

DRAFT ENVIRONMENTAL IMPACT ASSESSMENT
AND
ENVIRONMENTAL MANAGEMENT PLAN
OF
SAND MINING PROJECT ON TILAWA RIVER (SAHARSA TILAWA
RIVER UNIT - 01 SAND GHAT) DIST – SAHARSA (BIHAR)

SAND BLOCK	SAHARSA TILawe RIVER UNIT – 01 (Tulsiyahi Sand Ghat Block 01 , Dakra Bhaptiya Sand Ghat Block 02 & Sital-Patti Sand Ghat Block 03)			
PROPOSAL NO	SIA/BR/MIN/412974/2023			
ToR No	SIA/1(a)/2395/2023			
AREA		Tulsiyahi Sand Ghat Block 01	3.0 Ha	
		Dakra Bhaptiya Sand Ghat Block 02	1.15 Ha	
		Sital-Patti Sand Ghat Block 03	4.0 Ha	
		Total	8.15 Ha	
PRODUCTION		Tulsiyahi Sand Ghat Block 01	48900 cum/year or 88020 TPA	
		Dakra Bhaptiya Sand Ghat Block 02		
		Sital-Patti Sand Ghat Block 03		
LOCATION	SAHARSA TILawe RIVER UNIT - 01 Village- Bhatauni, Bhapatia & Kanp, Distt.- Saharsa (Bihar)			
KHATA No	126, 1100, 2559			
KHASRA No	1621,3448,16103			

APPLICANT

Shree Abhishek Kumar Singh

S/o – Dayashankar Singh

Add : - Vill + Post – Saroja, P.S – Simri Bakhtiyarpur,
Dist – Saharsa (Bihar), Pin – 852127

CONSULTANT

P&M Solution

C-88, Sector 65, Noida -201301 – U.P
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Project: Sand Mining Project (Saharsa Tilawe River Unit 01 Sand Ghat) at Village- Bhatauni, Bhapatia & Kanp District- Saharsa, (Bihar).

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SL NO.	ANNEXURE
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ABBREVIATIONS

AAQ	Ambient Air Quality
bgl	Below Ground Level
BOD	Biochemical Oxygen Demand
COD	Chemical Oxygen Demand
CPCB	Central Pollution Control Board
CSR	Corporate Social Responsibility
dB	Decibel
DO	Dissolved Oxygen
EAC	Expert Appraisal Committee
EIA	Environmental Impact Assessment
EMC	Environmental Management Cell
EMP	Environment Management Plan
EPA	The Environment Protection Act
GLC	Ground Level Concentration
Ha	Hectare
Ham	Hectare Meter
HFL	High Flood Level
KLD	Kilo litre Per Day
Km	Kilo Meter
Leq	Equivalent Noise Level
LFL	Low Flood Level
LOS	Level of Service
MoEF	Ministry of Environment and Forest & Climate Change
NABET	National Accreditation Board for Education and Training
NGO	Non Governmental Organisation
NH	National Highway
NOC	No Objection Certificate
OSHA	Occupational Safety and Health Administration
PCU	Passenger Car Unit
PM	Particulate Matter
PUC	Pollution Under Control
QCI	Quality Council of India
R & R	Rehabilitation & Resettlement
RBM	River Bed Material
RL	Reduced Level
SEAC	State Expert Appraisal Committee
SH	State Highway
SPCB	State Pollution Control Board
T/cum	Tons Per Cubic Meter
TKN	Total Kjeldahl Nitrogen
TOR	Term of Reference
TPA	Tonnes Per Annum
UNFC	United Nations Framework Classification
VWG	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 14th 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 Proposed Sand Mining Project is located on Saharsa Tilawe River Unit 01 (Tulsiyahi Sand Ghat Block 01, Dakra Bhaptiya Sand Ghat Block 02 & Sital-Patti Sand Ghat Block 03) at Village- Bhatauni, Bhapatia & Kanp, Distt.- Saharsa, Bihar.

The Proposed Production is 48900 Cum/Year or 88020 Tonnes per annum and Area of the project site is 8.15 ha.

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 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.

The details of the project are given below:

Name & Address of the Mine	Saharsa Tilawe River Unit 01	Sand Mining Project (Saharsa Tilawe River Unit 01 Sand Ghat) at Village- Bhatauni, Bhapatia & Kanp District- Saharsa, (Bihar).
River	Tilawe	

Project: Sand Mining Project (Saharsa Tilawe River Unit 01 Sand Ghat) at Village- Bhatauni, Bhapatia & Kanp District- Saharsa, (Bihar).

Mineral	Sand	
Area (ha)	Saharsa Tilawe River Unit 01	8.15 ha (Tulsiyahi Sand Ghat Block 01 = 3.0 ha + Dakra Bhaptiya Sand Ghat Block 02 = 1.15 ha + Sital- Patti Sand Ghat Block 03 = 4.0 ha)
Production	Saharsa Tilawe River Unit 01	48900 Cum/Year or 88020 TPA
Postal Address	Saharsa Tilawe River Unit 01	Shree Abhishek Kumar Singh S/o – Dayashankar Singh Add: - Vill + Post – Saroja, P.S – Simri Bakhtiyarpur, Dist – Saharsa (Bihar), Pin – 852127
Status of Mine	Fresh application for Environmental Clearance.	
Project Cost	Rs- 57,23,500/-	
CER Cost	CER cost will be 2% of the total project cost. This amount will be used for social welfare. CER COST is Rs. 57,23,500/-x 2% = Rs. 1,14,470/-	

1.2 BRIEF DESCRIPTION OF PROJECT

The proposed project is open cast semi-mechanized mining of sand with a proposed production of 88020 TPA for applied lease. Detail has been given below:

The proposed project is over an area 8.15 ha. Details are summarized in Table no 1.1

As per MoEF, New Delhi Gazette dated 14th September 2006 and amended thereof, the proposed mining project is categorized as **Category ‘B-1’**. The estimated project cost for the proposed project is **given below:** (including auction cost).

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Table: 1.1 Project cost & Production

Sand Ghat Block	Area (Ha.)	Khasra No	Khata No	Production	Auction Cost
Block 01	3.0	126	1621	88020 TPA	44,01,000/-
Block 02	1.15	1100	3448		
Block 03	4.0	2559	16103		
Total	8.15			88020 TPA	44,01,000/-

The proposed mining lease area falls in Survey of India Toposheet 72 K/9, 72 K/10, 72K/13, 72K/14. The mine lease co-ordinates and connectivity details are listed below:

Table: 1.2 Mine lease Pillar Co-ordinates (Saharsa Tilawe River Unit 01)

Co-ordinates					Ghat/ Address	River
Tulsiyahi Sand Ghat Block 1	3.0	1	25°44'3.57"N	86°40'36.07"E	Tulsiyahi Balu Ghat Village- Bhatauni, Post- Bhatauni, Anchal+Tehsil- Simri Bakhtiyarpur Distt.- Saharsa	Tilawe
		2	25°44'4.72"N	86°40'37.64"E		
		3	25°43'55.44"N	86°40'45.67"E		
		4	25°43'52.01"N	86°40'47.56"E		
		5	25°43'48.62"N	86°40'47.09"E		
		6	25°43'48.70"N	86°40'45.79"E		
		7	25°43'54.51"N	86°40'44.15"E		
Dakra Bhaptiya Sand Ghat Block 02	1.15	1	25°45'49.85"N	86°41'56.25"E	Bhapatia Balu Ghat Village- Bhapatia, Post- Bhapatia, Anchal+Tehsil- Saur Bazar, Distt.- Saharsa	Tilawe
		2	25°45'48.86"N	86°41'56.78"E		
		3	25°45'46.41"N	86°41'53.00"E		
		4	25°45'45.75"N	86°41'47.55"E		
		5	25°45'46.33"N	86°41'47.57"E		
Sital-Patti Sand Ghat Block 03	4.0	1	25°49'16.93"N	86°45'31.35"E	Sital Patti Balu Ghat Village- Kanp, Post- Kanp, Anchal+Tehsil-Saur Bazar, Distt.- Saharsa	Tilawe
		2	25°49'14.67"N	86°45'45.49"E		
		3	25°49'11.52"N	86°45'43.69"E		
		4	25°49'11.81"N	86°45'37.72"E		
		5	25°49'15.31"N	86°45'30.48"E		

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10 KM BUFFER MAP OF THE STUDY AREA

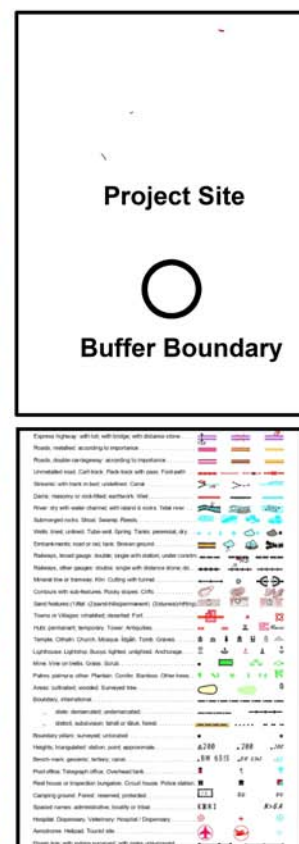
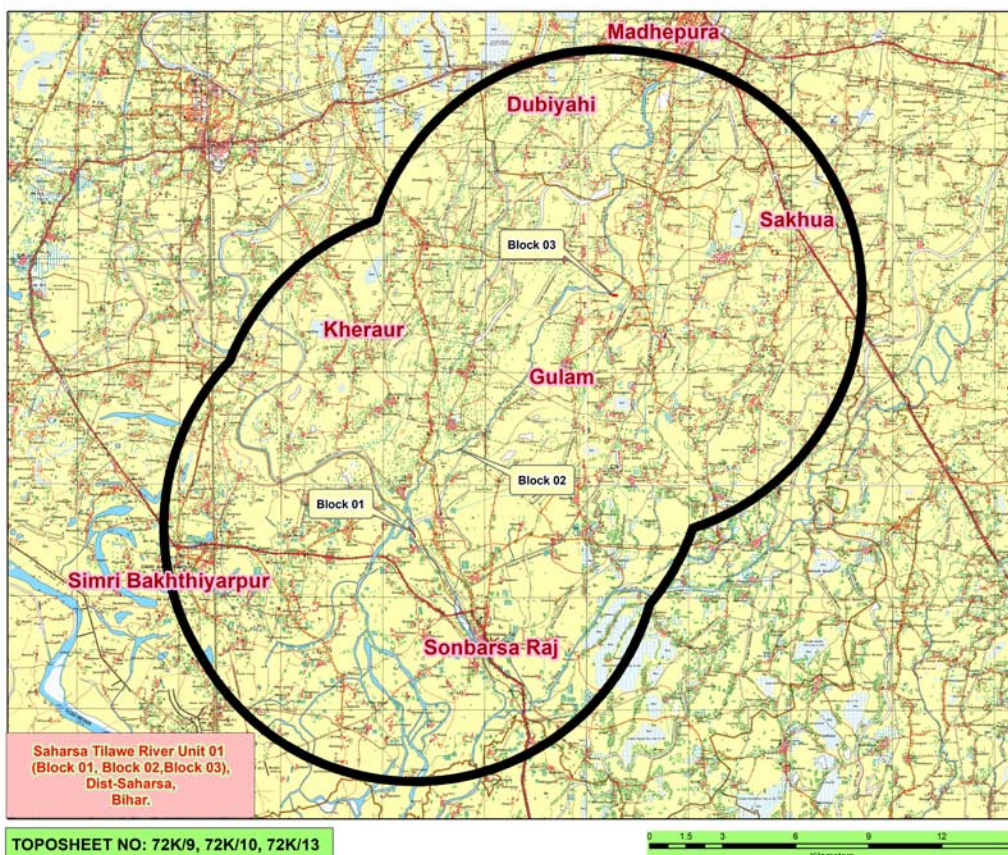


Figure 1.1, 10 km buffer map

Table: 1.3, Connectivity Details given below

Nearest Habitation/ town	Blocks	Village	Distance (Km) Direction
	Block 01	Kapsia	Approx. 0.65 km, towards S direction.
	Block 02	Bhabita	Approx. 1.40 km, towards W direction.
	Block 03	Bhatauni	Approx. 1.30 km, towards SW direction.
Nearest Railway Station	Blocks	Railway Station	Distance (Km) Direction

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	Block 01	Saharsa Railway Station	Approx. 17.52 km, towards NNW direction.
	Block 02	Saharsa Railway Station	Approx. 16.0 km, towards NW direction.
	Block 03	Saharsa Railway Station	Approx. 17.46 km, towards NW direction.
Nearest Airport	Blocks	Airport	Distance (Km) Direction
	Block 01	JPN Airport, Patna	Approx. 159.97 km towards W direction.
	Block 02	JPN Airport, Patna	Approx. 162.26 km towards W direction.
	Block 03	JPN Airport, Patna	Approx. 169.23 km towards W direction.
Nearest Highway	Block 01 - SH-59: Approx. 0.86 Km towards E direction. Block 02 - SH-59: Approx. 1.32 km towards W direction Block 03 - SH-59: Approx. 7.95 km towards W direction.		

1.3 Details of environmental settings

Sl. No.	Particulars	Details
1	Ecological Sensitive Areas (National Park, Wildlife Sanctuaries)	There is no any Ecological Sensitive Areas Like National Park, Wildlife Sanctuaries, etc are found within 10 km of the study area.
2	Nearest water body	Project site is located on Tilawe River.
3	Seismic Zone	Zone- IV <i>Source: BMTC</i>

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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. 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.

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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 Reference attached as **Annexure-1**.

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

Table: 1.4 Point wise compliance for TOR

(ToR File No- SIA/1(a)/2395/2023)

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 opened. It will open 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. 883/khanan, Saharsa, dated. 16.11.2022	Annexure II, LOI
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	The documents including mine plan and EIA report submitted are compatible with one another w.r.t. to following information: Mining Lease Area- 8.15	Annexure- III Mine plan All details has been complied in

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	and should be in the name of the lessee.	<p>Hectare</p> <p>Lessee: Shree Abhishek Kumar Singh S/o – Dayashankar Singh</p> <p>Add : - Vill + Post – Saroja, P.S – Simri Bakhtiyarpur, Dist – Saharsa (Bihar), Pin – 852127</p> <p>Waste generation-</p> <p>No waste will be generated.</p> <p>Mining Method-Opencast semi-mechanized method</p>	chapter-2
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 the proposed area should clearly show the land use and other ecological features of the study area (core and buffer zone).	All Corner Coordinates of mining lease area superimposed on Toposheet Map has been incorporated in EIA/EMP Report.	Refer Chapter 2 Fig: 2.1, Corner Coordinates map
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.	<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>	Land-use of the study area Figure 3.1.
6	Details about the land proposed for mining activities should be given with information as to whether mining	The Lease area is dry part of River bed. This is a barren land.	Chapter II & III

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	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.	The mining process will be done by land use policy of the State & no land diversion has been proposed.	
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	Issue related to mine safety has been given in of chapter 7.	

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	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.	<p>The 10 km zone from periphery of the lease has been considered as the study area. The Buffer map of the study area is attached with report.</p> <p>All the details in the EIA report are for the life of the mine period.</p> <p>The details of mining & production have been given in the report.</p>	<p>Chapter I</p> <p>Figure 1.1</p>
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.	<p>Land use pattern of 10 km from the periphery of the lease area has been prepared and incorporated with the report.</p> <p>The study area lies in Tilawe River.</p> <p>There is no any Wild Life sanctuary & National Park, protected forest within the study area.</p>	<p>Land-use of the study area Figure 3.1 , Table 3.1</p> <p>10 km buffer map enclosed in Chapter I of EIA Report.</p>
11	Details of the land for any Over Burden Dumps outside the mine lease,	There is no overburden outside the mine lease area.	

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	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.	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 recognition 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	There is no any Ecological Sensitive Areas Like National Park, Wildlife Sanctuaries, etc are found within 10 km of the study area. However, the vegetation details of the study area are incorporated with the report.	Chapter III Section 3.1.6 Biological Environment
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	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.	Chapter III Section 3.1.6 Biological Environment

Project: Sand Mining Project (Saharsa Tilawe River Unit 01 Sand Ghat) at Village- Bhatauni, Bhapatia & Kanp District- Saharsa, (Bihar).

	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.	MAP showing eco sensitive zone is attached in Chapter III (Fig 3.4)	
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 Section 3.1.6 Biological Environment

Project: Sand Mining Project (Saharsa Tilawe River Unit 01 Sand Ghat) at Village- Bhatauni, Bhapatia & Kanp District- Saharsa, (Bihar).

19	Proximity to Areas declared as ‘Critically Polluted’ or the Project areas 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.	Proposed project does not come under critically polluted area.	
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)	There is no R & R involved in this project.	
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	There is no R & R involved in this project.	

Project: Sand Mining Project (Saharsa Tilawe River Unit 01 Sand Ghat) at Village- Bhatauni, Bhapatia & Kanp District- Saharsa, (Bihar).

	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.		
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	Base line study was carried out for Pre Monsoon season March 2023 -May 2023 Details are provided in EIA/EMP Report. The locations of the monitoring stations were decided on the basis of prevailing meteorological conditions (Wind direction & wind speed) of the study area. 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.	Chapter III Section 3.1.2 Air Environment

Project: Sand Mining Project (Saharsa Tilawe River Unit 01 Sand Ghat) at Village- Bhatauni, Bhapatia & Kanp District- Saharsa, (Bihar).

	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.	The location of the monitoring sites has been shown in map.	
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.	A detailed study on Air quality modeling will be incorporated at the time of FEIA.	
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	The water requirement for Sand Block Saharsa Tilawe River Unit 01 is 20.0 KLD for drinking, dust suppression and green belt development.	Chapter –II Section 2.7.4 Water Requirement

Project: Sand Mining Project (Saharsa Tilawe River Unit 01 Sand Ghat) at Village- Bhatauni, Bhapatia & Kanp District- Saharsa, (Bihar).

	indicated.	A detailed water balance is being provided in the report.	
25	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
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 required should be provided.	<p>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.</p> <p>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.</p>	
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".	<p>Mining activity will be done on Dry Bed of River so there is no impact on surface water.</p> <p>Mining will be up to 1.0 m below ground level or above the ground water table whichever comes first. This will not intersect the ground water table.</p>	Chapter II

Project: Sand Mining Project (Saharsa Tilawe River Unit 01 Sand Ghat) at Village- Bhatauni, Bhapatia & Kanp District- Saharsa, (Bihar).

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.	The mining will be done only upto 1.0 m depth. The detailed impact and control measure w.r.t the quality of water in the surrounding area is discussed under Chapter 4.	
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.	The project site lies on Tilawe River. No diversion is proposed.	
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.	The mining will be done as per the approved mining plan and 1.0 meter bgl whichever is comes first.	
31	A time bound Progressive Greenbelt Development Plan shall be prepared in	Plantation/afforestation will be done as per program i.e along	Chapter VIII Section 8.2

Project: Sand Mining Project (Saharsa Tilawe River Unit 01 Sand Ghat) at Village- Bhatauni, Bhapatia & Kanp District- Saharsa, (Bihar).

	<p>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 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.</p>	<p>the road sides and near civic amenities, as per mine plan. 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 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</p>	
32	<p>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</p>	<p>The projection has been done based on the mineral transportation.</p> <p>The details of traffic analysis are discussed in the report.</p>	<p>Chapter IV</p> <p>Section 4.6 Traffic Analysis</p> <p>Fig 4.2, Table 4.3(i), 4.3(ii)</p>

Project: Sand Mining Project (Saharsa Tilawe River Unit 01 Sand Ghat) at Village- Bhatauni, Bhapatia & Kanp District- Saharsa, (Bihar).

	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	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 Section 2.12.2
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.	Conceptual plans and Sections are given in Chapter 2.	
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.	Occupational health impact mainly is expected due air pollution due to fugitive dust emission because of movement of vehicles. However appropriate mitigation measures for air pollution control have been given in the report, discussed in Chapter-4. Each labour will undergo pre-placement medical examination.	Chapter VII Section 7.2 Chapter VIII Section 8.3

Project: Sand Mining Project (Saharsa Tilawe River Unit 01 Sand Ghat) at Village- Bhatauni, Bhapatia & Kanp District- Saharsa, (Bihar).

		Thereafter periodical health check up will be arranged as stated in the report.	
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.	The proposed project being a small scale semi-mechanized 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.	Chapter VII Section 7.2 Chapter VIII Section 8.3
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 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.	Chapter VI Section 6.4 Chapter VII Section 7.2
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	The detailed environmental management plan to mitigate the environmental impacts has been mentioned in of the EIA/EMP Report.	Chapter VIII

Project: Sand Mining Project (Saharsa Tilawe River Unit 01 Sand Ghat) at Village- Bhatauni, Bhapatia & Kanp District- Saharsa, (Bihar).

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.	This is a draft EIA report. Public hearing is yet to be conducted.	--									
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.	No litigation is pending against the project.										
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.	<table><tr><td colspan="3">The capital cost & recurring cost for has been earmarked for EMP. Chapter IX</td></tr><tr><td>Block</td><td>Capital Cost</td><td>Recurring Cost</td></tr><tr><td>Saharsa Tilawe River Unit-01</td><td>8.945 Lakh</td><td>5.5 lakh</td></tr></table>	The capital cost & recurring cost for has been earmarked for EMP. Chapter IX			Block	Capital Cost	Recurring Cost	Saharsa Tilawe River Unit-01	8.945 Lakh	5.5 lakh	Chapter IX
The capital cost & recurring cost for has been earmarked for EMP. Chapter IX												
Block	Capital Cost	Recurring Cost										
Saharsa Tilawe River Unit-01	8.945 Lakh	5.5 lakh										
42	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									
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.	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.										
44	Besides the above, the below mentioned general points are also to be followed:-											

Project: Sand Mining Project (Saharsa Tilawe River Unit 01 Sand Ghat) at Village- Bhatauni, Bhapatia & Kanp District- Saharsa, (Bihar).

a	All documents to be properly referenced with index and continuous page numberings.	All the 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.	Compiled With EIA report.	
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.	Compiled With EIA report.	
d	Where the documents provided are in a language other than English, an English translation should be provided.	Compiled With EIA report.	
e	The Questionnaire for environmental appraisal of mining projects as devised earlier by the Ministry shall also be filled and submitted.	Compiled With EIA report.	
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	Compiled With EIA report.	

Project: Sand Mining Project (Saharsa Tilawe River Unit 01 Sand Ghat) at Village- Bhatauni, Bhapatia & Kanp District- Saharsa, (Bihar).

	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.	Agreed	
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.	This is new case for Mining. No certified compliance is required.	

Project: Sand Mining Project (Saharsa Tilawe River Unit 01 Sand Ghat) at Village- Bhatauni, Bhapatia & Kanp District- Saharsa, (Bihar).

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.	Compiled With EIA report.	
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Project: Sand Ghat Mining Project (Saharsa Tilawe River Unit 01 Sand Ghat) at Village- Bhatauni, Bhapatia & Kanp District- Saharsa, (Bihar).

2.0 TYPE OF PROJECT

The project is proposed is for sand Saharsa Tilawe River Unit 01 for the excavation of sand from the bed of river Tilawe. The proposed project is opencast semi-mechanized/OTFM mining project.

2.1 NEED FOR THE PROJECT

The project site lies on Tilawe 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 Proposed Sand Mining Project is located on (Saharsa Tilawe River Unit 01) Tulsiyahi Sand Ghat Village- Bhatauni, Post- Bhatauni, Anchal+Tehsil- Simri Bakhtiyarpur, Distt.- Saharsa), (Dakra Bhaptiya Sand Ghat Block 02, situated at Bhapatia Balu Ghat, Village- Bhapatia, Post- Bhapatia, Anchal+Tehsil- Saur Bazar, Distt.- Saharsa), (Sital-Patti Sand Ghat Block 03, situated at Sital Patti Balu Ghat, Village- Kanp, Post- Kanp, Anchal+Tehsil- Saur Bazar, Distt.- Saharsa (Bihar) .

The Proposed Production is 48900 Cum/Year or 88020 TPA and Area of the project site is 8.15 ha.

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.

CHAPTER-2	PROJECT DESCRIPTION
Project: Sand Ghat Mining Project (Saharsa Tilawe River Unit 01 Sand Ghat) at Village- Bhatauni, Bhapatia & Kanp District- Saharsa, (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.

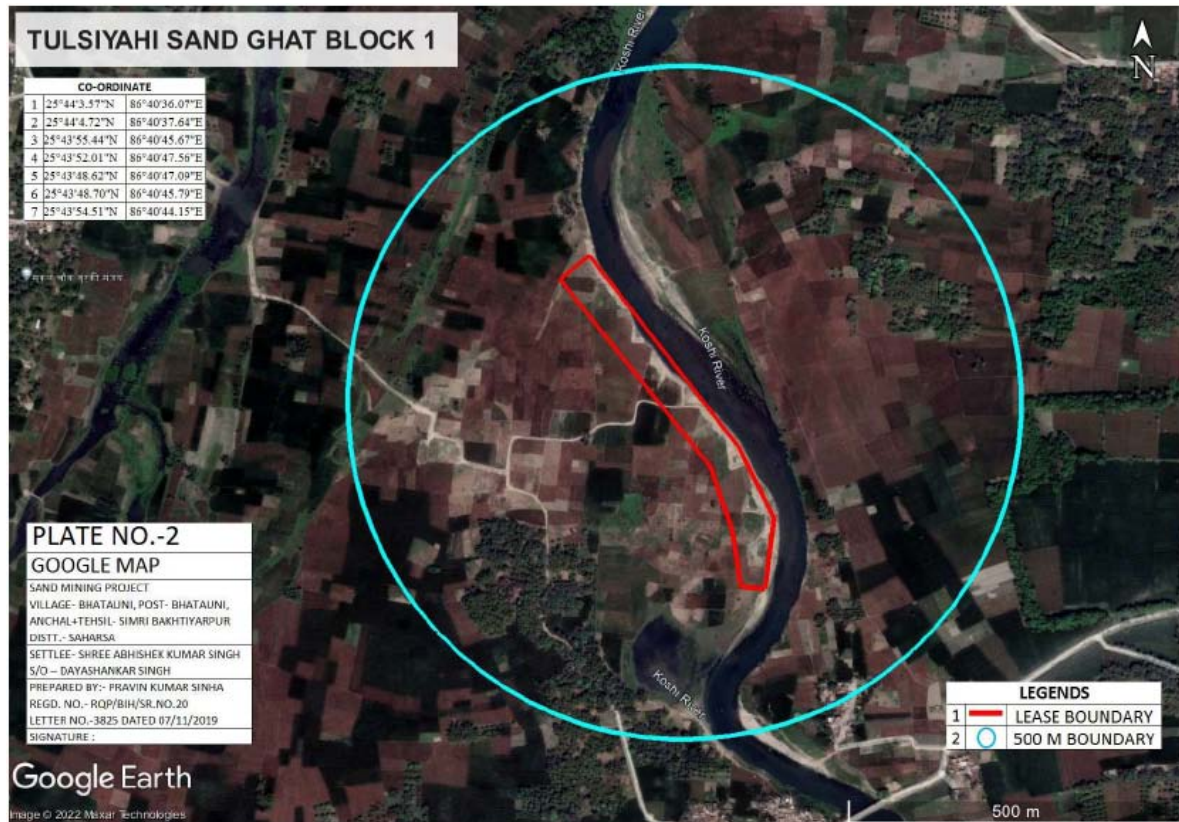
Geo Coordinate of Lease Area:

Table 2.1, Mine lease Pillar Co-ordinates (Saharsa Tilawe River Unit 01)

Co-ordinates					Ghat/ Address	River
Tulsiyahi Sand Ghat Block 1	3.0	1	25°44'3.57"N	86°40'36.07"E	Tulsiyahi Balu Ghat Village- Bhatauni, Post- Bhatauni, Anchal+Tehsil- Simri Bakhtiyarpur Distt.- Saharsa	Tilawe
		2	25°44'4.72"N	86°40'37.64"E		
		3	25°43'55.44"N	86°40'45.67"E		
		4	25°43'52.01"N	86°40'47.56"E		
		5	25°43'48.62"N	86°40'47.09"E		
		6	25°43'48.70"N	86°40'45.79"E		
		7	25°43'54.51"N	86°40'44.15"E		
Dakra Bhaptiya Sand Ghat Block 02	1.15	1	25°45'49.85"N	86°41'56.25"E	Bhapatia Balu Ghat Village- Bhapatia, Post- Bhapatia, Anchal+Tehsil- Saur Bazar, Distt.- Saharsa	Tilawe
		2	25°45'48.86"N	86°41'56.78"E		
		3	25°45'46.41"N	86°41'53.00"E		
		4	25°45'45.75"N	86°41'47.55"E		
		5	25°45'46.33"N	86°41'47.57"E		
Sital-Patti Sand Ghat Block 03	4.0	1	25°49'16.93"N	86°45'31.35"E	Sital Patti Balu Ghat Village- Kanp, Post- Kanp, Anchal+Tehsil- Saur Bazar, Distt.- Saharsa	Tilawe
		2	25°49'14.67"N	86°45'45.49"E		
		3	25°49'11.52"N	86°45'43.69"E		
		4	25°49'11.81"N	86°45'37.72"E		
		5	25°49'15.31"N	86°45'30.48"E		

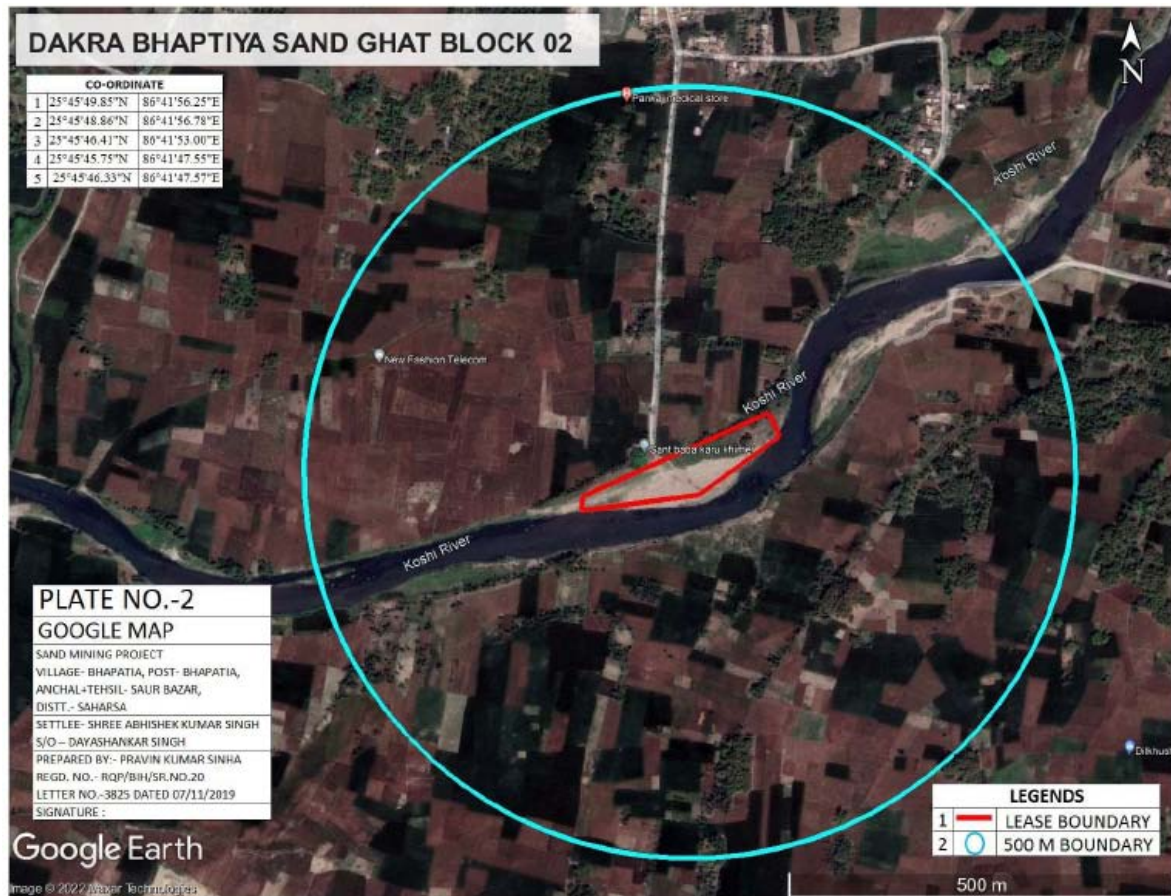
Saharsa Tilawe River Unit 01 Sand Ghat is well connected by SH-59: distance from Block 01 - SH-59: Approx. 0.86 Km towards E direction. Block 02 - SH-59: Approx. 1.32 km towards W direction Block 03 - SH-59: Approx. 7.95 km towards W direction.

