

**DRAFT ENVIRONMENTAL IMPACT ASSESSMENT
AND
ENVIRONMENTAL MANAGEMENT PLAN
OF
SAND MINING PROJECT OF JEHANABAD BLOCK
NO 15 SAND GHAT, DISTRICT - JEHANABAD**

SAND BLOCK	BLOCK 15
PROPOSAL NO	SIA/BR/MIN/412590/2022
TOR NO	SIA/1(a)/2283/2023
AREA	6.72 HA
PRODUCTION	80640 cum/annum or 135475 TPA
LOCATION	Mauja – Rustamchak, Anchal – Ratani Faridpur, Dist – Jehanabad (Bihar)
KHATA NO	61, 128, 178, 361
KHASRA NO	221, 312, 348, 123, 367, 307, 740, 802

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Project: Sand Mining Project (Jehanabad Block No -15 Sand Ghat) at Riverbed of River Dhab at Mauja-Rustamchak, Anchal – Ratani Faridpur, Dist – Jehanabad (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

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.

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

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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 Dhab River at Block No – 15 Sand Ghat at Mauja – Rustamchak, Anchal – Ratani Faridpur, Dist – Jehanabad (Bihar) over an area of 6.72 hectares.

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. Block No.- 15 Sand Ghat fall in Dhab River at Block No – 15 Sand Ghat at Dhab River at Block No – 15 Sand Ghat at Mauja – Rustamchak, Anchal – Ratani Faridpur, Dist – Jehanabad (Bihar) over an area of 6.72 hectares. The details of the project are given below:

Name & Address of the Mine	Block 15	Mauja – Rustamchak, Anchal – Ratani Faridpur, Dist – Jehanabad (Bihar) over an area of 6.72 hectares
River	Dhab River	
Mineral	Sand	
Area (ha)	Block 15	6.72 ha
Production	Block 15	80640 cum/annum or 135475 TPA
Postal Address	Block 15	Alok Kumar S/o –Shri Jay Singh Address : - Vill – Viraha, P.O – Dhawal Bigha Thana - Hulashganj, Jehanabad (Bihar)
Status of Mine	Fresh application for Environmental Clearance.	

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Project Cost	RS- 77,60,800
CER Cost	CSR cost will be 2% of the total project cost. This amount will be used for social welfare. CSR COST is Rs 77,60,800 x 2% = Rs. 1,55,216/-

1.2 BRIEF DESCRIPTION OF PROJECT

The proposed project is open cast semi-mechanized mining of sand with a proposed production of 80640 cum/annum or 135475 TPA for applied lease. Detail has been given below:

The proposed project is over an area 6.72 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)

Table: 1.1 Project cost & Production

Sand Ghat Block	Area	Khata No	Khasra No	Production	Project Cost
Block 15	6.72	61, 128, 178, 361	221, 312, 348, 123, 367, 307, 740,802,	80640 cum/annum or 135475 TPA	77,60,800
Total				80640 cum/annum or 135475 TPA	77,60,800

The proposed mining lease area falls in Survey of India Toposheet 72C/16, 72D/13. The mine lease co-ordinates and connectivity details are listed below:

Table: 1.2 Mine lease Pillar Co-ordinates (Block 15)

JEHANABAD DHAB-1	6.72	1	25.06646171	84.88346841
		2	25.06642519	84.88320086
		3	25.06720123	84.88320639
		4	25.06796055	84.88301
		5	25.06891902	84.88196555
		6	25.0690832	84.88223808
		7	25.06903526	84.88232437
		8	25.06856811	84.88287395
		9	25.06800659	84.88333891

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	10	25.06755412	84.88349044
	11	25.06693453	84.88340073
	12	25.06661088	84.8834876
	13	25.06646171	84.88346841
JEHANABAD DHAB-1-1	1	25.07207851	84.87922142
	2	25.07164916	84.87927101
	3	25.07127379	84.87914765
	4	25.07120594	84.87921543
	5	25.07094179	84.87923583
	6	25.07087701	84.8791469
	7	25.07112888	84.87890746
	8	25.07148572	84.87896602
	9	25.07180866	84.87900104
	10	25.07196906	84.87905555
		11	25.07207851
JEHANABAD DHAB-2-0	1	25.08631741	84.88076821
	2	25.08571804	84.88077984
	3	25.0857083	84.88073166
	4	25.08585554	84.88070671
	5	25.08651098	84.88016844
	6	25.08723485	84.87850293
	7	25.08774511	84.87781648
	8	25.08856699	84.8774636
	9	25.08872208	84.87741695
	10	25.08871024	84.87760174
	11	25.08761871	84.87844275
	12	25.08725557	84.87894173
	13	25.08712638	84.87931308
	14	25.08709189	84.8798426
	15	25.08693994	84.88016971
	16	25.08641266	84.88072896
	17	25.08631741	84.88076821
JEHANABAD DHAB-2-1	1	25.09008208	84.87482133
	2	25.08997947	84.87457125
	3	25.08999576	84.87449211
	4	25.09064857	84.87405583
	5	25.09078005	84.87403689

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JEHANABAD DHAB-2-2	6	25.09080099	84.87458783
	7	25.09074591	84.87457349
	8	25.09024398	84.87469558
	9	25.09022076	84.87476
	10	25.09008208	84.87482133
	1	25.09142174	84.87400842
	2	25.09165624	84.87405756
	3	25.09195812	84.87427499
	4	25.09221493	84.87454574
	5	25.09237021	84.87508114
	6	25.09241494	84.87550292
	7	25.09258981	84.87590176
	8	25.09280836	84.87609503
	9	25.09338554	84.87615313
	10	25.09382048	84.87607355
	11	25.09503544	84.8749596
	12	25.09564157	84.87398104
	13	25.09585566	84.87319215
	14	25.09566254	84.87262465
	15	25.09524535	84.87233701
	16	25.09464851	84.8720883
	17	25.09437125	84.8718891
	18	25.09426236	84.87163648
	19	25.09431927	84.87116155
	20	25.09456627	84.87080948
	21	25.09497473	84.87044435
	22	25.09540758	84.87029329
	23	25.09537134	84.87056551
	24	25.09476613	84.87100412
	25	25.09452423	84.87151046
	26	25.09458645	84.87173481
	27	25.09478503	84.87195439
28	25.094933	84.87201589	
29	25.09538754	84.87209116	
30	25.09573477	84.87223719	
31	25.09597655	84.87254546	
32	25.09605573	84.87299379	

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	33	25.09584821	84.87407528
	34	25.09569177	84.8743952
	35	25.09518126	84.8751445
	36	25.0946386	84.87556765
	37	25.09368032	84.87646192
	38	25.09339769	84.87658018
	39	25.09246096	84.87612539
	40	25.09221028	84.87534911
	41	25.09183259	84.87490243
	42	25.09142875	84.87459766
	43	25.09137223	84.8746066
	44	25.09136417	84.87434369
	45	25.09142174	84.87400842

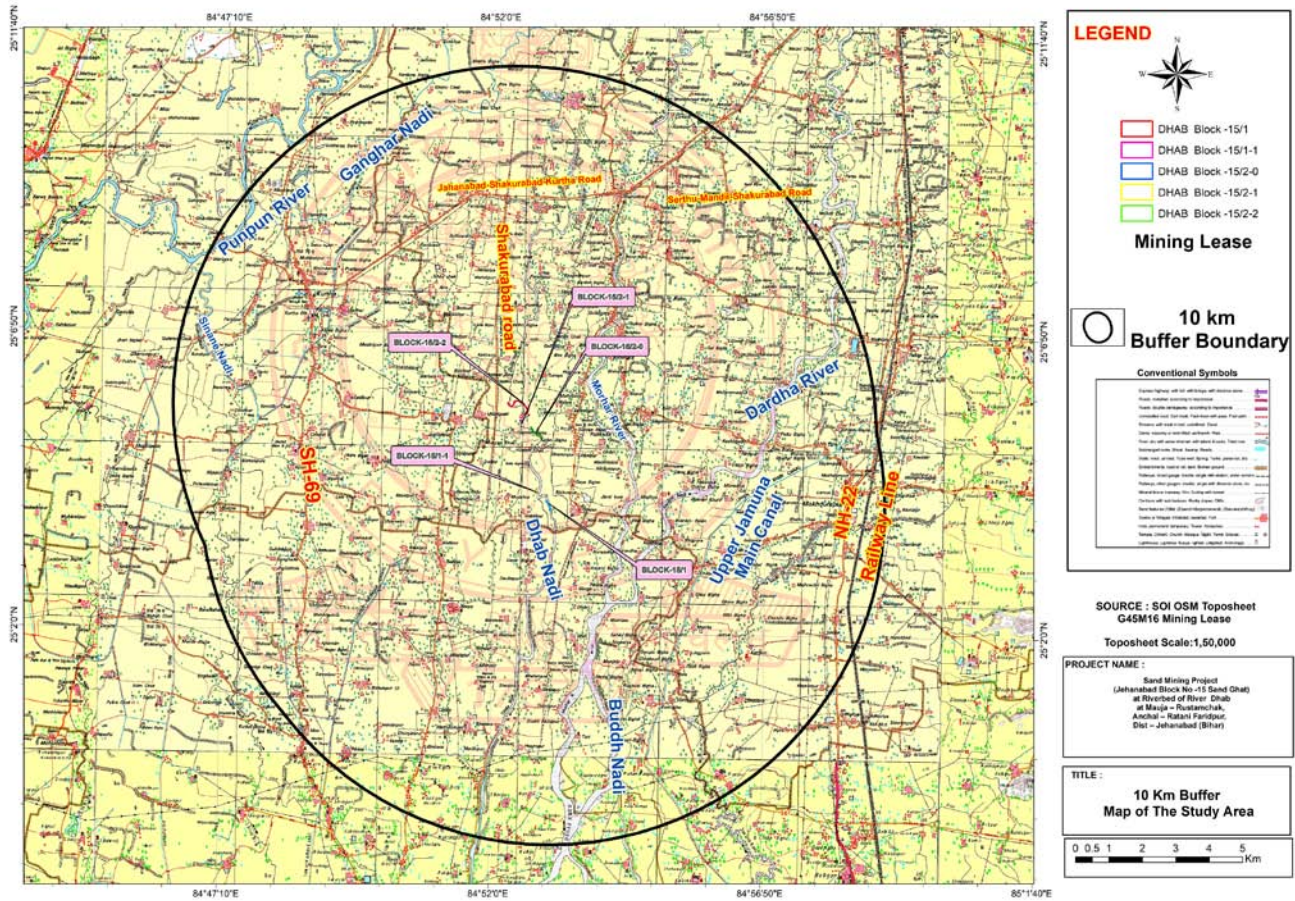


Figure 1.1, 10 km buffer map

Project: Sand Mining Project (Jehanabad Block No -15 Sand Ghat) at Riverbed of River Dhab at Mauja Rustamchak, Anchal – Ratani Faridpur, Dist – Jehanabad (Bihar)

Table: 1.3, Connectivity Details given below

Nearest Habitation/ town	Blocks	Village	Distance (Km) Direction
	Block 15	Gopalpur	Approx. 0.75 km towards West direction.
Nearest Railway Station	Blocks	Railway Station	Distance (Km) Direction
	Block 15	Makhdumpur Gaya Railway Station,	approx. 9.95 km towards SW direction.
Nearest Airport	Blocks	Airport	Distance (Km) Direction
	Block 15	Gaya International Airport Bihar,	approx. 35.75 km towards S direction.
Nearest Highway	NH-22: Approx. 8.85 KM towards East direction. SH 69 :Approx. 7.35 KM towards West direction.		

Details of environmental settings

Sl. No.	Particulars	Details
2	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.
3	Nearest water body	The mine site lies on the dry bed of Dhab River.
4	Seismic Zone	Zone- IV <i>Source BMTC 2nd edition</i> https://www.bmtpc.org/disaster%20resistnace%20technolgies/ZONE%20I V.htm

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.

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: 1.5 Point wise compliance for TOR of Block -15
(ToR File No.SIA/1(a)/2283/2023)**

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. 1178/khanan dated. 23.11.2022 for a period of 05 years	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- Block 15,	Annexure- III Mine plan All details has been complied in

	and should be in the name of the lessee.	6.72 Hectare Lessee (Block 15): Alok Kumar S/o –Shri Jay Singh Address : - Vill – Viraha, P.O – Dhawal Bigha Thana - Hulashganj, Jehanabad (Bihar) Waste generation- No waste will be generated. Mining Method-Opencast semi-mechanized method	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.	The land use map showing salient features of the area is given in the report. The geological map of the mine lease area is also given in the report showing geomorphology	Land-use of the study area Figure 3.1.
6	Details about the land proposed for mining activities should be given with	The Lease area is dry part of	Chapter II & III

	information as to whether mining conforms to the land use policy of the State; land diversion for mining should have approval from State land use board or the concerned authority.	River bed. This is a barren land. 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	Issue related to mine safety has been given in of chapter 7.	

	case of open cast mining, blasting study etc. should be detailed. The proposed safeguard measures in each case should also be provided.		
9	The study area will comprise of 10 km zone around the mine lease from lease periphery and the data contained in the EIA such as waste generation etc. should be for the life of the mine/lease period.	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. All the details in the EIA report are for the life of the mine period. The details of mining & production have been given in the report.	Chapter I Figure 1.1
10	Land use of the study area delineating forest area, agricultural land, grazing land, wildlife sanctuary, national park, migratory routes of fauna, water bodies, human settlements and other ecological features should be indicated. Land use plan of the mine lease area should be prepared to encompass preoperational, operational and post operational phases and submitted. Impact, if any, of change of land use should be given.	Land use pattern of 10 km from the periphery of the lease area has been prepared and incorporated with the report. The study area lies in Dhab River. There is no any Wild Life sanctuary & National Park, protected forest within the study area.	Land-use of the study area Figure 3.1 , Table 3.1 10 km buffer map enclosed in Chapter I of EIA Report.
11	Details of the land for any Over Burden Dumps outside the mine lease,	There is no overburden outside the mine lease area.	

	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.	

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 authenticated by Chief Wildlife	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. MAP showing eco sensitive	Chapter III Section 3.1.6 Biological Environment

	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.	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
19	Proximity to Areas declared as ‘Critically Polluted’ or the Project areas attracting court restrictions for	Proposed project does not come under critically polluted area.	

	mining operations, should also be indicated and where so required, clearance certifications from the prescribed Authorities, such as the SPCB or State Mining Dept. Should be secured and furnished to the effect that the proposed mining activities could be considered.		
20	Similarly, for coastal projects ,A CRZ map duly authenticated by one of the authorized agencies demarcating LTL.HTL, CRZ area ,location of the mine lease w.r.t CRZ, Coastal features such as mangroves ,if any should be furnished.(Note: The Mining Projects falling under CRZ would also need to obtain approval of the concerned Coastal Zone Management Authority)	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 the society in the study area, a need based sample survey, family-wise, should be undertaken to assess their requirements, and action programmes	There is no R & R involved in this project.	

	<p>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.</p>		
<p>22</p>	<p>One season (non-monsoon) [i.e. March-May (Summer season); October-December (post monsoon season); December-February (winter season)] primary baseline data on ambient air quality as per CPCB Notification of 2009, water quality, noise level, soil and flora and fauna shall be collected and the AAQ and other data so compiled presented date-wise in the EIA and EMP Report" Site-specific meteorological data should also be collected. The location of the monitoring stations should be such as to represent whole of the study area and justified keeping in view the pre-dominant downwind direction and location of sensitive receptors. There should be at least one monitoring station within 500 m of the mine lease</p>	<p>Base line study was carried out for March 2023 To May 2023 Details are provided in EIA/EMP Report.</p> <p>The locations of the monitoring stations were decided on the basis of prevailing meteorological conditions (Wind direction & wind speed) of the study area.</p> <p>The wind rose has been given in chapter III of EIA/EMP Report. One location has been selected in downwind direction within 500 m from the lease boundary.</p> <p>The location of the monitoring sites has been shown in map.</p>	<p>Chapter III Section 3.1.2 Air Environment</p>

	in the pre-dominant downwind direction. The mineralogical composition of PM10, particularly for free silica, should be given.		
23	Air quality modeling should be carried out for prediction of impact of the project on the air quality of the area. It should also take into account the impact of movement of vehicles for transportation of mineral. The details of the model used and input parameters used for modeling should be provided. The air quality contours may be shown on a location map clearly indicating the location of the site, location of sensitive receptors, if any, and the habitation. The wind roses showing pre-dominant wind direction may also be indicated on the map.	Air Modelling will be used for air quality modelling. Air quality modelling will be submitted with Final EIA report.	
24	The water requirement for the Project, its availability and source should be furnished. A detailed water balance should also be provided. Fresh water requirement for the Project should be indicated.	The water requirement for Sand Block 15 is 5.33 KLD for drinking, dust suppression and green belt development. A detailed water balance is being provided in the report.	Chapter –II Section 2.7.4 Water Requirement
25	Necessary clearance from the Competent Authority for drawl of requisite quantity of water for the	Water requirement will be fulfilled by private water tanker. So, no clearance is required.	Chapter II

	Project should be provided.		
26	Description of water conservation measures proposed to be adopted in the Project should be given. Details of rainwater harvesting proposed in the project, if any 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 2.0 m below ground level or above the ground water table whichever comes first. This will not intersect the ground water table.</p>	Chapter II
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	<p>The mining will be done only upto 2 m depth.</p> <p>The detailed impact and control measure w.r.t the quality of water in the surrounding area is discussed under Chapter 4.</p>	

	should be undertaken and Report furnished. The Report inter – alia, shall include details of the aquifers present and impact of mining activities on these aquifers. Necessary permission from Central Ground Water Authority for working below ground water and for pumping of ground water should also be obtained and copy furnished.		
29	Details of any stream, season 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 Dhab 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 2 meter bgl whichever is comes first.	
31	A time bound Progressive Greenbelt Development Plan shall be prepared in a tabular form (indicating the linear and Quantities coverage, plant species and time frame) and Submitted keeping in mind the same will have to be executed up front on commencement of the Project. Phase-wise plan of plantation and compensatory afforestation should be charted clearly	Plantation/afforestation will be done as per program i.e along 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. List of Plant species selected for green belt is detailed in the EIA	Chapter VIII Section 8.2

	<p>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>report. 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 agencies such as State Government) should be covered. Project Proponent shall conduct Impact of Transportation study as per Indian Road Congress Guidelines.</p>	<p>The projection has been done based on the mineral transportation. The details of traffic analysis are discussed in the report.</p>	<p>Chapter IV Section 4.6 Traffic Analysis Fig 4.2, Table 4.3(i), 4.3(ii)</p>
33	<p>Details of the onsite shelter and facilities to be provided to the mine workers should be included in the EIA Report</p>	<p>A temporary rest shelter will be provided for the workers near to the site with provisions of water, first aid facility,</p>	<p>Chapter II Section 2.12.2</p>

		protective equipments, etc. Details are given in the EIA/EMP Report.	
34	Conceptual post mining land use and Reclamation and Restoration of mined out areas (with plans and with adequate number of sections) should be given in the EIA report.	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. Thereafter periodical health check up will be arranged as stated in the report.	Chapter VII Section 7.2 Chapter VIII Section 8.3

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
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	This is a draft EIA report. Public hearing is yet to be conducted.	--

	provided and also incorporated in the final EIA/EMP Report of the Project.								
40	Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project should be given.	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.	The capital cost & recurring cost for has been earmarked for EMP. Chapter IX <table border="1"> <thead> <tr> <th>Block</th> <th>Capital Cost</th> <th>Recurring Cost</th> </tr> </thead> <tbody> <tr> <td>Block 15</td> <td>2.63</td> <td>5.5</td> </tr> </tbody> </table>	Block	Capital Cost	Recurring Cost	Block 15	2.63	5.5	Chapter IX
Block	Capital Cost	Recurring Cost							
Block 15	2.63	5.5							
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:-								
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 August, 2009, which are available on the website of this Ministry, should be followed.	Compiled With EIA report.	

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 reason 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.	
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	Compiled With EIA report.	

Project: Sand Mining Project (Jehanabad Block No -15 Sand Ghat) at Riverbed of River Dhab at Mauja Rustamchak, Anchal – Ratani Faridpur, Dist – Jehanabad (Bihar)

	dumps, if any, clearly showing the land features of the adjoining area.		
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Project: Sand Ghat Mining Project (Jehanabad Block No -15 Sand Ghat) at Riverbed of River Dhab at Rustamchak, Anchal – Ratani Faridpur, Dist – Jehanabad (Bihar)

2.0 TYPE OF PROJECT

The project is proposed is for sand Ghat block no-15 for the excavation of sand from the bed of river Dhab. The proposed project is opencast semi-mechanized/OTFM mining project.

2.1 NEED FOR THE PROJECT

The project site lies on Dhab 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 Dhab River at Block No – 15 Sand Ghat at Mauja – Rustamchak, Anchal – Ratani Faridpur, Dist – Jehanabad (Bihar) over an area of 6.72 hectares. The state government has given consent for Sand mining to State Govt. has given consent for mining vide letter no. 1178/khanan dated. 23.11.2022 for a period of 05 years.

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 project located on Dhab River at Block No – 15 Sand Ghat at Mauja – Rustamchak, Anchal – Ratani Faridpur, Dist – Jehanabad (Bihar) over an area of 6.72 hectares.

