand Mining Management Guidelines 2016, Guidelines for Mining Policy 2020)

for

ENVIRONMENTAL CLEARANCE

of

SAND MINING (MINOR MINERAL)

for

Hingangaon Satha 1– A Riverbed Sand Mine / Sand Ghat
Khasra No. GSDA approved 4, 2, 51 to 54, 7
Area (4.75ha)

Village Hingangaon, Tehsil Gevrai, District Beed

Prepared By

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ABBREVIATION

Short Form	Long Form
EMP	Environmental Management Plan
MoEFCC	Ministry of Environment Forest and Climate Change
DSR	District-level Survey Report
EC	Environmental Coordinator
OM	Operations Manager
GSDA	Groundwater Surveys & Development Agency
MPCB	Maharashtra Pollution Control Board
MSL	Mean Sea Level
MS	Maharashtra State
PUC	Pollution Under Control
R&R	Rehabilitation and Resettlement
DLTF	Distance Learning Task Force
TP	Transport Permission/Permits
IBA	Indian Bank Association
MICR	Magnetic Ink Character Recognition Code
QR	Quick Response Code
GPS	Global Positioning System

CCTV	Closed-Circuit Television
DGPS	Differential Global Positioning System
RL	Reduced Levels
CER	Corporate Environment Responsibility

CHAPTER 1

INTRODUCTION

The Environmental Management Plan (¹EMP) plays a vital connection uniting forecast impacts and mitigation measures during implementation and operational activities. EMP stipulates the mitigation, monitoring and conventional measures to be taken during project implementation and operation. EMP is to escape or mitigate adverse environmental impacts, and to implement these measures.

This Environmental Management Plan (EMP) has been prepared as part of the Scoping Report which will be compiled in terms of the Environmental Assessment for the sand mining activities.

Considering the Ministry of Environment and Forest Climate Change (²MoEFCC) Notification 2006 and Sustainable Sand Mining Management Guidelines 2016, the Govt. of Maharashtra had mapped out the Minor Mineral Extraction Rules 2013. These rules are to extract all minor minerals in a scientific way so that there is no unfavourable impact on Environment and Climate. To extract every minor mineral from any land (either Government or Private) there is provision for a Mining Plan. These plans need to be approved by a competent authority. For long-term leased minor minerals (5-10 years period) and sand excavation from the riverbed, Senior Deputy Director of Directorate of Geology and Mining is the competent authority. These plans are for short term temporary permits which are valid for one year.

According to Enforcement & Monitoring Guidelines for Sand Mining 2020, Sustainable Sand Mining Management Guidelines 2016, Standard Environment conditions for sand mining and sustainable mining practices, District level Survey Report (³DSR) should be prepared and are suitable for mining and area prohibited for mining must be recognized.

¹ Environmental Management Plan

² Ministry of Environment Forest and Climate Change

³ District Survey Report

Objectives of EMP

- To provide overall conservation of the environment.
- To minimize waste generation and pollution.
- To regulate the precise use of natural resources and water.
- To provide Safety, Welfare, and Good health for the workforce and populace.
- To regulate the effective operation of all control measures.
- To ensure alertness against probable disasters and accidents.
- To monitor cumulative and long-term impacts.
- To regulate the effective operation of all control measures.

Roles and Responsibilities concerning the implementation of the EMP

The roles and responsibilities of all parties involved in successfully managing the environment are mentioned below.

Environmental Coordinator

The Environmental Coordinator will inspect operational areas on a quarterly basis and at the onset of mining any new island, to ensure that all specifications are met. The duties of the environmental coordinator will be the following.

- Guide the operations team in respect of the implementation of the environmental specifications.
- Lead the visits to ensure all work is aligned with the EMP.
- The environmental coordinator must examine the site during the three-monthly visits. All rehabilitation results will be Comprised in the quarterly report.
- Examination of the rehabilitation area and giving guidance regarding rehabilitation measures if any.

The Operations Manager

The responsibilities of the Operations Manager (4OM) or his nominated authority are as follows.

1. Familiarize themselves with the requirements of the EMP.
2. Monitor employees' and contractor's compliance with the environmental specifications; and enforce adherence.

⁴ Operations Manager

3. Communicate all environment-related incidents with the Environmental Coordinator and distribute them internally to avoid repetition.
4. Maintain a record of activities relevant to Environmental Management.
5. The Operations Manager shall be responsible for monitoring and the enforcement of the Environmental Management specifications on a day-to-day basis. Any violation of the environmental specifications shall be recorded, and the agreed disciplinary measures are taken.

Senior personnel and contractors

The roles of the senior personnel/contractors are as follows:

- Familiarize themselves with the requirements of the EMP.
- Comply with the environmental management specifications.
- Ensure that all team members are familiar with the environmental management specifications.

Details of the project

The Hingangaon Satha 1 sand ghat area has been selected in perspective of its subsisting demand for building-grade sand for the area in and around Gevrai Taluka. The District Mining Officer Beed has put forward the proposal for Environmental Clearance for mining. The ghat has a production of 16784 brass sand within an area of 4.75ha. The proposed proposal follows an organized mining process for Environmental Clearance.

Further Chapter informs about the in-depth details of the Sand Ghat, its geographical structure, and a Google map of the ghat with its approach road for contractors and workers to reach to sand ghat from the village.

CHAPTER 2

DETAILS OF THE PROJECT

Hingangaon village is located in Gevrai Taluka of Beed district, Maharashtra. Beed is well connected with all nearby cities. The National highway NH-52, it traverses through the states of Punjab, Haryana, Rajasthan, Madhya Pradesh and Maharashtra in India. NH-52 is the National Highway passing through the district, covering a total distance of 73.60km. Gevrai has situated about 31.3km by road from Beed. The district has road links to adjoining districts Ahmednagar District to the west, Jalna District to the North, Latur District to the East, Osmanabad District to the South, Parbhani District to the East The district is well connected by roads.

Hingangaon village is 44.78km away from Collector Office headquarters Beed. The Geographical area of the Beed is around 10693km². The nearest Railway station to Hingangaon village is Kodi Railway station. The nearest Airport to Beed District is Aurangabad Airport, Aurangabad Airport is 104km away from beed.

Honourable Collector Beed intends to auction Sand Ghats and appointed District Mining Officer as Project Proponent. A total of 38 sand ghats are identified by Tahsildar Majalgaon, Parli Ve, Gevrai, Beed along with District Mining Officer, Beed. The 38 sand ghats were jointly surveyed by Taluka level technical committee headed by respective tahsildar with Dy. Engineer Irrigation Department, Junior Geologist Directorate of Geology and Mining Govt. of Maharashtra, Junior Geologist, Groundwater Surveys & Development Agency (⁵GSDA). DMO Beed and a representative of the Maharashtra Pollution Control Board (⁶MPCB), as per the procedure defined in Sand Auction Rules 2019 dated 3/09/2019 formed a Taluka-level technical committee, which explored the sand ghats for an available quantity of sand for scooping. Revenue of Rs.25 Crore is expected from the auction of these sand ghats. Hingangaon Satha 1 Sand Ghat proposed over river Godavari in Gevrai Taluka is proposed to cater to the infrastructural

⁵ Groundwater Surveys & Development Agency

⁶ Maharashtra Pollution Control Board

requirement of sand in the Tehsil of Beed and adjoining areas of other talukas.

Table 2. 1 Details of Hingangaon Satha 1 Sand ghat

Name of Village	Tahsil	River/ Nallah	Nearest survey No.	Area (ha)	Proposed Depth for excavation (m)	Quantity Permitted for mining of Sand in Brass	Method of Mining
Hingangaon.	Gevrai	Godavari	4, 2, 51 to 54, 7	4.75	1.0	16784	Open-cast manual mining

Table 2. 2 Salient features of the project

Particulars	Details															
Location	Village- Hingangaon (Satha 1), Tehsil- Gevrai, District-Beed, Maharashtra.															
Latitude and Longitude	<table border="1"> <thead> <tr> <th>Boundary points of Hingangaon Satha 1 sand spot</th> <th>Latitude</th> <th>Longitude</th> </tr> </thead> <tbody> <tr> <td>BP1</td> <td>19°23'13.86"N</td> <td>75°45'24.66"E</td> </tr> <tr> <td>BP2</td> <td>19°23'13.77"N</td> <td>75°45'26.35"E</td> </tr> <tr> <td>BP3</td> <td>19°22'47.05"N</td> <td>75°45'40.79"E</td> </tr> <tr> <td>BP4</td> <td>19°22'46.21"N</td> <td>75°45'39.34"E</td> </tr> </tbody> </table>	Boundary points of Hingangaon Satha 1 sand spot	Latitude	Longitude	BP1	19°23'13.86"N	75°45'24.66"E	BP2	19°23'13.77"N	75°45'26.35"E	BP3	19°22'47.05"N	75°45'40.79"E	BP4	19°22'46.21"N	75°45'39.34"E
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BP3	19°22'47.05"N	75°45'40.79"E														
BP4	19°22'46.21"N	75°45'39.34"E														
Sand spot area (In ha)	4.75ha															
Proposed production capacity (in Brass)	16784															
Infrastructure Requirement (As per Govt Resolution 3rd January 2018)	<ol style="list-style-type: none"> 1. Room / Hut for Official records 2. Electricity / Battery for Running CCTV 24x7 daily. 3. One Computer / Android-based Mobile for the online generation of Invoice numbers. 															

Particulars	Details										
Distance of project site from nearest rail or road bridge over the concerned River, Nallah, etc.	Godavari River Bridge-15.08km										
<table border="1"> <tr> <td>Distance from infrastructural facilities</td> <td rowspan="10"> Kodi railway station-44.18 NH52-10.72km MSH-9.20km 4.82km 1km </td> </tr> <tr> <td>Railway line</td> </tr> <tr> <td>National Highway</td> </tr> <tr> <td>State Highway</td> </tr> <tr> <td>Major District Road</td> </tr> <tr> <td>Any Other Road</td> </tr> <tr> <td>Electric transmission line pole or tower</td> </tr> <tr> <td>Canal or check dam or reservoirs or lake or ponds</td> </tr> <tr> <td>In-take for drinking water pump house</td> </tr> <tr> <td>Intake for Irrigation canal pumps</td> </tr> </table>	Distance from infrastructural facilities	Kodi railway station-44.18 NH52-10.72km MSH-9.20km 4.82km 1km	Railway line	National Highway	State Highway	Major District Road	Any Other Road	Electric transmission line pole or tower	Canal or check dam or reservoirs or lake or ponds	In-take for drinking water pump house	Intake for Irrigation canal pumps
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Railway line											
National Highway											
State Highway											
Major District Road											
Any Other Road											
Electric transmission line pole or tower											
Canal or check dam or reservoirs or lake or ponds											
In-take for drinking water pump house											
Intake for Irrigation canal pumps											
Areas already subjected to pollution or environmental damage. (those where existing legal environmental standards are exceeded)	None										
Areas susceptible to natural hazards which could cause the project to Present environmental problems (earthquakes, subsidence, landslides, erosion, flooding, or extreme or adverse climatic conditions)	No. Sand Ghat is at safe distances from natural hazards like earthquake prone area, subsidence, landslide, erosion, flooding prone area and extreme or adverse climatic conditions										

Particulars	Details
Whether the proposal involves approval or clearance under the following Regulations or Acts, namely: - (a) The Forest (Conservation) Act, 1980. (b) The Wildlife (Protection) Act, 1972. (c) The Coastal Regulation Zone Notification, 2011. If yes, details of the same and their status are to be given.	None
Forest land involved (hectares)	None

The below figure shows the google image of Hingangaon Satha 1 sand ghat.



Fig 2.1-Google image of Hingangaon Satha 1 sand ghat

Approach road along with google location is as shown below.

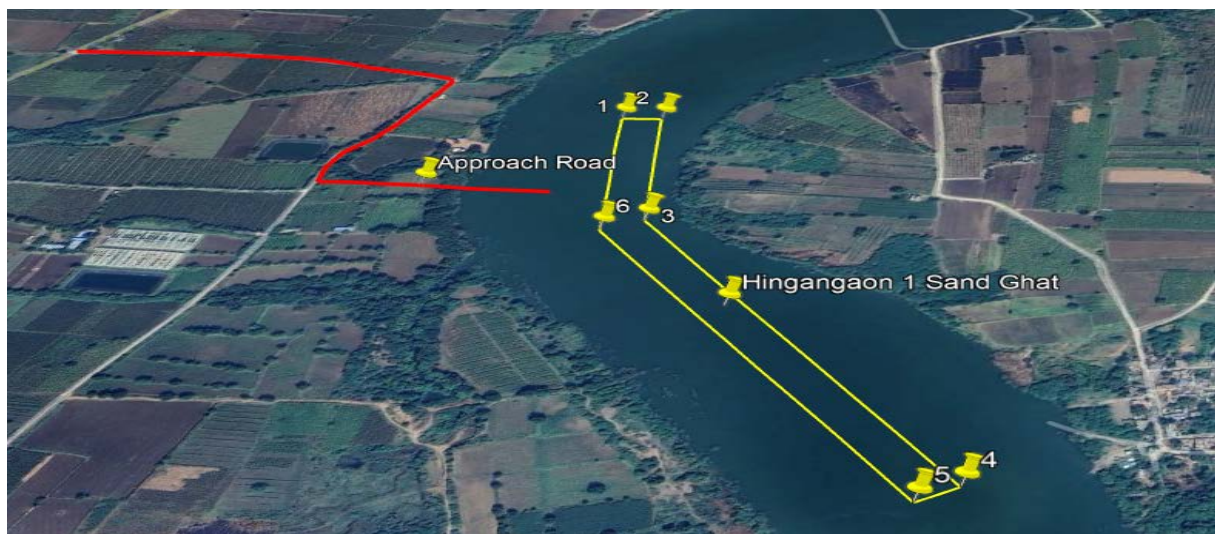


Fig 2.2-Approach Road for sand ghat

Next chapter 3 is Baseline Environmental Status in which the entire Topography, Climate, Soil Environment, Land use, water Environment, Hydrology, Biological environment, and Socio-economic Environment are briefly explained for the Beed district.

CHAPTER 3

BASELINE ENVIRONMENT STATUS

Topography

The Sand Ghat area as per the survey is the riverbed of the Godavari River of the Beed district. The maximum elevation is 443m MSL, average elevation is 440m MSL, & minimum elevation is 438m (⁷MSL) Mean Sea Level. The slope of the Sand Ghat area towards the Northwest to Southeast side. The flow of Godavari River is from Southeast direction.

Presently, there is neither any infrastructure within the riverbed nor are proposed.

Hydrology

There will be no change in the Water Table during the mining operation, as the depth of mining shall be restricted to 1.0m water level, which is less likely to affect the surface level or Groundwater Table. There is no proposal of any stream modification/diversion due to this mining activity hence there will be not any impact on the flow of water.

Soil Environment

The riverbed consists of sand /gravel. There is no topsoil. The depth of mining shall be restricted to 1.0m. There is no crucial impact on the soil forecasted due to mining activities.

Land Use Land Cover

Land use shows that agriculture land use is predominant. The proposed site is 4.75ha having adjoined Khasara No 4, 2, 51 to 54, 7. The land doesn't cover any human habitation, forest, etc. Any change in the scope of the approved Mining Plan will lead to riverbank erosion/cutting and thereby river channel shifting, degradation of land, causing loss of properties and degradation of the surrounding landscape.

⁷ Mean sea level

Water Environment

While transporting sand there may be fugitive dust. There will be water requirement for spraying for dust suppression purposes. This water will be supplied from the borewell from nearby villages through tankers as well as from surface water sources. The water source may vary from village to village.

Climate

During summer May is the hottest month of the year in this area. The temperature rises to 42°C in the month of May. The average rainfall in this region is 600-700mm About 50% of rainfall precipitates between June to September. December is the coldest month with temperature falling down to 18°C. Overall the proposed site area has sub-tropical conditions.

Biological Environment

Flora

The agricultural area is seen near the Sand Ghat. Few trees and thorny bushes are seen on the banks of the river.

Fauna

As there is no forest cover, no endangered species of wildlife are seen in this area.

Socio-Economic Environment

This project may create constructive impacts of the sand mining that are stated below:

1. The mining operations will provide direct & indirect employment to village people.
2. The villages and their inhabitants & domestic animals will not be disturbed due to mining, as the quarry is far from their settlements.
3. Local workforce will be given first preference for employment.
4. Mining activities will benefit the local people due to the provision of more infrastructural facilities (developments of approach routes within the village area).

The next chapter describes all possible impacts on the Environment due to this project along with its mitigation measure to overcome these impacts.

CHAPTER 4

IMPACT ASSESSMENT REPORT ALONG WITH PROPOSED MITIGATION MEASURES

1. Land Environment

Anticipated Impact

Movement of vehicles can create issues for agricultural land, human habitations, noise, and risk for public and cause traffic hazards. The impacts include damage to the riverbank due to access ramps to the riverbed, soil erosion because of extraction of sand, micro disturbance to groundwater, possible stimulation of the changed river course, and contamination of sand aquifer water due to ponding. There might be surface degradation due to the road network.

The quality of soil will not be affected due to transportation or any other activity of mining.

Mitigation measure

1. Mining depth should be restricted to 3 meters and distance from the bank should be $\frac{1}{4}$ th or river width and should not be less than 7.5 meters as per “Sustainable Sand Mining Guidelines 2020” Page 23, Point no 4.3 (m).
2. There will be a minimal number of access roads to riverbeds. Cutting of riverbanks will be avoided and ramp with smooth slope will be maintained. Access points to the riverbed will be decided based on the least steepness of the riverbank and the least human activity at that location.
3. No foreign material like polythene bags, jute bags, and useless articles should be allowed to remain/spill in the riverbed and catchment area, or no pits/pockets will be allowed to be filled with such material.
4. Mining at the concave side of the river channel should be avoided to prevent bank erosion. Similarly, a tortuous segment of a river is to be selected for mining in such a way as to ignore the natural eroding of banks.
5. Ensure that ponding is not created in the riverbed.
6. Transportation route should be such that it gives minimum

damage to the environment.

7. Green belt will be developed along the haul road and the bank of rivers of mine premises and near the sand mining site. While selecting the plant species, preference will be given for planting native species of the area.

2. Water environment

Anticipated Impact

The project activity will be carried out in the dry part of the riverbed. Care will be taken to ensure that neither of the project activities will affect the water environment or riverbank habitats. During the lean months, the proposed Sand Mining will not expose the base flow of the river and hence there will not be any inauspicious impact on surface hydrology and groundwater regime due to this project. Project activities will not have any adverse consequences on the physical components of the environment and therefore may not have any effect on the recharge of ground waters or affect the water quality. Monitoring of water quality will be checked yearly.

Mitigation measures

1. Mining is avoided during the monsoon season and at the time of floods. This will help in the replenishment of sand in the riverbed.
2. Mining below the subterranean water level will be avoided as a safeguard against environmental contamination and over-exploitation of resources.
3. River stream will not be transferred to create active channels.
4. Mining schedule is synchronized with the river flow direction and the gradient of the land.
5. Mining at the concave side of the river channel will be avoided to prevent bank erosion.
6. Tortuous segment of the river will be selected for mining in such a way as to avoid naturally eroding banks and to promote mining on naturally building meander components.
7. Mining depth shall be maintained as per the guidelines and

rules of the Sand Mining Policy dated 03/09/2019 and recommendations of Maharashtra State (⁸M.S.). State Ground Water Department for extraction of sand during the lease period.

8. Water Quality Monitoring for the ground waters, river water, and other surface waters shall be carried out seasonally to ensure that the water quality is not affected by the project activities.
9. Utmost care will be taken to minimize or control leaking vehicles to be used for sand transportation.
10. The washing of tractor trolleys in the river will not be done.
11. The contractor will follow all guidelines and rules for proper and scientific methods of mining during the period of extracting the sand.

3. Air Environment

Anticipated Impacts

Plying of tractor trolleys from the public road to river sand collection points needs access roads. The majority of such access roads are the already existing roads/tracks being used by pedestrians/cart owners. The movement of heavy vehicles sometimes causes problems for cattle, agricultural land, and human habitations due to dust, noise, and the movement of the public. These environmental problems are felt more as the area is rural in nature.

Air pollution is likely to be caused at various stages of Sand Mining operations such as excavation, loading & transportation of material. Most of the fugitive dust emissions will be generated from loading & transportation. This dust becomes airborne and spreads away to surrounding areas.

The impact on air is mainly localized in nature as the dust particles of 100 μ in size are not carried to farther distances beyond 100m and the effect is felt within the core zone of the project involving active Sand Mining operations.

⁸ Maharashtra State

Mitigation measures

1. Movement of the vehicles on the road will be increased; however, the unmetalled road in the mining area will be sprinkled with water at regular intervals.
2. In addition to preventing spillage from tractor trolleys, overloading shall be controlled to 1-brass/tractor trolley. The speed limit will be <20 km/hr.
3. Maintenance of the haul road will be done on a regular basis.
4. To avoid fugitive dust emissions at the time of excavation, a regular sprinkling of water will be done on regular basis.
5. Sand is transported to the sites by road through tractor trolleys. The sand-carrying vehicles shall be covered by tarpaulin sheets.
6. The Green belt development will be prepared along the haul roads, which will act as a pollution sink.
7. To minimize vehicular pollution from the sand transporting vehicles, the following conditions will be insisted upon to permit the vehicles of the transporters.
8. The vehicles should be Bharat-IV stage compliant and should have a Pollution Under Control (⁹PUC) Certificate issued by appropriate authorities.
9. Regular maintenance of transport vehicles and monitoring of vehicular emission levels at periodical intervals.

4. Noise Environment

Anticipated Impact

The noise environment in this project will be overdone by the equipment at the site and vehicular transportation. A slight increase in noise levels of <10dB(A) can be expected up to a distance of 100m.

Mitigation measures.

1. Minimum use of horns in the village area.
2. Timely maintenance of vehicles and their silencers to

⁹ Pollution Under Control

minimize vibration and sound.

3. Phasing out old and worn-out tractor trolleys.
4. Provision of green belts along the road networks.
5. Care will be taken to produce minimum sound during sand loading.
6. Backhoe loader excavator will be used
7. Earplugs may be provided to protect the laborers working at the site.

5. Socio-economic Environment

Anticipated Impacts and Evaluation

1. The project activities shall not have any adverse impacts on any of the common property resources of the village communities, as the Sand Mine lease area is not being used for any purpose by any section of the society in this region.
2. There is no Resettlement and Rehabilitation (¹⁰R&R) involvement in this project.
3. There is no land acquisition in this project.
4. A major portion of the houses in the study area is semi-pucca-type structures.
5. The water source to these areas is from the Grampanchayat /Nagar Parishad connection and private bore wells and wells.
6. People living around the project area need the project for the purpose of employment and economic benefits.
7. The awareness level regarding the proposed mining activity is very towering. The proposed mining activity is expected to provide stimulus to socio-economic activities in the region and thereby accelerate further development processes.

Social and Demographic Profile

The workers are from local villages. These people have been provided welfare benefits from the lessee like medical benefits,

¹⁰ Rehabilitation and Resettlement

insurance, fees for children's education, etc. They have some land and cattle for their daily earnings. Additional revenue earned from the Sand Mining work will improve their living standard. The group of quarries in and around will help to have infrastructure facilities like roads, schools, shops, etc. This will enhance their social life.

Occupational Health and Safety

This is a riverbed Sand Mine. So, the mining activities are comparatively smaller because the production is not on a high scale. Workers do not come across any extreme conditions like excessive heat, moisture, etc. Workers working around it may come across this dusty environment. But the impact on health will be within the limit.

Human Settlement

1. There are no houses in and around the lease area. Blasting is the only activity, which may affect the settlement, which is not done. The settlement is more than 1-km from the sand mine.
2. Appropriate precautions will be taken during mining. Transportation of finished products is through the villages. There will be an effect of traffic on the local people. However, the intensity of traffic is 70-80/day.

Health and Hygiene

In general, the health of villagers is moderately good. In the rainy season, the atmospheric condition is unhygienic due to a lack of proper drainage and sanitation in the village habitation. Villagers are working in agricultural fields and work as labourers.

Education

Most education of 70% young <20 years, is up to the 5th to 9th. Economic condition is in general moderate. So, after this project, the standard of education will increase.

Socio-Economic Benefits Arising Out of Mining

1. Generation of employment in rural areas.
2. Upgradation in the living standards of rural people.
3. Creating infrastructural facilities like roads, electricity, shops, schools, etc.
4. Upgrading literacy in the area by exploiting natural minerals so the generation of revenue.

5. Helping to sustain construction activity.
6. Improving the greenery of the area, which is otherwise poor.

Liquid Effluent

Not applicable, because these activities do not generate effluent from operation or process.

Solid Waste

Not applicable, because small mines and impacts are negligible.

Project benefits due to the sand mining of Hingangaon Satha 1 are explained in the next Chapter.

CHAPTER 5

PROJECT BENEFITS

The proposed Sand Mining project of Hingangaon Village, Gevrai Tehsil, Beed District will lead to the following benefits:

1. Increase in the revenue of the district will ultimately increase the revenue of the village, which in return can be used to improve the infrastructure of the village.
2. Sand is available for building construction work and by systematic separation of sand, there is no possibility of a flood. Providing smooth movement of water of the river.
3. This project will contribute additional revenue to the state Exchequer in the form of revenue.
4. The project will conclude with employment opportunities for unskilled/skilled local people.
5. Standard of living of employed people will increase.

CHAPTER 6

SITE-SPECIFIC ENFORCEMENT & MONITORING PLAN

Sand Ghat Site specific enforcement & monitoring plan

(as per guidelines stipulated in the Enforcement and Monitoring Guidelines for sand mining issued by MoEFCC in January 2020.)

District administration shall deliver information on its website about the Sand Mines in the district for public information. The objective is to extend all information into the public domain so that the citizens are aware of the mining activities. People can also report to the district administration any deviation observed. Suitable feedback and its composition shall also be made operational.

Details shall include, but not be limited to, lease area, geo-coordinates of lease area and mineable area, transport routes, permitted capacity, regulatory conditions for operation including mining, environmental and social commitments, etc.

An Independent Committee of experts constituted by the Distance Learning Task Force (¹¹DLTF) will assess the environmental or ecological damage caused due to illegal mining and recommend recovery of environmental compensation from the concerned miners.

The recommendation may also include action under the provision of the Environment (Protection) Act 1986 u/s.15 read with s.19.

¹¹ Distance Learning Task Force

CHAPTER 7

SECURITY FEATURES

Security features are included in the Transport Permission/Permits (TP)

It will be ensured that the following security features are included in the Transport Permission/Permits (¹²TP) so that duplicate/fraudulent/forged TPs for transport, not accounted for in the IT-based system, is not possible:

1. Printed on Indian Bank Association (¹³IBA) Approved letterhead with account details
2. Magnetic Ink Character Recognition Code (¹⁴MICR) paper
3. Unique Barcode
4. Unique Quick Response Code (¹⁵QR)
5. Fugitive Ink Background
6. Invisible Ink Mark
7. Void Pantograph Watermark
8. Global Positioning System (¹⁶GPS) based vehicle tracking system
9. Closed-Circuit Television (¹⁷CCTV) Camera

¹² Transport Permission

¹³ Indian Bank Association

¹⁴ Magnetic Ink Character Recognition Code

¹⁵ Quick Response Code

¹⁶ Global Positioning System

¹⁷ Closed Circuit Television

CHAPTER 8

REPLENISHMENT

Replenishment study is the most important part of Sand Mining as it is the only basis to carry out sand mining. Without a Replenishment Study, we cannot understand the amount of deposition of sand. Following points to be followed for the replenishment study.

1. Area of deposition and erosion will be calculated for each cross-section after giving due regard to the stability & safety of active channel banks & other features of importance.
2. Differential Global Positioning System (¹⁸DGPS) and other survey tools will be used to define the topography, contours, and offsets of the lease area.
3. Contour & elevation benchmarks will provide baseline data for assessing pre- and post-study period scenario.
4. Physical benchmarks will be fixed at appropriate intervals (preferably 1 in 30m) & Reduced levels (¹⁹RL) shall be validated from a nearby standard RL.
5. These RL will be engraved on a steel plate (Bench Plate) & will be fixed & placed at locations that are free from any damages & are available in the pre-and post-study period.
6. Bench plates will be available for use during the mining period as a reference for all mining activity.
7. Baseline data on elevation status for a grid of 10m x 10m is preferred to have accuracy in the assessment.
8. It is expected that two consecutive cross-sections in longitudinal and lateral directions will not be more than a 10m distance apart.
9. Changes observed in the elevation in pre and post-scenario at each node, will be depicted in graphical forms with an appropriate scale to estimate the area of deposition & erosion.

¹⁸ Differential global positioning system

¹⁹ Reduced levels

10. Elevation level will be in reference to the nearest bench plates established for the purpose.
11. The levels (MSL & RL) of the corner point of each grid will be identifiable and safety barriers (non-Mining) demarcated as restricted in consensus with the Mineral Concession Rules of the respective State, and the provision mentioned in this Sustainable Sand Mining Management Guidelines.
12. A clear identification will be highlighted between grids under the mineable and grids under the non-mineable area.
13. These baseline data (pre and post) be subjected to stimulation with the help of data mine software to derive the replenishment area and corresponding volume and estimated weight.
14. The database will be structured in a tabulated form clearly depicting the nomenclature of the section lines, latitude and longitude of the starting point, chainage, and respective levels of all the points taken on that section line.
15. Net area shall be derived after summation of an area of deposition minus the area of erosion for each cross-section.
16. Volume will be estimated by multiplying the distance between two cross-sections with the average of the net area of these two consecutive cross-sections.
17. One sample per 900m² (30m x 30m) will be the preferred sample density for the assessment of bulk density for the estimation of deposition rate.
18. Care will be taken that the sample for assessment of Bulk Density is taken from the deposition zone & not from erosion.

Methodology for Sand Mining:

The following methodology should be followed for the Replenishment study.

1. The Demarcation and benchmark of the Sand Ghat are done at 10m x 10m intervals.
2. The use of the Auger Driller is to find out the depth of sand in each grid.
3. Auger Driller has created the holes in sand ghat by 10mx10m grid pattern.
4. Measured the depth of holes by using a measuring tape.

5. After taking all the readings average depth of sand is calculated.
6. The average depth of Hingangaon Satha 1 at Godavari is measured.

Replenishment study of sand in the proposed ghat along with details of the methodology, technology used to identify the existing reserve & replenishment of the same

Dandy Bolton Equation

For runoff less than 2 inches

$$S = 1280 \times (Q) \times 0.46 \times (1.46 - 0.26 \log(A)) \times F$$

For runoff more than 2 inches

$$S = 1958 \times (Q) \times (e^{-0.055 \times Q}) \times (1.43 - 0.26 \log(A))$$

Where,

S = sediment yield of stream (t/yr/km²),

Q = average annual runoff (m³),

A = net drainage area in sq.mile.

CHAPTER 9

PROPOSED PLANTATION PLAN

The Project Proponent must take care of the plantation around the site. This will not only enhance the beautification of the area but also there will be the reduction of pollution, not some extent.

Details of the plantation and Tree species recommended for the plantation are shown below.

Table 9. 1 Details of green belt

Location of greenbelt	Both sides of the approach road, On the riverbanks of both sides of the sand spot & nearby open areas. Haul Road outside the riverbed
No. of plants to be planted	2000 per Hectare
Spacing of plants	2m grid interval
Species selected	Native species

Table 9. 2 Trees species for plantation

Botanical Name	Local Name	Importance
Azadirachta Indica	Neem	Neem oil & neem products
Tectona Grandis	Teek	Antibacterial, Antifungal, Antiulcer
Ficus religiosaa	Peepal	Medicinal use, Fruits & figs
Bambusa vulgaris	Bamboo	Anthelmintic Anti-inflammatory, Astringent Properties
Madhuca longifolia	Mahua	Acts as a Stimulant & cough relief,

CHAPTER 10

ENVIRONMENTAL MANAGEMENT PLAN

A total capital cost of Rs.5.97 Lakhs has been kept in the project cost towards the environmental protection, control, mitigation measures, and implementation of the Environmental Management Plan (EMP). This cost is borne by the bidder/leaseholder. The budgetary cost estimate for the EMP is given in Table.

Table 10. 1 Budgetary cost of EMP

Sr	Impact Source	Impact	Control Measure	Cost (Rs.)
1	Transport Road	On Air Quality	Compaction, gradation, and drainage on both sides.	90000
		On Land, the Stability of the Road and degradation of road	Proper maintenance	40000
			Regular water spraying	43000
			The air quality will be monitored at the impacted village. (For One Day Monitoring)	5000
			Health Check-up of Employees	5000
2	Truck/ Tractor Movement	Air Quality	Sand-carrying trucks will be effectively covered by tarpaulin to avoid the escape of fines to the atmosphere. (2 Tarpaulin)	25000
			Regular monitoring of the exhaust fumes	5000

Sr	Impact Source	Impact	Control Measure	Cost (Rs.)
			Barriers & Traffic Management Expenses. (Excluding Manpower Salary which is included in labour costs)	10000
3	Ramp and Sand Reach	Mining Operation	Regular ramp Inspection and Ramp maintenance. (Excluding Manpower Salary which is included in labour costs)	50000
			Provision of dust masks	10000
4	Bank Management	Bank Erosion/Flood Plain management	The green belt along the bank (For Green Belt Development)	230000
			Plantation of wide leaf tall trees on banks and grass along a slanting portion of the bank	
5	Transportation on Village Roads	Dust Control	The green belt along village Rd (For Green Belt Development)	
6	Final Mine Closure Plan implementation	Replenishment of Sand	Gabions/ boulders will be arranged as per guidelines	15000
7	Mobile toilet, sewage handling & treatment		Mobile toilet, sewage handling & treatment	100000
8	CCTV Monitoring			100000
Total				728000

Budget For Corporate Environment Responsibility (²⁰CER)

About 2% fund of the project cost is allocated for Corporate Environment Responsibility (CER) activities as presented in below Table

Table 10.2 Budget for CER

Sr.	Description	Cost (Rs)
1.	Village Schools (separate toilet for girls and boys)	25000
2.	Solar panels over Gram Panchayat buildings	25000
3.	Solar panels over Public Health Centers	20000
	Total	70000

²⁰ Corporate Environment Responsibility

CHAPTER 11

SUMMARY AND CONCLUSION

The Roles and Responsibilities of the Environmental coordinator, the Operation Manager, and the senior personnel contractor are essential in EMP.

The environmental status of the project site and study area of 10km radius is delineated with respect to air, noise, water, land, biological and socio-economic environment the different project activities in the construction and operation phases are identified.

To identify the impacts, the interaction between the project activities and different components of the environment is classified phase-wise. A summary of the recognized impacts is given in the following paragraphs.

- During the operational phase, the transportation of sand could cause a temporary disturbance to the local environment which will be prevented with the proposed mitigation measures.
- Proposed project will not have any major significant negative impacts. The minor impacts arising during Excavation and Transportation phases can be mitigated with the help of the proposed Environmental Management Plan.
- In general, sand excavation from Hingangaon Satha 1 sand spot will be useful to the developmental work in the district and generate employment opportunities.

From this project, it is concluded that the district revenue will increase in return minimum of 2% of funds are utilized for the development of the village. The project will also grab employment which will improve the standard of life of villagers.

*** END ***

Environmental Management Plan

As per Rules 23 & 26 of MMME (D & R) RULE 2013 & Section 15 of MMDR Act 1957, MoEFCC Notification 2006, S.O. 141(E) dated 15. 01. 2016; MoEFCC, Sustainable Sand Mining Management Guidelines 2016, Guidelines for Mining Policy 2020)

For

ENVIRONMENTAL CLEARANCE

of

SAND MINING (MINOR MINERAL)

for

Hivra 3 – A Riverbed Sand Mine / Sand Ghat
Khasra No. GSDA approved 1 to 3, 5, 6, 16, 17
Area (1.75ha)

Village Hivra, Taluka Majalgaon, District Beed

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ABBREVIATION

Short Form	Long Form
EMP	Environmental Management Plan
MoEFCC	Ministry of Environment Forest and Climate Change
DSR	District-level Survey Report
EC	Environmental Coordinator
OM	Operations Manager
GSDA	Groundwater Surveys & Development Agency
MPCB	Maharashtra Pollution Control Board
MSL	Mean Sea Level
MS	Maharashtra State
PUC	Pollution Under Control
R&R	Rehabilitation and Resettlement
DLTF	Distance Learning Task Force
TP	Transport Permission/Permits
IBA	Indian Bank Association
MICR	Magnetic Ink Character Recognition Code
QR	Quick Response Code
GPS	Global Positioning System

CCTV	Closed-Circuit Television
DGPS	Differential Global Positioning System
RL	Reduced Levels
CER	Corporate Environment Responsibility

CHAPTER 1

INTRODUCTION

The Environmental Management Plan (¹EMP) plays a vital connection uniting forecast impacts and mitigation measures during implementation and operational activities. EMP stipulates the mitigation, monitoring and conventional measures to be taken during project implementation and operation. EMP is to escape or mitigate adverse environmental impacts, and to implement these measures.

This Environmental Management Plan (EMP) has been prepared as part of the Scoping Report which will be compiled in terms of the Environmental Assessment for the sand mining activities.

Considering the Ministry of Environment and Forest Climate Change (²MoEFCC) Notification 2006 and Sustainable Sand Mining Management Guidelines 2016, the Govt. of Maharashtra had mapped out the Minor Mineral Extraction Rules 2013. These rules are to extract all minor minerals in a scientific way so that there is no unfavourable impact on Environment and Climate. To extract every minor mineral from any land (either Government or Private) there is provision for a Mining Plan. These plans need to be approved by a competent authority. For long-term leased minor minerals (5-10 years period) and sand excavation from the riverbed, Senior Deputy Director of Directorate of Geology and Mining is the competent authority. These plans are for short term temporary permits which are valid for one year.

According to Enforcement & Monitoring Guidelines for Sand Mining 2020, Sustainable Sand Mining Management Guidelines 2016, Standard Environment conditions for sand mining and sustainable mining practices, District level Survey Report (³DSR) should be prepared and are suitable for mining and area prohibited for mining must be recognized.

¹ Environmental Management Plan

² Ministry of Environment Forest and Climate Change

³ District Survey Report

Objectives of EMP

- To provide overall conservation of the environment.
- To minimize waste generation and pollution.
- To regulate the precise use of natural resources and water.
- To provide Safety, Welfare, and Good health for the workforce and populace.
- To regulate the effective operation of all control measures.
- To ensure alertness against probable disasters and accidents.
- To monitor cumulative and long-term impacts.
- To regulate the effective operation of all control measures.

Roles and Responsibilities concerning the implementation of the EMP

The roles and responsibilities of all parties involved in successfully managing the environment are mentioned below.

Environmental Coordinator

The Environmental Coordinator will inspect operational areas on a quarterly basis and at the onset of mining any new island, to ensure that all specifications are met. The duties of the environmental coordinator will be the following.

- Guide the operations team in respect of the implementation of the environmental specifications.
- Lead the visits to ensure all work is aligned with the EMP.
- The environmental coordinator must examine the site during the three-monthly visits. All rehabilitation results will be Comprised in the quarterly report.
- Examination of the rehabilitation area and giving guidance regarding rehabilitation measures if any.

The Operations Manager

The responsibilities of the Operations Manager (4OM) or his nominated authority are as follows.

1. Familiarize themselves with the requirements of the EMP.
2. Monitor employees' and contractor's compliance with the environmental specifications; and enforce adherence.

⁴ Operations Manager

3. Communicate all environment-related incidents with the Environmental Coordinator and distribute them internally to avoid repetition.
4. Maintain a record of activities relevant to Environmental Management.
5. The Operations Manager shall be responsible for monitoring and the enforcement of the Environmental Management specifications on a day-to-day basis. Any violation of the environmental specifications shall be recorded, and the agreed disciplinary measures are taken.

Senior personnel and contractors

The roles of the senior personnel/contractors are as follows:

- Familiarize themselves with the requirements of the EMP.
- Comply with the environmental management specifications.
- Ensure that all team members are familiar with the environmental management specifications.

Details of the project

The Hivra 3 sand ghat area has been selected in perspective of its subsisting demand for building-grade sand for the area in and around Majalgaon Taluka. The District Mining Officer Beed has put forward the proposal for Environmental Clearance for mining. The ghat has a production of 6802 brass sand within an area of 1.75ha. The proposed proposal follows an organized mining process for Environmental Clearance.

Further Chapter informs about the in-depth details of the Sand Ghat, its geographical structure, and a Google map of the ghat with its approach road for contractors and workers to reach to sand ghat from the village.

CHAPTER 2

DETAILS OF THE PROJECT

Hivra village is located in Majalgaon Taluka of Beed district, Maharashtra. Majalgaon is well connected with all nearby cities. The National highway NH-52, it traverses through the states of Punjab, Haryana, Rajasthan, Madhya Pradesh, Maharashtra, Karnataka in India. NH-52 is the National Highway passing through the district, covering a total distance of 73.60km. Majalgaon has situated about 51.22km by road from Beed. The district has road links to adjoining districts Ahmednagar District to the west, Jalna District to the North, Latur District to the East, Osmanabad District to the South, Parbhani District to the East. The district is well connected by roads.

Hivra village is 46.12km away from Collector office headquarters Beed. The Geographical area of the Beed is around 10693km². The nearest Railway station to Hivra village is Usamanpur Railway station. The nearest Airport to Beed District is Aurangabad Airport, Aurangabad Airport is 104km from Beed city, 97.12km from Hivra.

Honourable Collector Beed intends to auction Sand Ghats and appointed District Mining Officer as Project Proponent. A total of 38 sand ghats are identified by Tahsildar Majalgaon, Parli Ve., Gevrai, Beed along with District Mining Officer, Beed. The 38 sand ghats were jointly surveyed by Taluka level technical committee headed by respective Tahsildar with Dy. Engineer Irrigation Department, Junior Geologist Directorate of Geology and Mining Govt. of Maharashtra, Junior Geologist, Groundwater Surveys & Development Agency (⁵GSDA). DMO Beed and a representative of the Maharashtra Pollution Control Board (⁶MPCB), as per the procedure defined in Sand Auction Rules 2019 dated 3/09/2019 formed a Taluka-level technical committee, which explored the sand ghats for an available quantity of sand for scooping. Revenue of Rs.25 Crore is expected from the auction of these sand ghats. Hivra 3 Sand Ghat proposed over river Godavari in Majalgaon Taluka is proposed to cater to the infrastructural requirement of sand in the Taluka of Beed and adjoining areas of other talukas.

⁵ Groundwater Surveys & Development Agency

⁶ Maharashtra Pollution Control Board

Table 2. 1 Details of Hivra 3 Sand ghat

Name of Village	Taluka	River/ Nallah	Nearest survey No.	Area (ha)	Proposed Depth for excavation (m)	Quantity Permitted for mining of Sand in Brass	Method of Mining
Hivra	Majalgaon	Godavari	1 to 3, 5, 6,16, 17	1.75	1.10	6802	Open-cast manual mining

Table 2. 2 Salient features of the project

Particulars	Details		
Location	Village-Hivra, Taluka-Majalgaon, District-Beed, Maharashtra.		
Latitude and Longitude	Boundary points of Hivra 3 sand spot	Latitude	Longitude
	BP1	19°16'57.53"N	76°5'23.26"E
	BP2	19°16'58.70"N	76°5'22.08"E
	BP3	19°17'7.01"N	76°5'28.37"E
	BP4	19°17'6.80"N	76°5'30.16"E
Sand spot area (In ha)	1.75ha		
Proposed production capacity (in Brass)	6802		
Infrastructure Requirement (As per Govt Resolution 3rd January 2018)	<ol style="list-style-type: none"> 1. Room / Hut for Official records 2. Electricity / Battery for Running CCTV 24x7 daily. 3. One Computer / Android-based Mobile for the online generation of Invoice numbers. 		

Particulars	Details
Distance of project site from nearest rail or road bridge over the concerned River, Nallah, etc.	4.41km
Distance from infrastructural facilities	
Railway line	32.59km
National Highway	36.39km (NH-52)
State Highway	28.93km (SH-144)
Major District Road	28.93km
Any Other Road	
Electric transmission line pole or tower	1km
Canal or check dam or reservoirs or lake or ponds	
In-take for drinking water pump house	
Intake for Irrigation canal pumps	
Areas already subjected to pollution or environmental damage. (those where existing legal environmental standards are exceeded)	None

Particulars	Details
<p>Areas susceptible to natural hazards which could cause the project to Present environmental problems (earthquakes, subsidence, landslides, erosion, flooding, or extreme or adverse climatic conditions)</p>	<p>No. Sand Ghat is at safe distances from natural hazards like earthquake prone area, subsidence, landslide, erosion, flooding prone area and extreme or adverse climatic conditions</p>
<p>Whether the proposal involves approval or clearance under the following Regulations or Acts, namely: - (a) The Forest (Conservation) Act, 1980. (b) The Wildlife (Protection) Act, 1972. (c) The Coastal Regulation Zone Notification, 2011. If yes, details of the same and their status are to be given.</p>	<p>None</p>
<p>Forest land involved (hectares)</p>	<p>None</p>

The below figure shows the google image of Hivra 3 sand ghat.



Fig 2.1-Google image of Hivra 3 sand ghat

Approach roach along with google location is as shown below.

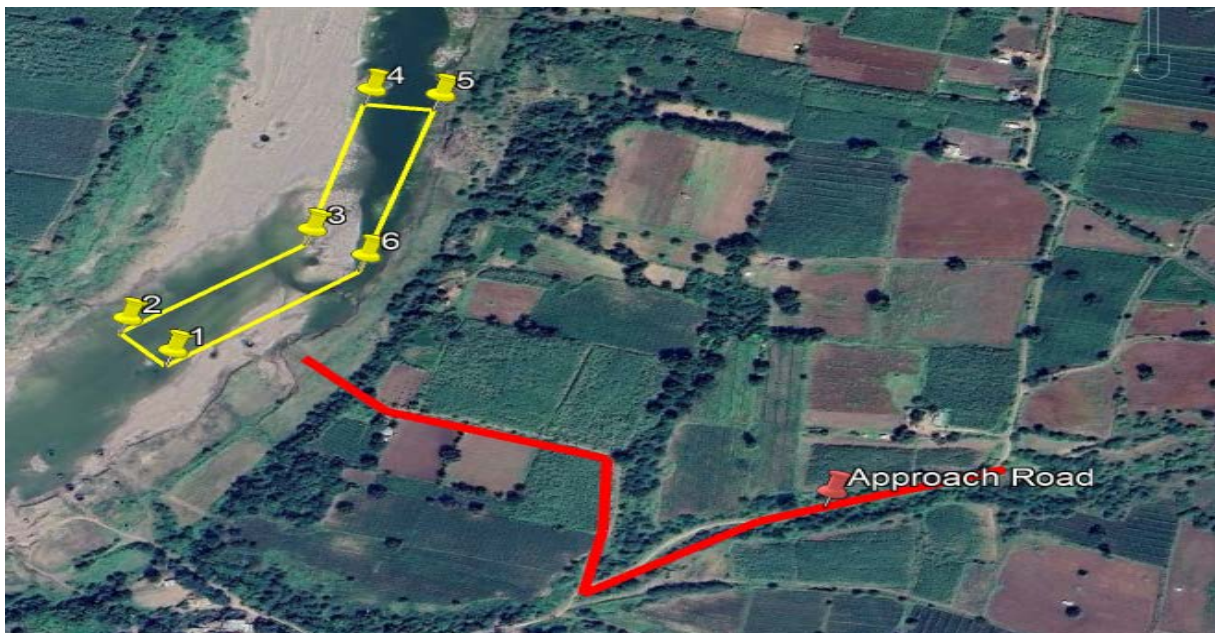


Fig 2.2-Approach Road for sand ghat

Next chapter 3 is Baseline Environmental Status in which the entire Topography, Climate, Soil Environment, Land use, water Environment, Hydrology, Biological environment, and Socio-economic Environment are briefly explained for the Beed district.

CHAPTER 3

BASELINE ENVIRONMENT STATUS

Topography

The Sand Ghat area as per the survey is the riverbed of the Godavari River of the Beed district. The maximum elevation is 426m MSL, average elevation is 425m MSL, & minimum elevation is 423m (⁷MSL) Mean Sea Level. The slope of the Sand Ghat area towards the Southwest to Northeast side. The flow of Godavari River is from Southeast direction.

Presently, there is neither any infrastructure within the riverbed nor are proposed.

Hydrology

There will be no change in the Water Table during the mining operation, as the depth of mining shall be restricted to 1.10m water level, which is less likely to affect the surface level or Groundwater Table. There is no proposal of any stream modification/diversion due to this mining activity hence there will be not any impact on the flow of water.

Soil Environment

The riverbed consists of sand /gravel. There is no topsoil. The depth of mining shall be restricted to 1.10m. There is no crucial impact on the soil forecasted due to mining activities.

Land Use Land Cover

Land use shows that agriculture land use is predominant. The proposed site is 1.75ha having adjoined Khasara No 1 to 3, 5, 6, 16, 17. The land doesn't cover any human habitation, forest, etc. Any change in the scope of the approved Mining Plan will lead to riverbank erosion/cutting and thereby river channel shifting, degradation of land, causing loss of properties and degradation of the surrounding landscape.

⁷ Mean sea level

Water Environment

While transporting sand there may be fugitive dust. There will be water requirement for spraying for dust suppression purposes. This water will be supplied from the borewell from nearby villages through tankers as well as from surface water sources. The water source may vary from village to village.

Climate

During summer May is the hottest month of the year in this area. The temperature rises to 42°C in the month of May. The average rainfall in this region is 600mm to 700mm About 50% of rainfall precipitates between June to September. December is the coldest month with temperatures falling down to 18°C. Overall the proposed site area has sub-tropical conditions.

Biological Environment

Flora

The agricultural area is seen near the Sand Ghat. Few trees and thorny bushes are seen on the banks of the river.

Fauna

As there is no forest cover, no endangered species of wildlife are seen in this area.

Socio-Economic Environment

This project may create constructive impacts of the sand mining that are stated below:

1. The mining operations will provide direct & indirect employment to village people.
2. The villages and their inhabitants & domestic animals will not be disturbed due to mining, as the quarry is far from their settlements.
3. Local workforce will be given first preference for employment.
4. Mining activities will benefit the local people due to the provision of more infrastructural facilities (developments of approach routes within the village area).

The next chapter describes all possible impacts on the Environment due to this project along with its mitigation measure to overcome these impacts.

CHAPTER 4

IMPACT ASSESSMENT REPORT ALONG WITH PROPOSED MITIGATION MEASURES

1. Land Environment

Anticipated Impact

Movement of vehicles can create issues for agricultural land, human habitations, noise, and risk for public and cause traffic hazards. The impacts include damage to the riverbank due to access ramps to the riverbed, soil erosion because of extraction of sand, micro disturbance to groundwater, possible stimulation of the changed river course, and contamination of sand aquifer water due to ponding. There might be surface degradation due to the road network.

The quality of soil will not be affected due to transportation or any other activity of mining.

Mitigation measure

1. Mining depth should be restricted to 3 meters and distance from the bank should be $\frac{1}{4}$ th or river width and should not be less than 7.5 meters as per “Sustainable Sand Mining Guidelines 2020” ■ Page 23, Point no 4.3 (m).
2. There will be a minimal number of access roads to riverbeds. Cutting of riverbanks will be avoided and ramp with smooth slope will be maintained. Access points to the riverbed will be decided based on the least steepness of the riverbank and the least human activity at that location.
3. No foreign material like polythene bags, jute bags, and useless articles should be allowed to remain/spill in the riverbed and catchment area, or no pits/pockets will be allowed to be filled with such material.
4. Mining at the concave side of the river channel should be avoided to prevent bank erosion. Similarly, a tortuous segment of a river is to be selected for mining in such a way as to ignore the natural eroding of banks.
5. Ensure that ponding is not created in the riverbed.
6. Transportation route should be such that it gives minimum

damage to the environment.

7. Green belt will be developed along the haul road and the bank of rivers of mine premises and near the sand mining site. While selecting the plant species, preference will be given for planting native species of the area.

2. Water environment

Anticipated Impact

The project activity will be carried out in the dry part of the riverbed. Care will be taken to ensure that neither of the project activities will affect the water environment or riverbank habitats. During the lean months, the proposed Sand Mining will not expose the base flow of the river and hence there will not be any inauspicious impact on surface hydrology and groundwater regime due to this project. Project activities will not have any adverse consequences on the physical components of the environment and therefore may not have any effect on the recharge of ground waters or affect the water quality. Monitoring of water quality will be checked yearly.

Mitigation measures

1. Mining is avoided during the monsoon season and at the time of floods. This will help in the replenishment of sand in the riverbed.
2. Mining below the subterranean water level will be avoided as a safeguard against environmental contamination and over-exploitation of resources.
3. River stream will not be transferred to create active channels.
4. Mining schedule is synchronized with the river flow direction and the gradient of the land.
5. Mining at the concave side of the river channel will be avoided to prevent bank erosion.
6. Tortuous segment of the river will be selected for mining in such a way as to avoid naturally eroding banks and to promote mining on naturally building meander components.
7. Mining depth shall be maintained as per the guidelines and

rules of the Sand Mining Policy dated 03/09/2019 and recommendations of Maharashtra State (⁸M.S.). State Ground Water Department for extraction of sand during the lease period.

8. Water Quality Monitoring for the ground waters, river water, and other surface waters shall be carried out seasonally to ensure that the water quality is not affected by the project activities.
9. Utmost care will be taken to minimize or control leaking vehicles to be used for sand transportation.
10. The washing of tractor trolleys in the river will not be done.
11. The contractor will follow all guidelines and rules for proper and scientific methods of mining during the period of extracting the sand.

3. Air Environment

Anticipated Impacts

Plying of tractor trolleys from the public road to river sand collection points needs access roads. The majority of such access roads are the already existing roads/tracks being used by pedestrians/cart owners. The movement of heavy vehicles sometimes causes problems for cattle, agricultural land, and human habitations due to dust, noise, and the movement of the public. These environmental problems are felt more as the area is rural in nature.

Air pollution is likely to be caused at various stages of Sand Mining operations such as excavation, loading & transportation of material. Most of the fugitive dust emissions will be generated from loading & transportation. This dust becomes airborne and spreads away to surrounding areas.

The impact on air is mainly localized in nature as the dust particles of 100 μ in size are not carried to farther distances beyond 100m and the effect is felt within the core zone of the project involving active Sand Mining operations.

⁸ Maharashtra State

Mitigation measures

1. Movement of the vehicles on the road will be increased; however, the unmetalled road in the mining area will be sprinkled with water at regular intervals.
2. In addition to preventing spillage from tractor trolleys, overloading shall be controlled to 1-brass/tractor trolley. The speed limit will be <20 km/hr.
3. Maintenance of the haul road will be done on a regular basis.
4. To avoid fugitive dust emissions at the time of excavation, a regular sprinkling of water will be done on regular basis.
5. Sand is transported to the sites by road through tractor trolleys. The sand-carrying vehicles shall be covered by tarpaulin sheets.
6. The Green belt development will be prepared along the haul roads, which will act as a pollution sink.
7. To minimize vehicular pollution from the sand transporting vehicles, the following conditions will be insisted upon to permit the vehicles of the transporters.
8. The vehicles should be Bharat-IV stage compliant and should have a Pollution Under Control (⁹PUC) Certificate issued by appropriate authorities.
9. Regular maintenance of transport vehicles and monitoring of vehicular emission levels at periodical intervals.

4. Noise Environment

Anticipated Impact

The noise environment in this project will be overdone by the equipment at the site and vehicular transportation. A slight increase in noise levels of <10dB(A) can be expected up to a distance of 100m.

Mitigation measures.

1. Minimum use of horns in the village area.
2. Timely maintenance of vehicles and their silencers to

⁹ Pollution Under Control

minimize vibration and sound.

3. Phasing out old and worn-out tractor trolleys.
4. Provision of green belts along the road networks.
5. Care will be taken to produce minimum sound during sand loading.
6. Backhoe loader excavator will be used
7. Earplugs may be provided to protect the labourers working at the site.

5. Socio-economic Environment

Anticipated Impacts and Evaluation

1. The project activities shall not have any adverse impacts on any of the common property resources of the village communities, as the Sand Mine lease area is not being used for any purpose by any section of the society in this region.
2. There is no Resettlement and Rehabilitation (¹⁰R&R) involvement in this project.
3. There is no land acquisition in this project.
4. A major portion of the houses in the study area is semi-pucca-type structures.
5. The water source to these areas is from the Grampanchayat /Nagar Parishad connection and private bore wells and wells.
6. People living around the project area need the project for the purpose of employment and economic benefits.
7. The awareness level regarding the proposed mining activity is very towering. The proposed mining activity is expected to provide stimulus to socio-economic activities in the region and thereby accelerate further development processes.

Social and Demographic Profile

The workers are from local villages. These people have been provided welfare benefits from the lessee like medical benefits,

¹⁰ Rehabilitation and Resettlement

insurance, fees for children's education, etc. They have some land and cattle for their daily earnings. Additional revenue earned from the Sand Mining work will improve their living standard. The group of quarries in and around will help to have infrastructure facilities like roads, schools, shops, etc. This will enhance their social life.

Occupational Health and Safety

This is a riverbed Sand Mine. So, the mining activities are comparatively smaller because the production is not on a high scale. Workers do not come across any extreme conditions like excessive heat, moisture, etc. Workers working around it may come across this dusty environment. But the impact on health will be within the limit.

Human Settlement

1. There are no houses in and around the lease area. Blasting is the only activity, which may affect the settlement, which is not done. The settlement is more than 1-km from the sand mine.
2. Appropriate precautions will be taken during mining. Transportation of finished products is through the villages. There will be an effect of traffic on the local people. However, the intensity of traffic is 70-80/day.

Health and Hygiene

In general, the health of villagers is moderately good. In the rainy season, the atmospheric condition is unhygienic due to a lack of proper drainage and sanitation in the village habitation. Villagers are working in agricultural fields and work as labourers.

Education

Most education of 70% young <20 years, is up to the 5th to 9th. Economic condition is in general moderate. So, after this project, the standard of education will increase.

Socio-Economic Benefits Arising Out of Mining

1. Generation of employment in rural areas.
2. Upgradation in the living standards of rural people.
3. Creating infrastructural facilities like roads, electricity, shops, schools, etc.
4. Upgrading literacy in the area by exploiting natural minerals so the generation of revenue.

5. Helping to sustain construction activity.
6. Improving the greenery of the area, which is otherwise poor.

Liquid Effluent

Not applicable, because these activities do not generate effluent from operation or process.

Solid Waste

Not applicable, because small mines and impacts are negligible.

Project benefits due to the sand mining of Hivra 3 are explained in the next Chapter.

CHAPTER 5

PROJECT BENEFITS

The proposed Sand Mining project of Hivra 3 village, Majalgaon Taluka, Beed District will lead to the following benefits:

1. Increase in the revenue of the district will ultimately increase the revenue of the village, which in return can be used to improve the infrastructure of the village.
2. Sand is available for building construction work and by systematic separation of sand, there is no possibility of a flood. Providing smooth movement of water of the river.
3. This project will contribute additional revenue to the state Exchequer in the form of revenue.
4. The project will conclude with employment opportunities for unskilled/skilled local people.
5. Standard of living of employed people will increase.

CHAPTER 6

SITE-SPECIFIC ENFORCEMENT & MONITORING PLAN

Sand Ghat Site specific enforcement & monitoring plan

(as per guidelines stipulated in the Enforcement and Monitoring Guidelines for sand mining issued by MoEFCC in January 2020.)

District administration shall deliver information on its website about the Sand Mines in the district for public information. The objective is to extend all information into the public domain so that the citizens are aware of the mining activities. People can also report to the district administration any deviation observed. Suitable feedback and its composition shall also be made operational.

Details shall include, but not be limited to, lease area, geo-coordinates of lease area and mineable area, transport routes, permitted capacity, regulatory conditions for operation including mining, environmental and social commitments, etc.

An Independent Committee of experts constituted by the Distance Learning Task Force (¹¹DLTF) will assess the environmental or ecological damage caused due to illegal mining and recommend recovery of environmental compensation from the concerned miners.

The recommendation may also include action under the provision of the Environment (Protection) Act 1986 u/s.15 read with s.19.

¹¹ Distance Learning Task Force

CHAPTER 7

SECURITY FEATURES

Security features are included in the Transport Permission/Permits (TP)

It will be ensured that the following security features are included in the Transport Permission/Permits (¹²TP) so that duplicate/fraudulent/forged TPs for transport, not accounted for in the IT-based system, is not possible:

1. Printed on Indian Bank Association (¹³IBA) Approved letterhead with account details
2. Magnetic Ink Character Recognition Code (¹⁴MICR) paper
3. Unique Barcode
4. Unique Quick Response Code (¹⁵QR)
5. Fugitive Ink Background
6. Invisible Ink Mark
7. Void Pantograph Watermark
8. Global Positioning System (¹⁶GPS) based vehicle tracking system
9. Closed-Circuit Television (¹⁷CCTV) Camera

¹² Transport Permission

¹³ Indian Bank Association

¹⁴ Magnetic Ink Character Recognition Code

¹⁵ Quick Response Code

¹⁶ Global Positioning System

¹⁷ Closed Circuit Television

CHAPTER 8

REPLENISHMENT

Replenishment study is the most important part of Sand Mining as it is the only basis to carry out sand mining. Without a Replenishment Study, we cannot understand the amount of deposition of sand. Following points to be followed for the replenishment study.

1. Area of deposition and erosion will be calculated for each cross-section after giving due regard to the stability & safety of active channel banks & other features of importance.
2. Differential Global Positioning System (¹⁸DGPS) and other survey tools will be used to define the topography, contours, and offsets of the lease area.
3. Contour & elevation benchmarks will provide baseline data for assessing pre- and post-study period scenario.
4. Physical benchmarks will be fixed at appropriate intervals (preferably 1 in 30m) & Reduced levels (¹⁹RL) shall be validated from a nearby standard RL.
5. These RL will be engraved on a steel plate (Bench Plate) & will be fixed & placed at locations that are free from any damages & are available in the pre-and post-study period.
6. Bench plates will be available for use during the mining period as a reference for all mining activity.
7. Baseline data on elevation status for a grid of 10m x 10m is preferred to have accuracy in the assessment.
8. It is expected that two consecutive cross-sections in longitudinal and lateral directions will not be more than a 10m distance apart.
9. Changes observed in the elevation in pre and post-scenario at each node, will be depicted in graphical forms with an appropriate scale to estimate the area of deposition & erosion.

¹⁸ Differential global positioning system

¹⁹ Reduced levels

10. Elevation level will be in reference to the nearest bench plates established for the purpose.
11. The levels (MSL & RL) of the corner point of each grid will be identifiable and safety barriers (non-Mining) demarcated as restricted in consensus with the Mineral Concession Rules of the respective State, and the provision mentioned in this Sustainable Sand Mining Management Guidelines.
12. A clear identification will be highlighted between grids under the mineable and grids under the non-mineable area.
13. These baseline data (pre and post) be subjected to stimulation with the help of data mine software to derive the replenishment area and corresponding volume and estimated weight.
14. The database will be structured in a tabulated form clearly depicting the nomenclature of the section lines, latitude and longitude of the starting point, chainage, and respective levels of all the points taken on that section line.
15. Net area shall be derived after summation of an area of deposition minus the area of erosion for each cross-section.
16. Volume will be estimated by multiplying the distance between two cross-sections with the average of the net area of these two consecutive cross-sections.
17. One sample per 900m² (30m x 30m) will be the preferred sample density for the assessment of bulk density for the estimation of deposition rate.
18. Care will be taken that the sample for assessment of Bulk Density is taken from the deposition zone & not from erosion.

Methodology for Sand Mining:

The following methodology should be followed for the Replenishment study.

1. The Demarcation and benchmark of the Sand Ghat are done at 10m x 10m intervals.
2. The use of the Auger Driller is to find out the depth of sand in each grid.
3. Auger Driller has created the holes in sand ghat by 10mx10m grid pattern.
4. Measured the depth of holes by using a measuring tape.

5. After taking all the readings average depth of sand is calculated.
6. The average depth of Hivra 3 at Godavari is measured.

Replenishment study of sand in the proposed ghat along with details of the methodology, technology used to identify the existing reserve & replenishment of the same

Dandy Bolton Equation

For runoff less than 2 inches

$$S = 1280 \times (Q) \times 0.46 \times (1.46 - 0.26 \log(A)) \times F$$

For runoff more than 2 inches

$$S = 1958 \times (Q) \times (e^{-0.055 \times Q}) \times (1.43 - 0.26 \log(A))$$

Where,

S = sediment yield of stream (t/yr/km²),

Q = average annual runoff (m³),

A = net drainage area in sq.mile.

CHAPTER 9

PROPOSED PLANTATION PLAN

The Project Proponent must take care of the plantation around the site. This will not only enhance the beautification of the area but also there will be the reduction of pollution, not some extent.

Details of the plantation and Tree species recommended for the plantation are shown below.

Table 9. 1 Details of green belt

Location of greenbelt	Both sides of the approach road, On the riverbanks of both sides of the sand spot & nearby open areas. Haul Road outside the riverbed
No. of plants to be planted	2000 per Hectare
Spacing of plants	2m grid interval
Species selected	Native species

Table 9. 2 Trees species for plantation

Botanical Name	Local Name	Importance
Azadirachta Indica	Neem	Neem oil & neem products
Tectona Grandis	Teek	Antibacterial, Antifungal, Antiulcer
Ficus religiosaa	Peepal	Medicinal use, Fruits & figs
Bambusa vulgaris	Bamboo	Anthelmintic Anti-inflammatory, Astringent Properties
Madhuca longifolia	Mahua	Acts as a Stimulant & cough relief,

CHAPTER 10

ENVIRONMENTAL MANAGEMENT PLAN

A total capital cost of Rs.5.97 Lakhs has been kept in the project cost towards the environmental protection, control, mitigation measures, and implementation of the Environmental Management Plan (EMP). This cost is borne by the bidder/leaseholder. The budgetary cost estimate for the EMP is given in Table.

Table 10. 1 Budgetary cost of EMP

Sr	Impact Source	Impact	Control Measure	Cost (Rs.)
1	Transport Road	On Air Quality	Compaction, gradation, and drainage on both sides.	40000
		On Land, the Stability of the Road and degradation of road	Proper maintenance	30000
			Regular water spraying	30000
			The air quality will be monitored at the impacted village. (For One Day Monitoring)	5000
			Health Check-up of Employees	5000
2	Truck/ Tractor Movement	Air Quality	Sand-carrying trucks will be effectively covered by tarpaulin to avoid the escape of fines to the atmosphere. (2 Tarpaulin)	25000
			Regular monitoring of the exhaust fumes	5000

Sr	Impact Source	Impact	Control Measure	Cost (Rs.)
			Barriers & Traffic Management Expenses. (Excluding Manpower Salary which is included in labour costs)	10000
3	Ramp and Sand Reach	Mining Operation	Regular ramp Inspection and Ramp maintenance. (Excluding Manpower Salary which is included in labour costs)	50000
			Provision of dust masks	10000
4	Bank Management	Bank Erosion/Flood Plain management	The green belt along the bank (For Green Belt Development)	150000
			Plantation of wide leaf tall trees on banks and grass along a slanting portion of the bank	
5	Transportation on Village Roads	Dust Control	The green belt along village Rd (For Green Belt Development)	
6	Final Mine Closure Plan implementation	Replenishment of Sand	Gabions/ boulders will be arranged as per guidelines	15000
7	Mobile toilet, sewage handling & treatment		Mobile toilet, sewage handling & treatment	80000
8	CCTV Monitoring			80000
Total				535000

Budget For Corporate Environment Responsibility (²⁰CER)

About 2% fund of the project cost is allocated for Corporate Environment Responsibility (CER) activities as presented in below Table

Table 10.2 Budget for CER

Sr.	Description	Cost (Rs)
1.	Village Schools (separate toilet for girls and boys)	15000
2.	Solar panels over Gram Panchayat buildings	15000
3.	Solar panels over Public Health Centers	20000
	Total	50000

²⁰ Corporate Environment Responsibility

CHAPTER 11

SUMMARY AND CONCLUSION

The Roles and Responsibilities of the Environmental coordinator, the Operation Manager, and the senior personnel contractor are essential in EMP.

The environmental status of the project site and study area of 10km radius is delineated with respect to air, noise, water, land, biological and socio-economic environment the different project activities in the construction and operation phases are identified.

To identify the impacts, the interaction between the project activities and different components of the environment is classified phase-wise. A summary of the recognized impacts is given in the following paragraphs.

- During the operational phase, the transportation of sand could cause a temporary disturbance to the local environment which will be prevented with the proposed mitigation measures.
- Proposed project will not have any major significant negative impacts. The minor impacts arising during Excavation and Transportation phases can be mitigated with the help of the proposed Environmental Management Plan.
- In general, sand excavation from Hivra 3 sand spot will be useful to the developmental work in the district and generate employment opportunities.

From this project, it is concluded that the district revenue will increase in return minimum of 2% of funds are utilized for the development of the village. The project will also grab employment which will improve the standard of life of villagers.