Project: Sand Ghat Mining Project (Saharsa Tilawe River Unit 01 Sand Ghat) at Village- Bhatauni, Bhapatia & Kanp District- Saharsa, (Bihar).



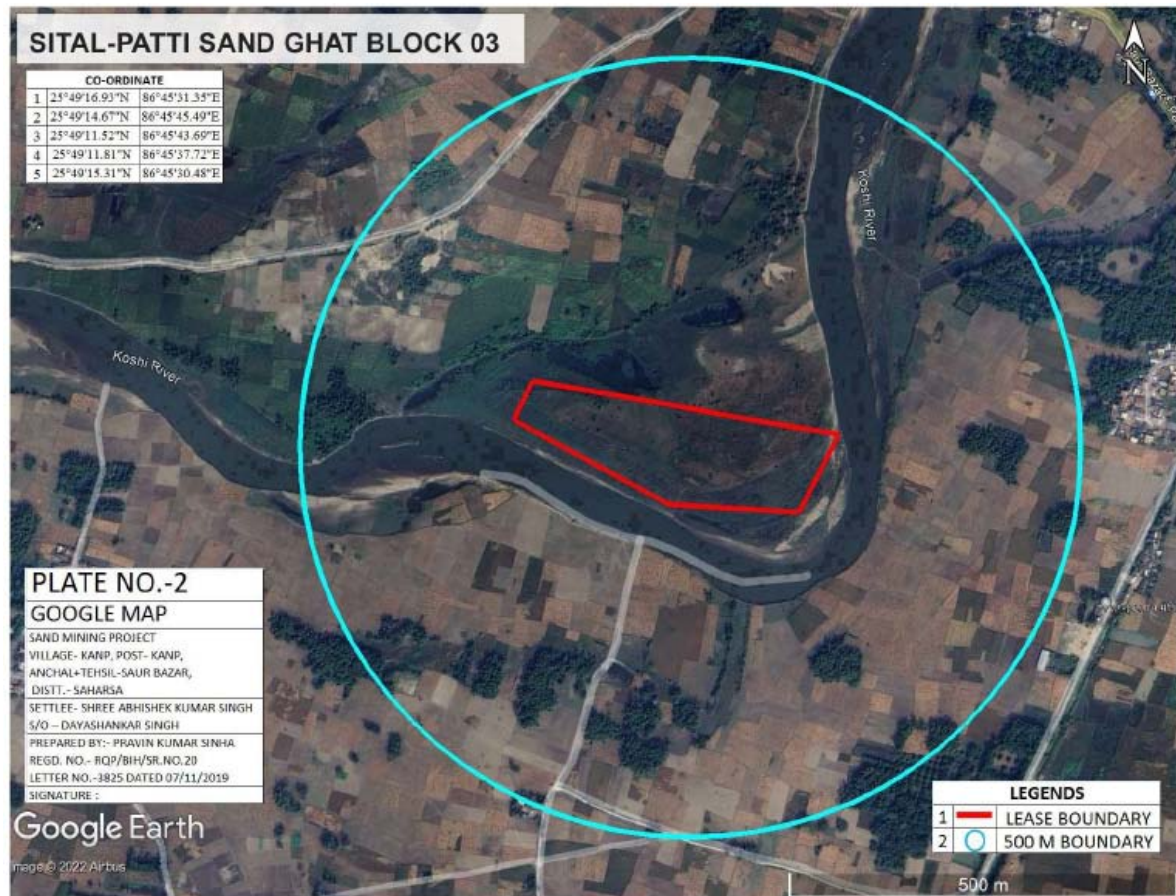
Pillar Coordinate Map of Saharsa Tilawe River Unit 01 (Block No. 01)

Project: Sand Ghat Mining Project (Saharsa Tilawe River Unit 01 Sand Ghat) at Village- Bhatauni, Bhapatia & Kanp District- Saharsa, (Bihar).



Pillar Coordinate Map of Saharsa Tilawe River Unit 01 (Block No. 02)

Project: Sand Ghat Mining Project (Saharsa Tilawe River Unit 01 Sand Ghat) at Village-Bhatauni, Bhapatia & Kanp District- Saharsa, (Bihar).



Pillar Coordinate Map of Saharsa Tilawe River Unit 01 (Block No. 03)

Figure 2.1:- Pillar Coordinate Map of Saharsa Tilawe River Unit 01

2.2.1 Lease / Block Area

The proposed project is Open Cast Semi-Mechanized Mining of Sand with a proposed production is given below in tabular form.

Sand Ghat Block	Area	Khata No	Khasra No	Production	Auction Cost
Block 01	3.0	126	1621	88020 TPA	44,01,000/-
Block 02	1.15	1100	3448		
Block 03	4.0	2559	16103		
Total	8.15 Ha			88020 TPA	44,01,000/-

Project: Sand Ghat Mining Project (Saharsa Tilawe River Unit 01 Sand Ghat) at Village-Bhatauni, Bhapatia & Kanp District- Saharsa, (Bihar).

As per MoEF, New Delhi Gazette dated 14th September 2006 and amended thereof, the proposed mining project is categorized as Category 'B-1'. The estimated project cost for the proposed project is given in above table.

LOCATION MAP

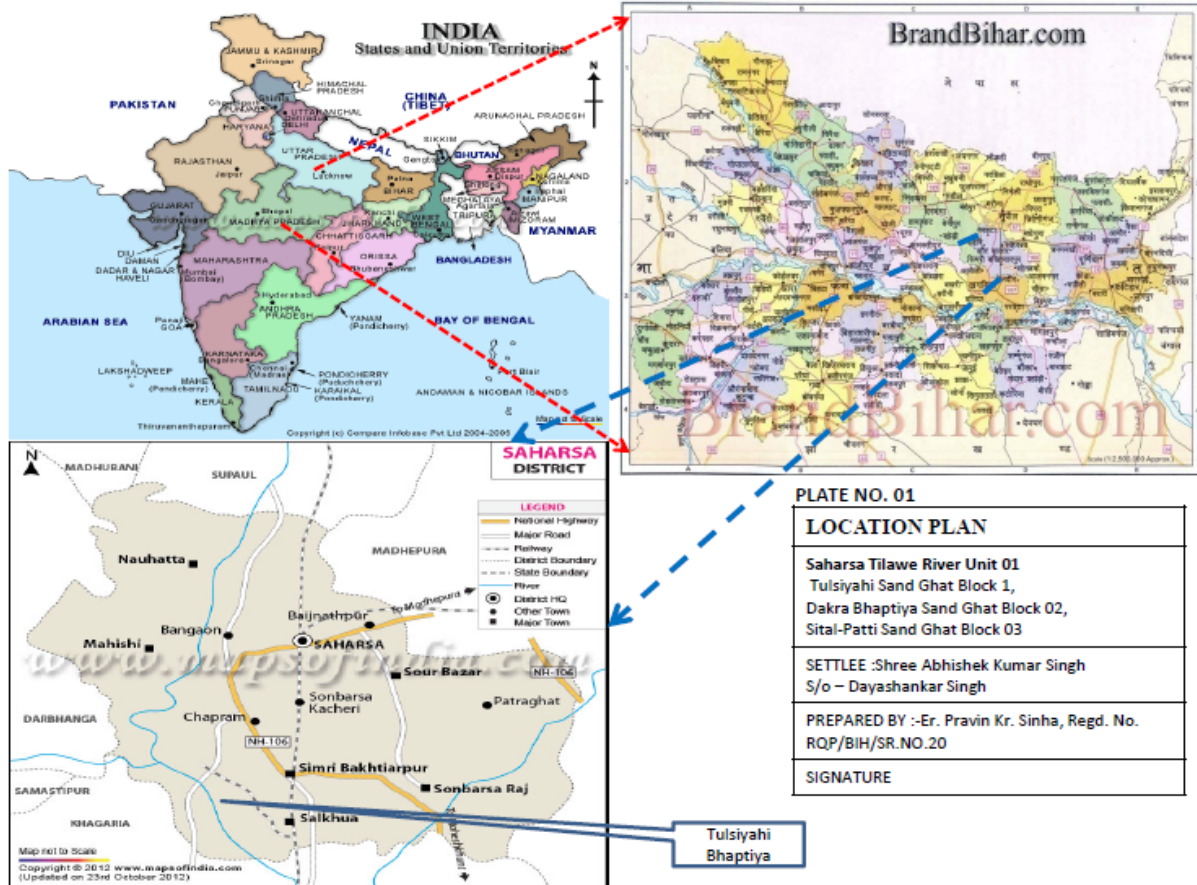


Figure 2.2:- Location map of the project site (Saharsa Tilawe River Unit 01)

2.3 TOPOGRAPHY & GEOLOGY

2.3.1 Topography

The area represents a gentle topography. A detailed geological map on 1:1000 scales with contour interval. The area shows a general slope toward SW to SE while the highest RL of 36.4m occurring on the North -East side of the area along boundary pillar, whereas the lowest RL of 35.5m within the lease area is found along S-E slope near boundary line. The area shows a general slope toward SW to SE while the highest RL of 36.4m occurring on

Project: Sand Ghat Mining Project (Saharsa Tilawe River Unit 01 Sand Ghat) at Village-Bhatauni, Bhapatia & Kanp District- Saharsa, (Bihar).

the North -East side of the area along boundary pillar, whereas the lowest RL of 35.5m within the lease area is found along S-E slope near boundary line. The area shows a general slope toward SW to SE while the highest RL of 38.4m occurring on the North -East side of the area along boundry pillar, whereas the lowest RL of 37.5m within the lease area is found along S-E slope near boundary line.

Source: Mining plan

2.3.2 GEOMORPHOLOGY

The district has a vast alluvial plain devoid of any hills. There is a gentle slope from north to south with a depression on the centre. The maximum ground elevation is 52.50 m amsl in northern part of the district and the minimum is 41.08 m amsl in the south- eastern parts, average being 47 m amsl. Levees along the stream banks, back swamps or flood basins/ chauras of various sizes are the only significant features over the area. The District of Saharsa can be divided in natural divisions. It contains large tracts of sandy land covered with wild marsh. The second division comprised of the anchals lying south of the Tilawe river and is the most fertile area in the district. It is also on higher level than the other part of the district and contains very few marshes. It is well suited to the rabbi crops.

Source: Mining plan

2.3.3 REGIONAL GEOLOGY

Regional Geology

The State of Bihar can be geologically divided into three district Lithounits of different eras i.e rocks comprising of pre - Cambrian era, alluvium of ganga basin & siwaliks of extra peninsular region. Siwaliks are present in few areas of northern districts of the state. Whereas alluvium occupy 2/3 of total geographical area of the state particularly in northern & central part. Precambrian / Achaean rocks are rocks are present in southern districts of the state. The broad geological succession is as follows

Table 2.2. Showing the Geological Succession and their geographic distribution

Age	Geology	Occurrences
Quaternary	Alluvial Deposits (Sand, Clay, Silt,	North Bihar Plain & Central Bihar

Project: Sand Ghat Mining Project (Saharsa Tilawe River Unit 01 Sand Ghat) at Village-Bhatauni, Bhapatia & Kanp District- Saharsa, (Bihar).

	Fragments)	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 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

2.3.4 LOCAL GEOLOGY OF THE AREA

The water bearing formations in the district occurs within the thick pile of quaternary sediments. The thickness of these sediments is about 1000 to 2000 m in the south of the district as inferred from the geophysical survey of Geological Survey of India. There are cyclic deposits of sand, gravel and pebbles of various grades along with clay and silt. In the upper part of the alluvial sequence, sand is fine to medium grained whereas in the lower parts those are medium to coarse with occasional association of gravels. The clay part contains sandy and silty materials. Kankars (calcareous nodules) are found in abundance in clays

Fine sand : 1/64" (0.04 cm) to 1/32" (0.08 cm)

Medium to coarse sand : 1/16" (0.15 cm)

Gravel : 1/8" to 1/16".

Source: Mining Plan

Project: Sand Ghat Mining Project (Saharsa Tilawe River Unit 01 Sand Ghat) at Village-Bhatauni, Bhapatia & Kanp District- Saharsa, (Bihar).

2.3.5 CLIMATE

The area has warm and humid climate with high temperature and medium to high rainfall.

The temperatures are lowest during December-January with an average minimum of 8⁰C to 10⁰C and maximum of 24⁰C to 25⁰C. The temperatures in the hottest months of April to June are minima 23⁰C to 25⁰C and maxima 35⁰C to 38⁰C.

Source https://cgwb.gov.in/District_Profile/Bihar/Saharsa.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 2m from surface has been considered as proved reserves.

The summary of Proved, Probable reserves & resources of each stretches is as below the bulk density multiply by 1.8.

Table-2.3:- Proved Mineral Reserves

Tulsiyahi Sand Ghat Block 01

Classification	Code	Quantity of Sand
A)Mineral Reserves		Cum
1)Proved Mineral Reserve	111	30000
Total		30000

Total Geological Reserve = 30000 cum. Or 54000 tonnes.

Dakra Bhaptiya Sand Ghat Block 02

Classification	Code	Quantity of Sand
A)Mineral Reserves		Cum
1)Proved Mineral Reserve	111	11500
Total		11500

Total Geological Reserve = 11500 cum. Or 20815 tonnes.

Project: Sand Ghat Mining Project (Saharsa Tilawe River Unit 01 Sand Ghat) at Village-Bhatauni, Bhapatia & Kanp District- Saharsa, (Bihar).

Sital-Patti Sand Ghat Block 03

Classification	Code	Quantity of Sand
A)Mineral Reserves		Cum
1)Proved Mineral Reserve	111	40000
Total		40000

Total Geological Reserve = 40000 cum. Or 71600 tonnes.

Total Geological Resrve of Block 1, Block 2 and Block 3 = (30000+11500+40000)

= 81500 cum or 146700 tonnes

Source: Mining Plan

2.4.1 Mineable Reserves:

Mineable reserves have been computed up to 1 m depth from surface. The volume multiplied by bulk density 1.80 g/cm³ for Tulsiyahi Sand Ghat, 1.81 g/cm³ for Dakra Bhaptiya Sand Ghat and 1.79 g/cm³ for Sital Patti Sand Ghat to get the tonnage. Average 1.80 g/ cm³ is taken for the Tilawe River.

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

Table-2.4:- Summary of minable reserves of Saharsa Tilawe River Unit-01

BLOCK-01

Level (mRL)	Length (m)	Width (m)	Depth (m)	Volume (cum)	Tonnes
36-35	529	37	1	19573	35231
Total				19573	35231

Project: Sand Ghat Mining Project (Saharsa Tilawe River Unit 01 Sand Ghat) at Village-Bhatauni, Bhapatia & Kanp District- Saharsa, (Bihar).

BLOCK-02

Level (mRL)	Length (m)	Width (m)	Depth (m)	Volume (cum)	Tonnes
36-35	249	34	1	8466	15323
Total				8466	15323

BLOCK-03

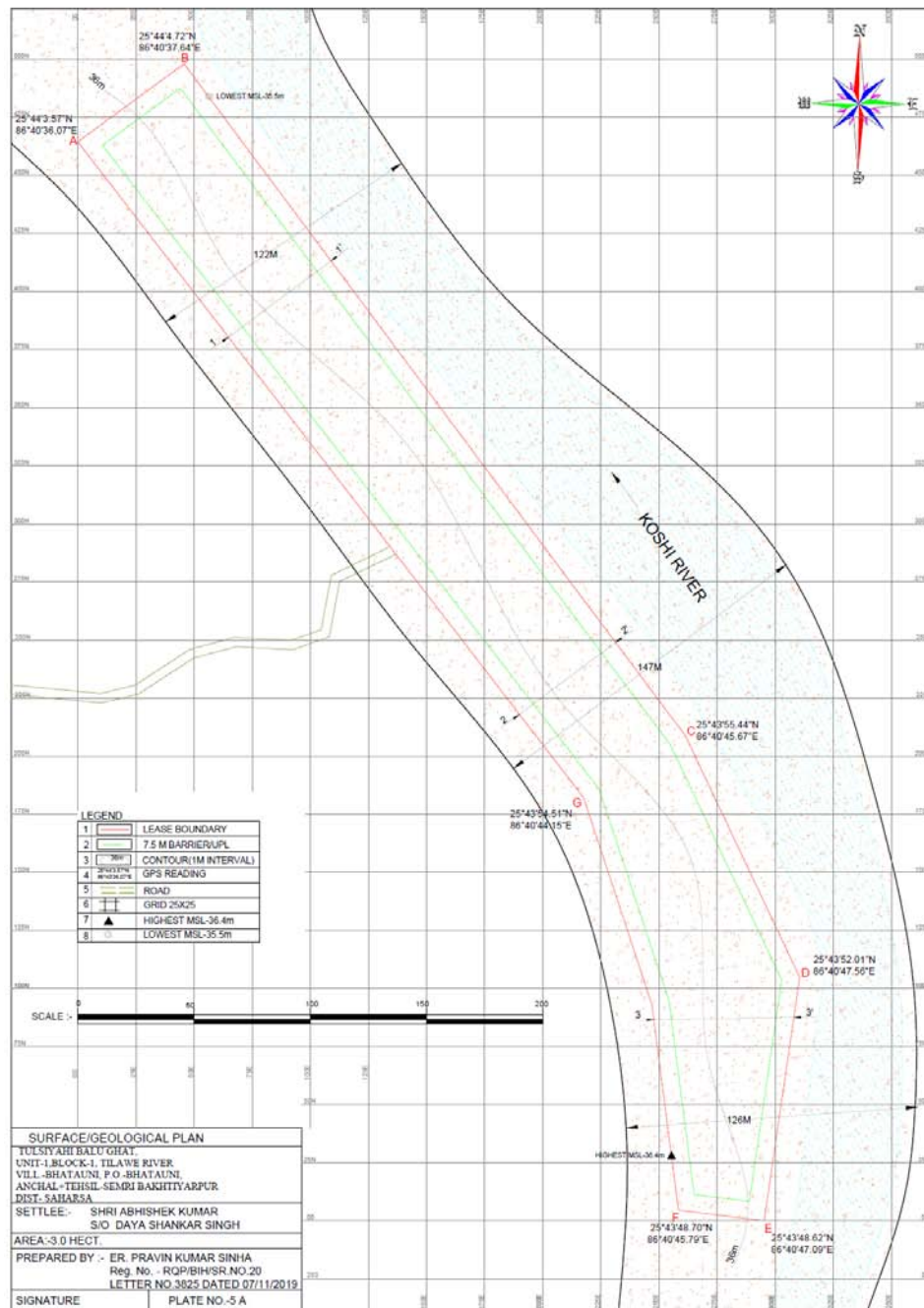
Level (mRL)	Length (m)	Width (m)	Depth (m)	Volume (cum)	Tonnes
38-37	376	79	1	29704	53170
Total				29704	53170

Total Mineable Reserve = (19573+8466+29704) CUM = 57743 cum or 103938 tonnes

Table-2.5:- Classification Mineral Reserves

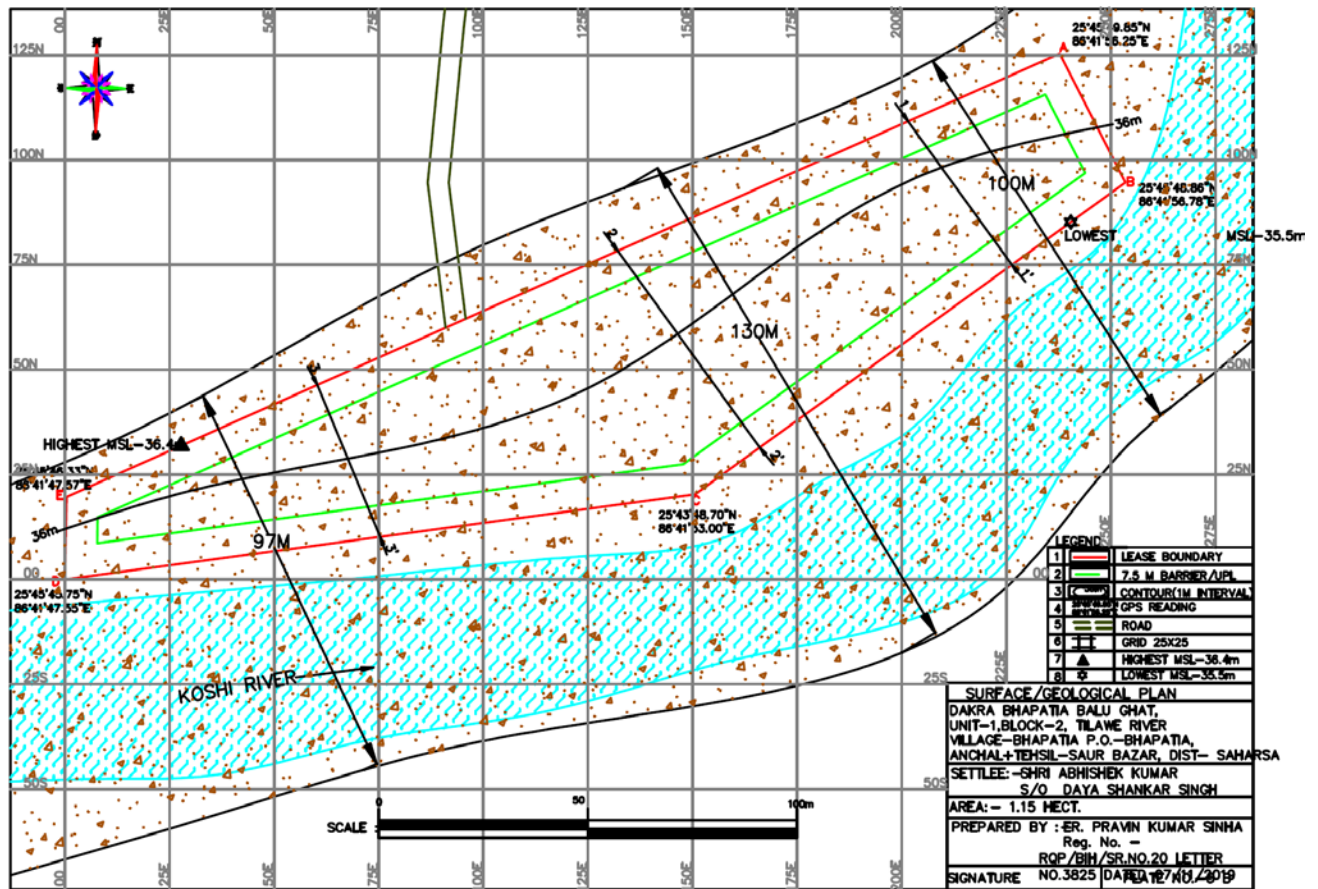
Sand Ghat	Area (Hect)	Geological Reserves (m3)	Mineable Reserves (m3)	Annual Permitted Reserve As per LoI (m3)
Saharsa Tilawe River Unit 01	8.15	81500	57743	48900

Project: Sand Ghat Mining Project (Saharsa Tilawe River Unit 01 Sand Ghat) at Village- Bhatauni, Bhapatia & Kanp District- Saharsa, (Bihar).



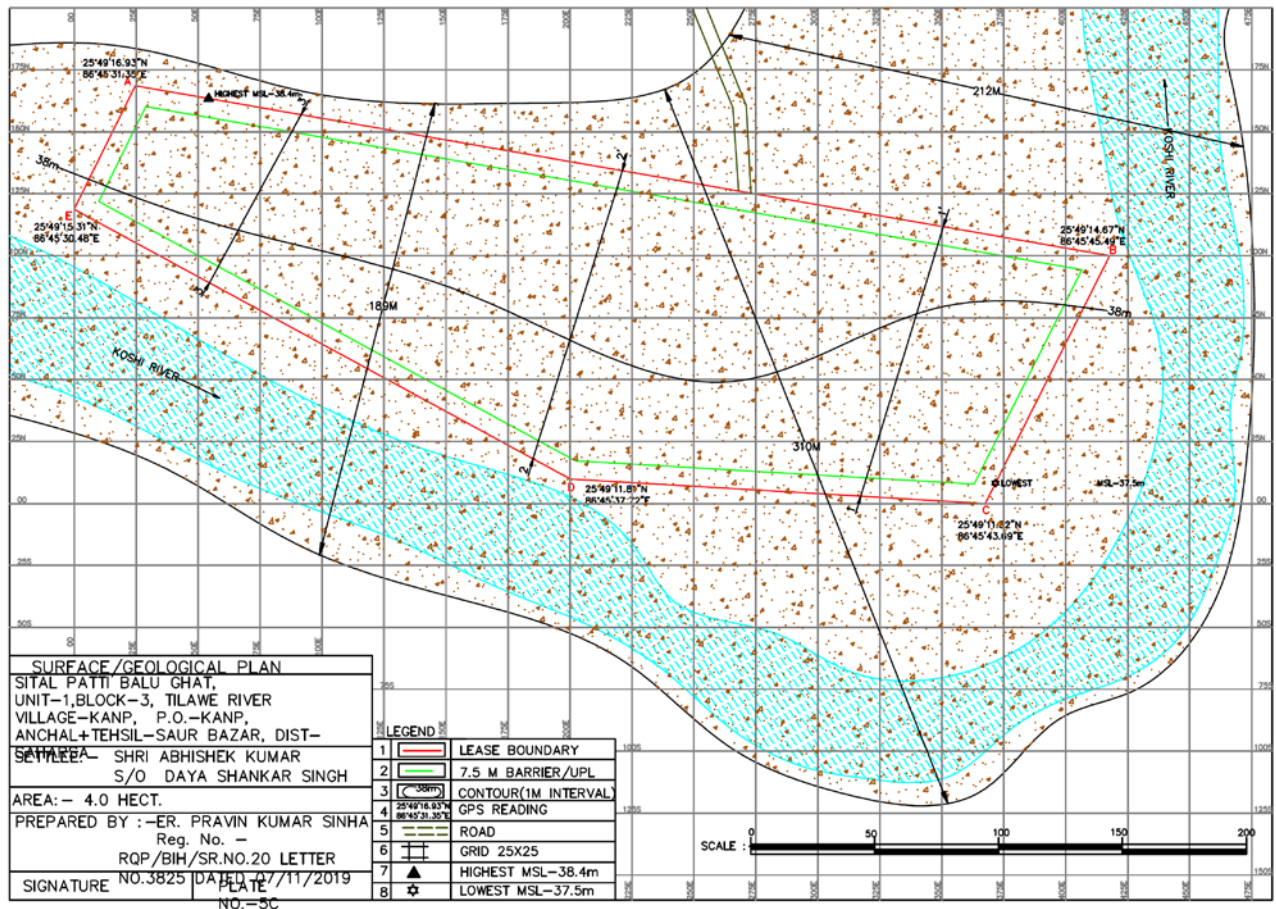
Tulsiyahi Sand Ghat Block 1

Project: Sand Ghat Mining Project (Saharsa Tilawe River Unit 01 Sand Ghat) at Village-Bhatauni, Bhapatia & Kanp District- Saharsa, (Bihar).



Dakra Bhaptiya Sand Ghat Block 02

Project: Sand Ghat Mining Project (Saharsa Tilawe River Unit 01 Sand Ghat) at Village- Bhatauni, Bhapatia & Kanp District- Saharsa, (Bihar).



Sital-Patti Sand Ghat Block 03

Figure 2.3:- Surface cum Geological Section of Saharsa Tilawe River Unit 01

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, SSMG -2016, and EMGSM – 2020.
- 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 1 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.

Project: Sand Ghat Mining Project (Saharsa Tilawe River Unit 01 Sand Ghat) at Village-Bhatauni, Bhapatia & Kanp District- Saharsa, (Bihar).

- 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 Saharsa Tilawe River Unit - 01 Sand Ghat are given below :-

Table 2.7: Year wise Production Details

YEAR	ROM sand (cum)
1 st Year	48900
2 nd Year	48900
3 rd Year	48900
4 th Year	48900
5 th Year	48900

The annual extractable RBM comes to **48900 CUM or 88020 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 Saharsa Tilawe River Unit - 01 Sand Ghat. However, as the digging depth will be restricted to 1.0 m only. This will be further replenished during rainy season. Balu 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.

- Final Slope Angle to Be Adopted: Height of the bench is limited to 1 m while width of individual bench shall be kept 6.0 m. 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.

Project: Sand Ghat Mining Project (Saharsa Tilawe River Unit 01 Sand Ghat) at Village-Bhatauni, Bhapatia & Kanp District- Saharsa, (Bihar).

(ii) During plan period workings will be carried out in the Balu 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..

2.6 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 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 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.

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 lie on the dry bed of Tilawe River so there will be no impact on surface water.

Project: Sand Ghat Mining Project (Saharsa Tilawe River Unit 01 Sand Ghat) at Village-Bhatauni, Bhapatia & Kanp District- Saharsa, (Bihar).

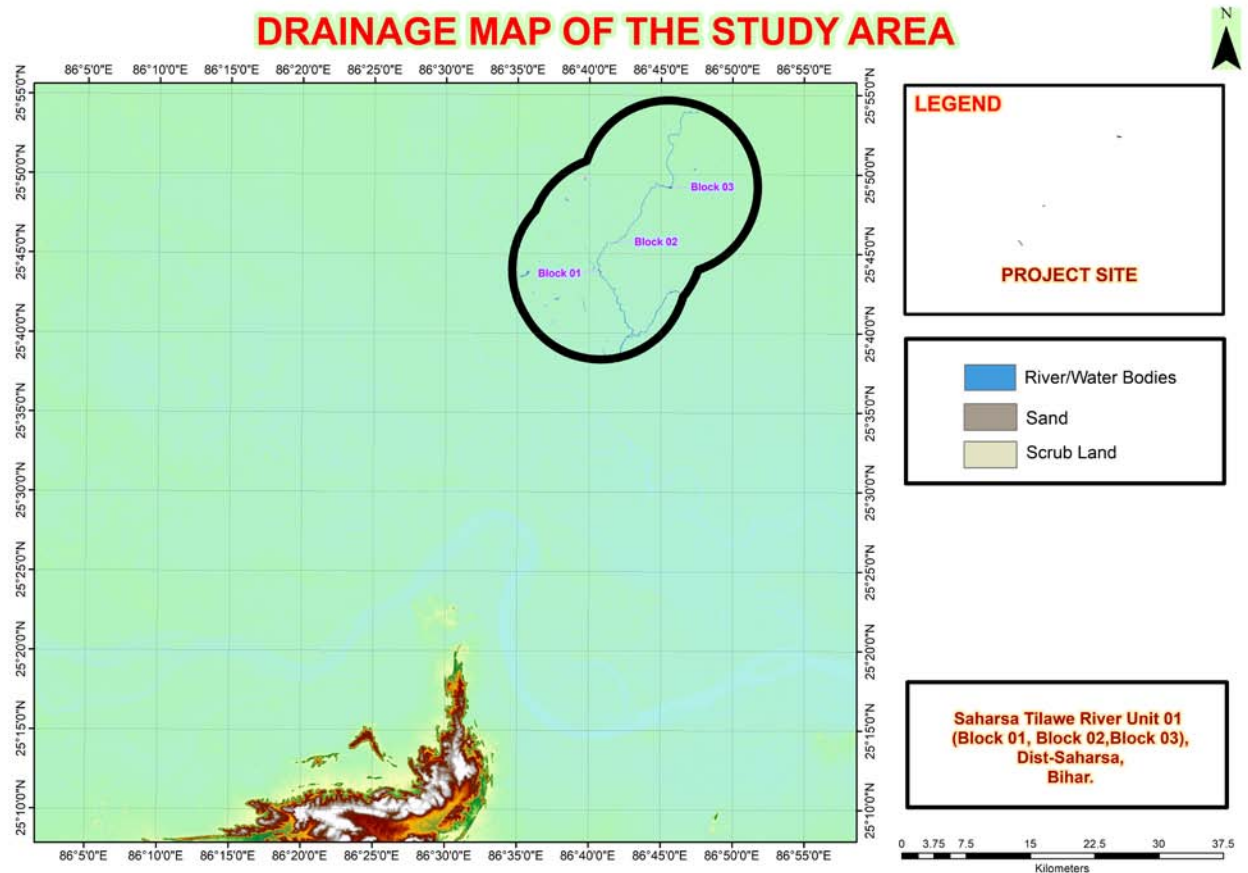


Fig-2.5, Drainage Map

2.7.3 Man power requirement

The manpower requirement for the proposed project will be around 23 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	3
3.	Skilled	07
4.	Un-skilled	12
TOTAL		23

Project: Sand Ghat Mining Project (Saharsa Tilawe River Unit 01 Sand Ghat) at Village-Bhatauni, Bhapatia & Kanp District- Saharsa, (Bihar).

