ENVIRONMENT MANAGEMENT PLAN

KHARASROTA NADI SAND DAITARIPUR

Over an area of 12.00 Acres 4.856 hect. in
Village- Padanipal under Aul Tahasil of
Kendrapara district, Odisha

Applicant

Tahasildar Aul

(On Behalf of Successful bidder)

At/Po- Aul

Dist:-Kendrapara

State:-Odisha

1.0 Introduction

Sand being one of the most vital element of various industrial and constructional activities, has reached its requirement level on top over the few decades. Hence, practice of sand mining got essential to fulfill this requirement. Mainly river sand is mined to satisfy this purpose. It is restricted for domestic use only, not for export purpose. Environmental management involves functions that determine and implement environmental policy. It involves identification of objectives, adoption of appropriate mitigation measures, protection of ecosystem, enhancement of quality of life for those affected and minimization of environmental cost. Environmental Management Plan (EMP) will be formulated with an objective to mitigate the adverse impact of any proposed project. This includes an environmental policy on protection of environment and public safety. The river management function involves strategic planning, sustainable allocation of resources and environment compatible mining method for protecting the river ecosystem. Management of river includes legal, social and economic consideration as well as scientific insights. Rivers and their floodplains possess diverse and valuable ecosystem. Not only in the availability of the fresh water is itself vital for sustaining life, but it also support lush vegetation and abundant insect life that forms the base of the food chain.

Sand is a naturally occurring granular material composed of finely divided rock and mineral particles. Sand mining is the process of removal of sand and gravel from the river bed. River sand is used mainly in construction sector as building material and for making concrete. This is also used for filling roads, construction of building, brick making, making glass, sandpapers and reclamations of mines voids. Its strength and long life makes it suitable for a

number of purposes. Such river sand is used for domestic purpose only & not for export.

This project is meant for the extraction of river sand from Kharasrota River near Padanipal village in Kendrapara District. "Kharasrota Nadi Sand Daitaripur" in Padanipal village, Aul Tahasil, Kendrapara District comprises area of 12.00 acre or 4.856 Ha. Quarry lease for minor mineral (sand) has been proposed to be granted by the Tahasildar, Aul to the successful highest bidder only after obtaining statutory clearances like mining plan and environmental clearance for a period of five years. As per Government of India notification regarding environmental clearance notification of 14th September 2006 and its subsequent amendment, the Applicant/lessee should have to obtain Environmental Clearance from State Environment Impact Assessment Authority (SEIAA), Odisha.

1.0.1 *Name and address of the holder of the Mining Lease* :

Name of the Project	**Kharasrota Nadi Sand Daitaripur**
Applicant	Tahasildar Aul (On Behalf of Successful Highest Bidder)
Address of the Applicant	At/PO- Aul Dist- Kendrapara, Odisha
Period of Concession	5 years (From the date of Execution)

1.0.2 Details of the Area :

Name of the Project	**Kharasrota Nadi Sand Daitaripur** (Kharasrota River)
Area	12.00 Acres / 4.856 Hectares
Village	Padanipal
Tahasil	Aul, Kendrapara District, Odisha.
Khata Number	688
Plot Number	970(P)
Kisam	Nadi
Location	Latitude – 20°42'18.66" N to 20°42'30.14" N Longitude–86°34'47.99" E to 86°34'54.44" E
Toposheet	F45U10

2.0 Mining Method:

The mode of the deposit, geomorphology of the area and its hydrological condition are some of the factors those favor the open cast method of mining. Mining will be done with manual excavation & loading into trucks/ tractors and transported from sand quarry to the users/destination through trucks/tractors. The mining will be undertaken on single shift basis. The local man power shall be engaged in the mine.

2.1 *Details of Machineries to be used in Mining Operation :*

No machineries are going to be used for extraction of sand from the river bed. As the mining method has been proposed to be Manual, hence, only local labors will be engaged, who will use Handpicks, Spade and Chisel for extraction of sand. The sand will be extracted upto a depth of 1 m and will be loaded & transported through Tippers / Tractors having capacity 6Cum/3Cum. These vehicles will be covered with Tarpaulins during transportation to avoid air pollution.

