

ASHTI LIFT IRRIGATION SCHEME, TAL: ASHTI, DISTRICT: BEED

EXECUTIVE SUMMARY

Introduction

The Ashti Lift Irrigation is a part of Krishna Marathwada Irrigation Project (KMIP) that envisages lifting of water from Ujani Reservoir through LIS Nos. I, II & III in 5, 6 and 6 stages respectively and through static lifts of about 305.42 m (LIS I), 268.09 m (LIS II) and 308 m (LIS III).

Area proposed to be irrigated under KMIP project covers Draught Prone Areas (DPA) of Osmanabad and Beed Districts. The talukas to be benefitted are Paranda, Bhoom, Kalamb, Washi, Osmanabad, Tuljapur, Lohara, Omerga of Osmanabad District (LIS I & II) & Asthi of Beed District (LIS III).

The Krishna Marathwada Irrigation scheme was administratively approved by the Government of Maharashtra resolution no. 2004/1413(385 /04) (Marathi), dated 23rd August, 2007 for the districts Osmanabad and Beed and sanctioned for Rs. 2382.50 crores for 19 TMC of surplus water in Krishna basin. Subsequently, according to Govt. letter no. 2008/417/[113/02]/dt.04.11.2008 sanction was given to include Lift Irrigation Scheme of Beed district under **KMIP**. Accordingly, for Beed District, Asthi Lift Irrigation Scheme is included in the Revised Estimate of Krishna Marathwada Irrigation Project & GoM has given Ist Revised Administrative approval by Government resolution no. KMIP-0709-(437/2009) MP-1Dtd.27-8-2009 for Rs.4845.05 crores.

The Ashti Lift Irrigation scheme (III) envisages lifting of water from Ujani Reservoir in 6 stages through a static lift of 308 m. The Lift Irrigation Scheme is proposed to Irrigate Land in Ashti Taluka in Beed District.

1.1 Salient features of the Scheme

For this proposed project, water will be lifted from Ujni reservoir at six stages as mentioned below. It is proposed to use Bhosekhind tunnel in second phase. The available water of about 131.59 TMC for this project will be stored in Khuntephal storage tank that will be used for irrigation of 27543 ha agricultural land.

Stage no.	Location	Static head (m)	Rising main length (km)	Canal length (m)
1	Ujani (Pedgaon) to Takli Kolewadi lake	51.00	7.50	19000
2	Takli Kolewadi lake to Bhosekhind tunnel (19 km)	55.00	14.50	23000
3	Sina Nimgaon project to Parodi ridge	53.00	9.00	17000
4	a: Khuntephal new proposed tank to Ganesh ridge	50.00	28.75	4000
4	b: Khuntephal lake to Balewadi ridge	30.00	14.00	6000
5	Kamli tank to Dongargaon ridge	39.00	65.80	9000
6	Kini MI tank Kini ridge	30.00	35.50	3000
TOTAL		308.00	175.05	81000

Salient Features

SN	Particulars	Detailed Information
1.	Scope of Scheme	It is proposed to irrigate 27543 ha of land in Ashti Taluka of Beed District. Annual Utilization for this proposal is 5.68 TMC
2.	Source	5.68 TMC water from Ujani reservoir which is available through Krishna Basin Stabilization Project is proposed to utilized for this scheme.
3.	State	Maharashtra
4.	Region	Marathwada
5.	District	Beed
6.	Taluka	Ashti
(i)	Location	Ujani storage - Pedgaon- Takli.
(ii)	Static Head	308 m

Details of Kuntephal dam (In Stage IV A)