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:

TABLE 2.10 - Water requirement

Activity	Calculation	Round off Figure in KLD
Drinking	@ 10 lpcd per labor $10 \times 23 / 1000 = 0.23$ KLD	0.23
Dust Suppression	Total approach road to be water sprinkled = (Block 01 = 2000m + Block 02 = 540m + Block 03 = 710m) Total 3250 m for Saharsa Tilawe River Unit 01 $3250 \text{ m} \times 6 \text{ m} \times 0.5 \times 2 \text{ times} / 1000 = 19.5$ KLD	19.5
Plantation	82 plant (during plan period) @ 5 L/per plant = $82 \times 5 \text{ lts} = 410 / 1000 = 0.41$ KLD	0.41
Total		20.14 or 20.0 KLD

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.

Project: Sand Ghat Mining Project (Saharsa Tilawe River Unit 01 Sand Ghat) at Village-Bhatauni, Bhapatia & Kanp District- Saharsa, (Bihar).

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.

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 March 2023 to May 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.

- ✓ By setting up meteorological station near project site
- ✓ Collection of site specific meteorological data at the mine site.

Project: Sand Mining Project (Saharsa Tilawe River Unit 01 Sand Ghat) at Village-Bhatauni, Bhapatia & Kanp District- Saharsa, (Bihar).

- ✓ Installation of respiratory dust samplers (for PM₁₀, PM_{2.5}) at different location in the study area for the collection of primary air pollutant and analyze the existing air conditions.
- ✓ Carrying out a detailed biological study for the Core and Buffer Zone
- ✓ Soil sample were collected from various location in the study area to analyze physical and chemical characteristics for assessment of impact on soil.
- ✓ 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.
- ✓ Noise measurement has been done in core zone as well as buffer zone to analyze the existing situation in the study area.
- ✓ 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.
- ✓ Existing pollution load has been also identified in the buffer zone due to similar activities.
- ✓ Accordingly, field studies were carried out during the study period (March 2023 to May 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**.

Project: Sand Mining Project (Saharsa Tilawe River Unit 01 Sand Ghat) at Village- Bhatauni, Bhapatia & Kanp District- Saharsa, (Bihar).

Table 3.1: Land Use Cover of the Project Study Area

Landuse Type	Area (ha.)
Scrub Land	1057.91
Forest	1374.03
River/Water Bodies	523.59
Settlement	9374.78
Vegetation	9.91
Agriculture	46589.04
Area	58929.26

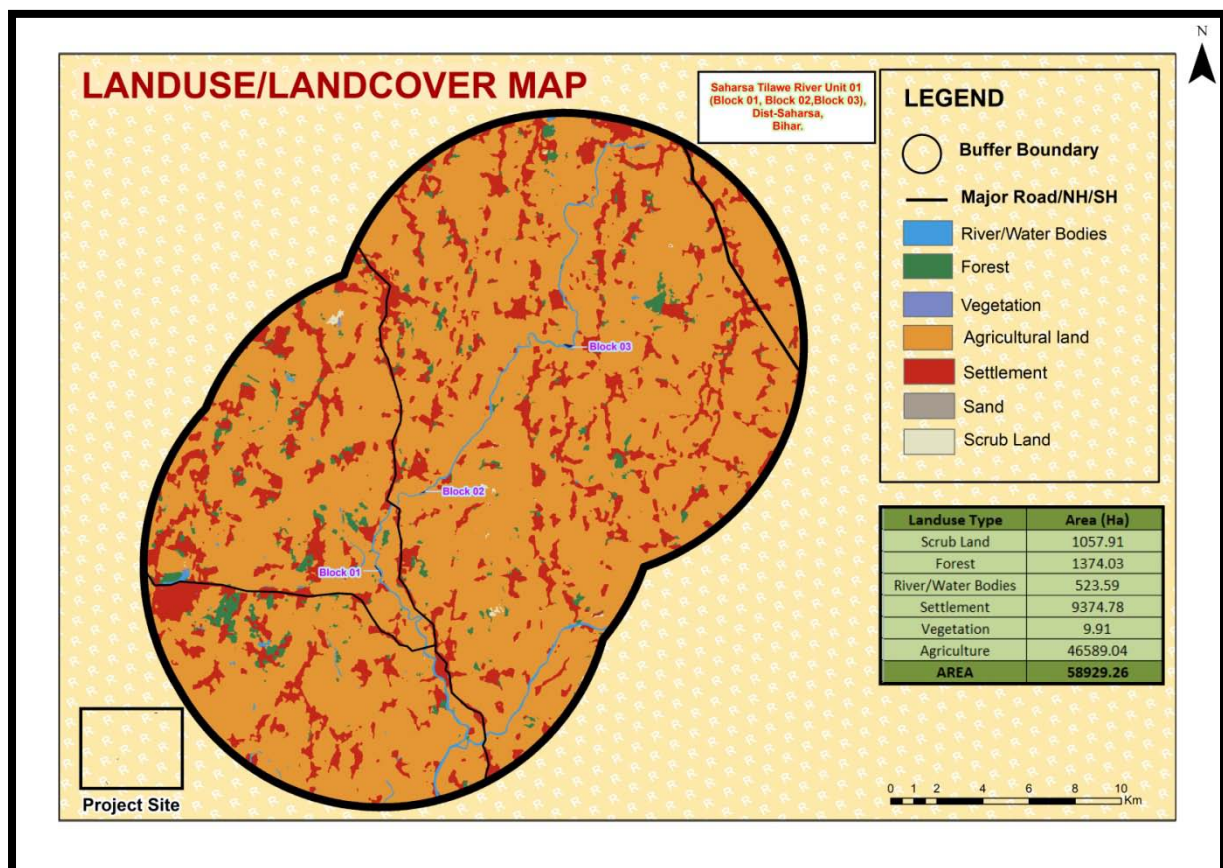


FIGURE 3.1: LAND USE COVER OF THE PROJECT STUDY AREA

Project: Sand Mining Project (Saharsa Tilawe River Unit 01 Sand Ghat) at Village-Bhatauni, Bhapatia & Kanp District- Saharsa, (Bihar).

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.

The water quality at the site and other locations within the 10 km impact zone was monitored during March 2023 to May 2023. 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

Ground Water monitoring locations			
Location ID	Location name	Distance (Km)	Direction
GW 1	Kapasias (PS)	0.38 from Block No. 3	East
GW 2	Kanp East	1.78 from Block No. 3	NW
GW 3	Bhabtia (PS)	0.60 from Block No. 2	NNE
GW 4	Shahpur	0.88 from Block No. 1	NE
GW 5	Tulsiyahi (PS)	0.32 from Block No. 1	South

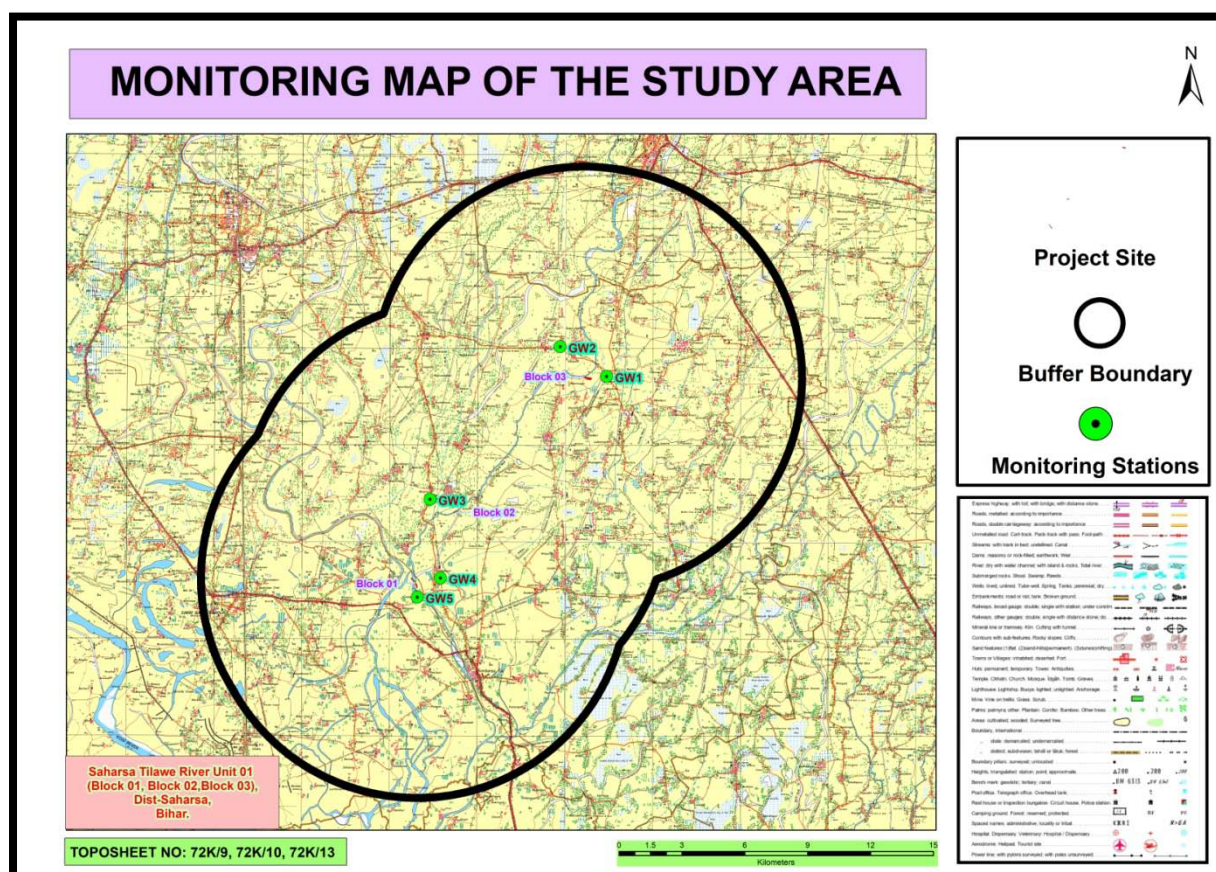


Figure 3.2 Water Sampling Location Map

Table 3.3 Ground Water Quality Monitoring Result

S. No.	Parameter	Unit	Limit (as per IS:10500)		GW1	GW2	GW3	GW4	GW5
			Desirable	Permissible					
1	Colour	Hazen	5	25	<2	<2	<2	<2	<2
2	Odour	-	Un	-	Un	Un	Un	Un	Un
3	Taste	-	Agreeable	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
4	Turbidity	NTU	5	10	<1	<1	<1	<1	<1
5	pH	-	6.5-8.5	No Relaxation	7.66	7.52	7.46	7.48	7.51
6	Total Hardness (as CaCO3)	mg/l	300	600	210	267	284	245	252

Project: Sand Mining Project (Saharsa Tilawe River Unit 01 Sand Ghat) at Village- Bhatauni, Bhapatia & Kanp District- Saharsa, (Bihar).

7	Iron (as Fe)	mg/l	0.3	1	0.86	0.82	0.91	0.75	0.86
8	Chlorides (as Cl)	mg/l	250	1000	54	42	46	38	40
9	Fluoride (as F)	mg/l	1	1.5	0.7	0.6	0.7	0.6	0.8
10	TDS	mg/l	500	2000	425	414	391	378	385
11	Calcium(as Ca ²⁺)	mg/l	75	200	42	54	60	51	55
12	Magnesium (as Mg ²⁺)	mg/l	30	100	25	32	32	28	27
13	Copper (as Cu)	mg/l	0.05	1.5	<0.01	<0.01	<0.01	<0.01	<0.01
14	Manganese(as Mn)	mg/l	0.1	0.3	0.13	0.11	0.12	0.10	0.11
15	Sulphate (as SO ₄)	mg/l	200	400	46	38	55	32	50
16	Nitrate(as NO ₃)	mg/l	45	No Relaxation	5	8	7	7	6
17	Phenolic Compounds (as C ₆ H ₅ OH)	mg/l	0.001	0.002	<0.001	<0.001	<0.001	<0.001	<0.001
18	Mercury (as Hg)	mg/l	0.001	No Relaxation	<0.001	<0.001	<0.001	<0.001	<0.001
19	Cadmium (as Cd)	mg/l	0.01	No Relaxation	<0.01	<0.01	<0.01	<0.01	<0.01
20	Selenium (as Se)	mg/l	0.01	No Relaxation	<0.01	<0.01	<0.01	<0.01	<0.01
21	Arsenic (as As)	mg/l	0.01	No Relaxation	<0.01	<0.01	<0.01	<0.01	<0.01
22	Cyanide (as CN)	mg/l	0.05	No Relaxation	<0.01	<0.01	<0.01	<0.01	<0.01
23	Lead (as Pb)	mg/l	0.05	No Relaxation	0.03	0.03	0.02	0.02	0.01

Project: Sand Mining Project (Saharsa Tilawe River Unit 01 Sand Ghat) at Village- Bhatauni, Bhapatia & Kanp District- Saharsa, (Bihar).

24	Zinc (as Zn)	mg/l	5	15	0.08	0.12	0.11	0.11	0.13
25	Anionic Detergent (as MBAS)	mg/l	0.2	1	<0.01	<0.01	<0.01	<0.01	<0.01
26	Chromium (as Cr6+)	mg/l	0.05	No Relaxation	<0.01	<0.01	<0.01	<0.01	<0.01
27	Mineral oil	mg/l	0.01	0.03	<0.01	<0.01	<0.01	<0.01	<0.01
28	Alkalinity as CaCO ₃	mg/l	200	600	215	236	184	220	196
29	Aluminium (as Al)	mg/l	0.03	0.2	0.03	0.02	0.02	0.03	0.02
30	Boron (as B)	mg/l	1	5	0.3	0.2	0.3	0.3	0.3
Microbiological Parameter									
31	Total Coliform	MPN /100ml	10 , Max	-	<2	<2	<2	<2	<2
32	<i>E. coli</i>	E.coli /100ml	Absent	-	Absent	Absent	Absent	Absent	Absent

Observation:

Analysis of results of ground water reveals the following: -

- pH varies from 7.46 to 7.66
- Total hardness varies from 210 mg/l to 284 mg/l .
- Total dissolved solids vary from 378 mg/l to 425 mg/l.

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

There is no surface water samples taken for the study area as the river is seasonal and not perennial so there is water in the river during the rainy season and in rest of the months it is dry channel.

Project: Sand Mining Project (Saharsa Tilawe River Unit 01 Sand Ghat) at Village-Bhatauni, Bhapatia & Kanp District- Saharsa, (Bihar).

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.

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

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	D	pH between 6.5 to 8.5

Project: Sand Mining Project (Saharsa Tilawe River Unit 01 Sand Ghat) at Village-Bhatauni, Bhapatia & Kanp District- Saharsa, (Bihar).

life and Fisheries		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 January. Sampling was done by standard sampling technique as per the Standard Methods. Necessary precautions were taken for preservation of samples.

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 pre-monsoon season and shown in **Table-3.5**.

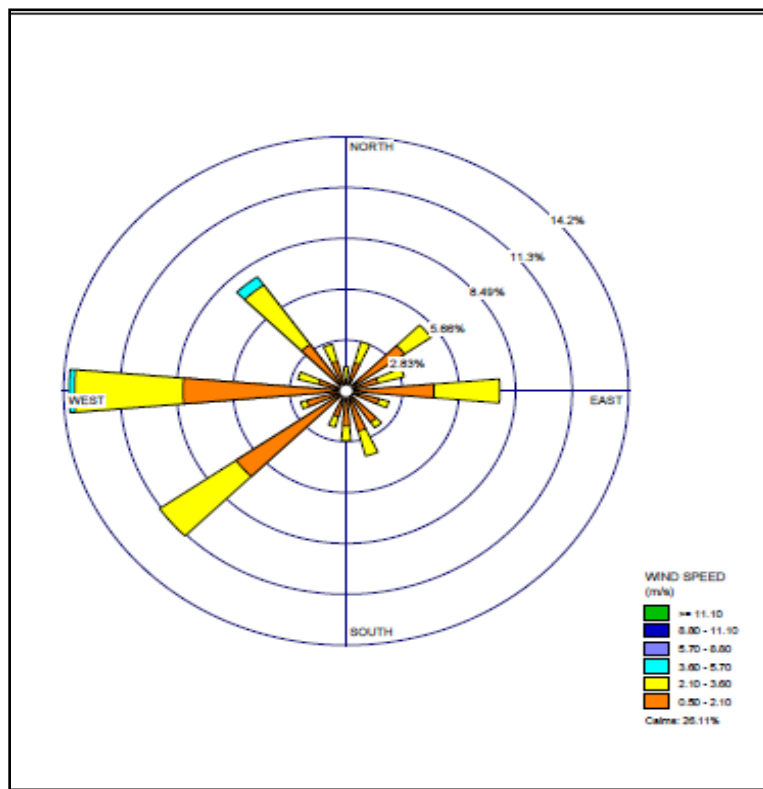
The following parameters were recorded at hourly intervals continuously during monitoring period, except rainfall which was recorded on daily basis.

- Wind speed
- Wind Direction
- Air Temperature

Table-3.5, Summarized project site meteorological data for Pre-Monsoon Season

Month	Temperature °C		Wind Speed (Km/Hr)	
	Min	Max	Average	Max
March 2023	20	38	11.3	21.0
April 2023	25	43	13.2	24.9
May 2023	26	42	16.1	27.5

Project: Sand Mining Project (Saharsa Tilawe River Unit 01 Sand Ghat) at Village- Bhatauni, Bhapatia & Kanp District- Saharsa, (Bihar).



Project: Sand Mining Project (Saharsa Tilawe River Unit 01 Sand Ghat) at Village-Bhatauni, Bhapatia & Kanp District- Saharsa, (Bihar).

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 08 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-3.6**.

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 (PM₁₀) & PM_{2.5}, Sulphur-dioxide (SO₂) and Oxides of Nitrogen (NO₂) has been measured through a planned field monitoring.

The baseline values of the air pollutants of concern are presented in Tables below statistical parameters like minimum, maximum, average and 98th percentiles have been computed from the observed field data for all sampling stations and are given **Table-3.7, Table-3.8, Table-**

Project: Sand Mining Project (Saharsa Tilawe River Unit 01 Sand Ghat) at Village- Bhatauni, Bhapatia & Kanp District- Saharsa, (Bihar).

3.9 & Table 3.10. These are compared with the standards prescribed by Central Pollution Control Board (CPCB) for industrial, residential and rural zone.

Table 3.6: Ambient Air Quality Monitoring Stations

Air monitoring locations			
Location ID	Location name	Distance (Km)	Direction
AQ 1	Kapasias (PS)	0.38 from Block No. 3	East
AQ 2	Golma East	2.15 from Block No. 3	South
AQ 3	Bishunpur	2.58 from Block No. 3	NNE
AQ 4	Kanp East	1.78 from Block No. 3	NW
AQ 5	Kachra	2.86 from Block No. 2	North
AQ 6	Bhabtia (PS)	0.60 from Block No. 2	NNE
AQ 7	Sirrahi	1.94 from Block No. 2	ESE
AQ 8	Lagma	1.04 from Block No. 1	North
AQ 9	Tariyama	2.50 from Block No. 1	WNW
AQ 10	Shahpur	0.88 from Block No. 1	NE
AQ 11	Tulsiyahi (PS)	0.32 from Block No. 1	South
AQ 12	Soha	2.68 from Block No. 1	SE
AQ 13	Bhatauni	1.20 from Block No. 1	SW
AQ 14	Ghoganpatti	1.54 from Block No. 3	SW

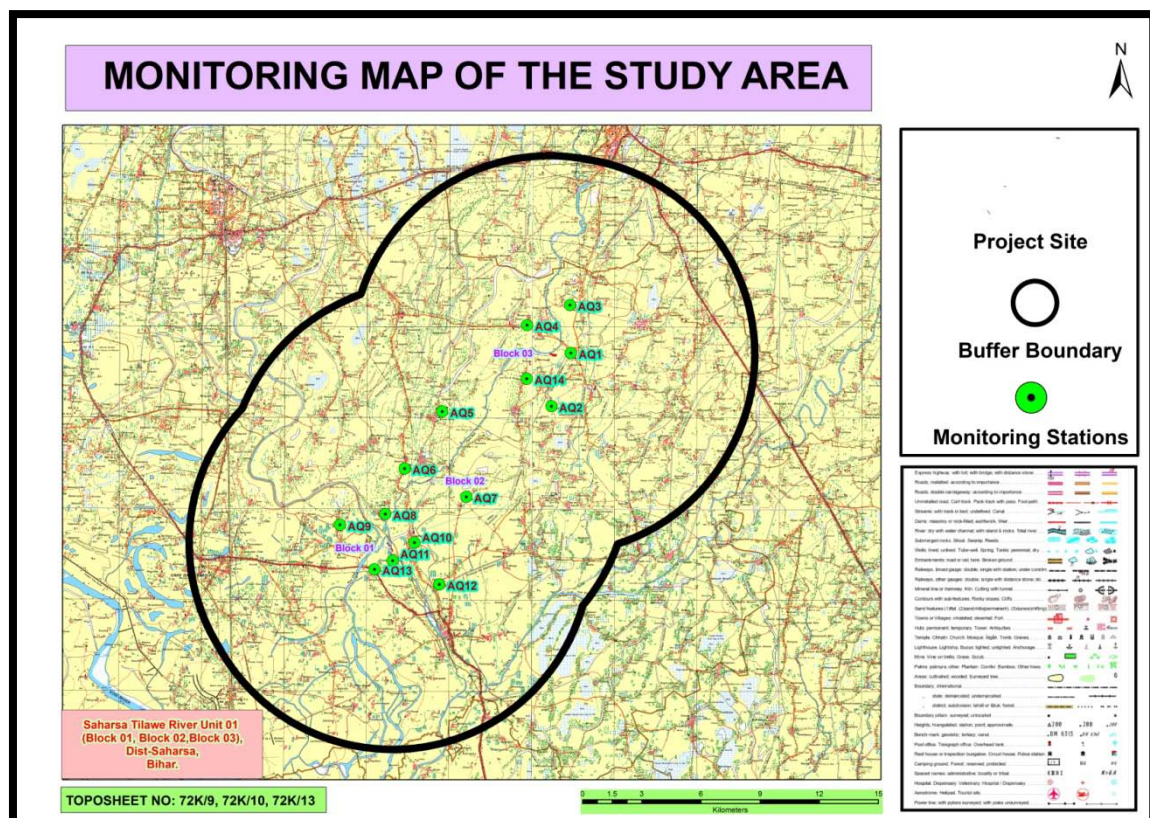


Figure 3.4 Ambient Air Quality Monitoring Stations

Project: Sand Mining Project (Saharsa Tilawe River Unit 01 Sand Ghat) at Village-Bhatauni, Bhapatia & Kanp District- Saharsa, (Bihar).

Table-3.7: Ambient Air Quality in the Study Area PM_{2.5}

Location Code	PM _{2.5} (µg/m ³)				
	Name of the station	Min	Max	Average	98 th Percentile
AAQ1	Kapasias (PS)	38.55	57.96	46.28	55.72
AAQ2	Golma East	26.01	36.93	30.33	36.47
AAQ3	Bishunpur	24.48	47.22	37.24	46.55
AAQ4	Kanp East	29.48	46.14	35.79	44.59
AAQ5	Kachra	26.01	36.93	30.29	36.47
AAQ6	Bhaptia (PS)	27.72	45.97	34.65	44.86
AAQ7	Sirrahi	40.33	50.89	44.64	49.91
AAQ8	Lagma	27.24	42.16	36.08	42.15
AAQ9	Tariyama	34.80	43.60	39.31	43.16
AAQ10	Shahpur	37.48	48.26	42.28	48.12
AAQ11	Tulsiyahi (PS)	37.99	47.72	43.39	47.61
AAQ12	Soha	31.87	42.19	37.42	41.88
AAQ13	Bhatauni	25.15	33.52	30.13	33.43
AAQ14	Ghoganpatti	28.20	37.64	32.52	37.22

Table-3.8: Ambient Air Quality in the Study Area PM₁₀

Location Code	PM ₁₀ (µg/m ³)				
	Name of the station	Min	Max	Average	98 th Percentile
AAQ1	Kapasias (PS)	71.39	83.78	77.51	83.55
AAQ2	Golma East	58.28	80.42	71.61	79.25
AAQ3	Bishunpur	61.72	80.83	70.54	78.77
AAQ4	Kanp East	62.88	78.97	70.97	77.71
AAQ5	Kachra	65.05	80.42	70.54	79.25
AAQ6	Bhaptia (PS)	64.26	76.14	70.01	75.16
AAQ7	Sirrahi	69.46	87.88	78.55	87.26
AAQ8	Lagma	69.13	82.58	75.81	82.48
AAQ9	Tariyama	55.24	78.08	68.18	76.85
AAQ10	Shahpur	60.26	81.10	69.92	80.40
AAQ11	Tulsiyahi (PS)	54.03	82.17	67.89	81.30
AAQ12	Soha	52.14	80.94	69.83	79.96
AAQ13	Bhatauni	52.79	72.58	62.64	71.67
AAQ14	Ghoganpatti	49.26	70.00	60.78	68.55

Project: Sand Mining Project (Saharsa Tilawe River Unit 01 Sand Ghat) at Village-Bhatauni, Bhapatia & Kanp District- Saharsa, (Bihar).

Table-3.9: Ambient Air Quality in the Study Area SO₂

Location Code	SO ₂ (µg/m ³)				
	Name of the station	Min	Max	Average	98 th Percentile
AAQ1	Kapasias (PS)	7.31	13.69	10.68	13.31
AAQ2	Golma East	6.24	11.72	8.98	11.53
AAQ3	Bishunpur	6.36	12.8	9.86	12.77
AAQ4	Kanp East	7.27	13.06	10.13	12.91
AAQ5	Kachra	6.24	13.81	9.46	13.18
AAQ6	Bhaptia (PS)	6.51	10.46	8.41	10.46
AAQ7	Sirrahi	10.78	17.66	13.92	16.94
AAQ8	Lagma	6.91	9.15	7.60	9.13
AAQ9	Tariyama	7.94	10.0	9.17	9.99
AAQ10	Shahpur	8.66	10.76	9.67	10.73
AAQ11	Tulsiyahi (PS)	8.78	10.21	9.73	10.20
AAQ12	Soha	14.25	16.58	15.56	16.46
AAQ13	Bhatauni	6.20	8.02	7.08	8.01
AAQ14	Ghoganpatti	7.47	9.33	8.60	9.32

Table-3.10: Ambient Air Quality in the Study Area NO₂

Location Code	NO ₂ (µg/m ³)				
	Name of the station	Min	Max	Average	98 th Percentile
AAQ1	Kapasias (PS)	13.16	20.76	16.66	20.11
AAQ2	Golma East	11.37	18.44	14.29	18.44
AAQ3	Bishunpur	12.08	18.21	15.06	17.98
AAQ4	Kanp East	11.29	18.44	14.86	18.34
AAQ5	Kachra	10.41	18.44	14.35	18.44
AAQ6	Bhaptia (PS)	10.43	16.48	13.40	15.91
AAQ7	Sirrahi	17.13	26.56	21.42	26.15
AAQ8	Lagma	11.21	16.64	14.04	16.46
AAQ9	Tariyama	14.77	17.40	15.85	17.14
AAQ10	Shahpur	15.94	18.70	17.09	18.47
AAQ11	Tulsiyahi (PS)	15.16	16.54	16.02	16.52
AAQ12	Soha	7.14	9.37	8.15	9.36
AAQ13	Bhatauni	11.67	12.86	12.03	12.72
AAQ14	Ghoganpatti	16.03	18.39	17.02	18.38

Project: Sand Mining Project (Saharsa Tilawe River Unit 01 Sand Ghat) at Village-Bhatauni, Bhapatia & Kanp District- Saharsa, (Bihar).

3.3.4.1 Baseline Scenario

Particulate Matter (PM_{2.5})

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:

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

PM_{2.5} recorded within the study area was in the range of 24.48 $\mu\text{g}/\text{m}^3$ to 57.96 $\mu\text{g}/\text{m}^3$. 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_{2.5} for industrial, residential, rural and other areas.

Suspended Particulate Matter (PM₁₀)

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 PM₁₀ recorded within the study area was in the range of 52.14 $\mu\text{g}/\text{m}^3$ to 87.88 $\mu\text{g}/\text{m}^3$. The 24 hourly average values of PM₁₀ 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 PM₁₀ in industrial, residential, rural and other areas.

Sulphur Dioxide (SO₂)

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

Project: Sand Mining Project (Saharsa Tilawe River Unit 01 Sand Ghat) at Village-Bhatauni, Bhapatia & Kanp District- Saharsa, (Bihar).

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.

The minimum and maximum concentration of SO_2 recorded within the study area was $6.20 \mu\text{g}/\text{m}^3$ to $17.66 \mu\text{g}/\text{m}^3$. The 24 hourly average values of SO_2 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 $80 \mu\text{g}/\text{m}^3$ for Residential, Rural and other areas.

Oxides of Nitrogen (NO_2)

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_2 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_2 recorded within the study area was in the range of was $7.14 \mu\text{g}/\text{m}^3$ to $26.56 \mu\text{g}/\text{m}^3$.

The 24 hourly average values of NO_2 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 $80 \mu\text{g}/\text{m}^3$ for Residential, Rural and other areas.

Ambient Air Quality in the Study Area, Free Silica

$\text{SiO}_2(\mu\text{g}/\text{m}^3)$	AQ1	AQ2	AQ3	AQ4	AQ5	AQ6	AQ7	AQ8	AQ9	AQ 10	AQ 11	AQ 12	AQ 13	AQ 14
Minimum	1.42	1.62	1.55	1.49	1.60	1.50	1.5	1.5	1.50	1.6	1.54	1.59	1.40	1.51
Maximum	1.69	1.9	1.66	1.80	1.7	1.79	1.6	1.7	1.8	1.8	1.82	1.81	1.71	1.21

Project: Sand Mining Project (Saharsa Tilawe River Unit 01 Sand Ghat) at Village- Bhatauni, Bhapatia & Kanp District- Saharsa, (Bihar).

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 05 locations and analyzed as per CPCB norms. The soil sampling locations are marked in **Figure 3.5** and shown in **Table 3.11**. The physico-chemical characteristic of these soil samples is given in **Table 3.12**.

Table 3.11: Description of soil sampling locations

Soil monitoring locations			
Location ID	Location name	Distance (Km)	Direction
SQ 1	Kapasias (PS)	0.38 from Block No. 3	East
SQ 2	Kanp East	1.78 from Block No. 3	NW
SQ 3	Bhaptia (PS)	0.60 from Block No. 2	NNE
SQ 4	Shahpur	0.88 from Block No. 1	NE
SQ 5	Tulsiyahi (PS)	0.32 from Block No. 1	South

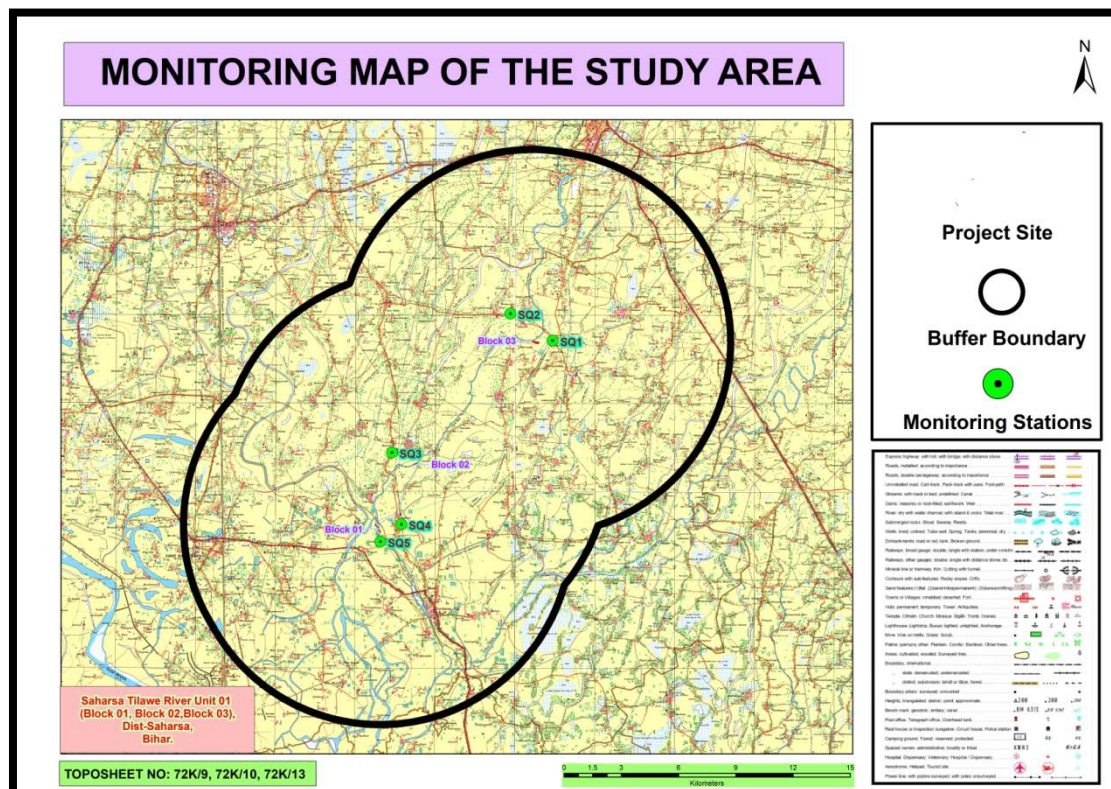


Figure 3.5, Soil Sampling Locations

Project: Sand Mining Project (Saharsa Tilawe River Unit 01 Sand Ghat) at Village-Bhatauni, Bhapatia & Kanp District- Saharsa, (Bihar).

