

**DRAFT ENVIRONMENTAL IMPACT ASSESSMENT  
AND  
ENVIRONMENTAL MANAGEMENT PLAN  
OF  
SAND MINING PROJECT ON SON RIVER AT  
MAINPURA SOHSA (ARWAL SON - 13) SAND GHAT**

<b>PROPOSAL NO</b>	<b>SIA/BR/MIN/414481/2023</b>
<b>ToR No</b>	<b>File No.SIA/1(a)/2249/2023</b>
<b>AREA</b>	<b>44.46 Ha</b>
<b>PRODUCTION</b>	<b>800280 CUM PER ANNUM OR 1344470 TPA</b>
<b>LOCATION</b>	<b>MAUJA – MAINPURA SOHSA, TEHSIL – KALER, DISTRICT ARWAL,BIHAR.</b>
<b>KHATA NO</b>	<b>384, 176</b>
<b>KHASRA NO</b>	<b>2484, 2518, 2519</b>

**APPLICANT**

**Maa Kamakhya Construction & Co.  
Pro.- Avinash Kumar  
S/o- Ramashish Singh  
Vill.+P.O.-Kamta, P.S.- Prasi, Dist.- Arwal, Bihar**



**CONSULTANT**  
**P&M Solution**  
**C-88, Sector 65, Noida -201301 – U.P**  
**A QCI –NABET Accredited Organization**  
**Regional Office: 201, Mangal Market,**  
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Project: Sand Mining Project, On Son River At Mainpura Sohsa (Arwal Son - 13) Balu Ghat  
(Area-44.46 Ha)

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<b>SL NO.</b>	<b>ANNEXURE</b>
1.	TOR
2.	LOI
3.	Mine Plan

## ABBREVIATIONS

<b>AAQ</b>	Ambient Air Quality
<b>bgl</b>	Below Ground Level
<b>BOD</b>	Biochemical Oxygen Demand
<b>COD</b>	Chemical Oxygen Demand
<b>CPCB</b>	Central Pollution Control Board
<b>CSR</b>	Corporate Social Responsibility
<b>dB</b>	Decibel
<b>DO</b>	Dissolved Oxygen
<b>EAC</b>	Expert Appraisal Committee
<b>EIA</b>	Environmental Impact Assessment
<b>EMC</b>	Environmental Management Cell
<b>EMP</b>	Environment Management Plan
<b>EPA</b>	The Environment Protection Act
<b>GLC</b>	Ground Level Concentration
<b>Ha</b>	Hectare
<b>Ham</b>	Hectare Meter
<b>HFL</b>	High Flood Level
<b>KLD</b>	Kilo litre Per Day
<b>Km</b>	Kilo Meter
<b>Leq</b>	Equivalent Noise Level
<b>LFL</b>	Low Flood Level
<b>LOS</b>	Level of Service
<b>MoEF</b>	Ministry of Environment and Forest & Climate Change
<b>NABET</b>	National Accreditation Board for Education and Training
<b>NGO</b>	Non Governmental Organisation
<b>NH</b>	National Highway
<b>NOC</b>	No Objection Certificate
<b>OSHA</b>	Occupational Safety and Health Administration
<b>PCU</b>	Passenger Car Unit
<b>PM</b>	Particulate Matter
<b>PUC</b>	Pollution Under Control
<b>QCI</b>	Quality Council of India
<b>R &amp; R</b>	Rehabilitation & Resettlement
<b>RBM</b>	River Bed Material
<b>RL</b>	Reduced Level
<b>SEAC</b>	State Expert Appraisal Committee
<b>SH</b>	State Highway
<b>SPCB</b>	State Pollution Control Board
<b>T/cum</b>	Tons Per Cubic Meter
<b>TKN</b>	Total Kjeldahl Nitrogen
<b>TOR</b>	Term of Reference
<b>TPA</b>	Tonnes Per Annum
<b>UNFC</b>	United Nations Framework Classification
<b>VWG</b>	Village Working Group

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## 1.0 PURPOSE OF THE REPORT

Environment Impact Assessment (EIA) is a process used to identify the environmental, social & economic impacts of a project prior to decision making. It aims to predict environmental impacts at an early stage of project planning & design, find ways & means to reduce adverse impacts. By using EIA, we can decide the suitable mitigation measures for implementation to maintain healthy working environment and contain pollution within permissible limits.

River plays an important role in the lives of the people. The river systems provide irrigation, potable water, transportation, electricity, and the livelihoods for a large number of people all over the country and to rural areas. Apart from this, river is also a good source of construction grade material as sand & gravel.

As transportation and construction infrastructure expanded since last few decades, the demand for construction grade sand also increased exponentially. The market demand of river sand is high throughout the nation. Sand is extracted directly from the river channel and it doesn't require processing other than size grading. But it is now well understood that continued and indiscriminate sand mining can cause serious environmental impacts, particularly if the river being mined is eroded.

Environmental Impact Assessment is one of the proven management tools for integrating environmental concerns in development process and for improved decision making as there is a need to harmonize the developmental activities with the environmental concerns into the larger interest of the society. The growing awareness, over the years, on environmental protection and sustainable development, has given further emphasis to the implementation of sound environmental management practices for mitigating adverse impacts from developmental activities. EIA study plays a vital role in sustainable development of a country. Recognizing its importance, the Ministry of Environment and Forest, Government of India had formulated policies and procedures governing the industrial and other developmental activities to prevent indiscriminate exploitation of natural resources and to promote integration of environmental concern in project development.

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Environmental Impact Assessment report is prepared to comply with the Terms of Reference (TOR) received from SEIAA, Bihar under EIA notification of the MoEF & CC dated 14<sup>th</sup> September, 2006 and its subsequent amendment there-off and also the EIA Guidance Manual for Mining of Minerals of MoEF&CC, Govt. of India, for seeking environmental clearance for mining of Sand in the applied mining lease area.

### 1.1 IDENTIFICATION OF PROJECT & PROJECT PROPONENT

The project is being proposed by M/s Maa Kamakhya Construction & Co.(Pro.- Avinash Kumar)

The address of the proponent is given below:

M/s Maa Kamakhya Construction & Co.

Pro.- Avinash KumarS/o- Ramashish Singh

Vill.+P.O.-Kamta, P.S.- Prasi, Dist.- Arwal, Bihar

The proposed project is of River bed sand mining and falls under Category- “B1” as per EIA Notification 2006 and its subsequent amendments by Ministry of Environment Forests & Climate Change, GOI. Arwal Son - 13 Sand Ghat fall in Mauja – Mainpura Sohsa, Tehsil – Kaler, Dist - Arwal, (Bihar). The details of the project are given below:

Name of Mine	Sand Mining Project On Son River At Arwal Son - 13 Sand Ghat, Tehsil- Kaler & District - Arwal, State-Bihar.
Mineral	Sand
Area (ha)	44.46 Ha
Postal Address	M/s Maa Kamakhya Construction & Co. Pro.- Avinash Kumar, S/o- Ramashish Singh, Vill.+P.O.-Kamta, P.S.- Prasi, Dist.- Arwal.
Status of Mine	Fresh application for Environmental Clearance.

### CLUSTER SITUATION:

The proposed mining was a cluster of 7 mining lease area of **Arwal Son sand block 7, block 8, block 9, block 10, block 11, block 12 & block 13** over an combined area of 386.17 Ha is for river bed sand mining on Son River District – Arwal, (Bihar)

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As per Approved District Survey Report Arwal the Proposed sand Ghats of block block 7 block 8, block 9, block 10, block 11, block 12 & block 13 are comes in cluster situation whose combined cluster area is 386.17 ha. All the lease area of homogeneous minerals is coming within 500 m radius from each other confirming a cluster situation.

As per the Director of Geology, Bihar, the modification of mining plan has been approved .As per EIA notification 2016 and subsequent amendments, the project is coming under category ‘B’ (B1) and the lease area is more than 5.0 Ha, approved Mining Plan, Pre-feasibility Report and EMP are required for Environment Clearance in respect of the said quarry lease. Copy of letter is enclosed as **Annexure No. II.**

The Details of cluster is given below:

<b>SAND GHATS</b>	<b>AREA</b>	<b>PRODUCTION (CUM)</b>	<b>PRODUCTION (TONNES)</b>
ARWAL SON 7	94.88	1707840	2869171.2
ARWAL SON 8	49.96	899280	1510790.4
ARWAL SON 9	54.95	989100	1661688
ARWAL SON 10	53.94	970920	1631145.6
ARWAL SON 11	55.01	990180	1663502.4
ARWAL SON 12	32.97	593460	997012.8
ARWAL SON 13	44.46	800280	1344470.4
<b>Total</b>	<b>386.17</b>	<b>6951060</b>	<b>11677780.8</b>

The proposed project is of River bed sand mining and falls under Category- “B1” as per EIA Notification 2006 and its subsequent amendments by Ministry of Environment Forests & Climate Change, GOI.

## **1.2 BRIEF DESCRIPTION OF PROJECT**



Project: Sand Mining Project, On Son River At Mainpura Sohsa (Arwal Son - 13) Sand (Area-44.46 Ha)

The proposed project is Open Cast Semi-Mechanized Mining of Sand with a proposed production of 8,00,280 cum per annum or 13,44,470 Tonnes per annum.

The project has been proposed by M/s Maa Kamakhya Construction & Co.(Pro.- Avinash Kumar). The proposed project is over an area of 44.46 Ha at Khata no. – 384, 176 & Khasra No. - 2484, 2518, 2519 on Son River at Mauja – Mainpura Sohsa, Tehsil – Kaler, Dist - Arwal (Bihar). As per MoEF, New Delhi Gazette dated 14<sup>th</sup> September 2006 and amended thereof, the proposed mining project is categorized as **Category ‘B-1’**. The estimated project cost for the proposed project is **Rs 13,88,15,200/-** (including auction cost)

**Table: 1.1 Project cost break-up**

S. No.	Description	Cost in Rs.
1	Cost of Labour & Equipment	66,69,000
2	Miscellaneous	1,00,000
3	Auction Cost	13,20,46,200
<b>TOTAL</b>		<b>13,88,15,200/-</b>

The proposed mining lease area falls in Survey of India Toposheet 72C/07, 72C/08, 72C/11 & 72C/12.

The mine lease co-ordinates and connectivity details are listed below:

**Table: 1.2 Mine lease Pillar Co-ordinates**

Sl. No	Coordinate	River Name
1	25.179889 N , 84.487798 E	Son
2	25.178622 N , 84.488867E	
3	25.175221N , 84.487616 E	
4	25.17249N , 84.486344 E	
5	25.170566N , 84.485014 E	
6	25.16735N , 84.481279 E	
7	25.172961N , 84.481326 E	
8	25.179889 N , 84.487798 E	

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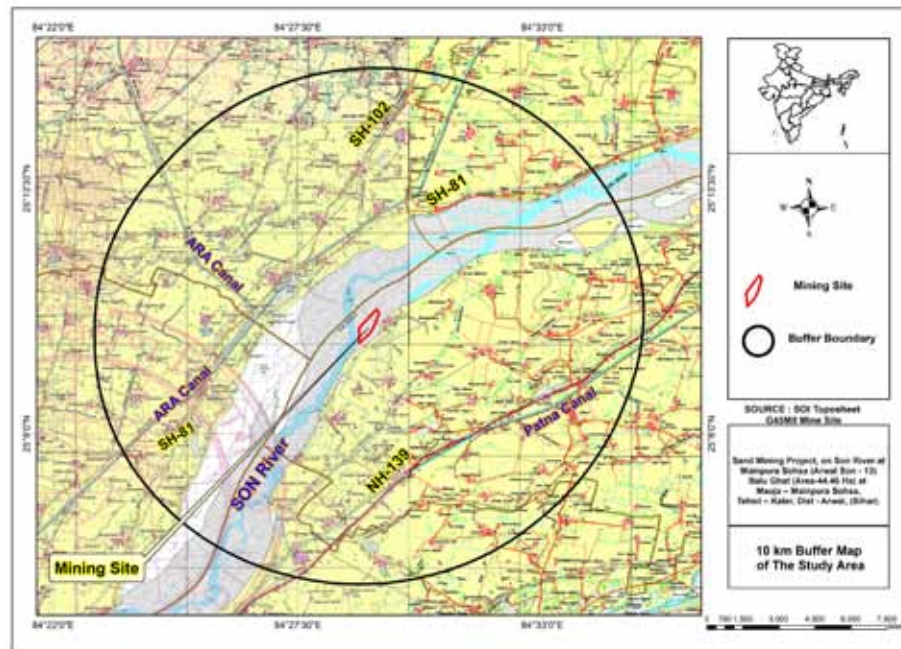


FIGURE 1.1, 10 KM BUFFER MAP

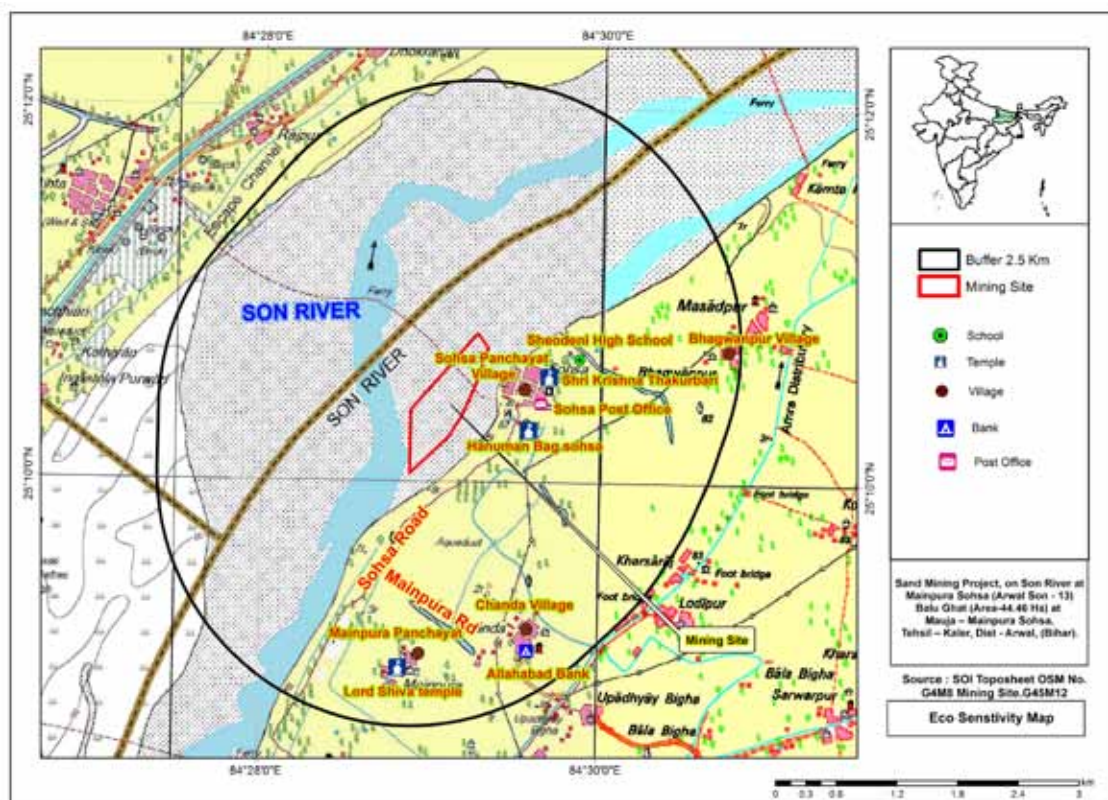


FIGURE 1.2- 2.5 KM BUFFER MAP SHOWING SENSITIVE RECEPTOR

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**Table: 1.3, Connectivity Details given below**

Nearest Railway Station	Piro Railway Station, approx. 17.0 km towards NW direction.
Nearest Airport	Jay Prakash Narayan International Airport Patna, approx. 76.0 km towards NE direction.
Nearest Highway	NH 139: Approx. 6.30 km towards SE direction. SH 81: Approx. 4.70 km towards West direction.

**Table: 1.4, Details of Environmental Settings**

Sl. No.	Particulars	Details
1	Elevation	74.2 AMSL to 75.2 AMSL
2	Ecological Sensitive Areas (National Park, Wildlife Sanctuaries)	None
3	Nearest water body	The mine site lies on the dry bed of Son river.
4	Seismic Zone	Zone-III <i>Source BMTC 2<sup>nd</sup> edition</i> <a href="https://www.bmtpc.org/disaster%20resistnace%20technolgies/ZONE%20II.htm">https://www.bmtpc.org/disaster%20resistnace%20technolgies/ZONE%20II.htm</a>

The EIA-EMP report is prepared as per the TOR granted under the EIA Notification. In order to assess the impact on environment due to proposed mine, it is necessary to ascertain present status of environment prevailing at the project site and identification and assessment of impacts on the environment of the proposed operation.

### **Project's importance to the country and the region**

Sands are ubiquitous material; available everywhere and is being used from the time immemorial for wide applications in our daily life; infrastructures, building construction, highways, roads, townships, multiplexes, foundations of buildings and industrial units etc. and is an integral part of development.

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Life without sand is unthinkable. Over the millennia, the weathering effect, the flow of water at high velocities in rivers and the pressure of water from the high mountainous reservoirs converted and pushed the hard ground underneath into sands, etc. which travelled as sediments with the flow. This sand got deposited along the river course wherever conditions were favorable. In the deep past this settled sand was not extracted in a quantity in which it deposited; since due to less population the requirements was not enough. As a result of continuous deposit of sand, the rivers went on changing their course, widening by itself, eroding the fields and expanding, resulting in flooding, inundation and breaking their banks, causing devastation of property and loss of life. There has been a severe impact on every aspect of the environment. The rivers thus, needed channelization and therefore, extraction of these minor minerals through mining was expedient. The haphazard mining of sands being practiced now for long, through unregulated, uncontrolled and illegal way added almost an irreversible damage to the environment, which became a cause of serious concern to everyone. Though sands are very important mineral source for development, its mining through scientific methods has also become equally imperative.

It is for this purpose that ‘mining plan’ is being drawn so that all its aspects are taken care of justifiably, according to law, protecting the environment, removing all adverse impacts and creating a direct and indirect employment opportunities, improving socio-economic conditions of the local inhabitants and all-around status of life, achieving thereby a sustainable development.

Besides the above, the process of mining of minor minerals (Sand) is a constant source of revenue generation to the State Government through Royalty.

#### 1.4 SCOPE OF THE STUDY

The project proposal was submitted to State Level Environment Impact Assessment Authority-Bihar for its appraisal. Based on which, presentation was held for Terms of Reference (TOR). Based on the data provided and presentation made, the SEIAA-Bihar has issued the Terms of dated 27.01.2023 attached as **Annexure-1**

Followings are the point wise compliance of the ToR provided by the SEIAA Bihar.

**Table: 1.5 Point wise compliance for TOR**

Project: Sand Mining Project, On Son River At Mainpura Sohla (Arwal Son - 13) Sand (Area-44.46 Ha)

S. No	TOR	Compliance	Reference in the Report
1	Year-wise production details since 1994 should be given, clearly stating the highest production achieved in any one year prior to 1994. It may also be categorically informed whether there had been any increase in production after the EIA Notification 1994 came into force, w.r.t. the highest production achieved prior to 1994.	This is fresh LOI, Mine is yet to be operate. It will operate only after getting environmental clearance.	--
2	A copy of the document in support of the fact that the Proponent is the rightful lessee of the mine should be given.	State Govt. has given consent for mining vide letter no. 1323 dated 28-11-2022 in favor of M/s Maa Kamakhya Construction & Co. Pro.- Avinash Kumar.	<b>Annexure II, LOI</b>
3	All documents including approved mine plan, EIA and public hearing should be compatible with one another in terms of the mine lease area, production levels, waste generation and its management and mining technology and should be in the name of the lessee.	The documents including mine plan and EIA report submitted are compatible with one another w.r.t. to following information:  Mining Lease Area- 44.46 Hectare.  Lessee: M/s Maa Kamakhya Construction & Co. Pro.- Avinash Kumar.  Proposed Production- 8,00,280 cum per annum or 13,44,470 TPA.	<b>Annexure- III</b>  Mine plan  All details has been complied in chapter-2

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		<p>Waste generation-</p> <p>No waste will be generated.</p> <p>Mining Method-Open Cast semi-mechanized/OTFM Method</p>	
4	<p>All corner coordinates of the mine lease area, superimposed on a High Resolution Imagery toposheet, topographic sheet, geomorphology and geology of the area should be provided. Such an Imagery of the proposed area should clearly show the land use and other ecological features of the study area (core and buffer zone).</p>	<p>All Corner Coordinates of mining lease area superimposed on High Resolution Imagery has been incorporated in EIA/EMP Report.</p>	<p>Refer Chapter 2</p> <p>Fig: 2.1, Corner Coordinates map</p>
5	<p>Information should be provided in Survey of India Toposheet in 1:50,000 scale indicating geological map of the area, geomorphology of land forms of the area, existing minerals and mining history of the area, important water bodies, streams and rivers and soil characteristics.</p>	<p>The land use map showing salient features of the area is given in the report.</p> <p>The geological map of the mine lease area is also given in the report showing geomorphology</p>	<p>Land-use of the study area Figure 3.1.</p>
6	<p>Details about the land proposed for mining activities should be given with information as to whether mining conforms to the land use policy of the State; land diversion for mining should have approval from State land use board or the concerned authority.</p>	<p>The Lease area is dry part of River bed.</p> <p>The mining process will be done by land use policy of the State &amp; no land diversion has been proposed.</p>	<p>Chapter II &amp; III</p>



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7	It should be clearly stated whether the proponent Company has a well laid down Environment Policy approved by its Board of Directors? If so, it may be spelt out in the EIA Report with description of the prescribed operating processes /procedures to bring into focus any infringement / deviation / violation of the environmental or forest norms / conditions?. The hierarchical system or administrative order of the company to deal with the environmental issues and for insuring compliances with the EC conditions may also be given. The system of reporting of non-compliances / violations of environmental norms to the Board of Directors of the Company and/or shareholders or stakeholders at large, may also be detailed in the EIA Report.	Yes, the proponent Company has a well laid down Environment Policy. The hierarchical system or administrative order of the company has been given in the EIA report.	Chapter VIII Section 8.1 Corporate Environment Policy
8	Issues relating to Mine Safety, including subsidence study in case of underground mining and slope study in case of open cast mining, blasting study etc. should be detailed. The proposed safeguard measures in each case should also be provided.	Issue related to mine safety has been given in of chapter 7.	
9	The study area will comprise of 10 km	The 10 km zone from periphery	Chapter I

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	zone around the mine lease from lease periphery and the data contained in the EIA.	of the lease has been considered as the study area. The Buffer map of the study area is attached with report.  All the details in the EIA report are for the life of the mine period.  The details of mining & production have been given in the report.	Figure 1.1
10	Land use of the study area delineating forest area, agricultural land, grazing land, wildlife sanctuary, national park, migratory routes of fauna, water bodies, human settlements and other ecological features should be indicated. Land use plan of the mine lease area should be prepared to encompass preoperational, operational and post operational phases and submitted. Impact, if any, of change of land use should be given.	Land use pattern of 10 km from the periphery of the lease area has been prepared and incorporated with the report. The study area lies on Son River.  There is no wildlife sanctuary or national park within the study area.	Land-use of the study area Figure 3.1 , Table 3.1
11	Details of the land for any Over Burden Dumps outside the mine lease, such as extent of land area, distance from mine lease, its land use, R&R issues, if any, should be given.	There is no overburden outside the mine lease area.	



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12	A Certificate from the Competent Authority in the State Forest Department should be provided, confirming the involvement of forest land, if any, in the project area. In the event of any contrary claim by the Project Proponent regarding the status of forests, the site may be inspected by the State Forest Department along with the Regional Office of the Ministry to ascertain the status of forests, based on which, the Certificate in this regard as mentioned above be issued. In all such cases, it would be desirable for representative of the State Forest Department to assist the Expert Appraisal Committees.	There is no forest land within the lease area.	---
13	Status of forestry clearance for the broken up area and virgin forestland involved in the Project including deposition of net present value (NPV) and Compensatory afforestation (CA) should be indicated. A copy of the forestry clearance should also be furnished.	No forest land is involved in the lease area, therefore, deposition of net present value (NPV) and compensated Afforestation is not indicated.	

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14	Implementation status of reorganization of forest rights under the schedule tribes and other traditional forest Dwellers (Recognition of Forest Rights) Act, 2006 should be indicated"	There is no forest land involved in the leased out area. Hence, this act is not applicable for this project.	
15	The vegetation in the RF / PF areas in the study area, with necessary details, should be given.	No RF/PF is present within the 10 km radius of the lease area. However, the vegetation details of the study area are incorporated with the report.	Chapter III
16	A study shall be got done to ascertain the impact of the Mining Project on wildlife of the study area and details furnished. Impact of the project on the wildlife in the surrounding and any other protected area and accordingly, detailed mitigative measures required, should be worked out with cost implications and submitted.	The details Impacts & there mitigation measures are given in chapter IV of EIA/EMP Report.	Chapter IV
17	Location of National Parks, Sanctuaries, Biosphere Reserves, Wildlife Corridors, Ramsar site Tiger / Elephant Reserves / (existing as well as proposed), if any, within 10 km of the mine lease should be clearly indicated, supported by a location map duly authenticated by Chief Wildlife Warden. Necessary clearance, as may be applicable to such projects due to	No National Parks, Sanctuaries, Biosphere Reserves, Wildlife Corridors, Ramsar site Tiger / Elephant Reserves / (existing as well as proposed) are found within 10 km of the study area.	

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	proximity of the ecologically sensitive areas as mentioned above, should be obtained from the Standing Committee of National Board of Wildlife and copy furnished.		
18	A detailed biological study of the study area [core zone and buffer zone (10 km radius of the periphery of the mine lease)] shall be carried out. Details of flora and fauna, endangered, endemic and RET Species duly authenticated, separately for core and buffer zone should be furnished based on such primary field survey, clearly indicating the Schedule of the fauna present. In case of any scheduled-I fauna found in the study area, the necessary plan along with budgetary provisions for their conservation should be prepared in consultation with State Forest and Wildlife Department and details furnished. Necessary allocation of funds for implementing the same should be made as part of the project cost.	Detailed biological study of core zone and buffer zone within 10 km radius of the periphery of the mine lease has been carried out for the project. The same has been incorporated in the report.	Chapter III
19	Proximity to Areas declared as 'Critically Polluted' or the Project areas attracting court restrictions for mining operations, should also be	Proposed project does not come under critically polluted area.	

Project: Sand Mining Project, On Son River At Mainpura Sohsa (Arwal Son - 13) Sand (Area-44.46 Ha)

	indicated and where so required, clearance certifications from the prescribed Authorities, such as the SPCB or State Mining Dept. Should be secured and furnished to the effect that the proposed mining activities could be considered.		
20	R&R Plan/compensation details for the Project Affected People (PAP) should be furnished. While preparing the R&R Plan, the relevant State/National Rehabilitation & Resettlement Policy should be kept in view. In respect of SCs /STs and other weaker sections of the society in the study area, a need based sample survey, family-wise, should be undertaken to assess their requirements, and action programmes prepared and submitted accordingly, integrating the sectoral programmes of line departments of the State Government. It may be clearly brought out whether the village(s) located in the mine lease area will be shifted or not. The issues relating to shifting of village(s) including their R&R and socio-economic aspects should be discussed in the Report.	There is no R & R involved in this project.	

Project: Sand Mining Project, On Son River At Mainpura Sohsa (Arwal Son - 13) Sand (Area-44.46 Ha)

21	<p>One season (non-monsoon) [i.e. March-May (Summer Season); October-December (post monsoon season); December-February (winter season)] primary baseline data on ambient air quality as per CPCB Notification of 2009, water quality, noise level, soil and flora and fauna shall be collected and the AAQ and other data so compiled presented date-wise in the EIA and EMP Report" Site-specific meteorological data should also be collected. The location of the monitoring stations should be such as to represent whole of the study area and justified keeping in view the pre-dominant downwind direction and location of sensitive receptors. There should be at least one monitoring station within 500 m of the mine lease in the pre-dominant downwind direction. The mineralogical composition of PM10, particularly for free silica, should be given.</p>	<p>Base line study was carried out for season Dec 2022 &amp; Jan-Feb 2023. Details are provided in EIA/EMP Report.</p> <p>The locations of the monitoring stations were decided on the basis of prevailing meteorological conditions (Wind direction &amp; wind speed) of the study area.</p> <p>The wind rose has been given in chapter III of EIA/EMP Report. One location has been selected in downwind direction within 500 m from the lease boundary.</p> <p>The location of the monitoring sites has been shown in map.</p>	Chapter III
22	<p>Air quality modeling should be carried out for prediction of impact of the project on the air quality of the area. It should also take into account the impact of movement of vehicles for</p>	<p>Air modelling will be used for air quality modelling. Air quality modelling is given chapter IV.</p>	

Project: Sand Mining Project, On Son River At Mainpura Sohla (Arwal Son - 13) Sand (Area-44.46 Ha)

	transportation of mineral. The details of the model used and input parameters used for modeling should be provided. The air quality contours may be shown on a location map clearly indicating the location of the site, location of sensitive receptors, if any, and the habitation. The wind roses showing pre-dominant wind direction may also be indicated on the map.		
23	The water requirement for the Project, its availability and source should be furnished. A detailed water balance should also be provided. Fresh water requirement for the Project should be indicated.	The water requirement for the project is 5.20 KLD for drinking, dust suppression and green belt development.  A detailed water balance is being provided in the report.	Chapter –II
24	Necessary clearance from the Competent Authority for drawl of requisite quantity of water for the Project should be provided.	Water requirement will be fulfilled by private water tanker. So, no clearance is required.	Chapter II
25	Description of water conservation measures proposed to be adopted in the Project should be given.	The project do not consume any process water except for drinking, dust suppression & plantation. Plantation is proposed, which will increase the water holding capacity & help in recharging of ground water.	

Project: Sand Mining Project, On Son River At Mainpura Sohsa (Arwal Son - 13) Sand (Area-44.46 Ha)

		No artificial rainwater harvesting is proposed for the present project in lease area, however if any such project proposed by State Government PP will help out for the above.	
26	Impact of the Project on the water quality, both surface and groundwater, should be assessed and necessary safeguard measures, if any required, should be provided"	Mining activity will be done on Dry Bed of River so there is no impact on surface water. Mining will be up to 3 m below ground level or above the ground water table whichever comes first. This will not intersect the ground water table.	Chapter II
27	Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided. In case the working will intersect groundwater table, a detailed Hydro Geological Study should be undertaken and Report furnished. The Report inter-alia, shall include details of the aquifers present and impact of mining activities on these aquifers. Necessary permission from Central Ground Water Authority for working below ground water and for pumping of ground water should also be	The mining will be done only upto 3.0 m depth.  The detailed impact and control measure w.r.t the quality of water in the surrounding area is discussed under Chapter 4.	

Project: Sand Mining Project, On Son River At Mainpura Sohla (Arwal Son - 13) Sand (Area-44.46 Ha)

	obtained and copy furnished.		
28	Details of any stream, seasonal or otherwise, passing through the lease area and modification / diversion proposed, if any, and the impact of the same on the hydrology should be brought out.	The project site lies on Son river. No diversion is proposed.	
29	Information on site elevation, working depth, groundwater table etc. Should be provided both in AMSL and bgl. A schematic diagram may also be provided for the same.	The Elevation of the applied area for the block is 74.2 AMSL to 75.2 AMSL in the stretch. Mining will be up to 3 m below ground level or above the ground water table whichever comes first.	
30	A time bound Progressive Greenbelt Development Plan shall be prepared in a tabular form (indicating the linear and Quantities coverage, plant species and time frame) and Submitted keeping in mind the same will have to be executed up front on commencement of the Project. Phase-wise plan of plantation and compensatory afforestation should be charted clearly indicating the area to be covered under plantation and the species to be planted. The details of plantation already done should be given. The	<p>Plantation/afforestation will be done as per program i.e along the road sides and near civic amenities.</p> <p>Post plantation, the area will be regularly monitored in every season for evaluation of success rate.</p> <p>List of Plant species selected for green belt is detailed in the EIA report.</p> <p>The plant species selected for green belt have a greater ecological value and are of good</p>	Chapter IX



Project: Sand Mining Project, On Son River At Mainpura Sohsa (Arwal Son - 13) Sand (Area-44.46 Ha)

	plant species selected for green belt should have greater ecological value and should be of good utility value to the local population with emphasis on local and native species and the species which are tolerant to pollution.	utility value to the local population. The plant species are selected by giving emphasis on local and native species and the species which are tolerant to pollution	
31	Impact on local transport infrastructure due to the Project should be indicated. Projected increase in truck traffic as a result of the Project in the present road network (including those outside the Project area) should be worked out, indicating whether it is capable of handling the incremental load. Arrangement for improving the infrastructure, if contemplated (including action to be taken by other agencies such as State Government) should be covered. Project Proponent shall conduct Impact of Transportation study as per Indian Road Congress Guidelines.	The projection has been done based on the mineral transportation.  The details of traffic analysis are discussed in the report.	Chapter IV
32	Details of the onsite shelter and facilities to be provided to the mine workers should be included in the EIA Report.	A temporary rest shelter will be provided for the workers near to the site with provisions of water, first aid facility, protective equipments, etc. Details are given in the EIA/EMP Report.	Chapter II

[illegible]

Project: Sand Mining Project, On Son River At Mainpura Sohla (Arwal Son - 13) Sand (Area-44.46 Ha)

35	Public health implications of the Project and related activities for the population in the impact zone should be systematically evaluated and the proposed remedial measures should be detailed along with budgetary allocations.	The proposed project being a small scale semi-mechanized/OTFM Method mining project, there will be hardly any process related health implication on the population of the nearby villages except fugitive dust emissions due to transportation. Budgetary allocation is given in Chapter-VIII.	
36	Measures of socio economic significance and influence to the local community proposed to be provided by the Project Proponent should be indicated. As far as possible, quantitative dimensions may be given with time to time for implementation.	Socio-economic significance provided to the local community i.e. to the nearby villagers is given in the EIA/EMP Report.	
37	Detailed environmental management plan (EMP) to mitigate the environmental impacts which, should inter-alia include the impacts of change of land use, loss of agricultural and grazing land, if any, occupational health impacts besides other impacts specific to the proposed Project	The detailed environmental management plan to mitigate the environmental impacts has been mentioned in of the EIA/EMP Report.	Chapter IX

Project: Sand Mining Project, On Son River At Mainpura Sohla (Arwal Son - 13) Sand (Area-44.46 Ha)

38	Public Hearing points raised and commitment of the Project Proponent on the same along with time bound Action Plan with budgetary provisions to implement the same should be provided and also incorporated in the final EIA/EMP Report of the Project.	This is a draft EIA report. Public hearing is yet to be conducted.	--
39	Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project should be given.	No litigation is pending against the project.	
40	The cost of the Project (capital cost and recurring cost) as well as the cost towards implementation of EMP should be clearly spelt out.	The capital cost of <b>5.437</b> lakh & <b>6.0</b> lakh as recurring cost has been earmarked for EMP. Chapter IX table no. 9.2	Chapter IX
41	A Disaster management Plan shall be prepared and included in the EIA/EMP Report".	A Disaster management Plan has been given in EIA report.	Chapter VI
42	Benefits of the Project if the Project is implemented should be spelt out. The benefits of the Project shall clearly indicate environmental, social, economic, employment potential, etc.	2% of the total cost of the project has been earmarked towards the Enterprise Social Commitment which will be used for the development of village.	
43	<b>Besides the above, the below mentioned general points are also to be followed:-</b>		

Project: Sand Mining Project, On Son River At Mainpura Sohsa (Arwal Son - 13) Sand (Area-44.46 Ha)

a	All the documents to be properly referenced with index and continuous page numbering.	complied	
b	Where data are presented in the report especially in tables, the period in which the data were collected and the sources should be indicated.	complied	
c	The project proponent shall enclose all the analysis/testing reports of water, air, soil, noise etc. using the MoEF&CC/NABL accredited laboratories. All the original analysis/testing reports should be available during appraisal of the project.	complied	
d	Where the documents provided are in language other than English, an English translation should be provided.	Agreed and complied	
e	The Questionnaire for environment appraisal of mining projects as devised earlier by the ministry shall also be filled and submitted.	Agreed	
f	While preparing the EIA report, the instructions for the proponents and instructions for the consultants issued by MoEF&CC vide O.M. No-J-11013/41/2006-IA.II (I) dated 4rth	Complied	

Project: Sand Mining Project, On Son River At Mainpura Sohsa (Arwal Son - 13) Sand (Area-44.46 Ha)

	August, 2009.which are available on the website of this Ministry, should be followed.		
g	Changes, if any made in the basic scope the project parameters (as submitted in Form-1 and the PFR for securing the TOR) should be brought to the attention of MoEF&CC with reasons for such changes and permission should be sought, as the TOR may also have to be altered. Post public Hearing changes in structure and content of the Draft EIA/EMP (other than modification arising out of the P.H. process) Will entail conducting the PH again with the revised documentation.	Agreed	
h	As per the circular no J-11011/618/2010-IA,II(I) dated 30.5.2012 certified report of the status compliance of the conditions stipulated in the environment clearance for the existing operations of the project should be obtained from the regional office of Ministry of Environment, Forest and Climate Change, as may be applicable.	Agreed	
i	The EIA report should also include: (i)	complied	

Project: Sand Mining Project, On Son River At Mainpura Sohla (Arwal Son - 13) Sand (Area-44.46 Ha)

	surface plan of the area indicating contours of main topographic features, drainage and mining area (ii) geological maps and sections and (iii) sections of the mine pit and external dumps, if any, clearly showing the land features of the adjoining area.		
	<b>Additional Specific Conditions-</b>		
1	Submit a report based on cumulative assessment of increase in air pollutants due to increase in traffic load in view of proposed mining activities on all the roads located within aerial distance of 10 km using suitable air model.	ISCST3 modelling has been used detail has been given in chapter 4.	
2	If the proposed mining lease is overlapping with the previously allotted mining lease or already working or worked out mining lease the same must be clearly shown on the map. The details about quantity of sand extracted from overlapped area should be furnished duly certified from the concerned District Mining Officer.	No mining lease is overlapping with the previously allotted mining lease.	
3	The Satellite imageries (high resolution) of last three years in succession for summer, rainy and winter seasons of each proposed mining lease must be submitted. A map	Noted it will be submitted with Final EIA report.  Traffic plan has been discussed in Chapter-4.	

Project: Sand Mining Project, On Son River At Mainpura Sohsa (Arwal Son - 13) Sand (Area-44.46 Ha)

	on appropriate scale to show extraction paths to be used outside the mining lease boundary to approach major public roads (Rural/District road or State/National Highway).		
4	Alternatives route be explored if extraction path is passing through dense population/human settlements.	Alternative route has been examined and has been discussed in chapter-4.	Figure 4.1 & Figure 4.2 of Chapter-4.
5	A cumulative traffic management plan for cluster sand mining proposal must be submitted.	Agreed.	
6	A map of the area falling within 2.5 km radius from boundary of each mining lease showing all man-made public utility features such as bridge/public civil structures (including water intake points), culverts etc. and highways, and a table showing distance of the above mentioned man-made features from the mining lease boundary to facilitate decision making pertaining to relevant rules/Guidelines be submitted.	A map of 2.5 km radius has been prepared and attached as Figure 1.2 in Chapter 1.	Figure-1.2
7.	A report of the cumulative EIA/EMP study for the cluster sand mining blocks of the proposed mining site.	The proposed mining site does not fall in cluster situation.	

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Project: Sand Mining Project, On Son River At Mainpura Sohsa (Arwal Son - 13) Sand (Area- 44.46 Ha)

## 2.0 TYPE OF PROJECT

The project is proposed for the excavation of sand from the bed of river Son. The proposed project is Open cast Semi-mechanized/OTFM mining project.

## 2.1 NEED FOR THE PROJECT

The project site lies on Son River. The river get recharged by the rain water and carries sediment consisting of sand etc during monsoon season, generally.

Sand is used widely in the construction industry. It is usually mixed with cement and other ingredients to create mortar for building. It is also used in agriculture, as sandy soils are ideal for crops such as watermelons, peaches and peanuts. Sand is also used in Aquaria as it makes a low cost aquarium base material. This project will also provide employment to local people helping them earn livelihood.

## 2.2 LOCATION DETAILS

The project has been proposed by M/s Maa Kamakhya Construction & Co., Pro.- Avinash Kumar. The proposed project is over an area of 44.46 Ha at Khata no. – 384, 176 & Khasra No. - 2484, 2518, 2519 on Son River at Mauja – Mainpura Sohsa, Block – Kaler, Dist - Arwal (Bihar).The lease area falls in Survey of India Toposheet **72C/07, 72C/08, 72C/11 & 72C/12**.The lease co-ordinates and connectivity details are listed below:

**Table 2.1, Mine Lease Co-ordinates**

Sl. No	Coordinate	River Name
1	25.179889 N , 84.487798 E	Son
2	25.178622 N , 84.488867 E	
3	25.175221 N , 84.487616 E	
4	25.17249 N , 84.486344 E	
5	25.170566 N , 84.485014 E	
6	25.16735 N , 84.481279 E	
7	25.172961 N , 84.481326 E	
8	25.179889 N , 84.487798 E	

The mine site is well connected via an approach road of approx. 395 Metres to Metalled Road which further connects to NH 139. Piro Railway Station, approx. 17.0 km towards NW direction..

Project: Sand Mining Project, On Son River At Mainpura Sohsa (Arwal Son - 13) Sand (Area- 44.46 Ha)

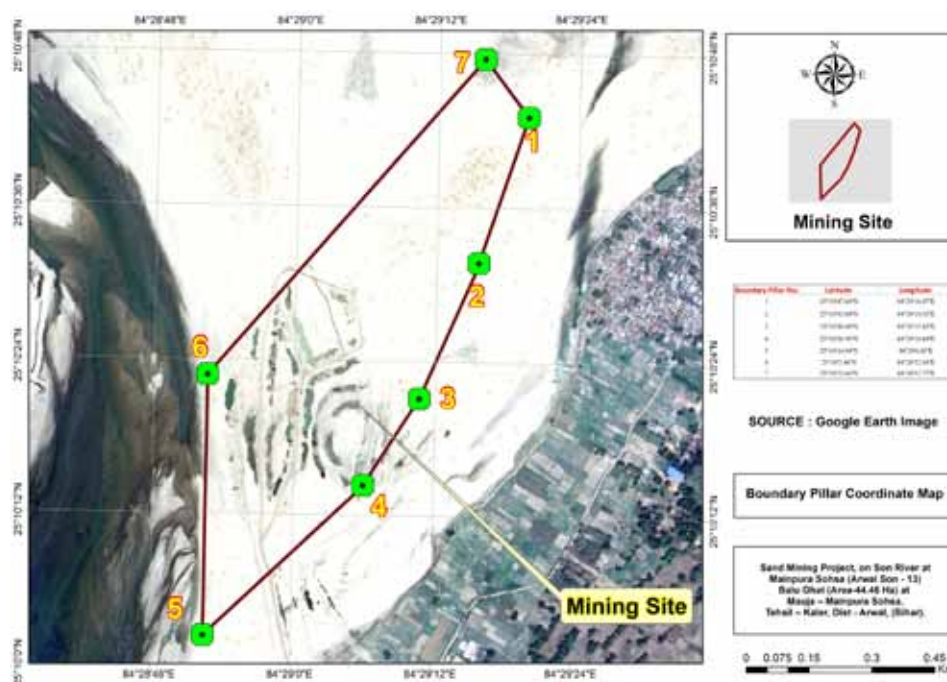


FIGURE 2.1:- PILLAR COORDINATE MAP

### 2.2.1 Lease / Block Area

The proposed project is Open Cast Semi-Mechanized Mining of Sand with a proposed production of 8,00,280 cum per annum or 13,44,470 Tonnes per annum.

The project has been proposed by M/s Maa Kamakhya Construction & Co.(Pro.- Avinash Kumar). The proposed project is over an area of 44.46 Ha at Khata no. – 384, 176 & Khasra No. - 2484, 2518, 2519 on Son River at Mauja – Mainpura Sohsa, Tehsil – Kaler, Dist - Arwal (Bihar). As per MoEF, New Delhi Gazette dated 14<sup>th</sup> September 2006 and amended thereof, the proposed mining project is categorized as **Category ‘B-1’**. The estimated project cost for the proposed project is **Rs 13,88,15,200/-** (including auction cost)

### CLUSTER SITUATION:

The proposed mining was a cluster of 7 mining lease area of **Arwal Son sand block 7, block 8, block 9, block 10, block 11, block 12 & block 13** over an combined area of 386.17 Ha is for river bed sand mining on Son River District – Arwal, (Bihar) As per Approved District Survey Report Arwal the Proposed sand Ghats of block block 7 block 8, block 9, block 10, block 11, block 12 & block 13 are comes in cluster situation whose combined cluster area is 386.17 ha. All the lease area of homogeneous minerals is coming within 500 m radius from

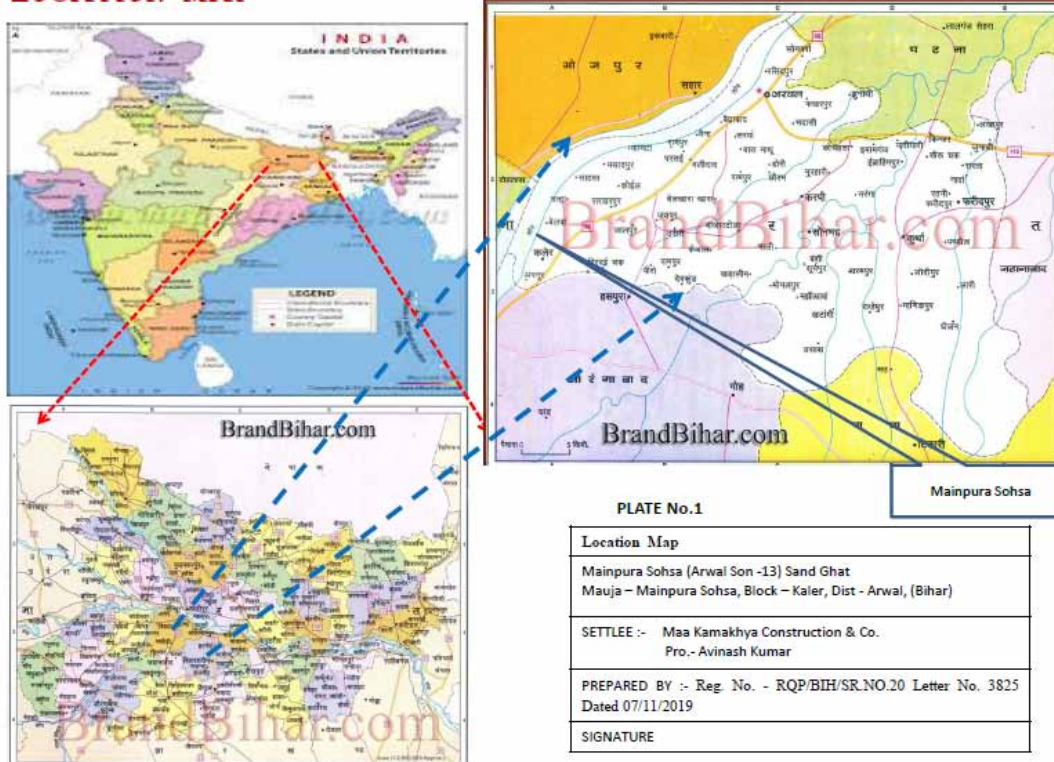
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each other confirming a cluster situation. As per the Director of Geology, Bihar, the modification of mining plan has been approved .As per EIA notification 2016 and subsequent amendments, the project is coming under category ‘B’ (B1) and the lease area is more than 5.0 Ha, approved Mining Plan, Pre-feasibility Report and EMP are required for Environment Clearance in respect of the said quarry lease. Copy of letter is enclosed as **Annexure No. II.**

The Details of cluster is given below:

SAND GHATS	AREA	PRODUCTION (CUM)	PRODUCTION (TONNES)
ARWAL SON 7	94.88	1707840	2869171.2
ARWAL SON 8	49.96	899280	1510790.4
ARWAL SON 9	54.95	989100	1661688
ARWAL SON 10	53.94	970920	1631145.6
ARWAL SON 11	55.01	990180	1663502.4
ARWAL SON 12	32.97	593460	997012.8
ARWAL SON 13	44.46	800280	1344470.4
<b>Total</b>	<b>386.17</b>	<b>6951060</b>	<b>11677780.8</b>

### LOCATION MAP



**FIGURE 2.2:- LOCATION MAP OF THE PROJECT SITE**

**2.3 TOPOGRAPHY & GEOLOGY****2.3.1 Topography**

Arwal town is the administrative headquarters of Arwal district in Bihar state of India. It was earlier part of Jehanabad district. The district as formed to control the naxalism in the area. District was formed from the area of two near by districts i.e. Jehanabad and Aurangabad. Arwal district is situated in the South Bihar alluvial plains. Arwal is located at 25.25°N 84.68°E. It has an average elevation of 67 metres (220 ft). The state capital, Patna is 65 km to the north. Arwal has a population of 588,000. Arwal, the district headquarters is approximately 80 km south from the state capital Patna. Arwal town is situated on the right side bank of the river Son, which is a tributary to the River Ganges.

**2.3.2 Geomorphology**

Arwal district is characterized by flat quaternary alluvial plain. With average surface elevation of 100 meter about mean sea level.

*Source:* [https://cgwb.gov.in/District\\_Profile/Bihar/Arwal.pdf](https://cgwb.gov.in/District_Profile/Bihar/Arwal.pdf)

**2.3.3 REGIONAL GEOLOGY**

Regionally the area constitutes a part of the Ganga River Basin.

The north-eastern part of Haryana is predominantly characterized by sedimentary lithology in the Sub-Himalayan zone comprising Subathus, Dagshais, Kasaulis and Siwaliks. A general Regional stratigraphic sequence in the area is given below :

Showing the Geological Succession and their geographic distribution

**Table 2.2 Showing the Geological Succession and their Occurrences distribution**

Age	Geology	Occurrences
Quaternary	Alluvial Deposits (Sand, Clay, Silt, Fragments)	North Bihar Plain & Central Bihar Plain
Tertiary	Sand Stones & Clay Stones	North Champaran Hills
Gondwana	Coal Measures, Forming a series of Small outlier basins	Banka District

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Vindhyan	Sandstones, Shales, Limestones, etc.	Parts of Bahbhua and Rohtas dist
Satpura	Schist, Phyllite, Quartzite	Part of Aurangabad, Gaya, Nawada, Nalanda, Sheikhpura and Munger District
Proterozoic	Mica Schist, amphibolites, quartzite, granite, dolerite and pegmatite	Nawada, Jamui and Banka
Archaean	Gneisses, Granites, Schists, Phyllites, quartzite, amphibolites & intrusive all metamorphosed sedimentary and igneous rocks	Part of Aurangabad, Gaya, Nawada, Jamui, Banka and Bhagalpur

*Source: Mining Plan*

### **2.3.4 LOCAL GEOLOGY OF THE AREA**

The sand exposed in the River bed of Son and surrounding areas is the product of the deposition of the sediments brought and deposited in the flood plains of River Ganga. These sediments are of recent geological formation. The litho-units exposed within the river and surrounding areas have formed as water borne sediments brought by flood water during rainy season every year and deposited in riverbed.

The litho units encountered in the riverbed and surrounding areas belongs to the Shivalik super groups. The size of the sediments towards the source i.e. host rock is coarse and at the tale end of the river the grain size is reduced to smaller sizes resulted in the formation of clay beds. The following sequences have been observed in the area, i.e. Top soil/ Alluvium followed by sand deposition.

Sand and silt are deposited in the middle of the river whereas fine sand and soil are deposited at the fringe of the riverbanks.

Soil/ alluvium varying in thickness from 0.20m to 0.60m m constitute the top horizons in the area suitable for agriculture. River Ganga meanders through the area exposing the alluvium and soil at the banks. Sand is found in the river bed upto a depth of more than 3.0

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m. The major part of bed remains dry as water flows in a single stream during the non-monsoon seasons. Only during rainy seasons the entire flood plain has water, when there will be no mining done.

Source: Mining Plan

### 2.3.5 CLIMATE

The area experiences a continental monsoon type of climate owing to its great distance from the sea. The climate is extreme and comprises three broad seasons-the summer, the monsoon and the winter. The summer months from the middle of March to May are characterized by hot blasts of westerly winds commonly known as 'loo'. The cold spell starts from December and continues till end of February. .

**Source:** [https://cgwb.gov.in/District\\_Profile/Bihar/Arwal.pdf](https://cgwb.gov.in/District_Profile/Bihar/Arwal.pdf)

### 2.4 GEOLOGICAL RESERVE

The geological reserves have been each stretches & for individual blocks. Geological reserves have been completed through cross sectional area method. The area of each section line is multiplied by strike influence to get the volume.

Proved Mineral Reserves (111): All quantities of sand occurring up to depth of 3m from surface has been considered as proved reserves.

**Table-2.3:- Proved Mineral Reserves**

Classification	Code	Quantity of Sand
A) Mineral Reserves	----	Cum
1) Proved Mineral Reserves	111	1333800
<b>Total</b>		<b>1333800</b>

*Source Mining Plan*

#### 2.4.1 Mineable Reserves:



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Mineable reserves have been computed up to 3m depth from surface. Benches having height 1.5m & width 6.0m drawn from the ultimate pit limit. Areas of each bench have been calculated multiplied by strike influence to get the volume. The volume multiplied by bulk density ( $1.68\text{kg/m}^3$ ) to get the tonnage.

The minerals excavated from the river bed will be replenished gradually during the monsoon season every year. And the area pertaining to palaeochannels of the river will be leveled & restored back.

**Table-2.4:- Minal Reserves**

Bench Level (mRL)	Length (m)	Width (m)	Depth (m)	Volume (cum)	Tonnes
75 – 73.5	1221	344	1.5	630036	1058461
73.5 - 72	1211	334	1.5	606711	10192745
<b>Total</b>				1236747	2077736

**Total Mineable Reserve = 1236747 CUM or 2077736 Tonnes**

**Table No-.2.5 Classification Mineral Reserves:**

Sand Ghat	Area (Hect)	Geological Reserves (m3)	Mineable Reserves (m3)	Annual Mineable Permitted Reserve As per LoI (m3)
Arwal Son 13 Mainpura Sohsa	44.46	1333800	1236747	800280

Project: Sand Mining Project, On Son River At Mainpura Sohla (Arwal Son - 13) Sand (Area- 44.46 Ha)

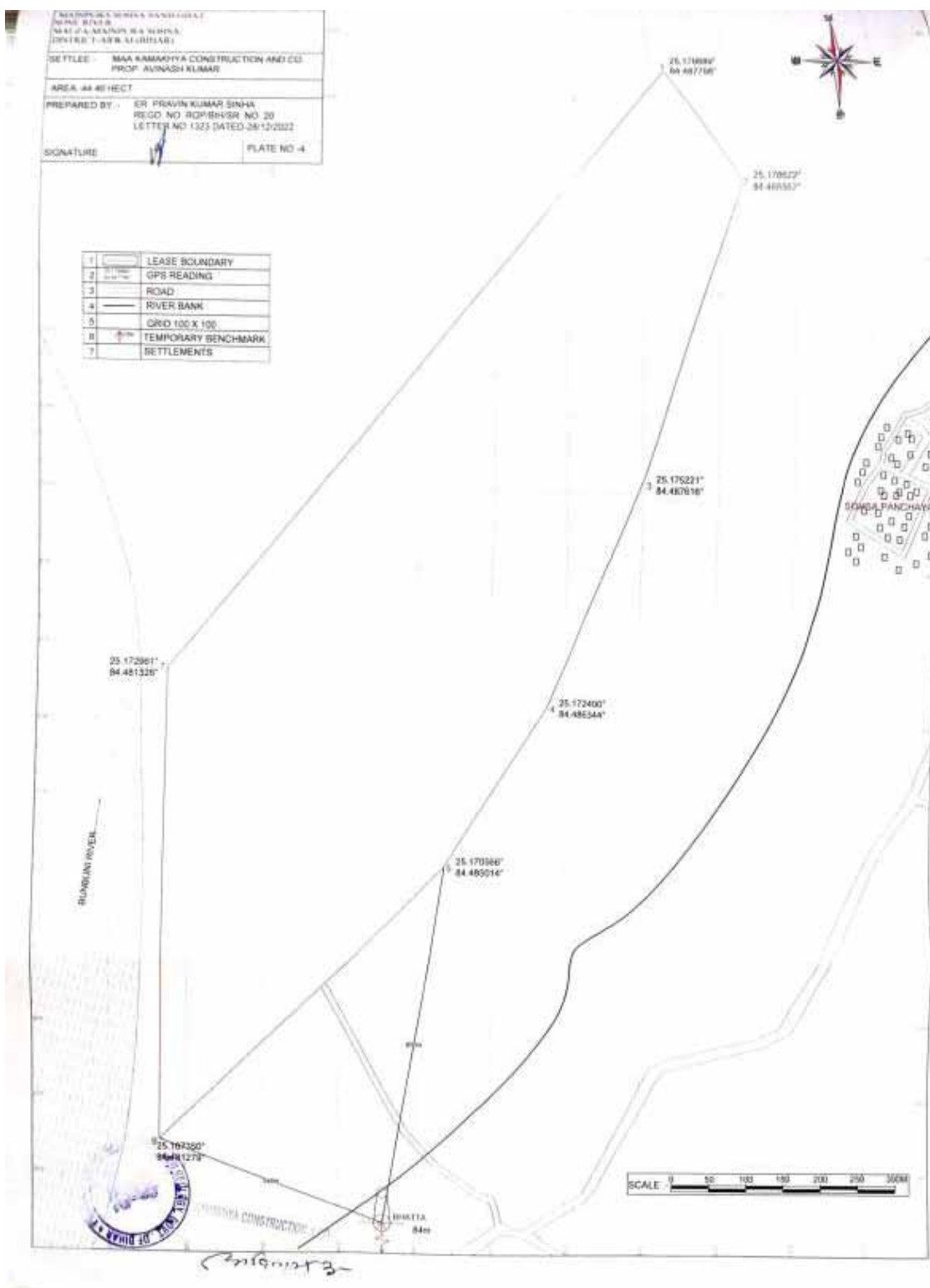


FIGURE 2.3:- SURFACE CUM GEOLOGICAL PLAN OF PROJECT



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### 2.4.2 Type of Mining

Mining will be done as per the guidelines of Bihar Mineral (Concession Prevention of illegal Mining Transportation & Storage) Rules, 2019.

This is an open-cast mining project. The operation will be semi-mechanized/OTFM with use of excavators/JCBs truck /tractors combination or Manually etc. The sand will be collected in its existing form.

Sand Mining will be carried out only upto a depth of 3 m bgl or above ground water level (whichever is less), for river bed block.

No drilling /blasting are required as the material is loose in nature.

Proper benching of 1.5 m height and 6m width will be maintained for mining blocks as per guideline M.M.R-2019, under rule 115(1).

Mining will be done only during the day time and completely stopped during the monsoon season.

### 2.4.3 Year Wise Production Schedule:

The bench wise annual exploitation of sand from Arwal Son 03 is given below:-

**Table 2.6 Year wise Production Detail**

YEAR	Over burden (cum)	ROM sand (cum)	Saleable Sand (cum)
1 <sup>st</sup> Year	-	800280	800280
2 <sup>nd</sup> Year	-	800280	800280
3 <sup>rd</sup> Year	-	800280	800280
4 <sup>th</sup> Year	-	800280	800280
5 <sup>th</sup> Year	-	800280	800280

**Table 2.7 Classification Mineral Reserves:**

Sand Ghat	Area (Ha)	Geological Reserves (m3)	Mineable Reserves (m3)	Annual Production target (m3)	Annual Production target (Tonnes)
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Project: Sand Mining Project, On Son River At Mainpura Sohsa (Arwal Son - 13) Sand (Area- 44.46 Ha)

Arwal Son 13 Mainpura Sohsa	44.46	1333800	1236747	800280	1344470
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The annual extractable RBM comes to 800280 CUM or 1344470 Tonnes. It will be replenished after rainy season every year.

**Source: Mining Plan**

### **2.5 Conceptual Mining Plan**

Mine Applied Area will be worked for Arwal Son Mainpura Sohsa Sand Ghat. However, as the digging depth will be restricted to 3.0 m only. This will be further replenished during rainy season. Sand Ghat will be worked systematically as the width is limited while length is much more. As the lease period is only 5 (Five) years, some of the area will be left un-worked at the end of lease period.

(i) Final Slope Angle to Be Adopted: Height of the bench is limited to 1.5 m while width of individual bench shall be kept 6.0m. River bank side will be protected by working in dry part of the river and by leaving safety distance of the width of the river of 5 meter. Bank side natural slope will not be disturbed. This will prevent collapse of bank and erosion. However, the height of the bank with respect to river bed is varying from 3-4 meters.

(ii) During plan period workings will be carried out in the Sand Ghat at a time of the Applied Area simultaneously. Scattered workings will ensure safety, remove congestion of vehicles and will have better control and management.

(iii) Ultimate Capacity of Dumps: There will be no OB removal / during the plan period. Therefore no proposal has been envisaged for its separate dumping. No outside material will be filled up in the extracted zone. The conceptual plan & section of each mining plots are attached with mine plan

### **2.6.0 Anticipated life of mine**

There is as such no specific life of the mine as the area under reference is inactive part of river bed of the river and its pale channels and whatever quantity of minor minerals are extracted from the Applied Area during five year; almost equal to extracted quantity of the

Project: Sand Mining Project, On Son River At Mainpura Sohsa (Arwal Son - 13) Sand (Area- 44.46 Ha)

same are replenished every year and the river bed area will be leveled & restored back. However, as lease has been granted for 5 years, mining will be done for the allotted time.

### **2.6.1 Waste –disposal arrangement**

No top soil is present in the mining area as it is riverbed. Small amount of domestic waste will be generated by the workers at the site, which will be disposed off through proper municipal way. No other waste generation is expected. No waste will be thrown into the streams or left on the banks. Separate bins will be kept within the lease area for domestic wastes.

## **2.7 GENERAL FEATURES**

### **2.7.1 Land-use pattern**

The mine lease area is flat river bed and river banks. There is no forest land or agriculture land in the mine lease area. The entire mining lease lies within River.

### **2.7.2 Surface drainage pattern**

The mine site lies on the dry bed of Son River so there will be no impact on surface water.

Project: Sand Mining Project, On Son River At Mainpura Sohsa (Arwal Son - 13) Sand (Area-44.46 Ha)

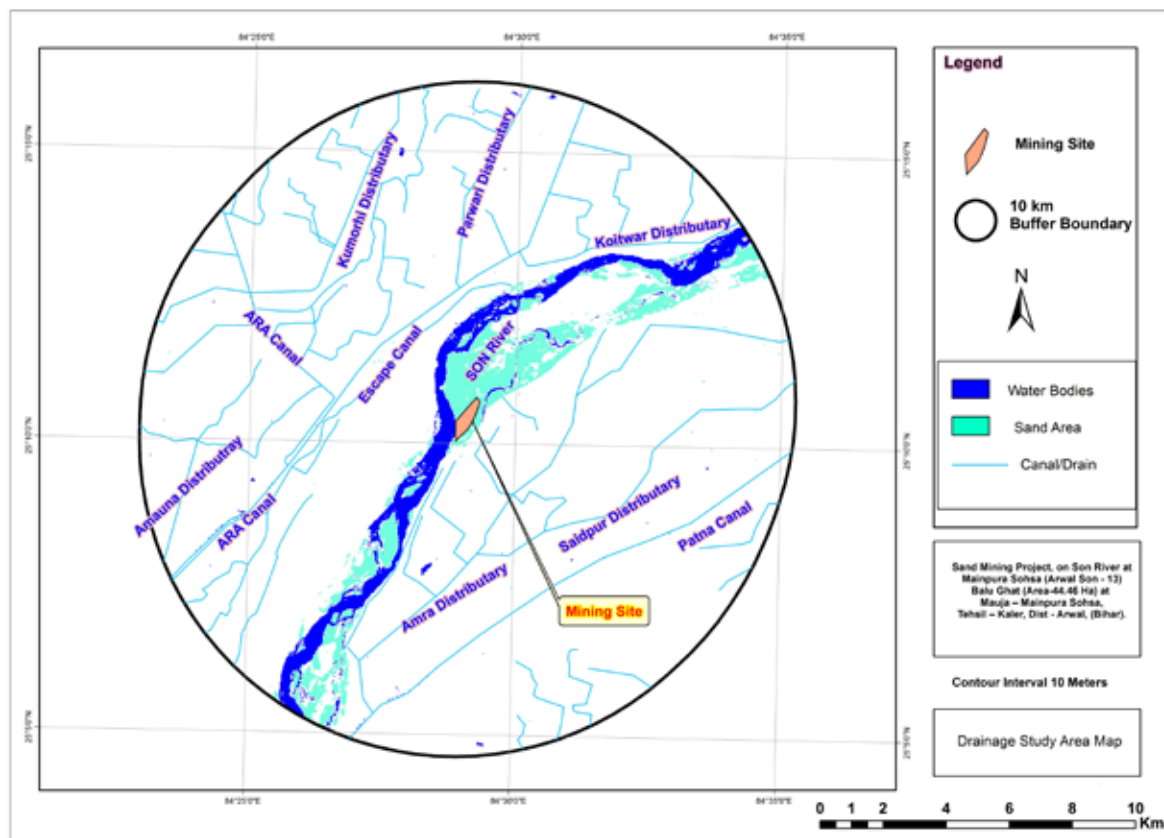


FIG-2.4, DRAINAGE MAP

### 2.7.3 Man power requirement

The manpower requirement for the proposed project will be around 61 who will be utilized for excavation & loading of minerals into trucks or tractor-trolleys. Break-up of Man-power requirement is given in below **Table 2.8**.

**Table 2.8, Manpower Requirement**

S. No.	Category	Numbers
1.	Administration	1
2.	Supervisor	4
3.	Skilled	16
4.	Un-skilled	40
<b>TOTAL</b>		<b>61</b>

Project: Sand Mining Project, On Son River At Mainpura Sohsa (Arwal Son - 13) Sand (Area- 44.46 Ha)

#### 2.7.4 Water supply

Water requirement for the proposed project will be provided for the workers for drinking & domestic purpose. Water will also be provided for dust suppression. Fresh water will be only used for drinking purpose. The break up for water requirement is given below:

Activity	Calculation	Round off Figure in KLD
Drinking	@ 10 lpcd per labor $10 \times 61 / 1000 = 0.61$ KLD	0.61
Dust Suppression	<b>Total approach road to be water sprinkled = 990 m</b> $395 \text{ m} \times 6 \text{ m} \times 0.5 \times 2 \text{ times} / 1000 = 2.37$ KLD	2.37
Plantation	445 plant (during plan period) @ 5 L/per plant = $445 \times 5 \text{ lts} = 2225 / 1000 = 2.225$ KLD	2.225
<b>Total</b>		<b>5.20</b>

The water will be supplied from available sources from nearby village.