Project: Sand Ghat Mining Project (Jehanabad Block No -15 Sand Ghat) at Riverbed of River Dhab at Rustamchak, Anchal – Ratani Faridpur, Dist – Jehanabad (Bihar)

Geo Coordinate of Lease Area:

Table 2.1, Mine lease Pillar Co-ordinates (Block 15)

JEHANABAD DHAB-1	6.72	1	25.06646171	84.88346841
		2	25.06642519	84.88320086
		3	25.06720123	84.88320639
		4	25.06796055	84.88301
		5	25.06891902	84.88196555
		6	25.0690832	84.88223808
		7	25.06903526	84.88232437
		8	25.06856811	84.88287395
		9	25.06800659	84.88333891
		10	25.06755412	84.88349044
		11	25.06693453	84.88340073
		12	25.06661088	84.8834876
		13	25.06646171	84.88346841
JEHANABAD DHAB-1-1		1	25.07207851	84.87922142
		2	25.07164916	84.87927101
		3	25.07127379	84.87914765
		4	25.07120594	84.87921543
		5	25.07094179	84.87923583
		6	25.07087701	84.8791469
		7	25.07112888	84.87890746
		8	25.07148572	84.87896602
		9	25.07180866	84.87900104
		10	25.07196906	84.87905555
	11	25.07207851	84.87922142	
JEHANABAD DHAB-2-0	1	25.08631741	84.88076821	
	2	25.08571804	84.88077984	
	3	25.0857083	84.88073166	
	4	25.08585554	84.88070671	
	5	25.08651098	84.88016844	
	6	25.08723485	84.87850293	
	7	25.08774511	84.87781648	
	8	25.08856699	84.8774636	
	9	25.08872208	84.87741695	
	10	25.08871024	84.87760174	
	11	25.08761871	84.87844275	

Project: Sand Ghat Mining Project (Jehanabad Block No -15 Sand Ghat) at Riverbed of River Dhab at Rustamchak, Anchal – Ratani Faridpur, Dist – Jehanabad (Bihar)

		12	25.08725557	84.87894173
		13	25.08712638	84.87931308
		14	25.08709189	84.8798426
		15	25.08693994	84.88016971
		16	25.08641266	84.88072896
		17	25.08631741	84.88076821
JEHANABAD DHAB-2-1		1	25.09008208	84.87482133
		2	25.08997947	84.87457125
		3	25.08999576	84.87449211
		4	25.09064857	84.87405583
		5	25.09078005	84.87403689
		6	25.09080099	84.87458783
		7	25.09074591	84.87457349
		8	25.09024398	84.87469558
		9	25.09022076	84.87476
			10	25.09008208
JEHANABAD DHAB-2-2		1	25.09142174	84.87400842
		2	25.09165624	84.87405756
		3	25.09195812	84.87427499
		4	25.09221493	84.87454574
		5	25.09237021	84.87508114
		6	25.09241494	84.87550292
		7	25.09258981	84.87590176
		8	25.09280836	84.87609503
		9	25.09338554	84.87615313
		10	25.09382048	84.87607355
		11	25.09503544	84.8749596
		12	25.09564157	84.87398104
		13	25.09585566	84.87319215
		14	25.09566254	84.87262465
		15	25.09524535	84.87233701
		16	25.09464851	84.8720883
		17	25.09437125	84.8718891
		18	25.09426236	84.87163648
		19	25.09431927	84.87116155
		20	25.09456627	84.87080948
		21	25.09497473	84.87044435
		22	25.09540758	84.87029329

Project: Sand Ghat Mining Project (Jehanabad Block No -15 Sand Ghat) at Riverbed of River Dhab at Rustamchak, Anchal – Ratani Faridpur, Dist – Jehanabad (Bihar)

	23	25.09537134	84.87056551
	24	25.09476613	84.87100412
	25	25.09452423	84.87151046
	26	25.09458645	84.87173481
	27	25.09478503	84.87195439
	28	25.094933	84.87201589
	29	25.09538754	84.87209116
	30	25.09573477	84.87223719
	31	25.09597655	84.87254546
	32	25.09605573	84.87299379
	33	25.09584821	84.87407528
	34	25.09569177	84.8743952
	35	25.09518126	84.8751445
	36	25.0946386	84.87556765
	37	25.09368032	84.87646192
	38	25.09339769	84.87658018
	39	25.09246096	84.87612539
	40	25.09221028	84.87534911
	41	25.09183259	84.87490243
	42	25.09142875	84.87459766
	43	25.09137223	84.8746066
	44	25.09136417	84.87434369
	45	25.09142174	84.87400842

Block 15 Sand Ghat is well connected by NH-22: Approx. 8.85 KM towards East direction & SH 69 :Approx. 7.35 KM towards West direction.

Project: Sand Ghat Mining Project (Jehanabad Block No -15 Sand Ghat) at Riverbed of River Dhab at Rustamchak, Anchal – Ratani Faridpur, Dist – Jehanabad (Bihar)

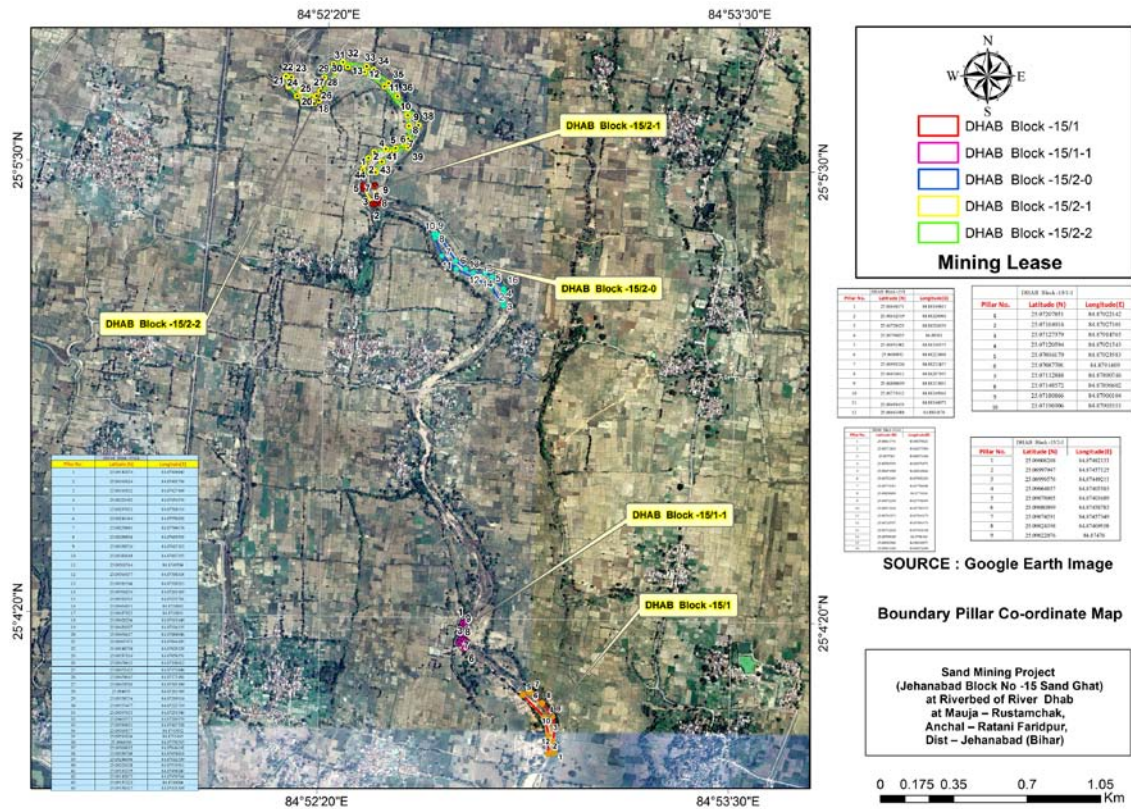


Figure 2.1:- Pillar Coordinate map of block 15

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 15	6.72	61, 128, 178, 361	221, 312, 348, 123, 367, 307, 740,802,	80640 cum/annum or 135475 TPA	77,60,800
Total				80640 cum/annum or 135475 TPA	77,60,800

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.

Project: Sand Ghat Mining Project (Jehanabad Block No -15 Sand Ghat) at Riverbed of River Dhab at Rustamchak, Anchal – Ratani Faridpur, Dist – Jehanabad (Bihar)

LOCATION MAP

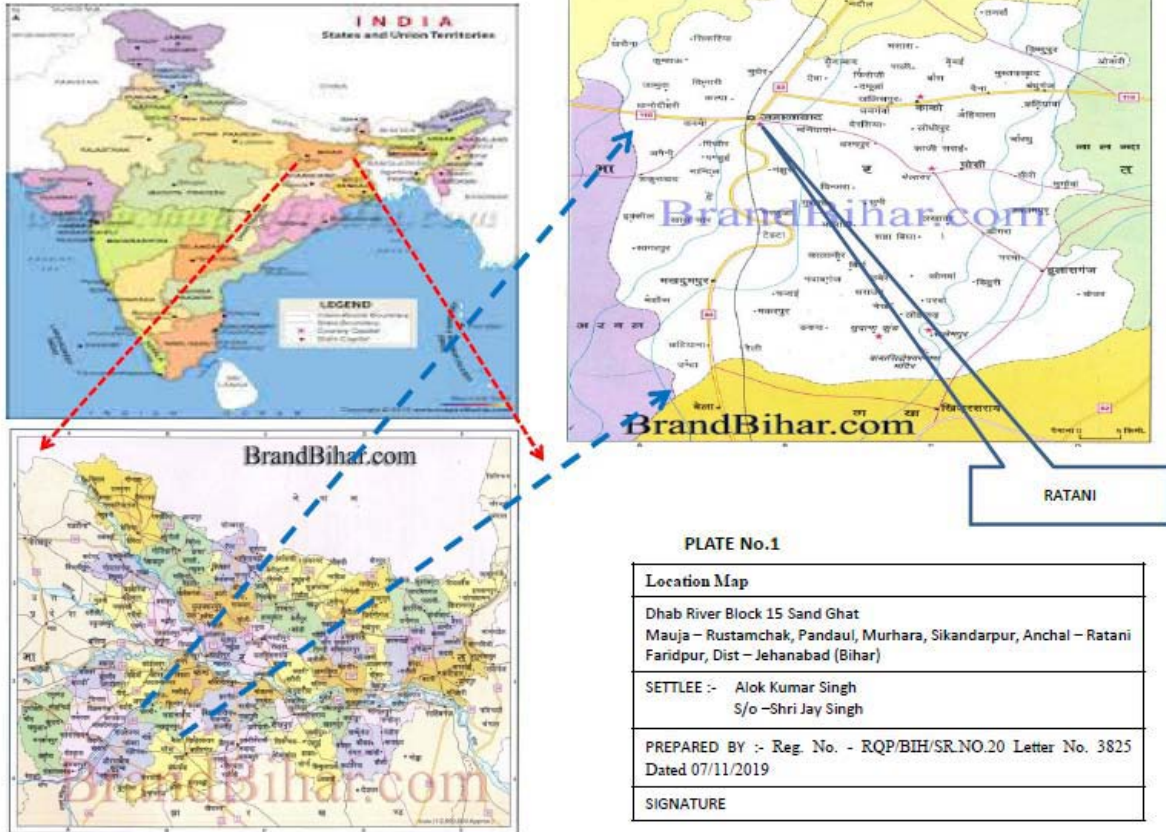


Figure 2.2:- Location map of the project site Block 15

2.3 TOPOGRAPHY & GEOLOGY

2.3.1 Topography

The area represents a rough and rugged topography. A detailed geological map on 1:1000 scales with contour interval. The area shows a general slope toward N-E while the highest RL of 75.5 m occurring on the South –West side of the area along boundry pillar, whereas the lowest RL of 72.5 m within the lease area is found along N-E slope near boundary line

The maximum part of Jehanabad district is mainly occupied by Quarternary sediments, which occur mainly in eastern part. The western part is covered by sediments of Fatwa formation of middle Holocene age made up of alternate sequence of sand silt and clay. Small part of eastern side of the district contains soft loose sediments of flood plain of

Project: Sand Ghat Mining Project (Jehanabad Block No -15 Sand Ghat) at Riverbed of River Dhab at Rustamchak, Anchal – Ratani Faridpur, Dist – Jehanabad (Bihar)

streams i.e. sediments of Diara formation of late Holocene age. A small portion in South occupied by metasediments of Munger group belonging to middle Proterozoic age. The meta sediments include highly folded and fractured quartzite, phyllite and schiest with intrusive granite and pegmatites. Very small portion in south contains lateritic soil.

Ground water occurs both in Alluvium and meta sediments. In alluvium ground water is in unconfined condition whereas in meta sediments ground water present in the formation due to secondary porosity that is between fault and fractures within rocks.

2.3.2 GEOMORPHOLOGY

Jahanabad district is a part of the Indo-Gangetic alluvium, one of the three main physiographic divisions of India, which separates Extra-Peninsular regions on the north from the Peninsular region on the south. The level plain is known to be the outcome of a granular filling of a great depression with alluvial sediments since Middle Pleistocene times. The district forming a part of the flood plains of the Ganga has a monotonously flat relief. The area under study is underlain by alluvial sediments of quaternary age. The quaternary sediments are deposited unconformable on the Archaean basement. The generalized stratigraphic sequence of the geological formations for the area is as follows.

SOIL

The farming situations in the district are mainly dependent as soil, topography and irrigation systems prevalent in the area. The district has mainly four types of soils ranging from moderately well drained to poorly drained, acidic to slightly alkaline and medium to heavy textured. From the farming point of view only four types of soils may be recognised as light to heavy in texture

2.3.3 REGIONAL GEOLOGY

Geologically, it represents nearly two third of Bihar is under cover of Ganga basin composed of alluvium and masks the nature of basement rocks.

Showing the Geological Succession and their Occurrences distribution

AGE	GEOLOGY	OCCURRENCES
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Project: Sand Ghat Mining Project (Jehanabad Block No -15 Sand Ghat) at Riverbed of River Dhab at Rustamchak, Anchal – Ratani Faridpur, Dist – Jehanabad (Bihar)

Quaternary	Alluvial Deposits (Sand, Clay, Silt, Fragments)	North Bihar Plain & Central Bihar Plain
Tertiary	Sand Stones & Clay Stones	North Champaran Hills
Gondwana	Coal Measures, Forming a series of Small outlier basins	Banka District
Vindhya	Sandstones, Shales, Limestones, etc.	Parts of Bahbhua and Rohtas dist
Satpura	Schist, Phyllite, Quartzite	Part of Aurangabad, Jahanabad, 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, Jahanabad, Nawada, Jamui, Banka and Bhagalpur

2.3.4 LOCAL GEOLOGY OF THE AREA

Jahanabad district is surrounded by two important river systems namely Ganga and Sone, a major tributary of Ganga, bordering the northern and western boundary of the district respectively. The Ganga flows from west to east while Sone flows from south to north which finally joins Ganga at Rampur village. The river Sone has been shifted from east near Maner to further west to its present position which is evident from the presence of alluvial bars and deltas in the river course. Punpun and Phalgu are the other two important rivers in the district which enter with a northerly flowing direction before they turn north-east and finally flow towards east. All along the southern bank of the Ganga, the levee deposits form a barrier for the rivers flowing from the south and prevents them from having a direct access to the river Ganga. All the rivers are effluent and as such perennial in nature.

Project: Sand Ghat Mining Project (Jehanabad Block No -15 Sand Ghat) at Riverbed of River Dhab at Rustamchak, Anchal – Ratani Faridpur, Dist – Jehanabad (Bihar)

The area is dominated by medium to fine sand geologically the area comprising of Terrace alluvium deposited in depositional terraces of old rivers & contain cyclic sequence of fine to course grained sand. It is angular two subangular and the angularity of the grains of this category of sand decreases with depth. The Litho unit shown on the geological map of the leased out area have been plotted on the basis of physical characteristics observed in the field. Sand and silt are deposited in the middle of the river whereas fine sand and soil are deposited at the fringe of the riverbanks. Soil/ alluvium varying in thickness from 0.20m to 0.60m m constitute the top horizons in the area suitable for agriculture. River Falgu, Dhab , Morhar, Mohana, Lokain & Dhab . meanders through the area exposing the alluvium and soil at the banks. Sand is found in the river bed up to a depth of more than 3.0 m

Source: Mining Plan

2.3.5 CLIMATE

The district comes under the “Sub-tropical” type i.e. mild and dry winter and hot summer. The area experiences a continental monsoon type of climate owing to its great distance from the sea. The climate is extreme and comprises three broad seasons-the summer, the monsoon and the winter. The summer months from the middle of March to May are characterized by hot blasts of westerly winds commonly known as „lõö The peak of summer is in May. The cold spell starts from December and continues till end of February. During this period the mercury drops down to as low as 4°C.

Source: https://cgwb.gov.in/AQM/NAQUIM_REPORT/Bihar/jehanabad%20Final%20Bihar.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. Bulk density is taken 1.68g/cm³
Proved Mineral Reserves (111): All quantities of sand occurring up to depth of 2m from surface has been considered as proved reserves.

Table-2.3:- Proved Mineral Reserves Block 15

Classification	Code	Quantity of Sand
A)Mineral Reserves		Cum
1)Proved Mineral Reserve	111	134400

Project: Sand Ghat Mining Project (Jehanabad Block No -15 Sand Ghat) at Riverbed of River Dhab at Rustamchak, Anchal – Ratani Faridpur, Dist – Jehanabad (Bihar)

Total	134400
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Replenished quantity of sand = 134400 cum. or 225792 tonnes.

Source Mining Plan

2.4.1 Mineable Reserves:

Mineable reserves have been computed up to 2 m depth from surface. The volume multiplied by bulk density (1.68 g/cm³) to get the tonnage.

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

Table-2.4:- Summary of minable reserves of Jehanabad Dhab 15 Sand Ghat as below (the bulk density multiply by 1.68)

Table 2.5 Block 15

Bench Level (mRL)	Length (m)	Width (m)	Depth (m)	Volume (cum)	Tonnes
75.5-74.5	2201	25	1	55025	92442
74.5-73.5	2183	19	1	41477	69682
Total				96502	162124

Total Mineable Reserve = 96502 cum or 162124 tonnes

Project: Sand Ghat Mining Project (Jehanabad Block No -15 Sand Ghat) at Riverbed of River Dhab at Rustamchak, Anchal – Ratani Faridpur, Dist – Jehanabad (Bihar)

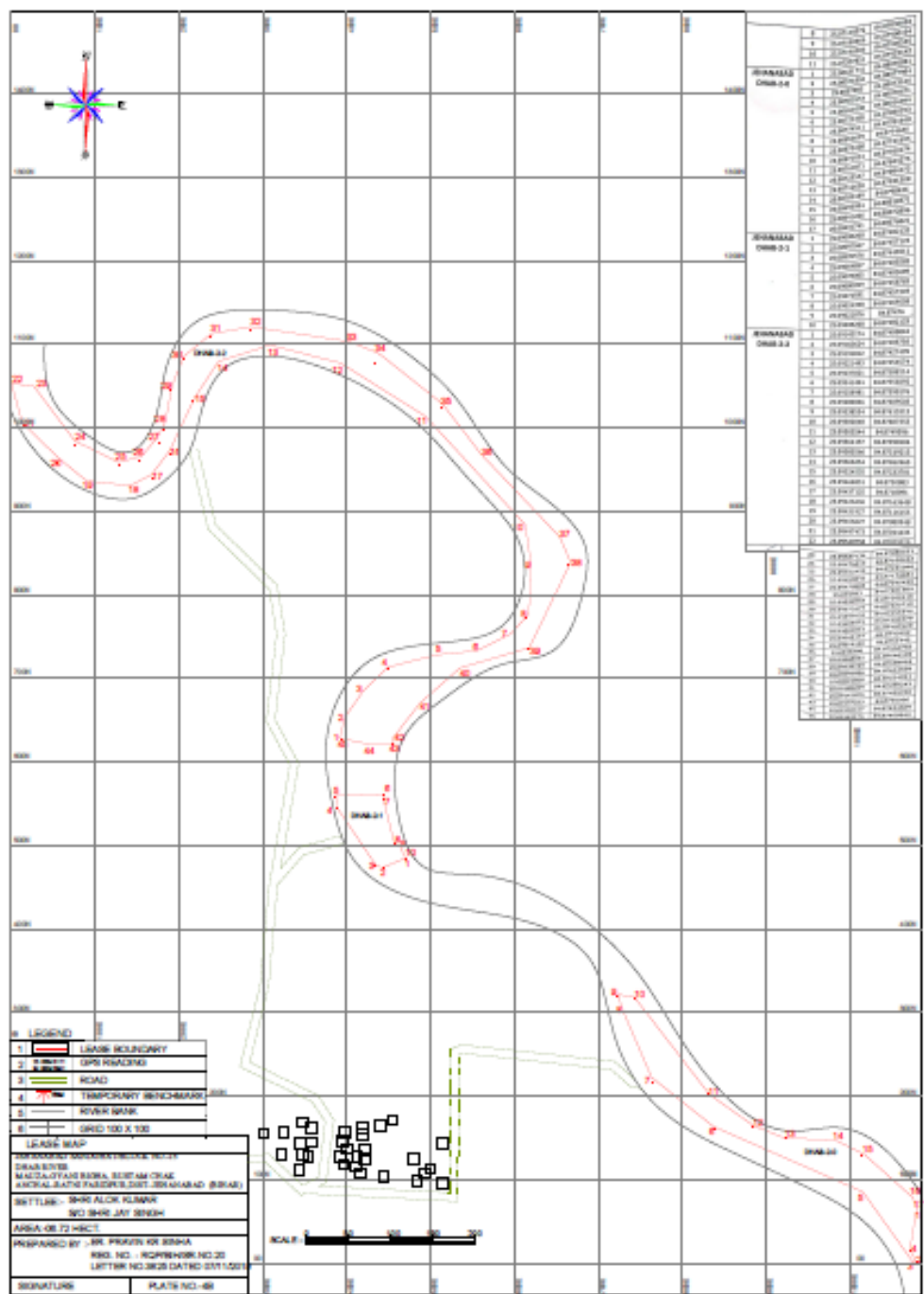


Figure 2.3:- Surface cum Geological Section of Block 15

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.

Project: Sand Ghat Mining Project (Jehanabad Block No -15 Sand Ghat) at Riverbed of River Dhab at Rustamchak, Anchal – Ratani Faridpur, Dist – Jehanabad (Bihar)

- 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 2 m bgl or above ground water level (whichever is less), for river bed block.
- No drilling /blasting are required as the material is loose in nature.
- Proper benching of 1 m height and 6m width will be maintained for mining blocks as per guideline M.M.R-2019, under rule 115(1).
- Mining will be done only during the day time and completely stopped during the monsoon season.

2.4.3 Year Wise Production Schedule:

The bench wise annual exploitation of sand from Sand Ghat Mining Project (Jehanabad Block No.-15) at Riverbed of River Dhab are given below :-

Table 2.7: Year wise Production Details of Sand Ghat 15

YEAR	ROM sand (cum)
1 st Year	80640
2 nd Year	80640
3 rd Year	80640
4 th Year	80640
5 th Year	80640
Total	403200

The annual extractable RBM comes to 80640 cum or 135475 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 Jehanabad Block No.-15 Sand Ghat. However, as the digging depth will be restricted to 1.0 m only. This will be further replenished during rainy season. Sand Ghat will be worked systematically as the width is limited while length is

Project: Sand Ghat Mining Project (Jehanabad Block No -15 Sand Ghat) at Riverbed of River Dhab at Rustamchak, Anchal – Ratani Faridpur, Dist – Jehanabad (Bihar)

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

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

(iii) Ultimate Capacity of Dumps: There will be no OB removal / during the plan period. Therefore no proposal has been envisaged for its separate dumping. No outside material will be filled up in the extracted zone.

2.6.0 Anticipated life of mine

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

Project: Sand Ghat Mining Project (Jehanabad Block No -15 Sand Ghat) at Riverbed of River Dhab at Rustamchak, Anchal – Ratani Faridpur, Dist – Jehanabad (Bihar)

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

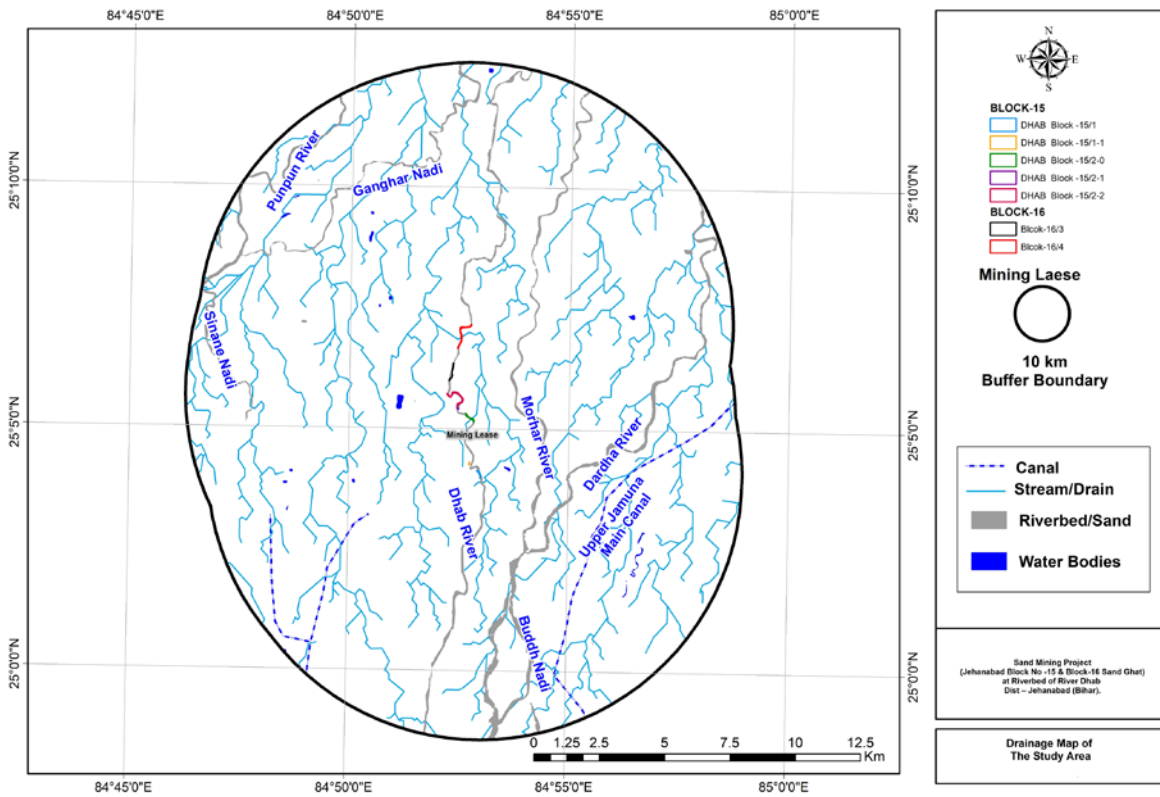


Fig-2.5, Drainage map

2.7.3 Man power requirement

The manpower requirement for the proposed project will be around 31 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 2.6.