Table 3.12: Physico-chemical properties of soil

S.No	Parameter	Unit	SQ-1	SQ-2	SQ-3	SQ-4	SQ-5
1	Texture	-	Sand	Loamy Sand	Loamy Sand	Loamy Sand	Loamy Sand
	Silt	%	1.91	4.24	5.12	6.25	4.99
	clay	%	4.27	14.44	16.25	15.63	8.74
	Sand	%	93.82	81.32	21.37	21.88	86.27
2	pH	-	7.63	7.81	7.52	7.21	7.92
3	Electrical Conductivity	µmhos/cm	113	121	129	130	126
4	Cation exchange capacity	meq/100 gm	8.94	10.82	11.82	13.61	12.61
5	Potassium	mg/kg	51.61	56.78	50.50	70.1	68.71
6	Sodium	mg/kg	14.52	18.76	17.51	19.50	22.34
7	Calcium	mg/kg	1228.26	1436.54	1450.12	1730.40	1758.39
8	Magnesium	mg/kg	313.55	409.75	412.15	420.5	425.67
9	Sodium Absorption Ratio	-	0.09	0.11	0.12	0.13	0.12
10	Water Holding Capacity	%	24.17	25.1	27.1	25.12	26.84
11	Porosity	%	52.12	48.69	50.69	35.25	46.25

Observations:

Samples collected from identified locations indicate the soil is sandy type and the pH value ranging from 7.21 to 7.92, which shows that the soil is alkaline in nature. Potassium is found to be from 50.50 meq/100 gm to 70.10 meq/100 gm.

3.5 NOISE ENVIRONNENT

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 3.13**. The noise level monitoring locations are marked in **Figure 3.6** and shown in **Table 3.14**.

Project: Sand Mining Project (Saharsa Tilawe River Unit 01 Sand Ghat) at Village- Bhatauni, Bhapatia & Kanp District- Saharsa, (Bihar).

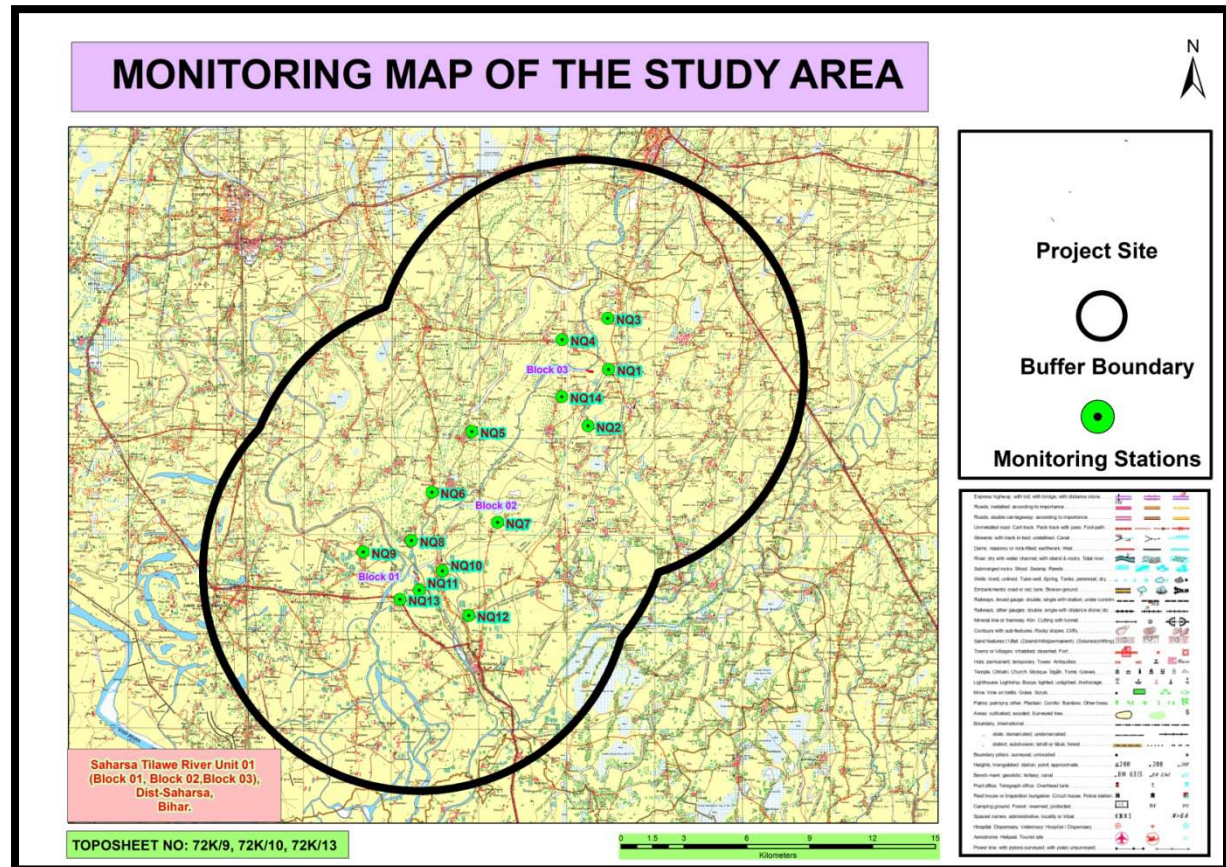


Figure 3.6 Noise Monitoring Stations

Table 3.13: Noise Quality Monitoring Stations

Noise monitoring locations			
Location ID	Location name	Distance (Km)	Direction
NQ 1	Kapasia (PS)	0.38 from Block No. 3	East
NQ 2	Golma East	2.15 from Block No. 3	South
NQ 3	Bishunpur	2.58 from Block No. 3	NNE
NQ 4	Kanp East	1.78 from Block No. 3	NW
NQ 5	Kachra	2.86 from Block No. 2	North
NQ 6	Bhabtia (PS)	0.60 from Block No. 2	NNE
NQ 7	Sirrahi	1.94 from Block No. 2	ESE
NQ 8	Lagma	1.04 from Block No. 1	North
NQ 9	Tariyama	2.50 from Block No. 1	WNW
NQ 10	Shahpur	0.88 from Block No. 1	NE
NQ 11	Tulsiyahi (PS)	0.32 from Block No. 1	South
NQ 12	Soha	2.68 from Block No. 1	SE
NQ 13	Bhatauni	1.20 from Block No. 1	SW
NQ 14	Ghoganpatti	1.54 from Block No. 3	SW

Project: Sand Mining Project (Saharsa Tilawe River Unit 01 Sand Ghat) at Village-Bhatauni, Bhapatia & Kanp District- Saharsa, (Bihar).

Table 3.14: 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	NQ1	Residential Zone	55	45	35.86	31.11
2	NQ2	Residential Zone	55	45	47.16	30.06
3	NQ3	Residential Zone	55	45	48.51	38.08
4	NQ4	Residential Zone	55	45	45.87	38.76
5	NQ5	Residential Zone	55	45	47.09	36.35
6	NQ6	Residential Zone	55	45	45.64	32.45
7	NQ7	Residential Zone	55	45	47.31	33.34
8	NQ8	Residential Zone	55	45	47.85	39.31
9	NQ9	Residential Zone	55	45	40.04	30.87
10	NQ10	Residential Zone	55	45	39.65	35.50
11	NQ11	Residential Zone	55	45	33.55	33.00
12	NQ12	Residential Zone	55	45	35.86	32.00
13	NQ13	Residential Zone	55	45	47.16	35.50
14	NQ14	Residential Zone	55	45	35.05	33.00

Results

Noise monitoring reveals that the minimum & maximum noise levels at day time were recorded as 33.55 dB(A) to 48.51 dB(A) respectively. The minimum & maximum noise levels at night time were found to be 30.06 dB (A) & 39.31 dB(A) 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 Introduction

Biodiversity reflects the potential of a regional ecosystem and also biological communities influence and react sensitively to changes in the balance of environmental stresses.

Conservation of the biodiversity is essential for the sustainable development as it not only provides the food, fodder and medicine, but also contributes to improvement of essential environmental factors. 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 the operation of the proposed project. A similar approach has been adopted for conducting the study on Biological Environment for this Project.

The study was conducted in the project area to assess all the details the biological environment especially flora and fauna for their diversity. The present study is highlighting the various issues pertaining to floristic diversity and the faunal wealth in the core area *i.e.* Banka sand mine block 5 and buffer zone *i.e.* area within 10 km radius.

3.6.2 Description of the Study Area

Saharsa Tilawe River Unit 01 sand mine is located on the dry river bed of Tilawe River over an area of 8.15 ha in Saharsa district of Bihar. Saharsa district lies under the Seismic Zone-IV as per IS-1893 (part-1)-2002. Forest of Banka district comprises of tropical moist deciduous vegetation due to high temperature and humidity. Land development refers to the activities which increase the fertility of land leading to higher productivity. There is no any Eco-sensitive zone such as Wildlife Sanctuary and National Parks present in the buffer zone while one Jungle Jhari forest are present in western part approx. 7 km in the buffer zone.

The proposed project site lies in the Agro climatic zone of the middle gangetic plain region. It is a fertile alluvial plain drained by the Ganga and its tributaries. Rice, maize, millets in kharif, wheat, gram, barley, peas, mustard and potato in Rabi are important crops and the village people are mainly agrarian.

Forests

The Forest cover in the state, based on interpretation of satellite data of Nov 2008 Jan 2009 is 6845 km² which is 7.27 % of the states geographical area. In terms of forest canopy density

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classes the state has 231 sq km very dense forest, 3,280 sq km moderately dense forest, 3,334 sq km open forest. In terms of forest canopy density classes, the Banka district under very dense forest area is nil, 111 sq km area under moderately dense forest and 110 sq km area under open forest. Therefore, approx. 7.31 % of the total geographical area of the district is under forest cover. (Source: India State of Forest Report Bihar, 2011; http://fsi.nic.in/cover_2011/bihar.pdf)

3.6.3 Methodology

The ecological survey has been conducted during winter season for the collection of primary data of flora and fauna, and other environmental observations from Core zone (at the project site) and Buffer zone (around 10 km radius of the project site).

A 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 visits and secondary data was collected from the Forest Department and published relevant literature. The mode of data and parameters considered during field investigations is given in Table below.

Table 3.15 Mode of data collection & parameters considered during the Survey

Aspect	Data	Mode of data collection	Parameters monitored
Terrestrial Ecology	Primary data collection	By field survey	Floral and Faunal diversity
	Secondary data collection	*Forests department of Bihar *Department of Forest and Environment Bihar *Published literatures	Floral and Faunal diversity and study of vegetation, forest type, importance etc.

Vegetation Study

Vegetation study was conducted in both buffer and core zones. The inventory of plants was prepared through the field visits, personal interviews and group discussion with local people. The species composition revealed that plants are deciduous in nature and in the shrub form.

Any species which could not be identified in the field was brought back (flowers/leaves specimen) and cross-checked with the help of expert institutions/resource person.

Project: Sand Mining Project (Saharsa Tilawe River Unit 01 Sand Ghat) at Village-Bhatauni, Bhapatia & Kanp District- Saharsa, (Bihar).

a) Flora and Fauna of Core Zone

Flora

The core zone comprises flat sandy bed of Chandan River where mining operation is proposed. Most of the areas nearby the project site are waste land. No major trees were recorded from the core zone except some seasonal grasses. No ecologically sensitive plant species has been reported from this area. Some grass species were recorded from core zone such as Doob and Motha etc.

Fauna

Core zone of the proposed mine area is dry sand bed and devoid of any major plant species, So, mammals and avifauna were not observed during the study period. There is no any aquatic habitat in the core zone, so aquatic flora and fauna also does not exist.

b) Flora and Fauna of Buffer Zone

Flora

Terrestrial Flora

The buffer zone devoid of any forest except in the western part of 10 km buffer at approx. 7 km there is one Jungle jhari forest area. Common trees such as Mahua (*Madhuca indica*) Mango (*Mangifera Indica*), Arjun (*Terminalia arjuna*), Neem (*Azadirachta indica*), Peepal (*Ficus religiosa* (L.)), Palas (*Butea monosperma*) Tal (*Borassus flabellifer*), Babool (*Acacia nilotica*), Khejri (*Prosopis cineraria*) have been found on the edges of agricultural fields along pathways and along the river bank. Detail list of flora has been enumerated in the tables below.

Table 3.16 List of Trees in Study area

S. No.	Botanical Name	Common Name	Family
1.	<i>Borassus flabellifer</i>	Tal	Arecaceae
2.	<i>Terminalia arjuna</i>	Arjun	Combretaceae
3.	<i>Artocarpus heterophyllus</i>	Katahal	Moraceae

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S. No.	Botanical Name	Common Name	Family
4.	<i>Acacia nilotica</i>	Babool	Fabaceae
5.	<i>Bombax ceiba</i>	Semal	Malvaceae
6.	<i>Madhuca indica</i>	Mahua	Sapotaceae
7.	<i>Dalbergia sissoo</i>	Sisam	Fabaceae
8.	<i>Ficus benghalensis</i>	Bargad	Moraceae
9.	<i>Neolamarckia cadamba</i>	Kadamb	Rubiaceae
10.	<i>Ficus religiosa</i>	Pipal	Moraceae
11.	<i>Terminalia elliptica</i>	Asan	Combretaceae
12.	<i>Azadirachta indica</i>	Neem	Meliaceae
13.	<i>Melia azedarach (L.)</i>	Bakain	Meliaceae
14.	<i>Syzigium cumini (L.) Skeels</i>	Jamun	Myrtaceae
15.	<i>Ziziphus mauritiana Lam.</i>	Ber	Rahmnaceae
16.	<i>Emblica officinalis Gaertn.</i>	Amla	Euphorbiaceae
17.	<i>Diospyros melanoxylon</i>	Kend	Ebenaceae
18.	<i>Tamarindus indica (L.)</i>	Emli	Caesalpiniaceae
19.	<i>Aegle marmelos Linn</i>	Bel	Rutaceae
20.	<i>Mangifera indica</i>	Mango	Anacardiaceae
21.	<i>Diospyros melanoxylon</i>	Kend	Ebenaceae

Source: <http://forest.bih.nic.in/>

Project: Sand Mining Project (Saharsa Tilawe River Unit 01 Sand Ghat) at Village-Bhatauni, Bhapatia & Kanp District- Saharsa, (Bihar).

Table 3.17 List of Shrubs and Herbs in Study area

S.No.	Botanical name	Local name	Family
1.	<i>Jasminum sambac</i>	Jasmin	Apocynaceae
2.	<i>Hibiscus rosasinensis</i>	China rose	Malvaceae
3.	<i>Achyranthes aspera</i>	Apamarg/Chirchita	Amaranthaceae
4.	<i>Justicia Adhatoda</i>	Adusa	Acanthaceae
5.	<i>Anona squamosa</i>	Sitaphal	Anonaceae
6.	<i>Butea monosperma</i>	Palas	Fabaceae
7.	<i>Argemone mexicana</i>	Siarkanta	Papaveraceae
8.	<i>Calotropis gigantea</i>	Aak	Apocynaceae
9.	<i>Thevetia peruviana</i>	Kaner	Apocynaceae
10.	<i>Euphorbia nivulia</i>	-	Euphorbiaceae
11.	<i>Colebrookia oppositifolia, Smith.</i>	Kalabansa	Lamiaceae
12.	<i>Holarrhena pubescens</i>	-	Apocynaceae
13.	<i>Lantana camara</i>	Raimuniya	Verbenaceae
14.	<i>Bambusa gracilis</i>	Bamboo	Gramineae
15.	<i>Bambusa gracilis</i>	Bamboo	Gramineae

Fauna

Terrestrial Fauna

Table 3.18 Faunal Species observed in the Buffer Zone

S. No	English Name	Scientific Name	Schedule Status (WPA-1972)	IUCN Status

Project: Sand Mining Project (Saharsa Tilawe River Unit 01 Sand Ghat) at Village-Bhatauni, Bhapatia & Kanp District- Saharsa, (Bihar).

S. No	English Name	Scientific Name	Schedule Status (WPA-1972)	IUCN Status
Mammals				
1	Fulvous Fruit Bat	<i>Rousettus leschenaulti</i>	V	LC
2	Indian Field Mouse	<i>Mus booduga</i>	V	LC
3	Three-striped Palm Squirrel	<i>Funambulus palmarum</i>	II	LC
4	Bandicoot Rat	<i>Bandicota indica</i>	V	LC
5	Indian porcupine	<i>Hystrix indica</i>	IV	LC
6	Indian hare	<i>Lepus nigricollis</i>	IV	LC
7	Indian Grey Mongoose	<i>Herpestes edwardsii</i>	IV	LC
8	Indian Flying Fox Bat	<i>Pteropus giganteus</i>	V	LC
Avian Fauna				
1	Jungle Crow	<i>Corvus macrorhynchos</i>	IV	LC
2	Red Jungle fowl	<i>Gallus gallus</i>	IV	LC
3	Jungle Bush Quail	<i>Perdicula asiatica</i>	IV	LC
4	Jungle Myna	<i>Acridotheres fuscus</i>	IV	LC
5	Common Myna	<i>Acridotheres tristis</i>	IV	LC
6	Common Quail	<i>Coturnix coturnix</i>	IV	LC
7	Rock Pigeon	<i>Columba livia</i>	IV	LC
8	House Sparrow	<i>Passer domesticus</i>	IV	LC
9	Common Babbler	<i>Turdoides caudata</i>	IV	LC
10	Jungle Babbler	<i>Turdoides striata</i>	IV	LC
11	Scarlet Mini vet	<i>Pericrocotus flammeus</i>	IV	LC
Reptiles and Lizards				
1	Rat Snake	<i>Ptyas mucosus</i>	II	NA
2	Common Krait	<i>Bungarus caeruleus</i>	IV	NA
3	Rock Lizard	<i>Agama buberulatus</i>	-	DD
4	Chameleon	<i>Chamelion calcarata</i>	II	DD
5	Indian House Gecko	<i>Hemidactylus flaviviridis</i>	-	DD
Source: Present Survey Data and Data supported by Department of Forest, Bihar.				

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S. No	English Name	Scientific Name	Schedule Status (WPA-1972)	IUCN Status
IUCN Red list: LC: Least Concern, VU: Vulnerable, NE: Not Evaluated, EN: Endangered, NT: Near Threatened.				

Management Scheme/Plan (point wise) of flora and fauna of the buffer zone & core zone of the mine area.

Core zone: Lease area is located on the dry river bed of Chandan river and any animal species belongs to Schedule-I category as per Wildlife Protection Act (1972) are not observed.

Buffer zone: As per Wildlife Protection Act (1972), no Schedule-I species were observed from buffer zone. However, all care will be taken for protection of others flora & fauna also, if any in the lease hold area.

3.7 Socio-Economic Environment

Demography & Socio-Economic Features

Introduction

The proposed sand mine project is Saharsa Tilawe River Unit 01 (*Tulsiyahi Balu Ghat Block 1*, situated at Tulsiyahi Sand Ghat Village- Bhatauni, Post- Bhatauni, Anchal+Tehsil- SimriBakhtiyarpur, Distt.- Saharsa), (*DakraBhaptiya Sand Ghat Block 02*, situated at Bhapatia Balu Ghat, Village- Bhapatia, Post- Bhapatia, Anchal+Tehsil- Saur Bazar, District - Saharsa), (*Sital-Patti Sand Ghat Block 03*, situated at Sital Patti Balu Ghat, Village-Kanp, Post-Kanp, Anchal+Tehsil-Saur Bazar, District - Saharsa, Bihar over an area of 8.15 ha, (Tulsiyahi Sand Ghat Block 01 = 3.0 ha + DakraBhaptiya Sand Ghat Block 02 = 1.15 ha + Sital-Patti Sand Ghat Block 03 = 4.0 ha).

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.

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Need for the Project and its Importance to the Country & Region

The project lies on the bed of Badua River. The sediment in the form of river bed material (RBM) deposited in inactive channel the last many years had changed the shape of the Badua bed from a valley to a raised land. Hence, it is necessary to remove the materials so that the stream gets channelized. Due to rapid infrastructure development in India, the demand of construction material has increased. To supply this demand, mining of Sand is done. This project operation will provide employment directly and indirectly to the people residing in vicinity, thus improving the Socio-economic status of the area.

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 two concerned districts named Saharsa and Madhepura of Bihar state was compiled and placed in the form of tabulation and graphical representation.

Demography of the Saharsa District

As per the census records 2011, Saharsa district has a population of 19,00,661 persons followed by 9,97,174 males and 9,03,487 females respectively. Out of the total population of the district, about 156,540 persons (8.2%) population lived in urban areas while 1,744,121 persons (91.8%) live in rural areas. The decadal Variation of the district has been seen at 26.0% during the decade 2001-11. The Rural area of the district has attained a higher decadal variation of 26.1% as compared to that of urban area at 25.1%. The district has a population density of 1125 inhabitants per sq. km. (2910/Sq. mi)

As per 2011 census sex ratio of the district is 906 females per 1,000 males. The same for rural and urban areas of the district stands at 908 and 879 respectively. As per the census records 2011, the sex ratio of population in the age group 0-6, was recorded as 933 females per 1,000 males. While the sex ratio of (0-6) population in the rural areas of the district is 934, the sex ratio of (0-6) population for the urban areas is only 916 females per 1000 males.

As per the census records 2011, it is observed that the proportion of scheduled castes and scheduled tribe's population to the total population of the district is found to be only 16.7&0.32% respectively. For rural areas, the respective proportion of scheduled castes and scheduled tribes to the total population of the district comes out to be 17.5&0.3%

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respectively. Similarly, in urban areas, the percentage of scheduled castes and scheduled tribe's population to the total population of the district comes out to 8.0% & 0.3% respectively.

It is also observed from the census records 2011, that the district has registered a literacy rate of 53.2% followed by 63.56% for males and 41.68% for Females. As regards to rural and urban areas of the district the literacy rates have been registered 51.1% & 75.6% respectively. The gap in the male-female literacy rates has been 21.88% point as it is 67.0% male and 47.0% female respectively. For the district as a whole, the literacy rate of males is much higher than that of females.

Census data 2011 shows that the '*Work Participation Rate*' (WPR) in the district is 19.12% for main workers and 15.08% for marginal workers. Proportion of non workers in the district is 65.8%.

Religions

The population of the Saharsa district during 2011 was 1,900,661. Hindus constitute 85.72% (1,629,254 persons) of the population in the district followed by Muslims 14.03% (266,620 persons).

Mother Tongue

As per the census records, 2011, for Saharsa district, Maithili, the main mother tongue of the district was returned by 70.2 percent (10,58,530 persons) of the population. The corresponding percentage for the Hindi, the second most prominent language spoken in Saharsa district, was 17.0 percent (2,56,069 persons). Urdu 12.4% Speakers of other Scheduled languages were very thin in number than the two described above.

Methodology

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 Saharsa and Madhepura districts of Bihar state was compiled and placed in the form of tabulation and graphical representation. Entire study area is observed predominantly rural and no town was found in the study area.

Purpose of the Study

Socio-economic study was conducted to establish the baseline demographic features and impacts due to this 'Sand Ghat Project', as operation phase of any project invariably leads to Socio-economic changes. The construction phase of any kind of project could lead to

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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 93 villages and one town named Madhepura (NP)/26 Wards, lying under Saharsa and Madhepura Districts in Bihar state. Overall study area villages are falling mainly under Seven (07) no of tehsils namely Saur Bazar (32 villages), Patarghat (15 villages), Sonbarsa (09 villages), SimriBakhtiarapur (02 villages), Ghailarh (02 villages), Madhepura (31 villages and 01 town) and Murliganj (02 villages) of Saharsa and Madhepuradistricts in Bihar state.

There is only one village named Chotachakla under Saur Bazar Tehsil of Saharsa district was found as uninhabited village in the study area. There is only one town named Madhepura (NP)/26 Wards, of Madhepura district found in the study zone.

Population Distribution (10 km)

As per the Census Records 2011, the total population of 10 km study zone was recorded as 544560 persons of 94 villages/town of 2 Districts named Saharsa and Madhepura in Bihar state. Male-female wise total population was recorded as 285935 males (52.5%) and 258625 (47.5%) females respectively.

Total number of 'Households' was observed as 544560 in the 10 km radius study zone. Scheduled Caste ('SC') population was observed as 92390 persons consisting of 47706 males (51.6%) and 44684 females (48.4%) in the 10km radial study zone. Scheduled Tribes ('ST') population was also observed as 456 persons (0.08%) consisting of 241 males (53.0%) and 215 females (47.0%) in the 10 km study zone. The child population (0-6 Age) of the study area is recorded as 107706 (19.8%) and comprising of 55808 (51.8%) males & 51898 (48.2%) females respectively.

Rural and Urban population distribution is shown in **Table 3.19, Figure 3.7 & 3.8** given as follows;

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Table 3.19: Rural & Urban Population Distribution (10 km)

Zone	No. of Households	Total Population			Scheduled Castes			Scheduled Tribes		
		Persons	Males	Females	Persons	Males	Females	Persons	Males	Females
Rural	97540	490088	256955	233133	86901	44849	42052	252	130	122
%age	90.2	90.0	90.0	90.0	94.0	94.0	94.0	55.3	54.0	56.7
Urban	10577	54472	28980	25492	5489	2857	2632	204	111	93
%age	9.8	10.0	10.0	9.9	6.0	6.0	6.0	44.7	46.0	43.3
Total (10km)	108117	544560	285935	258625	92390	47706	44684	456	241	215

Source-Census of India, 2011

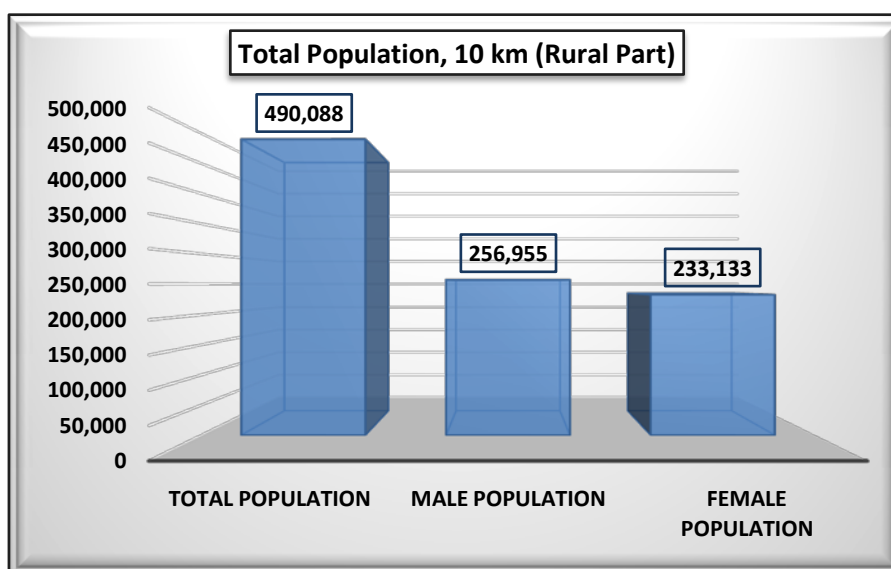


Figure 3.7: Male-Female Wise Rural Population Distribution

Project: Sand Mining Project (Saharsa Tilawe River Unit 01 Sand Ghat) at Village-Bhatauni, Bhapatia & Kanp District- Saharsa, (Bihar).