S.N.	Particulars	Detailed Information
1	Name of Storage Tank	Khutephal storage tank
2	Location	1 Km downstream side of Khutephal Village
3	Toposheet no.	47/J-13
	Latitude	18°53'54''
	Longitude	74°59'01''
4	Type of catchment	Good
5	Rain gauge Station	Asthi Tq.Asthi District Beed
6	Free catchment	325.13 Sq.km
7	Important Levels	
	a)River bed Level	594.50M
	b)Sill Level	605.95M
	c) M.D.D.L	606.85M
	d) F.R..L	628.00M
	e) M.W.L	631.00M
	f) T.B.L	633.50M
8	Capacity at F.R.L.	13159MM ³
9	Total Submergence	1067 ha
10	Percentage of submergence to command area	3.87%
12	Submerged villages	Khutephal, Balewadi, Kumbephal, Solapurwadi and <u>Waghlu</u>
13	Details of Earthen Dam	
	a) Location	1 km down stream of Kuntephal (Pundi) village
	b) Length of earthen Dam	1410M
	c) Maximum Height (m)	39.50M
	d) Top Width of earthen	6.50M
	e) Freeboard	2.50M
14	Type of Waste weir	
	a) Location of W.W.	1810 to 2000 M
	b) Standard Maximum Flood	2186.59 m ³ /sec
	c) Projected Maximum Flood	2 186.59m ³ /sec
	d) Length of Waste weir	190 m
	e) Flood release height	3 m
	f) Type	Ogee
	g) Crest Level	628.00 M
15	Details of the Sluice	
	a) location	570 M.
	b) Type	Well Type

S.N.	Particulars	Detailed Information
16	Command Area (Ha)	
	a) Gross Command Area	52662 ha
	b) Total Cultivable Area	3647 ha
	c) Total Irrigable Area (ICA)	27543 ha
17	Total cost of the project (DSR 2008-2009)	Rs 1046 Crores (LIS III)
18	Cost / ha of irrigable area	3.79 lakhs/Ha
19	Benefit cost ratio	1.25
20	Cost /TMC of utilization	Rs 184.15 Crores/TMC

1.2 Objectives of the Study:

As per new EIA Notification 2006 issued by Ministry of Environment & Forests, Govt. of India *vide* Gazette Notification No. S.O. 1533(E) dt: 14th Sep.'2006, projects having command area (CCA) > 10000 ha shall be treated as Category 'A' projects requiring prior Environmental Clearance from EAC, MOEF& CC.

In this connection, M/s. Godavari Marathwada Irrigation Development Corporation (GMIDC) submitted an application along with filled up 'Form I' & Proposed TOR, in the prescribed format to respective regulatory authorities for obtaining approved TOR and Environmental Clearance for the said project. Based on the application and project presented before EAC, ToR approved by EAC on 10th December 2015. Accordingly Vide letter no J-12011/14/2015-IA.I Environmental Impact Assessment studies have been carried out as per approved TOR. The objective of the Environmental Impact Assessment (EIA) study is to understand the prevailing physical and biological environments.

The purpose of any EIA exercise is to identify and assess the adverse impacts of a project in the planning stage itself, so that necessary mitigation measures to prevent or minimize these adverse impacts can be planned early and cost-effectively.

2.0 Description of the Environment

2.1` Geology and Topography

The command area is basically Deccan trap Basalt interspersed with its different varieties of basalt and geru layer. Soil is good for cultivation on river banks rocks and are covered by boulders, sand and silt. Soil cover is quite adequate for vegetation in the command area. There is no significant mineral deposit in the command area. The area is covered by medium brown/ black and dry soil.

Meteorology

The climate of project area is generally hot. In the project area, there is hot summer and general dryness during major part of year except during rainy season. Rainy Season which normally starts in the second week of June and is over by the end of September. October and November constitute the post monsoon or retreating southwest monsoon season, while winter season is from the month of December to February

Seismology

The geological and seismological profile of the area indicates that the area is prone to moderate to severe seismic attacks. The same is applicable to the area covered under Ashti Lift Irrigation Project area that falls in Seismic Zone III. It suggests that the area is a moderately affected Zone

Ambient Air Quality

The ambient air sampling was carried out at 9 different locations so as to determine the ambient air quality.. The selected Sampling stations includes the dam site, downwind, upwind and cross wind spread across catchment, command and submergence. Assessment of the ambient air conditions has been done by studying the air quality at 9 different locations for three Seasons (September 2016 -November 2016, December 2016 – February 2017 and March to May 2017).