#### 2.7.5 Site services

The following facilities/amenities will be extended by the mine management under site services:

- A temporary rest shelter will be provided for the workers near to the site for rest.
- Provisions will also be made for following in the rest shelter:
  - ✓ First aid box will be made available at the site. In emergency worker.
  - ✓ Sanitation facility i.e. septic tank or community toilet facility will be provided for the workers.
  - ✓ Mask and gloves distribution to the workers.

#### 2.7.6 Extent of mechanization

The operation will be open cast semi- mechanized/OTFM with use of excavators/JCBs truck /tractors combination or Manually etc. The sand will be collected in its existing form.

Project: Sand Mining Project, On Son River At Mainpura Sohsa (Arwal Son - 13) Sand (Area- 44.46 Ha)

**Table 2.9, List of Equipment to be used**

S.No	Name of Machinery	Capacity	Fuel Consumption	No of Machinery
1	JCB	1.00 m <sup>3</sup>	10 Ltr/hr	02
2	Excavator	2.00 m <sup>3</sup>	16 Ltr/hr	07
3	Trucks	12 Tonnes	4 Ltr/hr	334
4	Tractors	04 Tonnes	2 Ltr/hr	345
5	Water Tanker	4000 liter	4 Ltr/hr	2
6	Light Vehicles	As per requirement	4 Ltr/hr	2

### 2.7.7 Statutory requirements

It is accepted that effective resource management cannot be done in isolation. The proponent therefore vigorously pursues approaches towards coordination and integration where possible, so as to lead to coordinated regulatory systems.

Various acts dealing with matters relating to the conservation and protection of the environment and which a holder of a mining authorization must also take cognizance of include inter alia, the following:

- Bihar Minor Mineral Concession Rule, 2014 amended till date.
- The Mines Act, 1952.
- The Mines and Mineral (Development and Regulation) Act, 1957.
- Mines Rules, 1955.
- Mineral Concession Rules, 1960.
- Mineral Conservation and Development Rules, 1988.
- The Water (Prevention and Control of Pollution) Act, 1974.
- The Air (Prevention and Control of Pollution) Act, 1981.
- The Environment (Protection) Act, 1986.
- The Forest (Conservation) Act, 1980.
- The Wildlife (Protection) Act, 1972.

\*\*\*\*\*

### **3.0 General**

The main objective of describing the environment which may be potentially affected, are i) to assess present environmental quality and the environmental impacts and ii) to identify environmentally significant factors that could preclude mine development. Mining activities affect the existing status of environment at site. In order to maintain the existing environmental status at mining site it is essential study existing environmental status and assess the impact of upcoming project on various environmental components. This chapter gives idea of description of environment status of the study area and this will be helpful for assessment of impact on the environment due to proposed mining activities. Baseline environmental status in and around proposed mining lease area describe the existing conditions of air, noise, water, soil, biological and socio-economic environment. The proposed project as a center, a radial distance of 10 km is considered as study area for baseline data collection and environmental monitoring. The data was collected for various environmental attributes so as to compute the impacts that are likely to arise due to proposed development activity.

#### **3.0.1 Study area & study period**

The proposed project as a center, a radial distance of 10 km is considered as study area for baseline data collection and environmental monitoring. The baseline environment quality was carried out over a radial distance of 10 km around the mining lease area during the months of Dec 2022, Jan-Feb 2023.

#### **3.0.2 Methodology**

Base line attributes like ambient air, water, meteorology, noise, Soil, Ecology and Biodiversity & Socio Economy condition were collected as per approved term of reference. Secondary data was also collected from various government department as well as local people. Methodology adopted in this study is as follows.

- ü By setting up meteorological station near project site
- ü Collection of site specific meteorological data at the mine site.
- ü Installation of respiratory dust samplers (for PM<sub>10</sub>, PM<sub>2.5</sub>) at different location in the study area for the collection of primary air pollutant and analyze the existing air conditions.

Project: Sand Mining Project, On Son River At Mainpura Sohsa (Arwal Son - 13) Sand (Area- 44.46 Ha)

- ü Carrying out a detailed biological study for the Core and Buffer Zone
- ü Soil sample were collected from various location in the study area to analyze physical and chemical characteristics for assessment of impact on soil.
- ü Surface and Ground water samples were also collected from the various locations in the study area for analysing the existing water quality in the study area.
- ü Noise measurement has been done in core zone as well as buffer zone to analyze the existing situation in the study area.
- ü Literature review that includes identification of relevant data and articles from various publications, various government agencies and other sources for socio-economy, demography has been done with primary data collection in 10 km of the study area.
- ü Existing pollution load has been also identified in the buffer zone due to similar activities.
- ü Accordingly, field studies were carried out during the study period (Dec 2022, Jan-Feb 2023) to establish the existing baseline conditions.

### 3.1 Land Environment of the Study area

#### Land use

Land use involves the management and modification of natural environment or wilderness in to built environment such as settlements and semi-natural habitats such as arable fields, pastures, and managed woods. It also has been defined as "the total of arrangements, activities and inputs that people undertake in a certain land cover type.

#### Land cover

Land cover is the physical material at the surface of the earth. Land covers include grass, asphalt, trees, bare ground, water, etc. Earth cover is the expression used by ecologist Frederick Edward Clements that has its closest modern equivalent being vegetation. The expression continues to be used by the Bureau of Land Management.

To assess the land use pattern surrounding the 10 km radius of the site, a detailed study was carried out. The land use pattern study reveals that the 10 km environs is predominantly agricultural land. The land use details are given in **Table- 3.1** and shown in **Figure-3.1**

**Table 3.1: Land Use Cover of the Project Study Area**



Project: Sand Mining Project, On Son River At Mainpura Sohsa (Arwal Son - 13) Sand (Area- 44.46 Ha)

Land use Type	Area (Ha)	Area (%)
Settlement	619.03	1.78
Water Bodies	1140.37	3.28
Sand Area	1432.19	4.12
Scrub/Plantation	687.41	1.97
Agriculture land	30856.14	88.83
<b>TOTAL</b>	<b>34735.14</b>	<b>100</b>

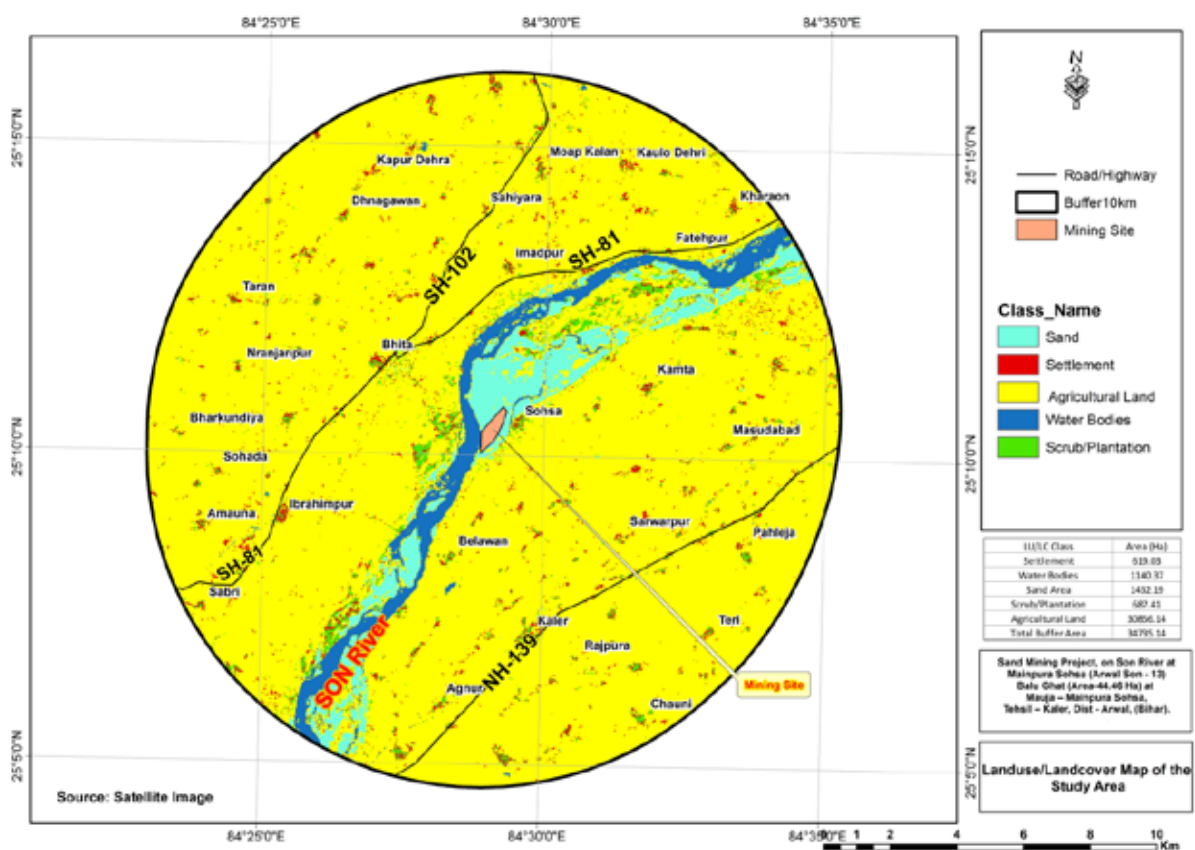


FIGURE 3.1: LAND USE COVER OF THE PROJECT STUDY AREA

### 3.2 Water Environment

Water quality assessment is one of the essential components of EIA study. Such assessment helps in evaluating the existing health of water body and suggesting appropriate mitigation measures to minimize the potential impact from development projects. Water quality of ground water has been studied in order to assess proposed water-uses in construction, drinking, cooling and horticulture purpose.

Project: Sand Mining Project, On Son River At Mainpura Sohsa (Arwal Son - 13) Sand (Area- 44.46 Ha)

The water quality at the site and other locations within the 10 km impact zone was monitored during Dec 2022. The water sampling locations marked within the study are presented in **Table 3.2** and **Figure 3.2** and the result of the monitoring and analysis are presented in the **Table 3.3** showing Water Quality Monitoring Locations marked within the Study Area.

Table 3.2: Water sampling locations

SITE	Location	Distance, direction
Ground water		
GW1	Near Project Site	----
GW2	Sohsa	0.85 Km, East
GW3	Kamta	4.70 Km, ENE

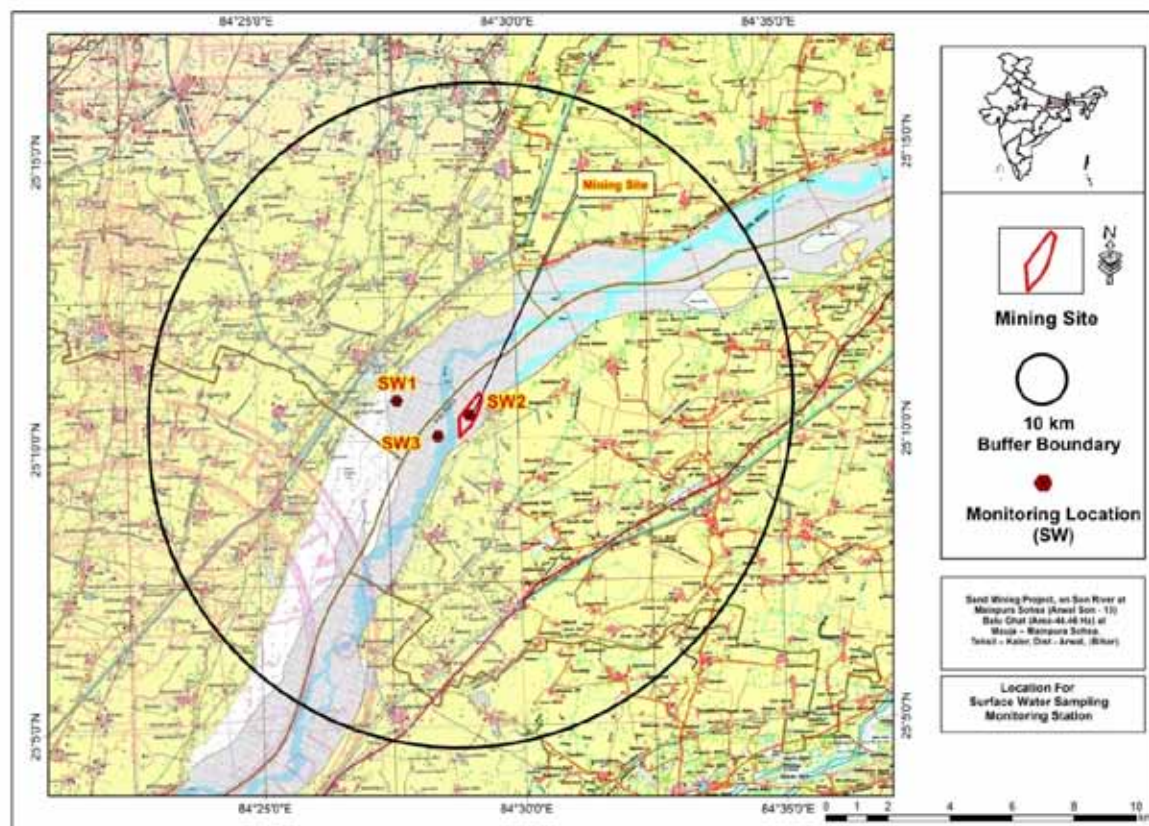


Figure 3.2 Water Sampling Location Map

**CHAPTER-3****BASELINE ENVIRONMENTAL STATUS**

Project: Sand Mining Project, On Son River At Mainpura Sohsa (Arwal Son - 13) Sand (Area-44.46 Ha)

**Table 3.3 Water Quality Monitoring Result**

S. No.	Parameter	Unit	Limit (as per IS:10500)		GW1 Upstream	GW2 Project Site	GW3 Downstream
			Desirable	Permissible			
1	Colour	Hazen	5	25	<2	<2	<2
2	Odour	-	Un	-	Un	Un	Un
3	Taste	-	Agreeable	-	Agreeable	Agreeable	Agreeable
4	Turbidity	NTU	5	10	<1	<1	<1
5	pH	-	6.5-8.5	No Relaxation	7.53	7.46	7.49
6	Total Hardness (as CaCO <sub>3</sub> )	µg/l	300	600	298	346	285
7	Iron (as Fe)	µg/l	0.3	1	0.38	0.34	0.25
8	Chlorides (as Cl)	µg/l	250	1000	62	71	59
9	Fluoride (as F )	µg/l	1	1.5	0.7	0.9	0.6
10	TDS	µg/l	500	2000	536	580	509
11	Calcium(as Ca <sup>2+</sup> )	µg/l	75	200	70	75	68
12	Magnesium (as µg <sup>2+</sup> )	µg/l	30	100	29	36	28
13	Copper (as Cu)	µg/l	0.05	1.5	<0.01	<0.01	<0.01
14	Manganese(as Mn)	µg/l	0.1	0.3	0.01	0.03	0.01
15	Sulphate (as SO <sub>4</sub> )	µg/l	200	400	26	28	22
16	Nitrate(as NO <sub>3</sub> )	µg/l	45	No Relaxation	5	6	5
17	Phenolic Compounds (as C <sub>6</sub> H <sub>5</sub> OH)	µg/l	0.001	0.002	<0.001	<0.001	<0.001
18	Mercury (as Hg)	µg/l	0.001	No Relaxation	<0.001	<0.001	<0.001
19	Cadmium (as Cd)	µg/l	0.01	No Relaxation	<0.01	<0.01	<0.01
20	Selenium ( as Se )	µg/l	0.01	No Relaxation	<0.01	<0.01	<0.01
21	Arsenic (as As)	µg/l	0.01	No Relaxation	<0.01	<0.01	<0.01
22	Cyanide (as CN )	µg/l	0.05	No Relaxation	<0.01	<0.01	<0.01
23	Lead (as Pb)	µg/l	0.05	No Relaxation	0.05	0.04	0.03
24	Zinc (as Zn)	µg/l	5	15	0.26	0.15	0.18
25	Anionic Detergent (as MBAS)	µg/l	0.2	1	<0.01	<0.01	<0.01
26	Chromium (as Cr <sup>6+</sup> )	µg/l	0.05	No Relaxation	<0.01	<0.01	<0.01
27	Mineral oil	µg/l	0.01	0.03	<0.01	<0.01	<0.01
28	Alkalinity as CaCO <sub>3</sub>	µg/l	200	600	325	343	311
29	Aluminium (as Al)	µg/l	0.03	0.2	<0.02	<0.02	<0.02
30	Boron (as B)	µg/l	1	5	<0.1	<0.1	<0.1
<b>Microbiological Parameter</b>							
31	Total Coliform	MPN /100ml	10 , Max	-	6	8	4
32	E.coli	E.coli	Absent	-	Absent	Absent	Absent

Project: Sand Mining Project, On Son River At Mainpura Sohsa (Arwal Son - 13) Sand (Area- 44.46 Ha)

		/100ml					
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Observation:

Analysis of results of ground water reveals the following: -

- pH varies from 7.46 at to 7.53.
- Total hardness varies from 285 mg/l to 346 mg/l .
- Total dissolved solids vary from 509 mg/l to 580.

The ground water from all sources remains suitable for drinking purposes as all the constituents are within the limits prescribed by drinking water standards promulgated by Indian Standards IS: 10500.

### 3.2 (b) SURFACE WATER

Three surface water samples were collected from the study area. The location of surface water samples is given in Table 3.3 (iii). The physio-chemical analysis of the these samples are given in the Table 3.3 (iv)

#### Surface water sampling locations

Station No.	Location	Direction	Distance (km)
SW1	Upstream	W	2.25
SW2	Project Site	-	0
SW3	Downstream	SW	1.0

**Table 3.3 (iv) Physio-chemical properties of surface water**

S. No.	Parameter	Unit	S.W. 1	S.W. 2	S.W. 2
			Near Project Site	Sohsa	Kamta
1	pH	-	7.14	7.5	7.3
2	Dissolved oxygen	mg/l	7.6	7.3	7.5
3	BOD (3 Days at 27°C)	mg/l	3	3	2
4	Free Ammonia (as N)	mg/l	<0.1	<0.1	<0.1
5	Sodium Adsorption Ratio	-	1.15	1.04	1.20

Project: Sand Mining Project, On Son River At Mainpura Sohsa (Arwal Son - 13) Sand (Area- 44.46 Ha)

6	Boron	mg/l	0.2	0.3	0.4
7	Conductivity	μmhos/cm	497	519	544
8	Turbidity	NTU	3	5	4
9	Magnesium Hardness ( as CaCO <sub>3</sub> )	mg/l	83	92	96
10	Total Alkalinity (as CaCO <sub>3</sub> )	mg/l	193	215	220
11	Chloride (as Cl)	mg/l	35	31	39
12	Sulphate (as SO <sub>4</sub> )	mg/l	7	6	5
13	Nitrate (as NO <sub>3</sub> )	mg/l	2.7	2.1	2.6
14	Fluoride (as F)	mg/l	0.5	0.7	0.7
15	Sodium (as Na)	mg/l	35	33	31
16	Potassium (as K)	mg/l	2.4	3.2	3.1
17	TKN (as N)	mg/l	1.9	2.3	2.1
18	Total Phosphorous (as PO <sub>4</sub> )	mg/l	0.16	0.19	0.17
19	COD	mg/l	15	17	16
20	Phenolic compounds (as C <sub>6</sub> H <sub>5</sub> OH)	mg/l	<0.001	<0.001	<0.001
21	Iron (as Fe)	mg/l	0.26	0.41	0.42
22	Zinc (as Zn)	mg/l	0.08	0.05	0.05
23	Arsenic (as As)	mg/l	<0.01	<0.01	<0.01
24	Mercury (as Hg)	mg/l	<0.001	<0.001	<0.001
25	Total Coliform	MPN/100ml	1260	1450	1015
26	Faecal Coliform	MPN/100ml	615	712	503

### 3.2.1 Sampling frequency

Parameters for analysis of water quality were selected based on the utility of the particular source of water as per CPCB guidance. Surface water quality was monitored for parameters as per Methods of Monitoring & Analysis published by CPCB and it was rated according to the CPCB Water Quality Criteria against A, B, C, D & E class of water. Water samples were collected as Grab water sample from sampling location for complete physico-chemical and bacteriological tests respectively. The samples were analyzed as per standard procedure / method given in IS: 10500.

Project: Sand Mining Project, On Son River At Mainpura Sohla (Arwal Son - 13) Sand (Area- 44.46 Ha)

The surface water quality is compared with CPCB water quality criteria mentioned in **Table 3.4** below:

**Table 3.4, Water quality criteria as per Central Pollution Control Board**

Designated-Best-Use	Class of water	Criteria
Drinking Water Source without conventional treatment but after disinfection	A	Total Coliforms Organism MPN/100ml shall be 50 or less pH between 6.5 and 8.5 Dissolved Oxygen 6mg/l or more Biochemical Oxygen Demand 5 days 20°C 2mg/l or less
Outdoor bathing (Organized)	B	Total Coliforms Organism MPN/100ml shall be 500 or less; pH between 6.5 and 8.5; Dissolved Oxygen 5mg/l or more Biochemical Oxygen Demand 5 days 20°C 3mg/l or less
Drinking water source after conventional treatment and disinfection	C	Total Coliforms Organism MPN/100ml shall be 5000 or less; pH between 6 to 9; Dissolved Oxygen 4mg/l or more Biochemical Oxygen Demand 5 days 20°C 3mg/l or less
Propagation of Wild life and Fisheries	D	pH between 6.5 to 8.5 Dissolved Oxygen 4mg/l or more Free Ammonia (as N) 1.2 mg/l or less
Irrigation, Industrial Cooling, Controlled Waste disposal	E	pH between 6.0 to 8.5 Electrical Conductivity at 25°C micro mhos/cm Max.2250 Sodium absorption Ratio Max. 26 Boron Max. 2mg/l
	Below-E	Not Meeting A, B, C, D & E Criteria

As per the standard practice, one sample from each station was taken in Dec-22. Sampling was done by standard sampling technique as per the Standard Methods. Necessary precautions were taken for preservation of samples.

### 3.2.2 Result & Conclusion:

The analysis results indicate that the pH ranges between 7.14 and 7.50.

Dissolved Oxygen (DO) was observed in the range of 7.6 to 7.6 mg/l against the minimum requirement of 4 mg/l. BOD values were observed to be in the range of 2-4mg/l.



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The chlorides were found to be in the range of 31-39 mg/l and sulphates were found to be in the range of 5-7 mg/l

Bacteriological examination of surface water samples revealed the presence of total coliform in range of 1015 MPN/100 ml to 1450 MPN/100 ml.

Based on the results it is evident that most of the parameters of the samples comply with 'Category C' standards indicating their suitability as Drinking water with conventional treatment followed by disinfections

### 3.3 Air Environment

Meteorology is the key to understand the air quality. The essential relationship between meteorology and atmospheric dispersion involves the wind in the broadest sense. Wind fluctuations over a very wide range of time, accomplish dispersion and strongly influence other processes associated with them.

A meteorological station was set up at the proposed mine premises. Meteorological data was generated during the winter season monitoring period and shown in **Table-3.5**

The following parameters were recorded at hourly intervals continuously during monitoring period, except rainfall which was recorded on daily basis.

- Wind speed
- Wind Direction
- Air Temperature

**Table-3.5, Summarized project site meteorological data for Winter Season**

Month	Temperature °C		Wind Speed (Km/Hr)	
	Min	Max	Avg	Max
DEC 2022	13	28	9.3	12.6
JANUARY 2023	11	28	9.6	13.3
FEBRUARY 2023	13	34	11	17.7

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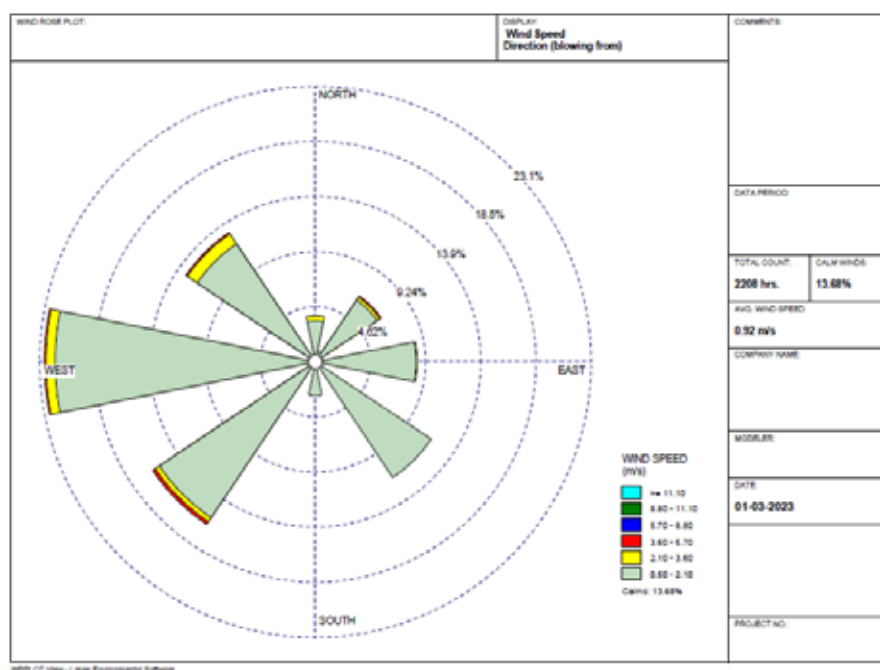


Figure 3.3 (a), Wind Rose Diagram (at site)

### 3.3.1 Secondary Data Collected from IMD

Secondary data from IMD- Patna has been collected for temperature, relative humidity, rainfall, wind speed and direction. The data at IMD is usually measured twice a day viz., at 0830 and 1730 hr.

The meteorological data is collected from the IMD- Patna is about 80 km from project site, which is the nearest operating IMD station to the project site. The data collected from IMD includes wind speed, wind direction, temperature, relative humidity and rainfall for the year 1981-2010. The monthly maximum, minimum and average values are collected for all the parameters except wind speed and direction. The collected data is tabulated in **Table-3.6**

When the data generated at project site is compared with the data recorded at IMD, it is observed that the data generated at the site is broadly in comparison with regional meteorology, except for minor variations as described above.

### 3.3.2 Comparison of primary and secondary data

The India Meteorological Department (IMD) records the data twice a day viz. 0830 hr and 1730 hr while the site-specific data has been recorded at an hourly interval. On comparison of



Project: Sand Mining Project, On Son River At Mainpura Sohsa (Arwal Son - 13) Sand (Area- 44.46 Ha)

site specific data generated for study period vis-à-vis the IMD data, slight variations were observed. The following observations are brought out:

When the data generated at project site is compared with the data recorded at IMD, it is observed that the data generated at the site is broadly in comparison with regional meteorology, except for minor variations as described above such as predominant wind direction is NW at IMD while at project site predominant wind direction is West.

### 3.3.3 Ambient Air Quality

The ambient air quality was monitored in the impact area as per MoEF& CC guidelines. The study area represents entirely rural environment. The prime objective of the baseline air quality study was to assess the ambient air quality of the mining lease area.

### 3.3.4 Selection criteria for monitoring location

The baseline status of the ambient air quality has been assessed through a scientifically designed ambient air quality network. The design of monitoring network in the air quality surveillance programme has been based on the following consideration.

- Meteorological parameters including wind direction
- Topography of the study area
- Representative of regional background air quality for obtaining baseline status
- Representative of likely impact areas.

Ambient Air Quality Monitoring (AAQM) stations were set up at 7 locations with due consideration to the above mentioned points. AAQM locations were selected in downwind, upwind as well as crosswind direction of the proposed mining lease area covering core and buffer zones. The details of the monitoring stations are given in **Figure 3.4** and shown in **Table-3.7**

Ambient air quality monitoring was carried out twice a week with a frequency of 24 hours for three months during the study period. The common air pollutant namely Particulate Matter-10 (PM<sub>10</sub>) & PM<sub>2.5</sub>, Sulphur-dioxide (SO<sub>2</sub>) and Oxides of Nitrogen (NO<sub>2</sub>) has been measured through a planned field monitoring.

The baseline values of the air pollutants of concern are presented in Tables below statistical

Project: Sand Mining Project, On Son River At Mainpura Sohsa (Arwal Son - 13) Sand (Area- 44.46 Ha)

parameters like minimum, maximum, average and 98<sup>th</sup> percentiles have been computed from the observed field data for all sampling stations and are given **Table-3.8, Table-3.9, Table-3.10& Table 3.11**. These are compared with the standards prescribed by Central PollutionControl Board (CPCB) for industrial, residential and rural zone.

**Table 3.7Ambient Air Quality Monitoring Stations**

SITE	Location	Distance, direction
AAQ1	Project Site	----
AAQ2	Sohsa	0.85 Km, East
AAQ3	Kamta	4.70 Km, ENE
AAQ4	Sarwarpur	5.0 Km, SE
AAQ5	Danwar	6.0 Km,W
AAQ6	Belawan	4.10 Km,SSW
AAQ7	Bihta	3.85 Km, NW

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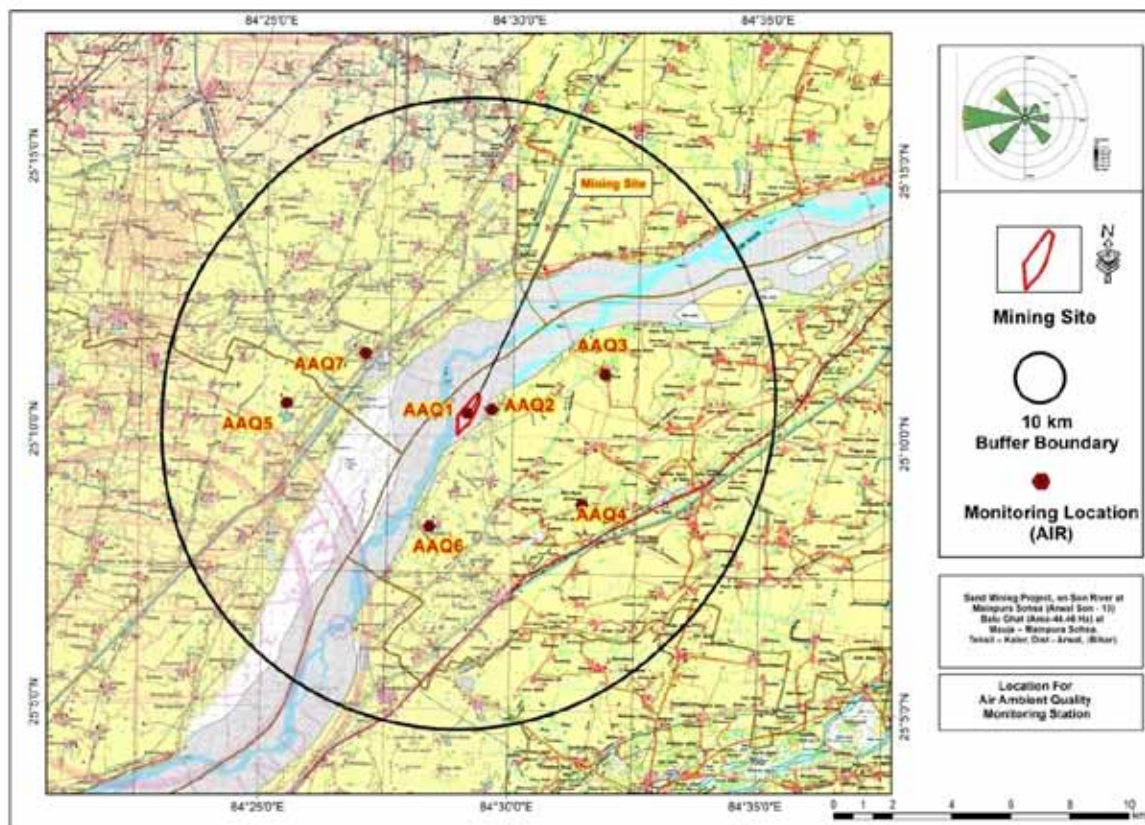


Figure 3.4 Ambient Air Quality Monitoring Stations

Table-3.8 Ambient Air Quality in the Study Area PM2.5

Location Code	PM2.5 ( $\mu\text{g}/\text{m}^3$ )				
	Name of the station	Min	Max	Average	98 <sup>th</sup> Percentile
AAQ1	Project Site	38	42.4	39.95	42.17
AAQ2	Sohsa	38.9	43.3	40.84	43.07
AAQ3	Kamta	38.3	42.7	40.25	42.47
AAQ4	Sarwarpur	39.1	43.7	41.29	43.47
AAQ5	Danwar	38.6	43	40.53	42.77
AAQ6	Belawan	37.9	49.9	42.87	49.44
AAQ7	Bihta	36.1	47.5	40.85	47.04

Table-3.9 Ambient Air Quality in the Study Area PM10

Location Code	PM10 ( $\mu\text{g}/\text{m}^3$ )				
	Name of the station	Min	Max	Average	98 <sup>th</sup> Percentile

Project: Sand Mining Project, On Son River At Mainpura Sohsa (Arwal Son - 13) Sand (Area- 44.46 Ha)

AAQ1	Project Site	73.9	88.2	80.77	87.14
AAQ2	Sohsa	75.6	90.2	82.58	89.14
AAQ3	Kamta	74.5	88.9	81.39	87.84
AAQ4	Sarwarpur	72.3	97	82.99	93.23
AAQ5	Danwar	75	89.5	81.96	88.44
AAQ6	Belawan	70.3	89.4	80.68	89.17
AAQ7	Bihta	66.4	86.4	76.55	85.25

**Table-3.10 Ambient Air Quality in the Study Area SO<sub>2</sub>**

Location Code	SO <sub>2</sub> (µg/m <sup>3</sup> )				
	Name of the station	Min	Max	Average	98 <sup>th</sup> Percentile
AAQ1	Project Site	4.2	8.1	5.71	7.92
AAQ2	Sohsa	5.7	9.5	7.39	9.18
AAQ3	Kamta	4.6	7.4	5.87	7.22
AAQ4	Sarwarpur	6	9.5	7.32	8.99
AAQ5	Danwar	5.2	9	6.89	8.68
AAQ6	Belawan	4.6	6	5.09	5.82
AAQ7	Bihta	4.4	7.2	5.59	7.02

**Table-3.11 Ambient Air Quality in the Study Area NO<sub>2</sub>**

Location Code	NO <sub>2</sub> (µg/m <sup>3</sup> )				
	Name of the station	Min	Max	Average	98 <sup>th</sup> Percentile
AAQ1	Project Site	6.9	16	10.22	15.63
AAQ2	Sohsa	9.4	17.2	12.67	16.74
AAQ3	Kamta	7.6	18.6	10.75	17.54
AAQ4	Sarwarpur	9.9	17.7	12.51	16.41
AAQ5	Danwar	8.6	17.8	12.05	16.79
AAQ6	Belawan	10.5	17.8	13.86	17.62
AAQ7	Bihta	9.3	16.6	13	16.42

### 3.3.4.1 Baseline Scenario

#### Particulate Matter (PM<sub>2.5</sub>)

Fine particles include all types of combustion, including motor vehicles, power plants, residential wood burning, forest fires, agricultural burning, and some industrial processes. In general some of the important sources of particulate matter are mines. The following sources of particulate matter in the study area are identified:

Project: Sand Mining Project, On Son River At Mainpura Sohsa (Arwal Son - 13) Sand (Area- 44.46 Ha)

- Emission due to vehicular movement
- Dust generation from ground or other mining operations

PM<sub>2.5</sub> recorded within the study area was in the range of 36.1  $\mu\text{g}/\text{m}^3$  to 49.9  $\mu\text{g}/\text{m}^3$  with the 98th percentile ranging between 42.17  $\mu\text{g}/\text{m}^3$  to 49.44  $\mu\text{g}/\text{m}^3$  ref. Table 3.3 were compared with the National Ambient Air Quality Standards (NAAQS) and found that all sampling stations recorded in the study area are within the applicable limits i.e., 60 $\mu\text{g}/\text{m}^3$  for PM<sub>2.5</sub> for industrial, residential, rural and other areas.

### **Suspended Particulate Matter (PM<sub>10</sub>)**

Suspended particulate matter in general terms is the particulate matter in suspension in ambient air. It includes dust, smoke etc. In general some of the important sources of suspended particulate matter are mines. The following sources of suspended particulate matter in the study area are identified:

- Emission due to vehicular movement
- Dust generation from ground or other mining operations

The minimum and maximum level of PM<sub>10</sub> recorded within the study area was in the range of 66.4  $\mu\text{g}/\text{m}^3$  to 97 $\mu\text{g}/\text{m}^3$  with the 98<sup>th</sup> percentile ranging between 85.25  $\mu\text{g}/\text{m}^3$  to 93.23  $\mu\text{g}/\text{m}^3$ . The 24 hourly average values of PM<sub>10</sub> were compared with the National Ambient Air Quality Standards (NAAQS) and found that all sampling stations recorded in the study area are within the applicable limits i.e., 100  $\mu\text{g}/\text{m}^3$  for PM<sub>10</sub> in industrial, residential, rural and other areas.

### **Sulphur Dioxide (SO<sub>2</sub>)**

Sulphur dioxide gas is an inorganic gaseous pollutant. Sulphur dioxide emissions are expected to be emitted wherever combustion of any fuel containing Sulphur takes place. The Sulphur in the fuel will combine with oxygen to form Sulphur dioxide. The following sources of Sulphur dioxide in the study area are identified:

- Emissions from domestic/consumption of fuel (coal, diesel, etc)

Sulphur dioxide in atmosphere is significant because of its toxicity; Sulphur dioxide is capable of causing illness and lung injury. Further it can combine with water in the air to form toxic acid aerosols that can corrode metal surfaces, fabrics and the leaves of plants. Sulphur dioxide is an irritant to the eyes and respiratory system. Excessive exposure to Sulphur dioxide causes breathing related diseases as it affects the lungs.

Project: Sand Mining Project, On Son River At Mainpura Sohsa (Arwal Son - 13) Sand (Area- 44.46 Ha)

The minimum and maximum concentration of SO<sub>2</sub> recorded within the study area was 4.2 to 6.0 µg/m<sup>3</sup> with the 98<sup>th</sup> percentile ranging between 5.82 µg/m<sup>3</sup> to 9.18 µg/m<sup>3</sup>.

The 24 hourly average values of SO<sub>2</sub> were compared with the National Ambient Air Quality Standards (NAAQS) and it was found that all sampling stations recorded values are below the applicable limits 80 µg/m<sup>3</sup> for Residential, Rural and other areas.

### Oxides of Nitrogen (NO<sub>2</sub>)

The important sources of oxides of Nitrogen are from utilities and auto exhaust due to vehicular movement in mine lease area. The following sources of oxides of nitrogen in the study area are identified.

- Emissions from vehicular movements in the study area.

Oxides of Nitrogen in the presence of sunlight will undergo reactions with a number of organic compounds to produce all the effects associated with photochemical smog. NO<sub>2</sub> has inherent ability to produce deleterious effects by themselves like toxicity. It causes asphyxiation when its concentration is great enough to reduce the normal oxygen supply from the air. The minimum and maximum level of NO<sub>2</sub> recorded within the study area was in the range of was 6.9 µg/m<sup>3</sup> to 18.6 µg/m<sup>3</sup> with the 98<sup>th</sup> percentile ranging between 15.63 µg/m<sup>3</sup> to 17.62 µg/m<sup>3</sup>.

The 24 hourly average values of NO<sub>2</sub> were compared with the National Ambient Air Quality Standards (NAAQS) and it was found that all sampling stations recorded values are below the applicable limits 80 µg/m<sup>3</sup> for Residential, Rural and other areas.

### 3.4 SOIL ENVIRONMENT

Soil may be defined as a thin layer of earth's crust, a medium for the growth of plants. The soil characteristics include both physical and chemical properties. The soil survey and soil sample were carried out / collected to assess the soil characteristics of the study area. Soil samples were collected from 5 locations and analyzed as per CPCB norms. The soil sampling locations are marked in **Figure 3.5** and shown in **Table 3.12** The physico-chemical characteristic of these soil samples is given in **Table 3.13**

**Table 3.12 Description of soil sampling locations**

SITE	Location	Distance, direction
------	----------	---------------------



Project: Sand Mining Project, On Son River At Mainpura Sohsa (Arwal Son - 13) Sand (Area- 44.46 Ha)

SQ1	Sohsa	0.85 Km, East
SQ2	Kamta	4.70 Km, ENE
SQ3	Sarwarpur	5.0 Km, SE
SQ4	Danwar	6.0 Km,W
SQ5	Belawan	4.10 Km,SSW

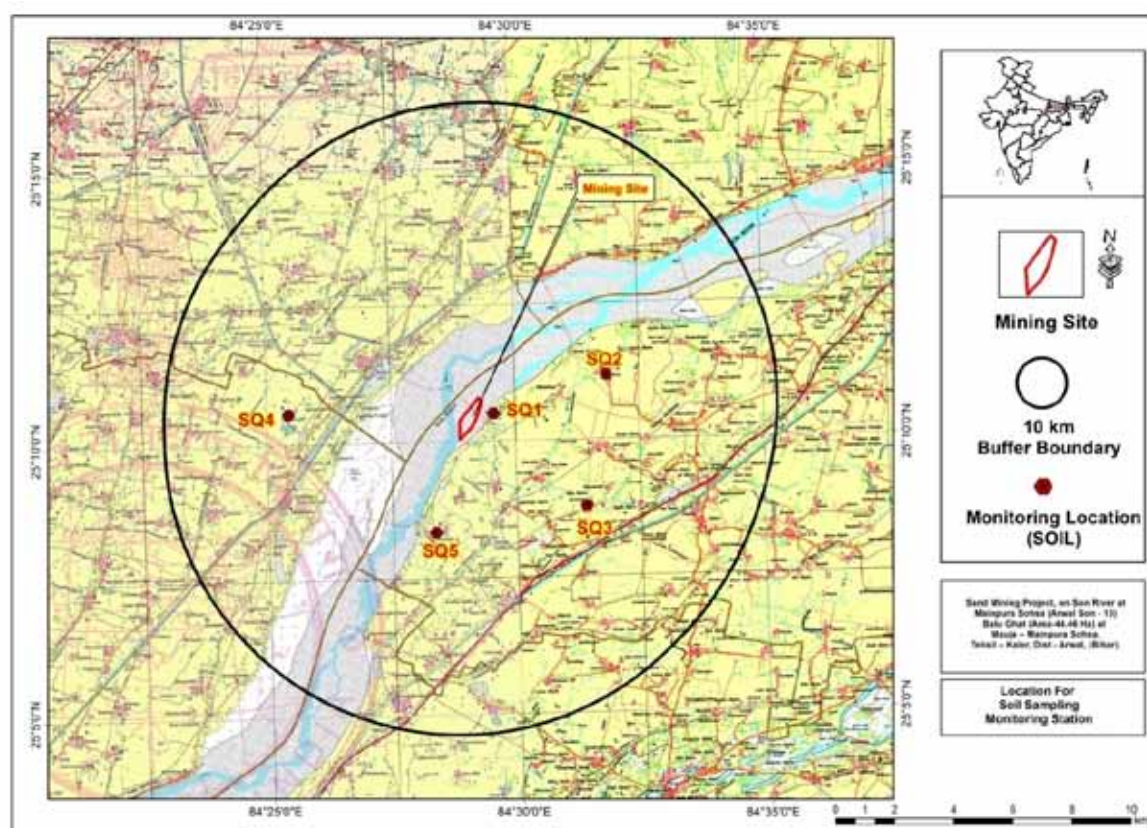


Figure 3.5, Soil Sampling Locations

Table 3.13 Physico-chemical properties of soil

S. No.	Parameter	Unit	SQ-1 Sohsa	SQ-2 Kamta	SQ-3 Shrirampur	SQ-4 Danwar	SQ-5 Belawan
1	Texture	-	Sand	Loamy Sand	Sandy Loam	Sandy Loam	Sandy Loam
	Silt	%	1.02	8	17.15	18.75	28.54
	clay	%	5.86	7.28	13.57	15.24	14.21
	Sand	%	93.12	84.72	69.28	66.01	57.25
2	pH	-	8.41	8.07	8.14	8.24	8.13
3	Electrical	μmhos/c	179	141	162	153	153

Project: Sand Mining Project, On Son River At Mainpura Sohsa (Arwal Son - 13) Sand (Area- 44.46 Ha)

	Conductivity	m					
4	Cation exchange capacity	meq/100 gm	22.13	27.90	24.01	22.10	23.21
5	Potassium	mg/kg	129.65	123.58	136.54	142.21	135.62
6	Sodium	mg/kg	81.28	87.62	70.46	72.10	67.85
7	Calcium	mg/kg	3674.15	4752.69	4017.56	3917.46	4125.36
8	Magnesium	mg/kg	369.46	413.56	392.41	354.41	394.21
9	Sodium Absorption Ratio	-	0.34	0.32	0.28	0.25	0.26
10	Water Holding Capacity	%	16.4	16.3	19.26	18.24	16.26
11	Porosity	%	46.64	43.39	42.18	41.18	43.31

### Observations:

Samples collected from identified locations indicate the soil is sandy type and the pH value ranging from 8.07 to 8.41, which shows that the soil is alkaline in nature. Potassium is found to be from 123.58 mg/kg to 142.21 mg/kg. The water holding capacity is found in between 16.26% to 19.26%.

### 3.5 NOISE ENVIRONMENT

The noise levels within the study area were recorded using Sound Level Meter and noise monitoring results were compared with the Ambient Noise Quality Standard notified under Environment Protection Act, 1986. The levels recorded are as stated in **Table 3.15** The noise level monitoring locations are marked in **Figure 3.6** and shown in **Table 3.14**



Project: Sand Mining Project, On Son River At Mainpura Sohsa (Arwal Son - 13) Sand (Area-44.46 Ha)

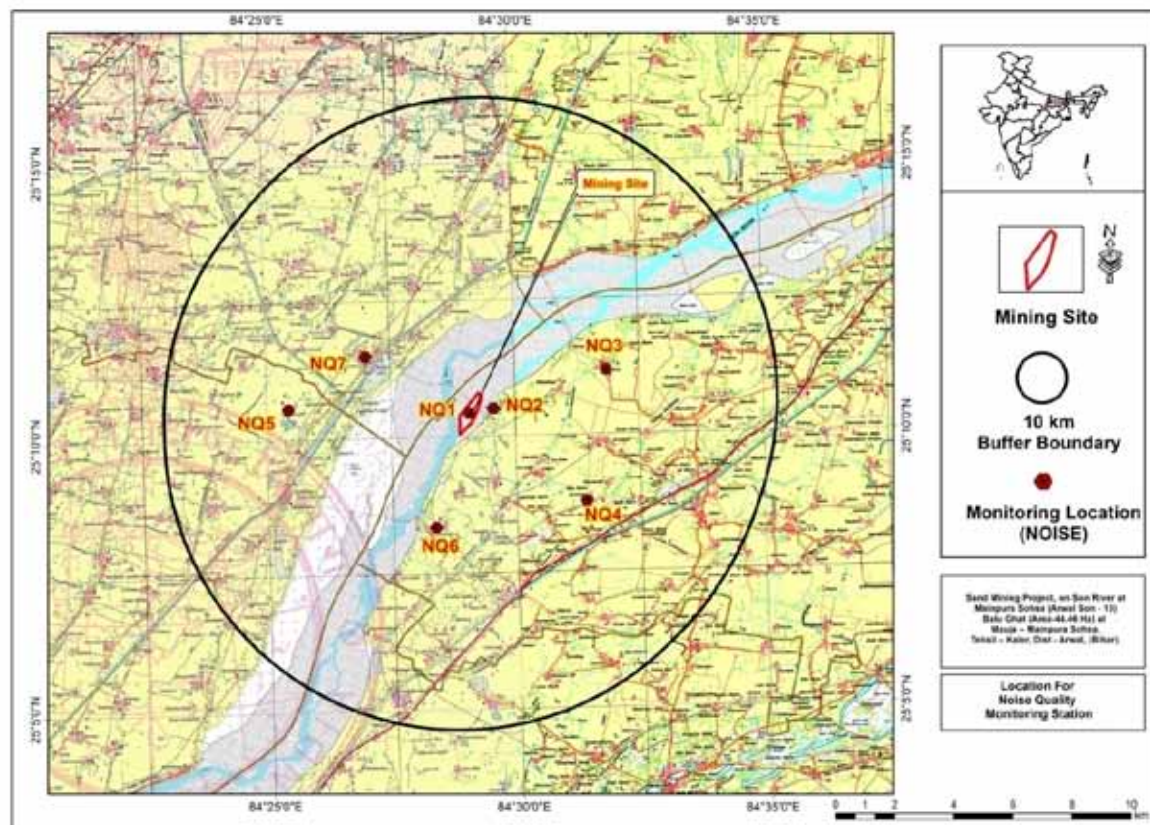


Figure 3.6 Noise Monitoring Stations

Table 3.14 Noise quality monitoring stations

SITE	Location	Distance, direction
NQ1	Project Site	----
NQ2	Sohsa	5.05 Km, East
NQ3	Kamta	2.43 Km, East
NQ4	Sarwarpur	5.73 Km, SE
NQ5	Danwar	4.40 Km,NW
NQ6	Belawan	6.74 Km,SW
NQ7	Bihta	5.02 Km, South

Project: Sand Mining Project, On Son River At Mainpura Sohsa (Arwal Son - 13) Sand (Area- 44.46 Ha)

**Table 3.15 Noise Monitoring Results**

S. No.	Locations		Equivalent Noise Level, dB (A)			
			Limit (as per CPCB Guidelines), Leq, dB(A)		Observed value Leq, dB(A)	
			DAY*	NIGHT*	DAY*	NIGHT*
1	Project Site	Industrial Zone	75	70	52.2	42.3
2	Sohsa	Residential Zone	55	45	41.4	38.6
3	Kamta	Residential Zone	55	45	41.7	35.61
4	Sarwarpur	Residential Zone	55	45	46.5	40.82
5	Danwar	Residential Zone	55	45	40.5	38.55
6	Belawan	Residential Zone	55	45	45.5	39.82
7	Bihta	Residential Zone	55	45	41.5	37.55

## Results

Noise monitoring reveals that the minimum & maximum noise levels at day time were recorded as 40.5 dB(A) at NQ-5 & 52.2 dB(A) at NQ7 respectively. The minimum & maximum noise levels at night time were found to be 35.61 dB (A) at NQ3 & 42.3 dB(A) at NQ1 respectively.

There are several sources in the 10 km radius of study area, which contributes to the local noise level of the area. On the commencement of the project, the sound from traffic activities will add to the ambient noise level of the area. This will be kept under check by taking proper suggestive measures.

## 3.6 BIOLOGICAL ENVIRONMENT

### 3.6.1.1 Introduction

Biodiversity is a generic term that can be related to many environments and species, for example, forests, freshwater, marine and temperate environments, the soil, crop plants, domestic animals, wild species and micro-organisms. On the other hand, biological diversity

Project: Sand Mining Project, On Son River At Mainpura Sohsa (Arwal Son - 13) Sand (Area- 44.46 Ha)

comprises the variability of species, genus and ecosystems and is broadly divided in to two types i.e. the floral diversity and faunal diversity.

Conservation of global biodiversity is important to sustaining human life at local and global scales because humans are dependent on the healthy functionality of other life forms. Many argue that biodiversity must be preserved because all species have intrinsic value.

Before starting any Environmental Impact Assessment study, it is necessary to identify the baseline of relevant environmental parameters which are likely to be affected as a result of operation of the proposed project. A similar approach has been adopted for conducting the study on Biological Environment for this Project. Both terrestrial and aquatic ecosystems have been studied to understand the biological environment.

#### 3.6.1.2 Description of the Study Area

Sand Ghat is located on the dry river bed of Son River in the Arwal District (Bihar). All these sand mining blocks are situated under the Seismic Zone-III in Bihar.

Major part of the Arwal district is fertile and richly cultivated. The drainage pattern of the district is dendritic. National Parks and Wildlife Sanctuary are not present (as per Wildlife Protection Act, 1972) in the core and Study Area of the present mining area.

#### 3.6.1.3 Climate

The area experiences a continental monsoon type of climate owing to its great distance from the sea. The climate is extreme and comprises three broad seasons-the summer, the monsoon and the winter. The summer months from the middle of March to May are characterized by hot blasts of westerly winds commonly known as 'loo'. The cold spell starts from December and continues till end of February.

The monsoon sets in the end of June. The actual average rainfall of July is 147.6 mm and of August is 168.2 mm respectively. The months of July and August receive the maximum rainfall when average monthly normal rainfall of 293.1 mm and 310.2 mm is recorded. The annual normal rainfall of the district (1901-1970) is 1027.3 mm.

#### 3.6.1.4 Soil

Project: Sand Mining Project, On Son River At Mainpura Sohsa (Arwal Son - 13) Sand (Area- 44.46 Ha)

Arwal district is characterized by flat quaternary alluvial plain. With average surface elevation of 100 meter about mean sea level. The soils of the district belong to two classes- Entisols (Younger alluvial soils) and Inceptisols (Calcareous alluvial soils). The soils of the district is rich in nitrogen and calcium and thus are fertile.

#### 3.6.1.5 Drainage

The district falls under Punpun sub-basin of the Ganga basin. The drainage network in the district is represented by river Punpun emanating from southern plateau (Palamu District).

#### 3.6.1.6 Methodology

##### Period of Sampling

The ecological survey has been conducted during Winter season for the collection of primary data of flora-fauna, vegetation, soil and other environmental observations in the Core and Study Area of the project area.

#### 3.6.1.7 Mode of Data Collection

Detailed survey was conducted to evaluate floral and faunal composition of the study area. Primary data on floral and faunal composition was recorded during site visit and secondary data was collected from the Forest Department and published relevant literature. Inventory of flora and fauna has been prepared on the basis of collected data. The mode of data and parameters considered during field investigations is given in Table 3.16.

Table 3.16: Mode of Data Collection & Parameters Considered during Present Survey

Aspect	Data	Mode of data collection	Parameters monitored
Terrestrial Ecology	Primary data collection	By field survey	Floral and Faunal diversity
	Secondary data collection	* Department of Forest, Bihar, * Official website of Arwal District, * Department of Fisheries, Bihar	Floral and Faunal diversity, Types of vegetation, forest type, Importance etc.

#### 3.6.1.8 Biology of Core Zone

##### Flora

All the present mining blocks are situated on the dry river bed of River Son where mining operation is proposed. There is no any vegetation observed in the core zone during the present study.

Project: Sand Mining Project, On Son River At Mainpura Sohsa (Arwal Son - 13) Sand (Area- 44.46 Ha)

The core zone comprises of Son river bed, where mining operation is proposed. This area consists of riparian vegetation in which aquatic and marshland plants are the main component. Most among them are weeds. No ecologically sensitive plant species has been reported from this area.

#### Fauna

Core zone of the Sand Arwal Block 1 Mining Project District-Arwal , Bihar devoid of any major faunal species as all are situated on the dry river bed. So, mammals and avifauna were not observed during the study period. some Amphibians, Molluscs, avifauna were observed in core zone of project site.

#### 3.6.1.8 Biology of Study Area

#### 3.6.1.9 Forests

The Arwal district falls in the tropical climatic region and has which comprises of tropical moist deciduous vegetation due to high temperature and humidity. National Parks and Wildlife Sanctuary protected and declared under “Wildlife Protection Act. (1972) are not present within 10 km radius of the present mining area.

#### 3.6.1.10 Terrestrial Flora of the Study Area

Study Area of the projects is mainly agricultural land, and lower land. The flora of Study Area most dominant species in not forest area are neem (*Azadirachta indica*), peepal (*Ficus religiosa*), vilayatibabool (*Prosopis juliflora*), , gulmohar (*Delonix regia*), babool (*Vachellia nilotica*), amaltas (*Cassia fistula*), dhatura (*Datura stramonium*), arandi (*Ricinus communis*), ber (*Ziziphus jujube*), bougainvillia (*Bougainvillea spectabilis*), , shisham (*Dalbergia sissoo*), sagwan (*Tectona grandis* L.f.) etc. were observed within 10km radius of the study area.

A detail of terrestrial flora of respective Study Area is given in Table-3.17

Table 3.17: Plant/Tree Species found in Study Area

Sl. No.	Scientific Name	Local Name	Family
1	<i>Vachellia nilotica</i>	Babool	Fabaceae
2	<i>Emblica officinalis</i>	Amla	Phyllanthaceae

Project: Sand Mining Project, On Son River At Mainpura Sohla (Arwal Son - 13) Sand (Area- 44.46 Ha)

3	Prosopis juliflora	Vilayati Babool	Fabaceae
4	Azadirachta indica	Neem	Meliaceae
5	Mangifera indica	Mango	Anacardiaceae
6	Ficus religiosa	Peepal	Moraceae
7	Datura stramonium	Datura	Solanaceae
8	Cassia fistula	Amaltas	Fabaceae
9	Tectona grandis	Sagwan	Lamiaceae
10	Delonix regia	Gulmohar	Fabaceae
11	Terminalia arjuna	Arjun	Combretaceae
12	Madhuca longifolia	Mahua	Sapotaceae
13	Mangifera indica	Aam	Anacardiaceae
14	Aegle marmelos	Bel	Rutaceae
15	Artocarpus heterophyllus Lam.	Kathal	Moraceae
16	Tamarindus indica	Imli	Fabaceae
17	Anogeissus latifolia	Dhautha	Combretaceae
18	Musa acuminata	Kela	Musaceae
19	Psidium guajava	Amrud	Myrtaceae
20	Syzygium cumini	Jamun	Myrtaceae
21	Dalbergia sissoo	Sisham	Fabaceae
22	Terminalia belerica	Bahera	Combretaceae
23	Terminalia chebula	Harra	Combretaceae
24	Butea frondosa	Palas	Fabaceae
25	Cassia fistula	Amaltas	Fabaceae
26	Diospyros melanoxylon	Tendu	Ebenaceae
27	Bombax ceiba	Semal	Malvaceae
28	Buchanania lanzan	Piar	Anacardiaceae
29	Adina cordifolia	Karam	Rubiaceae
30	Ficus benghalensis	Bar	Moraceae
31	Morus alba L	Tut	Moraceae
32	Albizia lebbek (L.) Benth.	Siris	Fabaceae
33	Ricinus communis L	Rendi	Euphorbiaceae

Project: Sand Mining Project, On Son River At Mainpura Sohsa (Arwal Son - 13) Sand (Area- 44.46 Ha)

NA= not assessed yet for IUCN red list; LC= least concern, EN-endangered, VU-Vulnerable, Source Field Survey and data based on communication with local inhabitant.

#### Flora (Shrubs) of the Study Area

Sl. No.	Scientific Name	Local Name	Family
1	Hibiscus rosa-sinensisL	Gurhal	Malvaceae
2	Cestrum nocturnumL.	Raat rani	Solanaceae
3	JasminumauriculatumVahl	Juhi	Oleaceae
4	Calotropisprocera (Aiton)	Madar	Apocynaceae
5	VitexnegundoL	Nirgundi	Lamiaceae
6	Aloe vera(L.) Burm.f.	Aloe vera	Xanthorrhoeaceae
7	OcimumtenuiflorumL.	Tulsi	Lamiaceae
8	Asparagus racemosus	Satawari	Asparagaceae
9	Alternantherasessilis(L.)	Garundi	Amaranthaceae
10	ArgemonemexicanaL	Peelikantili	Papaveraceae
11	Solanumvirginianum L	Kantakari	Solanaceae
12	Partheniumhysterophorus L	GajarGhas	Asteraceae
13	Cynodondactylon(L.) Pers)	Dub	Poaceae

#### 3.6.1.11 Fauna of the study Area

The major part of the buffer area lies under agriculture field and barren land which restrict the wildlife habitat significantly. The animals thus recorded were cross checked with Wildlife Protection Act (1972) for their schedule. The fauna of study area have been grouped into aquatic and terrestrial category.

##### Mammals

Domesticated mammal species are reported from the Study Area during the field survey. Common grazing animals like cow, goat etc. are noticed in the Study Area. List of mammal species present in Study Area of present study area is given in Table 3.18.

Table 3.18: Mammal Species Present in Study Area

S. No.	English Name	Scientific Name	Schedule Status	IUCN Status
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Project: Sand Mining Project, On Son River At Mainpura Sohsa (Arwal Son - 13) Sand (Area- 44.46 Ha)

			(WPA,1972)	
1	Rattus rattus	Rat	IV	LC
2	Presbytis entellus	Common langur	II	LC
3	Sus scrofa	Wild pig	V	LC
4	Canis aureus	Jackal	II	LC
5	Anathana elliotti	Indian Tree Shrew	V	LC
6	Bandicoot Rat	Bandicota indica	II	LC
7	Boselaphus tragocamelus	Nilgai/Blue Bull	II	LC
8	Felis chaus	Jungle cat	IV	LC
9	Funambulus palmatum	Three-striped Squirrel	V	LC
10	Herpestes edwardsi	Common Mongoose	II	LC
11	Hystrix indica	Indian Porcupine	V	LC
12	Indian Flying Fox Bat	Pteropus giganteus	III	LC
13	Indian Wild Boar	Sus scrofa	V	LC
14	Mus booduga	Indian Field Mouse	III	LC
15	Pteropus giganteus	Indian Flying Fox	II	LC
16	Rattus rattus	Indian House Rat	II	LC
17	Rhesus Macaque	Macaca mulatta	III	VU

NA= not assessed yet for IUCN red list; LC= least concern, EN-endangered, VU-Vulnerable, Source Field Survey and data based on communication with local inhabitant.

### Reptiles

During the present survey period some of the reptiles and lizard species were recorded in the Study Area of the present mining area. A list of reptiles and lizard species observed in the buffer area is given in Table 3.19.

Table 3.19: Reptiles, Lizard and Amphibians Species Present in the Study Area

S.No.	Scientific Name	Local Name	WLA Schedule	IUCN Category
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Project: Sand Mining Project, On Son River At Mainpura Sohsa (Arwal Son - 13) Sand (Area- 44.46 Ha)

AMPHIBIANS				
1.	Duttaphrynus melanostictus	Toad	IV	LC
2.	Rana caterbeiana	Frog	IV	LC
(A) REPTILES				
1	Kelotes versicolor	Girgit	IV	NA
2	Podaris muralis	Lizard	IV	NA
3	Bungarus caeruleus	Krait	IV	NA
4	Naja naja	Cobra	II	V
5	Ptyas mucosa	Dhaman	II	NA
6	Crotolus sp	Pit viper	II	LC

#### Avian Fauna

During the present investigation it was observed that the various avian fauna are moving across the mining area in the Study Area. List of avian fauna present in the Study Area is given in Table 3.20

Table 3.20: List of Avian Fauna observed in Study Area

S. No	Scientific Name	English Name	Schedule Status (WPA,1972)	IUCN Status
1	Acridotheres tristis	Myna	IV	LC
	Amandava amandava	Red munia	IV	LC
2	Eudynamys Scolopacea	Koyal	IV	NA
3	Alcedo atthis	Small blue kingfisher	IV	NA
4	Cecropis daurica	Red-rumped Swallow	IV	LC
5	Columba livia	Rock Pigeon	IV	LC
6	Corvus splendens	Crow	V	NA
7	Eudynamys Scolopacea	Koyal	IV	NA
8	Gallus gallus	Red Jungle fowl	IV	LC
9	Megalaima virens	Great Barbet	IV	LC
10	Passer domesticus	Sparrow	IV	LC
11	Columbidae	Pigeon	IV	NA
12	Picidae	Kathphora	IV	NA
13	Hiera Coccyx Virus	Hawk Cuckoo	IV	NA
14	Ardeidae	Bagula	IV	NA
15	Dicrurus adsimilis	Black drango	IV	LC
16	Gallinule chloropus	Common moorhen	IV	LC
17	Amandava amandava	Red munia	IV	LC
18	Milvus migrans	Black Kite	IV	NA

Project: Sand Mining Project, On Son River At Mainpura Sohsa (Arwal Son - 13) Sand (Area- 44.46 Ha)

NA= not assessed yet for IUCN red list; LC= least concern

Source Field Survey and data based on communication with local inhabitant.

Amphibian

Some common amphibian species reported from Study Area are listed below in Table 3.21:

Table 3.21: Amphibian Species of Study Area

Sl. No.	Common name	Scientific name	Schedule / WPA, 1972	IUCN
1	Common Indian toad	Duttaphrynus melanostictus	IV	NA
2	Indian skipper frog	Euphlyctis cyanophlyctis	IV	NA
3	Indian bull frog	Hoplobatrachus tigerinus	IV	NA

NA= not assessed yet for IUCN red list; LC= least concern

Source Field Survey and data based on communication with local inhabitant.

Butterflies observed in the Core zone

S. No.	Common Name	Scientific Name	Family	IUCN Status
1.	Plain Tiger	Danaus chrysippus	Nymphalidae	LC
2.	Common emigrant	Catopsilia pomona	Pieridae	LC
3.	Common crow	Euploea core	Nymphalidae	LC
4.	Small grass yellow	Eurema brigitta	Pieridae	LC

Source: Primary Survey data of P&M Solution, Noida and the data supported by Department of Forest, Arwal district of Bihar

Aquatic life: Along its course river Son support rich aquatic habitat. Numerous species

Fishes, planktons & zooplanktons are found in the study area.

Fishes: Son River is adobe for variety of fishes. To have an idea about the fishes local peoples were asked along the proposed project, sand deposited area within the fishes local peoples were asked along the proposed project, sand deposited area within the river and on the bank. Secondary information about fishes noticed from study is Rohu, Catla, Hilsa, Mystus sp, Cirrhinus Sp, etc. The species of fishes given in Table 3.16 are commonly reported in the fresh water bodies like river, streams, lakes, pond and estuaries They are cosmopolitan in distribution and are reported all over India and Indian Sub continents. These species of fishes are commonly used in aqua culture practice and had good commercial importance.