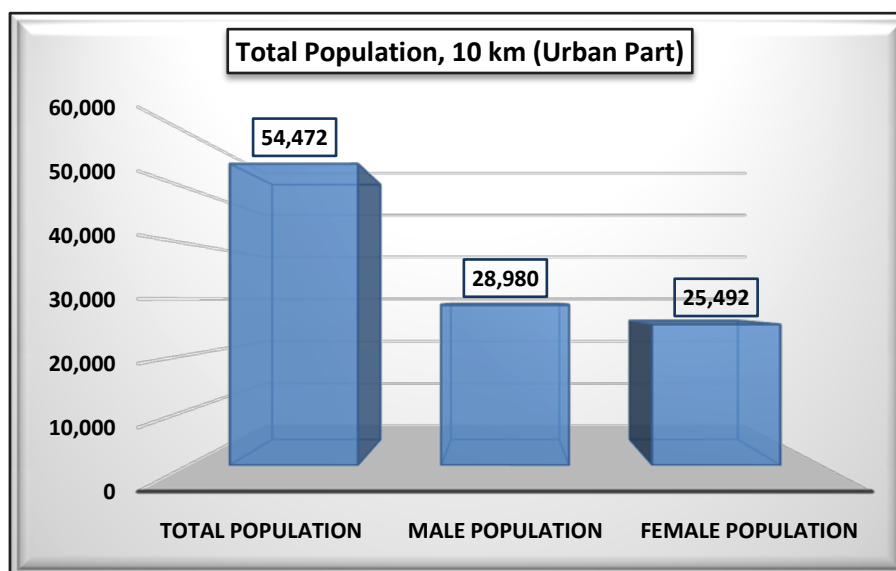


Figure 3.8: Male-Female Wise Urban Population Distribution

Village wise details of population distribution are given as follows in **Table 3.20 & 3.21**

Table 3.20: 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 Saharsa, Bihar							
Tiri	1790	9395	4990	4405	2096	1103	993
Lachhminia	748	3987	2081	1906	910	482	428
Barahi	579	2982	1584	1398	676	363	313
Sahuria	2015	10934	5673	5261	2433	1188	1245
Silet	1264	6940	3625	3315	1595	806	789
Raghunathpur	257	1162	618	544	227	114	113
Raghunathpur	261	1322	704	618	302	166	136
Kachradaun	123	619	318	301	105	51	54
Bhulia	101	489	237	252	99	43	56
Bhulia	57	245	125	120	39	17	22
Hanuman Nagar Chakla	291	1415	738	677	281	132	149
Kachradaun	237	1270	675	595	279	162	117
JiwachhpurPurwari	132	674	358	316	112	59	53
JiwachhpurPachhiari Patti	97	482	260	222	72	36	36

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Garhia	269	1487	764	723	255	131	124
Ajgaiba	342	1885	949	936	415	177	238
Bhawanipur	263	1441	763	678	269	143	126
Saur	759	4220	2149	2071	983	475	508
Saur Bazar	832	4577	2406	2171	978	532	446
Chanaur	4047	22436	11792	10644	4448	2313	2135
Madhura	1117	6012	3126	2886	1283	650	633
Nado	1550	8084	4258	3826	1684	877	807
RautaKhem	818	3975	2073	1902	725	367	358
Bhabtia	1072	5893	3115	2778	1251	654	597
Suhath	1437	7965	4165	3800	1688	885	803
Phursaha	648	3317	1690	1627	722	363	359
Kachra	604	2928	1545	1383	616	336	280
Kachra	626	3575	1858	1717	678	342	336
Chotachakla	Uninhabited Village						
Chakla	116	606	322	284	110	56	54
Karahia	896	4664	2477	2187	958	508	450
Kanp	3727	19431	10009	9422	4118	2051	2067
Gulam	5380	24969	13110	11859	4759	2477	2282
Bishunpur	1417	6590	3472	3118	1346	662	684
Dhabauli	5605	25782	13451	12331	5086	2650	2436
Kapasias	1073	4758	2492	2266	969	483	486
Patarghat	1770	8297	4340	3957	1753	892	861
Lachhmipur	538	2474	1281	1193	477	256	221
Jamhra	1959	9421	4959	4462	1966	1049	917
Bhaddi	1013	5099	2745	2354	927	492	435
Kishunpur	1992	10362	5432	4930	2185	1121	1064
Pama	2296	11131	5785	5346	2290	1195	1095
Paharpur	660	3205	1705	1500	637	338	299
Bara Singhia	206	954	493	461	211	108	103
Jirwa	576	2972	1542	1430	682	362	320
Sahgaura	29	158	83	75	53	31	22
Pastpar	2328	12150	6307	5843	2548	1314	1234

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Sirrahi	405	2171	1135	1036	466	234	232
Rakhauta	530	2599	1363	1236	516	260	256
Khasurha	1690	8291	4358	3933	1644	852	792
Bhaura	552	3111	1647	1464	598	315	283
Amirta	820	4722	2498	2224	837	431	406
Baraith	1104	6067	3233	2834	1167	622	545
Atlakha	1031	5056	2663	2393	1109	576	533
Manguar	854	4606	2458	2148	843	443	400
Durgapur	670	3315	1722	1593	709	367	342
Paharpur	1613	8873	4745	4128	1753	936	817
Tilanthi	507	3045	1620	1425	651	337	314
2. District Madhepura, Bihar							
Bhawantikthi	2577	12542	6560	5982	2401	1224	1177
Arraha	775	4427	2325	2102	765	399	366
Barahi	1900	9459	4910	4549	1749	933	816
Dubiahi	567	2742	1469	1273	575	310	265
Matiahi	793	3980	2161	1819	721	417	304
Pithahi	568	2853	1500	1353	661	357	304
Bhelwa	1385	7724	4078	3646	1566	817	749
Gorhiari	284	1353	744	609	240	143	97
Sahugarh	3838	19659	10381	9278	3900	2051	1849
Madhipura	1394	6782	3547	3235	1398	701	697
Manikpur	3573	17161	9034	8127	3451	1789	1662
Madhuban	1706	8443	4367	4076	1653	836	817
Madanpur	3020	13669	7083	6586	2865	1458	1407
TuniahiUttarwari	579	2640	1362	1278	525	256	269
LchhmirampurUttarwariChakla	261	1250	624	626	264	128	136
LachhmirampurDakhinwari	182	899	479	420	166	90	76
TuniahiDakhinwari	481	2283	1195	1088	411	216	195
SukhasanUttarwari	743	3421	1826	1595	688	369	319
SiriparUttarwari	447	1827	977	850	371	193	178
SiripurDakhinwari	315	1676	868	808	353	178	175
SukhasanDakhinwari	958	4246	2242	2004	783	416	367

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KhopaitiBadh	57	254	146	108	48	28	20
Bahadur Singh UttarwariChakla	223	921	477	444	151	88	63
Bahadur Singh DakhinwariChakla	142	661	347	314	150	77	73
Buniad Singh Chakla	81	400	217	183	107	55	52
Hanuman Nagar Chakla	51	230	124	106	31	15	16
Gothkhopaiti	124	593	287	306	156	73	83
Khopaiti	268	1186	658	528	297	171	126
Mudwala	496	2338	1219	1119	533	271	262
Mudwala	225	1228	655	573	252	131	121
Balam	387	2059	1071	988	421	206	215
Garhia	778	4080	2137	1943	728	394	334
Garthan	259	1430	770	660	277	151	126
Madhepura (NP)/26 Wards	10577	54472	28980	25492	8491	4428	4063
Khari	1197	5593	2955	2638	899	482	417
Belo	3213	15489	8074	7415	3070	1572	1498
TOTAL (10km)	108117	544560	285935	258625	107706	55808	51898
<i>Source-Census of India, 2011</i>							

Table 3.21: 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 Saharsa, Bihar							
Tiri	9395	1744	929	815	9	3	6
Lachhminia	3987	412	215	197	0	0	0
Barahi	2982	557	297	260	0	0	0
Sahuria	10934	1468	747	721	4	2	2
Silet	6940	1496	758	738	1	0	1
Raghunathpur	1162	255	142	113	0	0	0
Raghunathpur	1322	359	192	167	3	2	1
Kachradaun	619	144	76	68	0	0	0
Bhulia	489	0	0	0	0	0	0
Bhulia	245	0	0	0	0	0	0

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Hanuman Nagar Chakla	1415	659	340	319	0	0	0
Kachradaun	1270	179	101	78	0	0	0
JiwachhpurPurwari	674	166	91	75	0	0	0
JiwachhpurPachhiari Patti	482	99	55	44	0	0	0
Garhia	1487	219	108	111	1	0	1
Ajgaiba	1885	123	60	63	0	0	0
Bhawanipur	1441	82	43	39	0	0	0
Saur	4220	273	137	136	0	0	0
Saur Bazar	4577	234	128	106	14	5	9
Chanaur	22436	3456	1773	1683	62	36	26
Madhura	6012	973	507	466	6	1	5
Nado	8084	1151	603	548	1	0	1
RautaKhem	3975	771	387	384	0	0	0
Bhabtia	5893	886	455	431	1	1	0
Suhath	7965	984	487	497	0	0	0
Phursaha	3317	945	495	450	0	0	0
Kachra	2928	485	241	244	1	0	1
Kachra	3575	282	140	142	1	0	1
Chotachakla	Uninhabited Village						
Chakla	606	0	0	0	0	0	0
Karahia	4664	1284	676	608	0	0	0
Kanp	19431	2189	1108	1081	1	1	0
Gulam	24969	3599	1884	1715	14	9	5
Bishunpur	6590	1057	540	517	2	1	1
Dhabauli	25782	6358	3199	3159	1	1	0
Kapasias	4758	1106	544	562	0	0	0
Patarghat	8297	1720	893	827	1	0	1
Lachhmipur	2474	308	152	156	0	0	0
Jamhra	9421	2352	1210	1142	1	1	0
Bhaddi	5099	1288	700	588	3	1	2
Kishunpur	10362	2706	1390	1316	0	0	0
Pama	11131	1214	624	590	0	0	0
Paharpur	3205	629	314	315	1	1	0

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Bara Singhia	954	403	202	201	1	1	0
Jirwa	2972	783	409	374	0	0	0
Sahgaura	158	158	83	75	0	0	0
Pastpar	12150	1881	953	928	1	1	0
Sirrahi	2171	332	165	167	0	0	0
Rakhauta	2599	218	117	101	0	0	0
Khasurha	8291	1757	924	833	0	0	0
Bhaura	3111	922	478	444	1	0	1
Amirta	4722	805	427	378	0	0	0
Baraith	6067	537	269	268	0	0	0
Atlakha	5056	956	474	482	0	0	0
Manguar	4606	1001	510	491	0	0	0
Durgapur	3315	397	219	178	0	0	0
Paharpur	8873	1086	570	516	0	0	0
Tilanthi	3045	227	119	108	1	1	0
2. District Madhepura, Bihar							
Bhawantikthi	12542	2444	1263	1181	33	17	16
Arraha	4427	864	449	415	0	0	0
Barahi	9459	2008	984	1024	28	17	11
Dubiahi	2742	365	192	173	0	0	0
Matiahi	3980	704	390	314	10	4	6
Pithahi	2853	435	229	206	4	1	3
Bhelwa	7724	1223	642	581	1	0	1
Gorhiari	1353	50	30	20	0	0	0
Sahugarh	19659	3700	1905	1795	9	5	4
Madhipura	6782	669	345	324	0	0	0
Manikpur	17161	3037	1582	1455	10	5	5
Madhuban	8443	1754	899	855	1	0	1
Madanpur	13669	2196	1138	1058	3	2	1
TuniahiUttarwari	2640	1027	525	502	2	2	0
LchhmirampurUttarwariChakla	1250	0	0	0	0	0	0
LachhmirampurDakhinwari	899	48	43	5	0	0	0
TuniahiDakhinwari	2283	0	0	0	0	0	0

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SukhasanUttarwari	3421	754	403	351	0	0	0
SiriparUttarwari	1827	177	99	78	0	0	0
SiripurDakhinwari	1676	416	208	208	0	0	0
SukhasanDakhinwari	4246	1109	573	536	1	1	0
KhopaitiBadh	254	91	54	37	0	0	0
Bahadur Singh UttarwariChakla	921	137	69	68	0	0	0
Bahadur Singh DakhinwariChakla	661	0	0	0	0	0	0
Buniad Singh Chakla	400	221	120	101	0	0	0
Hanuman Nagar Chakla	230	0	0	0	0	0	0
Gothkhopaiti	593	6	4	2	0	0	0
Khopaiti	1186	568	324	244	1	1	0
Mudwala	2338	843	435	408	8	4	4
Mudwala	1228	69	33	36	2	0	2
Balam	2059	317	165	152	1	0	1
Garhia	4080	518	256	262	0	0	0
Garthan	1430	402	217	185	0	0	0
Madhepura (NP)/26 Wards	54472	5489	2857	2632	204	111	93
Khari	5593	626	305	321	0	0	0
Belo	15489	4448	2308	2140	6	3	3
TOTAL (10km)	544560	92390	47706	44684	456	241	215
<i>Source-Census of India, 2011</i>							

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 906 females per 1000 males in the District. The same was recorded as 904 females for every 1000 males in the study area. The child (0-6 yr age) sex ratio of the stud area was observed as 930 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 3.21 & Figure 3.9**.

Project: Sand Mining Project (Saharsa Tilawe River Unit 01 Sand Ghat) at Village- Bhatauni, Bhapatia & Kanp District- Saharsa, (Bihar).

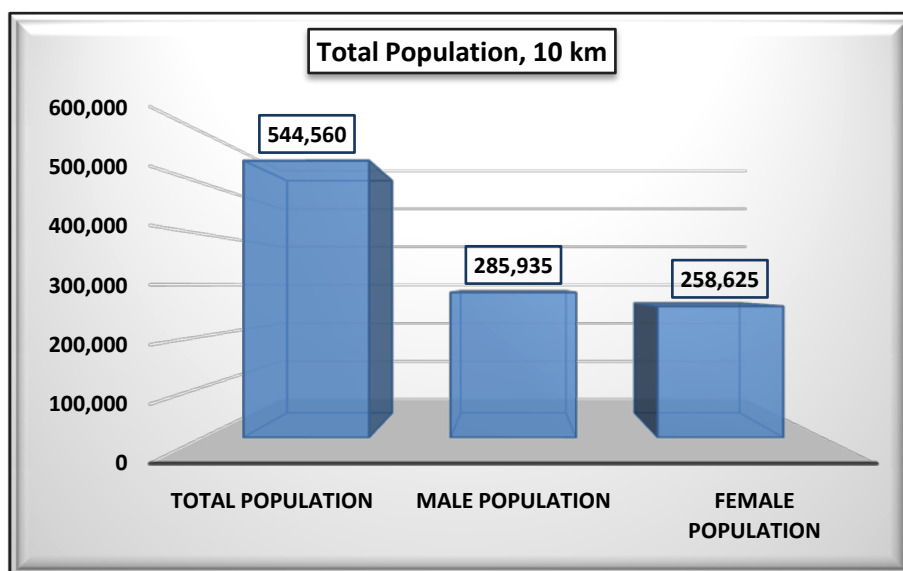


Figure 3.9: Male-Female Wise Population Distribution

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 92390 persons consisting of 47706 males and 44684 females respectively in the study area which accounts as 17.0% to the total population (544560 persons) of the study area. Scheduled Tribes ('ST') population was observed as 456 persons, accounts as 0.08% to the total population of the study zone consisting of 241 males and 215 females in the 10km radius study zone. It implies that the rest 82.9% 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 3.10 & 3.11** as follows.

Project: Sand Mining Project (Saharsa Tilawe River Unit 01 Sand Ghat) at Village- Bhatauni, Bhapatia & Kanp District- Saharsa, (Bihar).

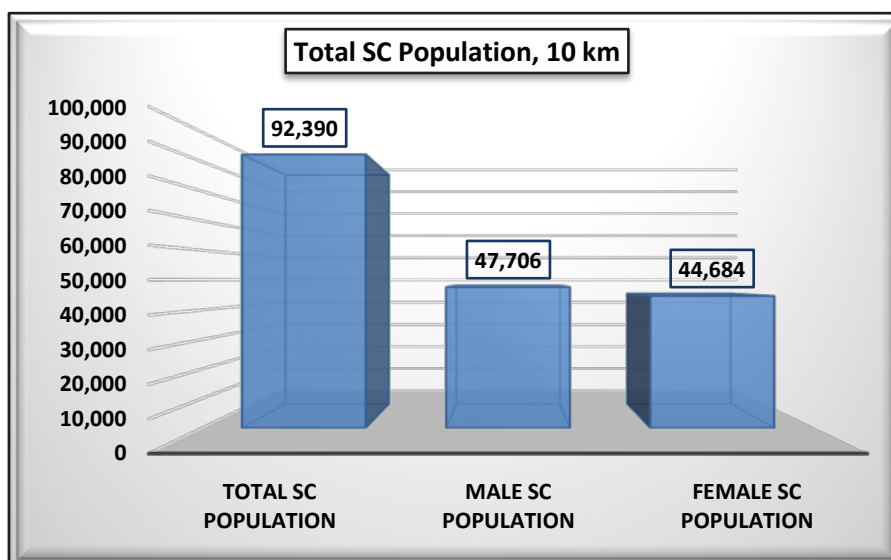


Figure 3.10: Scheduled Caste Population in the Study Area

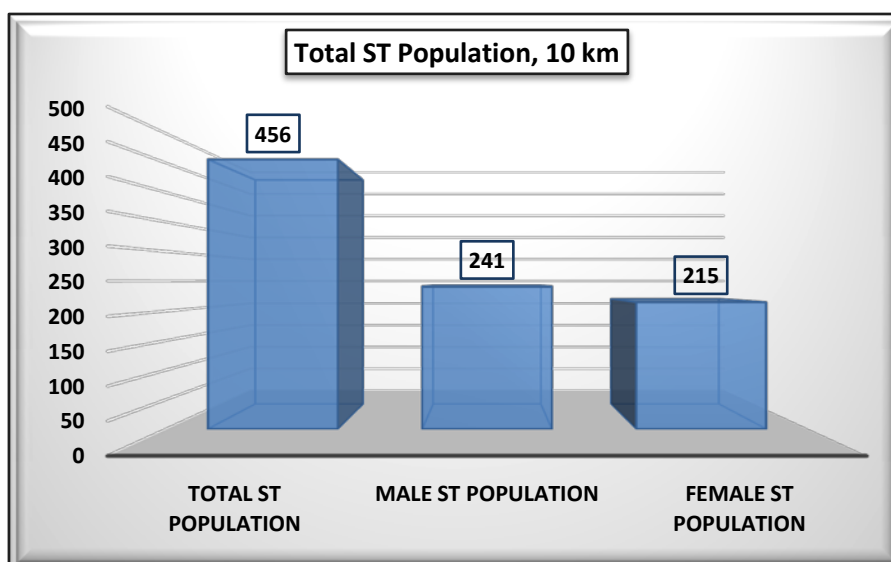


Figure 3.11: Scheduled Tribes Population in the Study Area

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 3.22**. Total literate's population was recorded as 241071 persons (44.3%) in the study area. **Table 3.22** reveals that Male-Female wise literates are observed as 150358 & 90713 persons respectively, implies that the 'Literacy Rate' is recorded as 44.3% with male-female wise percentages being 27.6% & 16.7% respectively.

Project: Sand Mining Project (Saharsa Tilawe River Unit 01 Sand Ghat) at Village- Bhatauni, Bhapatia & Kanp District- Saharsa, (Bihar).

The Male-Female wise graphical representation of literates & illiterate's population in study area villages/town is shown in **Figure 3.12**.

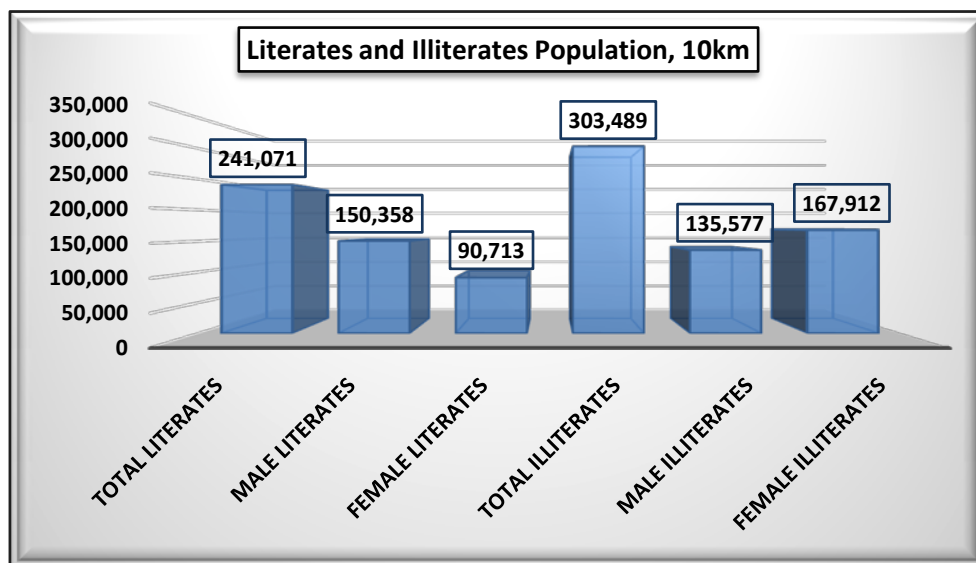


Figure 3.12: Male-Female Wise Distribution of Literates & Illiterates

Table 3.22: Male-Female Wise Literates and Illiterates (10km)

Name of Village/Town	Total Population	Literates			Illiterates		
		Persons	Males	Females	Persons	Males	Females
1. District Saharsa, Bihar							
Tiri	9395	3780	2522	1258	5615	2468	3147
Lachhminia	3987	1266	841	425	2721	1240	1481
Barahi	2982	1094	736	358	1888	848	1040
Sahuria	10934	3693	2505	1188	7241	3168	4073
Silet	6940	2411	1587	824	4529	2038	2491
Raghunathpur	1162	519	363	156	643	255	388
Raghunathpur	1322	621	409	212	701	295	406
Kachradaun	619	441	240	201	178	78	100
Bhulia	489	217	146	71	272	91	181
Bhulia	245	106	69	37	139	56	83
Hanuman Nagar Chakla	1415	585	379	206	830	359	471
Kachradaun	1270	557	366	191	713	309	404
JiwachhpurPurwari	674	362	223	139	312	135	177

Project: Sand Mining Project (Saharsa Tilawe River Unit 01 Sand Ghat) at Village-Bhatauni, Bhapatia & Kanp District- Saharsa, (Bihar).

JiwachhpurPachhiari Patti	482	324	203	121	158	57	101
Garhia	1487	847	537	310	640	227	413
Ajgaiba	1885	837	565	272	1048	384	664
Bhawanipur	1441	790	508	282	651	255	396
Saur	4220	1776	1079	697	2444	1070	1374
Saur Bazar	4577	2243	1338	905	2334	1068	1266
Chanaur	22436	9506	6197	3309	12930	5595	7335
Madhura	6012	2957	1880	1077	3055	1246	1809
Nado	8084	3752	2365	1387	4332	1893	2439
RautaKhem	3975	1836	1169	667	2139	904	1235
Bhabtia	5893	3057	1868	1189	2836	1247	1589
Suhath	7965	3657	2250	1407	4308	1915	2393
Phursaha	3317	1198	766	432	2119	924	1195
Kachra	2928	1395	882	513	1533	663	870
Kachra	3575	1489	954	535	2086	904	1182
Chotachakla	Uninhabited Village						
Chakla	606	266	181	85	340	141	199
Karahia	4664	2070	1278	792	2594	1199	1395
Kanp	19431	7591	4918	2673	11840	5091	6749
Gulam	24969	11277	7020	4257	13692	6090	7602
Bishunpur	6590	3043	1833	1210	3547	1639	1908
Dhabauli	25782	12348	7311	5037	13434	6140	7294
Kapasias	4758	2275	1401	874	2483	1091	1392
Patarghat	8297	2507	1652	855	5790	2688	3102
Lachhmipur	2474	593	393	200	1881	888	993
Jamhra	9421	3917	2363	1554	5504	2596	2908
Bhaddi	5099	2846	1759	1087	2253	986	1267
Kishunpur	10362	4164	2475	1689	6198	2957	3241
Pama	11131	4771	2936	1835	6360	2849	3511
Paharpur	3205	1626	901	725	1579	804	775
Bara Singhia	954	540	275	265	414	218	196
Jirwa	2972	1079	716	363	1893	826	1067
Sahgaura	158	18	12	6	140	71	69

Project: Sand Mining Project (Saharsa Tilawe River Unit 01 Sand Ghat) at Village- Bhatauni, Bhapatia & Kanp District- Saharsa, (Bihar).

Pastpar	12150	5001	3138	1863	7149	3169	3980
Sirrahi	2171	751	477	274	1420	658	762
Rakhauta	2599	1219	779	440	1380	584	796
Khasurha	8291	3407	2195	1212	4884	2163	2721
Bhaura	3111	964	643	321	2147	1004	1143
Amirta	4722	1889	1175	714	2833	1323	1510
Baraith	6067	2597	1645	952	3470	1588	1882
Atlakha	5056	1986	1251	735	3070	1412	1658
Manguar	4606	2186	1336	850	2420	1122	1298
Durgapur	3315	986	634	352	2329	1088	1241
Paharpur	8873	3087	2142	945	5786	2603	3183
Tilanthi	3045	945	694	251	2100	926	1174
2. District Madhepura, Bihar							
Bhawantikthi	12542	5104	3262	1842	7438	3298	4140
Arraha	4427	2374	1457	917	2053	868	1185
Barahi	9459	4573	2909	1664	4886	2001	2885
Dubiahi	2742	918	595	323	1824	874	950
Matiahi	3980	1870	1175	695	2110	986	1124
Pithahi	2853	1186	758	428	1667	742	925
Bhelwa	7724	3287	2220	1067	4437	1858	2579
Gorhiari	1353	632	432	200	721	312	409
Sahugarh	19659	7822	4993	2829	11837	5388	6449
Madhipura	6782	2587	1669	918	4195	1878	2317
Manikpur	17161	7497	4744	2753	9664	4290	5374
Madhuban	8443	3789	2293	1496	4654	2074	2580
Madanpur	13669	5552	3541	2011	8117	3542	4575
TuniahiUttarwari	2640	967	588	379	1673	774	899
LchhmirampurUttarwariChakla	1250	499	352	147	751	272	479
LachhmirampurDakhinwari	899	387	264	123	512	215	297
TuniahiDakhinwari	2283	1087	651	436	1196	544	652
SukhasanUttarwari	3421	1547	979	568	1874	847	1027
SiriparUttarwari	1827	756	505	251	1071	472	599
SiripurDakhinwari	1676	750	455	295	926	413	513

Project: Sand Mining Project (Saharsa Tilawe River Unit 01 Sand Ghat) at Village-Bhatauni, Bhapatia & Kanp District- Saharsa, (Bihar).

SukhasanDakhinwari	4246	1977	1178	799	2269	1064	1205
KhopaitiBadh	254	122	91	31	132	55	77
Bahadur Singh UttarwariChakla	921	450	289	161	471	188	283
Bahadur Singh DakhinwariChakla	661	250	156	94	411	191	220
Buniad Singh Chakla	400	80	59	21	320	158	162
Hanuman Nagar Chakla	230	133	74	59	97	50	47
Gothkhopaiti	593	154	89	65	439	198	241
Khopaiti	1186	401	242	159	785	416	369
Mudwala	2338	649	450	199	1689	769	920
Mudwala	1228	286	197	89	942	458	484
Balam	2059	785	490	295	1274	581	693
Garhia	4080	1577	1028	549	2503	1109	1394
Garthan	1430	576	367	209	854	403	451
Madhepura (NP)/26 Wards	54472	35244	20272	14972	19228	8708	10520
Khari	5593	2567	1615	952	3026	1340	1686
Belo	15489	5371	3439	1932	10118	4635	5483
TOTAL (10km)	544560	241071	150358	90713	303489	135577	167912
<i>Source-Census of India, 2011</i>							

Economic Profile ofSaharsaDistrict:

It is the major producer of best quality of Corn and Makhana in India. From Saharsa corn and Makhana are exported abroad country such as America, France, Japan, England. Every year 2 lakhs tonnes of corn are exported to different country and similarly Makhana also.

The follgown in the region; Makhana (Euryale feroxSalisb), rice, mangoes, litchi, bamboo, mustard, corn, wheat, ber and sugarcane. Sagwan (Tectonagrandis) tree is now grown on a large scale.

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 116602(21.0%) and 78349(14.0%) to the total population (544560), while the remaining 349609(65.0%) persons were recorded as non-

Project: Sand Mining Project (Saharsa Tilawe River Unit 01 Sand Ghat) at Village-Bhatauni, Bhapatia & Kanp District- Saharsa, (Bihar).

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 3.23**.

Project: Sand Mining Project (Saharsa Tilawe River Unit 01 Sand Ghat) at Village-Bhatauni, Bhapatia & Kanp District- Saharsa, (Bihar).

Table 3.23: Village-wise Occupational Pattern (10km)

Name of the Village/Town	MAIN WORK_P	MAIN_ CL_P	MAIN_ AL_P	MAIN_H H_P	MAIN_O T_P	MARG WORK_P	MARG_ CL_P	MARG_ AL_P	MARG_ HH_P	MARG_ OT_P
1. District Saharsa, Bihar										
Tiri	1772	627	945	26	174	1830	418	1280	52	80
Lachhminia	1458	648	792	0	18	190	8	178	0	4
Barahi	654	228	341	0	85	231	51	177	0	3
Sahuria	1886	1321	441	32	92	3063	845	2090	77	51
Silet	1436	485	800	6	145	1177	319	809	3	46
Raghunathpur	424	169	241	6	8	151	41	94	5	11
Raghunathpur	244	173	65	2	4	203	11	146	0	46
Kachradaun	17	3	3	0	11	128	12	57	0	59
Bhulia	117	99	12	0	6	10	2	8	0	0
Bhulia	62	51	10	0	1	3	2	0	0	1
Hanuman Nagar Chakla	101	54	14	2	31	499	69	369	6	55
Kachradaun	404	229	157	6	12	216	141	65	2	8
JiwachhpurPurwari	55	22	18	11	4	232	46	155	14	17
JiwachhpurPachhiari										
Patti	85	77	0	0	8	43	5	38	0	0
Garhia	182	144	17	0	21	435	2	430	1	2

Chapter-III**BASELINE DATA DESCRIPTION**

Project: Sand Mining Project (Saharsa Tilawe River Unit 01 Sand Ghat) at Village-Bhatauni, Bhapatia & Kanp District- Saharsa, (Bihar).

Ajgaiba	326	161	90	3	72	262	78	145	5	34
Bhawanipur	378	216	84	10	68	1	0	0	0	1
Saur	465	72	185	63	145	730	35	606	28	61
Saur Bazar	861	86	144	11	620	599	25	435	22	117
Chanaur	4891	2514	1752	80	545	2708	535	1680	294	199
Madhura	1417	538	744	63	72	1401	599	767	5	30
Nado	1475	514	823	27	111	1636	690	854	20	72
RautaKhem	566	482	14	7	63	816	227	570	0	19
Bhabtia	1204	573	479	43	109	541	38	390	73	40
Suhath	1557	501	980	14	62	1454	470	928	10	46
Phursaha	673	345	290	8	30	526	13	495	4	14
Kachra	532	110	373	3	46	223	5	180	0	38
Kachra	386	128	135	16	107	592	180	400	6	6
Chotachakla	Uninhabited Village									
Chakla	145	47	95	0	3	16	1	14	0	1
Karahia	1605	172	1363	9	61	317	31	226	31	29
Kanp	5190	2693	1987	223	287	2223	847	1259	44	73
Gulam	4976	1617	2804	59	496	3384	564	2639	27	154
Bishunpur	1227	551	563	4	109	927	132	770	3	22
Dhabauli	7040	2161	4090	69	720	3110	537	2428	31	114

Chapter-III**BASELINE DATA DESCRIPTION**

Project: Sand Mining Project (Saharsa Tilawe River Unit 01 Sand Ghat) at Village-Bhatauni, Bhapatia & Kanp District- Saharsa, (Bihar).

Kapasia	1146	632	413	13	88	419	94	232	20	73
Patarghat	1300	256	631	3	410	978	54	892	3	29
Lachhmipur	624	214	368	10	32	79	2	72	0	5
Jamhra	1974	722	1142	7	103	1070	122	584	11	353
Bhaddi	1377	549	662	23	143	175	35	89	22	29
Kishunpur	2068	1176	708	17	167	2567	1186	1325	3	53
Pama	3156	1024	1981	36	115	988	87	876	14	11
Paharpur	1049	473	516	2	58	142	110	25	3	4
Bara Singhia	271	147	121	0	3	0	0	0	0	0
Jirwa	701	262	335	13	91	55	2	17	3	33
Sahgaure	46	0	43	0	3	0	0	0	0	0
Pastpar	2844	1013	1308	7	516	918	41	809	11	57
Sirrahi	342	175	141	1	25	255	23	213	1	18
Rakhauta	155	6	99	2	48	675	16	542	15	102
Khasurha	758	388	274	12	84	1779	312	1409	33	25
Bhaura	638	168	420	1	49	230	9	205	0	16
Amirta	807	355	349	14	89	837	321	488	17	11
Baraith	902	471	199	45	187	999	169	737	7	86
Atlakha	917	602	158	31	126	574	57	253	154	110
Manguar	824	504	184	7	129	929	58	835	1	35

Chapter-III**BASELINE DATA DESCRIPTION**

Project: Sand Mining Project (Saharsa Tilawe River Unit 01 Sand Ghat) at Village-Bhatauni, Bhapatia & Kanp District- Saharsa, (Bihar).

Durgapur	510	175	310	3	22	822	27	727	68	0
Paharpur	1990	1336	579	1	74	450	81	307	7	55
Tilanthi	338	105	203	0	30	603	93	501	4	5
2. District Madhepura, Bihar										
Bhawantikthi	2080	692	956	62	370	2856	467	2142	111	136
Arraha	762	391	279	3	89	839	105	709	9	16
Barahi	1660	789	654	8	209	2573	674	1670	27	202
Dubiahi	335	243	30	2	60	789	296	469	1	23
Matiahi	1096	341	375	168	212	439	55	260	40	84
Pithahi	597	296	149	13	139	372	51	267	24	30
Bhelwa	1238	550	572	34	82	1861	288	1242	99	232
Gorhiari	61	5	13	0	43	562	246	304	5	7
Sahugarh	3860	1376	1700	94	690	3566	879	2326	62	299
Madhipura	1028	255	285	18	470	1403	94	1116	43	150
Manikpur	5092	1627	2108	174	1183	2017	290	1367	38	322
Madhuban	2302	965	1068	9	260	619	94	482	2	41
Madanpur	2334	921	1027	61	325	2856	481	2002	245	128
TuniahiUttarwari	833	195	559	16	63	268	117	147	1	3
LchhmirampurUttarwari Chakla	203	48	103	2	50	275	2	269	0	4

Chapter-III**BASELINE DATA DESCRIPTION**

Project: Sand Mining Project (Saharsa Tilawe River Unit 01 Sand Ghat) at Village-Bhatauni, Bhapatia & Kanp District- Saharsa, (Bihar).

LachhmirampurDakhinwari	85	63	10	0	12	283	48	170	17	48
TuniahiDakhinwari	770	246	418	5	101	169	91	61	2	15
SukhasanUttarwari	726	76	503	4	143	614	51	541	1	21
SiriparUttarwari	355	4	337	3	11	365	90	272	0	3
SiripurDakhinwari	511	146	303	8	54	116	13	95	1	7
SukhasanDakhinwari	914	104	550	3	257	492	64	325	24	79
KhopaitiBadh	50	25	24	0	1	75	38	35	0	2
Bahadur Singh UttarwariChakla	67	18	12	16	21	436	22	322	53	39
Bahadur Singh DakhinwariChakla	175	38	118	1	18	3	0	0	0	3
Buniad Singh Chakla	3	1	2	0	0	186	0	186	0	0
Hanuman Nagar Chakla	1	0	1	0	0	0	0	0	0	0
Gothkhopaiti	41	20	0	3	18	245	1	238	3	3
Khopaiti	555	266	278	6	5	31	4	26	1	0
Mudwala	351	59	239	46	7	751	4	722	19	6
Mudwala	224	148	61	13	2	415	3	403	7	2
Balam	282	9	260	0	13	487	8	461	0	18
Garhia	933	514	290	5	124	990	262	661	7	60

Chapter-III**BASELINE DATA DESCRIPTION**

Project: Sand Mining Project (Saharsa Tilawe River Unit 01 Sand Ghat) at Village-Bhatauni, Bhapatia & Kanp District- Saharsa, (Bihar).