The values of PM_{2.5}, PM₁₀, SO₂ & NO_x observed in the project area and in the surrounding study are within the prescribed limits. of NAAQ As there are no major industries in the project area, which would generate pollution the impacts on present ambient air quality is limited.

Noise Quality

Ambient noise level survey was conducted for the command area, dam site and adjacent area The main objective of the noise monitoring was to establish the baseline noise levels with respect to standards.

The noise samples were collected in day time for 8 hours with sound level meter, capable of measuring the Sound Pressure Level (SPL). The sampling locations were spread in within 10 km radius of the proposed activities.

The overall noise levels in the project area were lower but slightly higher at some locations due to the vehicular movement at the site. The noise levels in command area, submergence and catchment area were below the standard limits.

Water Quality:

Surface and ground water samples were collected from Command area and 10km radius from command area. Water Samples were collected following standard methods and analysed for physical and chemical parameters. Overall, 16 sampling locations were selected for 5 surface water and 11 ground water samples.

pH of these water samples **was** found to be neutral to slightly alkaline. The electrical conductivity of surface water samples is found to be normal. Low sodium level **was** recorded in surface water. The level of dissolved oxygen is found to be good.

As the command area of the Krishna Marathwada LIS project is undulating, its natural slope will provide draining property to the soil. Thus the problem of water logging will be negligible. Proper selection of salt resistant crop varieties and crop rotation will be additional steps to ensure good productivity with the present quality of water.

All the ground water samples have shown moderate electrical conductivity and hardness levels. All samples were found suitable for irrigation purpose. The total dissolved solid, Hardness level in ground water was found to be higher. This is possibly due to the low water table.

Samples, analyzed in winter season, were found to be contaminated with coli forms and potable only after suitable disinfection.

A positive effect can be envisaged in areas where the canals will be of lined type. This will help to avoid water logging problem.

Soil Quality

The irrigable area, planned under the Ashti Lift Irrigation Project, is spread across Ashti Taluka of Beed district in Maharashtra. Selected sampling locations are spread across the entire command, catchment & submergence areas of the proposed project. The soil samples were examined for various parameters (viz pH, electrical conductivity, chloride, available calcium & magnesium, phosphorus, exchangeable sodium & potassium, available nitrogen etc.) Samples were collected from Catchment (8 samples), Submergence (11 samples) & Command areas (15 samples).

The percentage of water holding capacity of soil when examined ranged from 28.1 to 69.9% in catchment, 52.2 to 79.1% in command, and 48.2 to 78% in submergence during three seasons. In the project area, majority of the soils were found to be clayey to clay loam in nature. The pH of soil was found towards neutral to strongly alkaline. The EC measures below 1,ms/cm. Observed Organic Carbon was found to be average to good in all soil samples indicating medium to fertile soil. The medium level of available Potassium was noticed in all soil samples. The available phosphorous was found to be sufficient for crop growth.

Land Use Pattern: Land use pattern of the project area has been established through interpretation of latest satellite imageries.

The major land use/ land cover classes discernible in the Ashti Lift Irrigation Project using LIS III satellite image of 30 m spatial resolution include mostly Agricultural land, fallow, open scrub, s water bodies in the forms of streams, rivers and reservoir, vegetation and open scrubland, besidepatches of plantations and human habitation within settlements.

Ecological & Biodiversity

In the command area, vegetation is observed only along the borders of the agricultural areas, roadside and along the already existing water bodies. The vegetation predominantly is dry deciduous scrub. Overall, the entire region falls under low rainfall area of Maharashtra, and dominated by scrub vegetation.