Table: 3.22 Fish species of Son River

Project: Sand Mining Project, On Son River At Mainpura Sohsa (Arwal Son - 13) Sand (Area- 44.46 Ha)

S. No.	Local Name	Scientific Name
1	Catla	Catlacatla
2	Mrigal	Cirrhinamrigala
3	Rohu	Lebeorohita
4	Bhakur	Catlacatla
5	Karosh	Labeokalbasu
6	Nayan	Cirhinnusmrigala
7	Calbasu	Lebeocalbasu
8	Rahiya	Cirhanusreva
9	Ras-bora	Rasboradanconius
10	Padhan	Wallagoattu
11	Mangul	Elariusbatacus
12	Bata	Labeobata
13	Kalabans	Labeodero
14	Saul	Channamorutius ,channa vitatus ,channa stratus

(Source: Site visit and Secondary Data)

#### 3.6.1.12 Agricultural Land

Arwal district is predominantly an agrarian district. Agriculture is the main means for livelihood for about 80% of the district population. Production of Paddy, Maize and Wheat is the main economic activity of the district and the main source of earning. Agriculture also provides raw materials to the small and village industry and is the centre of all allied activities. In terms of the Bihar, agriculture is the predominantly main occupation here in the state in which again 80% of rural population involved.

#### 3.6.1.13 Occurrence of Schedule-I species and Rare, Endangered and Threatened Species (RET)

Overall study of proposed mine reveals that, Schedule-I species as well as Plant species under the category of RET have not been observed from the Study Area. However, all care will be taken for protection of others flora & fauna also, if any in the lease hold area.

Project: Sand Mining Project, On Son River At Mainpura Sohsa (Arwal Son - 13) Sand (Area- 44.46 Ha)

### **3.7Socio-Economic Environment**

#### **Demography& Socio-Economic Features**

##### **Introduction**

The proposed sand mine project is situated at Mauja – Koriyam Anchal– Arwal, Dist - Arwal (Bihar) over an area of 76.92 hectares. The state government has given consent for Sand mining to Rana Uday Pratap Singh S/o- Late Rana Ranvijay Pratap Singh Add. - Jayprakash Nagar, Vishunpur Nala, Dhanbad, Jharkhand. This project falls under Category- “B1” as per EIA Notification 2006 (amended till date) of the Ministry of Environment and Forests & Climate Change, New Delhi.

##### **Demography**

Demography is one of the important indicators of environmental health of an area. It includes population, sex ratio, number of households, literacy, population density, etc. In order to assess the Demographic & Socio-economic features of the area, Census data 2011, for the 3 concerned districts i.e. Arwal, Bhojpur and Patna of Biharstate was compiled and placed in the form of tabulation and graphical representation.

##### **Demography of the ArwalDistrict**

As per the census records 2011, Arwal district has a population of 700,843, persons roughly equal to the nation of Bhutan or the US state of North Dakota. This gives it a ranking of 502nd in India (out of a total of 640). The district has a population density of 1,099 inhabitants per square kilometre (2,850/sq mi). Its population growth rate over the decade 2001-2011 was 19.01%. Arwal has a sex ratio of 927 females for every 1000 males, and a literacy rate of 69.54%. Scheduled Castes and Scheduled Tribes make up 20.16% and 0.08% of the population respectively. Language

Languages in Arwal district (2011)[10], At the time of the 2011 Census of India, 86.53% of the population in the district spoke Magahi, 8.11% Hindi, and 4.96% Urdu as their first language.[] The language spoken here is Magahi. Some number of people also speaks Bhojpuri.

##### **Religion**

The population of the Arwal district during 2011 was 700,843. Hindus constitute 90.48 percent (634,099 persons) of the population in the district followed by Muslims 9.17 percent (64,259 persons).

##### **Methodology**

Project: Sand Mining Project, On Son River At Mainpura Sohsa (Arwal Son - 13) Sand (Area- 44.46 Ha)

In order to assess the Demographic & Socio-economic features along with the 10km distance based on field surveys and public consultations undertaken during the baseline field study period and Census records 2011, for the 3 concerned districts i.e. Arwal, Bhojpur and Patna of Bihar state respectively was compiled and placed in the form of tabulation and graphical representation. Entire study area is observed predominantly rural except one town named Arwal.

#### Purpose of the Study

Socio-economic study was conducted to establish the baseline demographic features and impacts due to this 'SandGhatProject', as operation phase of any project invariably leads to Socio-economic changes. The construction phase of any kind of project could lead to unplanned and haphazard development of slums of various size and description with little or rudimentary.

#### Description of Social Environment

As per the Census Records 2011, the study area has a total of 154 villages and one town named Arwal (NP) / (25 wards) lying under Arwal in Bihar state. Overall study area villages are falling mainly under Seven (07 Villages) tehsils namely Arwal (26 villages), Karpi (12 villages), Paliganj (40 villages), Sandesh (17 villages), Agiaon (42 villages), Tarari (01 village), Sahar (17 village), under 3 main districts i.e. Arwal, Bhojpur and Patna in Bihar state respectively. There are thirteen (13) villages of above mentioned 3 districts in Bihar state found as uninhabited villages in the study area.

#### Population Distribution within 10 km radial Study Zone

As per the Census Records 2011, the total population of 10 km study zone was recorded as 376053 persons of 155 villages/town of 3 main districts named Arwal, Bhojpur and Patna in Bihar state. Male-female wise total population was recorded as 194636 males (51.8%) and 1,81417 (48.2%) females respectively.

Total number of 'Households' was observed as 61173 in the 10 km radius study zone. Scheduled Caste ('SC') population was observed as 69969 persons consisting of 36020 males (51.5%) and 33949 females (48.5%) in the 10km study zone. Scheduled Tribes ('ST') population was also observed as 203 persons (0.05%) consisting of 92 males (45.3%) and 111 females (54.7%) in the 10 km study zone. The child population (0-6 Age) of the study area is recorded as 65945 (17.5%) and comprising of 33861 (51.3%) males & 32084 (48.7%) females respectively.

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Village wise details of population distribution are given as follows in Table 3.23....

Table: 3.24 Village-wise Population Distribution (10km)

Name of Village/Town	No of Households	Total Population			Child Population (0-6 Years)		
		Persons	Male	Female	Persons	Male	Female
1. District Arwal, Bihar							
Koriam	703	3935	1994	1941	728	349	379
Bara	199	998	522	476	109	64	45
Satpura	233	1307	665	642	161	77	84
Konika	370	1964	1034	930	405	212	193
Sonbarsa	849	4994	2605	2389	844	442	402
Sakri	436	2561	1351	1210	351	182	169
Sonbarsa Makbulpur Alauddin	221	1199	620	579	216	104	112
Madan Singhka Bigha	120	798	409	389	144	75	69
Sonbarsa	Uninhabited Village						
Aslampur Dullah	Uninhabited Village						
Bhusura	282	1665	869	796	304	160	144
Chiraia Tanr	195	1195	626	569	190	100	90
Dangra Ahar	351	2316	1205	1111	414	210	204
Saifabad	Uninhabited Village						
Bhadasi	743	4675	2449	2226	834	432	402
Gaddopur	390	2474	1275	1199	518	254	264
Madanpur Dhawa	94	598	302	296	107	47	60
Makbulpur Raja	309	1891	941	950	344	179	165
Bhermpur Khapura	41	198	102	96	31	17	14
Rampur	150	1061	547	514	165	88	77
Fakharpur	542	3120	1540	1580	541	277	264
Jalpura	197	1271	683	588	157	90	67
Pheku Bigha	172	1103	571	532	175	92	83
Piare Chak	359	2191	1148	1043	386	200	186
Darwesh pura	38	261	142	119	32	15	17
Arwal (NP)	8453	51849	27077	24772	9194	4754	4440

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Project: Sand Mining Project, On Son River At Mainpura Sohsa (Arwal Son - 13) Sand (Area- 44.46 Ha)

Baroha	Uninhabited Village						
Dariyapur	89	502	265	237	68	41	27
Inglish Gulab Singh	248	1505	809	696	251	138	113
Patak Chak	86	603	339	264	113	62	51
Aiyara	1173	7815	4034	3781	1334	657	677
Laraua	62	379	195	184	80	39	41
Purainia Ruknuddin	222	1261	631	630	244	110	134
Purainia Shekha	334	2133	1134	999	361	199	162
Latifpur Paraha	274	1487	778	709	307	158	149
Lodipur	162	1066	543	523	235	126	109
Masudpur Bara	109	750	390	360	147	75	72
Nagawan	430	2383	1277	1106	417	232	185
2. District Patna, Bihar							
Kalyanpur	517	3450	1866	1584	583	321	262
Jalpura	216	1570	828	742	245	140	105
Masaurha	442	2413	1203	1210	397	207	190
Udaipur	367	2130	1073	1057	391	191	200
Mohbalipur	1251	6863	3466	3397	1273	640	633
Mohabbatpur	110	634	336	298	117	54	63
Ranipur	258	1584	828	756	263	140	123
Fatehpur	276	1630	856	774	265	143	122
Dariapur Pem	302	1697	880	817	290	142	148
Akhtiarpur Pali	614	3776	1970	1806	661	386	275
Kurkuri	701	4444	2248	2196	763	386	377
Bibipur	198	1157	576	581	192	103	89
Harpur Ankuri	581	2810	1342	1468	576	287	289
Sarsi	385	2471	1293	1178	401	225	176
Muhammadpur	264	1452	751	701	262	128	134
Bherharia	846	5419	2849	2570	1015	508	507
Mohibalipur Chak	Uninhabited Village						
Ghurna Bigha	191	1218	622	596	225	112	113

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Project: Sand Mining Project, On Son River At Mainpura Sohsa (Arwal Son - 13) Sand (Area- 44.46 Ha)

Habsapur	103	712	370	342	120	66	54
Pipardaha	652	4007	2055	1952	792	395	397
Belaunra	550	3078	1617	1461	500	274	226
Kansopur	197	1393	726	667	262	144	118
Bela	240	1729	887	842	283	149	134
Korra	691	4249	2159	2090	699	345	354
Lakhnipur	195	1196	623	573	209	107	102
Akbarpur	682	4399	2330	2069	665	342	323
Ajda	209	1010	505	505	158	82	76
Thakuri	205	1271	671	600	197	110	87
Sikaria	916	4768	2444	2324	910	471	439
Sedura	261	1787	900	887	334	163	171
Taranpur	290	1777	905	872	355	161	194
Chauri	153	917	472	445	157	81	76
Banauli Buzurg	114	687	384	303	99	48	51
Banauli Khurd	369	2288	1143	1145	460	237	223
Khiri	173	1107	588	519	173	96	77
Hemanpur	145	867	431	436	145	59	86
Khanpura	312	1597	841	756	315	169	146
Mankurha	278	1799	912	887	298	164	134
Torni	250	1363	674	689	298	133	165
Rampur Nagwan	710	4535	2348	2187	827	428	399
3. District Bhojpur, Bihar							
Bara	171	997	514	483	166	92	74
Bartiar	305	1788	942	846	330	184	146
Kosdihra	116	766	394	372	149	74	75
Kori	1067	6821	3434	3387	1208	589	619
Baranhpur	18	84	45	39	12	7	5
Khandaul	846	5179	2686	2493	791	429	362
Phulari	762	5036	2682	2354	762	387	375
Bhatauli	431	2482	1324	1158	345	169	176



**CHAPTER-3****BASELINE ENVIRONMENTAL STATUS**

Project: Sand Mining Project, On Son River At Mainpura Sohsa (Arwal Son - 13) Sand (Area- 44.46 Ha)

Chanchar	Uninhabited Village						
Raman Sanrh	837	5613	3003	2610	890	478	412
Patkhaulia	85	552	273	279	103	54	49
Pinjroi	110	689	334	355	112	58	54
Mahadeopur	Uninhabited Village						
Ahiman Chak	230	1457	736	721	282	131	151
Khemkaranpur	Uninhabited Village						
Baga	472	2697	1316	1381	473	243	230
Bhikham Chak	8	39	16	23	7	2	5
Narayanpur	961	6476	3406	3070	1072	524	548
Bhaluni	262	1872	1012	860	361	210	151
Seothara	161	978	496	482	145	76	69
Muradpur	159	1195	601	594	170	82	88
Chhaprapur	334	2158	1092	1066	380	188	192
Dihra	106	981	505	476	175	88	87
Mahpur	Uninhabited Village						
Chansi	624	3810	2005	1805	662	362	300
Banauli	448	2441	1301	1140	365	197	168
Keshwarpur	111	833	435	398	116	52	64
Chauria	80	582	286	296	109	52	57
Ekauna	163	1077	555	522	211	111	100
Agiaon	835	4801	2481	2320	863	446	417
Kharainacha	243	1544	821	723	264	134	130
Isarpura	108	714	376	338	117	53	64
Paswan	590	3490	1863	1627	603	311	292
Ahila	407	2477	1280	1197	488	245	243
Kheri	248	1706	858	848	330	160	170
Bargaon	1711	10748	5650	5098	1873	942	931
Megharia	227	1278	599	679	260	133	127
Kamaria	271	2004	1029	975	330	170	160
Kirkiri	686	4247	2194	2053	785	398	387

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Project: Sand Mining Project, On Son River At Mainpura Sohsa (Arwal Son - 13) Sand (Area- 44.46 Ha)

Chipura	101	641	326	315	123	59	64
Narainaganj	58	279	159	120	63	35	28
Dundhua	Uninhabited Village						
Barhampur Mehdanra	511	3044	1568	1476	473	252	221
Chilhar	685	4188	2221	1967	711	379	332
Tara Chak	256	1748	927	821	283	153	130
Karbasin	450	2846	1450	1396	566	291	275
Gordiha	166	1218	641	577	189	92	97
Amarpur	Uninhabited Village						
Nadhi	511	3469	1845	1624	579	316	263
Nonaur	744	4691	2469	2222	820	433	387
Muzaffarpur	149	1450	779	671	241	134	107
Madhopur	87	591	308	283	119	65	54
Baghi	235	1724	885	839	304	154	150
Sewantha	307	1992	1012	980	328	178	150
Baruna	543	3528	1857	1671	689	365	324
Dhobha	271	1713	877	836	310	150	160
Paharpur Khurd	60	427	208	219	62	28	34
Rudarpur	64	434	221	213	77	33	44
Ekauni	44	269	126	143	55	24	31
Ramnagar	291	1749	893	856	338	163	175
Bajrean	283	2160	1125	1035	373	203	170
Bishunpura	89	450	222	228	66	32	34
Baruhi	1210	7021	3673	3348	1217	615	602
Ekwari	1877	11561	5976	5585	2111	1070	1041
Inurkhi	384	2492	1271	1221	473	238	235
Kunrwa	71	463	252	211	45	23	22
Newada	306	2005	1044	961	319	156	163
Bansi Dehri	304	1472	699	773	238	114	124
Jot Gobind	Uninhabited Village						
Dehri	397	2452	1242	1210	443	230	213

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Project: Sand Mining Project, On Son River At Mainpura Sohsa (Arwal Son - 13) Sand (Area- 44.46 Ha)

Peur	401	2080	1016	1064	399	201	198
Peur Chak	Uninhabited Village						
Sahar	931	5674	2865	2809	1081	543	538
Abgilla	446	2845	1395	1450	520	257	263
Mathurapur	240	1328	666	662	256	136	120
Patrihan	249	1570	771	799	312	152	160
Shiw Chak	409	2105	1059	1046	371	162	209
TOTAL (10km)	61173	376053	194636	181417	65945	33861	32084
Source-Census of India, 2011							

Table: 3.25 Village-wise SC & ST Population Distribution (10km)

Name of Village/Town	Total Population	Scheduled Castes			Scheduled Tribes		
		Persons	Males	Females	Persons	Males	Females
1. District Arwal, Bihar							
Koriam	3935	1109	560	549	0	0	0
Bara	998	105	48	57	0	0	0
Satpura	1307	196	89	107	0	0	0
Konika	1964	848	436	412	0	0	0
Sonbarsa	4994	910	485	425	1	1	0
Sakri	2561	958	499	459	0	0	0
Sonbarsa Makbulpur Alauddin	1199	119	65	54	21	12	9
Madan Singhka Bigha	798	194	100	94	0	0	0
Sonbarsa	Uninhabited Village						
Aslampur Dullah	Uninhabited Village						
Bhusura	1665	129	65	64	0	0	0
Chiraia Tanr	1195	112	66	46	0	0	0
Dangra Ahar	2316	286	157	129	1	1	0
Saifabad	Uninhabited Village						
Bhadasi	4675	1008	518	490	2	0	2
Gaddopur	2474	766	383	383	0	0	0

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Project: Sand Mining Project, On Son River At Mainpura Sohsa (Arwal Son - 13) Sand (Area- 44.46 Ha)

Madanpur Dhawa	598	16	8	8	0	0	0
Makbulpur Raja	1891	99	47	52	0	0	0
Bhermpur Khapura	198	0	0	0	0	0	0
Rampur	1061	0	0	0	0	0	0
Fakharpur	3120	775	391	384	8	3	5
Jalpura	1271	119	57	62	0	0	0
Pheku Bigha	1103	124	66	58	0	0	0
Piare Chak	2191	392	213	179	0	0	0
Darwesh pura	261	47	28	19	0	0	0
Arwal (NP)	51849	9599	4949	4650	78	34	44
Baroha	Uninhabited Village						
Dariyapur	502	0	0	0	0	0	0
Inglish Gulab Singh	1505	325	172	153	0	0	0
Patak Chak	603	0	0	0	0	0	0
Aiyara	7815	510	243	267	4	0	4
Laraua	379	74	37	37	0	0	0
Purainia Ruknuddin	1261	442	231	211	3	2	1
Purainia Shekha	2133	173	88	85	0	0	0
Latifpur Paraha	1487	483	255	228	0	0	0
Lodipur	1066	58	33	25	0	0	0
Masudpur Bara	750	0	0	0	0	0	0
Nagawan	2383	719	386	333	0	0	0
2. District Patna, Bihar							
Kalyanpur	3450	329	177	152	0	0	0
Jalpura	1570	91	45	46	0	0	0
Masaurha	2413	600	310	290	0	0	0
Udaipur	2130	75	44	31	0	0	0
Mohbalipur	6863	1729	878	851	2	2	0
Mohabbatpur	634	0	0	0	0	0	0
Ranipur	1584	198	110	88	1	1	0
Fatehpur	1630	803	413	390	1	0	1

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Project: Sand Mining Project, On Son River At Mainpura Sohna (Arwal Son - 13) Sand (Area- 44.46 Ha)

Dariapur Pem	1697	853	438	415	1	0	1
Akhtiarpur Pali	3776	341	172	169	0	0	0
Kurkuri	4444	563	284	279	0	0	0
Bibipur	1157	320	158	162	0	0	0
Harpur Ankuri	2810	834	402	432	1	1	0
Sarsi	2471	597	318	279	0	0	0
Muhammadpur	1452	148	76	72	0	0	0
Bherharia	5419	1251	640	611	8	5	3
Mohibalipur Chak	Uninhabited Village						
Ghurna Bigha	1218	468	246	222	0	0	0
Habsapur	712	49	26	23	0	0	0
Pipardaha	4007	1484	756	728	1	1	0
Belaunra	3078	757	406	351	0	0	0
Kansopur	1393	96	46	50	0	0	0
Bela	1729	36	17	19	0	0	0
Korra	4249	953	485	468	0	0	0
Lakhnipur	1196	446	229	217	1	0	1
Akbarpur	4399	858	428	430	0	0	0
Ajda	1010	237	117	120	0	0	0
Thakuri	1271	534	281	253	0	0	0
Sikaria	4768	1542	766	776	1	0	1
Sedura	1787	197	93	104	0	0	0
Taranpur	1777	836	425	411	1	1	0
Chauri	917	184	98	86	1	0	1
Banauli Buzurg	687	74	37	37	0	0	0
Banauli Khurd	2288	798	400	398	4	1	3
Khiri	1107	221	119	102	0	0	0
Hemanpur	867	0	0	0	0	0	0
Khanpura	1597	630	320	310	0	0	0
Mankurha	1799	283	156	127	4	2	2
Torni	1363	180	87	93	0	0	0

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Project: Sand Mining Project, On Son River At Mainpura Sohsa (Arwal Son - 13) Sand (Area- 44.46 Ha)

Rampur Nagwan	4535	534	277	257	6	2	4
3. District Bhojpur, Bihar							
Bara	997	0	0	0	0	0	0
Bartiar	1788	402	214	188	0	0	0
Kosdihra	766	0	0	0	0	0	0
Kori	6821	1098	554	544	0	0	0
Baranhpur	84	0	0	0	0	0	0
Khandaul	5179	231	115	116	0	0	0
Phulari	5036	586	297	289	0	0	0
Bhatauli	2482	540	275	265	0	0	0
Chanchar	Uninhabited Village						
Raman Sanrh	5613	887	476	411	0	0	0
Patkhaulia	552	257	126	131	0	0	0
Pinjroi	689	0	0	0	0	0	0
Mahadeopur	Uninhabited Village						
Ahiman Chak	1457	77	44	33	0	0	0
Khemkaranpur	Uninhabited Village						
Baga	2697	295	140	155	0	0	0
Bhikham Chak	39	0	0	0	0	0	0
Narayanpur	6476	873	454	419	1	1	0
Bhaluni	1872	88	50	38	0	0	0
Seothara	978	359	170	189	0	0	0
Muradpur	1195	428	222	206	3	2	1
Chhaprapur	2158	134	72	62	0	0	0
Dihra	981	0	0	0	0	0	0
Mahpur	Uninhabited Village						
Chansi	3810	254	126	128	0	0	0
Banauli	2441	450	239	211	0	0	0
Keshwarpur	833	0	0	0	0	0	0
Chauria	582	0	0	0	0	0	0
Ekauna	1077	352	179	173	0	0	0

**CHAPTER-3****BASELINE ENVIRONMENTAL STATUS**

Project: Sand Mining Project, On Son River At Mainpura Sohna (Arwal Son - 13) Sand (Area- 44.46 Ha)

Agiaon	4801	1239	642	597	2	1	1
Kharainacha	1544	591	307	284	0	0	0
Isarpura	714	0	0	0	0	0	0
Paswan	3490	871	453	418	0	0	0
Ahila	2477	360	190	170	0	0	0
Kheri	1706	138	75	63	0	0	0
Bargaon	10748	987	531	456	1	0	1
Megharia	1278	122	61	61	0	0	0
Kamaria	2004	98	49	49	0	0	0
Kirkiri	4247	201	102	99	0	0	0
Chipura	641	0	0	0	0	0	0
Narainaganj	279	181	100	81	0	0	0
Dundhua	Uninhabited Village						
Barhampur Mehdanra	3044	416	210	206	0	0	0
Chilhar	4188	1095	577	518	0	0	0
Tara Chak	1748	296	148	148	0	0	0
Karbasin	2846	693	348	345	1	0	1
Gordiha	1218	235	115	120	0	0	0
Amarpur	Uninhabited Village						
Nadhi	3469	884	481	403	0	0	0
Nonaaur	4691	917	481	436	11	7	4
Muzaffarpur	1450	292	159	133	0	0	0
Madhopur	591	107	58	49	1	0	1
Baghi	1724	55	32	23	0	0	0
Sewantha	1992	494	250	244	0	0	0
Baruna	3528	771	410	361	0	0	0
Dhobha	1713	231	116	115	0	0	0
Paharpur Khurd	427	0	0	0	0	0	0
Rudarpur	434	0	0	0	0	0	0
Ekauni	269	0	0	0	0	0	0
Ramnagar	1749	608	301	307	0	0	0

**CHAPTER-3****BASELINE ENVIRONMENTAL STATUS**

Project: Sand Mining Project, On Son River At Mainpura Sohna (Arwal Son - 13) Sand (Area- 44.46 Ha)

Bajrean	2160	112	59	53	0	0	0
Bishunpura	450	34	20	14	0	0	0
Baruhi	7021	1973	1037	936	0	0	0
Ekwari	11561	1750	915	835	1	0	1
Inurkhi	2492	851	439	412	0	0	0
Kunrwa	463	0	0	0	0	0	0
Newada	2005	478	250	228	0	0	0
Bansi Dehri	1472	631	299	332	13	6	7
Jot Gobind	Uninhabited Village						
Dehri	2452	850	431	419	0	0	0
Peur	2080	402	206	196	0	0	0
Peur Chak	Uninhabited Village						
Sahar	5674	1038	545	493	18	6	12
Abgilla	2845	645	313	332	0	0	0
Mathurapur	1328	612	314	298	0	0	0
Patrihan	1570	199	105	94	0	0	0
Shiw Chak	2105	377	183	194	0	0	0
TOTAL (10km)	376053	69969	36020	33949	203	92	111
Source-Census of India, 2011							

**Sex Ratio**

The 'Sex Ratio' of the study area is a numeric relationship between females and males of an area and bears paramount importance in the present day scenario where the un-ethnic pre-determination of sex and killing of female foetus during pregnancy is practiced by unscrupulous medical practitioners against the rule of the law of the country. It is evident that by contrast the practice of female foeticide is not prevalent in the study area.

The 'Sex Ratio' was observed as 929 females per 1000 males in the District. The same was recorded as 932 females for every 1000 males in the study area. The child (0-6 yr age) sex ratio of the study area was observed as 947 female children per 1000 male children.

The village wise male-female population distribution for the study area is depicted and shown by graphical representation in Table.3.26... & Figure.....



Project: Sand Mining Project, On Son River At Mainpura Sohsa (Arwal Son - 13) Sand (Area- 44.46 Ha)

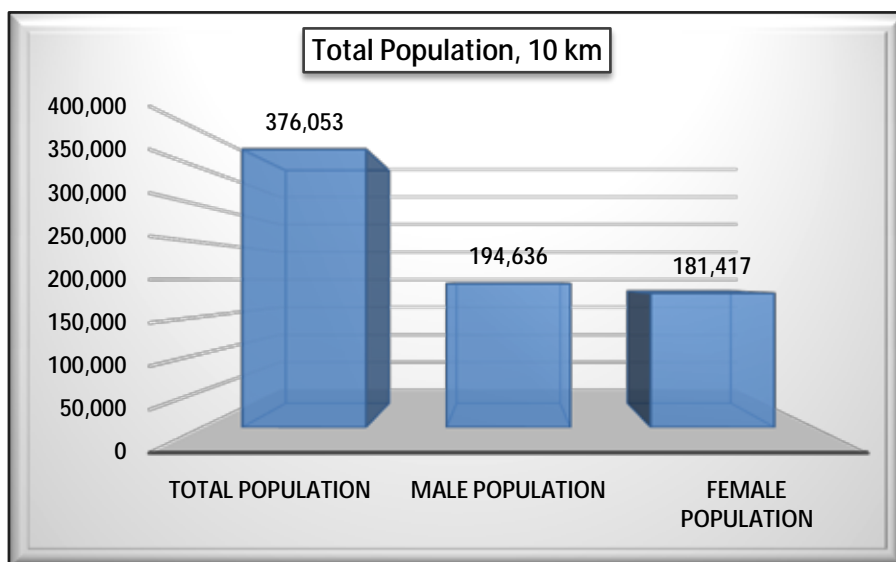
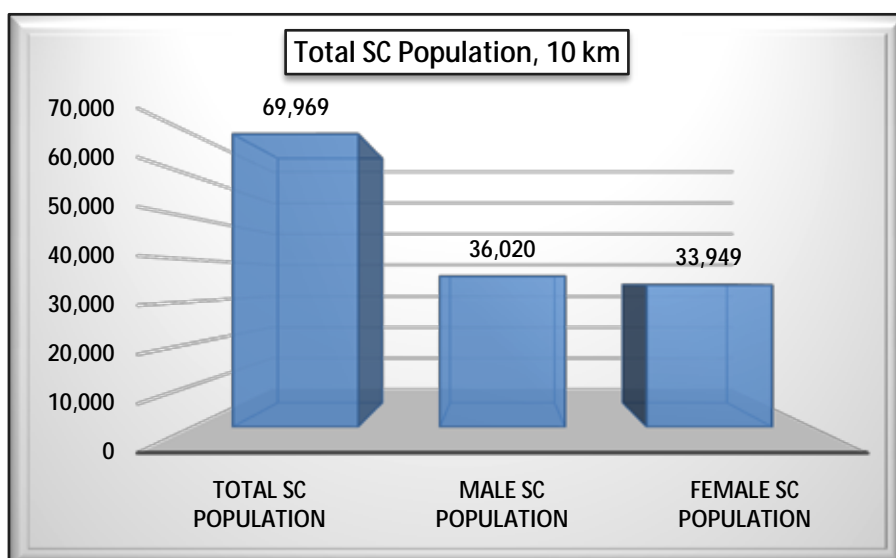


Figure 3.7 :Male-Female Wise Population Distribution

#### Scheduled Caste & Scheduled Tribe Population

On the basis of the village wise SC & ST population distribution of the study area during 2011, the 'Scheduled Castes' population was observed as 69969 persons consisting of 36020 males and 33949 females respectively in the study area which accounts as 18.6% to the total population (376053 persons) of the study area. Scheduled Tribes ('ST') population was observed as 203 persons, accounts as 0.05% to the total population of the study zone consisting of 92 males and 111 females in the 10 km radius study zone. It implies that the rest 81.4% of the total population belongs to the general category.

Male-female wise distribution of 'SC' & 'ST' population in the study area is graphically shown in Figure .....&.....as follows.



Project: Sand Mining Project, On Son River At Mainpura Sohsa (Arwal Son - 13) Sand (Area- 44.46 Ha)

Figure: 3.8 Scheduled Caste Population in the Study Area

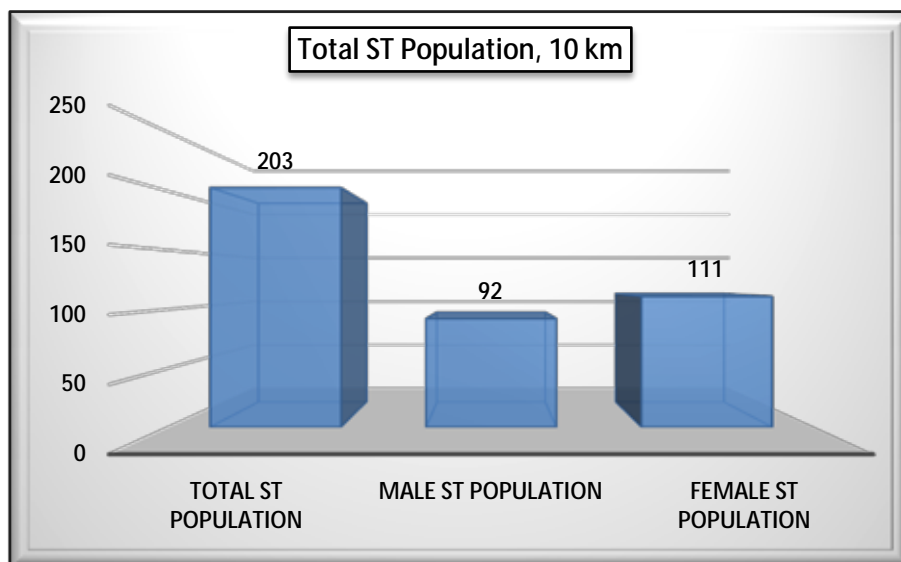
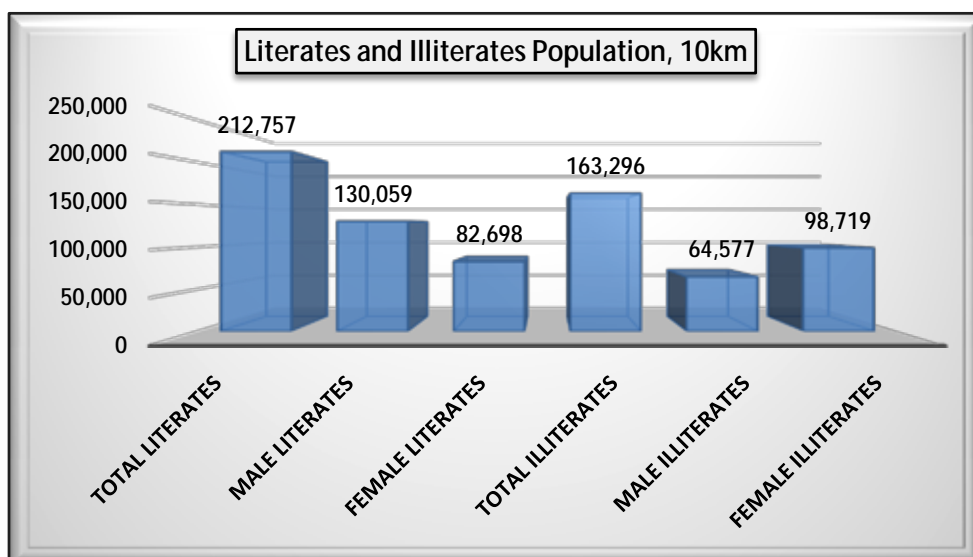


Figure: 3.9 Scheduled Tribes Population in the Study Area

#### Literacy Rate

Literacy level is quantifiable indicator to assess the development status of an area or region. Male-Female wise literates and illiterate's population is represented in Table ..... Total literate's population was recorded as 212,757 persons (56.6%) in the study area. Table reveals that Male-Female wise literates are observed as 130,059 & 82,698 persons respectively, implies that the 'Literacy Rate' is recorded as 56.6% with male-female wise percentages being 34.6% & 22.0% respectively.

The Male-Female wise graphical representation of literates & illiterate's population in study area villages/town is shown in Figure .....



<b>CHAPTER-3</b>
<b>BASELINE ENVIRONMENTAL STATUS</b>
Project: Sand Mining Project, On Son River At Mainpura Sohsa (Arwal Son - 13) Sand (Area-44.46 Ha)

Figure 3.10...:Male-Female Wise Distribution of Literates & Illiterates

Table 3.27 ...:Male-Female Wise Literates and Illiterates(10km)

Name of Village/Town	Total Population	Literates			Illiterates		
		Persons	Males	Females	Persons	Males	Females
1. District Arwal, Bihar							
Koriam	3935	2196	1368	828	1739	626	1113
Bara	998	778	442	336	220	80	140
Satpura	1307	848	507	341	459	158	301
Konika	1964	1008	634	374	956	400	556
Sonbarsa	4994	3144	1855	1289	1850	750	1100
Sakri	2561	1762	1069	693	799	282	517
Sonbarsa Makbulpur Alauddin	1199	609	393	216	590	227	363
Madan Singhka Bigha	798	306	197	109	492	212	280
Sonbarsa	Uninhabited Village						
Aslampur Dullah	Uninhabited Village						
Bhusura	1665	1002	641	361	663	228	435
Chiraia Tanr	1195	737	452	285	458	174	284
Dangra Ahar	2316	1369	849	520	947	356	591
Saifabad	Uninhabited Village						
Bhadasi	4675	2693	1631	1062	1982	818	1164
Gaddopur	2474	1284	817	467	1190	458	732
Madanpur Dhawa	598	312	210	102	286	92	194
Makbulpur Raja	1891	975	560	415	916	381	535
Bhermpur Khapura	198	95	64	31	103	38	65
Rampur	1061	667	407	260	394	140	254
Fakharpur	3120	1682	966	716	1438	574	864
Jalpura	1271	936	549	387	335	134	201
Pheku Bigha	1103	584	366	218	519	205	314
Piare Chak	2191	1158	724	434	1033	424	609
Darwesh pura	261	162	105	57	99	37	62
Arwal (NP)	51849	32116	19012	13104	19733	8065	11668

**CHAPTER-3****BASELINE ENVIRONMENTAL STATUS**

Project: Sand Mining Project, On Son River At Mainpura Sohsa (Arwal Son - 13) Sand (Area- 44.46 Ha)

Baroha	Uninhabited Village						
Dariyapur	502	346	205	141	156	60	96
Inglish Gulab Singh	1505	830	551	279	675	258	417
Patak Chak	603	314	211	103	289	128	161
Aiyara	7815	4909	2896	2013	2906	1138	1768
Laraua	379	113	74	39	266	121	145
Purainia Ruknuddin	1261	615	417	198	646	214	432
Purainia Shekha	2133	1243	782	461	890	352	538
Latifpur Paraha	1487	698	437	261	789	341	448
Lodipur	1066	565	330	235	501	213	288
Masudpur Bara	750	342	228	114	408	162	246
Nagawan	2383	1405	880	525	978	397	581
2. District Patna, Bihar							
Kalyanpur	3450	1731	1136	595	1719	730	989
Jalpura	1570	1085	622	463	485	206	279
Masaurha	2413	1425	831	594	988	372	616
Udaipur	2130	1066	693	373	1064	380	684
Mohbalipur	6863	3804	2316	1488	3059	1150	1909
Mohabbatpur	634	342	243	99	292	93	199
Ranipur	1584	917	555	362	667	273	394
Fatehpur	1630	842	513	329	788	343	445
Dariapur Pem	1697	720	481	239	977	399	578
Akhtiarpur Pali	3776	2360	1382	978	1416	588	828
Kurkuri	4444	2692	1596	1096	1752	652	1100
Bibipur	1157	704	420	284	453	156	297
Harpur Ankuri	2810	1381	813	568	1429	529	900
Sarsi	2471	1549	939	610	922	354	568
Muhammadpur	1452	656	411	245	796	340	456
Bherharia	5419	3023	1864	1159	2396	985	1411
Mohibalipur Chak	Uninhabited Village						
Ghurna Bigha	1218	460	330	130	758	292	466

**CHAPTER-3****BASELINE ENVIRONMENTAL STATUS**

Project: Sand Mining Project, On Son River At Mainpura Sohsa (Arwal Son - 13) Sand (Area- 44.46 Ha)

Habsapur	712	460	263	197	252	107	145
Pipardaha	4007	1851	1205	646	2156	850	1306
Belaunra	3078	1656	1008	648	1422	609	813
Kansopur	1393	708	445	263	685	281	404
3. District Bhojpur, Bihar							
Bela	1729	988	601	387	741	286	455
Korra	4249	2521	1487	1034	1728	672	1056
Lakhnipur	1196	561	340	221	635	283	352
Akbarpur	4399	2781	1673	1108	1618	657	961
Ajda	1010	579	349	230	431	156	275
Thakuri	1271	736	444	292	535	227	308
Sikaria	4768	2561	1523	1038	2207	921	1286
Sedura	1787	1123	636	487	664	264	400
Taranpur	1777	828	535	293	949	370	579
Chauri	917	472	309	163	445	163	282
Banauli Buzurg	687	534	310	224	153	74	79
Banauli Khurd	2288	1151	638	513	1137	505	632
Khiri	1107	644	401	243	463	187	276
Hemanpur	867	379	258	121	488	173	315
Khanpura	1597	664	403	261	933	438	495
Mankurha	1799	934	567	367	865	345	520
Torni	1363	575	385	190	788	289	499
Rampur Nagwan	4535	2230	1410	820	2305	938	1367
Bara	997	678	393	285	319	121	198
Bartiar	1788	1009	640	369	779	302	477
Kosdihra	766	353	246	107	413	148	265
Kori	6821	3549	2261	1288	3272	1173	2099
Baranhpur	84	59	38	21	25	7	18
Khandaul	5179	2624	1657	967	2555	1029	1526
Phulari	5036	3194	1990	1204	1842	692	1150
Bhatauli	2482	1427	928	499	1055	396	659

**CHAPTER-3****BASELINE ENVIRONMENTAL STATUS**

Project: Sand Mining Project, On Son River At Mainpura Sohsa (Arwal Son - 13) Sand (Area- 44.46 Ha)

Chanchar	Uninhabited Village						
Raman Sanrh	5613	3301	2080	1221	2312	923	1389
Patkhaulia	552	318	189	129	234	84	150
Pinjroi	689	436	240	196	253	94	159
Mahadeopur	Uninhabited Village						
Ahiman Chak	1457	727	475	252	730	261	469
Khemkaranpur	Uninhabited Village						
Baga	2697	1668	948	720	1029	368	661
Bhikham Chak	39	20	9	11	19	7	12
Narayanpur	6476	3761	2374	1387	2715	1032	1683
Bhaluni	1872	1028	681	347	844	331	513
Seothara	978	490	284	206	488	212	276
Muradpur	1195	812	483	329	383	118	265
Chhaprapur	2158	1238	773	465	920	319	601
Dihra	981	524	351	173	457	154	303
Mahpur	Uninhabited Village						
Chansi	3810	1949	1267	682	1861	738	1123
Banauli	2441	1334	859	475	1107	442	665
Keshwarpur	833	461	325	136	372	110	262
Chauria	582	344	223	121	238	63	175
Ekauna	1077	634	396	238	443	159	284
Agiaon	4801	2798	1672	1126	2003	809	1194
Kharainacha	1544	850	544	306	694	277	417
Isarpura	714	438	293	145	276	83	193
Paswan	3490	1935	1212	723	1555	651	904
Ahila	2477	1261	810	451	1216	470	746
Kheri	1706	1041	629	412	665	229	436
Bargaon	10748	5758	3670	2088	4990	1980	3010
Megharia	1278	711	401	310	567	198	369
Kamaria	2004	1085	696	389	919	333	586
Kirkiri	4247	2532	1498	1034	1715	696	1019

**CHAPTER-3****BASELINE ENVIRONMENTAL STATUS**

Project: Sand Mining Project, On Son River At Mainpura Sohsa (Arwal Son - 13) Sand (Area- 44.46 Ha)

Chipura	641	361	247	114	280	79	201
Narainaganj	279	75	55	20	204	104	100
Dundhua	Uninhabited Village						
Barhampur Mehdanra	3044	1553	958	595	1491	610	881
Chilhar	4188	2377	1437	940	1811	784	1027
Tara Chak	1748	998	637	361	750	290	460
Karbasi	2846	1563	953	610	1283	497	786
Gordiha	1218	589	402	187	629	239	390
Amarpur	Uninhabited Village						
Nadhi	3469	1911	1253	658	1558	592	966
Nonaur	4691	2639	1645	994	2052	824	1228
Muzaffarpur	1450	864	545	319	586	234	352
Madhopur	591	321	210	111	270	98	172
Baghi	1724	1043	632	411	681	253	428
Sewantha	1992	1335	745	590	657	267	390
Baruna	3528	1866	1147	719	1662	710	952
Dhobha	1713	818	513	305	895	364	531
Paharpur Khurd	427	154	97	57	273	111	162
Rudarpur	434	275	160	115	159	61	98
Ekauni	269	112	71	41	157	55	102
Ramnagar	1749	953	611	342	796	282	514
Bajrean	2160	1192	793	399	968	332	636
Bishunpura	450	204	131	73	246	91	155
Baruhi	7021	3579	2184	1395	3442	1489	1953
Ekwari	11561	6897	4005	2892	4664	1971	2693
Inurkhi	2492	1326	847	479	1166	424	742
Kunrwa	463	266	173	93	197	79	118
Newada	2005	1215	769	446	790	275	515
Bansi Dehri	1472	812	455	357	660	244	416
Jot Gobind	Uninhabited Village						
Dehri	2452	1434	838	596	1018	404	614

**CHAPTER-3****BASELINE ENVIRONMENTAL STATUS**

Project: Sand Mining Project, On Son River At Mainpura Sohsa (Arwal Son - 13) Sand (Area- 44.46 Ha)

Peur	2080	975	573	402	1105	443	662
Peur Chak	Uninhabited Village						
Sahar	5674	2884	1741	1143	2790	1124	1666
Abgilla	2845	1608	884	724	1237	511	726
Mathurapur	1328	713	428	285	615	238	377
Patrihan	1570	856	519	337	714	252	462
Shiw Chak	2105	1146	702	444	959	357	602
TOTAL (10km)	376053	212757	130059	82698	163296	64577	98719
Source-Census of India, 2011							

#### Economic Profile of Lakhisarai District:

Economy of the district is totally agriculture Based and this area does not have any presence of any Industry. Paddy, wheat and maize are the main crops. In 2008 the Bihar government approved the construction of a bridge across the Son River at a cost of Rs. 9,742 lakhs[4] from Arwal to Sahar in Bhojpur district. The economy of Arwal depends on agriculture only. Most of the population resides in villages and are farmers. The entire district is well irrigated due to the proper arrangement of canals, except area like Kurtha, Vanshi and Karpi. There is no existence of any industry or other business centre.[5]

#### Workers Scenario:

Occupational studied to assess the skills of people in the study area. Occupational pattern helps in identifying major economic activities of the area. In the study area the Main and Marginal Workers population was observed as 80588(21.0%) and 44402(12.0%) to the total population (376053), while the remaining 2,51,063 (67.0%) persons were recorded as non-workers. Thus it implies that the semi-skilled and non-skilled work-force required in study area for the project is available in aplenty.

The village-wise main and marginal worker's population with further classification as casual, agricultural, households and other workers is shown as follows in Table 3.28



**CHAPTER-3****BASELINE ENVIRONMENTAL STATUS**

Project: Sand Mining Project, On Son River At Mainpura Sohsa (Arwal Son - 13) Sand (Area- 44.46 Ha)

Table 3.28 Village-wise Occupational Pattern (10km)

Name of the Village/Town	MAIN WORK_P	MAIN_C L_P	MAIN_A L_P	MAIN_H H_P	MAIN_O T_P	MARG WORK_P	MARG_C L_P	MARG_A L_P	MARG_H H_P	MARG_OT_P
1. District Arwal, Bihar										
Koriam	705	153	425	12	115	287	9	260	5	13
Bara	242	123	62	14	43	8	1	3	2	2
Satpura	363	59	231	8	65	55	14	33	6	2
Konika	474	37	403	0	34	334	2	330	0	2
Sonbarsa	975	73	452	85	365	607	27	523	22	35
Sakri	523	215	213	2	93	199	0	184	0	15
Sonbarsa										
Makbulpur										
Alauddin	227	96	47	1	83	146	30	72	3	41
Madan Singhka										
Bigha	86	54	28	0	4	231	0	230	0	1
Sonbarsa	Uninhabited Village									
Aslampur Dullah	Uninhabited Village									
Bhusura	581	170	317	16	78	105	2	88	5	10
Chiraia Tanr	251	58	165	0	28	52	1	9	15	27

**CHAPTER-3****BASELINE ENVIRONMENTAL STATUS**

Project: Sand Mining Project, On Son River At Mainpura Sohla (Arwal Son - 13) Sand (Area- 44.46 Ha)

Dangra Ahar	404	82	185	73	64	209	44	155	1	9
Saifabad	Uninhabited Village									
Bhadasi	1124	244	688	27	165	637	74	494	7	62
Gaddopur	685	87	491	12	95	31	0	27	1	3
Madanpur Dhawa	118	73	29	6	10	4	0	0	4	0
Makbulpur Raja	464	150	297	0	17	41	18	21	0	2
Bhermpur Khapura	47	45	0	0	2	9	0	9	0	0
Rampur	168	121	4	0	43	110	19	86	0	5
Fakharpur	500	121	201	23	155	317	40	240	5	32
Jalpura	222	86	83	0	53	127	12	92	8	15
Pheku Bigha	159	89	28	0	42	75	1	64	2	8
Piare Chak	261	81	69	16	95	446	2	413	12	19
Darwesh pura	54	41	13	0	0	0	0	0	0	0
Arwal (NP)	10565	1370	3724	204	5267	3763	324	2250	244	945
Baroha	Uninhabited Village									
Dariyapur	119	68	21	1	29	5	0	3	0	2
Inglish Gulab Singh	424	159	175	34	56	173	2	166	0	5
Patak Chak	49	14	10	0	25	124	1	118	0	5
Aiyara	1381	767	372	14	228	1244	272	880	9	83

**CHAPTER-3****BASELINE ENVIRONMENTAL STATUS**

Project: Sand Mining Project, On Son River At Mainpura Sohla (Arwal Son - 13) Sand (Area- 44.46 Ha)

Laraua	11	6	5	0	0	111	0	111	0	0
Purainia Ruknuddin	381	75	286	11	9	218	5	205	2	6
Purainia Shekha	591	264	256	19	52	350	8	320	3	19
Latifpur Paraha	374	138	186	1	49	19	0	19	0	0
Lodipur	375	65	250	17	43	3	0	1	0	2
Masudpur Bara	138	5	116	0	17	68	0	61	0	7
Nagawan	504	244	226	3	31	252	4	237	2	9
2. District Patna, Bihar										
Kalyanpur	877	155	665	1	56	318	11	236	1	70
Jalpura	166	89	20	1	56	240	160	42	1	37
Masaurha	404	183	137	22	62	597	98	360	70	69
Udaipur	240	48	64	33	95	542	38	436	39	29
Mohbalipur	993	386	249	52	306	967	94	725	51	97
Mohabbatpur	93	80	6	0	7	27	17	9	0	1
Ranipur	402	126	201	4	71	130	26	82	1	21
Fatehpur	304	28	230	5	41	331	1	316	5	9
Dariapur Pem	354	84	221	12	37	481	35	245	13	188
Akhtiarpur Pali	772	250	291	94	137	419	62	194	40	123
Kurkuri	1198	529	543	1	125	107	11	77	0	19

**CHAPTER-3****BASELINE ENVIRONMENTAL STATUS**

Project: Sand Mining Project, On Son River At Mainpura Sohla (Arwal Son - 13) Sand (Area- 44.46 Ha)

Bibipur	252	57	88	1	106	105	5	96	0	4
Harpur Ankuri	587	257	193	1	136	370	17	279	0	74
Sarsi	672	232	326	7	107	33	13	7	0	13
Muhammadpur	226	31	186	2	7	86	48	18	9	11
Bherharia	1261	205	714	29	313	838	65	427	227	119
Mohibalipur Chak	Uninhabited Village									
Ghurna Bigha	148	25	120	0	3	349	39	305	0	5
Habsapur	381	72	273	1	35	10	5	1	0	4
Pipardaha	870	204	604	1	61	517	67	409	13	28
Belaunra	634	325	253	7	49	695	7	621	36	31
Kansopur	313	156	133	3	21	18	0	11	0	7
Bela	117	26	60	8	23	837	39	319	418	61
Korra	1098	291	640	25	142	414	13	336	28	37
Lakhnipur	362	83	247	22	10	31	4	25	1	1
Akbarpur	1520	360	866	40	254	271	13	198	14	46
Ajda	237	80	149	4	4	9	1	7	1	0
Thakuri	307	73	200	3	31	10	1	4	2	3
Sikaria	1109	369	644	6	90	337	42	287	6	2
Sedura	186	53	110	4	19	505	19	442	21	23

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Project: Sand Mining Project, On Son River At Mainpura Sohla (Arwal Son - 13) Sand (Area- 44.46 Ha)

Taranpur	297	69	192	4	32	298	8	284	0	6
Chauri	173	31	124	0	18	103	2	99	1	1
Banauli Buzurg	230	4	204	0	22	36	1	33	0	2
Banauli Khurd	653	24	515	3	111	139	14	112	7	6
Khiri	259	16	211	2	30	7	1	2	0	4
Hemanpur	386	11	369	2	4	108	3	101	0	4
Khanpura	445	139	251	0	55	4	1	1	1	1
Mankurha	476	100	315	17	44	184	50	132	1	1
Torni	360	80	249	7	24	54	2	51	1	0
Rampur Nagwan	731	184	474	2	71	944	145	730	26	43
3. District Bhojpur, Bihar										
Bara	329	144	93	54	38	53	0	6	38	9
Bartiar	539	132	163	158	86	211	14	119	23	55
Kosdihra	154	125	8	0	21	38	4	30	1	3
Kori	2100	166	1545	52	337	154	4	131	4	15
Baranhpur	15	8	5	0	2	11	2	9	0	0
Khandaul	783	329	331	7	116	767	26	632	11	98
Phulari	912	150	515	5	242	658	200	294	11	153
Bhatauli	239	39	147	20	33	335	27	276	11	21

**CHAPTER-3****BASELINE ENVIRONMENTAL STATUS**

Project: Sand Mining Project, On Son River At Mainpura Sohla (Arwal Son - 13) Sand (Area- 44.46 Ha)

Chanchar	Uninhabited Village									
Raman Sanrh	1313	452	596	77	188	549	124	171	36	218
Patkhaulia	113	30	70	0	13	5	0	2	1	2
Pinjroi	126	79	18	0	29	0	0	0	0	0
Mahadeopur	Uninhabited Village									
Ahiman Chak	223	37	91	46	49	269	14	208	17	30
Khemkaranpur	Uninhabited Village									
Baga	233	12	123	3	95	328	66	232	9	21
Bhikham Chak	4	0	2	0	2	5	1	2	0	2
Narayanpur	1356	585	511	49	211	313	101	185	14	13
Bhaluni	413	26	244	27	116	494	10	264	100	120
Seothara	42	22	7	1	12	354	64	256	1	33
Muradpur	27	15	3	0	9	419	3	381	2	33
Chhaprapur	622	153	353	14	102	35	5	7	5	18
Dihra	28	20	2	1	5	282	79	195	3	5
Mahpur	Uninhabited Village									
Chansi	1472	582	843	15	32	184	112	62	6	4
Banauli	759	204	522	5	28	28	7	8	1	12
Keshwarpur	211	191	5	0	15	190	190	0	0	0

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Project: Sand Mining Project, On Son River At Mainpura Sohla (Arwal Son - 13) Sand (Area- 44.46 Ha)

Chauria	113	50	39	0	24	87	2	85	0	0
Ekauna	320	206	60	2	52	110	10	90	0	10
Agiaon	1112	104	487	214	307	816	94	553	61	108
Kharainacha	515	273	26	52	164	329	33	260	19	17
Isarpura	16	4	3	0	9	369	3	346	8	12
Paswan	747	340	219	39	149	281	35	167	19	60
Ahila	713	213	186	189	125	375	83	229	22	41
Kheri	482	164	156	101	61	177	43	48	33	53
Bargaon	2075	541	1148	70	316	2079	188	1515	46	330
Megharia	192	55	41	45	51	90	13	67	7	3
Kamaria	378	230	112	10	26	327	36	126	10	155
Kirkiri	780	57	175	23	525	196	8	35	20	133
Chipura	131	104	7	8	12	3	1	0	1	1
Narainaganj	82	26	53	0	3	7	3	3	0	1
Dundhua	Uninhabited Village									
Barhampur										
Mehdanra	861	177	453	21	210	509	80	238	115	76
Chilhar	767	190	242	44	291	318	14	248	39	17
Tara Chak	435	272	121	1	41	385	19	343	2	21

**CHAPTER-3****BASELINE ENVIRONMENTAL STATUS**

Project: Sand Mining Project, On Son River At Mainpura Sohla (Arwal Son - 13) Sand (Area- 44.46 Ha)

Karbasin	898	115	481	191	111	249	12	135	13	89
Gordiha	36	16	6	3	11	625	74	515	10	26
Amarpur	Uninhabited Village									
Nadhi	815	271	495	6	43	339	170	130	15	24
Nonaaur	1009	336	470	12	191	421	107	293	7	14
Muzaffarpur	445	188	203	10	44	201	198	3	0	0
Madhopur	246	159	69	2	16	104	76	26	0	2
Baghi	483	46	229	2	206	395	5	146	16	228
Sewantha	352	122	145	1	84	277	18	112	2	145
Baruna	587	240	101	32	214	484	125	239	68	52
Dhobha	397	119	258	2	18	181	3	135	2	41
Paharpur Khurd	53	22	25	1	5	48	8	37	1	2
Rudarpur	182	93	76	8	5	68	5	10	0	53
Ekauni	57	37	18	1	1	7	5	2	0	0
Ramnagar	458	96	182	78	102	264	3	252	5	4
Bajrean	549	408	86	2	53	91	32	55	1	3
Bishunpura	6	1	0	0	5	137	66	50	5	16
Baruhi	1809	992	687	34	96	791	104	620	7	60
Ekwari	2360	831	963	83	483	1599	256	1224	19	100



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Inurkhi	465	227	130	8	100	456	94	246	56	60
Kunrwa	3	0	1	0	2	305	0	224	74	7
Newada	498	294	177	0	27	254	16	152	5	81
Bansi Dehri	461	372	77	0	12	275	252	1	1	21
Jot Gobind	Uninhabited Village									
Dehri	266	46	84	10	126	668	171	343	53	101
Peur	331	51	194	29	57	363	52	298	2	11
Peur Chak	Uninhabited Village									
Sahar	820	139	190	21	470	884	84	649	28	123
Abgilla	443	79	133	2	229	245	2	174	14	55
Mathurapur	304	98	164	5	37	97	18	41	21	17
Patrihan	305	107	156	11	31	180	6	124	1	49
Shiw Chak	580	95	448	9	28	423	17	394	0	12
TOTAL (10km)	80588	23055	37368	2941	17224	44402	5787	30216	2514	5885

Source-Census of India, 2011

**ABBREVIATIONS:**

MAIN WORKERS POPULATION: MAIN\_WORK\_P: Main worker's total population, MAIN\_CL\_P: Main cultivated labour population, MAIN\_AL\_P: Main agricultural labour population, MAIN\_HH\_P: Main workers population involved in household industries, MAIN\_OT\_P: Main other worker's population

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### BASELINE ENVIRONMENTAL STATUS

Project: Sand Mining Project, On Son River At Mainpura Sohsa (Arwal Son - 13) Sand (Area- 44.46 Ha)

#### MARGINAL WORKERS POPULATION:

MARG\_WORK\_P: Marginal worker's total population, MARG\_CL\_P: Marginal cultivated labors total population, MARG\_AL\_P: Marginal agricultural labors population, MARG\_HH\_P: Marginal workers involved in household industries, MARG\_OT\_P : Marginal other workers Population

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Distribution of work participation rate of the study area population is shown in Table 3.29....as follows;

Table 3.29 Distribution of Work Participation Rate(10km)

Occupation Class	Year, 2011
Main Workers	80588 (21.0%)
Male	66091(82.0%)
Female	14497(18.0%)
Marginal Workers	44402(12.0%)
Male	25002(56.3%)
Female	19400(43.7%)
Non-Workers	251063(67.0%)
Male	103543 (41.2%)
Female	147520(58.8%)
Total Population (10km)	376053
Source: Census of India Records, 2011	

Graphical representation of Workers Scenario is given below as Figure .....

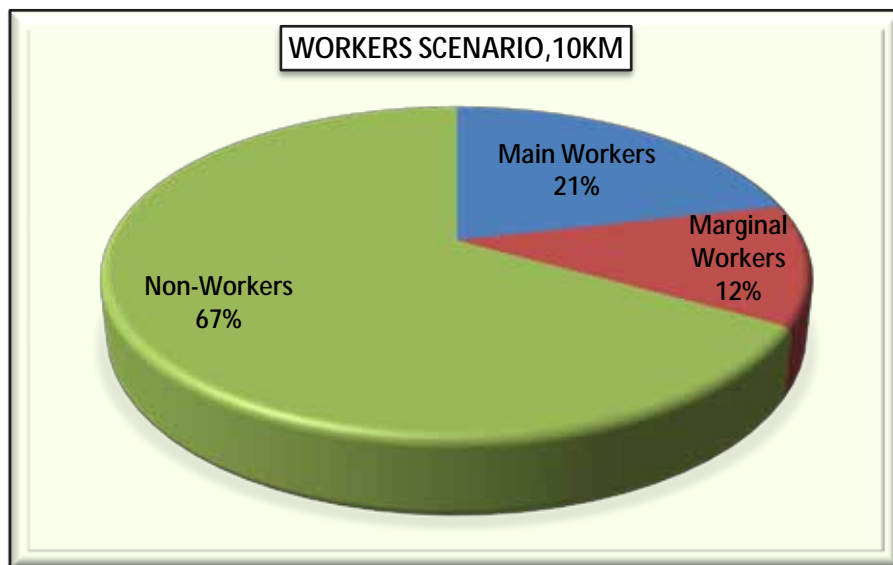


Figure:3.10 Workers Scenario of Study Area

Composition of Main Workers:

The 'Main Workers' were observed as 80588 persons (21.0%) to the total population (376053) of the study area and its composition is made-up of Casual laborers as 23,055

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(29.0%), Agricultural laborers as 37368(46.0%), Household workers 2941(4.0%) and other workers as 17224(21.0%) respectively.

Composition of Main workers is shown below as Figure ....

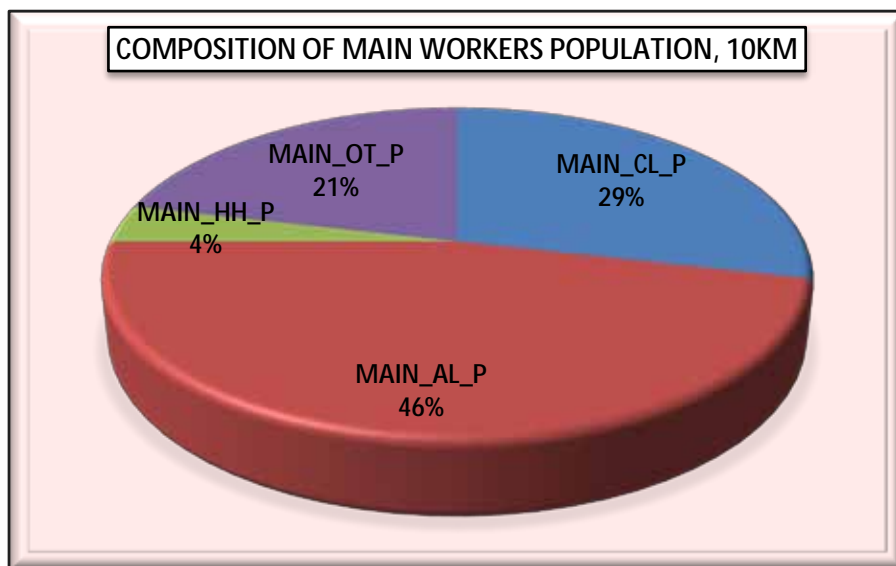


Figure:3.11 Composition of Main Workers Population

Composition of Marginal Workers:

The total marginal workers are observed as 44402 which constitute 12.0% to the total population (376053) comprising of Marginal Casual Laborers as 5787 (13.0%), Marginal Agricultural Laborers as 30216(68.0%), Marginal Household laborers as 2,514 (6.0%) and marginal other workers were also observed as 5885 (13.0%) of the total marginal workers respectively.

Details about marginal workers in the study area are tabulated in Table .... Composition of Marginal workers is shown in Figure ... as follows.

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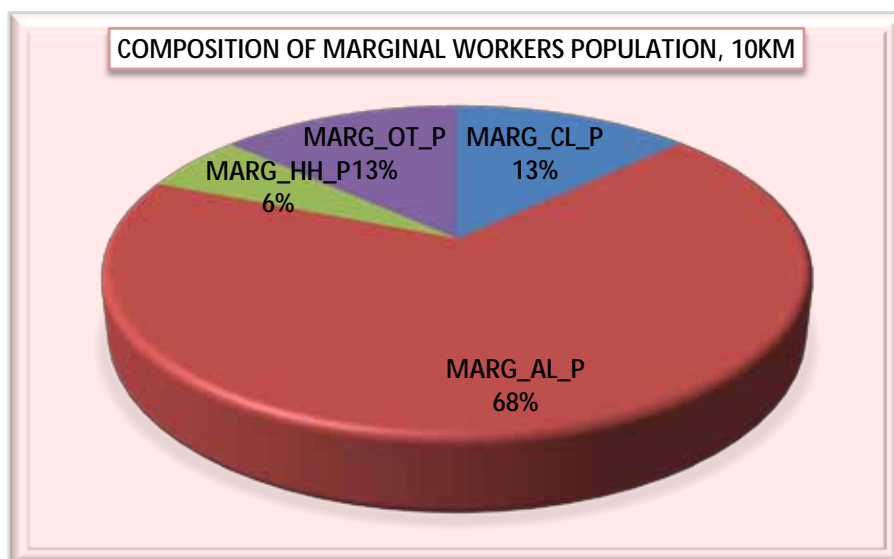


Figure:3.12 Composition of Marginal Workers

#### Composition of Non-Workers:

The total Non-worker's population was observed as 2,51,063 which accounts 67.0% to the total population (3,76,053) of the study area. Male-female wise Non-worker's population was recorded as 103543 Males (41.2%) and 147520 Females (58.8%) respectively.

Details about Total Non-workers in the study area are compiled in Table .... Graphical representation of Non-worker's population is shown as follows in Figure ....

Table 3.30.....:Composition of Non-Workers

Non-Workers Population		
Persons	Males	Females
251063	103543 (41.2%)	147520(58.8%)

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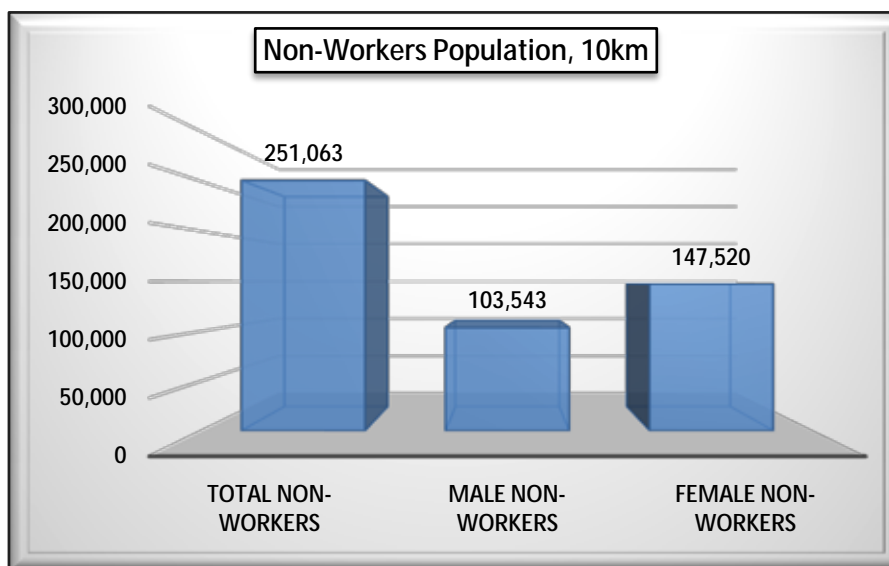


Figure: 3.13 Composition of Non-Workers

Basic Infrastructure Facilities Availability(as per the census records of 2011)

A review of basic infrastructure facilities (Amenities) available in the study area has been done on the basis of the field survey and Census records, 2011 for the study area inhabited villages of Arwal, Bhojpur and Patna Districts in Bihar state. The study area has average level of basic infrastructure facilities like educational, medical, potable water and power supply and transport & communication network.

As per the Census Records 2011, the study area has a total of 154 villages and one town named Arwal (NP) / (25 wards) lying under Arwal in Bihar state. Overall study area villages are falling mainly under Seven (07 Villages) tehsils namely Arwal (26 villages), Karpi (12 villages), Paliganj (40 villages), Sandesh (17 villages), Agiaon (42 villages), Tarari (01 village), Sahar (17 village), under 3 main districts i.e. Arwal, Bhojpur and Patna in Bihar state respectively. There are thirteen (13) villages of above mentioned 3 districts in Bihar state found as uninhabited villages in the study area.

#### Educational Facilities

There is a total no. of 166 Primary schools existing in the 10km radius study area. Ninety-nine (99) no of Middle schools are found in the study area. Only sixty-three (63) Higher Secondary School (SS) and eleven (11) Senior Secondary School (SSS) facility is available in the study area. The educational facilities have been further strengthening now and a number of private public schools and colleges are also functioning in the surroundings of the study area. Besides, there are Engineering and Medical colleges available in Towns and District headquarters only. Higher education facilities are available in Towns of the district. There is a

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considerable improvement in educational facility. The villages of the study area have no such facilities can reach within 5 to 10 km range. No town was found in the 10 km radial study area.