Garthan	263	128	66	1	68	205	15	149	2	39
Madhepura (NP)/26										
Wards	13072	1198	1525	462	9887	3446	495	716	328	1907
Khari	1306	1094	151	7	54	528	125	360	28	15
Belo	3889	1321	2317	17	234	1796	396	1357	3	40
TOTAL (10km)	116602	42736	49338	2315	22213	78349	15747	53692	2363	6547

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 worker's population involved in household industries, **MAIN_OT_P:** Main other worker's population

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

Project: Sand Mining Project (Saharsa Tilawe River Unit 01 Sand Ghat) at Village-Bhatauni, Bhapatia & Kanp District- Saharsa, (Bihar).

Distribution of work participation rate of the study area population is shown in **Table 3.24** as follows;

Table 3.24: Distribution of Work Participation Rate (10km)

Occupation Class	Year, 2011
Main Workers	116602 (21.0%)
Male	93249(80.0%)
Female	23353(20.0%)
Marginal Workers	78349(14.0%)
Male	39673(50.6%)
Female	38673(49.4%)
Non-Workers	349609(65.0%)
Male	153013 (43.8%)
Female	196596(56.2%)
Total Population (10km)	544560
<i>Source: Census of India Records, 2011</i>	

Graphical representation of Workers Scenario is given below as **Figure 3.13**.

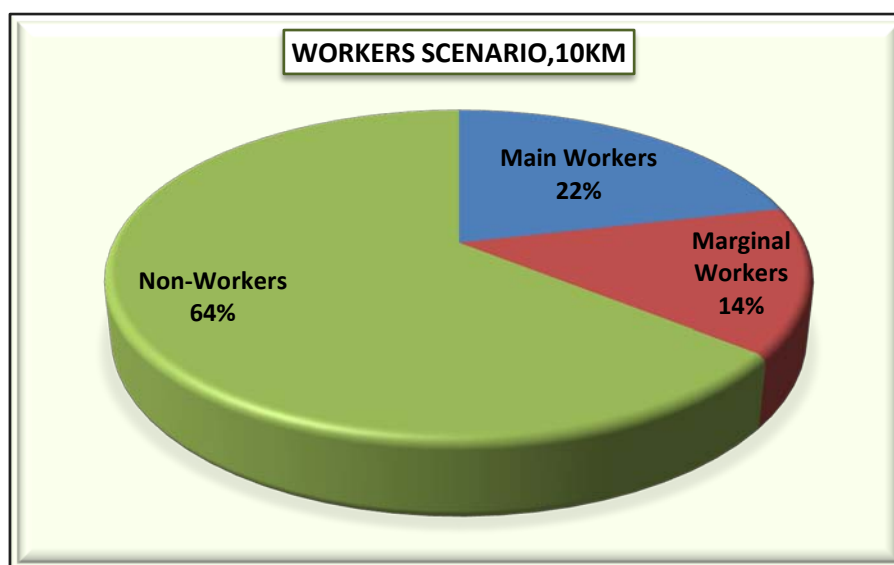


Figure 3.13: Workers Scenario of Study Area

Project: Sand Mining Project (Saharsa Tilawe River Unit 01 Sand Ghat) at Village- Bhatauni, Bhapatia & Kanp District- Saharsa, (Bihar).

Composition of Main Workers:

The 'Main Workers' were observed as 116602 persons (21.0%) to the total population (544560) of the study area and its composition is made-up of Casual laborers as 42736 (37.0%), Agricultural laborers as 49338 (42.0%), Household workers 2315 (2.0%) and other workers as 22213 (19.0%) respectively.

Composition of Main workers is shown below as **Figure 3.14**.

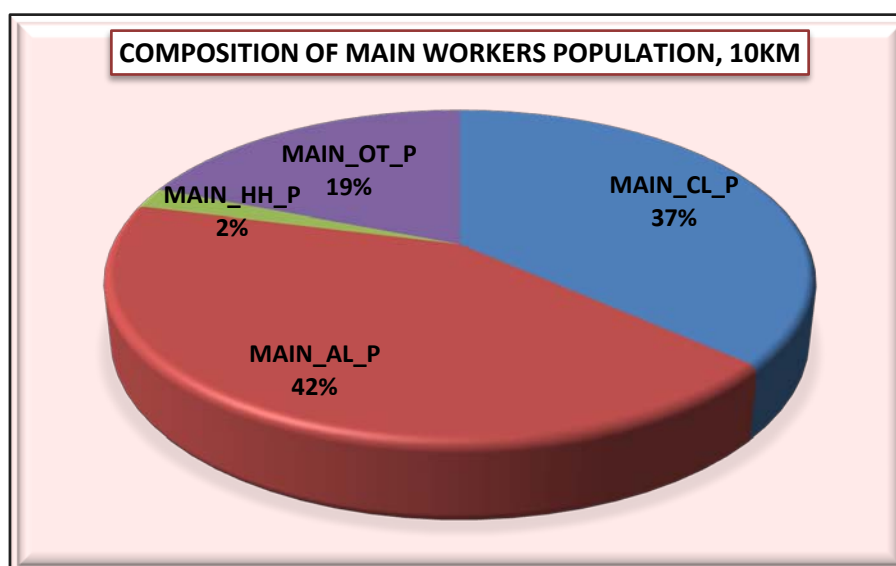


Figure 3.14: Composition of Main Workers Population

Composition of Marginal Workers:

The total marginal workers are observed as 78349 which constitute 14.0% to the total population (544560) comprising of Marginal Casual Laborers as 15747 (20.0%), Marginal Agricultural Laborers as 53692 (69.0%), Marginal Household laborers as 2363 (3.0%) and marginal other workers were also observed as 6547 (8.0%) of the total marginal workers respectively. Details about marginal workers in the study area are tabulated in **Table 3.24** Composition of Marginal workers is shown in **Figure 3.15** as follows.

Project: Sand Mining Project (Saharsa Tilawe River Unit 01 Sand Ghat) at Village-Bhatauni, Bhapatia & Kanp District- Saharsa, (Bihar).

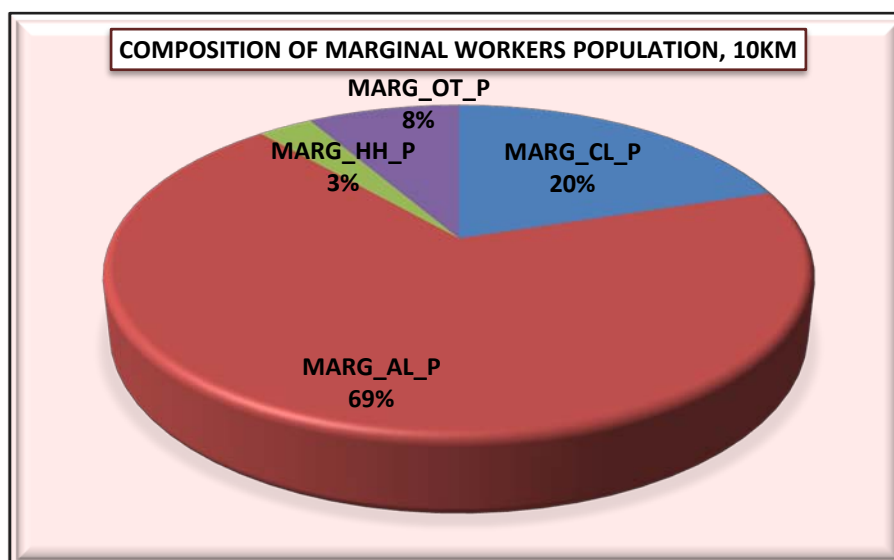


Figure 3.15: Composition of Marginal Workers

Composition of Non-Workers:

The total Non-worker's population was observed as 349609 which accounts 65.0% to the total population (544560) of the study area. Male-female wise Non-worker's population was recorded as 153013 Males (43.8%) and 196596 Females (56.2%) respectively.

Details about Total Non-workers in the study area are compiled in **Table 3.25**. Graphical representation of Non-worker's population is shown as follows in **Figure 3.16**.

Table 3.25: Composition of Non-Workers

Non-Workers Population		
Persons	Males	Females
349609	15301 (43.8%)	196596(56.2%)

Project: Sand Mining Project (Saharsa Tilawe River Unit 01 Sand Ghat) at Village-Bhatauni, Bhapatia & Kanp District- Saharsa, (Bihar).

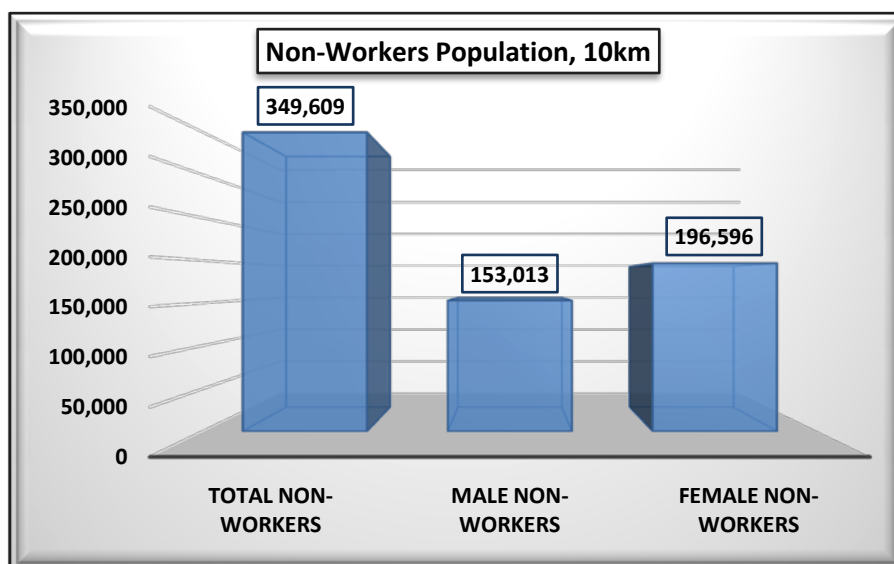


Figure 3.16: Composition of Non-Workers

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 both, Saharsa and Madhepur 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 93 villages and one town named Madhepura (NP)/26 Wards, lying under Saharsa and Madhepura Districts in Bihar state. Overall study area villages are falling mainly under Seven (07) no of tehsils namely Saur Bazar (32 villages), Patarghat (15 villages), Sonbarsa (09 villages), Simri Bakhtiarpur (02 villages), Ghailarh (02 villages), Madhepura (31 villages and 01 town) and Murliganj (02 villages) of Saharsa and Madhepura districts in Bihar state.

There is only one village named Chotachakla under Saur Bazar Tehsil of Saharsa district was found as uninhabited village in the study area. There is only one town named Madhepura (NP)/26 Wards, of Madhepura district found in the study zone.

Educational Facilities

There is a total no. of 191 Primary schools existing in the 10km radius study area. About 129 no of Middle schools are found in the study area. About 17 no of Higher Secondary School (SS) and only 06 no of 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 considerable improvement in educational facility. The villages of the study area have no such facilities can reach within 5 to 10 km range.

Availability of University Education in Saharsa District

There are several affiliated and constituted colleges of the B. N. Mandal University, Madhepura which imparts under graduate and post graduate education in the district. IGNOU (Indira Gandhi National Open University) has opened study center Saharsa College in Saharsa where one can study many distance courses of under graduate, post graduate and other vocational courses etc.

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 two 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 (CHC) was found in the study area. Only 34 no of Primary Health Sub-Centers exist in the villages of the study area. Only 14 no of Mother & Child Welfare Centers are found in the study area. No allopathic hospital exists in the study area. Only one Medical Dispensary at Saur Bazar village under same tehsil of Saharsa district was found in the study area. Overall study area villages are served by moderate level of 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 94 villages/town, only 57 villages (60.6%) are served with River/Canal water in the study area. As per the census records 2011, only 34 villages (36.0%) were found 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 10km radius zone. Only 60 villages(64.0%) 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. Nearest railway station is Saharsa Railway Station located at a distance of approx. 17.52km, 16.0km and 17.46km in NNW, NW & WNW from Block 01, 02 & 03 respectively. Nearest State Highway (SH-59) is passing at approx. 0.86, 1.32 & 7.95km in East, West and West direction from Block 01, 02 & 03 respectively. Nearest Town/District Headquarters of Saharsa, is situated at approx. 16.54, 15.12 and 17.16km away in NNW, NW & WNW Direction from Block 01, 02 & 03 respectively. Nearest airport is Jai Prakash Narayan International Airport Patna is located at 160.0, 162.26 and 169.23km away in West direction from Block 01, 02 & 03 respectively.

Connectivity - The mine site Block 1 is well connected via an approach road of Approx. 0.48km towards Southwest direction. The mine site Block 2 is well connected via an approach road of Approx. 0.52km towards North direction. The mine site Block 3 is well connected via an approach road of Approx. 0.90km towards North direction.

Communications (Saharsa District)

Roads - The district of Saharsa is well served by a network of roads. The roads are classified as the National Highways, State Highways, Major district roads and Other district roads. They are maintained by the CPWD/NHAI, Public works Department, the Rural Engineering Organisation, the Zila parishad, Municipalities. Under the central Road Fund, the following roads have been improved upon: - Singheswar Asthan-Supaul Road, Tribeniganj-Purnia Border Road and Simrahi-Bhaptiahi Road.

A number of bridges have been constructed in the different parts of district. It is also connected with the interior of the district by metalled road. NH-107 and SH-59 pass through Saharsa.

Railways - A branch line of the East Central Railway (ECR) running from Mansi to Supaul enters this district at Sonbarsa Kacheri Station and covers a distance of 37 kilometres. Another branch line of the same Railway covers distance of 42 Kilometres in the district. A third

Project: Sand Mining Project (Saharsa Tilawe River Unit 01 Sand Ghat) at Village-Bhatauni, Bhapatia & Kanp District- Saharsa, (Bihar).

section of the East Central Railway (ECR) coming from Banmankhi (Purnia) goes to Behariganj (Saharsa). The fourth section of the East Central Railway (ECR) from Sakri (Darbhanga) to Nirmali passes through Saharsa district covering a distance only 3 kms within Saharsa district. In the recent past the expansion of railway lines in the district has also taken place.

Airway - There is a small air-strip in the district located at Saharsa, maintained by the Public Works Department.

Boats - The district lacks navigable rivers. However, small country boats serve the purpose of navigation, though on limited scale.

Banking Facility

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

Trade and Commerce

In Saharsa district, trade consists mainly of export of Jute and Mesta and import of Iron and iron products, coal, cotton textiles food grains and consumer goods.

The above mentioned goods are mostly transported by the Railways. Bullock carts carry the product to the railway station or mandis. Trucks are also being utilised for the purpose. Saharsa is the centre for wholesale business in the district. Jute, bamboo, cloth, rice, ghee and grains, other than rice are the principal commodities for wholesale business.

Mines and Minerals

There are no mines in the district and only brick soil and sand are available as minerals.

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 70 villages (74.5%) of the study area are electrified for domestic purpose, 28 villages (29.8%) for agricultural purpose, only 09 villages were observed electrified for commercial & for all purposes in the study area. Out of 94 villages/towns in the study area, 22 villages (23.4%) including only one uninhabited village are not electrified for any purpose in the study area.

Project: Sand Mining Project (Saharsa Tilawe River Unit 01 Sand Ghat) at Village-Bhatauni, Bhapatia & Kanp District- Saharsa, (Bihar).

The district receives its entire power supply from Bihar State Electricity Board. Saharsa (Nagar Parishad) is the only town of Saharsa district has electricity. 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. 297 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 3.26** as follows;

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BASELINE DATA DESCRIPTION

Project: Sand Mining Project (Saharsa Tilawe River Unit 01 Sand Ghat) at Village- Bhatauni, Bapatia & Kanp District- Saharsa, (Bihar).

Table 3.26: Village wise Basic Amenities Availability (10km)

Name of the Village/Town	Educational				Medical							Drinking Water							C T	Communication & Transport				Approach to the Village				Power Supply				Nearest Town Distance, km
	P	M	SS	S	C	P	P	M	H	D	F	T	W	H	T	R	T	P		P	B	R	P	K	N	F	E	E	E	E		
				S	H	H	H	C			W			P	W		k	O		T	S	S	R	R	W	P	D	Ag.	C	A		
1. District Saharsa, Bihar																																
Tiri	2	2	0	0	0	0	1	0	0	0	0	2	2	1	1	2	2	2	1	2	2	2	1	1	2	1	1	2	2	2	Saharsa,14km	
Lachhminia	1	1	0	0	0	0	0	0	0	0	0	2	2	1	1	2	2	2	2	2	2	2	1	1	2	1	1	2	2	2	Saharsa,14km	
Barahi	1	1	0	0	0	0	0	0	0	0	0	2	2	1	1	2	2	2	2	2	1	2	1	1	2	1	1	2	2	2	Saharsa,20km	
Sahuria	7	3	0	0	0	0	1	0	0	0	0	2	2	1	1	2	2	2	1	2	2	2	1	1	2	1	1	2	2	2	Saharsa,21km	
Silet	3	2	0	0	0	0	1	0	0	0	0	2	2	1	1	1	1	2	2	2	2	2	1	1	2	1	1	1	2	2	Saharsa,16km	
Raghunathpur	1	1	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	Saharsa,20km	
Raghunathpur	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	Saharsa,21km	
Kachradaun	1	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	1	2	2	2	Saharsa,19km	
Bhulia	0	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	Saharsa,22km	
Bhulia	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	2	2	2	2	Saharsa,22km	

Chapter-III**BASELINE DATA DESCRIPTION**

**Project: Sand Mining Project (Saharsa Tilawe River Unit 01 Sand Ghat) at Village-
Bhatauni, Bhapatia & Kanp District- Saharsa, (Bihar).**

Hanuman Nagar Chakla	1	1	0	0	0	0	0	0	0	0	0	2	2	1	2	1	2	2	2	2	2	2	1	1	2	1	1	2	2	2	Saharsa,18km
Kachradaun	1	0	0	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	Saharsa,19km
JiwachhpurPurwari	1	0	0	0	0	0	0	0	0	0	0	2	2	1	2	1	2	2	2	2	1	2	1	1	2	1	1	2	2	2	Saharsa,18km
JiwachhpurPachhiari Patti	1	1	0	0	0	0	0	0	0	0	0	2	2	1	2	1	2	2	2	2	1	2	1	1	2	1	1	2	2	2	Saharsa,19km
Garhia	1	1	0	0	0	0	0	0	0	0	0	2	2	1	2	2	2	2	1	2	1	2	1	1	2	1	1	2	2	2	Saharsa,18km
Ajgaiba	2	1	0	0	0	0	1	0	0	0	0	2	2	1	1	1	2	2	1	2	2	2	1	1	2	1	1	1	2	2	Saharsa,18km
Bhawanipur	1	1	0	0	0	0	0	0	0	0	0	2	2	1	1	1	2	2	2	2	2	2	1	1	2	1	1	2	2	2	Saharsa,18km
Saur	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	1	1	2	2	Saharsa,16km
Saur Bazar	2	2	2	1	0	1	1	1	0	1	1	2	2	1	1	2	1	2	1	2	1	2	1	1	2	1	1	1	2	2	Saharsa,16km
Chanaur	9	6	0	0	0	0	0	0	0	0	0	2	2	1	1	2	2	2	2	2	1	2	1	1	2	1	1	1	2	2	Saharsa,14km
Madhura	3	1	0	0	0	0	0	0	0	0	0	2	2	1	1	1	2	2	1	2	2	2	1	1	2	1	1	2	2	2	Saharsa,10km
Nado	3	1	0	0	0	0	0	0	0	0	0	2	2	1	1	1	2	2	1	2	2	2	1	1	2	1	1	2	2	2	Saharsa,11km
RautaKhem	3	1	0	0	0	0	1	0	0	0	0	2	2	1	1	1	2	2	1	2	2	2	1	1	2	1	1	2	2	2	Saharsa,20km
Bhabtia	2	2	0	0	0	0	1	0	0	0	0	2	2	1	1	1	2	2	2	2	1	2	1	1	2	1	2	2	2	2	Saharsa,24km
Suhath	1	2	0	0	0	0	1	0	0	0	0	2	2	1	1	1	2	2	1	2	2	2	1	1	2	1	2	2	2	2	Saharsa,25km
Phursaha	1	1	0	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	Saharsa,28km
Kachra	1	1	0	0	0	0	0	0	0	0	0	2	2	1	1	1	2	2	2	2	2	2	1	1	2	1	1	2	2	2	Saharsa,23km
Kachra	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	1	2	2	2	Saharsa,23km
Chotachakla	Uninhabited Village																												Saharsa,23km		

Chapter-III**BASELINE DATA DESCRIPTION**

Project: Sand Mining Project (Saharsa Tilawe River Unit 01 Sand Ghat) at Village-Bhatauni, Bapatia & Kanp District- Saharsa, (Bihar).

Chakla	0	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	2	Saharsa,29km	
Karahia	1	1	0	0	0	0	0	0	0	0	0	2	2	1	1	1	2	2	1	2	2	2	1	1	2	1	1	2	2	2	Saharsa,25km	
Kanp	6	6	0	0	0	0	0	0	0	0	0	2	1	1	1	1	1	2	1	2	1	2	1	1	2	1	1	2	2	2	Saharsa,21km	
Gulam	12	6	2	1	0	0	1	0	0	0	0	2	2	1	2	1	1	2	1	2	1	2	1	1	1	1	1	1	1	2	2	Saharsa,5km
Bishunpur	5	1	0	0	0	0	1	0	0	0	0	2	2	1	1	1	2	2	1	2	2	2	1	1	2	1	1	1	1	2	2	Madhepura,28km
Dhabauli	13	11	2	1	0	0	1	0	0	0	0	2	2	1	1	1	2	2	1	2	2	2	1	1	2	1	1	1	1	2	2	Madhepura,10km
Kapasias	2	2	0	0	0	0	1	0	0	0	0	2	2	1	2	1	2	2	1	2	2	2	1	1	1	1	1	1	1	2	2	Madhepura,7km
Patarghat	3	1	1	1	0	1	1	1	0	0	1	2	2	1	1	1	1	2	1	2	2	2	1	1	1	1	1	1	1	2	2	Saharsa,22km
Lachhmipur	1	1	1	0	0	0	1	0	0	0	0	2	2	1	1	1	1	2	2	2	1	2	1	1	1	1	1	1	1	2	2	Saharsa,25km
Jamhra	4	3	1	0	0	0	0	0	0	0	0	2	2	1	1	1	2	2	1	2	2	2	1	1	1	1	1	1	1	2	2	Madhepura,15km
Bhaddi	2	2	1	0	0	0	1	0	0	0	0	2	2	1	1	1	1	2	1	2	2	2	1	1	1	1	2	2	2	2	2	Madhepura,21km
Kishunpur	4	4	1	0	0	0	1	0	0	0	0	2	2	1	1	1	2	2	1	2	1	2	1	1	1	1	1	1	1	2	2	Madhepura,15km
Pama	4	3	0	0	0	0	1	0	0	0	0	2	2	1	1	1	1	2	1	2	1	2	1	1	1	1	1	1	1	2	2	Madhepura,19km
Paharpur	1	1	0	0	0	0	1	0	0	0	0	2	2	1	1	1	2	2	2	2	1	2	1	1	1	1	1	1	1	2	2	Madhepura,21km
Bara Singhia	1	1	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	2	Madhepura,18km
Jirwa	1	1	0	0	0	0	0	0	0	0	0	2	2	1	1	2	2	2	2	2	2	2	1	1	1	1	1	1	1	2	2	Madhepura,15km
Sahgaura	0	0	0	0	0	0	0	0	0	0	0	2	2	1	1	2	2	2	2	2	2	2	1	1	1	1	2	2	2	2	2	Madhepura,15km
Pastpar	2	2	1	0	0	0	0	0	0	0	0	2	2	1	2	2	2	2	1	2	2	2	1	1	1	1	1	1	1	2	2	Madhepura,18km
Sirrahi	2	0	0	0	0	0	0	0	0	0	0	2	2	1	2	2	2	2	1	2	1	2	1	1	2	1	1	1	1	1	1	Saharsa,28km

Chapter-III**BASELINE DATA DESCRIPTION**

**Project: Sand Mining Project (Saharsa Tilawe River Unit 01 Sand Ghat) at Village-
Bhatauni, Bapatia & Kanp District- Saharsa, (Bihar).**

Rakhauta	1	1	0	0	0	0	0	0	0	0	0	0	2	2	1	2	1	2	2	2	2	1	2	1	1	2	1	1	1	1	1	Saharsa,42km
Khasurha	4	1	0	0	0	0	0	0	0	0	0	0	2	2	1	2	1	1	2	1	2	1	2	1	1	1	1	1	1	1	1	Saharsa,42km
Bhaura	1	0	0	0	0	0	0	0	0	0	0	0	2	2	1	2	1	1	2	2	2	1	2	1	1	2	1	1	1	1	1	Saharsa,42km
Amirta	2	2	0	0	0	0	0	0	0	0	0	0	2	2	1	2	1	1	2	1	2	1	2	1	1	2	1	1	1	1	1	Saharsa,42km
Baraith	2	1	0	0	0	0	1	0	0	0	0	0	2	2	1	2	2	2	2	1	2	2	2	1	1	1	1	1	1	1	1	Saharsa,42km
Atlakha	3	1	0	0	0	0	1	0	0	0	0	0	2	2	1	2	1	2	2	1	2	2	2	1	1	1	1	1	1	1	1	Saharsa,45km
Manguar	2	1	0	0	0	0	1	0	0	0	0	0	2	2	1	2	2	2	2	1	1	1	2	1	1	1	1	1	1	1	1	Saharsa,42km
Durgapur	1	1	0	0	0	0	0	0	0	0	0	0	2	2	1	2	1	1	2	1	2	2	2	1	1	2	1	1	1	1	1	Saharsa,42km
Paharpur	1	2	0	0	0	1	1	1	0	0	1	2	2	1	2	2	2	2	1	2	2	2	2	1	1	2	1	1	2	2	2	Saharsa,20km
Tilanthi	1	1	0	0	0	0	0	0	0	0	0	0	2	1	1	2	2	2	2	2	2	2	2	2	1	1	2	1	2	2	2	Saharsa,22km
2. District Madhepura, Bihar																																
Bhawantikthi	3	1	1	0	0	0	0	0	0	0	0	0	2	2	1	2	2	1	2	1	2	2	2	1	1	1	1	1	2	2	2	Madhepura,5km
Arraha	2	2	0	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	2	2	Madhepura,15km
Barahi	2	2	0	0	0	0	0	0	0	0	0	0	2	2	1	2	1	2	2	1	2	2	2	2	1	2	1	1	1	2	2	Madhepura,12km
Dubiahi	1	1	0	0	0	0	0	0	0	0	0	0	2	2	1	1	1	1	2	1	2	2	1	1	2	2	1	2	2	2	2	Madhepura,15km
Matiahi	2	1	0	0	0	0	1	1	0	0	0	0	2	2	1	1	1	1	2	1	2	2	1	1	1	2	1	1	2	2	2	Madhepura,6km
Pithahi	1	0	0	0	0	0	0	0	0	0	0	0	2	2	1	1	1	2	1	2	2	2	2	1	1	2	1	2	2	2	2	Madhepura,6km
Bhelwa	2	1	0	0	0	0	1	1	0	0	0	0	2	2	1	1	1	1	2	1	2	2	2	1	2	2	1	1	2	2	2	Madhepura,10km
Gorhiari	1	1	0	0	0	0	0	0	0	0	0	0	2	2	1	1	2	1	2	2	2	2	2	1	2	1	1	1	2	2	2	Madhepura,6km

Chapter-III**BASELINE DATA DESCRIPTION**

Project: Sand Mining Project (Saharsa Tilawe River Unit 01 Sand Ghat) at Village-Bhatauni, Bapatia & Kanp District- Saharsa, (Bihar).

Sahugarh	4	1	0	0	0	0	1	1	0	0	0	2	2	1	2	2	2	2	1	1	1	1	1	1	1	1	1	2	2	2	Madhepura,3km
Madhipura	6	5	2	2	0	1	1	1	0	0	1	2	2	1	1	2	1	1	1	1	1	1	1	1	1	1	2	2	2	2	Madhepura,3km
Manikpur	6	3	0	0	0	0	1	1	0	0	0	2	2	1	1	1	1	2	1	2	2	2	1	1	1	1	1	2	2	2	Madhepura,3km
Madhuban	2	2	0	0	0	0	0	0	0	0	0	2	2	1	2	2	1	2	1	2	2	2	1	1	2	1	1	2	2	2	Madhepura,5km
Madanpur	2	3	0	0	0	0	1	1	0	0	0	2	2	1	1	1	2	2	1	2	1	2	1	1	2	1	1	1	2	2	Madhepura,5km
TuniahiUttarwari	1	1	0	0	0	0	0	0	0	0	0	2	2	1	2	1	1	2	1	2	2	2	2	2	2	1	1	2	2	2	Madhepura,3km
LchhmirampurUttarwariChakla	1	0	0	0	0	0	0	0	0	0	0	2	2	1	2	2	2	2	2	2	2	2	1	2	1	1	2	2	2	2	Madhepura,6km
LachhmirampurDakhinwari	0	0	0	0	0	0	0	0	0	0	0	2	2	1	2	2	2	2	2	2	2	2	1	2	2	1	2	2	2	2	Madhepura,6km
TuniahiDakhinwari	1	1	0	0	0	0	0	0	0	0	0	2	2	1	2	2	2	2	1	2	2	2	1	2	2	1	1	2	2	2	Madhepura,5km
SukhasanUttarwari	1	1	0	0	0	0	1	1	0	0	0	2	2	1	1	1	1	2	1	2	2	2	1	1	1	1	1	2	2	2	Madhepura,3km
SiriparUttarwari	1	1	0	0	0	0	0	0	0	0	0	2	2	1	1	1	1	2	2	2	2	2	1	2	1	1	1	2	2	2	Madhepura,6km
SiripurDakhinwari	0	0	0	0	0	0	0	0	0	0	0	2	1	1	1	1	1	2	1	2	2	2	1	1	2	1	2	2	2	2	Madhepura,7km
SukhasanDakhinwari	1	1	0	0	0	0	0	0	0	0	0	2	2	1	2	2	2	2	1	2	2	2	1	1	1	1	1	2	2	2	Madhepura,7km
KhopaitiBadh	0	0	0	0	0	0	0	0	0	0	0	2	2	1	2	2	1	2	1	1	2	2	1	1	1	1	1	2	2	2	Madhepura,8km
Bahadur Singh UttarwariChakla	0	0	0	0	0	0	0	0	0	0	0	2	2	1	1	2	2	2	1	2	2	2	1	1	1	1	1	2	2	2	Madhepura,6km
Bahadur Singh DakhinwariChakla	0	0	0	0	0	0	0	0	0	0	0	2	2	1	2	2	1	2	1	2	2	2	1	1	2	1	1	2	2	2	Madhepura,6km

Chapter-III**BASELINE DATA DESCRIPTION**

Project: Sand Mining Project (Saharsa Tilawe River Unit 01 Sand Ghat) at Village-Bhatauni, Bhopatia & Kanp District- Saharsa, (Bihar).

Buniad Singh Chakla	1	1	0	0	0	0	1	1	0	0	0	2	2	1	2	2	1	2	1	2	2	2	1	1	1	1	1	2	2	2	Madhepura,5km
Hanuman Nagar Chakla	0	0	0	0	0	0	1	1	0	0	0	2	2	1	2	2	1	2	1	1	2	1	1	1	1	1	2	2	2	Madhepura,9km	
Gothkhopaiti	0	0	0	0	0	0	0	0	0	0	0	2	2	1	1	1	2	2	1	2	2	2	1	1	2	1	1	2	2	2	Madhepura,8km
Khopaiti	1	1	1	0	0	0	0	0	0	0	0	2	2	1	1	2	2	2	1	2	2	2	1	1	2	1	1	2	2	2	Madhepura,7km
Mudwala	0	0	0	0	0	0	0	0	0	0	0	2	2	1	2	2	2	2	1	2	2	2	1	1	1	1	1	2	2	2	Madhepura,4km
Mudwala	1	1	0	0	0	0	0	0	0	0	0	2	2	1	1	2	1	2	1	1	2	2	1	1	2	1	1	2	2	2	Madhepura,4km
Balam	0	0	0	0	0	0	0	0	0	0	0	2	2	1	1	1	1	2	1	2	2	2	1	1	2	1	2	2	2	2	Madhepura,10km
Garhia	1	1	0	0	0	1	1	1	0	0	1	2	2	1	1	1	1	2	2	2	2	2	1	2	1	1	2	2	2	2	Madhepura,10km
Garthan	1	1	0	0	0	0	0	0	0	0	0	2	2	1	2	1	1	2	1	1	1	1	1	1	1	1	1	2	2	2	Madhepura,4km
Madhepura (NP)/26 Wards	Urban Part																												Madhepura (NP),0km		
Khari	3	2	0	0	0	0	0	0	0	0	0	2	2	1	2	1	1	2	1	2	2	2	1	1	1	1	2	2	2	2	Murliganj,20km
Belo	8	4	1	0	0	0	1	1	0	0	0	2	2	1	2	1	1	2	1	2	2	2	1	1	1	1	1	2	2	2	Madhepura,12km
TOTAL (10km)	19	12										Status for Availability and Non-Availability is shown as A (1) & NA (2) respectively																			
	1	9	17	6	0	5	34	14	0	1	5																				

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



Chapter-III

BASELINE DATA DESCRIPTION

Project: Sand Mining Project (Saharsa Tilawe River Unit 01 Sand Ghat) at Village-Bhatauni, Bhapatia & Kanp District- Saharsa, (Bihar).