*** END ***

Environmental Management Plan

As per Rules 23 & 26 of MMME (D & R) RULE 2013 & Section 15 of MMDR Act 1957, MoEFCC Notification 2006, S.O. 141(E) dated 15. 01. 2016; MoEFCC, Sustainable Sand Mining Management Guidelines 2016, Guidelines for Mining Policy 2020)

For

ENVIRONMENTAL CLEARANCE

of

SAND MINING (MINOR MINERAL)

for

Kaudgaonthadi – A Riverbed Sand Mine / Sand Ghat
Khasra No. GSDA approved 21, 12, 21, 37, 15, 216
Area (3.75ha)

Village Kaudgaonthadi , Taluka Majalgaon, District Beed

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ABBREVIATION

Short Form	Long Form
EMP	Environmental Management Plan
MoEFCC	Ministry of Environment Forest and Climate Change
DSR	District-level Survey Report
EC	Environmental Coordinator
OM	Operations Manager
GSDA	Groundwater Surveys & Development Agency
MPCB	Maharashtra Pollution Control Board
MSL	Mean Sea Level
MS	Maharashtra State
PUC	Pollution Under Control
R&R	Rehabilitation and Resettlement
DLTF	Distance Learning Task Force
TP	Transport Permission/Permits
IBA	Indian Bank Association
MICR	Magnetic Ink Character Recognition Code
QR	Quick Response Code
GPS	Global Positioning System

CCTV	Closed-Circuit Television
DGPS	Differential Global Positioning System
RL	Reduced Levels
CER	Corporate Environment Responsibility

CHAPTER 1

INTRODUCTION

The Environmental Management Plan (¹EMP) plays a vital connection uniting forecast impacts and mitigation measures during implementation and operational activities. EMP stipulates the mitigation, monitoring and conventional measures to be taken during project implementation and operation. EMP is to escape or mitigate adverse environmental impacts, and to implement these measures.

This Environmental Management Plan (EMP) has been prepared as part of the Scoping Report which will be compiled in terms of the Environmental Assessment for the sand mining activities.

Considering the Ministry of Environment and Forest Climate Change (²MoEFCC) Notification 2006 and Sustainable Sand Mining Management Guidelines 2016, the Govt. of Maharashtra had mapped out the Minor Mineral Extraction Rules 2013. These rules are to extract all minor minerals in a scientific way so that there is no unfavourable impact on Environment and Climate. To extract every minor mineral from any land (either Government or Private) there is provision for a Mining Plan. These plans need to be approved by a competent authority. For long-term leased minor minerals (5-10 years period) and sand excavation from the riverbed, Senior Deputy Director of Directorate of Geology and Mining is the competent authority. These plans are for short term temporary permits which are valid for one year.

According to Enforcement & Monitoring Guidelines for Sand Mining 2020, Sustainable Sand Mining Management Guidelines 2016, Standard Environment conditions for sand mining and sustainable mining practices, District level Survey Report (³DSR) should be prepared and are suitable for mining and area prohibited for mining must be recognized.

¹ Environmental Management Plan

² Ministry of Environment Forest and Climate Change

³ District Survey Report

Objectives of EMP

- To provide overall conservation of the environment.
- To minimize waste generation and pollution.
- To regulate the precise use of natural resources and water.
- To provide Safety, Welfare, and Good health for the workforce and populace.
- To regulate the effective operation of all control measures.
- To ensure alertness against probable disasters and accidents.
- To monitor cumulative and long-term impacts.
- To regulate the effective operation of all control measures.

Roles and Responsibilities concerning the implementation of the EMP

The roles and responsibilities of all parties involved in successfully managing the environment are mentioned below.

Environmental Coordinator

The Environmental Coordinator will inspect operational areas on a quarterly basis and at the onset of mining any new island, to ensure that all specifications are met. The duties of the environmental coordinator will be the following.

- Guide the operations team in respect of the implementation of the environmental specifications.
- Lead the visits to ensure all work is aligned with the EMP.
- The environmental coordinator must examine the site during the three-monthly visits. All rehabilitation results will be Comprised in the quarterly report.
- Examination of the rehabilitation area and giving guidance regarding rehabilitation measures if any.

The Operations Manager

The responsibilities of the Operations Manager (4OM) or his nominated authority are as follows.

1. Familiarize themselves with the requirements of the EMP.
2. Monitor employees' and contractor's compliance with the environmental specifications; and enforce adherence.

⁴ Operations Manager

3. Communicate all environment-related incidents with the Environmental Coordinator and distribute them internally to avoid repetition.
4. Maintain a record of activities relevant to Environmental Management.
5. The Operations Manager shall be responsible for monitoring and the enforcement of the Environmental Management specifications on a day-to-day basis. Any violation of the environmental specifications shall be recorded, and the agreed disciplinary measures are taken.

Senior personnel and contractors

The roles of the senior personnel/contractors are as follows:

- Familiarize themselves with the requirements of the EMP.
- Comply with the environmental management specifications.
- Ensure that all team members are familiar with the environmental management specifications.

Details of the project

The Kaudgaonthadi sand ghat area has been selected in perspective of its subsisting demand for building-grade sand for the area in and around Majalgaon Taluka. The District Mining Officer Beed has put forward the proposal for Environmental Clearance for mining. The ghat has a production of 7950 brass sand within an area of 3.75ha. The proposed proposal follows an organized mining process for Environmental Clearance.

Further Chapter informs about the in-depth details of the Sand Ghat, its geographical structure, and a Google map of the ghat with its approach road for contractors and workers to reach to sand ghat from the village.

CHAPTER 2

DETAILS OF THE PROJECT

Kaudgaonthadi village is located in Majalgaon Taluka of Beed district, Maharashtra. Majalgaon is well connected with all nearby cities. The National highway NH-52, it traverses through the states of Punjab, Haryana, Rajasthan, Madhya Pradesh, Maharashtra, Karnataka in India. NH-52 is the National Highway passing through the district, covering a total distance of 73.60km. Majalgaon has situated about 51.22km by road from Beed. The district has road links to adjoining districts Ahmednagar District to the west, Jalna District to the North, Latur District to the East, Osmanabad District to the South, Parbhani District to the East. The district is well connected by roads.

Kaudgaonthadi village is 46.33km away from Collector office headquarters Beed. The Geographical area of the Beed is around 10693km². The nearest Railway station to Kaudgaonthadi village is Usmanpur Railway station. The nearest Airport to Beed District is Aurangabad Airport, Aurangabad Airport is 104km from Beed city, 95.79km from Kaudgaonthadi.

Honourable Collector Beed intends to auction Sand Ghats and appointed District Mining Officer as Project Proponent. A total of 38 sand ghats are identified by Tahsildar Majalgaon, Parli Ve., Gevrai, Beed along with District Mining Officer, Beed. The 38 sand ghats were jointly surveyed by Taluka level technical committee headed by respective Tahsildar with Dy. Engineer Irrigation Department, Junior Geologist Directorate of Geology and Mining Govt. of Maharashtra, Junior Geologist, Groundwater Surveys & Development Agency (⁵GSDA). DMO Beed and a representative of the Maharashtra Pollution Control Board (⁶MPCB), as per the procedure defined in Sand Auction Rules 2019 dated 3/09/2019 formed a Taluka-level technical committee, which explored the sand ghats for an available quantity of sand for scooping. Revenue of Rs.25 Crore is expected from the auction of these sand ghats. Kaudgaonthadi Sand Ghat proposed over river Godavari in Majalgaon Taluka is proposed to cater to the infrastructural

⁵ Groundwater Surveys & Development Agency

⁶ Maharashtra Pollution Control Board

requirement of sand in the Taluka of Beed and adjoining areas of other talukas.

Table 2. 1 Details of Kaudgaonthadi Sand ghat

Name of Village	Taluka	River/ Nallah	Nearest survey No.	Area (ha)	Proposed Depth for excavation (m)	Quantity Permitted for mining of Sand in Brass	Method of Mining
Kaudgaonthadi	Majalgaon	Godavari	21, 12, 21, 37, 15, 216	3.75	0.60	7950	Open- cast manual mining

Table 2. 2 Salient features of the project

Particulars	Details		
Location	Village-Kaudgaonthadi , Taluka-Majalgaon, District-Beed, Maharashtra.		
Latitude and Longitude	Boundary points of Kaudgaonthadi sand spot	Latitude	Longitude
	BP1	19°16'48.81" N	76°3'58.73" E
	BP2	19°16'50.50" N	76°3'59.45" E
	BP3	19°16'44.84" N	76°4'18.80" E
	BP4	19°16'43.05" N	76°4'18.68" E
Sand spot area (In ha)	3.75ha		
Proposed production capacity (in Brass)	7950		

Particulars	Details
Infrastructure Requirement (As per Govt Resolution 3rd January 2018)	<ol style="list-style-type: none"> 1. Room / Hut for Official records 2. Electricity / Battery for Running CCTV 24x7 daily. 3. One Computer / Android-based Mobile for the online generation of Invoice numbers.
Distance of project site from nearest rail or road bridge over the concerned River, Nallah, etc.	2.02km
Distance from infrastructural facilities	
Railway line	35.26km
National Highway	1.24km (NH-61)
State Highway	27.49 (SH-144)
Major District Road	34.04km
Any Other Road	8.74km
Electric transmission line pole or tower	
Canal or check dam or reservoirs or lake or ponds	
In-take for drinking water pump house	
Intake for Irrigation canal pumps	

Particulars	Details
<p>Areas already subjected to pollution or environmental damage. (those where existing legal environmental standards are exceeded)</p>	<p>None</p>
<p>Areas susceptible to natural hazards which could cause the project to Present environmental problems (earthquakes, subsidence, landslides, erosion, flooding, or extreme or adverse climatic conditions)</p>	<p>No. Sand Ghat is at safe distances from natural hazards like earthquake prone area, subsidence, landslide, erosion, flooding prone area and extreme or adverse climatic conditions</p>

Particulars	Details
<p>Whether the proposal involves approval or clearance under the following Regulations or Acts, namely: -</p> <ul style="list-style-type: none">(a) The Forest (Conservation) Act, 1980.(b) The Wildlife (Protection) Act, 1972.(c) The Coastal Regulation Zone Notification, 2011. <p>If yes, details of the same and their status are to be given.</p>	None
Forest land involved (hectares)	None

The below figure shows the google image of Kaudgaonthadi sand ghat.



Fig 2.1-Google image of Kaudgaonthadi sand ghat

Approach roach along with google location is as shown below.

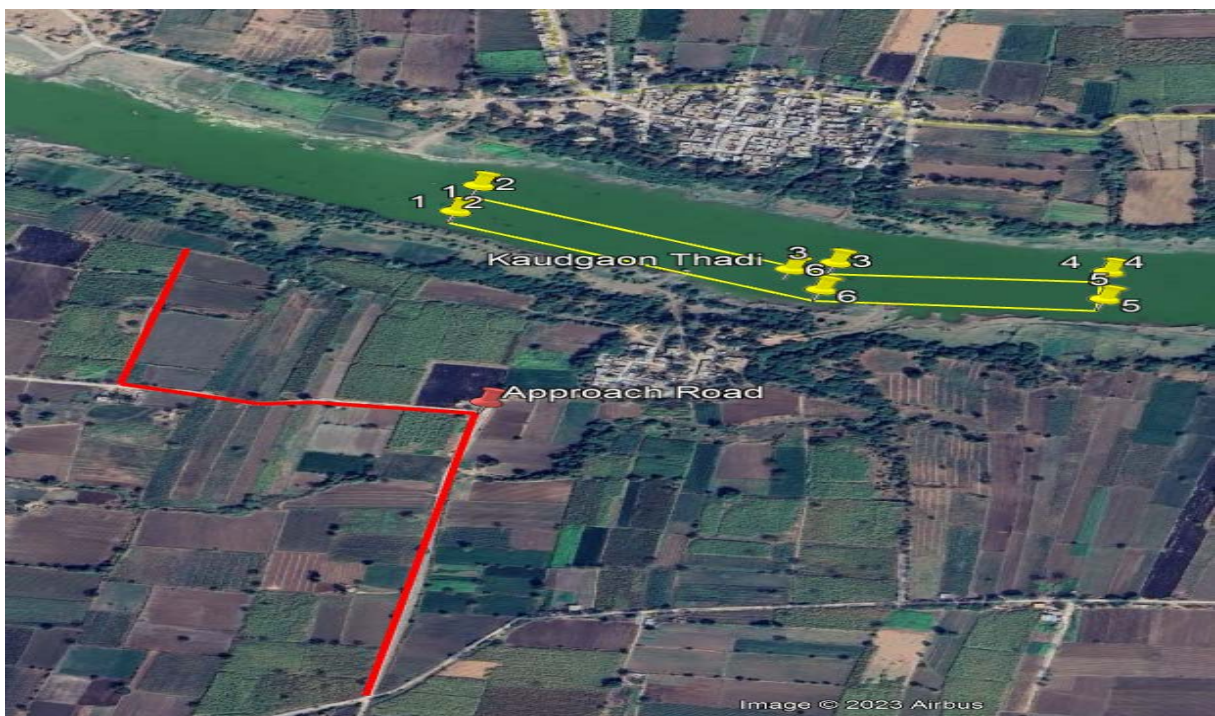


Fig 2.2-Approach Road for sand ghat

Next chapter 3 is Baseline Environmental Status in which the entire Topography, Climate, Soil Environment, Land use, water Environment, Hydrology, Biological environment, and Socio-economic Environment are briefly explained for the Beed district.

CHAPTER 3

BASELINE ENVIRONMENT STATUS

Topography

The Sand Ghat area as per the survey is the riverbed of the Godavari River of the Beed district. The maximum elevation is 411m MSL, average elevation is 414m MSL, & minimum elevation is 407m (⁷MSL) Mean Sea Level. The slope of the Sand Ghat area towards the Southwest to Northeast side. The flow of Godavari River is from Southeast direction.

Presently, there is neither any infrastructure within the riverbed nor are proposed.

Hydrology

There will be no change in the Water Table during the mining operation, as the depth of mining shall be restricted to 0.60m water level, which is less likely to affect the surface level or Groundwater Table. There is no proposal of any stream modification/diversion due to this mining activity hence there will be not any impact on the flow of water.

Soil Environment

The riverbed consists of sand /gravel. There is no topsoil. The depth of mining shall be restricted to 0.60m. There is no crucial impact on the soil forecasted due to mining activities.

Land Use Land Cover

Land use shows that agriculture land use is predominant. The proposed site is 3.75ha having adjoined Khasara No 21, 12, 21, 37, 15, 216. The land doesn't cover any human habitation, forest, etc. Any change in the scope of the approved Mining Plan will lead to riverbank erosion/cutting and thereby river channel shifting, degradation of land, causing loss of properties and degradation of the surrounding landscape.

⁷ Mean sea level

Water Environment

While transporting sand there may be fugitive dust. There will be water requirement for spraying for dust suppression purposes. This water will be supplied from the borewell from nearby villages through tankers as well as from surface water sources. The water source may vary from village to village.

Climate

During summer May is the hottest month of the year in this area. The temperature rises to 42°C in the month of May. The average rainfall in this region is 600mm to 700mm About 50% of rainfall precipitates between June to September. December is the coldest month with temperatures falling down to 18°C. Overall the proposed site area has sub-tropical conditions.

Biological Environment

Flora

The agricultural area is seen near the Sand Ghat. Few trees and thorny bushes are seen on the banks of the river.

Fauna

As there is no forest cover, no endangered species of wildlife are seen in this area.

Socio-Economic Environment

This project may create constructive impacts of the sand mining that are stated below:

1. The mining operations will provide direct & indirect employment to village people.
2. The villages and their inhabitants & domestic animals will not be disturbed due to mining, as the quarry is far from their settlements.
3. Local workforce will be given first preference for employment.
4. Mining activities will benefit the local people due to the provision of more infrastructural facilities (developments of approach routes within the village area).

The next chapter describes all possible impacts on the Environment due to this project along with its mitigation measure to overcome these impacts.

CHAPTER 4

IMPACT ASSESSMENT REPORT ALONG WITH PROPOSED MITIGATION MEASURES

1. Land Environment

Anticipated Impact

Movement of vehicles can create issues for agricultural land, human habitations, noise, and risk for public and cause traffic hazards. The impacts include damage to the riverbank due to access ramps to the riverbed, soil erosion because of extraction of sand, micro disturbance to groundwater, possible stimulation of the changed river course, and contamination of sand aquifer water due to ponding. There might be surface degradation due to the road network.

The quality of soil will not be affected due to transportation or any other activity of mining.

Mitigation measure

1. Mining depth should be restricted to 3 meters and distance from the bank should be $\frac{1}{4}$ th or river width and should not be less than 7.5 meters as per “Sustainable Sand Mining Guidelines 2020” ■ Page 23, Point no 4.3 (m).
2. There will be a minimal number of access roads to riverbeds. Cutting of riverbanks will be avoided and ramp with smooth slope will be maintained. Access points to the riverbed will be decided based on the least steepness of the riverbank and the least human activity at that location.
3. No foreign material like polythene bags, jute bags, and useless articles should be allowed to remain/spill in the riverbed and catchment area, or no pits/pockets will be allowed to be filled with such material.
4. Mining at the concave side of the river channel should be avoided to prevent bank erosion. Similarly, a tortuous segment of a river is to be selected for mining in such a way as to ignore the natural eroding of banks.
5. Ensure that ponding is not created in the riverbed.
6. Transportation route should be such that it gives minimum

damage to the environment.

7. Green belt will be developed along the haul road and the bank of rivers of mine premises and near the sand mining site. While selecting the plant species, preference will be given for planting native species of the area.

2. Water environment

Anticipated Impact

The project activity will be carried out in the dry part of the riverbed. Care will be taken to ensure that neither of the project activities will affect the water environment or riverbank habitats. During the lean months, the proposed Sand Mining will not expose the base flow of the river and hence there will not be any inauspicious impact on surface hydrology and groundwater regime due to this project. Project activities will not have any adverse consequences on the physical components of the environment and therefore may not have any effect on the recharge of ground waters or affect the water quality. Monitoring of water quality will be checked yearly.

Mitigation measures

1. Mining is avoided during the monsoon season and at the time of floods. This will help in the replenishment of sand in the riverbed.
2. Mining below the subterranean water level will be avoided as a safeguard against environmental contamination and over-exploitation of resources.
3. River stream will not be transferred to create active channels.
4. Mining schedule is synchronized with the river flow direction and the gradient of the land.
5. Mining at the concave side of the river channel will be avoided to prevent bank erosion.
6. Tortuous segment of the river will be selected for mining in such a way as to avoid naturally eroding banks and to promote mining on naturally building meander components.
7. Mining depth shall be maintained as per the guidelines and

rules of the Sand Mining Policy dated 03/09/2019 and recommendations of Maharashtra State (⁸M.S.). State Ground Water Department for extraction of sand during the lease period.

8. Water Quality Monitoring for the ground waters, river water, and other surface waters shall be carried out seasonally to ensure that the water quality is not affected by the project activities.
9. Utmost care will be taken to minimize or control leaking vehicles to be used for sand transportation.
10. The washing of tractor trolleys in the river will not be done.
11. The contractor will follow all guidelines and rules for proper and scientific methods of mining during the period of extracting the sand.

3. Air Environment

Anticipated Impacts

Plying of tractor trolleys from the public road to river sand collection points needs access roads. The majority of such access roads are the already existing roads/tracks being used by pedestrians/cart owners. The movement of heavy vehicles sometimes causes problems for cattle, agricultural land, and human habitations due to dust, noise, and the movement of the public. These environmental problems are felt more as the area is rural in nature.

Air pollution is likely to be caused at various stages of Sand Mining operations such as excavation, loading & transportation of material. Most of the fugitive dust emissions will be generated from loading & transportation. This dust becomes airborne and spreads away to surrounding areas.

The impact on air is mainly localized in nature as the dust particles of 100 μ in size are not carried to farther distances beyond 100m and the effect is felt within the core zone of the project involving active Sand Mining operations.

⁸ Maharashtra State

Mitigation measures

1. Movement of the vehicles on the road will be increased; however, the unmetalled road in the mining area will be sprinkled with water at regular intervals.
2. In addition to preventing spillage from tractor trolleys, overloading shall be controlled to 1-brass/tractor trolley. The speed limit will be <20 km/hr.
3. Maintenance of the haul road will be done on a regular basis.
4. To avoid fugitive dust emissions at the time of excavation, a regular sprinkling of water will be done on regular basis.
5. Sand is transported to the sites by road through tractor trolleys. The sand-carrying vehicles shall be covered by tarpaulin sheets.
6. The Green belt development will be prepared along the haul roads, which will act as a pollution sink.
7. To minimize vehicular pollution from the sand transporting vehicles, the following conditions will be insisted upon to permit the vehicles of the transporters.
8. The vehicles should be Bharat-IV stage compliant and should have a Pollution Under Control (⁹PUC) Certificate issued by appropriate authorities.
9. Regular maintenance of transport vehicles and monitoring of vehicular emission levels at periodical intervals.

4. Noise Environment

Anticipated Impact

The noise environment in this project will be overdone by the equipment at the site and vehicular transportation. A slight increase in noise levels of <10dB(A) can be expected up to a distance of 100m.

Mitigation measures.

1. Minimum use of horns in the village area.
2. Timely maintenance of vehicles and their silencers to

⁹ Pollution Under Control

minimize vibration and sound.

3. Phasing out old and worn-out tractor trolleys.
4. Provision of green belts along the road networks.
5. Care will be taken to produce minimum sound during sand loading.
6. Backhoe loader excavator will be used
7. Earplugs may be provided to protect the labourers working at the site.

5. Socio-economic Environment

Anticipated Impacts and Evaluation

1. The project activities shall not have any adverse impacts on any of the common property resources of the village communities, as the Sand Mine lease area is not being used for any purpose by any section of the society in this region.
2. There is no Resettlement and Rehabilitation (¹⁰R&R) involvement in this project.
3. There is no land acquisition in this project.
4. A major portion of the houses in the study area is semi-pucca-type structures.
5. The water source to these areas is from the Grampanchayat /Nagar Parishad connection and private bore wells and wells.
6. People living around the project area need the project for the purpose of employment and economic benefits.
7. The awareness level regarding the proposed mining activity is very towering. The proposed mining activity is expected to provide stimulus to socio-economic activities in the region and thereby accelerate further development processes.

Social and Demographic Profile

The workers are from local villages. These people have been provided welfare benefits from the lessee like medical benefits,

¹⁰ Rehabilitation and Resettlement

insurance, fees for children's education, etc. They have some land and cattle for their daily earnings. Additional revenue earned from the Sand Mining work will improve their living standard. The group of quarries in and around will help to have infrastructure facilities like roads, schools, shops, etc. This will enhance their social life.

Occupational Health and Safety

This is a riverbed Sand Mine. So, the mining activities are comparatively smaller because the production is not on a high scale. Workers do not come across any extreme conditions like excessive heat, moisture, etc. Workers working around it may come across this dusty environment. But the impact on health will be within the limit.

Human Settlement

1. There are no houses in and around the lease area. Blasting is the only activity, which may affect the settlement, which is not done. The settlement is more than 1-km from the sand mine.
2. Appropriate precautions will be taken during mining. Transportation of finished products is through the villages. There will be an effect of traffic on the local people. However, the intensity of traffic is 70-80/day.

Health and Hygiene

In general, the health of villagers is moderately good. In the rainy season, the atmospheric condition is unhygienic due to a lack of proper drainage and sanitation in the village habitation. Villagers are working in agricultural fields and work as labourers.

Education

Most education of 70% young <20 years, is up to the 5th to 9th. Economic condition is in general moderate. So, after this project, the standard of education will increase.

Socio-Economic Benefits Arising Out of Mining

1. Generation of employment in rural areas.
2. Upgradation in the living standards of rural people.
3. Creating infrastructural facilities like roads, electricity, shops, schools, etc.
4. Upgrading literacy in the area by exploiting natural minerals so the generation of revenue.

5. Helping to sustain construction activity.
6. Improving the greenery of the area, which is otherwise poor.

Liquid Effluent

Not applicable, because these activities do not generate effluent from operation or process.

Solid Waste

Not applicable, because small mines and impacts are negligible.

Project benefits due to the sand mining of Kaudgaonthadi are explained in the next Chapter.

CHAPTER 5

PROJECT BENEFITS

The proposed Sand Mining project of Kaudgaonthadi village, Majalgaon Taluka, Beed District will lead to the following benefits:

1. Increase in the revenue of the district will ultimately increase the revenue of the village, which in return can be used to improve the infrastructure of the village.
2. Sand is available for building construction work and by systematic separation of sand, there is no possibility of a flood. Providing smooth movement of water of the river.
3. This project will contribute additional revenue to the state Exchequer in the form of revenue.
4. The project will conclude with employment opportunities for unskilled/skilled local people.
5. Standard of living of employed people will increase.

CHAPTER 6

SITE-SPECIFIC ENFORCEMENT & MONITORING PLAN

Sand Ghat Site specific enforcement & monitoring plan

(as per guidelines stipulated in the Enforcement and Monitoring Guidelines for sand mining issued by MoEFCC in January 2020.)

District administration shall deliver information on its website about the Sand Mines in the district for public information. The objective is to extend all information into the public domain so that the citizens are aware of the mining activities. People can also report to the district administration any deviation observed. Suitable feedback and its composition shall also be made operational.

Details shall include, but not be limited to, lease area, geo-coordinates of lease area and mineable area, transport routes, permitted capacity, regulatory conditions for operation including mining, environmental and social commitments, etc.

An Independent Committee of experts constituted by the Distance Learning Task Force (¹¹DLTF) will assess the environmental or ecological damage caused due to illegal mining and recommend recovery of environmental compensation from the concerned miners.

The recommendation may also include action under the provision of the Environment (Protection) Act 1986 u/s.15 read with s.19.

¹¹ Distance Learning Task Force

CHAPTER 7

SECURITY FEATURES

Security features are included in the Transport Permission/Permits (TP)

It will be ensured that the following security features are included in the Transport Permission/Permits (¹²TP) so that duplicate/fraudulent/forged TPs for transport, not accounted for in the IT-based system, is not possible:

1. Printed on Indian Bank Association (¹³IBA) Approved letterhead with account details
2. Magnetic Ink Character Recognition Code (¹⁴MICR) paper
3. Unique Barcode
4. Unique Quick Response Code (¹⁵QR)
5. Fugitive Ink Background
6. Invisible Ink Mark
7. Void Pantograph Watermark
8. Global Positioning System (¹⁶GPS) based vehicle tracking system
9. Closed-Circuit Television (¹⁷CCTV) Camera

¹² Transport Permission

¹³ Indian Bank Association

¹⁴ Magnetic Ink Character Recognition Code

¹⁵ Quick Response Code

¹⁶ Global Positioning System

¹⁷ Closed Circuit Television

CHAPTER 8

REPLENISHMENT

Replenishment study is the most important part of Sand Mining as it is the only basis to carry out sand mining. Without a Replenishment Study, we cannot understand the amount of deposition of sand. Following points to be followed for the replenishment study.

1. Area of deposition and erosion will be calculated for each cross-section after giving due regard to the stability & safety of active channel banks & other features of importance.
2. Differential Global Positioning System (¹⁸DGPS) and other survey tools will be used to define the topography, contours, and offsets of the lease area.
3. Contour & elevation benchmarks will provide baseline data for assessing pre- and post-study period scenario.
4. Physical benchmarks will be fixed at appropriate intervals (preferably 1 in 30m) & Reduced levels (¹⁹RL) shall be validated from a nearby standard RL.
5. These RL will be engraved on a steel plate (Bench Plate) & will be fixed & placed at locations that are free from any damages & are available in the pre-and post-study period.
6. Bench plates will be available for use during the mining period as a reference for all mining activity.
7. Baseline data on elevation status for a grid of 10m x 10m is preferred to have accuracy in the assessment.
8. It is expected that two consecutive cross-sections in longitudinal and lateral directions will not be more than a 10m distance apart.
9. Changes observed in the elevation in pre and post-scenario at each node, will be depicted in graphical forms with an appropriate scale to estimate the area of deposition & erosion.

¹⁸ Differential global positioning system

¹⁹ Reduced levels

10. Elevation level will be in reference to the nearest bench plates established for the purpose.
11. The levels (MSL & RL) of the corner point of each grid will be identifiable and safety barriers (non-Mining) demarcated as restricted in consensus with the Mineral Concession Rules of the respective State, and the provision mentioned in this Sustainable Sand Mining Management Guidelines.
12. A clear identification will be highlighted between grids under the mineable and grids under the non-mineable area.
13. These baseline data (pre and post) be subjected to stimulation with the help of data mine software to derive the replenishment area and corresponding volume and estimated weight.
14. The database will be structured in a tabulated form clearly depicting the nomenclature of the section lines, latitude and longitude of the starting point, chainage, and respective levels of all the points taken on that section line.
15. Net area shall be derived after summation of an area of deposition minus the area of erosion for each cross-section.
16. Volume will be estimated by multiplying the distance between two cross-sections with the average of the net area of these two consecutive cross-sections.
17. One sample per 900m² (30m x 30m) will be the preferred sample density for the assessment of bulk density for the estimation of deposition rate.
18. Care will be taken that the sample for assessment of Bulk Density is taken from the deposition zone & not from erosion.

Methodology for Sand Mining:

The following methodology should be followed for the Replenishment study.

1. The Demarcation and benchmark of the Sand Ghat are done at 10m x 10m intervals.
2. The use of the Auger Driller is to find out the depth of sand in each grid.
3. Auger Driller has created the holes in sand ghat by 10mx10m grid pattern.
4. Measured the depth of holes by using a measuring tape.

5. After taking all the readings average depth of sand is calculated.
6. The average depth of Kaudgaonthadi at Godavari is measured.

Replenishment study of sand in the proposed ghat along with details of the methodology, technology used to identify the existing reserve & replenishment of the same

Dandy Bolton Equation

For runoff less than 2 inches

$$S = 1280 \times (Q) \times 0.46 \times (1.46 - 0.26 \log(A)) \times F$$

For runoff more than 2 inches

$$S = 1958 \times (Q) \times (e^{-0.055 \times Q}) \times (1.43 - 0.26 \log(A))$$

Where,

S = sediment yield of stream (t/yr/km²),

Q = average annual runoff (m³),

A = net drainage area in sq.mile.

CHAPTER 9

PROPOSED PLANTATION PLAN

The Project Proponent must take care of the plantation around the site. This will not only enhance the beautification of the area but also there will be the reduction of pollution, not some extent.

Details of the plantation and Tree species recommended for the plantation are shown below.

Table 9. 1 Details of green belt

Location of greenbelt	Both sides of the approach road, On the riverbanks of both sides of the sand spot & nearby open areas. Haul Road outside the riverbed
No. of plants to be planted	2000 per Hectare
Spacing of plants	2m grid interval
Species selected	Native species

Table 9. 2 Trees species for plantation

Botanical Name	Local Name	Importance
Azadirachta Indica	Neem	Neem oil & neem products
Tectona Grandis	Teek	Antibacterial, Antifungal, Antiulcer
Ficus religiosaa	Peepal	Medicinal use, Fruits & figs
Bambusa vulgaris	Bamboo	Anthelmintic Anti-inflammatory, Astringent Properties
Madhuca longifolia	Mahua	Acts as a Stimulant & cough relief,

CHAPTER 10

ENVIRONMENTAL MANAGEMENT PLAN

A total capital cost of Rs.5.97 Lakhs has been kept in the project cost towards the environmental protection, control, mitigation measures, and implementation of the Environmental Management Plan (EMP). This cost is borne by the bidder/leaseholder. The budgetary cost estimate for the EMP is given in Table.

Table 10. 1 Budgetary cost of EMP

Sr	Impact Source	Impact	Control Measure	Cost (Rs)
1	Transport Road	On Air Quality	Compaction, gradation, and drainage on both sides.	40000
		On Land, the Stability of the Road and degradation of road	Proper maintenance	30000
			Regular water spraying	30000
			The air quality will be monitored at the impacted village. (For One Day Monitoring)	5000
			Health Check-up of Employees	5000
2	Truck/ Tractor Movement	Air Quality	Sand-carrying trucks will be effectively covered by tarpaulin to avoid the escape of fines to the atmosphere. (2 Tarpaulin)	25000
			Regular monitoring of the exhaust fumes	5000

Sr	Impact Source	Impact	Control Measure	Cost (Rs)
			Barriers & Traffic Management Expenses. (Excluding Manpower Salary which is included in labour costs)	10000
3	Ramp and Sand Reach	Mining Operation	Regular ramp Inspection and Ramp maintenance. (Excluding Manpower Salary which is included in labour costs)	50000
			Provision of dust masks	10000
4	Bank Management	Bank Erosion/Flood Plain management	The green belt along the bank (For Green Belt Development)	150000
			Plantation of wide leaf tall trees on banks and grass along a slanting portion of the bank	
5	Transportation on Village Roads	Dust Control	The green belt along village Rd (For Green Belt Development)	
6	Final Mine Closure Plan implementation	Replenishment of Sand	Gabions/ boulders will be arranged as per guidelines	15000
7	Mobile toilet, sewage handling & treatment		Mobile toilet, sewage handling & treatment	80000
8	CCTV Monitoring			80000
Total				535000

Budget For Corporate Environment Responsibility (²⁰CER)

About 2% fund of the project cost is allocated for Corporate Environment Responsibility (CER) activities as presented in below Table

Table 10.2 Budget for CER

Sr.	Description	Cost (Rs)
1.	Village Schools (separate toilet for girls and boys)	15000
2.	Solar panels over Gram Panchayat buildings	15000
3.	Solar panels over Public Health Centers	20000
	Total	50000

²⁰ Corporate Environment Responsibility

CHAPTER 11

SUMMARY AND CONCLUSION

The Roles and Responsibilities of the Environmental coordinator, the Operation Manager, and the senior personnel contractor are essential in EMP.

The environmental status of the project site and study area of 10km radius is delineated with respect to air, noise, water, land, biological and socio-economic environment the different project activities in the construction and operation phases are identified.

To identify the impacts, the interaction between the project activities and different components of the environment is classified phase-wise. A summary of the recognized impacts is given in the following paragraphs.

- During the operational phase, the transportation of sand could cause a temporary disturbance to the local environment which will be prevented with the proposed mitigation measures.
- Proposed project will not have any major significant negative impacts. The minor impacts arising during Excavation and Transportation phases can be mitigated with the help of the proposed Environmental Management Plan.
- In general, sand excavation from Kaudgaonthadi sand spot will be useful to the developmental work in the district and generate employment opportunities.

From this project, it is concluded that the district revenue will increase in return minimum of 2% of funds are utilized for the development of the village. The project will also grab employment which will improve the standard of life of villagers.

*** END ***

Environmental Management Plan

As per Rules 23 & 26 of MMME (D & R) RULE 2013 & Section 15 of MMDR Act 1957, MoEFCC Notification 2006, S.O. 141(E) dated 15. 01. 2016; MoEFCC, Sustainable Sand Mining Management Guidelines 2016, Guidelines for Mining Policy 2020)

for

ENVIRONMENTAL CLEARANCE

of

SAND MINING (MINOR MINERAL)

for

Khudras- A Riverbed Sand Mine / Sand Ghat
Khasra No. GSDA approved 7, 6, 4, 3, 2, 1
Area (1.10ha)

Village Khudras, Tehsil Beed, District Beed

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ABBREVIATION

Short Form	Long Form
EMP	Environmental Management Plan
MoEFCC	Ministry of Environment Forest and Climate Change
DSR	District-level Survey Report
EC	Environmental Coordinator
OM	Operations Manager
GSDA	Groundwater Surveys & Development Agency
MPCB	Maharashtra Pollution Control Board
MSL	Mean Sea Level
MS	Maharashtra State
PUC	Pollution Under Control
R&R	Rehabilitation and Resettlement
DLTF	Distance Learning Task Force
TP	Transport Permission/Permits
IBA	Indian Bank Association
MICR	Magnetic Ink Character Recognition Code
QR	Quick Response Code
GPS	Global Positioning System

CCTV	Closed-Circuit Television
DGPS	Differential Global Positioning System
RL	Reduced Levels
CER	Corporate Environment Responsibility

CHAPTER 1

INTRODUCTION

The Environmental Management Plan (¹EMP) plays a vital connection uniting forecast impacts and mitigation measures during implementation and operational activities. EMP stipulates the mitigation, monitoring and conventional measures to be taken during project implementation and operation. EMP is to escape or mitigate adverse environmental impacts, and to implement these measures.

This Environmental Management Plan (EMP) has been prepared as part of the Scoping Report which will be compiled in terms of the Environmental Assessment for the sand mining activities.

Considering the Ministry of Environment and Forest Climate Change (²MoEFCC) Notification 2006 and Sustainable Sand Mining Management Guidelines 2016, the Govt. of Maharashtra had mapped out the Minor Mineral Extraction Rules 2013. These rules are to extract all minor minerals in a scientific way so that there is no unfavourable impact on Environment and Climate. To extract every minor mineral from any land (either Government or Private) there is provision for a Mining Plan. These plans need to be approved by a competent authority. For long-term leased minor minerals (5-10 years period) and sand excavation from the riverbed, Senior Deputy Director of Directorate of Geology and Mining is the competent authority. These plans are for short term temporary permits which are valid for one year.

According to Enforcement & Monitoring Guidelines for Sand Mining 2020, Sustainable Sand Mining Management Guidelines 2016, Standard Environment conditions for sand mining and sustainable mining practices, District level Survey Report (³DSR) should be prepared and are suitable for mining and area prohibited for mining must be recognized.

¹ Environmental Management Plan

² Ministry of Environment Forest and Climate Change

³ District Survey Report

Objectives of EMP

- To provide overall conservation of the environment.
- To minimize waste generation and pollution.
- To regulate the precise use of natural resources and water.
- To provide Safety, Welfare, and Good health for the workforce and populace.
- To regulate the effective operation of all control measures.
- To ensure alertness against probable disasters and accidents.
- To monitor cumulative and long-term impacts.
- To regulate the effective operation of all control measures.

Roles and Responsibilities concerning the implementation of the EMP

The roles and responsibilities of all parties involved in successfully managing the environment are mentioned below.

Environmental Coordinator

The Environmental Coordinator will inspect operational areas on a quarterly basis and at the onset of mining any new island, to ensure that all specifications are met. The duties of the environmental coordinator will be the following.

- Guide the operations team in respect of the implementation of the environmental specifications.
- Lead the visits to ensure all work is aligned with the EMP.
- The environmental coordinator must examine the site during the three-monthly visits. All rehabilitation results will be Comprised in the quarterly report.
- Examination of the rehabilitation area and giving guidance regarding rehabilitation measures if any.

The Operations Manager

The responsibilities of the Operations Manager (4OM) or his nominated authority are as follows.

1. Familiarize themselves with the requirements of the EMP.
2. Monitor employees' and contractor's compliance with the environmental specifications; and enforce adherence.

⁴ Operations Manager

3. Communicate all environment-related incidents with the Environmental Coordinator and distribute them internally to avoid repetition.
4. Maintain a record of activities relevant to Environmental Management.
5. The Operations Manager shall be responsible for monitoring and the enforcement of the Environmental Management specifications on a day-to-day basis. Any violation of the environmental specifications shall be recorded, and the agreed disciplinary measures are taken.

Senior personnel and contractors

The roles of the senior personnel/contractors are as follows:

- Familiarize themselves with the requirements of the EMP.
- Comply with the environmental management specifications.
- Ensure that all team members are familiar with the environmental management specifications.

Details of the project

The Khudras sand ghat area has been selected in perspective of its subsisting demand for building-grade sand for the area in and around Beed Taluka. The District Mining Officer Beed has put forward the proposal for Environmental Clearance for mining. The ghat has a production of 3887 brass sand within an area of 1.10ha. The proposed proposal follows an organized mining process for Environmental Clearance.

Further Chapter informs about the in-depth details of the Sand Ghat, its geographical structure, and a Google map of the ghat with its approach road for contractors and workers to reach to sand ghat from the village.

CHAPTER 2

DETAILS OF THE PROJECT

Khudras village is located in Beed Taluka of Beed district, Maharashtra. Beed is well connected with all nearby cities. The National highway NH-52, it traverses through the states of Punjab, Haryana, Rajasthan, Madhya Pradesh and Maharashtra in India. NH-52 is the National Highway passing through the district, covering a total distance of 73.60km. Beed has situated about 0km by road from Beed. The district has road links to adjoining districts Ahmednagar District to the west, Jalna District to the North, Latur District to the East, Osmanabad District to the South, Parbhani District to the East The district is well connected by roads.

Khudras village is 17.76km away from Collector Office headquarters Beed. The Geographical area of the Beed is around 10693km². The nearest Railway station to Khudras village is Partur Railway station. The nearest Airport to Beed District is Aurangabad Airport, Aurangabad Airport is 104km away from beed.

Honourable Collector Beed intends to auction Sand Ghats and appointed District Mining Officer as Project Proponent. A total of 38 sand ghats are identified by Tahsildar Majalgaon, Parli Ve, Gevrai, Beed along with District Mining Officer, Beed. The 38 sand ghats were jointly surveyed by Taluka level technical committee headed by respective tahsildar with Dy. Engineer Irrigation Department, Junior Geologist Directorate of Geology and Mining Govt. of Maharashtra, Junior Geologist, Groundwater Surveys & Development Agency (⁵GSDA). DMO Beed and a representative of the Maharashtra Pollution Control Board (⁶MPCB), as per the procedure defined in Sand Auction Rules 2019 dated 3/09/2019 formed a Taluka-level technical committee, which explored the sand ghats for an available quantity of sand for scooping. Revenue of Rs.25 Crore is expected from the auction of these sand ghats. Khudras Sand Ghat proposed over river Sindhphana in Beed Taluka is proposed to cater to the infrastructural requirement of sand in the Tehsil of Beed and adjoining areas of other talukas.

⁵ Groundwater Surveys & Development Agency

⁶ Maharashtra Pollution Control Board

Table 2. 1 Details of Khudras Sand ghat

Name of Village	Tahsil	River/ Nallah	Nearest survey No.	Area (ha)	Proposed Depth for excavation (m)	Quantity Permitted for mining of Sand in Brass	Method of Mining
Khudras.	Beed	Sindhphana	7, 6, 4, 3, 2, 1	1.10	1.0	3887	Open-cast manual mining

Table 2. 2 Salient features of the project

Particulars	Details															
Location	Village- Khudras, Taluka- Beed, District-Beed, Maharashtra.															
Latitude and Longitude	<table border="1"> <thead> <tr> <th>Boundary points of Khudras sand spot</th> <th>Latitude</th> <th>Longitude</th> </tr> </thead> <tbody> <tr> <td>BP1</td> <td>19°6'33.20"N</td> <td>75°51'39.33"E</td> </tr> <tr> <td>BP2</td> <td>19°6'34.40"N</td> <td>75°51'39.73"E</td> </tr> <tr> <td>BP3</td> <td>19°6'30.65"N</td> <td>75°51'47.48"E</td> </tr> <tr> <td>BP4</td> <td>19°6'29.47"N</td> <td>75°51'46.91"E</td> </tr> </tbody> </table>	Boundary points of Khudras sand spot	Latitude	Longitude	BP1	19°6'33.20"N	75°51'39.33"E	BP2	19°6'34.40"N	75°51'39.73"E	BP3	19°6'30.65"N	75°51'47.48"E	BP4	19°6'29.47"N	75°51'46.91"E
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BP3	19°6'30.65"N	75°51'47.48"E														
BP4	19°6'29.47"N	75°51'46.91"E														
Sand spot area (In ha)	1.10ha															
Proposed production capacity (in Brass)	3887															
Infrastructure Requirement (As per Govt Resolution 3rd January 2018)	<ol style="list-style-type: none"> 1. Room / Hut for Official records 2. Electricity / Battery for Running CCTV 24x7 daily. 3. One Computer / Android-based Mobile for the online generation of Invoice numbers. 															
Distance of project site from nearest rail or road bridge over the concerned River, Nallah, etc.	Bindusara River Bridge-7.20km															

Particulars	Details
Distance from infrastructural facilities Railway line National Highway State Highway Major District Road Any Other Road Electric transmission line pole or tower Canal or check dam or reservoirs or lake or ponds In-take for drinking water pump house Intake for Irrigation canal pumps	Partur railway station-63.51km NH61-10.71km MSH144-5.77km 5.37km 1km
Areas already subjected to pollution or environmental damage. (those where existing legal environmental standards are exceeded)	None
Areas susceptible to natural hazards which could cause the project to Present environmental problems (earthquakes, subsidence, landslides, erosion, flooding, or extreme or adverse climatic conditions)	No. Sand Ghat is at safe distances from natural hazards like earthquake prone area, subsidence, landslide, erosion, flooding prone area and extreme or adverse climatic conditions

Particulars	Details
Whether the proposal involves approval or clearance under the following Regulations or Acts, namely: - (a) The Forest (Conservation) Act, 1980. (b) The Wildlife (Protection) Act, 1972. (c) The Coastal Regulation Zone Notification, 2011. If yes, details of the same and their status are to be given.	None
Forest land involved (hectares)	None

The below figure shows the google image of Khudras sand ghat.



Fig 2.1-Google image of Khudras sand ghat

Approach road along with google location is as shown below.



Fig 2.2-Approach Road for sand ghat

Next chapter 3 is Baseline Environmental Status in which the entire Topography, Climate, Soil Environment, Land use, water Environment, Hydrology, Biological environment, and Socio-economic Environment are briefly explained for the Beed district.

CHAPTER 3

BASELINE ENVIRONMENT STATUS

Topography

The Sand Ghat area as per the survey is the riverbed of the Sindhphana River of the Beed district. The maximum elevation is 468m MSL, average elevation is 467m MSL, & minimum elevation is 464m (⁷MSL) Mean Sea Level. The slope of the Sand Ghat area towards the Northwest to Southeast side. The flow of Sindhphana River is from West to East direction.

Presently, there is neither any infrastructure within the riverbed nor are proposed.

Hydrology

There will be no change in the Water Table during the mining operation, as the depth of mining shall be restricted to 1.0m water level, which is less likely to affect the surface level or Groundwater Table. There is no proposal of any stream modification/diversion due to this mining activity hence there will be not any impact on the flow of water.

Soil Environment

The riverbed consists of sand /gravel. There is no topsoil. The depth of mining shall be restricted to 1.0m. There is no crucial impact on the soil forecasted due to mining activities.

Land Use Land Cover

Land use shows that agriculture land use is predominant. The proposed site is 1.10ha having adjoined Khasara No 7, 6, 4, 3, 2, 1. The land doesn't cover any human habitation, forest, etc. Any change in the scope of the approved Mining Plan will lead to riverbank erosion/cutting and thereby river channel shifting, degradation of land, causing loss of properties and degradation of the surrounding landscape.

⁷ Mean sea level

Water Environment

While transporting sand there may be fugitive dust. There will be water requirement for spraying for dust suppression purposes. This water will be supplied from the borewell from nearby villages through tankers as well as from surface water sources. The water source may vary from village to village.

Climate

During summer May is the hottest month of the year in this area. The temperature rises to 42°C in the month of May. The average rainfall in this region is 600-700mm About 50% of rainfall precipitates between June to September. December is the coldest month with temperature falling down to 18°C. Overall the proposed site area has sub-tropical conditions.

Biological Environment

Flora

The agricultural area is seen near the Sand Ghat. Few trees and thorny bushes are seen on the banks of the river.

Fauna

As there is no forest cover, no endangered species of wildlife are seen in this area.

Socio-Economic Environment

This project may create constructive impacts of the sand mining that are stated below:

1. The mining operations will provide direct & indirect employment to village people.
2. The villages and their inhabitants & domestic animals will not be disturbed due to mining, as the quarry is far from their settlements.
3. Local workforce will be given first preference for employment.
4. Mining activities will benefit the local people due to the provision of more infrastructural facilities (developments of approach routes within the village area).

The next chapter describes all possible impacts on the Environment due to this project along with its mitigation measure to overcome these impacts.

CHAPTER 4

IMPACT ASSESSMENT REPORT ALONG WITH PROPOSED MITIGATION MEASURES

1. Land Environment

Anticipated Impact

Movement of vehicles can create issues for agricultural land, human habitations, noise, and risk for public and cause traffic hazards. The impacts include damage to the riverbank due to access ramps to the riverbed, soil erosion because of extraction of sand, micro disturbance to groundwater, possible stimulation of the changed river course, and contamination of sand aquifer water due to ponding. There might be surface degradation due to the road network.

The quality of soil will not be affected due to transportation or any other activity of mining.

Mitigation measure

1. Mining depth should be restricted to 3 meters and distance from the bank should be $\frac{1}{4}$ th or river width and should not be less than 7.5 meters as per “Sustainable Sand Mining Guidelines 2020” Page 23, Point no 4.3 (m).
2. There will be a minimal number of access roads to riverbeds. Cutting of riverbanks will be avoided and ramp with smooth slope will be maintained. Access points to the riverbed will be decided based on the least steepness of the riverbank and the least human activity at that location.
3. No foreign material like polythene bags, jute bags, and useless articles should be allowed to remain/spill in the riverbed and catchment area, or no pits/pockets will be allowed to be filled with such material.
4. Mining at the concave side of the river channel should be avoided to prevent bank erosion. Similarly, a tortuous segment of a river is to be selected for mining in such a way as to ignore the natural eroding of banks.
5. Ensure that ponding is not created in the riverbed.
6. Transportation route should be such that it gives minimum

damage to the environment.

7. Green belt will be developed along the haul road and the bank of rivers of mine premises and near the sand mining site. While selecting the plant species, preference will be given for planting native species of the area.

2. Water environment

Anticipated Impact

The project activity will be carried out in the dry part of the riverbed. Care will be taken to ensure that neither of the project activities will affect the water environment or riverbank habitats. During the lean months, the proposed Sand Mining will not expose the base flow of the river and hence there will not be any inauspicious impact on surface hydrology and groundwater regime due to this project. Project activities will not have any adverse consequences on the physical components of the environment and therefore may not have any effect on the recharge of ground waters or affect the water quality. Monitoring of water quality will be checked yearly.

Mitigation measures

1. Mining is avoided during the monsoon season and at the time of floods. This will help in the replenishment of sand in the riverbed.
2. Mining below the subterranean water level will be avoided as a safeguard against environmental contamination and over-exploitation of resources.
3. River stream will not be transferred to create active channels.
4. Mining schedule is synchronized with the river flow direction and the gradient of the land.
5. Mining at the concave side of the river channel will be avoided to prevent bank erosion.
6. Tortuous segment of the river will be selected for mining in such a way as to avoid naturally eroding banks and to promote mining on naturally building meander components.
7. Mining depth shall be maintained as per the guidelines and

rules of the Sand Mining Policy dated 03/09/2019 and recommendations of Maharashtra State (⁸M.S.). State Ground Water Department for extraction of sand during the lease period.

8. Water Quality Monitoring for the ground waters, river water, and other surface waters shall be carried out seasonally to ensure that the water quality is not affected by the project activities.
9. Utmost care will be taken to minimize or control leaking vehicles to be used for sand transportation.
10. The washing of tractor trolleys in the river will not be done.
11. The contractor will follow all guidelines and rules for proper and scientific methods of mining during the period of extracting the sand.

3. Air Environment

Anticipated Impacts

Plying of tractor trolleys from the public road to river sand collection points needs access roads. The majority of such access roads are the already existing roads/tracks being used by pedestrians/cart owners. The movement of heavy vehicles sometimes causes problems for cattle, agricultural land, and human habitations due to dust, noise, and the movement of the public. These environmental problems are felt more as the area is rural in nature.

Air pollution is likely to be caused at various stages of Sand Mining operations such as excavation, loading & transportation of material. Most of the fugitive dust emissions will be generated from loading & transportation. This dust becomes airborne and spreads away to surrounding areas.

The impact on air is mainly localized in nature as the dust particles of 100 μ in size are not carried to farther distances beyond 100m and the effect is felt within the core zone of the project involving active Sand Mining operations.

⁸ Maharashtra State

Mitigation measures

1. Movement of the vehicles on the road will be increased; however, the unmetalled road in the mining area will be sprinkled with water at regular intervals.
2. In addition to preventing spillage from tractor trolleys, overloading shall be controlled to 1-brass/tractor trolley. The speed limit will be <20 km/hr.
3. Maintenance of the haul road will be done on a regular basis.
4. To avoid fugitive dust emissions at the time of excavation, a regular sprinkling of water will be done on regular basis.
5. Sand is transported to the sites by road through tractor trolleys. The sand-carrying vehicles shall be covered by tarpaulin sheets.
6. The Green belt development will be prepared along the haul roads, which will act as a pollution sink.
7. To minimize vehicular pollution from the sand transporting vehicles, the following conditions will be insisted upon to permit the vehicles of the transporters.
8. The vehicles should be Bharat-IV stage compliant and should have a Pollution Under Control (⁹PUC) Certificate issued by appropriate authorities.
9. Regular maintenance of transport vehicles and monitoring of vehicular emission levels at periodical intervals.

4. Noise Environment

Anticipated Impact

The noise environment in this project will be overdone by the equipment at the site and vehicular transportation. A slight increase in noise levels of <10dB(A) can be expected up to a distance of 100m.

Mitigation measures.

1. Minimum use of horns in the village area.
2. Timely maintenance of vehicles and their silencers to

⁹ Pollution Under Control

- minimize vibration and sound.
3. Phasing out old and worn-out tractor trolleys.
 4. Provision of green belts along the road networks.
 5. Care will be taken to produce minimum sound during sand loading.
 6. Backhoe loader excavator will be used
 7. Earplugs may be provided to protect the laborers working at the site.

5. Socio-economic Environment

Anticipated Impacts and Evaluation

1. The project activities shall not have any adverse impacts on any of the common property resources of the village communities, as the Sand Mine lease area is not being used for any purpose by any section of the society in this region.
2. There is no Resettlement and Rehabilitation (¹⁰R&R) involvement in this project.
3. There is no land acquisition in this project.
4. A major portion of the houses in the study area is semi-pucca-type structures.
5. The water source to these areas is from the Grampanchayat /Nagar Parishad connection and private bore wells and wells.
6. People living around the project area need the project for the purpose of employment and economic benefits.
7. The awareness level regarding the proposed mining activity is very towering. The proposed mining activity is expected to provide stimulus to socio-economic activities in the region and thereby accelerate further development processes.

Social and Demographic Profile

The workers are from local villages. These people have been provided welfare benefits from the lessee like medical benefits,

¹⁰ Rehabilitation and Resettlement

insurance, fees for children's education, etc. They have some land and cattle for their daily earnings. Additional revenue earned from the Sand Mining work will improve their living standard. The group of quarries in and around will help to have infrastructure facilities like roads, schools, shops, etc. This will enhance their social life.

Occupational Health and Safety

This is a riverbed Sand Mine. So, the mining activities are comparatively smaller because the production is not on a high scale. Workers do not come across any extreme conditions like excessive heat, moisture, etc. Workers working around it may come across this dusty environment. But the impact on health will be within the limit.

Human Settlement

1. There are no houses in and around the lease area. Blasting is the only activity, which may affect the settlement, which is not done. The settlement is more than 1-km from the sand mine.
2. Appropriate precautions will be taken during mining. Transportation of finished products is through the villages. There will be an effect of traffic on the local people. However, the intensity of traffic is 70-80/day.

Health and Hygiene

In general, the health of villagers is moderately good. In the rainy season, the atmospheric condition is unhygienic due to a lack of proper drainage and sanitation in the village habitation. Villagers are working in agricultural fields and work as labourers.

Education

Most education of 70% young <20 years, is up to the 5th to 9th. Economic condition is in general moderate. So, after this project, the standard of education will increase.

Socio-Economic Benefits Arising Out of Mining

1. Generation of employment in rural areas.
2. Upgradation in the living standards of rural people.
3. Creating infrastructural facilities like roads, electricity, shops, schools, etc.
4. Upgrading literacy in the area by exploiting natural minerals so the generation of revenue.

5. Helping to sustain construction activity.
6. Improving the greenery of the area, which is otherwise poor.

Liquid Effluent

Not applicable, because these activities do not generate effluent from operation or process.

Solid Waste

Not applicable, because small mines and impacts are negligible.

Project benefits due to the sand mining of Khudras are explained in the next Chapter.

CHAPTER 5

PROJECT BENEFITS

The proposed Sand Mining project of Khudras Village, Beed Tehsil, Beed District will lead to the following benefits:

1. Increase in the revenue of the district will ultimately increase the revenue of the village, which in return can be used to improve the infrastructure of the village.
2. Sand is available for building construction work and by systematic separation of sand, there is no possibility of a flood. Providing smooth movement of water of the river.
3. This project will contribute additional revenue to the state Exchequer in the form of revenue.
4. The project will conclude with employment opportunities for unskilled/skilled local people.
5. Standard of living of employed people will increase.

CHAPTER 6

SITE-SPECIFIC ENFORCEMENT & MONITORING PLAN

Sand Ghat Site specific enforcement & monitoring plan

(as per guidelines stipulated in the Enforcement and Monitoring Guidelines for sand mining issued by MoEFCC in January 2020.)

District administration shall deliver information on its website about the Sand Mines in the district for public information. The objective is to extend all information into the public domain so that the citizens are aware of the mining activities. People can also report to the district administration any deviation observed. Suitable feedback and its composition shall also be made operational.

Details shall include, but not be limited to, lease area, geo-coordinates of lease area and mineable area, transport routes, permitted capacity, regulatory conditions for operation including mining, environmental and social commitments, etc.

An Independent Committee of experts constituted by the Distance Learning Task Force (¹¹DLTF) will assess the environmental or ecological damage caused due to illegal mining and recommend recovery of environmental compensation from the concerned miners.

The recommendation may also include action under the provision of the Environment (Protection) Act 1986 u/s.15 read with s.19.

¹¹ Distance Learning Task Force

CHAPTER 7

SECURITY FEATURES

Security features are included in the Transport Permission/Permits (TP)

It will be ensured that the following security features are included in the Transport Permission/Permits (¹²TP) so that duplicate/fraudulent/forged TPs for transport, not accounted for in the IT-based system, is not possible:

1. Printed on Indian Bank Association (¹³IBA) Approved letterhead with account details
2. Magnetic Ink Character Recognition Code (¹⁴MICR) paper
3. Unique Barcode
4. Unique Quick Response Code (¹⁵QR)
5. Fugitive Ink Background
6. Invisible Ink Mark
7. Void Pantograph Watermark
8. Global Positioning System (¹⁶GPS) based vehicle tracking system
9. Closed-Circuit Television (¹⁷CCTV) Camera

¹² Transport Permission

¹³ Indian Bank Association

¹⁴ Magnetic Ink Character Recognition Code

¹⁵ Quick Response Code

¹⁶ Global Positioning System

¹⁷ Closed Circuit Television

CHAPTER 8

REPLENISHMENT

Replenishment study is the most important part of Sand Mining as it is the only basis to carry out sand mining. Without a Replenishment Study, we cannot understand the amount of deposition of sand. Following points to be followed for the replenishment study.

1. Area of deposition and erosion will be calculated for each cross-section after giving due regard to the stability & safety of active channel banks & other features of importance.
2. Differential Global Positioning System (¹⁸DGPS) and other survey tools will be used to define the topography, contours, and offsets of the lease area.
3. Contour & elevation benchmarks will provide baseline data for assessing pre- and post-study period scenario.
4. Physical benchmarks will be fixed at appropriate intervals (preferably 1 in 30m) & Reduced levels (¹⁹RL) shall be validated from a nearby standard RL.
5. These RL will be engraved on a steel plate (Bench Plate) & will be fixed & placed at locations that are free from any damages & are available in the pre-and post-study period.
6. Bench plates will be available for use during the mining period as a reference for all mining activity.
7. Baseline data on elevation status for a grid of 10m x 10m is preferred to have accuracy in the assessment.
8. It is expected that two consecutive cross-sections in longitudinal and lateral directions will not be more than a 10m distance apart.
9. Changes observed in the elevation in pre and post-scenario at each node, will be depicted in graphical forms with an appropriate scale to estimate the area of deposition & erosion.

¹⁸ Differential global positioning system

¹⁹ Reduced levels

10. Elevation level will be in reference to the nearest bench plates established for the purpose.
11. The levels (MSL & RL) of the corner point of each grid will be identifiable and safety barriers (non-Mining) demarcated as restricted in consensus with the Mineral Concession Rules of the respective State, and the provision mentioned in this Sustainable Sand Mining Management Guidelines.
12. A clear identification will be highlighted between grids under the mineable and grids under the non-mineable area.
13. These baseline data (pre and post) be subjected to stimulation with the help of data mine software to derive the replenishment area and corresponding volume and estimated weight.
14. The database will be structured in a tabulated form clearly depicting the nomenclature of the section lines, latitude and longitude of the starting point, chainage, and respective levels of all the points taken on that section line.
15. Net area shall be derived after summation of an area of deposition minus the area of erosion for each cross-section.
16. Volume will be estimated by multiplying the distance between two cross-sections with the average of the net area of these two consecutive cross-sections.
17. One sample per 900m² (30m x 30m) will be the preferred sample density for the assessment of bulk density for the estimation of deposition rate.
18. Care will be taken that the sample for assessment of Bulk Density is taken from the deposition zone & not from erosion.

Methodology for Sand Mining:

The following methodology should be followed for the Replenishment study.

1. The Demarcation and benchmark of the Sand Ghat are done at 10m x 10m intervals.
2. The use of the Auger Driller is to find out the depth of sand in each grid.
3. Auger Driller has created the holes in sand ghat by 10mx10m grid pattern.
4. Measured the depth of holes by using a measuring tape.

5. After taking all the readings average depth of sand is calculated.
6. The average depth of Khudras at Sindhphana is measured.

Replenishment study of sand in the proposed ghat along with details of the methodology, technology used to identify the existing reserve & replenishment of the same

Dandy Bolton Equation

For runoff less than 2 inches

$$S = 1280 \times (Q) \times 0.46 \times (1.46 - 0.26 \log(A)) \times F$$

For runoff more than 2 inches

$$S = 1958 \times (Q) \times (e^{-0.055 \times Q}) \times (1.43 - 0.26 \log(A))$$

Where,

S = sediment yield of stream (t/yr/km²),

Q = average annual runoff (m³),

A = net drainage area in sq.mile.

CHAPTER 9

PROPOSED PLANTATION PLAN

The Project Proponent must take care of the plantation around the site. This will not only enhance the beautification of the area but also there will be the reduction of pollution, not some extent.

Details of the plantation and Tree species recommended for the plantation are shown below.

Table 9. 1 Details of green belt

Location of greenbelt	Both sides of the approach road, On the riverbanks of both sides of the sand spot & nearby open areas. Haul Road outside the riverbed
No. of plants to be planted	2000 per Hectare
Spacing of plants	2m grid interval
Species selected	Native species

Table 9. 2 Trees species for plantation

Botanical Name	Local Name	Importance
Azadirachta Indica	Neem	Neem oil & neem products
Tectona Grandis	Teek	Antibacterial, Antifungal, Antiulcer
Ficus religiosaa	Peepal	Medicinal use, Fruits & figs
Bambusa vulgaris	Bamboo	Anthelmintic Anti-inflammatory, Astringent Properties
Madhuca longifolia	Mahua	Acts as a Stimulant & cough relief,

CHAPTER 10

ENVIRONMENTAL MANAGEMENT PLAN

A total capital cost of Rs.5.97 Lakhs has been kept in the project cost towards the environmental protection, control, mitigation measures, and implementation of the Environmental Management Plan (EMP). This cost is borne by the bidder/leaseholder. The budgetary cost estimate for the EMP is given in Table.

Table 10. 1 Budgetary cost of EMP

Sr	Impact Source	Impact	Control Measure	Cost(Rs)
1	Transport Road	On Air Quality	Compaction, gradation, and drainage on both sides.	35000
		On Land, the Stability of the Road and degradation of road	Proper maintenance	20000
			Regular water spraying	25000
			The air quality will be monitored at the impacted village. (For One Day Monitoring)	3000
			Health Check-up of Employees	3000
2	Truck/ Tractor Movement	Air Quality	Sand-carrying trucks will be effectively covered by tarpaulin to avoid the escape of fines to the atmosphere. (2 Tarpaulin)	20000
			Regular monitoring of the exhaust fumes	3000

Sr	Impact Source	Impact	Control Measure	Cost(Rs)
			Barriers & Traffic Management Expenses. (Excluding Manpower Salary which is included in labour costs)	8000
3	Ramp and Sand Reach	Mining Operation	Regular ramp Inspection and Ramp maintenance. (Excluding Manpower Salary which is included in labour costs)	40000
			Provision of dust masks	8000
4	Bank Management	Bank Erosion/Flood Plain management	The green belt along the bank (For Green Belt Development)	100000
			Plantation of wide leaf tall trees on banks and grass along a slanting portion of the bank	
5	Transportation on Village Roads	Dust Control	The green belt along village Rd (For Green Belt Development)	
6	Final Mine Closure Plan implementation	Replenishment of Sand	Gabions/ boulders will be arranged as per guidelines	10000
7	Mobile toilet, sewage handling & treatment		Mobile toilet, sewage handling & treatment	70000
8	CCTV Monitoring			70000
Total				415000

Budget For Corporate Environment Responsibility (²⁰CER)

About 2% fund of the project cost is allocated for Corporate Environment Responsibility (CER) activities as presented in below Table

Table 10.2 Budget for CER

Sr.	Description	Cost (Rs)
1.	Village Schools (separate toilet for girls and boys)	10000
2.	Solar panels over Gram Panchayat buildings	10000
3.	Solar panels over Public Health Centers	15000
	Total	35000

²⁰ Corporate Environment Responsibility

CHAPTER 11

SUMMARY AND CONCLUSION

The Roles and Responsibilities of the Environmental coordinator, the Operation Manager, and the senior personnel contractor are essential in EMP.

The environmental status of the project site and study area of 10km radius is delineated with respect to air, noise, water, land, biological and socio-economic environment the different project activities in the construction and operation phases are identified.

To identify the impacts, the interaction between the project activities and different components of the environment is classified phase-wise. A summary of the recognized impacts is given in the following paragraphs.

- During the operational phase, the transportation of sand could cause a temporary disturbance to the local environment which will be prevented with the proposed mitigation measures.
- Proposed project will not have any major significant negative impacts. The minor impacts arising during Excavation and Transportation phases can be mitigated with the help of the proposed Environmental Management Plan.
- In general, sand excavation from Khudras sand spot will be useful to the developmental work in the district and generate employment opportunities.

From this project, it is concluded that the district revenue will increase in return minimum of 2% of funds are utilized for the development of the village. The project will also grab employment which will improve the standard of life of villagers.

*** END ***

Environmental Management Plan

As per Rules 23 & 26 of MMME (D & R) RULE 2013 & Section 15 of MMDR Act 1957, MoEFCC Notification 2006, S.O. 141(E) dated 15. 01. 2016; MoEFCC, Sustainable Sand Mining Management Guidelines 2016, Guidelines for Mining Policy 2020)

For

ENVIRONMENTAL CLEARANCE

of

SAND MINING (MINOR MINERAL)

for

Manjarath 1– A Riverbed Sand Mine / Sand Ghat
Khasra No. GSDA approved 36 to 40, 43,49, 50, 52, 55
Area (4.5ha)

Village Manjarath, Taluka Majalgaon, District Beed

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ABBREVIATION

Short Form	Long Form
EMP	Environmental Management Plan
MoEFCC	Ministry of Environment Forest and Climate Change
DSR	District-level Survey Report
EC	Environmental Coordinator
OM	Operations Manager
GSDA	Groundwater Surveys & Development Agency
MPCB	Maharashtra Pollution Control Board
MSL	Mean Sea Level
MS	Maharashtra State
PUC	Pollution Under Control
R&R	Rehabilitation and Resettlement
DLTF	Distance Learning Task Force
TP	Transport Permission/Permits
IBA	Indian Bank Association
MICR	Magnetic Ink Character Recognition Code
QR	Quick Response Code
GPS	Global Positioning System

CCTV	Closed-Circuit Television
DGPS	Differential Global Positioning System
RL	Reduced Levels
CER	Corporate Environment Responsibility

CHAPTER 1

INTRODUCTION

The Environmental Management Plan (¹EMP) plays a vital connection uniting forecast impacts and mitigation measures during implementation and operational activities. EMP stipulates the mitigation, monitoring and conventional measures to be taken during project implementation and operation. EMP is to escape or mitigate adverse environmental impacts, and to implement these measures.

This Environmental Management Plan (EMP) has been prepared as part of the Scoping Report which will be compiled in terms of the Environmental Assessment for the sand mining activities.

Considering the Ministry of Environment and Forest Climate Change (²MoEFCC) Notification 2006 and Sustainable Sand Mining Management Guidelines 2016, the Govt. of Maharashtra had mapped out the Minor Mineral Extraction Rules 2013. These rules are to extract all minor minerals in a scientific way so that there is no unfavourable impact on Environment and Climate. To extract every minor mineral from any land (either Government or Private) there is provision for a Mining Plan. These plans need to be approved by a competent authority. For long-term leased minor minerals (5-10 years period) and sand excavation from the riverbed, Senior Deputy Director of Directorate of Geology and Mining is the competent authority. These plans are for short term temporary permits which are valid for one year.

According to Enforcement & Monitoring Guidelines for Sand Mining 2020, Sustainable Sand Mining Management Guidelines 2016, Standard Environment conditions for sand mining and sustainable mining practices, District level Survey Report (³DSR) should be prepared and are suitable for mining and area prohibited for mining must be recognized.