Availability of University education in the District

University education facility is available in the district and it is being imparted through various colleges, constituent as well as affiliated to Magadh University.

Medical Facilities

The medical facilities are provided by different agencies like Govt. & Private individuals and voluntary organizations in the study area. As per the census 2011, only 14 primary health centers exist in the study area; most of the study area villages depend upon the towns & district HQ of the study area having such facility. No community health centre exists in the study area. Only twenty-five (25) Primary Health Sub-Centers exist in the villages of the study area. Only seventeen (17) no of Mother & Child Welfare Centers are found in the study area. No allopathic hospital exists in the study area. Only 4 Dispensaries are found in the study area. Only seventeen (17) Family Welfare Centers are found in the study area. Overall study area villages are served by average medical facilities. Specialized medical facilities are available only in towns and District Headquarter (HQ) only.

Potable Water Facilities

Potable water facility is available in most of the villages of the study area. The entire study area has average level of potable water facilities. Hand Pump (HP) water facility is commonly observed in the study area as potable water facility. Out of the total 154 villages, only 77 villages (50.0%) are served with River/Canal water in the study area. As per the census records 2011, about 6 (4.0%) villages are being served with Tank/Pond/Lake as potable water facility in the study area.

Communication, Road & Transport Facilities

Apart from Post & Telegraph Office (PTO) services, transport is the main communication linkage in the study area. Compiled census 2011, data shows that the study area has good postal facilities in the 10 km radius zone. About 50 villages (32.5%) were found serving with Post Office facilities in the study area, remaining villages are depending upon towns of the study area. The study area has average rail and road network, passes from the area.

Only one village named Sikaria under Paliganj tehsil of Patna district was found with railway station facility in the study area. Nearest railway station is Garhani Railway station at distance of approx. 16.84 km in NW direction from the mine lease area site. Nearest town is Arwal,

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situated at approx. 7.58km in Southwest direction. District Headquarters Arwal, situated at approx. 7.58 km towards SW direction.

Site is well connected by Nearest National Highway (NH-139) is passing at 1.92km towards East Direction from the site. Nearest airport is Jayprakash Narayan International Airport Patna, in Bihar state, situated at 50.0km in NE direction from the mine lease area site.

Roads - The district of Arwal is well served by a network of roads. Road communication is the main mode of transportation in this district. The roads are classified as the National Highways, State Highways, Major district roads and other district roads. They are maintained by the Public Works Department, the Rural Engineering Organisation, the Zila Parishad and Municipalities. It is also connected with the interior of the district by metalled road. NH-98 and NH-110 pass through the district.

The district of Arwal has not a railway communication system. Airways facilities are not available in the district. Waterways facilities are not available in the district.

#### Banking Facility

The study area has almost all the schedule commercial banks with ATM facility at urban areas and the district HQ.

#### Power Supply

It is revealed from the compiled information on amenities availability as per the census record of 2011; most of the villages and towns are electrified for Domestic, Agriculture, and Commercial & for all purposes. About 33 villages (21.4%) and towns of the study area are electrified for domestic purpose, only 7 villages (4.6%) for agricultural purpose, 4 villages for commercial purpose and for all purposes in the study area. Out of 154 villages in the study area, 121 villages (78.5%) including 13 uninhabited villages (8.5%) are not electrified for any purpose in the study area.

The district receives its entire power supply from Bihar State Electricity Board. All the towns of Arwal district have electricity. Some villages are provided with electricity. Domestic and commercial use, account for a considerable part of power consumption. In the rural areas, the Government is trying to extend electric line to the maximum number of villages by implementing various schemes for rural electrification. 37 Villages of the district are electrified.

Village/town wise Basic Infrastructure and Amenities availabilities data for the entire study area is compiled and presented in Table... as follows;



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## BASELINE ENVIRONMENTAL STATUS

Project: Sand Mining Project, On Son River At Mainpura Sohsa (Arwal Son - 13) Sand (Area-44.46 Ha)

Table 3.31....:Village wise Basic Amenities Availability

Village Name of the Village/Town	Education al				Medical								Drinking Water								C T	Communicati on & Transport				Approach to the Village				Power Supply				Nearest Town & Distance, km
	P	M	S	S	C	P	P	M	H	D	F	T	W	H	T	R	T	P	P	B		RS	P	K	N	F	E	E	E	E				
			S	S	H	H	H	C			W			P	W		k	O	T	S		R	R	W	P	D	Ag	C	A					
Koriam	1	1	1	0	0	1	1	1	0	0	1	2	2	1	2	1	2	2	2	2	2	1	2	2	1	2	2	2	2	Arwal,6km				
Bara	1	0	0	0	0	0	0	0	0	0	0	2	2	1	2	1	2	2	1	2	2	1	1	1	1	2	2	2	2	Arwal,8km				
Satpura	1	0	0	0	0	0	0	0	0	0	0	2	2	1	2	1	2	2	2	2	2	2	1	2	1	2	2	2	2	Arwal,8km				
Konika	0	0	0	0	0	0	0	0	0	0	0	2	2	1	2	1	2	2	2	2	2	1	2	2	1	2	2	2	2	Arwal,7km				
Sonbarsa	1	1	0	0	0	1	1	1	0	0	1	2	2	1	2	1	2	2	1	2	2	2	1	1	1	1	1	2	2	2	Arwal,8km			
Sakri	1	1	0	0	0	0	0	0	0	0	0	2	2	1	2	1	2	2	1	2	2	2	1	1	2	1	2	2	2	2	Arwal,4km			
Sonbarsa Makbulpur Alauddin	1	0	0	0	0	0	0	0	0	0	0	2	2	1	2	1	2	2	2	2	2	1	1	1	1	2	2	2	2	Arwal,6km				
Madan Singhka Bigha	1	0	0	0	0	0	0	0	0	0	0	2	2	1	2	1	2	2	2	2	2	2	2	1	1	2	2	2	2	Arwal,4km				
Sonbarsa	Uninhabited Village																												Arwal,4km					

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Aslampur Dullah	Uninhabited Village																												Arwal,4km
Bhusura	1	0	0	0	0	0	0	0	0	0	0	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	Arwal,5km
Chiraia Tanr	2	0	0	0	0	0	0	0	0	0	0	2	2	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	Arwal,4km
Dangra Ahar	1	1	0	0	0	0	0	0	0	0	0	2	2	1	2	2	1	2	2	2	2	2	2	2	2	2	2	2	Arwal,5km
Saifabad	Uninhabited Village																												Arwal,5km
Bhadasi	1	1	0	0	0	0	0	0	0	0	0	2	2	1	2	2	2	2	1	2	2	2	1	1	2	1	2	2	Arwal,2km
Gaddopur	1	0	0	0	0	0	0	0	0	0	0	2	2	1	1	1	2	2	2	2	2	2	2	1	2	1	1	2	Arwal,8km
Madanpur Dhawa	0	0	0	0	0	0	0	0	0	0	0	2	2	1	1	1	2	2	2	2	2	2	2	1	2	1	1	2	Arwal,9km
Makbulpur Raja	1	0	0	0	0	0	0	0	0	0	0	2	2	1	1	1	1	2	1	2	2	2	2	1	2	1	1	2	Arwal,8km
Bhermpur Khapura	0	0	0	0	0	0	0	0	0	0	0	2	2	1	1	1	2	2	2	2	2	2	2	1	2	1	1	2	Arwal,8km
Rampur	1	0	0	0	0	0	0	0	0	0	0	2	2	1	1	1	1	2	2	2	2	2	2	1	2	1	1	2	Arwal,5km
Fakharpur	1	2	1	1	0	0	1	1	0	0	1	2	2	1	1	1	1	2	1	2	1	2	1	1	2	1	1	2	Arwal,8km
Jalpura	1	1	0	0	0	0	0	0	0	0	0	2	2	1	1	2	2	2	1	2	2	2	1	1	2	1	2	2	Arwal,5km
Pheku Bigha	1	0	0	0	0	0	0	0	0	0	0	2	2	1	2	1	2	2	2	2	2	2	2	1	2	1	2	2	Arwal,1km
Piare Chak	1	0	0	0	0	0	1	1	0	0	1	2	2	1	2	1	1	2	2	2	2	2	2	1	1	1	2	2	Arwal,5km
Darwesh pura	1	0	0	0	0	0	0	0	0	0	0	2	2	1	2	2	2	2	2	2	2	2	2	1	2	1	2	2	Arwal,5km
Arwal (NP)	Urban Part																												Arwal (NP),0km
Baroha	Uninhabited Village																												Arwal,5km

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Dariyapur	0	0	0	0	0	0	0	0	0	0	0	2	2	1	2	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	Arwal,3km	
Inglish Gulab Singh	1	0	0	0	0	0	0	0	0	0	0	2	2	1	2	1	2	2	2	2	2	2	2	2	1	2	1	2	2	2	Arwal,3km	
Patak Chak	1	0	0	0	0	0	0	0	0	0	0	2	2	1	2	1	2	2	2	2	2	2	2	2	1	2	1	2	2	2	Arwal,4km	
Aiyara	6	3	1	0	0	0	0	0	0	0	0	2	2	1	2	2	2	2	1	2	2	2	2	2	1	2	1	2	2	2	Arwal,15km	
Laraua	1	0	0	0	0	0	0	0	0	0	0	2	2	1	1	2	2	2	2	2	2	2	2	2	1	2	1	2	2	2	Arwal,15km	
Purainia Ruknuddin	0	0	0	0	0	0	0	0	0	0	0	2	2	1	2	2	2	2	1	2	2	2	2	2	1	2	1	2	2	2	Arwal,15km	
Purainia Shekha	2	1	0	0	0	0	1	1	0	0	1	2	2	1	2	2	2	2	1	2	2	2	2	1	1	2	1	2	2	2	Arwal,15km	
Latifpur Paraha	1	1	0	0	0	0	0	0	0	0	0	2	2	1	1	2	2	2	2	2	2	2	2	2	1	2	1	2	2	2	Arwal,12km	
Lodipur	1	0	0	0	0	0	0	0	0	0	0	2	2	1	2	2	2	2	2	2	2	2	2	2	1	2	1	2	2	2	Arwal,13km	
Masudpur Bara	1	0	0	0	0	0	0	0	0	0	0	2	2	1	1	2	2	2	2	2	2	2	2	2	1	2	2	1	2	2	Arwal,15km	
Nagawan	2	0	0	0	0	0	0	0	0	0	0	2	2	1	2	1	2	2	2	2	2	2	2	2	1	2	1	2	2	2	Arwal,14km	
Kalyanpur	1	1	1	0	0	0	0	0	0	0	0	2	2	1	2	2	2	2	2	2	2	2	2	1	2	2	1	2	2	2	Jehanabad,25km	
Jalpura	1	1	1	0	0	1	1	1	0	1	1	2	2	1	2	1	2	2	2	2	2	2	2	1	1	2	1	2	2	2	Jehanabad,28km	
Masaurha	1	1	1	0	0	0	0	0	0	0	0	2	2	1	2	1	2	2	1	2	2	2	2	1	1	2	1	2	2	2	Jehanabad,28km	
Udaipur	1	1	1	0	0	0	0	0	0	0	0	2	2	1	1	1	2	2	2	2	2	2	2	1	1	2	1	2	2	2	Jehanabad,30km	
Mohbalipur	4	4	4	1	0	0	1	0	0	0	0	2	1	1	2	1	2	2	1	2	1	2	2	1	1	1	1	1	2	2	2	Jehanabad,28km
Mohabbatpur	1	1	1	0	0	0	0	0	0	0	0	2	2	1	1	2	2	2	2	2	2	2	2	1	1	2	1	2	2	2	Jehanabad,27km	
Ranipur	1	1	1	0	0	0	0	0	0	0	0	2	2	1	1	2	2	2	2	1	2	2	2	1	1	2	1	1	2	2	Jehanabad,27km	

**CHAPTER-3****BASELINE ENVIRONMENTAL STATUS**

Project: Sand Mining Project, On Son River At Mainpura Sohsa (Arwal Son - 13) Sand (Area- 44.46 Ha)

Fatehpur	1	1	1	0	0	0	0	0	0	0	0	2	2	1	2	2	2	2	1	2	2	2	2	1	2	1	2	2	2	2	Jehanabad,25km
Dariapur Pem	2	2	2	0	0	0	0	0	0	0	0	2	2	1	2	2	2	2	2	2	2	2	1	1	2	1	1	2	2	2	Jehanabad,26km
Akhtiarpur Pali	1	1	1	0	0	0	0	0	0	0	0	2	2	1	2	1	2	2	2	2	2	2	2	1	1	1	2	2	2	2	Jehanabad,23km
Kurkuri	2	1	1	0	0	0	0	0	0	0	0	2	2	1	2	1	2	2	1	2	1	2	1	2	2	1	2	2	2	2	Jehanabad,26km
Bibipur	1	1	1	0	0	0	0	0	0	0	0	2	2	1	2	2	2	2	2	2	2	2	1	2	2	1	1	1	1	1	Jehanabad,28km
Harpur Ankuri	1	1	1	0	0	0	0	0	0	0	0	2	1	1	2	2	2	2	1	2	2	2	1	2	2	1	1	2	2	2	Jehanabad,29km
Sarsi	1	1	1	0	0	0	0	0	0	0	0	2	2	1	2	2	2	2	1	2	2	2	1	2	2	1	1	1	1	1	Jehanabad,29km
Muhammadpur	1	1	1	0	0	0	0	0	0	0	0	2	2	1	2	1	2	2	2	2	2	1	2	1	1	1	1	1	1	1	Jehanabad,30km
Bherharia	2	2	2	0	0	0	0	0	0	0	0	2	1	1	1	1	2	2	2	2	2	2	1	1	2	1	1	2	2	2	Jehanabad,30km
Mohibalipur Chak																													Jehanabad,30km		
Ghurna Bigha	1	1	1	0	0	0	0	0	0	0	0	2	2	1	2	2	2	2	2	2	2	2	2	1	2	1	2	2	2	2	Jehanabad,28km
Habsapur	1	1	1	0	0	0	0	0	0	0	0	2	2	1	2	1	2	2	2	2	2	2	2	1	1	1	2	2	2	2	Jehanabad,27km
Pipardaha	1	1	1	0	0	0	0	0	0	0	0	2	1	1	2	1	2	2	2	2	2	2	1	1	2	1	2	2	2	2	Jehanabad,25km
Belaunra	1	2	2	0	0	0	1	0	0	0	0	2	2	1	2	1	2	2	1	2	2	2	1	1	2	1	2	2	2	2	Jehanabad,29km
Kansopur	1	1	1	0	0	0	0	0	0	0	0	2	1	1	2	1	2	2	2	2	2	2	1	1	2	1	1	2	2	2	Jehanabad,29km
Bela	1	1	1	0	0	0	0	0	0	0	0	2	1	1	2	1	2	2	2	2	2	2	1	1	2	1	1	2	2	2	Jehanabad,30km
Korra	1	1	1	0	0	0	0	0	0	0	0	2	2	1	2	1	2	2	1	2	2	2	1	1	1	1	2	2	2	2	Jehanabad,32km
Lakhnipur	1	1	1	0	0	0	0	0	0	0	0	2	2	1	2	1	2	2	2	2	2	2	2	1	2	1	2	2	2	2	Jehanabad,30km

**CHAPTER-3****BASELINE ENVIRONMENTAL STATUS**

Project: Sand Mining Project, On Son River At Mainpura Sohsa (Arwal Son - 13) Sand (Area- 44.46 Ha)

Akbarpur	1	1	1	0	0	1	1	1	0	1	1	2	2	1	2	1	2	2	1	2	2	2	1	2	2	1	2	2	2	2	Jehanabad, 29km
Ajda	1	1	1	0	0	0	0	0	0	0	0	2	2	1	2	1	2	2	2	2	2	2	2	1	2	1	1	2	2	2	Jehanabad, 28km
Thakuri	1	1	1	0	0	0	0	0	0	0	0	2	2	1	2	1	2	2	2	2	2	2	2	1	2	1	1	2	2	2	Jehanabad, 26km
Sikaria	2	1	1	0	0	0	0	0	0	0	0	2	1	1	1	1	2	2	1	2	1	1	1	2	1	1	2	2	2	2	Jehanabad, 26km
Sedura	1	1	1	0	0	0	0	0	0	0	0	2	2	1	2	1	2	2	2	2	2	2	2	1	1	2	1	2	2	2	Jehanabad, 26km
Taranpur	1	1	1	0	0	0	0	0	0	0	0	2	1	1	2	1	2	2	2	2	2	2	2	2	1	1	1	1	2	2	Jehanabad, 25km
Chauri	0	0	0	0	0	0	0	0	0	0	0	2	2	1	2	2	2	2	2	2	2	2	2	2	2	1	1	2	2	2	Jehanabad, 25km
Banauli Buzurg	1	1	1	0	0	0	0	0	0	0	0	2	2	1	2	2	2	2	2	2	2	2	2	2	1	2	1	2	2	2	Jehanabad, 25km
Banauli Khurd	1	1	1	0	0	0	0	0	0	0	0	2	2	1	1	2	2	2	1	2	2	2	2	2	1	2	1	1	2	2	Jehanabad, 24km
Khiri	1	1	1	0	0	0	0	0	0	0	0	2	2	1	1	2	2	2	1	2	2	2	2	2	2	1	1	1	2	2	Jehanabad, 22km
Hemanpur	1	1	1	0	0	0	0	0	0	0	0	2	2	1	2	2	2	2	2	2	2	2	2	1	2	2	1	1	2	2	Jehanabad, 22km
Khanpura	1	1	1	0	0	0	0	0	0	0	0	2	2	1	2	1	2	2	1	2	2	2	2	2	2	1	1	1	2	2	Jehanabad, 22km
Mankurha	1	1	1	0	0	0	0	0	0	0	0	2	2	1	2	1	2	2	2	2	2	2	2	2	2	1	1	1	2	2	Jehanabad, 24km
Torni	1	1	1	0	0	0	0	0	0	0	0	2	2	1	1	1	2	2	2	2	2	1	2	2	2	1	2	2	2	2	Jehanabad, 24km
Rampur Nagwan	1	2	2	0	0	0	0	0	0	0	0	2	2	1	1	1	2	2	2	2	2	2	2	1	2	2	1	2	2	2	Jehanabad, 24km
Bara	1	1	0	0	0	0	0	0	0	0	0	2	2	1	1	2	1	2	2	2	2	2	2	1	1	1	1	2	2	2	Arrah, 24km
Bartiar	1	1	0	0	0	0	0	0	0	0	0	2	2	1	1	2	2	2	2	2	2	2	2	1	1	1	1	2	2	2	Arrah, 24km
Kosdihra	1	0	0	0	0	0	0	0	0	0	0	2	2	1	2	2	2	2	2	2	2	2	2	1	1	1	1	2	2	2	Arrah, 30km

**CHAPTER-3****BASELINE ENVIRONMENTAL STATUS**

Project: Sand Mining Project, On Son River At Mainpura Sohsa (Arwal Son - 13) Sand (Area- 44.46 Ha)

Kori	1	1	1	0	0	0	1	0	0	0	0	2	2	1	1	2	2	2	1	1	1	2	1	1	2	1	1	2	2	2	Arrah,30km
Baranhpur	0	0	0	0	0	0	0	0	0	0	0	2	1	1	1	2	2	2	2	2	2	2	1	1	2	1	2	2	2	2	Arrah,28km
Khandaul	1	1	0	0	0	0	0	0	0	0	0	2	2	1	2	1	2	2	2	1	1	2	1	1	1	1	1	1	2	2	Arrah,30km
Phulari	3	1	1	0	0	0	1	0	0	0	0	2	2	1	2	2	2	2	1	2	1	2	1	1	2	1	1	2	2	2	Arrah,30km
Bhatauli	1	1	1	0	0	0	0	0	0	0	0	2	2	1	1	1	2	2	1	2	2	2	1	1	2	1	2	2	2	2	Arrah,20km
Chanchar	Uninhabited Village																														Arrah,20km
Raman Sanrh	1	1	1	0	0	0	1	0	0	1	0	2	2	1	1	1	2	2	1	2	2	2	1	1	2	1	2	2	2	2	Arrah,20km
Patkhaulia	1	0	0	0	0	0	0	0	0	0	0	2	1	1	2	2	2	2	2	2	2	2	1	1	2	1	2	2	2	2	Arrah,30km
Pinjroi	1	0	0	0	0	0	0	0	0	0	0	2	2	1	1	1	2	2	2	2	2	2	1	1	2	1	2	2	2	2	Arrah,30km
Mahadeopur	Uninhabited Village																														Arrah,30km
Ahiman Chak	1	0	0	0	0	0	0	0	0	0	0	2	2	1	1	1	2	2	2	2	1	2	1	1	2	1	2	2	2	2	Arrah,30km
Khemkaranpur	Uninhabited Village																														Arrah,30km
Baga	2	1	0	0	0	0	1	0	0	0	0	2	2	1	1	2	2	2	1	2	2	2	1	1	2	1	2	2	2	2	Arrah,30km
Bhikham Chak	0	0	0	0	0	0	0	0	0	0	0	2	2	1	1	2	2	2	2	2	1	2	1	1	2	1	2	2	2	2	Arrah,30km
Narayanpur	3	1	1	0	0	0	0	0	0	0	0	2	2	1	1	1	2	2	1	1	2	2	1	1	2	1	2	2	2	2	Arrah,30km
Bhaluni	1	0	0	0	0	0	0	0	0	0	0	2	2	1	1	1	2	2	2	2	2	2	1	1	2	1	2	2	2	2	Arrah,30km
Seothara	1	0	0	0	0	0	0	0	0	0	0	2	2	1	1	1	2	2	1	1	2	2	1	1	2	1	2	2	2	2	Arrah,34km
Muradpur	1	0	0	0	0	0	0	0	0	0	0	2	2	1	1	1	2	2	2	2	2	2	1	1	2	1	2	2	2	2	Arrah,36km

**CHAPTER-3****BASELINE ENVIRONMENTAL STATUS**

Project: Sand Mining Project, On Son River At Mainpura Sohsa (Arwal Son - 13) Sand (Area- 44.46 Ha)

Chhaprapur	3	1	0	0	0	0	0	0	0	0	0	2	2	1	1	2	2	2	2	2	2	2	2	1	2	2	1	2	2	2	2	Arrah,36km	
Dihra	1	0	0	0	0	0	0	0	0	0	0	2	2	1	2	2	2	2	2	2	2	2	2	2	1	2	1	2	2	2	2	Arrah,30km	
Mahpur	Uninhabited Village																											Arrah,30km					
Chansi	2	1	0	0	0	0	0	0	0	0	0	2	2	1	1	2	2	2	1	2	1	2	1	2	2	1	2	2	2	2	Arrah,30km		
Banauli	2	1	1	0	0	0	0	0	0	0	0	2	2	1	1	2	2	2	2	2	2	2	2	1	2	2	1	2	2	2	2	Arrah,30km	
Keshwarpur	2	1	1	1	0	0	0	0	0	0	0	2	2	1	1	2	2	2	2	2	2	2	2	1	2	2	1	2	2	2	2	Arrah,25km	
Chauria	1	0	0	0	0	0	0	0	0	0	0	2	2	1	1	1	2	2	2	2	2	2	2	1	1	2	1	2	2	2	2	Arrah,24km	
Ekauna	1	1	0	0	0	0	0	0	0	0	0	2	2	1	1	1	2	2	2	2	2	2	2	2	1	2	1	2	2	2	2	Arrah,24km	
Agiaon	1	1	0	0	0	0	0	0	0	0	0	2	2	1	1	1	2	2	1	2	1	2	1	1	1	2	1	2	2	2	2	Arrah,24km	
Kharainacha	1	0	0	0	0	0	0	0	0	0	0	2	2	1	1	1	2	2	2	2	2	2	2	1	1	2	1	2	2	2	2	Arrah,24km	
Isarpura	1	1	0	0	0	0	0	0	0	0	0	2	2	1	1	1	2	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	Arrah,24km
Paswan	1	1	0	0	0	0	0	0	0	0	0	2	1	1	2	1	2	2	1	2	2	2	2	2	2	2	2	1	1	2	2	2	Arrah,25km
Ahila	1	1	0	0	0	0	1	0	0	0	0	2	1	1	1	1	2	2	1	1	2	2	2	1	1	2	1	2	2	2	2	2	Arrah,30km
Kheri	1	1	0	0	0	0	0	0	0	0	0	2	2	1	1	2	2	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	Arrah,32km
Bargaon	5	1	1	2	0	1	1	1	0	0	1	2	2	1	2	2	2	2	1	2	2	2	2	2	2	2	2	1	2	2	2	2	Arrah,30km
Megharia	0	0	0	0	0	0	0	0	0	0	0	2	2	1	1	2	2	2	1	1	2	2	2	1	2	2	1	2	2	2	2	2	Arrah,35km
Kamaria	1	1	0	0	0	0	0	0	0	0	0	2	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	Arrah,35km
Kirkiri	3	1	0	0	0	1	1	1	0	0	1	2	1	1	2	1	2	2	1	2	2	2	2	1	2	2	1	2	2	2	2	2	Arrah,35km

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Project: Sand Mining Project, On Son River At Mainpura Sohsa (Arwal Son - 13) Sand (Area- 44.46 Ha)

Chipura	2	0	0	0	0	0	0	0	0	0	0	2	2	1	2	1	2	2	2	2	2	2	2	1	2	1	2	2	2	2	Arrah,35km	
Narainaganj	0	0	1	1	0	0	0	0	0	0	0	2	2	1	1	1	2	2	2	2	2	2	2	1	1	2	1	2	2	2	2	Arrah,40km
Dundhua	Uninhabited Village																												Arrah,40km			
Barhampur																																
Mehdanra	1	1	0	0	0	0	0	0	0	0	0	2	2	1	2	2	2	2	2	2	2	2	2	1	1	2	1	2	2	2	2	Arrah,25km
Chilhar	2	1	1	0	0	1	1	1	0	0	1	2	2	1	2	1	2	2	1	1	2	2	2	2	2	2	1	2	2	2	2	Arrah,25km
Tara Chak	1	1	0	0	0	1	1	1	0	1	1	2	2	1	2	2	2	2	2	2	2	2	2	2	1	2	1	2	2	2	2	Arrah,30km
Karbasin	1	1	0	0	0	1	1	1	0	0	1	2	2	1	2	2	2	2	1	2	1	2	2	1	1	2	1	2	2	2	2	Arrah,30km
Gordiha	1	1	0	0	0	0	0	0	0	0	0	2	2	1	1	1	2	2	2	2	2	2	2	1	1	2	1	2	2	2	2	Arrah,30km
Amarpur	Uninhabited Village																												Arrah,30km			
Nadhi	1	1	0	0	0	0	0	0	0	0	0	2	2	1	2	2	2	2	2	2	2	1	2	1	1	2	1	2	2	2	2	Arrah,32km
Nonaur	3	1	1	0	0	0	0	0	0	0	0	2	2	1	1	1	2	2	2	2	1	2	2	2	2	1	1	2	2	2	2	Arrah,32km
Muzaffarpur	1	0	0	0	0	0	0	0	0	0	0	2	2	1	1	1	2	2	2	2	2	2	2	1	1	1	1	2	2	2	2	Arrah,32km
Madhopur	1	0	0	0	0	0	0	0	0	0	0	2	2	1	2	1	2	2	2	2	2	2	2	1	1	2	1	2	2	2	2	Arrah,32km
Baghi	1	1	0	0	0	0	0	0	0	0	0	2	2	1	1	1	2	2	1	2	2	2	2	1	1	2	1	2	2	2	2	Arrah,38km
Sewantha	1	0	0	0	0	0	0	0	0	0	0	2	2	1	1	1	2	2	1	1	2	2	2	1	1	2	1	2	2	2	2	Arrah,38km
Baruna	1	1	0	0	0	0	1	0	0	0	0	2	2	1	1	2	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	Arrah,36km
Dhobha	1	1	0	0	0	0	0	0	0	0	0	2	2	1	1	2	2	2	2	2	2	2	2	1	1	2	1	2	2	2	2	Arrah,25km



**CHAPTER-3****BASELINE ENVIRONMENTAL STATUS**

Project: Sand Mining Project, On Son River At Mainpura Sohsa (Arwal Son - 13) Sand (Area- 44.46 Ha)

Paharpur Khurd	0	0	0	0	0	0	0	0	0	0	0	2	1	1	2	1	2	2	2	2	2	2	2	1	2	1	2	2	2	2	2	Arrah,18km
Rudarpur	0	0	0	0	0	0	0	0	0	0	0	2	2	1	1	1	2	2	2	2	2	2	2	2	2	1	2	2	2	2	Arrah,18km	
Ekauni	0	0	0	0	0	0	0	0	0	0	0	2	2	1	1	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	Arrah,19km	
Ramnagar	0	0	0	0	0	1	1	1	0	0	1	2	2	1	2	2	2	2	1	2	2	2	1	1	2	1	2	2	2	2	Piro,12km	
Bajrean	2	1	0	0	0	0	0	0	0	0	0	2	1	1	1	2	2	2	2	2	2	2	1	2	2	1	2	2	2	2	Arwal,12km	
Bishunpura	0	0	0	0	0	0	0	0	0	0	0	2	2	1	2	1	2	2	2	2	2	2	2	2	2	1	2	2	2	2	Arwal,12km	
Baruhi	1	2	1	0	0	0	0	0	0	0	0	2	2	1	2	2	2	2	1	2	2	2	2	2	2	1	2	2	2	2	Arwal,12km	
Ekwari	1	1	1	3	0	1	1	1	0	0	1	2	2	1	1	1	2	2	1	2	2	2	1	2	1	1	1	2	2	2	2	Arwal,12km
Inurkhi	2	0	0	0	0	0	0	0	0	0	0	2	2	1	2	2	2	2	2	2	2	1	2	1	1	1	1	2	2	2	2	Arwal,12km
Kunrwa	0	0	0	0	0	0	0	0	0	0	0	2	1	1	2	2	2	2	2	2	2	2	2	1	2	2	1	2	2	2	2	Arwal,9km
Newada	2	1	0	0	0	1	1	1	0	0	1	2	2	1	2	2	2	2	1	2	2	2	2	1	2	1	2	2	2	2	2	Arwal,8km
Bansi Dehri	1	1	0	0	0	0	0	0	0	0	0	2	1	1	2	2	2	2	1	2	2	2	2	2	2	1	2	2	2	2	2	Arwal,8km
Jot Gobind	Uninhabited Village																															Arwal,8km
Dehri	1	0	0	0	0	0	0	0	0	0	0	2	2	1	2	2	2	2	1	2	2	2	2	2	1	1	2	2	2	2	Arwal,7km	
Peur	3	1	1	1	0	1	1	1	0	0	1	2	2	1	1	1	2	2	1	2	1	2	1	1	1	1	2	2	2	2	2	Arwal,8km
Peur Chak	Uninhabited Village																															Arwal,8km
Sahar	1	1	1	1	0	1	1	1	0	0	1	2	2	1	1	2	2	2	1	1	1	2	1	2	1	1	2	2	2	2	Arwal,4km	
Abgilla	1	0	0	0	0	0	0	0	0	0	0	2	1	1	2	1	2	2	1	2	2	2	1	2	1	1	1	1	1	1	Arwal,5km	

**CHAPTER-3****BASELINE ENVIRONMENTAL STATUS**

Project: Sand Mining Project, On Son River At Mainpura Sohsa (Arwal Son - 13) Sand (Area-44.46 Ha)

Mathurapur	2	0	0	0	0	0	0	0	0	0	0	2	2	1	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	Arwal,6km	
Patrihan	1	0	0	0	0	0	0	0	0	0	0	2	1	1	2	2	2	2	2	2	2	2	1	1	2	1	2	2	2	2	Arwal,9km
Shiw Chak	1	1	0	0	0	0	0	0	0	0	0	2	2	1	2	2	2	2	1	1	2	2	1	2	2	1	2	2	2	2	Arwal,14km
TOTAL (10km)	1											Status for Availability and Non-Availability is shown as A (1) & NA (2) respectively																			
	6	9	6	1		1	2	1			1																				
	6	9	3	1	0	4	5	7	0	4	7																				

Source-<http://www.censusindia.gov.in/2011census/dchb/DCHB.html>

**Abbreviations:**

Educational Facilities: P-Primary School, M-Middle School, SS-Higher Secondary Schools, SSS-Senior Secondary School

Medical Facilities: CHC-Community Health Centre, PHC-Primary Health Centre, PHSC-Primary Health Sub-Centre, MCWC-Maternity and Child Welfare Centre, H-Hospital, D-Dispensary, FWC-Family Welfare Centre

Drinking Water Facilities: T-Tap Water, W-Well Water, HP-Hand Pump, TW-Tube Well Water, R-River Water, Tk-Tank Water, O-Other Drinking Water Facility, CT-Community Toilet

Communication & Transport Facilities: PO-Post Office, SPO-Sub-Post Office, PTO-Post & Telegraph Office, Tel. -Telephone Connection, Mob. - Mobile Phone Coverage, BS-Bus Services, RS-Railways Services

Approach to Village: PR-Paved Roads, KR-Kuchha Road, FP-Foot Path

Power Supply: ED-Power Supply for Domestic use, E Ag. -Power Supply for Agricultural use, EC- Power supply for Commercial use, EA-Electricity for All Purposes

Nearest Town & Distance, km : a for < 5 Km, b for 5-10 Km and c for 10+ km of nearest place where facility is available is given.

Project: Sand Mining Project, On Son River At Mainpura Sohsa (Arwal Son - 13) Sand (Area-44.46 Ha)
--

Brief Description of Places of Religious, Historical or Archaeological Importance and Tourist interest in Villages and Towns of the District:(District level information only)

Brief description of place of religious, historical or archaeological and tourist interest are as follows;

#### Anand Garh Palace

It is situated at about 5 kms. away in southwest from Karpi, the C.D. Block headquarters. The palace is known for its panoramic surroundings, elegant gardens and beautiful tanks. The buildings and embellishments are fine specimen of modern architecture and sculpture. Bhelawar Known for ancient temples of Lord Shiva, Bhelawar village is situated in Kako C.D. Block at about 11 km. South-west of Jehanabad railway station. The remains of the stone gates of the temple compound can be seen at the outskirts of the village. Sculptures of Hindu and Muslim periods have been found here. Every year a large fair is held on the eve of Shivaratri. On excavation, some coins and earthenware were found here.

Sarea - The village is under Kurtha C.D. Block. It has a brick-built temple. The holy emblem of Lord Shiva is believed to have been enshrined in it by Pandavas. According to a local legend the Pandavas, on conclusion of Mahabharat battle, came down to this place to offer pindas to their kinsmen killed in the epic battle.

Ghejan - Under Kurtha C.D. Block, Ghejan is an ancient village situated about 19 kms. It contains an old fortress where stone images of Lord Buddha and other images of Gupta period were excavated. These images are preserved at Patna Museum.

#### Social, Cultural Events

Fairs and festivals are held regularly in the district. The Chhat festival is one of the most important and auspicious religious event for Arwal district in general and Arwal town in Particular. On the occasion, the Sun God is worshipped.

#### **Rehabilitation & Resettlement (R & R)**

Policy to be adopted (Central/State) in respect of the project affected persons including home or land oustees and landless labour. Hence, any planning with respect to Rehabilitation & Resettlement is not applicable.

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## **4.0 GENERAL**

Identification of all potential environmental impacts due to project is an essential step of Environmental Impact Assessment. In case of mining projects, impacts on biodiversity, air pollution, water pollution, waste management and social issues are significant. Both direct and indirect environmental impacts will be created on various environmental attributes due to proposed mining activity in the surrounding environment, during the operational phase.

The occurrence of sand (minor mineral) deposits, being site specific, their exploitation often does not allow for any choice except adoption of eco-friendly operation. Positive impacts on socio-economic environment are expected due to creation of employment opportunities. Mining activities are normally carried out over a long period which also encourages development in the area such as roads, schools, hospitals etc.

Keeping in mind, the environmental baseline scenario as detailed in Chapter III and the proposed mining activity described in Chapter II, it is attempted to assess the likely impact and its extent on various environmental parameters and likely mitigation measures to be adopted.

The following parameters are of significance in the Environmental Impact Assessment and are being discussed in detail:

1. Land Environment
2. Water Environment
3. Air Environment
4. Noise Environment
5. Biological Environment
6. Socio-Economic Environment
7. Solid Waste
8. Traffic Environment

## **4.1 LAND ENVIRONMENT**

The proposed extraction of stream bed materials, mining below the existing streambed, and alteration of channel-bed form and shape may lead to several impacts such as erosion of channel bed and banks, increase in channel slope, and change in channel morphology if, the operations are not carried out scientific & systematically.

Project: Sand Mining Project, On Son River At Mainpura Sohsa (Arwal Son - 13) Sand (Area-44.46 Ha))

The mining and allied activities involved due to mining result in creation of temporary haul roads and formation of mined pits, etc. affecting the land use pattern. In this project, silt and clay are also produced as a constituent along with minerals, which are considered to be waste.

**Anticipated Impacts:**

- Mining activity will impact river bed topography by formation of excavation voids.
- River bed mining may bring in some change in topography at the nearby area of the mine lease.
- Stacks of solid waste generated from mining activity may hinder the flow of water in monsoon season.

**Mitigation measures:**

Adopting suitable, site-specific mitigation measures can reduce the degree of impact of mining on land. Some of the land-related mitigation measures are as follows:

- Excavated pits will get replenished annually in monsoon itself & will be restored to original.
- The mine working will remain confined to allotted river bed only, so it will not disturb any surface area outside the mine lease area which may affect topography or drainage.
- Solid waste will not be stacked on the bank side as it will hinder the flow of water in monsoon season.

**4.2 WATER ENVIRONMENT****Anticipated Impacts:**

Mining of sand from within or near *river* has an indirect impact on the physico-chemical habitat characteristics during monsoon season. These characteristics include in stream roughness elements, depth, velocity, turbidity, sediment transport and stream discharge.

The detrimental effects, if any, to biota resulting from bed material mining are caused by following:

- Ø Alteration of flow patterns resulting from modification of the *river*
- Ø An excess of suspended sediment during monsoon season.

Project: Sand Mining Project, On Son River At Mainpura Sohsa (Arwal Son - 13) Sand (Area-44.46 Ha))

### **Mitigation measures**

Project activity will be carried out only in the dry part of the Son River. Hence, none of the project activities affect the water environment directly. In the project, it is not proposed to divert or truncate any stream in monsoon season only. No proposal is envisaged for pumping of water either from the *River* (in monsoon) or tapping the ground water.

In the lean months, the proposed mining will not expose the base flow of the *River* and hence, there will not be any adverse impact on surface hydrology.

The deposit will be worked from the top surface up to a maximum depth of 1m below ground level or above the ground water table whichever comes first. Hence mining will not affect the ground water regime as well.

Further mining will be completely stopped during the monsoon seasons to allow the excavated area to regain its natural profile.

## **4.3 AIR ENVIRONMENT**

### **Impact On Air Quality**

The proposed project includes various activities like development of benches, approach roads, haul roads, excavation and transportation of mineral and waste materials. These operations generally result in generation of dust and thereby pose health hazards. However, it is proposed that adequate control measures will be provided at every stage of operation such as, water sprinkling at loading, unloading points and on haul roads before transportation to reduce the fugitive dust emissions.

The mining is proposed to be carried out by opencast manual method. The air borne particulate matter (PM10) generated by ore and waste handling operations, transportation and screening of ore is the main respirable air pollutant. The emissions of Sulphur dioxide (SO<sub>2</sub>), Nitrogen Oxides (NO<sub>2</sub>) contributed by vehicles plying on haul roads will be marginal. Prediction of impacts on air environment has been carried out taking into consideration proposed production and net increase in emissions.

#### **4.3.1 Emissions Details**

Project: Sand Mining Project, On Son River At Mainpura Sohla (Arwal Son - 13) Sand (Area-44.46 Ha))

Loading - unloading and transportation of sand material, wind erosion of the exposed area and movement of light vehicles will be the main polluting source in the proposed mining activities releasing Particulate Matter (PM<sub>10</sub>) affecting Ambient Air of the area. Emission during, Loading and unloading was calculated by the area sources. Details of emission during loading/unloading and transportation on the haul road, wind erosion of the exposed area and road maintenance were discussed and combined impact was predicted in the worst case scenario under worst meteorological condition given as follows:

Loading and Unloading - US EPA, 2008, revision of emission factor for AP-42 was used to calculate emission of particulate matter released into the atmosphere during loading and unloading separately. Emission during loading was found more than during unloading. Emission of PM<sub>10</sub> during loading was calculated and found to be  $1.12 \times 10^{-3} \text{ g/s/m}^2$  based on moisture content 10-20% mine. It is assumed that moisture content was 10% and further moisture content will be increased to 10-20% to reduce emission of PM<sub>10</sub> during unloading and average wind speed was 2.57 m/s as observed with site data as shown in wind rose and discussion of local meteorology of the area.

Haul Road - US EPA, 2006, revision of emission factor for AP-42 was used to calculate emission of particulate matter released into the atmosphere during transportation of ore and overburden by trucks operated per hour on haul road. Emission of PM<sub>10</sub> due to transportation of sand on haul road was  $1.02 \times 10^{-4} \text{ g/s/m}^2$  based on assumption that silt content spread on road surface was 5%, and efficiency of PM<sub>10</sub> emission control 90%. Truck will be fully covered with tarpaulin material and emission of PM<sub>10</sub> during on the haul road will be insignificant.

Based on the above consideration that there was low emission of PM<sub>10</sub> during transportation of ore and overburden, however during loading & unloading, transportation of ore over the haul road, emission of PM<sub>10</sub> of the exposed area due to wind erosion and movement of light vehicles on the road were not considered and combined with mining activities. US EPA based Dispersion ISCST-3 model was used for prediction of impact with 24-h meteorological data of the study period for the assessment of GLC.

#### **4.3.2 Meteorological Data**

Project: Sand Mining Project, On Son River At Mainpura Sohla (Arwal Son - 13) Sand (Area-44.46 Ha))

The meteorological data recorded at hourly interval during the month of Dec to feb 2023 on wind speed 0.92 m/s, wind direction, dry & wet bulb temperature, humidity, cloud cover and rainfall was processed to extract hourly mean meteorological data as per the guidelines of CPCB/MoEF for prediction of impacts from the area source. Stability was computed by Turner's method and mixing height was obtained from publication of IMD "Atlas of Hourly Mixing Height in India, 2008.

Data recorded from authorized source/Govt. agency were used as meteorological input for Dispersion Model which was stored in the computer for further analysis and interpretation to study the local meteorology of the study area. It was observed that westerly & north westerly was pre-dominant wind during summer as shown in wind rose (Figure 4.1) with low wind speed and 13.6 % calm condition was observed during study period at the site which was very much close and cumbersome with long term meteorological data of IMD. Average wind speed was 0.92 m/s. Impact of the pollutants was anticipated in southeast sector under influence of northeasterly & westerly winds. Ambient air quality locations were selected based on the long term wind rose pattern of the area. Air quality sampling locations were finalized to study the baseline status around the proposed site and to study impact at various locations. 24-h maximum impact of PM<sub>10</sub> was envisaged in southeast sector at very short distance from the site due to moderate to low wind speed.

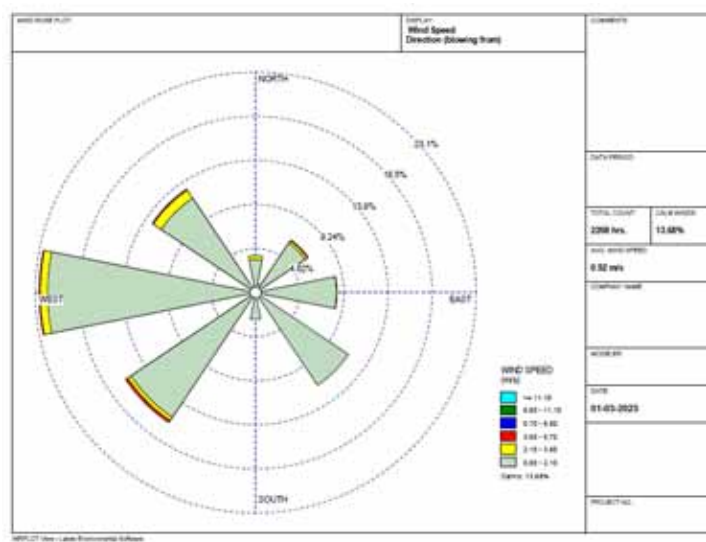


Figure 4.1: Wind Rose Diagram



Project: Sand Mining Project, On Son River At Mainpura Sohla (Arwal Son - 13) Sand (Area-44.46 Ha))

Stable atmospheric condition E & F dominates in early morning and night hours and B, C & D in day hours were observed. Pollutants were dispersed from the proposed source under influence of local meteorology and dispersed on the ground in downwind direction close (~100 m) to the source under influence of moderate to low wind speed. High temperature and low humidity were observed at site with high temperature in day hours and low during night. There was no significant rain fall received and sky was clear of clouds in most of the days.

**4.3.3 Frame work of Computation & Model details:** By using the above-mentioned inputs, ground level concentrations due to the mining activities have been estimated to know the incremental rise in ambient air quality and impact in the study area. The effect of air pollutants upon receptors are influenced by concentration of pollutants and their dispersion in the atmosphere. Air quality modeling is an important tool for prediction, planning and evaluation of air pollution control activities besides identifying the requirements for emission control to meet the regulatory standards and to apply mitigation measures to reduce impact caused by mining activities.

PM10 was the major pollutant occurred during mining activities. Impact of area source emission was considered and prediction of impact was made on various monitoring locations in the study area due to i) loading and unloading and iii) transportation of vehicles on the haul road in the mining area. Impact was predicted in the worst case scenario due to combined impact of loading and unloading and emission due to transportation of vehicles on mine on haul road of mining area and other mining activities will occur simultaneously.

Impact was predicted over the distance of 10,000 m and 2,000 m around the source in grids of 200m & 20 m respectively in Cartesian coordinates(X,Y) to assess the impact at each receptor separately at the various locations and maximum incremental GLC value at the project site. Maximum impact of PM10 was observed close to the source due to low to moderate wind speeds. Incremental value of PM10 was superimposed on the base line data monitored at the proposed site to predict total GLC of PM10 due to combined impacts.

#### **4.3.4 Model Results**

Project: Sand Mining Project, On Son River At Mainpura Sohsa (Arwal Son - 13) Sand (Area- 44.46 Ha))

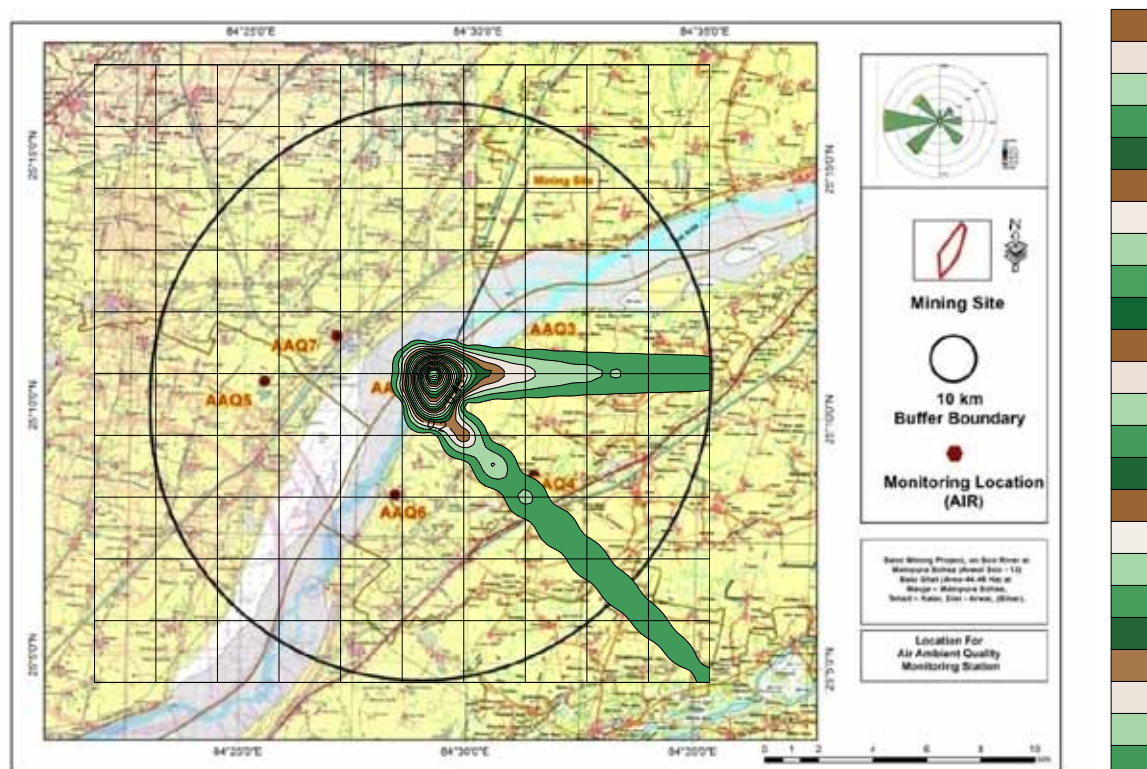
The Air Quality Impact Prediction has been done by using “Industrial Source Complex Short Term version 3 (ISCST3), of USEPA”. The main sources of air pollution with regard to the proposed project for the purpose of estimation of increase in PM<sub>10</sub> are identified due to –

- (i) Loading/unloading of ore
- (ii) Transportation of ore by trucks on the Haul roads from mining benches.

Combined impact of PM<sub>10</sub> was considered due to mining activities occurred simultaneously on various sampling locations is given in below table:

able 4. 1 Incremental Concentration of PM<sub>10</sub> in the Study Area

SITE	Location	Distance/direction	98th percentile	Incremental Value	Total Value
AAQ1	Project Site	----	80.77	1.2	81.97
AAQ2	Mahamadpur	2.30 Km, East	82.58	0.8	83.38
AAQ3	Madhopur	5.20 Km, W	81.39	<0.001	81.39
AAQ4	Akbarpur musahari	6.20 Km, SE	82.99	<0.001	82.99
AAQ5	Ankuri	4.90 Km,ENE	81.96	<0.001	81.96
AAQ6	Badgaon	5.30 Km,NW	80.68	<0.001	80.68
AAQ7	Rashidpur	5.38 Km, SSW	76.55	<0.001	76.55



Project: Sand Mining Project, On Son River At Mainpura Sohsa (Arwal Son - 13) Sand (Area-44.46 Ha))

### **Mitigation measures**

The collection and lifting of minerals will be done by loaders. Therefore, the dust generated is likely to be insignificant as there will be no drilling & blasting. The only air pollution sources are the road transport network of the trucks. The mitigation measures like the following will be resorted:

- ü Water sprinkling will be done on the haul roads twice in a day.
- ü Deploying PUC certified vehicles to reduce their emissions
- ü Proper tuning of vehicles to keep the gas emissions under check
- ü Monitoring to ensure compliance with emission limits would be carried out during operation
- ü There is no major source of emissions except emission from combustion of fuels from the Transportation Vehicles and Material Handling.
- ü Besides this, to control the emissions further regular preventive maintenance of Equipment / Transportation Vehicles will be carried out on contractual basis.
- ü It will be ensured that all transportation vehicles carry a valid PUC certificate.
- ü Plantation will be carried out along the approach road, river banks & at all strategic places in the vicinity area.
- ü Periodic air quality monitoring will be done to assess the quality and for timely corrective actions.
- ü Speed limits will be enforced to reduce airborne fugitive dust from vehicular traffic.
- ü Spillage from the trucks will be prevented by covering tarpaulin over the trucks.

### **4.4 NOISE ENVIRONMENT**

The proposed mining activity is semi-mechanized in nature. No drilling & blasting is envisaged for the mining activity. Hence, the only impact is anticipated is due to movement of vehicles deployed for transportation of minerals.

#### **Anticipated Impacts:**

- Mental disturbance, stress& impaired hearing.
- Decrease in speech reception& communication.
- Distraction and diminished concentration affecting job performance efficiency.

Project: Sand Mining Project, On Son River At Mainpura Sohsa (Arwal Son - 13) Sand (Area- 44.46 Ha))

The noise level in the working environment are compared with the standards prescribed by Occupational Safety and Health Administration (OSHA-USA) which has been adopted and enforced by the Govt. of India through model rules framed under Factories Act, 1980 and CPCB 2000 norms. The summary of the permissible exposures in cases of continuous noise as per above rules is given below:

**Table 4.1, Damage risk criteria for hearing loss OSHA regulations**

Maximum allowable duration per day in hour	Sound pressure dB(A)	Remarks
(1)	(2)	(3)
8.0	90	1. For any period of exposure falling in between any figure and lower figure as indicated in column (1), the permissible sound is to be determined by extrapolation or proportionate scale. 2. No exposure in excess of 115 dB (A) is permissible.
6.0	92	
4.0	95	
3.0	97	
2.0	100	
1 ½	102	
1	105	
¾	107	
½	110	
¼	115	

Noise at lower levels (sound pressure) is quite acceptable and does not have any bad effect on human beings, but when it is abnormally high- it incurs some maleficent effects.

#### **a. Mitigation measures**

The following measures have been envisaged to reduce the impact from the transportation of minerals:

- The vehicles will be maintained in good running condition so that noise will be reduced to minimum possible level.
- In addition, truck drivers will be instructed to make minimum use of horns in the village area and sensitive zones.
- No such machinery is used for mining which will create noise to have ill effects.

Project: Sand Mining Project, On Son River At Mainpura Sohsa (Arwal Son - 13) Sand (Area-44.46 Ha))

- Awareness will be imparted to the workers about the permissible noise levels & maximum exposure to those levels.

#### **4.5 BIOLOGICAL ENVIRONMENT**

Mining which leads to the removal of channel substrate, re-suspension of streambed sediment and stockpiling on the streambed, will have ecological impacts. These impacts may have an effect on the direct loss of stream reserve habitat, disturbances of species attached to streambed deposits, reduced light penetration, reduced primary production, and reduced feeding opportunities. Sand mining generates additional traffic, which negatively impairs the environment.

##### **Anticipated Impacts:**

###### **Flora**

The proposed project of river bed sand mining shall be carried out on the riverbed of Son River. There are no trees in the project area. The project shall also not lead to any change in land use and will be replenished every year after successive rains. The proposed mining activity, which although is an economically gainful activity, also constitutes river training work. It allows for necessary dredging activity which may otherwise lead to flooding of the valley.

There shall be negligible air emissions or effluents from the project site during loading of the truck. This shall be a temporary effect and not anticipated to affect the surrounding vegetation significantly.

###### **Fauna**

Animals are sensitive to noise and avoid human territory. The project stretch of the river is not an identified drinking water point for the animals. However, any animal desirous of accessing the river can continue to do so upstream or downstream of the stretch during the mining activities, as there will not be any damming or diverting of water. Hence, no significant impact is anticipated from the proposed project.

##### **Mitigation measures**



Project: Sand Mining Project, On Son River At Mainpura Sohsa (Arwal Son - 13) Sand (Area- 44.46 Ha))

As the proposed mining will be carried out in a scientific manner, not much significant impact is anticipated, however, the following mitigation measures will be taken to further minimize it:

### Flora

Although, the project will not lead to any tree cutting, plantation activities shall be undertaken to improve the vegetation cover of the area. To avoid dust emissions, the mined materials will be covered with tarpaulin during transportation.

### Fauna

The workers shall be directed to not venture out of the leased area for collecting fuel wood, or hunting. They shall also be trained not to harm any wildlife. No work shall be carried out after sunset.

## 4.6 TRAFFIC ANALYSIS

### Transportation Route:

The sand extracted will store the nearby storage point. From there sand will be transported to the market. Sand will be stored in to storage point and from there it will be transported in the night time when traffic load is low on nearest SH or NH.

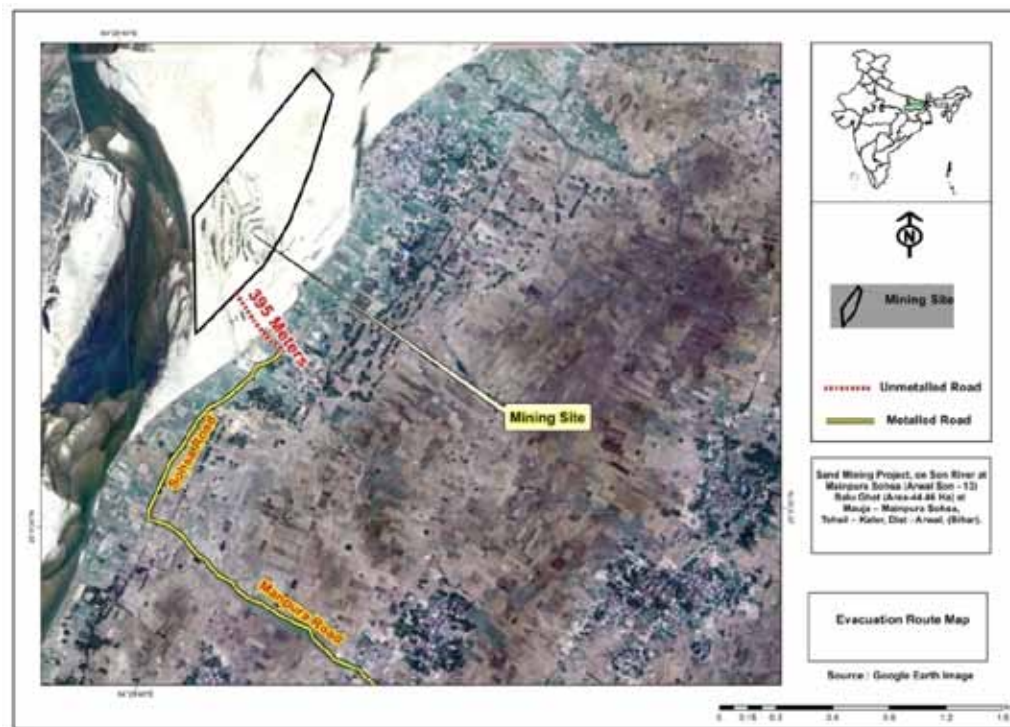


FIGURE 4.1 MAP SHOWING EVACUATION ROUTE

Project: Sand Mining Project, On Son River At Mainpura Sohla (Arwal Son - 13) Sand (Area-44.46 Ha))

Traffic analysis is carried out by understanding the existing carrying capacity of the roads near to the project site and the connecting main roads in the area. Then depending on the capacity of the mine, the number of trucks that will be added to the present scenario will be compared to the carrying capacity.

**Table 4.2 (i): Existing Traffic Scenario & LOS**

Road	V	C	Existing V/C Ratio	LOS
State Highway (SH-81)	2500	15,000	0.16	A

*Source: Capacity as per IRC: 64-1990*

V= Volume of Vehicles in PCU's/day & C= Capacity of Road in PCU's/day

The existing Level of Service (LOS) is "A" & "B" i.e. excellent & very good.

V/C	LOS	Performance
0.0 - 0.2	A	Excellent
0.2 - 0.4	B	Very Good
0.4 - 0.6	C	Good / Average / Fair
0.6 - 0.8	D	Poor
0.8 - 1.0	E	Very Poor

*Reference: ENVIS Technical Report, IISc, Bangalore.*

#### **During Mine operation**

Proposed Capacity of Mine/annum : 1344470 TPA

No. of working days : 250 days

Proposed Capacity of mine/day : 5377.88 or say 5378 TPD

Truck Capacity : 16 tonnes

No. of trucks deployed/day : 336.125 or say 337

Increase in PCU/day (449\*3) : 1011

**Table 4.2 (ii): Modified Traffic Scenario & LOS**

Road	V	C	Modified V/C Ratio	LOS
State Highway (SH-18)	2500+1011=3511	15000	0.23	B

#### **Results**

<b>CHAPTER-4</b>	<b>ANTICIPATED ENVIRONMENTAL IMPACT AND MITIGATION MEASURES</b>
Project: Sand Mining Project, On Son River At Mainpura Sohla (Arwal Son - 13) Sand (Area-44.46 Ha))	

From the above analysis it can be seen that the LOS has changed from 0.16 to 0.23 at Highway intersection that is 'B' (Very Good) respectively, as per classification. Hence, there will not so much adverse affect on the proposed evacuation roads due to additional traffic. Traffic management has been proposed as given below.

#### **Traffic Management:**

1. Roads will be repaired regularly and maintained in good conditions.
2. Haul roads will be sprinkled with water to keep the dust suppressed.
3. A supervisor will be appointed to regulate the traffic movement near the site.
4. Speed breakers will be constructed near accident prone areas to calm the traffic and its speed.

#### **TRAFFIC MANAGEMENT FOR PROJECTS IN CLUSTER**

##### **Production Details of Cluster of project:**

<b>SAND GHATS</b>	<b>AREA</b>	<b>PRODUCTION (CUM)</b>	<b>PRODUCTION (TONNES)</b>
ARWAL SON 7	94.88	1707840	2869171.2
ARWAL SON 8	49.96	899280	1510790.4
ARWAL SON 9	54.95	989100	1661688
ARWAL SON 10	53.94	970920	1631145.6
ARWAL SON 11	55.01	990180	1663502.4
ARWAL SON 12	32.97	593460	997012.8
ARWAL SON 13	44.46	800280	1344470.4
<b>Total</b>	<b>386.17</b>	<b>6951060</b>	<b>11677780.8</b>

**Table 4.2 (i): Existing Traffic Scenario & LOS for  
Cluster of Sand Block 7,8,9,10,11,12 & 13**

<b>Road</b>	<b>V</b>	<b>C</b>	<b>Existing V/C Ratio</b>	<b>LOS</b>
State Highway (SH-18)	2500	15,000	0.16	A

*Source: Capacity as per IRC: 64-1990*

V= Volume of Vehicles in PCU's/day & C= Capacity of Road in PCU's/day

The existing Level of Service (LOS) is "A" & "B" i.e. excellent & very good.

<b>V/C</b>	<b>LOS</b>	<b>Performance</b>
0.0 - 0.2	A	Excellent
0.2 - 0.4	B	Very Good
0.4 - 0.6	C	Good / Average / Fair



Project: Sand Mining Project, On Son River At Mainpura Sohsa (Arwal Son - 13) Sand (Area-44.46 Ha))

0.6 - 0.8	D	Poor
0.8 - 1.0	E	Very Poor

*Reference: ENVIS Technical Report, IISc, Bangalore.*

During Mine operation for **Cluster of Block 7,8,9,10,11,12 & 13**

Proposed Capacity of Mine/annum : **11677780.8 TPA**

No. of working days : 250 days

Proposed Capacity of mine/day : 46711.1232 or say 46712 TPD

Truck Capacity : 16 tonnes

No. of trucks deployed/day : 2919.5

Increase in PCU/day (1080\*3) : 8758.5

**Table 4.2 (ii): Modified Traffic Scenario & LOS**

<b>Road</b>	<b>V</b>	<b>C</b>	<b>Modified V/C Ratio</b>	<b>LOS</b>
State Highway (SH-18)	2500+8758.5=11258.5	15000	0.75	B

## **Results**

From the above analysis it can be seen that the LOS has changed from 0.16 to 0.75 at Highway intersection that is from 'A' to 'D' i.e from 'Excellent' to 'Poor' respectively, as per classification. Hence, there will some adverse affect on the proposed evacuation roads due to additional traffic. Traffic management has been proposed as given below.

## **Traffic Management:**

5. Roads will be repaired regularly and maintained in good conditions.
6. Haul roads will be sprinkled with water to keep the dust suppressed.
7. A supervisor will be appointed to regulate the traffic movement near the site.
8. Speed breakers will be constructed near accident prone areas to calm the traffic and its speed.

Project: Sand Mining Project, On Son River At Mainpura Sohsa (Arwal Son - 13) Sand (Area-44.46 Ha)

## **5.0 ANALYSIS OF ALTERNATIVE TECHNOLOGY AND SITE**

### **5.1 Site Alternatives under Consideration**

Presence of sand for commercial exploitation has been identified based on the result of geological investigations and exploration. The mining projects are site specific as such alternate sites were not considered.

### **5.2 Analysis of Alternative Technology**

#### **5.2.1 Choice of Method of Mining**

Factors in the choice of an actual mining method for a given deposit are deposit characteristics, requirement of health and safety and environmental concerns, production, scheduling scope of mechanization, workforce requirements wage rates, replenishment, operating and capital cost estimates. The selection of the mining method (development and extraction) is a key decision to be made in the opening up of a mine.

Surface or open cast mining is used for large, near-surface mineral deposits. Mineral is exploited, loaded into trucks, and hauled to a market.

The opencast mining method will be adopted because of the following reasons:

- The opencast mining operations ensure higher mineral conservation.
- Replenishment

The method used for mining is efficient for sand mining, so no alternative mining method is proposed.

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## **6.0 INTRODUCTION**

Regular monitoring of the various environmental parameters is necessary to evaluate the effectiveness of the management programme so that the necessary corrective measures can be taken in case there are some drawbacks in the proposed programme. Since environmental quality parameters at work zone and surrounding areas are important for maintaining sound operating practices of the project in conformity with environmental regulations, the post project monitoring work forms part of Environmental Monitoring Program.

Environmental Monitoring Program will be implemented once the project activity commences. Environmental monitoring program includes (i) Environmental surveillance, (ii) analysis & interpretation of data, (iii) Preparation of reports to support environmental management system and (iv) Organizational set up responsible for the implementation of the programme.

## **6.1 ENVIRONMENTAL MONITORING AND REPORTING PROCEDURE**

Monitoring shall confirm that commitments are being met. This may take the form of direct measurement and recording of quantitative information, such as amounts and concentrations of discharges and wastes, for measurement against corporate or statutory standards, consent limits or targets. It may also require measurement of ambient environmental quality in the vicinity of a site using ecological/biological, physical and chemical indicators. Monitoring may include socio-economic interaction, through local liaison activities or even assessment of complaints.

The preventive approach to environment management may also require monitoring of process inputs, for example, type and method used, resource consumption, equipment and pollution control performance etc.

The key aims of environment monitoring are:

1. To ensure that results/ conditions are as forecast during the planning stage, and where they are not, to pinpoint the cause and implement action to remedy the situation.

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2. To verify the evaluations made during the planning process, in particular with risk and impact assessments and standard & target setting and to measure operational and process efficiency.
3. Monitoring will also be required to meet compliance with statutory and corporate requirements.
4. Finally, monitoring results provide the basis for auditing i.e. to identify unexpected changes.