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 (Saharsa Tilawe River Unit 01 Sand Ghat) at Village-Bhatauni, Bhapatia & Kanp District- Saharsa, (Bihar).

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;

Dewan Ban Mandir - One Shivling is established in the temple situated in Sahpur-Manjhoul of Nauhatta block. It is said that the Ling was established by Maharaja Shalivahan sometime in 100 B. C. The Hindus celebrate a festival called jitiya after the name of Jimutbahan who was the son of Maharaja Shalivahan. Description of this place is found in Shri Puran. The ancient shrine at Dewan Ban was washed away by the turbulent Koshi river. The local people have however built another temple in the adjacent area.

Nauhatta - It is an old village, important since the time of Mughals and is presently the headquarters of the block of the same name. The village has a 'Shiva temple' about 80 feet in height. The temple which was damaged in the earthquake of 1934 was reconstructed by Raja Srinand Singh of Srinagar Estate.

There is a grave of Madho Singh on an earthen mound about 50 feet high. Madho Singh had become a martyr in the battle of Ladri Ghat. Offerings are made on the grave both by Hindus and Muslims.

Mandan Bharti Asthan - The place is situated in village Mahishi. It is said that a religious discourse (Shastrarth) was held between Shankaracharya and the local scholar Mandan Mishra. Bharti, wife of Madan Mishra, who was also a great scholar, was named as Judge for the discourse. It is also said that Shankaracharya, after his initial victory over Mandan Mishra was challenged by Bharati, was outwitted by her and he (accepted defeat).

Tara Asthan -It is situated at a distance of about 16 Kms. West of Saharsa in village Mahishi where an ancient temple of Bhagwati Tara is built. The idol of Bhagwati Tara is said to be very old and draws devotees from far and wide. On either side of the main deity, there are two smaller female deities which are worshipped by the people as Ekjatanad Nil Saraswati.

Udahi - The village is situated in Kahara block. It contains an ancient image of goddess Durga discovered during excavation. According to a legend one Sone LalaJha dreamt that he had received divine instruction to excavate a particular place. The image was found at that

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very spot and latter established in the temple. Devotees throng here from far and wide. A fair is held on the day of Maha Ashtami Puja every year.

Sun Temple at Kandaha

Like Dev (in Aurangabad district), the sun temple at Kandaha village is an important religious and historical place which has been duly recognized by the Archaeological Survey of India. The idol of sun God riding seven horsed chariot, has been carved on a single granite slab. At the door of the sanctum sanctorum, there are inscriptions which deciphered by historians, confirm that this sun temple was built during the period of king NarsimhaDeo of Karnata dynasty who ruled over Mithila in the 12th century. It is said that a brutal mughal emperor named Kalapahad had damaged the temple which was however renovated by the famous saint poet, LaxminathGonsai.

ChandikaAsthana at Biratpur - Biratpur village under Sonebarsa block of this district is famous for an ancient temple of goddess Chandi. This village is also associated with King Birat of the Mahabharat age. During exile the Pandavas had lived here for 12 years.

The tantric Scholars and devotees attach much significance to this Chandi temple, which is said to form an equilateral triangle (TRIK) with Katyayani temple near Dhamharaghat and Tara temple at Mahishi. During the Navratra people from distant places visit the village to offer prayers to the goddess of power.

LaxminathGonsaiAsthana at Bangoan - The famous saint a poet of devotional songs of 18th century, Baba Laxmi Nath Gosai lived at Bangoan village which is hardly 9 km away from the district headquarters. The huge banyan tree under which the remains of Gosaiji have been preserved is the centre of great reverence for the people of the district.

KaruKhirhari Temple - Situated on the bank of Kosi River, there is a temple of Saint KaruKhirhari who is said to have attained divinity by virtue of his Shiv-bhakti a dedication to Cows. People from all walks of life come to offer milk to Karu Baba. Although this temple near Mahpura village-2km away from Mahishi block office, is situated in the riverside of the eastern Koshi Embankment, it has survived the onslaught of the turbulent river. Recently the Bihar Government has announced to develop Karu temple as a major tourist spot.

Rakta Kali and 64 Yogini Temple in Matsyaganda Campus at Saharsa - The barren water logged area better known as Laibh in Saharsa town has now been developed as a beautiful

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picnic spot commonly known as Matsyagandha project. The construction of Rakta Kali temple and an oval shaped temple with 64 deities (known as 64 Yogini) filled on the inner walls of temple, attracts devotees from far-off places. The Bihar Government has decided to establish a tourist complex at this place.

Social and Cultural Events

The district is mainly agrarian in nature. The district is prone to flood. Almost every year major areas of the district are inundated by the flood water of the river Kosi. The turbulent Kosi has been controlled considerably and the completion of the kosi project has helped to change in the cropping pattern. Sugarcane cultivation has increased considerably.

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. There is no structure or habitation in the core zone mining lease area, hence, any planning with respect to Rehabilitation & Resettlement is not applicable.

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.

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:

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

Mitigation measures

Project activity will be carried out only in the dry part of the Tilawe 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 3m 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 (SO₂), Nitrogen Oxides (NO₂) 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

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 (PM10) 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

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of PM10 during loading was calculated and found to be $1.92 \times 10^{-3} \text{ g/s/m}^2$ 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 PM10 during unloading and average wind speed was 0.92 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 PM10 due to transportation of sand on haul road was $1.65 \times 10^{-4} \text{ g/s/m}^2$ based on assumption that silt content spread on road surface was 5%, and efficiency of PM10 emission control 90%. Truck will be fully covered with tarpaulin material and emission of PM10 during on the haul road will be insignificant.

Based on the above consideration that there was low emission of PM10 during transportation of ore and overburden, however during loading & unloading, transportation of ore over the haul road, emission of PM10 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

The meteorological data recorded at hourly interval during the month of March 2023 to May 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

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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 0.92m/s. Impact of the pollutants was anticipated in southeast sector under influence of north easterly & 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 PM10 was envisaged in southeast sector at very short distance from the site due to moderate to low wind speed.

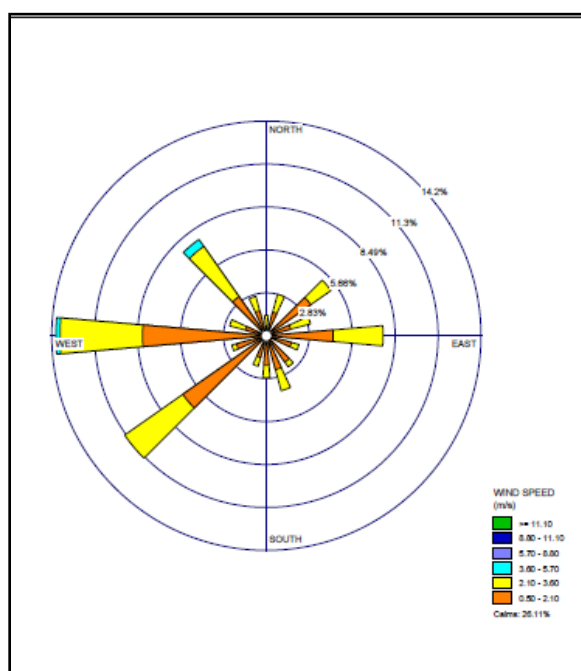


Figure 4.1: Wind Rose Diagram

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.

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:

- ✓ Water sprinkling will be done on the haul roads twice in a day.

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

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

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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.
- 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 Tilawe 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.

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Mitigation measures

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:

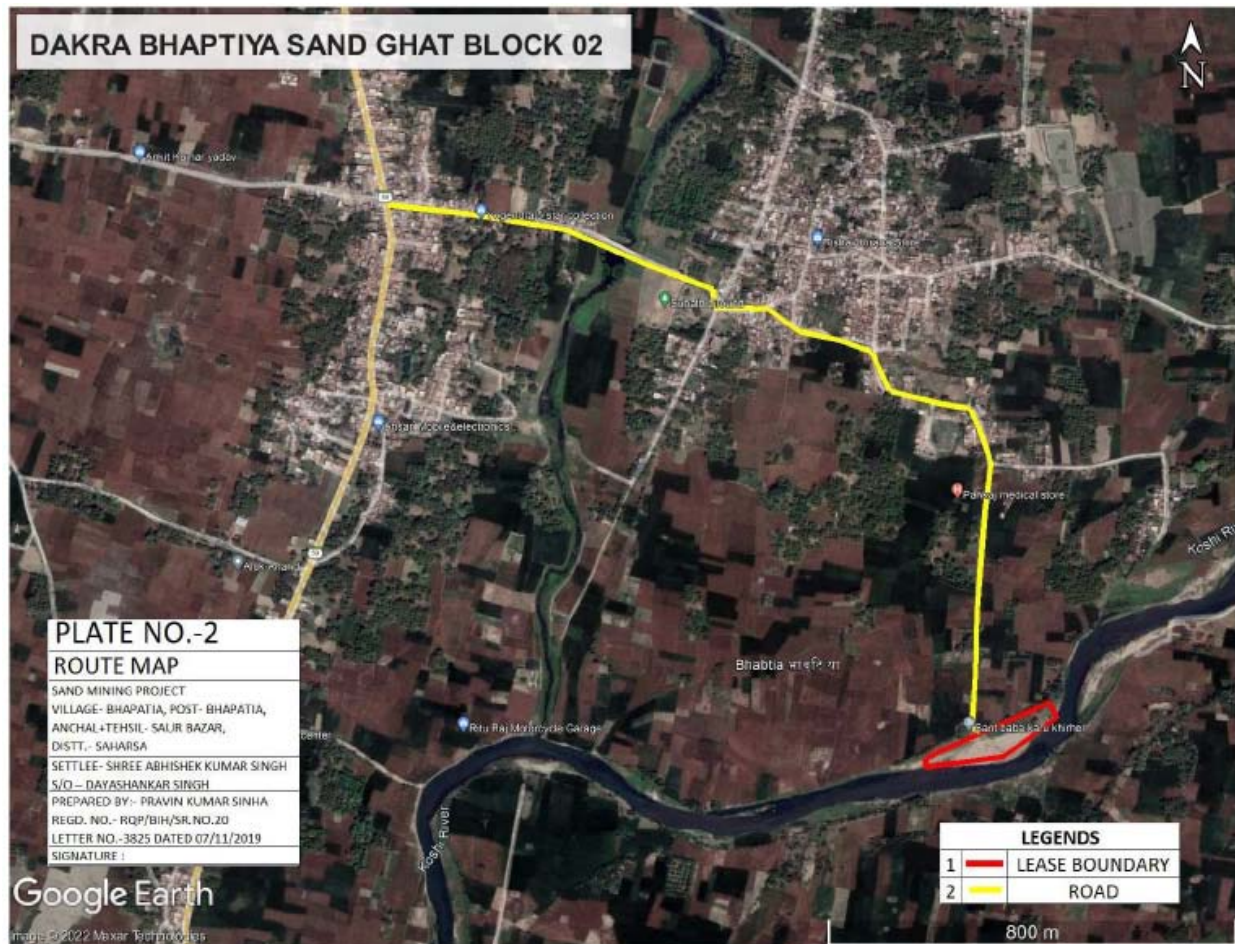
The sand extracted will store the nearby storage point. From there sand will be transported to the market. Sand will be stored in to storage point and from there it will be transported in the night time when traffic load is low on nearest SH or NH.

Project: Sand Mining Project (Saharsa Tilawe River Unit 01 Sand Ghat) at Village- Bhatauni, Bhapatia & Kanp District- Saharsa, (Bihar).



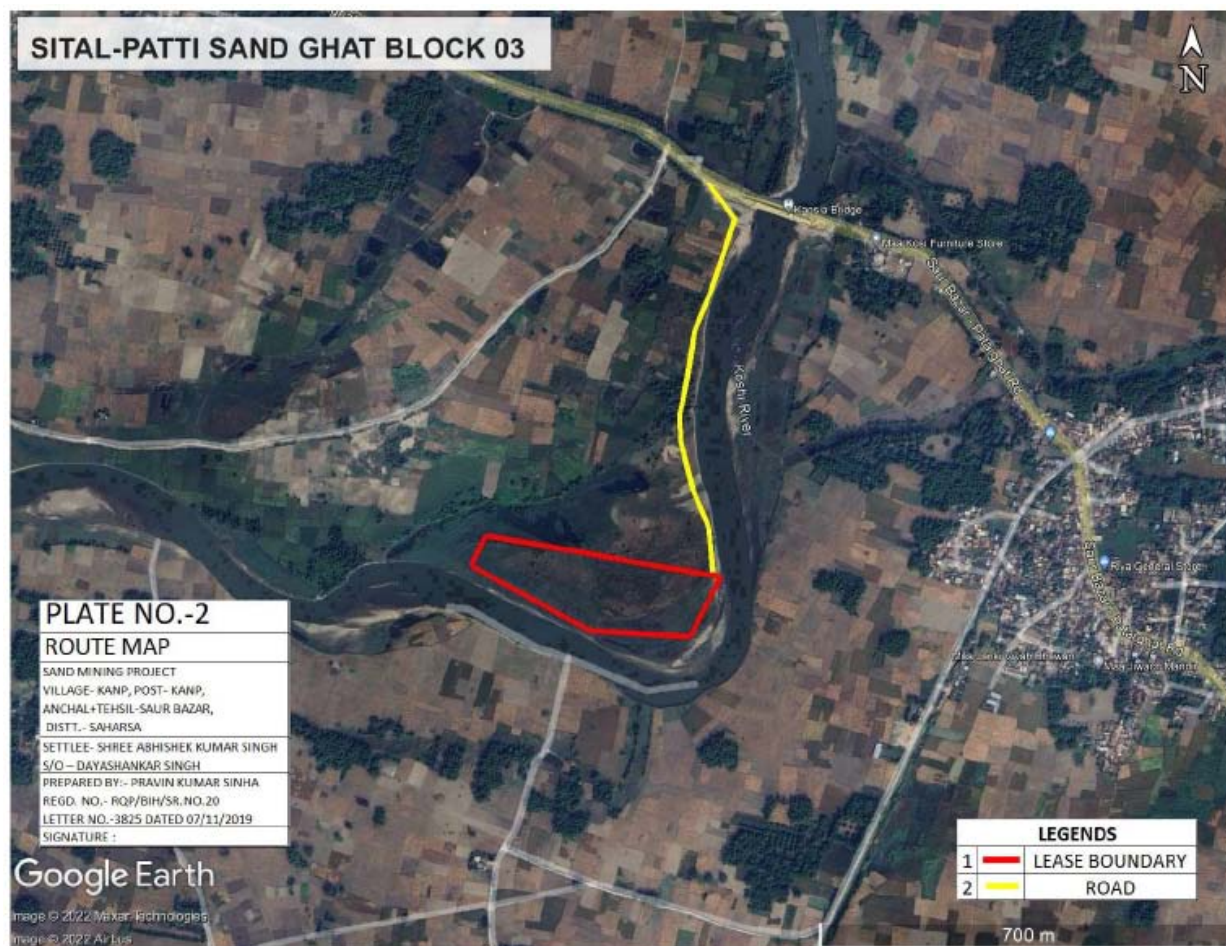
MAP SHOWING EVACUATION ROUTE OF BLOCK NO. 01

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MAP SHOWING EVACUATION ROUTE OF BLOCK NO. 02

Project: Sand Mining Project (Saharsa Tilawe River Unit 01 Sand Ghat) at Village- Bhatauni, Bhapatia & Kanp District- Saharsa, (Bihar).



MAP SHOWING EVACUATION ROUTE OF BLOCK NO. 03

FIGURE 4.1 MAP SHOWING EVACUATION ROUTE

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.

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Table 4.2 (i): Existing Traffic Scenario & LOS

Road	V	C	Existing V/C Ratio	LOS
National Highway (NH-231)	2500	15000	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 for Sand **Unit 01**

Proposed Capacity of Mine/annum : 88020 TPA

No. of working days : 250 days

Proposed Capacity of mine/day : 352.08 ~ 352

Truck Capacity : 16 tonnes

No. of trucks deployed/day : 22

Increase in PCU/day (22*3) : 66

Table 4.2 (ii): Modified Traffic Scenario & LOS

Road	V	C	Modified V/C Ratio	LOS
National Highway (NH-231)	2500 + 66 = 2566	15000	0.171	A

Results

From the above analysis it can be seen that the LOS has changed from 0.16 to 0.171 at Highway intersection that remains 'A' i.e. 'Excellent'. Hence, there will not so much adverse affect on the proposed evacuation roads due to additional traffic. Traffic management has been proposed as given in 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.

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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 (SO₂) and Nitrogen Dioxide (NO₂) will be monitored at the workplace i.e. core zone. The methodology proposed for is shown below:

Table 6.1, Monitoring methodologies and parameters

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

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

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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

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

S. No.	Description	Cost to be incurred (in lakhs/annum)
1	Water Quality (Surface & Groundwater)	1.0
2	Soil Quality	0.50
3	Air Quality	1.0
4	Noise Level	0.5
5	Plantation Monitoring	0.5
6	Socio-economic Condition	0.5
TOTAL		4.0

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:

- ✓ Elimination of hazards.

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- ✓ Substitute something safer.
- ✓ Use engineering/design controls.
- ✓ Use administrative controls such as safe work procedures.
- ✓ 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.

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Risk analysis is done for:

- Forecasting any unwanted situation
- 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		
L1	Happens every time we operate	Almost Certain	Common or repeating occurrence	C1	Fatality	Catastrophic
L2	Happens regularly (often)	Likely	Known to have occurred "has happened"	C2	Permanent disability	Major
L3	Has happened (occasionally)	Possible	Could occur or "heard of it happening"	C3	Medical/hospital or lost time	Moderate
L4	Happens irregularly (almost never)	Unlikely	Not likely to occur	C4	First aid or no lost time	Minor
L5	Improbable (never)	Rare	Practically impossible	C5	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
C1 Catastrophic	1	2	4	7	11

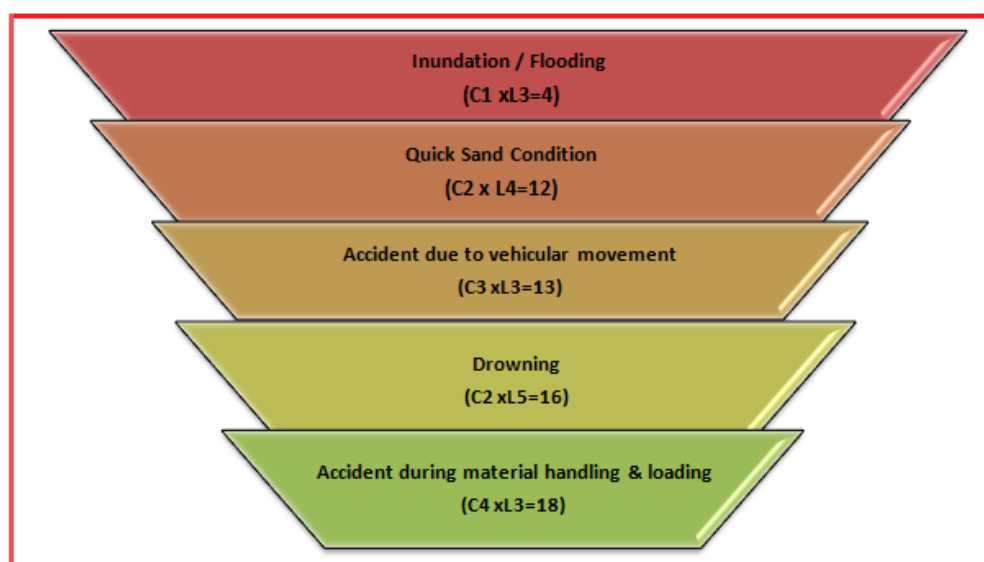
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C2 Major	3	5	8	12	16
C3 Moderate	6	9	13	17	20
C4 Minor	10	14	18	21	23
C5 Insignificant	15	19	22	24	25

RISK RATING:

HIGH RISK 1-6	MEDIUM RISK 7-15	LOW RISK 16-25
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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:

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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.

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 of 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

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reckless or untrained driver or overloading of trucks or in case pathway is not compacted suitably, etc.

Measures to Prevent Accidents during Transportation

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.

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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.

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: Banka District like other areas of Bihar is moderately vulnerable to earthquake as it exists in Zone IV. 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.

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(B) Response Plan:

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 Banka 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 **23 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 Tilawe 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.

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Income to Government

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

Project: Sand Mining Project (Saharsa Tilawe River Unit 01 Sand Ghat) at Village-Bhatauni, Bhatatia & Kanp District- Saharsa, (Bihar).

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 on Tilawe River Unit- 01 Sand Ghat at Mauja- Bhatauni, Bhatatia & Kanp District- Saharsa, State - Bihar, provides employment to local people who are in search of the same. The granting of environment clearance to 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 Tilawe 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 Tilawe 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

Project: Sand Mining Project (Saharsa Tilawe River Unit 01 Sand Ghat) at Village-Bhatauni, Bhapatia & Kanp, District- Saharsa, (Bihar).

lift the general health status of the residents of the area. Health camps, medical aids, family welfare programs, immunization camp, sports will be arranged.

Table-8.1, Budget for Public Health

S. No.	Activities recommended for communities level services	Tentative cost (Lakh Rs) For Each Mine
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.	0.5
	Total	2.5

- 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 Each Mine
For routine checkup	1,00,000
Medical aid as per ESI Scheme	2,00,000
Training	1,00,000
Total	4,00,000

8.3 ENVIRONMENTAL BENEFITS

- Protection of banks
- Reducing submergence of adjoining agricultural lands due to flooding.

Project: Sand Mining Project (Saharsa Tilawe River Unit 01 Sand Ghat) at Village-Bhatauni, Bhapatia & Kanp, District- Saharsa, (Bihar).

- c. Reducing aggradations of river level.
- d. Protection of crops being cultivated along the bank.
- e. A check on illegal mining activity.

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 1st May 2018. The following has been proposed considering the needs & demand of the people.

CER cost will be 2% of the total project cost. This amount will be used for social welfare.

CER COST is Rs. 57,23,500/- x 2% = Rs. 1,14,470/-

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.

Project: Sand Mining Project (Saharsa Tilawe River Unit 01 Sand Ghat) at Village- Bhatauni, Bapatia & Kanp District- Saharsa, (Bihar).

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:

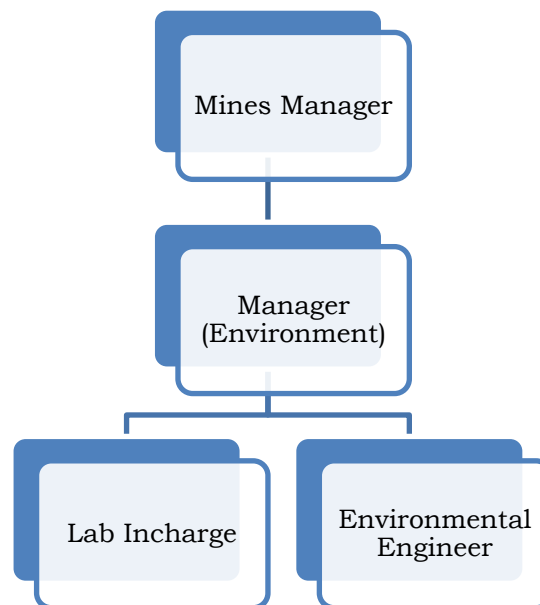


Figure 9.1 Environment Management Cell

Project: Sand Mining Project (Saharsa Tilawe River Unit 01 Sand Ghat) at Village- Bhatauni, Bhapatia & Kanp District- Saharsa, (Bihar).

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.
- 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.

Project: Sand Mining Project (Saharsa Tilawe River Unit 01 Sand Ghat) at Village- Bhatauni, Bhapatia & Kanp District- Saharsa, (Bihar).

- 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 1.0m maximum 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 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.

Project: Sand Mining Project (Saharsa Tilawe River Unit 01 Sand Ghat) at Village- Bhatauni, Bhapatia & Kanp District- Saharsa, (Bihar).

- 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.
- 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.

Project: Sand Mining Project (Saharsa Tilawe River Unit 01 Sand Ghat) at Village- Bhatauni, Bhapatia & Kanp District- Saharsa, (Bihar).

- 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, a social 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. 82 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, minimum 05 plant per hectare will be proposed for development of greenbelt but in this project 10 plants per hectare will be proposed for better condition of environment.
- Total Number of plants for cluster of Sand Blocks are given below.

Sand Ghat	Area (Ha)	Plants
Saharsa Tilawe River Unit 01	8.15	8.15*10 Plants= 82 plants
Total Plants		82 plants

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 ₂
2	<i>Mangifera indica</i>	Aam	Tolerant to Dust control
3	<i>Tectona grandis</i>	Sagon	Tolerant to Dust control
4	<i>Azadirachta indica</i>	Neem	Tolerant to SO ₂
5	<i>Pithecolibium duclouxii</i>	Jungle jalebi	Tolerant to SO ₂ and Dust control
6	<i>Scigium cumuni</i>	Jamun	To stop river bank erosion
7	<i>Terminalia arjuna</i>	Arjun	To stop river bank erosion

Project: Sand Mining Project (Saharsa Tilawe River Unit 01 Sand Ghat) at Village- Bhatauni, Bhapatia & Kanp District- Saharsa, (Bihar).

8	<i>Populus ciliate</i>	Popular	Fast growing, broad leaf
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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 Shree Abhishek Kumar Singh, S/o – Dayashankar Singh, Add: - Vill + Post – Saroja, P.S – Simri Bakhtiyarpur, Dist – Saharsa (Bihar), Pin – 852127, (Sand Unit 01), 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.

Project: Sand Mining Project (Saharsa Tilawe River Unit 01 Sand Ghat) at Village- Bhatauni, Bhapatia & Kanp District- Saharsa, (Bihar).

- 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.
- 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

Shree Abhishek Kumar Singh, S/o – Dayashankar Singh, Add: - Vill + Post – Saroja, P.S – Simri Bakhtiyarpur, Dist – Saharsa (Bihar), Pin – 852127, (Sand Unit 01), 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.



Project: Sand Mining Project (Saharsa Tilawe River Unit 01 Sand Ghat) at Village- Bhatauni, Bhapatia & Kanp District- Saharsa, (Bihar).

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 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.

Project: Sand Mining Project (Saharsa Tilawe River Unit 01 Sand Ghat) at Village- Bhatauni, Bhapatia & Kanp District- Saharsa, (Bihar).

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.

Table 9.2, Budget of EMP (Unit 01)

Sl. No	Description	Capital Cost (lakh)	Recurring Cost (lakh)
1	Pollution Control & Dust Suppression	--	1.5
2	Pollution Monitoring i) Air pollution ii) Water pollution iii) Soil pollution iv) Noise Pollution	--	2.0
3	Plantation and salary for one gardener (part time basis).	0.82	0.5
4	Haul road Maintenance Cost	8.125	1.5
TOTAL		8.945	5.5

Note: *82 plants * 1000 Rs (for each plants including hedges and fences) =Rs 82000/-

- 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 *3.25 km haul road) = 812500/-

Project: Sand Mining Project (Saharsa Tilawe River Unit 01 Sand Ghat) at Village- Bhatauni, Bhapatia & Kanp District- Saharsa, (Bihar).

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 14th 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 Proposed Sand Mining Project is located on Saharsa Tilawe River Unit 01 (Tulsiyahi Sand Ghat Block 01, Dakra Bhaptiya Sand Ghat Block 02 & Sital-Patti Sand Ghat Block 03) at Village- Bhatauni, Bhapatia & Kanp, Distt.- Saharsa, Bihar.

The Proposed Production is 48900 Cum/Year or 88020 Tonnes per annum and Area of the project site is 8.15 ha.

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**.

10.3 BRIEF DESCRIPTION OF PROJECT

The proposed project is Open Cast Semi-Mechanized Mining of Sand with a proposed production of 48900 Cum/Year or 88020 TPA. The project has been proposed by (Unit 01 - Shree Abhishek Kumar Singh, S/o – Dayashankar Singh, Add: - Vill + Post – Saroja, P.S – Simri Bakhtiyarpur, Dist – Saharsa (Bihar), Pin – 852127.

Project: Sand Mining Project (Saharsa Tilawe River Unit 01 Sand Ghat) at Village- Bhatauni, Bhapatia & Kanp District- Saharsa, (Bihar).

The proposed project is over an area 8.15 ha on Tilawe River at Mauja- Bhatauni, Bhapatia & Kanp District- Saharsa, (Bihar). As per MoEF, New Delhi Gazette dated 14th 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- 57,23,500/- (including auction cost).

The proposed mining lease area falls in Survey of India Toposheet 72 K/9, 72 K/10, 72K/13, 72K/14.

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

Table: 10.1 Mine lease Co-ordinates

Saharsa Tilawe River Unit 01

Co-ordinates					Ghat/ Address	River
Tulsiyahi Sand Ghat Block 1	3.0	1	25°44'3.57"N	86°40'36.07"E	Tulsiyahi Balu Ghat Village- Bhatauni, Post- Bhatauni, Anchal+Tehsil- Simri Bakhtiyarpur Distt.- Saharsa	Tilawe
		2	25°44'4.72"N	86°40'37.64"E		
		3	25°43'55.44"N	86°40'45.67"E		
		4	25°43'52.01"N	86°40'47.56"E		
		5	25°43'48.62"N	86°40'47.09"E		
		6	25°43'48.70"N	86°40'45.79"E		
		7	25°43'54.51"N	86°40'44.15"E		
Dakra Bhaptiya Sand Ghat Block 02	1.1 5	1	25°45'49.85"N	86°41'56.25"E	Bhapatia Balu Ghat Village- Bhapatia, Post- Bhapatia, Anchal+Tehsil- Saur Bazar, Distt.- Saharsa	Tilawe
		2	25°45'48.86"N	86°41'56.78"E		
		3	25°45'46.41"N	86°41'53.00"E		
		4	25°45'45.75"N	86°41'47.55"E		
		5	25°45'46.33"N	86°41'47.57"E		
Sital-Patti Sand Ghat Block 03	4.0	1	25°49'16.93"N	86°45'31.35"E	Sital Patti Balu Ghat Village- Kanp, Post- Kanp, Anchal+Tehsil-Saur Bazar, Distt.- Saharsa	Tilawe
		2	25°49'14.67"N	86°45'45.49"E		
		3	25°49'11.52"N	86°45'43.69"E		
		4	25°49'11.81"N	86°45'37.72"E		
		5	25°49'15.31"N	86°45'30.48"E		

Project: Sand Mining Project (Saharsa Tilawe River Unit 01 Sand Ghat) at Village-Bhatauni, Bhapatia & Kanp District- Saharsa, (Bihar).

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

Table-10.2: Details of Environmental Setting

Sr. No.	Particulars	Details			
1	Location				
a	Village	Mauja – Bhatauni, Bhapatia & Kanp			
b	District	Saharsa			
c	State	Bihar			
2	Elevation above	Unit- 01 Tulsiyahi Sand Ghat Block 1 (36.4 ASML to 35.5 ASML) Dakra Bhaptiya Sand Ghat Block 02 (36.4 ASML to 35.5 ASML) Sital-Patti Sand Ghat Block 03 (38.4 ASML to 37.5 ASML)			
3	Nearest National /State Highway	Block 01 - SH-59: Approx. 0.86 Km towards E direction. Block 02 - SH-59: Approx. 1.32 km towards W direction Block 03 - SH-59: Approx. 7.95 km towards W direction.			
4	Nearest Railway station		Blocks	Railway Station	Distance (Km) Direction
			Block 01	Saharsa Railway Station	Approx. 17.52 km, towards NNW direction.
			Block 02	Saharsa Railway Station	Approx. 16.0 km, towards NW direction.
			Block 03	Saharsa Railway Station	Approx. 17.46 km, towards NW direction.
5	Nearest Airport		Blocks	Airport	Distance (Km) Direction
			Block 01	JPN Airport, Patna	Approx. 159.97 km towards W direction.
			Block 02	JPN Airport, Patna	Approx. 162.26 km towards W direction.
			Block 03	JPN Airport, Patna	Approx. 169.23 km towards W direction.
6	Ecological Sensitive Areas (Wildlife Sanctuaries)	There is no any Ecological Sensitive Areas Like National Park, Wildlife Sanctuaries, etc are found within 10 km of the study area.			