2.1.1 Detail of measurement of mining pit earlier excavation in the area to be sanctioned and details of mineral concessions situated within 100m periphery of the area :

Not required as the source is declared as new source and there are no other mines present within 500m periphery of the area.

2.2 Scheme of Plantation :

Since, the deposit is on river bed, hence it has been proposed to plant trees on the alluvial soil present to the Western side of the lease area. However, avenue plantation will be done in free government lands with proper permission from concerned authorities if required. Plants are proposed with survival rate of 70%. However, the dead plants will be replaced by fresh plantation to reclaim the original number.

2.2.1 Details and approximate distance of National Park, Sanctuary, Biodiversity area, Interstate boundary situated within periphery of 10 Km from the area to be sanctioned :

No above mentioned features are present within 10Km radius from the lease area.

2.2.2 Proposed annual production of minerals :

The proposed total production is 3050 Cum of sand.

ANNUAL PRODUCTION	
Year	**Volume of Sand (m^3)**
FIRST YEAR	610
SECOND YEAR	610
THIRD YEAR	610
FOURTH YEAR	610
FIFTH YEAR	610
Total	**3050**

2.2.3 Effect on Ground Water level due to mining operation and it's preventive measures :

As the proposed extraction will be done much above the ground water table, hence no safety precautions are required for this head.

2.2.4 Details of scheme of continuous reclamation and rehabilitation of the land degradation due to mining operation :

Sl.No.	Type Of Land Use	During plan period
1	Water Channel area	0.305Ha
2	Safety Zone area & water body	4.029 Ha
3	Unutilized land	0.522 Ha
Total		**4.856 Ha**

3.0 ENVIRONMENTAL MANAGEMENT PLAN

The Environmental management plan has been formulated based on the identified impact caused due Kharasrota Nadi Sand Daitaripur to mitigate the adverse impact of the project. This includes an environmental policy on protection of environment and public safety. The river management functions involve strategic planning, sustainable allocation of resources and environment compatible mining methods for protecting the health of the river system. Management of rivers includes legal, social and economic considerations, as well as scientific insights.

The aims of EMP are:

- Pollution Prevention and Abatement Plan
- Occupational Health & Safety Management Plan
- Community Health & Safety Management Plan
- Green Belt Development Plan
- Post Closure & Maintenance Plan

The environmental management plan for the proposed project activities is formulated taking into considerations the following key environmental issues.

3.1 LAND/ SOIL MANAGEMENT

In the proposed Mining activity there will be not be much impact on the land environment due to following reasons.

- ✓ Mining will be done in the lease hold inside the safety zone.
- ✓ There is no removal of vegetation such as plants, bushes in the lease area.
- ✓ The mining activity will be carried out during daylight only.

- ✓ There will be no stockpiling of excavated sand on the river bed or river bank. The excavated material will be transported to the user agency as soon as possible.
- ✓ Water sprinkling on the transportation route as the river bed connecting to the highway is un-metalled road.
- ✓ The extraction/mining excavated pit will be allowed for replenishment in rainy season.

There is no soil over the sand bed; however the receding floods in the monsoon season deposit some clay /soil carried down by river water. It is hardly a few millimetres thick and of not much consequence. Even in the areas of no mining activity the process of deposition in one season and transportation of previously deposited material in the next season takes place along with deposition of fresh material by receding floods.

3.2 AIR MANAGEMENT

As the proposed mining is a manual process, the quality of the air will not be altered by this. The only source of air pollution is due to the loading and transportation activity by trucks and tractors. All the vehicles used for transport of sand will be environmentally compliant and the emissions will be according to MOEF norms.

The following measures will be adopted to eliminate the dust emission.

- Water sprinkling will be done for dust suppression on the unpaved road.
- Leveling of roads will be done to maintain the uniform speed of the trucks/tippers.

- The vehicles will be maintained properly and at regular intervals to control the air emissions.
- The transporting trucks will be covered by tarpaulin so that dust emission will be reduced.
- Overloading will be avoided during the transportation.
- Dust mask provided to the workers engaged at dust generation points like excavations, loading and unloading points.
- The only air pollution sources are the road transport network of the trucks and tractors. The dust suppression measures like water spraying will be done on the unmetalled roads.
- Utmost care will be taken to prevent spillage of sand and stone from the trucks. Overloading will be prevented. The trucks/ tractor trolley will be covered by tarpaulin covers.
- The transportation route of the materials has been made outside the human habitation.