## **6.2 MONITORING METHODOLOGIES AND PARAMETERS**

### **Air quality monitoring**

Air Quality monitoring is essential for evaluation of the effectiveness of abatement programmes and to develop appropriate control measures. Suspended Particulate Matter (SPM), Sulphur Dioxide (SO<sub>2</sub>) and Nitrogen Dioxide (NO<sub>2</sub>) will be monitored at the workplace i.e. core zone. The methodology proposed for is shown below:

**Table 6.1, Monitoring methodologies and parameters**

<b>Parameters</b>	<b>Technique</b>	<b>Technical Protocol</b>
PM <sub>10</sub>	Gravimetric method	<b>IS 5182 (Part-XXIII)</b>
Sulphur Dioxide	Improved West and Gaeke	<b>IS-5182 (Part-II)</b>
Nitrogen Dioxide	Modified Jacob & Hochheiser	<b>IS-5182 (Part-VI)</b>

### **Water quality monitoring**

Water quality monitoring involves periodical assessment of quality of surface water and the ground water near the mining project.

- Surface water samples will be analyzed for all the parameters as per EPA, 1986
- Ground water samples will be analyzed for all the parameters as per IS-10500:2012.

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**Soil quality monitoring**

The soil quality monitoring is carried out to assess the soil characteristic. The soil quality will be analyzed as per CPCB norms.

**Noise level monitoring**

Noise level monitoring will be done for achieving the following objectives:

- a) To compare sound levels with the values specified in noise regulations
- b) To determine the need and extent of noise control of various noise generating sources

Noise level monitoring will be done at the work zone to assess the occupational noise exposure levels. Noise levels will also be monitored at the noise generating sources like mineral handling arrangements, vehicle movements and also at the nearest village for studying the impact due to higher noise levels for taking necessary control measures at the source.

**Socio-economic Survey**

Socio economic condition will be monitored to assess the demographic particulars of the area including the impacts on the social & economical condition on the residents nearby.

**Plantation Monitoring Programme**

Plantation monitoring will be done to ensure survival & growth rate of plantations.

**6.3 MONITORING SCHEDULE**

The schedule has been shown below for the parameters proposed for monitoring.

**Table 6.2, Details of monitoring schedule**

S.No.	Description of Parameters	Schedule of Monitoring
1	Air Quality	24 hourly samples twice/Thrice a week in each season except monsoon
2	Water Quality (Surface & Groundwater)	Once a season for 4 seasons in a year

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<b>3</b>	Soil Quality	Once in a year in project area
<b>4</b>	Noise Level	Twice a year for first two years & then once a year
<b>5</b>	Socio-economic Condition	Once in 3 years
<b>6</b>	Plantation Monitoring	Once in a season

#### **6.4 MONITORING SCHEDULE - IMPLEMENTATION**

An implementation programme has been prepared as it serves no purpose if it is not implemented in letter and spirit.

Implementation of proposed control measures and monitoring programme has an implication on mining site as well as on the surrounding area. Therefore, mine management should strengthen the existing control measures as elaborated earlier in this report and monitor the efficacy of the control measures implemented in the entire study area:

- a) Collection of air and water samples at strategic locations with frequency suggested and by analyzing thereof. If the parameters exceed the permissible tolerance limits, corrective regulation measure will be taken.
- b) Collection of soil samples at strategic locations once every two years and analysis thereof with regard to deleterious constituents, if any.
- c) Measurement of water level fluctuations in the nearby ponds dug wells and bore wells and to assess if mining has got any impact on it or not.
- d) Measurement of noise levels at mine site and adjacent villages will be done twice a year for first two years and thereafter once a year.
- e) Post plantation, the area will be regularly monitored in every season for evaluation of success rate. For selection of plant species local people should also be involved.

An Environmental Management Cell (EMC) is envisaged which will be responsible for monitoring EMP and its implementation. EMC members should meet periodically to assess the progress and analyze the data collected during the month.

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### **6.5 BUDGET ALLOCATION FOR MONITORING**

The EMC will be responsible to carry on the monitoring. Budget allotment has also been proposed for the same:

**Table 6.3, Budget for monitoring**

<b>S. No.</b>	<b>Description</b>	<b>Cost to be incurred (in lakhs/annum)</b>
<b>1</b>	Water Quality (Surface & Groundwater)	0.5
<b>2</b>	Soil Quality	0.5
<b>3</b>	Air Quality	0.5
<b>4</b>	Noise Level	0.5
<b>5</b>	Plantation Monitoring	0.5
<b>6</b>	Socio-economic Condition	0.5
<b>TOTAL</b>		<b>3.0</b>

### **6.6 REPORTING SCHEDULES OF THE MONITORING DATA**

It is proposed that voluntary reporting of environmental performance with reference to the EMP should be undertaken. The environmental monitoring cell shall co-ordinate all monitoring programmes at site to furnish the data to the State regulatory agencies regularly in respect of the stipulated prior environmental clearance terms and conditions. The proponent shall prominently advertise in the newspapers indicating that the project has been accorded environmental clearance and also the details of website where it is displayed.

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## **7.0 PUBLIC CONSULTATION**

This is draft EIA report public hearing is yet to be conducted.

## **7.1 HAZARD IDENTIFICATION AND RISK ASSESSMENT METHODOLOGY**

Risk is to expose someone or something to danger, harm or loss. The different steps of risk assessment procedure are as given below:

### **Step I: Hazard Identification**

The purpose of hazard identification is to identify and develop a list of hazards for each job in the organization that are reasonably likely to expose people to injury, illness or disease if not effectively controlled. Workers can then be informed of these hazards and controls put in place to protect workers prior to them being exposed to the actual hazard.

### **Step II: Risk Assessment**

Risk assessment is the process used to determine the likelihood that people exposed to injury, illness or disease in the workplace arising from any situation identified during the hazard identification process prior to consideration or implementation of control measures.

Risk occurs when a person is exposed to a hazard. Risk is the likelihood that exposure to a hazard will lead to injury or health issues. It is a measure of probability and potential severity of harm or loss.

### **Step III: Risk Control**

Risk control is the process used to identify, develop, implement and continually review all practicable measures for eliminating or reducing the likelihood of an injury, illness or diseases in the workplace.

### **Step IV: Implementation of risk controls**

All hazards that have been assessed should be dealt in order of priority in one or more of the following hierarchy of controls

The most effective methods of control are:

- ü Elimination of hazards.
- ü Substitute something safer.
- ü Use engineering/design controls.



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ü Use administrative controls such as safe work procedures.

ü Protect the workers i.e. by ensuring competence through supervision and training, etc.

Each measure must have a designated person assigned for the implementation of controls.

This ensures that all required safety measures will be completed.

### **Step V: Monitor and Review**

Hazard identification, risk assessment and control are an on-going process. Therefore regularly review the effectiveness of your hazard assessment and control measures. Make sure that you undertake a hazard and risk assessment when there is change to the workplace including when work systems, tools, machinery or equipment changes. Provide additional supervision when the new employees with reduced skill levels or knowledge are introduced to the workplace.

### **A) RISK ANALYSIS**

The risk assessment portion of the process involves three levels of site evaluation:

- a) Initial Site Evaluation,
- b) Detailed Site Evaluation,
- c) Priority Site Investigations and Recommendations.

The risk assessment criteria used for all levels of site evaluation take into account two basic factors:

- The existing site conditions
- The level of the travelling public's exposure to those conditions.

The Initial Site Evaluation and Detailed Site Evaluation both apply weighted criteria to the existing information and information obtained from one site visit. The Initial Site Evaluation subdivides the initial inventory listing of sites into 5 risk assessment site groups. The Detailed Site Evaluation risk assessment is then performed on each of the three highest risk site groups in order of the group priority level of risk. The result of the Detailed Site Evaluation process is a prioritized listing of the sites within each of the three highest risk site groups.

### **Risk analysis is done for:**

- Forecasting any unwanted situation

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- Estimating damage potential of such situation
- Decision making to control such situation
- Evaluating effectiveness of control measures

**Table 7.1, Risk Likelihood Table for Guidance**

Step 1: Assess the Likelihood				Step 2: Assess the Consequences		
<b>L1</b>	Happens every time we operate	Almost Certain	Common or repeating occurrence	<b>C1</b>	Fatality	Catastrophic
<b>L2</b>	Happens regularly (often)	Likely	Known to have occurred "has happened"	<b>C2</b>	Permanent disability	Major
<b>L3</b>	Has happened (occasionally)	Possible	Could occur or "heard of it happening"	<b>C3</b>	Medical/hospital or lost time	Moderate
<b>L4</b>	Happens irregularly (almost never)	Unlikely	Not likely to occur	<b>C4</b>	First aid or no lost time	Minor
<b>L5</b>	Improbable (never)	Rare	Practically impossible	<b>C5</b>	No injury	Insignificant

A logical systematic process is usually followed during a qualitative risk assessment to identify the key risk events and to assess the consequences of the events occurring and the likelihood of their occurrence Table 7.2

**Table 7.2, Qualitative Risk Assessment**

Risk Rank	L1	L2	L3	L4	L5
Likelihood Consequence	Almost certain	Likely	Possible	Unlikely	Rare
<b>C1</b> <b>Catastrophic</b>	<b>1</b>	<b>2</b>	<b>4</b>	<b>7</b>	<b>11</b>
<b>C2</b> <b>Major</b>	<b>3</b>	<b>5</b>	<b>8</b>	<b>12</b>	<b>16</b>

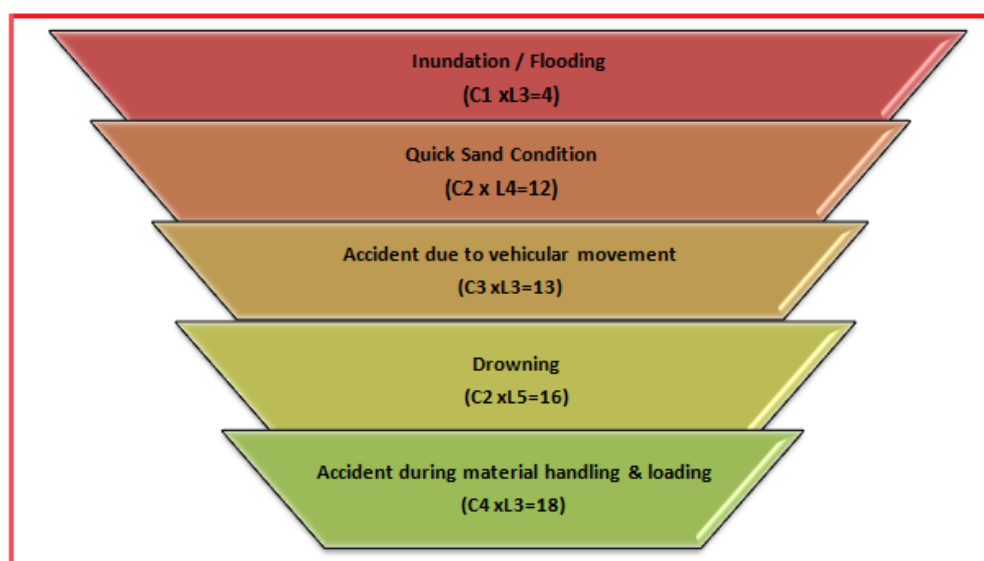
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<b>C3</b> <b>Moderate</b>	<b>6</b>	<b>9</b>	<b>13</b>	<b>17</b>	<b>20</b>
<b>C4</b> <b>Minor</b>	<b>10</b>	<b>14</b>	<b>18</b>	<b>21</b>	<b>23</b>
<b>C5</b> <b>Insignificant</b>	<b>15</b>	<b>19</b>	<b>22</b>	<b>24</b>	<b>25</b>

### RISK RATING:

<b>HIGH RISK 1-6</b>	<b>MEDIUM RISK 7-15</b>	<b>LOW RISK 16-25</b>
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## 7.2 RISK ASSESSMENT



There are various factors, which can create unsafe working conditions/hazards in mining of minor minerals from bed of river.

The key risk (hazard x probability) event rating associated with sand mining and to assess its consequences of such events occurring and the likelihood based on above Table 7.1 (ii) are as:-

The Risk rating of such hazards is as follows:

### 7.2.1 INUNDATION/FLOODING

The risk rating assigned to this activity is assigned as '4' i.e., it is possible and will have catastrophic with major consequences, if work started without assessment of the *river* condition especially during monsoon season.

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Inundation or flooding is expected and beneficial for these mines as during this time only the mineral reserve gets replenished.

### **Measures to prevent consequences of inundation/flooding**

Inundation or flooding is expected and beneficial for these mines as during this time only the mineral reserve gets replenished.

1. During monsoon months and heavy rains the mining operations are ceased.
2. There should be mechanism/warning system of heavy rains and discharges from the upstream dams.

### **7.2.2 Quick Sand Condition**

The risk rating assigned to this activity is assigned as '12' i.e., it is an unlikely event with major consequences as frequency of this risk is less likely to occur.

Two things may create the conditions to form quicksand. Underground water may seep-up and saturate the sand, thereby reducing the friction between the sand grains and giving the sand a liquid nature. Or, sand or another soil may be sifted by the force of an earthquake so that friction is lessened and the earth becomes unsteady.

This creates danger condition to the trucks plying near the *river* and banks for transportation of minerals.

### **Measures to Prevent Quick Sand Condition**

1. The only way to avoid quick sand condition is by avoiding mineral lifting below water table.
2. Mining will be done in layers rather than going for maximum depth at one time.

### **7.2.3 ACCIDENT DUE TO VEHICULAR MOVEMENT**

The risk rating assigned to this activity is assigned as '13' i.e., it is possible event with moderate consequences as frequency of this operation is more but the predicted/assumed intensity is less like minor cuts, bodily injury. The possibilities of road accidents are due to reckless or untrained driver or overloading of trucks or in case pathway is not compacted suitably, etc.

### **Measures to Prevent Accidents during Transportation**

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1. All transportation within the main working should be carried out directly under the supervision and control of the management.
2. The Vehicles will be maintained/repared and checked thoroughly by the competent person.
3. A statutory provision of constant education, training etc. will go a long way in reducing the incidents of such accidents.
4. Overloading will not be permitted and will be covered with tarpaulin.
5. The maximum permissible speed limit will be ensured.
6. The truck drivers will have valid driving license.

#### 7.2.4 DROWNING

The risk rating assigned to this activity is assigned as '16' i.e., it is a rare accident but will have major consequences, if occurred. This may occur due to flash floods etc due to which the workers at the site may get seriously injured or drowned.

##### Measure to Prevent Drowning

1. The mining will be done under strict supervision and only in the dry part of the *river*.
2. Mining will be completely stopped in monsoon season to avoid such accidents.
3. Deep water areas will be identified and 'No Go Zones' will be clearly marked and made aware to the mine workers.

#### 7.2.5 ACCIDENT DURING MATERIAL HANDLING & LOADING

The risk rating assigned to this activity is assigned as '18' i.e. it is possible event with minor consequences", as frequency of this operation is more but the predicted/assumed intensity is less like minor cuts, abrasion, etc. may be due to bank of *river* collapse, over thrown boulders/pebbles, injuries due to carelessness use of hand tools, etc.

##### Measures to Prevent Accidents during material handling & loading

1. The truck should be brought to a lower level so that the loading operation suits to the ergonomic condition of the workers.
2. The loading should be done from one side of the truck only to avoid over throw of materials.
3. The workers should be provided with gloves and safety shoes during loading.

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All the activities will be done under strict supervision/control to avoid anticipated accidents so that the risk is reduced to a level considered **As Low As Reasonably Practicable (ALARP)** conditions which are adequately safe and healthy.

### 7.3 DISASTERS & ITS MANAGEMENT

#### 7.3.1 Anticipated Disaster

- 1. Floods:** Most of the areas of this district are flood prone owing to the presence of seasonal rivers. Rivers and its tributaries cause heavy losses to the human lives, livestock, land and property mainly due to flash floods. Hence no mining has been proposed during monsoon and flood alerts will be given, if any.
- 2. Earth Quake:** District like other areas of Bihar is moderately vulnerable to earthquake as it exists in Zone III. However the vulnerability to damage near the site is quite low as there are no built in structures at the site.
- 3. Drought:** due to deficiency in rainfall prime reasons of recurring drought in Bihar is the nature of soil with low mineral and humus-contents besides extremely poor water holding capacity. Recurrent rainfall variability and sustained departure from the normal rainfall vis-a-vis low reliability, fluctuating both surface and underground water resources and extremely poor water holding capacity of the major soil group appear to have clubbed together to cause frequent droughts in Bihar. Besides, there is a positive relationship between reducing forest land and the increasing rainfall variability and the phenomenon is well manifested in Bihar scenario of recurrent droughts.

#### 7.3.2 Disaster Management Plan & Strategy

The Disaster Management Plan has three components:

##### (A) Risk Analysis and Vulnerability Assessment:

The Risk Analysis and Vulnerability Assessment depict the present picture for each disaster-exposure, loss of life, property damage, etc. It also shows geographic distribution of each hazard. The various monitoring facilities, regulatory regimes, countermeasures available for each disaster are identified and listed.

##### (B) Response Plan:

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The response plan presents an organizational structure of the District to effectively handle the disaster in a coordinated and quickest possible manner to mitigate the impact of disaster. It identifies functional areas such as relief, restoration, communication, information, transport, emergency health services etc and proposes assignments to various departments; including identifying lead and supporting departments. The response plan also lays down preparedness checklists and standing operating procedure (SOP) guidelines.

**(C) Mitigation Strategy:**

The mitigation strategy and plan focus on the long-term planning for impact reduction. It deals with the issues of continued commitment to hazard identification and risk assessment, applied research and technology transfer, investment-incentives for mitigation, and leadership and co-ordination for mitigation.

The mine management will be in regular contact with the District administration to gather information on natural disasters and will pass on the message at the site to avoid any loss of health or wealth due to impending disasters.

Though the responsibility of disaster management is vested with the center and state Governments, it is extremely difficult for them to deal effectively all the aspects of disaster management according to the needs of the affected people.

Thus disaster management plan of the Arwal District has been prepared through incorporation of the features of Community Based Disaster Management and involvement of local governments, Municipalities etc.

## **7.4 SOCIO-ECONOMIC IMPACT OF THE PROJECT & SAFETY MEASURES**

### **INTRODUCTION**

Socio-Economic Impact Assessment (SEIA) refers to systematic analysis of various social and economic characteristics of human being living in a given geographical area during a given period. The geographical area is often called Study Area or Impact Area. SEIA is carried out separately but concurrently with Environment Impact Assessment (EIA). The study area consists of core area where the project is located and a buffer area encircling the project area with a radius of 10 km from the periphery of the core area. For every new

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project or existing project under expansion or tied for modernization or change in product mix, Socio-economic Impact Assessment is mandatory. The Socio-economic impact assessment focuses the effect of the project on social and economic well-being of the community. The impact may be direct or indirect. Further, the impact may be positive or negative.

### **OBJECTIVES OF SEIA**

The prime objective of the current study is to assess the impact of the proposed mining project on socio-economic characteristics of people living in the neighborhoods. Further, it is to be established whether the impending impact would be direct or indirect. Furthermore, it is to be examined whether the said impact would be positive or negative. Lastly, it is to be comprehended if the impact is positive how long it would sustain or if it is negative how soon the same could be eased.

### **SCOPE**

The Scope of the study is as follows:

- a) To collect baseline data of the study area
- b) To comprehend socio-economic status of the people living in the study area.
- c) To assess probable impact of the project on social and economic aspects in the study area.
- d) To measure the impact of the project on Quality of life of the people living in the study area.
- e) To ensure sustainability of positive impact.
- f) To suggest mitigation measures and agency responsible for taking action in case of adverse impact.

### **SOCIO-ECONOMIC IMPACT OF THE PROJECT**

#### ***Impact on Demographic Composition***

The proposed Project will hardly make any difference in the demographic composition of the study area as the additional employment it envisages to create will be met locally to the maximum extent. Hence, the chances of in-migration of people from outside the study area are remote. Accordingly, there will be no variation in the total population of the study area including that of sex ratio, when the mine starts operating.



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### ***Employment Opportunities***

The proposed Project will provide employment to the local people. The number of workers to be deployed in the mining project will depend upon the quantity of minerals to be extracted from the mine by the lease holder. Both the miners and the unskilled workers will be recruited locally. It has estimated that around 61 people will get employment in this mining project for a period of ten months in a year. It is a positive impact of the project since it is providing employment opportunities to the local people. The project will not affect the vulnerable groups of people.

### ***Increased supply of sand in the market***

The demand for minerals is ever increasing with the growth of the infrastructure development in our country. Both Government departments and private developers have taken up construction of roads, bridges and buildings in a big way. The requirement for the building materials is always high and there is already an acute shortage of sand in the market and the construction industry is the main sufferer. With the commencement of the proposed mining project the supply of minerals will increase and the gap between demand & supply will decrease to some extent, if not fully.

### ***Impact on agriculture***

It is non-forest land and the proposed activity is to take place in the bed of the Son River. There will be no negative impact on agriculture as no cultivation is taking place on the proposed mining area. Since, scientific mining will be adopted in the proposed mining project the area will be free from annual floods, which destroy standing crops and land & property. This is a positive impact of the proposed mining project.

### ***Impact on road development***

Movement of trucks and other vehicles to and fro the mining site is expected to increase, when mining will start. The existing roads are connecting the quarry with the national highway connected by metalled followed by un-metalled roads. Hence, there is need for road maintenance and repairing regularly in the mining area. Further, there are risks of accidents during loading of extracted minerals into trucks and transportation to markets for sells. However, accidents can be avoided by taking due care and precautions.

### ***Income to Government***

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The proposed mining activity will benefit the State in the form of royalty, dead rent, fees and earnings from taxes.

### ***Impact on Law & Order***

As most of the workers to be employed in the proposed mining project are local residents no law & order problem is envisaged. It is expected that the workers will attend to their duties from their residence and return to their homes after the day's work. There would have been law & order problem if the workers were migrants and lived in shanties closed to the mining area. However, to meet any untoward incident one police post may be set up closed to the mining site.

### ***Impact on Health***

There are no chances of occurring diseases, due to mining. The minerals excavated are non-toxic. To avoid respiratory problem from dust necessary protection should be taken.

### ***Few safety measures are outlined below:***

- a) **Safe Working Environment:** The project proponent shall ensure health and safety of all the employees at work. Efforts will be made to provide and maintain a safe work environment and ensure that the machinery and equipment in use is safe for employees. Further, it will be ensured that working arrangements are not hazardous to employees.
- b) **Provision of First Aid:** The first aid treatment reflects the hazards associated with the mining of minerals. The first-aiders will be well trained in handling patients working in the Project.
- c) **Regular Health Examination:** For all mine workers regular health examination will be made compulsory. Treatment of serious back injury; existing asthma or respiratory diseases, existing skin diseases, lung function test (pre and post ventolin), Audiograms, Chest X- ray etc. will also be taken care of.
- d) **Health Education:** Adequate health education and information related to the job will be provided to the workers. Baseline health information will be recorded for future references.
- e) **Tie-up with the Nearest Hospital for Medical Assistance:** To meet the medical needs of the mine workers tie-up with nearest hospitals will be made. Efforts will be

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made to reserve few beds in the above hospitals for the workers of the mining project. This will ensure timely medical aid to the affected persons.

- f) **Supply of Mask and Gloves:** The workers in the Sand mining project are subject to respiratory diseases. For protection from dust it will be made compulsory for all workers to wear masks and gloves, while working in the mine.
- g) **Administration of Anti-venom Injections:** Provision of Anti-venom therapy will be made available for administration to the workers in case of snake, spider and insect bites, while working in the mine.
- h) **Special Telephone Number:** A special telephone number will be made available to the workers in case of emergency so that they can dial the same for medical assistances. Further, efforts will be made to provide vehicles to the patients in short duration for shifting to a hospital.
- i) **Special Group Insurance Scheme:** All the mine workers will be covered under a Group Insurance Scheme of LIC or any other Insurance company.

## CONCLUSION

The commissioning of the Sand Mining Project (44.46 ha) at Mauja – Mainpura Sohsa, Tehsil – Kaler, Dist - Arwal (Bihar) provides employment to local people who are in search of the same. The granting of environment clearance to M/s Maa Kamakhya Construction & Co.(Pro.- Avinash Kumar) make mining of sand legally valid and it will generate revenue for the state. It is expected that prospective entrepreneurs will venture to set up industrial units in the vicinity in the near future making the area a mixed society, dependent on industry, trade and business. With the implementation of the project the occupational pattern of the people in the area will change making more people engaged in mining, industrial and business activities rather in agriculture only. The study area is still lacking in health and educational facilities. It is expected that same will improve to a great extent with opening of the project and associated industrial & business activities.

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## 8.0 GENERAL

Various benefits are envisaged while planning for the mining of sand from Son River Bed. Sand is very important minor mineral and is the principal raw material for meeting the huge demand of construction material required in building construction and infrastructure works, road material for construction and maintenance of roads / highway; elastic ballast material for rail tracks in the State of Bihar & and nearby cities and towns of Bihar. The natural available materials in shoal deposits of Son River bed quarry site have been found suitable from techno-economic consideration.

## 8.1 PHYSICAL BENEFITS

The opening of the proposed project will enhance the following physical infrastructure facilities in the adjoining areas.

- a. **Road Transport:** There will be improved road communication due to the proposed project and maintenance will also be done time to time.
- b. **Market:** Generating useful economic resource for construction. Excavated minor mineral sand will provide a good market opportunity.
- c. **Enhancement of green cover:** As a part of reclamation plan, plantation will be carried along the river banks or along the road sides or near the civic amenities.
- a. **Creation of community assets** (infrastructure) like provision for drinking water, construction of school buildings, village roads/ linked roads, dispensary & health centre, community centre, market place etc, as a part of corporate social responsibility.

## 8.2 SOCIAL BENEFITS

- a) **Increase in Employment Potential due to the project activity:** Employment opportunities will increase both directly as well indirectly.
- b) **Contribution to the Exchequer** as the saleable minerals will be given royalty. Since the quarries will be leased out to successful allottees, mining operation in the state will get legalized and it will fetch income to the state exchequer.
- c) **Increased Health related activities:** Healthcare promotional activities will be undertaken. Pre-placement & and Periodic medical checkups will be done, which will lift the general health status of the residents of the area. Health camps, medical aids, family welfare programs, immunization camp, sports will be arranged.



Project: Sand Mining Project, On Son River At Mainpura Sohla (Arwal Son - 13) Sand (Area- 44.46 Ha)

**Table-8.1, Budget for Public Health**

S. No.	Activities recommended for communities level services	Tentative cost (Lakh Rs)
1	Awareness campaigns regarding health issues in the nearby villages.	1.0
2	Provide free health checkups & medicines to the nearby villagers of the project site.	1.0
3	Assistance to set up a temporary health center during the lease tenure.	0.50
	<b>Total</b>	<b>2.5</b>

- d) **Educational attainments:** Educational activities will be promoted by the lessee. Awareness program will be arranged covering basic issues related to primary level education, environment, health and hygiene etc.
- e) **Strengthening of existing community** facilities through the Community Development Programme.

**Table 8.2, Budget for Occupational Health**

Particulars	Recurring Cost per year (Rs.)
For routine checkup	1,00,000
Medical aid as per ESI Scheme	2,00,000
Training	1,00,000
<b>Total</b>	<b>4,00,000</b>

### 8.3 ENVIRONMENTAL BENEFITS

- Protection of banks
- Reducing submergence of adjoining agricultural lands due to flooding.
- Reducing aggradations of river level.
- Protection of crops being cultivated along the bank.
- A check on illegal mining activity.

Project: Sand Mining Project, On Son River At Mainpura Sohsa (Arwal Son - 13) Sand (Area- 44.46 Ha)

#### 8.4 CORPORATE ENVIRONMENTAL RESPONSIBILITY

2% of capital cost of the project cost will be allotted for the Corporate Environmental Responsibility as per OM dated 1<sup>st</sup> May 2018. The following has been proposed considering the needs & demand of the people. **CER is 27,76,304/-**

For each activity the funds to be earmarked by the proponent will be decided after discussion with the local authority/people and the beneficiaries during Public Hearing. It has been planned to undertake a concurrent evaluation of the activities to be taken up under the CER programme.

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Project: Sand Mining Project, On Son River At Mainpura Sohla (Arwal Son - 13) Sand Ghat (Area- 44.46 Ha)

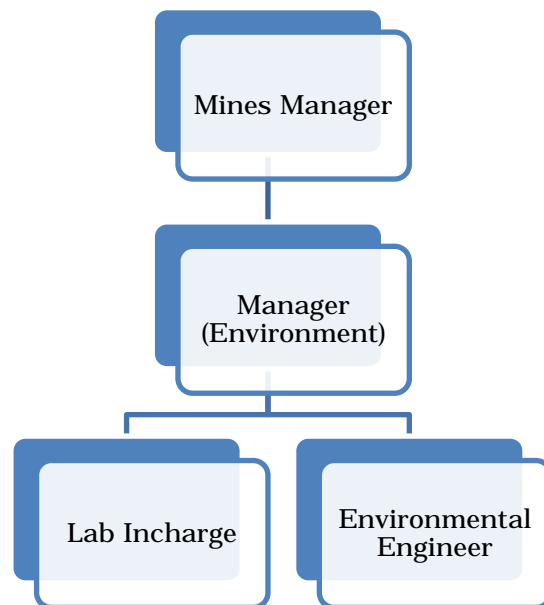
## 9.0 INTRODUCTION

The environmental management must be integrated into the process of mine planning so that ecological balance of the area is maintained and adverse effects are minimized. The Environmental Management Plan (EMP) consists of a set of monitoring programme, mitigation measures, and management control strategies to minimize adverse environmental impacts.

The EMP has therefore been made considering implementation and monitoring of environmental protection measures during and after mining operations. Measures to be taken for each of the impact areas are detailed in the following paras:

## 9.1 ENVIRONMENTAL MANAGEMENT CELL (EMC)

It is imperative to establish an effective organization to implement, maintain, monitor and control the environmental management system. A separate Environmental Management Cell (EMC) will be formed to look after the environment related matter of the mine. The structure of EMC is as follows:



**Figure 9.1 Environment Management Cell**

Project: Sand Mining Project, On Son River At Mainpura Sohsa (Arwal Son - 13) Sand Ghat (Area- 44.46 Ha)

The EMC will perform the following activities:

- EMC will oversee that environmental control measures are implemented as per the plan.
- EMC will ensure ambient Field monitoring like air monitoring, meteorological monitoring and noise monitoring in coordination with outside agencies.
- Coordinating the environment related activities within the organization as well as with outside agencies.
- Reporting the status report to the statutory authorities.
- Systematically document and record keeping w.r.t. environmental issues.
- Plantation and their maintenance
- Collection statistics of health of workers and population of surrounding villages.
- Environmental compliance to the regulatory authorities.
- Communication with the concerned department on the environmental issue.
- Monitoring the progress of implementation of environmental management programme.

## **9.2 AIR POLLUTION CONTROL MEASURES**

During the course of sand mining, no toxic substances are released into the atmosphere, so there seems to be no potential threat to health of human beings. In river bed mining activities, dust will be generated during mining, loading and transportation. The only source of fugitive gaseous emission during mining is vehicles which will be used for transportation. The environmental management for air pollution control includes:

- Plantation will be done along the road-sides and also the vacant land present under Gram Panchayat after consultation with local villagers/authority.
- Dust mask provided to the workers engaged at dust generation points like excavations, loading and unloading points.





Project: Sand Mining Project, On Son River At Mainpura Sohsa (Arwal Son - 13) Sand Ghat (Area- 44.46 Ha)

- The only air pollution sources are the road transport network of the trucks. The dust suppression measures like water spraying will be done on the roads.
- Utmost care will be taken to prevent spillage of sand and stone from the trucks.
- Water sprinkling will be done to reduce the emission of dust due to transportation of minerals.
- Overloading will be prevented. The trucks/ tractor trolley will be covered by tarpaulin covers.
- Plantation activities in consultation with village Panchayat along the roads will also reduce the impact of dust in the nearby villages.

### **9.3 WATER POLLUTION CONTROL MEASURES**

During the operational phase of mine no waste water or industrial effluent will be generated. The environmental management for water pollution control includes:

- Water requirements for drinking, plantation and dust suppression will be met by tanker supply on the daily basis.
- Local people will be employed and no permanent housing will be done so no permanent drainage pattern for sewerage system is required as domestic sewage shall be disposed off into septic tank followed by soak pits.
- Mining in the area will be done up to depth of 3.0 m from the surface level well above the ground water table, therefore impact on water regime is not anticipated.
- Monitoring of water quality of nearby surface water, ground water and domestic water will be conducted once in every season except monsoon to evaluate the performance of the mitigation measures.

### **9.4 NOISE POLLUTION CONTROL MEASURES**

As there will be no heavy earth moving machinery there will not be any major impact on noise level due to sand mining and other association activities a detailed noise survey has been carried out and results were cross referenced with standards and were found to be well within limits. Blasting technique is not used for sand mining hence no possibility of land vibration. It was found that the proposed mining activity will not have any significant impact

Project: Sand Mining Project, On Son River At Mainpura Sohsa (Arwal Son - 13) Sand Ghat (Area- 44.46 Ha)

on the noise environment of the region. The only impact will be due to transportation of sand and by excavator involve trucks and tractor trolleys.

- Proper maintenance of all machines is being carried out, which help in reducing generation of noise during operations.
- No other equipments accept the Transportation vehicles and Excavator and Loaders (as and when required) for loading is allowed.
- Noise generated by these equipments is intermittent and does not cause much adverse impact.
- Periodical monitoring of noise will be done to adopt corrective actions wherever needed.
- Plantation will be taken up along the approach roads. The plantation minimizes propagation of noise and also arrests dust.

## **9.5 BIOLOGICAL ENVIRONMENT**

Although, there are no significant adverse impacts from the project, the following measures are proposed to minimize anticipated impacts:

- It will be ensured that no mining activity will be carried out during the monsoon season to minimize impact on aquatic life which is mainly breeding season for many of the species.
- As the mining site has no vegetation, no clearance of vegetation will be done.
- Prior to closure of mining operations / during the rainy season the eroded bank will be restored / reclaimed to minimize negative impacts on aquatic habitats.
- Sprinkling will be done on the haul roads with water to avoid the dust emission, thus avoiding damage to the crops.
- Mining will be carried out on the dry part of the lease area to avoid disturbance to the aquatic habitat and movement of fish species.

Project: Sand Mining Project, On Son River At Mainpura Sohla (Arwal Son - 13) Sand Ghat (Area- 44.46 Ha)

- No discard of food, polythene waste etc. will be allowed in the lease area which would distract/attract the wildlife.
- No night time mining will be allowed which may catch the attention of wild life.
- Workers will be made aware of the importance of the wildlife and signage will be displayed at the sensitive areas to caution the workers & other passerby.
- **Greenery development:** The project will not lead to any tree cutting. However, associational responsibility, greenery will be developed along the both sides of road and the bank of river. Community services will be deployed in raising these plantations. Trees of economic importance and native origin such as fruit trees shall be planted.
- Approx. 393 trees will be planted around haul road during the plan period.
- The trees proposed for plantation are:

**Table 9.1:- List of Plant selected for Green Belt Development**

	Agro-climatic zone & Sub zone	Middle Genetic Plains, North west alluvial sub zone	
S/n	Scientific name	Common Name	Pollution control features
1	<i>Acacia nilotica</i>	Babul	Tolerant to SO <sub>2</sub>
2	<i>Azadirachta indica</i>	Neem	Tolerant to SO <sub>2</sub>
3	<i>Pithecolibium duclouxii</i>	Jungle jalebi	Tolerant to SO <sub>2</sub> and Dust control
4	<i>Mangifera indica</i>	Aam	Tolerant to Dust control
5	<i>Tectona grandis</i>	Sagon	Tolerant to Dust control
6	<i>Ficus benghalensis</i>	Bargad	Tolerant to Dust control
7	<i>Scigium cumuni</i>	Jamun	To stop river bank erosion
8	<i>Terminalia arjuna</i>	Arjun	To stop river bank erosion
9	<i>Populus ciliate</i>	Popular	Fast growing, broad leaf
10	<i>Ficus religiosa</i>	Peepal	Dust particles absorbance

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## **9.6 LAND USE PLANNING**

Degradation of land is not a very significant adverse impact of riverbed mining due to creation of access roads, mining operations, transportation of mined material. In order to prevent the environmental degradation of leased mine area and its surroundings, the following measures shall be taken;

- Mineral will be mined out after leaving sufficient safety zone from the bank as per sustainable sand mining guidelines-2016 for bank stability.
- The pits from where the material will be picked should not get deeper than 3.0 meter & shall follow the normal channel direction of the river.
- No foreign material shall be allowed to remain/spill in river bed and catchment area, or no pits/pockets will be allowed to be filled with such material.
- The mining is planned in non-monsoon seasons only, so that the excavated area gets replenished during the monsoon each year.
- Pits will get replenished naturally every year after monsoon.

## **9.7 Occupational Health & Safety**

Occupational safety and health is very closely related to productivity and good employer-employee relationship. The factor of occupational health in Sand Ghat of M/s Maa Kamakhya Construction & Co., Pro.- Avinash Kumar. is mainly dust. Safety of employees during operation and maintenance etc. shall be as per Mines rules and regulations.

To avoid any adverse effect on the health of workers due to various pollutants, sufficient measures relating to safety and health will also be practiced:

- Provision of rest shelters for mine workers with amenities like drinking water, portable toilets etc.
- All safety measures like use of safety appliances, such as dust masks, shoes, non breakable goggles as the case may be, shall be ensured. Safety awareness programs, awards, posters, slogans related to safety etc. will be encouraged.



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- Training of employees for use of safety appliances and first aid in vocational training center.
- Regular maintenance and testing of all equipment as per manufacturers' guidelines.
- Periodical Medical Examination (PME) of all workers by a Medical Officer.
- First Aid facility will be provided at the mine site.
- Close surveillance of the factors in working environment and work practices which may affect environment and worker's health.
- Working of mine as per approved mining plan and environmental plans.

## **9.8 SOCIO-ECONOMIC ENVIRONMENT**

This project operation will provide livelihood to the poorest section of the society. The overall impact of riverbed mining of sand on the social economics of the area shall be a very positive one, as not only it will generate employment opportunities for local population at mine site for transportation of mined material, etc. It will also give a good boost to the general economy of the area.

The proposed mining activity is expected to provide stimulus to socio-economic activities in the region and thereby accelerate further development processes. However, there is an apprehension that local people may get engaged in illegal activities if the proposed mining operation or the project is shelved or there is inordinate delay in its execution.

## **9.9 ENVIRONMENT POLICY**

M/s Maa Kamakhya Construction & Co., Pro.- Avinash Kumar of Sand Ghat believes that responsible environmental stewardship comprises diligent application of well-established natural resource management, controls and practices for the protection of the mined out land, preservation of biodiversity and proper disposal of waste if any following the best environmental practices during the process of mining.

Environmental policy prescribed for standard operating process to bring into focus any violation/deviation of the environment and forest norms/conditions that the company operations will implement operational and risk management practices that provide for



Project: Sand Mining Project, On Son River At Mainpura Sohsa (Arwal Son - 13) Sand Ghat (Area- 44.46 Ha)

maximum protection of people and the environment. To this end, the owner resolves that company will follow the below mentioned practices:

Operate in accordance with prescribed industry standards while complying with all applicable environmental, health and safety laws and regulations.

- Establish and maintain a well-defined environmental, health and safety management system to guide its operations.
- Ensure that all employees, officers and directors understand and adhere to its environmental, health and safety management program.
- Provide operations with the necessary resources, expertise and training to effectively carry out its EHS management programs.
- Engage employees at all levels in programs directed towards minimizing adverse effects on the environment resulting from mining activity.
- Work proactively with governments and the public in the development of cost effective and realistic regulations that promote enhanced environmental, health and safety protection.
- Promote environmental awareness among its employees, their families and the communities in which it operates.
- Require those who provide services and products to practice good environmental stewardship.
- Mitigate its environmental impacts through efficient use of resources, and the reduction of input materials and waste.
- Maintain a high degree of emergency preparedness.

#### **9.10 BUDGET ALLOCATION FOR EMP IMPLEMENTATION**

Annual budget for EMC is very essential for successful implementation of EMP. Costs will be both Capital and Recurring cost as given below. The fund allocated will not be diverted for any other purposes and the top management will be responsible for this.



Project: Sand Mining Project, On Son River At Mainpura Sohla (Arwal Son - 13) Sand Ghat (Area- 44.46 Ha)

**Table 9.2, Budget of EMP**

Sl. No	Description	Capital Cost (Rs)	Recurring Cost (Rs)
1	Pollution Control & Dust Suppression	--	2,00,000
2	Pollution Monitoring i) Air pollution ii) Water pollution iii) Soil Pollution iv) Noise Pollution	--	2,00,000
3	Plantation and salary for one gardener (part time basis).	4,45,000	50,000 (Gardener)
4	Haul road Maintenance Cost	98,750	1,50,000 (Labour Charge)
<b>TOTAL</b>		<b>5,43,750</b>	<b>6,00,000</b>

Note: \*445 plants \* 1000 Rs (for each plants including hedges and fences) = Rs 4,45,000/-

- Salary of Labour for haul road maintenance 2 labor\*300=600 per day
- 600\* 250= 1,50,000/-
- \* 2.5 lakh per kilometer ( 2,50,000 \*0.395 km haul road) = 98,750/-

\*\*\*\*\*

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## **10.0 INTRODUCTION**

### **10.1 Purpose of the Report**

Environmental Impact Assessment report is prepared to comply with the Terms of Reference (TOR) received from SEIAA, Bihar under EIA notification of the MoEF&CC dated 14<sup>th</sup> September, 2006 and its subsequent amendment there-off and also the EIA Guidance Manual for Mining of Minerals (Feb, 2010) of MoEF&CC, Govt. of India, for seeking environmental clearance for mining of Sand in the applied mining lease area.

## **10.2 IDENTIFICATION OF PROJECT & PROJECT PROPONENT**

### **10.2.1 Identification of Project**

The project is being proposed by M/s Maa Kamakhya Construction & Co. (Pro.- Avinash Kumar).

The address of the proponent is given below:

M/s Maa Kamakhya Construction & Co.  
Pro.- Avinash Kumar,  
S/o- Ramashish Singh,  
Vill.+P.O.-Kamta, P.S.- Prasi, Dist.- Arwal.  
Mob. No. 9771557204  
Email- maakamkhya393@gmail.com

The proposed project is of River bed sand mining and falls under Category- “B1” as per EIA Notification 2006 and its subsequent amendments by Ministry of Environment Forests & Climate Change, GOI. Arwal Son - 13 Sand Ghat fall in Mauja – Mainpura Sohsa, Tehsil – Kaler, Dist - Arwal, (Bihar).

### **10.2.2 Project Proponent**

The project is being proposed by M/s Maa Kamakhya Construction & Co. (Pro.- Avinash Kumar).

The address of the proponent is given below:

M/s Maa Kamakhya Construction & Co.  
Pro.- Avinash Kumar,  
S/o- Ramashish Singh,  
Vill.+P.O.-Kamta, P.S.- Prasi, Dist.- Arwal.  
Mob. No. 9771557204  
Email- [maakamkhya393@gmail.com](mailto:maakamkhya393@gmail.com)



Project: Sand Mining Project, On Son River At Mainpura Sohsa (Arwal Son - 13) Sand (Area- 44.46 Ha)

### 10.3 BRIEF DESCRIPTION OF PROJECT

The proposed project is Open Cast Semi-Mechanized Mining of Sand with a proposed production of 8,00,280 cum per annum or 13,44,470 Tonnes per annum.

The project has been proposed by M/s Maa Kamakhya Construction & Co. (Pro.- Avinash Kumar). The proposed project is over an area of 44.46 Ha at Khata no. – 384, 176 & Khasra No. - 2484, 2518, 2519 on Son River at Mauja – Mainpura Sohsa, Tehsil – Kaler, Dist - Arwal (Bihar). As per MoEF, New Delhi Gazette dated 14<sup>th</sup> September 2006 and amended thereof, the proposed mining project is categorized as **Category ‘B-1’**. The estimated project cost for the proposed project is **Rs 13,88,15,200/-** (including auction cost)

The proposed mining lease area falls in Survey of India Toposheet 72C/07, 72C/08, 72C/11 & 72C/12.

The mine lease co-ordinates and connectivity details are listed below:

**Table: 10.1 Mine lease Co-ordinates**

Sl. No	Coordinate	River Name
1	25.179889 N , 84.487798 E	Son
2	25.178622 N , 84.488867E	
3	25.175221N , 84.487616 E	
4	25.17249N , 84.486344 E	
5	25.170566N , 84.485014 E	
6	25.16735N , 84.481279 E	
7	25.172961N , 84.481326 E	
8	25.179889 N , 84.487798 E	

Project: Sand Mining Project, On Son River At Mainpura Sohsa (Arwal Son - 13) Sand (Area- 44.46 Ha)

The details of environmental setting are given in **Table-10.2**.

**Table-10.2: Details of Environmental Setting**

Sr. No.	Particulars	Details
1	<b>Location</b>	
a	Village	Mauza– Mainpura Sohsa,
b	Tehsil	Kaler
c	District	Arwal
d	State	Bihar
2	Elevation above	74.2 AMSL to 75.2 AMSL
3	Nearest National Highway/State Highway	NH 139: Approx. 6.30 km towards SE direction. SH 81: Approx. 4.70 km towards West direction.
4	Nearest Railway station	Piro Railway Station, approx. 17.0 km towards NW direction.
5	Nearest Airport	Jay Prakash Narayan International Airport Patna, approx. 76.0 km towards NE direction.
6	Ecological Sensitive Areas (Wildlife Sanctuaries)	none
7	Seismic Zone	Zone-III <i>Source BMTC 2<sup>nd</sup> edition</i> <a href="https://www.bmtpc.org/disaster%20resistnace%20technolgies/ZONE%20III.htm">https://www.bmtpc.org/disaster%20resistnace%20technolgies/ZONE%20III.htm</a>

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## 10.4 PROJECT DESCRIPTION

### 10.4.1 Salient features of mine lease

The salient features of mine lease are given below:

**Table-10.3: Salient features of mine lease**

Sr. No.	Parameter	Description
1	Name of the Mine	Lakhsarai Block 10 Sand Ghat Mining Project
2	Mining Capacity	Proposed: 800280 cum/annum or 1344470 TPA
3	Method of mining	Open cast semi-mechanized mining/OTFM
4	Total ML area	44.46 Ha
5	Depth of mining	3 m depth
6	Manpower	61 persons
9	Water Requirement	5.20 KLD
10	Source of Water	Tanker/ Nearby village.

### 10.4.2 Mineral Reserves and production

Slices of height 1.5m & width 6.0 m has been drawn in geological sections to calculate the mineable reserves. The area of each bench level has been calculated & multiplied by strike influence to get the volume. Volume is multiplied by bulk density (1.68) to get Tonnes.

**Table 10.4 Classification Mineral Reserves**

Sand Ghat	Area (Hect)	Geological Reserves (m3)	Mineable Reserves (m3)	Annual Mineable Permitted Reserve As per LoI (m3)
Arwal Son 13 Mainpura Sohsa	44.46	1333800	1236747	800280

In the lease area the river flow being reduced and sediment load get deposited. During flood season, the area gets replenished with sediments and source of erosion at this location. It is a river bed deposit and mined out area shall be replenished each year during monsoon period and depth of quarry shall be filled back by river sand each year and area will restore its original topography.

Project: Sand Mining Project, On Son River At Mainpura Sohsa (Arwal Son - 13) Sand (Area- 44.46 Ha)

### 10.4.3 Conceptual Plan

Mine Applied Area will be worked for Arwal Son Mainpura Sohsa Sand Ghat. However, as the digging depth will be restricted to 3.0 m only. This will be further replenished during rainy season. Sand Ghat will be worked systematically as the width is limited while length is much more. As the lease period is only 5 (Five) years, some of the area will be left un-worked at the end of lease period.

(i) Final Slope Angle to Be Adopted: Height of the bench is limited to 1.5 m while width of individual bench shall be kept 6.0m. River bank side will be protected by working in dry part of the river and by leaving safety distance of the width of the river of 5 meter. Bank side natural slope will not be disturbed. This will prevent collapse of bank and erosion. However, the height of the bank with respect to river bed is varying from 3-4 meters.

(ii) During plan period workings will be carried out in the Sand Ghat at a time of the Applied Area simultaneously. Scattered workings will ensure safety, remove congestion of vehicles and will have better control and management.

(iii) Ultimate Capacity of Dumps: There will be no OB removal / during the plan period. Therefore no proposal has been envisaged for its separate dumping. No outside material will be filled up in the extracted zone. The conceptual plan & section of each mining plots are attached with mine plan

### 10.4.4 Method of Mining

Mining activity will be carried out by open cast semi- mechanized method/OTFM. The operation will be semi-mechanized/OTFM with use of excavators/JCBs truck /tractors combination or Manually etc. The sand will be collected in its existing form.

## 10.5 AFFORESTATION PROGRAMME

Topsoil if any would be utilized for intensive plantation and greenbelt development, all along the bank of the river. The details of plantation and number of saplings to be planted are given below. Approx. 445 trees will be planted around haul road during the plan period.

## 10.6 LAND USE PATTERN

The mine lease area is flat river bed and river banks. There is no forest land or agriculture land in the mine lease area. The entire mining lease lies within River.

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## 10.7 BASELINE ENVIRONMENTAL STATUS

### 10.7.1 Soil Quality

Three soil samples were collected in and around the mine lease area to assess the present soil quality of the region. The pH of the soil indicates that the soil is slightly alkaline in nature. Based on the results, it is evident that the soils are not contaminated by any polluting sources.

### 10.7.2 Meteorology

Meteorological data at the site was monitored during Dec 2022 to Jan-Feb 2023 representing winter season. It was observed that the during study period, temperature ranged from 11 °C to 34.0 °C.

### 10.7.3 Ambient Air Quality

Ambient Air Quality Monitoring (AAQM) has been carried out at five locations. The minimum and maximum level of PM<sub>10</sub> recorded within the study area was in the range of 66.4 µg/m<sup>3</sup> to 97 µg/m<sup>3</sup> with the 98<sup>th</sup> percentile ranging between 85.25 µg/m<sup>3</sup> to 93.23 µg/m<sup>3</sup>. The Particulate Matter PM<sub>2.5</sub> recorded within the study area was in the range of 36.1 µg/m<sup>3</sup> to 49.9 µg/m<sup>3</sup> with the 98<sup>th</sup> percentile ranging between 42.17 µg/m<sup>3</sup> to 49.44 µg/m<sup>3</sup>. The minimum and maximum concentration of SO<sub>2</sub> recorded within the study area was 4.2 to 6.0 µg/m<sup>3</sup> with the 98<sup>th</sup> percentile ranging between 5.82 µg/m<sup>3</sup> to 9.18 µg/m<sup>3</sup>. Oxides of Nitrogen NO<sub>2</sub> recorded within the study area was in the range of 6.9 µg/m<sup>3</sup> to 18.6 µg/m<sup>3</sup> with the 98<sup>th</sup> percentile ranging between 15.63 µg/m<sup>3</sup> to 17.62 µg/m<sup>3</sup>. The results thus obtained indicate that the concentrations of PM<sub>10</sub>, SO<sub>2</sub> and NO<sub>2</sub> in the ambient air are well within the National Ambient Air Quality (NAAQ) standards for Residential and Rural areas.

### 10.7.4 Water quality

To assess the physical and chemical properties of water in the region, water samples from three locations were collected from various water sources around the mine lease area. The pH was varying for ground waters from 7.46 to 7.53. The total dissolved solids are varying from 509 mg/l to 580 mg/l.

Project: Sand Mining Project, On Son River At Mainpura Sohla (Arwal Son - 13) Sand (Area- 44.46 Ha)

The results indicate groundwater is generally in conformity with the drinking water standards (IS: 10500).

### 10.7.5 Noise Quality

Noise monitoring reveals that the minimum & maximum noise levels at day time were recorded as 40.5 dB(A) at NQ-5 & 52.2 dB(A) at NQ7 respectively. The minimum & maximum noise levels at night time were found to be 35.61 dB (A) at NQ3 & 42.3 dB(A) at NQ1 respectively.

### 10.7.6 Ecological Environment

Based on the field studies and review of published literature, it is observed that there are. There are no wildlife sanctuaries and National Parks within the study area of 10-km radius.

## 10.8 ANTICIPATED ENVIRONMENTAL IMPACTS

### 10.8.1 Impact on Air Environment

The proposed mining activities loading and movement of other transport vehicles used in mining will generate dust (SPM/RSPM). Proper water sprinkling shall be carried out at the mine site. The mineral will be transported by road through covered tarpaulin trucks/tippers to reduce the fugitive emission caused by the wind.

### 10.8.2 Impact on Water Environment

Mining of sand from within or near river has an indirect impact on the physico-chemical habitat characteristics during monsoon season. These characteristics include in stream roughness elements, depth, velocity, turbidity, sediment transport and stream discharge.

The detrimental effects, if any, to biota resulting from bed material mining are caused by following:

- Alteration of flow patterns resulting from modification of the river
- An excess of suspended sediment during monsoon season.

Project activity will be carried out only in the dry part of the Son River. Hence, none of the project activities affect the water environment directly. In the project, it is not proposed to divert or truncate any stream in monsoon season only. No proposal is envisaged for pumping of water either from the *River* (in monsoon) or tapping the ground water.

Project: Sand Mining Project, On Son River At Mainpura Sohla (Arwal Son - 13) Sand (Area- 44.46 Ha)

### **10.8.3 Impact on Water Quality**

Analysis results of water samples collected from the buffer zone indicate that the pH, total dissolved solids (TDS) are well below the prescribed limits.

No wastewater generation is envisaged due to the mining operations. The sanitary wastewater will be sent to septic tanks.

### **10.8.4 Impact on Noise Environment**

The proposed mining activity is semi-mechanized/OTFM in nature. No drilling & blasting is envisaged for the mining activity. Hence, the only impact is anticipated is due to movement of vehicles deployed for transportation of minerals. The vehicles will be maintained in good running condition so that noise will be reduced to minimum possible level.

### **10.8.5 Impact on Land Environment**

The proposed extraction of stream bed materials, mining below the existing streambed, and alteration of channel-bed form and shape may lead to several impacts such as erosion of channel bed and banks, increase in channel slope, and change in channel morphology if, the operations are not carried out systematically.

The systematic and scientific removal of sand will not cause bed degradation. The silt and clay generated as waste will be used for plantation or filling up low lying area elsewhere. The mining is planned in non monsoon seasons only, so that the excavated area gets replenished gradually during the monsoons each year.

### **10.8.6 Impact on flora and fauna**

As the proposed mining will be carried out in a scientific manner, not much significant impact is anticipated. No mining will be carried out during the monsoon season to minimize impact on aquatic life which is mainly breeding season for many of the species. The mining site has no vegetation; no clearance of vegetation will be done. Haul roads will be sprinkled with water which would reduce the dust emission, thus avoiding damage to the crops.

### **10.8.7 Impact on Socio - Economic Aspects**

Project: Sand Mining Project, On Son River At Mainpura Sohla (Arwal Son - 13) Sand (Area- 44.46 Ha)

The mine area does not cover any habitation. Hence the mining activity does not involve any displacement of human settlement. No public buildings, places, monuments etc exist within the lease area or in the vicinity. The mining operation will not disturb/ relocate any village or need resettlement. Thus no adverse impact is anticipated. The impact of mining activity in the area is positive on the socio-economic environment of the region. Sand mining will be providing employment to local people whenever there is requirement of manpower.

### 10.9 ENVIRONMENTAL MANAGEMENT PLAN

- Extraction will be done from the bed leaving safety zone from bank.
- The maximum working depth will remain above ground water table of the area.
- Provide health facilities to the workers & surrounding people in the impact area to reduce the health impacts.
- Ensuring wildlife protection & arranging awareness campaigns for the same.
- Minimize activities that release fine sediment to the river.
- Effective mitigation measures will be adopted to minimize disturbance during transportation & handling of minerals:
- Establishment of reclamation program with plantation of local/native & fast growing species
- Establishment of restoration plan during the closure of mine at the onset of monsoon season.
- Establishment of effective Disaster Management Plan to take timely precautionary measures to avoid effects of impending disasters.
- Establishment of effective Monitoring Program monitored by Environment Management Cell.

### 10.10 ENVIRONMENTAL MONITORING PROGRAM

**Table 10.5: Post project environmental monitoring**

S.No.	Description of Parameters	Schedule of Monitoring
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Project: Sand Mining Project, On Son River At Mainpura Sohla (Arwal Son - 13) Sand (Area- 44.46 Ha)

1	Air Quality	24 hourly samples twice a week in each season except monsoon
2	Water Quality (Surface & Groundwater)	Once a season for 4 seasons in a year
3	Soil Quality	Once in a year in project area
4	Noise Level	Twice a year for first two years & then once a year
5	Socio-economic Condition	Once in 3 years
6	Plantation Monitoring	Once in a season

### 10.11 ENVIRONMENTAL PROTECTION COST

The details of the cost to be incurred for successful monitoring of environmental parameters and implementation of control measures are given in **Table-10.6**.

**Table 10.6: Cost of Environmental Protection Measures**

Sl. No	Description	Capital Cost (Rs)	Recurring Cost (Rs)
1	Pollution Control & Dust Suppression	--	2,00,000
2	Pollution Monitoring S. Air pollution ii) Water pollution iv) Noise Pollution	--	2,00,000
3	Plantation and salary for one gardener (part time basis).	4,45,000	50,000 (Gardener)
4	Haul road Maintenance Cost	98,750	1,50,000 (Labour Charge)
<b>TOTAL</b>		<b>5,43,750</b>	<b>6,00,000</b>

Note: \*445 plants \* 1000 Rs (for each plants including hedges and fences) = Rs 4, 45,000/-

- Salary of Labour for haul road maintenance 2 labor\*300=600 per day
- 600\* 250= 1,50,000/-
- \* 2.5 lakh per kilometer ( 2,50,000 \*0.395 km haul road) = 98,750/-

Project: Sand Mining Project, On Son River At Mainpura Sohsa (Arwal Son - 13) Sand (Area- 44.46 Ha)

## 10.12 ADDITIONAL STUDIES

### 10.12.1 Risk Assessment

The complete mining operation will be carried out under the management control and direction of a qualified mine manager holding. The DGMS have been regularly issuing standing orders, model, standing orders and circulars to be followed by the mine management in case of disaster, if any.

### 10.12.2 Disaster Management Plan

Emergency preparedness is an important aspect in the planning of Disaster Management. Personnel would be trained suitably and prepared mentally and physically in emergency response through carefully planned, simulated procedures. Similarly, the key personnel and essential personnel shall be trained in the operations.

### 10.12.3 Public Consultation

This is a draft EIA report. Public hearing is yet to be conducted. Public Hearing will be incorporated in FEIA report.

## 10.13 PROJECT BENEFITS

**Physical Benefits:** Road Transport, Market, Enhancement of green cover & Creation of community assets.

**Social Benefits:** Increase in Employment Potential, Contribution to the Exchequer, Increased Health related activities, Educational attainments & Strengthening of existing community facilities.

### Environmental Benefits:

- Ø Controlling river channel and protection of banks.
- Ø Reducing submergence of adjoining agricultural lands due to flooding.
- Ø Reducing aggradation of river level.
- Ø A check on illegal mining activity.

### Corporate Social Responsibility

Project: Sand Mining Project, On Son River At Mainpura Sohsa (Arwal Son - 13) Sand (Area- 44.46 Ha)

2% of capital cost of the project cost will be allotted for the Corporate Environmental Responsibility as per OM dated 1<sup>st</sup> May 2018. The following has been proposed considering the needs & demand of the people. CER is 27,76,304/-

For each activity the funds to be earmarked by the proponent will be decided after discussion with the local authority/people and the beneficiaries during Public Hearing. It has been planned to undertake a concurrent evaluation of the activities to be taken up under the CER programme.

#### **10.14 CONCLUSIONS**



- The mining operations will meet the compliance requirements of MoEF&CC;
- Community impacts will be beneficial, as the project will generate significant economic benefits for the region;
- Monitoring program will be followed till the mining operations continue.
- With the effective implementation of the Environment Management Plan (EMP) during the mining activities, the proposed project can proceed without any significant negative impact on environment.

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Project: Sand Mining Project, On Son River At MainpuraSohsa (Arwal Son - 13)  
SandGhat(Area-44.46 Ha)

### CONSULTANT

Name of the Consultant	P and M Solution
Address	C-88, Sector 65, Noida -201301 – U.P
Credentials	Accredited by QCI/NABET
Consultant accreditation details are given below:	


**Quality Council of India**  
 National Accreditation Board for  
 Education & Training
 

**CERTIFICATE OF ACCREDITATION**


**P and M Solution**  
 First Floor, C-88, Sector-65, Noida, Uttar Pradesh- 201301

**Accredited as Category -A** organization under the QCI-NABET Scheme for Accreditation of EIA Consultant Organizations: Version 3 for preparing EIA/EMP reports in the following sectors:

Sl. No	Sector Description	Sector (as per)		Cat.
		NABET	MoEFCC	
1.	Mining of minerals including opencast / underground mining	1	1 (a) (i)	A
2.	River Valley projects	3	1 (c)	B
3.	Metallurgical Industries (ferrous & non-ferrous)	8	3 (a)	B
4.	Highways,	34	7 (f)	A
5.	Building and construction projects	38	8 (a)	B
6.	Townships and Area development projects	39	8 (b)	B

**Note:** Names of approved EIA Coordinators and Functional Area Experts are mentioned in IA AC Minutes dated December 20, 2019 on QCI-NABET website.

The Accreditation shall remain in force subject to continued compliance to the terms and conditions mentioned in NABET's letter of accreditation bearing no. QCI/NABET/ENV/ACO/20/1223 dated February 3, 2020. The accreditation needs to be renewed before the expiry date by P and M Solution, Noida following due process of assessment.

  
 Sr. Director, NABET  
 Dated: February 3, 2020

Certificate No.  
 NABET/EIA/1922/IA0053

Valid till  
 Dec 10, 2022

For the updated List of Accredited EIA Consultant Organizations with approved Sectors please refer to QCI-NABET website.

Project: Sand Mining Project, On Son River At MainpuraSohsa (Arwal Son - 13)  
SandGhat(Area-44.46 Ha)



National Accreditation Board for Education and Training



QCI/NABET/ENV/ACO/23/2698

March 07, 2023

To

**P and M Solution**  
C-88, Sector-65 Noida  
Noida, UP

Sub.: Extension of Validity of Accreditation till June 06, 2023 – regarding  
Ref.. Certificate no. NABET/EIA/1922/IA0053

Dear Sir/Madam

This has reference to the accreditation of your organization under the QCI-NABET EIA Scheme, the validity of **P and M Solution** is hereby extended till June 06, 2023 or completion of the assessment process, whichever is earlier.

The above extension is subject to the submitted documents/required information with respect to your application and timely submission and closure of NC/Obs during the process of assessment.

You are requested not to use this letter after expiry of the above stated date.

With best regards.

(A K Jha)  
Sr. Director, NABET

NABET

Institute of Town Planners India, 6<sup>th</sup> Floor, 4-A, Ring Road, I.P Estate, New Delhi-110 002, India  
Tel : +91-11-233 23 416, 417, 418, 419, 420, 421, 423 E-mail : [ceo.nabet@qcin.org](mailto:ceo.nabet@qcin.org) Website : [www.qcin.org](http://www.qcin.org)

Project: Sand Mining Project, On Son River At MainpuraSohsa (Arwal Son - 13)  
SandGhat(Area-44.46 Ha)

**Consultant Contact Details:****P and M Solution****Address –C-88, Sector 65 Noida****Mobile no. - +8377871554, 8826287364**

<b>S No</b>	<b>Name</b>	<b>EC/FAE</b>	<b>DETAILS</b>
1	Pravin Kumar Sinha	EC	EC
2	Pravin Kumar Sinha	FAE	GEO
3	TapanMajumdar	FAE	HG
4	Subhash Kumar	FAE	SC
5	Manoj Kumar Pandey	FAE	EB
6	R K Tiwary	FAE	RH,AP
7	Rahul Kumar	FAE	AQ
8	AbhayNath Mishra	FAE	SE
9	HussainZiauddin	FAE	WP
10	PoonamKumariMangalam	FAE	LU
11	JatinKumar Srivastava	FAE	NV

\*\*\*\*\*

**File No.SIA/1(a)/2249/2023**  
Government of India  
State Level Environment Impact Assessment Authority  
Bihar  
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To,

M/s MAA KAMAKHYA CONSTRUCTION & CO  
Village+P.O- Kamta, P.S- Prsai, Dist.- Arwal,  
Arwal-804428  
Bihar

**Tel.No.-; Email:arwalson13@gmail.com**

**Sub. Terms of Reference to the Arwal Son 13 Mainpura Sohसा at Riverbed of Son River ,  
Village+P.O- Kamta, P.S- Prsai, Dist.- Arwal**

Dear Sir/Madam,

This has reference to the proposal submitted in the Ministry of Environment, Forest and Climate Change to prescribe the Terms of Reference (TOR) for undertaking detailed EIA study for the purpose of obtaining Environmental Clearance in accordance with the provisions of the EIA Notification, 2006. For this purpose, the proponent had submitted online information in the prescribed format (Form-1 ) along with a Pre-feasibility Report. The details of the proposal are given below:

- |   |  |
|---|--|
| <b>1. Proposal No.:</b>                 | SIA/BR/MIN/414481/2023                               |
| <b>2. Name of the Proposal:</b>         | Arwal Son 13 Mainpura Sohसा at Riverbed of Son River |
| <b>3. Category of the Proposal:</b>     | Non-Coal Mining                                      |
| <b>4. Project/Activity applied for:</b> | 1(a) Mining of minerals                              |
| <b>5. Date of submission for TOR:</b>   | 19 Jan 2023  |

Date : 27-01-2023

Mr. Sudhir Kumar  
( Member Secretary )

Office : **2nd Floor, Beltron B**  
Phone No : Mobile : **9939204550**  
Email id : **seiaa.ms.br@gmail.com**

**Note :** This is auto tor granted letter.

In this regard, under the provisions of the EIA Notification 2006 as amended, the Standard TOR for the purpose of preparing environment impact assessment report and environment management plan for obtaining prior environment clearance is prescribed with public consultation as follows:



## **STANDARD TERMS OF REFERENCE (TOR) FOR EIA/EMP REPORT FOR PROJECTS/ACTIVITIES REQUIRING ENVIRONMENT CLEARANCE**

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Terms of Reference (TOR) for preparation of Environmental Impact Assessment (EIA) and Environmental Management Plan (EMP) for "Mining of Minerals" as per the EIA Notification, 2006 has been devised to improve the quality of the reports and facilitate decision-making transparent and easy. TOR will help the project proponents to prepare report with relevant project specific data and easily interpretable information. TOR for mining of minerals is expected to cover all environmental related features.