Dominant tree species in study area are *Azadirachta indica*, *Ficus religiosa*, *Ficus benghalensis*, *Tamarandus indica*, *Vitex negundo*. Shrubs consist of *Lantana camara*, *Euphorbia*, *Thymifolia*, *Calotropis procera* and herbs like *Achyranthus aspera*, *Alternanthera sessilis*, *Argemone Mexicana*, *Celosia argentia* etc. Herb and shrubs were mostly found in rainy and winter seasons.

Main agricultural crops grown in study area are wheat, gram and pulses. Agro-climatic condition of the area provides a range of potentialities to grow cash crops like off seasonal vegetables viz. chilly, brinjal, bhindi, and fruits like pomegranate, papaya, guava etc. The common kharif crops grown in the study area are cotton, maize, groundnut, bajra, tur etc . while wheat, maize, jawar, gram, mustard etc. are cultivated as rabbi crops.

Five species of amphibians were found, water bodies in rainy season Common Indian toad and frog were found near the water bodies. nine species of reptiles were found, of which Common Garden lizard and Indian chameleon were encountered at various places in

study area.

Total numbers of 50 species of birds were encountered during the survey. However, 25 species of avifauna have been recorded based on discussions with concerned forest department officials, local people, published literature, NGOs etc. Kamble lake and Shila dam are good ecological niche for different aquatic birds. Many aquatic birds like little cormorant, western reef heron, small blue kingfisher, Indian darter, redwattled lapwing, cattle egret, pond heron etc. were encountered around the river.

In areas with agriculture fields, the grain eating herbivorous species like, doves, sparrows and parakeets while Insectivorous bird species viz. green bee eater, white breasted kingfisher, cattle egrets, swallows etc. were found. Indian peafowl is listed endangered (Schedule I) as per Wildlife (Protection) Act 1972. four RET species namely Painted stork, Pied tit, Oriental white ibis and Black-necked stork were recorded within 10 km surroundings. As per discussions with local people, published literature, NGOs etc.

Socio Economic:

Agriculture is the main source of livelihood of the region. Project villages and urban areas showed mixed results for the total working and dependent class of population. Total working population is estimated to be 53% as compared to 47% of the nonworking population. On an average 69% population is literate while 31% of the population was reported to be illiterate.

The beneficiaries of the project include the small and marginal farmers. They will be able to cultivate cash crops, varieties of high yielding / improved crops, floriculture, horticulture, oil seeds etc. which are economically viable options and can raise the income levels of the local communities.

Environmental Impact Assessment

Impacts on Air Environment

Construction Phase

Due to construction activities like excavation, dumping, infrastructure development and vehicle movement the emission of Particulate Matter (PM₁₀ and PM_{2.5}), Carbon Monoxide (CO), and Sulphur Dioxide (SO₂) will increase during the construction phase. This will result

into increase in dust particles and air pollution for a short period of time, resulting in low negative impact for temporary phase.

Operation phase

Sources will include emissions from vehicular movement only. During the operation phase of the project, the following pollutants are anticipated to be emitted viz. Nitrogen oxides (NO_x), PM₁₀ and PM_{2.5}), Sulphur dioxide (SO₂ and CO from vehicle exhaust within the Project site. This will be permanent low negative impact.

Noise

Construction Phase

During construction phase minor noise pollution is anticipated due to vehicle movement and machineries, However it will not affect to biota including human due to low impact. Although there are no wild animals in nearby area minor impact to avifauna and insects is anticipated during construction and operation phase such effects are temporary and will be adjusted due to acclimatization by the animals

Operation phase

During this period noise pollution will not be occurred except during transportation.

a) Impact on Water Resource

The present water quality has been assessed by collecting and analyzing the surface and ground water samples in the project area. The impact on the water resources during the construction and operation phase is as follows:

Construction Phase

Construction activities for the proposed development may have impact on hydrology and ground water quality and surface water due to soil runoff from the site particularly during rainy season, disposal of construction debris, domestic wastewater from temporary labor camps etc. This can be termed as Temporary High negative impact.