Table 2.6 Manpower Requirement in Block 15

S. No.	Category	Numbers
1.	Administration	1
2.	Supervisor	2
3.	Skilled	08
4.	Un-skilled	20
TOTAL		31

Project: Sand Ghat Mining Project (Jehanabad Block No -15 Sand Ghat) at Riverbed of River Dhab at Rustamchak, Anchal – Ratani Faridpur, Dist – Jehanabad (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 2.7 Water Requirement

Activity	Calculation	Round off Figure in KLD
Drinking	@ 10 lpcd per labor $10 \times 31 / 1000 = 0.31$ KLD	0.31
Dust Suppression	Total approach road to be water sprinkled = 780 m for block 15(all blocks) $780 \text{ m} \times 6 \text{ m} \times 0.5 \times 2 \text{ times} = 4680 / 1000 = 4.68$ KLD	4.68
Plantation	68 plant (during plan period) @ 5 L/per plant = $68 \times 5 \text{ lts} = 340 / 1000 = 0.34$ KLD	0.34
Total		5.33 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.

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

Project: Sand Ghat Mining Project (Jehanabad Block No -15 Sand Ghat) at Riverbed of River Dhab at Rustamchak, Anchal – Ratani Faridpur, Dist – Jehanabad (Bihar)

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.
- ✓ Installation of respiratory dust samplers (for PM_{10} , $PM_{2.5}$) at different location in the study area for the collection of primary air pollutant and analyze the existing air conditions.



Project: Sand Mining Project (Jehanabad Block No -15 Sand Ghat) at Riverbed of River Dhab at Mauja Rustamchak, Anchal – Ratani Faridpur, Dist – Jehanabad (Bihar)

- ✓ 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 (Jehanabad Block No -15 Sand Ghat) at Riverbed of River Dhab at Mauja Rustamchak, Anchal – Ratani Faridpur, Dist – Jehanabad (Bihar)

Table 3.1: Land Use Cover of the Project Study Area

LU/LC Class	Area (Ha)
Settlement	5976.79
Water Bodies	48.09
Riverbed/Sand	1139.45
Scrub Land	320.66
Agricultural Land	36718.88
Total Study Area	44203.87

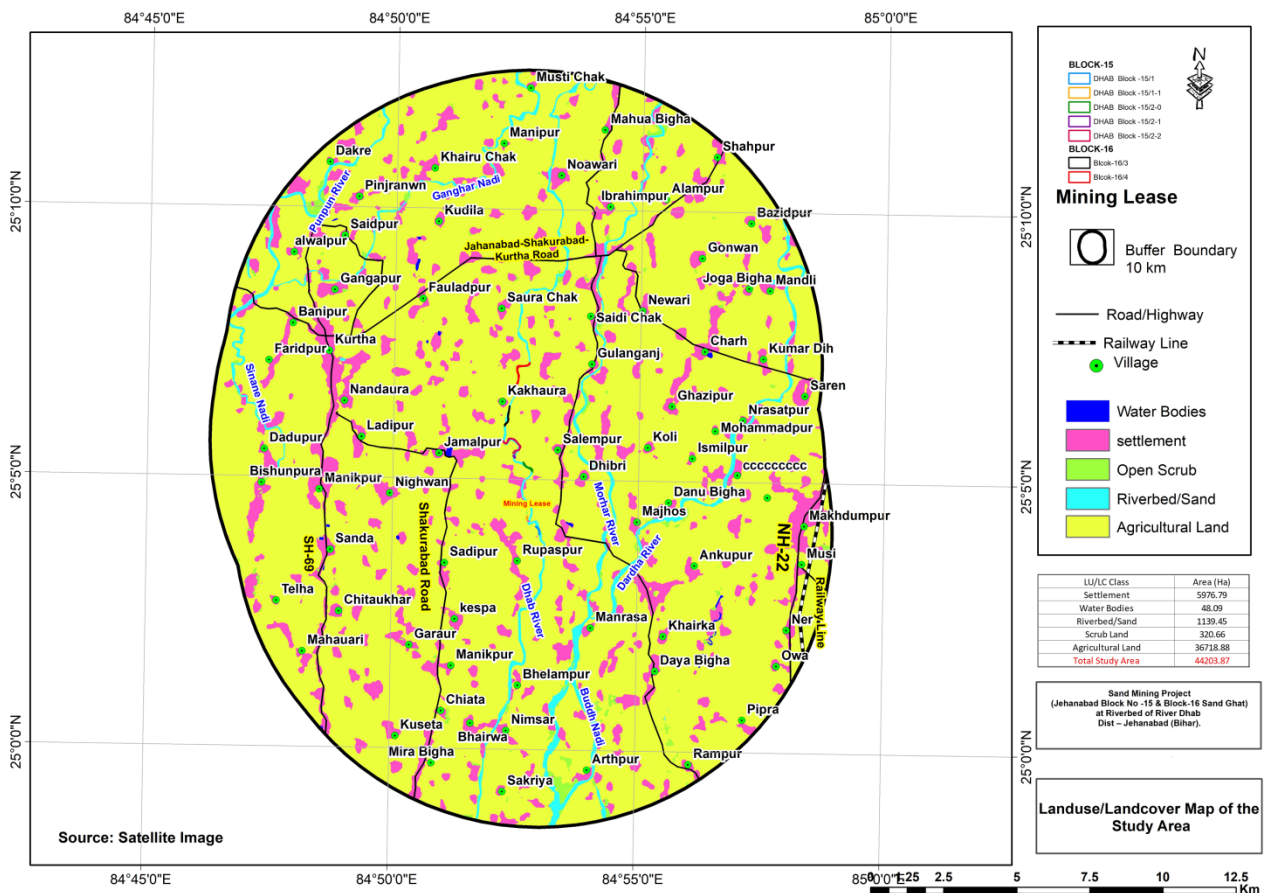


FIGURE 3.1: LAND USE COVER OF THE PROJECT STUDY AREA

Project: Sand Mining Project (Jehanabad Block No -15 Sand Ghat) at Riverbed of River Dhab at Mauja Rustamchak, Anchal – Ratani Faridpur, Dist – Jehanabad (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

Water (Ground) Monitoring Locations			
GW 1	Gyani Bigha (PS)	0.35 Km from Jehanabad Block15(DHAB-2-0)	SE
GW 2	Utra Patti (PS)	0.28 Km from Jehanabad Block15(DHAB-2-1)	S
GW 3	Pandaul(PS)	0.28 Km from Jehanabad Block16(DHAB-4)	NW
GW 4	Lari	2.0 Km from Jehanabad Block15(DHAB-2-2)	WSW
GW 5	Chak Saura	2.2 Km from Jehanabad Block16 (DHAB-4)	NNW
GW 6	Pirijpura	2.0 Km from Jehanabad Block16 (DHAB-3)	E

Project: Sand Mining Project (Jehanabad Block No -15 Sand Ghat) at Riverbed of River Dhab at Mauja Rustamchak, Anchal – Ratani Faridpur, Dist – Jehanabad (Bihar)

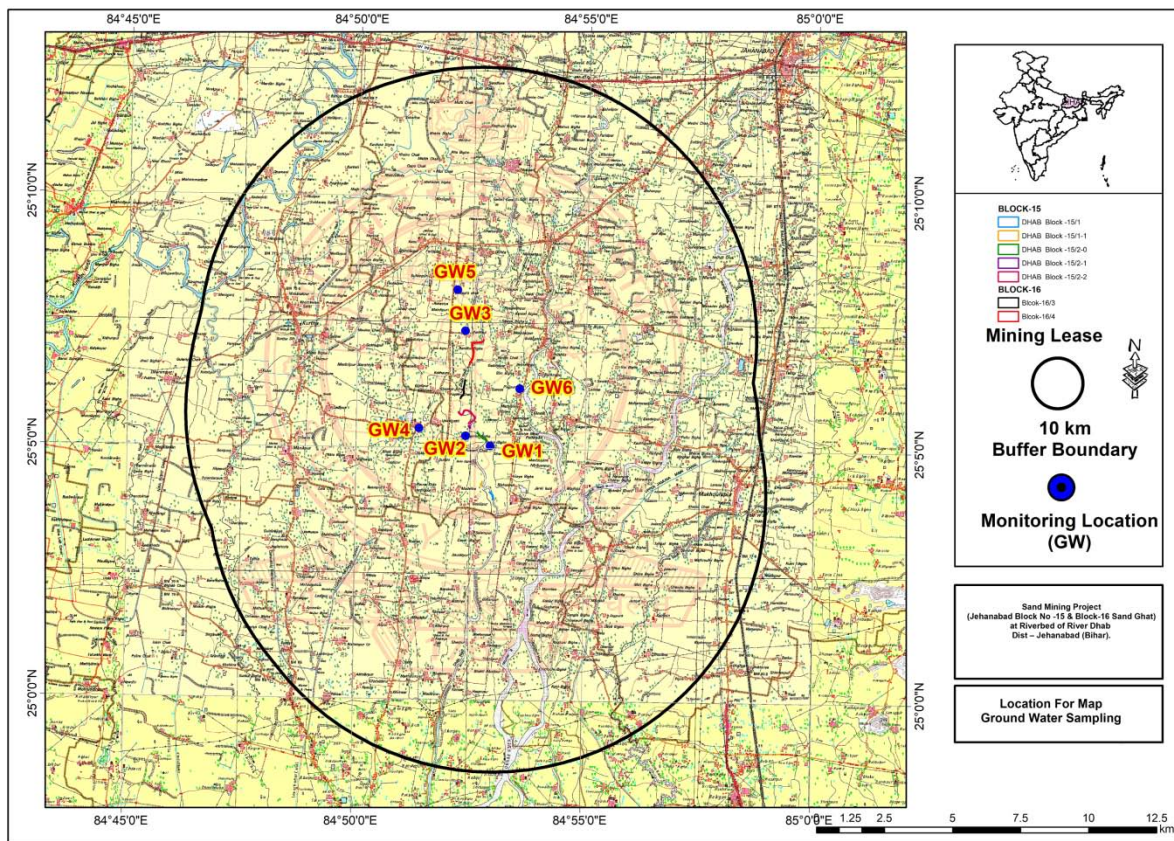


Figure 3.2 Water Sampling Location Map

Table 3.3 Ground Water Quality Monitoring Result

S. No.	Parameter	Unit	Limit (as per IS:10500)		GW1	GW2	GW3
			Desirable	Permissible			
1	Colour	Hazen	5	25	<2	<2	<2
2	Odour	-	Un	-	Un	Un	Un
3	Taste	-	Agreeable	-	Agreeable	Agreeable	Agreeable
4	Turbidity	NTU	5	10	<1	<1	<1
5	pH	-	6.5-8.5	No Relaxation	7.35	7.54	7.43
6	Total Hardness (as CaCO ₃)	mg/l	300	600	224	238	211
7	Iron (as Fe)	mg/l	0.3	1	0.08	0.09	0.07
8	Chlorides (as Cl)	mg/l	250	1000	28	35	31
9	Fluoride (as F)	mg/l	1	1.5	0.4	0.5	0.4
10	TDS	mg/l	500	2000	278	328	294
11	Calcium(as Ca ²⁺)	mg/l	75	200	55	57	48
12	Magnesium (as Mg ²⁺)	mg/l	30	100	21	23	22
13	Copper (as Cu)	mg/l	0.05	1.5	<0.01	<0.01	<0.01

Project: Sand Mining Project (Jehanabad Block No -15 Sand Ghat) at Riverbed of River Dhab at Mauja Rustamchak, Anchal – Ratani Faridpur, Dist – Jehanabad (Bihar)

14	Manganese(as Mn)	mg/l	0.1	0.3	0.01	0.02	0.01
15	Sulphate (as SO ₄)	mg/l	200	400	12	16	13
16	Nitrate(as NO ₃)	mg/l	45	No Relaxation	1.2	1.8	1.5
17	Phenolic Compounds (as C ₆ H ₅ OH)	mg/l	0.001	0.002	<0.001	<0.001	<0.001
18	Mercury (as Hg)	mg/l	0.001	No Relaxation	<0.001	<0.001	<0.001
19	Cadmium (as Cd)	mg/l	0.01	No Relaxation	<0.01	<0.01	<0.01
20	Selenium (as Se)	mg/l	0.01	No Relaxation	<0.01	<0.01	<0.01
22	Cyanide (as CN)	mg/l	0.05	No Relaxation	<0.01	<0.01	<0.01
23	Lead (as Pb)	mg/l	0.05	No Relaxation	<0.01	<0.01	<0.01
24	Zinc (as Zn)	mg/l	5	15	0.04	0.05	0.04
25	Anionic Detergent (as MBAS)	mg/l	0.2	1	<0.01	<0.01	<0.01
26	Chromium (as Cr ₆₊)	mg/l	0.05	No Relaxation	<0.01	<0.01	<0.01
27	Mineral oil	mg/l	0.01	0.03	<0.01	<0.01	<0.01
28	Alkalinity as CaCO ₃	mg/l	200	600	190	218	198
29	Aluminium (as Al)	mg/l	0.03	0.2	<0.02	<0.02	<0.02
30	Boron (as B)	mg/l	1	5	0.1	0.1	0.1
Microbiological Parameter							
31	Total Coliform	MPN/100ml	10 , Max	-	<2	<2	7
32	<i>E. coli</i>	E.coli/100ml	Absent	-	Absent	Absent	Absent

S. No.	Parameter	Unit	Limit (as per IS:10500)		GW4	GW5	GW6
			Desirable	Permissible			
1	Colour	Hazen	5	25	<2	<2	<2
2	Odour	-	Un	-	Un	Un	Un
3	Taste	-	Agreeable	-	Agreeable	Agreeable	Agreeable
4	Turbidity	NTU	5	10	<1	<1	<1
5	pH	-	6.5-8.5	No Relaxation	7.24	7.45	7.34
6	Total Hardness (as CaCO ₃)	mg/l	300	600	216	231	204
7	Iron (as Fe)	mg/l	0.3	1	0.09	0.08	0.07
8	Chlorides (as Cl)	mg/l	250	1000	31	40	34

Project: Sand Mining Project (Jehanabad Block No -15 Sand Ghat) at Riverbed of River Dhab at Mauja Rustamchak, Anchal – Ratani Faridpur, Dist – Jehanabad (Bihar)

9	Fluoride (as F)	mg/l	1	1.5	0.4	0.5	0.5
10	TDS	mg/l	500	2000	272	326	289
11	Calcium(as Ca ²⁺)	mg/l	75	200	53	56	47
12	Magnesium (as Mg ²⁺)	mg/l	30	100	20	22	21
13	Copper (as Cu)	mg/l	0.05	1.5	<0.01	<0.01	<0.01
14	Manganese(as Mn)	mg/l	0.1	0.3	0.01	0.02	0.01
15	Sulphate (as SO ₄)	mg/l	200	400	13	15	12
16	Nitrate(as NO ₃)	mg/l	45	No Relaxation	1.1	1.7	1.3
17	Phenolic Compounds (as C ₆ H ₅ OH)	mg/l	0.001	0.002	<0.001	<0.001	<0.001
18	Mercury (as Hg)	mg/l	0.001	No Relaxation	<0.001	<0.001	<0.001
19	Cadmium (as Cd)	mg/l	0.01	No Relaxation	<0.01	<0.01	<0.01
20	Selenium (as Se)	mg/l	0.01	No Relaxation	<0.01	<0.01	<0.01
22	Cyanide (as CN)	mg/l	0.05	No Relaxation	<0.01	<0.01	<0.01
23	Lead (as Pb)	mg/l	0.05	No Relaxation	<0.01	<0.01	<0.01
24	Zinc (as Zn)	mg/l	5	15	0.06	0.07	0.04
25	Anionic Detergent (as MBAS)	mg/l	0.2	1	<0.01	<0.01	<0.01
26	Chromium (as Cr ⁶⁺)	mg/l	0.05	No Relaxation	<0.01	<0.01	<0.01
27	Mineral oil	mg/l	0.01	0.03	<0.01	<0.01	<0.01
28	Alkalinity as CaCO ₃	mg/l	200	600	178	210	190
29	Aluminium (as Al)	mg/l	0.03	0.2	<0.02	<0.02	<0.02
30	Boron (as B)	mg/l	1	5	0.1	0.1	0.1
Microbiological Parameter							
31	Total Coliform	MPN/100ml	10 , Max	-	<2	<2	6
32	<i>E. coli</i>	E.coli /100ml	Absent	-	Absent	Absent	Absent

Observation:

Analysis of results of ground water reveals the following: -

- pH varies from 7.24 to 7.54.
- Total hardness varies from 204 mg/l to 238 mg/l .
- Total dissolved solids vary from 272 mg/l to 326 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.

3.2.1 Sampling frequency



Project: Sand Mining Project (Jehanabad Block No -15 Sand Ghat) at Riverbed of River Dhab at Mauja Rustamchak, Anchal – Ratani Faridpur, Dist – Jehanabad (Bihar)

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 3.6** below:

Table 3.6, Water quality criteria as per Central Pollution Control Board

Designated-Best-Use	Class of water	Criteria
Drinking Water Source without conventional treatment but after disinfection	A	Total Coliforms Organism MPN/100ml shall be 50 or less pH between 6.5 and 8.5 Dissolved Oxygen 6mg/l or more Biochemical Oxygen Demand 5 days 20°C 2mg/l or less
Outdoor bathing (Organized)	B	Total Coliforms Organism MPN/100ml shall be 500 or less; pH between 6.5 and 8.5; Dissolved Oxygen 5mg/l or more Biochemical Oxygen Demand 5 days 20°C 3mg/l or less
Drinking water source after conventional treatment and disinfection	C	Total Coliforms Organism MPN/100ml shall be 5000 or less; pH between 6 to 9; Dissolved Oxygen 4mg/l or more Biochemical Oxygen Demand 5 days 20°C 3mg/l or less
Propagation of Wild life and Fisheries	D	pH between 6.5 to 8.5 Dissolved Oxygen 4mg/l or more Free Ammonia (as N) 1.2 mg/l or less
Irrigation, Industrial	E	pH between 6.0 to 8.5

Project: Sand Mining Project (Jehanabad Block No -15 Sand Ghat) at Riverbed of River Dhab at Mauja Rustamchak, Anchal – Ratani Faridpur, Dist – Jehanabad (Bihar)

Cooling, Controlled Waste disposal		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-3.7**.

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-3.7, Summarized project site meteorological data for Pre-Monsoon Season

Month	Temperature °C		Wind Speed (Km/Hr)	
	Min	Max	Avg.	Max
MARCH 2023	21	38	10.3	18.5
APRIL 2023	27	44	14.8	24.9
MAY 2023	28	44	14.0	25.0

Project: Sand Mining Project (Jehanabad Block No -15 Sand Ghat) at Riverbed of River Dhab at Mauja Rustamchak, Anchal – Ratani Faridpur, Dist – Jehanabad (Bihar)

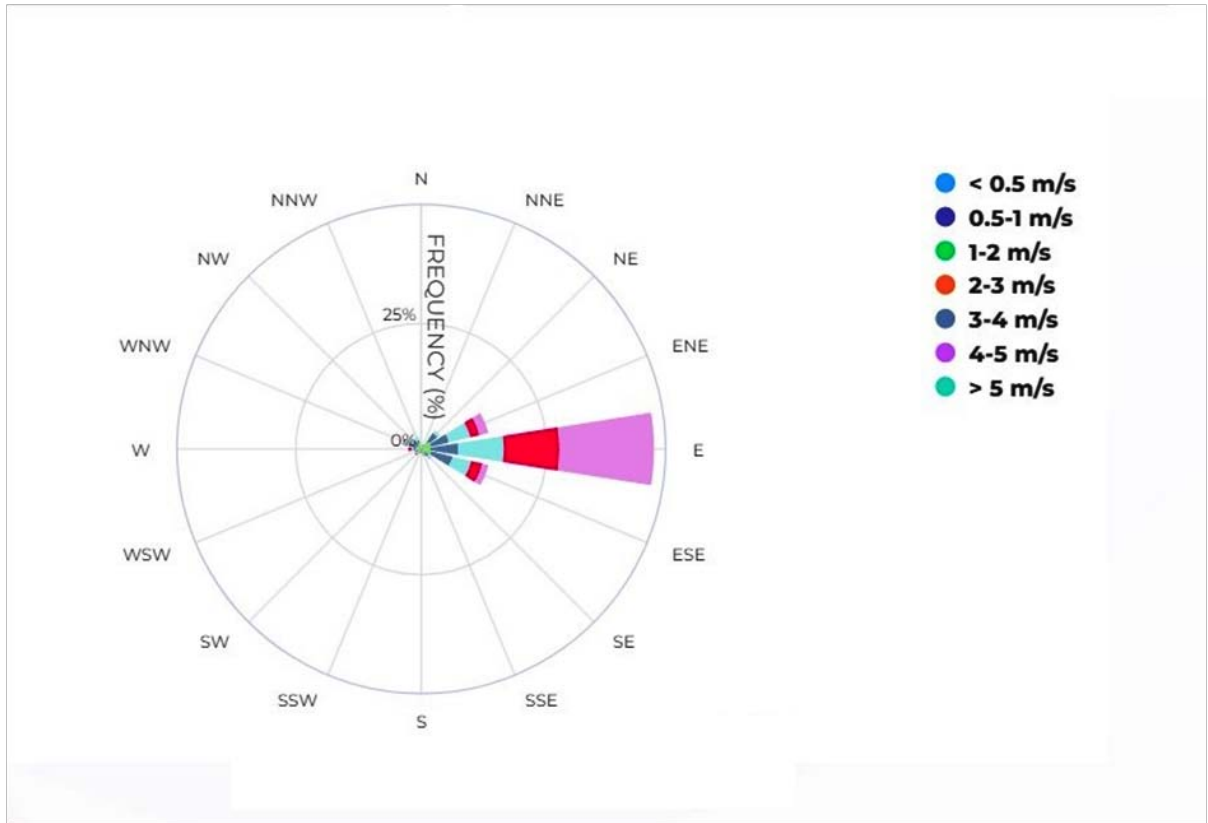


Figure 3.3: Wind Rose Diagram (at site)

3.3.1 Secondary Data Collected from IMD

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

The meteorological data is collected from the IMD- Patna is about 60 km from project site, which is the nearest operating IMD station to the project site. The data collected from IMD includes wind speed, wind direction, temperature, relative humidity and rainfall for the year 1981-2010. The monthly maximum, minimum and average values are collected for all the parameters except wind speed and direction.