Mining of minerals plays a positive role in the process of country's economic development. In addition to the contribution towards economic growth, mining can also be a major source of degradation of physical as well as social environment, unless it is properly managed. Environmental impacts can arise during all activities of the mining process. Minimizing the damage due to mining operations depends on sound environmental practices in a framework of balanced environmental legislation. The potential adverse effects of mining activities include air pollution, surface and groundwater pollution, noise and vibration, damage to local ecology, natural topography and drainage, depletion of water resources etc. All these environmental components are required to be considered while selecting a proper methodology of mining, mitigation measures to reduce pollution load, conservation of natural resources etc.

The projects of mining of minerals as stated in the schedule require prior environment clearance under the EIA notification, 2006. Category 'A' Projects are handled in the MoEF&CC and Category 'B' projects are being handled by the respective State Environment Impact Assessment Authorities (SEIAAs) notified by MoEF&CC and following the procedure prescribed under the EIA Notification, 2006. As per this Notification, as amended, the projects of mining of minor minerals with mining lease area equal to or greater than 50 hectare are to be handled at the level of the MoEF&CC for grant of EC. Such projects with mining lease area less than 50 hectare are to be handled by the respective State Environment Impact Assessment Authority (SEIAA).

### **1(a):STANDARD TERMS OF REFERENCE FOR CONDUCTING ENVIRONMENT IMPACT ASSESSMENT STUDY FOR NON-COAL MINING PROJECTS AND INFORMATION TO BE INCLUDED IN EIA/EMP REPORT**

- 1) Year-wise production details since 1994 should be given, clearly stating the highest production achieved in any one year prior to 1994. It may also be categorically informed whether there had been any increase in production after the EIA Notification 1994 came into force, w.r.t. the highest production achieved prior to 1994.
- 2) A copy of the document in support of the fact that the Proponent is the rightful lessee of the mine should be given.
- 3) All documents including approved mine plan, EIA and Public Hearing should be compatible with one another in terms of the mine lease area, production levels, waste generation and its management, mining technology etc. and should be in the name of the lessee.
- 4) All corner coordinates of the mine lease area, superimposed on a High Resolution Imagery/ toposheet, topographic sheet, geomorphology and geology of the area should be provided. Such an Imagery of

## **STANDARD TERMS OF REFERENCE (TOR) FOR EIA/EMP REPORT FOR PROJECTS/ ACTIVITIES REQUIRING ENVIRONMENT CLEARANCE**

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the proposed area should clearly show the land use and other ecological features of the study area (core and buffer zone).

- 5) Information should be provided in Survey of India Toposheet in 1:50,000 scale indicating geological map of the area, geomorphology of land forms of the area, existing minerals and mining history of the area, important water bodies, streams and rivers and soil characteristics.
- 6) Details about the land proposed for mining activities should be given with information as to whether mining conforms to the land use policy of the State; land diversion for mining should have approval from State land use board or the concerned authority.
- 7) It should be clearly stated whether the proponent Company has a well laid down Environment Policy approved by its Board of Directors? If so, it may be spelt out in the EIA Report with description of the prescribed operating process/procedures to bring into focus any infringement/deviation/violation of the environmental or forest norms/ conditions? The hierarchical system or administrative order of the Company to deal with the environmental issues and for ensuring compliance with the EC conditions may also be given. The system of reporting of non-compliances / violations of environmental norms to the Board of Directors of the Company and/or shareholders or stakeholders at large, may also be detailed in the EIA Report.
- 8) Issues relating to Mine Safety, including subsidence study in case of underground mining and slope study in case of open cast mining, blasting study etc. should be detailed. The proposed safeguard measures in each case should also be provided.
- 9) The study area will comprise of 10 km zone around the mine lease from lease periphery and the data contained in the EIA such as waste generation etc. should be for the life of the mine / lease period.
- 10) Land use of the study area delineating forest area, agricultural land, grazing land, wildlife sanctuary, national park, migratory routes of fauna, water bodies, human settlements and other ecological features should be indicated. Land use plan of the mine lease area should be prepared to encompass preoperational, operational and post operational phases and submitted. Impact, if any, of change of land use should be given.
- 11) Details of the land for any Over Burden Dumps outside the mine lease, such as extent of land area, distance from mine lease, its land use, R&R issues, if any, should be given.
- 12) A Certificate from the Competent Authority in the State Forest Department should be provided, confirming the involvement of forest land, if any, in the project area. In the event of any contrary claim by the Project Proponent regarding the status of forests, the site may be inspected by the State Forest Department along with the Regional Office of the Ministry to ascertain the status of forests, based on which, the Certificate in this regard as mentioned above be issued. In all such cases, it would be desirable for representative of the State Forest Department to assist the Expert Appraisal Committees.
- 13) Status of forestry clearance for the broken up area and virgin forestland involved in the Project including deposition of net present value (NPV) and compensatory afforestation (CA) should be indicated. A copy of the forestry clearance should also be furnished.

## **STANDARD TERMS OF REFERENCE (TOR) FOR EIA/EMP REPORT FOR PROJECTS/ACTIVITIES REQUIRING ENVIRONMENT CLEARANCE**

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- 14) Implementation status of recognition of forest rights under the Scheduled Tribes and other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 should be indicated.
- 15) The vegetation in the RF / PF areas in the study area, with necessary details, should be given.
- 16) A study shall be got done to ascertain the impact of the Mining Project on wildlife of the study area and details furnished. Impact of the project on the wildlife in the surrounding and any other protected area and accordingly, detailed mitigative measures required, should be worked out with cost implications and submitted.
- 17) Location of National Parks, Sanctuaries, Biosphere Reserves, Wildlife Corridors, Ramsar site Tiger/ Elephant Reserves/(existing as well as proposed), if any, within 10 km of the mine lease should be clearly indicated, supported by a location map duly authenticated by Chief Wildlife Warden. Necessary clearance, as may be applicable to such projects due to proximity of the ecologically sensitive areas as mentioned above, should be obtained from the Standing Committee of National Board of Wildlife and copy furnished.
- 18) A detailed biological study of the study area [core zone and buffer zone (10 km radius of the periphery of the mine lease)] shall be carried out. Details of flora and fauna, endangered, endemic and RET Species duly authenticated, separately for core and buffer zone should be furnished based on such primary field survey, clearly indicating the Schedule of the fauna present. In case of any scheduled-I fauna found in the study area, the necessary plan alongwith budgetary provisions for their conservation should be prepared in consultation with State Forest and Wildlife Department and details furnished. Necessary allocation of funds for implementing the same should be made as part of the project cost.
- 19) Proximity to Areas declared as 'Critically Polluted' or the Project areas likely to come under the 'Aravali Range', (attracting court restrictions for mining operations), should also be indicated and where so required, clearance certifications from the prescribed Authorities, such as the SPCB or State Mining Dept. Should be secured and furnished to the effect that the proposed mining activities could be considered.
- 20) Similarly, for coastal Projects, A CRZ map duly authenticated by one of the authorized agencies demarcating LTL, HTL, CRZ area, location of the mine lease w.r.t CRZ, coastal features such as mangroves, if any, should be furnished. (Note: The Mining Projects falling under CRZ would also need to obtain approval of the concerned Coastal Zone Management Authority).
- 21) R&R Plan/compensation details for the Project Affected People (PAP) should be furnished. While preparing the R&R Plan, the relevant State/National Rehabilitation & Resettlement Policy should be kept in view. In respect of SCs /STs and other weaker sections of the society in the study area, a need based sample survey, family-wise, should be undertaken to assess their requirements, and action programmes prepared and submitted accordingly, integrating the sectoral programmes of line departments of the State Government. It may be clearly brought out whether the village(s) located in the mine lease area will be shifted or not. The issues relating to shifting of village(s) including their R&R and socio-economic aspects should be discussed in the Report.

## **STANDARD TERMS OF REFERENCE (TOR) FOR EIA/EMP REPORT FOR PROJECTS/ ACTIVITIES REQUIRING ENVIRONMENT CLEARANCE**

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- 22) One season (non-monsoon) [i.e. March-May (Summer Season); October-December (post monsoon season) ; December-February (winter season)]primary baseline data on ambient air quality as per CPCB Notification of 2009, water quality, noise level, soil and flora and fauna shall be collected and the AAQ and other data so compiled presented date-wise in the EIA and EMP Report. Site-specific meteorological data should also be collected. The location of the monitoring stations should be such as to represent whole of the study area and justified keeping in view the pre-dominant downwind direction and location of sensitive receptors. There should be at least one monitoring station within 500 m of the mine lease in the pre-dominant downwind direction. The mineralogical composition of PM10, particularly for free silica, should be given.
- 23) Air quality modeling should be carried out for prediction of impact of the project on the air quality of the area. It should also take into account the impact of movement of vehicles for transportation of mineral. The details of the model used and input parameters used for modeling should be provided. The air quality contours may be shown on a location map clearly indicating the location of the site, location of sensitive receptors, if any, and the habitation. The wind roses showing pre-dominant wind direction may also be indicated on the map.
- 24) The water requirement for the Project, its availability and source should be furnished. A detailed water balance should also be provided. Fresh water requirement for the Project should be indicated.
- 25) Necessary clearance from the Competent Authority for drawl of requisite quantity of water for the Project should be provided.
- 26) Description of water conservation measures proposed to be adopted in the Project should be given. Details of rainwater harvesting proposed in the Project, if any, should be provided.
- 27) Impact of the Project on the water quality, both surface and groundwater, should be assessed and necessary safeguard measures, if any required, should be provided.
- 28) Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided. In case the working will intersect groundwater table, a detailed Hydro Geological Study should be undertaken and Report furnished. The Report inter-alia, shall include details of the aquifers present and impact of mining activities on these aquifers. Necessary permission from Central Ground Water Authority for working below ground water and for pumping of ground water should also be obtained and copy furnished.
- 29) Details of any stream, seasonal or otherwise, passing through the lease area and modification / diversion proposed, if any, and the impact of the same on the hydrology should be brought out.
- 30) Information on site elevation, working depth, groundwater table etc. Should be provided both in AMSL and bgl. A schematic diagram may also be provided for the same.
- 31) A time bound Progressive Greenbelt Development Plan shall be prepared in a tabular form (indicating the linear and quantitative coverage, plant species and time frame) and submitted, keeping in mind, the same will have to be executed up front on commencement of the Project. Phase-wise plan of plantation and compensatory afforestation should be charted clearly indicating the area to be covered

## **STANDARD TERMS OF REFERENCE (TOR) FOR EIA/EMP REPORT FOR PROJECTS/ACTIVITIES REQUIRING ENVIRONMENT CLEARANCE**

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under plantation and the species to be planted. The details of plantation already done should be given. The plant species selected for green belt should have greater ecological value and should be of good utility value to the local population with emphasis on local and native species and the species which are tolerant to pollution.

- 32) Impact on local transport infrastructure due to the Project should be indicated. Projected increase in truck traffic as a result of the Project in the present road network (including those outside the Project area) should be worked out, indicating whether it is capable of handling the incremental load. Arrangement for improving the infrastructure, if contemplated (including action to be taken by other agencies such as State Government) should be covered. Project Proponent shall conduct Impact of Transportation study as per Indian Road Congress Guidelines.
- 33) Details of the onsite shelter and facilities to be provided to the mine workers should be included in the EIA Report.
- 34) Conceptual post mining land use and Reclamation and Restoration of mined out areas (with plans and with adequate number of sections) should be given in the EIA report.
- 35) Occupational Health impacts of the Project should be anticipated and the proposed preventive measures spelt out in detail. Details of pre-placement medical examination and periodical medical examination schedules should be incorporated in the EMP. The project specific occupational health mitigation measures with required facilities proposed in the mining area may be detailed.
- 36) Public health implications of the Project and related activities for the population in the impact zone should be systematically evaluated and the proposed remedial measures should be detailed along with budgetary allocations.
- 37) Measures of socio economic significance and influence to the local community proposed to be provided by the Project Proponent should be indicated. As far as possible, quantitative dimensions may be given with time frames for implementation.
- 38) Detailed environmental management plan (EMP) to mitigate the environmental impacts which, should inter-alia include the impacts of change of land use, loss of agricultural and grazing land, if any, occupational health impacts besides other impacts specific to the proposed Project.
- 39) Public Hearing points raised and commitment of the Project Proponent on the same along with time bound Action Plan with budgetary provisions to implement the same should be provided and also incorporated in the final EIA/EMP Report of the Project.
- 40) Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project should be given.
- 41) The cost of the Project (capital cost and recurring cost) as well as the cost towards implementation of EMP should be clearly spelt out.
- 42) A Disaster management Plan shall be prepared and included in the EIA/EMP Report.

## **STANDARD TERMS OF REFERENCE (TOR) FOR EIA/EMP REPORT FOR PROJECTS/ ACTIVITIES REQUIRING ENVIRONMENT CLEARANCE**

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- 43) Benefits of the Project if the Project is implemented should be spelt out. The benefits of the Project shall clearly indicate environmental, social, economic, employment potential, etc.
- 44) Besides the above, the below mentioned general points are also to be followed:-
- a) All documents to be properly referenced with index and continuous page numbering.
  - b) Where data are presented in the Report especially in Tables, the period in which the data were collected and the sources should be indicated.
  - c) Project Proponent shall enclose all the analysis/testing reports of water, air, soil, noise etc. using the MoEF&CC/NABL accredited laboratories. All the original analysis/testing reports should be available during appraisal of the Project.
  - d) Where the documents provided are in a language other than English, an English translation should be provided.
  - e) The Questionnaire for environmental appraisal of mining projects as devised earlier by the Ministry shall also be filled and submitted.
  - f) While preparing the EIA report, the instructions for the Proponents and instructions for the Consultants issued by MoEF vide O.M. No. J-11013/41/2006-IA.II(I) dated 4th August, 2009, which are available on the website of this Ministry, should be followed.
  - g) Changes, if any made in the basic scope and project parameters (as submitted in Form-I and the PFR for securing the TOR) should be brought to the attention of MoEF&CC with reasons for such changes and permission should be sought, as the TOR may also have to be altered. Post Public Hearing changes in structure and content of the draft EIA/EMP (other than modifications arising out of the P.H. process) will entail conducting the PH again with the revised documentation.
  - h) As per the circular no. J-11011/618/2010-IA.II(I) dated 30.5.2012, certified report of the status of compliance of the conditions stipulated in the environment clearance for the existing operations of the project, should be obtained from the Regional Office of Ministry of Environment, Forest and Climate Change, as may be applicable.
  - i) The EIA report should also include (i) surface plan of the area indicating contours of main topographic features, drainage and mining area, (ii) geological maps and sections and (iii) sections of the mine pit and external dumps, if any, clearly showing the land features of the adjoining area.

\*\*\*\*



# समाहरणाल, अरवल।

(खनन शाखा)

पत्रांक-1323/खनन, अरवल

दिनांक:-28.11.2022

प्रेषित,

मां कमख्या कन्सट्रक्सन एण्ड कं  
प्रो०-अविनाश कुमार, पिता-रामाशिष सिंह,  
ग्राम+पो०-कमता, थाना-परासी, जिला-अरवल।  
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विषय :-

अरवल जिलान्तर्गत सोन नदी के बालूघाट मैनपुरा सोहसा की आगामी पांच वर्षों के लिए बंदोबस्ती हेतु दिनांक 22.11.2022 को सम्पन्न ई-नीलामी में उच्चतम डाकवक्ता घोषित होने के उपरांत सैद्धांतिक स्वीकृत्यादेश निर्गत करने के संबंध में।

उपर्युक्त विषयक अरवल जिलान्तर्गत सोन नदी के बालूघाट मैनपुरा सोहसा की आगामी पांच वर्षों के लिए बंदोबस्ती हेतु दिनांक 22.11.2022 को सम्पन्न ई-नीलामी में आपके द्वारा मो०-12,00,42,000.00 (बारह करोड़ बियालीस हजार) के विरुद्ध उच्चतम डाक की राशि मो०-13,20,46,200.00 (तेरह करोड़ बीस लाख छियालीस हजार दो सौ) रुपया बोली के उपरांत उच्चतम डाकवक्ता घोषित हुए हैं। निविदा दस्तावेज की कंडिका-20(i) के आलोक में आपके द्वारा नीलामी राशि के 25 प्रतिशत (अग्रधन राशि समायोजनोपरांत) शेष प्रतिभूति राशि मो०-30,01,050.00 (तीस लाख एक हजार पचास) रुपया के भुगतान के साक्ष्य दिनांक 26.11.2022 को कार्यालय में प्रस्तुत किया गया है।

निविदा दस्तावेज की कंडिका-20(i)(ii)(iii)(iv)(v) के आलोक में जिलान्तर्गत सोननदी के मैनपुरा सोहसा बालूघाट का सैद्धांतिक स्वीकृत्यादेश निम्न शर्तों एवं बंधेज के साथ दिया जाता है:-

1. सोन नदी के मैनपुरा सोहसा बालूघाट का संक्षिप्त विवरणी निम्नवत है:-

क्र०स०	नदी का नाम	रकवा(हे० में)	Geo-Coordinates	
1	सोन नदी (Perennial)	44.46	25.179889	84.487798
			25.178622	84.488867
			25.175221	84.487616
			25.17249	84.486344
			25.170566	84.485014
			25.16735	84.481279
			25.172961	84.481326
			25.179889	84.487798
1	वन क्षेत्र से दूरी		लागू नहीं	
2	सुरक्षित क्षेत्र/वन अभ्यारण्य/पक्षी अभ्यारण्य/जीव अभ्यारण्य क्षेत्र से दूरी		लागू नहीं	
3	बालूघाट से 500 मीटर के अंदर खनन पट्टा क्षेत्र की दूरी		हैं (सोहसा-रकवा 32.97 हे० बेलाव-01 -रकवा 79.00 हे०)	
4	पुरातात्विक स्थल की दूरी		लागू नहीं	
5	खनन योग्य मात्रा		800280 घनमीटर	
6	थाना/खाता/खेसरा संख्या		148, 152/384, 176/2484, 2518, 2519	

2. भुगतान की शर्त:-

(i) नीलामी-राशि केवल प्रथम वर्ष के लिए बंदोबस्ती की राशि मानी जाएगी। दूसरे वर्ष और उसके बाद की बंदोबस्ती की राशि गत वर्ष की बंदोबस्ती राशि के 120 प्रतिशत के बराबर होगी।

(ii) प्रतिभूति जमा के अतिरिक्त बंदोबस्तधारी निम्नलिखित समय सारणी/भुगतान अनुसूची के अनुसार बंदोबस्ती की राशि का भुगतान करेगा :-



किस्त	भुगतान की नियत तारीख
प्रथम किस्त (50%)	(क) पट्टा संविदा निष्पादन से पहले (पहले वर्ष के लिए) (ख) प्रथम वर्ष में पट्टा संविदा निष्पादन की तिथि से एक वर्ष पूरा होने के 60 दिन पूर्व और अनुक्रमिक वर्षों में इसी प्रक्रिया का पालन करते हुए जमा किया जायेगा।
द्वितीय किस्त (25%)	03 महीना पूरा होने से पहले।
तृतीय किस्त (25%)	06 महीना पूरा होने से पहले।

- प्रत्येक समानुदान वर्ष में बंदोबस्तधारी द्वारा पहली किस्त के भुगतान के समय दूसरी और तीसरी किस्तों की राशि के लिए पोस्टडेटेड चेक संबंधित समाहर्ता, अरवल के समक्ष जमा की जायेगी। यदि किस्तों के भुगतान करने में बंदोबस्तधारी असफल होता है तो आगे ई-चालान सिस्टम द्वारा बंद कर दिया जाएगा और केवल अग्रिम भुगतान कर दिये जाने के बाद ही खोला जाएगा एवं इसके लिए किसी तरह के क्षतिपूर्ति का कोई दावा मान्य नहीं होगा।
- 3. GST का भुगतान :-** बंदोबस्तधारी को जी0एस0टी0 के रूप में प्रचलित दर के अनुसार राशि वाणिज्य कर विभाग को भुगतान करना होगा। जिला खनन कार्यालय अरवल में जी0एस0टी0 भुगतान का प्रमाण प्रत्येक किस्त के साथ देना होगा।
  - 4. आयकर/अन्य करों का भुगतान:-** बंदोबस्तधारी को आयकर अधिनियम के तहत आयकर एवं उस पर नियमानुसार देय अधिभार का भुगतान आयकर विभाग के प्रचलित दर के अनुसार एक मुश्त करना होगा। यह राशि बंदोबस्ती राशि के प्रत्येक किस्त के साथ देय होगी। जिला खनन कार्यालय, अरवल द्वारा यह राशि आयकर मद में जमा करा दी जायेगी।
  - 5. जिला खनिज फाउण्डेशन:-** Bihar Mineral District Foundation Rules, 2018 के अनुसार बंदोबस्ती राशि की 2 प्रतिशत राशि जिला खनिज फाउण्डेशन को जिला खनन पदाधिकारी, अरवल के पदनाम से भुगतान बैंक ड्राफ्ट के माध्यम अनुसार करना होगा।
  - 6. वैधानिक अनापत्ति:-** बालूघाट संचालन हेतु आवश्यक समस्त वैधानिक अनापत्ति/अनुमति (जैसे:- खनन योजना, पर्यावरणीय स्वीकृति, जल एवं वायु सहमति आदि सफल डाकवक्ता द्वारा प्राप्त की जाएगी। वैधानिक अनापत्ति/अनुमति प्राप्त करने के पश्चात् ही बालू खनन प्रारंभ किया जा सकेगा। वैधानिक अनापत्ति/अनुमति के बिना अथवा वैधानिक अनापत्ति/अनुमति में अनुज्ञात मात्रा से अधिक मात्रा या निर्धारित क्षेत्र से बाहर खनन किए जाने की दशा में सुसंगत नियमों के अनुसार संबंधित सफल डाकवक्ता/बंदोबस्तधारी पर कार्रवाई की जाएगी। वैधानिक अनापत्ति/अनुमति निम्नानुसार है:-
    - i. खनन योजना:-** खनन योजना प्रभावी नियमों में उल्लिखित प्रावधानों के अनुसार सफल डाकवक्ता/बंदोबस्तधारी द्वारा QCI/NABET से मान्यता प्राप्त Professional RQP से तैयार कर निदेशक, खान या विभाग द्वारा प्राधिकृत पदाधिकारी के समक्ष लेटर ऑफ इंटेन्ट निर्गत होने से 30 दिनों के अन्दर अनुमोदन के लिए प्रस्तुत करेगा। खनन योजना बनाने पर होने वाले व्यय का वहन संबंधित खनिज डाकवक्ता/बंदोबस्तधारी द्वारा किया जायेगा। साथ ही खनन योजना की जाँच हेतु समाहर्ता/विभाग अन्य ऐजेंसी चयनित कर सकेगा, जिसका निर्धारित फीस/खर्च भी बंदोबस्तधारी को ही वहन करना होगा। सफल डाकवक्ता/बंदोबस्तधारी खनन योजना के अनुसार खनन करना सुनिश्चित करेंगे।
    - ii. पर्यावरणीय स्वीकृति:-** सफल डाकवक्ता/बंदोबस्तधारी खनन योजना अनुमोदन के 15 दिनों के अन्दर पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय, भारत सरकार के सक्षम प्राधिकार के समक्ष पर्यावरणीय स्वीकृति (EC) के लिए प्रस्ताव समर्पित करेगा। समयबद्ध रीति से पर्यावरणीय एवं अन्य वैधानिक स्वीकृति प्राप्त करना सफल डाकवक्ता की जिम्मेवारी होगी। अपेक्षित पर्यावरणीय स्वीकृति एवं अन्य आवश्यक स्वीकृति प्राप्त करने में किसी भी प्रकार की देरी के लिए सफल डाकवक्ता स्वयं जिम्मेवार होंगे एवं इस संबंध में किसी भी प्रकार की क्षतिपूर्ति के लिए कोई भी दावा मान्य नहीं होगा।
    - iii. जल एवं वायु सहमति:-** पर्यावरणीय स्वीकृति प्राप्त करने के पश्चात् सफल डाकवक्ता अधिकतम 07 (सात) दिवस के अंदर जल (प्रदूषण निवारण एवं नियंत्रण) अधिनियम, 1974 तथा वायु (प्रदूषण निवारण एवं नियंत्रण) अधिनियम, 1981 के अधीन सक्षम पदाधिकारी के समक्ष सहमति/ Consent to Establish/ Consent to Operate प्राप्त करने हेतु आवेदन प्रस्तुत करेगा।




- iv. **खनन के लिए अनुमत मात्रा:-** खनन योजना, पर्यावरणीय स्वीकृति तथा जल (प्रदूषण निवारण एवं नियंत्रण) अधिनियम, 1974 तथा वायु (प्रदूषण निवारण एवं नियंत्रण) अधिनियम, 1981 के तहत प्राप्त सहमति में वर्णित बालू की मात्रा (इनमें से जो भी कम हो) तक ही खनन अनुमान्य होगा। यदि अनुमोदित खनन योजना, पर्यावरणीय स्वीकृति तथा जल एवं वायु सहमति में खनन योग्य मात्रा कम किये जाने पर भी वार्षिक देय बंदोबस्ती राशि किसी स्थिति में कम नहीं की जाएगी।
- v. बिना किसी वैध कारण के पर्यावरणीय स्वीकृति, Consent to Establish/ Consent to Operate /जल एवं वायु सहमति प्राप्त नहीं कर पाते हैं या प्राप्त करने में रुचि नहीं लेते हैं तो, समाहर्ता द्वारा अग्रधन राशि जप्त कर पुनः निलामी की कार्यवाई की जाएगी।
7. **बंदोबस्ती विलेख/पट्टा संविदा (डीड) निष्पादन करना:-**
- i. सफल डाकवक्ता द्वारा सभी वैधानिक अनापत्ति प्राप्त करने के उपरान्त 5 वर्षों की अवधि के लिए बालू खनन करने हेतु समानुदान/बंदोबस्ती स्वीकृत किया जाएगा। सफल डाकवक्ता विहित प्रपत्र में संबंधित नियमानुसार बंदोबस्ती विलेख अथवा उसके समरूप एक प्रपत्र, कार्य आरंभ करने के पहले, निष्पादित करेगा तथा यथा विहित अपेक्षित प्रतिभूति राशि जमा देगा। बंदोबस्तधारी के पट्टे की अवधि विलेख/संविदा निष्पादन की तिथि से पाँच वर्षों के लिए विधिमान्य होगा।
- ii. बंदोबस्तधारी को निष्पादित संविदा का निबंधन संबंधित विभाग के प्रचलित नियमों के अधीन 01 माह के अन्दर कराना अनिवार्य होगा।
8. सफल डाकवक्ता/बंदोबस्तधारी द्वारा बंदोबस्ती प्रत्यर्पण/कारोबार छोड़ने का विकल्प बिहार खनिज (समानुदान, अवैध खनन, परिवहन एवं भंडारण निवारण) नियमावली 2019 के नियम 50 के अनुरूप किया जा सकेगा।
9. **सामान्य शर्तें :-**

- (i) बंदोबस्तधारी नदी तट से बालू प्रेषण के बिन्दु पर एक साईनबोर्ड लगाएगा जिसपर बंदोबस्तधारी का नाम एवं पता, बंदोबस्ती की अवधि, स्थानीय मैनेजर का नाम एवं पता तथा बालू का विक्रय मूल्य प्रदर्शित किया जाएगा। यदि साईन बोर्ड निरीक्षण में नहीं पाया गया तो शास्ति अधिरोपित की जाएगी।
- (ii) बंदोबस्तधारी श्रम विधियों के प्रावधानों के अनुसार आश्रय गृह, पीने का पानी, शिशु गृह (क्रेचेज) तथा फर्स्ट एड किट की व्यवस्था संबंधित बालूघाटों में लगे श्रमिकों के लिए करेगा।
- (iii) बंदोबस्तधारी संबंधित क्षेत्रों का निरीक्षण करेगा तथा स्वयं/ अथवा अपने द्वारा अधिकृत प्रतिनिधियों के माध्यम से बालूघाटों का प्रचालन करेगा। किसी रूप में किये गये उपपट्टा (सबलेटिंग) के लिए बंदोबस्ती रद्द कर दी जाएगी। बालूघाटों/नदी तल तक बालू के परिवहन के प्रयोजनार्थ पहुँच पथ (अप्रोच रोड़) का निर्माण बंदोबस्तधारी द्वारा स्वयं अपने खर्च से किया जाएगा।
- (iv) बालूघाट की सुरक्षा की जिम्मेदारी सफल डाकवक्ता/बंदोबस्तधारी की होगी।
- (v) सफल डाकवक्ता/बंदोबस्तधारी बंदोबस्त क्षेत्र के भीतर किसी अवैध खनन के लिए जिम्मेवार होंगे और पायी गई किसी भी शिकायत पर गंभीरता से विचार किया जाएगा तथा बंदोबस्तधारी के विरुद्ध आपराधिक मामला दायर किया जाएगा।
- (vi) सफल डाकवक्ता/बंदोबस्तधारी समाहर्ता द्वारा बालूघाटों का संचालन के संबंध में लोकहित में जारी निर्बंधनों और शर्तों तथा निदेशों का पालन करेगा।
- (vii) यथोक्त शर्तों बंधेजों एवं निर्बंधनों का पालन नहीं करने पर कारण पूछा निर्गत कर बंदोबस्ती रद्द करने की कार्यवाई की जा सकेगी।
- (viii) सफल डाकवक्ता/बंदोबस्तधारी को खनन राजस्व/जी0एस0टी0/आयकर/स्टाम्प शुल्क/रजिस्ट्रेशन फीस का भुगतान नहीं करने की दशा में 30 दिनों के अंदर कारण स्पष्ट करने हेतु नोटिस दी जायेगी। निर्धारित अवधि के अंदर बंदोबस्तधारी द्वारा बकाए का भुगतान करने में असफल रहने की दशा में राशि वसूली की कार्यवाई के साथ-साथ बंदोबस्ती रद्द करने की भी कार्यवाई की जाएगी।
- (ix) निलामी हेतु प्रस्तावित बालूघाटों से संबंधित तकनीकी तथा अन्य बिन्दुओं यथा भूमि के अंचल, थाना, मौजा, खाता, खेसरा, रकबा तथा GPS Co-ordinate के संबंध में विवाद/त्रुटि पाए जाने पर संशोधन का अधिकार संबंधित जिला खनन कार्यालय का होगा। बालूघाटों का सीमांकन एवं नियमानुसार निर्धारित आयाम/विशिष्टियों का सीमा स्तंभ का अधिष्ठापन GPS Co-ordinate के अनुसार बालू बंदोबस्तधारी को कराना होगा तथा खनन के क्रम में संधारित कराना बंदोबस्तधारी की जवाबदेही होगी, जिसे RQP/अंचलाधिकारी की उपस्थिति में

प्रमाणित कराकर खनन कार्य कराना होगा। बालूघाटों के निर्धारित क्षेत्र का Reduced Level (RL)/Pre-Level (PL) एवं Satellite images मानसून के पूर्व एवं बाद का समर्पित करना होगा।

- (x) बालूघाट से लिंक रोड और बालूघाट के बीच कोई प्राकृतिक जल मार्ग सिंचाई नहर पड़ती हो तो खनिज समानुदान धारक जल संसाधन विभाग की पूर्व अनुमति से बालू के परिवहन के लिए अस्थायी संरचनाएँ खड़ा कर सकेगा। पूर्व अनुमति के लिए ऐसे आवेदन जल संसाधन विभाग के संबंधित मुख्य अभियंता के समक्ष दिए जाएंगे।
- (xi) बालूघाट में रैयती/बंदोबस्त जमीन होने पर संबंधित रैयत से सहमति प्राप्त कर बालू का खनन करना होगा। यह जिम्मेदारी पूर्णतः बंदोबस्तधारी की होगी एवं विभाग से कोई क्षतिपूर्ति का दावा मान्य नहीं होगा।
- (xii) बंदोबस्तधारी द्वारा बंदोबस्ती अवधि के दौरान किसी भी कारण से खनन कार्य नहीं करने की स्थिति में किसी भी प्रकार का मुआवजा/नुकसान एवं क्षतिपूर्ति का दावा मान्य नहीं होगा।
- (xiii) ई-नीलामी एवं बालूघाट की बंदोबस्ती अवधि के दौरान उत्पन्न किसी भी प्रकार का विवाद बिहार खनिज (समानुदान, अवैध खनन, परिवहन एवं भंडारण निवारण) नियमावली 2019, (यथा संशोधित) के अधीन होगा।
- (xiv) सफल डाकवक्ता/बंदोबस्तीधारी को इलेक्ट्रॉनिक माध्यम से भेजी गयी कोई भी सूचना/निदेश/आदेश इत्यादि IT-Act के तहत स्वीकार्य साक्ष्य के रूप में माना जाएगा।

  
समाहर्ता,  
अखिल  
28/11/2024



बिहार सरकार,  
खान एवं भूतत्व विभाग।

पत्रांक- 6298 / एम०, पटना, दिनांक- 21/12/2022  
प्रेषक-

कमलेश कुमार सिंह  
संयुक्त सचिव

सेवा में,

ई० मेल

मा कमख्या कन्सट्रक्शन एण्ड क०  
प्ल०-अविनाश कुमार, पिता-रामाशिष सिंह,  
ग्राम-प्ल०-कमता, थाना-परासी, जिला-अरवल।  
मो०-9771557204  
ई-मेल-maakamkhyas393@gmail.com

विषय:- अरवल जिला के सोन नदी बालूघाट सं०- 13 (मैनपुरा सोहसा) के खनन योजना के अनुमोदन के संबंध में।

महाशय,

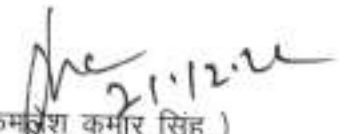
उपर्युक्त विषय के संबंध में कहना है कि बिहार बालू खनन नीति-2019 यथा संशोधित एवं बिहार खनिज (समानुदान अवैध खनन, परिवहन एवं भंडारण निवारण) नियमावली, 2019 (यथा संशोधित 2021) के नियम-17 में वर्णित प्रावधानों के तहत अरवल जिला के सोन नदी बालूघाट सं०- 13 (मैनपुरा सोहसा) से संबंधित समर्पित खनन योजना के अनुमोदन पर प्राधिकृत समिति द्वारा समीक्षा की गई। समीक्षापरांत निम्न शर्तों एवं बंधों के तहत खनन योजना अनुमोदित की जाती है -

1. उक्त खनन योजना केन्द्र सरकार/राज्य सरकार द्वारा विनियमित अन्य सभी अधिनियम/नियमावली में वर्णित प्रावधानों को तथा किसी न्यायालय/अन्य न्यायिक संस्था द्वारा पारित किये गये न्यायादेश को बिना प्रभावित किये अनुमोदित किया जा सकता है।
2. उक्त खनन योजना का अनुमोदन खान एवं खनिज (विकास एवं विनियमन) अधिनियम, 1957 (यथा संशोधित), बिहार खनिज (समानुदान अवैध खनन, परिवहन एवं भंडारण निवारण) नियमावली, 2019 के नियम-17, वन संरक्षण अधिनियम, 1980, पर्यावरण सुरक्षा अधिनियम, 1986, श्रम संबंधी नियम, EMGSM 2020 तथा अन्य सभी सुसंगत अधिनियम/नियमावली तथा उनमें वर्णित प्रावधानों के प्रतिकूल नहीं होगा। लीज के रकवा के अनुसार प्रति हेक्टेयर कम से कम 10 पौधा लगाना होगा तथा 50 प्रतिशत Survival सुनिश्चित करना होगा।
3. खनन योजना में निहित शर्तों का पालन करते हुए ही बालू खनिज का खनन तथा प्रेषण किया जायेगा।
4. संबंधित सक्षम प्राधिकार से यथा वांछित प्रमाण-पत्र प्राप्त कर विभाग को अवगत कराना अनिवार्य होगा।
5. यदि किसी भी समय खनन योजना में वर्णित शर्तों के अनुपालन में अनियमितता पायी जाती है, तो खनन पदाधिकारी को नियमानुसार आवश्यक कार्रवाई करने का अधिकार होगा।
6. संबंधित बालूघाट में खनिज की उपलब्धता, पहुँच पथ का निर्माण तथा अन्य खनन कार्यों से संबंधित सम्पूर्ण जबाबदेही बालूघाट संचालनकर्ता की होगी तथा इसमें किसी भी तरह का कोई दावा अथवा क्षतिपूर्ति मान्य नहीं होगा।
7. खनन योजना में वर्णित सभी तकनीकी तथा अन्य बिन्दुओं से संबंधित ऑकड़ों की सत्यता / वैधता की जिम्मेवारी RQP/बंदोबस्तधारी की होगी तथा भविष्य में उपर्युक्त के संबंध में किसी प्रकार की भिन्नता/अनियमितता की पूरी जबाबदेही RQP/बंदोबस्तधारी की होगी।

8. खनन कार्य के दौरान घाट संचालनकर्ता द्वारा पर्यावरण संबंधी मानकों का नियमित रूप से अनुश्रवण करने की व्यवस्था करनी होगी। खनन कार्य के दौरान नदियों के प्राकृतिक बहाव आदि में किसी भी तरह का व्यवधान/रूकावट/बदलाव करना पूर्ण रूप से प्रतिबंधित होगा।
9. बालूघाट में Secondary Loading की व्यवस्था इस प्रकार सुनिश्चित की जाएगी ताकि गीला बालू का परिवहन नहीं हो।
10. यद्यपि खनन योजना में Semi-mechanised mining को प्राथमिकता दी गयी है तथापि Manual Mining पर कोई प्रतिबंध नहीं रखा जाएगा एवं स्थानीय व्यक्तियों को नियोजन देने के दृष्टिकोण से Manual Mining को उचित अवसर प्रदान करना होगा।
11. सफल डाकवक्ता/बंदोबस्तधारी द्वारा खान एवं खनिज (विकास एवं विनियमन) अधिनियम, 1957, बिहार खनिज (समानुदान अवैध खनन, परिवहन एवं भंडारण निवारण) नियमावली, 2019 (यथा संशोधित 2021) तथा बिहार बालू खनन नीति, 2019 के प्रावधानों का अनिवार्य रूप से पालन किया जायेगा।
12. सफल डाकवक्ता/बंदोबस्तधारी को पर्यावरण सुरक्षा हेतु सभी उपाय करने होंगे तथा नियमित रूप से जल/वायु की गुणवत्ता की जाँच/अनुश्रवण की व्यवस्था सुनिश्चित करनी होगी।
13. सफल डाकवक्ता/बंदोबस्तधारी को उत्पादन/प्रेषण का आँकड़ा एवं पंजी संचारित करना अनिवार्य होगा जिसे नियमित रूप से अद्यतन किया जाएगा।
14. संचालन करने वाले घाटों की सीमांकन कराना, RL/PL प्राप्त करना एवं उसे खनन के क्रम में संचारित कराना सफल डाकवक्ता/बंदोबस्तधारी की जवाबदेही होगी, जिसे RQP/अंचलाधिकारी की उपस्थिति में प्रमाणित करवाकर खनन कार्य करना होगा।
15. बिहार खनिज (समानुदान अवैध खनन, परिवहन एवं भंडारण निवारण) नियमावली, 2019 (यथा संशोधित 2021) में वर्णित प्रतिबंधित क्षेत्रों में किसी प्रकार का खनन कार्य वर्जित होगा।
16. बालूघाटों से बालू का निष्कासन एवं प्रेषण आबादी से सटे ग्रामीण सड़क को छोड़कर अलग मार्ग से करना होगा।
17. खनन योजना की एक-एक प्रति, जो संबंधित RQP द्वारा प्रत्येक पृष्ठ पर हस्ताक्षरित होगी, निदेशक, खान एवं भूतत्व विभाग के कार्यालय के अतिरिक्त समाहर्ता, अरवल के गोपनीय कोषांग, उपनिदेशक, मगध अंचल, गया के कार्यालय में उपलब्ध कराना सुनिश्चित किया जायेगा, ताकि किसी भी समय इसकी जाँच की जा सके।

प्राधिकृत समिति की अनुशंसा के आलोक में उपरोक्त शर्तों के साथ अरवल सोन नदी बालूघाट सं०- 13 (मैनपुरा सोहसा) से संबंधित समर्पित खनन योजना के अन्तर्गत ही बालू उत्खनन कार्य सुनिश्चित कराया जाय।

विश्वासमाजन

  
( कम्लेश कुमार सिंह )  
संयुक्त सचिव

# MINING PLAN

## WITH PROGRESSIVE MINE CLOSURE PLAN

Submitted under Rule (17) of Bihar Minerals (concession, prevention of illegal transportation & storage) Rules 2010

OF

### ARWAL SON MAINPURA SOHSA SAND GHAT RIVER - SON

in Mauja Mainpura Sohsa,

Anchal - Kaler, Dist - Arwal, (Bihar)

APPLIED AREA- 44.46 HECTARES

PLAN PERIOD: FOR FIVE YEARS



**APPROVED**

Vide Dept. of Mines & Geology  
Govt. of Bihar, Patna

Letter No. S. 22. 10. 21/12/18



#### Settlee

Maa Kamakhya Construction & Co.  
Pro.- Avinash Kumar  
S/o- Ramashish Singh  
Vill.+P.O.-Kamta, P.S.- Prasi,  
Dist.- Arwal.  
Phone. No. - 9771557204  
E-mail ID- [maakamkhya393@gmail.com](mailto:maakamkhya393@gmail.com)

#### *Prepared By:*

Er. Pravin Kr Sinha (Regd. No.: RQP/BIH/SR.NO.20)  
**Consultant :**  
P&M Solution  
C-88, SECTOR-65 NOIDA  
(Accredited by QCI- NABET)  
Regional Off :-  
9889024004 & 7542949027, Mangal Market, Raja  
Bazar, Patna (Bihar) Pin - 800014.  
[indusminingbihar@gmail.com](mailto:indusminingbihar@gmail.com)



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ANNEXURE NO.	NAME OF ANNEXURE
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2	COPY OF RQP CERTIFICATE

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PLATE NO.	LIST OF PLATES
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8	CONCEPTUAL PLAN
9	PROGRESSIVE MINE CLOSURE PLAN



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# MINING PLAN

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**PART A**  
**CHAPTER - I**

**I. INTRODUCTION**

1.1	Settlee Name & Full address  Phone. No. E-mail ID	Maa Kamakhya Construction & Co. Pro.- Avinash Kumar S/o- Ramashish Singh Vill.-P.O.-Kanta, P.S.- Prasi, Dist.- Arwal. 9771557204 maukamkhyas93@gmail.com
1.2	Letter no. / date of lease execution & lease period	District Magistrate issue LOI on letter no. 1323/khanan dated. 28.11.2022 for a period of 05 years (Annexure No. -1)
1.3	Settlee post/social status	Private
1.4	Mineral or Minerals which the Settlee intends to mine	Sand
1.5	Applied area for mining lease	Arwal Son Mainpura Sohsa Sand Ghat Lease has an applied area of 44.46 Hectare.
1.6	Name & address of RQP & Regd. No.  Mobile No. E-mail ID	Er. Pravin Kr Sinha Reg. No. - RQP/BIH/SR.NO.20 Letter No. 3825 Dated 07/11/2019 <b>Consultant :</b> P & M Solution 201,Mangal Market Raja Bazar, Patna (Bihar) 9889024004 & 7542949027 indusminingbihar@gmail.com
1.7	RQP Certificate	RQP certificate copy attached as <b>Annexure 2</b>
1.8	Name of the Prospecting agency	The base data is collected from various geological reports of the Department of Mines & Geology and local authorities as well as detailed prospecting of the area is carried out by the RQP.
1.9	Status of Environmental clearance	After Mining Plan approval then Settlee shall submit application to state Environment Impact Assessment Authority (SEIAA) of Bihar for environment clearance.
2.0	Date of Survey	02.12.2022



*(Signature)*

**CHAPTER-2****2. PROJECT DESCRIPTION****2.1 JUSTIFICATION OF PROJECT**

Sand is a ubiquitous material; available everywhere and is being used from the time immemorial for wide applications in our daily life; infrastructures, building construction, highways, roads, townships, multiplexes, foundations of buildings and industrial units etc. and is an integral part of development. Over the millennia, the weathering effect, the flow of water at high velocities in rivers and the pressure of water from the high mountainous reservoirs converted and pushed the hard ground underneath into sand, etc. which travelled as sediments with the flow. Huge amount of sand get deposited along the river course wherever conditions were favorable. As a result of continuous deposit of sand, the rivers may change their course, by widening itself and expanding, can result in flooding, inundation and breaking their banks, may cause devastation of property and loss of life. The rivers thus, needed channelization and therefore, extraction of sand through mining was expedient. The haphazard mining of sand being practiced now for long, through unregulated, uncontrolled and illegal way added almost an irreversible damage to the environment, which became a cause of serious concern to everyone. Though sand is a very important mineral source for development, its mining through scientific methods has also become equally imperative.

It is for this purpose that 'mining plan' is being drawn so that all its aspects are taken care of justifiably, according to law, protecting the environment, removing all adverse impacts and creating a direct and indirect employment opportunities, improving socio-economic conditions of the local inhabitants and all-around status of life, achieving thereby a sustainable development.

Besides the above, the process of mining of minor minerals (Sand) is a constant source of revenue generation to the State Government through Royalty.



*Pravin Kr. Sinha*

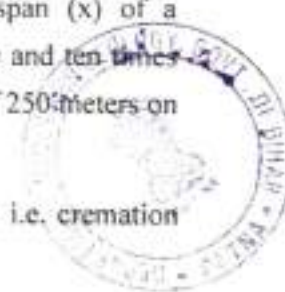
## 2.2 BACKGROUND OF THE PROJECT

The Department of Mines & Geology, Bihar required under Bihar Minerals (Concession, Prevention of Illegal Mining, Transportation & Storage) Rules, 2019 & Bihar Sand Mining Policy, 2019. The general conditions of mining lease for minor minerals are mentioned here below:

- First the State Government shall identify the areas which are suitable for river bed mining based on quantity of the minor minerals available and suitable from ecological and environmental aspects as well.
- Under rule 17 (4) Approval and submission of Mining Plan - All Mineral Concession Holders or the Government/Corporation as the case may be shall submit a mining Plan duly prepared by an RQP and approved by the Director or any officer / person/academic institution/Govt. agency authorized by the Department in this regard within a period of three months from the date on which communication regarding grant of mineral concession is received or such other period as may be decided/ allowed by the department for the submission of the approved Mining Plan.
- While preparing the mining plan, proper attention has been paid to ensure that the relevant provisions under MMDR Act-1957, MMR-1961, Mines Act-1952 & Mines Rules-1955, Sustainable Sand Mining Guidelines – 2016 and Enforcement & Monitoring Guidelines for sand Mining - 2020 have been followed. All safety measures, provided in the statue, will be taken into consideration. On 17.09.2019 Bihar Government took its policy decision vides notification no. – 4/V.Mu-20-93 / 18-3174 /M . That all Mining Lessee / Settle under rule 17 of the said Rules, the lessee shall submit the mining plan with Progressive Mine closure plan for approval to the competent officer , Department of Mines & Geology, Bihar
- Mining operation to be in accordance with Environmental clearance.
- For baseline, data assistance has been taken from the data, available from local authorities.

## 2.3 Restricted areas for sand quarrying

- i. The quarrying of sand shall be prohibited within up to a distance of 1 kilometre (1 km) from major bridges and highways on both sides, or five times (5x) of the span (x) of a bridge/public civil structure (including water intake points) on up-stream side and ten times (10x) the span of such bridge on down-stream side, subjected to a minimum of 250 meters on the upstream side and 500 meters on the downstream side.
- ii. No quarrying shall be permitted within 50 (fifty) meters of any public place i.e. cremation Ghat or any religious place etc.
- iii. No quarrying shall be allowed to be extracted where erosion may occur, such as at the concave bank.



*Pravin Kr. Singh*



- vi. The quarrying of sand shall be prohibited within 100 (one hundred) meters upstream and downstream from any dam weir or any other structure erected for irrigation purpose.
- v. Sand Ghats should preferably be located on the river side embankment. For low embankment less than 6 meters height, quarrying should not be done within 25 meter from toe/heel of the embankment and depth of mining should not be more than 1.0 meter. In case of higher embankments, the distance should not be less than 50 meter and depth of mining should be maximum 1.50 meter and at a distance of 75 meter or more mining depth should be maximum 2.0 meter. In order to obviate the development of flow parallel to embankment, crossbars of width eight times the depth of mining pits spaced at 50 to 60 meters center to center should be left in the mining pits.
- vi. The irrigation outlet shall be maintained at the same level as that of the river bed and in no case, the river bed level shall be permitted to be below the irrigation outlet level. No quarrying shall be permitted around the infiltration well/intake well up to a distance of 5 meters.
- vii. No quarrying of sand shall be permitted in any private land owned by a person other than a settlee unless the settlee obtains the consent of the concerned land owner/raiyat.
- viii. No quarrying of sand shall be permitted in any area which the State Government notifies as restricted area.
- ix. 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.
- x. Demarcation of mining area with pillars and geo-referencing should be done prior to the start of mining.
- xi. A buffer distance /un-mined block of 50 meters after every block of 1000 meters over which mining is undertaken or at such distance as may be directed/prescribed by the regulatory authority shall be maintained.
- xii. River bed sand mining shall be restricted within the central  $\frac{3}{4}$ th width of the river/rivulet or 7.5 meters (inward) from river banks but up to 10% of the width of the river, as the case may be and decided by regulatory authority while granting environmental clearance in consultation with irrigation department. Regulating authority while regulating the zone of river bed mining shall ensure that the objective to minimize the effects of riverbank erosion and consequential channel migration are achieved to the extent possible. In general, the area for removal of minerals shall not exceed 60% of the mine lease area, and any deviation or relaxation in this regard shall be adequately supported by the scientific report.



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## CHAPTER-3

## 3. LOCATION, GENERAL AND ACCESSIBILITY

## 3.1 LOCATION

## (a) Details of the area

(i)	Lease-hold area	44.46 Hect.		
	Location	Mainpura Sohsa (Arwal Son -13) Sand Ghat fall in Mauja – Mainpura Sohsa, Block – Kaler, Dist - Arwal, (Bihar). The location plan is enclosed (Plate No. 1)		
(ii)	Mining Lease Map	Khata No.- 384, 176. Khesra No.- 2484, 2518, 2519. Thana No.- 148, 152. Google Map of Arwal Son Mainpura Sohsa Sand Ghat is attached as Annexure no. 2.		
(iii)	District & State	Arwal, Bihar		
(iv)	Mining Plot	Sand Ghat	River	Area (ha)
		Arwal Son 13 Mainpura Sohsa	Son	44.46
		Total		44.46
(v)	Name of Ghat	Arwal Son Mainpura Sohsa Sand Ghat of 44.46 hectares.		
(vi)	Ghat details	44.46 ha (Son River bed)		
(vii)	Coordinates	The area & geographical coordinates of (Arwal Son -13) Mainpura Sohsa Sand Ghat is given in Table No.1  Toposheet No. – 72C/07, 72C/08, 72C/11 & 72C/12		



**ARWAL SON MAINPURA SOHSA SAND GHAT CO-ORDINATES**

S. No	Sand Ghat	Area (in Ha)	Co-ordinates		Ghat/Village	River
1	Arwal Son 13 Mainpura Sohsa	44.46	1	25.179889 84.487798	Mauja – Mainpura Sohsa, Anchal – Kaler, Dist - Arwal, (Bihar)	Son
			2	25.178622 84.488867		
			3	25.175221 84.487616		
			4	25.17249 84.486344		
			5	25.170566 84.485014		
			6	25.16735 84.481279		
			7	25.172961 84.481326		
			8	25.179889 84.487798		

**(b) Key plan of area:-**

Key plan of Sand Ghat (Son river) is attached as **Plate-2**.

Total mining area is completely outside of any restricted or protected area by any state or central government.

**3.2 GENERAL**

(a) Mineral being worked	Sand
(b) Period of Mining Lease	The lease period has been granted for Five years.
(c) Category of Land used	The mining area is inactive channel of riverbed
(d) Relief of Plot	Arwal Son Mainpura Sohsa Sand Ghat (75.2 ASML to 74.2 ASML)
(e) Existing pits	As the mining area is of river bed and it will be replenished every year no pits will be formed.
(f) Type of lease area:	Total area is almost hundred percent river bed flood plain land & it is free from forest land.
(g) Present land use pattern:	The existing land use is given below:



Sr. No.	Land use	River bed (Ha)	Forest Land (Ha)	Barren land (Ha)	Grazing Land (Ha)
1	Mining pits Quarry	-	-	-	-
2	Approach Road	-	-	-	-
3	Dumps	-	-	-	-
4	Office, Resht Shelter etc.	-	-	-	-
5	Balance undisturbed land	44.46	-	-	-
	Total	44.46	-	-	-

### 3.2 ACCESSIBILITY

Arwal district is one of the thirty-eight districts of Bihar state, India, and Arwal town is the administrative headquarters of this district. It came into existence in August 2001 and was earlier part of Jehanabad district. Arwal has a population of 699563. The five block divisions are Arwal, Kaler, Karpi, Kurtha and Suryapur Vanshi. Paddy, wheat and maize are the main crops. Nearest airport is at Patna and railway station is at Jehanabad. By road, Arwal is linked with Jehanabad, Patna, Aurangabad and Bhojpur. It's headquarter is situated at Arwal which is approximately 65 KMs south from the state capital Patna. Arwal town is situated on the right side bank of the river Son, which is a tributary to the river Ganges.

Project site is falls in Mauja – Mainpura Sohसा. Site is well connected by NH- 139 which is at distance of approx. 6 Km in SE direction. Nearest railway station is Piro Railway Station at distance of approx. 17 km in NW. Nearest airport is JPN International Airport Patna at distance of approx. 76 km in NE.



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**CHAPTER-4****4.1 GEOLOGY & EXPLORATION**

**Topography and general geology and local / mine geology of the mineral deposit including drainage pattern**

Arwal town is the administrative headquarters of Arwal district in Bihar state of India. It was earlier part of Jehanabad district. The district was formed to control the naxalism in the area. District was formed from the area of two near by districts i.e. Jehanabad and Aurangabad. Arwal district is situated in the South Bihar alluvial plains. Arwal is located at 25.25°N 84.68°E. It has an average elevation of 67 metres (220 ft). The state capital, Patna is 65 km to the north. Arwal has a population of 588,000. Arwal, the district headquarters is approximately 80 km south from the state capital Patna. Arwal town is situated on the right side bank of the river Son, which is a tributary to the River Ganges.

The State of Bihar is transected by a no. of rivers. The individual river basins and their catchment areas is shown in Fig. no. 1 below. The various sand mining lease areas (also referred to as sand Ghats) lie in the river bed of river Son which is a major tributary of river Ganga. They are formed in the Quaternary period of central Bihar Plains- the OAG (Older Alluvium Group) forming the highest terrace, in the Son-Ganga alluvial tract, and NAG (Newer Alluvium Group) forming younger terraces, as Older Flood Plains, are exposed all along the Alluvial Upland.



**Figure 1**



**Ganga & Sone Valley Plains:**

The river Son originates at an elevation of 600 m above msl near Amarkantak plateau in Madhya Pradesh (MP), and debouches in the river Ganga near Patna, Bihar. The total length of the river is 784 km, out of which about 500 km lies in MP, 82 km in Uttar Pradesh and the remaining 202 km in Bihar. The important tributaries of river Ganga are Son, Mahatwain, Dharda, Dhowa, Mohani, Pampun, Morhar. The total catchment area of the river is spread over 71,259 sq km. The river has a steep gradient with quick run-off and ephemeral regimes, becoming a roaring river with the rainwater in the catchment area, but turning quickly into a formidable stream. The river being wide and shallow leaves disconnected pools of water during summer (lean period).

**Regional Geology**

Regionally the area constitutes a part of the Ganga River Basin.

The north-eastern part of Haryana is predominantly characterized by sedimentary lithology in the Sub-Himalayan zone comprising Subathus, Dagshais, Kasaulis and Siwaliks. A general Regional stratigraphic sequence in the area is given below :

Showing the Geological Succession and their geographic distribution

Age	Geology	Occurrences
Quaternary	Alluvial Deposits (Sand, Clay, Silt, Fragments)	North Bihar Plain & Central Bihar Plain
Tertiary	Sand Stones & Clay Stones	North Champaran Hills
Gondwana	Coal Measures, Forming a series of Small outlier basins	Banka District
Vindhya	Sandstones, Shales, Limestones, etc.	Parts of Bahbhua and Rohtas district
Satpura	Schist, Phyllite, Quartzite	Part of Aurangabad, Gaya, Nawada, Nalanda, Sheikhpura and Munger District
Proterozoic	Mica Schist, amphibolites, quartzite, granite, dolerite and pegmatite	Nawada, Jamui and Banka

Archaean	Gneisses, Granites, Schists, Phyllites, quartzite, amphibolites & intrusive all metamorphosed sedimentary and igneous rocks	Part of Aurangabad, Gaya, Nawada, Jamui, Banka and Bhagalpur
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**GEOLOGY OF THE AREA:**

The sand exposed in the River bed of Son and surrounding areas is the product of the deposition of the sediments brought and deposited in the flood plains of River Ganga. These sediments are of recent geological formation. The litho-units exposed within the river and surrounding areas have formed as water borne sediments brought by flood water during rainy season every year and deposited in riverbed.

The litho units encountered in the riverbed and surrounding areas belongs to the Shivalik super groups. The size of the sediments towards the source i.e. host rock is coarse and at the tale end of the river the grain size is reduced to smaller sizes resulted in the formation of clay beds. The following sequences have been observed in the area, i.e. Top soil/ Alluvium followed by sand deposition (as shown in the figure below).



Sand and silt are deposited in the middle of the river whereas fine sand and soil are deposited at the fringe of the riverbanks.

Soil/ alluvium varying in thickness from 0.20m to 0.60m m constitute the top horizons in the area suitable for agriculture. River Ganga meanders through the area exposing the alluvium and soil at the banks. Sand is found in the river bed upto a depth of more than 3.0 m. The major part of bed remains dry as water flows in a single stream during the non-monsoon seasons. Only during rainy seasons the entire flood plain has water, when there will be no mining done.



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#### 4.2 ORIGIN & CONTROL OF MINERALIZATION (ANNUAL REPLENISHMENT OF MINERAL IN RIVER BED AREA/SEDIMENTATION)

Sedimentation, in the geological sciences, is a process of deposition of a solid material from a state of suspension or solution in a fluid (usually air or water). Broadly defined river sand is a product of natural weathering of rocks over a period of millions of years and these materials get collected under the impetus of gravity alone, as in talus deposits, or accumulations of rock debris at the base of cliffs. The term is commonly used as a synonym for sedimentary petrology and sedimentology.

Sedimentation is generally considered by geologists in terms of the textures, structures, and fossil content of the deposits lay down in different geographic and geomorphic environments.

The factors which affects the "Computation of Sediment":

Geomorphology & Drainage Pattern: The following geomorphic units plays important role:

- Structural Plain
- Structural Hill
- Structural Ridge
- Denudation Ridge & Valley
- Plain & Plateau of Gangetic plain
- Highly Dissected pediment
- Un-dissected pediment
- b) Distribution of Basin Area River wise
- c) Drainage System/Pattern of the area, Rainfall & Climate: Year wise Rainfall data for previous 10 years .
- e) As per Dandy & Bolton study "Sediment Yield" can be related to
  - i) Catchment Area and
  - ii) Mean Annual Run-off

Sand is an essential minor mineral used extensively across the country as a useful construction constituent and variety of other uses in sports, agriculture, glass making (a form of sand with high silica content) etc. It is common knowledge that minerals are non-renewable but this form of mineral naturally gets replenished from time to time in a given river system and is very much interrelated to the hydrological cycle in a river basin.

Sand mining has become a widely spread activity and does not require a huge set up or technology, the number of ventures has increased extensively and it has become a footloose industry in itself but the backward-forward linkages are becoming stronger as many are getting employed as well as the construction activity / industry requires this mineral at consistent rates. Riverine



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environmental systems are unique in themselves and provide environmental services, natural resources to meet variety of needs of urban and rural communities.

#### 4.2.1 REPLENISHMENT STUDY OF MINED AREA OF SON RIVER:-

Replenishment Rate is the rate at which Bajri is transported into the river channel, which is under examination or subjected to sand extraction. This volume is often considered as sustainable yield of that river. Estimation of sand discharge through stream bed and its residence period (temporary deposition) is one of the most difficult task in sediment budgeting.

The rate of gross or absolute silt production (erosion) in the watershed and the ability of the stream system to transport the eroded material in a river and then to a reservoir has the direct relation with the quantity of sediment delivered into a reservoir. It has been observed that the average rate of sediment production decreases as the size of drainage area increase and the larger watershed the lesser is the variation between the rates. The larger watershed presents more opportunity for deposition of silt during its traverse from the point of production. The total amount of eroded material, which reaches a particular hydraulic control point, is termed as sediment yield. The sediment control of inflow is governed by Character of run-off; Susceptibility of soils; the extent and density of vegetative cover in the area; and the hydraulic efficiency of the drainage system.

This report quantifies the annual replenishment of bed material in the Son River during periods of sediment transport at high flows within the mined area. It provides estimates of the amounts of sand & hajri which will be used in construction and for other uses.

#### 4.2.2. METHODOLOGY FOR REPLENISHMENT STUDY:-

The methodology used for Replenishment study is based on the measurement of volumetric survey at selected points as monitoring stations within the lease area in Pre-monsoon season & Post Monsoon season respectively. For the said project replenishment study has been done during the post-monsoon season has done by field survey (volumetric survey) method. Firstly Volumetric Survey was done in the proposed mining block. By this method spot RL/level are marked & mapped and sections are drawn for several monitoring locations within the mine area. After that, for post-monsoon season again spot RL/level are marked & mapped on the same location and sections are drawn. The RL(m) observed during Pre-monsoon season of all locations.



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Table 7. volumetric survey measurement

Classification	Code	Quantity of Sand
A) Mineral Reserves		Cum
1) Proved Mineral Reserve	111	1333800
Total		1333800

Replenished quantity of sand = 1333800 cum. or 2240784 tonnes.

### 4.3 EXPLORATION

Mining of sand is being done since long time therefore no specific method of exploration is required as the sand, deposited all along the bed and its pale channels, which is very well exposed on the surface. The minerals excavated from the river bed will be replenished gradually during the monsoon season every year. And the area pertaining to paleochannels of the river will be leveled & restored back. Adequate quantity of Sand in reserves is available for meeting consumer demand.

### 4.4 MINERAL RESERVES

The Mineral reserves have been estimated as per the Indian Standard Procedures. The area of the mining lease is 44.46 Hectares and the average thickness of the river bed minerals estimated as 3.0 mt.

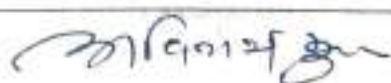
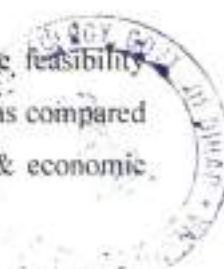
#### 4.4.1 Parameters of Reserve Estimation:

The geological reserves have been estimated as per UNFC guidelines in all the three axis.

**Economic Axis (E-1):** The Sand is exists with in the entire stretch & having no problem selling in the market. The road is near the Ghat & sand shall loaded into tipper with the deployment of an excavator & transport to various parties. The land is State Govt. land & State Govt. has given its consent for the exploitation of Sand on their expensive land. On the feasibility study, economic viability of deposit has been established sand in economic viable, therefore economic axis has been considered as E-1.

**Feasibility Status (F-1):** Feasibility study has been carried out & is considered to be feasibility status. A feasibility study provides a preliminary assessment with a level of confidence as compared to that of feasibility study. It has been revealed that exploitation of sand is feasible & economic viable & feasibility axis under UNFC code has been considered as F-1;

**Geological Axis:** The exposure of sand is seen in the entire stretch & thickness of sand varies 2.5m to 3.0m. Therefore geological axis has been considered as G-1.

**Geological Reserves**

The geological reserves have been each stretches & for individual blocks. Geological reserves have been completed through cross sectional area method. The area of each section line is multiplied by strike influence to get the volume.

- i) **Proved Mineral Reserves (III):** All quantities of sand occurring upto depth of 3 m from surface has been considered as proved reserves.

Classification	Code	Quantity of Sand
A) Mineral Reserves		Cum
1) Proved Mineral Reserves	III	1333800
Total		1333800

Total Geological Reserve = 1333800 cum. Or 2240784 tonnes.

\*Bulk density is 1.68 g/cm<sup>3</sup>

**4.4.2 Mineable Reserves:**

Mineable reserves have been computed up to 3m depth from surface. Benches having height 1.5m & width 6.0m drawn from the ultimate pit limit. Area of each benches have been calculated multiplied by strike influence to get the volume. The volume multiplied by bulk density (1.68 g/cm<sup>3</sup>) to get the tonnage.

The minerals excavated from the river bed will be replenished gradually during the monsoon season every year. And the area pertaining to paleochannels of the river will be leveled & restored back.

**Table-4.4:- Summary of mineable reserves of Arwal Son Mainpura Sohसा Sand Ghat as below:**

**ARWAL SON -13 ( MAINPURA SOHSA) SAND GHAT OF SON RIVER**

The mineable reserves are given in Table Nos.4

Bench Level (mRL)	Length (m)	Width (m)	Depth (m)	Volume (cum)	Tonnes
75 - 73.5	1221	344	1.5	630036	1058461
73.5 - 72	1211	334	1.5	606711	10192745
<b>Total</b>				<b>1236747</b>	<b>2077736</b>

**Total Mineable Reserve = 1236747 CUM or 2077736 Tonnes**



*Pravin Kr. Singh*



- Mineable reserve has been consider 60% approx. of geological reserve after applying the guideline of Enforcement & Monitoring Guidelines for Sand Mining 2020.
- The proposed production grant in LOI is 800280 cum per year which is within the sustainable limit of mineable reserve.
- The BD for Sand has been adopted at 1.68 g/cm<sup>3</sup> [Lab Report of Rappid Test Lab Private Limited]

• **CLASSIFICATION MINERAL RESERVES:**

Sand Ghat	Area (Hect)	Geological Reserves (m <sup>3</sup> )	Mineable Reserves (m <sup>3</sup> )	Annual Permitted Reserve As per Lol (m <sup>3</sup> )
Arwal Son Mainpura Sohsa	44.46	1333800	1236747	800280

The annual extractable RBM comes to 800280 CUM or 1344470 Tonnes. It will be replenished after rainy season every year.