¹ Environmental Management Plan

² Ministry of Environment Forest and Climate Change

³ District Survey Report

Objectives of EMP

- To provide overall conservation of the environment.
- To minimize waste generation and pollution.
- To regulate the precise use of natural resources and water.
- To provide Safety, Welfare, and Good health for the workforce and populace.
- To regulate the effective operation of all control measures.
- To ensure alertness against probable disasters and accidents.
- To monitor cumulative and long-term impacts.
- To regulate the effective operation of all control measures.

Roles and Responsibilities concerning the implementation of the EMP

The roles and responsibilities of all parties involved in successfully managing the environment are mentioned below.

Environmental Coordinator

The Environmental Coordinator will inspect operational areas on a quarterly basis and at the onset of mining any new island, to ensure that all specifications are met. The duties of the environmental coordinator will be the following.

- Guide the operations team in respect of the implementation of the environmental specifications.
- Lead the visits to ensure all work is aligned with the EMP.
- The environmental coordinator must examine the site during the three-monthly visits. All rehabilitation results will be Comprised in the quarterly report.
- Examination of the rehabilitation area and giving guidance regarding rehabilitation measures if any.

The Operations Manager

The responsibilities of the Operations Manager (4OM) or his nominated authority are as follows.

1. Familiarize themselves with the requirements of the EMP.
2. Monitor employees' and contractor's compliance with the environmental specifications; and enforce adherence.

⁴ Operations Manager

3. Communicate all environment-related incidents with the Environmental Coordinator and distribute them internally to avoid repetition.
4. Maintain a record of activities relevant to Environmental Management.
5. The Operations Manager shall be responsible for monitoring and the enforcement of the Environmental Management specifications on a day-to-day basis. Any violation of the environmental specifications shall be recorded, and the agreed disciplinary measures are taken.

Senior personnel and contractors

The roles of the senior personnel/contractors are as follows:

- Familiarize themselves with the requirements of the EMP.
- Comply with the environmental management specifications.
- Ensure that all team members are familiar with the environmental management specifications.

Details of the project

The Manjarath 1 sand ghat area has been selected in perspective of its subsisting demand for building-grade sand for the area in and around Majalgaon Taluka. The District Mining Officer Beed has put forward the proposal for Environmental Clearance for mining. The ghat has a production of 15901 brass sand within an area of 4.5ha. The proposed proposal follows an organized mining process for Environmental Clearance.

Further Chapter informs about the in-depth details of the Sand Ghat, its geographical structure, and a Google map of the ghat with its approach road for contractors and workers to reach to sand ghat from the village.

CHAPTER 2

DETAILS OF THE PROJECT

Manjarath village is located in Majalgaon Taluka of Beed district, Maharashtra. Majalgaon is well connected with all nearby cities. The National highway NH-52, it traverses through the states of Punjab, Haryana, Rajasthan, Madhya Pradesh, Maharashtra, Karnataka in India. NH-52 is the National Highway passing through the district, covering a total distance of 73.60km. Majalgaon has situated about 51.22km by road from Beed. The district has road links to adjoining districts Ahmednagar District to the west, Jalna District to the North, Latur District to the East, Osmanabad District to the South, Parbhani District to the East. The district is well connected by roads.

Manjarath village is 59.36km away from Collector office headquarters Beed. The Geographical area of the Beed is around 10693km². The nearest Railway station to Manjarath village is Selu Railway station. The nearest Airport to Beed District is Aurangabad Airport, Aurangabad Airport is 104km from Beed city, 113.41km from Manjarath.

Honourable Collector Beed intends to auction Sand Ghats and appointed District Mining Officer as Project Proponent. A total of 38 sand ghats are identified by Tahsildar Majalgaon, Parli Ve., Gevrai, Beed along with District Mining Officer, Beed. The 38 sand ghats were jointly surveyed by Taluka level technical committee headed by respective Tahsildar with Dy. Engineer Irrigation Department, Junior Geologist Directorate of Geology and Mining Govt. of Maharashtra, Junior Geologist, Groundwater Surveys & Development Agency (⁵GSDA). DMO Beed and a representative of the Maharashtra Pollution Control Board (⁶MPCB), as per the procedure defined in Sand Auction Rules 2019 dated 3/09/2019 formed a Taluka-level technical committee, which explored the sand ghats for an available quantity of sand for scooping. Revenue of Rs.25 Crore is expected from the auction of these sand ghats. Manjarath 1 Sand Ghat proposed over river Godavari in Majalgaon

⁵ Groundwater Surveys & Development Agency

⁶ Maharashtra Pollution Control Board

Taluka is proposed to cater to the infrastructural requirement of sand in the Taluka of Beed and adjoining areas of other talukas.

Table 2. 1 Details of Manjarath 1 Sand ghat

Name of Village	Taluka	River/ Nallah	Nearest survey No.	Area (ha)	Proposed Depth for excavation (m)	Quantity Permitted for mining of Sand in Brass	Method of Mining
Manjarath	Majalgaon	Godavari	36 to 40, 43,49, 50, 52, 55	4.5	1.00	15901	Open-cast manual mining

Table 2. 2 Salient features of the project

Particulars	Details		
Location	Village-Manjarath, Taluka-Majalgaon, District-Beed, Maharashtra.		
Latitude and Longitude	Boundary points of Manjarath 1 sand spot	Latitude	Longitude
	BP1	19°15'9.91"N	76°15'33.98"E
	BP2	19°15'11.25"N	76°15'32.94"E
	BP3	19°15'25.90"N	76°15'59.59"E
	BP4	19°15'24.50"N	76°16'0.34"E
Sand spot area (In ha)	4.5ha		
Proposed production capacity (in Brass)	15901		

Particulars	Details
Infrastructure Requirement (As per Govt Resolution 3rd January 2018)	<ol style="list-style-type: none"> 1. Room / Hut for Official records 2. Electricity / Battery for Running CCTV 24x7 daily. 3. One Computer / Android-based Mobile for the online generation of Invoice numbers.
Distance of project site from nearest rail or road bridge over the concerned River, Nallah, etc.	10.71km
Distance from infrastructural facilities	
Railway line	54.94km
National Highway	21.36km (NH-61)
State Highway	80.06km (SH-144)
Major District Road	107.56km
Any Other Road	10.31km
Electric transmission line pole or tower	
Canal or check dam or reservoirs or lake or ponds	
In-take for drinking water pump house	
Intake for Irrigation canal pumps	

Particulars	Details
Areas already subjected to pollution or environmental damage. (those where existing legal environmental standards are exceeded)	None
Areas susceptible to natural hazards which could cause the project to Present environmental problems (earthquakes, subsidence, landslides, erosion, flooding, or extreme or adverse climatic conditions)	No. Sand Ghat is at safe distances from natural hazards like earthquake prone area, subsidence, landslide, erosion, flooding prone area and extreme or adverse climatic conditions

Particulars	Details
<p>Whether the proposal involves approval or clearance under the following Regulations or Acts, namely: - (a) The Forest (Conservation) Act, 1980. (b) The Wildlife (Protection) Act, 1972. (c) The Coastal Regulation Zone Notification, 2011. If yes, details of the same and their status are to be given.</p>	<p>None</p>
<p>Forest land involved (hectares)</p>	<p>None</p>

The below figure shows the google image of Manjarath 1 sand ghat.



Fig 2.1-Google image of Manjarath 1 sand ghat

Approach road along with google location is as shown below.

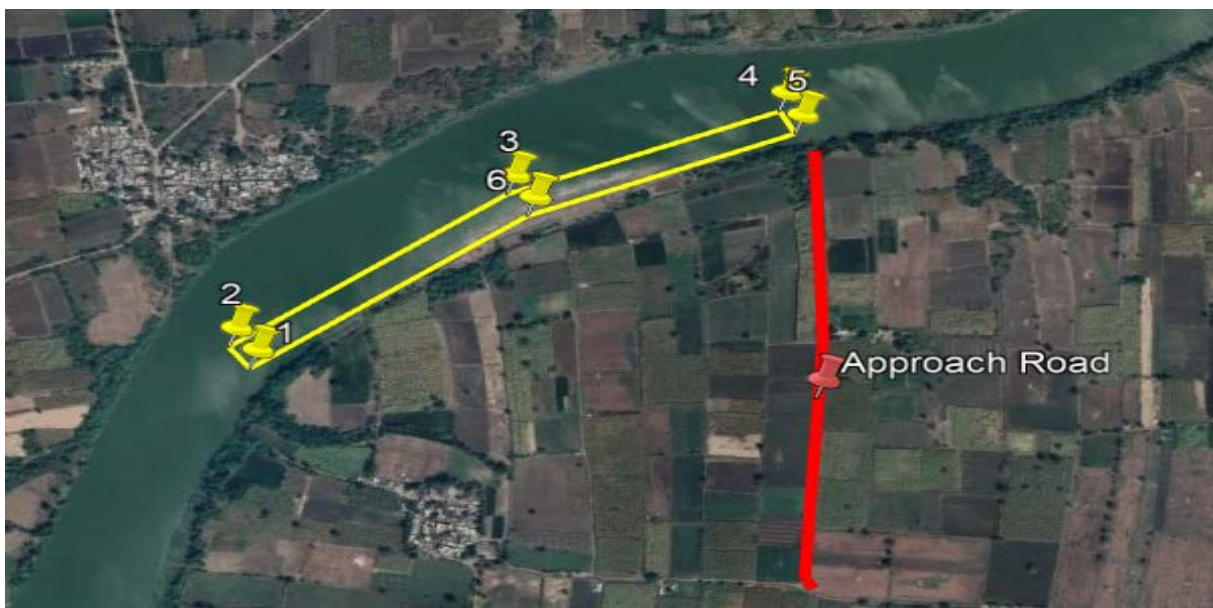


Fig 2.2-Approach Road for sand ghat

Next chapter 3 is Baseline Environmental Status in which the entire Topography, Climate, Soil Environment, Land use, water Environment, Hydrology, Biological environment, and Socio-economic Environment are briefly explained for the Beed district.

CHAPTER 3

BASELINE ENVIRONMENT STATUS

Topography

The Sand Ghat area as per the survey is the riverbed of the Godavari River of the Beed district. The maximum elevation is 420m MSL, average elevation is 417m MSL, & minimum elevation is 414m (⁷MSL) Mean Sea Level. The slope of the Sand Ghat area towards the Southwest to Northeast side. The flow of Godavari River is from Southeast direction.

Presently, there is neither any infrastructure within the riverbed nor are proposed.

Hydrology

There will be no change in the Water Table during the mining operation, as the depth of mining shall be restricted to 1.0m water level, which is less likely to affect the surface level or Groundwater Table. There is no proposal of any stream modification/diversion due to this mining activity hence there will be not any impact on the flow of water.

Soil Environment

The riverbed consists of sand /gravel. There is no topsoil. The depth of mining shall be restricted to 1.0m. There is no crucial impact on the soil forecasted due to mining activities.

Land Use Land Cover

Land use shows that agriculture land use is predominant. The proposed site is 4.5ha having adjoined Khasara No 36 to 40, 43,49, 50, 52, 55. The land doesn't cover any human habitation, forest, etc. Any change in the scope of the approved Mining Plan will lead to riverbank erosion/cutting and thereby river channel shifting, degradation of land, causing loss of properties and degradation of the surrounding landscape.

⁷ Mean sea level

Water Environment

While transporting sand there may be fugitive dust. There will be water requirement for spraying for dust suppression purposes. This water will be supplied from the borewell from nearby villages through tankers as well as from surface water sources. The water source may vary from village to village.

Climate

During summer May is the hottest month of the year in this area. The temperature rises to 42°C in the month of May. The average rainfall in this region is 600mm to 700mm About 50% of rainfall precipitates between June to September. December is the coldest month with temperatures falling down to 18°C. Overall the proposed site area has sub-tropical conditions.

Biological Environment

Flora

The agricultural area is seen near the Sand Ghat. Few trees and thorny bushes are seen on the banks of the river.

Fauna

As there is no forest cover, no endangered species of wildlife are seen in this area.

Socio-Economic Environment

This project may create constructive impacts of the sand mining that are stated below:

1. The mining operations will provide direct & indirect employment to village people.
2. The villages and their inhabitants & domestic animals will not be disturbed due to mining, as the quarry is far from their settlements.
3. Local workforce will be given first preference for employment.
4. Mining activities will benefit the local people due to the provision of more infrastructural facilities (developments of approach routes within the village area).

The next chapter describes all possible impacts on the Environment due to this project along with its mitigation measure to overcome these impacts.

CHAPTER 4

IMPACT ASSESSMENT REPORT ALONG WITH PROPOSED MITIGATION MEASURES

1. Land Environment

Anticipated Impact

Movement of vehicles can create issues for agricultural land, human habitations, noise, and risk for public and cause traffic hazards. The impacts include damage to the riverbank due to access ramps to the riverbed, soil erosion because of extraction of sand, micro disturbance to groundwater, possible stimulation of the changed river course, and contamination of sand aquifer water due to ponding. There might be surface degradation due to the road network.

The quality of soil will not be affected due to transportation or any other activity of mining.

Mitigation measure

1. Mining depth should be restricted to 3 meters and distance from the bank should be $\frac{1}{4}$ th or river width and should not be less than 7.5 meters as per “Sustainable Sand Mining Guidelines 2020” ■ Page 23, Point no 4.3 (m).
2. There will be a minimal number of access roads to riverbeds. Cutting of riverbanks will be avoided and ramp with smooth slope will be maintained. Access points to the riverbed will be decided based on the least steepness of the riverbank and the least human activity at that location.
3. No foreign material like polythene bags, jute bags, and useless articles should be allowed to remain/spill in the riverbed and catchment area, or no pits/pockets will be allowed to be filled with such material.
4. Mining at the concave side of the river channel should be avoided to prevent bank erosion. Similarly, a tortuous segment of a river is to be selected for mining in such a way as to ignore the natural eroding of banks.
5. Ensure that ponding is not created in the riverbed.
6. Transportation route should be such that it gives minimum

damage to the environment.

7. Green belt will be developed along the haul road and the bank of rivers of mine premises and near the sand mining site. While selecting the plant species, preference will be given for planting native species of the area.

2. Water environment

Anticipated Impact

The project activity will be carried out in the dry part of the riverbed. Care will be taken to ensure that neither of the project activities will affect the water environment or riverbank habitats. During the lean months, the proposed Sand Mining will not expose the base flow of the river and hence there will not be any inauspicious impact on surface hydrology and groundwater regime due to this project. Project activities will not have any adverse consequences on the physical components of the environment and therefore may not have any effect on the recharge of ground waters or affect the water quality. Monitoring of water quality will be checked yearly.

Mitigation measures

1. Mining is avoided during the monsoon season and at the time of floods. This will help in the replenishment of sand in the riverbed.
2. Mining below the subterranean water level will be avoided as a safeguard against environmental contamination and over-exploitation of resources.
3. River stream will not be transferred to create active channels.
4. Mining schedule is synchronized with the river flow direction and the gradient of the land.
5. Mining at the concave side of the river channel will be avoided to prevent bank erosion.
6. Tortuous segment of the river will be selected for mining in such a way as to avoid naturally eroding banks and to promote mining on naturally building meander components.
7. Mining depth shall be maintained as per the guidelines and

rules of the Sand Mining Policy dated 03/09/2019 and recommendations of Maharashtra State (⁸M.S.). State Ground Water Department for extraction of sand during the lease period.

8. Water Quality Monitoring for the ground waters, river water, and other surface waters shall be carried out seasonally to ensure that the water quality is not affected by the project activities.
9. Utmost care will be taken to minimize or control leaking vehicles to be used for sand transportation.
10. The washing of tractor trolleys in the river will not be done.
11. The contractor will follow all guidelines and rules for proper and scientific methods of mining during the period of extracting the sand.

3. Air Environment

Anticipated Impacts

Plying of tractor trolleys from the public road to river sand collection points needs access roads. The majority of such access roads are the already existing roads/tracks being used by pedestrians/cart owners. The movement of heavy vehicles sometimes causes problems for cattle, agricultural land, and human habitations due to dust, noise, and the movement of the public. These environmental problems are felt more as the area is rural in nature.

Air pollution is likely to be caused at various stages of Sand Mining operations such as excavation, loading & transportation of material. Most of the fugitive dust emissions will be generated from loading & transportation. This dust becomes airborne and spreads away to surrounding areas.

The impact on air is mainly localized in nature as the dust particles of 100 μ in size are not carried to farther distances beyond 100m and the effect is felt within the core zone of the project involving active Sand Mining operations.

⁸ Maharashtra State

Mitigation measures

1. Movement of the vehicles on the road will be increased; however, the unmetalled road in the mining area will be sprinkled with water at regular intervals.
2. In addition to preventing spillage from tractor trolleys, overloading shall be controlled to 1-brass/tractor trolley. The speed limit will be <20 km/hr.
3. Maintenance of the haul road will be done on a regular basis.
4. To avoid fugitive dust emissions at the time of excavation, a regular sprinkling of water will be done on regular basis.
5. Sand is transported to the sites by road through tractor trolleys. The sand-carrying vehicles shall be covered by tarpaulin sheets.
6. The Green belt development will be prepared along the haul roads, which will act as a pollution sink.
7. To minimize vehicular pollution from the sand transporting vehicles, the following conditions will be insisted upon to permit the vehicles of the transporters.
8. The vehicles should be Bharat-IV stage compliant and should have a Pollution Under Control (⁹PUC) Certificate issued by appropriate authorities.
9. Regular maintenance of transport vehicles and monitoring of vehicular emission levels at periodical intervals.

4. Noise Environment

Anticipated Impact

The noise environment in this project will be overdone by the equipment at the site and vehicular transportation. A slight increase in noise levels of <10dB(A) can be expected up to a distance of 100m.

Mitigation measures.

1. Minimum use of horns in the village area.
2. Timely maintenance of vehicles and their silencers to

⁹ Pollution Under Control

minimize vibration and sound.

3. Phasing out old and worn-out tractor trolleys.
4. Provision of green belts along the road networks.
5. Care will be taken to produce minimum sound during sand loading.
6. Backhoe loader excavator will be used
7. Earplugs may be provided to protect the labourers working at the site.

5. Socio-economic Environment

Anticipated Impacts and Evaluation

1. The project activities shall not have any adverse impacts on any of the common property resources of the village communities, as the Sand Mine lease area is not being used for any purpose by any section of the society in this region.
2. There is no Resettlement and Rehabilitation (¹⁰R&R) involvement in this project.
3. There is no land acquisition in this project.
4. A major portion of the houses in the study area is semi-pucca-type structures.
5. The water source to these areas is from the Grampanchayat /Nagar Parishad connection and private bore wells and wells.
6. People living around the project area need the project for the purpose of employment and economic benefits.
7. The awareness level regarding the proposed mining activity is very towering. The proposed mining activity is expected to provide stimulus to socio-economic activities in the region and thereby accelerate further development processes.

Social and Demographic Profile

The workers are from local villages. These people have been provided welfare benefits from the lessee like medical benefits,

¹⁰ Rehabilitation and Resettlement

insurance, fees for children's education, etc. They have some land and cattle for their daily earnings. Additional revenue earned from the Sand Mining work will improve their living standard. The group of quarries in and around will help to have infrastructure facilities like roads, schools, shops, etc. This will enhance their social life.

Occupational Health and Safety

This is a riverbed Sand Mine. So, the mining activities are comparatively smaller because the production is not on a high scale. Workers do not come across any extreme conditions like excessive heat, moisture, etc. Workers working around it may come across this dusty environment. But the impact on health will be within the limit.

Human Settlement

1. There are no houses in and around the lease area. Blasting is the only activity, which may affect the settlement, which is not done. The settlement is more than 1-km from the sand mine.
2. Appropriate precautions will be taken during mining. Transportation of finished products is through the villages. There will be an effect of traffic on the local people. However, the intensity of traffic is 70-80/day.

Health and Hygiene

In general, the health of villagers is moderately good. In the rainy season, the atmospheric condition is unhygienic due to a lack of proper drainage and sanitation in the village habitation. Villagers are working in agricultural fields and work as labourers.

Education

Most education of 70% young <20 years, is up to the 5th to 9th. Economic condition is in general moderate. So, after this project, the standard of education will increase.

Socio-Economic Benefits Arising Out of Mining

1. Generation of employment in rural areas.
2. Upgradation in the living standards of rural people.
3. Creating infrastructural facilities like roads, electricity, shops, schools, etc.
4. Upgrading literacy in the area by exploiting natural minerals so the generation of revenue.

5. Helping to sustain construction activity.
6. Improving the greenery of the area, which is otherwise poor.

Liquid Effluent

Not applicable, because these activities do not generate effluent from operation or process.

Solid Waste

Not applicable, because small mines and impacts are negligible.

Project benefits due to the sand mining of Manjarath 1 are explained in the next Chapter.

CHAPTER 5

PROJECT BENEFITS

The proposed Sand Mining project of Manjarath village, Majalgaon Taluka, Beed District will lead to the following benefits:

1. Increase in the revenue of the district will ultimately increase the revenue of the village, which in return can be used to improve the infrastructure of the village.
2. Sand is available for building construction work and by systematic separation of sand, there is no possibility of a flood. Providing smooth movement of water of the river.
3. This project will contribute additional revenue to the state Exchequer in the form of revenue.
4. The project will conclude with employment opportunities for unskilled/skilled local people.
5. Standard of living of employed people will increase.

CHAPTER 6

SITE-SPECIFIC ENFORCEMENT & MONITORING PLAN

Sand Ghat Site specific enforcement & monitoring plan

(as per guidelines stipulated in the Enforcement and Monitoring Guidelines for sand mining issued by MoEFCC in January 2020.)

District administration shall deliver information on its website about the Sand Mines in the district for public information. The objective is to extend all information into the public domain so that the citizens are aware of the mining activities. People can also report to the district administration any deviation observed. Suitable feedback and its composition shall also be made operational.

Details shall include, but not be limited to, lease area, geo-coordinates of lease area and mineable area, transport routes, permitted capacity, regulatory conditions for operation including mining, environmental and social commitments, etc.

An Independent Committee of experts constituted by the Distance Learning Task Force (¹¹DLTF) will assess the environmental or ecological damage caused due to illegal mining and recommend recovery of environmental compensation from the concerned miners.

The recommendation may also include action under the provision of the Environment (Protection) Act 1986 u/s.15 read with s.19.

¹¹ Distance Learning Task Force

CHAPTER 7

SECURITY FEATURES

Security features are included in the Transport Permission/Permits (TP)

It will be ensured that the following security features are included in the Transport Permission/Permits (¹²TP) so that duplicate/fraudulent/forged TPs for transport, not accounted for in the IT-based system, is not possible:

1. Printed on Indian Bank Association (¹³IBA) Approved letterhead with account details
2. Magnetic Ink Character Recognition Code (¹⁴MICR) paper
3. Unique Barcode
4. Unique Quick Response Code (¹⁵QR)
5. Fugitive Ink Background
6. Invisible Ink Mark
7. Void Pantograph Watermark
8. Global Positioning System (¹⁶GPS) based vehicle tracking system
9. Closed-Circuit Television (¹⁷CCTV) Camera

¹² Transport Permission

¹³ Indian Bank Association

¹⁴ Magnetic Ink Character Recognition Code

¹⁵ Quick Response Code

¹⁶ Global Positioning System

¹⁷ Closed Circuit Television

CHAPTER 8

REPLENISHMENT

Replenishment study is the most important part of Sand Mining as it is the only basis to carry out sand mining. Without a Replenishment Study, we cannot understand the amount of deposition of sand. Following points to be followed for the replenishment study.

1. Area of deposition and erosion will be calculated for each cross-section after giving due regard to the stability & safety of active channel banks & other features of importance.
2. Differential Global Positioning System (¹⁸DGPS) and other survey tools will be used to define the topography, contours, and offsets of the lease area.
3. Contour & elevation benchmarks will provide baseline data for assessing pre- and post-study period scenario.
4. Physical benchmarks will be fixed at appropriate intervals (preferably 1 in 30m) & Reduced levels (¹⁹RL) shall be validated from a nearby standard RL.
5. These RL will be engraved on a steel plate (Bench Plate) & will be fixed & placed at locations that are free from any damages & are available in the pre-and post-study period.
6. Bench plates will be available for use during the mining period as a reference for all mining activity.
7. Baseline data on elevation status for a grid of 10m x 10m is preferred to have accuracy in the assessment.
8. It is expected that two consecutive cross-sections in longitudinal and lateral directions will not be more than a 10m distance apart.
9. Changes observed in the elevation in pre and post-scenario at each node, will be depicted in graphical forms with an appropriate scale to estimate the area of deposition & erosion.

¹⁸ Differential global positioning system

¹⁹ Reduced levels

10. Elevation level will be in reference to the nearest bench plates established for the purpose.
11. The levels (MSL & RL) of the corner point of each grid will be identifiable and safety barriers (non-Mining) demarcated as restricted in consensus with the Mineral Concession Rules of the respective State, and the provision mentioned in this Sustainable Sand Mining Management Guidelines.
12. A clear identification will be highlighted between grids under the mineable and grids under the non-mineable area.
13. These baseline data (pre and post) be subjected to stimulation with the help of data mine software to derive the replenishment area and corresponding volume and estimated weight.
14. The database will be structured in a tabulated form clearly depicting the nomenclature of the section lines, latitude and longitude of the starting point, chainage, and respective levels of all the points taken on that section line.
15. Net area shall be derived after summation of an area of deposition minus the area of erosion for each cross-section.
16. Volume will be estimated by multiplying the distance between two cross-sections with the average of the net area of these two consecutive cross-sections.
17. One sample per 900m² (30m x 30m) will be the preferred sample density for the assessment of bulk density for the estimation of deposition rate.
18. Care will be taken that the sample for assessment of Bulk Density is taken from the deposition zone & not from erosion.

Methodology for Sand Mining:

The following methodology should be followed for the Replenishment study.

1. The Demarcation and benchmark of the Sand Ghat are done at 10m x 10m intervals.
2. The use of the Auger Driller is to find out the depth of sand in each grid.
3. Auger Driller has created the holes in sand ghat by 10mx10m grid pattern.
4. Measured the depth of holes by using a measuring tape.

5. After taking all the readings average depth of sand is calculated.
6. The average depth of Manjarath 1 at Godavari is measured.

Replenishment study of sand in the proposed ghat along with details of the methodology, technology used to identify the existing reserve & replenishment of the same

Dandy Bolton Equation

For runoff less than 2 inches

$$S = 1280 \times (Q) \times 0.46 \times (1.46 - 0.26 \log(A)) \times F$$

For runoff more than 2 inches

$$S = 1958 \times (Q) \times (e^{-0.055 \times Q}) \times (1.43 - 0.26 \log(A))$$

Where,

S = sediment yield of stream (t/yr/km²),

Q = average annual runoff (m³),

A = net drainage area in sq.mile.

CHAPTER 9

PROPOSED PLANTATION PLAN

The Project Proponent must take care of the plantation around the site. This will not only enhance the beautification of the area but also there will be the reduction of pollution, not some extent.

Details of the plantation and Tree species recommended for the plantation are shown below.

Table 9. 1 Details of green belt

Location of greenbelt	Both sides of the approach road, On the riverbanks of both sides of the sand spot & nearby open areas. Haul Road outside the riverbed
No. of plants to be planted	2000 per Hectare
Spacing of plants	2m grid interval
Species selected	Native species

Table 9. 2 Trees species for plantation

Botanical Name	Local Name	Importance
Azadirachta Indica	Neem	Neem oil & neem products
Tectona Grandis	Teek	Antibacterial, Antifungal, Antiulcer
Ficus religiosaa	Peepal	Medicinal use, Fruits & figs
Bambusa vulgaris	Bamboo	Anthelmintic Anti-inflammatory, Astringent Properties
Madhuca longifolia	Mahua	Acts as a Stimulant & cough relief,

CHAPTER 10

ENVIRONMENTAL MANAGEMENT PLAN

A total capital cost of Rs.5.97 Lakhs has been kept in the project cost towards the environmental protection, control, mitigation measures, and implementation of the Environmental Management Plan (EMP). This cost is borne by the bidder/leaseholder. The budgetary cost estimate for the EMP is given in Table.

Table 10. 1 Budgetary cost of EMP

Sr	Impact Source	Impact	Control Measure	Cost (Rs.)
1	Transport Road	On Air Quality	Compaction, gradation, and drainage on both sides.	90000
		On Land, the Stability of the Road and degradation of road	Proper maintenance	40000
			Regular water spraying	43000
			The air quality will be monitored at the impacted village. (For One Day Monitoring)	5000
			Health Check-up of Employees	5000
2	Truck/ Tractor Movement	Air Quality	Sand-carrying trucks will be effectively covered by tarpaulin to avoid the escape of fines to the atmosphere. (2 Tarpaulin)	25000
			Regular monitoring of the exhaust fumes	5000

Sr	Impact Source	Impact	Control Measure	Cost (Rs.)
			Barriers & Traffic Management Expenses. (Excluding Manpower Salary which is included in labour costs)	10000
3	Ramp and Sand Reach	Mining Operation	Regular ramp Inspection and Ramp maintenance. (Excluding Manpower Salary which is included in labour costs)	50000
			Provision of dust masks	10000
4	Bank Management	Bank Erosion/Flood Plain management	The green belt along the bank (For Green Belt Development)	230000
			Plantation of wide leaf tall trees on banks and grass along a slanting portion of the bank	
5	Transportation on Village Roads	Dust Control	The green belt along village Rd (For Green Belt Development)	
6	Final Mine Closure Plan implementation	Replenishment of Sand	Gabions/ boulders will be arranged as per guidelines	15000
7	Mobile toilet, sewage handling & treatment		Mobile toilet, sewage handling & treatment	100000
8	CCTV Monitoring			100000
Total				728000

Budget For Corporate Environment Responsibility (²⁰CER)

About 2% fund of the project cost is allocated for Corporate Environment Responsibility (CER) activities as presented in below Table

Table 10.2 Budget for CER

Sr.	Description	Cost (Rs)
1.	Village Schools (separate toilet for girls and boys)	25000
2.	Solar panels over Gram Panchayat buildings	25000
3.	Solar panels over Public Health Centers	20000
	Total	70000

²⁰ Corporate Environment Responsibility

CHAPTER 11

SUMMARY AND CONCLUSION

The Roles and Responsibilities of the Environmental coordinator, the Operation Manager, and the senior personnel contractor are essential in EMP.

The environmental status of the project site and study area of 10km radius is delineated with respect to air, noise, water, land, biological and socio-economic environment the different project activities in the construction and operation phases are identified.

To identify the impacts, the interaction between the project activities and different components of the environment is classified phase-wise. A summary of the recognized impacts is given in the following paragraphs.

- During the operational phase, the transportation of sand could cause a temporary disturbance to the local environment which will be prevented with the proposed mitigation measures.
- Proposed project will not have any major significant negative impacts. The minor impacts arising during Excavation and Transportation phases can be mitigated with the help of the proposed Environmental Management Plan.
- In general, sand excavation from Manjarath 1 sand spot will be useful to the developmental work in the district and generate employment opportunities.

From this project, it is concluded that the district revenue will increase in return minimum of 2% of funds are utilized for the development of the village. The project will also grab employment which will improve the standard of life of villagers.

*** END ***

Environmental Management Plan

As per Rules 23 & 26 of MMME (D & R) RULE 2013 & Section 15 of MMDR Act 1957, MoEFCC Notification 2006, S.O. 141(E) dated 15. 01. 2016; MoEFCC, Sustainable Sand Mining Management Guidelines 2016, Guidelines for Mining Policy 2020)

For

ENVIRONMENTAL CLEARANCE

of

SAND MINING (MINOR MINERAL)

for

Manjarath 2- A Riverbed Sand Mine / Sand Ghat
Khasra No. GSDA approved 21 to 24, 26, 27, 31, 32, 34
Area (4.5ha)

Village Manjarath , Taluka Majalgaon, District Beed

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ABBREVIATION

Short Form	Long Form
EMP	Environmental Management Plan
MoEFCC	Ministry of Environment Forest and Climate Change
DSR	District-level Survey Report
EC	Environmental Coordinator
OM	Operations Manager
GSDA	Groundwater Surveys & Development Agency
MPCB	Maharashtra Pollution Control Board
MSL	Mean Sea Level
MS	Maharashtra State
PUC	Pollution Under Control
R&R	Rehabilitation and Resettlement
DLTF	Distance Learning Task Force
TP	Transport Permission/Permits
IBA	Indian Bank Association
MICR	Magnetic Ink Character Recognition Code
QR	Quick Response Code
GPS	Global Positioning System

CCTV	Closed-Circuit Television
DGPS	Differential Global Positioning System
RL	Reduced Levels
CER	Corporate Environment Responsibility

CHAPTER 1

INTRODUCTION

The Environmental Management Plan (¹EMP) plays a vital connection uniting forecast impacts and mitigation measures during implementation and operational activities. EMP stipulates the mitigation, monitoring and conventional measures to be taken during project implementation and operation. EMP is to escape or mitigate adverse environmental impacts, and to implement these measures.

This Environmental Management Plan (EMP) has been prepared as part of the Scoping Report which will be compiled in terms of the Environmental Assessment for the sand mining activities.

Considering the Ministry of Environment and Forest Climate Change (²MoEFCC) Notification 2006 and Sustainable Sand Mining Management Guidelines 2016, the Govt. of Maharashtra had mapped out the Minor Mineral Extraction Rules 2013. These rules are to extract all minor minerals in a scientific way so that there is no unfavourable impact on Environment and Climate. To extract every minor mineral from any land (either Government or Private) there is provision for a Mining Plan. These plans need to be approved by a competent authority. For long-term leased minor minerals (5-10 years period) and sand excavation from the riverbed, Senior Deputy Director of Directorate of Geology and Mining is the competent authority. These plans are for short term temporary permits which are valid for one year.

According to Enforcement & Monitoring Guidelines for Sand Mining 2020, Sustainable Sand Mining Management Guidelines 2016, Standard Environment conditions for sand mining and sustainable mining practices, District level Survey Report (³DSR) should be prepared and are suitable for mining and area prohibited for mining must be recognized.

¹ Environmental Management Plan

² Ministry of Environment Forest and Climate Change

³ District Survey Report

Objectives of EMP

- To provide overall conservation of the environment.
- To minimize waste generation and pollution.
- To regulate the precise use of natural resources and water.
- To provide Safety, Welfare, and Good health for the workforce and populace.
- To regulate the effective operation of all control measures.
- To ensure alertness against probable disasters and accidents.
- To monitor cumulative and long-term impacts.
- To regulate the effective operation of all control measures.

Roles and Responsibilities concerning the implementation of the EMP

The roles and responsibilities of all parties involved in successfully managing the environment are mentioned below.

Environmental Coordinator

The Environmental Coordinator will inspect operational areas on a quarterly basis and at the onset of mining any new island, to ensure that all specifications are met. The duties of the environmental coordinator will be the following.

- Guide the operations team in respect of the implementation of the environmental specifications.
- Lead the visits to ensure all work is aligned with the EMP.
- The environmental coordinator must examine the site during the three-monthly visits. All rehabilitation results will be Comprised in the quarterly report.
- Examination of the rehabilitation area and giving guidance regarding rehabilitation measures if any.

The Operations Manager

The responsibilities of the Operations Manager (4OM) or his nominated authority are as follows.

1. Familiarize themselves with the requirements of the EMP.
2. Monitor employees' and contractor's compliance with the environmental specifications; and enforce adherence.

⁴ Operations Manager

3. Communicate all environment-related incidents with the Environmental Coordinator and distribute them internally to avoid repetition.
4. Maintain a record of activities relevant to Environmental Management.
5. The Operations Manager shall be responsible for monitoring and the enforcement of the Environmental Management specifications on a day-to-day basis. Any violation of the environmental specifications shall be recorded, and the agreed disciplinary measures are taken.

Senior personnel and contractors

The roles of the senior personnel/contractors are as follows:

- Familiarize themselves with the requirements of the EMP.
- Comply with the environmental management specifications.
- Ensure that all team members are familiar with the environmental management specifications.

Details of the project

The Manjarath 2 sand ghat area has been selected in perspective of its subsisting demand for building-grade sand for the area in and around Majalgaon Taluka. The District Mining Officer Beed has put forward the proposal for Environmental Clearance for mining. The ghat has a production of 19081 brass sand within an area of 4.5ha. The proposed proposal follows an organized mining process for Environmental Clearance.

Further Chapter informs about the in-depth details of the Sand Ghat, its geographical structure, and a Google map of the ghat with its approach road for contractors and workers to reach to sand ghat from the village.

CHAPTER 2

DETAILS OF THE PROJECT

Manjarath village is located in Majalgaon Taluka of Beed district, Maharashtra. Majalgaon is well connected with all nearby cities. The National highway NH-52, it traverses through the states of Punjab, Haryana, Rajasthan, Madhya Pradesh, Maharashtra, Karnataka in India. NH-52 is the National Highway passing through the district, covering a total distance of 73.60km. Majalgaon has situated about 51.22km by road from Beed. The district has road links to adjoining districts Ahmednagar District to the west, Jalna District to the North, Latur District to the East, Osmanabad District to the South, Parbhani District to the East. The district is well connected by roads.

Manjarath village is 59.36km away from Collector office headquarters Beed. The Geographical area of the Beed is around 10693km². The nearest Railway station to Manjarath village is Selu Railway station. The nearest Airport to Beed District is Aurangabad Airport, Aurangabad Airport is 104km from Beed city, 113.41km from Manjarath.

Honourable Collector Beed intends to auction Sand Ghats and appointed District Mining Officer as Project Proponent. A total of 38 sand ghats are identified by Tahsildar Majalgaon, Parli Ve., Gevrai, Beed along with District Mining Officer, Beed. The 38 sand ghats were jointly surveyed by Taluka level technical committee headed by respective Tahsildar with Dy. Engineer Irrigation Department, Junior Geologist Directorate of Geology and Mining Govt. of Maharashtra, Junior Geologist, Groundwater Surveys & Development Agency (⁵GSDA). DMO Beed and a representative of the Maharashtra Pollution Control Board (⁶MPCB), as per the procedure defined in Sand Auction Rules 2019 dated 3/09/2019 formed a Taluka-level technical committee, which explored the sand ghats for an available quantity of sand for scooping. Revenue of Rs.25 Crore is expected from the auction of these sand ghats. Manjarath 2 Sand Ghat proposed over river Godavari in Majalgaon

⁵ Groundwater Surveys & Development Agency

⁶ Maharashtra Pollution Control Board

Taluka is proposed to cater to the infrastructural requirement of sand in the Taluka of Beed and adjoining areas of other talukas.

Table 2. 1 Details of Manjarath 2 Sand ghat

Name of Village	Taluka	River/ Nallah	Nearest survey No.	Area (ha)	Proposed Depth for excavation (m)	Quantity Permitted for mining of Sand in Brass	Method of Mining
Manjarath	Majalgaon	Godavari	21 to 24, 26, 27, 31, 32, 34	4.5	1.20	19081	Open-cast manual mining

Table 2. 2 Salient features of the project

Particulars	Details		
Location	Village-Manjarath, Taluka-Majalgaon, District-Beed, Maharashtra.		
Latitude and Longitude	Boundary points of Manjarath 2 sand spot	Latitude	Longitude
	BP1	19°14'53.12"N	76°15'25.50"E
	BP2	19°14'52.85"N	76°15'27.38"E
	BP3	19°14'30.54"N	76°15'12.53"E
	BP4	19°14'31.89"N	76°15'11.41"E
Sand spot area (In ha)	4.5ha		
Proposed production capacity (in Brass)	19081		

Particulars	Details
Infrastructure Requirement (As per Govt Resolution 3rd January 2018)	<ol style="list-style-type: none"> 1. Room / Hut for Official records 2. Electricity / Battery for Running CCTV 24x7 daily. 3. One Computer / Android-based Mobile for the online generation of Invoice numbers.
Distance of project site from nearest rail or road bridge over the concerned River, Nallah, etc.	2.54km
Distance from infrastructural facilities	
Railway line	54.94km
National Highway	8.93km (NH-61)
State Highway	36.32km (SH-144)
Major District Road	52.35km
Any Other Road	4.65km
Electric transmission line pole or tower	
Canal or check dam or reservoirs or lake or ponds	
In-take for drinking water pump house	
Intake for Irrigation canal pumps	

Particulars	Details
Areas already subjected to pollution or environmental damage. (those where existing legal environmental standards are exceeded)	None
Areas susceptible to natural hazards which could cause the project to Present environmental problems (earthquakes, subsidence, landslides, erosion, flooding, or extreme or adverse climatic conditions)	No. Sand Ghat is at safe distances from natural hazards like earthquake prone area, subsidence, landslide, erosion, flooding prone area and extreme or adverse climatic conditions

Particulars	Details
<p>Whether the proposal involves approval or clearance under the following Regulations or Acts, namely: - (a) The Forest (Conservation) Act, 1980. (b) The Wildlife (Protection) Act, 1972. (c) The Coastal Regulation Zone Notification, 2011. If yes, details of the same and their status are to be given.</p>	<p>None</p>
<p>Forest land involved (hectares)</p>	<p>None</p>

The below figure shows the google image of Manjarath 2 sand ghat.



Fig 2.1-Google image of Manjarath 2 sand ghat

Approach road along with google location is as shown below.

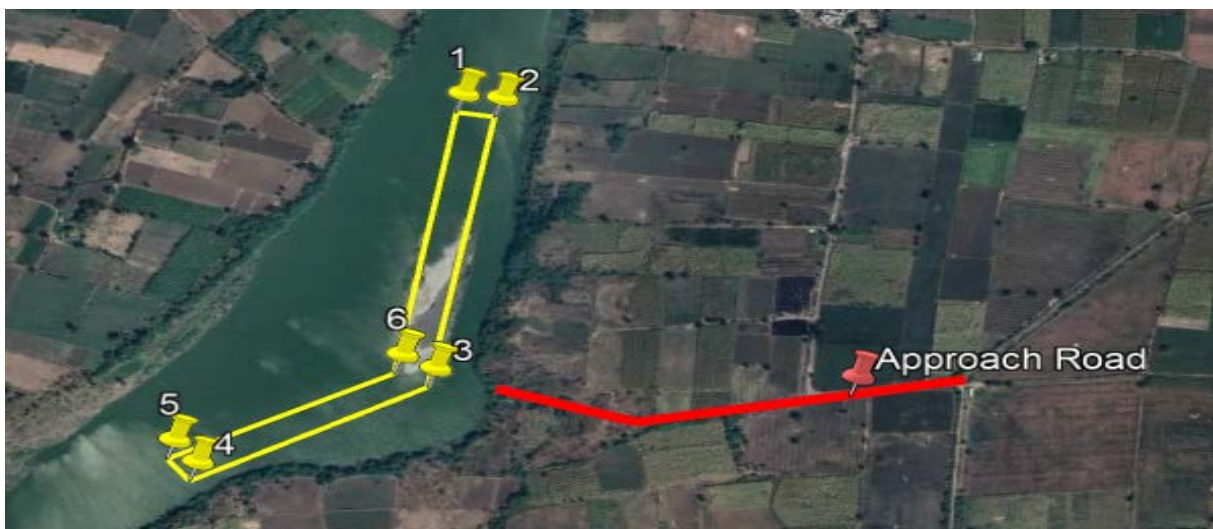


Fig 2.2-Approach Road for sand ghat

Next chapter 3 is Baseline Environmental Status in which the entire Topography, Climate, Soil Environment, Land use, water Environment, Hydrology, Biological environment, and Socio-economic Environment are briefly explained for the Beed district.

CHAPTER 3

BASELINE ENVIRONMENT STATUS

Topography

The Sand Ghat area as per the survey is the riverbed of the Godavari River of the Beed district. The maximum elevation is 418m MSL, average elevation is 416m MSL, & minimum elevation is 413m (⁷MSL) Mean Sea Level. The slope of the Sand Ghat area towards the Southwest to Northeast side. The flow of Godavari River is from Southeast direction.

Presently, there is neither any infrastructure within the riverbed nor are proposed.

Hydrology

There will be no change in the Water Table during the mining operation, as the depth of mining shall be restricted to 1.20m water level, which is less likely to affect the surface level or Groundwater Table. There is no proposal of any stream modification/diversion due to this mining activity hence there will be not any impact on the flow of water.

Soil Environment

The riverbed consists of sand /gravel. There is no topsoil. The depth of mining shall be restricted to 1.20m. There is no crucial impact on the soil forecasted due to mining activities.

Land Use Land Cover

Land use shows that agriculture land use is predominant. The proposed site is 4.5ha having adjoined Khasara No 21 to 24, 26, 27, 31, 32, 34. The land doesn't cover any human habitation, forest, etc. Any change in the scope of the approved Mining Plan will lead to riverbank erosion/cutting and thereby river channel shifting, degradation of land, causing loss of properties and degradation of the surrounding landscape.

⁷ Mean sea level

Water Environment

While transporting sand there may be fugitive dust. There will be water requirement for spraying for dust suppression purposes. This water will be supplied from the borewell from nearby villages through tankers as well as from surface water sources. The water source may vary from village to village.

Climate

During summer May is the hottest month of the year in this area. The temperature rises to 42°C in the month of May. The average rainfall in this region is 600mm to 700mm About 50% of rainfall precipitates between June to September. December is the coldest month with temperatures falling down to 18°C. Overall the proposed site area has sub-tropical conditions.

Biological Environment

Flora

The agricultural area is seen near the Sand Ghat. Few trees and thorny bushes are seen on the banks of the river.

Fauna

As there is no forest cover, no endangered species of wildlife are seen in this area.

Socio-Economic Environment

This project may create constructive impacts of the sand mining that are stated below:

1. The mining operations will provide direct & indirect employment to village people.
2. The villages and their inhabitants & domestic animals will not be disturbed due to mining, as the quarry is far from their settlements.
3. Local workforce will be given first preference for employment.
4. Mining activities will benefit the local people due to the provision of more infrastructural facilities (developments of approach routes within the village area).

The next chapter describes all possible impacts on the Environment due to this project along with its mitigation measure to overcome these impacts.

CHAPTER 4

IMPACT ASSESSMENT REPORT ALONG WITH PROPOSED MITIGATION MEASURES

1. Land Environment

Anticipated Impact

Movement of vehicles can create issues for agricultural land, human habitations, noise, and risk for public and cause traffic hazards. The impacts include damage to the riverbank due to access ramps to the riverbed, soil erosion because of extraction of sand, micro disturbance to groundwater, possible stimulation of the changed river course, and contamination of sand aquifer water due to ponding. There might be surface degradation due to the road network.

The quality of soil will not be affected due to transportation or any other activity of mining.

Mitigation measure

1. Mining depth should be restricted to 3 meters and distance from the bank should be ¼th or river width and should not be less than 7.5 meters as per “Sustainable Sand Mining Guidelines 2020” ■ Page 23, Point no 4.3 (m).
2. There will be a minimal number of access roads to riverbeds. Cutting of riverbanks will be avoided and ramp with smooth slope will be maintained. Access points to the riverbed will be decided based on the least steepness of the riverbank and the least human activity at that location.
3. No foreign material like polythene bags, jute bags, and useless articles should be allowed to remain/spill in the riverbed and catchment area, or no pits/pockets will be allowed to be filled with such material.
4. Mining at the concave side of the river channel should be avoided to prevent bank erosion. Similarly, a tortuous segment of a river is to be selected for mining in such a way as to ignore the natural eroding of banks.
5. Ensure that ponding is not created in the riverbed.
6. Transportation route should be such that it gives minimum

damage to the environment.

7. Green belt will be developed along the haul road and the bank of rivers of mine premises and near the sand mining site. While selecting the plant species, preference will be given for planting native species of the area.

2. Water environment

Anticipated Impact

The project activity will be carried out in the dry part of the riverbed. Care will be taken to ensure that neither of the project activities will affect the water environment or riverbank habitats. During the lean months, the proposed Sand Mining will not expose the base flow of the river and hence there will not be any inauspicious impact on surface hydrology and groundwater regime due to this project. Project activities will not have any adverse consequences on the physical components of the environment and therefore may not have any effect on the recharge of ground waters or affect the water quality. Monitoring of water quality will be checked yearly.

Mitigation measures

1. Mining is avoided during the monsoon season and at the time of floods. This will help in the replenishment of sand in the riverbed.
2. Mining below the subterranean water level will be avoided as a safeguard against environmental contamination and over-exploitation of resources.
3. River stream will not be transferred to create active channels.
4. Mining schedule is synchronized with the river flow direction and the gradient of the land.
5. Mining at the concave side of the river channel will be avoided to prevent bank erosion.
6. Tortuous segment of the river will be selected for mining in such a way as to avoid naturally eroding banks and to promote mining on naturally building meander components.
7. Mining depth shall be maintained as per the guidelines and

rules of the Sand Mining Policy dated 03/09/2019 and recommendations of Maharashtra State (⁸M.S.). State Ground Water Department for extraction of sand during the lease period.

8. Water Quality Monitoring for the ground waters, river water, and other surface waters shall be carried out seasonally to ensure that the water quality is not affected by the project activities.
9. Utmost care will be taken to minimize or control leaking vehicles to be used for sand transportation.
10. The washing of tractor trolleys in the river will not be done.
11. The contractor will follow all guidelines and rules for proper and scientific methods of mining during the period of extracting the sand.

3. Air Environment

Anticipated Impacts

Plying of tractor trolleys from the public road to river sand collection points needs access roads. The majority of such access roads are the already existing roads/tracks being used by pedestrians/cart owners. The movement of heavy vehicles sometimes causes problems for cattle, agricultural land, and human habitations due to dust, noise, and the movement of the public. These environmental problems are felt more as the area is rural in nature.

Air pollution is likely to be caused at various stages of Sand Mining operations such as excavation, loading & transportation of material. Most of the fugitive dust emissions will be generated from loading & transportation. This dust becomes airborne and spreads away to surrounding areas.

The impact on air is mainly localized in nature as the dust particles of 100 μ in size are not carried to farther distances beyond 100m and the effect is felt within the core zone of the project involving active Sand Mining operations.

⁸ Maharashtra State

Mitigation measures

1. Movement of the vehicles on the road will be increased; however, the unmetalled road in the mining area will be sprinkled with water at regular intervals.
2. In addition to preventing spillage from tractor trolleys, overloading shall be controlled to 1-brass/tractor trolley. The speed limit will be <20 km/hr.
3. Maintenance of the haul road will be done on a regular basis.
4. To avoid fugitive dust emissions at the time of excavation, a regular sprinkling of water will be done on regular basis.
5. Sand is transported to the sites by road through tractor trolleys. The sand-carrying vehicles shall be covered by tarpaulin sheets.
6. The Green belt development will be prepared along the haul roads, which will act as a pollution sink.
7. To minimize vehicular pollution from the sand transporting vehicles, the following conditions will be insisted upon to permit the vehicles of the transporters.
8. The vehicles should be Bharat-IV stage compliant and should have a Pollution Under Control (⁹PUC) Certificate issued by appropriate authorities.
9. Regular maintenance of transport vehicles and monitoring of vehicular emission levels at periodical intervals.

4. Noise Environment

Anticipated Impact

The noise environment in this project will be overdone by the equipment at the site and vehicular transportation. A slight increase in noise levels of <10dB(A) can be expected up to a distance of 100m.

Mitigation measures.

1. Minimum use of horns in the village area.
2. Timely maintenance of vehicles and their silencers to

⁹ Pollution Under Control

minimize vibration and sound.

3. Phasing out old and worn-out tractor trolleys.
4. Provision of green belts along the road networks.
5. Care will be taken to produce minimum sound during sand loading.
6. Backhoe loader excavator will be used
7. Earplugs may be provided to protect the labourers working at the site.

5. Socio-economic Environment

Anticipated Impacts and Evaluation

1. The project activities shall not have any adverse impacts on any of the common property resources of the village communities, as the Sand Mine lease area is not being used for any purpose by any section of the society in this region.
2. There is no Resettlement and Rehabilitation (¹⁰R&R) involvement in this project.
3. There is no land acquisition in this project.
4. A major portion of the houses in the study area is semi-pucca-type structures.
5. The water source to these areas is from the Grampanchayat /Nagar Parishad connection and private bore wells and wells.
6. People living around the project area need the project for the purpose of employment and economic benefits.
7. The awareness level regarding the proposed mining activity is very towering. The proposed mining activity is expected to provide stimulus to socio-economic activities in the region and thereby accelerate further development processes.

Social and Demographic Profile

The workers are from local villages. These people have been provided welfare benefits from the lessee like medical benefits,

¹⁰ Rehabilitation and Resettlement

insurance, fees for children's education, etc. They have some land and cattle for their daily earnings. Additional revenue earned from the Sand Mining work will improve their living standard. The group of quarries in and around will help to have infrastructure facilities like roads, schools, shops, etc. This will enhance their social life.

Occupational Health and Safety

This is a riverbed Sand Mine. So, the mining activities are comparatively smaller because the production is not on a high scale. Workers do not come across any extreme conditions like excessive heat, moisture, etc. Workers working around it may come across this dusty environment. But the impact on health will be within the limit.

Human Settlement

1. There are no houses in and around the lease area. Blasting is the only activity, which may affect the settlement, which is not done. The settlement is more than 1-km from the sand mine.
2. Appropriate precautions will be taken during mining. Transportation of finished products is through the villages. There will be an effect of traffic on the local people. However, the intensity of traffic is 70-80/day.

Health and Hygiene

In general, the health of villagers is moderately good. In the rainy season, the atmospheric condition is unhygienic due to a lack of proper drainage and sanitation in the village habitation. Villagers are working in agricultural fields and work as labourers.

Education

Most education of 70% young <20 years, is up to the 5th to 9th. Economic condition is in general moderate. So, after this project, the standard of education will increase.

Socio-Economic Benefits Arising Out of Mining

1. Generation of employment in rural areas.
2. Upgradation in the living standards of rural people.
3. Creating infrastructural facilities like roads, electricity, shops, schools, etc.
4. Upgrading literacy in the area by exploiting natural minerals so the generation of revenue.

5. Helping to sustain construction activity.
6. Improving the greenery of the area, which is otherwise poor.

Liquid Effluent

Not applicable, because these activities do not generate effluent from operation or process.

Solid Waste

Not applicable, because small mines and impacts are negligible.

Project benefits due to the sand mining of Manjarath 2 are explained in the next Chapter.

CHAPTER 5

PROJECT BENEFITS

The proposed Sand Mining project of Manjarath village, Majalgaon Taluka, Beed District will lead to the following benefits:

1. Increase in the revenue of the district will ultimately increase the revenue of the village, which in return can be used to improve the infrastructure of the village.
2. Sand is available for building construction work and by systematic separation of sand, there is no possibility of a flood. Providing smooth movement of water of the river.
3. This project will contribute additional revenue to the state Exchequer in the form of revenue.
4. The project will conclude with employment opportunities for unskilled/skilled local people.
5. Standard of living of employed people will increase.

CHAPTER 6

SITE-SPECIFIC ENFORCEMENT & MONITORING PLAN

Sand Ghat Site specific enforcement & monitoring plan

(as per guidelines stipulated in the Enforcement and Monitoring Guidelines for sand mining issued by MoEFCC in January 2020.)

District administration shall deliver information on its website about the Sand Mines in the district for public information. The objective is to extend all information into the public domain so that the citizens are aware of the mining activities. People can also report to the district administration any deviation observed. Suitable feedback and its composition shall also be made operational.

Details shall include, but not be limited to, lease area, geo-coordinates of lease area and mineable area, transport routes, permitted capacity, regulatory conditions for operation including mining, environmental and social commitments, etc.

An Independent Committee of experts constituted by the Distance Learning Task Force (¹¹DLTF) will assess the environmental or ecological damage caused due to illegal mining and recommend recovery of environmental compensation from the concerned miners.

The recommendation may also include action under the provision of the Environment (Protection) Act 1986 u/s.15 read with s.19.

¹¹ Distance Learning Task Force

CHAPTER 7

SECURITY FEATURES

Security features are included in the Transport Permission/Permits (TP)

It will be ensured that the following security features are included in the Transport Permission/Permits (¹²TP) so that duplicate/fraudulent/forged TPs for transport, not accounted for in the IT-based system, is not possible:

1. Printed on Indian Bank Association (¹³IBA) Approved letterhead with account details
2. Magnetic Ink Character Recognition Code (¹⁴MICR) paper
3. Unique Barcode
4. Unique Quick Response Code (¹⁵QR)
5. Fugitive Ink Background
6. Invisible Ink Mark
7. Void Pantograph Watermark
8. Global Positioning System (¹⁶GPS) based vehicle tracking system
9. Closed-Circuit Television (¹⁷CCTV) Camera

¹² Transport Permission

¹³ Indian Bank Association

¹⁴ Magnetic Ink Character Recognition Code

¹⁵ Quick Response Code

¹⁶ Global Positioning System

¹⁷ Closed Circuit Television

CHAPTER 8

REPLENISHMENT

Replenishment study is the most important part of Sand Mining as it is the only basis to carry out sand mining. Without a Replenishment Study, we cannot understand the amount of deposition of sand. Following points to be followed for the replenishment study.

1. Area of deposition and erosion will be calculated for each cross-section after giving due regard to the stability & safety of active channel banks & other features of importance.
2. Differential Global Positioning System (¹⁸DGPS) and other survey tools will be used to define the topography, contours, and offsets of the lease area.
3. Contour & elevation benchmarks will provide baseline data for assessing pre- and post-study period scenario.
4. Physical benchmarks will be fixed at appropriate intervals (preferably 1 in 30m) & Reduced levels (¹⁹RL) shall be validated from a nearby standard RL.
5. These RL will be engraved on a steel plate (Bench Plate) & will be fixed & placed at locations that are free from any damages & are available in the pre-and post-study period.
6. Bench plates will be available for use during the mining period as a reference for all mining activity.
7. Baseline data on elevation status for a grid of 10m x 10m is preferred to have accuracy in the assessment.
8. It is expected that two consecutive cross-sections in longitudinal and lateral directions will not be more than a 10m distance apart.
9. Changes observed in the elevation in pre and post-scenario at each node, will be depicted in graphical forms with an appropriate scale to estimate the area of deposition & erosion.

¹⁸ Differential global positioning system

¹⁹ Reduced levels

10. Elevation level will be in reference to the nearest bench plates established for the purpose.
11. The levels (MSL & RL) of the corner point of each grid will be identifiable and safety barriers (non-Mining) demarcated as restricted in consensus with the Mineral Concession Rules of the respective State, and the provision mentioned in this Sustainable Sand Mining Management Guidelines.
12. A clear identification will be highlighted between grids under the mineable and grids under the non-mineable area.
13. These baseline data (pre and post) be subjected to stimulation with the help of data mine software to derive the replenishment area and corresponding volume and estimated weight.
14. The database will be structured in a tabulated form clearly depicting the nomenclature of the section lines, latitude and longitude of the starting point, chainage, and respective levels of all the points taken on that section line.
15. Net area shall be derived after summation of an area of deposition minus the area of erosion for each cross-section.
16. Volume will be estimated by multiplying the distance between two cross-sections with the average of the net area of these two consecutive cross-sections.
17. One sample per 900m² (30m x 30m) will be the preferred sample density for the assessment of bulk density for the estimation of deposition rate.
18. Care will be taken that the sample for assessment of Bulk Density is taken from the deposition zone & not from erosion.

Methodology for Sand Mining:

The following methodology should be followed for the Replenishment study.

1. The Demarcation and benchmark of the Sand Ghat are done at 10m x 10m intervals.
2. The use of the Auger Driller is to find out the depth of sand in each grid.
3. Auger Driller has created the holes in sand ghat by 10mx10m grid pattern.
4. Measured the depth of holes by using a measuring tape.

5. After taking all the readings average depth of sand is calculated.
6. The average depth of Manjarath 2 at Godavari is measured.

Replenishment study of sand in the proposed ghat along with details of the methodology, technology used to identify the existing reserve & replenishment of the same

Dandy Bolton Equation

For runoff less than 2 inches

$$S = 1280 \times (Q) \times 0.46 \times (1.46 - 0.26 \log(A)) \times F$$

For runoff more than 2 inches

$$S = 1958 \times (Q) \times (e^{-0.055 \times Q}) \times (1.43 - 0.26 \log(A))$$

Where,

S = sediment yield of stream (t/yr/km²),

Q = average annual runoff (m³),

A = net drainage area in sq.mile.

CHAPTER 9

PROPOSED PLANTATION PLAN

The Project Proponent must take care of the plantation around the site. This will not only enhance the beautification of the area but also there will be the reduction of pollution, not some extent.

Details of the plantation and Tree species recommended for the plantation are shown below.

Table 9. 1 Details of green belt

Location of greenbelt	Both sides of the approach road, On the riverbanks of both sides of the sand spot & nearby open areas. Haul Road outside the riverbed
No. of plants to be planted	2000 per Hectare
Spacing of plants	2m grid interval
Species selected	Native species

Table 9. 2 Trees species for plantation

Botanical Name	Local Name	Importance
Azadirachta Indica	Neem	Neem oil & neem products
Tectona Grandis	Teek	Antibacterial, Antifungal, Antiulcer
Ficus religiosaa	Peepal	Medicinal use, Fruits & figs
Bambusa vulgaris	Bamboo	Anthelmintic Anti-inflammatory, Astringent Properties
Madhuca longifolia	Mahua	Acts as a Stimulant & cough relief,

CHAPTER 10

ENVIRONMENTAL MANAGEMENT PLAN

A total capital cost of Rs.5.97 Lakhs has been kept in the project cost towards the environmental protection, control, mitigation measures, and implementation of the Environmental Management Plan (EMP). This cost is borne by the bidder/leaseholder. The budgetary cost estimate for the EMP is given in Table.

Table 10. 1 Budgetary cost of EMP

Sr	Impact Source	Impact	Control Measure	Cost (Rs.)
1	Transport Road	On Air Quality	Compaction, gradation, and drainage on both sides.	90000
		On Land, the Stability of the Road and degradation of road	Proper maintenance	80000
			Regular water spraying	40000
			The air quality will be monitored at the impacted village. (For One Day Monitoring)	5000
			Health Check-up of Employees	5000
2	Truck/ Tractor Movement	Air Quality	Sand-carrying trucks will be effectively covered by tarpaulin to avoid the escape of fines to the atmosphere. (2 Tarpaulin)	25000
			Regular monitoring of the exhaust fumes	5000

Sr	Impact Source	Impact	Control Measure	Cost (Rs.)
			Barriers & Traffic Management Expenses. (Excluding Manpower Salary which is included in labour costs)	10000
3	Ramp and Sand Reach	Mining Operation	Regular ramp Inspection and Ramp maintenance. (Excluding Manpower Salary which is included in labour costs)	20000
			Provision of dust masks	10000
4	Bank Management	Bank Erosion/Flood Plain management	The green belt along the bank (For Green Belt Development)	280000
			Plantation of wide leaf tall trees on banks and grass along a slanting portion of the bank	
5	Transportation on Village Roads	Dust Control	The green belt along village Rd (For Green Belt Development)	
6	Final Mine Closure Plan implementation	Replenishment of Sand	Gabions/ boulders will be arranged as per guidelines	15000
7	Mobile toilet, sewage handling & treatment		Mobile toilet, sewage handling & treatment	130000
8	CCTV Monitoring			120000
Total				835000

Budget For Corporate Environment Responsibility (²⁰CER)

About 2% fund of the project cost is allocated for Corporate Environment Responsibility (CER) activities as presented in below Table

Table 10.2 Budget for CER

Sr.	Description	Cost (Rs)
1.	Village Schools (separate toilet for girls and boys)	20000
2.	Solar panels over Gram Panchayat buildings	30000
3.	Solar panels over Public Health Centers	30000
	Total	80000

²⁰ Corporate Environment Responsibility

CHAPTER 11

SUMMARY AND CONCLUSION

The Roles and Responsibilities of the Environmental coordinator, the Operation Manager, and the senior personnel contractor are essential in EMP.

The environmental status of the project site and study area of 10km radius is delineated with respect to air, noise, water, land, biological and socio-economic environment the different project activities in the construction and operation phases are identified.

To identify the impacts, the interaction between the project activities and different components of the environment is classified phase-wise. A summary of the recognized impacts is given in the following paragraphs.

- During the operational phase, the transportation of sand could cause a temporary disturbance to the local environment which will be prevented with the proposed mitigation measures.
- Proposed project will not have any major significant negative impacts. The minor impacts arising during Excavation and Transportation phases can be mitigated with the help of the proposed Environmental Management Plan.
- In general, sand excavation from Manjarath 2 sand spot will be useful to the developmental work in the district and generate employment opportunities.

From this project, it is concluded that the district revenue will increase in return minimum of 2% of funds are utilized for the development of the village. The project will also grab employment which will improve the standard of life of villagers.

*** END ***

Environmental Management Plan

As per Rules 23 & 26 of MMME (D & R) RULE 2013 & Section 15 of MMDR Act 1957, MoEFCC Notification 2006, S.O. 141(E) dated 15. 01. 2016; MoEFCC, Sustainable Sand Mining Management Guidelines 2016, Guidelines for Mining Policy 2020)

For

ENVIRONMENTAL CLEARANCE

of

SAND MINING (MINOR MINERAL)

for

Manjarath 3- A Riverbed Sand Mine / Sand Ghat
Khasra No. GSDA approved 484, 486 to 488, 495, 497
Area (4.2ha)

Village Manjarath, Taluka Majalgaon, District Beed

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ABBREVIATION

Short Form	Long Form
EMP	Environmental Management Plan
MoEFCC	Ministry of Environment Forest and Climate Change
DSR	District-level Survey Report
EC	Environmental Coordinator
OM	Operations Manager
GSDA	Groundwater Surveys & Development Agency
MPCB	Maharashtra Pollution Control Board
MSL	Mean Sea Level
MS	Maharashtra State
PUC	Pollution Under Control
R&R	Rehabilitation and Resettlement
DLTF	Distance Learning Task Force
TP	Transport Permission/Permits
IBA	Indian Bank Association
MICR	Magnetic Ink Character Recognition Code
QR	Quick Response Code
GPS	Global Positioning System

CCTV	Closed-Circuit Television
DGPS	Differential Global Positioning System
RL	Reduced Levels
CER	Corporate Environment Responsibility

CHAPTER 1

INTRODUCTION

The Environmental Management Plan (¹EMP) plays a vital connection uniting forecast impacts and mitigation measures during implementation and operational activities. EMP stipulates the mitigation, monitoring and conventional measures to be taken during project implementation and operation. EMP is to escape or mitigate adverse environmental impacts, and to implement these measures.

This Environmental Management Plan (EMP) has been prepared as part of the Scoping Report which will be compiled in terms of the Environmental Assessment for the sand mining activities.

Considering the Ministry of Environment and Forest Climate Change (²MoEFCC) Notification 2006 and Sustainable Sand Mining Management Guidelines 2016, the Govt. of Maharashtra had mapped out the Minor Mineral Extraction Rules 2013. These rules are to extract all minor minerals in a scientific way so that there is no unfavourable impact on Environment and Climate. To extract every minor mineral from any land (either Government or Private) there is provision for a Mining Plan. These plans need to be approved by a competent authority. For long-term leased minor minerals (5-10 years period) and sand excavation from the riverbed, Senior Deputy Director of Directorate of Geology and Mining is the competent authority. These plans are for short term temporary permits which are valid for one year.

According to Enforcement & Monitoring Guidelines for Sand Mining 2020, Sustainable Sand Mining Management Guidelines 2016, Standard Environment conditions for sand mining and sustainable mining practices, District level Survey Report (³DSR) should be prepared and are suitable for mining and area prohibited for mining must be recognized.

¹ Environmental Management Plan

² Ministry of Environment Forest and Climate Change

³ District Survey Report

Objectives of EMP

- To provide overall conservation of the environment.
- To minimize waste generation and pollution.
- To regulate the precise use of natural resources and water.
- To provide Safety, Welfare, and Good health for the workforce and populace.
- To regulate the effective operation of all control measures.
- To ensure alertness against probable disasters and accidents.
- To monitor cumulative and long-term impacts.
- To regulate the effective operation of all control measures.

Roles and Responsibilities concerning the implementation of the EMP

The roles and responsibilities of all parties involved in successfully managing the environment are mentioned below.

Environmental Coordinator

The Environmental Coordinator will inspect operational areas on a quarterly basis and at the onset of mining any new island, to ensure that all specifications are met. The duties of the environmental coordinator will be the following.

- Guide the operations team in respect of the implementation of the environmental specifications.
- Lead the visits to ensure all work is aligned with the EMP.
- The environmental coordinator must examine the site during the three-monthly visits. All rehabilitation results will be Comprised in the quarterly report.
- Examination of the rehabilitation area and giving guidance regarding rehabilitation measures if any.

The Operations Manager

The responsibilities of the Operations Manager (4OM) or his nominated authority are as follows.

1. Familiarize themselves with the requirements of the EMP.
2. Monitor employees' and contractor's compliance with the environmental specifications; and enforce adherence.

⁴ Operations Manager

3. Communicate all environment-related incidents with the Environmental Coordinator and distribute them internally to avoid repetition.
4. Maintain a record of activities relevant to Environmental Management.
5. The Operations Manager shall be responsible for monitoring and the enforcement of the Environmental Management specifications on a day-to-day basis. Any violation of the environmental specifications shall be recorded, and the agreed disciplinary measures are taken.