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

3.3.2 Comparison of primary and secondary data

The India Meteorological Department (IMD) records the data twice a day viz. 0830 hr and 1730 hr while the site-specific data has been recorded at an hourly interval. On comparison of 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 14 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-3.8**.

Project: Sand Mining Project (Jehanabad Block No -15 Sand Ghat) at Riverbed of River Dhab at Mauja Rustamchak, Anchal – Ratani Faridpur, Dist – Jehanabad (Bihar)

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-3.9, Table-3.10, Table-3.11 & Table 3.12**. These are compared with the standards prescribed by Central Pollution Control Board (CPCB) for industrial, residential and rural zone.

Table 3.8: Ambient Air Quality Monitoring Stations

Air monitoring locations			
Location ID	Location name	Distance (Km)	Direction
AQ 1	Gopalganj (PS)	0.28 Km from Jehanabad Block15(DHAB-1)	WNW
AQ 2	Gyani Bigha (PS)	0.35 Km from Jehanabad Block15(DHAB-2-0)	SE
AQ 3	Utra Patti (PS)	0.28 Km from Jehanabad Block15(DHAB-2-1)	S
AQ 4	Kauri (PS)	0.25 Km from Jehanabad Block16 (DHAB-3)	W
AQ 5	Pandaul(PS)	0.28 Km from Jehanabad Block16 (DHAB-4)	NW
AQ 6	Daulatpur	2.3 Km from Jehanabad Block15(DHAB-1)	S
AQ 7	Harnakhas	2.38 Km from Jehanabad Block15(DHAB-1-1)	W
AQ 8	Lari	2.0 Km from Jehanabad Block15(DHAB-2-2)	WSW
AQ 9	Mahmadpur	2.73 Km from Jehanabad Block16 (DHAB-4)	W
AQ 10	Chak Saura	2.2 Km from Jehanabad Block16 (DHAB-4)	NNW
AQ 11	Sikandarpur	1.45 Km from Jehanabad Block16 (DHAB-4)	ENE
AQ 12	Pirijpura	2.0 Km from Jehanabad Block16 (DHAB-3)	E
AQ 13	Selampur	1.3 Km from Jehanabad Block15(DHAB-2-0)	ENE

Project: Sand Mining Project (Jehanabad Block No -15 Sand Ghat) at Riverbed of River Dhab at Mauja Rustamchak, Anchal – Ratani Faridpur, Dist – Jehanabad (Bihar)

AQ 14	Narayanpur	2.3 Km from Jehanabad Block15(DHAB-1)	E
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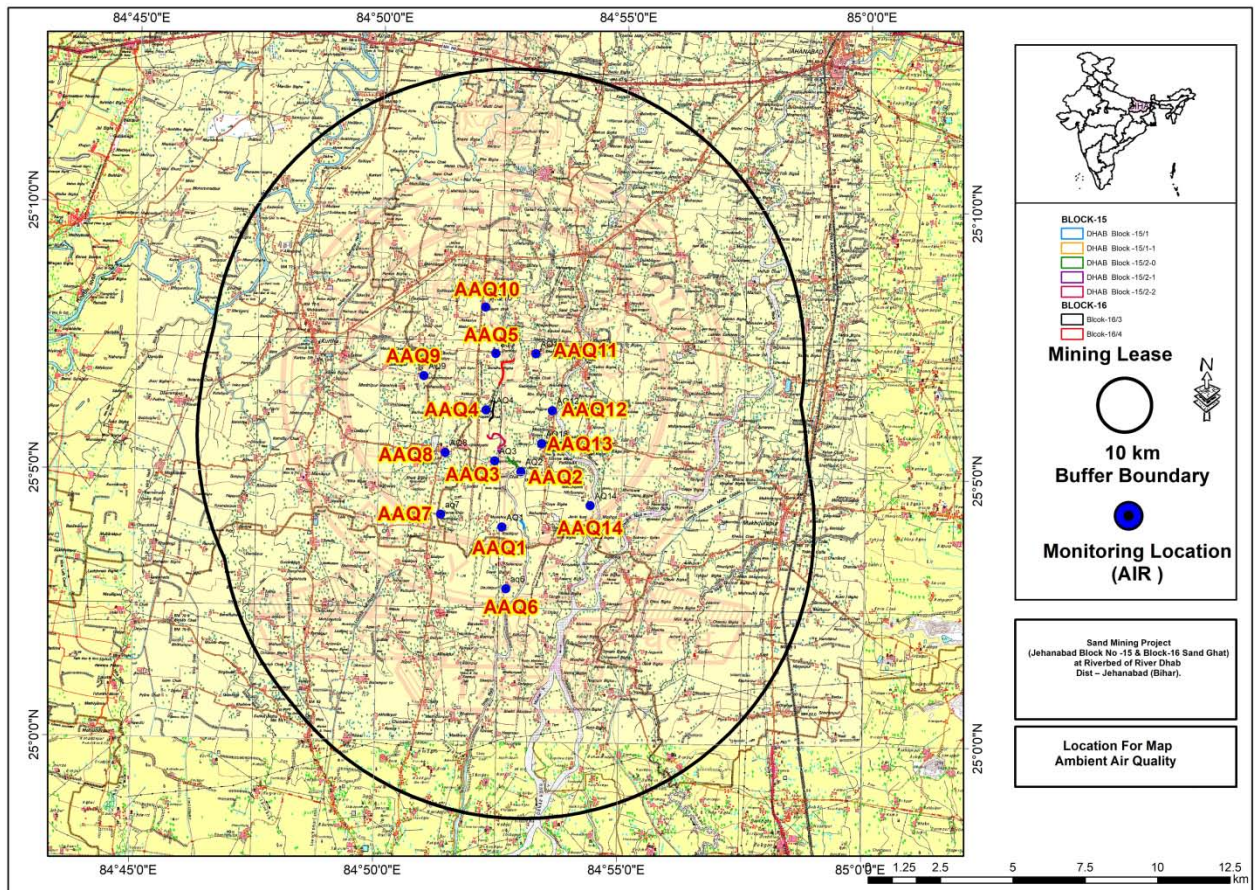


Figure 3.4 Ambient Air Quality Monitoring Stations

Table-3.9: Ambient Air Quality in the Study Area PM2.5

Location Code	PM2.5 ($\mu\text{g}/\text{m}^3$)				
	Name of the station	Min	Max	Average	98 th Percentile
AAQ 1	Gopalganj (PS)	32.2	44.1	39.7	43.7
AAQ 2	Gyani Bigha (PS)	32.9	45.3	39.3	44.4
AAQ 3	Utra Patti (PS)	31.3	44.8	39.9	43.5
AAQ 4	Kauri (PS)	36.2	45.6	40.6	44.9
AAQ 5	Pandaul(PS)	33	46.2	41.6	45.4
AAQ 6	Daulatpur	45.7	55.8	51.3	55.1
AAQ 7	Harnakhas	36.2	46.3	40.5	45.7

Project: Sand Mining Project (Jehanabad Block No -15 Sand Ghat) at Riverbed of River Dhab at Mauja Rustamchak, Anchal – Ratani Faridpur, Dist – Jehanabad (Bihar)

AAQ 8	Lari	38.1	48.6	42.8	47.7
AAQ 9	Mahmadpur	38	47	42.8	46.5
AAQ 10	Chak Saura	37.2	45.3	40.8	44.6
AAQ 11	Sikandarpur	45.7	55.8	51.3	55.1
AAQ 12	Pirijpura	40.3	52.3	45.8	51.6
AAQ 13	Selampur	38.1	48.6	42.8	47.7
AAQ 14	Narayanpur	37.4	49.2	40.4	48.3

Table-3.10: Ambient Air Quality in the Study Area PM10

Location Code	PM10 ($\mu\text{g}/\text{m}^3$)				
	Name of the station	Min	Max	Average	98 th Percentile
AAQ 1	Gopalganj (PS)	58.6	76.2	70.2	75.6
AAQ 2	Gyani Bigha (PS)	59.5	76.8	70.2	75.7
AAQ 3	Utra Patti (PS)	59.9	78.5	69.9	76
AAQ 4	Kauri (PS)	60.2	77	70.4	76.9
AAQ 5	Pandaul(PS)	60.4	79.1	71.6	78.9
AAQ 6	Daulatpur	78.1	94.5	88.2	93.7
AAQ 7	Harnakhas	73.2	91.1	81.7	90.5
AAQ 8	Lari	71.3	87.6	81.9	86.5
AAQ 9	Mahmadpur	68.3	83.1	74.4	82.2
AAQ 10	Chak Saura	69.5	85.6	78.4	85
AAQ 11	Sikandarpur	78.1	94.5	88.2	93.7
AAQ 12	Pirijpura	70.7	85.5	79.1	84.8
AAQ 13	Selampur	71.3	87.6	81.9	86.5
AAQ 14	Narayanpur	78.5	89.6	82.6	88.5

Table-3.11: Ambient Air Quality in the Study Area SO₂

Location Code	SO ₂ ($\mu\text{g}/\text{m}^3$)				
	Name of the station	Min	Max	Average	98 th Percentile

Project: Sand Mining Project (Jehanabad Block No -15 Sand Ghat) at Riverbed of River Dhab at Mauja Rustamchak, Anchal – Ratani Faridpur, Dist – Jehanabad (Bihar)

AAQ 1	Gopalganj (PS)	4.3	8.2	6.3	8.2
AAQ 2	Gyani Bigha (PS)	4	8.5	6.3	8.4
AAQ 3	Utra Patti (PS)	4.9	8.6	6.6	8.6
AAQ 4	Kauri (PS)	5	9	6.6	8.9
AAQ 5	Pandaul(PS)	4.6	9.5	6.6	9
AAQ 6	Daulatpur	8.7	13.1	10.7	12.9
AAQ 7	Harnakhas	4.3	7.6	5.7	7.4
AAQ 8	Lari	6.7	10.3	8.2	10.1
AAQ 9	Mahmadpur	5.2	8.1	6.8	8
AAQ 10	Chak Saura	6.2	9.8	7.8	9.5
AAQ 11	Sikandarpur	8.7	13.1	10.7	12.9
AAQ 12	Pirijpura	3.3	8.4	5.2	7.8
AAQ 13	Selampur	6.7	10.3	8.2	10.1
AAQ 14	Narayanpur	6.2	8.5	7.2	8.2

Table-3.12: 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
AAQ 1	Gopalganj (PS)	7	13	9.9	12.6
AAQ 2	Gyani Bigha (PS)	7.1	14.6	9.8	13.6
AAQ 3	Utra Patti (PS)	7.4	14	10.1	13.4
AAQ 4	Kauri (PS)	7.9	15.9	10.5	14.9
AAQ 5	Pandaul(PS)	7.5	15.1	10.3	14.3
AAQ 6	Daulatpur	18.5	25.1	21	24.5
AAQ 7	Harnakhas	6.1	15.7	9.8	14.3
AAQ 8	Lari	15.3	21.4	17.4	20.3
AAQ 9	Mahmadpur	9.1	17.4	12.3	16.5
AAQ 10	Chak Saura	14.1	18.6	15.8	18
AAQ 11	Sikandarpur	18.5	25.1	21	24.5
AAQ 12	Pirijpura	5	12.5	8.7	12.3
AAQ 13	Selampur	15.3	21.4	17.4	20.3

Project: Sand Mining Project (Jehanabad Block No -15 Sand Ghat) at Riverbed of River Dhab at Mauja Rustamchak, Anchal – Ratani Faridpur, Dist – Jehanabad (Bihar)

AAQ 14	Narayanpur	18.9	25.3	21.2	24.4
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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 31.3 $\mu\text{g}/\text{m}^3$ to 55.8 $\mu\text{g}/\text{m}^3$. The 24 hourly average values of PM_{2.5} 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 58.6 $\mu\text{g}/\text{m}^3$ to 94.5 $\mu\text{g}/\text{m}^3$. 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:



Project: Sand Mining Project (Jehanabad Block No -15 Sand Ghat) at Riverbed of River Dhab at Mauja Rustamchak, Anchal – Ratani Faridpur, Dist – Jehanabad (Bihar)

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

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

The minimum and maximum concentration of SO₂ recorded within the study area was 3.3 µg/m³ to 13.1 µg/m³.

The 24 hourly average values of SO₂ were compared with the National Ambient Air Quality Standards (NAAQS) and it was found that all sampling stations recorded values are below the applicable limits 80 µg/m³ for Residential, Rural and other areas.

Oxides of Nitrogen (NO₂)

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. NO₂ 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 NO₂ recorded within the study area was in the range of was 5.0 µg/m³ to 25.3 µg/m³.

The 24 hourly average values of NO₂ were compared with the National Ambient Air Quality Standards (NAAQS) and it was found that all sampling stations recorded values are below the applicable limits 80 µg/m³ for Residential, Rural and other areas.

Ambient Air Quality in the Study Area, Free Silica

Location	Free silica (µg/m³)		
Code	Name of the station	Min	Max

Project: Sand Mining Project (Jehanabad Block No -15 Sand Ghat) at Riverbed of River Dhab at Mauja Rustamchak, Anchal – Ratani Faridpur, Dist – Jehanabad (Bihar)

AAQ 1	Gopalganj (PS)	1.49	1.80
AAQ 2	Gyani Bigha (PS)	1.59	1.85
AAQ 3	Utra Patti (PS)	1.49	1.70
AAQ 4	Kauri (PS)	1.53	1.89
AAQ 5	Pandaul(PS)	1.41	1.71
AAQ 6	Daulatpur	1.55	1.92
AAQ 7	Harnakhas	1.59	1.78
AAQ 8	Lari	1.61	1.81
AAQ 9	Mahmadpur	1.53	1.86
AAQ 10	Chak Saura	1.40	1.55
AAQ 11	Sikandarpur	1.31	1.48
AAQ 12	Pirijpura	1.33	1.49
AAQ 13	Selampur	1.25	1.55
AAQ 14	Narayanpur	1.26	1.41

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 3.13**. The physico-chemical characteristic of these soil samples is given in **Table 3.14**.

Project: Sand Mining Project (Jehanabad Block No -15 Sand Ghat) at Riverbed of River Dhab at Mauja Rustamchak, Anchal – Ratani Faridpur, Dist – Jehanabad (Bihar)

Table 3.13: Description of soil sampling locations

Soil monitoring locations			
SQ 1	Gyani Bigha (PS)	0.35 Km from Jehanabad Block15(DHAB-2-0)	SE
SQ 2	Utra Patti (PS)	0.28 Km from Jehanabad Block15(DHAB-2-1)	S
SQ 3	Pandaul(PS)	0.28 Km from Jehanabad Block16(DHAB-4)	NW
SQ 4	Lari	2.0 Km from Jehanabad Block15(DHAB-2-2)	WSW
SQ 5	Chak Saura	2.2 Km from Jehanabad Block16 (DHAB-4)	NNW
SQ 6	Pirijpura	2.0 Km from Jehanabad Block16 (DHAB-3)	E

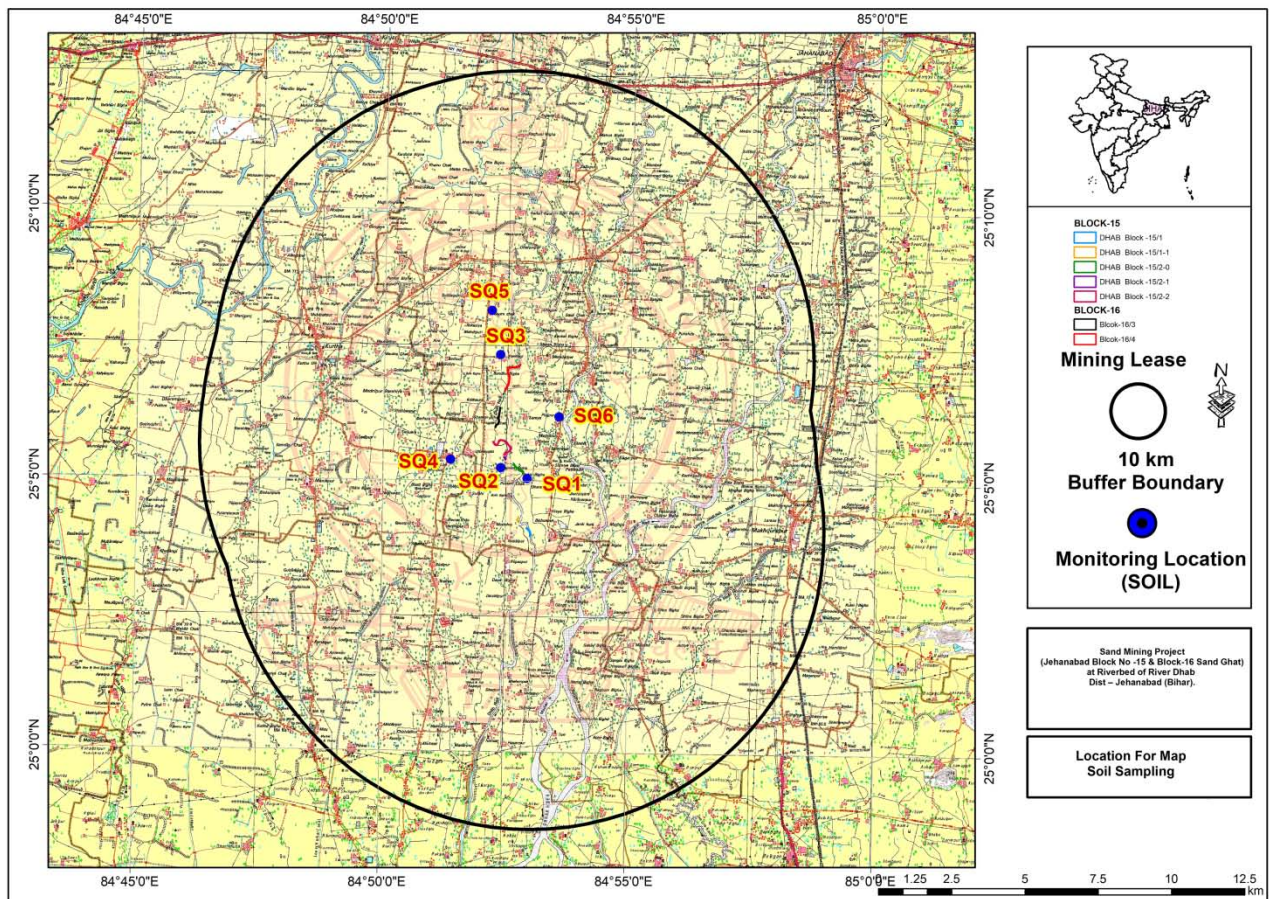


Figure 3.5, Soil Sampling Locations

Project: Sand Mining Project (Jehanabad Block No -15 Sand Ghat) at Riverbed of River Dhab at Mauja Rustamchak, Anchal – Ratani Faridpur, Dist – Jehanabad (Bihar)

Table 3.14: Physico-chemical properties of soil

S.No	Parameter	Unit	SQ-1	SQ-2	SQ-3	SQ-4	SQ-5	SQ-6
1	Texture	-	Sandy loam	Loamy Sand	Sandy Loam	Sandy Loam	Sand	Sandy Loam
	Silt	%	14.7	2.15	13.5	11.2	2.23	17.2
	clay	%	19.5	10.2	16.3	15.2	6.92	18.7
	Sand	%	65.8	87.65	70.2	73.6	90.85	64.1
2	pH	-	7.92	8.03	8.27	8.12	8.29	8.34
3	Electrical Conductivity	µmhos/cm	126	126	154	172	180	186
4	Cation exchange capacity	meq/100 gm	12.61	11.1	13.5	12.01	11.43	13.34
5	Potassium	mg/kg	68.71	51.3	63.9	74.86	71.12	63.77
6	Sodium	mg/kg	22.34	19.2	25.6	62.67	55.31	86.24
7	Calcium	mg/kg	1758.39	1359	1788	2056.61	1962.85	2292.56
8	Magnesium	mg/kg	425.67	487	516.3	152.13	144.01	160.76
9	Sodium Absorption Ratio	-	0.12	0.11	0.14	0.35	0.32	0.46
10	Water Holding Capacity	%	29.8	22.9	29.1	28.2	20.4	30.2
11	Porosity	%	39.1	48.16	42.1	40.3	50.24	38.9

Observations:

Samples collected from identified locations indicate the soil is sandy type and the pH value ranging from 7.92 to 8.34, which shows that the soil is alkaline in nature. Potassium is found to be from 51.3 mg/kg to 74.86 mg/kg.

3.5 NOISE ENVIRONMENT

The noise levels within the study area were recorded using Sound Level Meter and noise monitoring results were compared with the Ambient Noise Quality Standard notified under Environment Protection Act, 1986. The levels recorded are as stated in **Table 3.15**. The noise level monitoring locations are marked in **Figure 3.6** and shown in **Table 3.16**.