#### 4.5 LIFE OF MINE

There is as such no specific life of the mine as the area under reference is inactive part of river bed of the river and its pale channels and whatever quantity of minor minerals are extracted from the Applied Area during five year; almost equal to extracted quantity of the same are replenished every year and the river bed area will be leveled & restored back.. However, as lease has been granted for 5 years, mining will be done for the allotted time.



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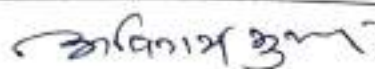
## CHAPTER – 5

## 5.0 MINING

- Mining will be done as per the guidelines of Bihar Mineral (Concession Prevention of illegal Mining Transportation & Storage ) Rules, 2019.
- This is an open-cast mining project. The operation will be semi-mechanized/OTFM with use of excavators/JCBs truck /tractors combination or Manually etc. The sand will be collected in its existing form.
- Sand Mining will be carried out only upto a depth of 3 m bgl or above ground water level (whichever is less), for river bed block.
- No drilling /blasting are required as the material is loose in nature.
- Proper benching of 1.5 m height and 6m width will be maintained for mining blocks as per guideline M.M.R-2019, under rule 115(1).
- Mining will be done only during the day time and completely stopped during the monsoon season.

## Restriction on mining:

- Sand and gravel shall not be extracted up to a distance of 1 km from major bridges and highways on both sides, or five times (5x) of the span (x) of a bridge/public civil structure (including water intake points) on up-stream side and ten times (10x) the span of such bridge on down side, subjected to a minimum of 250 meters on the upstream side and 500 meters on the downstream side.
- No quarrying shall be permitted within 50 (fifty) metres of any public place i.e. cremation Ghat or any religious place etc.
- No quarrying shall be permitted within 5 (five) metres from both banks of the river.
- The quarrying of sand shall be prohibited within 100 (one hundred) metres upstream and downstream from any dam/weir or any other structure erected for irrigation purpose.
- Sand Ghats should preferably be located on the river side embankment. For low embankment less than 6 metres height, quarrying should not be done within 25 metre from toe/heel of the embankment and depth of mining should not be more than 1.00 metre. In case of higher embankments, the distance should not be less than 50 metre and depth of mining should be maximum 1.50 metre and at a distance of 75 metre of more mining depth should be maximum 2.00 metre. In order to obviate the development of flow parallel to embankment,






crossbars of width eight times the depth of mining pits spaced at 50 to 60 metres center to center should be left in the mining pits.

- vi) The irrigation outlet shall be maintained at the same level as that of the river bed and in no case the river bed level shall be permitted to be below the irrigation outlet level. No quarrying shall be permitted around the infiltration well/intake well up to a distance of 5 meters.
- vii) The extraction of sand shall be permitted only after obtaining a No Objection Certificate from the Water Resources Department in the case of rivers where from irrigation channels are out flowing.
- viii) No quarrying of sand shall be permitted in any private land owned by a person other than the settler unless the settler obtains the consent of the concerned land owner/raiyat.
- ix) No quarrying of sand shall be permitted in any area which the State Government notifies as a restricted area.
- x) Sand and gravel shall not be allowed to be extracted where erosion may occur, such as at the concave bank.
- xi) 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.

#### 5.2.1 Proposed method of mining:

- Mining activity will be carried out by open cast manual/Mechanically method.
- No OB/ waste material will be produced in river bed. The sand shall be exploited upto depth of 3.0m only through the formation of bench height 1.5m & width 6.0m. An approach road having width 6.0m & gradient 1:12 shall be provided for the movement of loading machineries & transportation of sand. The sand shall be exploited with the deployment of an excavator & filled into Tractors/Trucks & transported to various buyers.
- No drilling/ blasting are required as the material is loose in nature.
- Proper benching of 1.5 m height will be maintained.
- Roads will be properly made and sprayed by water for suppression of dust.
- Roads in the applied area for the movement of loaded tractors/ trucks will not have slopes more than 1 in 16.
- The mined out area shall be replenished each year during monsoon period and maintained in maximum original topography.



*Pravin Kr. Singh*

- Approach roads from the various blocks as already described earlier will be merging with permanent tar roads on both sides of the river for transportation of the mineral to final destinations.
- The Sand transportation shall be insured after the covering the vehicle Tarpaulin.

### 5.3 Year wise Production Schedule:

The annual exploitation of sand from Arwal Son Mainpura Sohsa Sand Ghat are given below :-

YEAR	Over burden (cum)	ROM Sand (cum)	Saleable Sand (cum)
1 <sup>ST</sup>	-	800280	800280
2 <sup>ND</sup>	-	800280	800280
3 <sup>RD</sup>	-	800280	800280
4 <sup>TH</sup>	-	800280	800280
5 <sup>TH</sup>	-	800280	800280

The annual extractable RBM comes to 800280 CUM or 1344470 Tonnes. It will be replenished after rainy season every year.

### 5.4 Conceptual Mining Plan

Mine Applied Area will be worked for Arwal Son Mainpura Sohsa Sand Ghat. However, as the digging depth will be restricted to 3.0 m only. This will be further replenished during rainy season. Sand Ghat will be worked systematically as the width is limited while length is much more. As the lease period is only 5 (Five) years, some of the area will be left un-worked at the end of lease period.

(i) Final Slope Angle to Be Adopted: Height of the bench is limited to 1.5 m while width of individual bench shall be kept 6.0m. River bank side will be protected by working in dry part of the river and by leaving safety distance of the width of the river of 5 meter. Bank side natural slope will not be disturbed. This will prevent collapse of bank and erosion. However, the height of the bank with respect to river bed is varying from 3-4 meters.

(ii) During plan period workings will be carried out in the Sand Ghat at a time of the Applied Area simultaneously. Scattered workings will ensure safety, remove congestion of vehicles and will have better control and management.

(iii) Ultimate Capacity of Dumps: There will be no OB removal / during the plan period. Therefore no proposal has been envisaged for its separate dumping. No outside material will be filled up in the extracted zone.

The conceptual plan & section of each mining plots are attached with mine plan.

### 5.5 Extent of Mechanization:

The operation will be done by semi mechanized method / OTFM.

Following table gives the list of equipment to be used:

**Table-5.2:- List of Equipment's to be used**

S. No.	Name of machinery	Capacity	Fuel Consumption	No. of Machinery
1	JCB	1.00 m <sup>3</sup>	10 Ltr/hr	02
2	Excavator	2.0 m <sup>3</sup>	16 Ltr/hr	07
3	Trucks	12 tonnes	4 Ltr/hr	334
4	Tractors	04 Tonnes	2 Ltr/hr	345
5	Water Tanker	4000 liter	4 Ltr/hr	2
6	Light vehicles	As per requirement	4 Ltr/hr	2

### 5.6 QUANTITY OF HSD/ FUEL CONSUMPTION PER DAY

**Table-5.3:- Quantity of HSD/Fuel to be used**

S. No	Machine	Details of fuel (Diesel) requirements	Consumption of Diesel (in lits/ day)
1.	Excavator & JCB	Number of Excavator & JCB = 07&02  Diesel consumption by 02 jcb & 07 Excavators m/c in one shift	1056 liters



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		working.(i.e-10/15 litre/hr) $=02*8*10=160$ liters & $07*8*16=896$ liters	
2	Tippers/Tractors	Number of Tractors & Trucks = 345 & 334 Diesel consumption by 334 trucks & 345 Tractors in one shift working (i.e-4ltr/hr.) & (i.e-2 ltr/hr.) $=345*2*8=5520$ $=334*4*8=10688$	16208 liters
3	Water Sprinkler	Number of Sprinkler=02 Diesel consumption by Sprinkler in one shift working.(i.e-4ltr/hr). $=2*10*4=80$ liters.	80 liters
3	Extra	Transport vehicle, super vision vehicle, maintenance vehicle	50 liters
			Total=17394 liters

## 5.7 MINERAL PRODUCTION

The mining will be confined to excavation of sand to an extent depending upon availability and market demand. Production is taken tentatively upto a maximum of 1344470 TPA as per marked demand.



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**CHAPTER -6**

**6.0 DRILLING AND BLASTING**

No drilling and blasting shall be required to for the exploitation of river sand.



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**CHAPTER-7**

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**7.0 MINE DRAINAGE:****a) LIKELY DEPTH OF WATER TABLE BASED ON OBSERVATIONS FROM NEARBY WELLS AND WATER BODIES:**

As per the proposed mining, the working shall be confined up to 3.0 m or above the ground water table whichever comes first. Hence no water is likely to be encountered. So there is no need of any such arrangements.



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CHAPTER-8

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**8.0 DISPOSAL OF WASTE MATERIAL**

No waste as such will be generated at the site as all materials are saleable. If, at all silt clay will be generated along with the minerals will be used to dispose off in the low lying areas as spread, where plantation will be done after spreading top soil on it.



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**CHAPTER-9**

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**9.0 USE OF MINERALS**

Sand has become a very important mineral for expansion of our society due to its many uses. It can be used for making concrete, filling roads, building sites, brick-making, making glass, sandpapers, reclamations, and etc.



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## CHAPTER – 10

## 10.0 OTHERS

## 10.1 HAULAGE AND SURFACE TRANSPORT

Mode of transportation of material is by trucks/ Tractors of size of 12 tonnes / 4 tonns capacity have been planned.

Mining area is connected with an unmetalled (approach) road upto the nearest village and thereafter it is metalled road connected to State/National highway. The mine road is adequate to permit easy maneuverability of trucks allowing cross overs and changing points. Water is sprayed two times in a day by tractor mounted water sprinklers until dust remains airborne.

## 10.2 SITE SERVICES:

A temporary rest shelter will be provided for the workers near to the site for rest.

Provisions will also be made for following in the rest shelter:

- First aid box along with anti-venoms to counteract poison produced by certain Snakes / Reptiles, if any.
- Sanitation facility i.e. septic tank or community toilet facility will be provided for the workers.
- Canteen will be made available near the sites.

## 10.3 WATER REQUIREMENT

Total water requirement for the project is 6.5 KLD, its breakup is as under:-

**Table: 10.1- Water Requirement of the proposed project**

S.No.	Purpose	Water Requirement (KLD)
1.	Dust Suppression	3.5
2.	Domestic	01
3.	Green Belt	2.0
Total		6.5



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**10.4 EMPLOYMENT:**

The manpower requirement for the proposed project is tabulated below. This manpower is the permanent resource which excludes personnel's coming along with trucks / Tractors.

**Table 10.2:- Man power distribution of the proposed project**

S. No.	Category	Numbers
1.	Administration	1
2.	Supervisor	4
3.	Skilled	16
4.	Un-skilled	40
<b>TOTAL</b>		<b>61</b>

The maximum annual production envisaged is **1344470 TPA** which will be achieved every year that implies about 5378 tonnes per day. 250-working days in a year. That implies 61 workers will meet the required production.

**SAFETY PROVISION:**

All provisions in safety rules & regulation will be maintained by providing required materials to the employees. The lessee will provide safety shoes, safety helmets to all the employees. There will be no violation of safety provisions.



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**CHAPTER-11**

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**11.0 MINERAL BENEFICIATION**

Mineral Sand doesn't require processing or beneficiation. The excavated mineral will be directly loaded into the trucks.



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## CHAPTER -12

## 12.0 ENVIRONMENT MANAGEMENT PLAN

## 12.1 SOLID WASTE MANAGEMENT

In this if top soil will be generated, will be used for purposed of applied for green belt development. Small amount of domestic waste will be generated by the workers at the site, which will be disposed off through proper municipal way. No other waste generation is expected.

## 12.2 PLANTATION

The area of the proposed project lies in the river bed and devoid of any forest land.

Mining activities in River Bed blocks will not cause any harm to riparian or aquatic vegetation as mining will be only in the dry river bed portions of the river leaving safety distance from the bank. Hence it proposed to plant trees along the banks (wherever possible), along the haul road sides or near the civic amenities in consultation with village authority/local bodies.

In river bed mining cases plantation will be done at the river banks. It is proposed to have plantation along the haul road sides on both sides to provide cover against dust emission and also to act as noise absorber. Plantation will also be carried out as social forestry programme in villages, school/ and the areas allocated by the village authority/local bodies. Every year 89 trees of will be planted with various types of species. List of species is recommended for plantation.

Native plants like Mango, Neem, Kadamb, Kathal, Peepal, Gulmohar, and other local species will selected in suitable combination, so that can grow fast and also have good leaf cover. It is proposed to plant.

## 12.3 ENVIRONMENT MANAGEMENT PLAN

1.	Top soil storage, preservation and utilization	Present mining area is river bed, therefore no generally no top soil is present, if found then quantities of top soil to be generated will be stacked separately, preserved and used for purposed of plantation therefore no proposal has been envisage for storage, preservation & utilization.
2.	Waste dump management	No waste will be generated during mining whatever material is collected is transported in its original shape. Hence no waste management is required. Small amount of domestic waste is expected, which will be disposed off in a proper way. No

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		waste will be thrown into the streams or left on the banks.
3.	Plantation programme	Plantation will be done along both sides of roads and civic amenities in consultation with the local authorities. social forestry programme will also be conducted in the nearby villages.
4.	Quality of air	24 hourly samples twice a week for one month in each season except monsoon will be collected at the mine site and nearby villages and analyzed.
5.	Noise	Excavators used for mining & transportation vehicles used for dispatch of minerals are source of noise pollution at mine site. Hence periodical noise monitoring will be done. Ear muffs/protective equipments will also be provided for safety of the workers.
6.	Quality and make of water including surface and ground water	Mining will not have any impact on surface and ground water, however monitoring of parameters will be done once in each season.
7.	Soil	No major impact on soil due to mining operations is expected. Soil parameters will be monitored once in two years.
8.	Topography & drainage	Mined out area will be replenished every year during monsoon period in each stretches in each block in case of river bed blocks. Hence as such no topographical impact will be seen. A buffer zone will be left on either side of banks as safety measure. There is no stream crossing through the applied area which would show impact on drainage pattern.
9.	Local transport infrastructure	Trucks/dumpers are main vehicles running on the road for mineral transportation. The present road network is adequate to handle the load of this project. Water sprinkling on the haul roads/link roads will be done two times in a day to keep the dust suppressed. Also proper parking and traffic management will be followed.



21/11/2019

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**CHAPTER- 13**

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**CONCLUSION:**

The proposed project involves collection of sand from inactive channel of river bed of Son river. Safety distance will be left intact to avoid bank erosion. Mining activity will be done except monsoon season. All necessary measures will be taken care to save environment and for safety purposes. Besides this extraction of sand every year will reduce the chance of flood level by removing the deposited mineral. This is very essential in order to prevent widening of the riverbeds and to prevent flooding off and damage to the adjoining areas. The sand extracted is in high demand in the local market which is used in making bridges, road & Building Material, etc.

This project operation will provide livelihood to the poorest section of the society. It provides employment to the people residing in vicinity directly or indirectly by the project. After all the proposed project will increase developmental activities and employment opportunities.

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# PROGRASIVE MINE CLOSURE PLAN

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**PROGRESSIVE MINE CLOSURE PLAN****1.0. Introduction:**

1.1	Settlee Name & Full address  Phone. No. E-mail ID	Maa Kamakhya Construction & Co. Pro.- Avinash Kumar S/o- Ramashish Singh Vill.+P.O.-Kamta, P.S.- Prasi, Dist.- Arwal. 9771557204 maakamkhya393@gmail.com
1.2	Letter no. / date of lease execution & lease period	District Magistrate issue LOI on letter no. 1323/khanan dated. 28.11.2022 for a period of 05 years (Annexure No. -1)
1.3	Settlee post/social status	Private
1.4	Mineral or Minerals which the Settlee intends to mine	Sand
1.5	Applied area for mining lease	Arwal Son -13 (Mainpura Sohसा) Sand Ghat Lease has an applied area of 44.46 Hectare.
1.6	Name & address of RQP & Regd. No.  Mobile No. E-mail ID	Er. Pravin Kr Sinha Reg. No. - RQP/BIH/SR.NO.20 Letter No. 3825 Dated 07/11/2019 <b>Consultant :</b> P & M Solution 201,Mangal Market Raja Bazar, Patna (Bihar) 9889024004 & 7542949027 indusminingbihar@gmail.com
1.7	RQP Certificate	RQP certificate copy attached as <b>Annexure 2</b>
1.8	Name of the Prospecting agency	The base data is collected from various geological reports of the Department of Mines & Geology and local authorities as well as detailed prospecting of the area is carried out by the RQP.
1.9	Status of Environmental clearance	After Mining Plan approval then Settlee shall submit application to state Environment Impact Assessment Authority (SEIAA) of Bihar for environment clearance.
2.0	Date of Survey	02.12.2022




- a). **Location:** Arwal Son Mainpura Sohsa Sand Ghat fall in Mauja – Mainpura Sohsa, Anchal – Kaler, Dist - Arwal, (Bihar). The location plan is enclosed (Plate No. 1)
- b). **Extent of Lease area:** 44.46 Hectares
- c). **Type of lease area:** Total area is waste land & it is free from forest land
- d). **Present land use pattern:** The existing land use is given below:

Sr. No.	Land use	River bed (Ha)	Forest Land (Ha)	Barren land (Ha)	Grazing Land (Ha)
1	Mining pits Quarry	-	-	-	-
2	Approach Road	-	-	-	-
3	Dumps	-	-	-	-
4	Office, Resht Shelter etc.	-	-	-	-
5	Balance undisturbed land	44.46	-	-	-
	<b>Total</b>	<b>44.46</b>	<b>-</b>	<b>-</b>	<b>-</b>

e). **Method of mining and mineral processing:**

- Mining will be done as per the guidelines of Bihar Mineral (Concession Prevention of illegal Mining Transportation & Storage ) Rules, 2019.
- This is an open-cast mining project. The operation will be semi-mechanized/OTFM with use of excavators/JCBs truck tractors combination etc. The sand will be collected in its existing form.
- Sand Mining will be carried out only upto a depth of 3 m bgl or above ground water level (whichever is less), for river bed block.
- No drilling /blasting are required as the material is loose in nature.
- Proper benching of 1.5 m height and 6m width will be maintained for mining blocks as per guideline M.M.R-2019, under rule 115(1).
- Mining will be done only during the day time and completely stopped during the monsoon season.

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**1.1. Reasons for Closure:**

The "closure plan is a plan by which reinstate condition can be created, so that justification to the mother earth can be done" said by **James E. Hansen**. In the case of river bed mining, the excavated sand gets replenished during every monsoon and the area pertaining to palaeochannels of the river will be levelled & restored back to its original topography. More or less, the river bed maintains its previous form, such that the main stream of river remains unchanged.

According to experience and rough estimation of the State Government whatever quantity of minor minerals is extracted from the said area during the year will be replenished every year by the River itself on account of its flow and velocity.

At present there is no foreseeable reason regarding closure of mine. The progressive mine closure plan is being submitted.

**1.3. Closure plan preparation:****a). Name and address of the Lessee:**

Maa Kamakhya Construction & Co.  
 Pro.- Avinash Kumar  
 S/o- Ramashish Singh  
 Vill.+P.O.-Kamta, P.S.- Prasi, Dist.- Arwal.  
 Mob.- 9771557204  
 Email ID: maakamkhyha393@gmail.com

**b). Name, address & Registration No. of R. Q. P.**

Er. Pravin Kr Sinha  
 Reg. No. - RQP/BIH/SR.NO.20 Letter No. 3825 Dated 07/11/2019  
**Consultant :**  
 P & M Solution  
 201, Mangal Market  
 Raja Bazar, Patna (Bihar)  
 9889024004 & 7542949027  
 Email ID: indusminingbihar@gmail.com

**c). Name of the executing agency:**

The Proponent shall execute himself the provision of mine closure plan.



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## 2.0 Mine Description:

### i) Topography and general geology and local / mine geology of the mineral deposit including drainage pattern

Arwal town is the administrative headquarters of Arwal district in Bihar state of India. It was earlier part of Jehanabad district. The district was formed to control the naxalism in the area. District was formed from the area of two near by districts i.e. Jehanabad and Aurangabad. Arwal district is situated in the South Bihar alluvial plains. Arwal is located at  $25.25^{\circ}\text{N}$   $84.68^{\circ}\text{E}$ . It has an average elevation of 67 metres (220 ft). The state capital, Patna is 65 km to the north. Arwal has a population of 588,000. Arwal, the district headquarters is approximately 80 km south from the state capital Patna. Arwal town is situated on the right side bank of the river Son, which is a tributary to the River Ganges.

The State of Bihar is transected by a no. of rivers. The individual river basins and their catchment areas is shown in Fig. no. 1 below. The various sand mining lease areas (also referred to as sand ghats) lie in the river bed of river Son which is a major tributary of river Ganga. They are formed in the Quaternary period of central Bihar Plains- the OAG (Older Alluvium Group) forming the highest terrace, in the Son-Ganga alluvial tract, and NAG (Newer Alluvium Group) forming younger terraces, as Older Flood Plains, are exposed all along the Alluvial Upland.



Figure 1

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**Ganga & Sone Valley Plains:**

The river Son originates at an elevation of 600 m above msl near Amarkantak plateau in Madhya Pradesh (MP), and debouches in the river Ganga near Patna, Bihar. The total length of the river is 784 km, out of which about 500 km lies in MP, 82 km in Uttar Pradesh and the remaining 202 km in Bihar. The important tributaries of river Ganga are Son, Mahatwain, Dharda, Dhowa, Mohani, Punpun, Morhar. The total catchment area of the river is spread over 71,259 sq km. The river has a steep gradient with quick run-off and ephemeral regimes, becoming a roaring river with the rainwater in the catchment area, but turning quickly into a formidable stream. The river being wide and shallow leaves disconnected pools of water during summer (lean period).

**Regional Geology**

Regionally the area constitutes a part of the Ganga River Basin.

The north-eastern part of Haryana is predominantly characterized by sedimentary lithology in the Sub-Himalayan zone comprising Subathus, Dagshais, Kasaulis and Siwaliks. A general Regional stratigraphic sequence in the area is given below.

Showing the Geological Succession and their geographic distribution.

Age	Geology	Occurrences
Quaternary	Alluvial Deposits (Sand, Clay, Silt, Fragments)	North Bihar Plain & Central Bihar Plain
Tertiary	Sand Stones & Clay Stones	North Champaran Hills
Gondwana	Coal Measures, Forming a series of Small outlier basins	Banka District.
Vindhya	Sandstones, Shales, Limestones, etc.	Parts of Bahbhua and Rohtas District
Satpura	Schist, Phyllite, Quartzite	Part of Aurangabad, Gaya, Nawada, Nalanda, Sheikhpura and Munger District
Proterozoic	Mica Schist, amphibolites, quartzite, granite, dolerite and pegmatite	Nawada, Jamui and Banka District
Archaean	Gneisses, Granites, Schists, Phyllites, quartzite, amphibolites & intrusive all metamorphosed sedimentary and igneous rocks	Part of Aurangabad, Gaya, Nawada, Jamui, Banka and Bhagalpur District

**GEOLOGY OF THE AREA:**

The sand exposed in the River bed of Son and surrounding areas is the product of the deposition of the sediments brought and deposited in the flood plains of River Ganga. These sediments are of recent geological formation. The litho-units exposed within the river and surrounding areas have formed as water borne sediments brought by flood water during rainy season every year and deposited in riverbed.

**DETAILS OF EXPLORATION:****a) Already carried out in the area:**

No exploration has been carried out as sand lies all over the area & average thickness of sand is 3.0 m & area replenish every during the monsoon period. Therefore is no exploration has been carried out.

**b) Proposed to be carried out:**

Sand average thickness of 3.0 m lies all over the area & area replenish every during the monsoon period. Therefore no proposal of exploration has been given.

**2.2 Reserves:****ARWAL SON MAINPURA SOHSA SAND GHAT****Geological Reserves :-**

Classification	Code	Quantity of Sand
A) Mineral Reserves		Cum
1) Proved Mineral Reserves	111	1333800
Total		1333800

Total Geological Reserve = 1333800 cum. or 2240784 tonnes.

The mineable reserves are given in **Table Nos.4**

Bench Level (mRL)	Length (m)	Width (m)	Depth (m)	Volume (cum)	Tonnes
75 - 73.5	1221	344	1.5	630036	1058461
73.5 - 72	1211	334	1.5	606711	10192745
<b>Total</b>				1236747	2077736

**Total Mineable Reserve = 1236747 CUM or 2077736 Tonnes**

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- Mineable reserve has been consider 60% approx. of geological reserve after applying the guideline of Enforcement & Monitoring Guidelines for Sand Mining 2020.
- The proposed production grant in LOI is 800280 cum per year which is within the sustainable limit of mineable reserve.
- The BD for Sand has been adopted at 1.68 g/cm<sup>3</sup> [Lab Report of Rappid Test Lab Private Limited]

• **CLASSIFICATION MINERAL RESERVES:**

Sand Ghat	Area (Heet)	Geological Reserves (m3)	Mineable Reserves (m3)	Annual Permitted Reserve As per LoI (m3)
Arwal Son Mainpura Sohsa	44.46	1333800	1236747	800280

The annual extractable RBM comes to 800280 CUM or 1344470 Tonnes. It will be replenished after rainy season every year.

### 2.3 Mining Method:

#### Existing Method of mining:

It is fresh grant case of mining lease & at present no mining is being carried with the applied area.

#### b) Proposed method of mining:

- Mining activity will be carried out by open cast semi mechanized/OTFM method.
- No OB/ waste material will be produced in river bed. The sand shall be exploited upto depth of 3.0m only through the formation of bench height 1.5m & width 6.0m. An approach road having width 6.0m & gradient 1:12 shall be provided for the movement of loading machineries & transportation of sand. The sand shall be exploited with the deployment of an excavator & filled into Tractors/Trucks & transported to various buyers.
- No drilling/ blasting are required as the material is loose in nature.
- Proper benching of 1.5 m height will be maintained.

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Prepared by: Pravin K. Srivastava Reg. No. - RQP/BIH/SR.NO.20  
Letter No. 3825 Dated 07/11/2019



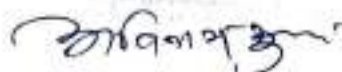
- Roads will be properly made and sprayed by water for suppression of dust.
- Roads in the applied area for the movement of loaded tractors/ trucks will not have slopes more than 1 in 16.
- The mined out area shall be replenished each year during monsoon period and maintained in maximum original topography.
- Approach roads from the various plots as already described earlier will be merging with permanent tar roads on both sides of the river for transportation of the mineral to final destinations.

#### 2.4 Mineral beneficiation:

No mineral beneficiation will be under taken for next five years. The sand shall be exploited semi mechanized with shovel tractor trolley/tippers combination & transport to parties.

#### 3.0 Review of implementation of mining plan / scheme of mining including five years progressive closure plan up to the final closure of mine:

At is fresh grant case of mining lease it is therefore premature to make any comments about review of implementation.



**4.0 Closure Plan:****4.1 Mined out land:**

Mining is proposed in one block. The mining shall be carried out during post monsoon season & depth of mining shall be restricted 3.0 m. Mining operation shall be suspended during monsoon period. The mined out pit shall be replenished during the monsoon period by sand and silt & leveled it. After over the monsoon period the replenish material shall be exploited manually as well as by means of an excavators & this process will continue.

The area already degrades due to mining & likely to be used during next five years is given below:

Activities	Area already used (Ha)	Area likely to be used in mining (Ha)
Pits & quarries	-	44.46
Approach road	-	-
Top soil Stack	-	-
Interburden dump	-	-
Backfilled pit	-	-
<b>Total</b>	-	<b>44.46</b>

**(A) Mining:**

Sl.No.	Activities	Area (Ha)
1.	Area already broken up	-
2.	Area already backfilled /reclaimed	-
Sl. No.	Activities	Area (Ha)
1.	Additional area proposed to be broken during next five years	-
2.	Additional area proposed to be replenished with flood water	-

**(B) Dump:**

Sl. No.	Activities	Area (Ha)
1.	Area already covered by dump	Nil
2.	Additional area to be covered by soil stack	-
3.	Additional area to be covered by interburden dump.	-
4.	Dump area to be covered by protective measures	-



**(C) Plantation:**

Sl. No.	Activities	Area(ha)
1.	Area already covered under plantation	-
2.	Area proposed to be covered under plantation in next five years (with in area)	-
	<b>Total</b>	-

**4.2 Water Quality Management:**

No ground water bodies exist within the area & no seasonal Nalla exists with in the area. The rain water accumulates in the pit & water percolates in to ground water.

Further no significant impact on water quality is anticipated as material exposed will be Sand & its shall very feebly react with water that too when water becomes acidic. Even of reaction takes place it gives arise to increased temporary hardness of water. Water is being supplied from the Tubewell.

**4.3. Air Quality Management:**

The mining shall be carried out semi-mechanized/OTFM with use of excavators/JCBs truck /tractors combination or Manually etc. No adoption of drilling & blasting mining shall be carried out in shallow depth. No doubt the mining in this remote area will deteriorate the air quality. The base line values are too low due to remoteness of the area with our past experience. In this kind of terrain, the SPM, SO<sub>2</sub> and NO<sub>x</sub> will always below 100, 10 & 10 microgram per meter cube respectively. Air quality monitoring shall be conducted once in a year as per CCOM'S circular No 3/92.

**4.4. Waste management:**

No waste shall be generated due to mining activities. All quantities of sand to be generated shall be sold in the local market. Therefore no proposal of waste management has been envisaged.

**4.5 Top Soil Management:**

No soil shall be generated during plan period & no proposal has been envisaged for its separate stacking & this management.

**4.6. Tailing Dam Management:**

No tailing dam is proposed in the soapstone mine.



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**4.7. Infrastructure:**

No infrastructure facilities like aerial ropeway, conveyor belts, building & structure, water treatment plant, transport & water supply sources are present within the lease area. Therefore no utilization & their physical stability & maintenance will be required. Also no infrastructure facilities like telephone line, water pipe line, sewer line, gas pipe line, electrical cables, culvert, bridges are not existing within the lease area. So question does not arise for their restoration. The approach road passed within the lease area & lessee shall maintain it during PMCP period.

**4.8. Disposal of Mining Machinery:**

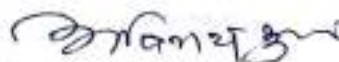
It will be opencast semi mechanized mine. No disposal of mining machineries shall be envisaged during plan period.

**4.9. Safety and Security:**

1. Each worker shall be provided with helmets & safety shoes.
2. Safety belt shall be provided to workers a working the top benches.
3. Hanging of loose materials shall be removed from mine faces.
4. The mining area shall be properly fenced to avoid any inadvertent entry in to mining pit.
5. Working hours shall be displaced at conspicuous places.
6. Mining shall be carried out thought the formation of benches maintaining overall pit slope 60deg.

**4.10 Disaster Management and risk assessment:**

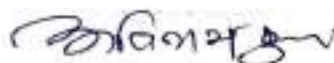
The mining is proposed in a gentler river bed. The mining will go up to the economical depth of 3m therefore, no disaster management and risk assessment shall be observed. However during monsoon period the area shall be properly fenced with barbed wire to avoid any inadvertent entry of any live stock.



**5.0. Economic repercussions of closure of mine and manpower retrenchments:**

All the workers being employed are contractor labours. An any industry will provide direct and indirect employment. The local residents will earn tremendous amount of money due to mining activities. It will change their life style. Due to closure of mine, it will create very negative impact on the economy of the workers for their survival. Those earning good money will get some occupation for survival of their families. The literate workers will move here and there for the search of job. In the overall view the closure of mine will give very bad impact on the society and surrounding areas.

- 5.1 Local residents of nearby villages will be employed in the mine. The family occupation is most by farming. Few of them occupation carpentry & masonry.
- 5.2 The lessee pay each year about 5,000 to 10,000 as a compensation for the sustenance of the few workers family.
- 5.3 About 30% of the workers employed in mine are independent but they are controlled depended by their family members.
- 5.4 The local residents will be employed in the mining operations, and allied activities related to mining operations.
- 5.5 During mining operations the land owners & society of the area shall earn lucrative amount of money from direct & indirect activities. Individual land owners shall also earn good amount of money in terms of royalty. Most of them will spend money to establish other business also. After mining, the total land shall be backfilled & agricultural activities shall be recommended. No repercussion should be observed during the closure of mine.



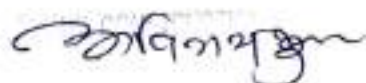




## 7.0 Abandonment Cost:

The tentative cost for implementation of protective and rehabilitation measures, the proposal given in the mining plan for next five years period is as under:

Activity	Year						Rate In Rs.	Amount In Rs.
	I	II	III	IV	V	Total		
i) Toe wall at the base and side of soil stack (mtr)	-	-	-	-	-	-	40/m	-
iii) Retaining wall at the edge of backfilled pit (m)	-	-	-	-	-	-	-	-
iv) Plantation ( no. of sapling with in the area.)	89	89	89	89	89	445	1000/-	445000
v) Reclamation(Cum.)	-	-	-	-	-	-	40cum	-
<b>Total</b>								<b>445000</b>




## 8.0 Any other information:

Community Development: The expensed increased towards the socio-economic development is given below:

Proposed Action Plan Towards socio economic development	First Year to Fifth Year	
	Expenditure proposed (in Rs.)	Expenditure in occurred (in Rs.)
General Development of the area	-	-
i) Housing	50,000	-
ii) Water Supply	25,000	-
iii) Sanitation	20,000	-
iv) Health, Safety & Medical Facilities	30,000	-
Education & Training	30,000	-
Employment to local inhabitants; Land owner compensation; Supervisor & Headers etc.	1,00,000	-
Public Transportation & Communication	20,000	-
Recreation & other sports activities	20,000	-
Expenditure for environment management	15,00,000	-
Others (Compensation to land owners)	80,000	-



**9.0 Financial Assurance:**

The financial assurance has been calculated on the basis of following parameters:

Sl. No.	Head	Area put on use at start of plan (In Ha)	Additional requirement during plan period. (In Ha)	Total (in Ha)	Area considered as fully reclaimed & rehabilitated (In Ha)	Net area considered for calculation (In Ha)
1.	Area under mining	-	44.46	44.46	44.46	0
2.	Storage for top soil	-	-	-	-	0
3.	Interburden/ dump	-	-	-	-	0
4.	Mineral storage	-	-	-	-	0
5.	Infrastructure (Workshop, administrative building etc.)	-	-	-	-	0
6.	Approach Road	-	-	-	-	-
7.	Railways	-	-	-	-	0
8.*	Green Belt	-	-	-	-	-
9.	Tailing pond	-	-	-	-	0
10.	Effluent Treatment Plant	-	-	-	-	0
11.	Mineral Separation Plant	-	-	-	-	0
12.	Township area	-	-	-	-	0
13.	Others to specify (retaining wall + toe walls)	-	-	-	-	-
	<b>Grand Total</b>		44.46	44.46	44.46	-

The total mined out area shall be replenished each year during monsoon period & no broken area will be remained in the applied area. Therefore, it is not possible to calculate financial assurance at this stage.

**Date:**

**Place:** Arwal

\* Plantation will be done along both sides of roads and civic amenities in consultation with the local authorities

*अविनाश कुमार*



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# ANNEXURE

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# M/S MAA KAMAKHYA CONSTRUCTION & COMPANY

(Govt. Contractor & General Order Suppliers)

Vill+Po.- Kamta, P.S-Parasi, Distt.-Arwal (Bihar)

E-mail :- maakamakhya393@gmail.com

Date : .....

## AUTHORISATION LETTER BY THE APPLICANT/ LESSEE

I, Avinash Kumar hereby authorise *Er. Pravinkumar Sinha, Reg.No.- RQP/BIH/SR.NO.20 Letter No. 3825 Dated 07/11/2019* to prepare the Mining plan Submitted under Rule (17) of Bihar Minerals (concession, prevention of illegal transportation & storage) Rules 2019 in respect of Maa Kamakhya Construction & Co. at over an area of 44.46 Hectare for mineral(s) for Arwal Son Mainpura Sohsa Sand Ghat in Mauja - Mainpura Sohsa, Anchal - Kaler, Dist - Arwal, (Bihar).

I request The Director, Department of Mines & Geology Patna, Bihar to make further correspondence regarding modification and to collect the approved copies of the aforesaid mining plan with the said recognized person on his following address:

Name of RQP : Er. Pravin Kr. Sinha  
Reg. No. - RQP/BIH/SR.NO.20  
Letter No. 3825 Dated 07/11/2019

### Address of RQP

: Consultant :  
P & M Solution  
201, Mangal Market  
Raja Bazar, Patna (Bihar)  
9889024004 & 7542949027  
indusminingbihar@gmail.com

Place : Arwal

Date :

Proponent,

MAA KAMAKHYA CONSTRUCTION & CO.  
DEPT. OF MINES & GEOLOGY GOVT. BIHAR  
Avinash Kumar  
Maa Kamakhya Construction & Co.  
S/o- Ramashish Singh  
Vill.+P.O.-Kamta, P.S.- Parasi  
Dist.- Arwal



## Certificate

1. Certified that the provisions of mines Act, Submitted under Rule (17) of Bihar Minerals (concession, prevention of illegal transportation & storage) Rules 2019 made there under have been observed in Arwal Son Mainpura Sohsa Sand Ghat Mining Plan, Mauja – Mainpura Sohsa, Anchal – Kaler, Dist - Arwal, (Bihar) and wherever specific permissions are required, the lessee will approach concerned authorities for granting permission.

The information furnished in Arwal Son Mainpura Sohsa Sand Ghat is true and correct to the best of my knowledge.



(Pravin Kumar Sinha)

Reg. No. - RQP/BIH/SR.NO.20

Letter No. 3825 Dated 07/11/2019

Place: - Patna

Date:-



(Approved RQP under Bihar  
Government)





कोटा एन्वायरन्मेंटल लघु खनिजों के खनन योजना तैयार करने हेतु एजेंसी Expressions of Interest के लिए आमंत्रित Expression of Interest के तहत प्राप्त निविदा के रूप में दिनांक 22.08.2019 को अपराह्न 03:00 बजे विभागीय समिति के बैठक में स्वीकृत हुई।

कोटा एन्वायरन्मेंटल लघु खनिजों के खनन योजना तैयार करने हेतु एजेंसी Expressions of Interest के दस्तावेजों/कागजातों के अभाव में एन.ए. द्वारा तैयार दिवराणी की जॉब खान एवं भूतत्त्व विभाग, पटना के अपर सहायक लघु निदेशक सह-अध्यक्ष के कार्यालय कक्ष में अन्य सदस्यों के सम्मक्ष की गई।

अंतर्गत Expression of Interest के तहत कुल 36 आवेदन विभाग को प्राप्त हुए। दिनांक 22.08.2019 में उल्लेखित प्रतिष्ठान भूमि इन्वायरटेक प्रा0 लि0 को योग्यता प्रमाण पत्र नहीं संलग्न करने के कारण तथा कंडिका-34 में उल्लेखित मेसर्स दिनांक 22.08.2019 को संबंधित योग्यता प्रमाण पत्र संलग्न नहीं होने के कारण अयोग्य घोषित किया गया। शेष 34 को Empanelled करने का निर्णय लिया गया, दिवराणी निम्नवत है :-

S. No.	Name	Contact Number	Qualifications	Rate for preparation of Mining Plan (per Ha)	Rate details	Address
1	Dr. Rishi Kant Singh	9430252522 8340280122	M.Sc. Geology	Rs. 25,000/- (including of Tax & GST)		Dr. R.N Singh, 7HF- 6-20, Sector 7, Block 6, Flat 20, HIG Flat, Bahardurpur Housing Colony, Patna -800026
2	Shree Teerth Housie	7982157774	M.Sc. Geology	Rate Slab attached	Rs. 10,000/- each Ha Rs. 8,000/- for each subsequent additional Ha. (above rates are inclusive of 18% GST)	122 C, Aastha , Road No. 5 A, Patliputra Colony, Patna - 800013
3	Dr. Anantjeet Kumar Singh	9431508238	Ph.D(Geology)	Rs. 20,000/- GST will be charged as per Government rules		S/O-Udho Singh, C/O-Sri Indrajit Kumar Singh, At & Po Jiradei, District-Siwan, Bihar-841245
4	Rakesh Kumar	9008802447	B.E. (Mining Engineer)	Rate Slab attached	Minimum (INR 25,000/- per mining plan upto 3 Hectare. For more than 3 Hectare the rate shall be increase @INR 10,000/- per Hectare.	Plot No.87,Rajwara Building,Sikhar More ,Near Mehta Petrol Pump,Manpur,Gaya-823003
5	Dr. Abdul Rahman	7870527271	Ph.D In Geology	Rs. 8,000/- (inclusive of Taxes)		B-78,P.C. Colony,kankarbagh, Patn -800020
6	Pankaj Lala Mahato	9911537948 8709005622	M.Sc. (Geology)	Rs. 11,800/-	Rate per Hectare @10,000/- + GST @18% (Rs. 1800) =Rs. 11,800/-	House No. 211, raghav Bhawan, Patna, Bihar, Sakardarpur, Patna - 812002
7	Sanjay Kumar	943106886	M.Sc. (Geology)	Rs. 25,000/-	Negotiable	Vastu Sarita Colony, Jankpur, Patna -St. Karen's School, Gola Road, Dandapur, Patna
8	Er. Navin Kumar Sinha	7366973516	B.E. (Mining)	Rs. 10,000/-		Er. Navin Kumar sinha, A-112, Sanjay gandhi Nagar, Kali Mandir, Road No.-9, Patna, Bihar

20	Prasen Kumar Saha	7542949027	B.E (Mining)	Rs. 2,000/- per Hectare (Each Block Mining Plan - Rs. 30,000/-)		201, 2nd Floor, Mangal Market, Raja Bazaar, Bailey Road, Patna-14
21	Md. Tanveer Warsi Greenera Mining & Envirotech Pvt. Ltd.	9534027112	M.Sc. (Geology)	Rs. 5,000/- (Excluding GST)		Greenera Mining & Envirotech Pvt. Ltd., 205 Mangal Market Raja Bazar, Bailey Road Patna-800014
22	Prabhat Kumar Srivastava	8827477206	B.E(Mining)	Rs. 8,000/-		Flat No-101, Road No.-01, Boodh Nagar, Chirya Tard, Postal Park, Patna-800001
23	Ashok Kumar Singh	8766859804	Mining Engineer	Rs. 8,000/-		C/o Shri Ram Prasad Singh, Mohalla - Mogal Kuan, P.O. - Sohsarai, P.S. - Sohsarai, Dist. - Nalanda, Bihar- 803118
24	Sandeep Kumar	8126253120	M.Sc. (Applied Geology)	Rs. 10,000/-		Anpurna Bhawan, C/O Ravi Kishan, Sundar Nagar, Lohia Path, Jagdeo Path, Patna - 800014 (Bihar)
25	United Exploration India Pvt. Ltd.	9431208782 9994304369	Required Qualification of the employees attached	Rs. 5,200/- (inclusive all Taxes)		301, 2nd Floor, Sahid Rajendra Singh Complex, Anishabad, Patna-800002
26	Rian Enviro Pvt. Ltd	9431289638	Required Qualification of the employees attached	Rs. 5,000/- (inclusive all Taxes)		202, 2nd Floor, Mangal Market, Raja Bazar, Sheikhpura Patna -800014
27	Ascenso Enviro Pvt. Ltd.	9204207920	Required Qualification of the employees attached	Rs. 4,750/- (inclusive all Taxes)		401, 4th Floor, Mangal Market, Raja Bazar, Sheikhpura, Patna-800014
28	M/s Baghel Environment & Waste Management Pvt. Ltd.	9431042532	Qualifications of candidates are attached	As decided by the department of Mines & Geology, Govt. of Bihar		Baghel Environment & Waste Management Pvt. Ltd., 1st Floor, 27, Guru Sahay Lal Nagar, Road No. 2, Magistrate Colony, Ashiyana Nagar, Patna - 800025, Bihar
29	Gramin Lok Seva	9934452711	Qualifications of candidates are attached	Rs. 7,000/-	Note - 1. Minimum rate for a Sand Block - INR 25,000/- 2. Maximum rate for a Sand Block - INR 60,000/- OR As decided by the Department of Mines & Geology, Govt. of Bihar	27, Guru Sahay Lal Nagar, Magistrate Colony, Ashiyana Nagar, Patna- 800025, Bihar
30	Praneja Envirocare & Management Pvt. Ltd.	9708251824	Qualifications of candidates are attached	Rs. 10,000/- (Excluding GST @18%)	Remarks - Fee should not be less than 20,000 or more than 50,000 thousand for single block. (Excluded GST) OR As decided by the Department of Mines & Geology, Govt. of Bihar	103, Bhagwati kunj apartment, Road No.-30, Anand vihar Colony, Rukampura, Patna -800014
31	Institute of Environment and Eco Development	7004620817	Details Of Qualification Attached	Rs. 10,000/- (Excluding GST)	Rate will be negotiable as per direction from Department of Mines & Geology, Govt. of Bihar	Admin. Office - 3rd floor, Shyam Nagar Colony, Maurya Park, Bailey Road, PO-B, College, Patna-800013
32	ENV Developmental Assistance Systems (India) Pvt. Ltd.	5224007470 9335913139	Details Of Qualification Attached	Rs. 2,750/- (inclusive all Taxes)		Prabha Niketan, Road No.-13, Patel Nagar, Near Petrol Pump, Patna-800029



11	Indusore Pvt. Ltd.	9431040119	Bachelor of Engineering (Mining)	Rate for each District is enclosed	Enclosure A	H.No-21, First Floor, M's Colony, S.E. Nagar, Patna-800001
12	M/S Sanyukt Infra	7296069668	Bachelor of Architecture	Rs. 3,500/-		South of Madhuban Housing complex, Matahi Pakdi, Kankarbagh-800002
13	Saathi Planners Pvt. Ltd.	9835877778	Details of qualification attached	Rs. 12,000/-		C/O Mr. Anil Kumar, plot No. L-171, Road No. 23 Near Malti Nigaran, Sri Krishna Nagar, Patna-800001
14	Overseas Min.Tech. Consultants	9460221084	Details of qualification attached	Rs. 13,000/-		501, 5th Floor, Apex Tower, Tonk Road, Jaipur-302015, Tel-0141-2744509

3. प्राप्त सभी EOI की समीक्षा के उपरांत विभागीय समिति द्वारा सर्वसम्मति से खनन योजना हेतु देय राशि प्रति खनन योजना अधिकतम ₹30,000/- (तीस हजार) रू0 GST सहित (चाहे माइनिंग प्लान कितने भी हेक्टेयर का हो) का भुगतान की अनुशंसा की गई।

4. समिति द्वारा उक्त न्यूनतम दर को स्वीकृत करते हुए उक्त न्यूनतम दर पर अभिरूचि की अभिव्यक्ति आमंत्रण में शामिल वैसे प्रतिष्ठान, जो वांछित योग्यता को पूरा करते हो तथा जिनका वर्तमान में पटना या बिहार राज्यान्तर्गत अन्य जिलों में कार्यालय संचालित है ऐसे प्रतिष्ठान को तत्काल प्रभाव से empanelled करने की अनुशंसा की जाती है।

शेष अन्य एजेंसी/व्यक्ति अगर भविष्य में बिहार राज्यान्तर्गत कार्यालय खोलने संबंधी साक्ष्य/दस्तावेज प्रस्तुत करते हैं तो उन्हें भी भविष्य में उक्त दर पर लघु खनिजों के खनन योजना तैयार करने हेतु RQP के रूप में empanelled करने की अनुशंसा की जाती है।

5. Empanelled एजेंसियों को अपने दस्तावेजों का सत्यापन विभागीय समिति से कराना आवश्यक होगा।

ह0/-  
स0आ0वि0सा0,  
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अवर सचिव,  
सदस्य

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उप निदेशक,  
पटना अंचल, पटना  
सदस्य

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उप निदेशक (मु0),  
सदस्य

ह0/-  
अपर सचिव-सह-  
निदेशक,  
अध्यक्ष

ह0/-

सरकार के अवर सचिव

ज्ञापांक:-...../एम0, दिनांक:-.....

प्रतिलिपि:- सभी समाहर्ता को सूचनार्थ एवं आवश्यक कार्रवाई हेतु प्रेषित।

ह0/-

सरकार के अवर सचिव

ज्ञापांक:-...../एम0, दिनांक:-.....

प्रतिलिपि:- सभी उप निदेशक/सभी सहायक निदेशक/सभी खनिज विकास पदाधिकारी/  
सभी खान निरीक्षक को सूचनार्थ एवं आवश्यक कार्रवाई हेतु प्रेषित।

ह0/-

सरकार के अवर सचिव

संख्याक- 3825 / एम0, दिनांक- 07/11/19

प्रतिलिपि-माननीय मंत्री के आप्त सचिव/प्रधान सचिव के प्रधान आप्त सचिव/निदेशक  
कोषांग/उप निदेशक (मु0)/सहायक निदेशक (मु0)/खनिज विकास  
पदाधिकारी (मु0) को सूचनार्थ एवं आवश्यक कार्रवाई हेतु प्रेषित।

1/11/19  
7/11/19

सरकार के अवर सचिव



# **(Accreditation Certificate)**



**NATIONAL ACCREDITATION BOARD FOR EDUCATION & TRAINING**  
**QUALITY COUNCIL OF INDIA**

6<sup>th</sup> Floor, ITPI Building, Ring Road, I.P. Estate, New Delhi  
Scheme for Accreditation of EIA Consultant Organizations  
**Accreditation Committee Meeting for Initial Accreditation held on**  
**December 20, 2019**

The following members were present during the meeting:

- |                            |            |
|----------------------------|------------|
| 1. Prof. B.B. Dhar         | - Chairman |
| 2. Prof. C. P. Kaushik     | - Member   |
| 3. Dr. P. Ahujarai         | - Member   |
| 4. Dr. J. P. Gupta         | - Member   |
| 5. Prof. Umesh Kulshrestha | - Member   |
| 6. Mr. A. K. Ghose         | - Member   |

Dr. S. R. Wate, Prof. Rajesh Khanna and Prof. G. J. Chakrapani expressed their inability to attend the meeting.

Prof. B. B. Dhar chaired the meeting in absence of Dr. S. R. Wate.

Mr. A.K. Jha – Senior Director, Dr. Pawan Kumar Singh – Assistant Director and Mr. Vipin Pant – Accreditation Officer were present in the meeting.

Following case was discussed and decisions taken thereof are:

**1.0 Case of Initial Accreditation**

**1.1 P and M Solution, Noida**

P and M Solution, Noida has been assessed as per Version 3 of the Scheme. Result of Initial Accreditation (IA) assessment is given below-

**1.1.1 Category of Approval:**

The organization has scored more than 60% marks therefore, is accredited with Cat. A.

**1.1.2 Scope of Accreditation**

Sl. No.	NABET Scheme Sectors	Sector Description	Cat.	Sector Number (MoEECC Notification dt. Sep. 14, 2006 & Amendments)



1.	1	Mining of minerals including opencast / underground mining	A	1 (a) (i)
2.	3	River Valley projects	B	1 (c)
3.	8	Metallurgical industries (ferrous & non-ferrous)	B	3 (a)
4.	34	Highways,	A	7 (f)
5.	38	Building and construction projects	B	8 (a)
6.	39	Townships and Area development projects	B	8 (b)

### 1.1.3 EIA Coordinators (ECs)

Sl. No	Name	Sectors			Cat.	Remarks
		Applied	Recommended	Approved		
In-house						
1	Jatin Kumar Srivastava	1	Yes	Yes	B	Opencast only.
2	Pravin Kumar Sinha	1	Yes	Yes	B	None
Empanelled						
3	Tapan Majumdar	1	Yes	Yes	A	With an observation.
4	Mayank Kumar	3	Yes	Yes	B	None
		34	Yes	Yes	A	
		38	Yes	Yes	B	
		39	Yes	Yes	B	
5	Vikas Chand Tripathi	8	Yes	Yes	B	None
		38	Yes	Yes	B	With an observation.

### 1.1.4 Functional Area Experts (FAEs)

Sl. No	Name	Functional Areas (FA)			Cat.	Remarks
		Applied	Recommended	Approved		
In-house						
1	Jatin Kumar Srivastava	SC	Yes	Yes	B	None
		NV	Yes	Yes	B	
		WP	Yes	Yes	B	
		EB	Yes	Yes	B	
2	Pravin Kumar Sinha	GEO	Yes	Yes	B	None
3	Amit Kumar	SHW	Yes	Yes	B	SW only
		AP	Yes	Yes	B	With an observation.
		WP	Yes	Yes	B	
4	Manoj Kumar Pandey	EB	Yes	Yes	B	None
5	Hussain Ziauddin	SHW	Yes	Yes	B	HW only
		WP	Yes	Yes	B	None
6	Abhay Nath Mishra	SE	Yes	Yes	B	With an observation
Empanelled						
7	Tapan Majumdar	GEO	Yes	Yes	A	None
		HG	Yes	Yes	A	
8	Mayank Kumar	EB	Yes	Yes	B	None
9		SHW	Yes	Yes	B	SW only.



Sl. No	Name	Functional Areas (FA)			Cat.	Remarks
		Applied	Recommended	Approved		
	Vikas Chand Tripathi	AP	Yes	Yes	B	None
		RH	Yes	Yes	A	
10	Neha Singh	AQ	Yes	Yes	B	None
		NV	Yes	Yes	B	
		WP	Yes	Yes	B	
		AP	Yes	Yes	B	
11	Debarati Ghosh	LU	Yes	Yes	B	With an observation.
12	Poonam Kumari Mangalam	LU	Yes	Yes	B	None

### 1.1.5 Functional Area Associates (FAAs)

Sl. No	Name	Functional Area (FA)		Name of Mentor/FAE	Remarks
		Applied	Approved		
1	Deepika Bisht	SC	-	-	Left the organization.
		EB	-	-	

Note: The following will be communicated to the ACO by NABET

- Detailed Observations (if any)
- Result of balance candidates

The meeting ended with a vote of thanks to the Chair.  
Issued by

(A K Jha)  
Senior Director  
QCI-NABET



# समाहरणाल, अरवल।

(खनन शाखा)

पत्रांक.13.23/खनन, अरवल

दिनांक:- 28/11/2022

प्रेषित,

मां कमख्या कन्सल्टन्स एण्ड कं  
प्रो०-अविनारा कुमार, पिता-रामाशिश सिंह,  
घान+पो०-कमता, थाना-परासी, जिला-अरवल।  
मो०-9771557204  
ई-मेल-maakamkhyas393@gmail.com

विषय :- अरवल जिलान्तर्गत सोन नदी के बालूघाट मैनपुरा सोहसा की आगामी पांच वर्षों के लिए बंदोबस्ती हेतु दिनांक 22.11.2022 को सम्पन्न ई-नीलामी में उच्चतम डाकवक्ता घोषित होने के उपरांत सैद्धांतिक स्वीकृत्यादेश निर्गत करने के संबंध में।

उपर्युक्त विषयक अरवल जिलान्तर्गत सोन नदी के बालूघाट मैनपुरा सोहसा की आगामी पांच वर्षों के लिए बंदोबस्ती हेतु दिनांक 22.11.2022 को सम्पन्न ई-नीलामी में आपके द्वारा मो०-12,00,42,000.00 (बारह करोड़ बियालीस हजार) के विरुद्ध उच्चतम डाक की राशि मो०-13,20,48,200.00 (तेरह करोड़ बीस लाख छियालीस हजार दो सौ) रुपया बोली के उपरांत उच्चतम डाकवक्ता घोषित हुए हैं। निविदा दस्तावेज की कंडिका-20(i) के आलोक में आपके द्वारा नीलामी राशि के 25 प्रतिशत (अग्रधन राशि समायोजनोपरांत) शेष प्रतिभूति राशि मो०-30,01,050.00 (तीस लाख एक हजार पचास) रुपया के भुगतान के साक्ष्य दिनांक 26.11.2022 को कार्यालय में प्रस्तुत किया गया है।

निविदा दस्तावेज की कंडिका-20(ii)(iii)(iv)(v) के आलोक में जिलान्तर्गत सोननदी के मैनपुरा सोहसा बालूघाट का सैद्धांतिक स्वीकृत्यादेश निम्न शर्तों एवं बंधों के साथ दिया जाता है:-

1. सोन नदी के मैनपुरा सोहसा बालूघाट का संक्षिप्त विवरणी निम्नवत है:-

क्र०सं०	नदी का नाम	रकबा(हे० में)	Geo-Coordinates
1	सोन नदी (Perennial)	44.46	25.179889 84.487798 25.178622 84.488867 25.175221 84.487616 25.17249 84.486344 25.170566 84.485014 25.16735 84.481279 25.172961 84.481326 25.179889 84.487798
1	वन क्षेत्र से दूरी		लागू नहीं
2	सुरक्षित क्षेत्र/वन अभ्यारण्य/पक्षी अभ्यारण्य/जीव अभ्यारण्य क्षेत्र से दूरी		लागू नहीं
3	बालूघाट से 500 मीटर के अंदर खनन पट्टा क्षेत्र की दूरी		है। (सोहसा-रकबा 32.97 हे० बेलान-01 -रकबा 79.00 हे०)
4	पुरातात्विक स्थल की दूरी		लागू नहीं
5	खनन योग्य मात्रा		800280 घनमीटर
6	थाना/खाता/खेसरा संख्या		148, 152/384, 178/2484, 2515, 2519

2. भुगतान की शर्त:-

- नीलामी-राशि केवल प्रथम वर्ष के लिए बंदोबस्ती की राशि मानी जाएगी। दूसरे वर्ष और उसके बाद की बंदोबस्ती की राशि गत वर्ष की बंदोबस्ती राशि के 120 प्रतिशत के बराबर होगी।
- प्रतिभूति जमा के अतिरिक्त बंदोबस्तधारी निम्नलिखित समय सारणी/भुगतान अनुसूची के अनुसार बंदोबस्ती की राशि का भुगतान करेगा :-



किस्त	भुगतान की नियत तारीख
प्रथम किस्त (50%)	(क) पट्टा संधिदा निष्पादन से पहले (पहले वर्ष के लिए) (ख) प्रथम वर्ष में पट्टा संधिदा निष्पादन की तिथि से एक वर्ष पूरा होने के 60 दिन पूर्व और अनुक्रमिक वर्षों में इसी प्रक्रिया का पालन करते हुए जमा किया जायेगा।
द्वितीय किस्त (25%)	03 महीना पूरा होने से पहले।
तृतीय किस्त (25%)	06 महीना पूरा होने से पहले।

प्रत्येक समानुदान वर्ष में बंदोबस्तधारी द्वारा पहली किस्त के भुगतान के समय दूसरी और तीसरी किस्तों की राशि के लिए पोस्टडेटेड चेक संबंधित समाहर्ता, अरवल के समक्ष जमा की जायेगी। यदि किस्तों के भुगतान करने में बंदोबस्तधारी असफल होता है तो आगे ई-घालान सिस्टम द्वारा बंद कर दिया जाएगा और केवल अग्रिम भुगतान कर दिये जाने के बाद ही खोला जाएगा एवं इसके लिए किसी तरह के क्षतिपूर्ति का कोई दावा मान्य नहीं होगा।

- 3. GST का भुगतान :-** बंदोबस्तधारी को जी0एस0टी0 के रूप में प्रचलित दर के अनुसार राशि वाणिज्य कर विभाग को भुगतान करना होगा। जिला खनन कार्यालय अरवल में जी0एस0टी0 भुगतान का प्रमाण प्रत्येक किस्त के साथ देना होगा।
- 4. आयकर/अन्य करों का भुगतान:-** बंदोबस्तधारी को आयकर अधिनियम के तहत आयकर एवं उस पर नियमानुसार देय अधिभार का भुगतान आयकर विभाग के प्रचलित दर के अनुसार एक मुस्त करना होगा। यह राशि बंदोबस्ती राशि के प्रत्येक किस्त के साथ देय होगी। जिला खनन कार्यालय, अरवल द्वारा यह राशि आयकर मद में जमा करा दी जायेगी।
- 5. जिला खनिज फाउण्डेशन:-** Bihar Mineral District Foundation Rules, 2018 के अनुसार बंदोबस्ती राशि की 2 प्रतिशत राशि जिला खनिज फाउण्डेशन को जिला खनन पदाधिकारी, अरवल के पदनाम से भुगतान बैंक ड्राफ्ट के माध्यम अनुसार करना होगा।
- 6. वैधानिक अनापत्ति:-** बालूघाट संचालन हेतु आवश्यक समस्त वैधानिक अनापत्ति/अनुमति (जैसे:- खनन योजना, पर्यावरणीय स्वीकृति, जल एवं वायु सहमति आदि सफल डाकवक्ता द्वारा प्राप्त की जाएगी। वैधानिक अनापत्ति/अनुमति प्राप्त करने के पश्चात् ही बालू खनन प्रारंभ किया जा सकेगा। वैधानिक अनापत्ति/अनुमति के बिना अथवा वैधानिक अनापत्ति/अनुमति में अनुज्ञात मात्रा से अधिक मात्रा या निर्धारित क्षेत्र से बाहर खनन किए जाने की दशा में सुसंगत नियमों के अनुसार संबंधित सफल डाकवक्ता/बंदोबस्तधारी पर कार्रवाई की जाएगी। वैधानिक अनापत्ति/अनुमति निम्नानुसार है:-

- i. खनन योजना:-** खनन योजना प्रभावी नियमों में उल्लिखित प्राक्कानों के अनुसार सफल डाकवक्ता/बंदोबस्तधारी द्वारा QCI/NABET से मान्यता प्राप्त Professional RQP से तैयार कर निदेशक, खान या विभाग द्वारा प्राधिकृत पदाधिकारी के समक्ष सेक्टर ऑफ इंटेंट निर्गत होने से 30 दिनों के अन्दर अनुमोदन के लिए प्रस्तुत करेगा। खनन योजना बनाने पर होने वाले व्यय का वहन संबंधित खनिज डाकवक्ता/बंदोबस्तधारी द्वारा किया जायेगा। साथ ही खनन योजना की जाँच हेतु समाहर्ता/विभाग अन्य ऐजेंसी घयनित कर सकेगा, जिसका निर्धारित फीस/खर्च भी बंदोबस्तधारी को ही वहन करना होगा। सफल डाकवक्ता/बंदोबस्तधारी खनन योजना के अनुसार खनन करना सुनिश्चित करेगा।
- ii. पर्यावरणीय स्वीकृति:-** सफल डाकवक्ता/बंदोबस्तधारी खनन योजना अनुमोदन के 15 दिनों के अन्दर पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय, भारत सरकार के सक्षम प्राधिकार के समक्ष पर्यावरणीय स्वीकृति (EC) के लिए प्रस्ताव समर्पित करेगा। समयबद्ध रीति से पर्यावरणीय एवं अन्य वैधानिक स्वीकृति प्राप्त करना सफल डाकवक्ता की जिम्मेवारी होगी। अपेक्षित पर्यावरणीय स्वीकृति एवं अन्य आवश्यक स्वीकृति प्राप्त करने में किसी भी प्रकार की देरी के लिए सफल डाकवक्ता स्वयं जिम्मेवार होंगे एवं इस संबंध में किसी भी प्रकार की क्षतिपूर्ति के लिए कोई भी दावा मान्य नहीं होगा।
- iii. जल एवं वायु सहमति:-** पर्यावरणीय स्वीकृति प्राप्त करने के पश्चात् सफल डाकवक्ता अधिकतम 07 (सात) दिवस के अंदर जल (प्रदूषण निवारण एवं नियंत्रण) अधिनियम, 1974 तथा वायु (प्रदूषण निवारण एवं नियंत्रण) अधिनियम, 1981 के अधीन सक्षम पदाधिकारी के समक्ष सहमति/ Consent to Establish/ Consent to Operate प्राप्त करने हेतु आवेदन प्रस्तुत करेगा।



- iv. खनन के लिए अनुमत मात्रा:- खनन योजना, पर्यावरणीय स्वीकृति तथा जल (प्रदूषण निवारण एवं नियंत्रण) अधिनियम, 1974 तथा वायु (प्रदूषण निवारण एवं नियंत्रण) अधिनियम, 1981 के तहत प्राप्त सहमति में वर्णित बालू की मात्रा (इनमें से जो भी कम हो) तक ही खनन अनुमान्य होगा। यदि अनुमोदित खनन योजना, पर्यावरणीय स्वीकृति तथा जल एवं वायु सहमति में खनन योग्य मात्रा कम किये जाने पर भी वार्षिक देय बंदोबस्ती राशि किसी स्थिति में कम नहीं की जाएगी।
- v. बिना किसी वैध कारण के पर्यावरणीय स्वीकृति, Consent to Establish/ Consent to Operate /जल एवं वायु सहमति प्राप्त नहीं कर पाते है या प्राप्त करने में रुचि नहीं लेते है तो, समाहर्ता द्वारा अग्रधन राशि जप्त कर पुनः नीलामी की कार्यवाई की जाएगी।
7. बंदोबस्ती विलेख/पट्टा सविदा (डीड) निष्पादन करना:-
- i. सफल डाकवक्ता द्वारा सभी वैधानिक अनापत्ति प्राप्त करने के उपरान्त 5 वर्षों की अवधि के लिए बालू खनन करने हेतु समानुदान/बंदोबस्ती स्वीकृत किया जाएगा। सफल डाकवक्ता विहित प्रपत्र में संबंधित नियमानुसार बंदोबस्ती विलेख अथवा उसके समरूप एक प्रपत्र, कार्य आरंभ करने के पहले, निष्पादित करेगा तथा यथा विहित अपेक्षित प्रतिभूति राशि जमा देगा। बंदोबस्तधारी के पट्टे की अवधि विलेख/सविदा निष्पादन की तिथि से पांच वर्षों के लिए विधिमान्य होगा।
- ii. बंदोबस्तधारी को निष्पादित सविदा का निबंधन संबंधित विभाग के प्रचलित नियमों के अधीन 01 माह के अन्दर कराना अनिवार्य होगा।
8. सफल डाकवक्ता/बंदोबस्तधारी द्वारा बंदोबस्ती प्रत्यर्पण/कारोबार छोड़ने का विकल्प बिहार खनिज (समानुदान, अवैध खनन, परिवहन एवं भंडारण निवारण) नियमावली 2019 के नियम 50 के अनुरूप किया जा सकेगा।
9. सामान्य शर्तें :-

- (i) बंदोबस्तधारी नदी तट से बालू प्रेषण के बिन्दु पर एक साईनबोर्ड लगाएगा जिसपर बंदोबस्तधारी का नाम एवं पता, बंदोबस्ती की अवधि, स्थानीय मैनेजर का नाम एवं पता तथा बालू का विक्रय मूल्य प्रदर्शित किया जाएगा। यदि साईन बोर्ड निरीक्षण में नहीं पाया गया तो शास्ति अधिरोपित की जाएगी।
- (ii) बंदोबस्तधारी श्रम विधियों के प्रावधानों के अनुसार आश्रय गृह, पीने का पानी, शिशु गृह (क्रैचेज) तथा फर्स्ट एड किट की व्यवस्था संबंधित बालूघाटों में लगे श्रमिकों के लिए करेगा।
- (iii) बंदोबस्तधारी संबंधित क्षेत्रों का निरीक्षण करेगा तथा स्वयं/ अथवा अपने द्वारा अधिकृत प्रतिनिधियों के माध्यम से बालूघाटों का प्रचालन करेगा। किसी रूप में किये गये उपपट्टा (सबलेटिंग) के लिए बंदोबस्ती रद्द कर दी जाएगी। बालूघाटों/नदी तल तक बालू के परिवहन के प्रयोजनार्थ पहुँच पथ (अप्रोच रोड) का निर्माण बंदोबस्तधारी द्वारा स्वयं अपने खर्च से किया जाएगा।
- (iv) बालूघाट की सुरक्षा की जिम्मेदारी सफल डाकवक्ता/बंदोबस्तधारी की होगी।
- (v) सफल डाकवक्ता/बंदोबस्तधारी बंदोबस्त क्षेत्र के भीतर किसी अवैध खनन के लिए जिम्मेवार होने और पायी गई किसी भी शिकायत पर गंभीरता से विचार किया जाएगा तथा बंदोबस्तधारी के विरुद्ध आपराधिक मामला दायर किया जाएगा।
- (vi) सफल डाकवक्ता/बंदोबस्तधारी समाहर्ता द्वारा बालूघाटों का संचालन के संबंध में लोकाहित में जारी निर्बंधनों और शर्तों तथा निदेशों का पालन करेगा।
- (vii) यथोक्त शर्तों बंधनों एवं निर्बंधनों का पालन नहीं करने पर कारण पूछा निर्गत कर बंदोबस्ती रद्द करने की कार्यवाई की जा सकेगी।
- (viii) सफल डाकवक्ता/बंदोबस्तधारी को खनन राजस्व/जी0एस0टी0/आयकर/स्टाम्प शुल्क/रजिस्ट्रेशन फीस का भुगतान नहीं करने की दशा में 30 दिनों के अंदर कारण स्पष्ट करने हेतु नोटिस दी जायेगी। निर्धारित अवधि के अंदर बंदोबस्तधारी द्वारा बकाए को भुगतान करने में असफल रहने की दशा में राशि वसूली की कार्यवाई के साथ-साथ बंदोबस्ती रद्द करने की भी कार्यवाई की जाएगी।
- (ix) नीलामी हेतु प्रस्तावित बालूघाटों से संबंधित तकनीकी तथा अन्य बिन्दुओं यथा भूमि के अंश, धाना, मौजा, खाता, खैसरा, रकबा तथा GPS Co-ordinate के संबंध में विवाद/संशय पैदा होने पर संशोधन का अधिकार संबंधित जिला खनन कार्यालय का होगा। बालूघाटों की सीमांकन एवं नियमानुसार निर्धारित आयाम/विशिष्टियों का सीमा स्तंभ का अधिष्ठापन GPS Co-ordinate के अनुसार बालू बंदोबस्तधारी को कराना होगा तथा खनन के क्रम में संचारित कराना बंदोबस्तधारी की जबाबदेही होगी, जिसे RQP/अधिलाधिकारी की उपस्थिति में





प्रमाणित कराकर खनन कार्य कराना होगा। बालूघाटों के निर्धारित क्षेत्र का Reduced Level (RL)/Pre-Level (PL) एवं Satellite images मानसून के पूर्व एवं बाद का समर्पित करना होगा।

- (x) बालूघाट से लिंक रोड और बालूघाट के बीच कोई प्राकृतिक जल मार्ग सिंचाई नहर पड़ती हो तो खनिज समानुदान धारक जल संसाधन विभाग की पूर्व अनुमति से बालू के परिवहन के लिए अस्थायी संरचनाएँ खड़ा कर सकेगा। पूर्व अनुमति के लिए ऐसे आवेदन जल संसाधन विभाग के संबंधित मुख्य अभियंता के समक्ष दिए जाएंगे।
- (xi) बालूघाट में रैयती/बंदोबस्त जमीन होने पर संबंधित रैयत से सहमति प्राप्त कर बालू का खनन करना होगा। यह जिम्मेदारी पूर्णतः बंदोबस्तधारी की होगी एवं विभाग से कोई क्षतिपूर्ति का दावा मान्य नहीं होगा।
- (xii) बंदोबस्तधारी द्वारा बंदोबस्ती अवधि के दौरान किसी भी कारण से खनन कार्य नहीं करने की स्थिति में किसी भी प्रकार का मुआवजा/नुकसान एवं क्षतिपूर्ति का दावा मान्य नहीं होगा।
- (xiii) ई-नीलामी एवं बालूघाट की बंदोबस्ती अवधि के दौरान उत्पन्न किसी भी प्रकार का विवाद बिहार खनिज (समानुदान, अवैध खनन, परिवहन एवं भंडारण निवारण) नियमावली 2019, (यथा संशोधित) के अधीन होगा।
- (xiv) सफल डाकवक्ता/बंदोबस्तीधारी को इलेक्ट्रॉनिक माध्यम से भेजी गयी कोई भी सूचना/निर्देश/आदेश इत्यादि IT-Act के तहत स्वीकार्य साक्ष्य के रूप में माना जाएगा।

  
समाहर्ता,  
20/11/2024

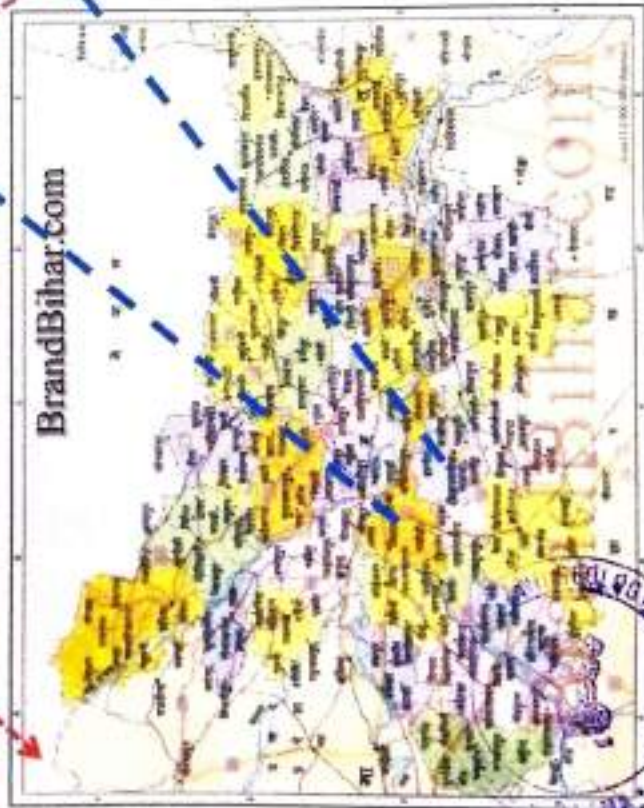
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# PLATES

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Mainpura Sohsa

### PLATE No.1

#### Route Map

Mainpura Sohsa (Arwal Son -13) Sand Ghat  
Mauja - Mainpura Sohsa, Block - Kaler, Dist - Arwal, (Bihar)

SETTLEE :- Maa Kamakhya Construction & Co,  
Pro.- Avinash Kumar

PREPARED BY :- Reg. No. - RQP/BIH/SR.NO.20 Letter No. 3825  
Dated 07/11/2019

SIGNATURE

*[Signature]*

*अविनाश कुमार*



Confidence	
0.99	0.99
0.95	0.95
0.90	0.90
0.85	0.85
0.80	0.80
0.75	0.75
0.70	0.70
0.65	0.65
0.60	0.60
0.55	0.55
0.50	0.50
0.45	0.45
0.40	0.40
0.35	0.35
0.30	0.30
0.25	0.25
0.20	0.20
0.15	0.15
0.10	0.10
0.05	0.05
0.01	0.01





LEASE AREA  
50.40

Masadpur Bazar

Dusse Jagah D

Bhagwanpur Bazar

Kharsa Jagah

Musepur Bazar

Dewi Mandir

Arwal Son-13

Sonsa Panchayat Bazar

Sand Hill

(Arwal Son -13) Sand Ghat  
ra Sohia, Block - Kaler, Dist - Arwal, (Bihar)

a Kamethiya Construction & Co.  
3 - Avinash Kumar

Reg. No. - RQP BHP SR NO. 20 Letter No. 2823  
19









MAA RAMAKHYA CONSTRUCTION AND CO.  
MAA RAMAKHYA CONSTRUCTION AND CO.  
MAA RAMAKHYA CONSTRUCTION AND CO.