Project: Sand Mining Project (Saharsa Tilawe River Unit 01 Sand Ghat) at Village- Bhatauni, Bapatia & Kanp District- Saharsa, (Bihar).

Sr. No.	Particulars	Details
7	Seismic Zone	Zone- IV <i>Source BMTC 2nd edition</i> https://www.bmtpc.org/disaster%20resistnace%20technolgies/ZONE%20IV.htm

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	Sand Mining Project (Saharsa Tilawe River Unit 01 Sand Ghat) at Village- Bhatauni, Bapatia & Kanp District- Saharsa, (Bihar).
2	Mining Capacity	48900 Cum/Year or 88020 TPA
3	Method of mining	Open cast semi-mechanized mining/OTFM
4	Total ML area	8.15 ha
5	Depth of mining	1.0 m depth
6	Manpower	23 persons
9	Water Requirement	20.0 KLD
10	Source of Water	Tanker/ Nearby village.

10.4.2 Mineral Reserves and production

Mineable reserves have been computed up to 1 m depth from surface. The volume multiplied by bulk density 1.80 g/cm³ for Tulsiyahi Sand Ghat, 1.81 g/cm³ for Dakra Bhaptiya Sand Ghat and 1.79 g/cm³ for Sital Patti Sand Ghat to get the tonnage. Average 1.80 g/ cm³ is taken for the Tilawe River.

Project: Sand Mining Project (Saharsa Tilawe River Unit 01 Sand Ghat) at Village-Bhatauni, Bhopatia & Kanp District- Saharsa, (Bihar).

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

Table 10.4 Classification Mineral Reserves

Sand Ghat	Area (Hect)	Geological Reserves (m3)	Mineable Reserves (m3)	Annual Permitted Reserve As per LoI (m3)
Saharsa Tilawe River Unit 01	8.15	81500	57743	48900

Total Mineable Reserve (Block 01, 02 & 03) = (19573+8466+29704) CUM
= 57743 cum or 103938 tonnes.

The annual extractable RBM comes to 48900 CUM or 88020 Tonnes.

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.

10.4.3 Conceptual Plan

Mine Applied Area will be worked for Saharsa Tilawe River Unit - 01 Sand Ghat. However, as the digging depth will be restricted to 1.0 m only. This will be further replenished during rainy season. Balu 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 m while width of individual bench shall be kept 6.0 m. 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.

Project: Sand Mining Project (Saharsa Tilawe River Unit 01 Sand Ghat) at Village-Bhatauni, Bhopatia & Kanp District- Saharsa, (Bihar).

- (ii) During plan period workings will be carried out in the Balu 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.

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. 82 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.

10.7 BASELINE ENVIRONMENTAL STATUS

10.7.1 Soil Quality

Five 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 March 2023 to May 2023 representing pre monsoon season. It was observed that the during study period, temperature ranged from 20 °C to 43 °C.

Project: Sand Mining Project (Saharsa Tilawe River Unit 01 Sand Ghat) at Village-Bhatauni, Bhopatia & Kanp District- Saharsa, (Bihar).

10.7.3 Ambient Air Quality

Ambient Air Quality Monitoring (AAQM) has been carried out at 15 locations. The minimum and maximum level of PM₁₀ recorded within the study area was in the range of 52.14 $\mu\text{g}/\text{m}^3$ to 87.88 $\mu\text{g}/\text{m}^3$. The Particulate Matter (PM_{2.5}) range of 24.48 $\mu\text{g}/\text{m}^3$ to 57.96 $\mu\text{g}/\text{m}^3$. Sulphur dioxide (SO₂) between 6.20 $\mu\text{g}/\text{m}^3$ to 17.66 $\mu\text{g}/\text{m}^3$. Oxides of Nitrogen (NO₂) between 7.14 $\mu\text{g}/\text{m}^3$ to 26.56 $\mu\text{g}/\text{m}^3$. The results thus obtained indicate that the concentrations of PM₁₀, SO₂ and NO₂ in the ambient air are well within the National Ambient Air Quality (NAAQ) standards for Residential and Rural areas.

10.7.4 Water quality

The Ground water sampling was taken from 05 locations. The analysis results indicate that the pH ranges between 7.46 and 7.66, Total hardness varies from 210 mg/l to 284 mg/l & Total dissolved solids vary from 378 mg/l to 425 mg/l.

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 33.55 dB(A) to 48.51 dB(A) respectively. The minimum & maximum noise levels at night time were found to be 30.06 dB (A) & 39.31 dB(A) respectively.

10.7.6 Ecological Environment

Based on the field studies and review of published literature, There is no any Ecological Sensitive Areas. Like National Park, Wildlife Sanctuaries, etc are found within 10 km of the study area.

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.

Project: Sand Mining Project (Saharsa Tilawe River Unit 01 Sand Ghat) at Village-Bhatauni, Bhapatia & Kanp District- Saharsa, (Bihar).

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 Tilawe 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.

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.

Project: Sand Mining Project (Saharsa Tilawe River Unit 01 Sand Ghat) at Village-Bhatauni, Bapatia & Kanp District- Saharsa, (Bihar).

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

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

Project: Sand Mining Project (Saharsa Tilawe River Unit 01 Sand Ghat) at Village-Bhatauni, Bapatia & Kanp District- Saharsa, (Bihar).

- 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
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**.

Project: Sand Mining Project (Saharsa Tilawe River Unit 01 Sand Ghat) at Village-Bhatauni, Bhapatia & Kanp District- Saharsa, (Bihar).

Table 10.6: Cost of Environmental Protection Measures

Budget of EMP (Unit 01)

Sl. No	Description	Capital Cost (lakh)	Recurring Cost (lakh)
1	Pollution Control & Dust Suppression	--	1.5
2	Pollution Monitoring i) Air pollution ii) Water pollution iii) Soil pollution iv) Noise Pollution	--	2.0
3	Plantation and salary for one gardener (part time basis).	0.82	0.5
4	Haul road Maintenance Cost	8.125	1.5
TOTAL		8.945	5.5

Note: *82 plants * 1000 Rs (for each plants including hedges and fences) =Rs 82000/-

- 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 *3.25 km haul road) = 812500/-

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

Project: Sand Mining Project (Saharsa Tilawe River Unit 01 Sand Ghat) at Village-Bhatauni, Bhopatia & Kanp District- Saharsa, (Bihar).

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 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:

- Controlling river channel and protection of banks.
- Reducing submergence of adjoining agricultural lands due to flooding.
- Reducing aggradation of river level.
- 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 1st May 2018. The following has been proposed considering the needs & demand of the people.

CER cost will be 2% of the total project cost. This amount will be used for social welfare.

CER COST is Rs. 57,23,500/- x 2% = Rs. 1,14,470/-

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.

Project: Sand Mining Project (Saharsa Tilawe River Unit 01 Sand Ghat) at Village-Bhatauni, Bapatia & Kanp District- Saharsa, (Bihar).



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.

Project: Sand Ghat Mining Project (Saharsa Tilawe River Unit 01 Sand Ghat) at Village- Bhatauni, Bhapatia & Kanp District- Saharsa, (Bihar).

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

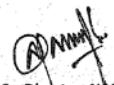
P and M Solution
 First Floor, C-88, Sector-65, Noida, Uttar Pradesh- 201301

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 Ghat Mining Project (Saharsa Tilawe River Unit 01 Sand Ghat) at Village- Bhatauni, Bhapatia & Kanp District- Saharsa, (Bihar).



National Accreditation Board for Education and Training



QCI/NABET/ENV/ACO/23/2770

June 02, 2023

To

P and M Solution
C-88, Sector-65 Noida
Noida, UP

Sub.: Extension of Validity of Accreditation till Sept 01, 2023 – regarding
Ref.. 1. Certificate no. NABET/EIA/1922/IA0053
2. Request e-mail dated May 30, 2023

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 Sept 01, 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

Project: Sand Ghat Mining Project (Saharsa Tilawe River Unit 01 Sand Ghat) at Village- Bhatauni, Bhapatia & Kanp District- Saharsa, (Bihar).

Consultant Contact Details:

P and M Solution

Address –C-88, Sector 65 Noida

Mobile no. - +8377871554, 8826287364

S No	Name	EC/FAE	DETAILS
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	Abhay Nath Mishra	FAE	SE
9	Hussain Ziauddin	FAE	WP
10	Poonam Kumari Mangalam	FAE	LU
11	Jatin Kumar Srivastava	FAE	NV

EXECUTIVE SUMMARY

FOR

SAND MINING PROJECT ON TILAWA RIVER (SAHARSA TILAWA RIVER UNIT - 01 SAND GHAT) DIST – SAHARSA (BIHAR)

(Tulsiyahi Sand Ghat Block 01, Dakra Bhaptiya Sand Ghat Block 02 &
Sital-Patti Sand Ghat Block 03)

At

Village- Bhatauni, Bhapatia & Kanp, Distt.- Saharsa, State – Bihar

AREA	Block 01 - 3.0 Ha. Block 02 - 1.15 Ha. Block 03 - 4.0 Ha. Total Area – 8.15 Ha.
PRODUCTION	48900 cum/year or 88020 TPA

PROJECT PROPONENT

Shree Abhishek Kumar Singh

S/o – Dayashankar Singh

Add : - Vill + Post – Saroja, P.S – Simri Bakhtiyarpur,
Dist – Saharsa (Bihar), Pin – 852127

Environment Consultant

P and M Solution

(Accredited by QCI/NABET)

Accreditation No. : NABET/EIA/1992/IA0053

C-88, Sector 65 Noida

www.pmsolution.in



EXECUTIVE SUMMARY

INTRODUCTION

As per MoEF & CC, New Delhi Gazette dated 14th September 2006 and amended thereof, the proposed mining project is categorized as **Category 'B1'** project.

Saharsa Tilawe River Unit 01

The project has been proposed by Shree Abhishek Kumar Singh. The Proposed Sand Mining Project is located on Tilawe River at Saharsa Tilawe River Unit 01 Sand Ghat (Tulsiyahi Sand Ghat Block 01, Dakra Bhaptiya Sand Ghat Block 02 & Sital-Patti Sand Ghat Block 03) at Village- Bhatauni, Bhapatia & Kanp, District Saharsa, (Bihar). LOI issued to lessee via letter no 883 /M, Saharsa dated 16-11-2022. 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 20-05-2023.

It has been proposed to mine around **88020** Tonnes per annum for applied lease. The estimated project cost for the proposed project is **Rs 57,23,500/-** (including auction cost).

PROJECT DESCRIPTION

LOCATION

Saharsa Tilawe River Unit 01

The proposed mining lease area falls in Survey of India Toposheet Topo sheet No- 72 K/9, 72 K/10, 72K/13, 72K/14. The lease area is located in Village- Bhatauni, Bhapatia & Kanp District- Saharsa, Bihar The mine lease co-ordinates are listed below:

Co-ordinates					Ghat/ Address	River
Tulsiyahi Sand Ghat Block 1	3.0	1	25°44'3.57"N	86°40'36.07"E	Tulsiyahi Balu Ghat Village- Bhatauni, Post- Bhatauni, Anchal+Tehsil- Simri Bakhtiyarpur Distt.- Saharsa	Tilawe
		2	25°44'4.72"N	86°40'37.64"E		
		3	25°43'55.44"N	86°40'45.67"E		
		4	25°43'52.01"N	86°40'47.56"E		
		5	25°43'48.62"N	86°40'47.09"E		
		6	25°43'48.70"N	86°40'45.79"E		
		7	25°43'54.51"N	86°40'44.15"E		

Dakra Bhaptiya Sand Ghat Block 02	1.15	1	25°45'49.85"N	86°41'56.25"E	Bhapatia Balu Ghat Village- Bhapatia, Post- Bhapatia, Anchal+Tehsil-Saur Bazar, Distt.- Saharsa	Tilawe
		2	25°45'48.86"N	86°41'56.78"E		
		3	25°45'46.41"N	86°41'53.00"E		
		4	25°45'45.75"N	86°41'47.55"E		
		5	25°45'46.33"N	86°41'47.57"E		
Sital-Patti Sand Ghat Block 03	4.0	1	25°49'16.93"N	86°45'31.35"E	Sital Patti Balu Ghat Village- Kanp, Post- Kanp, Anchal+Tehsil-Saur Bazar, Distt.- Saharsa	Tilawe
		2	25°49'14.67"N	86°45'45.49"E		
		3	25°49'11.52"N	86°45'43.69"E		
		4	25°49'11.81"N	86°45'37.72"E		
		5	25°49'15.31"N	86°45'30.48"E		

Area & production: The total ML area is 8.15 Ha. Proposed rate of production will be 88020 TPA.

Connectivity:

Saharsa Tilawe River Unit 01

Block 01 Sand Ghat is well connected to the nearest metalled road 2.0 km distance from the lease. SH-59: Approx. 0.86 Km towards E direction. Saharsa Railway Station Approx. 17.52 km, towards NNW direction.

Block 02 Sand Ghat is well connected to the nearest metalled road 0.54 Km distance from the lease. SH-59: Approx. 1.32 km towards W direction, Saharsa Railway Station 16.0 km, towards NW direction.

Block 03 Sand Ghat is well connected to the nearest metalled road 0.71 Km distance from the lease. SH-59: Approx. 7.95 km towards W direction, Saharsa Railway Station Approx. 17.46 km, towards NW direction.

Salient Features of Project

Saharsa Tilawe River Unit 01

Name of the applicant	Shree Abhishek Kumar Singh
Address of Lessee	Shree Abhishek Kumar Singh S/o – Dayashankar Singh Add: - Vill + Post – Saroja, P.S – Simri Bakhtiyarpur, Dist – Saharsa (Bihar), Pin – 852127

Name of Mine	Sand Mining Project on Saharsa Tilawe River Unit 01 (Tulsiyahi Sand Ghat Block 01, Dakra Bhaptiya Sand Ghat Block 02 & Sital-Patti Sand Ghat Block 03) at Village-Bhatauni, Bhapatia & Kanp, Distt.- Saharsa, Bihar.
Village	Block 01 - (Village- Bhatauni,) Block 02 - (Village- Bhapatia) Block 03 - (Village- Kanp)
District & State	Saharsa, Bihar
Mineral	Sand
Area (ha)	8.15 ha (Block 01 = 3.0 ha + Block 02 = 1.15 ha + Block 03 = 4.0 ha)

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 1 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 1 m depth from surface. The volume multiplied by bulk density 1.80 g/cm^3 for Tulsiyahi Sand Ghat, 1.81 g/cm^3 for Dakra Bhaptiya Sand Ghat and 1.79 g/cm^3 for Sital Patti Sand Ghat to get the tonnage. Average 1.80 g/cm^3 is taken for the Tilawe River.

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

The bench-wise annual exploitation of sand of is given below:

Saharsa Tilawe River Unit-01

BLOCK-01

Level (mRL)	Length (m)	Width (m)	Depth (m)	Volume (cum)	Tonnes
36-35	529	37	1	19573	35231
Total				19573	35231

BLOCK-02

Level (mRL)	Length (m)	Width (m)	Depth (m)	Volume (cum)	Tonnes
36-35	249	34	1	8466	15323
Total				8466	15323

BLOCK-03

Level (mRL)	Length (m)	Width (m)	Depth (m)	Volume (cum)	Tonnes
38-37	376	79	1	29704	53170
Total				29704	53170

Total Mineable Reserve = (19573+8466+29704) CUM = 57743 cum or 103938 tonnes

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 cluster water of **20.0 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 pre monsoon season from March 2023 to May 2023.

Meteorology

The Summarized Meteorological Data for the Monitoring Period March 2023 to May 2023) is given below:

Month	Temperature °C		Wind Speed (Km/Hr)	
	Min	Max	Average	Max
MARCH 2023	20	38	11.3	21
APRIL 2023	25	43	13.2	24.9
MAY 2023	26	42	16.1	27.5

Table Baseline Environmental Status

Attribute	Baseline status
Ambient Air Quality	Ambient Air Quality Monitoring reveals that the minimum & maximum concentrations of PM2.5 amongst all the 14 AQ monitoring stations were found to be 24.48 µg/m ³ to 57.96 µg/m ³ respectively; PM10 was in the range of 52.14 µg/m ³ to 87.88 µg/m ³ . As far as the gaseous pollutants SO ₂ and NO ₂ are concerned, the prescribed CPCB limit of 80 µg/m ³ 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 14 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.

Soil Quality	Samples collected from identified locations indicate the soil is sandy type and the pH value ranging from 7.21 to 7.92, which shows that the soil is slightly alkaline in nature.
Ecology and Biodiversity	There is no Ecological Sensitive Areas are found within 10 km of the study area.

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 Tilawe 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

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
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

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:

- Controlling *river* channel and protection of banks.
- Reducing submergence of adjoining agricultural lands due to flooding.
- Reducing aggradation of *river* level.
- 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 1st May 2018. The following has been proposed considering the needs & demand of the people.

CER cost for **Saharsa Tilawe River Unit 01** will be 2% of the total project cost. This amount will be used for social welfare. CSR COST is Rs. 57,23,500/-x 2% = Rs. 1,14,470/-.

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, a social 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. 82 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, minimum 5 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, Budget of EMP (Saharsa Tilawe River Unit 01)

Sl. No	Description	Capital Cost (lakh)	Recurring Cost (lakh)
1	Pollution Control & Dust Suppression	Nil	1.5
2	Pollution Monitoring i) Air pollution ii) Water pollution iii) Soil pollution iv) Noise Pollution	--	2.0
3	Plantation and salary for one gardener (part time basis).	0.82	0.5
4	Haul road Maintenance Cost	8.125	1.5
TOTAL		8.945	5.5

Note: *82 plants * 1000 Rs (for each plants including hedges and fences) =Rs 82,000/-

- 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 *3.25km haul road) = 8,12,500/-

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.

कार्यकारी सारांश

रेत खनन परियोजना

(सहरसा तिलावे नदी यूनिट - 01 रेत घाट)

जिला - सहरसा

(तुलसियाही रेत घाट ब्लॉक 01, डकरा भपटीया रेत घाट ब्लॉक 02
और सीतल-पट्टी रेत घाट ब्लॉक 03)

के लिए

ग्राम- भटौनी, भपटीया और कांप, जिला- सहरसा, राज्य- बिहार

क्षेत्रफल	ब्लॉक 01 - 3.0 हे. ब्लॉक 02 - 1.15 हे. ब्लॉक 03 - 4.0 हे. कुल क्षेत्र - 8.15 हेक्टेयर
उत्पादन	48900 घनमीटर प्रति वर्ष or 88020 टन प्रति वर्ष

आवदेन कर्ता

श्री अभिषेक कुमार सिंह

पुत्र - दयाशंकर सिंह

पता : - ग्राम + पोस्ट - सरोजा, थाना - सिमरी बख्तियारपुर,
जिला - सहरसा (बिहार) पिन - 852127

एनवायरनमेंट कन्सल्टेंट

पी & एम सल्यूशन

(क्वालिटी कौंसिल ऑफ़ इंडिया द्वारा मान्यता प्राप्त)

सी-88 सेक्टर 65 नॉएडा उत्तर-प्रदेश

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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।

सहरसा तिलावे नदी यूनिट -01

परियोजना के प्रस्ताव श्री अभिषेक कुमार सिंह ने दिया है। प्रस्तावित रेत खनन परियोजना ग्राम- भटौनी, भपटीया और कांप, जिला- सहरसा, (बिहार) में सहरसा तिलावे नदी यूनिट - 01 रेत घाट (तुलसियाही रेत घाट ब्लॉक 01 , डकरा भपटीया रेत घाट ब्लॉक 02 और सीतल-पट्टी रेत घाट ब्लॉक 03) तिलावे नदी पर स्थित है। पत्र संख्या 883/खनन दिनांक 16.11.2022 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 20-05-2023 द्वारा जारी किया गया है।

आवेदित पट्टे के लिए प्रति वर्ष लगभग 88020 टन खनन प्रस्तावित किया गया है, प्रस्तावित परियोजना के लिए अनुमानित परियोजना लागत 57,23,500/- रुपये (नीलामी लागत सहित) है।

❖ परियोजना विवरण

❖ स्थान

सहरसा तिलावे नदी यूनिट - 01

प्रस्तावित खनन पट्टा क्षेत्र सर्वे ऑफ इंडिया टोपोशीट टोपो शीट संख्या- 72 K/9, 72 K/10, 72K/13, 72K/14 के अंतर्गत आता है। पट्टा क्षेत्र ग्राम- भटौनी, भपटीया और कांप, जिला- सहरसा, राज्य- बिहार में स्थित है। खनन पट्टा समन्वय नीचे सूचीबद्ध हैं:

निर्देशांक					घाट/पता	नदी
तुलसियाही रेत घाट ब्लॉक 01	3.0	1	25°44'3.57"N	86°40'36.07"E	तुलसियाही रेत घाट ग्राम- भटौनी, अंचल+तहसील- सिमरी बख्तियारपुर. जिला- सहरसा	तिलावे
		2	25°44'4.72"N	86°40'37.64"E		
		3	25°43'55.44"N	86°40'45.67"E		
		4	25°43'52.01"N	86°40'47.56"E		
		5	25°43'48.62"N	86°40'47.09"E		
		6	25°43'48.70"N	86°40'45.79"E		
		7	25°43'54.51"N	86°40'44.15"E		
डकरा भपटीया रेत घाट ब्लॉक 02	1.15	1	25°45'49.85"N	86°41'56.25"E	डकरा भपटीया रेत घाट ग्राम- भपटीया, पोस्ट- भपटीया, अंचल+तहसील-सौर बाजार,जिला- सहरसा	तिलावे
		2	25°45'48.86"N	86°41'56.78"E		
		3	25°45'46.41"N	86°41'53.00"E		
		4	25°45'45.75"N	86°41'47.55"E		
		5	25°45'46.33"N	86°41'47.57"E		
सीतल-पट्टी रेत घाट ब्लॉक 03	4.0	1	25°49'16.93"N	86°45'31.35"E	सीतल-पट्टी रेत घाट ग्राम- कांप, पोस्ट- कांप, अंचल+तहसील- सौर बाजार,जिला- सहरसा	तिलावे
		2	25°49'14.67"N	86°45'45.49"E		
		3	25°49'11.52"N	86°45'43.69"E		
		4	25°49'11.81"N	86°45'37.72"E		
		5	25°49'15.31"N	86°45'30.48"E		

क्षेत्र और उत्पादन: कुल एमएल क्षेत्र 8.15 हेक्टेयर है। उत्पादन की प्रस्तावित दर 88020 टीपीए होगी।

❖ संयोजकता

सहरसा तिलावे नदी यूनिट -01

ब्लॉक 01 रेत घाट पट्टे से 2.0 कि.मी. की दूरी पर निकटतम पक्की सड़क से अच्छी तरह से जुड़ा हुआ है। SH-59 लगभग 0.86 कि.मी. पूर्व दिशा में है। सहरसा रेलवे स्टेशन उत्तर उत्तर पश्चिम दिशा में लगभग 17.52 कि.मी की दूरी पर है।

ब्लॉक 02 रेत घाट पट्टे से 0.54 कि.मी. की दूरी पर निकटतम पक्की सड़क से अच्छी तरह से जुड़ा हुआ है। SH-59 लगभग 1.32 कि.मी. पश्चिम दिशा में है। सहरसा रेलवे स्टेशन उत्तर पश्चिम दिशा में लगभग 16.0 कि.मी की दूरी पर है।

ब्लॉक 03 रेत घाट पट्टे से 0.71 कि.मी. की दूरी पर निकटतम पक्की सड़क से अच्छी तरह से जुड़ा हुआ है। SH-59 लगभग 7.95 कि.मी. पश्चिम दिशा में है। सहरसा रेलवे स्टेशन उत्तर पश्चिम दिशा में लगभग 17.46 कि.मी की दूरी पर है।

❖ **परियोजना की मुख्य विशेषताएं**
सहरसा तिलावे नदी यूनिट - 01

आवेदक का नाम	श्री अभिषेक कुमार सिंह
पट्टेदार का पता	श्री अभिषेक कुमार सिंह पुत्र - दयाशंकर सिंह पता : - ग्राम + पोस्ट - सरोजा, थाना - सिमरी बख्तियारपुर, जिला - सहरसा (बिहार) पिन - 852127
नाम	रेत खनन परियोजना (सहरसा तिलावे नदी यूनिट - 01 रेत घाट) (तुलसियाही रेत घाट ब्लॉक 01, डकरा भपटीया रेत घाट ब्लॉक 02 और सीतल-पट्टी रेत घाट ब्लॉक 03)
गाँव	ब्लॉक 01 - (ग्राम- भटौनी,) ब्लॉक 02 - (ग्राम- भपटीया) ब्लॉक 03 - (गाँव- कांप)
जिला और राज्य	सहरसा, बिहार
खनिज	रेत
क्षेत्र (हेक्टेयर)	कुल क्षेत्र - 8.15 हेक्टेयर (ब्लॉक 01- 3.0 हे. + ब्लॉक 02 - 1.15 हे & ब्लॉक 03 - 4.0 हे.)

❖ **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/जेसीबी 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 1 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 1 मीटर की गहराई तक की गई है। टनभार प्राप्त करने के लिए वॉल्यूम को बल्क डेंसिटी (तुलसियाही रेत घाट 1.80 g/cm^3 , डकरा भपटीया रेत घाट - 1.81 g/cm^3 और सीतल-पट्टी रेत घाट- 1.79 g/cm^3) से गुणा किया जाता है। तिलावे नदी के लिए औसतन 1.80 g/cm^3 लिया जाता है।

हर साल मानसून के मौसम के दौरान नदी तल से उत्खनन किए गए खनिजों की फिर से भरपाई (रिप्लेनिशमेंट) हो जाएगा। नदी के पैलियो चैनल से संबंधित क्षेत्र को समतल करके वापस बहाल किया जाएगा।

बेंचवार रेत का वार्षिक दोहन नीचे दिया गया है:

सहरसा तिलावे नदी यूनिट -01

ब्लॉक नं: 01

बेंच स्तर (mRL)	लंबाई (M)	चौड़ाई (M)	गहराई (M)	मात्रा (घन मीटर)	टन
36-35	529	37	1	19573	35231
Total				19573	35231

ब्लॉक नं: 02

बेंच स्तर (mRL)	लंबाई (M)	चौड़ाई (M)	गहराई (M)	मात्रा (घन मीटर)	टन
36-35	249	34	1	8466	15323
Total				8466	15323

ब्लॉक नं: 03

बेंच स्तर (mRL)	लंबाई (M)	चौड़ाई (M)	गहराई (M)	मात्रा (घन मीटर)	टन
38-37	376	79	1	29704	53170
Total				29704	53170

कुल खनन योग्य रिजर्व = (19573+8466+29704) घन मीटर = 57743 घन मीटर या 103938 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 20.0 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 मार्च 2023 से मई 2023 तक प्री मानसून सीजन के मौसम के दौरान खनन पट्टा क्षेत्र के आसपास 10 किमी की रेडियल दूरी वाले क्षेत्र में किया गया था।

- **मौसम विज्ञान**

निगरानी अवधि मार्च 2023 से मई 2023 के लिए संक्षिप्त मौसम संबंधी डेटा नीचे दिया गया है:

महीना	तापमान °C		हवा की गति (किमी/घंटा)	
	न्यूनतम	अधिकतम	औसत	अधिकतम
मार्च 2022	20	38	11.3	21
अप्रैल 2023	25	43	13.2	24.9
मई 2023	26	42	16.1	27.5

आधारभूत पर्यावरणीय स्थिति

गुण	आधारभूत स्थिति
<p>एम्बिएंट(परिवेशी) वायु गुणवत्ता</p>	<p>एम्बिएंट (परिवेशी) वायु गुणवत्ता निगरानी से पता चलता है कि सभी 14 AQ निगरानी स्टेशनों में PM2.5 की न्यूनतम और अधिकतम सांद्रता क्रमशः 24.48 µg/m³ से 57.96 µg/m³ पाई गई; PM10 52.14 µg/m³ to 87.88 µg/m³ की सीमा में था जहां तक गैसीय प्रदूषकों SO₂ और NO₂ का संबंध है, आवासीय और ग्रामीण क्षेत्रों के लिए 80 µg/m³ की निर्धारित CPCB सीमा किसी भी स्टेशन पर पार नहीं की गई है।</p>
<p>शोर का स्तर</p>	<p>निगरानी कार्यक्रम के परिणामों ने संकेत दिया कि निगरानी किए गए सभी 14 स्थानों पर शोर के दिन और रात दोनों समय एनएएक्यूएस की निर्धारित सीमा के भीतर थे।</p>
<p>पानी की गुणवत्ता</p>	<p>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।</p>
<p>मिट्टी की गुणवत्ता</p>	<p>चिन्निहित किए गए स्थानों से एकत्र किए गए नमूने इंगित करते हैं कि मिट्टी रेतीली प्रकार की है और पीएच मान 7.21 से 7.92 के बीच है, जो दर्शाता है कि मिट्टी प्रकृति में थोड़ी क्षारीय है।</p>
<p>पारिस्थितिकी और जैव विविधता</p>	<p>अध्ययन क्षेत्र में कोई पर्यावरण-संवेदनशील क्षेत्र नहीं है।</p>
<p>सामाजिक आर्थिक</p>	<p>नदी तल पर रेत खनन परियोजना के कार्यान्वयन से स्थानीय लोगों को प्रत्यक्ष और अप्रत्यक्ष दोनों तरह के रोजगार के अवसर मिलेंगे।</p> <p>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।</p>

❖ 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।

❖ 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 रिक्रेशर 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।

सहरसा तिलावे नदी यूनिट - 01 के लिए सीईआर (CER) लागत कुल परियोजना लागत का 2% होगी। इस राशि का उपयोग समाज कल्याण के लिए किया जाएगा। सीएसआर (CSR) लागत रु. 57,23,500/- x 2% = रु. 1,14,470/-

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।
- योजना अवधि में हॉल रोड के आसपास लगभग 82 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)

- रिवर बैंक से सुरक्षा क्षेत्र छोड़कर नदी तल से निकासी की जाएगी।
- अधिकतम काम करने की गहराई क्षेत्र के भूजल तालिका के ऊपर रहेगी।
- स्वास्थ्य प्रभावों को कम करने के लिए प्रभाव क्षेत्र में श्रमिकों और आसपास के लोगों को स्वास्थ्य सुविधाएं प्रदान किया जायेगा ।
- वन्यजीव संरक्षण सुनिश्चित करना और उसी के लिए जागरूकता अभियान की व्यवस्था किया जायेगा।
- नदी में महीन तलछट छोड़ने वाली गतिविधियों को किया जायेगा।
- खनिजों के परिवहन और प्रबंधन के दौरान गड़बड़ी को कम करने के लिए प्रभावी शमन उपाय अपनाए जाएंगे
- स्थानीय/देशी और तेजी से बढ़ने वाली प्रजातियों के वृक्षारोपण के साथ सुधार कार्यक्रम की स्थापना किया जायेगा
- मानसून के मौसम की शुरुआत में खान के बंद होने के दौरान बहाली योजना की स्थापना किया जायेगा
- आसन्न आपदाओं के प्रभाव से बचने के लिए समय पर एहतियाती उपाय करने के लिए प्रभावी आपदा प्रबंधन योजना की स्थापना।
- पर्यावरण प्रबंधन प्रकोष्ठ द्वारा प्रभावी निगरानी कार्यक्रम की स्थापना किया जायेगा।

❖ ईएमपी कार्यान्वयन के लिए बजट आवंटन

टेबल, ईएमपी का बजट (सहरसा तिलावे नदी यूनिट 01 -)

क्रम संख्या	विवरण	पूंजी लागत (लाख)	आवर्ती लागत (लाख)
1	प्रदूषण नियंत्रण और धूल दमन	Nil	1.5
2	प्रदूषण निगरानी i) वायु प्रदूषण ii) मृदा प्रदूषण iii) जल प्रदूषण iv) ध्वनि प्रदूषण	--	2.0
3	वृक्षारोपण और वेतन एक माली के लिए (अंशकालिक आधार पर)	0.82	0.5
4	परिवहन सड़क रखरखाव लागत	8.125	1.5
कुल		8.945	5.5

नोट: *82 पौधे * 1000 रुपये (हेज और बाड़ सहित प्रत्येक पौधे के लिए) = 82,000/- रुपये

- खनन परिवहन सड़क रखरखाव के लिए श्रम का वेतन 2 श्रमिक*300=600 प्रति दिन
- 600* 250= 8,12,500/-
- *2.5 लाख प्रति किलोमीटर (2,50,000*3.25 किमी लंबी सड़क) = 8,12,500/-

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।