Project: Sand Mining Project (Jehanabad Block No -15 Sand Ghat) at Riverbed of River Dhab at Mauja Rustamchak, Anchal – Ratani Faridpur, Dist – Jehanabad (Bihar)

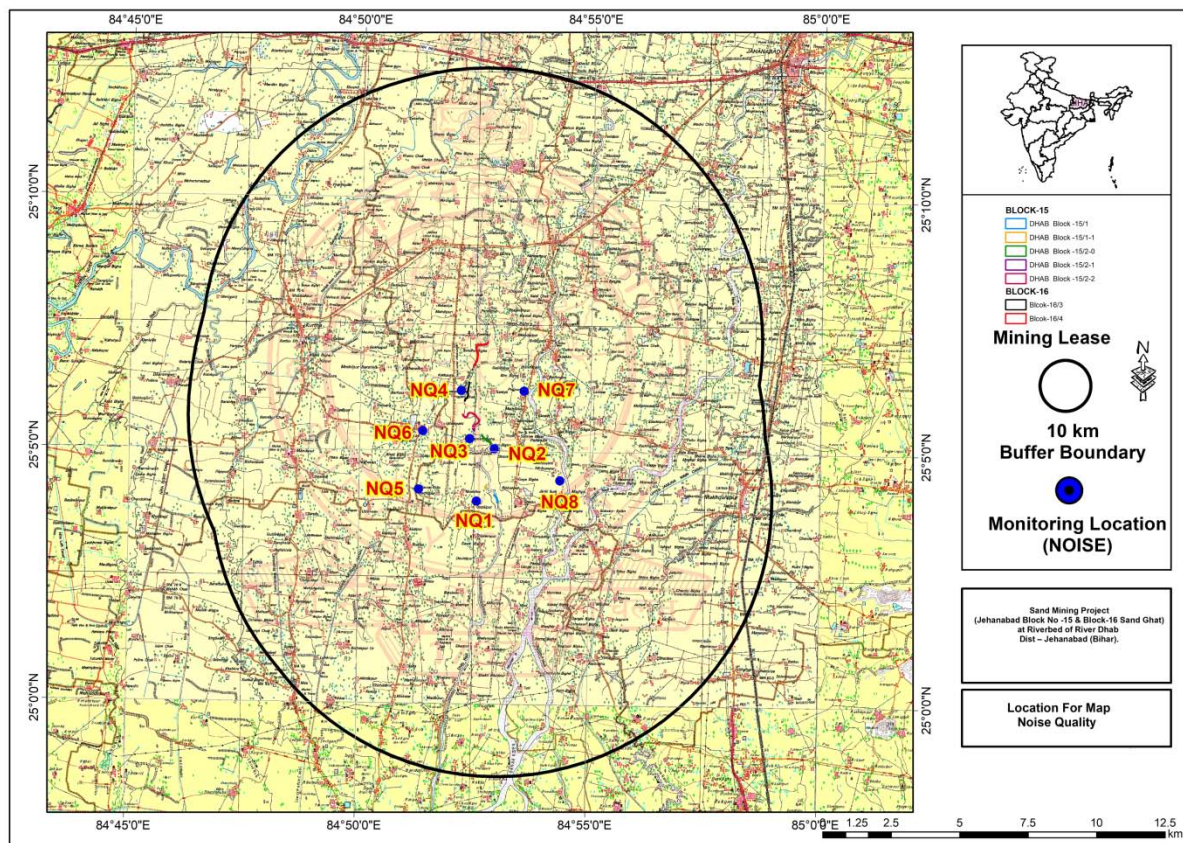


Figure 3.6 Noise Monitoring Stations

Table 3.15: Noise Quality Monitoring Stations

Noise Monitoring Locations			
NQ 1	Gopalganj (PS)	0.28 Km from Jehanabad Block15(DHAB-1)	WNW
NQ 2	Gyani Bigha (PS)	0.35 Km from Jehanabad Block15(DHAB-2-0)	SE
NQ 3	Utra Patti (PS)	0.28 Km from Jehanabad Block15(DHAB-2-1)	S
NQ 4	Kauri (PS)	0.25 Km from Jehanabad Block16 (DHAB-3)	W
NQ 5	Harnakhas	2.38 Km from Jehanabad Block15(DHAB-1-1)	W
NQ 6	Lari	2.0 Km from Jehanabad Block15(DHAB-2-2)	WSW
NQ 7	Pirijpura	2.0 Km from Jehanabad Block16 (DHAB-3)	E
NQ 8	Narayanpur	2.3 Km from Jehanabad	E

Project: Sand Mining Project (Jehanabad Block No -15 Sand Ghat) at Riverbed of River Dhab at Mauja Rustamchak, Anchal – Ratani Faridpur, Dist – Jehanabad (Bihar)

		Block15(DHAB-1)	
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Table 3.16: 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	Gopalganj (PS)	Residential Zone	55	45	51.9	40.8
2	Gyani Bigha (PS)	Residential Zone	55	45	52.4	41.3
3	Utra Patti (PS)	Silence zone	50	40	48.6	38.9
4	Kauri (PS)	Residential Zone	55	45	48.9	40.7
5	Harnakhas	Residential Zone	55	45	46.4	41.4
6	Lari	Residential Zone	55	45	49.9	43.8
7	Pirijpura	Residential Zone	55	45	50.4	40.4
8	Narayanpur	Residential Zone	55	45	51.5	42.8

Results

Noise monitoring reveals that the minimum & maximum noise levels at day time were recorded as 46.4 dB(A) to 52.4 dB(A) respectively. The minimum & maximum noise levels at night time were found to be 38.9 dB (A) & 43.8 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.

Project: Sand Mining Project (Jehanabad Block No -15 Sand Ghat) at Riverbed of River Dhab at Mauja Rustamchak, Anchal – Ratani Faridpur, Dist – Jehanabad (Bihar)

3.6 BIOLOGICAL ENVIRONMENT

3.6.1.1 Introduction

The ecological study reflects the potential of a regional ecosystem and its biological components. In India, the biological diversity of plants and animals varies from region to region on account of their diversity and density. Producers (plants), consumers (animals), and decomposers (microbes) govern the whole cycle of ecology. Plant and animals both are interdependent on each other.

The biological study is essential to understand the impact of any developmental project on the existing flora and fauna present in the study area. Hence, studies on various aspects of the ecosystem play an important role in identifying sensitive issues for undertaking appropriate action to mitigate the impact if required.

The Environment baseline data generation report in respect of flora-fauna has been prepared to assess the current ecology & biodiversity scenario of the area; and to carry out Environmental Management Plan based on the proposed project activities. The plan will identify and address the environmental and ecological conservation implications of the area. Conservation of biodiversity is essential for sustainable development.

The main objective of the ecological survey is aimed to find out the baseline status of flora and fauna (terrestrial and aquatic ecosystem) of the study area before the start of Sand Mining Project, At Block No – 15 Sand Ghat at Mauja Rustamchak, Anchal – Ratani Faridpur, Dist – Jehanabad (Bihar) on Dhab River.

3.6.2 Description of the study area

The Proposed Sand Mining Project is located on Dhab River at Block No – 15 Sand Ghat at Mauja Rustamchak, Anchal – Ratani Faridpur, Dist – Jehanabad (Bihar)

3.6.2.1 Description of Eco-sensitive zones in the Study Area (Wildlife Sanctuary/ National Parks/Animal or Elephant Corridors/ Protected Wetlands etc.)

There are no National parks, Biosphere Reserves, Wildlife corridors, Tiger/Elephant reserves (existing as well as proposed), within 5 km from the present project.

Also, areas protected under international conventions, national or local legislation for their ecological, landscape, cultural or other related value are doesn't exist in the core and buffer zone of the present project. On the other hand, the proposed alignment will cross over some riverine channel in the core zone. Adequate structure for cross drainage shall be constructed

Project: Sand Mining Project (Jehanabad Block No -15 Sand Ghat) at Riverbed of River Dhab at Mauja Rustamchak, Anchal – Ratani Faridpur, Dist – Jehanabad (Bihar)

in order to maintain the natural hydrology and protection of all forms of biota found there in all the water bodies of the area. Apart from the above, the proposed project the area will promote tourism activities due to the existing Beraila Wildlife Sanctuaries (Bird Sanctuary).

3.6.3 Drainage /Water Bodies of the Study Area

Apart from these, some seasonal (monsoon-fed) riverine streams and Nallas are also present in the study area. Few ponds are also recorded nearby the different villages mainly used for fish farming, Cattle feeding, Irrigation purpose by the villagers, etc.

Scope and Objectives of the Study

The above study aims in identifying potential impacts on flora and fauna and to suggest relevant compensatory and mitigatory measures to protect/conservate biodiversity in the likely impacted area due to the project activity. Following points to be covered under the scope of work:

- Survey of terrestrial & aquatic flora & fauna for core & buffer zone separately.
- Details of endemic species found in the study area and their IUCN status, Schedule status (as per WPA, 1972).
- Survey of the study area in terms of features like breeding & spawning grounds, habitats, flight paths, and the migratory path of the animals.
- Survey of flora covering types e.g. agriculture crop, commercial crop, plantation, natural vegetation/forest type, grass land. The endangered & endemic species of flora & fauna beside any other flora, if present are also to be identified.
- The survey has been covering a total listing of the faunal population. The survey has also covered endangered, endemic, migratory & detail of aquatic fauna.
- The assessment of potential damage to terrestrial & aquatic flora and fauna. The impact should be categorized as primary & secondary, temporary and long term, unavoidable & risk transboundary impacts, possible irreversible change.

3.6.4 Methodology/ Data Collection

A primary field survey was carried out within a 10 km radius of the proposed project in pre-monsoon period (March-May 2023). Both terrestrial and aquatic ecosystems have been studied to understand the biological environment. Secondary data were collected from

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authentic sources like the Forests Department, Fisheries Department, Agriculture Department of Dhab , and available published literature.

3.6.5 Flora (Aquatic and Terrestrial)

For the collection of data for aquatic flora, the methodology prescribed in the standard book of Adoni (1985), NEERI (1998), and APHA (2015) has been adopted. A total of 05 sampling sites were selected for the collection of samples to analyze the aquatic flora.

On the other hand, for the terrestrial data, community analysis was carried out during the summer season. For the collection of terrestrial data, a total of 05 sampling points were selected. At every sampling site, quadrates of 10m X 10m (100 sq.m.) size were randomly laid to study tree species. The circumference of all the adult individuals [(circumference at breast height (CBH)] was measured with Freeman's tape. The study of communities was carried out by using qualitative characteristics, and quantitative characteristics. Qualitative characteristic mainly involved presence/absence of the species, genera, and family. This showed the community structures, composition and other characteristic can be readily described by visual observation without actual measurements. The quantitative analysis involved the structure and composition of vegetation across vegetation types and compared in terms of frequency, density, abundance, and basal area of tree species.

3.6.6 Fauna (Aquatic and Terrestrial)

For the collection of data for aquatic fauna, the methodology prescribed in the standard book of Adoni (1985), NEERI (1998), and APHA (2015) has been adopted. A total of 05 sampling points were selected for the collection of samples to identify the aquatic fauna.

On the other hand, for the terrestrial data, the assessment of fauna was done by an extensive field survey in the area at 05 locations. During the survey, the Line Transect method was used for the study of mammals and Transact & Patch sampling were used for Amphibians, visual encountered methods was used for reptiles and butterflies. The presence of wildlife was also confirmed from the animal calls, footmarks, excreta, and from the local inhabitants depending on the animal sightings and the frequency of their visits in the project area which was later confirmed from the different government offices like the forest department or wildlife department, etc.

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Observations of birds were made during a walk-through in the chosen transect for sighting birds. The number of birds observed in each sampling location was listed. Birds were noted and identified with the help of binocular and standard field identification guides.

3.6.7 Sampling Sites

A total of 05 sampling sites (TS-1 to TS-5) were selected for the terrestrial vegetation, avian fauna, and other terrestrial animals like reptiles, mammals, etc. For the collection of samples and data of aquatic flora and fauna, 05 separate sampling sites (AS-1 to AS-5) were also selected at different locations in the study area.

3.6.8 Flora of the Study Area

The core zone of the proposed project area doesn't have any major natural forest land.

A major part of the core and buffer zone of the project is agricultural land having some major vegetation in the form of agro forestry. Vegetation patterns in villages and surrounding areas are slightly different from the rest of the areas in the Jamui district.

The common species grown near the villages are mostly edible, fruits bearing or useful plants. Purposely planted tree patches (mostly fruit-bearing) are available nearby several villages in the study area. The most dominant tree species in the study area are, *Ficus bengalensis* (Bargad) *Azadirachta indica* (Neem), *Aegle marmelos* (Bel), *Emblica officinalis* (Amla), *Syzygiumcumini* (Jamun), *Dalbergia sissoo* (Sisam), , *Musa paradisiacal* (Kela), *Cassia siamea* (Kasod/Siris), *Litchi chinensis* (Litchi), *Mangifera indica* (Aam) and in case of shrubs *Antigonum leptopus*, *Ricinus communis*, *Lantana camara*, *Jatropha gossipifolia* and *Cassia auriculata* etc. The most dominant species in the study area of both the district was *Mangifera indica* (Aam) and its different varieties.

3.6.9 Flora of Core zone

3.6.9.1 Terrestrial Flora of Core zone (Natural vegetation etc.).

There is no flora found in the core zone

3.6.9.2 Agricultural Crops/ Commercial Crops of the Core zone and Buffer Zone

Details of the agricultural vegetation and commercial crops were collected from the 05 selected sites of the core (Jamui district). These crops are similar to the crops of buffer zone also. So, the same information is applicable for the core and buffer zone.

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Table 3.17: List of Crops seasonally planted by respective farmers in the Core and Buffer Zone

S.No.	Botanical Name	Local/Trade Name	Family Name
1	<i>Zey mays</i>	Makkha/Maize	Poaceae
2	<i>Triticum aestivum</i>	Wheat	
3	<i>Oryza sativa</i>	Paddy	
4	<i>Cicer arietinum</i>	Channa	Fabacea
5	<i>Coriander sativum</i>	Dhaniya	Apiaceae
6	<i>Abelmoschus esculentus</i>	Bhendi	Amaranthacea
7	<i>Mamordica charanta</i>	Karela	Cucurbiataceae
8	<i>Capsicum annum</i>	Mirchi	Solanaceae
9	<i>Lycopersicon lycopersicum</i>	Tomato	
10	<i>Solanum melongena</i>	Brinjal	
11	<i>Capsicum annuum</i>	Mirchi	
12	<i>Solanum tuberosum</i>	Potato	
13	<i>Allium cepa</i>	Onian	Amaryllidaceae
14	<i>Cajanus cajan</i>	Pigeon pea	Fabaceae
15	<i>Carica papaya</i>	Papaya	Caricaceae
16	<i>Okra</i>	Ladyfinger/ Bhindi	Malvaceae
17	<i>Lagenaria siceraria</i>	Bottle gourd/ Lauki	Cucurbitaceae
Source: Present Survey Data Supported by District Agriculture Department, Jamui			

3.6.10 Flora of Buffer zone

3.6.10.1 Terrestrial Flora of Buffer zone (Natural vegetation/Commercial vegetation).

During the present survey Tree herbs and shrubs species were recorded from the buffer zone of the present study area. The below-mentioned vegetation details have been collected from the Core as well as Buffer zone of the present study area. All the details have been furnished based on the field survey at 09 different locations and data supported by the Department of Forest, Jamui district of Bihar. The details of vegetation of the buffer zone is given in Table 3.18.

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Table 3.18: List of Trees, Shrubs, Herbs and Grasses observed in Buffer Zone

S.No.	Botanical Name	Common/ Hindi Name	Name of family
	Trees		
1	<i>Acacia nilotica</i>	Babool	Mimosaceae
2	<i>Acacia nilotica</i>	Desi babool	Fabaceae
3	<i>Aegle marmelos</i>	Bel	Rutaceae
4	<i>Ailanthus excels</i>	Adusa	Simaroubaceae
5	<i>Albizzia amara</i>	Siris	Mimosoideae
6	<i>Albizzia lebbeck</i>	Sirish	Mimosaceae
7	<i>Alstonia scholaris</i>	Saptaparni	Apocynaceae
8	<i>Anthocephalus cadamba</i>	Kadamb	Rubiaceae
9	<i>Artocarpus heterophyllus</i>	Jack fruit	Moraceae
10	<i>Azadirachta indica</i>	Neem	Meliaceae
11	<i>Bauhinia variegata L.</i>	Kachnar	Leguminosae
12	<i>Bombax ceiba</i>	Semal	Malvaceae
13	<i>Bombax malabaricum</i>	Semal tree	Malvaceae
14	<i>Butea monosperma</i>	Palas	Leguminosae
15	<i>Cassia fistula</i>	Bahawa	Caesalpinaceae
16	<i>Cassia siamea</i>	Chirkundi	Mimosaceae
17	<i>Dalbergia latifolia</i>	Shisam	Leguminosae
18	<i>Dalbergia sissoo</i>	Shisam	Leguminosae
19	<i>Delonix regia</i>	Gulmohar	Fabaceae
20	<i>Dendrocalamus strictus</i>	Bamboo	Poaceae
21	<i>Eucalyptus globules</i>	Nilgiri	Myrtaceae
22	<i>Ficus benghalensis</i>	Bargad	Moraceae
23	<i>Ficus religiosa</i>	Pipal	Moraceae
24	<i>Madhuca longifolia</i>	Mohua tree	Sapotaceae
25	<i>Magnifera indica</i>	Aam	Anacardiaceae
26	<i>Melia azedarach</i>	Bukkam Neem	Meliaceae
27	<i>Moringa olerifera</i>	Munga	Moringanaceae
28	<i>Musa paradisiacal</i>	Banana	Musaceae

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29	<i>Nerium oleander</i>	Kaner	Apocynaceae
30	<i>Phyllanthus emblica</i>	Awla	Euphorbiaceae
31	<i>Pisidium guava</i>	Guava	Myrtaceae
32	<i>Pongamia pinnata</i>	Karanj	Leguminosae
33	<i>Prosopis juliflora</i>	Vilayati babool	Fabaceae
34	<i>Punica malus</i>	Anar	Lythraceae
35	<i>Shorea robusta</i>	Sal	Depterocarpaceae
36	<i>Syzygium cumini</i>	Jamun	Myrtaceae
37	<i>Tectona grandis</i>	Sagwan	Verbenaceae
38	<i>Terminalia arjuna</i>	Arjun	Combretaceae
39	<i>Zizyphus jujube</i>	Ber	Rhamnaceae
40	<i>Zizyphus mauritiana</i>	Ber	Rhamnaceae
Shrub & Herbs			
41	<i>Acanthospermum hispidum</i>	Kanti	Asteraceae
42	<i>Acheranthus aspera</i>	Aghada	Amaranthaceae
43	<i>Antigonum leptopus</i>	coral vine	eaecanogyloP
44	<i>Argemone mexicana</i>	Pila dhtura	Papaveraceae
45	<i>Chenopodium album</i>	manure weed	Amaranthaceae
46	<i>cleome viscosa</i>	Pivali tilval	Cleomaceae
47	<i>Dalura metel</i>	Dhotra	Solanaceae
48	<i>Echinops echinatus</i>	Unthkantali	Asteraceae
49	<i>Ervatamia divaricata</i>	Chandani	Apocynaceae
50	<i>Euphorbia hirta</i>	Mothi dudhi	Euphorbiaceae
51	<i>Ipomoea carnea</i>	Besharam	Convolvulaceae
52	<i>Jatropha gossipifolia</i>	cotton-leaf	Euphorbiaceae
53	<i>Lantana camara</i>	Ghaneri	Verbenaceae
54	<i>Mimosa pudica</i>	Chui Mui	Mimosaceae
55	<i>Ocimum sanctum</i>	Tulsi	Labiatae
56	<i>Parthenium hysterophorus</i>	Gajar grass	Asteraceae
57	<i>Ricinus communis</i>	Arand	Euphorbiaceae
58	<i>Tridax procumbens</i>	Kambarmodi	Asteraceae
59	<i>Xanthium strumarium</i>	Chota Dhatura	Asteraceae

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Grasses			
60	<i>Apluda mutica</i>	Mauntian grass	Poaceae
61	<i>Apluda mutica</i>	Banjura grass	Poaceae
62	<i>Commelina benghalensis</i>	Bokna	Commelinaceae
63	<i>Cynodon dactylon</i>	Doob	Poaceae
64	<i>DactylSeptemnerenum aegyptium</i>	Crow foot grass	Poaceae
65	<i>Pennisetum purpureum</i>	Elephant grass	Poaceae
66	<i>Saccharum spontaneum</i>	kans	Poaceae
Climbers			
67	<i>Abrus precatorius</i>	Gunja	Fabaceae
68	<i>Antigonon leptopus</i>	Anantalata	Polygonaceae
69	<i>Bougainvillea glabra</i>	Booganbel	Nyctaginaceae
70	<i>Celastrus paniculata</i>	Kujari	Celastraceae
71	<i>Cissampelos pareira</i>	Khariya lata	Menispermaceae
72	<i>Clitoria ternatea</i>	Blue pea	Fabaceae
73	<i>Cuscuta reflexa</i>	Amarbel	Convolvulaceae
74	<i>Cuscuta reflexa</i>	Amar bel	Convolvulaceae
75	<i>Hemidesmus indicus</i>	Anantamul	Apocynaceae
76	<i>Ipomoea cairica</i>	Neeli Bel	Convolvulaceae
77	<i>Tilospora cordifolia</i>	Giloy	Menispermaceae
Source: Primary data of P&M Solution, Noida and data supported by the Department of Forest, Jamui district of Bihar.			

3.6.10.2 Agricultural vegetation/ Commercial vegetation of the Buffer zone.

The variety of Crops and cropping patterns in the core and the buffer zone was the same in the study area. Vegetation details of the buffer zone were collected from 05 selected sites (TS-1 to TS-05)

3.6.11 Fauna of the Study Area

Proposed alignment passing through the rural and purely in the agricultural field. At some places, it will cross from adjacent to some villages in the study area. The study area is devoid of any natural forest, so, major wildlife animals are rarely found in the area. Only some

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moving animals were observed. Domesticated animals mainly constitute the faunal population within the project area.

The assessment of fauna was done on the bases of secondary data collected from different government offices like the forest department, wildlife department, etc. The presence of wildlife was also confirmed by the local inhabitants depending on the animal sightings and the frequency of their visits in the project area.

During the present study period, a large number of local birds are noticed in the buffer zone of the study area. But, there are no bird habitats like nesting, breeding, and foraging patterns are noticed in the core zone.

3.6.12 Fauna of the Core Zone

3.6.12.1 Terrestrial fauna of core zone (Mammals/Reptiles/amphibians/birds/insects etc.).

The domesticated animals like Goat (*Capra aegagrus*); Buffalo (*Bubalus bubalis*); Cow (*Bos primigenius*); Horse (*Equus caballus*); Ass (*Equus hemionus*) and Dog (*Canis lupus familiaris*) were observed moving in different parts of the study area (including core and buffer zone), especially nearby town and villages. Other mammals and reptiles found in the study area are listed in Table 3.19.

Table 3.19: List of Mammals/Reptiles/Amphibians/Birds recorded from the Core Zone

S. No.	Common Name	Scientific Name	Family	Schedule status (as per WPA- 1972)	IUCN status
Mammals					
1	Five striped palm squirrel	<i>Funambulus pennanti</i>	Sciuridae	IV	LC
2	Indian Field Mouse	<i>Mus booduga</i>	Muridae	V	LC
3	Common House Rat	<i>Rattus rattus</i>	Muridae	V	LC
4	Bandicoot Rat	<i>Bandicotabengalensis</i>	Muridae	V	LC
Reptiles & Amphibians					
5	Garden lizard	<i>Calotes versicolor</i>	Agamidae	IV	NE
6	Common skink	<i>Eutropis carinata</i>	Scincidae	IV	LC
7	King cobra	<i>Ophiophagus hannah</i>	Elapidae	II	LC

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8	Cobra	Naja naja	Elapidae	II	LC
9	Garden lizard	Calotes versicolor	Agamidae	IV	NE
Bird Species					
1	<i>Acridotheres tristis</i>	Myna	Sturnidae	IV	LC
2	<i>Acridotheres tristis</i>	Common myna	Sturnidae	IV	LC
3	<i>Ardeola grayii</i>	Indian pond heron	Ardeidae	IV	LC
4	<i>Bubulcus ibis</i>	Cattle egret	Ardeidae	IV	LC
5	<i>Columba livia</i>	Pigeon	Columbidae	IV	LC
6	<i>Corvus splendens</i>	Crow	Corvidae	V	LC
7	<i>Milvus migrans</i>	Black Kite	Accipitridae	IV	LC
8	<i>Passer domesticus</i>	House sparrow	Passeridae	IV	LC
9	<i>Phalacrocorax niger</i>	Little cormorant	Phalacrocoracidae	IV	LC
10	<i>Pycnonotus cafer</i>	Red-vented bulbul	Pycnonotidae	IV	LC
11	<i>Saxicoloides fulicatus</i>	Indian robin	Psittaculidae	IV	LC
12	<i>Turdoides caudate</i>	Common babbler	Leiotherichidae	IV	LC
13	<i>Upupa epops</i>	Common hoopoe	Upupidae	IV	LC
14	<i>Vanellus indicus</i>	Red-wattled lapwing	Charadriidae	IV	LC
IUCN Status =LC: Least Concern, NE: Not Evaluated.					
Source: Primary Survey data of P&M Solution, Noida and the data supported by Department of Forest, Jamui district of Bihar					

Table 3.20: Butterflies observed in the Core zone

S. No.	Common Name	Scientific Name	Family	IUCN Status
1.	Plain Tiger	<i>Danaus chrysippus</i>	Nymphalidae	LC
2.	Common emigrant	<i>Catopsilia pomona</i>	Pieridae	LC
3.	Common crow	<i>Euploea core</i>	Nymphalidae	LC
4.	Small grass yellow	<i>Eurema brigitta</i>	Pieridae	LC
Source: Primary Survey data of P&M Solution, Noida and the data supported by Department of Forest, Jamui district of Bihar				

3.6.12.4 Fauna of Buffer zone



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To prepare a detailed report on the status of faunal biodiversity of the present study area (1 km buffer) of Jamui district of Bihar and to assess the impacts due to digging/ leveling of alignment route/ construction of bridge/ operational activity which evolves suitable mitigation measures to protect & conserve biodiversity following components were studied: terrestrial biodiversity, wildlife survey (diversity), habitat study (feeding, breeding, roosting areas), distribution of birds, rare & endangered species of the study area.