3.3 NOISE MANAGEMENT

The Mining of River sand will not have any adverse effect in Noise levels as the operations are totally manual in nature. No mechanical methods will be used in the sand excavation. The only impact will be due to transportation of sand by trucks and tractor trolleys. Though the source of noise is very less following mitigation measures will be undertaken to maintain the noise level well within the limit:

- Minimum use of horns and speed limit of 10 kms in the village area.

- Timely maintenance of vehicles and their silencers to minimize vibration and sound.
- Provision of green belts in consultation with village panchayat near the river bank.
- Care will be taken to produce minimum sound during sand loading and movement of transporting vehicles.
- Earmuffs will be provided to the workers working in the noisy areas.

3.4 WATER MANAGEMENT

3.4.1. Surface Water Management

As the proposed excavation of sand mining is only manual and no waste water will be generated due to mining activity, surface water pollution due to the excavation of sand is not envisaged. Utmost care will be taken to minimize spillage of sand. However following environmental management plan will be undertaken to minimize the surface water pollution:

- The washing of trucks and tractor trolleys in the river will be avoided.
- Plantation along the river banks & degraded Panchayat waste land will be undertaken to improve its quality and utility.
- Monitoring of the surface water quality in both upstream and downstream of the lease area will be carried out on quarterly basis to assess the impact of mining on water quality of Kharasrota River.

3.4.2 Ground water Managment

There would not be any adverse effect on the ground water quality. The ultimate depth of mining is 1m below surface level and the depth of the ground water table is about 3m below the surface level. So the mining will operate above the ground water table. The mineral formation does not contain any harmful element, which could percolate into the ground and pollute the ground water. Hence, no control measures are required. However, regular monitoring of quality in the existing hand pumps/tube wells in the vicinity would be carried out both with reference to area and times intervals to study the hydrodynamics of the strata. Depth of ground water will be regularly monitored in the nearest dug wells to assess the change in depth of ground water.

3.4.3 Waste water management:

No waste water will be generated during extraction of sand. However, if so happens, then septic tanks and soak pits will be provided as per demand.

3.5 SOLID WASTE MANAGEMENT

No solid waste will be generated during mining activity.

3.6 BIOLOGICAL ENVIRONMENT

The impact of sand excavation from the lease area on the biological environment will be limited to the vegetation of the river bank, aquatic flora and aquatic fauna. Hence the anticipated negative impacts if any are only minor, temporary and easily reversible.

3.6.1 Green Belt Development

- Plantation of suitable local species will be done in outside of the lease hold as the lease area is river bed.
- Avenue plantation will be done in nearby free govt. lands with proper permission from the concerned authorities, if required.

3.7 SOCIO ECONOMIC ENVIRONMENT

In general, socio- economic environment will have positive impact due to mining project in the area. The deployed labors will be from nearby villages only as these people are mainly dependent upon such mining activities. The proposed mining activity will generate direct employment and indirect employment for the people living in the nearby area.

3.8 OCCUPATIONAL HEALTH MANAGEMENT

The process of excavation / quarrying leads to some health hazards. The most significant occupational health impacts are Noise Induced Hearing Loss (NIHL) and Occupational Lung Disease (OLD) due to inhalation of dust. As per Mines Rules, 1955, medical examination of employees at the initial stage and periodically, shall be done by a team of qualified medical officers provided by the lessee.

3.9 EFFECTS ON FLORA AND FAUNA

The direct impacts of the mining activity disturbances to land surfaces are usually significant, with the likelihood of destruction. No of biodiversity within natural ecosystems through removal of natural soils, plants and floral dependent animals. No wildlife population is present in the study area except the common type of birds and domestic animals. As

the mining is restricted to very small area there is no likelihood of any deforestation being caused. No significant long-term residual impacts on fauna due to mining activity of the proposed mine is expected.

3.10 Visual impact:

There is no any visual impact in the vicinity.

3.11 Historical Monuments:

There is no place of tourist interest, historical or religious importance in the vicinity.

Details of budgetary arrangement for environment management:

For implementation of Environmental Management Plan in the mining lease area, financial estimates for year-wise expenditure (both capital and recurring) and action plan to maintain better environment. The updated capital cost and recurring cost (per annum) for the environmental facilities for the project works out to be 1.2 lakhs per annum. Details are given as follows.