Senior personnel and contractors

The roles of the senior personnel/contractors are as follows:

- Familiarize themselves with the requirements of the EMP.
- Comply with the environmental management specifications.
- Ensure that all team members are familiar with the environmental management specifications.

Details of the project

The Manjarath 3 sand ghat area has been selected in perspective of its subsisting demand for building-grade sand for the area in and around Majalgaon Taluka. The District Mining Officer Beed has put forward the proposal for Environmental Clearance for mining. The ghat has a production of 14841 brass sand within an area of 4.2ha. The proposed proposal follows an organized mining process for Environmental Clearance.

Further Chapter informs about the in-depth details of the Sand Ghat, its geographical structure, and a Google map of the ghat with its approach road for contractors and workers to reach to sand ghat from the village.

CHAPTER 2

DETAILS OF THE PROJECT

Manjarath village is located in Majalgaon Taluka of Beed district, Maharashtra. Majalgaon is well connected with all nearby cities. The National highway NH-52, it traverses through the states of Punjab, Haryana, Rajasthan, Madhya Pradesh, Maharashtra, Karnataka in India. NH-52 is the National Highway passing through the district, covering a total distance of 73.60km. Majalgaon has situated about 51.22km by road from Beed. The district has road links to adjoining districts Ahmednagar District to the west, Jalna District to the North, Latur District to the East, Osmanabad District to the South, Parbhani District to the East. The district is well connected by roads.

Manjarath village is 59.36km away from Collector office headquarters Beed. The Geographical area of the Beed is around 10693km². The nearest Railway station to Manjarath village is Selu Railway station. The nearest Airport to Beed District is Aurangabad Airport, Aurangabad Airport is 104km from Beed city, 113.41km from Manjarath.

Honourable Collector Beed intends to auction Sand Ghats and appointed District Mining Officer as Project Proponent. A total of 38 sand ghats are identified by Tahsildar Majalgaon, Parli Ve., Gevrai, Beed along with District Mining Officer, Beed. The 38 sand ghats were jointly surveyed by Taluka level technical committee headed by respective Tahsildar with Dy. Engineer Irrigation Department, Junior Geologist Directorate of Geology and Mining Govt. of Maharashtra, Junior Geologist, Groundwater Surveys & Development Agency (⁵GSDA). DMO Beed and a representative of the Maharashtra Pollution Control Board (⁶MPCB), as per the procedure defined in Sand Auction Rules 2019 dated 3/09/2019 formed a Taluka-level technical committee, which explored the sand ghats for an available quantity of sand for scooping. Revenue of Rs.25 Crore is expected from the auction of these sand ghats. Manjarath 3 Sand Ghat proposed over river Godavari in Majalgaon

⁵ Groundwater Surveys & Development Agency

⁶ Maharashtra Pollution Control Board

Taluka is proposed to cater to the infrastructural requirement of sand in the Taluka of Beed and adjoining areas of other talukas.

Table 2. 1 Details of Manjarath 3 Sand ghat

Name of Village	Taluka	River/ Nallah	Nearest survey No.	Area (ha)	Proposed Depth for excavation (m)	Quantity Permitted for mining of Sand in Brass	Method of Mining
Manjarath	Majalgaon	Godavari	484, 486 to 488, 495, 497	4.2	1.00	14841	Open-cast manual mining

Table 2. 2 Salient features of the project

Particulars	Details		
Location	Village-Manjarath, Taluka-Majalgaon, District-Beed, Maharashtra.		
Latitude and Longitude	Boundary points of Manjarath 3 sand spot	Latitude	Longitude
	BP1	19°14'42.12"N	76°14'12.47"E
	BP2	19°14'44.40"N	76°14'12.50"E
	BP3	19°14'40.79"N	76°14'32.92"E
	BP4	19°14'38.63"N	76°14'32.20"E
Sand spot area (In ha)	4.2ha		
Proposed production capacity (in Brass)	14841		

Particulars	Details																
Infrastructure Requirement (As per Govt Resolution 3rd January 2018)	<ol style="list-style-type: none"> 1. Room / Hut for Official records 2. Electricity / Battery for Running CCTV 24x7 daily. 3. One Computer / Android-based Mobile for the online generation of Invoice numbers. 																
Distance of project site from nearest rail or road bridge over the concerned River, Nallah, etc.	0.83km																
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>Distance from infrastructural facilities</td> <td rowspan="10"></td> </tr> <tr> <td>Railway line</td> </tr> <tr> <td>National Highway</td> </tr> <tr> <td>State Highway</td> </tr> <tr> <td>Major District Road</td> </tr> <tr> <td>Any Other Road</td> </tr> <tr> <td>Electric transmission line pole or tower</td> </tr> <tr> <td>Canal or check dam or reservoirs or lake or ponds</td> </tr> <tr> <td>In-take for drinking water pump house</td> </tr> <tr> <td>Intake for Irrigation canal pumps</td> </tr> </table>	Distance from infrastructural facilities		Railway line	National Highway	State Highway	Major District Road	Any Other Road	Electric transmission line pole or tower	Canal or check dam or reservoirs or lake or ponds	In-take for drinking water pump house	Intake for Irrigation canal pumps	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>30.16km</td> </tr> <tr> <td>9.88km (NH-61)</td> </tr> <tr> <td>38.15km (SH-144)</td> </tr> <tr> <td>53.31km</td> </tr> <tr> <td>3.48km</td> </tr> </table>	30.16km	9.88km (NH-61)	38.15km (SH-144)	53.31km	3.48km
Distance from infrastructural facilities																	
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Intake for Irrigation canal pumps																	
30.16km																	
9.88km (NH-61)																	
38.15km (SH-144)																	
53.31km																	
3.48km																	

Particulars	Details
Areas already subjected to pollution or environmental damage. (those where existing legal environmental standards are exceeded)	None
Areas susceptible to natural hazards which could cause the project to Present environmental problems (earthquakes, subsidence, landslides, erosion, flooding, or extreme or adverse climatic conditions)	No. Sand Ghat is at safe distances from natural hazards like earthquake prone area, subsidence, landslide, erosion, flooding prone area and extreme or adverse climatic conditions
Whether the proposal involves approval or clearance under the following Regulations or Acts, namely: - (a) The Forest (Conservation) Act, 1980. (b) The Wildlife (Protection) Act, 1972. (c) The Coastal Regulation Zone Notification, 2011. If yes, details of the same and their status are to be given.	None
Forest land involved (hectares)	None

The below figure shows the google image of Manjarath 3 sand ghat.

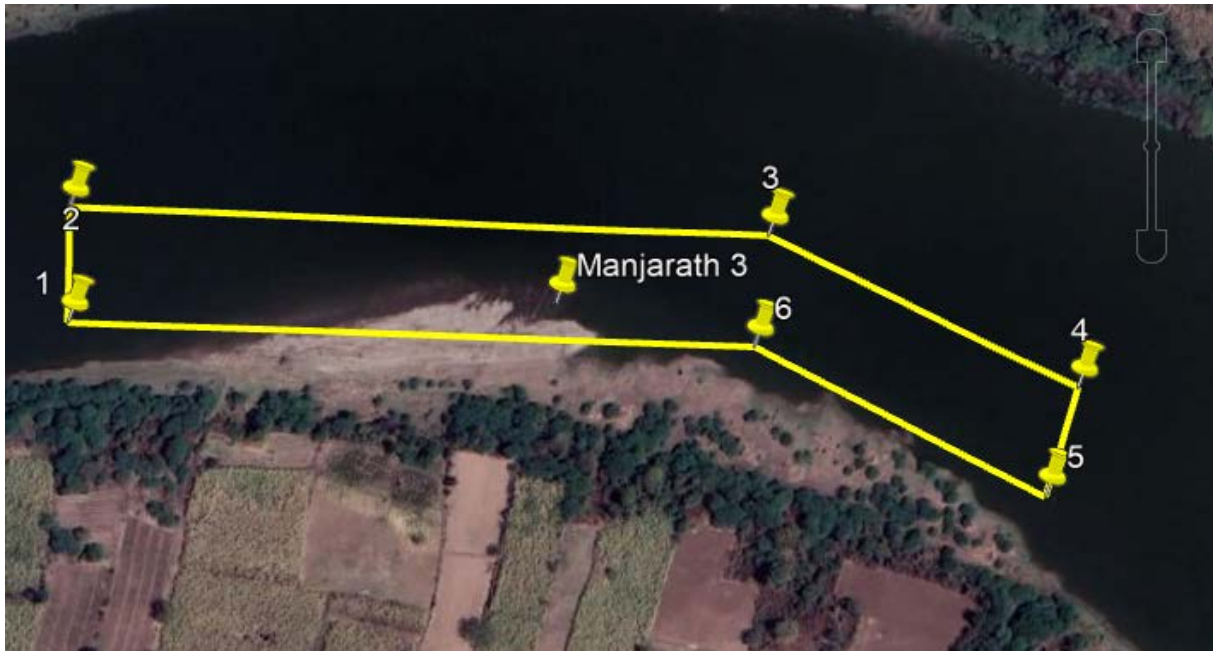


Fig 2.1-Google image of Manjarath 3 sand ghat

Approach roach along with google location is as shown below.

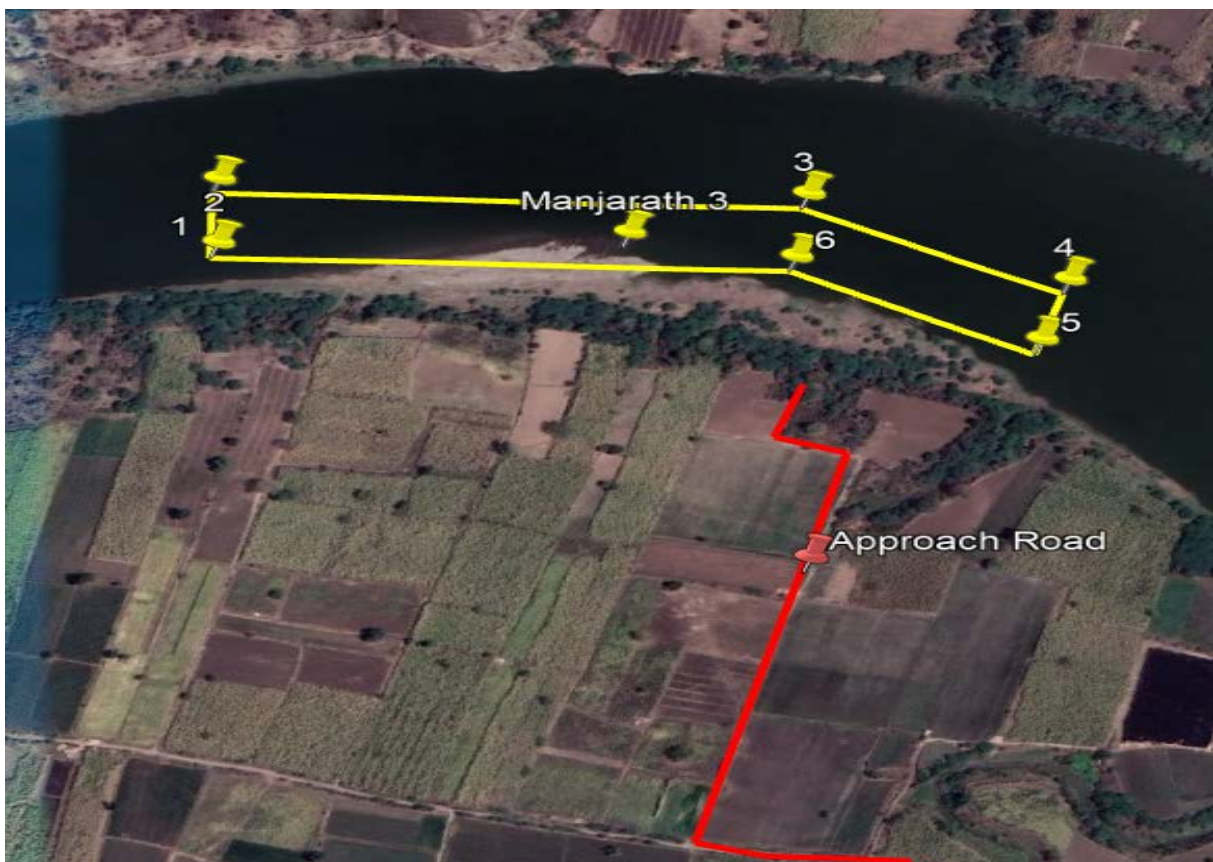


Fig 2.2-Approach Road for sand ghat

Next chapter 3 is Baseline Environmental Status in which the entire Topography, Climate, Soil Environment, Land use, water Environment, Hydrology, Biological environment, and Socio-economic Environment are briefly explained for the Beed district.

CHAPTER 3

BASELINE ENVIRONMENT STATUS

Topography

The Sand Ghat area as per the survey is the riverbed of the Godavari River of the Beed district. The maximum elevation is 422m MSL, average elevation is 417m MSL, & minimum elevation is 414m (⁷MSL) Mean Sea Level. The slope of the Sand Ghat area towards the Southwest to Northeast side. The flow of Godavari River is from Southeast direction.

Presently, there is neither any infrastructure within the riverbed nor are proposed.

Hydrology

There will be no change in the Water Table during the mining operation, as the depth of mining shall be restricted to 1.0m water level, which is less likely to affect the surface level or Groundwater Table. There is no proposal of any stream modification/diversion due to this mining activity hence there will be not any impact on the flow of water.

Soil Environment

The riverbed consists of sand /gravel. There is no topsoil. The depth of mining shall be restricted to 1.0m. There is no crucial impact on the soil forecasted due to mining activities.

Land Use Land Cover

Land use shows that agriculture land use is predominant. The proposed site is 4.2ha having adjoined Khasara No 484, 486 to 488, 495, 497. The land doesn't cover any human habitation, forest, etc. Any change in the scope of the approved Mining Plan will lead to riverbank erosion/cutting and thereby river channel shifting, degradation of land, causing loss of properties and degradation of the surrounding landscape.

⁷ Mean sea level

Water Environment

While transporting sand there may be fugitive dust. There will be water requirement for spraying for dust suppression purposes. This water will be supplied from the borewell from nearby villages through tankers as well as from surface water sources. The water source may vary from village to village.

Climate

During summer May is the hottest month of the year in this area. The temperature rises to 42°C in the month of May. The average rainfall in this region is 600mm to 700mm About 50% of rainfall precipitates between June to September. December is the coldest month with temperatures falling down to 18°C. Overall the proposed site area has sub-tropical conditions.

Biological Environment

Flora

The agricultural area is seen near the Sand Ghat. Few trees and thorny bushes are seen on the banks of the river.

Fauna

As there is no forest cover, no endangered species of wildlife are seen in this area.

Socio-Economic Environment

This project may create constructive impacts of the sand mining that are stated below:

1. The mining operations will provide direct & indirect employment to village people.
2. The villages and their inhabitants & domestic animals will not be disturbed due to mining, as the quarry is far from their settlements.
3. Local workforce will be given first preference for employment.
4. Mining activities will benefit the local people due to the provision of more infrastructural facilities (developments of approach routes within the village area).

The next chapter describes all possible impacts on the Environment due to this project along with its mitigation measure to overcome these impacts.

CHAPTER 4

IMPACT ASSESSMENT REPORT ALONG WITH PROPOSED MITIGATION MEASURES

1. Land Environment

Anticipated Impact

Movement of vehicles can create issues for agricultural land, human habitations, noise, and risk for public and cause traffic hazards. The impacts include damage to the riverbank due to access ramps to the riverbed, soil erosion because of extraction of sand, micro disturbance to groundwater, possible stimulation of the changed river course, and contamination of sand aquifer water due to ponding. There might be surface degradation due to the road network.

The quality of soil will not be affected due to transportation or any other activity of mining.

Mitigation measure

1. Mining depth should be restricted to 3 meters and distance from the bank should be ¼th or river width and should not be less than 7.5 meters as per “Sustainable Sand Mining Guidelines 2020” ■ Page 23, Point no 4.3 (m).
2. There will be a minimal number of access roads to riverbeds. Cutting of riverbanks will be avoided and ramp with smooth slope will be maintained. Access points to the riverbed will be decided based on the least steepness of the riverbank and the least human activity at that location.
3. No foreign material like polythene bags, jute bags, and useless articles should be allowed to remain/spill in the riverbed and catchment area, or no pits/pockets will be allowed to be filled with such material.
4. Mining at the concave side of the river channel should be avoided to prevent bank erosion. Similarly, a tortuous segment of a river is to be selected for mining in such a way as to ignore the natural eroding of banks.
5. Ensure that ponding is not created in the riverbed.
6. Transportation route should be such that it gives minimum

damage to the environment.

7. Green belt will be developed along the haul road and the bank of rivers of mine premises and near the sand mining site. While selecting the plant species, preference will be given for planting native species of the area.

2. Water environment

Anticipated Impact

The project activity will be carried out in the dry part of the riverbed. Care will be taken to ensure that neither of the project activities will affect the water environment or riverbank habitats. During the lean months, the proposed Sand Mining will not expose the base flow of the river and hence there will not be any inauspicious impact on surface hydrology and groundwater regime due to this project. Project activities will not have any adverse consequences on the physical components of the environment and therefore may not have any effect on the recharge of ground waters or affect the water quality. Monitoring of water quality will be checked yearly.

Mitigation measures

1. Mining is avoided during the monsoon season and at the time of floods. This will help in the replenishment of sand in the riverbed.
2. Mining below the subterranean water level will be avoided as a safeguard against environmental contamination and over-exploitation of resources.
3. River stream will not be transferred to create active channels.
4. Mining schedule is synchronized with the river flow direction and the gradient of the land.
5. Mining at the concave side of the river channel will be avoided to prevent bank erosion.
6. Tortuous segment of the river will be selected for mining in such a way as to avoid naturally eroding banks and to promote mining on naturally building meander components.
7. Mining depth shall be maintained as per the guidelines and

rules of the Sand Mining Policy dated 03/09/2019 and recommendations of Maharashtra State (⁸M.S.). State Ground Water Department for extraction of sand during the lease period.

8. Water Quality Monitoring for the ground waters, river water, and other surface waters shall be carried out seasonally to ensure that the water quality is not affected by the project activities.
9. Utmost care will be taken to minimize or control leaking vehicles to be used for sand transportation.
10. The washing of tractor trolleys in the river will not be done.
11. The contractor will follow all guidelines and rules for proper and scientific methods of mining during the period of extracting the sand.

3. Air Environment

Anticipated Impacts

Plying of tractor trolleys from the public road to river sand collection points needs access roads. The majority of such access roads are the already existing roads/tracks being used by pedestrians/cart owners. The movement of heavy vehicles sometimes causes problems for cattle, agricultural land, and human habitations due to dust, noise, and the movement of the public. These environmental problems are felt more as the area is rural in nature.

Air pollution is likely to be caused at various stages of Sand Mining operations such as excavation, loading & transportation of material. Most of the fugitive dust emissions will be generated from loading & transportation. This dust becomes airborne and spreads away to surrounding areas.

The impact on air is mainly localized in nature as the dust particles of 100 μ in size are not carried to farther distances beyond 100m and the effect is felt within the core zone of the project involving active Sand Mining operations.

⁸ Maharashtra State

Mitigation measures

1. Movement of the vehicles on the road will be increased; however, the unmetalled road in the mining area will be sprinkled with water at regular intervals.
2. In addition to preventing spillage from tractor trolleys, overloading shall be controlled to 1-brass/tractor trolley. The speed limit will be <20 km/hr.
3. Maintenance of the haul road will be done on a regular basis.
4. To avoid fugitive dust emissions at the time of excavation, a regular sprinkling of water will be done on regular basis.
5. Sand is transported to the sites by road through tractor trolleys. The sand-carrying vehicles shall be covered by tarpaulin sheets.
6. The Green belt development will be prepared along the haul roads, which will act as a pollution sink.
7. To minimize vehicular pollution from the sand transporting vehicles, the following conditions will be insisted upon to permit the vehicles of the transporters.
8. The vehicles should be Bharat-IV stage compliant and should have a Pollution Under Control (⁹PUC) Certificate issued by appropriate authorities.
9. Regular maintenance of transport vehicles and monitoring of vehicular emission levels at periodical intervals.

4. Noise Environment

Anticipated Impact

The noise environment in this project will be overdone by the equipment at the site and vehicular transportation. A slight increase in noise levels of <10dB(A) can be expected up to a distance of 100m.

Mitigation measures.

1. Minimum use of horns in the village area.
2. Timely maintenance of vehicles and their silencers to

⁹ Pollution Under Control

minimize vibration and sound.

3. Phasing out old and worn-out tractor trolleys.
4. Provision of green belts along the road networks.
5. Care will be taken to produce minimum sound during sand loading.
6. Backhoe loader excavator will be used
7. Earplugs may be provided to protect the labourers working at the site.

5. Socio-economic Environment

Anticipated Impacts and Evaluation

1. The project activities shall not have any adverse impacts on any of the common property resources of the village communities, as the Sand Mine lease area is not being used for any purpose by any section of the society in this region.
2. There is no Resettlement and Rehabilitation (¹⁰R&R) involvement in this project.
3. There is no land acquisition in this project.
4. A major portion of the houses in the study area is semi-pucca-type structures.
5. The water source to these areas is from the Grampanchayat /Nagar Parishad connection and private bore wells and wells.
6. People living around the project area need the project for the purpose of employment and economic benefits.
7. The awareness level regarding the proposed mining activity is very towering. The proposed mining activity is expected to provide stimulus to socio-economic activities in the region and thereby accelerate further development processes.

Social and Demographic Profile

The workers are from local villages. These people have been provided welfare benefits from the lessee like medical benefits,

¹⁰ Rehabilitation and Resettlement

insurance, fees for children's education, etc. They have some land and cattle for their daily earnings. Additional revenue earned from the Sand Mining work will improve their living standard. The group of quarries in and around will help to have infrastructure facilities like roads, schools, shops, etc. This will enhance their social life.

Occupational Health and Safety

This is a riverbed Sand Mine. So, the mining activities are comparatively smaller because the production is not on a high scale. Workers do not come across any extreme conditions like excessive heat, moisture, etc. Workers working around it may come across this dusty environment. But the impact on health will be within the limit.

Human Settlement

1. There are no houses in and around the lease area. Blasting is the only activity, which may affect the settlement, which is not done. The settlement is more than 1-km from the sand mine.
2. Appropriate precautions will be taken during mining. Transportation of finished products is through the villages. There will be an effect of traffic on the local people. However, the intensity of traffic is 70-80/day.

Health and Hygiene

In general, the health of villagers is moderately good. In the rainy season, the atmospheric condition is unhygienic due to a lack of proper drainage and sanitation in the village habitation. Villagers are working in agricultural fields and work as labourers.

Education

Most education of 70% young <20 years, is up to the 5th to 9th. Economic condition is in general moderate. So, after this project, the standard of education will increase.

Socio-Economic Benefits Arising Out of Mining

1. Generation of employment in rural areas.
2. Upgradation in the living standards of rural people.
3. Creating infrastructural facilities like roads, electricity, shops, schools, etc.
4. Upgrading literacy in the area by exploiting natural minerals so the generation of revenue.

5. Helping to sustain construction activity.
6. Improving the greenery of the area, which is otherwise poor.

Liquid Effluent

Not applicable, because these activities do not generate effluent from operation or process.

Solid Waste

Not applicable, because small mines and impacts are negligible.

Project benefits due to the sand mining of Manjarath 3 are explained in the next Chapter.

CHAPTER 5

PROJECT BENEFITS

The proposed Sand Mining project of Manjarath village, Majalgaon Taluka, Beed District will lead to the following benefits:

1. Increase in the revenue of the district will ultimately increase the revenue of the village, which in return can be used to improve the infrastructure of the village.
2. Sand is available for building construction work and by systematic separation of sand, there is no possibility of a flood. Providing smooth movement of water of the river.
3. This project will contribute additional revenue to the state Exchequer in the form of revenue.
4. The project will conclude with employment opportunities for unskilled/skilled local people.
5. Standard of living of employed people will increase.

CHAPTER 6

SITE-SPECIFIC ENFORCEMENT & MONITORING PLAN

Sand Ghat Site specific enforcement & monitoring plan

(as per guidelines stipulated in the Enforcement and Monitoring Guidelines for sand mining issued by MoEFCC in January 2020.)

District administration shall deliver information on its website about the Sand Mines in the district for public information. The objective is to extend all information into the public domain so that the citizens are aware of the mining activities. People can also report to the district administration any deviation observed. Suitable feedback and its composition shall also be made operational.

Details shall include, but not be limited to, lease area, geo-coordinates of lease area and mineable area, transport routes, permitted capacity, regulatory conditions for operation including mining, environmental and social commitments, etc.

An Independent Committee of experts constituted by the Distance Learning Task Force (¹¹DLTF) will assess the environmental or ecological damage caused due to illegal mining and recommend recovery of environmental compensation from the concerned miners.

The recommendation may also include action under the provision of the Environment (Protection) Act 1986 u/s.15 read with s.19.

¹¹ Distance Learning Task Force

CHAPTER 7

SECURITY FEATURES

Security features are included in the Transport Permission/Permits (TP)

It will be ensured that the following security features are included in the Transport Permission/Permits (¹²TP) so that duplicate/fraudulent/forged TPs for transport, not accounted for in the IT-based system, is not possible:

1. Printed on Indian Bank Association (¹³IBA) Approved letterhead with account details
2. Magnetic Ink Character Recognition Code (¹⁴MICR) paper
3. Unique Barcode
4. Unique Quick Response Code (¹⁵QR)
5. Fugitive Ink Background
6. Invisible Ink Mark
7. Void Pantograph Watermark
8. Global Positioning System (¹⁶GPS) based vehicle tracking system
9. Closed-Circuit Television (¹⁷CCTV) Camera

¹² Transport Permission

¹³ Indian Bank Association

¹⁴ Magnetic Ink Character Recognition Code

¹⁵ Quick Response Code

¹⁶ Global Positioning System

¹⁷ Closed Circuit Television

CHAPTER 8

REPLENISHMENT

Replenishment study is the most important part of Sand Mining as it is the only basis to carry out sand mining. Without a Replenishment Study, we cannot understand the amount of deposition of sand. Following points to be followed for the replenishment study.

1. Area of deposition and erosion will be calculated for each cross-section after giving due regard to the stability & safety of active channel banks & other features of importance.
2. Differential Global Positioning System (¹⁸DGPS) and other survey tools will be used to define the topography, contours, and offsets of the lease area.
3. Contour & elevation benchmarks will provide baseline data for assessing pre- and post-study period scenario.
4. Physical benchmarks will be fixed at appropriate intervals (preferably 1 in 30m) & Reduced levels (¹⁹RL) shall be validated from a nearby standard RL.
5. These RL will be engraved on a steel plate (Bench Plate) & will be fixed & placed at locations that are free from any damages & are available in the pre-and post-study period.
6. Bench plates will be available for use during the mining period as a reference for all mining activity.
7. Baseline data on elevation status for a grid of 10m x 10m is preferred to have accuracy in the assessment.
8. It is expected that two consecutive cross-sections in longitudinal and lateral directions will not be more than a 10m distance apart.
9. Changes observed in the elevation in pre and post-scenario at each node, will be depicted in graphical forms with an appropriate scale to estimate the area of deposition & erosion.

¹⁸ Differential global positioning system

¹⁹ Reduced levels

10. Elevation level will be in reference to the nearest bench plates established for the purpose.
11. The levels (MSL & RL) of the corner point of each grid will be identifiable and safety barriers (non-Mining) demarcated as restricted in consensus with the Mineral Concession Rules of the respective State, and the provision mentioned in this Sustainable Sand Mining Management Guidelines.
12. A clear identification will be highlighted between grids under the mineable and grids under the non-mineable area.
13. These baseline data (pre and post) be subjected to stimulation with the help of data mine software to derive the replenishment area and corresponding volume and estimated weight.
14. The database will be structured in a tabulated form clearly depicting the nomenclature of the section lines, latitude and longitude of the starting point, chainage, and respective levels of all the points taken on that section line.
15. Net area shall be derived after summation of an area of deposition minus the area of erosion for each cross-section.
16. Volume will be estimated by multiplying the distance between two cross-sections with the average of the net area of these two consecutive cross-sections.
17. One sample per 900m² (30m x 30m) will be the preferred sample density for the assessment of bulk density for the estimation of deposition rate.
18. Care will be taken that the sample for assessment of Bulk Density is taken from the deposition zone & not from erosion.

Methodology for Sand Mining:

The following methodology should be followed for the Replenishment study.

1. The Demarcation and benchmark of the Sand Ghat are done at 10m x 10m intervals.
2. The use of the Auger Driller is to find out the depth of sand in each grid.
3. Auger Driller has created the holes in sand ghat by 10mx10m grid pattern.
4. Measured the depth of holes by using a measuring tape.

5. After taking all the readings average depth of sand is calculated.
6. The average depth of Manjarath 3 at Godavari is measured.

Replenishment study of sand in the proposed ghat along with details of the methodology, technology used to identify the existing reserve & replenishment of the same

Dandy Bolton Equation

For runoff less than 2 inches

$$S = 1280 \times (Q) \times 0.46 \times (1.46 - 0.26 \log(A)) \times F$$

For runoff more than 2 inches

$$S = 1958 \times (Q) \times (e^{-0.055 \times Q}) \times (1.43 - 0.26 \log(A))$$

Where,

S = sediment yield of stream (t/yr/km²),

Q = average annual runoff (m³),

A = net drainage area in sq.mile.

CHAPTER 9

PROPOSED PLANTATION PLAN

The Project Proponent must take care of the plantation around the site. This will not only enhance the beautification of the area but also there will be the reduction of pollution, not some extent.

Details of the plantation and Tree species recommended for the plantation are shown below.

Table 9. 1 Details of green belt

Location of greenbelt	Both sides of the approach road, On the riverbanks of both sides of the sand spot & nearby open areas. Haul Road outside the riverbed
No. of plants to be planted	2000 per Hectare
Spacing of plants	2m grid interval
Species selected	Native species

Table 9. 2 Trees species for plantation

Botanical Name	Local Name	Importance
Azadirachta Indica	Neem	Neem oil & neem products
Tectona Grandis	Teek	Antibacterial, Antifungal, Antiulcer
Ficus religiosaa	Peepal	Medicinal use, Fruits & figs
Bambusa vulgaris	Bamboo	Anthelmintic Anti-inflammatory, Astringent Properties
Madhuca longifolia	Mahua	Acts as a Stimulant & cough relief,

CHAPTER 10

ENVIRONMENTAL MANAGEMENT PLAN

A total capital cost of Rs.5.97 Lakhs has been kept in the project cost towards the environmental protection, control, mitigation measures, and implementation of the Environmental Management Plan (EMP). This cost is borne by the bidder/leaseholder. The budgetary cost estimate for the EMP is given in Table.

Table 10. 1 Budgetary cost of EMP

Sr	Impact Source	Impact	Control Measure	Cost (Rs.)
1	Transport Road	On Air Quality	Compaction, gradation, and drainage on both sides.	90000
		On Land, the Stability of the Road and degradation of road	Proper maintenance	40000
			Regular water spraying	43000
			The air quality will be monitored at the impacted village. (For One Day Monitoring)	5000
			Health Check-up of Employees	5000
2	Truck/ Tractor Movement	Air Quality	Sand-carrying trucks will be effectively covered by tarpaulin to avoid the escape of fines to the atmosphere. (2 Tarpaulin)	25000
			Regular monitoring of the exhaust fumes	5000

Sr	Impact Source	Impact	Control Measure	Cost (Rs.)
			Barriers & Traffic Management Expenses. (Excluding Manpower Salary which is included in labour costs)	10000
3	Ramp and Sand Reach	Mining Operation	Regular ramp Inspection and Ramp maintenance. (Excluding Manpower Salary which is included in labour costs)	50000
			Provision of dust masks	10000
4	Bank Management	Bank Erosion/Flood Plain management	The green belt along the bank (For Green Belt Development)	230000
			Plantation of wide leaf tall trees on banks and grass along a slanting portion of the bank	
5	Transportation on Village Roads	Dust Control	The green belt along village Rd (For Green Belt Development)	
6	Final Mine Closure Plan implementation	Replenishment of Sand	Gabions/ boulders will be arranged as per guidelines	15000
7	Mobile toilet, sewage handling & treatment		Mobile toilet, sewage handling & treatment	100000
8	CCTV Monitoring			100000
Total				728000

Budget For Corporate Environment Responsibility (²⁰CER)

About 2% fund of the project cost is allocated for Corporate Environment Responsibility (CER) activities as presented in below Table

Table 10.2 Budget for CER

Sr.	Description	Cost (Rs)
1.	Village Schools (separate toilet for girls and boys)	25000
2.	Solar panels over Gram Panchayat buildings	25000
3.	Solar panels over Public Health Centers	20000
	Total	70000

²⁰ Corporate Environment Responsibility

CHAPTER 11

SUMMARY AND CONCLUSION

The Roles and Responsibilities of the Environmental coordinator, the Operation Manager, and the senior personnel contractor are essential in EMP.

The environmental status of the project site and study area of 10km radius is delineated with respect to air, noise, water, land, biological and socio-economic environment the different project activities in the construction and operation phases are identified.

To identify the impacts, the interaction between the project activities and different components of the environment is classified phase-wise. A summary of the recognized impacts is given in the following paragraphs.

- During the operational phase, the transportation of sand could cause a temporary disturbance to the local environment which will be prevented with the proposed mitigation measures.
- Proposed project will not have any major significant negative impacts. The minor impacts arising during Excavation and Transportation phases can be mitigated with the help of the proposed Environmental Management Plan.
- In general, sand excavation from Manjarath 3 sand spot will be useful to the developmental work in the district and generate employment opportunities.

From this project, it is concluded that the district revenue will increase in return minimum of 2% of funds are utilized for the development of the village. The project will also grab employment which will improve the standard of life of villagers.

*** END ***

Environmental Management Plan

As per Rules 23 & 26 of MMME (D & R) RULE 2013 & Section 15 of MMDR Act 1957, MoEFCC Notification 2006, S.O. 141(E) dated 15. 01. 2016; MoEFCC, Sustainable Sand Mining Management Guidelines 2016, Guidelines for Mining Policy 2020)

for

ENVIRONMENTAL CLEARANCE

of

SAND MINING (MINOR MINERAL)

for

Patharwala Khu- A Riverbed Sand Mine / Sand Ghat
Khasra No. GSDA approved 1, 2, 3, 4, 60
Area (2.40ha)

Village Patharwala Khu, Tehsil Gevrai, District Beed

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ABBREVIATION

Short Form	Long Form
EMP	Environmental Management Plan
MoEFCC	Ministry of Environment Forest and Climate Change
DSR	District-level Survey Report
EC	Environmental Coordinator
OM	Operations Manager
GSDA	Groundwater Surveys & Development Agency
MPCB	Maharashtra Pollution Control Board
MSL	Mean Sea Level
MS	Maharashtra State
PUC	Pollution Under Control
R&R	Rehabilitation and Resettlement
DLTF	Distance Learning Task Force
TP	Transport Permission/Permits
IBA	Indian Bank Association
MICR	Magnetic Ink Character Recognition Code
QR	Quick Response Code
GPS	Global Positioning System

CCTV	Closed-Circuit Television
DGPS	Differential Global Positioning System
RL	Reduced Levels
CER	Corporate Environment Responsibility

CHAPTER 1

INTRODUCTION

The Environmental Management Plan (¹EMP) plays a vital connection uniting forecast impacts and mitigation measures during implementation and operational activities. EMP stipulates the mitigation, monitoring and conventional measures to be taken during project implementation and operation. EMP is to escape or mitigate adverse environmental impacts, and to implement these measures.

This Environmental Management Plan (EMP) has been prepared as part of the Scoping Report which will be compiled in terms of the Environmental Assessment for the sand mining activities.

Considering the Ministry of Environment and Forest Climate Change (²MoEFCC) Notification 2006 and Sustainable Sand Mining Management Guidelines 2016, the Govt. of Maharashtra had mapped out the Minor Mineral Extraction Rules 2013. These rules are to extract all minor minerals in a scientific way so that there is no unfavourable impact on Environment and Climate. To extract every minor mineral from any land (either Government or Private) there is provision for a Mining Plan. These plans need to be approved by a competent authority. For long-term leased minor minerals (5-10 years period) and sand excavation from the riverbed, Senior Deputy Director of Directorate of Geology and Mining is the competent authority. These plans are for short term temporary permits which are valid for one year.

According to Enforcement & Monitoring Guidelines for Sand Mining 2020, Sustainable Sand Mining Management Guidelines 2016, Standard Environment conditions for sand mining and sustainable mining practices, District level Survey Report (³DSR) should be prepared and are suitable for mining and area prohibited for mining must be recognized.

¹ Environmental Management Plan

² Ministry of Environment Forest and Climate Change

³ District Survey Report

Objectives of EMP

- To provide overall conservation of the environment.
- To minimize waste generation and pollution.
- To regulate the precise use of natural resources and water.
- To provide Safety, Welfare, and Good health for the workforce and populace.
- To regulate the effective operation of all control measures.
- To ensure alertness against probable disasters and accidents.
- To monitor cumulative and long-term impacts.
- To regulate the effective operation of all control measures.

Roles and Responsibilities concerning the implementation of the EMP

The roles and responsibilities of all parties involved in successfully managing the environment are mentioned below.

Environmental Coordinator

The Environmental Coordinator will inspect operational areas on a quarterly basis and at the onset of mining any new island, to ensure that all specifications are met. The duties of the environmental coordinator will be the following.

- Guide the operations team in respect of the implementation of the environmental specifications.
- Lead the visits to ensure all work is aligned with the EMP.
- The environmental coordinator must examine the site during the three-monthly visits. All rehabilitation results will be Comprised in the quarterly report.
- Examination of the rehabilitation area and giving guidance regarding rehabilitation measures if any.

The Operations Manager

The responsibilities of the Operations Manager (4OM) or his nominated authority are as follows.

1. Familiarize themselves with the requirements of the EMP.
2. Monitor employees' and contractor's compliance with the environmental specifications; and enforce adherence.

⁴ Operations Manager

3. Communicate all environment-related incidents with the Environmental Coordinator and distribute them internally to avoid repetition.
4. Maintain a record of activities relevant to Environmental Management.
5. The Operations Manager shall be responsible for monitoring and the enforcement of the Environmental Management specifications on a day-to-day basis. Any violation of the environmental specifications shall be recorded, and the agreed disciplinary measures are taken.

Senior personnel and contractors

The roles of the senior personnel/contractors are as follows:

- Familiarize themselves with the requirements of the EMP.
- Comply with the environmental management specifications.
- Ensure that all team members are familiar with the environmental management specifications.

Details of the project

The Patharwala Khu sand ghat area has been selected in perspective of its subsisting demand for building-grade sand for the area in and around Gevrai Taluka. The District Mining Officer Beed has put forward the proposal for Environmental Clearance for mining. The ghat has a production of 4240 brass sand within an area of 2.40ha. The proposed proposal follows an organized mining process for Environmental Clearance.

Further Chapter informs about the in-depth details of the Sand Ghat, its geographical structure, and a Google map of the ghat with its approach road for contractors and workers to reach to sand ghat from the village.

CHAPTER 2

DETAILS OF THE PROJECT

Patharwala Khu village is located in Gevrai Taluka of Beed district, Maharashtra. Beed is well connected with all nearby cities. The National highway NH-52, it traverses through the states of Punjab, Haryana, Rajasthan, Madhya Pradesh and Maharashtra in India. NH-52 is the National Highway passing through the district, covering a total distance of 73.60km. Gevrai has situated about 31.3km by road from Beed. The district has road links to adjoining districts Ahmednagar District to the west, Jalna District to the North, Latur District to the East, Osmanabad District to the South, Parbhani District to the East The district is well connected by roads.

Patharwala Khu village is 51.41km away from Collector Office headquarters Beed. The Geographical area of the Beed is around 10693km². The nearest Railway station to Patharwala Khu village is Sarwari Railway station. The nearest Airport to Beed District is Aurangabad Airport, Aurangabad Airport is 104km away from beed.

Honourable Collector Beed intends to auction Sand Ghats and appointed District Mining Officer as Project Proponent. A total of 38 sand ghats are identified by Tahsildar Majalgaon, Parli Ve, Gevrai, Beed along with District Mining Officer, Beed. The 38 sand ghats were jointly surveyed by Taluka level technical committee headed by respective tahsildar with Dy. Engineer Irrigation Department, Junior Geologist Directorate of Geology and Mining Govt. of Maharashtra, Junior Geologist, Groundwater Surveys & Development Agency (⁵GSDA). DMO Beed and a representative of the Maharashtra Pollution Control Board (⁶MPCB), as per the procedure defined in Sand Auction Rules 2019 dated 3/09/2019 formed a Taluka-level technical committee, which explored the sand ghats for an available quantity of sand for scooping. Revenue of Rs.25 Crore is expected from the auction of these sand ghats. Patharwala Khu Sand Ghat proposed over river Godavari in Gevrai

⁵ Groundwater Surveys & Development Agency

⁶ Maharashtra Pollution Control Board

Taluka is proposed to cater to the infrastructural requirement of sand in the Tehsil of Beed and adjoining areas of other talukas.

Table 2. 1 Details of Patharwala Khu Sand ghat

Name of Village	Tahsil	River/ Nallah	Nearest survey No.	Area (ha)	Proposed Depth for excavation (m)	Quantity Permitted for mining of Sand in Brass	Method of Mining
Patharwala Khu.	Gevrai	Godavari	1, 2, 3, 4, 60	2.40	0.50	4240	Open-cast manual mining

Table 2. 2 Salient features of the project

Particulars	Details															
Location	Village- Patharwala Khu, Taluka- Gevrai, District-Beed, Maharashtra.															
Latitude and Longitude	<table border="1"> <thead> <tr> <th>Boundary points of Patharwala Khu sand spot</th> <th>Latitude</th> <th>Longitude</th> </tr> </thead> <tbody> <tr> <td>BP1</td> <td>19°24'12.07"N</td> <td>75°31'8.01"E</td> </tr> <tr> <td>BP2</td> <td>19°24'13.18"N</td> <td>75°31'8.63"E</td> </tr> <tr> <td>BP3</td> <td>19°24'3.33"N</td> <td>75°31'26.44"E</td> </tr> <tr> <td>BP4</td> <td>19°24'2.26"N</td> <td>75°31'25.71"E</td> </tr> </tbody> </table>	Boundary points of Patharwala Khu sand spot	Latitude	Longitude	BP1	19°24'12.07"N	75°31'8.01"E	BP2	19°24'13.18"N	75°31'8.63"E	BP3	19°24'3.33"N	75°31'26.44"E	BP4	19°24'2.26"N	75°31'25.71"E
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BP3	19°24'3.33"N	75°31'26.44"E														
BP4	19°24'2.26"N	75°31'25.71"E														
Sand spot area (In ha)	2.40ha															
Proposed production capacity (in Brass)	4240															
Infrastructure Requirement (As per Govt Resolution 3rd January 2018)	<ol style="list-style-type: none"> 1. Room / Hut for Official records 2. Electricity / Battery for Running CCTV 24x7 daily. 3. One Computer / Android-based Mobile for the online generation of Invoice numbers. 															

Particulars	Details
Distance of project site from nearest rail or road bridge over the concerned River, Nallah, etc.	Godavari River Bridge-5.76km
Distance from infrastructural facilities Railway line National Highway State Highway Major District Road Any Other Road Electric transmission line pole or tower Canal or check dam or reservoirs or lake or ponds In-take for drinking water pump house Intake for Irrigation canal pumps	Sarwari railway station-58.96km NH52-20.13km MSH44-13.48km 2.53km 1km
Areas already subjected to pollution or environmental damage. (those where existing legal environmental standards are exceeded)	None
Areas susceptible to natural hazards which could cause the project to Present environmental problems (earthquakes, subsidence, landslides, erosion, flooding, or extreme or adverse climatic conditions)	No. Sand Ghat is at safe distances from natural hazards like earthquake prone area, subsidence, landslide, erosion, flooding prone area and extreme or adverse climatic conditions

Particulars	Details
Whether the proposal involves approval or clearance under the following Regulations or Acts, namely: - (a) The Forest (Conservation) Act, 1980. (b) The Wildlife (Protection) Act, 1972. (c) The Coastal Regulation Zone Notification, 2011. If yes, details of the same and their status are to be given.	None
Forest land involved (hectares)	None

The below figure shows the google image of Patharwala Khu sand ghat.



Fig 2.1-Google image of Patharwala Khu sand ghat

Approach road along with google location is as shown below.

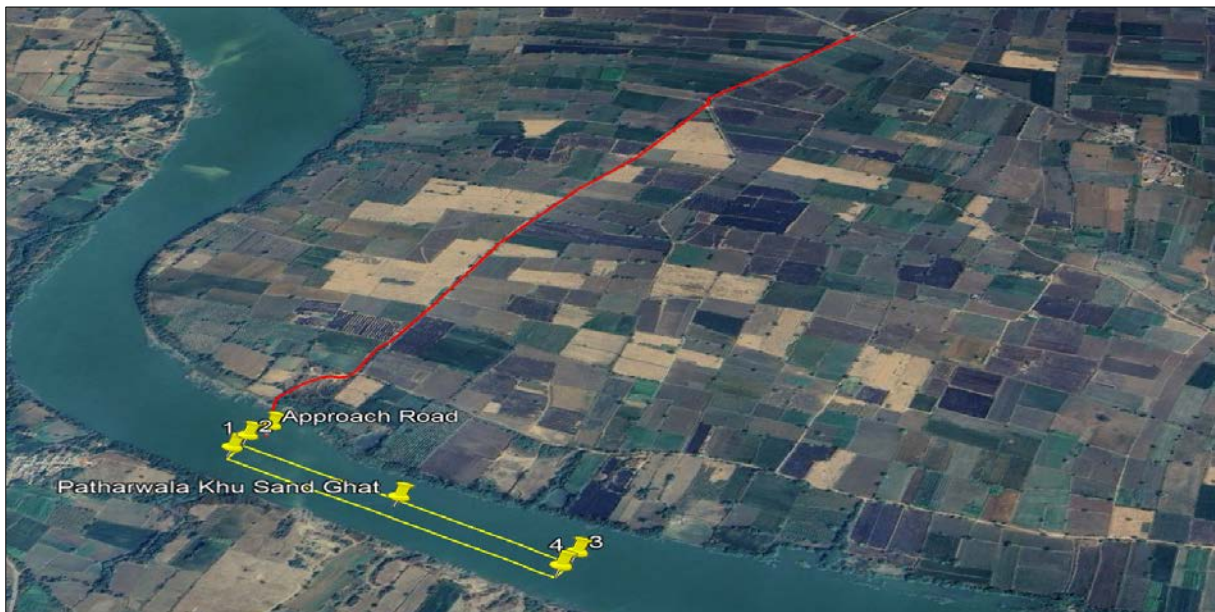


Fig 2.2-Approach Road for sand ghat

Next chapter 3 is Baseline Environmental Status in which the entire Topography, Climate, Soil Environment, Land use, water Environment, Hydrology, Biological environment, and Socio-economic Environment are briefly explained for the Beed district.

CHAPTER 3

BASELINE ENVIRONMENT STATUS

Topography

The Sand Ghat area as per the survey is the riverbed of the Godavari River of the Beed district. The maximum elevation is 454m MSL, average elevation is 446m MSL, & minimum elevation is 436m (⁷MSL) Mean Sea Level. The slope of the Sand Ghat area towards the Northwest to Southeast side. The flow of Godavari River is from Southeast direction.

Presently, there is neither any infrastructure within the riverbed nor are proposed.

Hydrology

There will be no change in the Water Table during the mining operation, as the depth of mining shall be restricted to 0.50m water level, which is less likely to affect the surface level or Groundwater Table. There is no proposal of any stream modification/diversion due to this mining activity hence there will be not any impact on the flow of water.

Soil Environment

The riverbed consists of sand /gravel. There is no topsoil. The depth of mining shall be restricted to 0.50m. There is no crucial impact on the soil forecasted due to mining activities.

Land Use Land Cover

Land use shows that agriculture land use is predominant. The proposed site is 2.40ha having adjoined Khasara No 1, 2, 3, 4, 60. The land doesn't cover any human habitation, forest, etc. Any change in the scope of the approved Mining Plan will lead to riverbank erosion/cutting and thereby river channel shifting, degradation of land, causing loss of properties and degradation of the surrounding landscape.

⁷ Mean sea level

Water Environment

While transporting sand there may be fugitive dust. There will be water requirement for spraying for dust suppression purposes. This water will be supplied from the borewell from nearby villages through tankers as well as from surface water sources. The water source may vary from village to village.

Climate

During summer May is the hottest month of the year in this area. The temperature rises to 42°C in the month of May. The average rainfall in this region is 600-700mm About 50% of rainfall precipitates between June to September. December is the coldest month with temperature falling down to 18°C. Overall the proposed site area has sub-tropical conditions.

Biological Environment

Flora

The agricultural area is seen near the Sand Ghat. Few trees and thorny bushes are seen on the banks of the river.

Fauna

As there is no forest cover, no endangered species of wildlife are seen in this area.

Socio-Economic Environment

This project may create constructive impacts of the sand mining that are stated below:

1. The mining operations will provide direct & indirect employment to village people.
2. The villages and their inhabitants & domestic animals will not be disturbed due to mining, as the quarry is far from their settlements.
3. Local workforce will be given first preference for employment.
4. Mining activities will benefit the local people due to the provision of more infrastructural facilities (developments of approach routes within the village area).

The next chapter describes all possible impacts on the Environment due to this project along with its mitigation measure to overcome these impacts.

CHAPTER 4

IMPACT ASSESSMENT REPORT ALONG WITH PROPOSED MITIGATION MEASURES

1. Land Environment

Anticipated Impact

Movement of vehicles can create issues for agricultural land, human habitations, noise, and risk for public and cause traffic hazards. The impacts include damage to the riverbank due to access ramps to the riverbed, soil erosion because of extraction of sand, micro disturbance to groundwater, possible stimulation of the changed river course, and contamination of sand aquifer water due to ponding. There might be surface degradation due to the road network.

The quality of soil will not be affected due to transportation or any other activity of mining.

Mitigation measure

1. Mining depth should be restricted to 3 meters and distance from the bank should be $\frac{1}{4}$ th or river width and should not be less than 7.5 meters as per “Sustainable Sand Mining Guidelines 2020” Page 23, Point no 4.3 (m).
2. There will be a minimal number of access roads to riverbeds. Cutting of riverbanks will be avoided and ramp with smooth slope will be maintained. Access points to the riverbed will be decided based on the least steepness of the riverbank and the least human activity at that location.
3. No foreign material like polythene bags, jute bags, and useless articles should be allowed to remain/spill in the riverbed and catchment area, or no pits/pockets will be allowed to be filled with such material.
4. Mining at the concave side of the river channel should be avoided to prevent bank erosion. Similarly, a tortuous segment of a river is to be selected for mining in such a way as to ignore the natural eroding of banks.
5. Ensure that ponding is not created in the riverbed.
6. Transportation route should be such that it gives minimum

damage to the environment.

7. Green belt will be developed along the haul road and the bank of rivers of mine premises and near the sand mining site. While selecting the plant species, preference will be given for planting native species of the area.

2. Water environment

Anticipated Impact

The project activity will be carried out in the dry part of the riverbed. Care will be taken to ensure that neither of the project activities will affect the water environment or riverbank habitats. During the lean months, the proposed Sand Mining will not expose the base flow of the river and hence there will not be any inauspicious impact on surface hydrology and groundwater regime due to this project. Project activities will not have any adverse consequences on the physical components of the environment and therefore may not have any effect on the recharge of ground waters or affect the water quality. Monitoring of water quality will be checked yearly.

Mitigation measures

1. Mining is avoided during the monsoon season and at the time of floods. This will help in the replenishment of sand in the riverbed.
2. Mining below the subterranean water level will be avoided as a safeguard against environmental contamination and over-exploitation of resources.
3. River stream will not be transferred to create active channels.
4. Mining schedule is synchronized with the river flow direction and the gradient of the land.
5. Mining at the concave side of the river channel will be avoided to prevent bank erosion.
6. Tortuous segment of the river will be selected for mining in such a way as to avoid naturally eroding banks and to promote mining on naturally building meander components.
7. Mining depth shall be maintained as per the guidelines and

rules of the Sand Mining Policy dated 03/09/2019 and recommendations of Maharashtra State (⁸M.S.). State Ground Water Department for extraction of sand during the lease period.

8. Water Quality Monitoring for the ground waters, river water, and other surface waters shall be carried out seasonally to ensure that the water quality is not affected by the project activities.
9. Utmost care will be taken to minimize or control leaking vehicles to be used for sand transportation.
10. The washing of tractor trolleys in the river will not be done.
11. The contractor will follow all guidelines and rules for proper and scientific methods of mining during the period of extracting the sand.

3. Air Environment

Anticipated Impacts

Plying of tractor trolleys from the public road to river sand collection points needs access roads. The majority of such access roads are the already existing roads/tracks being used by pedestrians/cart owners. The movement of heavy vehicles sometimes causes problems for cattle, agricultural land, and human habitations due to dust, noise, and the movement of the public. These environmental problems are felt more as the area is rural in nature.

Air pollution is likely to be caused at various stages of Sand Mining operations such as excavation, loading & transportation of material. Most of the fugitive dust emissions will be generated from loading & transportation. This dust becomes airborne and spreads away to surrounding areas.

The impact on air is mainly localized in nature as the dust particles of 100 μ in size are not carried to farther distances beyond 100m and the effect is felt within the core zone of the project involving active Sand Mining operations.

⁸ Maharashtra State

Mitigation measures

1. Movement of the vehicles on the road will be increased; however, the unmetalled road in the mining area will be sprinkled with water at regular intervals.
2. In addition to preventing spillage from tractor trolleys, overloading shall be controlled to 1-brass/tractor trolley. The speed limit will be <20 km/hr.
3. Maintenance of the haul road will be done on a regular basis.
4. To avoid fugitive dust emissions at the time of excavation, a regular sprinkling of water will be done on regular basis.
5. Sand is transported to the sites by road through tractor trolleys. The sand-carrying vehicles shall be covered by tarpaulin sheets.
6. The Green belt development will be prepared along the haul roads, which will act as a pollution sink.
7. To minimize vehicular pollution from the sand transporting vehicles, the following conditions will be insisted upon to permit the vehicles of the transporters.
8. The vehicles should be Bharat-IV stage compliant and should have a Pollution Under Control (⁹PUC) Certificate issued by appropriate authorities.
9. Regular maintenance of transport vehicles and monitoring of vehicular emission levels at periodical intervals.

4. Noise Environment

Anticipated Impact

The noise environment in this project will be overdone by the equipment at the site and vehicular transportation. A slight increase in noise levels of <10dB(A) can be expected up to a distance of 100m.

Mitigation measures.

1. Minimum use of horns in the village area.
2. Timely maintenance of vehicles and their silencers to

⁹ Pollution Under Control

minimize vibration and sound.

3. Phasing out old and worn-out tractor trolleys.
4. Provision of green belts along the road networks.
5. Care will be taken to produce minimum sound during sand loading.
6. Backhoe loader excavator will be used
7. Earplugs may be provided to protect the laborers working at the site.

5. Socio-economic Environment

Anticipated Impacts and Evaluation

1. The project activities shall not have any adverse impacts on any of the common property resources of the village communities, as the Sand Mine lease area is not being used for any purpose by any section of the society in this region.
2. There is no Resettlement and Rehabilitation (¹⁰R&R) involvement in this project.
3. There is no land acquisition in this project.
4. A major portion of the houses in the study area is semi-pucca-type structures.
5. The water source to these areas is from the Grampanchayat /Nagar Parishad connection and private bore wells and wells.
6. People living around the project area need the project for the purpose of employment and economic benefits.
7. The awareness level regarding the proposed mining activity is very towering. The proposed mining activity is expected to provide stimulus to socio-economic activities in the region and thereby accelerate further development processes.

Social and Demographic Profile

The workers are from local villages. These people have been provided welfare benefits from the lessee like medical benefits,

¹⁰ Rehabilitation and Resettlement

insurance, fees for children's education, etc. They have some land and cattle for their daily earnings. Additional revenue earned from the Sand Mining work will improve their living standard. The group of quarries in and around will help to have infrastructure facilities like roads, schools, shops, etc. This will enhance their social life.

Occupational Health and Safety

This is a riverbed Sand Mine. So, the mining activities are comparatively smaller because the production is not on a high scale. Workers do not come across any extreme conditions like excessive heat, moisture, etc. Workers working around it may come across this dusty environment. But the impact on health will be within the limit.

Human Settlement

1. There are no houses in and around the lease area. Blasting is the only activity, which may affect the settlement, which is not done. The settlement is more than 1-km from the sand mine.
2. Appropriate precautions will be taken during mining. Transportation of finished products is through the villages. There will be an effect of traffic on the local people. However, the intensity of traffic is 70-80/day.

Health and Hygiene

In general, the health of villagers is moderately good. In the rainy season, the atmospheric condition is unhygienic due to a lack of proper drainage and sanitation in the village habitation. Villagers are working in agricultural fields and work as labourers.

Education

Most education of 70% young <20 years, is up to the 5th to 9th. Economic condition is in general moderate. So, after this project, the standard of education will increase.

Socio-Economic Benefits Arising Out of Mining

1. Generation of employment in rural areas.
2. Upgradation in the living standards of rural people.
3. Creating infrastructural facilities like roads, electricity, shops, schools, etc.
4. Upgrading literacy in the area by exploiting natural minerals so the generation of revenue.

5. Helping to sustain construction activity.
6. Improving the greenery of the area, which is otherwise poor.

Liquid Effluent

Not applicable, because these activities do not generate effluent from operation or process.

Solid Waste

Not applicable, because small mines and impacts are negligible.

Project benefits due to the sand mining of Patharwala Khu are explained in the next Chapter.

CHAPTER 5

PROJECT BENEFITS

The proposed Sand Mining project of Patharwala Khu Village, Gevrai Tehsil, Beed District will lead to the following benefits:

1. Increase in the revenue of the district will ultimately increase the revenue of the village, which in return can be used to improve the infrastructure of the village.
2. Sand is available for building construction work and by systematic separation of sand, there is no possibility of a flood. Providing smooth movement of water of the river.
3. This project will contribute additional revenue to the state Exchequer in the form of revenue.
4. The project will conclude with employment opportunities for unskilled/skilled local people.
5. Standard of living of employed people will increase.

CHAPTER 6

SITE-SPECIFIC ENFORCEMENT & MONITORING PLAN

Sand Ghat Site specific enforcement & monitoring plan

(as per guidelines stipulated in the Enforcement and Monitoring Guidelines for sand mining issued by MoEFCC in January 2020.)

District administration shall deliver information on its website about the Sand Mines in the district for public information. The objective is to extend all information into the public domain so that the citizens are aware of the mining activities. People can also report to the district administration any deviation observed. Suitable feedback and its composition shall also be made operational.

Details shall include, but not be limited to, lease area, geo-coordinates of lease area and mineable area, transport routes, permitted capacity, regulatory conditions for operation including mining, environmental and social commitments, etc.

An Independent Committee of experts constituted by the Distance Learning Task Force (¹¹DLTF) will assess the environmental or ecological damage caused due to illegal mining and recommend recovery of environmental compensation from the concerned miners.

The recommendation may also include action under the provision of the Environment (Protection) Act 1986 u/s.15 read with s.19.

¹¹ Distance Learning Task Force

CHAPTER 7

SECURITY FEATURES

Security features are included in the Transport Permission/Permits (TP)

It will be ensured that the following security features are included in the Transport Permission/Permits (¹²TP) so that duplicate/fraudulent/forged TPs for transport, not accounted for in the IT-based system, is not possible:

1. Printed on Indian Bank Association (¹³IBA) Approved letterhead with account details
2. Magnetic Ink Character Recognition Code (¹⁴MICR) paper
3. Unique Barcode
4. Unique Quick Response Code (¹⁵QR)
5. Fugitive Ink Background
6. Invisible Ink Mark
7. Void Pantograph Watermark
8. Global Positioning System (¹⁶GPS) based vehicle tracking system
9. Closed-Circuit Television (¹⁷CCTV) Camera

¹² Transport Permission

¹³ Indian Bank Association

¹⁴ Magnetic Ink Character Recognition Code

¹⁵ Quick Response Code

¹⁶ Global Positioning System

¹⁷ Closed Circuit Television

CHAPTER 8

REPLENISHMENT

Replenishment study is the most important part of Sand Mining as it is the only basis to carry out sand mining. Without a Replenishment Study, we cannot understand the amount of deposition of sand. Following points to be followed for the replenishment study.

1. Area of deposition and erosion will be calculated for each cross-section after giving due regard to the stability & safety of active channel banks & other features of importance.
2. Differential Global Positioning System (¹⁸DGPS) and other survey tools will be used to define the topography, contours, and offsets of the lease area.
3. Contour & elevation benchmarks will provide baseline data for assessing pre- and post-study period scenario.
4. Physical benchmarks will be fixed at appropriate intervals (preferably 1 in 30m) & Reduced levels (¹⁹RL) shall be validated from a nearby standard RL.
5. These RL will be engraved on a steel plate (Bench Plate) & will be fixed & placed at locations that are free from any damages & are available in the pre-and post-study period.
6. Bench plates will be available for use during the mining period as a reference for all mining activity.
7. Baseline data on elevation status for a grid of 10m x 10m is preferred to have accuracy in the assessment.
8. It is expected that two consecutive cross-sections in longitudinal and lateral directions will not be more than a 10m distance apart.
9. Changes observed in the elevation in pre and post-scenario at each node, will be depicted in graphical forms with an appropriate scale to estimate the area of deposition & erosion.

¹⁸ Differential global positioning system

¹⁹ Reduced levels

10. Elevation level will be in reference to the nearest bench plates established for the purpose.
11. The levels (MSL & RL) of the corner point of each grid will be identifiable and safety barriers (non-Mining) demarcated as restricted in consensus with the Mineral Concession Rules of the respective State, and the provision mentioned in this Sustainable Sand Mining Management Guidelines.
12. A clear identification will be highlighted between grids under the mineable and grids under the non-mineable area.
13. These baseline data (pre and post) be subjected to stimulation with the help of data mine software to derive the replenishment area and corresponding volume and estimated weight.
14. The database will be structured in a tabulated form clearly depicting the nomenclature of the section lines, latitude and longitude of the starting point, chainage, and respective levels of all the points taken on that section line.
15. Net area shall be derived after summation of an area of deposition minus the area of erosion for each cross-section.
16. Volume will be estimated by multiplying the distance between two cross-sections with the average of the net area of these two consecutive cross-sections.
17. One sample per 900m² (30m x 30m) will be the preferred sample density for the assessment of bulk density for the estimation of deposition rate.
18. Care will be taken that the sample for assessment of Bulk Density is taken from the deposition zone & not from erosion.

Methodology for Sand Mining:

The following methodology should be followed for the Replenishment study.

1. The Demarcation and benchmark of the Sand Ghat are done at 10m x 10m intervals.
2. The use of the Auger Driller is to find out the depth of sand in each grid.
3. Auger Driller has created the holes in sand ghat by 10mx10m grid pattern.
4. Measured the depth of holes by using a measuring tape.

5. After taking all the readings average depth of sand is calculated.
6. The average depth of Patharwala Khu at Godavari is measured.

Replenishment study of sand in the proposed ghat along with details of the methodology, technology used to identify the existing reserve & replenishment of the same

Dandy Bolton Equation

For runoff less than 2 inches

$$S = 1280 \times (Q) \times 0.46 \times (1.46 - 0.26 \log(A)) \times F$$

For runoff more than 2 inches

$$S = 1958 \times (Q) \times (e^{-0.055 \times Q}) \times (1.43 - 0.26 \log(A))$$

Where,

S = sediment yield of stream (t/yr/km²),

Q = average annual runoff (m³),

A = net drainage area in sq.mile.

CHAPTER 9

PROPOSED PLANTATION PLAN

The Project Proponent must take care of the plantation around the site. This will not only enhance the beautification of the area but also there will be the reduction of pollution, not some extent.

Details of the plantation and Tree species recommended for the plantation are shown below.

Table 9. 1 Details of green belt

Location of greenbelt	Both sides of the approach road, On the riverbanks of both sides of the sand spot & nearby open areas. Haul Road outside the riverbed
No. of plants to be planted	2000 per Hectare
Spacing of plants	2m grid interval
Species selected	Native species

Table 9. 2 Trees species for plantation

Botanical Name	Local Name	Importance
Azadirachta Indica	Neem	Neem oil & neem products
Tectona Grandis	Teek	Antibacterial, Antifungal, Antiulcer
Ficus religiosaa	Peepal	Medicinal use, Fruits & figs
Bambusa vulgaris	Bamboo	Anthelmintic Anti-inflammatory, Astringent Properties
Madhuca longifolia	Mahua	Acts as a Stimulant & cough relief,

CHAPTER 10

ENVIRONMENTAL MANAGEMENT PLAN

A total capital cost of Rs.5.97 Lakhs has been kept in the project cost towards the environmental protection, control, mitigation measures, and implementation of the Environmental Management Plan (EMP). This cost is borne by the bidder/leaseholder. The budgetary cost estimate for the EMP is given in Table.

Table 10. 1 Budgetary cost of EMP

Sr	Impact Source	Impact	Control Measure	Cost (Rs.)
1	Transport Road	On Air Quality	Compaction, gradation, and drainage on both sides.	40000
		On Land, the Stability of the Road and degradation of road	Proper maintenance	30000
			Regular water spraying	30000
			The air quality will be monitored at the impacted village. (For One Day Monitoring)	5000
			Health Check-up of Employees	5000
2	Truck/ Tractor Movement	Air Quality	Sand-carrying trucks will be effectively covered by tarpaulin to avoid the escape of fines to the atmosphere. (2 Tarpaulin)	25000
			Regular monitoring of the exhaust fumes	5000

Sr	Impact Source	Impact	Control Measure	Cost (Rs.)
			Barriers & Traffic Management Expenses. (Excluding Manpower Salary which is included in labour costs)	10000
3	Ramp and Sand Reach	Mining Operation	Regular ramp Inspection and Ramp maintenance. (Excluding Manpower Salary which is included in labour costs)	50000
			Provision of dust masks	10000
4	Bank Management	Bank Erosion/Flood Plain management	The green belt along the bank (For Green Belt Development)	150000
			Plantation of wide leaf tall trees on banks and grass along a slanting portion of the bank	
5	Transportation on Village Roads	Dust Control	The green belt along village Rd (For Green Belt Development)	
6	Final Mine Closer Plan implementation	Replenishment of Sand	Gabions/ boulders will be arranged as per guidelines	15000
7	Mobile toilet, sewage handling & treatment		Mobile toilet, sewage handling & treatment	80000
8	CCTV Monitoring			80000
Total				535000

Budget For Corporate Environment Responsibility (²⁰CER)

About 2% fund of the project cost is allocated for Corporate Environment Responsibility (CER) activities as presented in below Table

Table 10.2 Budget for CER

Sr.	Description	Cost (Rs)
1.	Village Schools (separate toilet for girls and boys)	15000
2.	Solar panels over Gram Panchayat buildings	15000
3.	Solar panels over Public Health Centers	20000
	Total	50000

²⁰ Corporate Environment Responsibility

CHAPTER 11

SUMMARY AND CONCLUSION

The Roles and Responsibilities of the Environmental coordinator, the Operation Manager, and the senior personnel contractor are essential in EMP.

The environmental status of the project site and study area of 10km radius is delineated with respect to air, noise, water, land, biological and socio-economic environment the different project activities in the construction and operation phases are identified.

To identify the impacts, the interaction between the project activities and different components of the environment is classified phase-wise. A summary of the recognized impacts is given in the following paragraphs.

- During the operational phase, the transportation of sand could cause a temporary disturbance to the local environment which will be prevented with the proposed mitigation measures.
- Proposed project will not have any major significant negative impacts. The minor impacts arising during Excavation and Transportation phases can be mitigated with the help of the proposed Environmental Management Plan.
- In general, sand excavation from Patharwala Khu sand spot will be useful to the developmental work in the district and generate employment opportunities.

From this project, it is concluded that the district revenue will increase in return minimum of 2% of funds are utilized for the development of the village. The project will also grab employment which will improve the standard of life of villagers.