The fauna of the study area (Core and Buffer zone) vary upon the local topography and different types of habitats. The fauna of the study area has been categorized into two categories based on their habitat, i.e.

- (i) Aquatic fauna and
- (ii) Terrestrial fauna.

During the present survey, there are some seasonal, perennial and private water body was observed along with the proposed alignment, which will be affected due to the present project activities. The alignment of the project will cross a few seasonal and perennial streams.

3.6.12.6 Terrestrial Fauna of Buffer zone (Mammals/Reptiles/Amphibians/Birds/ Insects etc.)

The major part of the study area lies under agricultural fields and barren land which restricts the wildlife habitat significantly. There is neither any wildlife sensitive area nor any corridor for the movement of wildlife in the study area. A list of the animals of the study area has been prepared on the basis of the survey and also inquire from the local people. The animals, thus recorded were cross-checked with Wildlife (Protection) Act, 1972 for their schedule status. Faunal details of the study area are given in Tables 3.25 to 3.27.

i. Mammals and Reptiles/ Amphibians

The domesticated animals like Goat (*Capra aegagrus*); Buffalo (*Bubalus bubalis*); Cow (*Bos primigenius*); Horse (*Equus caballus*); Ass (*Equus hemionus*) and Dog (*Canis lupus familiaris*) were observed moving in different parts of the study area, especially nearby town and villages. Other mammals and reptiles found in the study area are listed in Table 3.21.

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Table 3.21: List Mammals, Reptiles and Amphibians recorded from the Buffer Zone

S. No.	Common Name	Scientific Name	Family	Status as per WPA-1972	IUCN status
Mammals					
1	<i>Bandicota bengalensis</i>	Bandicoot Rat	Sciuridae	IV	LC
2	<i>Canis aurius</i>	Jackal	Pteropodidae	V	LC
3	<i>Fellis chaus</i>	Jungle cat	Soricidae	IV	LC
4	<i>Funambulus palmarum</i>	Three-striped Squirrel	Suidae	III	LC
5	<i>Funambulus pennanti</i>	Five striped palm squirrel	Hyaenidae	III	LC
6	<i>Herpestes edwardsi</i>	Indian Grey Mongoose	Canidae	II	LC
7	<i>Hyaena hyaena</i>	Stripped hyena	Leporidae	V	LC
8	<i>Lepus nigricollis</i>	Indian Hare	Canidae	II	LC
9	<i>Mus booduga</i>	Indian Field Mouse	Sciuridae	IV	LC
10	<i>Presbytis entellus</i>	Common langur	Cercopithecidae	II	LC
11	<i>Pteropus giganteus</i>	Indian Flying Fox	Pteropodidae	V	LC
12	<i>Suncus murinus</i>	Grey musk Shrew	Muridae	V	LC
13	<i>Sus scrofa</i>	Wild Boar	Canidae	III	LC
14	<i>Vulpes bengalensis</i>	Indian fox	Felidae	II	LC
Reptiles and Amphibians					
1	<i>Bufo melanostictus</i>	Common toad	Bufonidae	IV	LC
2	<i>Bungarus caeruleus</i>	Krait	Elapidae	IV	NE
3	<i>Calotes versicolor</i>	Garden lizard	Agamidae	IV	NE
4	<i>Crotalus sp.</i>	Pit viper	Viperidae	II	LC
5	<i>Euphlyctis hexadactyla</i>	Common frog	Dicroglossidae	IV	LC
6	<i>Eutropis carinata</i>	Common skink	Scincidae	IV	LC
7	<i>Naja naja</i>	Cobra	Elapidae	II	LC

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8	Ophiophagus hannah	King cobra	Elapidae	II	LC
9	Ptyas mucosa	Rat Snake	Colubridae	II	NE
10	Rana temporaria	Common frog	Ranidae	IV	LC
11	Testudo graeca	Common Tortoise	Testudinidae	IV	VU
12	Varanus sp.	Monitor lizzard	Varanidae	II	LC

IUCN Status =LC: Least Concern, **VU:** Vulnerable. **NT:** Near Threatened, **NE:** Not Evaluated, **Source:** Primary Survey data of P&M solution, Noida and the data supported by Department of Forest, Jamui District.

ii. Avian Fauna

Table 3.22: Avian Fauna observed from the study area (01 KM Buffer area)

S.No	Scientific Name	Common Name	Family	Schedule Status (WPA-1972)	IUCN Status
1	<i>Acridotheres tristis</i>	Myna	Sturnidae	IV	LC
2	<i>Acridotheres tristis</i>	Common myna	Sturnidae	IV	LC
3	<i>Alcedo atthis</i>	Small blue kingfisher	Alcedinidae	IV	LC
4	<i>Amandava amandava</i>	Red munia	Estrildidae	IV	LC
5	<i>Amaurornis phoenicurus</i>	White-breasted waterhen	Rallidae	IV	LC
6	<i>Ardea cinerea</i>	Grey heron	Ardeidae	IV	LC
7	<i>Ardea purpurea</i>	Purple heron	Ardeidae	IV	LC
8	<i>Ardeola grayii</i>	Indian pond heron	Ardeidae	IV	LC
9	<i>Athene brama</i>	Spotted Owlet	Strigidae	IV	LC
10	<i>Bubulcus ibis</i>	Cattle egret	Ardeidae	IV	LC
11	<i>Butorides striatus</i>	Striated heron	Ardeidae	IV	LC
12	<i>Casmerodius albus</i>	Great egret	Ardeidae	IV	LC
13	<i>Centropus sinensis</i>	Crow pheasant	Cuculidae	IV	LC
14	<i>Ceryle rudis</i>	Pied kingfisher	Alcedinidae	IV	LC
15	<i>Cinnyris asiaticus</i>	Purple Sunbird	Psittaculidae	IV	LC

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16	<i>Columba livia</i>	Pigeon	Columbidae	IV	LC
17	<i>Corvus macrorhynchos</i>	Jungle crow	Corvidae	IV	LC
18	<i>Corvus splendens</i>	Crow	Corvidae	V	LC
19	<i>Dicrurus adsimilis</i>	Black drongo	Dicruridae	IV	LC
20	<i>Egretta garzetta</i>	Little egret	Ardeidae	IV	LC
21	<i>Francolinus pondicerianus</i>	Titar	Phasianidae	IV	LC
22	<i>Gallinule chloropus</i>	Common moorhen	Rallidae	IV	LC
23	<i>Gallus gallus</i>	Jungle hen	Phasianidae	IV	LC
24	<i>Passer domesticus</i>	House sparrow	Passeridae	IV	LC
25	<i>Pluvialis fulva</i>	Pacific golden plover	Charadriidae	IV	LC
26	<i>Pseudibis papillosa</i>	Red-naped ibis	Threskiornithidae	IV	LC
27	<i>Psittacula krameri</i>	Rose ringed Parakeet	Psittacidae	IV	LC
28	<i>Pycnonotus cafer</i>	Red-vented bulbul	Pycnonotidae	IV	LC
29	<i>Sarkidiornis melanotos</i>	Knob-billed duck	Anatidae	IV	LC
30	<i>Saxicoloides fulicatus</i>	Indian robin	Psittaculidae	IV	LC
31	<i>Spilopelia senegalensis</i>	Little brown dove	Columbidae	IV	LC
32	<i>Sturnia pagodarum</i>	Brahminy Starling	Sturnidae	IV	LC
33	<i>Tringa tetanus</i>	Common redshank	Charadriidae	IV	LC
34	<i>Turdoides caudate</i>	Common babbler	Leiothrichidae	IV	LC
35	<i>Upupa epops</i>	Common hoopoe	Upupidae	IV	LC

IUCN Status =LC: Least Concern, **VU:** Vulnerable.

Source: Primary Survey data of P&M Solution and the data supported by Department of Forest, Jamui, Bihar.

iii. Butter Flies

Table 3.23: Butterflies observed from the Buffer zone of the study area

S.No.	Scientific Name	Common Name	Family	IUCN Status
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1	<i>Catopsilia pomona</i>	Common emigrant	Pieridae	LC
2	<i>Chlosyne lacinia</i>	Sunflower/Bordered Patch	Nymphalidae	LC
3	<i>Crocothemis erythraea</i>	Scarlet dragonfly	Libellulidae	LC
4	<i>Danaus chrysippus</i>	Plain Tiger	Nymphalidae	LC
5	<i>Danaus genutia</i>	Stripped Tiger	Nymphalidae	LC
6	<i>Euploea core</i>	Common crow	Nymphalidae	LC
7	<i>Eurema brigitta</i>	Small grass yellow	Pieridae	LC

Source: Primary Survey data of P&M Solution and the data supported by Department of Forest, Jamui, Bihar.

ii. Macro-invertebrates (Insects/Benthos)

Macro-invertebrates are commonly found in all types of aquatic habitats such as streams, rivers, wetlands, lakes, and ponds. The term macro-invertebrate is used for those animals that have no backbone and can be seen with the naked eye. These animals generally include insects, crustaceans, mollusks, and annelids. They are significant within the food chain as larger animals such as fish and birds rely on them as a food source. None of the macro-invertebrate species have been observed under the of Rare, Endangered, and threatened category. Various macro-invertebrate species were collected and identified from the present study area and listed in Table.

Table 3.24: Macro-invertebrates recorded from the Core and Buffer zone

Insecta											
1	<i>Baetis nymph</i>		+	+	+	+	+	+	+	NA	NE
2	<i>Caenid mayfly</i>	+			+		+			NA	NE
3	<i>Chironomus plumosus</i>	+	+	+	+	+	+	+	+	NA	NE
4	<i>Chironomus sp.</i>	+	+	+	+	+	+	+	+	NA	NE
5	<i>Damsel flies nymphs</i>	+			+		+			NA	NE
6	<i>Dragon flies nymphs</i>	+		+	+		+	+	+	NA	NE
7	<i>Ephydra larvae</i>	+	+	+	+	+	+			NA	NE
8	<i>Hirudineria glossophonia</i>		+			+	+	+	+	NA	NE
9	<i>Hirudineria sp.</i>	+	+	+			+	+	+	NA	NE

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10	<i>Limnodrillus hoffmeisteri</i>	+					+			NA	NE
11	<i>Mayflies nymphs</i>		+		+		+	+	+	NA	NE
12	<i>Mosquitos larvae</i>	+	+	+	+	+	+	+	+	NA	NE
13	<i>Ranatra elongata</i>	+	+			+	+	+	+	NA	NE
14	<i>Ranatra filliformis</i>	+		+	+	+	+	+	+	NA	NE
15	<i>Stone flies nymphs</i>			+	+		+			NA	NE
16	<i>Tubifex tubifex</i>	+	+	+		+	+	+	+	NA	NE
	Total	12	10	10	11	9	16	11	11		
	Mollusca										
1	<i>Bellamyia bengalensis</i>	+		+	+	+	+	+	+	NA	NE
2	<i>Corbicula fluminalis</i>		+	+	+	+	+	+	+	NA	NE
3	<i>Corbicula sp.</i>	+	+	+	+	+	+			NA	NE
4	<i>Gyraulus convexciculus</i>	+		+			+	+	+	NA	NE
5	<i>Gyraulus sp.</i>	+	+		+	+	+		+	NA	NE
6	<i>Lymnaea acuminata</i>	+		+		+		+	+	NA	NE
7	<i>Lymnaea sp.</i>	+	+	+	+	+	+	+		NA	NE
8	<i>Melanoides lineatus</i>		+	+			+		+	NA	NE
9	<i>Pila globosa (apple snail)</i>		+		+		+		+	NA	NE
10	<i>Pila sp.</i>	+		+	+	+	+	+	+	NA	NE
11	<i>Thira sp.</i>	+	+	+			+	+	+	NA	NE
12	<i>Thira tuberculata</i>	+	+	+	+		+		+	NA	NE
13	<i>Unio tigridis</i>			+	+		+	+	+	NA	NE
14	<i>Vivipara bengalensis</i>			+	+	+	+	+		NA	NE
	Total	9	8	12	10	8	13	9	11		
	Source: Primary Survey data of P&M Solution, Noida.										

iii. Amphibians

Amphibians and reptiles are commonly found at places along the margin of aquatic and terrestrial systems. The presence of water bodies like rivers, streams, etc. in the study area are providing shelter to many amphibian species. Some of the commonly reported amphibian species in the present study areas are given in Table. None of the Amphibians and

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Reptiles have been observed under the Rare, Endangered, and threatened category. Also, none of them are under the Schedule-I category as per Wildlife Protection Act, 1972.

Table 3.25: Amphibians and Reptiles recorded from the Core and Buffer zone

S. No	English Name	Scientific Name	S-1	S-2	S-3	S-4	S-5	S-6	S-7	S-8	Schedule Status (WPA,1972)	IUCN Status
1	<i>Agama tuberculatus</i>	Rock Lizard	+	+	+	+	+	+	+	+	IV	LC
2	<i>Bungarus caeruleus</i>	Common Krait	+	+	+	+	+	+	+	+	IV	LC
3	<i>Bungarus fasciatus</i>	Banded Krait	+	+	+	+	+	+	+	+	IV	LC
4	<i>Hoplobatrachus tigerinus</i>	(Indian bullfrog).	+	+	+	+	+	+	+	+	IV	LC
5	<i>Chamelion calcarata</i>	Chameleon	+	+	+	+	+	+	+	+	II	LC
6	<i>Naja naja</i>	Indian Cobra	+	+	+	+	+	+	+	+	II	LC

Note: DD=Data Deficient, LC=Least Concern, NE=Not Evaluated.

Source: Primary Survey data of P&M Solution, Noida and Data supported by data of Department of Forest, Jamuidistrict, Bihar.

3.6.13 Observations of Present Study (Flora & Fauna)

3.6.13.1 Flora

Most of the parts of the present study area (Jamui district) are agricultural fields, village land. The forest of the district comprises tropical deciduous vegetation due to high temperature and humidity. No any rare, endangered and threatened floral species have been observed from the core and buffer zone of the present study.

3.6.13.2 Fauna

There are no National parks, Sanctuaries, Biosphere Reserves, Wildlife corridors, Tiger/Elephant reserves (existing as well as proposed), within 1 km buffer area as well as 5 km of the project area. No any endangered and threatened faunal species were observed from the core and buffer zone of the present study area. On the other hand, there is no any

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Schedule-I fauna was recorded as per the Wildlife (Protection) Act, 1972. However, care will be taken during the developmental activities if found any.

3.7 Socio-Economic Environment

Demography & Socio-Economic Features

Demography

Introduction

The proposed sand mine project is situated at Riverbed of Dhab River (Jehanabad Block No-15 Sand Ghat) over an area of 6.72 ha. Proposed Sand Mining site is falling near at Mauja - Rustamchak, Anchal - Ratani Faridpur, District - Jehanabad, Bihar.

The state government has given consent for Sand mining to Sri Alok Kumar Singh S/o Sri Jay Singh, Address: Village - Viraha, P.O. - Dhawal Bigha, Thana - Hulashganj, Jehanabad, Bihar.

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.

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 Jehanabad and Gaya of Bihar state was compiled and placed in the form of tabulation and graphical representation.

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Demography of the Jehanabad District

As per the census records 2011, the total population of the District is 1125313 persons consisting of 5, 85,582 males and 5, 39,731 females respectively.

The decadal variation of the district has been seen at 21.5% during the decade 2001-2011. The Urban area of the district has attained a thin lower decadal variation of 21.1% as compared to that of rural area at 21.5%. As per 2011 census sex ratio of the district is 922 females per 1,000 males. The same for rural and urban areas of the district stands at 926 and 893 respectively. It is observed from the table that sex ratio of population in the age group 0-6, which works out to 922, is equal to the sex ratio of the total population (922) in the district of Jehanabad. 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 19.8 and 0.1% respectively. For rural areas, the respective proportion of scheduled castes and scheduled tribes to the total population of the district comes out to be 20.5 and 0.1% respectively.

As per the census records 2011, it is observed that the district has registered a literacy rate of 66.8%. As regards to rural and urban areas of the district the literacy rates have been registered 65.5% and 76.3% respectively. As per the census records 2011, the work participation rate (WPR) in the district is 22.4% for main workers and 10.1% for marginal workers. Proportion of non-workers in the district is 67.5%.

Religions

The population of the Jehanabad district during 2011 was 1,125,313. Hindus constitute 92.9% (1,045,117 persons) of the population in the district followed by Muslims 6.7% (75,742 persons). All other four major religious communities have almost negligible percentages.

Mother Tongue

Spoken language, which is medium of conversation, is an important attribute of population. As per the census, 2011 of Jehanabad district, Hindi, the main mother tongue spoken by 92.8% of the population. The corresponding percentage for the Urdu, the second most prominent language spoken in Jehanabad district, was 6.4%. Speakers of other Scheduled languages were very thin in number than the two described above.

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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 Jehanabad and Gaya 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 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 212 villages and one town named Makhdumpur (NP)/19 Wards lying under Jehanabad and Gaya Districts in Bihar state. Overall study area villages are falling mainly under Six(06) no of tehsils namely Ratni Faridpur (58 villages), Jehanabad (27 villages), Kako (02 villages), Makhdumpur (72 villages and one town), Tikari (43 villages) and Belaganj (10 villages) of Jehanabad and Gaya districts in Bihar state. About ten (10) villages were found as uninhabited villages in the 10km radial study zone.

Population Distribution (10 km)

As per the Census Records 2011, the total population of 10 km study zone was recorded as 387702 persons of 213 villages/towns of 2 Districts named Jehanabad and Gaya in Bihar state. Male-female wise total population was recorded as 201747 males (52.0%) and 185955 (48.0%) females respectively. Total number of 'Households' was observed as 61719 in the 10 km radius study zone. Scheduled Caste ('SC') population was observed as 80284 persons consisting of 41272 males (51.4%) and 39012 females (48.6%) in the 10km radial study zone. Scheduled Tribes ('ST') population was also observed as 362 persons (0.1%) consisting of 185 males (51.0%) and 177 females (49.0%) in the 10 km study

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zone. The child population (0-6 Age) of the study area is recorded as 68445(17.7%) and comprising of 35506 (52.0%)males&32939 (48.0%) females respectively.

Rural and Urban population distribution is shown in **Table 3.31, Figure 3.7 & 3.8** given as follows;

Table 3.31: 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	56701	355708	185029	170679	73207	37593	35614	314	159	155
%age	91.9%	91.7%	91.7%	91.8%	91.2%	91.1%	91.3%	86.7%	86.0%	87.6%
Urban	5018	31994	16718	15276	7077	3679	3398	48	26	22
%age	8.1%	8.3%	8.3%	8.2%	8.8%	8.9%	8.7%	13.3%	14.0%	12.4%
Total (10km)	61719	387702	201747	185955	80284	41272	39012	362	185	177

Source-Census of India, 2011

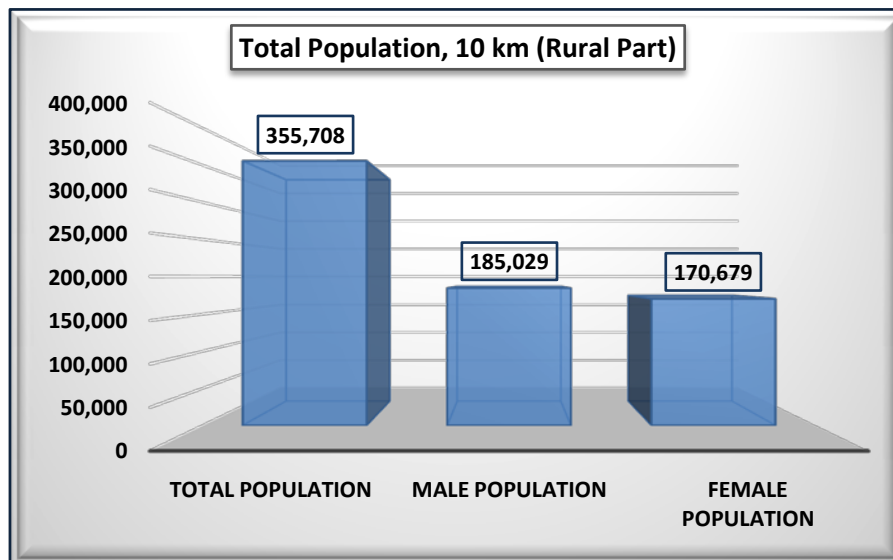


Figure 3.7: Male-Female Wise Rural Population Distribution

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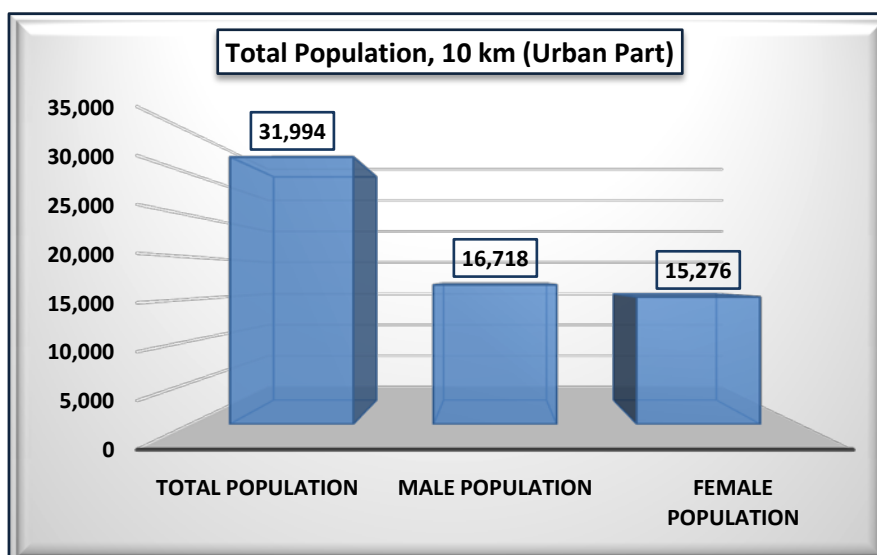


Figure 3.8: Male-Female Wise Urban Population Distribution

Village wise details of population distribution are given as follows in **Table 3.32 & 3.33**.