Operation Phase

Due to supply of assured water for irrigation the intensive Agricultural activity will be in command area. This will in turn increase the usage of pesticides, insecticides and fertilizers and other agriculture chemicals. These chemicals may cause seepage into the ground water.

Hence there is possibility of deterioration in ground water quality over the period of time due to indiscriminate use of pesticides, insecticides and fertilizers.

b) Impacts on Land Use

Construction Phase

Land which will be going under submergence of storage tank is a rainfed agricultural. It is observed that the agricultural activity is mainly monsoon dependent. Increased productivity of the command area must compensate for the loss of the submerged land before agricultural benefits can be counted. Therefore this impact can be termed as Temporary Low negative impact. Compensatory afforestation program and Catchment Area Treatment plan will enhance overall vegetation cover around the submergence area.

Operation Phase

The project will involve the impoundment of water. The site area will be developed by greenery and open space. Land will be used for various purposes like permanent structures, roads and other infrastructures, green areas, etc. Due to availability of assured water the cropping pattern in the command area will be improved.

The change in aesthetics and visual appeal of the region will be positive, wherein existing unplanned development will give way to a planned, environment friendly development. Therefore this will be a Permanent High positive impact.

c) Impacts on Soil

Construction Phase

Mixing of construction debris with soil and reduction in the pervious area may lead to reduced infiltration rate, decreased permeability and increased runoff. Excavation of different layers of soil and subsequent mixing of different layers would lead to disruption of soil structure. Pollution of soil would be on account of spillage of oil from vehicles used for transportation of construction material. However, this impact will be Temporary Low negative impact.

Operation Phase

During the operation phase the impact on soil will be in terms of top soil erosion and increase in soil salinity due to excess irrigation. Flood irrigation of field will also result in loss of top soil into natural streams and nallas, flowing away into major rivers or clogging natural drains

leading to localized water logging. However soil conservation measures will be taken in the catchment area to reduce the soil erosion and sediment load in the reservoir. Landscapes and green belt areas will be carefully designed, developed and maintained. No significant impact is expected on the soils on and around the site, due to the following measures:

- All solid wastes from the area will be properly collected, stored and disposed to avoid soil contamination.
- Wastewater will be treated, disinfected and reused for various purposes on site and will not be discharged outside the premises.
- Soil and water conservation plan shall be implemented on slopes so as to enhance soil moisture and reduce soil erosion. Catchment Area Treatment is suggested to reduce the rate of runoff and soil erosion.

Hence, Permanent High positive impact on soil quality in the study area is expected due to the project activities.

d) Impacts due to construction waste

Construction Phase

During the construction phase generated, solid waste will include debris from land clearing activities, excavation of earth and rock, waste from the labour camp and construction waste. However, the earth excavated will be reused within the site for backfilling, landscapes etc. This impact can be termed as Temporary negative impact.

Operation Phase

Since construction waste will be cleared and utilized for filling low lying areas, there will be no impact due to this parameter during the operation phase.

e) Impacts on Ecological Environment

Construction Phase

The prime productive agricultural land in the submergence area is negligible. Hence no major negative impacts are envisaged on agriculture land. No endangered or endemic plant was recorded in the study area. Thus biodiversity or plant and animals would not be significantly affected during construction activity.

Operation Phase

During operation phase proposed green belts would be designed in order to integrate with the existing and surrounding ecology. This will provide enrichment the habitats and create new niches for fauna of the area. This will be Permanent High positive impact.

f) Impacts on Socio-economic Environment

This section discusses the project activities and the extent of the potential impacts on the socioeconomic conditions in the study area.

- **Employment Generation**

Due to the Ashti LIS-3, there will be a large scale employment generation. During construction and operation phases, the local community will be benefited due to more jobs opportunities in the industries and commercial establishments. Jobs would be created for unskilled, semi skilled and skilled labor categories for which local people would be given preference. This will lead to economic development and social upliftment of the region. This will be Permanent High positive impact.