*** END ***

Environmental Management Plan

As per Rules 23 & 26 of MMME (D & R) RULE 2013 & Section 15 of MMDR Act 1957, MoEFCC Notification 2006, S.O. 141(E) dated 15. 01. 2016; MoEFCC, Sustainable Sand Mining Management Guidelines 2016, Guidelines for Mining Policy 2020)

For

ENVIRONMENTAL CLEARANCE

of

SAND MINING (MINOR MINERAL)

for

Purshottampuri- A Riverbed Sand Mine / Sand Ghat
Khasra No. GSDA approved 12 to 21, 24 to 26, 31, 32,36, 37
Area (3.75ha)

Village Purshottampuri, Taluka Majalgaon, District Beed

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ABBREVIATION

Short Form	Long Form
EMP	Environmental Management Plan
MoEFCC	Ministry of Environment Forest and Climate Change
DSR	District-level Survey Report
EC	Environmental Coordinator
OM	Operations Manager
GSDA	Groundwater Surveys & Development Agency
MPCB	Maharashtra Pollution Control Board
MSL	Mean Sea Level
MS	Maharashtra State
PUC	Pollution Under Control
R&R	Rehabilitation and Resettlement
DLTF	Distance Learning Task Force
TP	Transport Permission/Permits
IBA	Indian Bank Association
MICR	Magnetic Ink Character Recognition Code
QR	Quick Response Code
GPS	Global Positioning System

CCTV	Closed-Circuit Television
DGPS	Differential Global Positioning System
RL	Reduced Levels
CER	Corporate Environment Responsibility

CHAPTER 1

INTRODUCTION

The Environmental Management Plan (¹EMP) plays a vital connection uniting forecast impacts and mitigation measures during implementation and operational activities. EMP stipulates the mitigation, monitoring and conventional measures to be taken during project implementation and operation. EMP is to escape or mitigate adverse environmental impacts, and to implement these measures.

This Environmental Management Plan (EMP) has been prepared as part of the Scoping Report which will be compiled in terms of the Environmental Assessment for the sand mining activities.

Considering the Ministry of Environment and Forest Climate Change (²MoEFCC) Notification 2006 and Sustainable Sand Mining Management Guidelines 2016, the Govt. of Maharashtra had mapped out the Minor Mineral Extraction Rules 2013. These rules are to extract all minor minerals in a scientific way so that there is no unfavourable impact on Environment and Climate. To extract every minor mineral from any land (either Government or Private) there is provision for a Mining Plan. These plans need to be approved by a competent authority. For long-term leased minor minerals (5-10 years period) and sand excavation from the riverbed, Senior Deputy Director of Directorate of Geology and Mining is the competent authority. These plans are for short term temporary permits which are valid for one year.

According to Enforcement & Monitoring Guidelines for Sand Mining 2020, Sustainable Sand Mining Management Guidelines 2016, Standard Environment conditions for sand mining and sustainable mining practices, District level Survey Report (³DSR) should be prepared and are suitable for mining and area prohibited for mining must be recognized.

¹ Environmental Management Plan

² Ministry of Environment Forest and Climate Change

³ District Survey Report

Objectives of EMP

- To provide overall conservation of the environment.
- To minimize waste generation and pollution.
- To regulate the precise use of natural resources and water.
- To provide Safety, Welfare, and Good health for the workforce and populace.
- To regulate the effective operation of all control measures.
- To ensure alertness against probable disasters and accidents.
- To monitor cumulative and long-term impacts.
- To regulate the effective operation of all control measures.

Roles and Responsibilities concerning the implementation of the EMP

The roles and responsibilities of all parties involved in successfully managing the environment are mentioned below.

Environmental Coordinator

The Environmental Coordinator will inspect operational areas on a quarterly basis and at the onset of mining any new island, to ensure that all specifications are met. The duties of the environmental coordinator will be the following.

- Guide the operations team in respect of the implementation of the environmental specifications.
- Lead the visits to ensure all work is aligned with the EMP.
- The environmental coordinator must examine the site during the three-monthly visits. All rehabilitation results will be Comprised in the quarterly report.
- Examination of the rehabilitation area and giving guidance regarding rehabilitation measures if any.

The Operations Manager

The responsibilities of the Operations Manager (4OM) or his nominated authority are as follows.

1. Familiarize themselves with the requirements of the EMP.
2. Monitor employees' and contractor's compliance with the environmental specifications; and enforce adherence.

⁴ Operations Manager

3. Communicate all environment-related incidents with the Environmental Coordinator and distribute them internally to avoid repetition.
4. Maintain a record of activities relevant to Environmental Management.
5. The Operations Manager shall be responsible for monitoring and the enforcement of the Environmental Management specifications on a day-to-day basis. Any violation of the environmental specifications shall be recorded, and the agreed disciplinary measures are taken.

Senior personnel and contractors

The roles of the senior personnel/contractors are as follows:

- Familiarize themselves with the requirements of the EMP.
- Comply with the environmental management specifications.
- Ensure that all team members are familiar with the environmental management specifications.

Details of the project

The Purshottampuri sand ghat area has been selected in perspective of its subsisting demand for building-grade sand for the area in and around Majalgaon Taluka. The District Mining Officer Beed has put forward the proposal for Environmental Clearance for mining. The ghat has a production of 13251 brass sand within an area of 3.75ha. The proposed proposal follows an organized mining process for Environmental Clearance.

Further Chapter informs about the in-depth details of the Sand Ghat, its geographical structure, and a Google map of the ghat with its approach road for contractors and workers to reach to sand ghat from the village.

CHAPTER 2

DETAILS OF THE PROJECT

Purshottampuri village is located in Majalgaon Taluka of Beed district, Maharashtra. Majalgaon is well connected with all nearby cities. The National highway NH-52, it traverses through the states of Punjab, Haryana, Rajasthan, Madhya Pradesh, Maharashtra, Karnataka in India. NH-52 is the National Highway passing through the district, covering a total distance of 73.60km. Majalgaon has situated about 51.22km by road from Beed. The district has road links to adjoining districts Ahmednagar District to the west, Jalna District to the North, Latur District to the East, Osmanabad District to the South, Parbhani District to the East. The district is well connected by roads.

Purshottampuri village is 53.94km away from Collector office headquarters Beed. The Geographical area of the Beed is around 10693km². The nearest Railway station to Purshottampuri village is Usamanpur Railway station. The nearest Airport to Beed District is Aurangabad Airport, Aurangabad Airport is 104km from Beed city, 103.93km from Purshottampuri.

Honourable Collector Beed intends to auction Sand Ghats and appointed District Mining Officer as Project Proponent. A total of 38 sand ghats are identified by Tahsildar Majalgaon, Parli Ve., Gevrai, Beed along with District Mining Officer, Beed. The 38sand ghats were jointly surveyed by Taluka level technical committee headed by respective Tahsildar with Dy. Engineer Irrigation Department, Junior Geologist Directorate of Geology and Mining Govt. of Maharashtra, Junior Geologist, Groundwater Surveys & Development Agency (⁵GSDA). DMO Beed and a representative of the Maharashtra Pollution Control Board (⁶MPCB), as per the procedure defined in Sand Auction Rules 2019 dated 3/09/2019 formed a Taluka-level technical committee, which explored the sand ghats for an available quantity of sand for scooping. Revenue of Rs.25 Crore is expected from the auction of these sand ghats. Purshottampuri Sand Ghat proposed over river Godavari in Majalgaon Taluka is proposed to cater to the infrastructural

⁵ Groundwater Surveys & Development Agency

⁶ Maharashtra Pollution Control Board

requirement of sand in the Taluka of Beed and adjoining areas of other talukas.

Table 2. 1 Details of Purshottampuri Sand ghat

Name of Village	Taluka	River/ Nallah	Nearest survey No.	Area (ha)	Proposed Depth for excavation (m)	Quantity Permitted for mining of Sand in Brass	Method of Mining
Purshottampuri	Majalgaon	Godavari	12 to 21, 24 to 26, 31, 32, 36, 37	3.75	1.00	13251	Open-cast manual mining

Table 2. 2 Salient features of the project

Particulars	Details		
Location	Village-Purshottampuri, Taluka-Majalgaon, District-Beed, Maharashtra.		
Latitude and Longitude	Boundary points of Purshottampuri sand spot	Latitude	Longitude
	BP1	19°16'58.16" N	76°10'16.41" E
	BP2	19°16'59.73" N	76°10'15.81" E
	BP3	19°17'14.10" N	76°10'34.91" E
	BP4	19°17'12.95" N	76°10'36.12" E
Sand spot area (In ha)	3.75ha		
Proposed production capacity (in Brass)	13251		

Particulars	Details
Infrastructure Requirement (As per Govt Resolution 3rd January 2018)	<ol style="list-style-type: none">1. Room / Hut for Official records2. Electricity / Battery for Running CCTV 24x7 daily.3. One Computer / Android-based Mobile for the online generation of Invoice numbers.
Distance of project site from nearest rail or road bridge over the concerned River, Nallah, etc.	4.41km

Particulars	Details
Distance from infrastructural facilities	
Railway line	
National Highway	29km
State Highway	45.47km (NH-52)
Major District Road	37.05km (SH-144)
Any Other Road	45.47km
Electric transmission line pole or tower	1.75km
Canal or check dam or reservoirs or lake or ponds	
In-take for drinking water pump house	
Intake for Irrigation canal pumps	
Areas already subjected to pollution or environmental damage. (those where existing legal environmental standards are exceeded)	None

Particulars	Details
<p>Areas susceptible to natural hazards which could cause the project to Present environmental problems (earthquakes, subsidence, landslides, erosion, flooding, or extreme or adverse climatic conditions)</p>	<p>No. Sand Ghat is at safe distances from natural hazards like earthquake prone area, subsidence, landslide, erosion, flooding prone area and extreme or adverse climatic conditions</p>

Particulars	Details
<p>Whether the proposal involves approval or clearance under the following Regulations or Acts, namely: - (a) The Forest (Conservation) Act, 1980. (b) The Wildlife (Protection) Act, 1972. (c) The Coastal Regulation Zone Notification, 2011. If yes, details of the same and their status are to be given.</p>	<p>None</p>
<p>Forest land involved (hectares)</p>	<p>None</p>

The below figure shows the google image of Purshottampuri sand ghat.



Fig 2.1-Google image of Purshottampuri sand ghat

Approach road along with google location is as shown below.



Fig 2.2-Approach Road for sand ghat

Next chapter 3 is Baseline Environmental Status in which the entire Topography, Climate, Soil Environment, Land use, water Environment, Hydrology, Biological environment, and Socio-economic Environment are briefly explained for the Beed district.

CHAPTER 3

BASELINE ENVIRONMENT STATUS

Topography

The Sand Ghat area as per the survey is the riverbed of the Godavari River of the Beed district. The maximum elevation is 422m MSL, average elevation is 419m MSL, & minimum elevation is 416m (⁷MSL) Mean Sea Level. The slope of the Sand Ghat area towards the Southwest to Northeast side. The flow of Godavari River is from Southeast direction.

Presently, there is neither any infrastructure within the riverbed nor are proposed.

Hydrology

There will be no change in the Water Table during the mining operation, as the depth of mining shall be restricted to 1.0m water level, which is less likely to affect the surface level or Groundwater Table. There is no proposal of any stream modification/diversion due to this mining activity hence there will be not any impact on the flow of water.

Soil Environment

The riverbed consists of sand /gravel. There is no topsoil. The depth of mining shall be restricted to 1.0m. There is no crucial impact on the soil forecasted due to mining activities.

Land Use Land Cover

Land use shows that agriculture land use is predominant. The proposed site is 3.75ha having adjoined Khasara No 12 to 21, 24 to 26, 1,32, 36, 37. The land doesn't cover any human habitation, forest, etc. Any change in the scope of the approved Mining Plan will lead to riverbank erosion/cutting and thereby river channel shifting, degradation of land, causing loss of properties and degradation of the surrounding landscape.

⁷ Mean sea level

Water Environment

While transporting sand there may be fugitive dust. There will be water requirement for spraying for dust suppression purposes. This water will be supplied from the borewell from nearby villages through tankers as well as from surface water sources. The water source may vary from village to village.

Climate

During summer May is the hottest month of the year in this area. The temperature rises to 42°C in the month of May. The average rainfall in this region is 600mm to 700mm About 50% of rainfall precipitates between June to September. December is the coldest month with temperatures falling down to 18°C. Overall the proposed site area has sub-tropical conditions.

Biological Environment

Flora

The agricultural area is seen near the Sand Ghat. Few trees and thorny bushes are seen on the banks of the river.

Fauna

As there is no forest cover, no endangered species of wildlife are seen in this area.

Socio-Economic Environment

This project may create constructive impacts of the sand mining that are stated below:

1. The mining operations will provide direct & indirect employment to village people.
2. The villages and their inhabitants & domestic animals will not be disturbed due to mining, as the quarry is far from their settlements.
3. Local workforce will be given first preference for employment.
4. Mining activities will benefit the local people due to the provision of more infrastructural facilities (developments of approach routes within the village area).

The next chapter describes all possible impacts on the Environment due to this project along with its mitigation measure to overcome these impacts.

CHAPTER 4

IMPACT ASSESSMENT REPORT ALONG WITH PROPOSED MITIGATION MEASURES

1. Land Environment

Anticipated Impact

Movement of vehicles can create issues for agricultural land, human habitations, noise, and risk for public and cause traffic hazards. The impacts include damage to the riverbank due to access ramps to the riverbed, soil erosion because of extraction of sand, micro disturbance to groundwater, possible stimulation of the changed river course, and contamination of sand aquifer water due to ponding. There might be surface degradation due to the road network.

The quality of soil will not be affected due to transportation or any other activity of mining.

Mitigation measure

1. Mining depth should be restricted to 3 meters and distance from the bank should be $\frac{1}{4}$ th or river width and should not be less than 7.5 meters as per “Sustainable Sand Mining Guidelines 2020” ■ Page 23, Point no 4.3 (m).
2. There will be a minimal number of access roads to riverbeds. Cutting of riverbanks will be avoided and ramp with smooth slope will be maintained. Access points to the riverbed will be decided based on the least steepness of the riverbank and the least human activity at that location.
3. No foreign material like polythene bags, jute bags, and useless articles should be allowed to remain/spill in the riverbed and catchment area, or no pits/pockets will be allowed to be filled with such material.
4. Mining at the concave side of the river channel should be avoided to prevent bank erosion. Similarly, a tortuous segment of a river is to be selected for mining in such a way as to ignore the natural eroding of banks.
5. Ensure that ponding is not created in the riverbed.
6. Transportation route should be such that it gives minimum

damage to the environment.

7. Green belt will be developed along the haul road and the bank of rivers of mine premises and near the sand mining site. While selecting the plant species, preference will be given for planting native species of the area.

2. Water environment

Anticipated Impact

The project activity will be carried out in the dry part of the riverbed. Care will be taken to ensure that neither of the project activities will affect the water environment or riverbank habitats. During the lean months, the proposed Sand Mining will not expose the base flow of the river and hence there will not be any inauspicious impact on surface hydrology and groundwater regime due to this project. Project activities will not have any adverse consequences on the physical components of the environment and therefore may not have any effect on the recharge of ground waters or affect the water quality. Monitoring of water quality will be checked yearly.

Mitigation measures

1. Mining is avoided during the monsoon season and at the time of floods. This will help in the replenishment of sand in the riverbed.
2. Mining below the subterranean water level will be avoided as a safeguard against environmental contamination and over-exploitation of resources.
3. River stream will not be transferred to create active channels.
4. Mining schedule is synchronized with the river flow direction and the gradient of the land.
5. Mining at the concave side of the river channel will be avoided to prevent bank erosion.
6. Tortuous segment of the river will be selected for mining in such a way as to avoid naturally eroding banks and to promote mining on naturally building meander components.
7. Mining depth shall be maintained as per the guidelines and

rules of the Sand Mining Policy dated 03/09/2019 and recommendations of Maharashtra State (⁸M.S.). State Ground Water Department for extraction of sand during the lease period.

8. Water Quality Monitoring for the ground waters, river water, and other surface waters shall be carried out seasonally to ensure that the water quality is not affected by the project activities.
9. Utmost care will be taken to minimize or control leaking vehicles to be used for sand transportation.
10. The washing of tractor trolleys in the river will not be done.
11. The contractor will follow all guidelines and rules for proper and scientific methods of mining during the period of extracting the sand.

3. Air Environment

Anticipated Impacts

Plying of tractor trolleys from the public road to river sand collection points needs access roads. The majority of such access roads are the already existing roads/tracks being used by pedestrians/cart owners. The movement of heavy vehicles sometimes causes problems for cattle, agricultural land, and human habitations due to dust, noise, and the movement of the public. These environmental problems are felt more as the area is rural in nature.

Air pollution is likely to be caused at various stages of Sand Mining operations such as excavation, loading & transportation of material. Most of the fugitive dust emissions will be generated from loading & transportation. This dust becomes airborne and spreads away to surrounding areas.

The impact on air is mainly localized in nature as the dust particles of 100 μ in size are not carried to farther distances beyond 100m and the effect is felt within the core zone of the project involving active Sand Mining operations.

⁸ Maharashtra State

Mitigation measures

1. Movement of the vehicles on the road will be increased; however, the unmetalled road in the mining area will be sprinkled with water at regular intervals.
2. In addition to preventing spillage from tractor trolleys, overloading shall be controlled to 1-brass/tractor trolley. The speed limit will be <20 km/hr.
3. Maintenance of the haul road will be done on a regular basis.
4. To avoid fugitive dust emissions at the time of excavation, a regular sprinkling of water will be done on regular basis.
5. Sand is transported to the sites by road through tractor trolleys. The sand-carrying vehicles shall be covered by tarpaulin sheets.
6. The Green belt development will be prepared along the haul roads, which will act as a pollution sink.
7. To minimize vehicular pollution from the sand transporting vehicles, the following conditions will be insisted upon to permit the vehicles of the transporters.
8. The vehicles should be Bharat-IV stage compliant and should have a Pollution Under Control (⁹PUC) Certificate issued by appropriate authorities.
9. Regular maintenance of transport vehicles and monitoring of vehicular emission levels at periodical intervals.

4. Noise Environment

Anticipated Impact

The noise environment in this project will be overdone by the equipment at the site and vehicular transportation. A slight increase in noise levels of <10dB(A) can be expected up to a distance of 100m.

Mitigation measures.

1. Minimum use of horns in the village area.
2. Timely maintenance of vehicles and their silencers to

⁹ Pollution Under Control

minimize vibration and sound.

3. Phasing out old and worn-out tractor trolleys.
4. Provision of green belts along the road networks.
5. Care will be taken to produce minimum sound during sand loading.
6. Backhoe loader excavator will be used
7. Earplugs may be provided to protect the labourers working at the site.

5. Socio-economic Environment

Anticipated Impacts and Evaluation

1. The project activities shall not have any adverse impacts on any of the common property resources of the village communities, as the Sand Mine lease area is not being used for any purpose by any section of the society in this region.
2. There is no Resettlement and Rehabilitation (¹⁰R&R) involvement in this project.
3. There is no land acquisition in this project.
4. A major portion of the houses in the study area is semi-pucca-type structures.
5. The water source to these areas is from the Grampanchayat /Nagar Parishad connection and private bore wells and wells.
6. People living around the project area need the project for the purpose of employment and economic benefits.
7. The awareness level regarding the proposed mining activity is very towering. The proposed mining activity is expected to provide stimulus to socio-economic activities in the region and thereby accelerate further development processes.

Social and Demographic Profile

The workers are from local villages. These people have been provided welfare benefits from the lessee like medical benefits,

¹⁰ Rehabilitation and Resettlement

insurance, fees for children's education, etc. They have some land and cattle for their daily earnings. Additional revenue earned from the Sand Mining work will improve their living standard. The group of quarries in and around will help to have infrastructure facilities like roads, schools, shops, etc. This will enhance their social life.

Occupational Health and Safety

This is a riverbed Sand Mine. So, the mining activities are comparatively smaller because the production is not on a high scale. Workers do not come across any extreme conditions like excessive heat, moisture, etc. Workers working around it may come across this dusty environment. But the impact on health will be within the limit.

Human Settlement

1. There are no houses in and around the lease area. Blasting is the only activity, which may affect the settlement, which is not done. The settlement is more than 1-km from the sand mine.
2. Appropriate precautions will be taken during mining. Transportation of finished products is through the villages. There will be an effect of traffic on the local people. However, the intensity of traffic is 70-80/day.

Health and Hygiene

In general, the health of villagers is moderately good. In the rainy season, the atmospheric condition is unhygienic due to a lack of proper drainage and sanitation in the village habitation. Villagers are working in agricultural fields and work as labourers.

Education

Most education of 70% young <20 years, is up to the 5th to 9th. Economic condition is in general moderate. So, after this project, the standard of education will increase.

Socio-Economic Benefits Arising Out of Mining

1. Generation of employment in rural areas.
2. Upgradation in the living standards of rural people.
3. Creating infrastructural facilities like roads, electricity, shops, schools, etc.
4. Upgrading literacy in the area by exploiting natural minerals so the generation of revenue.

5. Helping to sustain construction activity.
6. Improving the greenery of the area, which is otherwise poor.

Liquid Effluent

Not applicable, because these activities do not generate effluent from operation or process.

Solid Waste

Not applicable, because small mines and impacts are negligible.

Project benefits due to the sand mining of Purshottampuri are explained in the next Chapter.

CHAPTER 5

PROJECT BENEFITS

The proposed Sand Mining project of Purshottampuri village, Majalgaon Taluka, Beed District will lead to the following benefits:

1. Increase in the revenue of the district will ultimately increase the revenue of the village, which in return can be used to improve the infrastructure of the village.
2. Sand is available for building construction work and by systematic separation of sand, there is no possibility of a flood. Providing smooth movement of water of the river.
3. This project will contribute additional revenue to the state Exchequer in the form of revenue.
4. The project will conclude with employment opportunities for unskilled/skilled local people.
5. Standard of living of employed people will increase.

CHAPTER 6

SITE-SPECIFIC ENFORCEMENT & MONITORING PLAN

Sand Ghat Site specific enforcement & monitoring plan

(as per guidelines stipulated in the Enforcement and Monitoring Guidelines for sand mining issued by MoEFCC in January 2020.)

District administration shall deliver information on its website about the Sand Mines in the district for public information. The objective is to extend all information into the public domain so that the citizens are aware of the mining activities. People can also report to the district administration any deviation observed. Suitable feedback and its composition shall also be made operational.

Details shall include, but not be limited to, lease area, geo-coordinates of lease area and mineable area, transport routes, permitted capacity, regulatory conditions for operation including mining, environmental and social commitments, etc.

An Independent Committee of experts constituted by the Distance Learning Task Force (¹¹DLTF) will assess the environmental or ecological damage caused due to illegal mining and recommend recovery of environmental compensation from the concerned miners.

The recommendation may also include action under the provision of the Environment (Protection) Act 1986 u/s.15 read with s.19.

¹¹ Distance Learning Task Force

CHAPTER 7

SECURITY FEATURES

Security features are included in the Transport Permission/Permits (TP)

It will be ensured that the following security features are included in the Transport Permission/Permits (¹²TP) so that duplicate/fraudulent/forged TPs for transport, not accounted for in the IT-based system, is not possible:

1. Printed on Indian Bank Association (¹³IBA) Approved letterhead with account details
2. Magnetic Ink Character Recognition Code (¹⁴MICR) paper
3. Unique Barcode
4. Unique Quick Response Code (¹⁵QR)
5. Fugitive Ink Background
6. Invisible Ink Mark
7. Void Pantograph Watermark
8. Global Positioning System (¹⁶GPS) based vehicle tracking system
9. Closed-Circuit Television (¹⁷CCTV) Camera

¹² Transport Permission

¹³ Indian Bank Association

¹⁴ Magnetic Ink Character Recognition Code

¹⁵ Quick Response Code

¹⁶ Global Positioning System

¹⁷ Closed Circuit Television

CHAPTER 8

REPLENISHMENT

Replenishment study is the most important part of Sand Mining as it is the only basis to carry out sand mining. Without a Replenishment Study, we cannot understand the amount of deposition of sand. Following points to be followed for the replenishment study.

1. Area of deposition and erosion will be calculated for each cross-section after giving due regard to the stability & safety of active channel banks & other features of importance.
2. Differential Global Positioning System (¹⁸DGPS) and other survey tools will be used to define the topography, contours, and offsets of the lease area.
3. Contour & elevation benchmarks will provide baseline data for assessing pre- and post-study period scenario.
4. Physical benchmarks will be fixed at appropriate intervals (preferably 1 in 30m) & Reduced levels (¹⁹RL) shall be validated from a nearby standard RL.
5. These RL will be engraved on a steel plate (Bench Plate) & will be fixed & placed at locations that are free from any damages & are available in the pre-and post-study period.
6. Bench plates will be available for use during the mining period as a reference for all mining activity.
7. Baseline data on elevation status for a grid of 10m x 10m is preferred to have accuracy in the assessment.
8. It is expected that two consecutive cross-sections in longitudinal and lateral directions will not be more than a 10m distance apart.
9. Changes observed in the elevation in pre and post-scenario at each node, will be depicted in graphical forms with an appropriate scale to estimate the area of deposition & erosion.

¹⁸ Differential global positioning system

¹⁹ Reduced levels

10. Elevation level will be in reference to the nearest bench plates established for the purpose.
11. The levels (MSL & RL) of the corner point of each grid will be identifiable and safety barriers (non-Mining) demarcated as restricted in consensus with the Mineral Concession Rules of the respective State, and the provision mentioned in this Sustainable Sand Mining Management Guidelines.
12. A clear identification will be highlighted between grids under the mineable and grids under the non-mineable area.
13. These baseline data (pre and post) be subjected to stimulation with the help of data mine software to derive the replenishment area and corresponding volume and estimated weight.
14. The database will be structured in a tabulated form clearly depicting the nomenclature of the section lines, latitude and longitude of the starting point, chainage, and respective levels of all the points taken on that section line.
15. Net area shall be derived after summation of an area of deposition minus the area of erosion for each cross-section.
16. Volume will be estimated by multiplying the distance between two cross-sections with the average of the net area of these two consecutive cross-sections.
17. One sample per 900m² (30m x 30m) will be the preferred sample density for the assessment of bulk density for the estimation of deposition rate.
18. Care will be taken that the sample for assessment of Bulk Density is taken from the deposition zone & not from erosion.

Methodology for Sand Mining:

The following methodology should be followed for the Replenishment study.

1. The Demarcation and benchmark of the Sand Ghat are done at 10m x 10m intervals.
2. The use of the Auger Driller is to find out the depth of sand in each grid.
3. Auger Driller has created the holes in sand ghat by 10mx10m grid pattern.
4. Measured the depth of holes by using a measuring tape.

5. After taking all the readings average depth of sand is calculated.
6. The average depth of Purshottampuriat Godavari is measured.

Replenishment study of sand in the proposed ghat along with details of the methodology, technology used to identify the existing reserve & replenishment of the same

Dandy Bolton Equation

For runoff less than 2 inches

$$S = 1280 \times (Q) \times 0.46 \times (1.46 - 0.26 \log(A)) \times F$$

For runoff more than 2 inches

$$S = 1958 \times (Q) \times (e^{-0.055 \times Q}) \times (1.43 - 0.26 \log(A))$$

Where,

S = sediment yield of stream (t/yr/km²),

Q = average annual runoff (m³),

A = net drainage area in sq.mile.

CHAPTER 9

PROPOSED PLANTATION PLAN

The Project Proponent must take care of the plantation around the site. This will not only enhance the beautification of the area but also there will be the reduction of pollution, not some extent.

Details of the plantation and Tree species recommended for the plantation are shown below.

Table 9. 1 Details of green belt

Location of greenbelt	Both sides of the approach road, On the riverbanks of both sides of the sand spot & nearby open areas. Haul Road outside the riverbed
No. of plants to be planted	2000 per Hectare
Spacing of plants	2m grid interval
Species selected	Native species

Table 9. 2 Trees species for plantation

Botanical Name	Local Name	Importance
Azadirachta Indica	Neem	Neem oil & neem products
Tectona Grandis	Teek	Antibacterial, Antifungal, Antiulcer
Ficus religiosaa	Peepal	Medicinal use, Fruits & figs
Bambusa vulgaris	Bamboo	Anthelmintic Anti-inflammatory, Astringent Properties
Madhuca longifolia	Mahua	Acts as a Stimulant & cough relief,

CHAPTER 10

ENVIRONMENTAL MANAGEMENT PLAN

A total capital cost of Rs.5.97 Lakhs has been kept in the project cost towards the environmental protection, control, mitigation measures, and implementation of the Environmental Management Plan (EMP). This cost is borne by the bidder/leaseholder. The budgetary cost estimate for the EMP is given in Table.

Table 10. 1 Budgetary cost of EMP

Sr	Impact Source	Impact	Control Measure	Cost (Rs.)
1	Transport Road	On Air Quality	Compaction, gradation, and drainage on both sides.	90000
		On Land, the Stability of the Road and degradation of road	Proper maintenance	40000
			Regular water spraying	43000
			The air quality will be monitored at the impacted village. (For One Day Monitoring)	5000
			Health Check-up of Employees	5000
2	Truck/ Tractor Movement	Air Quality	Sand-carrying trucks will be effectively covered by tarpaulin to avoid the escape of fines to the atmosphere. (2 Tarpaulin)	25000
			Regular monitoring of the exhaust fumes	5000

Sr	Impact Source	Impact	Control Measure	Cost (Rs.)
			Barriers & Traffic Management Expenses. (Excluding Manpower Salary which is included in labour costs)	10000
3	Ramp and Sand Reach	Mining Operation	Regular ramp Inspection and Ramp maintenance. (Excluding Manpower Salary which is included in labour costs)	50000
			Provision of dust masks	10000
4	Bank Management	Bank Erosion/Flood Plain management	The green belt along the bank (For Green Belt Development)	230000
			Plantation of wide leaf tall trees on banks and grass along a slanting portion of the bank	
5	Transportation on Village Roads	Dust Control	The green belt along village Rd (For Green Belt Development)	
6	Final Mine Closure Plan implementation	Replenishment of Sand	Gabions/ boulders will be arranged as per guidelines	15000
7	Mobile toilet, sewage handling & treatment		Mobile toilet, sewage handling & treatment	100000
8	CCTV Monitoring			100000
Total				728000

Budget For Corporate Environment Responsibility (²⁰CER)

About 2% fund of the project cost is allocated for Corporate Environment Responsibility (CER) activities as presented in below Table

Table 10.2 Budget for CER

Sr.	Description	Cost (Rs)
1.	Village Schools (separate toilet for girls and boys)	25000
2.	Solar panels over Gram Panchayat buildings	25000
3.	Solar panels over Public Health Centers	20000
	Total	70000

²⁰ Corporate Environment Responsibility

CHAPTER 11

SUMMARY AND CONCLUSION

The Roles and Responsibilities of the Environmental coordinator, the Operation Manager, and the senior personnel contractor are essential in EMP.

The environmental status of the project site and study area of 10km radius is delineated with respect to air, noise, water, land, biological and socio-economic environment the different project activities in the construction and operation phases are identified.

To identify the impacts, the interaction between the project activities and different components of the environment is classified phase-wise. A summary of the recognized impacts is given in the following paragraphs.

- During the operational phase, the transportation of sand could cause a temporary disturbance to the local environment which will be prevented with the proposed mitigation measures.
- Proposed project will not have any major significant negative impacts. The minor impacts arising during Excavation and Transportation phases can be mitigated with the help of the proposed Environmental Management Plan.
- In general, sand excavation from Purshottampuri sand spot will be useful to the developmental work in the district and generate employment opportunities.

From this project, it is concluded that the district revenue will increase in return minimum of 2% of funds are utilized for the development of the village. The project will also grab employment which will improve the standard of life of villagers.

*** END ***

Environmental Management Plan

As per Rules 23 & 26 of MMME (D & R) RULE 2013 & Section 15 of MMDR Act 1957, MoEFCC Notification 2006, S.O. 141(E) dated 15. 01. 2016; MoEFCC, Sustainable Sand Mining Management Guidelines 2016, Guidelines for Mining Policy 2020)

For

ENVIRONMENTAL CLEARANCE

of

SAND MINING (MINOR MINERAL)

for

Sakshalpimpri 1 – A Riverbed Sand Mine / Sand Ghat
Khasra No. GSDA approved 774 &788
Area (1.10ha)

Village Sakshalpimpri 1, Taluka Beed, District Beed

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ABBREVIATION

Short Form	Long Form
EMP	Environmental Management Plan
MoEFCC	Ministry of Environment Forest and Climate Change
DSR	District-level Survey Report
EC	Environmental Coordinator
OM	Operations Manager
GSDA	Groundwater Surveys & Development Agency
MPCB	Maharashtra Pollution Control Board
MSL	Mean Sea Level
MS	Maharashtra State
PUC	Pollution Under Control
R&R	Rehabilitation and Resettlement
DLTF	Distance Learning Task Force
TP	Transport Permission/Permits
IBA	Indian Bank Association
MICR	Magnetic Ink Character Recognition Code
QR	Quick Response Code
GPS	Global Positioning System

CCTV	Closed-Circuit Television
DGPS	Differential Global Positioning System
RL	Reduced Levels
CER	Corporate Environment Responsibility

CHAPTER 1

INTRODUCTION

The Environmental Management Plan (¹EMP) plays a vital connection uniting forecast impacts and mitigation measures during implementation and operational activities. EMP stipulates the mitigation, monitoring and conventional measures to be taken during project implementation and operation. EMP is to escape or mitigate adverse environmental impacts, and to implement these measures.

This Environmental Management Plan (EMP) has been prepared as part of the Scoping Report which will be compiled in terms of the Environmental Assessment for the sand mining activities.

Considering the Ministry of Environment and Forest Climate Change (²MoEFCC) Notification 2006 and Sustainable Sand Mining Management Guidelines 2016, the Govt. of Maharashtra had mapped out the Minor Mineral Extraction Rules 2013. These rules are to extract all minor minerals in a scientific way so that there is no unfavourable impact on Environment and Climate. To extract every minor mineral from any land (either Government or Private) there is provision for a Mining Plan. These plans need to be approved by a competent authority. For long-term leased minor minerals (5-10 years period) and sand excavation from the riverbed, Senior Deputy Director of Directorate of Geology and Mining is the competent authority. These plans are for short term temporary permits which are valid for one year.

According to Enforcement & Monitoring Guidelines for Sand Mining 2020, Sustainable Sand Mining Management Guidelines 2016, Standard Environment conditions for sand mining and sustainable mining practices, District level Survey Report (³DSR) should be prepared and are suitable for mining and area prohibited for mining must be recognized.

¹ Environmental Management Plan

² Ministry of Environment Forest and Climate Change

³ District Survey Report

Objectives of EMP

- To provide overall conservation of the environment.
- To minimize waste generation and pollution.
- To regulate the precise use of natural resources and water.
- To provide Safety, Welfare, and Good health for the workforce and populace.
- To regulate the effective operation of all control measures.
- To ensure alertness against probable disasters and accidents.
- To monitor cumulative and long-term impacts.
- To regulate the effective operation of all control measures.

Roles and Responsibilities concerning the implementation of the EMP

The roles and responsibilities of all parties involved in successfully managing the environment are mentioned below.

Environmental Coordinator

The Environmental Coordinator will inspect operational areas on a quarterly basis and at the onset of mining any new island, to ensure that all specifications are met. The duties of the environmental coordinator will be the following.

- Guide the operations team in respect of the implementation of the environmental specifications.
- Lead the visits to ensure all work is aligned with the EMP.
- The environmental coordinator must examine the site during the three-monthly visits. All rehabilitation results will be Comprised in the quarterly report.
- Examination of the rehabilitation area and giving guidance regarding rehabilitation measures if any.

The Operations Manager

The responsibilities of the Operations Manager (4OM) or his nominated authority are as follows.

1. Familiarize themselves with the requirements of the EMP.
2. Monitor employees' and contractor's compliance with the environmental specifications; and enforce adherence.

⁴ Operations Manager

3. Communicate all environment-related incidents with the Environmental Coordinator and distribute them internally to avoid repetition.
4. Maintain a record of activities relevant to Environmental Management.
5. The Operations Manager shall be responsible for monitoring and the enforcement of the Environmental Management specifications on a day-to-day basis. Any violation of the environmental specifications shall be recorded, and the agreed disciplinary measures are taken.

Senior personnel and contractors

The roles of the senior personnel/contractors are as follows:

- Familiarize themselves with the requirements of the EMP.
- Comply with the environmental management specifications.
- Ensure that all team members are familiar with the environmental management specifications.

Details of the project

The Sakshalpimpri 1 sand ghat area has been selected in perspective of its subsisting demand for building-grade sand for the area in and around Beed Taluka. The District Mining Officer Beed has put forward the proposal for Environmental Clearance for mining. The ghat has a production of 7774 brass sand within an area of 1.10ha. The proposed proposal follows an organized mining process for Environmental Clearance.

Further Chapter informs about the in-depth details of the Sand Ghat, its geographical structure, and a Google map of the ghat with its approach road for contractors and workers to reach to sand ghat from the village.

CHAPTER 2

DETAILS OF THE PROJECT

Sakshalpimpri 1 village is located in Beed Taluka of Beed district, Maharashtra. Beed is well connected with all nearby cities. The National highway NH-52, it traverses through the states of Punjab, Haryana, Rajasthan, Madhya Pradesh, Maharashtra, Karnataka in India. NH-52 is the National Highway passing through the district, covering a total distance of 73.60km. Beed has situated about 0km by road from Beed. The district has road links to adjoining districts Ahmednagar District to the west, Jalna District to the North, Latur District to the East, Osmanabad District to the South, Parbhani District to the East. The district is well connected by roads.

Sakshalpimpri.1 village is 19.62km away from Collector office headquarters Beed. The Geographical area of the Beed is around 10693km². The nearest Railway station to Sakshalpimpri 1 village is Ghat Nandur Railway station. The nearest Airport to Beed District is Aurangabad Airport, Aurangabad Airport is 87.82km away from Beed.

Honourable Collector Beed intends to auction Sand Ghats and appointed District Mining Officer as Project Proponent. A total of 38 sand ghats are identified by Tahsildar Majalgaon, Parli Ve., Gevrai, Beed along with District Mining Officer, Beed. The 38 sand ghats were jointly surveyed by Taluka level technical committee headed by respective Tahsildar with Dy. Engineer Irrigation Department, Junior Geologist Directorate of Geology and Mining Govt. of Maharashtra, Junior Geologist, Groundwater Surveys & Development Agency (⁵GSDA). DMO Beed and a representative of the Maharashtra Pollution Control Board (⁶MPCB), as per the procedure defined in Sand Auction Rules 2019 dated 3/09/2019 formed a Taluka-level technical committee, which explored the sand ghats for an available quantity of sand for scooping. Revenue of Rs.25 Crore is expected from the auction of these sand ghats. Sakshalpimpri 1 Sand Ghat proposed over river Sindhphana in Beed Taluka is proposed to cater to the infrastructural requirement of sand in the Taluka of Beed and adjoining areas of other talukas.

⁵ Groundwater Surveys & Development Agency

⁶ Maharashtra Pollution Control Board

Table 2. 1 Details of Sakshalpimpri 1 Sand ghat

Name of Village	Taluka	River/ Nallah	Nearest survey No.	Area (ha)	Proposed Depth for excavation (m)	Quantity Permitted for mining of Sand in Brass	Method of Mining
Sakshalpimpri	Beed	Sindhphana	774 & 788	1.10	2.0	7774	Open-cast manual mining

Table 2. 2 Salient features of the project

Particulars	Details		
Location	Village-Sakshalpimpri 1, Taluka-Beed, District-Beed, Maharashtra.		
Latitude and Longitude	Boundary points of Sakshalpimpri 1 sand spot	Latitude	Longitude
	BP1	19°5'49.63"N	75°35'38.29"E
	BP2	19°5'49.02"N	75°35'38.40"E
	BP3	19°5'53.68"N	75°35'56.36"E
	BP4	19°5'54.26"N	75°35'56.03"E
Sand spot area (In ha)	1.10ha		
Proposed production capacity (in Brass)	7774		
Infrastructure Requirement (As per Govt Resolution 3rd January 2018)	1. Room / Hut for Official records 2. Electricity / Battery for Running CCTV 24x7 daily. 3. One Computer / Android-based Mobile for the online generation of Invoice numbers.		

Particulars	Details
Distance of project site from nearest rail or road bridge over the concerned River, Nallah, etc.	1.05km
Distance from infrastructural facilities	
Railway line	19.32km
National Highway	24.93km(NH-52) 20.03km(SH-144)
State Highway	38km
Major District Road	1.20km
Any Other Road	
Electric transmission line pole or tower	
Canal or check dam or reservoirs or lake or ponds	
In-take for drinking water pump house	
Intake for Irrigation canal pumps	

Particulars	Details
Areas already subjected to pollution or environmental damage. (those where existing legal environmental standards are exceeded)	None
Areas susceptible to natural hazards which could cause the project to Present environmental problems (earthquakes, subsidence, landslides, erosion, flooding, or extreme or adverse climatic conditions)	No. Sand Ghat is at safe distances from natural hazards like earthquake prone area, subsidence, landslide, erosion, flooding prone area and extreme or adverse climatic conditions

Particulars	Details
<p>Whether the proposal involves approval or clearance under the following Regulations or Acts, namely: - (a) The Forest (Conservation) Act, 1980. (b) The Wildlife (Protection) Act, 1972. (c) The Coastal Regulation Zone Notification, 2011. If yes, details of the same and their status are to be given.</p>	None
Forest land involved (hectares)	None

The below figure shows the google image of Sakshalpimpri 1 sand ghat.

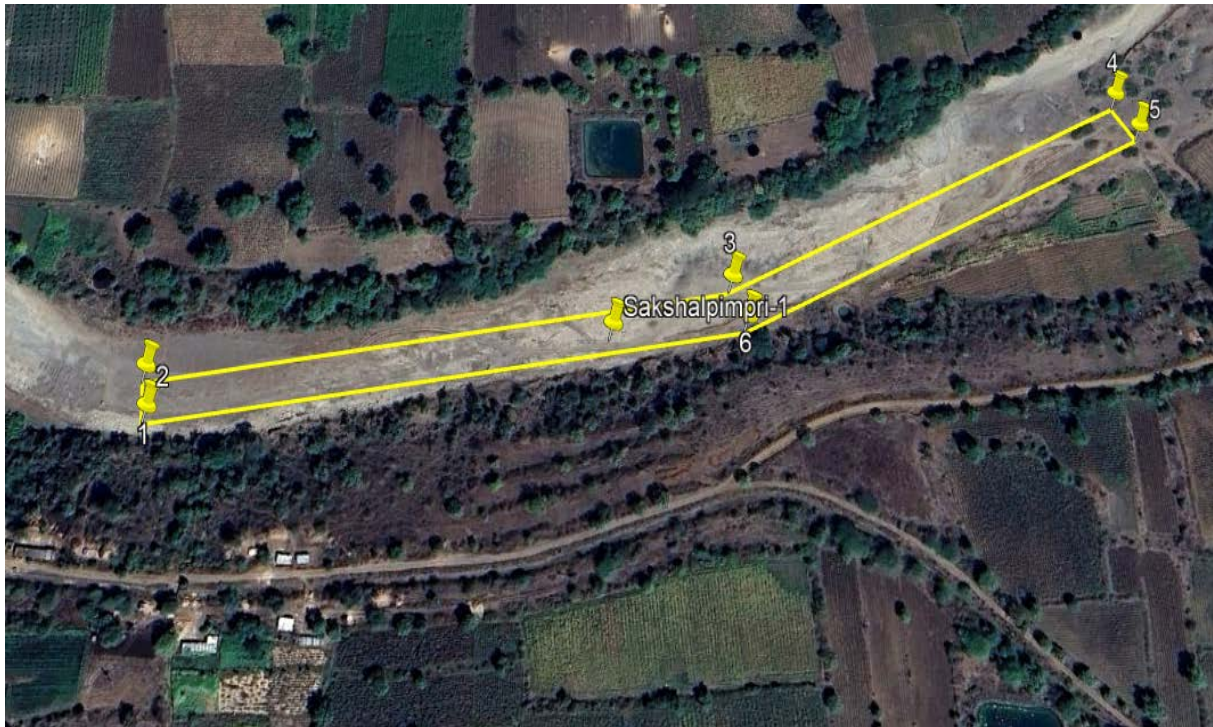


Fig 2.1-Google image of Sakshalpimpri 1 sand ghat

Approach road along with google location is as shown below.

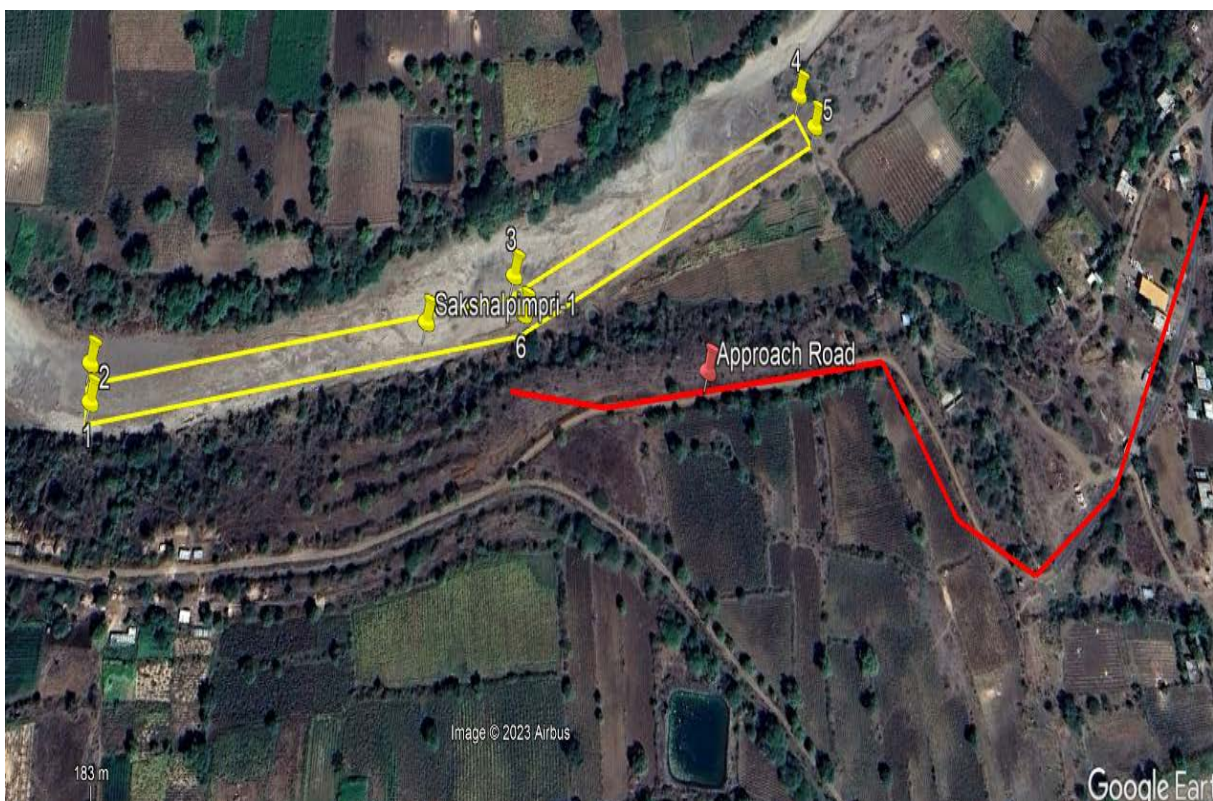


Fig 2.2-Approach Road for sand ghat

Next chapter 3 is Baseline Environmental Status in which the entire Topography, Climate, Soil Environment, Land use, water Environment, Hydrology, Biological environment, and Socio-economic Environment are briefly explained for the Beed district.

CHAPTER 3

BASELINE ENVIRONMENT STATUS

Topography

The Sand Ghat area as per the survey is the riverbed of the Sindhphana River of the Beed district. The maximum elevation is 428m MSL, average elevation is 424m MSL, & minimum elevation is 420m (⁷MSL) Mean Sea Level. The slope of the Sand Ghat area towards the Southwest to Northeast side. The flow of Sindhphana River is from South to West direction.

Presently, there is neither any infrastructure within the riverbed nor are proposed.

Hydrology

There will be no change in the Water Table during the mining operation, as the depth of mining shall be restricted to 2.0m water level, which is less likely to affect the surface level or Groundwater Table. There is no proposal of any stream modification/diversion due to this mining activity hence there will be not any impact on the flow of water.

Soil Environment

The riverbed consists of sand /gravel. There is no topsoil. The depth of mining shall be restricted to 2.0m. There is no crucial impact on the soil forecasted due to mining activities.

Land Use Land Cover

Land use shows that agriculture land use is predominant. The proposed site is 1.10ha having adjoined Khasara No 774 & 788 The land doesn't cover any human habitation, forest, etc. Any change in the scope of the approved Mining Plan will lead to riverbank erosion/cutting and thereby river channel shifting, degradation of land, causing loss of properties and degradation of the surrounding landscape.

⁷ Mean sea level

Water Environment

While transporting sand there may be fugitive dust. There will be water requirement for spraying for dust suppression purposes. This water will be supplied from the borewell from nearby villages through tankers as well as from surface water sources. The water source may vary from village to village.

Climate

During summer May is the hottest month of the year in this area. The temperature rises to 42°C in the month of May. The average rainfall in this region is 600mm to 700mm About 50% of rainfall precipitates between June to September. December is the coldest month with temperatures falling down to 18°C. Overall the proposed site area has sub-tropical conditions.

Biological Environment

Flora

The agricultural area is seen near the Sand Ghat. Few trees and thorny bushes are seen on the banks of the river.

Fauna

As there is no forest cover, no endangered species of wildlife are seen in this area.

Socio-Economic Environment

This project may create constructive impacts of the sand mining that are stated below:

1. The mining operations will provide direct & indirect employment to village people.
2. The villages and their inhabitants & domestic animals will not be disturbed due to mining, as the quarry is far from their settlements.
3. Local workforce will be given first preference for employment.
4. Mining activities will benefit the local people due to the provision of more infrastructural facilities (developments of approach routes within the village area).

The next chapter describes all possible impacts on the Environment due to this project along with its mitigation measure to overcome these impacts.

CHAPTER 4

IMPACT ASSESSMENT REPORT ALONG WITH PROPOSED MITIGATION MEASURES

1. Land Environment

Anticipated Impact

Movement of vehicles can create issues for agricultural land, human habitations, noise, and risk for public and cause traffic hazards. The impacts include damage to the riverbank due to access ramps to the riverbed, soil erosion because of extraction of sand, micro disturbance to groundwater, possible stimulation of the changed river course, and contamination of sand aquifer water due to ponding. There might be surface degradation due to the road network.

The quality of soil will not be affected due to transportation or any other activity of mining.

Mitigation measure

1. Mining depth should be restricted to 3 meters and distance from the bank should be ¼th or river width and should not be less than 7.5 meters as per “Sustainable Sand Mining Guidelines 2020” ■ Page 23, Point no 4.3 (m).
2. There will be a minimal number of access roads to riverbeds. Cutting of riverbanks will be avoided and ramp with smooth slope will be maintained. Access points to the riverbed will be decided based on the least steepness of the riverbank and the least human activity at that location.
3. No foreign material like polythene bags, jute bags, and useless articles should be allowed to remain/spill in the riverbed and catchment area, or no pits/pockets will be allowed to be filled with such material.
4. Mining at the concave side of the river channel should be avoided to prevent bank erosion. Similarly, a tortuous segment of a river is to be selected for mining in such a way as to ignore the natural eroding of banks.
5. Ensure that ponding is not created in the riverbed.
6. Transportation route should be such that it gives minimum

damage to the environment.

7. Green belt will be developed along the haul road and the bank of rivers of mine premises and near the sand mining site. While selecting the plant species, preference will be given for planting native species of the area.

2. Water environment

Anticipated Impact

The project activity will be carried out in the dry part of the riverbed. Care will be taken to ensure that neither of the project activities will affect the water environment or riverbank habitats. During the lean months, the proposed Sand Mining will not expose the base flow of the river and hence there will not be any inauspicious impact on surface hydrology and groundwater regime due to this project. Project activities will not have any adverse consequences on the physical components of the environment and therefore may not have any effect on the recharge of ground waters or affect the water quality. Monitoring of water quality will be checked yearly.

Mitigation measures

1. Mining is avoided during the monsoon season and at the time of floods. This will help in the replenishment of sand in the riverbed.
2. Mining below the subterranean water level will be avoided as a safeguard against environmental contamination and over-exploitation of resources.
3. River stream will not be transferred to create active channels.
4. Mining schedule is synchronized with the river flow direction and the gradient of the land.
5. Mining at the concave side of the river channel will be avoided to prevent bank erosion.
6. Tortuous segment of the river will be selected for mining in such a way as to avoid naturally eroding banks and to promote mining on naturally building meander components.
7. Mining depth shall be maintained as per the guidelines and

rules of the Sand Mining Policy dated 03/09/2019 and recommendations of Maharashtra State (⁸M.S.). State Ground Water Department for extraction of sand during the lease period.

8. Water Quality Monitoring for the ground waters, river water, and other surface waters shall be carried out seasonally to ensure that the water quality is not affected by the project activities.
9. Utmost care will be taken to minimize or control leaking vehicles to be used for sand transportation.
10. The washing of tractor trolleys in the river will not be done.
11. The contractor will follow all guidelines and rules for proper and scientific methods of mining during the period of extracting the sand.

3. Air Environment

Anticipated Impacts

Plying of tractor trolleys from the public road to river sand collection points needs access roads. The majority of such access roads are the already existing roads/tracks being used by pedestrians/cart owners. The movement of heavy vehicles sometimes causes problems for cattle, agricultural land, and human habitations due to dust, noise, and the movement of the public. These environmental problems are felt more as the area is rural in nature.

Air pollution is likely to be caused at various stages of Sand Mining operations such as excavation, loading & transportation of material. Most of the fugitive dust emissions will be generated from loading & transportation. This dust becomes airborne and spreads away to surrounding areas.

The impact on air is mainly localized in nature as the dust particles of 100 μ in size are not carried to farther distances beyond 100m and the effect is felt within the core zone of the project involving active Sand Mining operations.

⁸ Maharashtra State

Mitigation measures

1. Movement of the vehicles on the road will be increased; however, the unmetalled road in the mining area will be sprinkled with water at regular intervals.
2. In addition to preventing spillage from tractor trolleys, overloading shall be controlled to 1-brass/tractor trolley. The speed limit will be <20 km/hr.
3. Maintenance of the haul road will be done on a regular basis.
4. To avoid fugitive dust emissions at the time of excavation, a regular sprinkling of water will be done on regular basis.
5. Sand is transported to the sites by road through tractor trolleys. The sand-carrying vehicles shall be covered by tarpaulin sheets.
6. The Green belt development will be prepared along the haul roads, which will act as a pollution sink.
7. To minimize vehicular pollution from the sand transporting vehicles, the following conditions will be insisted upon to permit the vehicles of the transporters.
8. The vehicles should be Bharat-IV stage compliant and should have a Pollution Under Control (⁹PUC) Certificate issued by appropriate authorities.
9. Regular maintenance of transport vehicles and monitoring of vehicular emission levels at periodical intervals.

4. Noise Environment

Anticipated Impact

The noise environment in this project will be overdone by the equipment at the site and vehicular transportation. A slight increase in noise levels of <10dB(A) can be expected up to a distance of 100m.

Mitigation measures.

1. Minimum use of horns in the village area.
2. Timely maintenance of vehicles and their silencers to

⁹ Pollution Under Control

minimize vibration and sound.

3. Phasing out old and worn-out tractor trolleys.
4. Provision of green belts along the road networks.
5. Care will be taken to produce minimum sound during sand loading.
6. Backhoe loader excavator will be used
7. Earplugs may be provided to protect the laborers working at the site.

5. Socio-economic Environment

Anticipated Impacts and Evaluation

1. The project activities shall not have any adverse impacts on any of the common property resources of the village communities, as the Sand Mine lease area is not being used for any purpose by any section of the society in this region.
2. There is no Resettlement and Rehabilitation (¹⁰R&R) involvement in this project.
3. There is no land acquisition in this project.
4. A major portion of the houses in the study area is semi-pucca-type structures.
5. The water source to these areas is from the Grampanchayat /Nagar Parishad connection and private bore wells and wells.
6. People living around the project area need the project for the purpose of employment and economic benefits.
7. The awareness level regarding the proposed mining activity is very towering. The proposed mining activity is expected to provide stimulus to socio-economic activities in the region and thereby accelerate further development processes.

Social and Demographic Profile

The workers are from local villages. These people have been provided welfare benefits from the lessee like medical benefits,

¹⁰ Rehabilitation and Resettlement

insurance, fees for children's education, etc. They have some land and cattle for their daily earnings. Additional revenue earned from the Sand Mining work will improve their living standard. The group of quarries in and around will help to have infrastructure facilities like roads, schools, shops, etc. This will enhance their social life.

Occupational Health and Safety

This is a riverbed Sand Mine. So, the mining activities are comparatively smaller because the production is not on a high scale. Workers do not come across any extreme conditions like excessive heat, moisture, etc. Workers working around it may come across this dusty environment. But the impact on health will be within the limit.

Human Settlement

1. There are no houses in and around the lease area. Blasting is the only activity, which may affect the settlement, which is not done. The settlement is more than 1-km from the sand mine.
2. Appropriate precautions will be taken during mining. Transportation of finished products is through the villages. There will be an effect of traffic on the local people. However, the intensity of traffic is 70-80/day.

Health and Hygiene

In general, the health of villagers is moderately good. In the rainy season, the atmospheric condition is unhygienic due to a lack of proper drainage and sanitation in the village habitation. Villagers are working in agricultural fields and work as labourers.

Education

Most education of 70% young <20 years, is up to the 5th to 9th. Economic condition is in general moderate. So, after this project, the standard of education will increase.

Socio-Economic Benefits Arising Out of Mining

1. Generation of employment in rural areas.
2. Upgradation in the living standards of rural people.
3. Creating infrastructural facilities like roads, electricity, shops, schools, etc.
4. Upgrading literacy in the area by exploiting natural minerals so the generation of revenue.

5. Helping to sustain construction activity.
6. Improving the greenery of the area, which is otherwise poor.

Liquid Effluent

Not applicable, because these activities do not generate effluent from operation or process.

Solid Waste

Not applicable, because small mines and impacts are negligible.

Project benefits due to the sand mining of Sakshalpimpri 1 are explained in the next Chapter.

CHAPTER 5

PROJECT BENEFITS

The proposed Sand Mining project of Sakshalpimpri village, Beed Taluka, Beed District will lead to the following benefits:

1. Increase in the revenue of the district will ultimately increase the revenue of the village, which in return can be used to improve the infrastructure of the village.
2. Sand is available for building construction work and by systematic separation of sand, there is no possibility of a flood. Providing smooth movement of water of the river.
3. This project will contribute additional revenue to the state Exchequer in the form of revenue.
4. The project will conclude with employment opportunities for unskilled/skilled local people.
5. Standard of living of employed people will increase.

CHAPTER 6

SITE-SPECIFIC ENFORCEMENT & MONITORING PLAN

Sand Ghat Site specific enforcement & monitoring plan

(as per guidelines stipulated in the Enforcement and Monitoring Guidelines for sand mining issued by MoEFCC in January 2020.)

District administration shall deliver information on its website about the Sand Mines in the district for public information. The objective is to extend all information into the public domain so that the citizens are aware of the mining activities. People can also report to the district administration any deviation observed. Suitable feedback and its composition shall also be made operational.

Details shall include, but not be limited to, lease area, geo-coordinates of lease area and mineable area, transport routes, permitted capacity, regulatory conditions for operation including mining, environmental and social commitments, etc.

An Independent Committee of experts constituted by the Distance Learning Task Force (¹¹DLTF) will assess the environmental or ecological damage caused due to illegal mining and recommend recovery of environmental compensation from the concerned miners.

The recommendation may also include action under the provision of the Environment (Protection) Act 1986 u/s.15 read with s.19.

¹¹ Distance Learning Task Force

CHAPTER 7

SECURITY FEATURES

Security features are included in the Transport Permission/Permits (TP)

It will be ensured that the following security features are included in the Transport Permission/Permits (¹²TP) so that duplicate/fraudulent/forged TPs for transport, not accounted for in the IT-based system, is not possible:

1. Printed on Indian Bank Association (¹³IBA) Approved letterhead with account details
2. Magnetic Ink Character Recognition Code (¹⁴MICR) paper
3. Unique Barcode
4. Unique Quick Response Code (¹⁵QR)
5. Fugitive Ink Background
6. Invisible Ink Mark
7. Void Pantograph Watermark
8. Global Positioning System (¹⁶GPS) based vehicle tracking system
9. Closed-Circuit Television (¹⁷CCTV) Camera

¹² Transport Permission

¹³ Indian Bank Association

¹⁴ Magnetic Ink Character Recognition Code

¹⁵ Quick Response Code

¹⁶ Global Positioning System

¹⁷ Closed Circuit Television

CHAPTER 8

REPLENISHMENT

Replenishment study is the most important part of Sand Mining as it is the only basis to carry out sand mining. Without a Replenishment Study, we cannot understand the amount of deposition of sand. Following points to be followed for the replenishment study.

1. Area of deposition and erosion will be calculated for each cross-section after giving due regard to the stability & safety of active channel banks & other features of importance.
2. Differential Global Positioning System (¹⁸DGPS) and other survey tools will be used to define the topography, contours, and offsets of the lease area.
3. Contour & elevation benchmarks will provide baseline data for assessing pre- and post-study period scenario.
4. Physical benchmarks will be fixed at appropriate intervals (preferably 1 in 30m) & Reduced levels (¹⁹RL) shall be validated from a nearby standard RL.
5. These RL will be engraved on a steel plate (Bench Plate) & will be fixed & placed at locations that are free from any damages & are available in the pre-and post-study period.
6. Bench plates will be available for use during the mining period as a reference for all mining activity.
7. Baseline data on elevation status for a grid of 10m x 10m is preferred to have accuracy in the assessment.
8. It is expected that two consecutive cross-sections in longitudinal and lateral directions will not be more than a 10m distance apart.
9. Changes observed in the elevation in pre and post-scenario at each node, will be depicted in graphical forms with an appropriate scale to estimate the area of deposition & erosion.

¹⁸ Differential global positioning system

¹⁹ Reduced levels

10. Elevation level will be in reference to the nearest bench plates established for the purpose.
11. The levels (MSL & RL) of the corner point of each grid will be identifiable and safety barriers (non-Mining) demarcated as restricted in consensus with the Mineral Concession Rules of the respective State, and the provision mentioned in this Sustainable Sand Mining Management Guidelines.
12. A clear identification will be highlighted between grids under the mineable and grids under the non-mineable area.
13. These baseline data (pre and post) be subjected to stimulation with the help of data mine software to derive the replenishment area and corresponding volume and estimated weight.
14. The database will be structured in a tabulated form clearly depicting the nomenclature of the section lines, latitude and longitude of the starting point, chainage, and respective levels of all the points taken on that section line.
15. Net area shall be derived after summation of an area of deposition minus the area of erosion for each cross-section.
16. Volume will be estimated by multiplying the distance between two cross-sections with the average of the net area of these two consecutive cross-sections.
17. One sample per 900m² (30m x 30m) will be the preferred sample density for the assessment of bulk density for the estimation of deposition rate.
18. Care will be taken that the sample for assessment of Bulk Density is taken from the deposition zone & not from erosion.

Methodology for Sand Mining:

The following methodology should be followed for the Replenishment study.

1. The Demarcation and benchmark of the Sand Ghat are done at 10m x 10m intervals.
2. The use of the Auger Driller is to find out the depth of sand in each grid.
3. Auger Driller has created the holes in sand ghat by 10mx10m grid pattern.
4. Measured the depth of holes by using a measuring tape.

5. After taking all the readings average depth of sand is calculated.
6. The average depth of Sakshalpimpri 1 at Sindhphana is measured.

Replenishment study of sand in the proposed ghat along with details of the methodology, technology used to identify the existing reserve & replenishment of the same

Dandy Bolton Equation

For runoff less than 2 inches

$$S = 1280 \times (Q) \times 0.46 \times (1.46 - 0.26 \log(A)) \times F$$

For runoff more than 2 inches

$$S = 1958 \times (Q) \times (e^{-0.055 \times Q}) \times (1.43 - 0.26 \log(A))$$

Where,

S = sediment yield of stream (t/yr/km²),

Q = average annual runoff (m³),

A = net drainage area in sq.mile.

CHAPTER 9

PROPOSED PLANTATION PLAN

The Project Proponent must take care of the plantation around the site. This will not only enhance the beautification of the area but also there will be the reduction of pollution, not some extent.

Details of the plantation and Tree species recommended for the plantation are shown below.

Table 9. 1 Details of green belt

Location of greenbelt	Both sides of the approach road, On the riverbanks of both sides of the sand spot & nearby open areas. Haul Road outside the riverbed
No. of plants to be planted	2000 per Hectare
Spacing of plants	2m grid interval
Species selected	Native species

Table 9. 2 Trees species for plantation

Botanical Name	Local Name	Importance
Azadirachta Indica	Neem	Neem oil & neem products
Tectona Grandis	Teek	Antibacterial, Antifungal, Antiulcer
Ficus religiosaa	Peepal	Medicinal use, Fruits & figs
Bambusa vulgaris	Bamboo	Anthelmintic Anti-inflammatory, Astringent Properties
Madhuca longifolia	Mahua	Acts as a Stimulant & cough relief,

CHAPTER 10

ENVIRONMENTAL MANAGEMENT PLAN

A total capital cost of Rs.5.97 Lakhs has been kept in the project cost towards the environmental protection, control, mitigation measures, and implementation of the Environmental Management Plan (EMP). This cost is borne by the bidder/leaseholder. The budgetary cost estimate for the EMP is given in Table.

Table 10. 1 Budgetary cost of EMP

Sr	Impact Source	Impact	Control Measure	Cost (Rs.)
1	Transport Road	On Air Quality	Compaction, gradation, and drainage on both sides.	40000
		On Land, the Stability of the Road and degradation of road	Proper maintenance	30000
			Regular water spraying	30000
			The air quality will be monitored at the impacted village. (For One Day Monitoring)	5000
			Health Check-up of Employees	5000
2	Truck/ Tractor Movement	Air Quality	Sand-carrying trucks will be effectively covered by tarpaulin to avoid the escape of fines to the atmosphere. (2 Tarpaulin)	25000
			Regular monitoring of the exhaust fumes	5000

Sr	Impact Source	Impact	Control Measure	Cost (Rs.)
			Barriers & Traffic Management Expenses. (Excluding Manpower Salary which is included in labour costs)	10000
3	Ramp and Sand Reach	Mining Operation	Regular ramp Inspection and Ramp maintenance. (Excluding Manpower Salary which is included in labour costs)	50000
			Provision of dust masks	10000
4	Bank Management	Bank Erosion/Flood Plain management	The green belt along the bank (For Green Belt Development)	150000
			Plantation of wide leaf tall trees on banks and grass along a slanting portion of the bank	
5	Transportation on Village Roads	Dust Control	The green belt along village Rd (For Green Belt Development)	
6	Final Mine Closure Plan implementation	Replenishment of Sand	Gabions/ boulders will be arranged as per guidelines	15000
7	Mobile toilet, sewage handling & treatment		Mobile toilet, sewage handling & treatment	80000
8	CCTV Monitoring			80000
Total				535000

Budget For Corporate Environment Responsibility (²⁰CER)

About 2% fund of the project cost is allocated for Corporate Environment Responsibility (CER) activities as presented in below Table

Table 10.2 Budget for CER

Sr.	Description	Cost (Rs)
1.	Village Schools (separate toilet for girls and boys)	15000
2.	Solar panels over Gram Panchayat buildings	15000
3.	Solar panels over Public Health Centers	20000
	Total	50000

²⁰ Corporate Environment Responsibility

CHAPTER 11

SUMMARY AND CONCLUSION

The Roles and Responsibilities of the Environmental coordinator, the Operation Manager, and the senior personnel contractor are essential in EMP.

The environmental status of the project site and study area of 10km radius is delineated with respect to air, noise, water, land, biological and socio-economic environment the different project activities in the construction and operation phases are identified.

To identify the impacts, the interaction between the project activities and different components of the environment is classified phase-wise. A summary of the recognized impacts is given in the following paragraphs.

- During the operational phase, the transportation of sand could cause a temporary disturbance to the local environment which will be prevented with the proposed mitigation measures.
- Proposed project will not have any major significant negative impacts. The minor impacts arising during Excavation and Transportation phases can be mitigated with the help of the proposed Environmental Management Plan.
- In general, sand excavation from Sakshalpimpri 1 sand spot will be useful to the developmental work in the district and generate employment opportunities.

From this project, it is concluded that the district revenue will increase in return minimum of 2% of funds are utilized for the development of the village. The project will also grab employment which will improve the standard of life of villagers.

*** END ***

Environmental Management Plan

As per Rules 23 & 26 of MMME (D & R) RULE 2013 & Section 15 of MMDR Act 1957, MoEFCC Notification 2006, S.O. 141(E) dated 15. 01. 2016; MoEFCC, Sustainable Sand Mining Management Guidelines 2016, Guidelines for Mining Policy 2020)

For

ENVIRONMENTAL CLEARANCE

of

SAND MINING (MINOR MINERAL)

for

Sandas Chincholi – A Riverbed Sand Mine / Sand Ghat
Khasra No. GSDA approved 37, 46, 50, 51, 54, 55
Area (0.7ha)

Village Sandas Chincholi , Taluka Majalgaon, District Beed

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ABBREVIATION

Short Form	Long Form
EMP	Environmental Management Plan
MoEFCC	Ministry of Environment Forest and Climate Change
DSR	District-level Survey Report
EC	Environmental Coordinator
OM	Operations Manager
GSDA	Groundwater Surveys & Development Agency
MPCB	Maharashtra Pollution Control Board
MSL	Mean Sea Level
MS	Maharashtra State
PUC	Pollution Under Control
R&R	Rehabilitation and Resettlement
DLTF	Distance Learning Task Force
TP	Transport Permission/Permits
IBA	Indian Bank Association
MICR	Magnetic Ink Character Recognition Code
QR	Quick Response Code
GPS	Global Positioning System

CCTV	Closed-Circuit Television
DGPS	Differential Global Positioning System
RL	Reduced Levels
CER	Corporate Environment Responsibility

CHAPTER 1

INTRODUCTION

The Environmental Management Plan (¹EMP) plays a vital connection uniting forecast impacts and mitigation measures during implementation and operational activities. EMP stipulates the mitigation, monitoring and conventional measures to be taken during project implementation and operation. EMP is to escape or mitigate adverse environmental impacts, and to implement these measures.