PROPOSED ACTION PLAN	EXPENCES PER YEAR (IN RS.)
Pollution control ➢ Dust suppression	20,000
Environment monitoring	20,000
CSR activities	40,000
Haul road repair	25,000
Miscellaneous	15,000
Total	**120,000**

ENVIRONMENT MONITORING PLAN

4.1 Introduction:

Regular monitoring of the environmental parameters is of immense importance to maintain the environmental conditions as monitoring plays an important role in management. Hence environmentalists and policy makers can make changes in pollution control equipments and environment policy to save the environment.

The main objectives of monitoring area as follows:

1. Very effectiveness of planning decisions
2. Measure effectiveness of operational procedures
3. Conform statutory and corporate compliance
4. Identify unexpected changes

4.2 Environmental Monitoring Cell:

A centralized Environmental Monitoring Cell will be established for monitoring of important environmental parameters which are of immense importance to access the status of environment during mine operation. The routine monitoring program will be implemented under project monitoring as per CPCB & MoEF & CC guidelines. Officer not below the rank of Manager will be responsible of environmental management cell and execution of environmental monitoring program.

4.3 Environmental Parameters

Environmental monitoring Program will be conducted once in season except Monsoon. Various parameters which will be taken into account are as follows.

ENVIRONMENTAL PARAMETERS AND FREQUENCY			
Sl. No.	Potential Impact	Parameters for monitoring	Frequency of monitoring
1	Air Emission	PM_{10}, $PM_{2.5}$, SO_2, NO_X & CO	As per CPCB / MoEF & CC requirements i.e. 24 hourly monitoring for one month in each season except monsoon season.
2	Noise	Spot Noise level recording Leq(Day) Leq(Night) Leq(Dn)	Periodic / As per CPCB norms i.e. Once in season (1 – hourly)
3	Water Quality	As per drinking water standards	Once in season except Monsoon
4	Soil Quality	Analyzed as CPCB method	Once in season except Monsoon
5	Health	Total health parameters	Initial Medical Examination (IME) and periodic medical examination – once in five years as per Mines Rules, 1955.

Sl. No.	Description	Frequency Of Monitoring
1	Ambient Air Quality in and around Mines	One sample after 24 hours continuous monitoring will be done twice a week in every year during mining period or as per norms of SPCB, Odisha
2	Water Quality	Annually once for 2surface water samples during mining period or as per norms of SPCB, Odisha & MoEF for various parameters
3	Noise Level Monitoring	Once in every year for 24 hours during mining period or as per norms of SPCB, Odisha & MoEF.

SUMMARY

Fugitive emission in the form of dust shall be generated during handling and loading of sand. The adequate preventive measures will be adopted to contain the various pollutants within permissible limits. Plantation development will be carried out in the mine premises, along the approach roads, around Govt. buildings, schools approx. 250 trees during plan period. It will prove an effective pollution mitigate technique, and help avoid soil erosion during monsoon season. Employment opportunities will be provided to the local villagers to improve their live hood.

FINAL RECOMMENDATION

Post-Project Environmental Monitoring is an essential tool in Environmental Management Program to check the environmental quality status through monitoring of environmental parameters as per frequency and method recommended by CPCB. It helps environmentalist and policy makers to maintain the status of the green environment. It will help sustainable growth through clean mining activity.

The environmental cell will co-ordinate all monitoring program, Environmental awareness Program, Training and its importance in proposed project at site. Half-yearly report will be submitted on June and January of each year to the regional office of MoEF / CC, Odisha. Objective of the entire process will be to improve environment and reduce the impact of project activities on Our Environment.

In course of mining there will be no generation of waste. As every year during rainy season there will replenishment of the excavated portion, there will be no need of closure procedure. The total operation shall be carried out with ease & minimum risk of the workers. The excavation of river sand will not only generate royalty for the Government but also keep the river bed from filling up and the carrying capacity of the river will be intact to mitigate the floods.

The proposed Environmental Management Plan will keep the area in a safe environment with negligible impact on the environment. The Plantation will substantiate the impact due to the mining activity.

The Lessee shall pay 5 % of the royalty to the authority towards environment management fund.