- **Impact on Public Health**

Water related diseases (e.g. Malaria, Schistosomiasis, Onchocerciasis, Encephalitis) often increase due to reservoir and irrigation projects. Dams and impoundments can create a variety of health risks as the vector breeding conditions are ideal in calm and clear water. During the rainy season the turbulent and muddy flow is not conducive to the vector breeding. Periodic flushing will also disturb the ideal breeding conditions. Proper care for medical and paramedical facilities will be taken to minimize the impact.

Groundwater may be polluted with pesticide residues and fertilizers. As a consequence, high levels of nitrates may end up in drinking water, which may lead to severe illness. Since proper management for these factors will be provided the occurrence of diseases and health ailments will be avoided. In addition to that due to incorporation of health care centers equipped with the modern facilities, quality water supply and sanitation services, the health profile of the study area would improve. This will be Permanent Medium positive impact.

- **Economic Condition of the study area**

This project will increase the economic activities around the area, creating avenues for direct/indirect employment in the post project period. Due to availability of assured water the

opportunities in agriculture will increase the income level of the people. This will improve overall economic condition of the study area, resulting Permanent High positive impact.

- **Aesthetics Environment**

The creation of the reservoir would create a large water surface, water body surrounded by plantation and water birds. This will lead to increase in the recreation potential of the project area. Aesthetic look of the command area of the project is likely to increase due to green fields and local plantation. This will be Permanent High positive impact.

- **Resettlement and Rehabilitation**

Due to construction of Kuntephal Storage tank 5 villages (Kuntephal (Kundi), Solapurwadi, Kumbhepahl, Balewadi and Vagluj will be affected. The families from these villages will be rehabilitated as per 'Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013'.

Proper compensation package is planned and will be provided to the project affected population. The trauma will remain till the farmer gets the compensation and livelihood source in case of the farmers which have lost their entire land and proper rehabilitation and resettlement for the people who have lost their houses. Therefore, this impact will be Temporary High negative impact.

- **Impact on Historical, Archeological and Architectural Sites**

There is no listed heritage/ archaeological site within the site and the buffer zone. Therefore these will not be affected due to the project. Hence, there will be no impact

Environmental Management Plan

Comprehensive management plan has been prepared and measures to minimize impacts are suggested as follows

- **Management of Physical and Environmental Resources**

The mitigation measures to be taken-up during the construction and operational phases are suggested below.

Surface Water Hydrology

- ❖ As the downstream trends of river flows can adversely affect the reservoir regulation plan, a monitoring programme should be set up to investigate the trends which really exist so as to modify the regulation plan accordingly; and

- ❖ Definite criteria should be set up for the reservoir for minimum water release planning while taking downstream requirements into consideration.
- ❖ Mehakari River is a seasonal and flowing only in rainy season. To enhance the aquatic flora and fauna environment flow in the river will be maintained. For that 10% water will be released as per guidelines of concern authorities.

Water Logging

The water logging problems are expected to arise either in the regions located in immediate downstream of dam site or surrounding the submergence area due to water impoundment. The waterlogging problem that may arise in areas adjacent to water spread area can be mitigated by development of appropriate greenery which will readily evapotranspiration the seepage/capillary water that might seep from the reservoir. Also command area development plan will be prepared to address any negative waterlogging situation arises in command area.

Proper drainage system will be provided along the canal and in the command area to avoid water logging. Provision has been made for drainage system of rupees twenty lakh.

Erosion and Sedimentation

- Deforestation and felling of the existing vegetation in catchment area should be prevented. An appropriate cropping pattern should be evolved for the catchment area so as to reduce the soil erosion and reservoir sedimentation;
- As a measure to remove the sediment deposition in the reservoir, the dam should be opened for flushing, once in a year during monsoon season; and
- Tree plantation measures should be taken on the submergence boundary to reduce soil erosion due to wave action.
- Execution of Catchment Area Treatment Plan

Ecological Resources

- Construction activities needs to be restricted to day hours only and the movements of workers and vehicles should be completely banned during early morning and late evening when wildlife activities are at peak.
- Blasting and other construction activities generating noise need to be synchronized in order to keep the exposure to such noise to the minimum.