This Environmental Management Plan (EMP) has been prepared as part of the Scoping Report which will be compiled in terms of the Environmental Assessment for the sand mining activities.

Considering the Ministry of Environment and Forest Climate Change (²MoEFCC) Notification 2006 and Sustainable Sand Mining Management Guidelines 2016, the Govt. of Maharashtra had mapped out the Minor Mineral Extraction Rules 2013. These rules are to extract all minor minerals in a scientific way so that there is no unfavourable impact on Environment and Climate. To extract every minor mineral from any land (either Government or Private) there is provision for a Mining Plan. These plans need to be approved by a competent authority. For long-term leased minor minerals (5-10 years period) and sand excavation from the riverbed, Senior Deputy Director of Directorate of Geology and Mining is the competent authority. These plans are for short term temporary permits which are valid for one year.

According to Enforcement & Monitoring Guidelines for Sand Mining 2020, Sustainable Sand Mining Management Guidelines 2016, Standard Environment conditions for sand mining and sustainable mining practices, District level Survey Report (³DSR) should be prepared and are suitable for mining and area prohibited for mining must be recognized.

¹ Environmental Management Plan

² Ministry of Environment Forest and Climate Change

³ District Survey Report

Objectives of EMP

- To provide overall conservation of the environment.
- To minimize waste generation and pollution.
- To regulate the precise use of natural resources and water.
- To provide Safety, Welfare, and Good health for the workforce and populace.
- To regulate the effective operation of all control measures.
- To ensure alertness against probable disasters and accidents.
- To monitor cumulative and long-term impacts.
- To regulate the effective operation of all control measures.

Roles and Responsibilities concerning the implementation of the EMP

The roles and responsibilities of all parties involved in successfully managing the environment are mentioned below.

Environmental Coordinator

The Environmental Coordinator will inspect operational areas on a quarterly basis and at the onset of mining any new island, to ensure that all specifications are met. The duties of the environmental coordinator will be the following.

- Guide the operations team in respect of the implementation of the environmental specifications.
- Lead the visits to ensure all work is aligned with the EMP.
- The environmental coordinator must examine the site during the three-monthly visits. All rehabilitation results will be Comprised in the quarterly report.
- Examination of the rehabilitation area and giving guidance regarding rehabilitation measures if any.

The Operations Manager

The responsibilities of the Operations Manager (4OM) or his nominated authority are as follows.

1. Familiarize themselves with the requirements of the EMP.
2. Monitor employees' and contractor's compliance with the environmental specifications; and enforce adherence.

⁴ Operations Manager

3. Communicate all environment-related incidents with the Environmental Coordinator and distribute them internally to avoid repetition.
4. Maintain a record of activities relevant to Environmental Management.
5. The Operations Manager shall be responsible for monitoring and the enforcement of the Environmental Management specifications on a day-to-day basis. Any violation of the environmental specifications shall be recorded, and the agreed disciplinary measures are taken.

Senior personnel and contractors

The roles of the senior personnel/contractors are as follows:

- Familiarize themselves with the requirements of the EMP.
- Comply with the environmental management specifications.
- Ensure that all team members are familiar with the environmental management specifications.

Details of the project

The Sandas Chincholi sand ghat area has been selected in perspective of its subsisting demand for building-grade sand for the area in and around Majalgaon Taluka. The District Mining Officer Beed has put forward the proposal for Environmental Clearance for mining. The ghat has a production of 1113 brass sand within an area of 0.7ha. The proposed proposal follows an organized mining process for Environmental Clearance.

Further Chapter informs about the in-depth details of the Sand Ghat, its geographical structure, and a Google map of the ghat with its approach road for contractors and workers to reach to sand ghat from the village.

CHAPTER 2

DETAILS OF THE PROJECT

Sandas Chincholi village is located in Majalgaon Taluka of Beed district, Maharashtra. Majalgaon is well connected with all nearby cities. The National highway NH-52, it traverses through the states of Punjab, Haryana, Rajasthan, Madhya Pradesh, Maharashtra, Karnataka in India. NH-52 is the National Highway passing through the district, covering a total distance of 73.60km. Majalgaon has situated about 51.22km by road from Beed. The district has road links to adjoining districts Ahmednagar District to the west, Jalna District to the North, Latur District to the East, Osmanabad District to the South, Parbhani District to the East. The district is well connected by roads.

Sandas Chincholi village is 60.08km away from Collector office headquarters Beed. The Geographical area of the Beed is around 10693km². The nearest Railway station to Sandas Chincholi village is Dhengli Pimpalgaon Railway station. The nearest Airport to Beed District is Aurangabad Airport, Aurangabad Airport is 104km from Beed city, 116.99km from Sandas Chincholi.

Honourable Collector Beed intends to auction Sand Ghats and appointed District Mining Officer as Project Proponent. A total of 38 sand ghats are identified by Tahsildar Majalgaon, Parli Ve., Gevrai, Beed along with District Mining Officer, Beed. The 38 sand ghats were jointly surveyed by Taluka level technical committee headed by respective Tahsildar with Dy. Engineer Irrigation Department, Junior Geologist Directorate of Geology and Mining Govt. of Maharashtra, Junior Geologist, Groundwater Surveys & Development Agency (⁵GSDA). DMO Beed and a representative of the Maharashtra Pollution Control Board (⁶MPCB), as per the procedure defined in Sand Auction Rules 2019 dated 3/09/2019 formed a Taluka-level technical committee, which explored the sand ghats for an available quantity of sand for scooping. Revenue of Rs.25 Crore is expected from the auction of these sand ghats. Sandas Chincholi Sand Ghat proposed over river Godavari in Majalgaon Taluka is proposed to cater to the infrastructural

⁵ Groundwater Surveys & Development Agency

⁶ Maharashtra Pollution Control Board

requirement of sand in the Taluka of Beed and adjoining areas of other talukas.

Table 2. 1 Details of Sandas Chincholi Sand ghat

Name of Village	Taluka	River/ Nallah	Nearest survey No.	Area (ha)	Proposed Depth for excavation (m)	Quantity Permitted for mining of Sand in Brass	Method of Mining
Sandas Chincholi	Majalgaon	Godavari	37, 46, 50, 51, 54, 55	0.7	0.45	1113	Open-cast manual mining

Table 2. 2 Salient features of the project

Particulars	Details		
Location	Village-Sandas Chincholi , Taluka-Majalgaon, District-Beed, Maharashtra.		
Latitude and Longitude	Boundary points of Sandas Chincholi sand spot	Latitude	Longitude
	BP1	19°12'43.00"N	76°16'12.72"E
	BP2	19°12'43.14"N	76°16'14.41"E
	BP3	19°12'36.62"N	76°16'14.86"E
	BP4	19°12'36.50"N	76°16'13.19"E
Sand spot area (In ha)	0.7ha		
Proposed production capacity (in Brass)	1113		

Particulars	Details
Infrastructure Requirement (As per Govt Resolution 3rd January 2018)	<ol style="list-style-type: none"> 1. Room / Hut for Official records 2. Electricity / Battery for Running CCTV 24x7 daily. 3. One Computer / Android-based Mobile for the online generation of Invoice numbers.
Distance of project site from nearest rail or road bridge over the concerned River, Nallah, etc.	2.12km
Distance from infrastructural facilities	
Railway line	
National Highway	
State Highway	
Major District Road	
Any Other Road	
Electric transmission line pole or tower	
Canal or check dam or reservoirs or lake or ponds	
In-take for drinking water pump house	
Intake for Irrigation canal pumps	

Particulars	Details
Areas already subjected to pollution or environmental damage. (those where existing legal environmental standards are exceeded)	None
Areas susceptible to natural hazards which could cause the project to Present environmental problems (earthquakes, subsidence, landslides, erosion, flooding, or extreme or adverse climatic conditions)	No. Sand Ghat is at safe distances from natural hazards like earthquake prone area, subsidence, landslide, erosion, flooding prone area and extreme or adverse climatic conditions

Particulars	Details
<p>Whether the proposal involves approval or clearance under the following Regulations or Acts, namely: - (a) The Forest (Conservation) Act, 1980. (b) The Wildlife (Protection) Act, 1972. (c) The Coastal Regulation Zone Notification, 2011. If yes, details of the same and their status are to be given.</p>	None
<p>Forest land involved (hectares)</p>	None

The below figure shows the google image of Sandas Chincholi sand ghat.



Fig 2.1-Google image of Sandas Chincholi sand ghat

Approach road along with google location is as shown below.



Fig 2.2-Approach Road for sand ghat

Next chapter 3 is Baseline Environmental Status in which the entire Topography, Climate, Soil Environment, Land use, water Environment, Hydrology, Biological environment, and Socio-economic Environment are briefly explained for the Beed district.

CHAPTER 3

BASELINE ENVIRONMENT STATUS

Topography

The Sand Ghat area as per the survey is the riverbed of the Godavari River of the Beed district. The maximum elevation is 411m MSL, average elevation is 414m MSL, & minimum elevation is 407m (⁷MSL) Mean Sea Level. The slope of the Sand Ghat area towards the Southwest to Northeast side. The flow of Godavari River is from Southeast direction.

Presently, there is neither any infrastructure within the riverbed nor are proposed.

Hydrology

There will be no change in the Water Table during the mining operation, as the depth of mining shall be restricted to 0.45m water level, which is less likely to affect the surface level or Groundwater Table. There is no proposal of any stream modification/diversion due to this mining activity hence there will be not any impact on the flow of water.

Soil Environment

The riverbed consists of sand /gravel. There is no topsoil. The depth of mining shall be restricted to 0.45m. There is no crucial impact on the soil forecasted due to mining activities.

Land Use Land Cover

Land use shows that agriculture land use is predominant. The proposed site is 0.7ha having adjoined Khasara No 37, 46, 50, 51, 54, 55. The land doesn't cover any human habitation, forest, etc. Any change in the scope of the approved Mining Plan will lead to riverbank erosion/cutting and thereby river channel shifting, degradation of land, causing loss of properties and degradation of the surrounding landscape.

⁷ Mean sea level

Water Environment

While transporting sand there may be fugitive dust. There will be water requirement for spraying for dust suppression purposes. This water will be supplied from the borewell from nearby villages through tankers as well as from surface water sources. The water source may vary from village to village.

Climate

During summer May is the hottest month of the year in this area. The temperature rises to 42°C in the month of May. The average rainfall in this region is 600mm to 700mm About 50% of rainfall precipitates between June to September. December is the coldest month with temperatures falling down to 18°C. Overall the proposed site area has sub-tropical conditions.

Biological Environment

Flora

The agricultural area is seen near the Sand Ghat. Few trees and thorny bushes are seen on the banks of the river.

Fauna

As there is no forest cover, no endangered species of wildlife are seen in this area.

Socio-Economic Environment

This project may create constructive impacts of the sand mining that are stated below:

1. The mining operations will provide direct & indirect employment to village people.
2. The villages and their inhabitants & domestic animals will not be disturbed due to mining, as the quarry is far from their settlements.
3. Local workforce will be given first preference for employment.
4. Mining activities will benefit the local people due to the provision of more infrastructural facilities (developments of approach routes within the village area).

The next chapter describes all possible impacts on the Environment due to this project along with its mitigation measure to overcome these impacts.

CHAPTER 4

IMPACT ASSESSMENT REPORT ALONG WITH PROPOSED MITIGATION MEASURES

1. Land Environment

Anticipated Impact

Movement of vehicles can create issues for agricultural land, human habitations, noise, and risk for public and cause traffic hazards. The impacts include damage to the riverbank due to access ramps to the riverbed, soil erosion because of extraction of sand, micro disturbance to groundwater, possible stimulation of the changed river course, and contamination of sand aquifer water due to ponding. There might be surface degradation due to the road network.

The quality of soil will not be affected due to transportation or any other activity of mining.

Mitigation measure

1. Mining depth should be restricted to 3 meters and distance from the bank should be ¼th or river width and should not be less than 7.5 meters as per “Sustainable Sand Mining Guidelines 2020” ■ Page 23, Point no 4.3 (m).
2. There will be a minimal number of access roads to riverbeds. Cutting of riverbanks will be avoided and ramp with smooth slope will be maintained. Access points to the riverbed will be decided based on the least steepness of the riverbank and the least human activity at that location.
3. No foreign material like polythene bags, jute bags, and useless articles should be allowed to remain/spill in the riverbed and catchment area, or no pits/pockets will be allowed to be filled with such material.
4. Mining at the concave side of the river channel should be avoided to prevent bank erosion. Similarly, a tortuous segment of a river is to be selected for mining in such a way as to ignore the natural eroding of banks.
5. Ensure that ponding is not created in the riverbed.
6. Transportation route should be such that it gives minimum

damage to the environment.

7. Green belt will be developed along the haul road and the bank of rivers of mine premises and near the sand mining site. While selecting the plant species, preference will be given for planting native species of the area.

2. Water environment

Anticipated Impact

The project activity will be carried out in the dry part of the riverbed. Care will be taken to ensure that neither of the project activities will affect the water environment or riverbank habitats. During the lean months, the proposed Sand Mining will not expose the base flow of the river and hence there will not be any inauspicious impact on surface hydrology and groundwater regime due to this project. Project activities will not have any adverse consequences on the physical components of the environment and therefore may not have any effect on the recharge of ground waters or affect the water quality. Monitoring of water quality will be checked yearly.

Mitigation measures

1. Mining is avoided during the monsoon season and at the time of floods. This will help in the replenishment of sand in the riverbed.
2. Mining below the subterranean water level will be avoided as a safeguard against environmental contamination and over-exploitation of resources.
3. River stream will not be transferred to create active channels.
4. Mining schedule is synchronized with the river flow direction and the gradient of the land.
5. Mining at the concave side of the river channel will be avoided to prevent bank erosion.
6. Tortuous segment of the river will be selected for mining in such a way as to avoid naturally eroding banks and to promote mining on naturally building meander components.
7. Mining depth shall be maintained as per the guidelines and

rules of the Sand Mining Policy dated 03/09/2019 and recommendations of Maharashtra State (⁸M.S.). State Ground Water Department for extraction of sand during the lease period.

8. Water Quality Monitoring for the ground waters, river water, and other surface waters shall be carried out seasonally to ensure that the water quality is not affected by the project activities.
9. Utmost care will be taken to minimize or control leaking vehicles to be used for sand transportation.
10. The washing of tractor trolleys in the river will not be done.
11. The contractor will follow all guidelines and rules for proper and scientific methods of mining during the period of extracting the sand.

3. Air Environment

Anticipated Impacts

Plying of tractor trolleys from the public road to river sand collection points needs access roads. The majority of such access roads are the already existing roads/tracks being used by pedestrians/cart owners. The movement of heavy vehicles sometimes causes problems for cattle, agricultural land, and human habitations due to dust, noise, and the movement of the public. These environmental problems are felt more as the area is rural in nature.

Air pollution is likely to be caused at various stages of Sand Mining operations such as excavation, loading & transportation of material. Most of the fugitive dust emissions will be generated from loading & transportation. This dust becomes airborne and spreads away to surrounding areas.

The impact on air is mainly localized in nature as the dust particles of 100 μ in size are not carried to farther distances beyond 100m and the effect is felt within the core zone of the project involving active Sand Mining operations.

⁸ Maharashtra State

Mitigation measures

1. Movement of the vehicles on the road will be increased; however, the unmetalled road in the mining area will be sprinkled with water at regular intervals.
2. In addition to preventing spillage from tractor trolleys, overloading shall be controlled to 1-brass/tractor trolley. The speed limit will be <20 km/hr.
3. Maintenance of the haul road will be done on a regular basis.
4. To avoid fugitive dust emissions at the time of excavation, a regular sprinkling of water will be done on regular basis.
5. Sand is transported to the sites by road through tractor trolleys. The sand-carrying vehicles shall be covered by tarpaulin sheets.
6. The Green belt development will be prepared along the haul roads, which will act as a pollution sink.
7. To minimize vehicular pollution from the sand transporting vehicles, the following conditions will be insisted upon to permit the vehicles of the transporters.
8. The vehicles should be Bharat-IV stage compliant and should have a Pollution Under Control (⁹PUC) Certificate issued by appropriate authorities.
9. Regular maintenance of transport vehicles and monitoring of vehicular emission levels at periodical intervals.

4. Noise Environment

Anticipated Impact

The noise environment in this project will be overdone by the equipment at the site and vehicular transportation. A slight increase in noise levels of <10dB(A) can be expected up to a distance of 100m.

Mitigation measures.

1. Minimum use of horns in the village area.
2. Timely maintenance of vehicles and their silencers to

⁹ Pollution Under Control

minimize vibration and sound.

3. Phasing out old and worn-out tractor trolleys.
4. Provision of green belts along the road networks.
5. Care will be taken to produce minimum sound during sand loading.
6. Backhoe loader excavator will be used
7. Earplugs may be provided to protect the labourers working at the site.

5. Socio-economic Environment

Anticipated Impacts and Evaluation

1. The project activities shall not have any adverse impacts on any of the common property resources of the village communities, as the Sand Mine lease area is not being used for any purpose by any section of the society in this region.
2. There is no Resettlement and Rehabilitation (¹⁰R&R) involvement in this project.
3. There is no land acquisition in this project.
4. A major portion of the houses in the study area is semi-pucca-type structures.
5. The water source to these areas is from the Grampanchayat /Nagar Parishad connection and private bore wells and wells.
6. People living around the project area need the project for the purpose of employment and economic benefits.
7. The awareness level regarding the proposed mining activity is very towering. The proposed mining activity is expected to provide stimulus to socio-economic activities in the region and thereby accelerate further development processes.

Social and Demographic Profile

The workers are from local villages. These people have been provided welfare benefits from the lessee like medical benefits,

¹⁰ Rehabilitation and Resettlement

insurance, fees for children's education, etc. They have some land and cattle for their daily earnings. Additional revenue earned from the Sand Mining work will improve their living standard. The group of quarries in and around will help to have infrastructure facilities like roads, schools, shops, etc. This will enhance their social life.

Occupational Health and Safety

This is a riverbed Sand Mine. So, the mining activities are comparatively smaller because the production is not on a high scale. Workers do not come across any extreme conditions like excessive heat, moisture, etc. Workers working around it may come across this dusty environment. But the impact on health will be within the limit.

Human Settlement

1. There are no houses in and around the lease area. Blasting is the only activity, which may affect the settlement, which is not done. The settlement is more than 1-km from the sand mine.
2. Appropriate precautions will be taken during mining. Transportation of finished products is through the villages. There will be an effect of traffic on the local people. However, the intensity of traffic is 70-80/day.

Health and Hygiene

In general, the health of villagers is moderately good. In the rainy season, the atmospheric condition is unhygienic due to a lack of proper drainage and sanitation in the village habitation. Villagers are working in agricultural fields and work as labourers.

Education

Most education of 70% young <20 years, is up to the 5th to 9th. Economic condition is in general moderate. So, after this project, the standard of education will increase.

Socio-Economic Benefits Arising Out of Mining

1. Generation of employment in rural areas.
2. Upgradation in the living standards of rural people.
3. Creating infrastructural facilities like roads, electricity, shops, schools, etc.
4. Upgrading literacy in the area by exploiting natural minerals so the generation of revenue.

5. Helping to sustain construction activity.
6. Improving the greenery of the area, which is otherwise poor.

Liquid Effluent

Not applicable, because these activities do not generate effluent from operation or process.

Solid Waste

Not applicable, because small mines and impacts are negligible.

Project benefits due to the sand mining of Sandas Chincholi are explained in the next Chapter.

CHAPTER 5

PROJECT BENEFITS

The proposed Sand Mining project of Sandas Chincholi village, Majalgaon Taluka, Beed District will lead to the following benefits:

1. Increase in the revenue of the district will ultimately increase the revenue of the village, which in return can be used to improve the infrastructure of the village.
2. Sand is available for building construction work and by systematic separation of sand, there is no possibility of a flood. Providing smooth movement of water of the river.
3. This project will contribute additional revenue to the state Exchequer in the form of revenue.
4. The project will conclude with employment opportunities for unskilled/skilled local people.
5. Standard of living of employed people will increase.

CHAPTER 6

SITE-SPECIFIC ENFORCEMENT & MONITORING PLAN

Sand Ghat Site specific enforcement & monitoring plan

(as per guidelines stipulated in the Enforcement and Monitoring Guidelines for sand mining issued by MoEFCC in January 2020.)

District administration shall deliver information on its website about the Sand Mines in the district for public information. The objective is to extend all information into the public domain so that the citizens are aware of the mining activities. People can also report to the district administration any deviation observed. Suitable feedback and its composition shall also be made operational.

Details shall include, but not be limited to, lease area, geo-coordinates of lease area and mineable area, transport routes, permitted capacity, regulatory conditions for operation including mining, environmental and social commitments, etc.

An Independent Committee of experts constituted by the Distance Learning Task Force (¹¹DLTF) will assess the environmental or ecological damage caused due to illegal mining and recommend recovery of environmental compensation from the concerned miners.

The recommendation may also include action under the provision of the Environment (Protection) Act 1986 u/s.15 read with s.19.

¹¹ Distance Learning Task Force

CHAPTER 7

SECURITY FEATURES

Security features are included in the Transport Permission/Permits (TP)

It will be ensured that the following security features are included in the Transport Permission/Permits (¹²TP) so that duplicate/fraudulent/forged TPs for transport, not accounted for in the IT-based system, is not possible:

1. Printed on Indian Bank Association (¹³IBA) Approved letterhead with account details
2. Magnetic Ink Character Recognition Code (¹⁴MICR) paper
3. Unique Barcode
4. Unique Quick Response Code (¹⁵QR)
5. Fugitive Ink Background
6. Invisible Ink Mark
7. Void Pantograph Watermark
8. Global Positioning System (¹⁶GPS) based vehicle tracking system
9. Closed-Circuit Television (¹⁷CCTV) Camera

¹² Transport Permission

¹³ Indian Bank Association

¹⁴ Magnetic Ink Character Recognition Code

¹⁵ Quick Response Code

¹⁶ Global Positioning System

¹⁷ Closed Circuit Television

CHAPTER 8

REPLENISHMENT

Replenishment study is the most important part of Sand Mining as it is the only basis to carry out sand mining. Without a Replenishment Study, we cannot understand the amount of deposition of sand. Following points to be followed for the replenishment study.

1. Area of deposition and erosion will be calculated for each cross-section after giving due regard to the stability & safety of active channel banks & other features of importance.
2. Differential Global Positioning System (¹⁸DGPS) and other survey tools will be used to define the topography, contours, and offsets of the lease area.
3. Contour & elevation benchmarks will provide baseline data for assessing pre- and post-study period scenario.
4. Physical benchmarks will be fixed at appropriate intervals (preferably 1 in 30m) & Reduced levels (¹⁹RL) shall be validated from a nearby standard RL.
5. These RL will be engraved on a steel plate (Bench Plate) & will be fixed & placed at locations that are free from any damages & are available in the pre-and post-study period.
6. Bench plates will be available for use during the mining period as a reference for all mining activity.
7. Baseline data on elevation status for a grid of 10m x 10m is preferred to have accuracy in the assessment.
8. It is expected that two consecutive cross-sections in longitudinal and lateral directions will not be more than a 10m distance apart.
9. Changes observed in the elevation in pre and post-scenario at each node, will be depicted in graphical forms with an appropriate scale to estimate the area of deposition & erosion.

¹⁸ Differential global positioning system

¹⁹ Reduced levels

10. Elevation level will be in reference to the nearest bench plates established for the purpose.
11. The levels (MSL & RL) of the corner point of each grid will be identifiable and safety barriers (non-Mining) demarcated as restricted in consensus with the Mineral Concession Rules of the respective State, and the provision mentioned in this Sustainable Sand Mining Management Guidelines.
12. A clear identification will be highlighted between grids under the mineable and grids under the non-mineable area.
13. These baseline data (pre and post) be subjected to stimulation with the help of data mine software to derive the replenishment area and corresponding volume and estimated weight.
14. The database will be structured in a tabulated form clearly depicting the nomenclature of the section lines, latitude and longitude of the starting point, chainage, and respective levels of all the points taken on that section line.
15. Net area shall be derived after summation of an area of deposition minus the area of erosion for each cross-section.
16. Volume will be estimated by multiplying the distance between two cross-sections with the average of the net area of these two consecutive cross-sections.
17. One sample per 900m² (30m x 30m) will be the preferred sample density for the assessment of bulk density for the estimation of deposition rate.
18. Care will be taken that the sample for assessment of Bulk Density is taken from the deposition zone & not from erosion.

Methodology for Sand Mining:

The following methodology should be followed for the Replenishment study.

1. The Demarcation and benchmark of the Sand Ghat are done at 10m x 10m intervals.
2. The use of the Auger Driller is to find out the depth of sand in each grid.
3. Auger Driller has created the holes in sand ghat by 10mx10m grid pattern.
4. Measured the depth of holes by using a measuring tape.

5. After taking all the readings average depth of sand is calculated.
6. The average depth of Sandas Chincholi at Godavari is measured.

Replenishment study of sand in the proposed ghat along with details of the methodology, technology used to identify the existing reserve & replenishment of the same

Dandy Bolton Equation

For runoff less than 2 inches

$$S = 1280 \times (Q) \times 0.46 \times (1.46 - 0.26 \log(A)) \times F$$

For runoff more than 2 inches

$$S = 1958 \times (Q) \times (e^{-0.055 \times Q}) \times (1.43 - 0.26 \log(A))$$

Where,

S = sediment yield of stream (t/yr/km²),

Q = average annual runoff (m³),

A = net drainage area in sq.mile.

CHAPTER 9

PROPOSED PLANTATION PLAN

The Project Proponent must take care of the plantation around the site. This will not only enhance the beautification of the area but also there will be the reduction of pollution, not some extent.

Details of the plantation and Tree species recommended for the plantation are shown below.

Table 9. 1 Details of green belt

Location of greenbelt	Both sides of the approach road, On the riverbanks of both sides of the sand spot & nearby open areas. Haul Road outside the riverbed
No. of plants to be planted	2000 per Hectare
Spacing of plants	2m grid interval
Species selected	Native species

Table 9. 2 Trees species for plantation

Botanical Name	Local Name	Importance
Azadirachta Indica	Neem	Neem oil & neem products
Tectona Grandis	Teek	Antibacterial, Antifungal, Antiulcer
Ficus religiosaa	Peepal	Medicinal use, Fruits & figs
Bambusa vulgaris	Bamboo	Anthelmintic Anti-inflammatory, Astringent Properties
Madhuca longifolia	Mahua	Acts as a Stimulant & cough relief,

CHAPTER 10

ENVIRONMENTAL MANAGEMENT PLAN

A total capital cost of Rs.5.97 Lakhs has been kept in the project cost towards the environmental protection, control, mitigation measures, and implementation of the Environmental Management Plan (EMP). This cost is borne by the bidder/leaseholder. The budgetary cost estimate for the EMP is given in Table.

Table 10. 1 Budgetary cost of EMP

Sr	Impact Source	Impact	Control Measure	Cost(Rs)
1	Transport Road	On Air Quality	Compaction, gradation, and drainage on both sides.	35000
		On Land, the Stability of the Road and degradation of road	Proper maintenance	20000
			Regular water spraying	25000
			The air quality will be monitored at the impacted village. (For One Day Monitoring)	3000
			Health Check-up of Employees	3000
2	Truck/ Tractor Movement	Air Quality	Sand-carrying trucks will be effectively covered by tarpaulin to avoid the escape of fines to the atmosphere. (2 Tarpaulin)	20000
			Regular monitoring of the exhaust fumes	3000

Sr	Impact Source	Impact	Control Measure	Cost(Rs)
			Barriers & Traffic Management Expenses. (Excluding Manpower Salary which is included in labour costs)	8000
3	Ramp and Sand Reach	Mining Operation	Regular ramp Inspection and Ramp maintenance. (Excluding Manpower Salary which is included in labour costs)	40000
			Provision of dust masks	8000
4	Bank Management	Bank Erosion/Flood Plain management	The green belt along the bank (For Green Belt Development)	100000
			Plantation of wide leaf tall trees on banks and grass along a slanting portion of the bank	
5	Transportation on Village Roads	Dust Control	The green belt along village Rd (For Green Belt Development)	
6	Final Mine Closure Plan implementation	Replenishment of Sand	Gabions/ boulders will be arranged as per guidelines	10000
7	Mobile toilet, sewage handling & treatment		Mobile toilet, sewage handling & treatment	70000
8	CCTV Monitoring			70000
Total				415000

Budget For Corporate Environment Responsibility (²⁰CER)

About 2% fund of the project cost is allocated for Corporate Environment Responsibility (CER) activities as presented in below Table

Table 10.2 Budget for CER

Sr.	Description	Cost (Rs)
1.	Village Schools (separate toilet for girls and boys)	10000
2.	Solar panels over Gram Panchayat buildings	10000
3.	Solar panels over Public Health Centers	15000
	Total	35000

²⁰ Corporate Environment Responsibility

CHAPTER 11

SUMMARY AND CONCLUSION

The Roles and Responsibilities of the Environmental coordinator, the Operation Manager, and the senior personnel contractor are essential in EMP.

The environmental status of the project site and study area of 10km radius is delineated with respect to air, noise, water, land, biological and socio-economic environment the different project activities in the construction and operation phases are identified.

To identify the impacts, the interaction between the project activities and different components of the environment is classified phase-wise. A summary of the recognized impacts is given in the following paragraphs.

- During the operational phase, the transportation of sand could cause a temporary disturbance to the local environment which will be prevented with the proposed mitigation measures.
- Proposed project will not have any major significant negative impacts. The minor impacts arising during Excavation and Transportation phases can be mitigated with the help of the proposed Environmental Management Plan.
- In general, sand excavation from Sandas Chincholi sand spot will be useful to the developmental work in the district and generate employment opportunities.

From this project, it is concluded that the district revenue will increase in return minimum of 2% of funds are utilized for the development of the village. The project will also grab employment which will improve the standard of life of villagers.

*** END ***

Environmental Management Plan

As per Rules 23 & 26 of MMME (D & R) RULE 2013 & Section 15 of MMDR Act 1957, MoEFCC Notification 2006, S.O. 141(E) dated 15. 01. 2016; MoEFCC, Sustainable Sand Mining Management Guidelines 2016, Guidelines for Mining Policy 2020)

For

ENVIRONMENTAL CLEARANCE

of

SAND MINING (MINOR MINERAL)

for

Sarvar Pimpalgaon– A Riverbed Sand Mine / Sand Ghat
Khasra No. GSDA approved 124, 134, 137 to 140, 145, 153, 154,
156
Area (4.55ha)

Village Sarvar Pimpalgaon, Taluka Majalgaon, District Beed

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ABBREVIATION

Short Form	Long Form
EMP	Environmental Management Plan
MoEFCC	Ministry of Environment Forest and Climate Change
DSR	District-level Survey Report
EC	Environmental Coordinator
OM	Operations Manager
GSDA	Groundwater Surveys & Development Agency
MPCB	Maharashtra Pollution Control Board
MSL	Mean Sea Level
MS	Maharashtra State
PUC	Pollution Under Control
R&R	Rehabilitation and Resettlement
DLTF	Distance Learning Task Force
TP	Transport Permission/Permits
IBA	Indian Bank Association
MICR	Magnetic Ink Character Recognition Code
QR	Quick Response Code
GPS	Global Positioning System

CCTV	Closed-Circuit Television
DGPS	Differential Global Positioning System
RL	Reduced Levels
CER	Corporate Environment Responsibility

CHAPTER 1

INTRODUCTION

The Environmental Management Plan (¹EMP) plays a vital connection uniting forecast impacts and mitigation measures during implementation and operational activities. EMP stipulates the mitigation, monitoring and conventional measures to be taken during project implementation and operation. EMP is to escape or mitigate adverse environmental impacts, and to implement these measures.

This Environmental Management Plan (EMP) has been prepared as part of the Scoping Report which will be compiled in terms of the Environmental Assessment for the sand mining activities.

Considering the Ministry of Environment and Forest Climate Change (²MoEFCC) Notification 2006 and Sustainable Sand Mining Management Guidelines 2016, the Govt. of Maharashtra had mapped out the Minor Mineral Extraction Rules 2013. These rules are to extract all minor minerals in a scientific way so that there is no unfavourable impact on Environment and Climate. To extract every minor mineral from any land (either Government or Private) there is provision for a Mining Plan. These plans need to be approved by a competent authority. For long-term leased minor minerals (5-10 years period) and sand excavation from the riverbed, Senior Deputy Director of Directorate of Geology and Mining is the competent authority. These plans are for short term temporary permits which are valid for one year.

According to Enforcement & Monitoring Guidelines for Sand Mining 2020, Sustainable Sand Mining Management Guidelines 2016, Standard Environment conditions for sand mining and sustainable mining practices, District level Survey Report (³DSR) should be prepared and are suitable for mining and area prohibited for mining must be recognized.

¹ Environmental Management Plan

² Ministry of Environment Forest and Climate Change

³ District Survey Report

Objectives of EMP

- To provide overall conservation of the environment.
- To minimize waste generation and pollution.
- To regulate the precise use of natural resources and water.
- To provide Safety, Welfare, and Good health for the workforce and populace.
- To regulate the effective operation of all control measures.
- To ensure alertness against probable disasters and accidents.
- To monitor cumulative and long-term impacts.
- To regulate the effective operation of all control measures.

Roles and Responsibilities concerning the implementation of the EMP

The roles and responsibilities of all parties involved in successfully managing the environment are mentioned below.

Environmental Coordinator

The Environmental Coordinator will inspect operational areas on a quarterly basis and at the onset of mining any new island, to ensure that all specifications are met. The duties of the environmental coordinator will be the following.

- Guide the operations team in respect of the implementation of the environmental specifications.
- Lead the visits to ensure all work is aligned with the EMP.
- The environmental coordinator must examine the site during the three-monthly visits. All rehabilitation results will be Comprised in the quarterly report.
- Examination of the rehabilitation area and giving guidance regarding rehabilitation measures if any.

The Operations Manager

The responsibilities of the Operations Manager (4OM) or his nominated authority are as follows.

1. Familiarize themselves with the requirements of the EMP.
2. Monitor employees' and contractor's compliance with the environmental specifications; and enforce adherence.

⁴ Operations Manager

3. Communicate all environment-related incidents with the Environmental Coordinator and distribute them internally to avoid repetition.
4. Maintain a record of activities relevant to Environmental Management.
5. The Operations Manager shall be responsible for monitoring and the enforcement of the Environmental Management specifications on a day-to-day basis. Any violation of the environmental specifications shall be recorded, and the agreed disciplinary measures are taken.

Senior personnel and contractors

The roles of the senior personnel/contractors are as follows:

- Familiarize themselves with the requirements of the EMP.
- Comply with the environmental management specifications.
- Ensure that all team members are familiar with the environmental management specifications.

Details of the project

The Sarvar Pimpalgaon sand ghat area has been selected in perspective of its subsisting demand for building-grade sand for the area in and around Majalgaon Taluka. The District Mining Officer Beed has put forward the proposal for Environmental Clearance for mining. The ghat has a production of 16078 brass sand within an area of 4.55ha. The proposed proposal follows an organized mining process for Environmental Clearance.

Further Chapter informs about the in-depth details of the Sand Ghat, its geographical structure, and a Google map of the ghat with its approach road for contractors and workers to reach to sand ghat from the village.

CHAPTER 2

DETAILS OF THE PROJECT

Sarvar Pimpalgaon village is located in Majalgaon Taluka of Beed district, Maharashtra. Majalgaon is well connected with all nearby cities. The National highway NH-52, it traverses through the states of Punjab, Haryana, Rajasthan, Madhya Pradesh, Maharashtra, Karnataka in India. NH-52 is the National Highway passing through the district, covering a total distance of 73.60km. Majalgaon has situated about 51.22km by road from Beed. The district has road links to adjoining districts Ahmednagar District to the west, Jalna District to the North, Latur District to the East, Osmanabad District to the South, Parbhani District to the East. The district is well connected by roads.

Sarvar Pimpalgaon village is 69.75km away from Collector office headquarters Beed. The Geographical area of the Beed is around 10693km². The nearest Railway station to Sarvar Pimpalgaon village is Manwath Railway station. The nearest Airport to Beed District is Aurangabad Airport, Aurangabad Airport is 104km from Beed city, 103.93km from Sarvar Pimpalgaon.

Honourable Collector Beed intends to auction Sand Ghats and appointed District Mining Officer as Project Proponent. A total of 38 sand ghats are identified by Tahsildar Majalgaon, Parli Ve., Gevrai, Beed along with District Mining Officer, Beed. The 38 sand ghats were jointly surveyed by Taluka level technical committee headed by respective Tahsildar with Dy. Engineer Irrigation Department, Junior Geologist Directorate of Geology and Mining Govt. of Maharashtra, Junior Geologist, Groundwater Surveys & Development Agency (⁵GSDA). DMO Beed and a representative of the Maharashtra Pollution Control Board (⁶MPCB), as per the procedure defined in Sand Auction Rules 2019 dated 3/09/2019 formed a Taluka-level technical committee, which explored the sand ghats for an available quantity of sand for scooping. Revenue of Rs.25 Crore is expected from the auction of these sand ghats. Sarvar Pimpalgaon Sand Ghat proposed over river Godavari in Majalgaon Taluka is proposed to cater to the infrastructural

⁵ Groundwater Surveys & Development Agency

⁶ Maharashtra Pollution Control Board

requirement of sand in the Taluka of Beed and adjoining areas of other talukas.

Table 2. 1 Details of Sarvar Pimpalgaon Sand ghat

Name of Village	Taluka	River/ Nallah	Nearest survey No.	Area (ha)	Proposed Depth for excavation (m)	Quantity Permitted for mining of Sand in Brass	Method of Mining
Sarvar Pimpalgaon	Majalgaon	Godavari	124, 134, 137 to 140, 145, 153, 154, 156	4.55	1.00	16078	Open-cast manual mining

Table 2. 2 Salient features of the project

Particulars	Details		
Location	Village-Sarvar Pimpalgaon, Taluka-Majalgaon, District-Beed, Maharashtra.		
Latitude and Longitude	Boundary points of Sarvar Pimpalgaon sand spot	Latitude	Longitude
	BP1	19°15'3.07"N	76°20'28.25"E
	BP2	19°15'4.05"N	76°20'28.79"E
	BP3	19°14'39.78"N	76°21'5.32"E
	BP4	19°14'38.76"N	76°21'4.60"E
Sand spot area (In ha)	4.55ha		
Proposed production capacity (in Brass)	16078		

Particulars	Details
Infrastructure Requirement (As per Govt Resolution 3rd January 2018)	<ol style="list-style-type: none"> 1. Room / Hut for Official records 2. Electricity / Battery for Running CCTV 24x7 daily. 3. One Computer / Android-based Mobile for the online generation of Invoice numbers.
Distance of project site from nearest rail or road bridge over the concerned River, Nallah, etc.	2.44km
Distance from infrastructural facilities	
Railway line	23.55km
National Highway	2.40km (NH-61)
State Highway	48.07km (SH-144)
Major District Road	62.68km
Any Other Road	1.40km
Electric transmission line pole or tower	
Canal or check dam or reservoirs or lake or ponds	
In-take for drinking water pump house	
Intake for Irrigation canal pumps	

Particulars	Details
Areas already subjected to pollution or environmental damage. (those where existing legal environmental standards are exceeded)	None
Areas susceptible to natural hazards which could cause the project to Present environmental problems (earthquakes, subsidence, landslides, erosion, flooding, or extreme or adverse climatic conditions)	No. Sand Ghat is at safe distances from natural hazards like earthquake prone area, subsidence, landslide, erosion, flooding prone area and extreme or adverse climatic conditions

Particulars	Details
<p>Whether the proposal involves approval or clearance under the following Regulations or Acts, namely: - (a) The Forest (Conservation) Act, 1980. (b) The Wildlife (Protection) Act, 1972. (c) The Coastal Regulation Zone Notification, 2011. If yes, details of the same and their status are to be given.</p>	None
Forest land involved (hectares)	None

The below figure shows the google image of Sarvar Pimpalgaon sand ghat.



Fig 2.1-Google image of Sarvar Pimpalgaon sand ghat

Approach road along with google location is as shown below.

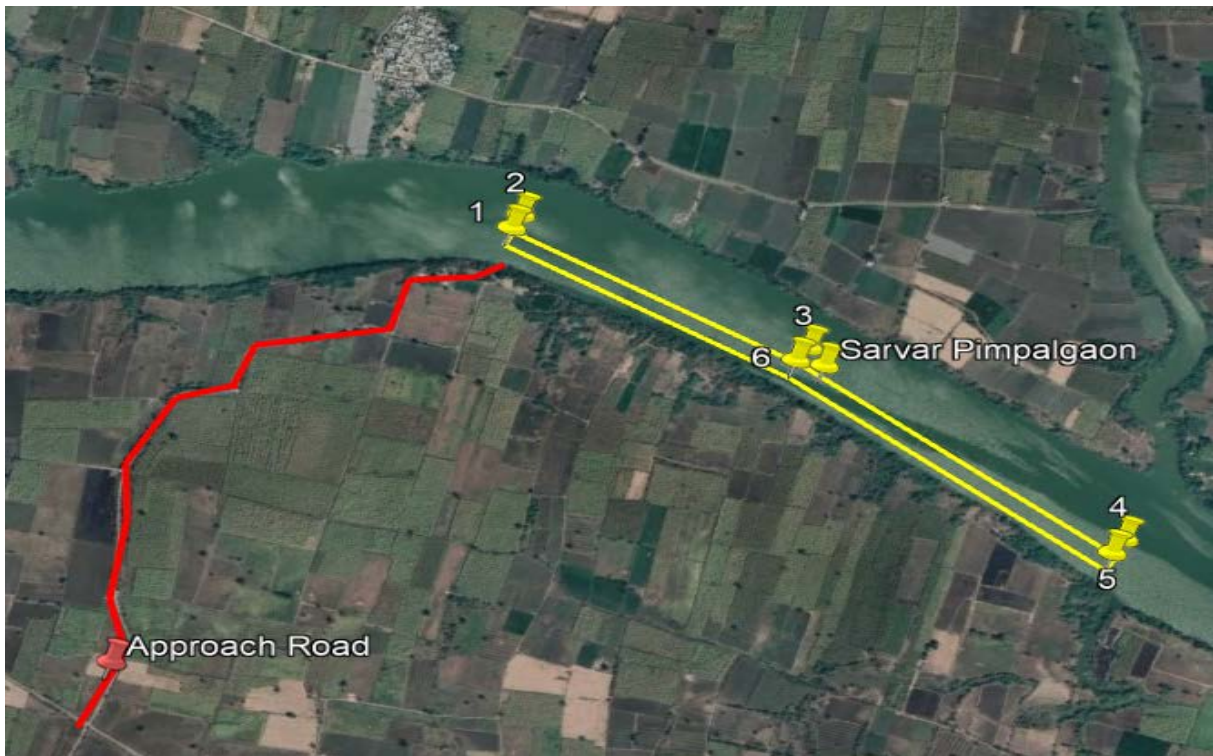


Fig 2.2-Approach Road for sand ghat

Next chapter 3 is Baseline Environmental Status in which the entire Topography, Climate, Soil Environment, Land use, water Environment, Hydrology, Biological environment, and Socio-economic Environment are briefly explained for the Beed district.

CHAPTER 3

BASELINE ENVIRONMENT STATUS

Topography

The Sand Ghat area as per the survey is the riverbed of the Godavari River of the Beed district. The maximum elevation is 417m MSL, average elevation is 413m MSL, & minimum elevation is 408m (⁷MSL) Mean Sea Level. The slope of the Sand Ghat area towards the Southwest to Northeast side. The flow of Godavari River is from Southeast direction.

Presently, there is neither any infrastructure within the riverbed nor are proposed.

Hydrology

There will be no change in the Water Table during the mining operation, as the depth of mining shall be restricted to 1.0m water level, which is less likely to affect the surface level or Groundwater Table. There is no proposal of any stream modification/diversion due to this mining activity hence there will be not any impact on the flow of water.

Soil Environment

The riverbed consists of sand /gravel. There is no topsoil. The depth of mining shall be restricted to 1.0m. There is no crucial impact on the soil forecasted due to mining activities.

Land Use Land Cover

Land use shows that agriculture land use is predominant. The proposed site is 4.55ha having adjoined Khasara No 124, 134, 137 to 140, 145, 153, 154, 156. The land doesn't cover any human habitation, forest, etc. Any change in the scope of the approved Mining Plan will lead to riverbank erosion/cutting and thereby river channel shifting, degradation of land, causing loss of properties and degradation of the surrounding landscape.

⁷ Mean sea level

Water Environment

While transporting sand there may be fugitive dust. There will be water requirement for spraying for dust suppression purposes. This water will be supplied from the borewell from nearby villages through tankers as well as from surface water sources. The water source may vary from village to village.

Climate

During summer May is the hottest month of the year in this area. The temperature rises to 42°C in the month of May. The average rainfall in this region is 600mm to 700mm About 50% of rainfall precipitates between June to September. December is the coldest month with temperatures falling down to 18°C. Overall the proposed site area has sub-tropical conditions.

Biological Environment

Flora

The agricultural area is seen near the Sand Ghat. Few trees and thorny bushes are seen on the banks of the river.

Fauna

As there is no forest cover, no endangered species of wildlife are seen in this area.

Socio-Economic Environment

This project may create constructive impacts of the sand mining that are stated below:

1. The mining operations will provide direct & indirect employment to village people.
2. The villages and their inhabitants & domestic animals will not be disturbed due to mining, as the quarry is far from their settlements.
3. Local workforce will be given first preference for employment.
4. Mining activities will benefit the local people due to the provision of more infrastructural facilities (developments of approach routes within the village area).

The next chapter describes all possible impacts on the Environment due to this project along with its mitigation measure to overcome these impacts.

CHAPTER 4

IMPACT ASSESSMENT REPORT ALONG WITH PROPOSED MITIGATION MEASURES

1. Land Environment

Anticipated Impact

Movement of vehicles can create issues for agricultural land, human habitations, noise, and risk for public and cause traffic hazards. The impacts include damage to the riverbank due to access ramps to the riverbed, soil erosion because of extraction of sand, micro disturbance to groundwater, possible stimulation of the changed river course, and contamination of sand aquifer water due to ponding. There might be surface degradation due to the road network.

The quality of soil will not be affected due to transportation or any other activity of mining.

Mitigation measure

1. Mining depth should be restricted to 3 meters and distance from the bank should be $\frac{1}{4}$ th or river width and should not be less than 7.5 meters as per “Sustainable Sand Mining Guidelines 2020” ■ Page 23, Point no 4.3 (m).
2. There will be a minimal number of access roads to riverbeds. Cutting of riverbanks will be avoided and ramp with smooth slope will be maintained. Access points to the riverbed will be decided based on the least steepness of the riverbank and the least human activity at that location.
3. No foreign material like polythene bags, jute bags, and useless articles should be allowed to remain/spill in the riverbed and catchment area, or no pits/pockets will be allowed to be filled with such material.
4. Mining at the concave side of the river channel should be avoided to prevent bank erosion. Similarly, a tortuous segment of a river is to be selected for mining in such a way as to ignore the natural eroding of banks.
5. Ensure that ponding is not created in the riverbed.
6. Transportation route should be such that it gives minimum

damage to the environment.

7. Green belt will be developed along the haul road and the bank of rivers of mine premises and near the sand mining site. While selecting the plant species, preference will be given for planting native species of the area.

2. Water environment

Anticipated Impact

The project activity will be carried out in the dry part of the riverbed. Care will be taken to ensure that neither of the project activities will affect the water environment or riverbank habitats. During the lean months, the proposed Sand Mining will not expose the base flow of the river and hence there will not be any inauspicious impact on surface hydrology and groundwater regime due to this project. Project activities will not have any adverse consequences on the physical components of the environment and therefore may not have any effect on the recharge of ground waters or affect the water quality. Monitoring of water quality will be checked yearly.

Mitigation measures

1. Mining is avoided during the monsoon season and at the time of floods. This will help in the replenishment of sand in the riverbed.
2. Mining below the subterranean water level will be avoided as a safeguard against environmental contamination and over-exploitation of resources.
3. River stream will not be transferred to create active channels.
4. Mining schedule is synchronized with the river flow direction and the gradient of the land.
5. Mining at the concave side of the river channel will be avoided to prevent bank erosion.
6. Tortuous segment of the river will be selected for mining in such a way as to avoid naturally eroding banks and to promote mining on naturally building meander components.
7. Mining depth shall be maintained as per the guidelines and

rules of the Sand Mining Policy dated 03/09/2019 and recommendations of Maharashtra State (⁸M.S.). State Ground Water Department for extraction of sand during the lease period.

8. Water Quality Monitoring for the ground waters, river water, and other surface waters shall be carried out seasonally to ensure that the water quality is not affected by the project activities.
9. Utmost care will be taken to minimize or control leaking vehicles to be used for sand transportation.
10. The washing of tractor trolleys in the river will not be done.
11. The contractor will follow all guidelines and rules for proper and scientific methods of mining during the period of extracting the sand.

3. Air Environment

Anticipated Impacts

Plying of tractor trolleys from the public road to river sand collection points needs access roads. The majority of such access roads are the already existing roads/tracks being used by pedestrians/cart owners. The movement of heavy vehicles sometimes causes problems for cattle, agricultural land, and human habitations due to dust, noise, and the movement of the public. These environmental problems are felt more as the area is rural in nature.

Air pollution is likely to be caused at various stages of Sand Mining operations such as excavation, loading & transportation of material. Most of the fugitive dust emissions will be generated from loading & transportation. This dust becomes airborne and spreads away to surrounding areas.

The impact on air is mainly localized in nature as the dust particles of 100 μ in size are not carried to farther distances beyond 100m and the effect is felt within the core zone of the project involving active Sand Mining operations.

⁸ Maharashtra State

Mitigation measures

1. Movement of the vehicles on the road will be increased; however, the unmetalled road in the mining area will be sprinkled with water at regular intervals.
2. In addition to preventing spillage from tractor trolleys, overloading shall be controlled to 1-brass/tractor trolley. The speed limit will be <20 km/hr.
3. Maintenance of the haul road will be done on a regular basis.
4. To avoid fugitive dust emissions at the time of excavation, a regular sprinkling of water will be done on regular basis.
5. Sand is transported to the sites by road through tractor trolleys. The sand-carrying vehicles shall be covered by tarpaulin sheets.
6. The Green belt development will be prepared along the haul roads, which will act as a pollution sink.
7. To minimize vehicular pollution from the sand transporting vehicles, the following conditions will be insisted upon to permit the vehicles of the transporters.
8. The vehicles should be Bharat-IV stage compliant and should have a Pollution Under Control (⁹PUC) Certificate issued by appropriate authorities.
9. Regular maintenance of transport vehicles and monitoring of vehicular emission levels at periodical intervals.

4. Noise Environment

Anticipated Impact

The noise environment in this project will be overdone by the equipment at the site and vehicular transportation. A slight increase in noise levels of <10dB(A) can be expected up to a distance of 100m.

Mitigation measures.

1. Minimum use of horns in the village area.
2. Timely maintenance of vehicles and their silencers to

⁹ Pollution Under Control

minimize vibration and sound.

3. Phasing out old and worn-out tractor trolleys.
4. Provision of green belts along the road networks.
5. Care will be taken to produce minimum sound during sand loading.
6. Backhoe loader excavator will be used
7. Earplugs may be provided to protect the labourers working at the site.

5. Socio-economic Environment

Anticipated Impacts and Evaluation

1. The project activities shall not have any adverse impacts on any of the common property resources of the village communities, as the Sand Mine lease area is not being used for any purpose by any section of the society in this region.
2. There is no Resettlement and Rehabilitation (¹⁰R&R) involvement in this project.
3. There is no land acquisition in this project.
4. A major portion of the houses in the study area is semi-pucca-type structures.
5. The water source to these areas is from the Grampanchayat /Nagar Parishad connection and private bore wells and wells.
6. People living around the project area need the project for the purpose of employment and economic benefits.
7. The awareness level regarding the proposed mining activity is very towering. The proposed mining activity is expected to provide stimulus to socio-economic activities in the region and thereby accelerate further development processes.

Social and Demographic Profile

The workers are from local villages. These people have been provided welfare benefits from the lessee like medical benefits,

¹⁰ Rehabilitation and Resettlement

insurance, fees for children's education, etc. They have some land and cattle for their daily earnings. Additional revenue earned from the Sand Mining work will improve their living standard. The group of quarries in and around will help to have infrastructure facilities like roads, schools, shops, etc. This will enhance their social life.

Occupational Health and Safety

This is a riverbed Sand Mine. So, the mining activities are comparatively smaller because the production is not on a high scale. Workers do not come across any extreme conditions like excessive heat, moisture, etc. Workers working around it may come across this dusty environment. But the impact on health will be within the limit.

Human Settlement

1. There are no houses in and around the lease area. Blasting is the only activity, which may affect the settlement, which is not done. The settlement is more than 1-km from the sand mine.
2. Appropriate precautions will be taken during mining. Transportation of finished products is through the villages. There will be an effect of traffic on the local people. However, the intensity of traffic is 70-80/day.

Health and Hygiene

In general, the health of villagers is moderately good. In the rainy season, the atmospheric condition is unhygienic due to a lack of proper drainage and sanitation in the village habitation. Villagers are working in agricultural fields and work as labourers.

Education

Most education of 70% young <20 years, is up to the 5th to 9th. Economic condition is in general moderate. So, after this project, the standard of education will increase.

Socio-Economic Benefits Arising Out of Mining

1. Generation of employment in rural areas.
2. Upgradation in the living standards of rural people.
3. Creating infrastructural facilities like roads, electricity, shops, schools, etc.
4. Upgrading literacy in the area by exploiting natural minerals so the generation of revenue.

5. Helping to sustain construction activity.
6. Improving the greenery of the area, which is otherwise poor.

Liquid Effluent

Not applicable, because these activities do not generate effluent from operation or process.

Solid Waste

Not applicable, because small mines and impacts are negligible.

Project benefits due to the sand mining of Sarvar Pimpalgaon are explained in the next Chapter.

CHAPTER 5

PROJECT BENEFITS

The proposed Sand Mining project of Sarvar Pimpalgaon village, Majalgaon Taluka, Beed District will lead to the following benefits:

1. Increase in the revenue of the district will ultimately increase the revenue of the village, which in return can be used to improve the infrastructure of the village.
2. Sand is available for building construction work and by systematic separation of sand, there is no possibility of a flood. Providing smooth movement of water of the river.
3. This project will contribute additional revenue to the state Exchequer in the form of revenue.
4. The project will conclude with employment opportunities for unskilled/skilled local people.
5. Standard of living of employed people will increase.

CHAPTER 6

SITE-SPECIFIC ENFORCEMENT & MONITORING PLAN

Sand Ghat Site specific enforcement & monitoring plan

(as per guidelines stipulated in the Enforcement and Monitoring Guidelines for sand mining issued by MoEFCC in January 2020.)

District administration shall deliver information on its website about the Sand Mines in the district for public information. The objective is to extend all information into the public domain so that the citizens are aware of the mining activities. People can also report to the district administration any deviation observed. Suitable feedback and its composition shall also be made operational.

Details shall include, but not be limited to, lease area, geo-coordinates of lease area and mineable area, transport routes, permitted capacity, regulatory conditions for operation including mining, environmental and social commitments, etc.

An Independent Committee of experts constituted by the Distance Learning Task Force (¹¹DLTF) will assess the environmental or ecological damage caused due to illegal mining and recommend recovery of environmental compensation from the concerned miners.

The recommendation may also include action under the provision of the Environment (Protection) Act 1986 u/s.15 read with s.19.

¹¹ Distance Learning Task Force

CHAPTER 7

SECURITY FEATURES

Security features are included in the Transport Permission/Permits (TP)

It will be ensured that the following security features are included in the Transport Permission/Permits (¹²TP) so that duplicate/fraudulent/forged TPs for transport, not accounted for in the IT-based system, is not possible:

1. Printed on Indian Bank Association (¹³IBA) Approved letterhead with account details
2. Magnetic Ink Character Recognition Code (¹⁴MICR) paper
3. Unique Barcode
4. Unique Quick Response Code (¹⁵QR)
5. Fugitive Ink Background
6. Invisible Ink Mark
7. Void Pantograph Watermark
8. Global Positioning System (¹⁶GPS) based vehicle tracking system
9. Closed-Circuit Television (¹⁷CCTV) Camera

¹² Transport Permission

¹³ Indian Bank Association

¹⁴ Magnetic Ink Character Recognition Code

¹⁵ Quick Response Code

¹⁶ Global Positioning System

¹⁷ Closed Circuit Television

CHAPTER 8

REPLENISHMENT

Replenishment study is the most important part of Sand Mining as it is the only basis to carry out sand mining. Without a Replenishment Study, we cannot understand the amount of deposition of sand. Following points to be followed for the replenishment study.

1. Area of deposition and erosion will be calculated for each cross-section after giving due regard to the stability & safety of active channel banks & other features of importance.
2. Differential Global Positioning System (¹⁸DGPS) and other survey tools will be used to define the topography, contours, and offsets of the lease area.
3. Contour & elevation benchmarks will provide baseline data for assessing pre- and post-study period scenario.
4. Physical benchmarks will be fixed at appropriate intervals (preferably 1 in 30m) & Reduced levels (¹⁹RL) shall be validated from a nearby standard RL.
5. These RL will be engraved on a steel plate (Bench Plate) & will be fixed & placed at locations that are free from any damages & are available in the pre-and post-study period.
6. Bench plates will be available for use during the mining period as a reference for all mining activity.
7. Baseline data on elevation status for a grid of 10m x 10m is preferred to have accuracy in the assessment.
8. It is expected that two consecutive cross-sections in longitudinal and lateral directions will not be more than a 10m distance apart.
9. Changes observed in the elevation in pre and post-scenario at each node, will be depicted in graphical forms with an appropriate scale to estimate the area of deposition & erosion.

¹⁸ Differential global positioning system

¹⁹ Reduced levels

10. Elevation level will be in reference to the nearest bench plates established for the purpose.
11. The levels (MSL & RL) of the corner point of each grid will be identifiable and safety barriers (non-Mining) demarcated as restricted in consensus with the Mineral Concession Rules of the respective State, and the provision mentioned in this Sustainable Sand Mining Management Guidelines.
12. A clear identification will be highlighted between grids under the mineable and grids under the non-mineable area.
13. These baseline data (pre and post) be subjected to stimulation with the help of data mine software to derive the replenishment area and corresponding volume and estimated weight.
14. The database will be structured in a tabulated form clearly depicting the nomenclature of the section lines, latitude and longitude of the starting point, chainage, and respective levels of all the points taken on that section line.
15. Net area shall be derived after summation of an area of deposition minus the area of erosion for each cross-section.
16. Volume will be estimated by multiplying the distance between two cross-sections with the average of the net area of these two consecutive cross-sections.
17. One sample per 900m² (30m x 30m) will be the preferred sample density for the assessment of bulk density for the estimation of deposition rate.
18. Care will be taken that the sample for assessment of Bulk Density is taken from the deposition zone & not from erosion.

Methodology for Sand Mining:

The following methodology should be followed for the Replenishment study.

1. The Demarcation and benchmark of the Sand Ghat are done at 10m x 10m intervals.
2. The use of the Auger Driller is to find out the depth of sand in each grid.
3. Auger Driller has created the holes in sand ghat by 10mx10m grid pattern.
4. Measured the depth of holes by using a measuring tape.

5. After taking all the readings average depth of sand is calculated.
6. The average depth of Sarvar Pimpalgaonat Godavari is measured.

Replenishment study of sand in the proposed ghat along with details of the methodology, technology used to identify the existing reserve & replenishment of the same

Dandy Bolton Equation

For runoff less than 2 inches

$$S = 1280 \times (Q) \times 0.46 \times (1.46 - 0.26 \log(A)) \times F$$

For runoff more than 2 inches

$$S = 1958 \times (Q) \times (e^{-0.055 \times Q}) \times (1.43 - 0.26 \log(A))$$

Where,

S = sediment yield of stream (t/yr/km²),

Q = average annual runoff (m³),

A = net drainage area in sq.mile.

CHAPTER 9

PROPOSED PLANTATION PLAN

The Project Proponent must take care of the plantation around the site. This will not only enhance the beautification of the area but also there will be the reduction of pollution, not some extent.

Details of the plantation and Tree species recommended for the plantation are shown below.

Table 9. 1 Details of green belt

Location of greenbelt	Both sides of the approach road, On the riverbanks of both sides of the sand spot & nearby open areas. Haul Road outside the riverbed
No. of plants to be planted	2000 per Hectare
Spacing of plants	2m grid interval
Species selected	Native species

Table 9. 2 Trees species for plantation

Botanical Name	Local Name	Importance
Azadirachta Indica	Neem	Neem oil & neem products
Tectona Grandis	Teek	Antibacterial, Antifungal, Antiulcer
Ficus religiosaa	Peepal	Medicinal use, Fruits & figs
Bambusa vulgaris	Bamboo	Anthelmintic Anti-inflammatory, Astringent Properties
Madhuca longifolia	Mahua	Acts as a Stimulant & cough relief,

CHAPTER 10

ENVIRONMENTAL MANAGEMENT PLAN

A total capital cost of Rs.5.97 Lakhs has been kept in the project cost towards the environmental protection, control, mitigation measures, and implementation of the Environmental Management Plan (EMP). This cost is borne by the bidder/leaseholder. The budgetary cost estimate for the EMP is given in Table.

Table 10. 1 Budgetary cost of EMP

Sr	Impact Source	Impact	Control Measure	Cost (Rs.)
1	Transport Road	On Air Quality	Compaction, gradation, and drainage on both sides.	90000
		On Land, the Stability of the Road and degradation of road	Proper maintenance	40000
			Regular water spraying	43000
			The air quality will be monitored at the impacted village. (For One Day Monitoring)	5000
			Health Check-up of Employees	5000
2	Truck/ Tractor Movement	Air Quality	Sand-carrying trucks will be effectively covered by tarpaulin to avoid the escape of fines to the atmosphere. (2 Tarpaulin)	25000
			Regular monitoring of the exhaust fumes	5000

Sr	Impact Source	Impact	Control Measure	Cost (Rs.)
			Barriers & Traffic Management Expenses. (Excluding Manpower Salary which is included in labour costs)	10000
3	Ramp and Sand Reach	Mining Operation	Regular ramp Inspection and Ramp maintenance. (Excluding Manpower Salary which is included in labour costs)	50000
			Provision of dust masks	10000
4	Bank Management	Bank Erosion/Flood Plain management	The green belt along the bank (For Green Belt Development)	230000
			Plantation of wide leaf tall trees on banks and grass along a slanting portion of the bank	
5	Transportation on Village Roads	Dust Control	The green belt along village Rd (For Green Belt Development)	
6	Final Mine Closure Plan implementation	Replenishment of Sand	Gabions/ boulders will be arranged as per guidelines	15000
7	Mobile toilet, sewage handling & treatment		Mobile toilet, sewage handling & treatment	100000
8	CCTV Monitoring			100000
Total				728000

Budget For Corporate Environment Responsibility (²⁰CER)

About 2% fund of the project cost is allocated for Corporate Environment Responsibility (CER) activities as presented in below Table

Table 10.2 Budget for CER

Sr.	Description	Cost (Rs)
1.	Village Schools (separate toilet for girls and boys)	25000
2.	Solar panels over Gram Panchayat buildings	25000
3.	Solar panels over Public Health Centers	20000
	Total	70000

²⁰ Corporate Environment Responsibility

CHAPTER 11

SUMMARY AND CONCLUSION

The Roles and Responsibilities of the Environmental coordinator, the Operation Manager, and the senior personnel contractor are essential in EMP.

The environmental status of the project site and study area of 10km radius is delineated with respect to air, noise, water, land, biological and socio-economic environment the different project activities in the construction and operation phases are identified.

To identify the impacts, the interaction between the project activities and different components of the environment is classified phase-wise. A summary of the recognized impacts is given in the following paragraphs.

- During the operational phase, the transportation of sand could cause a temporary disturbance to the local environment which will be prevented with the proposed mitigation measures.
- Proposed project will not have any major significant negative impacts. The minor impacts arising during Excavation and Transportation phases can be mitigated with the help of the proposed Environmental Management Plan.
- In general, sand excavation from Sarvar Pimpalgaon sand spot will be useful to the developmental work in the district and generate employment opportunities.

From this project, it is concluded that the district revenue will increase in return minimum of 2% of funds are utilized for the development of the village. The project will also grab employment which will improve the standard of life of villagers.

*** END ***

Environmental Management Plan

As per Rules 23 & 26 of MMME (D & R) RULE 2013 & Section 15 of MMDR Act 1957, MoEFCC Notification 2006, S.O. 141(E) dated 15. 01. 2016; MoEFCC, Sustainable Sand Mining Management Guidelines 2016, Guidelines for Mining Policy 2020)

For

ENVIRONMENTAL CLEARANCE

of

SAND MINING (MINOR MINERAL)

for

Telasmukh 1 – A Riverbed Sand Mine / Sand Ghat
Khasra No. GSDA approved 1, 92 to 98, 84 to 90, 82
Area (4.90ha)

Village Telasmukh, Taluka Parli Ve., District Beed

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ABBREVIATION

Short Form	Long Form
EMP	Environmental Management Plan
MoEFCC	Ministry of Environment Forest and Climate Change
DSR	District-level Survey Report
EC	Environmental Coordinator
OM	Operations Manager
GSDA	Groundwater Surveys & Development Agency
MPCB	Maharashtra Pollution Control Board
MSL	Mean Sea Level
MS	Maharashtra State
PUC	Pollution Under Control
R&R	Rehabilitation and Resettlement
DLTF	Distance Learning Task Force
TP	Transport Permission/Permits
IBA	Indian Bank Association
MICR	Magnetic Ink Character Recognition Code
QR	Quick Response Code
GPS	Global Positioning System

CCTV	Closed-Circuit Television
DGPS	Differential Global Positioning System
RL	Reduced Levels
CER	Corporate Environment Responsibility

CHAPTER 1

INTRODUCTION

The Environmental Management Plan (¹EMP) plays a vital connection uniting forecast impacts and mitigation measures during implementation and operational activities. EMP stipulates the mitigation, monitoring and conventional measures to be taken during project implementation and operation. EMP is to escape or mitigate adverse environmental impacts, and to implement these measures.

This Environmental Management Plan (EMP) has been prepared as part of the Scoping Report which will be compiled in terms of the Environmental Assessment for the sand mining activities.

Considering the Ministry of Environment and Forest Climate Change (²MoEFCC) Notification 2006 and Sustainable Sand Mining Management Guidelines 2016, the Govt. of Maharashtra had mapped out the Minor Mineral Extraction Rules 2013. These rules are to extract all minor minerals in a scientific way so that there is no unfavourable impact on Environment and Climate. To extract every minor mineral from any land (either Government or Private) there is provision for a Mining Plan. These plans need to be approved by a competent authority. For long-term leased minor minerals (5-10 years period) and sand excavation from the riverbed, Senior Deputy Director of Directorate of Geology and Mining is the competent authority. These plans are for short term temporary permits which are valid for one year.

According to Enforcement & Monitoring Guidelines for Sand Mining 2020, Sustainable Sand Mining Management Guidelines 2016, Standard Environment conditions for sand mining and sustainable mining practices, District level Survey Report (³DSR) should be prepared and are suitable for mining and area prohibited for mining must be recognized.

¹ Environmental Management Plan

² Ministry of Environment Forest and Climate Change

³ District Survey Report

Objectives of EMP

- To provide overall conservation of the environment.
- To minimize waste generation and pollution.
- To regulate the precise use of natural resources and water.
- To provide Safety, Welfare, and Good health for the workforce and populace.
- To regulate the effective operation of all control measures.
- To ensure alertness against probable disasters and accidents.
- To monitor cumulative and long-term impacts.
- To regulate the effective operation of all control measures.

Roles and Responsibilities concerning the implementation of the EMP

The roles and responsibilities of all parties involved in successfully managing the environment are mentioned below.

Environmental Coordinator

The Environmental Coordinator will inspect operational areas on a quarterly basis and at the onset of mining any new island, to ensure that all specifications are met. The duties of the environmental coordinator will be the following.

- Guide the operations team in respect of the implementation of the environmental specifications.
- Lead the visits to ensure all work is aligned with the EMP.
- The environmental coordinator must examine the site during the three-monthly visits. All rehabilitation results will be Comprised in the quarterly report.
- Examination of the rehabilitation area and giving guidance regarding rehabilitation measures if any.