SETTLED - MAA RAMAKHYA CONSTRUCTION AND CO.  
PROF. AVINASH KUMAR

AREA - 44.48 HECT

PREPARED BY - ER. PRAVIN KUMAR SINHA  
REGD. NO. ROP/BH/SR NO. 20  
LETTER NO. 1323 DATED-28/12/2022

SIGNATURE

PLATE NO - 4

1	LEASE BOUNDARY
2	GPS READING
3	ROAD
4	RIVER BANK
5	GRID 100 X 100
6	TEMPORARY BENCHMARK
7	SETTLEMENTS



25.171889°  
84.487716°

25.178527°  
84.485552°

25.175221°  
84.487818°

25.172400°  
84.485344°

25.170566°  
84.485014°

25.172961°  
84.481326°

BUMBANI RIVER

SOMSA PANCHAYAT

SCALE 0 50 100 150 200 250 300M



MAA RAMAKHYA CONSTRUCTION

DIATTA  
84m

28/12/2022

# PROJECTIONS PLAN

SHRUTI SANKAR  
KUMAR  
SHRUTI SANKAR CONSTRUCTION AND CO  
PLOT AVINASH KUMAR

DR. PRAVIN KUMAR SINHA  
REGD. NO. 8628/150R NO. 20  
LETTER NO. 1323 DATED 28/12/2022

PLATE NO. 5



## LEGEND

1	LEASE BOUNDARY
2	7.5 M BARRIERS PL.
3	CONTOUR (1M INTERVAL)
4	GPS READING
5	ROAD
6	GRID 2023
7	HIGHEST MSL 75.2M
8	LOWEST MSL 74.4M

25.172961°  
84.481325°

LOWEST MSL 74.4M

25.170820°  
84.487795°

25.178622°  
84.488607°

HIGHEST MSL 75.2M

25.175221°  
84.487616°

25.172490°  
84.486344°

25.170960°  
84.486014°

25.167350°  
84.481270°



*Handwritten signature*





LEGEND

1	LEASE BOUNDARY (LB)
2	7.5 M BARRIER/UPL
3	ROAD
4	PROVED RESERVE (111)
5	PROBABLE RESERVE (12)
6	FEASIBILITY RESOURCE (211)
7	PRI FEASIBILITY RESOURCE (222)

*Handwritten signature*

GEOLOGICAL SECTIONS
MAINPURA SOHSA SAND GRAT SONE RIVER MALUA-MAINPURA SOHSA, DISTRICT-ARWAH(BHAR)
SETTLEE-MAA KAMAKHYA CONSTRUCTION AND CO PROP-AMINASH KUMAR
AREA-44.48 HECT.
PREPARED BY - ER PRAVIN KUMAR SINHA REGD NO RQB/SR NO 20 LETTER NO 1323 DATED-28/12/2022
SIGNATURE <i>[Signature]</i> PLATE NO-8

PLAN

SANDHIA

SAKSHI  
(HREAR)

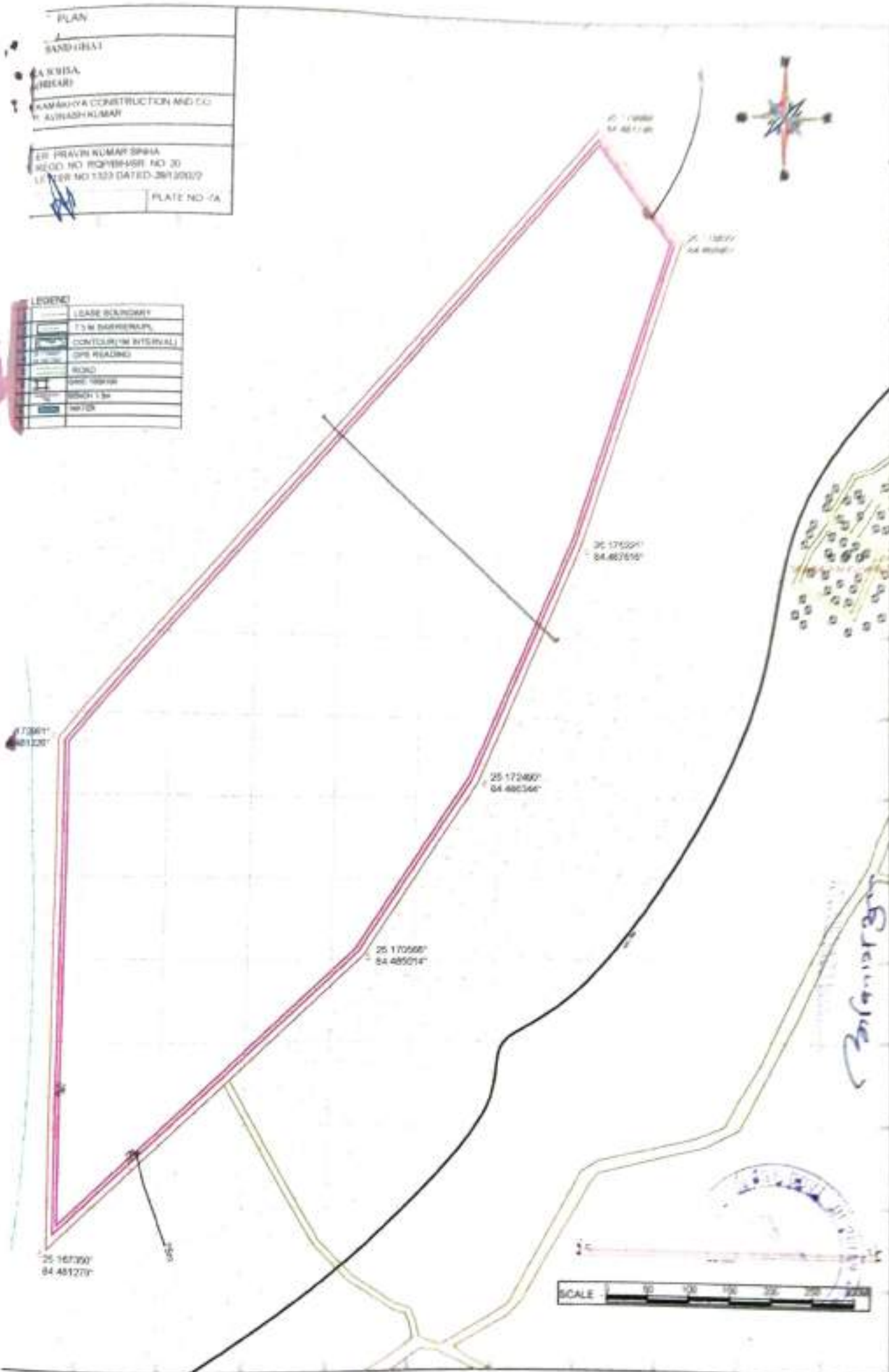
KAMARUPA CONSTRUCTION AND CO.  
N. ASHISH KUMAR

SR. PRAVIN KUMAR SRINIA  
REGD. NO. ROP/SHR. NO. 30  
L/SHR. NO. 133 DATED 26/10/2019

PLATE NO. 1A

LEGEND

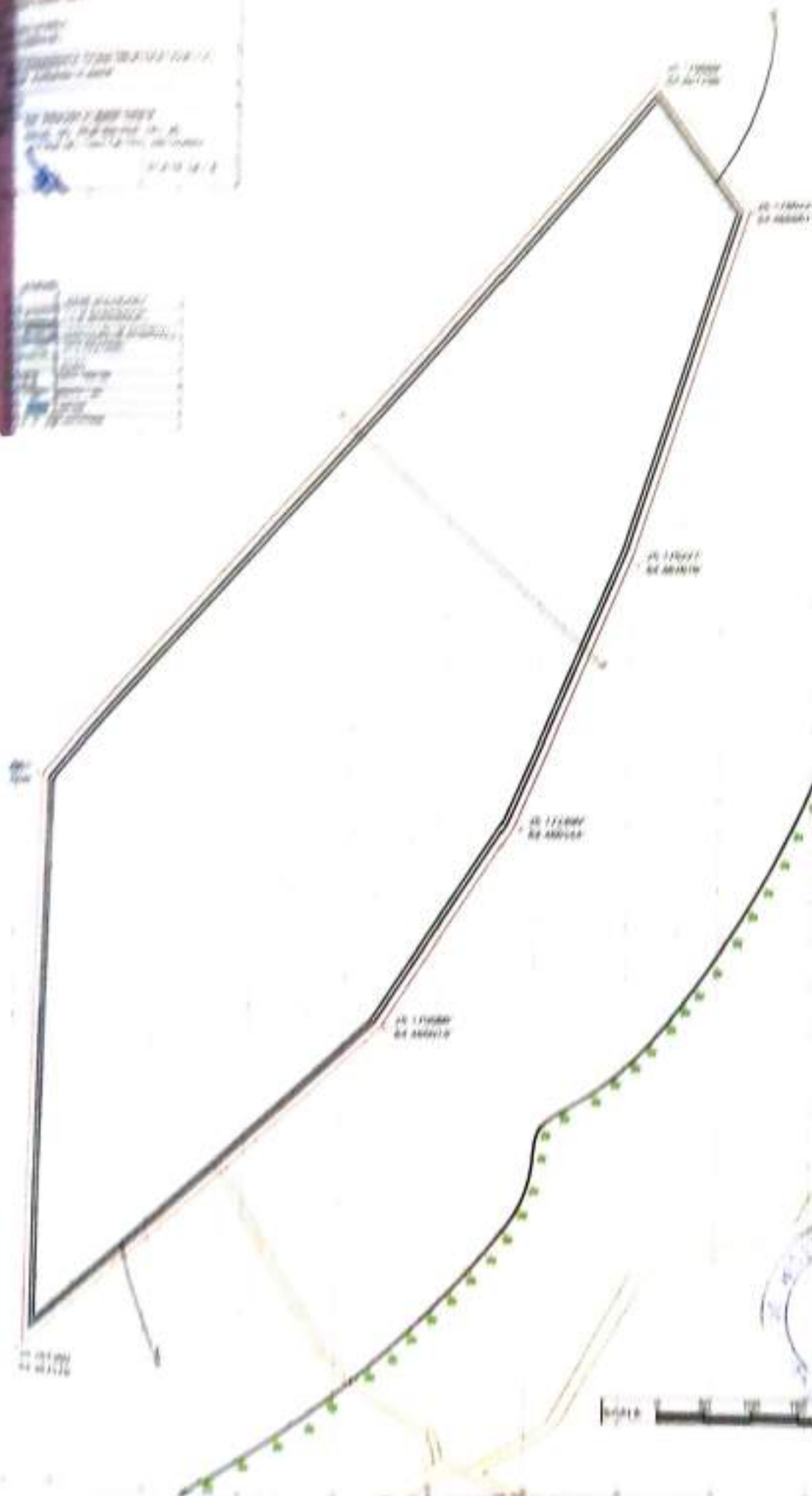
	LEASE BOUNDARY
	1:5 M BOUNDARY
	CONTOUR (1M INTERVAL)
	DPE READING
	ROAD
	DPE 1000M
	ROAD 1:5
	WATER











W. H. H. H.







# कार्यकारी सारांश

रेत खनन परियोजना  
(अरवल सोन - 13)

के लिए

मौजा- मैनपुरा सोहसा, तहसील-कलेर,  
जिला - अरवल, बिहार  
क्षेत्रफल 44.46 हेक्टेयर,  
उत्पादन 8,00,280 घन मीटर  
या 13,44,470 टन प्रति वर्ष

## आवदेन कर्ता

मेसर्स मां कमख्या कन्सट्रक्शन एंड कंपनी

प्रो.- अविनाश कुमार पुत्र- रामाशीष सिंह  
ग्राम+पीओ-कमता, थाना-परासी,  
जिला-अरवल, बिहार



एनवायरनमेंट कन्सल्टेंट :  
पी & एम सल्यूशन



(क्वालिटी कौंसिल ऑफ़ इंडिया द्वारा मान्यता प्राप्त)  
सी-88 सेक्टर 65 नॉएडा उत्तर-प्रदेश

[www.pmsolution.in](http://www.pmsolution.in)

Accreditation No. : NABET/EIA/1992/IA0053

## कार्यकारी सारांश

### ✓ परिचय

MoEF & CC (एमओईएफ एंड सीसी), नई दिल्ली राजपत्र दिनांक 14 सितंबर 2006 और उसमें समय समय पर किये गए संशोधन के अनुसार, प्रस्तावित खनन परियोजना को श्रेणी 'बी1' परियोजना के रूप में वर्गीकृत किया गया है।

### अरवल सोन 13 रेत घाट

परियोजना के प्रस्ताव राणा उदय प्रताप सिंह ने दिया है। प्रस्तावित रेत खनन परियोजना मौजा-मैनपुरा सोहसा, जिला-अरवल (बिहार) में ब्लॉक संख्या - 13 रेत घाट पर सोन नदी पर स्थित है। पत्र संख्या 1323/एम दिनांक 28.11.2022 के माध्यम से पट्टेदार को एलओआई जारी किया गया।

ईआईए अधिसूचना 2006 और इसके बाद के संशोधन के अनुसार ड्राफ्ट ईआईए रिपोर्ट तैयार की गई है। प्रस्तावित परियोजना का टीओआर SEIAA बिहार दिनांक 27-01-2023 द्वारा जारी किया गया है।

आवेदित पट्टे के लिए प्रति वर्ष लगभग 1344470 टन खनन प्रस्तावित किया गया है, प्रस्तावित परियोजना के लिए अनुमानित परियोजना लागत 13,88,15,200/- रुपये (नीलामी लागत सहित) है।

### **क्लस्टर स्थिति:**

प्रस्तावित खनन परियोजना अरवल सोन रेत ब्लॉक 7, ब्लॉक 8, ब्लॉक 9, ब्लॉक 10, ब्लॉक 11, ब्लॉक 12 और ब्लॉक 13 के 386.17 हेक्टेयर के संयुक्त क्षेत्र में सोन नदी के रेत खनन के लिए 7 खनन पट्टा क्षेत्र का एक समूह है जो नदी सोन जिला - अरवल, (बिहार) में स्थित है

स्वीकृत जिला सर्वेक्षण प्रतिवेदन के अनुसार अरवल में ब्लॉक 7 ब्लॉक 8, ब्लॉक 9, ब्लॉक 10, ब्लॉक 11, ब्लॉक 12 एवं ब्लॉक 13 के प्रस्तावित रेत घाट क्लस्टर स्थिति में आते हैं जिनका

संयुक्त क्लस्टर क्षेत्र 386.17 हेक्टेयर है। सजातीय खनिजों का समस्त पट्टा क्षेत्र एक दूसरे से 500 मीटर के दायरे में आ रहा है जो एक समूह स्थिति की पुष्टि करता है।

निदेशक भौमिकी, बिहार के अनुसार खनन योजना के संशोधन को मंजूरी दे दी गई है। ईआईए अधिसूचना 2016 और बाद के संशोधनों के अनुसार, परियोजना 'बी' (बी 1) श्रेणी के अंतर्गत आ रही है और पट्टा क्षेत्र 5.0 हेक्टेयर से अधिक स्वीकृत है। उक्त खदान पट्टे के संबंध में पर्यावरण मंजूरी के लिए खनन योजना, पूर्व-व्यवहार्यता रिपोर्ट और ईएमपी की आवश्यकता है।

क्लस्टर का विवरण नीचे दिया गया है:

रेत घाट	क्षेत्र	उत्पादन (घन मीटर)	उत्पादन (टन)
अरवल सोन 7	94.88	1707840	2869171.2
अरवल सोन 8	49.96	899280	1510790.4
अरवल सोन 9	54.95	989100	1661688
अरवल सोन 10	53.94	970920	1631145.6
अरवल सोन 11	55.01	990180	1663502.4
अरवल सोन 12	32.97	593460	997012.8
अरवल सोन 13	44.46	800280	1344470.4
<b>Total</b>	<b>386.17</b>	<b>6951060</b>	<b>11677780.8</b>

## ✓ परियोजना विवरण

स्थिति:

अरवल सोन 13 रेत घाट

प्रस्तावित खनन पट्टा क्षेत्र सर्वे ऑफ इंडिया टोपोशीट टोपो शीट संख्या- 72C/07, 72C/08, 72C/11 & 72C/12 के अंतर्गत आता है। पट्टा क्षेत्र मौजा- मैनपुरा सोहसा, जिला-अरवल, राज्य- बिहार में स्थित है। खान पट्टा समन्वय नीचे सूचीबद्ध हैं:

स्तंभ	अक्षांश (एन)	देशांतर (ई)
1	25.179889 N ,	84.487798 E
2	25.178622 N ,	84.488867E
3	25.175221N ,	84.487616 E
4	25.17249N ,	84.486344 E
5	25.170566N ,	84.485014 E
6	25.16735N ,	84.481279 E
7	25.172961N ,	84.481326 E
8	25.179889 N ,	84.487798 E

✓ **क्षेत्र और उत्पादन:** कुल क्षेत्रफल 44.46 हेक्टेयर है। उत्पादन की प्रस्तावित दर 1344470 टीपीए होगी।

✓ **संयोजकता**

**अरवल सोन 13 रेत घाट**

अरवल सोन 13 रेत घाट पट्टे से 0.395 किमी की दूरी पर दक्षिण दिशा में निकटतम पक्की सड़क (सोहसा-मानपुरा रोड) से अच्छी तरह से जुड़ा हुआ है। NH-139 दक्षिण पूर्व दिशा की ओर लगभग 6.30 किमी और SH 81 लगभग 4.70 किमी पश्चिम दिशा की ओर है पीरो रेलवे स्टेशन, लगभग 17.0 किमी उत्तर पश्चिम दिशा की ओर , जय प्रकाश नारायण अंतर्राष्ट्रीय हवाई अड्डा पटना, उत्तर पूर्व दिशा में लगभग 76.0 कि.मी. की दूरी पर है।

**परियोजना की मुख्य विशेषताएं**

**अरवल सोन 13 रेत घाट**

आवेदक का नाम	मेसर्स मां कमख्या कन्स्ट्रक्सन एंड कंपनी
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पट्टेदार का पता	मेसर्स मां कमख्या कन्सट्रक्सन एंड कंपनी प्रो.- अविनाश कुमार पुत्र- रामाशीष सिंह ग्राम+पीओ-कमता, थाना-परासी, जिला-अरवल, बिहार
नाम	अरवल सोन 13 रेत घाट खनन परियोजना, मौजा-मैनपुरा सोहसा, जिला-अरवल (बिहार) में सोन नदी पर रेत खनन परियोजना
गाँव	मौजा - मैनपुरा सोहसा
जिला और राज्य	अरवल, बिहार
टोपोशीट नंबर	72C/07, 72C/08, 72C/11 & 72C/12
खनिज	रेत
क्षेत्र (हेक्टेयर)	44.46 हेक्टेयर

#### ✓ ड्रिलिंग

ड्रिलिंग और ब्लास्टिंग की आवश्यकता नहीं है।

#### ✓ खनिज का उपयोग

रेत का उपयोग निर्माण कार्यो में किया जाता है सड़क निर्माण में भी इसका उपयोग किया जाता है

#### ✓ खनन

खनन प्रक्रिया ड्रिलिंग और ब्लास्टिंग के बिना खुली अर्ध-मशीनीकृत विधि है। यह एक ओपन कास्ट माइनिंग प्रोजेक्ट है। उत्खनन/जैसेबी ट्रक/ट्रैक्टर संयोजन या मैन्युअल आदि के उपयोग के साथ संचालन अर्ध-मशीनीकृत/ओटीएफएम होगा। रेत को अपने मौजूदा रूप में एकत्र किया जाएगा।

खनन रोटेशनल तरीके से किया जाएगा। चूंकि काम व्यवस्थित होने जा रहा है यानी बेंचों में खनन किया जाएगा। खदान में काम करने वाले कर्मचारी को कोई खतरा नहीं होगा। खनन परतों में किया जाएगा।

निक्षेप को संस्तर की सतह से 3 एमबीजीएल या भूजल स्तर से ऊपर, जो भी पहले आए, तक कार्य किया जाएगा। इसलिए, किसी भी समय खनन भूजल स्तर को नहीं काटेगा। खनन केवल दिन के समय किया जाएगा और मानसून के मौसम में पूरी तरह बंद कर दिया जाएगा।

## ✓ रिजर्व और उत्पादन

खनन योग्य भंडार की गणना सतह से 3 मीटर की गहराई तक की गई है। टनभार प्राप्त करने के लिए वॉल्यूम को बल्क डेंसिटी (1.68 g/cm<sup>3</sup>) से गुणा किया जाता है।

हर साल मानसून के मौसम के दौरान नदी तल से उत्खनन किए गए खनिजों की फिर से भरपाई (रिप्लेनिशमेंट) हो जाएगी। नदी के पैलियो चैनल से संबंधित क्षेत्र को समतल करके वापस बहाल किया जाएगा।

बैंचवार रेत का वार्षिक दोहन नीचे दिया गया है:

**अरवल सोन 13**

बैंच स्तर (mRL)	लंबाई (M)	चौड़ाई (M)	गहराई (M)	मात्रा (घन मीटर)	टन
75 - 73.5	1221	344	1.5	630036	1058461
73.5 - 72	1211	334	1.5	606711	10192745
कुल				1236747	1236747

कुल खनन योग्य रिजर्व = 1236747 घन मीटर या 1236747 टन

यह नदी तल जमा है और खनन क्षेत्र हर साल मानसून अवधि के दौरान फिर से भर जाएगा और खदान की गहराई हर साल नदी की रेत से भर जाएगा (रिप्लेनिशमेंट) और क्षेत्र अपनी मूल स्थलाकृति बहाल को कर देगा।

## ✓ साइट सुविधाएं और उपयोगिताएँ

### • जलापूर्ति

श्रमिकों को पीने व घरेलू उपयोग के लिए पानी उपलब्ध कराया जाएगा। धूल के दमन के लिए भी पानी की आवश्यकता होगी। प्रस्तावित परियोजना के लिए 5.20 केएलडी के जल की आवश्यकता होगी। ताजे पानी का उपयोग केवल पीने के उद्देश्य के लिए किया जाएगा। आसपास के गांव के उपलब्ध स्रोतों से पानी की आपूर्ति की जाएगी।

### • अस्थायी विश्राम गृह



विश्राम के लिए स्थल के पास श्रमिकों के लिए एक अस्थायी विश्राम आश्रय प्रदान किया जाएगा। इसके अलावा, छोटे कीड़ों की कुछ प्रजातियों द्वारा उत्पादित जहर का मुकाबला करने के लिए एंटी-वेनम के साथ प्राथमिक उपचार बॉक्स, यदि कोई हो और श्रमिकों के लिए स्वच्छता सुविधा जैसे सेप्टिक टैंक या सामुदायिक शौचालय की सुविधा प्रदान की जाएगी।

- **आधारभूत पर्यावरणीय स्थिति**

वायु, ध्वनि, जल, मिट्टी, वनस्पति एवं जीव-जन्तुओं के लिए प्रस्तावित खनन के संबंध में पर्यावरणीय डाटा एकत्र किया गया है। बेसलाइन पर्यावरण अध्ययन दिसंबर 2022 से जनवरी-फरवरी 2023 तक सर्दियों के मौसम के दौरान खनन पट्टा क्षेत्र के आसपास 10 किमी की रेडियल दूरी वाले क्षेत्र में किया गया था।

- **मौसम विज्ञान**

निगरानी अवधि दिसंबर 2022 से जनवरी-फरवरी 2023 के लिए संक्षिप्त मौसम संबंधी डेटा नीचे दिया गया है:

महीना	तापमान °C		हवा की गति (किमी/घंटा)	
	न्यूनतम	अधिकतम	न्यूनतम	अधिकतम
दिसम्बर 2022	13	28	9.3	12.6
जनवरी 2023	11	28	9.6	13.3
फरवरी 2023	13	34	11	17.7

### आधारभूत पर्यावरणीय स्थिति

गुण	आधारभूत स्थिति
एम्बिएंट(परिवेशी) वायु गुणवत्ता	एम्बिएंट (परिवेशी) वायु गुणवत्ता निगरानी से पता चलता है कि सभी 07 AQ निगरानी स्टेशनों में PM2.5 की न्यूनतम और अधिकतम सांद्रता क्रमशः 36.1 µg/m <sup>3</sup> से 49.9 µg/m <sup>3</sup> पाई गई; PM10 85.25 µg/m <sup>3</sup> to 93.23µg/m <sup>3</sup> की सीमा में था जहां तक गैसीय प्रदूषकों SO <sub>2</sub> और NO <sub>2</sub> का संबंध है, आवासीय और ग्रामीण क्षेत्रों के लिए 80 µg/m <sup>3</sup> की निर्धारित CPCB सीमा किसी भी स्टेशन पर पार नहीं की गई है।
शोर का स्तर	निगरानी कार्यक्रम के परिणामों ने संकेत दिया कि निगरानी

	किए गए सभी स्थानों पर शोर के दिन और रात दोनों समय एनएएक्यूएस की निर्धारित सीमा के भीतर थे।
पानी की गुणवत्ता	सभी स्रोतों से भूजल पीने के उद्देश्यों के लिए उपयुक्त रहता है क्योंकि सभी घटक IS: 10500 द्वारा प्रख्यापित पेयजल मानकों द्वारा निर्धारित सीमा के भीतर हैं। सोन नदी के सतही जल विश्लेषण के परिणामों से यह स्पष्ट होता है कि नमूनों के अधिकांश पैरामीटर सीपीसीबी के 'श्रेणी बी' मानकों का अनुपालन करते हैं, जो इंगित करता है यह जल स्नान के लिए उपयुक्त हैं।
मिट्टी की गुणवत्ता	चिन्निहित किए गए स्थानों से एकत्र किए गए नमूने इंगित करते हैं कि मिट्टी रेतीली प्रकार की है और पीएच मान 8.07 से 8.41 के बीच है, जो दर्शाता है कि मिट्टी प्रकृति में थोड़ी क्षारीय है।
पारिस्थितिकी और जैव विविधता	अध्ययन क्षेत्र में कोई ईको-संवेदनशील क्षेत्र नहीं है।
सामाजिक आर्थिक	नदी तल पर रेत खनन परियोजना के कार्यान्वयन से स्थानीय लोगों को प्रत्यक्ष और अप्रत्यक्ष दोनों तरह के रोजगार के अवसर मिलेंगे। अध्ययन क्षेत्र में शिक्षा, स्वास्थ्य, आवास, पानी, बिजली आदि को और बेहतर किया जा सकता है। उम्मीद है कि प्रस्तावित खनन परियोजना और संबद्ध औद्योगिक और व्यावसायिक गतिविधियों के कारण इसमें काफी हद तक और सुधार होगा।

## ✓ अनुमानित पर्यावरणीय प्रभाव

### ● वायु पर्यावरण पर प्रभाव

प्रस्तावित खनन गतिविधियां खनन में प्रयुक्त अन्य परिवहन वाहनों की लोडिंग और आवाजाही से धूल (SPM/RSPM) उत्पन्न होगी। खदान स्थल पर उचित जल छिड़काव किया जाएगा। हवा से होने वाले क्षणिक उत्सर्जन को कम करने के लिए खनिज को ढके हुए तिरपाल ट्रकों/टिप्परों के माध्यम से सड़क मार्ग से ले जाया जाएगा।

## ● जल पर्यावरण पर प्रभाव

नदी के भीतर या उसके पास से रेत के खनन का मानसून के मौसम के दौरान भौतिक-रासायनिक आवास विशेषताओं पर अप्रत्यक्ष प्रभाव पड़ता है। इन विशेषताओं में धारा खुरदरापन, तत्व, गहराई, वेग, मैलापन, तलछट परिवहन और धारा निर्वहन शामिल हैं।

संस्तर सामग्री खनन से उत्पन्न बायोटा पर हानिकारक प्रभाव, यदि कोई हो, निम्नलिखित के कारण होते हैं:

- नदी के परिवर्तन के परिणामस्वरूप प्रवाह पैटर्न में बदलाव
- मानसून के मौसम में निलम्बित तलछट की अधिकता।

परियोजना गतिविधि केवल सोन नदी के शुष्क भाग में की जाएगी। इसलिए, परियोजना की कोई भी गतिविधि सीधे तौर पर जल पर्यावरण को प्रभावित नहीं करती है। परियोजना में केवल मानसून के मौसम में किसी धारा को मोड़ने या काट देने का प्रस्ताव नहीं है। नदी (मानसून में) या भूजल दोहन से पानी की पंपिंग के लिए किसी प्रस्ताव की परिकल्पना नहीं की गई है।

## ✓ भूमि पर्यावरण पर प्रभाव

स्ट्रीम बेड सामग्री का प्रस्तावित निष्कर्षण, मौजूदा स्ट्रीमबेड के नीचे खनन, और चैनल-बेड फॉर्म और आकार में परिवर्तन से चैनल बेड और बैंकों के क्षरण, चैनल ढलान में वृद्धि, और चैनल आकारिकी में परिवर्तन जैसे कई प्रभाव हो सकते हैं, यदि, संचालन व्यवस्थित रूप से नहीं किया जाता है।

रेत के व्यवस्थित और वैज्ञानिक तरीके से हटाने से क्यारियों का क्षरण नहीं होगा। कचरे के रूप में उत्पन्न गाद और मिट्टी का उपयोग वृक्षारोपण के लिए या निचले इलाकों को कहीं और भरने के लिए किया जाएगा। खनन की योजना गैर-मानसून मौसम में ही बनाई जाती है, ताकि उत्खनित क्षेत्र प्रत्येक वर्ष मानसून के दौरान धीरे-धीरे भर जाए (रिप्लेनिशमेंट)।

## ✓ शोर पर्यावरण पर प्रभाव

प्रस्तावित खनन गतिविधि प्रकृति में अर्ध-मशीनीकृत है। खनन गतिविधि के लिए कोई ड्रिलिंग और ब्लास्टिंग परिकल्पित नहीं है। इसलिए, केवल खनिजों के परिवहन के लिए तैनात वाहनों की आवाजाही के

कारण प्रभाव का अनुमान लगाया गया है। वाहनों को अच्छी चालू स्थिति में रखा जाएगा ताकि शोर को न्यूनतम संभव स्तर तक कम किया जा सके।

### ✓ जैविक पर्यावरण पर प्रभाव

चूंकि प्रस्तावित खनन वैज्ञानिक तरीके से किया जाएगा, इसलिए ज्यादा महत्वपूर्ण प्रभाव का अनुमान नहीं है। जलीय जीवन पर प्रभाव को कम करने के लिए मानसून के मौसम के दौरान कोई खनन नहीं किया जाएगा जो कि कई प्रजातियों के लिए मुख्य रूप से प्रजनन का मौसम है। खनन स्थल पर कोई वनस्पति नहीं है; वनस्पति की सफाई नहीं की जाएगी। ढोने वाली सड़कों पर पानी का छिड़काव किया जाएगा जिससे धूल का उत्सर्जन कम होगा और इस प्रकार फसलों को होने वाले नुकसान से बचा जा सकेगा।

### ✓ सामाजिक आर्थिक पर्यावरण पर प्रभाव

क्षेत्र में खनन गतिविधि का प्रभाव क्षेत्र के सामाजिक-आर्थिक वातावरण पर सकारात्मक है। रेत खनन से स्थानीय लोगों को जब भी श्रमबल की आवश्यकता होगी रोजगार उपलब्ध होगा।

### पोस्ट प्रोजेक्ट पर्यावरण निगरानी

क्रम संख्या	पैरामीटर्स का विवरण	निगरानी की अनुसूची
1	हवा की गुणवत्ता	मानसून को छोड़कर प्रत्येक मौसम में सप्ताह में दो बार/तीन बार 24 घंटे के नमूने
2	जल गुणवत्ता (सतह और भूजल)	साल में 4 सीजन के लिए एक बार
3	मिट्टी की गुणवत्ता	परियोजना क्षेत्र में वर्ष में एक बार
4	शोर स्तर	साल में दो बार पहले दो साल और फिर साल में एक बार
5	सामाजिक-आर्थिक स्थिति	3 साल में एक बार
6	वृक्षारोपण निगरानी	एक बार एक मौसम में

### ✓ अतिरिक्त अध्ययन

#### • सार्वजनिक सुनवाई

जन सुनवाई अभी बाकी है।

## ✓ जोखिम आकलन

पूर्ण खनन कार्य एक योग्य खदान प्रबंधक होल्डिंग के प्रबंधन नियंत्रण और निर्देशन में किया जाएगा। डीजीएमएस नियमित रूप से स्थायी आदेश, मॉडल स्थायी आदेश और आपदा, यदि कोई हो, के मामले में खान प्रबंधन द्वारा पालन किए जाने वाले परिपत्र जारी करता रहा है। साथ ही खनन कर्मचारियों को सतर्क रखने के लिए समय-समय पर रिफ्रेशर कोर्स में भेजा जाएगा।

## ✓ आपदा प्रबंधन योजना

आपदा प्रबंधन की योजना में आपातकालीन तैयारी एक महत्वपूर्ण पहलू है। कर्मिकों को उचित रूप से प्रशिक्षित किया जाएगा और सावधानीपूर्वक नियोजित, सिम्युलेटेड प्रक्रियाओं के माध्यम से आपातकालीन प्रतिक्रिया में मानसिक और शारीरिक रूप से तैयार किया जाएगा। इसी तरह, प्रमुख कर्मियों और आवश्यक कर्मियों को संचालन में प्रशिक्षित किया जाएगा।

## ✓ परियोजना लाभ

- **भौतिक लाभ:** सड़क परिवहन, बाजार, हरित आवरण में वृद्धि और सामुदायिक संपत्तियों का निर्माण।
- **सामाजिक लाभ:** रोजगार क्षमता में वृद्धि, राजकोष में योगदान, स्वास्थ्य संबंधी गतिविधियों में वृद्धि, शैक्षिक उपलब्धियां और मौजूदा सामुदायिक सुविधाओं का सुदृढीकरण।

## ✓ पर्यावरणीय लाभ:

- ✓ नदी चैनल को नियंत्रित करना और बैंकों की सुरक्षा करना।
- ✓ बाढ़ के कारण आसपास की कृषि भूमि के डूबने को कम करना।
- ✓ नदी के स्तर के उन्नयन को कम करना।
- ✓ अवैध खनन गतिविधि पर एक जांच।

## ✓ कॉर्पोरेट की सामाजिक जिम्मेदारी

दिनांक 1 मई 2018 के कार्यालय ज्ञापन के अनुसार परियोजना लागत की पूंजीगत लागत का 2% कॉर्पोरेट पर्यावरणीय उत्तरदायित्व के लिए आवंटित किया जाएगा। लोगों की जरूरतों और मांग को ध्यान में रखते हुए निम्नलिखित प्रस्तावित किया गया है।

अरवल सोन 13 के लिए सीईआर (CER) लागत कुल परियोजना लागत का 2% होगी। इस राशि का उपयोग समाज कल्याण के लिए किया जाएगा। सीएसआर (CSR) लागत  $13,88,15,200 \times 2\% = \text{रु. } 27,76,304/-$

प्रत्येक गतिविधि के लिए प्रस्तावक द्वारा निर्धारित की जाने वाली धनराशि का निर्धारण जन सुनवाई के दौरान स्थानीय प्राधिकारी/लोगों एवं हितग्राहियों से चर्चा के बाद किया जायेगा। सीईआर कार्यक्रम के तहत की जाने वाली गतिविधियों का समवर्ती मूल्यांकन करने की योजना बनाई गई है।

#### ✓ वृक्षारोपण:

- परियोजना से कोई पेड़ नहीं कटेगा। तथापि, असामाजिक उत्तरदायित्व, सड़क के दोनों ओर और नदी के किनारे हरियाली विकसित की जाएगी। इन वृक्षारोपण को बढ़ाने के लिए सामुदायिक सेवाओं को तैनात किया जाएगा। आर्थिक महत्व के पेड़ और देशी मूल के पेड़ जैसे फलों के पेड़ लगाए जाएंगे।
- लगभग योजना अवधि में हॉल रोड के आसपास 445 पौधे रोपे जाएंगे।
- वृक्षारोपण के लिए प्रस्तावित पेड़ हैं:
- सस्टेनेबल सैंड मैनेजमेंट एंड माइनिंग गाइडलाइंस 2016 के अनुसार ग्रीनबेल्ट के विकास के लिए प्रति हेक्टेयर न्यूनतम 5 पौधे प्रस्तावित किए जाएंगे लेकिन पर्यावरण की बेहतर स्थिति के लिए परियोजनाओं के इस समूह में 10 पौधे प्रति हेक्टेयर प्रस्तावित किए जाएंगे।
- पीपल, अर्जुन, जामुन, बरगद, नीम, आम आदि के पेड़ लगाए जाएंगे।

#### पर्यावरण प्रबंधन योजना (ईएमपी)

- Ø रिवर बैंक से सुरक्षा क्षेत्र छोड़कर नदी तल से निकासी की जाएगी।
- Ø अधिकतम काम करने की गहराई क्षेत्र के भूजल तालिका के ऊपर रहेगी।
- Ø स्वास्थ्य प्रभावों को कम करने के लिए प्रभाव क्षेत्र में श्रमिकों और आसपास के लोगों को स्वास्थ्य सुविधाएं प्रदान किया जायेगा ।
- Ø वन्यजीव संरक्षण सुनिश्चित करना और उसी के लिए जागरूकता अभियान की व्यवस्था किया जायेगा।
- Ø नदी में महीन तलछट छोड़ने वाली गतिविधियों को किया जायेगा।



- Ø खनिजों के परिवहन और प्रबंधन के दौरान गड़बड़ी को कम करने के लिए प्रभावी शमन उपाय अपनाए जाएंगे
- Ø स्थानीय/देशी और तेजी से बढ़ने वाली प्रजातियों के वृक्षारोपण के साथ सुधार कार्यक्रम की स्थापना किया जायेगा
- Ø मानसून के मौसम की शुरुआत में खान के बंद होने के दौरान बहाली योजना की स्थापना किया जायेगा
- Ø आसन्न आपदाओं के प्रभाव से बचने के लिए समय पर एहतियाती उपाय करने के लिए प्रभावी आपदा प्रबंधन योजना की स्थापना।
- Ø पर्यावरण प्रबंधन प्रकोष्ठ द्वारा प्रभावी निगरानी कार्यक्रम की स्थापना किया जायेगा।

Ø

#### ✓ ईएमपी कार्यान्वयन के लिए बजट आवंटन

टेबल, ईएमपी का बजट

क्रम संख्या	विवरण	पूँजी लागत (रुपये)	आवर्ती लागत (रुपये)
1	प्रदूषण नियंत्रण और धूल दमन	--	2,00,000
2	प्रदूषण निगरानी i) वायु प्रदूषण ii) मृदा प्रदूषण iii) जल प्रदूषण iv) ध्वनि प्रदूषण	--	2,00,000
3	एक माली के लिए वृक्षारोपण और वेतन (अंशकालिक आधार पर)	4,45,000	50,000
4	परिवहन सड़क रखरखाव लागत	98,750	1,50,000
<b>TOTAL</b>		<b>5,43,750</b>	<b>6,00,000</b>

नोट: \*445 पौधे \* 1000 रुपये (हेज और बाड़ सहित प्रत्येक पौधे के लिए) = 4,45 ,000/- रुपये

· ढोना सड़क रखरखाव के लिए श्रम का वेतन 2 श्रमिक\*300=600 प्रति दिन

· 600\* 250= 1,50,000/-

· \*2.5 लाख प्रति किलोमीटर (2,50,000\*0.395 किमी लंबी सड़क) = 98,750/-

## निष्कर्ष

ईआईए अध्ययन के आधार पर यह देखा गया है कि धूल प्रदूषण में वृद्धि होगी, जिसे पानी के छिड़काव और वृक्षारोपण द्वारा नियंत्रित किया जाएगा। खनन गतिविधियों के कारण (एम्बिएंट) परिवेशी पर्यावरण और पारिस्थितिकी पर नगण्य प्रभाव पड़ेगा, इसके अलावा खनन संचालन से क्षेत्र में प्रत्यक्ष और अप्रत्यक्ष रोजगार सृजन होगा। क्षेत्र के चारों ओर हरित पट्टी का विकास एक प्रभावी प्रदूषण न्यूनीकरण तकनीक के साथ-साथ खान परिसर से निकलने वाले प्रदूषकों को नियंत्रित करने के लिए भी किया जाएगा। खनन कार्य जारी रहने तक निगरानी कार्यक्रम का पालन किया जाएगा। इसलिए, यह संक्षेप में कहा जा सकता है कि खान के विकास से क्षेत्र के सामाजिक-आर्थिक वातावरण पर सकारात्मक प्रभाव पड़ेगा और क्षेत्र के सतत विकास को बढ़ावा मिलेगा।

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# **EXECUTIVE SUMMARY**

**FOR**

**SAND MINING PROJECT, ON SON RIVER AT  
MAINPURA SOHSA (ARWAL SON - 13) SAND GHAT**

**At**

**Mauja – Mainpura Sohसा, Tehsil – Kaler,  
Dist - Arwal, State - Bihar**

**Area: 44.46 Ha**

**Proposed Production: 800280 cum per annum or  
1344470 TPA**

## **PROJECT PROPONENT**

**M/s Maa Kamakhya Construction & Co.**

**Pro.- Avinash Kumar**

**S/o- Ramashish Singh**

**Vill.+P.O.-Kamta, P.S.- Prasi, Dist.- Arwal, Bihar**

**Environment Consultant :**



**P and M Solution**

**(Accredited by QCI/NABET)**

**Accreditation No. : NABET/EIA/1992/IA0053**

**C-88, Sector 65 Noida**

**[www.pmsolution.in](http://www.pmsolution.in)**



## EXECUTIVE SUMMARY

### **INTRODUCTION**

As per MoEF & CC, New Delhi Gazette dated 14<sup>th</sup> September 2006 and amended thereof, the proposed mining project is categorized as **Category ‘B1’** project.

### **Arwal Son - 13 Sand Ghat**

The project has been proposed by M/s Maa Kamakhya Construction & Co.(Pro.- Avinash Kumar.) The proposed project is over an area of 44.46 Ha at Khata no. – 384, 176 & Khasra No. - 2484, 2518, on Son River at Mauja – Mainpura Sohna, Tehsil – Kaler, Dist - Arwal (Bihar). LOI issued to lessee via letter no 1323 /M, Arwal dated 28-11-2022. The Draft EIA report has been prepared according to EIA notification 2006 and its subsequent amendment thereof. TOR of the proposed project has been issued by SEIAA Bihar dated 27-01-2023

The proponent has applied for mining lease in the name of Arwal Son Mainpura Sohna Sand (Arwal Son 13) Ghat Mining Project from the bed of Son River over an area of 44.46 ha.

It has been proposed to mine around 800280 cum per annum or 1344470 TPA of minerals. The estimated project cost for the proposed project is **Rs 13,88,15,200/-** (including auction cost)

### **CLUSTER SITUATION:**

The proposed mining was a cluster of 7 mining lease area of **Arwal Son sand block 7, block 8, block 9, block 10, block 11, block 12 & block 13** over an combined area of 386.17 Ha is for river bed sand mining on Son River District – Arwal, (Bihar)

As per Approved District Survey Report Arwal the Proposed sand Ghats of block block 7 block 8, block 9, block 10, block 11, block 12 & block 13 are comes in cluster situation whose combined cluster area is 386.17 ha. All the lease area of homogeneous minerals is coming within 500 m radius from each other confirming a cluster situation.

As per the Director of Geology, Bihar, the modification of mining plan has been approved .As per EIA notification 2016 and subsequent amendments, the project is coming under category ‘**B’** (**B1**) and the lease area is more than 5.0 Ha, approved Mining Plan, Pre-feasibility Report and EMP are required for Environment Clearance in respect of the said quarry lease.

The Details of cluster is given below:

SAND GHATS	AREA	PRODUCTION (CUM)	PRODUCTION (TONNES)
------------	------	---------------------	------------------------

ARWAL SON 7	94.88	1707840	2869171.2
ARWAL SON 8	49.96	899280	1510790.4
ARWAL SON 9	54.95	989100	1661688
ARWAL SON 10	53.94	970920	1631145.6
ARWAL SON 11	55.01	990180	1663502.4
ARWAL SON 12	32.97	593460	997012.8
ARWAL SON 13	44.46	800280	1344470.4
<b>Total</b>	<b>386.17</b>	<b>6951060</b>	<b>11677780.8</b>

## **PROJECT DESCRIPTION**

### **LOCATION**

The proposed mining lease area falls in Survey of India Toposheet Topo sheet No- 72C/07, 72C/08, 72C/11 & 72C/12.. The lease area is located in Mauja – Mainpura Sohsa, Tehsil – Kaler, Dist - Arwal, State- Bihar. The mine lease co-ordinates are listed below:

Sl. No	Coordinate	River Name
1	25.179889 N , 84.487798 E	<b>Son</b>
2	25.178622 N , 84.488867E	
3	25.175221N , 84.487616 E	
4	25.17249N , 84.486344 E	
5	25.170566N , 84.485014 E	
6	25.16735N , 84.481279 E	
7	25.172961N , 84.481326 E	
8	25.179889 N , 84.487798 E	

**Area & production:** The total ML area is 44.46 Ha Proposed rate of production will be 800280 cum per annum or 1344470 TPA.

**Connectivity:**

**Arwal** Son 13 Sand Ghat is well connected to the nearest metalled road (Sohsa-Manpura Road) in South direction at a distance of 0.395 Km from the lease. NH 139: Approx. 6.30 km towards SE direction. , SH 81: Approx. 4.70 km towards West direction.. Piro Railway Station, approx. 17.0 km towards NW direction.. Jay Prakash Narayan International Airport Patna, approx. 76.0 km towards NE direction.

### **Salient Features of Project**

#### **Arwal Son - 13**

Name of the applicant	M/s Maa Kamakhya Construction & Co. Pro.- Avinash Kumar,
Address of Lessee	M/s Maa Kamakhya Construction & Co. Pro.- Avinash Kumar, S/o- Ramashish Singh, Vill.+P.O.-Kamta, P.S.- Prasi, Dist.- Arwal. Mob. No. 9771557204 Email- maakamkhya393@gmail.com
Name of Mine	Sand Mining Project, On Son River At Mainpura Sohsa (Arwal Son - 13) Sand Ghat, Tehsil- Kaler & District - Arwal, State-Bihar.
Village	Mauza – Mainpura Sohsa
Tehsil	Anchal- Kaler
District & State	Arwal, Bihar
Mineral	Sand
Area (ha)	44.46 hectare

### **MINING**

The mining process is opencast semi-mechanized method without drilling & blasting. This is an open-cast mining project. The operation will be semi-mechanized/OTFM with use of excavators/JCBs truck /tractors combination or Manually etc. The sand will be collected in its existing form.

The mining will be done in a rotational way. As the working is going to be methodical i.e. mining will be done in benches. There would be no risk to the employee working in the mines. Mining will be done in layers.

The deposit will be worked from the surface of the bed up to 3 m bgl or above ground water level, whichever comes first. Hence, at no point of time mining will intersect with ground water table. Mining will be done only during the day time and completely stopped during the monsoon season.



## **RESERVE AND PRODUCTION**

Mineable reserves have been computed up to 3m depth from surface. Benches having height 1.5m & width 6.0m drawn from the ultimate pit limit. Areas of each bench have been calculated multiplied by strike influence to get the volume. The volume multiplied by bulk density ( $1.68\text{kg/m}^3$ ) to get the tonnage.

The bench-wise annual exploitation of sand of is given below:

<b>Bench Level (mRL)</b>	<b>Length (m)</b>	<b>Width (m)</b>	<b>Depth (m)</b>	<b>Volume (cum)</b>	<b>Tonnes</b>
<b>75 – 73.5</b>	1221	344	1.5	630036	1058461
<b>73.5 - 72</b>	1211	334	1.5	606711	10192745
<b>Total</b>				1236747	2077736

It is a river bed deposit and mined out area shall be replenished each year during monsoon period and depth of quarry shall be filled back by river sand each year and area will restore its original topography.

## **SITE FACILITIES AND UTILITIES**

### **Water Supply**

Water will be provided to workers for drinking & domestic purpose. Water will also be required for dust suppression. A total water of 5.20 KLD will be required for the proposed project. Fresh water will be only used for drinking purpose. The water will be supplied from available sources from nearby village.

### **Temporary Rest Shelter**

A temporary rest shelter will be provided for the workers near to the site for rest. In addition, First aid box along with anti-venoms to counteract poison produced by certain species of small insects, if any and sanitation facility i.e. septic tank or community toilet facility will be provided for the workers.

## **BASELINE ENVIRONMENTAL STATUS**

Environmental data has been collected in relation to proposed mining for Air, Noise, Water, Soil, Flora & Fauna. The baseline environment study was carried out over an area with radial

distance of 10 km around the mining lease area during winter season from Dec 2022 to Jan-Feb 2023

### Meteorology

The Summarized Meteorological Data for the Monitoring Period (Dec 2022 to Jan-Feb 2023) is given below:

Month	Temperature °C		Wind Speed (Km/Hr)	
	Min	Max	Avg	Max
DEC 2022	13	28	9.3	12.6
JANUARY 2023	11	28	9.6	13.3
FEBRUARY 2023	13	34	11	17.7

**Table Baseline Environmental Status**

Attribute	Baseline status
Ambient Air Quality	Ambient Air Quality Monitoring reveals that the minimum & maximum concentrations of PM <sub>2.5</sub> amongst all the 07 AQ monitoring stations were found to be 36.1 µg/m <sup>3</sup> to 49.9 µg/m <sup>3</sup> respectively; PM <sub>10</sub> was in the range of 85.25 µg/m <sup>3</sup> to 93.23µg/m <sup>3</sup> As far as the gaseous pollutants SO <sub>2</sub> and NO <sub>2</sub> are concerned, the prescribed CPCB limit of 80 µg/m <sup>3</sup> for residential and rural areas has never been surpassed at any station.
Noise Levels	The results of the monitoring program indicated that both the daytime and night time levels of noise were well within the prescribed limits of NAAQS, at all the four locations monitored.
Water Quality	The ground water from all sources remains suitable for drinking purposes as all the constituents are within the limits prescribed by drinking water standards promulgated by IS: 10500.  Surface water analysis from River Son results it is evident that most of the parameters of the samples comply with 'Category B' standards of CPCB, indicating their suitability for outdoor bathing.
Soil Quality	Samples collected from identified locations indicate the soil is sandy type and the pH value ranging from 8.07 to 8.41, which shows that the soil is slightly alkaline in nature.

Ecology and Biodiversity	There is no Eco-Sensitive Areas in the study area.
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## **ANTICIPATED ENVIRONMENTAL IMPACTS**

### **Impact on Air Environment**

The proposed mining activities loading and movement of other transport vehicles used in mining will generate dust (SPM/RSPM). Proper water sprinkling shall be carried out at the mine site. The mineral will be transported by road through covered tarpaulin trucks/tippers to reduce the fugitive emission caused by the wind.

### **Impact on Water Environment**

Mining of sand from within or near *river* has an indirect impact on the physico-chemical habitat characteristics during monsoon season. These characteristics include in stream roughness, elements, depth, velocity, turbidity, sediment transport and stream discharge.

The detrimental effects, if any, to biota resulting from bed material mining are caused by following:

- Alteration of flow patterns resulting from modification of the *river*
- An excess of suspended sediment during monsoon season.

Project activity will be carried out only in the dry part of the Son River. Hence, none of the project activities affect the water environment directly. In the project, it is not proposed to divert or truncate any stream in monsoon season only. No proposal is envisaged for pumping of water either from the *River* (in monsoon) or tapping the ground water.

### **Impact on Land Environment**

The proposed extraction of stream bed materials, mining below the existing streambed, and alteration of channel-bed form and shape may lead to several impacts such as erosion of channel bed and banks, increase in channel slope, and change in channel morphology if, the operations are not carried out systematically.

The systematic and scientific removal of sand will not cause bed degradation. The silt and clay generated as waste will be used for plantation or filling up low lying area elsewhere. The mining is planned in non monsoon seasons only, so that the excavated area gets replenished gradually during the monsoons each year.

### **Impact on Noise Environment**

The proposed mining activity is semi-mechanized in nature. No drilling & blasting is envisaged for the mining activity. Hence, the only impact is anticipated is due to movement of vehicles deployed for transportation of minerals. The vehicles will be maintained in good running condition so that noise will be reduced to minimum possible level.

### **Impact on Biological Environment**

As the proposed mining will be carried out in a scientific manner, not much significant impact is anticipated. No mining will be carried out during the monsoon season to minimize impact on aquatic life which is mainly breeding season for many of the species. The mining site has no vegetation; no clearance of vegetation will be done. Haul roads will be sprinkled with water which would reduce the dust emission, thus avoiding damage to the crops.

### **Impact on Socio Economic Environment**

The impact of mining activity in the area is positive on the socio-economic environment of the region. Sand mining will be providing employment to local people whenever there is requirement of manpower.

### **POST PROJECT ENVIRONMENTAL MONITORING**

<b>S.No.</b>	<b>Description of Parameters</b>	<b>Schedule of Monitoring</b>
<b>1</b>	Air Quality	24 hourly samples twice/thrice a week in each season except monsoon
<b>2</b>	Water Quality (Surface & Groundwater)	Once a season for 4 seasons in a year
<b>3</b>	Soil Quality	Once in a year in project area

<b>4</b>	Noise Level	Twice a year for first two years & then once a year
<b>5</b>	Socio-economic Condition	Once in 3 years
<b>6</b>	Plantation Monitoring	Once in a season

## **ADDITIONAL STUDIES**

### **Public Hearing**

Public hearing is yet to be conducted.

### **Risk Assessment**

The complete mining operation will be carried out under the management control and direction of a qualified mine manager holding. The DGMS have been regularly issuing standing orders, model standing orders and circulars to be followed by the mine management in case of disaster, if any. Moreover, mining staff will be sent to refresher courses from time to time to keep them alert.

### **Disaster Management Plan**

Emergency preparedness is an important aspect in the planning of Disaster Management. Personnel would be trained suitably and prepared mentally and physically in emergency response through carefully planned, simulated procedures. Similarly, the key personnel and essential personnel shall be trained in the operations.

## **PROJECT BENEFITS**

**Physical Benefits:** Road Transport, Market, Enhancement of green cover & Creation of community assets.

**Social Benefits:** Increase in Employment Potential, Contribution to the Exchequer, Increased Health related activities, Educational attainments & Strengthening of existing community facilities.

**Environmental Benefits:**

- Ø Controlling *river* channel and protection of banks.
- Ø Reducing submergence of adjoining agricultural lands due to flooding.
- Ø Reducing aggradation of *river* level.
- Ø A check on illegal mining activity.

## **CORPORATE SOCIAL RESPONSIBILITY**

2% of capital cost of the project cost will be allotted for the Corporate Environmental Responsibility as per OM dated 1<sup>st</sup> May 2018. The following has been proposed considering the needs & demand of the people.

CSR cost will be 2% of the total project cost. This amount will be used for social welfare. CSR COST is  $13,88,15,200 \times 2\% = \text{Rs. } 27,76,304/-$

For each activity the funds to be earmarked by the proponent will be decided after discussion with the local authority/people and the beneficiaries during Public Hearing. It has been planned to undertake a concurrent evaluation of the activities to be taken up under the CER programme.

### **✓ PLANTATION:**

- The project will not lead to any tree cutting. However, asocial responsibility, greenery will be developed along the both sides of road and the bank of river. Community services will be deployed in raising theseplantations. Trees of economic importance and native origin such as fruit treesshall be planted.
- Approx. 445 trees will be planted around haul road during the plan period.
- The trees proposed for plantation are:
- As per Sustainable Sand Management & Mining Guidelines 2016,minimum5 plant per hectare will be proposed for development of greenbelt but in this cluster of projects 10 plants per hectare will be proposed for better condition of environment.
- Peepal, Arjun, Jamun, Banyan, Neem, Mango etc trees will be planted.

## **ENVIRONMENTAL MANAGEMENT PLAN (EMP)**

- Extraction will be done from the bed leaving safety zone from bank.
- The maximum working depth will remain above ground water table of the area.



- Provide health facilities to the workers & surrounding people in the impact area to reduce the health impacts.
- Ensuring wildlife protection & arranging awareness campaigns for the same.
- Minimize activities that release fine sediment to the *river*.
- Effective mitigation measures will be adopted to minimize disturbance during transportation & handling of minerals
- Establishment of reclamation program with plantation of local/native & fast growing species
- Establishment of restoration plan during the closure of mine at the onset of monsoon season.
- Establishment of effective Disaster Management Plan to take timely precautionary measures to avoid effects of impending disasters.
- Establishment of effective Monitoring Program monitored by Environment Management Cell.

### **BUDGET ALLOCATION FOR EMP IMPLEMENTATION**

**Table Environment Management Budget Budget of EMP for Arwal Son - 13**

<b>Sl. No</b>	<b>Description</b>	<b>Capital Cost (Rs)</b>	<b>Recurring Cost (Rs)</b>
1	Pollution Control & Dust Suppression	--	2,00,000
2	Pollution Monitoring i) Air pollution ii) Water pollution iii) Soil Pollution iv) Noise Pollution	--	2,00,000
3	Plantation and salary for one gardener (part time basis).	4,45,000	50,000 (Gardener)
4	Haul road Maintenance Cost	98,750	1,50,000 (Labour Charge)
<b>TOTAL</b>		<b>5,43,750</b>	<b>6,00,000</b>

Note: \*445 plants \* 1000 Rs (for each plants including hedges and fences) = Rs 4,45,000/-

- Salary of Labour for haul road maintenance 2 labor\*300=600 per day

- $600 \times 250 = 1,50,000/-$
- $* 2.5 \text{ lakh per kilometer } (2,50,000 \times 0.395 \text{ km haul road}) = 98,750/-$

## CONCLUSION

Based on the EIA study it is observed that there will be an increase in the dust pollution, which will be controlled by sprinkling of water and plantation. There will be an insignificant impact on ambient environment and ecology due to the mining activities moreover the mining operation will lead to direct and indirect employment generation in the area. Green belt development around the area will also be taken up as an effective pollution mitigative technique, as well as to control the pollutants released from the premises of the Mine. Monitoring program will be followed till the mining operations continue. Hence, it can be summarized that the development of the mine will have a positive impact on the socio-economic environment of the area and lead to sustainable development of the region.

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