Table 3.32: 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 Jehanabad, Bihar							
Harnakhas	120	782	402	380	110	53	57
Surahi	271	1446	744	702	236	124	112
Bheriya	Uninhabited Village						
Noawan	1573	9670	5040	4630	1583	793	790
Salarpur	253	1688	895	793	324	176	148
Gopalpur	Uninhabited Village						
Shahmahmad Bigha	143	812	428	384	112	59	53
Shakurabad	518	3486	1870	1616	627	341	286
Sisamma	776	4895	2546	2349	782	426	356
Hasanpura	238	1433	736	697	181	83	98
Uchhta	554	4082	2120	1962	754	356	398
Faridpur	298	1904	1017	887	362	204	158
Ganankura	376	2451	1281	1170	465	243	222
Mirzapur	180	1067	547	520	144	74	70
Lodhan Chak	Uninhabited Village						
Qazi Chak	92	572	288	284	129	64	65
Kundla	411	2769	1455	1314	395	217	178
Jagarnath pur	6	25	14	11	6	4	2
Kundla Ahar	Uninhabited Village						
Ratni	457	3067	1626	1441	500	265	235
Shahbazpur	116	733	364	369	125	58	67
Kansua	625	3838	2009	1829	636	354	282
Murgiga Chak	56	351	184	167	63	39	24
Mudhara	367	2294	1177	1117	423	213	210
Gopalpur	175	1139	570	569	241	126	115

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Ghejan	288	1537	819	718	245	143	102
Gyani Bigha	116	865	453	412	149	77	72
Rustan Chak	195	1119	584	535	222	121	101
Utra Patti	349	2394	1274	1120	431	236	195
Pokhanwan	185	1112	583	529	142	79	63
Bijulipur	108	658	345	313	115	58	57
Shankar Bigha	53	396	203	193	55	29	26
Hajampur	58	449	230	219	51	28	23
Kakhaura	153	945	493	452	159	83	76
Pandaul	584	3829	2002	1827	710	363	347
Bedauli	221	1236	634	602	229	120	109
Misraulia	88	547	285	262	107	58	49
Fauladpur	257	1430	724	706	277	122	155
Nirpur Ratni	47	362	182	180	66	37	29
Aira	163	1015	543	472	150	79	71
Ishaq Chak	50	356	194	162	69	36	33
Rakasia Deyal Chak	369	2397	1243	1154	450	241	209
Mahaddipur	114	699	374	325	123	71	52
Arif Chak	32	187	94	93	42	22	20
Chak Saura	264	1623	837	786	295	147	148
Chagori	343	2384	1274	1110	406	218	188
Bhagwanpur	53	375	206	169	67	38	29
Sikandarpur	1081	6567	3398	3169	1220	615	605
Pirijpura	222	1484	787	697	293	159	134
Galimapur	78	412	236	176	60	36	24
Sareya	263	1507	795	712	293	162	131
Manpur	40	230	126	104	27	16	11
Salempur 1	335	1378	755	623	143	83	60
Saraya	116	631	302	329	127	64	63
Rampur 1	141	811	371	440	173	82	91
Patiawan	291	2016	1059	957	324	181	143
Bishunpur	196	1177	625	552	221	108	113
Narayanpur	259	1694	890	804	296	138	158
Rupaspur	43	321	164	157	51	25	26
Tali	434	2558	1323	1235	470	247	223
Ghosi	52	240	120	120	50	27	23
Turkaul	81	578	317	261	115	73	42
Alampur	266	1257	664	593	220	104	116
Chainpura	259	1617	879	738	280	143	137
Imadpur	86	633	338	295	113	57	56
Karauta	287	1748	907	841	335	172	163
Basatpur	213	1226	632	594	256	119	137
Paras Bigha	106	649	340	309	126	71	55
Dohia	127	682	370	312	125	64	61
Pandui	805	4747	2479	2268	896	469	427
Jamuawan	405	2576	1356	1220	470	255	215
Mandil	863	5286	2700	2586	1000	521	479
Salempur 2	171	1217	652	565	254	136	118
Lilam	59	325	166	159	58	27	31
Pakri	207	1313	689	624	236	115	121
Kalupur	227	1258	675	583	245	130	115

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Balwa	15	84	43	41	13	6	7
Rasidpur	178	1245	674	571	270	139	131
Ganwan	435	2864	1463	1401	553	271	282
Ghosi	364	2204	1191	1013	295	158	137
Bajidpur	87	534	272	262	120	50	70
Mohanpur	366	2272	1175	1097	468	256	212
Amain	496	2981	1532	1449	534	249	285
Bazidpur	59	364	187	177	92	45	47
Sikariya	435	2404	1245	1159	375	176	199
Niazipur	37	238	120	118	64	33	31
Dharampur	351	1986	1037	949	384	202	182
Naugarh	324	2231	1166	1065	357	196	161
Sukna Bigha	147	766	399	367	150	78	72
Kazi chak	59	313	166	147	57	30	27
Mahamdipur	Uninhabited Village						
Ladaua	43	230	111	119	37	11	26
Khanpur Ikil	Uninhabited Village						
Ikil khas	250	1724	894	830	262	126	136
Bisunpur Pathra	140	972	521	451	163	93	70
Nirpur	64	502	257	245	79	44	35
Sagarpur	443	2820	1447	1373	462	242	220
Kandar	167	1100	587	513	200	106	94
Bhimpura	318	1816	975	841	300	163	137
Majhos	464	3112	1643	1469	579	299	280
Boknari Kalan	213	1344	703	641	200	109	91
Khojpura	279	1775	912	863	342	188	154
Ankupur	236	1603	858	745	249	144	105
Boknari Khurd	72	490	257	233	31	12	19
Solhanda	741	4745	2402	2343	800	384	416
Panpu	128	878	452	426	172	77	95
Ner	535	3380	1718	1662	654	325	329
Katrasin	223	1242	633	609	251	124	127
Jaitia	95	505	247	258	115	55	60
Akauna	405	2474	1256	1218	532	288	244
Chatar	186	1183	619	564	168	78	90
Kharka	265	1871	961	910	333	165	168
Machhil	408	2495	1252	1243	553	276	277
Jagpura	338	2011	1053	958	374	207	167
Dhanuki	141	735	389	346	155	79	76
Chhatiana	430	2735	1396	1339	542	277	265
Kapharpur	178	1130	602	528	186	95	91
Owa	149	1083	558	525	190	100	90
Khusialpur	Uninhabited Village						
Makarpur	537	3415	1745	1670	649	337	312
Damodarpur	64	468	251	217	72	37	35
Kukri Bigha	43	254	138	116	38	25	13
Chandai	267	1744	929	815	299	170	129
Sohjana	138	894	463	431	160	86	74
Chhariyari	1124	6774	3465	3309	1296	650	646
Jamalpur	116	765	390	375	156	76	80
Mahewa	267	1787	945	842	347	180	167

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Moghal Bigha	226	1301	689	612	251	134	117
Kachnanwan	585	3333	1723	1610	546	276	270
Raja Bigha	78	450	242	208	71	40	31
Danu Bigha	178	1062	526	536	180	80	100
Ismailpur	84	570	311	259	90	53	37
Koile	244	1645	850	795	298	147	151
Jagdishpur	29	254	126	128	51	21	30
Ghazipur	72	329	186	143	37	24	13
Sewati	112	707	379	328	114	62	52
Gol Bigha	40	201	106	95	35	18	17
Charh	502	3158	1658	1500	493	272	221
Lakhan Samha	173	827	438	389	111	72	39
Kankaria	484	3114	1642	1472	581	291	290
Mahmadpur	257	1220	612	608	249	128	121
Bandea	400	2715	1393	1322	502	266	236
Kumardih	540	3132	1637	1495	513	255	258
Kohara	777	4747	2435	2312	993	491	502
Mira Bigha	173	1086	571	515	241	132	109
Suganwan	1304	8310	4332	3978	1521	801	720
Saren	2334	14073	7352	6721	2474	1290	1184
Amarpur	140	943	476	467	154	84	70
Nandanpura	243	1574	800	774	252	126	126
Tehta	336	1830	944	886	299	158	141
Saidpur	132	860	449	411	190	94	96
Surka	334	2026	1037	989	417	225	192
Narayanpur	118	840	421	419	144	71	73
Kalanaur	878	5274	2739	2535	924	490	434
Dekuli	437	2817	1507	1310	560	313	247
Sarthua	570	3835	2017	1818	637	333	304
Minjumla	Uninhabited Village						
Punahda	424	2579	1322	1257	472	251	221
Newari	232	1624	852	772	261	134	127
Makhdumpur (NP)/19 Wards	5018	31994	16718	15276	5515	2850	2665
2. District Gaya, Bihar							
Madarpur	94	695	362	333	91	49	42
Makhdumpur	461	2568	1321	1247	477	238	239
Kapea	116	751	380	371	137	61	76
Alampur	89	587	314	273	68	36	32
Ridpura	10	64	32	32	7	3	4
Takuatanr	46	417	213	204	67	30	37
Manikpur Baliari	177	1304	677	627	242	129	113
Gaur	64	560	298	262	97	62	35
Alipur	253	1783	951	832	356	180	176
Bishunpur urur	288	1913	1013	900	336	178	158
Sidhay	112	704	365	339	124	56	68
Agar	182	985	508	477	186	91	95
Lodipur	97	467	230	237	89	40	49
Ithori	226	1492	775	717	236	129	107
Melda	99	726	367	359	144	69	75
Salempur 3	207	1278	638	640	258	125	133
Kutlupur	131	951	493	458	175	73	102

Project: Sand Mining Project (Jehanabad Block No -15 Sand Ghat) at Riverbed of River Dhab at Mauja Rustamchak, Anchal – Ratani Faridpur, Dist – Jehanabad (Bihar)

Akhanpur	127	930	484	446	196	93	103
Mahimapur	93	648	327	321	83	36	47
Sahwara	129	942	484	458	144	67	77
Idinpur	109	705	369	336	162	90	72
Rasalpur	88	753	386	367	98	47	51
Sadipur	162	925	466	459	173	86	87
Bohiyakamalpur	263	1853	972	881	318	181	137
Kespa	385	2418	1263	1155	377	215	162
Rupaspur	345	2287	1190	1097	424	225	199
Salempur 4	84	515	261	254	62	30	32
Daulatpur	332	2540	1330	1210	353	177	176
Barsiwan	363	2264	1177	1087	473	251	222
Rampur 2	43	227	123	104	44	28	16
Kharagpur	Uninhabited Village						
Bhelampur	113	642	323	319	105	50	55
Sherpur	111	690	334	356	144	78	66
Bhairwa	154	887	429	458	185	98	87
Nimsar	310	2038	1050	988	345	188	157
Jagarnathpur	21	159	77	82	20	7	13
Noni	618	3228	1688	1540	450	226	224
Bazidpur Sakti	105	743	382	361	86	39	47
Thanapur	184	1311	678	633	280	141	139
Sadipur	253	1644	858	786	249	138	111
Shahapur	176	1322	662	660	209	106	103
Baid Bigha	411	2718	1399	1319	485	232	253
Rupaspur	137	1058	545	513	183	93	90
Charhata Aghatpur	198	1410	752	658	250	150	100
Turi	338	2459	1284	1175	440	229	211
Men	518	3174	1618	1556	562	286	276
Gangti	214	1379	712	667	223	113	110
Koriyawan	497	2833	1487	1346	444	235	209
Panda Bigha	214	1366	710	656	235	123	112
Pai Bigha	1314	8609	4473	4136	1511	785	726
Manjhar	511	3068	1649	1419	527	293	234
Kormathu	465	3183	1675	1508	426	245	181
Inglish	Uninhabited Village						
TOTAL (10km)	61719	387702	201747	185955	68445	35506	32939

Source-Census of India, 2011

Table 3.33: 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 Jehanabad, Bihar							
Harnakhas	782	160	84	76	0	0	0
Surahi	1446	123	62	61	0	0	0
Bheriya	Uninhabited Village						
Noawan	9670	1149	583	566	2	1	1
Salarpur	1688	130	74	56	0	0	0

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Gopalpur	Uninhabited Village						
Shahmahmad Bigha	812	2	1	1	0	0	0
Shakurabad	3486	242	145	97	7	6	1
Sisamma	4895	657	343	314	1	0	1
Hasanpura	1433	268	130	138	7	4	3
Uchhta	4082	392	197	195	17	9	8
Faridpur	1904	780	413	367	8	4	4
Ganankura	2451	411	214	197	3	1	2
Mirzapur	1067	236	115	121	1	0	1
Lodhan Chak	Uninhabited Village						
Qazi Chak	572	113	56	57	7	5	2
Kundla	2769	233	121	112	66	32	34
Jagarnath pur	25	0	0	0	0	0	0
Kundla Ahar	Uninhabited Village						
Ratni	3067	316	167	149	6	3	3
Shahbazpur	733	147	73	74	0	0	0
Kansua	3838	454	230	224	0	0	0
Murgiga Chak	351	0	0	0	0	0	0
Mudhara	2294	560	279	281	11	3	8
Gopalpur	1139	28	14	14	0	0	0
Ghejan	1537	533	264	269	0	0	0
Gyani Bigha	865	367	184	183	2	1	1
Rustan Chak	1119	154	82	72	0	0	0
Utra Patti	2394	238	122	116	4	2	2
Pokhanwan	1112	112	59	53	0	0	0
Bijulipur	658	173	82	91	0	0	0
Shankar Bigha	396	0	0	0	0	0	0
Hajampur	449	0	0	0	0	0	0
Kakhaura	945	205	98	107	0	0	0
Pandaul	3829	456	231	225	0	0	0
Bedauli	1236	137	70	67	1	0	1
Misraulia	547	478	243	235	4	3	1
Fauladpur	1430	248	123	125	0	0	0
Nirpur Ratni	362	124	61	63	0	0	0
Aira	1015	291	149	142	0	0	0
Ishaq Chak	356	0	0	0	0	0	0
Rakasia Deyal Chak	2397	202	101	101	0	0	0
Mahaddipur	699	0	0	0	0	0	0
Arif Chak	187	0	0	0	0	0	0
Chak Saura	1623	274	133	141	0	0	0
Chagori	2384	179	87	92	0	0	0
Bhagwanpur	375	102	50	52	0	0	0
Sikandarapur	6567	1550	794	756	2	0	2
Pirijpura	1484	386	195	191	0	0	0
Galimapur	412	81	48	33	0	0	0
Sareya	1507	402	208	194	0	0	0
Manpur	230	0	0	0	0	0	0
Salempur 1	1378	142	87	55	0	0	0
Saraya	631	188	90	98	15	6	9
Rampur 1	811	399	196	203	0	0	0
Patiawan	2016	268	134	134	0	0	0

Project: Sand Mining Project (Jehanabad Block No -15 Sand Ghat) at Riverbed of River Dhab at Mauja Rustamchak, Anchal – Ratani Faridpur, Dist – Jehanabad (Bihar)

Bishunpur	1177	129	67	62	0	0	0
Narayanpur	1694	323	164	159	2	1	1
Rupaspur	321	45	28	17	0	0	0
Tali	2558	570	291	279	0	0	0
Ghosi	240	177	90	87	0	0	0
Turkaul	578	0	0	0	0	0	0
Alampur	1257	292	153	139	0	0	0
Chainpura	1617	749	393	356	0	0	0
Imadpur	633	21	10	11	0	0	0
Karauta	1748	511	244	267	3	1	2
Basatpur	1226	473	235	238	14	8	6
Paras Bigha	649	292	152	140	0	0	0
Dohia	682	251	127	124	0	0	0
Pandui	4747	853	449	404	2	2	0
Jamuawan	2576	817	433	384	8	2	6
Mandil	5286	956	504	452	1	0	1
Salempur 2	1217	0	0	0	0	0	0
Lilam	325	14	6	8	0	0	0
Pakri	1313	597	312	285	1	0	1
Kalupur	1258	752	407	345	8	2	6
Balwa	84	0	0	0	0	0	0
Rasidpur	1245	200	110	90	0	0	0
Ganwan	2864	818	407	411	2	1	1
Ghosi	2204	456	241	215	0	0	0
Bajidpur	534	91	47	44	0	0	0
Mohanpur	2272	562	296	266	0	0	0
Amain	2981	529	278	251	0	0	0
Bazidpur	364	232	116	116	0	0	0
Sikariya	2404	1086	567	519	1	0	1
Niazipur	238	164	78	86	0	0	0
Dharampur	1986	754	390	364	0	0	0
Naugarh	2231	748	389	359	4	1	3
Sukna Bigha	766	153	72	81	0	0	0
Kazi chak	313	66	38	28	0	0	0
Mahamdipur	Uninhabited Village						
Ladaua	230	55	23	32	0	0	0
Khanpur Ikil	Uninhabited Village						
Ikil khas	1724	269	130	139	9	5	4
Bisunpur Pathra	972	270	138	132	1	1	0
Nirpur	502	0	0	0	0	0	0
Sagarpur	2820	503	256	247	0	0	0
Kandar	1100	141	74	67	0	0	0
Bhimpura	1816	411	222	189	11	6	5
Majhos	3112	441	234	207	0	0	0
Boknari Kalan	1344	204	105	99	0	0	0
Khojpura	1775	418	222	196	0	0	0
Ankupur	1603	379	191	188	0	0	0
Boknari Khurd	490	111	54	57	0	0	0
Solhanda	4745	1297	667	630	0	0	0
Panpu	878	104	62	42	0	0	0
Ner	3380	497	245	252	2	1	1

Project: Sand Mining Project (Jehanabad Block No -15 Sand Ghat) at Riverbed of River Dhab at Mauja Rustamchak, Anchal – Ratani Faridpur, Dist – Jehanabad (Bihar)

Katrasin	1242	551	277	274	0	0	0
Jaitia	505	0	0	0	0	0	0
Akauna	2474	405	216	189	0	0	0
Chatar	1183	157	85	72	0	0	0
Kharka	1871	275	138	137	0	0	0
Machhil	2495	746	375	371	0	0	0
Jagpura	2011	582	304	278	0	0	0
Dhanuki	735	121	62	59	0	0	0
Chhatiana	2735	464	241	223	0	0	0
Kapharpur	1130	187	97	90	0	0	0
Owa	1083	82	44	38	0	0	0
Khusialpur	Uninhabited Village						
Makarpur	3415	815	418	397	7	3	4
Damodarpur	468	32	18	14	0	0	0
Kukri Bigha	254	0	0	0	0	0	0
Chandai	1744	532	281	251	2	1	1
Sohjana	894	101	52	49	0	0	0
Chhariyari	6774	1452	729	723	13	12	1
Jamalpur	765	265	135	130	8	5	3
Mahewa	1787	516	269	247	4	1	3
Moghal Bigha	1301	387	210	177	0	0	0
Kachnanwan	3333	805	389	416	1	1	0
Raja Bigha	450	163	87	76	0	0	0
Danu Bigha	1062	157	81	76	5	1	4
Ismailpur	570	163	81	82	0	0	0
Koile	1645	439	220	219	0	0	0
Jagdishpur	254	156	73	83	0	0	0
Ghazipur	329	0	0	0	0	0	0
Sewati	707	65	26	39	0	0	0
Gol Bigha	201	151	78	73	0	0	0
Charh	3158	507	256	251	0	0	0
Lakhan Samha	827	181	99	82	0	0	0
Kankaria	3114	900	461	439	0	0	0
Mahmadpur	1220	382	200	182	1	0	1
Bandea	2715	693	344	349	0	0	0
Kumardih	3132	685	365	320	0	0	0
Kohara	4747	722	357	365	0	0	0
Mira Bigha	1086	242	121	121	0	0	0
Suganwan	8310	1875	970	905	2	1	1
Saren	14073	2458	1284	1174	13	9	4
Amarpur	943	248	130	118	0	0	0
Nandanpura	1574	294	143	151	0	0	0
Tehta	1830	314	162	152	0	0	0
Saidpur	860	0	0	0	0	0	0
Surka	2026	620	329	291	0	0	0
Narayanpur	840	0	0	0	0	0	0
Kalanaur	5274	1251	629	622	0	0	0
Dekuli	2817	486	268	218	3	0	3
Sarthua	3835	521	280	241	1	1	0
Minjumla	Uninhabited Village						
Punahda	2579	272	143	129	1	0	1

Project: Sand Mining Project (Jehanabad Block No -15 Sand Ghat) at Riverbed of River Dhab at Mauja Rustamchak, Anchal – Ratani Faridpur, Dist – Jehanabad (Bihar)

Newari	1624	163	87	76	2	1	1
Makhdumpur (NP)/19 Wards	31994	7077	3679	3398	48	26	22
2. District Gaya, Bihar							
Madarpur	695	187	94	93	0	0	0
Makhdumpur	2568	743	389	354	0	0	0
Kapea	751	94	45	49	0	0	0
Alampur	587	141	70	71	0	0	0
Ridpura	64	52	27	25	0	0	0
Takuatanr	417	205	100	105	0	0	0
Manikpur Baliari	1304	228	114	114	0	0	0
Garaur	560	108	53	55	0	0	0
Alipur	1783	441	227	214	3	1	2
Bishunpur urur	1913	311	170	141	0	0	0
Sidhay	704	59	32	27	0	0	0
Agar	985	80	39	41	1	1	0
Lodipur	467	162	85	77	0	0	0
Ithori	1492	560	287	273	0	0	0
Melda	726	124	59	65	0	0	0
Salempur 3	1278	441	212	229	0	0	0
Kutlupur	951	209	110	99	0	0	0
Akhanpur	930	206	107	99	0	0	0
Mahimapur	648	124	64	60	0	0	0
Sahwara	942	260	129	131	0	0	0
Idinpur	705	195	97	98	0	0	0
Rasalpur	753	143	73	70	0	0	0
Sadipur	925	336	163	173	0	0	0
Bohiyakamalpur	1853	408	211	197	0	0	0
Kespa	2418	109	56	53	0	0	0
Rupaspur	2287	639	336	303	1	1	0
Salempur 4	515	0	0	0	0	0	0
Daulatpur	2540	418	215	203	0	0	0
Barsiwan	2264	409	210	199	0	0	0
Rampur 2	227	0	0	0	0	0	0
Kharagpur	Uninhabited Village						
Bhelampur	642	0	0	0	0	0	0
Sherpur	690	344	177	167	1	0	1
Bhairwa	887	359	179	180	0	0	0
Nimsar	2038	576	301	275	4	4	0
Jagarnathpur	159	0	0	0	0	0	0
Noni	3228	804	403	401	0	0	0
Bazidpur Sakti	743	315	164	151	0	0	0
Thanapur	1311	281	143	138	2	1	1
Sadipur	1644	259	131	128	0	0	0
Shahapur	1322	380	185	195	0	0	0
Baid Bigha	2718	376	194	182	1	1	0
Rupaspur	1058	0	0	0	0	0	0
Charhata Aghatpur	1410	441	244	197	1	1	0
Turi	2459	393	208	185	0	0	0
Men	3174	832	413	419	1	1	0
Gangti	1379	154	79	75	0	0	0
Koriyawan	2833	1053	535	518	3	1	2

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Panda Bigha	1366	211	110	101	0	0	0
Pai Bigha	8609	2215	1126	1089	0	0	0
Manjhar	3068	704	378	326	0	0	0
Kormathu	3183	664	326	338	0	0	0
English	Uninhabited Village						
TOTAL (10km)	387702	80284	41272	39012	362	185	177
<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 922 females per 1000 males in the District. The same was recorded as 922 females for every 1000 males in the study area. The child (0-6 yr age) sex ratio of the stud area was observed as 928 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 **Figure 3.9**.