The Operations Manager

The responsibilities of the Operations Manager (4OM) or his nominated authority are as follows.

1. Familiarize themselves with the requirements of the EMP.
2. Monitor employees' and contractor's compliance with the environmental specifications; and enforce adherence.

⁴ Operations Manager

3. Communicate all environment-related incidents with the Environmental Coordinator and distribute them internally to avoid repetition.
4. Maintain a record of activities relevant to Environmental Management.
5. The Operations Manager shall be responsible for monitoring and the enforcement of the Environmental Management specifications on a day-to-day basis. Any violation of the environmental specifications shall be recorded, and the agreed disciplinary measures are taken.

Senior personnel and contractors

The roles of the senior personnel/contractors are as follows:

- Familiarize themselves with the requirements of the EMP.
- Comply with the environmental management specifications.
- Ensure that all team members are familiar with the environmental management specifications.

Details of the project

The Telasmukh 1 sand ghat area has been selected in perspective of its subsisting demand for building-grade sand for the area in and around Parli Ve. Taluka. The District Mining Officer Beed has put forward the proposal for Environmental Clearance for mining. The ghat has a production of 17314 brass sand within an area of 4.90ha. The proposed proposal follows an organized mining process for Environmental Clearance.

Further Chapter informs about the in-depth details of the Sand Ghat, its geographical structure, and a Google map of the ghat with its approach road for contractors and workers to reach to sand ghat from the village.

CHAPTER 2

DETAILS OF THE PROJECT

Telasmukh village is located in Parli Ve. Taluka of Beed district, Maharashtra. Parli Ve. is well connected with all nearby cities. The National highway NH-52, it traverses through the states of Punjab, Haryana, Rajasthan, Madhya Pradesh, Maharashtra, Karnataka in India. NH-52 is the National Highway passing through the district, covering a total distance of 73.60km. Parli Ve. has situated about 92.9km by road from Beed. The district has road links to adjoining districts Ahmednagar District to the west, Jalna District to the North, Latur District to the East, Osmanabad District to the South, Parbhani District to the East. The district is well connected by roads.

Telasmukh village is 77.63km away from Collector office headquarters Beed. The Geographical area of the Beed is around 10693km². The nearest Railway station to Telasmukh village is Sanganapur Railway station. The nearest Airport to Beed District is Aurangabad Airport, Aurangabad Airport is 104km from Beed city, 139.71km from Telasmukh.

Honourable Collector Beed intends to auction Sand Ghats and appointed District Mining Officer as Project Proponent. A total of 38 sand ghats are identified by Tahsildar Parli Ve., Parli Ve., Gevrai, Beed along with District Mining Officer, Beed. The 38 sand ghats were jointly surveyed by Taluka level technical committee headed by respective Tahsildar with Dy. Engineer Irrigation Department, Junior Geologist Directorate of Geology and Mining Govt. of Maharashtra, Junior Geologist, Groundwater Surveys & Development Agency (⁵GSDA). DMO Beed and a representative of the Maharashtra Pollution Control Board (⁶MPCB), as per the procedure defined in Sand Auction Rules 2019 dated 3/09/2019 formed a Taluka-level technical committee, which explored the sand ghats for an available quantity of sand for scooping. Revenue of Rs.25 Crore is expected from the auction of these sand ghats. Telasmukh 1 Sand Ghat proposed over river Godavari in Parli Ve.

⁵ Groundwater Surveys & Development Agency

⁶ Maharashtra Pollution Control Board

Taluka is proposed to cater to the infrastructural requirement of sand in the Taluka of Beed and adjoining areas of other talukas.

Table 2. 1 Details of Telasmukh 1 Sand ghat

Name of Village	Taluka	River/ Nallah	Nearest survey No.	Area (ha)	Proposed Depth for excavation (m)	Quantity Permitted for mining of Sand in Brass	Method of Mining
Telasmukh	Parli Ve.	Godavari	1, 92 to 98, 84 to 90, 82	4.90	1.0	17314	Open-cast manual mining

Table 2. 2 Salient features of the project

Particulars	Details		
Location	Village-Telasmukh, Taluka-Parli Ve., District-Beed, Maharashtra.		
Latitude and Longitude	Boundary points of Telasmukh 1 sand spot	Latitude	Longitude
	BP1	19° 5'28.33"N	76°26'14.59"E
	BP2	19° 5'28.51"N	76°26'15.76"E
	BP3	19° 4'44.28"N	76°26'7.24"E
	BP4	19° 4'44.79"N	76°26'6.15"E
Sand spot area (In ha)	4.90ha		
Proposed production capacity (in Brass)	17314		

Particulars	Details																
Infrastructure Requirement (As per Govt Resolution 3rd January 2018)	<ol style="list-style-type: none"> 1. Room / Hut for Official records 2. Electricity / Battery for Running CCTV 24x7 daily. 3. One Computer / Android-based Mobile for the online generation of Invoice numbers. 																
Distance of project site from nearest rail or road bridge over the concerned River, Nallah, etc.	4.68km																
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>Distance from infrastructural facilities</td> <td rowspan="10"></td> </tr> <tr> <td>Railway line</td> </tr> <tr> <td>National Highway</td> </tr> <tr> <td>State Highway</td> </tr> <tr> <td>Major District Road</td> </tr> <tr> <td>Any Other Road</td> </tr> <tr> <td>Electric transmission line pole or tower</td> </tr> <tr> <td>Canal or check dam or reservoirs or lake or ponds</td> </tr> <tr> <td>In-take for drinking water pump house</td> </tr> <tr> <td>Intake for Irrigation canal pumps</td> </tr> </table>	Distance from infrastructural facilities		Railway line	National Highway	State Highway	Major District Road	Any Other Road	Electric transmission line pole or tower	Canal or check dam or reservoirs or lake or ponds	In-take for drinking water pump house	Intake for Irrigation canal pumps	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>35.57km</td> </tr> <tr> <td>16.88km (NH-61)</td> </tr> <tr> <td>45.40km (SH-144)</td> </tr> <tr> <td>71.63km</td> </tr> <tr> <td>2.71km</td> </tr> </table>	35.57km	16.88km (NH-61)	45.40km (SH-144)	71.63km	2.71km
Distance from infrastructural facilities																	
Railway line																	
National Highway																	
State Highway																	
Major District Road																	
Any Other Road																	
Electric transmission line pole or tower																	
Canal or check dam or reservoirs or lake or ponds																	
In-take for drinking water pump house																	
Intake for Irrigation canal pumps																	
35.57km																	
16.88km (NH-61)																	
45.40km (SH-144)																	
71.63km																	
2.71km																	

Particulars	Details
<p>Areas already subjected to pollution or environmental damage. (those where existing legal environmental standards are exceeded)</p>	<p>None</p>
<p>Areas susceptible to natural hazards which could cause the project to Present environmental problems (earthquakes, subsidence, landslides, erosion, flooding, or extreme or adverse climatic conditions)</p>	<p>No. Sand Ghat is at safe distances from natural hazards like earthquake prone area, subsidence, landslide, erosion, flooding prone area and extreme or adverse climatic conditions</p>
<p>Whether the proposal involves approval or clearance under the following Regulations or Acts, namely: - (a) The Forest (Conservation) Act, 1980. (b) The Wildlife (Protection) Act, 1972. (c) The Coastal Regulation Zone Notification, 2011. If yes, details of the same and their status are to be given.</p>	<p>None</p>
<p>Forest land involved (hectares)</p>	<p>None</p>

The below figure shows the google image of Telasmukh 1 sand ghat.

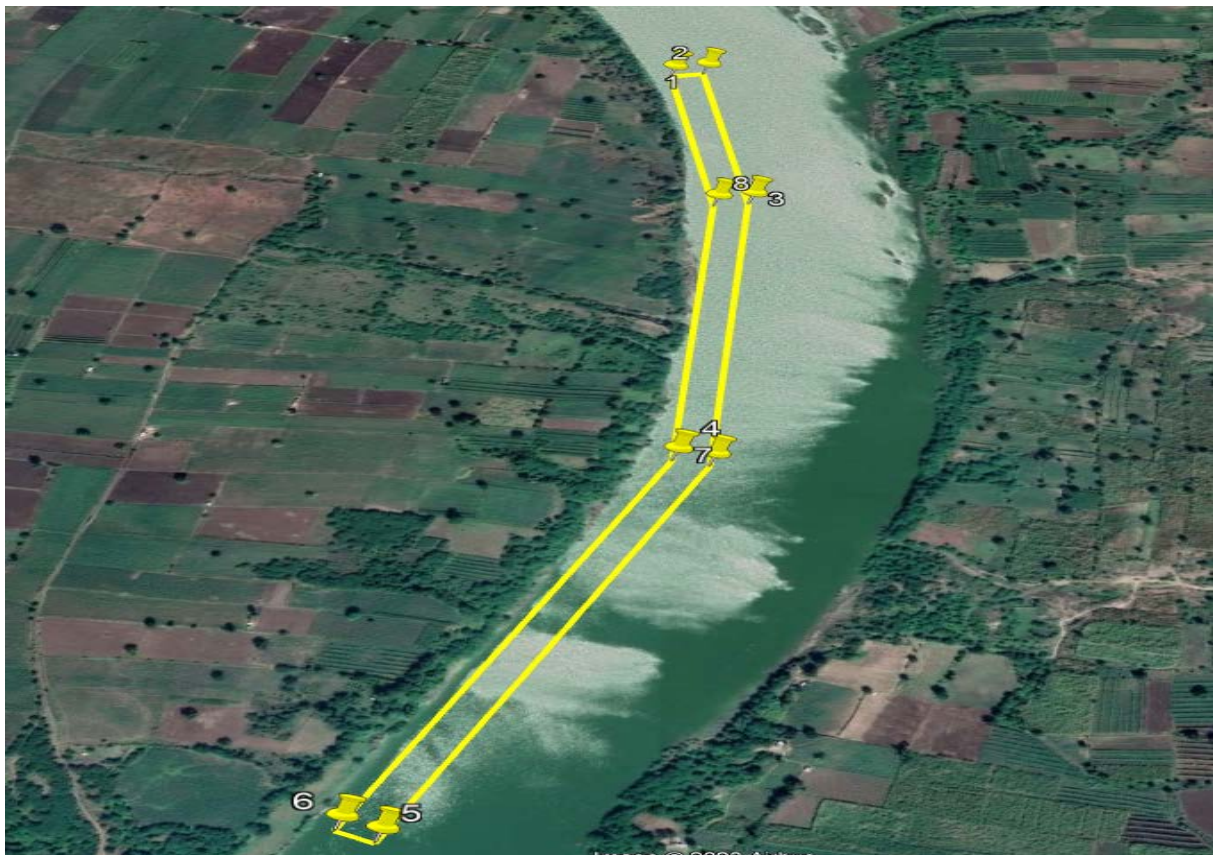


Fig 2.1-Google image of Telasmukh 1 sand ghat

Approach roach along with google location is as shown below.

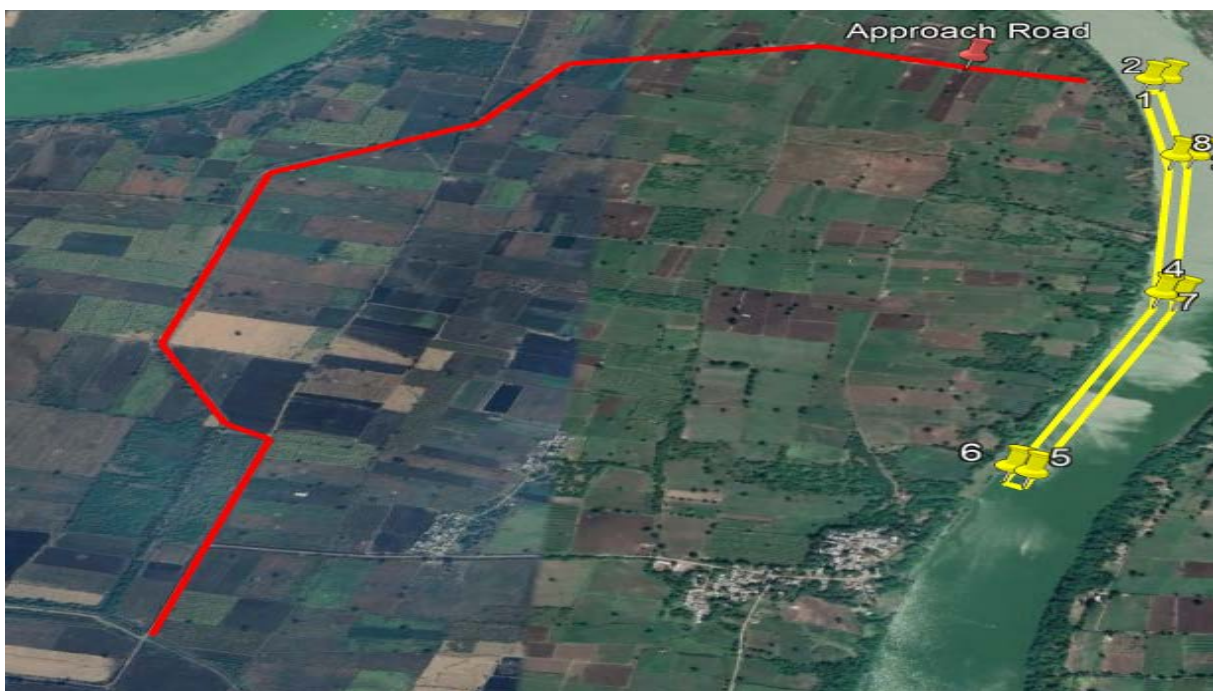


Fig 2.2-Approach Road for sand ghat

Next chapter 3 is Baseline Environmental Status in which the entire Topography, Climate, Soil Environment, Land use, water Environment, Hydrology, Biological environment, and Socio-economic Environment are briefly explained for the Beed district.

CHAPTER 3

BASELINE ENVIRONMENT STATUS

Topography

The Sand Ghat area as per the survey is the riverbed of the Godavari River of the Beed district. The maximum elevation is 406m MSL, average elevation is 402m MSL, & minimum elevation is 398m (⁷MSL) Mean Sea Level. The slope of the Sand Ghat area towards the Southwest to Northeast side. The flow of Godavari River is from Southeast direction.

Presently, there is neither any infrastructure within the riverbed nor are proposed.

Hydrology

There will be no change in the Water Table during the mining operation, as the depth of mining shall be restricted to 1.0m water level, which is less likely to affect the surface level or Groundwater Table. There is no proposal of any stream modification/diversion due to this mining activity hence there will be not any impact on the flow of water.

Soil Environment

The riverbed consists of sand /gravel. There is no topsoil. The depth of mining shall be restricted to 1.0m. There is no crucial impact on the soil forecasted due to mining activities.

Land Use Land Cover

Land use shows that agriculture land use is predominant. The proposed site is 4.90ha having adjoined Khasara No 1, 92 to 98, 84 to 90, 82. The land doesn't cover any human habitation, forest, etc. Any change in the scope of the approved Mining Plan will lead to riverbank erosion/cutting and thereby river channel shifting, degradation of land, causing loss of properties and degradation of the surrounding landscape.

⁷ Mean sea level

Water Environment

While transporting sand there may be fugitive dust. There will be water requirement for spraying for dust suppression purposes. This water will be supplied from the borewell from nearby villages through tankers as well as from surface water sources. The water source may vary from village to village.

Climate

During summer May is the hottest month of the year in this area. The temperature rises to 42°C in the month of May. The average rainfall in this region is 600mm to 700mm About 50% of rainfall precipitates between June to September. December is the coldest month with temperatures falling down to 18°C. Overall the proposed site area has sub-tropical conditions.

Biological Environment

Flora

The agricultural area is seen near the Sand Ghat. Few trees and thorny bushes are seen on the banks of the river.

Fauna

As there is no forest cover, no endangered species of wildlife are seen in this area.

Socio-Economic Environment

This project may create constructive impacts of the sand mining that are stated below:

1. The mining operations will provide direct & indirect employment to village people.
2. The villages and their inhabitants & domestic animals will not be disturbed due to mining, as the quarry is far from their settlements.
3. Local workforce will be given first preference for employment.
4. Mining activities will benefit the local people due to the provision of more infrastructural facilities (developments of approach routes within the village area).

The next chapter describes all possible impacts on the Environment due to this project along with its mitigation measure to overcome these impacts.

CHAPTER 4

IMPACT ASSESSMENT REPORT ALONG WITH PROPOSED MITIGATION MEASURES

1. Land Environment

Anticipated Impact

Movement of vehicles can create issues for agricultural land, human habitations, noise, and risk for public and cause traffic hazards. The impacts include damage to the riverbank due to access ramps to the riverbed, soil erosion because of extraction of sand, micro disturbance to groundwater, possible stimulation of the changed river course, and contamination of sand aquifer water due to ponding. There might be surface degradation due to the road network.

The quality of soil will not be affected due to transportation or any other activity of mining.

Mitigation measure

1. Mining depth should be restricted to 3 meters and distance from the bank should be $\frac{1}{4}$ th or river width and should not be less than 7.5 meters as per “Sustainable Sand Mining Guidelines 2020” ■ Page 23, Point no 4.3 (m).
2. There will be a minimal number of access roads to riverbeds. Cutting of riverbanks will be avoided and ramp with smooth slope will be maintained. Access points to the riverbed will be decided based on the least steepness of the riverbank and the least human activity at that location.
3. No foreign material like polythene bags, jute bags, and useless articles should be allowed to remain/spill in the riverbed and catchment area, or no pits/pockets will be allowed to be filled with such material.
4. Mining at the concave side of the river channel should be avoided to prevent bank erosion. Similarly, a tortuous segment of a river is to be selected for mining in such a way as to ignore the natural eroding of banks.
5. Ensure that ponding is not created in the riverbed.
6. Transportation route should be such that it gives minimum

damage to the environment.

7. Green belt will be developed along the haul road and the bank of rivers of mine premises and near the sand mining site. While selecting the plant species, preference will be given for planting native species of the area.

2. Water environment

Anticipated Impact

The project activity will be carried out in the dry part of the riverbed. Care will be taken to ensure that neither of the project activities will affect the water environment or riverbank habitats. During the lean months, the proposed Sand Mining will not expose the base flow of the river and hence there will not be any inauspicious impact on surface hydrology and groundwater regime due to this project. Project activities will not have any adverse consequences on the physical components of the environment and therefore may not have any effect on the recharge of ground waters or affect the water quality. Monitoring of water quality will be checked yearly.

Mitigation measures

1. Mining is avoided during the monsoon season and at the time of floods. This will help in the replenishment of sand in the riverbed.
2. Mining below the subterranean water level will be avoided as a safeguard against environmental contamination and over-exploitation of resources.
3. River stream will not be transferred to create active channels.
4. Mining schedule is synchronized with the river flow direction and the gradient of the land.
5. Mining at the concave side of the river channel will be avoided to prevent bank erosion.
6. Tortuous segment of the river will be selected for mining in such a way as to avoid naturally eroding banks and to promote mining on naturally building meander components.
7. Mining depth shall be maintained as per the guidelines and

rules of the Sand Mining Policy dated 03/09/2019 and recommendations of Maharashtra State (⁸M.S.). State Ground Water Department for extraction of sand during the lease period.

8. Water Quality Monitoring for the ground waters, river water, and other surface waters shall be carried out seasonally to ensure that the water quality is not affected by the project activities.
9. Utmost care will be taken to minimize or control leaking vehicles to be used for sand transportation.
10. The washing of tractor trolleys in the river will not be done.
11. The contractor will follow all guidelines and rules for proper and scientific methods of mining during the period of extracting the sand.

3. Air Environment

Anticipated Impacts

Plying of tractor trolleys from the public road to river sand collection points needs access roads. The majority of such access roads are the already existing roads/tracks being used by pedestrians/cart owners. The movement of heavy vehicles sometimes causes problems for cattle, agricultural land, and human habitations due to dust, noise, and the movement of the public. These environmental problems are felt more as the area is rural in nature.

Air pollution is likely to be caused at various stages of Sand Mining operations such as excavation, loading & transportation of material. Most of the fugitive dust emissions will be generated from loading & transportation. This dust becomes airborne and spreads away to surrounding areas.

The impact on air is mainly localized in nature as the dust particles of 100 μ in size are not carried to farther distances beyond 100m and the effect is felt within the core zone of the project involving active Sand Mining operations.

⁸ Maharashtra State

Mitigation measures

1. Movement of the vehicles on the road will be increased; however, the unmetalled road in the mining area will be sprinkled with water at regular intervals.
2. In addition to preventing spillage from tractor trolleys, overloading shall be controlled to 1-brass/tractor trolley. The speed limit will be <20 km/hr.
3. Maintenance of the haul road will be done on a regular basis.
4. To avoid fugitive dust emissions at the time of excavation, a regular sprinkling of water will be done on regular basis.
5. Sand is transported to the sites by road through tractor trolleys. The sand-carrying vehicles shall be covered by tarpaulin sheets.
6. The Green belt development will be prepared along the haul roads, which will act as a pollution sink.
7. To minimize vehicular pollution from the sand transporting vehicles, the following conditions will be insisted upon to permit the vehicles of the transporters.
8. The vehicles should be Bharat-IV stage compliant and should have a Pollution Under Control (⁹PUC) Certificate issued by appropriate authorities.
9. Regular maintenance of transport vehicles and monitoring of vehicular emission levels at periodical intervals.

4. Noise Environment

Anticipated Impact

The noise environment in this project will be overdone by the equipment at the site and vehicular transportation. A slight increase in noise levels of <10dB(A) can be expected up to a distance of 100m.

Mitigation measures.

1. Minimum use of horns in the village area.
2. Timely maintenance of vehicles and their silencers to

⁹ Pollution Under Control

- minimize vibration and sound.
3. Phasing out old and worn-out tractor trolleys.
 4. Provision of green belts along the road networks.
 5. Care will be taken to produce minimum sound during sand loading.
 6. Backhoe loader excavator will be used
 7. Earplugs may be provided to protect the labourers working at the site.

5. Socio-economic Environment

Anticipated Impacts and Evaluation

1. The project activities shall not have any adverse impacts on any of the common property resources of the village communities, as the Sand Mine lease area is not being used for any purpose by any section of the society in this region.
2. There is no Resettlement and Rehabilitation (¹⁰R&R) involvement in this project.
3. There is no land acquisition in this project.
4. A major portion of the houses in the study area is semi-pucca-type structures.
5. The water source to these areas is from the Grampanchayat /Nagar Parishad connection and private bore wells and wells.
6. People living around the project area need the project for the purpose of employment and economic benefits.
7. The awareness level regarding the proposed mining activity is very towering. The proposed mining activity is expected to provide stimulus to socio-economic activities in the region and thereby accelerate further development processes.

Social and Demographic Profile

The workers are from local villages. These people have been provided welfare benefits from the lessee like medical benefits,

¹⁰ Rehabilitation and Resettlement

insurance, fees for children's education, etc. They have some land and cattle for their daily earnings. Additional revenue earned from the Sand Mining work will improve their living standard. The group of quarries in and around will help to have infrastructure facilities like roads, schools, shops, etc. This will enhance their social life.

Occupational Health and Safety

This is a riverbed Sand Mine. So, the mining activities are comparatively smaller because the production is not on a high scale. Workers do not come across any extreme conditions like excessive heat, moisture, etc. Workers working around it may come across this dusty environment. But the impact on health will be within the limit.

Human Settlement

1. There are no houses in and around the lease area. Blasting is the only activity, which may affect the settlement, which is not done. The settlement is more than 1-km from the sand mine.
2. Appropriate precautions will be taken during mining. Transportation of finished products is through the villages. There will be an effect of traffic on the local people. However, the intensity of traffic is 70-80/day.

Health and Hygiene

In general, the health of villagers is moderately good. In the rainy season, the atmospheric condition is unhygienic due to a lack of proper drainage and sanitation in the village habitation. Villagers are working in agricultural fields and work as labourers.

Education

Most education of 70% young <20 years, is up to the 5th to 9th. Economic condition is in general moderate. So, after this project, the standard of education will increase.

Socio-Economic Benefits Arising Out of Mining

1. Generation of employment in rural areas.
2. Upgradation in the living standards of rural people.
3. Creating infrastructural facilities like roads, electricity, shops, schools, etc.
4. Upgrading literacy in the area by exploiting natural minerals so the generation of revenue.

5. Helping to sustain construction activity.
6. Improving the greenery of the area, which is otherwise poor.

Liquid Effluent

Not applicable, because these activities do not generate effluent from operation or process.

Solid Waste

Not applicable, because small mines and impacts are negligible.

Project benefits due to the sand mining of Telasmukh 1 are explained in the next Chapter.

CHAPTER 5

PROJECT BENEFITS

The proposed Sand Mining project of Telasmukh village, Parli Ve. Taluka, Beed District will lead to the following benefits:

1. Increase in the revenue of the district will ultimately increase the revenue of the village, which in return can be used to improve the infrastructure of the village.
2. Sand is available for building construction work and by systematic separation of sand, there is no possibility of a flood. Providing smooth movement of water of the river.
3. This project will contribute additional revenue to the state Exchequer in the form of revenue.
4. The project will conclude with employment opportunities for unskilled/skilled local people.
5. Standard of living of employed people will increase.

CHAPTER 6

SITE-SPECIFIC ENFORCEMENT & MONITORING PLAN

Sand Ghat Site specific enforcement & monitoring plan

(as per guidelines stipulated in the Enforcement and Monitoring Guidelines for sand mining issued by MoEFCC in January 2020.)

District administration shall deliver information on its website about the Sand Mines in the district for public information. The objective is to extend all information into the public domain so that the citizens are aware of the mining activities. People can also report to the district administration any deviation observed. Suitable feedback and its composition shall also be made operational.

Details shall include, but not be limited to, lease area, geo-coordinates of lease area and mineable area, transport routes, permitted capacity, regulatory conditions for operation including mining, environmental and social commitments, etc.

An Independent Committee of experts constituted by the Distance Learning Task Force (¹¹DLTF) will assess the environmental or ecological damage caused due to illegal mining and recommend recovery of environmental compensation from the concerned miners.

The recommendation may also include action under the provision of the Environment (Protection) Act 1986 u/s.15 read with s.19.

¹¹ Distance Learning Task Force

CHAPTER 7

SECURITY FEATURES

Security features are included in the Transport Permission/Permits (TP)

It will be ensured that the following security features are included in the Transport Permission/Permits (¹²TP) so that duplicate/fraudulent/forged TPs for transport, not accounted for in the IT-based system, is not possible:

1. Printed on Indian Bank Association (¹³IBA) Approved letterhead with account details
2. Magnetic Ink Character Recognition Code (¹⁴MICR) paper
3. Unique Barcode
4. Unique Quick Response Code (¹⁵QR)
5. Fugitive Ink Background
6. Invisible Ink Mark
7. Void Pantograph Watermark
8. Global Positioning System (¹⁶GPS) based vehicle tracking system
9. Closed-Circuit Television (¹⁷CCTV) Camera

¹² Transport Permission

¹³ Indian Bank Association

¹⁴ Magnetic Ink Character Recognition Code

¹⁵ Quick Response Code

¹⁶ Global Positioning System

¹⁷ Closed Circuit Television

CHAPTER 8

REPLENISHMENT

Replenishment study is the most important part of Sand Mining as it is the only basis to carry out sand mining. Without a Replenishment Study, we cannot understand the amount of deposition of sand. Following points to be followed for the replenishment study.

1. Area of deposition and erosion will be calculated for each cross-section after giving due regard to the stability & safety of active channel banks & other features of importance.
2. Differential Global Positioning System (¹⁸DGPS) and other survey tools will be used to define the topography, contours, and offsets of the lease area.
3. Contour & elevation benchmarks will provide baseline data for assessing pre- and post-study period scenario.
4. Physical benchmarks will be fixed at appropriate intervals (preferably 1 in 30m) & Reduced levels (¹⁹RL) shall be validated from a nearby standard RL.
5. These RL will be engraved on a steel plate (Bench Plate) & will be fixed & placed at locations that are free from any damages & are available in the pre-and post-study period.
6. Bench plates will be available for use during the mining period as a reference for all mining activity.
7. Baseline data on elevation status for a grid of 10m x 10m is preferred to have accuracy in the assessment.
8. It is expected that two consecutive cross-sections in longitudinal and lateral directions will not be more than a 10m distance apart.
9. Changes observed in the elevation in pre and post-scenario at each node, will be depicted in graphical forms with an appropriate scale to estimate the area of deposition & erosion.

¹⁸ Differential global positioning system

¹⁹ Reduced levels

10. Elevation level will be in reference to the nearest bench plates established for the purpose.
11. The levels (MSL & RL) of the corner point of each grid will be identifiable and safety barriers (non-Mining) demarcated as restricted in consensus with the Mineral Concession Rules of the respective State, and the provision mentioned in this Sustainable Sand Mining Management Guidelines.
12. A clear identification will be highlighted between grids under the mineable and grids under the non-mineable area.
13. These baseline data (pre and post) be subjected to stimulation with the help of data mine software to derive the replenishment area and corresponding volume and estimated weight.
14. The database will be structured in a tabulated form clearly depicting the nomenclature of the section lines, latitude and longitude of the starting point, chainage, and respective levels of all the points taken on that section line.
15. Net area shall be derived after summation of an area of deposition minus the area of erosion for each cross-section.
16. Volume will be estimated by multiplying the distance between two cross-sections with the average of the net area of these two consecutive cross-sections.
17. One sample per 900m² (30m x 30m) will be the preferred sample density for the assessment of bulk density for the estimation of deposition rate.
18. Care will be taken that the sample for assessment of Bulk Density is taken from the deposition zone & not from erosion.

Methodology for Sand Mining:

The following methodology should be followed for the Replenishment study.

1. The Demarcation and benchmark of the Sand Ghat are done at 10m x 10m intervals.
2. The use of the Auger Driller is to find out the depth of sand in each grid.
3. Auger Driller has created the holes in sand ghat by 10mx10m grid pattern.
4. Measured the depth of holes by using a measuring tape.

5. After taking all the readings average depth of sand is calculated.
6. The average depth of Telasmukh 1 at Godavari is measured.

Replenishment study of sand in the proposed ghat along with details of the methodology, technology used to identify the existing reserve & replenishment of the same

Dandy Bolton Equation

For runoff less than 2 inches

$$S = 1280 \times (Q) \times 0.46 \times (1.46 - 0.26 \log(A)) \times F$$

For runoff more than 2 inches

$$S = 1958 \times (Q) \times (e^{-0.055 \times Q}) \times (1.43 - 0.26 \log(A))$$

Where,

S = sediment yield of stream (t/yr/km²),

Q = average annual runoff (m³),

A = net drainage area in sq.mile.

CHAPTER 9

PROPOSED PLANTATION PLAN

The Project Proponent must take care of the plantation around the site. This will not only enhance the beautification of the area but also there will be the reduction of pollution, not some extent.

Details of the plantation and Tree species recommended for the plantation are shown below.

Table 9. 1 Details of green belt

Location of greenbelt	Both sides of the approach road, On the riverbanks of both sides of the sand spot & nearby open areas. Haul Road outside the riverbed
No. of plants to be planted	2000 per Hectare
Spacing of plants	2m grid interval
Species selected	Native species

Table 9. 2 Trees species for plantation

Botanical Name	Local Name	Importance
Azadirachta Indica	Neem	Neem oil & neem products
Tectona Grandis	Teek	Antibacterial, Antifungal, Antiulcer
Ficus religiosaa	Peepal	Medicinal use, Fruits & figs
Bambusa vulgaris	Bamboo	Anthelmintic Anti-inflammatory, Astringent Properties
Madhuca longifolia	Mahua	Acts as a Stimulant & cough relief,

CHAPTER 10

ENVIRONMENTAL MANAGEMENT PLAN

A total capital cost of Rs.5.97 Lakhs has been kept in the project cost towards the environmental protection, control, mitigation measures, and implementation of the Environmental Management Plan (EMP). This cost is borne by the bidder/leaseholder. The budgetary cost estimate for the EMP is given in Table.

Table 10. 1 Budgetary cost of EMP

Sr	Impact Source	Impact	Control Measure	Cost (Rs.)
1	Transport Road	On Air Quality	Compaction, gradation, and drainage on both sides.	90000
		On Land, the Stability of the Road and degradation of road	Proper maintenance	40000
			Regular water spraying	43000
			The air quality will be monitored at the impacted village. (For One Day Monitoring)	5000
			Health Check-up of Employees	5000
2	Truck/ Tractor Movement	Air Quality	Sand-carrying trucks will be effectively covered by tarpaulin to avoid the escape of fines to the atmosphere. (2 Tarpaulin)	25000
			Regular monitoring of the exhaust fumes	5000

Sr	Impact Source	Impact	Control Measure	Cost (Rs.)
			Barriers & Traffic Management Expenses. (Excluding Manpower Salary which is included in labour costs)	10000
3	Ramp and Sand Reach	Mining Operation	Regular ramp Inspection and Ramp maintenance. (Excluding Manpower Salary which is included in labour costs)	50000
			Provision of dust masks	10000
4	Bank Management	Bank Erosion/Flood Plain management	The green belt along the bank (For Green Belt Development)	230000
			Plantation of wide leaf tall trees on banks and grass along a slanting portion of the bank	
5	Transportation on Village Roads	Dust Control	The green belt along village Rd (For Green Belt Development)	
6	Final Mine Closures Plan implementation	Replenishment of Sand	Gabions/ boulders will be arranged as per guidelines	15000
7	Mobile toilet, sewage handling & treatment		Mobile toilet, sewage handling & treatment	100000
8	CCTV Monitoring			100000
Total				728000

Budget For Corporate Environment Responsibility (²⁰CER)

About 2% fund of the project cost is allocated for Corporate Environment Responsibility (CER) activities as presented in below Table

Table 10.2 Budget for CER

Sr.	Description	Cost (Rs)
1.	Village Schools (separate toilet for girls and boys)	25000
2.	Solar panels over Gram Panchayat buildings	25000
3.	Solar panels over Public Health Centers	20000
	Total	70000

²⁰ Corporate Environment Responsibility

CHAPTER 11

SUMMARY AND CONCLUSION

The Roles and Responsibilities of the Environmental coordinator, the Operation Manager, and the senior personnel contractor are essential in EMP.

The environmental status of the project site and study area of 10km radius is delineated with respect to air, noise, water, land, biological and socio-economic environment the different project activities in the construction and operation phases are identified.

To identify the impacts, the interaction between the project activities and different components of the environment is classified phase-wise. A summary of the recognized impacts is given in the following paragraphs.

- During the operational phase, the transportation of sand could cause a temporary disturbance to the local environment which will be prevented with the proposed mitigation measures.
- Proposed project will not have any major significant negative impacts. The minor impacts arising during Excavation and Transportation phases can be mitigated with the help of the proposed Environmental Management Plan.
- In general, sand excavation from Telasmukh 1 sand spot will be useful to the developmental work in the district and generate employment opportunities.

From this project, it is concluded that the district revenue will increase in return minimum of 2% of funds are utilized for the development of the village. The project will also grab employment which will improve the standard of life of villagers.

*** END ***

Environmental Management Plan

As per Rules 23 & 26 of MMME (D & R) RULE 2013 & Section 15 of MMDR Act 1957, MoEFCC Notification 2006, S.O. 141(E) dated 15. 01. 2016; MoEFCC, Sustainable Sand Mining Management Guidelines 2016, Guidelines for Mining Policy 2020)

For

ENVIRONMENTAL CLEARANCE

of

SAND MINING (MINOR MINERAL)

for

Telasmukh 2 – A Riverbed Sand Mine / Sand Ghat
Khasra No. GSDA approved 10, 16, 13, 14, 3, 4
Area (2.70ha)

Village Telasmukh, Taluka Parli Ve., District Beed

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ABBREVIATION

Short Form	Long Form
EMP	Environmental Management Plan
MoEFCC	Ministry of Environment Forest and Climate Change
DSR	District-level Survey Report
EC	Environmental Coordinator
OM	Operations Manager
GSDA	Groundwater Surveys & Development Agency
MPCB	Maharashtra Pollution Control Board
MSL	Mean Sea Level
MS	Maharashtra State
PUC	Pollution Under Control
R&R	Rehabilitation and Resettlement
DLTF	Distance Learning Task Force
TP	Transport Permission/Permits
IBA	Indian Bank Association
MICR	Magnetic Ink Character Recognition Code
QR	Quick Response Code
GPS	Global Positioning System

CCTV	Closed-Circuit Television
DGPS	Differential Global Positioning System
RL	Reduced Levels
CER	Corporate Environment Responsibility

CHAPTER 1

INTRODUCTION

The Environmental Management Plan (¹EMP) plays a vital connection uniting forecast impacts and mitigation measures during implementation and operational activities. EMP stipulates the mitigation, monitoring and conventional measures to be taken during project implementation and operation. EMP is to escape or mitigate adverse environmental impacts, and to implement these measures.

This Environmental Management Plan (EMP) has been prepared as part of the Scoping Report which will be compiled in terms of the Environmental Assessment for the sand mining activities.

Considering the Ministry of Environment and Forest Climate Change (²MoEFCC) Notification 2006 and Sustainable Sand Mining Management Guidelines 2016, the Govt. of Maharashtra had mapped out the Minor Mineral Extraction Rules 2013. These rules are to extract all minor minerals in a scientific way so that there is no unfavourable impact on Environment and Climate. To extract every minor mineral from any land (either Government or Private) there is provision for a Mining Plan. These plans need to be approved by a competent authority. For long-term leased minor minerals (5-10 years period) and sand excavation from the riverbed, Senior Deputy Director of Directorate of Geology and Mining is the competent authority. These plans are for short term temporary permits which are valid for one year.

According to Enforcement & Monitoring Guidelines for Sand Mining 2020, Sustainable Sand Mining Management Guidelines 2016, Standard Environment conditions for sand mining and sustainable mining practices, District level Survey Report (³DSR) should be prepared and are suitable for mining and area prohibited for mining must be recognized.

¹ Environmental Management Plan

² Ministry of Environment Forest and Climate Change

³ District Survey Report

Objectives of EMP

- To provide overall conservation of the environment.
- To minimize waste generation and pollution.
- To regulate the precise use of natural resources and water.
- To provide Safety, Welfare, and Good health for the workforce and populace.
- To regulate the effective operation of all control measures.
- To ensure alertness against probable disasters and accidents.
- To monitor cumulative and long-term impacts.
- To regulate the effective operation of all control measures.

Roles and Responsibilities concerning the implementation of the EMP

The roles and responsibilities of all parties involved in successfully managing the environment are mentioned below.

Environmental Coordinator

The Environmental Coordinator will inspect operational areas on a quarterly basis and at the onset of mining any new island, to ensure that all specifications are met. The duties of the environmental coordinator will be the following.

- Guide the operations team in respect of the implementation of the environmental specifications.
- Lead the visits to ensure all work is aligned with the EMP.
- The environmental coordinator must examine the site during the three-monthly visits. All rehabilitation results will be Comprised in the quarterly report.
- Examination of the rehabilitation area and giving guidance regarding rehabilitation measures if any.

The Operations Manager

The responsibilities of the Operations Manager (4OM) or his nominated authority are as follows.

1. Familiarize themselves with the requirements of the EMP.
2. Monitor employees' and contractor's compliance with the environmental specifications; and enforce adherence.

⁴ Operations Manager

3. Communicate all environment-related incidents with the Environmental Coordinator and distribute them internally to avoid repetition.
4. Maintain a record of activities relevant to Environmental Management.
5. The Operations Manager shall be responsible for monitoring and the enforcement of the Environmental Management specifications on a day-to-day basis. Any violation of the environmental specifications shall be recorded, and the agreed disciplinary measures are taken.

Senior personnel and contractors

The roles of the senior personnel/contractors are as follows:

- Familiarize themselves with the requirements of the EMP.
- Comply with the environmental management specifications.
- Ensure that all team members are familiar with the environmental management specifications.

Details of the project

The Telasmukh 2 sand ghat area has been selected in perspective of its subsisting demand for building-grade sand for the area in and around Parli Ve. Taluka. The District Mining Officer Beed has put forward the proposal for Environmental Clearance for mining. The ghat has a production of 12403 brass sand within an area of 2.70ha. The proposed proposal follows an organized mining process for Environmental Clearance.

Further Chapter informs about the in-depth details of the Sand Ghat, its geographical structure, and a Google map of the ghat with its approach road for contractors and workers to reach to sand ghat from the village.

CHAPTER 2

DETAILS OF THE PROJECT

Telasmukh village is located in Parli Ve. Taluka of Beed district, Maharashtra. Parli Ve. is well connected with all nearby cities. The National highway NH-52, it traverses through the states of Punjab, Haryana, Rajasthan, Madhya Pradesh, Maharashtra, Karnataka in India. NH-52 is the National Highway passing through the district, covering a total distance of 73.60km. Parli Ve. has situated about 92.9km by road from Beed. The district has road links to adjoining districts Ahmednagar District to the west, Jalna District to the North, Latur District to the East, Osmanabad District to the South, Parbhani District to the East. The district is well connected by roads.

Telasmukh village is 77.63km away from Collector office headquarters Beed. The Geographical area of the Beed is around 10693km². The nearest Railway station to Telasmukh village is Sanganapur Railway station. The nearest Airport to Beed District is Aurangabad Airport, Aurangabad Airport is 104km from Beed city, 139.71km from Telasmukh.

Honourable Collector Beed intends to auction Sand Ghats and appointed District Mining Officer as Project Proponent. A total of 38 sand ghats are identified by Tahsildar Parli Ve., Parli Ve., Gevrai, Beed along with District Mining Officer, Beed. The 38 sand ghats were jointly surveyed by Taluka level technical committee headed by respective Tahsildar with Dy. Engineer Irrigation Department, Junior Geologist Directorate of Geology and Mining Govt. of Maharashtra, Junior Geologist, Groundwater Surveys & Development Agency (⁵GSDA). DMO Beed and a representative of the Maharashtra Pollution Control Board (⁶MPCB), as per the procedure defined in Sand Auction Rules 2019 dated 3/09/2019 formed a Taluka-level technical committee, which explored the sand ghats for an available quantity of sand for scooping. Revenue of Rs.25 Crore is expected from the auction of these sand ghats. Telasmukh 2 Sand Ghat proposed over river Godavari in Parli Ve.

⁵ Groundwater Surveys & Development Agency

⁶ Maharashtra Pollution Control Board

Taluka is proposed to cater to the infrastructural requirement of sand in the Taluka of Beed and adjoining areas of other talukas.

Table 2. 1 Details of Telasmukh 2Sand ghat

Name of Village	Taluka	River/ Nallah	Nearest survey No.	Area (ha)	Proposed Depth for excavation (m)	Quantity Permitted for mining of Sand in Brass	Method of Mining
Telasmukh	Parli Ve.	Godavari	10, 16, 13, 14, 3, 4	2.70	1.30	12403	Open-cast manual mining

Table 2. 2 Salient features of the project

Particulars	Details		
Location	Village-Telasmukh, Taluka-Parli Ve., District-Beed, Maharashtra.		
Latitude and Longitude	Boundary points of Telasmukh 2 sand spot	Latitude	Longitude
	BP1	19° 4'16.17"N	76°26'0.52"E
	BP2	19° 4'17.79"N	76°26'3.03"E
	BP3	19° 4'9.91"N	76°26'8.66"E
	BP4	19° 4'8.10"N	76°26'6.20"E
Sand spot area (In ha)	2.70ha		
Proposed production capacity (in Brass)	12403		

Particulars	Details
Infrastructure Requirement (As per Govt Resolution 3rd January 2018)	<ol style="list-style-type: none"> 1. Room / Hut for Official records 2. Electricity / Battery for Running CCTV 24x7 daily. 3. One Computer / Android-based Mobile for the online generation of Invoice numbers.
Distance of project site from nearest rail or road bridge over the concerned River, Nallah, etc.	5.01km
Distance from infrastructural facilities	
Railway line	
National Highway	
State Highway	
Major District Road	
Any Other Road	
Electric transmission line pole or tower	
Canal or check dam or reservoirs or lake or ponds	
In-take for drinking water pump house	
Intake for Irrigation canal pumps	

Particulars	Details
Areas already subjected to pollution or environmental damage. (those where existing legal environmental standards are exceeded)	None
Areas susceptible to natural hazards which could cause the project to Present environmental problems (earthquakes, subsidence, landslides, erosion, flooding, or extreme or adverse climatic conditions)	No. Sand Ghat is at safe distances from natural hazards like earthquake prone area, subsidence, landslide, erosion, flooding prone area and extreme or adverse climatic conditions

Particulars	Details
<p>Whether the proposal involves approval or clearance under the following Regulations or Acts, namely: - (a) The Forest (Conservation) Act, 1980. (b) The Wildlife (Protection) Act, 1972. (c) The Coastal Regulation Zone Notification, 2011. If yes, details of the same and their status are to be given.</p>	<p>None</p>
<p>Forest land involved (hectares)</p>	<p>None</p>

The below figure shows the google image of Telasmukh 2 sand ghat.

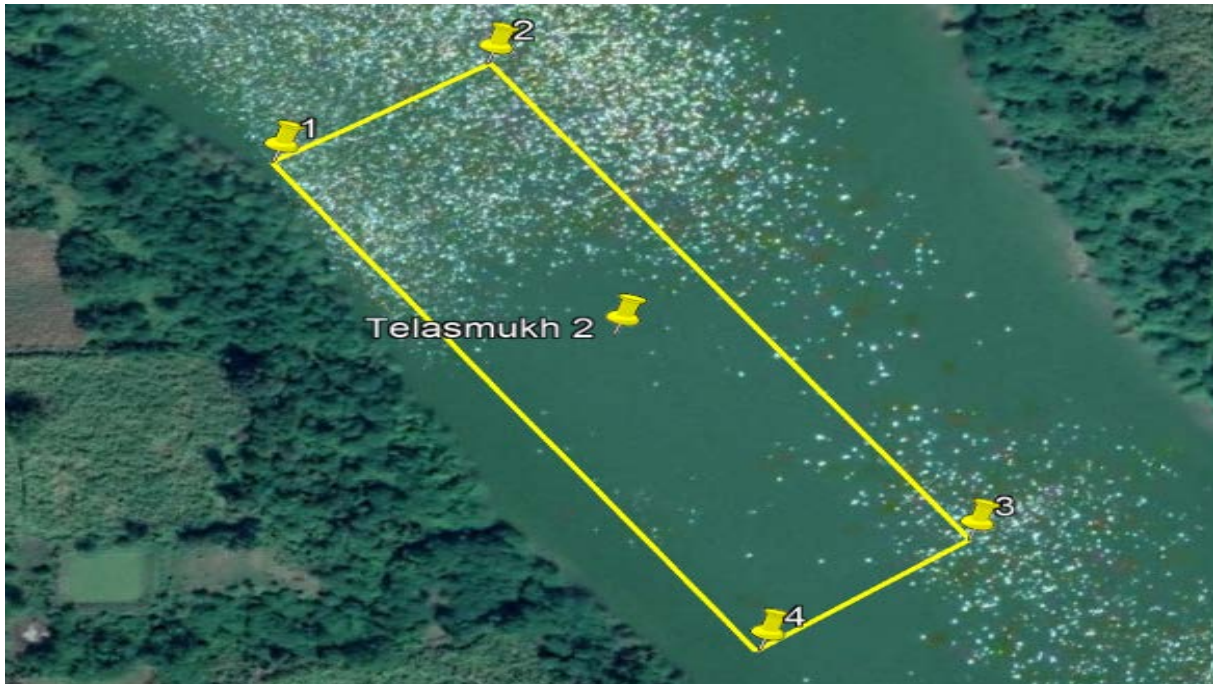


Fig 2.1-Google image of Telasmukh 2 sand ghat

Approach road along with google location is as shown below.



Fig 2.2-Approach Road for sand ghat

Next chapter 3 is Baseline Environmental Status in which the entire Topography, Climate, Soil Environment, Land use, water Environment, Hydrology, Biological environment, and Socio-economic Environment are briefly explained for the Beed district.

CHAPTER 3

BASELINE ENVIRONMENT STATUS

Topography

The Sand Ghat area as per the survey is the riverbed of the Godavari River of the Beed district. The maximum elevation is 394m MSL, average elevation is 400m MSL, & minimum elevation is 404m (⁷MSL) Mean Sea Level. The slope of the Sand Ghat area towards the Southwest to Northeast side. The flow of Godavari River is from Southeast direction.

Presently, there is neither any infrastructure within the riverbed nor are proposed.

Hydrology

There will be no change in the Water Table during the mining operation, as the depth of mining shall be restricted to 1.30m water level, which is less likely to affect the surface level or Groundwater Table. There is no proposal of any stream modification/diversion due to this mining activity hence there will be not any impact on the flow of water.

Soil Environment

The riverbed consists of sand /gravel. There is no topsoil. The depth of mining shall be restricted to 1.30m. There is no crucial impact on the soil forecasted due to mining activities.

Land Use Land Cover

Land use shows that agriculture land use is predominant. The proposed site is 2.70ha having adjoined Khasara No 10, 16, 13, 14, 3, 4. The land doesn't cover any human habitation, forest, etc. Any change in the scope of the approved Mining Plan will lead to riverbank erosion/cutting and thereby river channel shifting, degradation of land, causing loss of properties and degradation of the surrounding landscape.

⁷ Mean sea level

Water Environment

While transporting sand there may be fugitive dust. There will be water requirement for spraying for dust suppression purposes. This water will be supplied from the borewell from nearby villages through tankers as well as from surface water sources. The water source may vary from village to village.

Climate

During summer May is the hottest month of the year in this area. The temperature rises to 42°C in the month of May. The average rainfall in this region is 600mm to 700mm About 50% of rainfall precipitates between June to September. December is the coldest month with temperatures falling down to 18°C. Overall the proposed site area has sub-tropical conditions.

Biological Environment

Flora

The agricultural area is seen near the Sand Ghat. Few trees and thorny bushes are seen on the banks of the river.

Fauna

As there is no forest cover, no endangered species of wildlife are seen in this area.

Socio-Economic Environment

This project may create constructive impacts of the sand mining that are stated below:

1. The mining operations will provide direct & indirect employment to village people.
2. The villages and their inhabitants & domestic animals will not be disturbed due to mining, as the quarry is far from their settlements.
3. Local workforce will be given first preference for employment.
4. Mining activities will benefit the local people due to the provision of more infrastructural facilities (developments of approach routes within the village area).

The next chapter describes all possible impacts on the Environment due to this project along with its mitigation measure to overcome these impacts.

CHAPTER 4

IMPACT ASSESSMENT REPORT ALONG WITH PROPOSED MITIGATION MEASURES

1. Land Environment

Anticipated Impact

Movement of vehicles can create issues for agricultural land, human habitations, noise, and risk for public and cause traffic hazards. The impacts include damage to the riverbank due to access ramps to the riverbed, soil erosion because of extraction of sand, micro disturbance to groundwater, possible stimulation of the changed river course, and contamination of sand aquifer water due to ponding. There might be surface degradation due to the road network.

The quality of soil will not be affected due to transportation or any other activity of mining.

Mitigation measure

1. Mining depth should be restricted to 3 meters and distance from the bank should be $\frac{1}{4}$ th or river width and should not be less than 7.5 meters as per “Sustainable Sand Mining Guidelines 2020” ■ Page 23, Point no 4.3 (m).
2. There will be a minimal number of access roads to riverbeds. Cutting of riverbanks will be avoided and ramp with smooth slope will be maintained. Access points to the riverbed will be decided based on the least steepness of the riverbank and the least human activity at that location.
3. No foreign material like polythene bags, jute bags, and useless articles should be allowed to remain/spill in the riverbed and catchment area, or no pits/pockets will be allowed to be filled with such material.
4. Mining at the concave side of the river channel should be avoided to prevent bank erosion. Similarly, a tortuous segment of a river is to be selected for mining in such a way as to ignore the natural eroding of banks.
5. Ensure that ponding is not created in the riverbed.
6. Transportation route should be such that it gives minimum

damage to the environment.

7. Green belt will be developed along the haul road and the bank of rivers of mine premises and near the sand mining site. While selecting the plant species, preference will be given for planting native species of the area.

2. Water environment

Anticipated Impact

The project activity will be carried out in the dry part of the riverbed. Care will be taken to ensure that neither of the project activities will affect the water environment or riverbank habitats. During the lean months, the proposed Sand Mining will not expose the base flow of the river and hence there will not be any inauspicious impact on surface hydrology and groundwater regime due to this project. Project activities will not have any adverse consequences on the physical components of the environment and therefore may not have any effect on the recharge of ground waters or affect the water quality. Monitoring of water quality will be checked yearly.

Mitigation measures

1. Mining is avoided during the monsoon season and at the time of floods. This will help in the replenishment of sand in the riverbed.
2. Mining below the subterranean water level will be avoided as a safeguard against environmental contamination and over-exploitation of resources.
3. River stream will not be transferred to create active channels.
4. Mining schedule is synchronized with the river flow direction and the gradient of the land.
5. Mining at the concave side of the river channel will be avoided to prevent bank erosion.
6. Tortuous segment of the river will be selected for mining in such a way as to avoid naturally eroding banks and to promote mining on naturally building meander components.
7. Mining depth shall be maintained as per the guidelines and

rules of the Sand Mining Policy dated 03/09/2019 and recommendations of Maharashtra State (⁸M.S.). State Ground Water Department for extraction of sand during the lease period.

8. Water Quality Monitoring for the ground waters, river water, and other surface waters shall be carried out seasonally to ensure that the water quality is not affected by the project activities.
9. Utmost care will be taken to minimize or control leaking vehicles to be used for sand transportation.
10. The washing of tractor trolleys in the river will not be done.
11. The contractor will follow all guidelines and rules for proper and scientific methods of mining during the period of extracting the sand.

3. Air Environment

Anticipated Impacts

Plying of tractor trolleys from the public road to river sand collection points needs access roads. The majority of such access roads are the already existing roads/tracks being used by pedestrians/cart owners. The movement of heavy vehicles sometimes causes problems for cattle, agricultural land, and human habitations due to dust, noise, and the movement of the public. These environmental problems are felt more as the area is rural in nature.

Air pollution is likely to be caused at various stages of Sand Mining operations such as excavation, loading & transportation of material. Most of the fugitive dust emissions will be generated from loading & transportation. This dust becomes airborne and spreads away to surrounding areas.

The impact on air is mainly localized in nature as the dust particles of 100 μ in size are not carried to farther distances beyond 100m and the effect is felt within the core zone of the project involving active Sand Mining operations.

⁸ Maharashtra State

Mitigation measures

1. Movement of the vehicles on the road will be increased; however, the unmetalled road in the mining area will be sprinkled with water at regular intervals.
2. In addition to preventing spillage from tractor trolleys, overloading shall be controlled to 1-brass/tractor trolley. The speed limit will be <20 km/hr.
3. Maintenance of the haul road will be done on a regular basis.
4. To avoid fugitive dust emissions at the time of excavation, a regular sprinkling of water will be done on regular basis.
5. Sand is transported to the sites by road through tractor trolleys. The sand-carrying vehicles shall be covered by tarpaulin sheets.
6. The Green belt development will be prepared along the haul roads, which will act as a pollution sink.
7. To minimize vehicular pollution from the sand transporting vehicles, the following conditions will be insisted upon to permit the vehicles of the transporters.
8. The vehicles should be Bharat-IV stage compliant and should have a Pollution Under Control (⁹PUC) Certificate issued by appropriate authorities.
9. Regular maintenance of transport vehicles and monitoring of vehicular emission levels at periodical intervals.

4. Noise Environment

Anticipated Impact

The noise environment in this project will be overdone by the equipment at the site and vehicular transportation. A slight increase in noise levels of <10dB(A) can be expected up to a distance of 100m.

Mitigation measures.

1. Minimum use of horns in the village area.
2. Timely maintenance of vehicles and their silencers to

⁹ Pollution Under Control

minimize vibration and sound.

3. Phasing out old and worn-out tractor trolleys.
4. Provision of green belts along the road networks.
5. Care will be taken to produce minimum sound during sand loading.
6. Backhoe loader excavator will be used
7. Earplugs may be provided to protect the labourers working at the site.

5. Socio-economic Environment

Anticipated Impacts and Evaluation

1. The project activities shall not have any adverse impacts on any of the common property resources of the village communities, as the Sand Mine lease area is not being used for any purpose by any section of the society in this region.
2. There is no Resettlement and Rehabilitation (¹⁰R&R) involvement in this project.
3. There is no land acquisition in this project.
4. A major portion of the houses in the study area is semi-pucca-type structures.
5. The water source to these areas is from the Grampanchayat /Nagar Parishad connection and private bore wells and wells.
6. People living around the project area need the project for the purpose of employment and economic benefits.
7. The awareness level regarding the proposed mining activity is very towering. The proposed mining activity is expected to provide stimulus to socio-economic activities in the region and thereby accelerate further development processes.

Social and Demographic Profile

The workers are from local villages. These people have been provided welfare benefits from the lessee like medical benefits,

¹⁰ Rehabilitation and Resettlement

insurance, fees for children's education, etc. They have some land and cattle for their daily earnings. Additional revenue earned from the Sand Mining work will improve their living standard. The group of quarries in and around will help to have infrastructure facilities like roads, schools, shops, etc. This will enhance their social life.

Occupational Health and Safety

This is a riverbed Sand Mine. So, the mining activities are comparatively smaller because the production is not on a high scale. Workers do not come across any extreme conditions like excessive heat, moisture, etc. Workers working around it may come across this dusty environment. But the impact on health will be within the limit.

Human Settlement

1. There are no houses in and around the lease area. Blasting is the only activity, which may affect the settlement, which is not done. The settlement is more than 1-km from the sand mine.
2. Appropriate precautions will be taken during mining. Transportation of finished products is through the villages. There will be an effect of traffic on the local people. However, the intensity of traffic is 70-80/day.

Health and Hygiene

In general, the health of villagers is moderately good. In the rainy season, the atmospheric condition is unhygienic due to a lack of proper drainage and sanitation in the village habitation. Villagers are working in agricultural fields and work as labourers.

Education

Most education of 70% young <20 years, is up to the 5th to 9th. Economic condition is in general moderate. So, after this project, the standard of education will increase.

Socio-Economic Benefits Arising Out of Mining

1. Generation of employment in rural areas.
2. Upgradation in the living standards of rural people.
3. Creating infrastructural facilities like roads, electricity, shops, schools, etc.
4. Upgrading literacy in the area by exploiting natural minerals so the generation of revenue.

5. Helping to sustain construction activity.
6. Improving the greenery of the area, which is otherwise poor.

Liquid Effluent

Not applicable, because these activities do not generate effluent from operation or process.

Solid Waste

Not applicable, because small mines and impacts are negligible.

Project benefits due to the sand mining of Telasmukh 2 are explained in the next Chapter.

CHAPTER 5

PROJECT BENEFITS

The proposed Sand Mining project of Telasmukh village, Parli Ve. Taluka, Beed District will lead to the following benefits:

1. Increase in the revenue of the district will ultimately increase the revenue of the village, which in return can be used to improve the infrastructure of the village.
2. Sand is available for building construction work and by systematic separation of sand, there is no possibility of a flood. Providing smooth movement of water of the river.
3. This project will contribute additional revenue to the state Exchequer in the form of revenue.
4. The project will conclude with employment opportunities for unskilled/skilled local people.
5. Standard of living of employed people will increase.

CHAPTER 6

SITE-SPECIFIC ENFORCEMENT & MONITORING PLAN

Sand Ghat Site specific enforcement & monitoring plan

(as per guidelines stipulated in the Enforcement and Monitoring Guidelines for sand mining issued by MoEFCC in January 2020.)

District administration shall deliver information on its website about the Sand Mines in the district for public information. The objective is to extend all information into the public domain so that the citizens are aware of the mining activities. People can also report to the district administration any deviation observed. Suitable feedback and its composition shall also be made operational.

Details shall include, but not be limited to, lease area, geo-coordinates of lease area and mineable area, transport routes, permitted capacity, regulatory conditions for operation including mining, environmental and social commitments, etc.

An Independent Committee of experts constituted by the Distance Learning Task Force (¹¹DLTF) will assess the environmental or ecological damage caused due to illegal mining and recommend recovery of environmental compensation from the concerned miners.

The recommendation may also include action under the provision of the Environment (Protection) Act 1986 u/s.15 read with s.19.

¹¹ Distance Learning Task Force

CHAPTER 7

SECURITY FEATURES

Security features are included in the Transport Permission/Permits (TP)

It will be ensured that the following security features are included in the Transport Permission/Permits (¹²TP) so that duplicate/fraudulent/forged TPs for transport, not accounted for in the IT-based system, is not possible:

1. Printed on Indian Bank Association (¹³IBA) Approved letterhead with account details
2. Magnetic Ink Character Recognition Code (¹⁴MICR) paper
3. Unique Barcode
4. Unique Quick Response Code (¹⁵QR)
5. Fugitive Ink Background
6. Invisible Ink Mark
7. Void Pantograph Watermark
8. Global Positioning System (¹⁶GPS) based vehicle tracking system
9. Closed-Circuit Television (¹⁷CCTV) Camera

¹² Transport Permission

¹³ Indian Bank Association

¹⁴ Magnetic Ink Character Recognition Code

¹⁵ Quick Response Code

¹⁶ Global Positioning System

¹⁷ Closed Circuit Television

CHAPTER 8

REPLENISHMENT

Replenishment study is the most important part of Sand Mining as it is the only basis to carry out sand mining. Without a Replenishment Study, we cannot understand the amount of deposition of sand. Following points to be followed for the replenishment study.

1. Area of deposition and erosion will be calculated for each cross-section after giving due regard to the stability & safety of active channel banks & other features of importance.
2. Differential Global Positioning System (¹⁸DGPS) and other survey tools will be used to define the topography, contours, and offsets of the lease area.
3. Contour & elevation benchmarks will provide baseline data for assessing pre- and post-study period scenario.
4. Physical benchmarks will be fixed at appropriate intervals (preferably 1 in 30m) & Reduced levels (¹⁹RL) shall be validated from a nearby standard RL.
5. These RL will be engraved on a steel plate (Bench Plate) & will be fixed & placed at locations that are free from any damages & are available in the pre-and post-study period.
6. Bench plates will be available for use during the mining period as a reference for all mining activity.
7. Baseline data on elevation status for a grid of 10m x 10m is preferred to have accuracy in the assessment.
8. It is expected that two consecutive cross-sections in longitudinal and lateral directions will not be more than a 10m distance apart.
9. Changes observed in the elevation in pre and post-scenario at each node, will be depicted in graphical forms with an appropriate scale to estimate the area of deposition & erosion.

¹⁸ Differential global positioning system

¹⁹ Reduced levels

10. Elevation level will be in reference to the nearest bench plates established for the purpose.
11. The levels (MSL & RL) of the corner point of each grid will be identifiable and safety barriers (non-Mining) demarcated as restricted in consensus with the Mineral Concession Rules of the respective State, and the provision mentioned in this Sustainable Sand Mining Management Guidelines.
12. A clear identification will be highlighted between grids under the mineable and grids under the non-mineable area.
13. These baseline data (pre and post) be subjected to stimulation with the help of data mine software to derive the replenishment area and corresponding volume and estimated weight.
14. The database will be structured in a tabulated form clearly depicting the nomenclature of the section lines, latitude and longitude of the starting point, chainage, and respective levels of all the points taken on that section line.
15. Net area shall be derived after summation of an area of deposition minus the area of erosion for each cross-section.
16. Volume will be estimated by multiplying the distance between two cross-sections with the average of the net area of these two consecutive cross-sections.
17. One sample per 900m² (30m x 30m) will be the preferred sample density for the assessment of bulk density for the estimation of deposition rate.
18. Care will be taken that the sample for assessment of Bulk Density is taken from the deposition zone & not from erosion.

Methodology for Sand Mining:

The following methodology should be followed for the Replenishment study.

1. The Demarcation and benchmark of the Sand Ghat are done at 10m x 10m intervals.
2. The use of the Auger Driller is to find out the depth of sand in each grid.
3. Auger Driller has created the holes in sand ghat by 10mx10m grid pattern.
4. Measured the depth of holes by using a measuring tape.

5. After taking all the readings average depth of sand is calculated.
6. The average depth of Telasmukh 2 at Godavari is measured.

Replenishment study of sand in the proposed ghat along with details of the methodology, technology used to identify the existing reserve & replenishment of the same

Dandy Bolton Equation

For runoff less than 2 inches

$$S = 1280 \times (Q) \times 0.46 \times (1.46 - 0.26 \log(A)) \times F$$

For runoff more than 2 inches

$$S = 1958 \times (Q) \times (e^{-0.055 \times Q}) \times (1.43 - 0.26 \log(A))$$

Where,

S = sediment yield of stream (t/yr/km²),

Q = average annual runoff (m³),

A = net drainage area in sq.mile.

CHAPTER 9

PROPOSED PLANTATION PLAN

The Project Proponent must take care of the plantation around the site. This will not only enhance the beautification of the area but also there will be the reduction of pollution, not some extent.

Details of the plantation and Tree species recommended for the plantation are shown below.

Table 9. 1 Details of green belt

Location of greenbelt	Both sides of the approach road, On the riverbanks of both sides of the sand spot & nearby open areas. Haul Road outside the riverbed
No. of plants to be planted	2000 per Hectare
Spacing of plants	2m grid interval
Species selected	Native species

Table 9. 2 Trees species for plantation

Botanical Name	Local Name	Importance
Azadirachta Indica	Neem	Neem oil & neem products
Tectona Grandis	Teek	Antibacterial, Antifungal, Antiulcer
Ficus religiosaa	Peepal	Medicinal use, Fruits & figs
Bambusa vulgaris	Bamboo	Anthelmintic Anti-inflammatory, Astringent Properties
Madhuca longifolia	Mahua	Acts as a Stimulant & cough relief,

CHAPTER 10

ENVIRONMENTAL MANAGEMENT PLAN

A total capital cost of Rs.5.97 Lakhs has been kept in the project cost towards the environmental protection, control, mitigation measures, and implementation of the Environmental Management Plan (EMP). This cost is borne by the bidder/leaseholder. The budgetary cost estimate for the EMP is given in Table.

Table 10. 1 Budgetary cost of EMP

Sr	Impact Source	Impact	Control Measure	Cost (Rs.)
1	Transport Road	On Air Quality	Compaction, gradation, and drainage on both sides.	90000
		On Land, the Stability of the Road and degradation of road	Proper maintenance	40000
			Regular water spraying	43000
			The air quality will be monitored at the impacted village. (For One Day Monitoring)	5000
			Health Check-up of Employees	5000
2	Truck/ Tractor Movement	Air Quality	Sand-carrying trucks will be effectively covered by tarpaulin to avoid the escape of fines to the atmosphere. (2 Tarpaulin)	25000
			Regular monitoring of the exhaust fumes	5000

Sr	Impact Source	Impact	Control Measure	Cost (Rs.)
			Barriers & Traffic Management Expenses. (Excluding Manpower Salary which is included in labour costs)	10000
3	Ramp and Sand Reach	Mining Operation	Regular ramp Inspection and Ramp maintenance. (Excluding Manpower Salary which is included in labour costs)	50000
			Provision of dust masks	10000
4	Bank Management	Bank Erosion/Flood Plain management	The green belt along the bank (For Green Belt Development)	230000
			Plantation of wide leaf tall trees on banks and grass along a slanting portion of the bank	
5	Transportation on Village Roads	Dust Control	The green belt along village Rd (For Green Belt Development)	
6	Final Mine Closure Plan implementation	Replenishment of Sand	Gabions/ boulders will be arranged as per guidelines	15000
7	Mobile toilet, sewage handling & treatment		Mobile toilet, sewage handling & treatment	100000
8	CCTV Monitoring			100000
Total				728000

Budget For Corporate Environment Responsibility (²⁰CER)

About 2% fund of the project cost is allocated for Corporate Environment Responsibility (CER) activities as presented in below Table

Table 10.2 Budget for CER

Sr.	Description	Cost (Rs)
1.	Village Schools (separate toilet for girls and boys)	25000
2.	Solar panels over Gram Panchayat buildings	25000
3.	Solar panels over Public Health Centers	20000
	Total	70000

²⁰ Corporate Environment Responsibility

CHAPTER 11

SUMMARY AND CONCLUSION

The Roles and Responsibilities of the Environmental coordinator, the Operation Manager, and the senior personnel contractor are essential in EMP.

The environmental status of the project site and study area of 10km radius is delineated with respect to air, noise, water, land, biological and socio-economic environment the different project activities in the construction and operation phases are identified.

To identify the impacts, the interaction between the project activities and different components of the environment is classified phase-wise. A summary of the recognized impacts is given in the following paragraphs.

- During the operational phase, the transportation of sand could cause a temporary disturbance to the local environment which will be prevented with the proposed mitigation measures.
- Proposed project will not have any major significant negative impacts. The minor impacts arising during Excavation and Transportation phases can be mitigated with the help of the proposed Environmental Management Plan.
- In general, sand excavation from Telasmukh 2 sand spot will be useful to the developmental work in the district and generate employment opportunities.

From this project, it is concluded that the district revenue will increase in return minimum of 2% of funds are utilized for the development of the village. The project will also grab employment which will improve the standard of life of villagers.