- Strict instructions to the workers and contactors need to be given on ban on hunting of any faunal species and cutting of vegetation for fuel and alternative provision should be made.
- Destruction of the vegetation during construction along the canal should be compensated by developing a green belt. The native/local species should be used for green belt development.
- Introduction of exotic plant species should be strictly avoided.
- In order to minimize impact on wildlife, movement of vehicles should be strictly monitored.
- Restriction of construction activity from dusk to dawn so as to avoid impact on wildlife during night times.

Public Health and Nutrition

- Adequate medical facilities should be made available at the construction camps to take care of working personnel and construction labourers at the camps. A medical doctor shall visit the site and examine the personnel at construction camp for diagnosing diseases, if any.
- Necessary facilities should be provided for medical examination of the persons in the tent provided for this purpose.
- A mobile van should be made available at site in case of an emergency. Sufficient curative and preventive measures should be taken at the camp and construction site to eliminate hazards from mosquito-borne diseases, especially malaria. Good environmental health and sanitation practices should be maintained.
- During operational phase, a regular surveillance programme with the help of the concerned State Government Department should be established to collect data, which would be necessary for improvement of health status in the affected area. This should include:
 - Periodical health survey should be carried out in the surrounding areas of the project; and
 - Assessment of incidence rates of water related diseases.
- Data collected should be used in establishing a programme with the help of concerned State Government department for alleviating adverse public health impacts and improving health status of the people in the area.

d. Land Use Management

- Green belt development using local species of plants should be taken up all along the approach roads and around construction camps and the boundary of the reservoir;
- Borrow areas outside the submergence area (if any) should be reclaimed by filling up the trenches and development of greenbelt over them; and
- All disturbed construction areas, on the periphery of the construction site should be replanted with native plants to minimize impact and future erosion.

EMP Cost

It will include the cost of the factors required for the Environmental management.

Table 10.1: 7 Budgetary Cost Estimates for Environment Management

Sr. No.	Particulars	Unit cost	Total (Rs.in Lakhs)
1	Meteorology - Rainfall and evaporation	Yearly	5.00
2	Water Quality		
3	a. Surface water (5 locations)	Monthly	10.00
	b. Ground water (5 locations)	Monthly	10.00
4	Ecological Resources Terrestrial ecology / Aquatic Ecology	Once in a three year	20.00
5	Soil characteristics (10 locations)	Once in a year	20.00
6	Initial Investment for Greenbelt development	Lumpsum	188.00
7	Ambient Air Quality	Once in Three Month	25.00
8	Noise Level Monitoring	Once in Three Month	10.00
9	Command Area Development Plan	Lumpsum	3305.00
10	R & R Plan	Lumpsum	33144.00
		Total Cost	36737.00

Environmental Monitoring

The monitoring of various environmental parameters is necessary and is an integral part of the environmental protection measures. Monitoring is as important as that of control of pollution. A comprehensive monitoring programme is suggested here. Environmental attributes to be monitored are Meteorology; Water Quality; Siltation Rate; Ecological Conservation of Habitats and Up-gradation; Soil Characteristics; Catchment Area Treatment, Command Area monitoring.

Conclusion

Environmental Impact Assessment studies as worked out by Matrix method in chapter 4, by considering all the concerned aspects show that the impacts on environment during the construction phase is showing the negative impact on air, noise, water quality, soil and the land and impact due to construction waste and land acquisition process. However Environmental Monitoring Plan and execution of Environmental Management Plan will minimize the negative impact to considerable level.

During operation phase due to availability of assured water supply the positive impacts will be on socioeconomic condition, landuse, ecology biodiversity and water quality are envisage.

These impacts will be for the long term.

After implementation of the project, agricultural production will increase in the command area of this project, thus improving the present financial status of the people living in the area. Due to supply of irrigation water, drinking water, the economy of the area and quality of life in the study area will improve.