*** END ***

Environmental Management Plan

As per Rules 23 & 26 of MMME (D & R) RULE 2013 & Section 15 of MMDR Act 1957, MoEFCC Notification 2006, S.O. 141(E) dated 15. 01. 2016; MoEFCC, Sustainable Sand Mining Management Guidelines 2016, Guidelines for Mining Policy 2020)

for

ENVIRONMENTAL CLEARANCE

of

SAND MINING (MINOR MINERAL)

for

Ramgaon B– A Riverbed Sand Mine / Sand Ghat
Khasra No. GSDA approved 17
Area (1.25ha)

Village Ramgaon B, Tehsil Beed, District Beed

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ABBREVIATION

Short Form	Long Form
EMP	Environmental Management Plan
MoEFCC	Ministry of Environment Forest and Climate Change
DSR	District-level Survey Report
EC	Environmental Coordinator
OM	Operations Manager
GSDA	Groundwater Surveys & Development Agency
MPCB	Maharashtra Pollution Control Board
MSL	Mean Sea Level
MS	Maharashtra State
PUC	Pollution Under Control
R&R	Rehabilitation and Resettlement
DLTF	Distance Learning Task Force
TP	Transport Permission/Permits
IBA	Indian Bank Association
MICR	Magnetic Ink Character Recognition Code
QR	Quick Response Code
GPS	Global Positioning System

CCTV	Closed-Circuit Television
DGPS	Differential Global Positioning System
RL	Reduced Levels
CER	Corporate Environment Responsibility

CHAPTER 1

INTRODUCTION

The Environmental Management Plan (¹EMP) plays a vital connection uniting forecast impacts and mitigation measures during implementation and operational activities. EMP stipulates the mitigation, monitoring and conventional measures to be taken during project implementation and operation. EMP is to escape or mitigate adverse environmental impacts, and to implement these measures.

This Environmental Management Plan (EMP) has been prepared as part of the Scoping Report which will be compiled in terms of the Environmental Assessment for the sand mining activities.

Considering the Ministry of Environment and Forest Climate Change (²MoEFCC) Notification 2006 and Sustainable Sand Mining Management Guidelines 2016, the Govt. of Maharashtra had mapped out the Minor Mineral Extraction Rules 2013. These rules are to extract all minor minerals in a scientific way so that there is no unfavourable impact on Environment and Climate. To extract every minor mineral from any land (either Government or Private) there is provision for a Mining Plan. These plans need to be approved by a competent authority. For long-term leased minor minerals (5-10 years period) and sand excavation from the riverbed, Senior Deputy Director of Directorate of Geology and Mining is the competent authority. These plans are for short term temporary permits which are valid for one year.

According to Enforcement & Monitoring Guidelines for Sand Mining 2020, Sustainable Sand Mining Management Guidelines 2016, Standard Environment conditions for sand mining and sustainable mining practices, District level Survey Report (³DSR) should be prepared and are suitable for mining and area prohibited for mining must be recognized.

¹ Environmental Management Plan

² Ministry of Environment Forest and Climate Change

³ District Survey Report

Objectives of EMP

- To provide overall conservation of the environment.
- To minimize waste generation and pollution.
- To regulate the precise use of natural resources and water.
- To provide Safety, Welfare, and Good health for the workforce and populace.
- To regulate the effective operation of all control measures.
- To ensure alertness against probable disasters and accidents.
- To monitor cumulative and long-term impacts.
- To regulate the effective operation of all control measures.

Roles and Responsibilities concerning the implementation of the EMP

The roles and responsibilities of all parties involved in successfully managing the environment are mentioned below.

Environmental Coordinator

The Environmental Coordinator will inspect operational areas on a quarterly basis and at the onset of mining any new island, to ensure that all specifications are met. The duties of the environmental coordinator will be the following.

- Guide the operations team in respect of the implementation of the environmental specifications.
- Lead the visits to ensure all work is aligned with the EMP.
- The environmental coordinator must examine the site during the three-monthly visits. All rehabilitation results will be Comprised in the quarterly report.
- Examination of the rehabilitation area and giving guidance regarding rehabilitation measures if any.

The Operations Manager

The responsibilities of the Operations Manager (4OM) or his nominated authority are as follows.

1. Familiarize themselves with the requirements of the EMP.
2. Monitor employees' and contractor's compliance with the environmental specifications; and enforce adherence.

⁴ Operations Manager

3. Communicate all environment-related incidents with the Environmental Coordinator and distribute them internally to avoid repetition.
4. Maintain a record of activities relevant to Environmental Management.
5. The Operations Manager shall be responsible for monitoring and the enforcement of the Environmental Management specifications on a day-to-day basis. Any violation of the environmental specifications shall be recorded, and the agreed disciplinary measures are taken.

Senior personnel and contractors

The roles of the senior personnel/contractors are as follows:

- Familiarize themselves with the requirements of the EMP.
- Comply with the environmental management specifications.
- Ensure that all team members are familiar with the environmental management specifications.

Details of the project

The Ramgaon B sand ghat area has been selected in perspective of its subsisting demand for building-grade sand for the area in and around Beed Taluka. The District Mining Officer Beed has put forward the proposal for Environmental Clearance for mining. The ghat has a production of 4417 brass sand within an area of 1.25ha. The proposed proposal follows an organized mining process for Environmental Clearance.

Further Chapter informs about the in-depth details of the Sand Ghat, its geographical structure, and a Google map of the ghat with its approach road for contractors and workers to reach to sand ghat from the village.

CHAPTER 2

DETAILS OF THE PROJECT

Ramgaon B village is located in Beed Taluka of Beed district, Maharashtra. Beed is well connected with all nearby cities. The National highway NH-52, it traverses through the states of Punjab, Haryana, Rajasthan, Madhya Pradesh and Maharashtra in India. NH-52 is the National Highway passing through the district, covering a total distance of 73.60km. Beed has situated about 0km by road from Beed. The district has road links to adjoining districts Ahmednagar District to the west, Jalna District to the North, Latur District to the East, Osmanabad District to the South, Parbhani District to the East The district is well connected by roads.

Ramgaon B village is 25.65km away from Collector Office headquarters Beed. The Geographical area of the Beed is around 10693km². The nearest Railway station to Ramgaon B village is Partur Railway station. The nearest Airport to Beed District is Aurangabad Airport, Aurangabad Airport is 104km away from beed.

Honourable Collector Beed intends to auction Sand Ghats and appointed District Mining Officer as Project Proponent. A total of 38 sand ghats are identified by Tahsildar Majalgaon, Parli Ve, Gevrai, Beed along with District Mining Officer, Beed. The 38 sand ghats were jointly surveyed by Taluka level technical committee headed by respective tahsildar with Dy. Engineer Irrigation Department, Junior Geologist Directorate of Geology and Mining Govt. of Maharashtra, Junior Geologist, Groundwater Surveys & Development Agency (⁵GSDA). DMO Beed and a representative of the Maharashtra Pollution Control Board (⁶MPCB), as per the procedure defined in Sand Auction Rules 2019 dated 3/09/2019 formed a Taluka-level technical committee, which explored the sand ghats for an available quantity of sand for scooping. Revenue of Rs.25 Crore is expected from the auction of these sand ghats. Ramgaon B Sand Ghat proposed over river Sindhphana in Beed Taluka is proposed to cater to the infrastructural requirement of sand in the Tehsil of Beed and adjoining areas of other talukas.

⁵ Groundwater Surveys & Development Agency

⁶ Maharashtra Pollution Control Board

Table 2. 1 Details of Ramgaon B Sand ghat

Name of Village	Tahsil	River/ Nallah	Nearest survey No.	Area (ha)	Proposed Depth for excavation (m)	Quantity Permitted for mining of Sand in Brass	Method of Mining
Ramgaon B.	Beed	Sindhphana	17	1.25	1.0	4417	Open-cast manual mining

Table 2. 2 Salient features of the project

Particulars	Details															
Location	Village- Ramgaon B, Taluka- Beed, District-Beed, Maharashtra.															
Latitude and Longitude	<table border="1"> <thead> <tr> <th>Boundary points of Ramgaon B sand spot</th> <th>Latitude</th> <th>Longitude</th> </tr> </thead> <tbody> <tr> <td>BP1</td> <td>19°7'28.88"N</td> <td>75°56'38.58"E</td> </tr> <tr> <td>BP2</td> <td>19°7'29.34"N</td> <td>75°56'38.00"E</td> </tr> <tr> <td>BP3</td> <td>19°7'34.79"N</td> <td>75°56'53.98"E</td> </tr> <tr> <td>BP4</td> <td>19°7'34.14"N</td> <td>75°56'54.15"E</td> </tr> </tbody> </table>	Boundary points of Ramgaon B sand spot	Latitude	Longitude	BP1	19°7'28.88"N	75°56'38.58"E	BP2	19°7'29.34"N	75°56'38.00"E	BP3	19°7'34.79"N	75°56'53.98"E	BP4	19°7'34.14"N	75°56'54.15"E
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BP3	19°7'34.79"N	75°56'53.98"E														
BP4	19°7'34.14"N	75°56'54.15"E														
Sand spot area (In ha)	1.25ha															
Proposed production capacity (in Brass)	4417															
Infrastructure Requirement (As per Govt Resolution 3rd January 2018)	<ol style="list-style-type: none"> 1. Room / Hut for Official records 2. Electricity / Battery for Running CCTV 24x7 daily. 3. One Computer / Android-based Mobile for the online generation of Invoice numbers. 															
Distance of project site from nearest rail or road bridge over the concerned River, Nallah, etc.	Godavari River Bridge-19.37km															

Particulars	Details
Distance from infrastructural facilities Railway line National Highway State Highway Major District Road Any Other Road Electric transmission line pole or tower Canal or check dam or reservoirs or lake or ponds In-take for drinking water pump house Intake for Irrigation canal pumps	Partur railway station-57.21km NH61-14.95km MSH144-9.29km 7.18km 1km
Areas already subjected to pollution or environmental damage. (those where existing legal environmental standards are exceeded)	None
Areas susceptible to natural hazards which could cause the project to Present environmental problems (earthquakes, subsidence, landslides, erosion, flooding, or extreme or adverse climatic conditions)	No. Sand Ghat is at safe distances from natural hazards like earthquake prone area, subsidence, landslide, erosion, flooding prone area and extreme or adverse climatic conditions

Particulars	Details
Whether the proposal involves approval or clearance under the following Regulations or Acts, namely: - (a) The Forest (Conservation) Act, 1980. (b) The Wildlife (Protection) Act, 1972. (c) The Coastal Regulation Zone Notification, 2011. If yes, details of the same and their status are to be given.	None
Forest land involved (hectares)	None

The below figure shows the google image of Ramgaon B sand ghat.



Fig 2.1-Google image of Ramgaon B sand ghat

Approach road along with google location is as shown below.

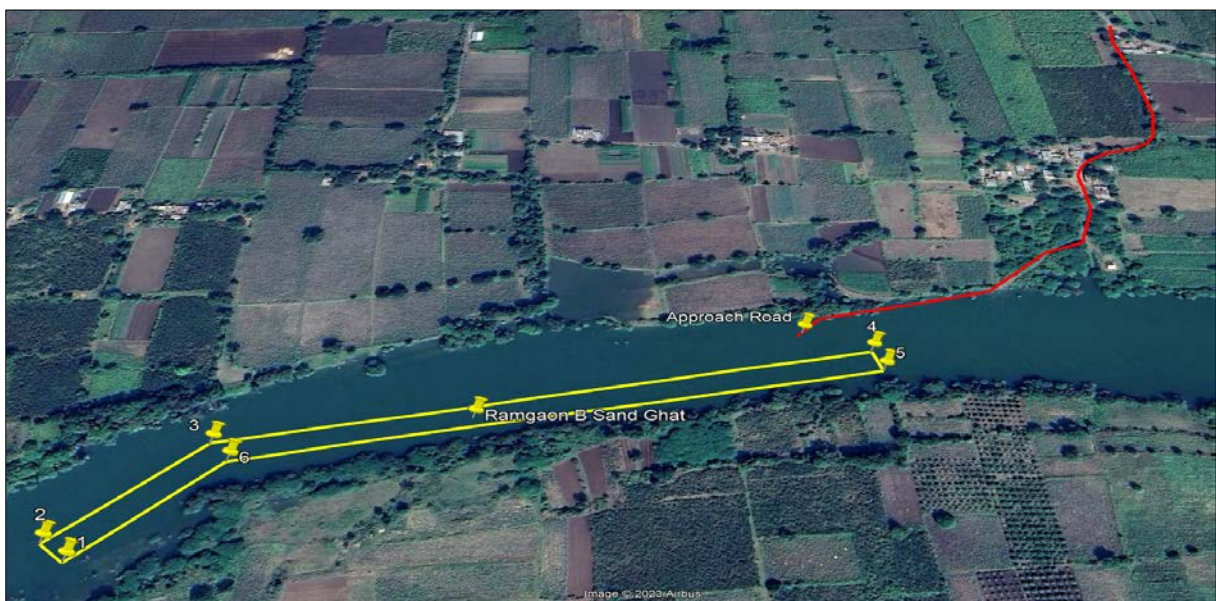


Fig 2.2-Approach Road for sand ghat

Next chapter 3 is Baseline Environmental Status in which the entire Topography, Climate, Soil Environment, Land use, water Environment, Hydrology, Biological environment, and Socio-economic Environment are briefly explained for the Beed district.

CHAPTER 3

BASELINE ENVIRONMENT STATUS

Topography

The Sand Ghat area as per the survey is the riverbed of the Sindhphana River of the Beed district. The maximum elevation is 461m MSL, average elevation is 459m MSL, & minimum elevation is 457m (7MSL) Mean Sea Level. The slope of the Sand Ghat area towards the Northeast to Southwest side. The flow of Sindhphana River is from West to East direction.

Presently, there is neither any infrastructure within the riverbed nor are proposed.

Hydrology

There will be no change in the Water Table during the mining operation, as the depth of mining shall be restricted to 1.0m water level, which is less likely to affect the surface level or Groundwater Table. There is no proposal of any stream modification/diversion due to this mining activity hence there will be not any impact on the flow of water.

Soil Environment

The riverbed consists of sand /gravel. There is no topsoil. The depth of mining shall be restricted to 1.0m. There is no crucial impact on the soil forecasted due to mining activities.

Land Use Land Cover

Land use shows that agriculture land use is predominant. The proposed site is 1.25ha having adjoined Khasara No 17. The land doesn't cover any human habitation, forest, etc. Any change in the scope of the approved Mining Plan will lead to riverbank erosion/cutting and thereby river channel shifting, degradation of land, causing loss of properties and degradation of the surrounding landscape.

⁷ Mean sea level

Water Environment

While transporting sand there may be fugitive dust. There will be water requirement for spraying for dust suppression purposes. This water will be supplied from the borewell from nearby villages through tankers as well as from surface water sources. The water source may vary from village to village.

Climate

During summer May is the hottest month of the year in this area. The temperature rises to 42°C in the month of May. The average rainfall in this region is 600-700mm About 50% of rainfall precipitates between June to September. December is the coldest month with temperature falling down to 18°C. Overall the proposed site area has sub-tropical conditions.

Biological Environment

Flora

The agricultural area is seen near the Sand Ghat. Few trees and thorny bushes are seen on the banks of the river.

Fauna

As there is no forest cover, no endangered species of wildlife are seen in this area.

Socio-Economic Environment

This project may create constructive impacts of the sand mining that are stated below:

1. The mining operations will provide direct & indirect employment to village people.
2. The villages and their inhabitants & domestic animals will not be disturbed due to mining, as the quarry is far from their settlements.
3. Local workforce will be given first preference for employment.
4. Mining activities will benefit the local people due to the provision of more infrastructural facilities (developments of approach routes within the village area).

The next chapter describes all possible impacts on the Environment due to this project along with its mitigation measure to overcome these impacts.

CHAPTER 4

IMPACT ASSESSMENT REPORT ALONG WITH PROPOSED MITIGATION MEASURES

1. Land Environment

Anticipated Impact

Movement of vehicles can create issues for agricultural land, human habitations, noise, and risk for public and cause traffic hazards. The impacts include damage to the riverbank due to access ramps to the riverbed, soil erosion because of extraction of sand, micro disturbance to groundwater, possible stimulation of the changed river course, and contamination of sand aquifer water due to ponding. There might be surface degradation due to the road network.

The quality of soil will not be affected due to transportation or any other activity of mining.

Mitigation measure

1. Mining depth should be restricted to 3 meters and distance from the bank should be $\frac{1}{4}$ th or river width and should not be less than 7.5 meters as per “Sustainable Sand Mining Guidelines 2020” Page 23, Point no 4.3 (m).
2. There will be a minimal number of access roads to riverbeds. Cutting of riverbanks will be avoided and ramp with smooth slope will be maintained. Access points to the riverbed will be decided based on the least steepness of the riverbank and the least human activity at that location.
3. No foreign material like polythene bags, jute bags, and useless articles should be allowed to remain/spill in the riverbed and catchment area, or no pits/pockets will be allowed to be filled with such material.
4. Mining at the concave side of the river channel should be avoided to prevent bank erosion. Similarly, a tortuous segment of a river is to be selected for mining in such a way as to ignore the natural eroding of banks.
5. Ensure that ponding is not created in the riverbed.
6. Transportation route should be such that it gives minimum

damage to the environment.

7. Green belt will be developed along the haul road and the bank of rivers of mine premises and near the sand mining site. While selecting the plant species, preference will be given for planting native species of the area.

2. Water environment

Anticipated Impact

The project activity will be carried out in the dry part of the riverbed. Care will be taken to ensure that neither of the project activities will affect the water environment or riverbank habitats. During the lean months, the proposed Sand Mining will not expose the base flow of the river and hence there will not be any inauspicious impact on surface hydrology and groundwater regime due to this project. Project activities will not have any adverse consequences on the physical components of the environment and therefore may not have any effect on the recharge of ground waters or affect the water quality. Monitoring of water quality will be checked yearly.

Mitigation measures

1. Mining is avoided during the monsoon season and at the time of floods. This will help in the replenishment of sand in the riverbed.
2. Mining below the subterranean water level will be avoided as a safeguard against environmental contamination and over-exploitation of resources.
3. River stream will not be transferred to create active channels.
4. Mining schedule is synchronized with the river flow direction and the gradient of the land.
5. Mining at the concave side of the river channel will be avoided to prevent bank erosion.
6. Tortuous segment of the river will be selected for mining in such a way as to avoid naturally eroding banks and to promote mining on naturally building meander components.
7. Mining depth shall be maintained as per the guidelines and

rules of the Sand Mining Policy dated 03/09/2019 and recommendations of Maharashtra State (⁸M.S.). State Ground Water Department for extraction of sand during the lease period.

8. Water Quality Monitoring for the ground waters, river water, and other surface waters shall be carried out seasonally to ensure that the water quality is not affected by the project activities.
9. Utmost care will be taken to minimize or control leaking vehicles to be used for sand transportation.
10. The washing of tractor trolleys in the river will not be done.
11. The contractor will follow all guidelines and rules for proper and scientific methods of mining during the period of extracting the sand.

3. Air Environment

Anticipated Impacts

Plying of tractor trolleys from the public road to river sand collection points needs access roads. The majority of such access roads are the already existing roads/tracks being used by pedestrians/cart owners. The movement of heavy vehicles sometimes causes problems for cattle, agricultural land, and human habitations due to dust, noise, and the movement of the public. These environmental problems are felt more as the area is rural in nature.

Air pollution is likely to be caused at various stages of Sand Mining operations such as excavation, loading & transportation of material. Most of the fugitive dust emissions will be generated from loading & transportation. This dust becomes airborne and spreads away to surrounding areas.

The impact on air is mainly localized in nature as the dust particles of 100 μ in size are not carried to farther distances beyond 100m and the effect is felt within the core zone of the project involving active Sand Mining operations.

⁸ Maharashtra State

Mitigation measures

1. Movement of the vehicles on the road will be increased; however, the unmetalled road in the mining area will be sprinkled with water at regular intervals.
2. In addition to preventing spillage from tractor trolleys, overloading shall be controlled to 1-brass/tractor trolley. The speed limit will be <20 km/hr.
3. Maintenance of the haul road will be done on a regular basis.
4. To avoid fugitive dust emissions at the time of excavation, a regular sprinkling of water will be done on regular basis.
5. Sand is transported to the sites by road through tractor trolleys. The sand-carrying vehicles shall be covered by tarpaulin sheets.
6. The Green belt development will be prepared along the haul roads, which will act as a pollution sink.
7. To minimize vehicular pollution from the sand transporting vehicles, the following conditions will be insisted upon to permit the vehicles of the transporters.
8. The vehicles should be Bharat-IV stage compliant and should have a Pollution Under Control (⁹PUC) Certificate issued by appropriate authorities.
9. Regular maintenance of transport vehicles and monitoring of vehicular emission levels at periodical intervals.

4. Noise Environment

Anticipated Impact

The noise environment in this project will be overdone by the equipment at the site and vehicular transportation. A slight increase in noise levels of <10dB(A) can be expected up to a distance of 100m.

Mitigation measures.

1. Minimum use of horns in the village area.
2. Timely maintenance of vehicles and their silencers to

⁹ Pollution Under Control

minimize vibration and sound.

3. Phasing out old and worn-out tractor trolleys.
4. Provision of green belts along the road networks.
5. Care will be taken to produce minimum sound during sand loading.
6. Backhoe loader excavator will be used
7. Earplugs may be provided to protect the laborers working at the site.

5. Socio-economic Environment

Anticipated Impacts and Evaluation

1. The project activities shall not have any adverse impacts on any of the common property resources of the village communities, as the Sand Mine lease area is not being used for any purpose by any section of the society in this region.
2. There is no Resettlement and Rehabilitation (¹⁰R&R) involvement in this project.
3. There is no land acquisition in this project.
4. A major portion of the houses in the study area is semi-pucca-type structures.
5. The water source to these areas is from the Grampanchayat /Nagar Parishad connection and private bore wells and wells.
6. People living around the project area need the project for the purpose of employment and economic benefits.
7. The awareness level regarding the proposed mining activity is very towering. The proposed mining activity is expected to provide stimulus to socio-economic activities in the region and thereby accelerate further development processes.

Social and Demographic Profile

The workers are from local villages. These people have been provided welfare benefits from the lessee like medical benefits,

¹⁰ Rehabilitation and Resettlement

insurance, fees for children's education, etc. They have some land and cattle for their daily earnings. Additional revenue earned from the Sand Mining work will improve their living standard. The group of quarries in and around will help to have infrastructure facilities like roads, schools, shops, etc. This will enhance their social life.

Occupational Health and Safety

This is a riverbed Sand Mine. So, the mining activities are comparatively smaller because the production is not on a high scale. Workers do not come across any extreme conditions like excessive heat, moisture, etc. Workers working around it may come across this dusty environment. But the impact on health will be within the limit.

Human Settlement

1. There are no houses in and around the lease area. Blasting is the only activity, which may affect the settlement, which is not done. The settlement is more than 1-km from the sand mine.
2. Appropriate precautions will be taken during mining. Transportation of finished products is through the villages. There will be an effect of traffic on the local people. However, the intensity of traffic is 70-80/day.

Health and Hygiene

In general, the health of villagers is moderately good. In the rainy season, the atmospheric condition is unhygienic due to a lack of proper drainage and sanitation in the village habitation. Villagers are working in agricultural fields and work as labourers.

Education

Most education of 70% young <20 years, is up to the 5th to 9th. Economic condition is in general moderate. So, after this project, the standard of education will increase.

Socio-Economic Benefits Arising Out of Mining

1. Generation of employment in rural areas.
2. Upgradation in the living standards of rural people.
3. Creating infrastructural facilities like roads, electricity, shops, schools, etc.
4. Upgrading literacy in the area by exploiting natural minerals so the generation of revenue.

5. Helping to sustain construction activity.
6. Improving the greenery of the area, which is otherwise poor.

Liquid Effluent

Not applicable, because these activities do not generate effluent from operation or process.

Solid Waste

Not applicable, because small mines and impacts are negligible.

Project benefits due to the sand mining of Ramgaon B are explained in the next Chapter.

CHAPTER 5

PROJECT BENEFITS

The proposed Sand Mining project of Ramgaon B Village, Beed Tehsil, Beed District will lead to the following benefits:

1. Increase in the revenue of the district will ultimately increase the revenue of the village, which in return can be used to improve the infrastructure of the village.
2. Sand is available for building construction work and by systematic separation of sand, there is no possibility of a flood. Providing smooth movement of water of the river.
3. This project will contribute additional revenue to the state Exchequer in the form of revenue.
4. The project will conclude with employment opportunities for unskilled/skilled local people.
5. Standard of living of employed people will increase.

CHAPTER 6

SITE-SPECIFIC ENFORCEMENT & MONITORING PLAN

Sand Ghat Site specific enforcement & monitoring plan

(as per guidelines stipulated in the Enforcement and Monitoring Guidelines for sand mining issued by MoEFCC in January 2020.)

District administration shall deliver information on its website about the Sand Mines in the district for public information. The objective is to extend all information into the public domain so that the citizens are aware of the mining activities. People can also report to the district administration any deviation observed. Suitable feedback and its composition shall also be made operational.

Details shall include, but not be limited to, lease area, geo-coordinates of lease area and mineable area, transport routes, permitted capacity, regulatory conditions for operation including mining, environmental and social commitments, etc.

An Independent Committee of experts constituted by the Distance Learning Task Force (¹¹DLTF) will assess the environmental or ecological damage caused due to illegal mining and recommend recovery of environmental compensation from the concerned miners.

The recommendation may also include action under the provision of the Environment (Protection) Act 1986 u/s.15 read with s.19.

¹¹ Distance Learning Task Force

CHAPTER 7

SECURITY FEATURES

Security features are included in the Transport Permission/Permits (TP)

It will be ensured that the following security features are included in the Transport Permission/Permits (¹²TP) so that duplicate/fraudulent/forged TPs for transport, not accounted for in the IT-based system, is not possible:

1. Printed on Indian Bank Association (¹³IBA) Approved letterhead with account details
2. Magnetic Ink Character Recognition Code (¹⁴MICR) paper
3. Unique Barcode
4. Unique Quick Response Code (¹⁵QR)
5. Fugitive Ink Background
6. Invisible Ink Mark
7. Void Pantograph Watermark
8. Global Positioning System (¹⁶GPS) based vehicle tracking system
9. Closed-Circuit Television (¹⁷CCTV) Camera

¹² Transport Permission

¹³ Indian Bank Association

¹⁴ Magnetic Ink Character Recognition Code

¹⁵ Quick Response Code

¹⁶ Global Positioning System

¹⁷ Closed Circuit Television

CHAPTER 8

REPLENISHMENT

Replenishment study is the most important part of Sand Mining as it is the only basis to carry out sand mining. Without a Replenishment Study, we cannot understand the amount of deposition of sand. Following points to be followed for the replenishment study.

1. Area of deposition and erosion will be calculated for each cross-section after giving due regard to the stability & safety of active channel banks & other features of importance.
2. Differential Global Positioning System (¹⁸DGPS) and other survey tools will be used to define the topography, contours, and offsets of the lease area.
3. Contour & elevation benchmarks will provide baseline data for assessing pre- and post-study period scenario.
4. Physical benchmarks will be fixed at appropriate intervals (preferably 1 in 30m) & Reduced levels (¹⁹RL) shall be validated from a nearby standard RL.
5. These RL will be engraved on a steel plate (Bench Plate) & will be fixed & placed at locations that are free from any damages & are available in the pre-and post-study period.
6. Bench plates will be available for use during the mining period as a reference for all mining activity.
7. Baseline data on elevation status for a grid of 10m x 10m is preferred to have accuracy in the assessment.
8. It is expected that two consecutive cross-sections in longitudinal and lateral directions will not be more than a 10m distance apart.
9. Changes observed in the elevation in pre and post-scenario at each node, will be depicted in graphical forms with an appropriate scale to estimate the area of deposition & erosion.

¹⁸ Differential global positioning system

¹⁹ Reduced levels

10. Elevation level will be in reference to the nearest bench plates established for the purpose.
11. The levels (MSL & RL) of the corner point of each grid will be identifiable and safety barriers (non-Mining) demarcated as restricted in consensus with the Mineral Concession Rules of the respective State, and the provision mentioned in this Sustainable Sand Mining Management Guidelines.
12. A clear identification will be highlighted between grids under the mineable and grids under the non-mineable area.
13. These baseline data (pre and post) be subjected to stimulation with the help of data mine software to derive the replenishment area and corresponding volume and estimated weight.
14. The database will be structured in a tabulated form clearly depicting the nomenclature of the section lines, latitude and longitude of the starting point, chainage, and respective levels of all the points taken on that section line.
15. Net area shall be derived after summation of an area of deposition minus the area of erosion for each cross-section.
16. Volume will be estimated by multiplying the distance between two cross-sections with the average of the net area of these two consecutive cross-sections.
17. One sample per 900m² (30m x 30m) will be the preferred sample density for the assessment of bulk density for the estimation of deposition rate.
18. Care will be taken that the sample for assessment of Bulk Density is taken from the deposition zone & not from erosion.

Methodology for Sand Mining:

The following methodology should be followed for the Replenishment study.

1. The Demarcation and benchmark of the Sand Ghat are done at 10m x 10m intervals.
2. The use of the Auger Driller is to find out the depth of sand in each grid.
3. Auger Driller has created the holes in sand ghat by 10mx10m grid pattern.
4. Measured the depth of holes by using a measuring tape.

5. After taking all the readings average depth of sand is calculated.
6. The average depth of Ramgaon B at Sindhphana is measured.

Replenishment study of sand in the proposed ghat along with details of the methodology, technology used to identify the existing reserve & replenishment of the same

Dandy Bolton Equation

For runoff less than 2 inches

$$S = 1280 \times (Q) \times 0.46 \times (1.46 - 0.26 \log(A)) \times F$$

For runoff more than 2 inches

$$S = 1958 \times (Q) \times (e^{-0.055 \times Q}) \times (1.43 - 0.26 \log(A))$$

Where,

S = sediment yield of stream (t/yr/km²),

Q = average annual runoff (m³),

A = net drainage area in sq.mile.

CHAPTER 9

PROPOSED PLANTATION PLAN

The Project Proponent must take care of the plantation around the site. This will not only enhance the beautification of the area but also there will be the reduction of pollution, not some extent.

Details of the plantation and Tree species recommended for the plantation are shown below.

Table 9. 1 Details of green belt

Location of greenbelt	Both sides of the approach road, On the riverbanks of both sides of the sand spot & nearby open areas. Haul Road outside the riverbed
No. of plants to be planted	2000 per Hectare
Spacing of plants	2m grid interval
Species selected	Native species

Table 9. 2 Trees species for plantation

Botanical Name	Local Name	Importance
Azadirachta Indica	Neem	Neem oil & neem products
Tectona Grandis	Teek	Antibacterial, Antifungal, Antiulcer
Ficus religiosaa	Peepal	Medicinal use, Fruits & figs
Bambusa vulgaris	Bamboo	Anthelmintic Anti-inflammatory, Astringent Properties
Madhuca longifolia	Mahua	Acts as a Stimulant & cough relief,

CHAPTER 10

ENVIRONMENTAL MANAGEMENT PLAN

A total capital cost of Rs.5.97 Lakhs has been kept in the project cost towards the environmental protection, control, mitigation measures, and implementation of the Environmental Management Plan (EMP). This cost is borne by the bidder/leaseholder. The budgetary cost estimate for the EMP is given in Table.

Table 10. 1 Budgetary cost of EMP

Sr	Impact Source	Impact	Control Measure	Cost (Rs.)
1	Transport Road	On Air Quality	Compaction, gradation, and drainage on both sides.	40000
		On Land, the Stability of the Road and degradation of road	Proper maintenance	30000
			Regular water spraying	30000
			The air quality will be monitored at the impacted village. (For One Day Monitoring)	5000
			Health Check-up of Employees	5000
2	Truck/ Tractor Movement	Air Quality	Sand-carrying trucks will be effectively covered by tarpaulin to avoid the escape of fines to the atmosphere. (2 Tarpaulin)	25000
			Regular monitoring of the exhaust fumes	5000

Sr	Impact Source	Impact	Control Measure	Cost (Rs.)
			Barriers & Traffic Management Expenses. (Excluding Manpower Salary which is included in labour costs)	10000
3	Ramp and Sand Reach	Mining Operation	Regular ramp Inspection and Ramp maintenance. (Excluding Manpower Salary which is included in labour costs)	50000
			Provision of dust masks	10000
4	Bank Management	Bank Erosion/Flood Plain management	The green belt along the bank (For Green Belt Development)	150000
			Plantation of wide leaf tall trees on banks and grass along a slanting portion of the bank	
5	Transportation on Village Roads	Dust Control	The green belt along village Rd (For Green Belt Development)	
6	Final Mine Closures Plan implementation	Replenishment of Sand	Gabions/ boulders will be arranged as per guidelines	15000
7	Mobile toilet, sewage handling & treatment		Mobile toilet, sewage handling & treatment	80000
8	CCTV Monitoring			80000
Total				535000

Budget For Corporate Environment Responsibility (²⁰CER)

About 2% fund of the project cost is allocated for Corporate Environment Responsibility (CER) activities as presented in below Table

Table 10.2 Budget for CER

Sr.	Description	Cost (Rs)
1.	Village Schools (separate toilet for girls and boys)	15000
2.	Solar panels over Gram Panchayat buildings	15000
3.	Solar panels over Public Health Centers	20000
	Total	50000

²⁰ Corporate Environment Responsibility

CHAPTER 11

SUMMARY AND CONCLUSION

The Roles and Responsibilities of the Environmental coordinator, the Operation Manager, and the senior personnel contractor are essential in EMP.

The environmental status of the project site and study area of 10km radius is delineated with respect to air, noise, water, land, biological and socio-economic environment the different project activities in the construction and operation phases are identified.

To identify the impacts, the interaction between the project activities and different components of the environment is classified phase-wise. A summary of the recognized impacts is given in the following paragraphs.

- During the operational phase, the transportation of sand could cause a temporary disturbance to the local environment which will be prevented with the proposed mitigation measures.
- Proposed project will not have any major significant negative impacts. The minor impacts arising during Excavation and Transportation phases can be mitigated with the help of the proposed Environmental Management Plan.
- In general, sand excavation from Ramgaon B sand spot will be useful to the developmental work in the district and generate employment opportunities.

From this project, it is concluded that the district revenue will increase in return minimum of 2% of funds are utilized for the development of the village. The project will also grab employment which will improve the standard of life of villagers.

*** END ***

Environmental Management Plan

As per Rules 23 & 26 of MMME (D & R) RULE 2013 & Section 15 of MMDR Act 1957, MoEFCC Notification 2006, S.O. 141(E) dated 15. 01. 2016; MoEFCC, Sustainable Sand Mining Management Guidelines 2016, Guidelines for Mining Policy 2020)

for

ENVIRONMENTAL CLEARANCE

of

SAND MINING (MINOR MINERAL)

for

Ridhori – A Riverbed Sand Mine / Sand Ghat
Khasra No. GSDA approved 177/1 3, 12, 13, 15 to 18,39
Area (4.50ha)

Village Ridhori, Taluka Majalgaon, District Beed

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ABBREVIATION

Short Form	Long Form
EMP	Environmental Management Plan
MoEFCC	Ministry of Environment Forest and Climate Change
DSR	District-level Survey Report
EC	Environmental Coordinator
OM	Operations Manager
GSDA	Groundwater Surveys & Development Agency
MPCB	Maharashtra Pollution Control Board
MSL	Mean Sea Level
MS	Maharashtra State
PUC	Pollution Under Control
R&R	Rehabilitation and Resettlement
DLTF	Distance Learning Task Force
TP	Transport Permission/Permits
IBA	Indian Bank Association
MICR	Magnetic Ink Character Recognition Code
QR	Quick Response Code
GPS	Global Positioning System

CCTV	Closed-Circuit Television
DGPS	Differential Global Positioning System
RL	Reduced Levels
CER	Corporate Environment Responsibility

CHAPTER 1

INTRODUCTION

The Environmental Management Plan (¹EMP) plays a vital connection uniting forecast impacts and mitigation measures during implementation and operational activities. EMP stipulates the mitigation, monitoring and conventional measures to be taken during project implementation and operation. EMP is to escape or mitigate adverse environmental impacts, and to implement these measures.

This Environmental Management Plan (EMP) has been prepared as part of the Scoping Report which will be compiled in terms of the Environmental Assessment for the sand mining activities.

Considering the Ministry of Environment and Forest Climate Change (²MoEFCC) Notification 2006 and Sustainable Sand Mining Management Guidelines 2016, the Govt. of Maharashtra had mapped out the Minor Mineral Extraction Rules 2013. These rules are to extract all minor minerals in a scientific way so that there is no unfavourable impact on Environment and Climate. To extract every minor mineral from any land (either Government or Private) there is provision for a Mining Plan. These plans need to be approved by a competent authority. For long-term leased minor minerals (5-10 years period) and sand excavation from the riverbed, Senior Deputy Director of Directorate of Geology and Mining is the competent authority. These plans are for short term temporary permits which are valid for one year.

According to Enforcement & Monitoring Guidelines for Sand Mining 2020, Sustainable Sand Mining Management Guidelines 2016, Standard Environment conditions for sand mining and sustainable mining practices, District level Survey Report (³DSR) should be prepared and are suitable for mining and area prohibited for mining must be recognized.

¹ Environmental Management Plan

² Ministry of Environment Forest and Climate Change

³ District Survey Report

Objectives of EMP

- To provide overall conservation of the environment.
- To minimize waste generation and pollution.
- To regulate the precise use of natural resources and water.
- To provide Safety, Welfare, and Good health for the workforce and populace.
- To regulate the effective operation of all control measures.
- To ensure alertness against probable disasters and accidents.
- To monitor cumulative and long-term impacts.
- To regulate the effective operation of all control measures.

Roles and Responsibilities concerning the implementation of the EMP

The roles and responsibilities of all parties involved in successfully managing the environment are mentioned below.

Environmental Coordinator

The Environmental Coordinator will inspect operational areas on a quarterly basis and at the onset of mining any new island, to ensure that all specifications are met. The duties of the environmental coordinator will be the following.

- Guide the operations team in respect of the implementation of the environmental specifications.
- Lead the visits to ensure all work is aligned with the EMP.
- The environmental coordinator must examine the site during the three-monthly visits. All rehabilitation results will be Comprised in the quarterly report.
- Examination of the rehabilitation area and giving guidance regarding rehabilitation measures if any.

The Operations Manager

The responsibilities of the Operations Manager (4OM) or his nominated authority are as follows.

1. Familiarize themselves with the requirements of the EMP.
2. Monitor employees' and contractor's compliance with the environmental specifications; and enforce adherence.

⁴ Operations Manager

3. Communicate all environment-related incidents with the Environmental Coordinator and distribute them internally to avoid repetition.
4. Maintain a record of activities relevant to Environmental Management.
5. The Operations Manager shall be responsible for monitoring and the enforcement of the Environmental Management specifications on a day-to-day basis. Any violation of the environmental specifications shall be recorded, and the agreed disciplinary measures are taken.

Senior personnel and contractors

The roles of the senior personnel/contractors are as follows:

- Familiarize themselves with the requirements of the EMP.
- Comply with the environmental management specifications.
- Ensure that all team members are familiar with the environmental management specifications.

Details of the project

The Ridhori sand ghat area has been selected in perspective of its subsisting demand for building-grade sand for the area in and around Majalgaon Taluka. The District Mining Officer Beed has put forward the proposal for Environmental Clearance for mining. The ghat has a production of 15901 brass sand within an area of 4.50ha. The proposed proposal follows an organized mining process for Environmental Clearance.

Further Chapter informs about the in-depth details of the Sand Ghat, its geographical structure, and a Google map of the ghat with its approach road for contractors and workers to reach to sand ghat from the village.

CHAPTER 2

DETAILS OF THE PROJECT

Ridhori village is located in Majalgaon Taluka of Beed district, Maharashtra. Majalgaon is well connected with all nearby cities. The National highway NH-52, it traverses through the states of Sangrur, Punjab, to Ankola, Karnataka in India. NH-52 is the National Highway passing through the district, covering a total distance of 73.60km. Majalgaon has situated about 51.22km by road from Beed. The district has road links to adjoining districts Ahmednagar District to the west, Jalna District to the North, Latur District to the East, Osmanabad District to the South, Parbhani District to the East. The district is well connected by roads.

Ridhori village is 44.60km away from headquarters Beed. The Geographical area of the Beed is around 10693km². The nearest Railway station to Ridhori village is Usmanpur Railway station. The nearest Airport to Beed District is Aurangabad Airport, Aurangabad Airport is 104km away from beed.

Honourable Collector Beed intends to auction Sand Ghats and appointed District Mining Officer as Project Proponent. A total of 38 sand ghats are identified by Tahsildar Majalgaon, Parli Ve., Gevrai, Beed along with District Mining Officer, Beed. The 38 sand ghats were jointly surveyed by Taluka level technical committee headed by respective tahsildar with Dy. Engineer Irrigation Department, Junior Geologist Directorate of Geology and Mining Govt. of Maharashtra, Junior Geologist, Groundwater Surveys & Development Agency (⁵GSDA). DMO Beed and a representative of the Maharashtra Pollution Control Board (⁶MPCB), as per the procedure defined in Sand Auction Rules 2019 dated 3/09/2019 formed a Taluka-level technical committee, which explored the sand ghats for an available quantity of sand for scooping. Revenue of Rs.25 Crore is expected from the auction of these sand ghats. Ridhori Sand Ghat proposed over river Godavari in Majalgaon Taluka is proposed to cater to the infrastructural requirement of sand in the Taluka of Beed and adjoining areas of other talukas.

⁵ Groundwater Surveys & Development Agency

⁶ Maharashtra Pollution Control Board

Table 2. 1 Details of Ridhori Sand ghat

Name of Village	Taluka	River/ Nallah	Nearest survey No.	Area (ha)	Proposed Depth for excavation (m)	Quantity Permitted for mining of Sand in Brass	Method of Mining
Ridhori	Majalgaon	Godavari	177/ 1, 3, 12, 13, 15 to 18,39	4.5	1	15901	Open-cast manual mining

Table 2. 2 Salient features of the project

Particulars	Details															
Location	Village-Ridhori Taluka-Majalgaon, District-Beed, Maharashtra.															
Latitude and Longitude	<table border="1"> <thead> <tr> <th>Boundary points of Ridhori sand spot</th> <th>Latitude</th> <th>Longitude</th> </tr> </thead> <tbody> <tr> <td>BP1</td> <td>19°17'1.95"N</td> <td>76°3'14.29"E</td> </tr> <tr> <td>BP2</td> <td>19°17'3.52"N</td> <td>76°3'14.11"E</td> </tr> <tr> <td>BP3</td> <td>19°16'56.91"N</td> <td>76°3'44.51"E</td> </tr> <tr> <td>BP4</td> <td>19°16'55.43"N</td> <td>76°3'43.91"E</td> </tr> </tbody> </table>	Boundary points of Ridhori sand spot	Latitude	Longitude	BP1	19°17'1.95"N	76°3'14.29"E	BP2	19°17'3.52"N	76°3'14.11"E	BP3	19°16'56.91"N	76°3'44.51"E	BP4	19°16'55.43"N	76°3'43.91"E
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BP4	19°16'55.43"N	76°3'43.91"E														
Sand spot area (In ha)	4.50ha															
Proposed production capacity (in Brass)	15901															
Infrastructure Requirement (As per Govt Resolution 3rd January 2018)	<ol style="list-style-type: none"> 1. Room / Hut for Official records 2. Electricity / Battery for Running CCTV 24x7 daily. 3. One Computer / Android-based Mobile for the online generation of Invoice numbers. 															
Distance of project site from nearest rail or road bridge over the concerned River, Nallah, etc.	0.70km															

Particulars	Details
Distance from infrastructural facilities	
Railway line	36km
National Highway	33.40km(NH-52)
State Highway	30.20km(SH-144)
Major District Road	36km
Any Other Road	0.70km
Electric transmission line pole or tower	
Canal or check dam or reservoirs or lake or ponds	
In-take for drinking water pump house	
Intake for Irrigation canal pumps	
Areas already subjected to pollution or environmental damage. (those where existing legal environmental standards are exceeded)	None

Particulars	Details
<p>Areas susceptible to natural hazards which could cause the project to Present environmental problems (earthquakes, subsidence, landslides, erosion, flooding, or extreme or adverse climatic conditions)</p>	<p>No. Sand Ghat is at safe distances from natural hazards like earthquake prone area, subsidence, landslide, erosion, flooding prone area and extreme or adverse climatic conditions</p>
<p>Whether the proposal involves approval or clearance under the following Regulations or Acts, namely: - (a) The Forest (Conservation) Act, 1980. (b) The Wildlife (Protection) Act, 1972. (c) The Coastal Regulation Zone Notification, 2011. If yes, details of the same and their status are to be given.</p>	<p>None</p>
<p>Forest land involved (hectares)</p>	<p>None</p>

The below figure shows the google image of Ridhori sand ghat.



Fig 2.1-Google image of Ridhori sand ghat

Approach roach along with google location is as shown below.

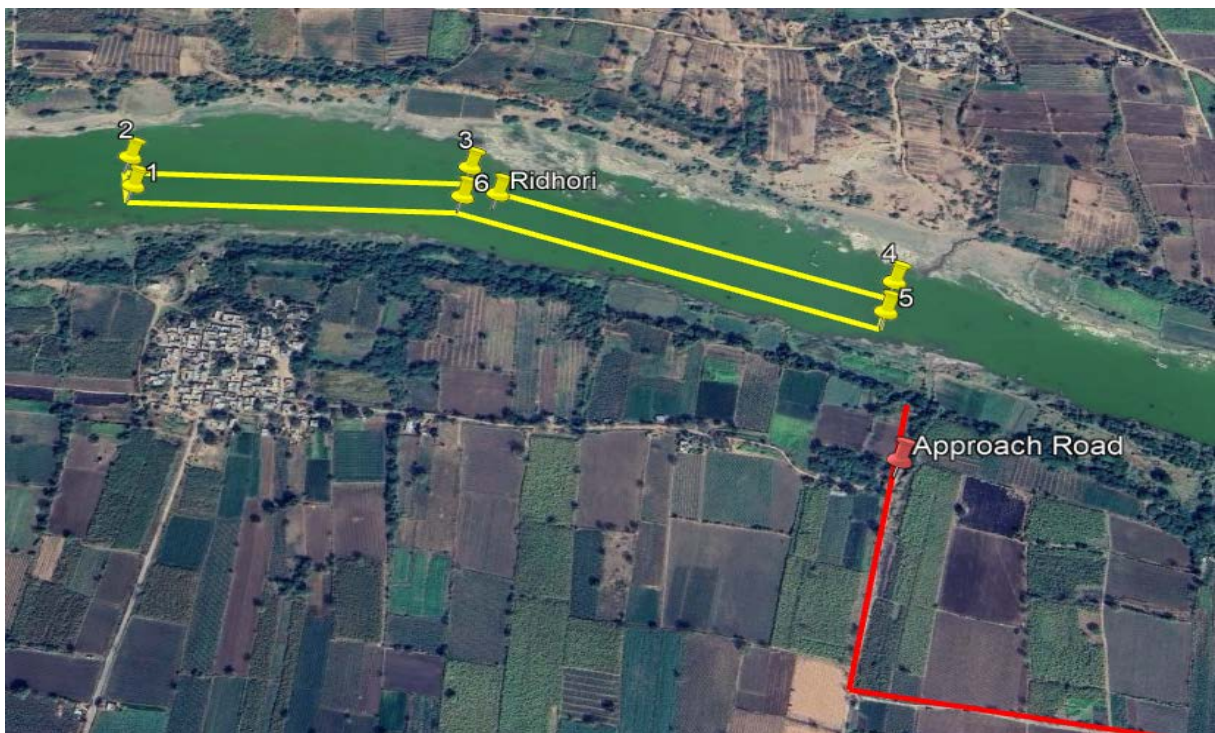


Fig 2.2-Approach Road for sand ghat

Next chapter 3 is Baseline Environmental Status in which the entire Topography, Climate, Soil Environment, Land use, water Environment, Hydrology, Biological environment, and Socio-economic Environment are briefly explained for the Beed district.

CHAPTER 3

BASELINE ENVIRONMENT STATUS

Topography

The Sand Ghat area as per the survey is the riverbed of the Godavari River of the Beed district. The maximum elevation is 427m MSL, average elevation is 425m MSL, & minimum elevation is 421m (7MSL) Mean Sea Level. The slope of the Sand Ghat area towards the West to Southeast side. The flow of Godavari River is from Southeast direction.

Presently, there is neither any infrastructure within the riverbed nor are proposed.

Hydrology

There will be no change in the Water Table during the mining operation, as the depth of mining shall be restricted to 1.0m water level, which is less likely to affect the surface level or Groundwater Table. There is no proposal of any stream modification/diversion due to this mining activity hence there will be not any impact on the flow of water.

Soil Environment

The riverbed consists of sand /gravel. There is no topsoil. The depth of mining shall be restricted to 1.0m. There is no crucial impact on the soil forecasted due to mining activities.

Land Use Land Cover

Land use shows that agriculture land use is predominant. The proposed site is 4.50ha having adjoined Khasara No 177/1, 3, 12, 13, 15 to 18, 39. The land doesn't cover any human habitation, forest, etc. Any change in the scope of the approved Mining Plan will lead to riverbank erosion/cutting and thereby river channel shifting, degradation of land, causing loss of properties and degradation of the surrounding landscape.

⁷ Mean sea level

Water Environment

While transporting sand there may be fugitive dust. There will be water requirement for spraying for dust suppression purposes. This water will be supplied from the borewell from nearby villages through tankers as well as from surface water sources. The water source may vary from village to village.

Climate

During summer May is the hottest month of the year in this area. The temperature rises to 42°C in the month of May. The average rainfall in this region is 600mm to 700mm About 50% of rainfall precipitates between June to September. December is the coldest month with temperatures falling down to 18°C. Overall the proposed site area has sub-tropical conditions.

Biological Environment

Flora

The agricultural area is seen near the Sand Ghat. Few trees and thorny bushes are seen on the banks of the river.

Fauna

As there is no forest cover, no endangered species of wildlife are seen in this area.

Socio-Economic Environment

This project may create constructive impacts of the sand mining that are stated below:

1. The mining operations will provide direct & indirect employment to village people.
2. The villages and their inhabitants & domestic animals will not be disturbed due to mining, as the quarry is far from their settlements.
3. Local workforce will be given first preference for employment.
4. Mining activities will benefit the local people due to the provision of more infrastructural facilities (developments of approach routes within the village area).

The next chapter describes all possible impacts on the Environment due to this project along with its mitigation measure to overcome these impacts.

CHAPTER 4

IMPACT ASSESSMENT REPORT ALONG WITH PROPOSED MITIGATION MEASURES

1. Land Environment

Anticipated Impact

Movement of vehicles can create issues for agricultural land, human habitations, noise, and risk for public and cause traffic hazards. The impacts include damage to the riverbank due to access ramps to the riverbed, soil erosion because of extraction of sand, micro disturbance to groundwater, possible stimulation of the changed river course, and contamination of sand aquifer water due to ponding. There might be surface degradation due to the road network.

The quality of soil will not be affected due to transportation or any other activity of mining.

Mitigation measure

1. Mining depth should be restricted to 3 meters and distance from the bank should be $\frac{1}{4}$ th or river width and should not be less than 7.5 meters as per “Sustainable Sand Mining Guidelines 2020” ■ Page 23, Point no 4.3 (m).
2. There will be a minimal number of access roads to riverbeds. Cutting of riverbanks will be avoided and ramp with smooth slope will be maintained. Access points to the riverbed will be decided based on the least steepness of the riverbank and the least human activity at that location.
3. No foreign material like polythene bags, jute bags, and useless articles should be allowed to remain/spill in the riverbed and catchment area, or no pits/pockets will be allowed to be filled with such material.
4. Mining at the concave side of the river channel should be avoided to prevent bank erosion. Similarly, a tortuous segment of a river is to be selected for mining in such a way as to ignore the natural eroding of banks.
5. Ensure that ponding is not created in the riverbed.
6. Transportation route should be such that it gives minimum

damage to the environment.

7. Green belt will be developed along the haul road and the bank of rivers of mine premises and near the sand mining site. While selecting the plant species, preference will be given for planting native species of the area.

2. Water environment

Anticipated Impact

The project activity will be carried out in the dry part of the riverbed. Care will be taken to ensure that neither of the project activities will affect the water environment or riverbank habitats. During the lean months, the proposed Sand Mining will not expose the base flow of the river and hence there will not be any inauspicious impact on surface hydrology and groundwater regime due to this project. Project activities will not have any adverse consequences on the physical components of the environment and therefore may not have any effect on the recharge of ground waters or affect the water quality. Monitoring of water quality will be checked yearly.

Mitigation measures

1. Mining is avoided during the monsoon season and at the time of floods. This will help in the replenishment of sand in the riverbed.
2. Mining below the subterranean water level will be avoided as a safeguard against environmental contamination and over-exploitation of resources.
3. River stream will not be transferred to create active channels.
4. Mining schedule is synchronized with the river flow direction and the gradient of the land.
5. Mining at the concave side of the river channel will be avoided to prevent bank erosion.
6. Tortuous segment of the river will be selected for mining in such a way as to avoid naturally eroding banks and to promote mining on naturally building meander components.
7. Mining depth shall be maintained as per the guidelines and

rules of the Sand Mining Policy dated 03/09/2019 and recommendations of Maharashtra State (⁸M.S.). State Ground Water Department for extraction of sand during the lease period.

8. Water Quality Monitoring for the ground waters, river water, and other surface waters shall be carried out seasonally to ensure that the water quality is not affected by the project activities.
9. Utmost care will be taken to minimize or control leaking vehicles to be used for sand transportation.
10. The washing of tractor trolleys in the river will not be done.
11. The contractor will follow all guidelines and rules for proper and scientific methods of mining during the period of extracting the sand.

3. Air Environment

Anticipated Impacts

Plying of tractor trolleys from the public road to river sand collection points needs access roads. The majority of such access roads are the already existing roads/tracks being used by pedestrians/cart owners. The movement of heavy vehicles sometimes causes problems for cattle, agricultural land, and human habitations due to dust, noise, and the movement of the public. These environmental problems are felt more as the area is rural in nature.

Air pollution is likely to be caused at various stages of Sand Mining operations such as excavation, loading & transportation of material. Most of the fugitive dust emissions will be generated from loading & transportation. This dust becomes airborne and spreads away to surrounding areas.

The impact on air is mainly localized in nature as the dust particles of 100 μ in size are not carried to farther distances beyond 100m and the effect is felt within the core zone of the project involving active Sand Mining operations.

⁸ Maharashtra State

Mitigation measures

1. Movement of the vehicles on the road will be increased; however, the unmetalled road in the mining area will be sprinkled with water at regular intervals.
2. In addition to preventing spillage from tractor trolleys, overloading shall be controlled to 1-brass/tractor trolley. The speed limit will be <20 km/hr.
3. Maintenance of the haul road will be done on a regular basis.
4. To avoid fugitive dust emissions at the time of excavation, a regular sprinkling of water will be done on regular basis.
5. Sand is transported to the sites by road through tractor trolleys. The sand-carrying vehicles shall be covered by tarpaulin sheets.
6. The Green belt development will be prepared along the haul roads, which will act as a pollution sink.
7. To minimize vehicular pollution from the sand transporting vehicles, the following conditions will be insisted upon to permit the vehicles of the transporters.
8. The vehicles should be Bharat-IV stage compliant and should have a Pollution Under Control (⁹PUC) Certificate issued by appropriate authorities.
9. Regular maintenance of transport vehicles and monitoring of vehicular emission levels at periodical intervals.

4. Noise Environment

Anticipated Impact

The noise environment in this project will be overdone by the equipment at the site and vehicular transportation. A slight increase in noise levels of <10dB(A) can be expected up to a distance of 100m.

Mitigation measures.

1. Minimum use of horns in the village area.
2. Timely maintenance of vehicles and their silencers to

⁹ Pollution Under Control

minimize vibration and sound.

3. Phasing out old and worn-out tractor trolleys.
4. Provision of green belts along the road networks.
5. Care will be taken to produce minimum sound during sand loading.
6. Backhoe loader excavator will be used
7. Earplugs may be provided to protect the laborers working at the site.

5. Socio-economic Environment

Anticipated Impacts and Evaluation

1. The project activities shall not have any adverse impacts on any of the common property resources of the village communities, as the Sand Mine lease area is not being used for any purpose by any section of the society in this region.
2. There is no Resettlement and Rehabilitation (¹⁰R&R) involvement in this project.
3. There is no land acquisition in this project.
4. A major portion of the houses in the study area is semi-pucca-type structures.
5. The water source to these areas is from the Grampanchayat /Nagar Parishad connection and private bore wells and wells.
6. People living around the project area need the project for the purpose of employment and economic benefits.
7. The awareness level regarding the proposed mining activity is very towering. The proposed mining activity is expected to provide stimulus to socio-economic activities in the region and thereby accelerate further development processes.

Social and Demographic Profile

The workers are from local villages. These people have been provided welfare benefits from the lessee like medical benefits,

¹⁰ Rehabilitation and Resettlement

insurance, fees for children's education, etc. They have some land and cattle for their daily earnings. Additional revenue earned from the Sand Mining work will improve their living standard. The group of quarries in and around will help to have infrastructure facilities like roads, schools, shops, etc. This will enhance their social life.

Occupational Health and Safety

This is a riverbed Sand Mine. So, the mining activities are comparatively smaller because the production is not on a high scale. Workers do not come across any extreme conditions like excessive heat, moisture, etc. Workers working around it may come across this dusty environment. But the impact on health will be within the limit.

Human Settlement

1. There are no houses in and around the lease area. Blasting is the only activity, which may affect the settlement, which is not done. The settlement is more than 1-km from the sand mine.
2. Appropriate precautions will be taken during mining. Transportation of finished products is through the villages. There will be an effect of traffic on the local people. However, the intensity of traffic is 70-80/day.

Health and Hygiene

In general, the health of villagers is moderately good. In the rainy season, the atmospheric condition is unhygienic due to a lack of proper drainage and sanitation in the village habitation. Villagers are working in agricultural fields and work as labourers.

Education

Most education of 70% young <20 years, is up to the 5th to 9th. Economic condition is in general moderate. So, after this project, the standard of education will increase.

Socio-Economic Benefits Arising Out of Mining

1. Generation of employment in rural areas.
2. Upgradation in the living standards of rural people.
3. Creating infrastructural facilities like roads, electricity, shops, schools, etc.
4. Upgrading literacy in the area by exploiting natural minerals so the generation of revenue.

5. Helping to sustain construction activity.
6. Improving the greenery of the area, which is otherwise poor.

Liquid Effluent

Not applicable, because these activities do not generate effluent from operation or process.

Solid Waste

Not applicable, because small mines and impacts are negligible.

Project benefits due to the sand mining of Ridhori are explained in the next Chapter.

CHAPTER 5

PROJECT BENEFITS

The proposed Sand Mining project of Ridhori village, Majalgaon Taluka, Beed District will lead to the following benefits:

1. Increase in the revenue of the district will ultimately increase the revenue of the village, which in return can be used to improve the infrastructure of the village.
2. Sand is available for building construction work and by systematic separation of sand, there is no possibility of a flood. Providing smooth movement of water of the river.
3. This project will contribute additional revenue to the state Exchequer in the form of revenue.
4. The project will conclude with employment opportunities for unskilled/skilled local people.
5. Standard of living of employed people will increase.

CHAPTER 6

SITE-SPECIFIC ENFORCEMENT & MONITORING PLAN

Sand Ghat Site specific enforcement & monitoring plan

(as per guidelines stipulated in the Enforcement and Monitoring Guidelines for sand mining issued by MoEFCC in January 2020.)

District administration shall deliver information on its website about the Sand Mines in the district for public information. The objective is to extend all information into the public domain so that the citizens are aware of the mining activities. People can also report to the district administration any deviation observed. Suitable feedback and its composition shall also be made operational.

Details shall include, but not be limited to, lease area, geo-coordinates of lease area and mineable area, transport routes, permitted capacity, regulatory conditions for operation including mining, environmental and social commitments, etc.

An Independent Committee of experts constituted by the Distance Learning Task Force (¹¹DLTF) will assess the environmental or ecological damage caused due to illegal mining and recommend recovery of environmental compensation from the concerned miners.

The recommendation may also include action under the provision of the Environment (Protection) Act 1986 u/s.15 read with s.19.

¹¹ Distance Learning Task Force

CHAPTER 7

SECURITY FEATURES

Security features are included in the Transport Permission/Permits (TP)

It will be ensured that the following security features are included in the Transport Permission/Permits (¹²TP) so that duplicate/fraudulent/forged TPs for transport, not accounted for in the IT-based system, is not possible:

1. Printed on Indian Bank Association (¹³IBA) Approved letterhead with account details
2. Magnetic Ink Character Recognition Code (¹⁴MICR) paper
3. Unique Barcode
4. Unique Quick Response Code (¹⁵QR)
5. Fugitive Ink Background
6. Invisible Ink Mark
7. Void Pantograph Watermark
8. Global Positioning System (¹⁶GPS) based vehicle tracking system
9. Closed-Circuit Television (¹⁷CCTV) Camera

¹² Transport Permission

¹³ Indian Bank Association

¹⁴ Magnetic Ink Character Recognition Code

¹⁵ Quick Response Code

¹⁶ Global Positioning System

¹⁷ Closed Circuit Television

CHAPTER 8

REPLENISHMENT

Replenishment study is the most important part of Sand Mining as it is the only basis to carry out sand mining. Without a Replenishment Study, we cannot understand the amount of deposition of sand. Following points to be followed for the replenishment study.

1. Area of deposition and erosion will be calculated for each cross-section after giving due regard to the stability & safety of active channel banks & other features of importance.
2. Differential Global Positioning System (¹⁸DGPS) and other survey tools will be used to define the topography, contours, and offsets of the lease area.
3. Contour & elevation benchmarks will provide baseline data for assessing pre- and post-study period scenario.
4. Physical benchmarks will be fixed at appropriate intervals (preferably 1 in 30m) & Reduced levels (¹⁹RL) shall be validated from a nearby standard RL.
5. These RL will be engraved on a steel plate (Bench Plate) & will be fixed & placed at locations that are free from any damages & are available in the pre-and post-study period.
6. Bench plates will be available for use during the mining period as a reference for all mining activity.
7. Baseline data on elevation status for a grid of 10m x 10m is preferred to have accuracy in the assessment.
8. It is expected that two consecutive cross-sections in longitudinal and lateral directions will not be more than a 10m distance apart.
9. Changes observed in the elevation in pre and post-scenario at each node, will be depicted in graphical forms with an appropriate scale to estimate the area of deposition & erosion.

¹⁸ Differential global positioning system

¹⁹ Reduced levels

10. Elevation level will be in reference to the nearest bench plates established for the purpose.
11. The levels (MSL & RL) of the corner point of each grid will be identifiable and safety barriers (non-Mining) demarcated as restricted in consensus with the Mineral Concession Rules of the respective State, and the provision mentioned in this Sustainable Sand Mining Management Guidelines.
12. A clear identification will be highlighted between grids under the mineable and grids under the non-mineable area.
13. These baseline data (pre and post) be subjected to stimulation with the help of data mine software to derive the replenishment area and corresponding volume and estimated weight.
14. The database will be structured in a tabulated form clearly depicting the nomenclature of the section lines, latitude and longitude of the starting point, chainage, and respective levels of all the points taken on that section line.
15. Net area shall be derived after summation of an area of deposition minus the area of erosion for each cross-section.
16. Volume will be estimated by multiplying the distance between two cross-sections with the average of the net area of these two consecutive cross-sections.
17. One sample per 900m² (30m x 30m) will be the preferred sample density for the assessment of bulk density for the estimation of deposition rate.
18. Care will be taken that the sample for assessment of Bulk Density is taken from the deposition zone & not from erosion.

Methodology for Sand Mining:

The following methodology should be followed for the Replenishment study.

1. The Demarcation and benchmark of the Sand Ghat are done at 10m x 10m intervals.
2. The use of the Auger Driller is to find out the depth of sand in each grid.
3. Auger Driller has created the holes in sand ghat by 10mx10m grid pattern.
4. Measured the depth of holes by using a measuring tape.

5. After taking all the readings average depth of sand is calculated.
6. The average depth of Ridhori at Godavari is measured.

Replenishment study of sand in the proposed ghat along with details of the methodology, technology used to identify the existing reserve & replenishment of the same

Dandy Bolton Equation

For runoff less than 2 inches

$$S = 1280 \times (Q) \times 0.46 \times (1.46 - 0.26 \log(A)) \times F$$

For runoff more than 2 inches

$$S = 1958 \times (Q) \times (e^{-0.055 \times Q}) \times (1.43 - 0.26 \log(A))$$

Where,

S = sediment yield of stream (t/yr/km²),

Q = average annual runoff (m³),

A = net drainage area in sq.mile.

CHAPTER 9

PROPOSED PLANTATION PLAN

The Project Proponent must take care of the plantation around the site. This will not only enhance the beautification of the area but also there will be the reduction of pollution, not some extent.

Details of the plantation and Tree species recommended for the plantation are shown below.

Table 9. 1 Details of green belt

Location of greenbelt	Both sides of the approach road, On the riverbanks of both sides of the sand spot & nearby open areas. Haul Road outside the riverbed
No. of plants to be planted	2000 per Hectare
Spacing of plants	2m grid interval
Species selected	Native species

Table 9. 2 Trees species for plantation

Botanical Name	Local Name	Importance
Azadirachta Indica	Neem	Neem oil & neem products
Tectona Grandis	Teek	Antibacterial, Antifungal, Antiulcer
Ficus religiosaa	Peepal	Medicinal use, Fruits & figs
Bambusa vulgaris	Bamboo	Anthelmintic Anti-inflammatory, Astringent Properties
Madhuca longifolia	Mahua	Acts as a Stimulant & cough relief,

CHAPTER 10

ENVIRONMENTAL MANAGEMENT PLAN

A total capital cost of Rs.5.97 Lakhs has been kept in the project cost towards the environmental protection, control, mitigation measures, and implementation of the Environmental Management Plan (EMP). This cost is borne by the bidder/leaseholder. The budgetary cost estimate for the EMP is given in Table.

Table 10. 1 Budgetary cost of EMP

Sr	Impact Source	Impact	Control Measure	Cost (Rs.)
1	Transport Road	On Air Quality	Compaction, gradation, and drainage on both sides.	90000
		On Land, the Stability of the Road and degradation of road	Proper maintenance	40000
			Regular water spraying	43000
			The air quality will be monitored at the impacted village. (For One Day Monitoring)	5000
			Health Check-up of Employees	5000
2	Truck/ Tractor Movement	Air Quality	Sand-carrying trucks will be effectively covered by tarpaulin to avoid the escape of fines to the atmosphere. (2 Tarpaulin)	25000
			Regular monitoring of the exhaust fumes	5000

Sr	Impact Source	Impact	Control Measure	Cost (Rs.)
			Barriers & Traffic Management Expenses. (Excluding Manpower Salary which is included in labour costs)	10000
3	Ramp and Sand Reach	Mining Operation	Regular ramp Inspection and Ramp maintenance. (Excluding Manpower Salary which is included in labour costs)	50000
			Provision of dust masks	10000
4	Bank Management	Bank Erosion/Flood Plain management	The green belt along the bank (For Green Belt Development)	230000
			Plantation of wide leaf tall trees on banks and grass along a slanting portion of the bank	
5	Transportation on Village Roads	Dust Control	The green belt along village Rd (For Green Belt Development)	
6	Final Mine Closure Plan implementation	Replenishment of Sand	Gabions/ boulders will be arranged as per guidelines	15000
7	Mobile toilet, sewage handling & treatment		Mobile toilet, sewage handling & treatment	100000
8	CCTV Monitoring			100000
Total				728000

Budget For Corporate Environment Responsibility (²⁰CER)

About 2% fund of the project cost is allocated for Corporate Environment Responsibility (CER) activities as presented in below Table

Table 10.2 Budget for CER

Sr.	Description	Cost (Rs)
1.	Village Schools (separate toilet for girls and boys)	25000
2.	Solar panels over Gram Panchayat buildings	25000
3.	Solar panels over Public Health Centers	20000
	Total	70000

²⁰ Corporate Environment Responsibility

CHAPTER 11

SUMMARY AND CONCLUSION

The Roles and Responsibilities of the Environmental coordinator, the Operation Manager, and the senior personnel contractor are essential in EMP.

The environmental status of the project site and study area of 10km radius is delineated with respect to air, noise, water, land, biological and socio-economic environment the different project activities in the construction and operation phases are identified.

To identify the impacts, the interaction between the project activities and different components of the environment is classified phase-wise. A summary of the recognized impacts is given in the following paragraphs.

- During the operational phase, the transportation of sand could cause a temporary disturbance to the local environment which will be prevented with the proposed mitigation measures.
- Proposed project will not have any major significant negative impacts. The minor impacts arising during Excavation and Transportation phases can be mitigated with the help of the proposed Environmental Management Plan.
- In general, sand excavation from Ridhori sand spot will be useful to the developmental work in the district and generate employment opportunities.

From this project, it is concluded that the district revenue will increase in return minimum of 2% of funds are utilized for the development of the village. The project will also grab employment which will improve the standard of life of villagers.

*** END ***