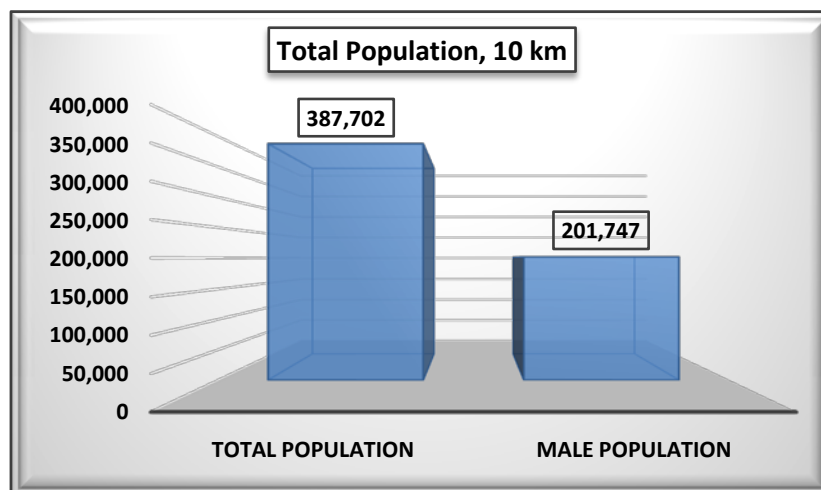


Figure 3.9: Male-Female Wise Population Distribution

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 80284 persons consisting of 41272 males and 39012 females respectively in the study area which accounts as 20.7% to the total

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population (387702persons) of the study area. Scheduled Tribes ('ST') population was observed as 362 persons,accounts as 0.1% to the total population of the study zone consisting of 185males and 177females in the 10km radius study zone.It implies that the rest 79.2% 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.

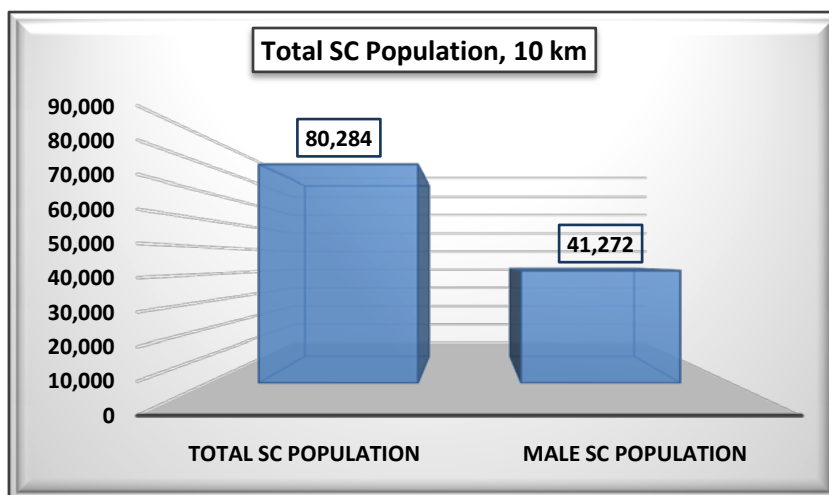


Figure 3.10: Scheduled Caste Population in the Study Area

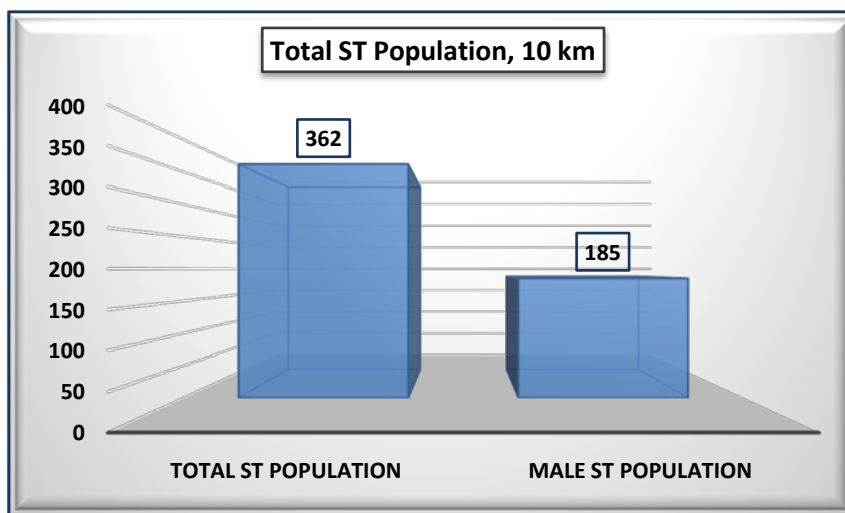


Figure 3.11: Scheduled Tribes Population in the Study Area

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 3.34**. Total literate’s population was recorded as as 211367 persons (54.5%) in the study area. **Table 3.34**



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reveals that Male-Female wise literates are observed as 129303 & 82064 persons respectively, implies that the 'Literacy Rate' is recorded as 54.5% with male-female wise percentages being 33.4% & 21.2% respectively.

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

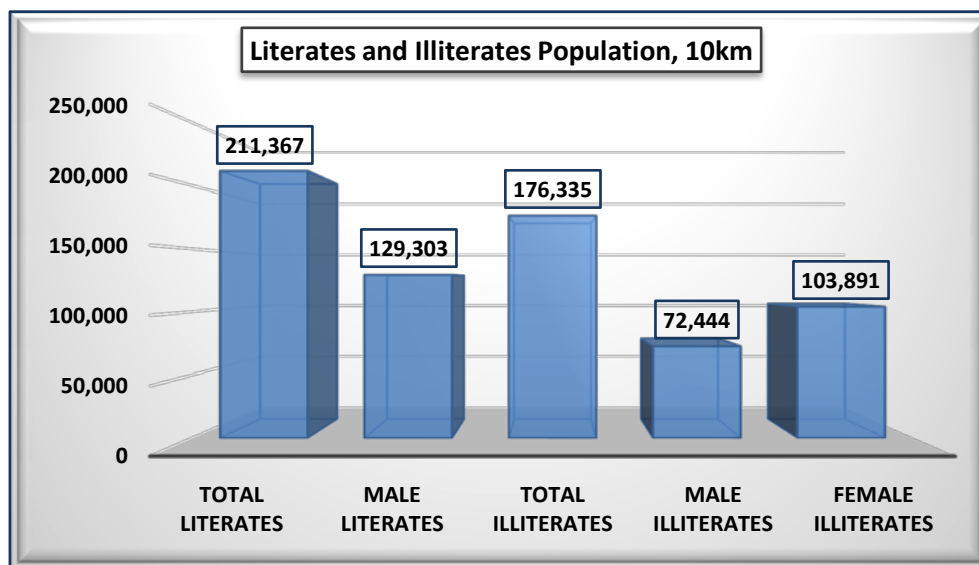


Figure 3.12: Male-Female Wise Distribution of Literates & Illiterates

Table 3.34: Male-Female Wise Literates and Illiterates (10km)

Name of Village/Town	Total Population	Literates			Illiterates		
		Persons	Males	Females	Persons	Males	Females
Harnakhas	782	508	292	216	274	110	164
Surahi	1446	948	566	382	498	178	320
Bheriya	Uninhabited Village						
Noawan	9670	5450	3310	2140	4220	1730	2490
Salarpur	1688	927	585	342	761	310	451
Gopalpur	Uninhabited Village						
Shahmahmad Bigha	812	583	340	243	229	88	141
Shakurabad	3486	2126	1250	876	1360	620	740
Sisamma	4895	2872	1691	1181	2023	855	1168
Hasanpura	1433	993	554	439	440	182	258
Uchhta	4082	2285	1415	870	1797	705	1092
Faridpur	1904	831	514	317	1073	503	570
Ganankura	2451	1272	798	474	1179	483	696

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Mirzapur	1067	754	417	337	313	130	183
Lodhan Chak	Uninhabited Village						
Qazi Chak	572	169	119	50	403	169	234
Kundla	2769	1646	1008	638	1123	447	676
Jagarnath pur	25	0	0	0	25	14	11
Kundla Ahar	Uninhabited Village						
Ratni	3067	1872	1173	699	1195	453	742
Shahbazpur	733	423	268	155	310	96	214
Kansua	3838	2049	1219	830	1789	790	999
Murgiga Chak	351	195	128	67	156	56	100
Mudhara	2294	1241	769	472	1053	408	645
Gopalpur	1139	614	375	239	525	195	330
Ghejan	1537	832	513	319	705	306	399
Gyani Bigha	865	612	363	249	253	90	163
Rustan Chak	1119	488	331	157	631	253	378
Utra Patti	2394	1177	792	385	1217	482	735
Pokhanwan	1112	810	452	358	302	131	171
Bijulipur	658	282	189	93	376	156	220
Shankar Bigha	396	243	155	88	153	48	105
Hajampur	449	321	183	138	128	47	81
Kakhaura	945	555	331	224	390	162	228
Pandaul	3829	2058	1313	745	1771	689	1082
Bedauli	1236	608	382	226	628	252	376
Misraulia	547	306	200	106	241	85	156
Fauladpur	1430	873	513	360	557	211	346
Nirpur Ratni	362	165	108	57	197	74	123
Aira	1015	740	428	312	275	115	160
Ishaq Chak	356	181	128	53	175	66	109
Rakasia Deyal Chak	2397	1289	812	477	1108	431	677
Mahaddipur	699	295	218	77	404	156	248
Arif Chak	187	86	56	30	101	38	63
Chak Saura	1623	888	588	300	735	249	486
Chagori	2384	1389	863	526	995	411	584
Bhagwanpur	375	221	133	88	154	73	81
Sikandarpur	6567	3280	2106	1174	3287	1292	1995
Pirijpura	1484	791	511	280	693	276	417
Galimapur	412	246	161	85	166	75	91
Sareya	1507	686	425	261	821	370	451

Project: Sand Mining Project (Jehanabad Block No -15 Sand Ghat) at Riverbed of River Dhab at Mauja Rustamchak, Anchal – Ratani Faridpur, Dist – Jehanabad (Bihar)

Manpur	230	189	108	81	41	18	23
Salempur 1	1378	1001	589	412	377	166	211
Saraya	631	271	149	122	360	153	207
Rampur 1	811	437	236	201	374	135	239
Patiawan	2016	1323	790	533	693	269	424
Bishunpur	1177	550	366	184	627	259	368
Narayanpur	1694	943	587	356	751	303	448
Rupaspur	321	203	118	85	118	46	72
Tali	2558	1237	757	480	1321	566	755
Ghosi	240	39	26	13	201	94	107
Turkaul	578	372	215	157	206	102	104
Alampur	1257	613	388	225	644	276	368
Chainpura	1617	908	560	348	709	319	390
Imadpur	633	392	236	156	241	102	139
Karauta	1748	915	568	347	833	339	494
Basatpur	1226	640	366	274	586	266	320
Paras Bigha	649	208	137	71	441	203	238
Dohia	682	319	204	115	363	166	197
Pandui	4747	2117	1342	775	2630	1137	1493
Jamuawan	2576	1298	793	505	1278	563	715
Mandil	5286	2901	1785	1116	2385	915	1470
Salempur 2	1217	534	361	173	683	291	392
Lilam	325	121	81	40	204	85	119
Pakri	1313	703	459	244	610	230	380
Kalupur	1258	596	369	227	662	306	356
Balwa	84	31	21	10	53	22	31
Rasidpur	1245	647	432	215	598	242	356
Ganwan	2864	1459	868	591	1405	595	810
Ghosi	2204	1346	818	528	858	373	485
Bajidpur	534	257	178	79	277	94	183
Mohanpur	2272	1068	628	440	1204	547	657
Amain	2981	1694	1035	659	1287	497	790
Bazidpur	364	183	119	64	181	68	113
Sikariya	2404	1539	885	654	865	360	505
Niazipur	238	123	75	48	115	45	70
Dharampur	1986	1042	657	385	944	380	564
Naugarh	2231	1120	647	473	1111	519	592
Sukna Bigha	766	421	257	164	345	142	203

Project: Sand Mining Project (Jehanabad Block No -15 Sand Ghat) at Riverbed of River Dhab at Mauja Rustamchak, Anchal – Ratani Faridpur, Dist – Jehanabad (Bihar)

Kazi chak	313	135	88	47	178	78	100
Mahamdipur	Uninhabited Village						
Ladaua	230	153	93	60	77	18	59
Khanpur Ikil	Uninhabited Village						
Ikil khas	1724	1196	686	510	528	208	320
Bisunpur Pathra	972	604	383	221	368	138	230
Nirpur	502	326	189	137	176	68	108
Sagarpur	2820	1680	1004	676	1140	443	697
Kandar	1100	573	365	208	527	222	305
Bhimpura	1816	1128	704	424	688	271	417
Majhos	3112	1766	1092	674	1346	551	795
Boknari Kalan	1344	904	537	367	440	166	274
Khojpura	1775	1019	644	375	756	268	488
Ankpur	1603	931	588	343	672	270	402
Boknari Khurd	490	275	176	99	215	81	134
Solhanda	4745	2365	1441	924	2380	961	1419
Panpu	878	451	294	157	427	158	269
Ner	3380	1951	1160	791	1429	558	871
Katrasin	1242	562	342	220	680	291	389
Jaitia	505	260	171	89	245	76	169
Akauna	2474	1169	757	412	1305	499	806
Chatar	1183	629	410	219	554	209	345
Kharka	1871	1023	634	389	848	327	521
Machhil	2495	1136	748	388	1359	504	855
Jagpura	2011	1054	657	397	957	396	561
Dhanuki	735	305	195	110	430	194	236
Chhatiana	2735	1376	853	523	1359	543	816
Kapharpur	1130	512	349	163	618	253	365
Owa	1083	644	397	247	439	161	278
Khusialpur	Uninhabited Village						
Makarpur	3415	1606	994	612	1809	751	1058
Damodarpur	468	172	116	56	296	135	161
Kukri Bigha	254	159	101	58	95	37	58
Chandai	1744	908	565	343	836	364	472
Sohjana	894	474	292	182	420	171	249
Chhariyari	6774	3346	2107	1239	3428	1358	2070
Jamalpur	765	368	226	142	397	164	233
Mahewa	1787	881	572	309	906	373	533

Project: Sand Mining Project (Jehanabad Block No -15 Sand Ghat) at Riverbed of River Dhab at Mauja Rustamchak, Anchal – Ratani Faridpur, Dist – Jehanabad (Bihar)

Moghal Bigha	1301	686	442	244	615	247	368
Kachnanwan	3333	1834	1147	687	1499	576	923
Raja Bigha	450	286	186	100	164	56	108
Danu Bigha	1062	663	357	306	399	169	230
Ismailpur	570	291	172	119	279	139	140
Koile	1645	973	587	386	672	263	409
Jagdishpur	254	49	30	19	205	96	109
Ghazipur	329	213	137	76	116	49	67
Sewati	707	393	235	158	314	144	170
Gol Bigha	201	8	8	0	193	98	95
Charh	3158	1936	1161	775	1222	497	725
Lakhan Samha	827	577	323	254	250	115	135
Kankaria	3114	1576	1002	574	1538	640	898
Mahmadpur	1220	521	311	210	699	301	398
Bandea	2715	1476	890	586	1239	503	736
Kumardih	3132	1719	1079	640	1413	558	855
Kohara	4747	2347	1460	887	2400	975	1425
Mira Bigha	1086	542	334	208	544	237	307
Suganwan	8310	4050	2522	1528	4260	1810	2450
Saren	14073	7922	4725	3197	6151	2627	3524
Amarpur	943	545	303	242	398	173	225
Nandanpura	1574	974	563	411	600	237	363
Tehta	1830	990	582	408	840	362	478
Saidpur	860	280	189	91	580	260	320
Surka	2026	870	543	327	1156	494	662
Narayanpur	840	405	269	136	435	152	283
Kalanaur	5274	2649	1593	1056	2625	1146	1479
Dekuli	2817	1488	1012	476	1329	495	834
Sarthua	3835	1848	1221	627	1987	796	1191
Minjumla	Uninhabited Village						
Punahda	2579	1332	794	538	1247	528	719
Newari	1624	997	589	408	627	263	364
Makhdumpur (NP)/19 Wards	31994	18293	10813	7480	13701	5905	7796
Madarpur	695	522	291	231	173	71	102
Makhdumpur	2568	1415	855	560	1153	466	687
Kapea	751	450	285	165	301	95	206
Alampur	587	311	203	108	276	111	165
Ridpura	64	7	1	6	57	31	26

Project: Sand Mining Project (Jehanabad Block No -15 Sand Ghat) at Riverbed of River Dhab at Mauja Rustamchak, Anchal – Ratani Faridpur, Dist – Jehanabad (Bihar)

Takuatanr	417	156	116	40	261	97	164
Manikpur Baliari	1304	723	448	275	581	229	352
Garaur	560	317	180	137	243	118	125
Alipur	1783	913	574	339	870	377	493
Bishunpur urur	1913	1049	616	433	864	397	467
Sidhay	704	380	237	143	324	128	196
Agar	985	548	354	194	437	154	283
Lodipur	467	219	150	69	248	80	168
Ithori	1492	787	512	275	705	263	442
Melda	726	312	220	92	414	147	267
Salempur 3	1278	721	434	287	557	204	353
Kutlupur	951	550	346	204	401	147	254
Akhanpur	930	467	305	162	463	179	284
Mahimapur	648	483	269	214	165	58	107
Sahwara	942	610	346	264	332	138	194
Idinpur	705	330	205	125	375	164	211
Rasalpur	753	567	311	256	186	75	111
Sadipur	925	524	308	216	401	158	243
Bohiyakamalpur	1853	1056	623	433	797	349	448
Kespa	2418	1603	925	678	815	338	477
Rupaspur	2287	1216	751	465	1071	439	632
Salempur 4	515	402	216	186	113	45	68
Daulatpur	2540	1196	775	421	1344	555	789
Barsiwan	2264	1122	728	394	1142	449	693
Rampur 2	227	124	80	44	103	43	60
Kharagpur	Uninhabited Village						
Bhelampur	642	355	234	121	287	89	198
Sherpur	690	381	209	172	309	125	184
Bhairwa	887	447	268	179	440	161	279
Nimsar	2038	1166	641	525	872	409	463
Jagarnathpur	159	84	62	22	75	15	60
Noni	3228	1979	1225	754	1249	463	786
Bazidpur Sakti	743	510	306	204	233	76	157
Thanapur	1311	732	476	256	579	202	377
Sadipur	1644	1035	642	393	609	216	393
Shahapur	1322	839	473	366	483	189	294
Baid Bigha	2718	1401	878	523	1317	521	796
Rupaspur	1058	718	429	289	340	116	224

Project: Sand Mining Project (Jehanabad Block No -15 Sand Ghat) at Riverbed of River Dhab at Mauja Rustamchak, Anchal – Ratani Faridpur, Dist – Jehanabad (Bihar)

Charhata Aghatpur	1410	652	399	253	758	353	405
Turi	2459	1285	813	472	1174	471	703
Men	3174	1574	936	638	1600	682	918
Gangti	1379	829	510	319	550	202	348
Koriyawan	2833	1416	873	543	1417	614	803
Panda Bigha	1366	713	433	280	653	277	376
Pai Bigha	8609	4906	2905	2001	3703	1568	2135
Manjhar	3068	1695	1046	649	1373	603	770
Kormathu	3183	1856	1117	739	1327	558	769
Inglish	Uninhabited Village						
TOTAL (10km)	387702	211367	129303	82064	176335	72444	103891
<i>Source-Census of India, 2011</i>							

Economic Profile of Jehanabad District:

The economic resources are an important means of subsistence for the working people of the district. The details about economic resources of important sectors are given below in brief.

Major Economic resources are, Forestry, Minerals and Mining, Soil and Cropping Pattern, Land and Land Use Pattern, Tenancy, Agriculture, Irrigation, Animal Husbandry, Fisheries, Industry, Trade and Commerce, Transport and Communication and Electricity etc.

As per the Census records 2011, Main source of income in the district is from the agriculture sector and per capita income is Rs. 16558. Economy of the district is totally agriculture Based and this area does not have any presence of any Industry. Paddy, wheat and maize are the main crops. Though most of the area of the district is well irrigated but due to lack of infrastructure and power-farmers are not benefited. Economy of this district mainly relies on the agriculture.

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 88309(23.0%) and 39502(10.0%) to the total population (387702), while the remaining 259891 (67.0%) persons were recorded as non-workers. Thus it implies that the semi-skilled and non-skilled work-force required in study area for the project is available in aplenty.

Project: Sand Mining Project (Jehanabad Block No -15 Sand Ghat) at Riverbed of River Dhab at Mauja Rustamchak, Anchal – Ratani Faridpur, Dist – Jehanabad (Bihar)

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 3.35**.

Project: Sand Mining Project (Jehanabad Block No -15 Sand Ghat) at Riverbed of River Dhab at Mauja Rustamchak, Anchal – Ratani Faridpur, Dist – Jehanabad (Bihar)

Table 3.35: Village-wise Occupational Pattern (10km)

Name of the Village/Town	MAIN WORK_P	MAIN_C L_P	MAIN_A L_P	MAIN_H H_P	MAIN_O T_P	MARG WORK_P	MARG_CL_P	MARG_AL_P	MARG_H H_P	MARG_O T_P
arnakhas	189	108	69	0	12	58	1	57	0	0
rahi	205	54	93	22	36	219	9	184	19	7
heriya	Uninhabited Village									
awan	2012	907	796	63	246	780	249	408	34	89
arpur	399	198	156	21	24	96	9	52	6	29
opalpur	Uninhabited Village									
ahmahmad Bigha	203	112	68	4	19	18	6	5	0	7
akurabad	630	36	86	61	447	248	16	76	35	121
samma	1145	397	552	4	192	361	49	224	18	70
asanpura	225	84	14	2	125	294	22	243	5	24
chhta	461	92	139	52	178	1014	87	523	146	258
ridpur	303	6	279	1	17	316	6	279	10	21
anankura	599	119	409	7	64	268	23	57	74	114
irzapur	287	150	82	8	47	14	5	7	1	1
odhan Chak	Uninhabited Village									
azi Chak	341	1	333	4	3	22	1	12	0	9
undla	508	279	133	10	86	483	118	325	4	36
garnath pur	8	1	7	0	0	0	0	0	0	0
undla Ahar	Uninhabited Village									
atni	298	170	40	12	76	646	147	337	2	160
ahbazpur	24	15	2	0	7	130	1	124	1	4
ansua	607	96	452	3	56	423	9	391	2	21
urgiga Chak	33	8	14	1	10	99	12	81	2	4
udhara	324	104	209	0	11	282	14	247	13	8
opalpur	103	23	58	0	22	204	37	137	8	22
nejan	283	36	187	20	40	99	8	76	8	7
yani Bigha	287	24	229	8	26	119	4	103	4	8
istan Chak	143	54	70	1	18	293	10	278	0	5
ra Patti	330	149	138	25	18	391	4	221	154	12
khawan	287	151	93	4	39	33	8	24	0	1
julipur	140	34	61	1	44	131	23	98	4	6

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BASELINE DATA DESCRIPTION

Project: Sand Mining Project (Jehanabad Block No -15 Sand Ghat) at Riverbed of River Dhab at Mauja Rustamchak, Anchal – Ratani Faridpur, Dist – Jehanabad (Bihar)

Bankar Bigha	133	6	115	0	12	67	1	64	1	1
Banjampur	48	10	5	1	32	191	133	51	0	7
Bakhaura	109	58	40	0	11	163	6	152	0	5
Bandaul	434	103	225	31	75	1082	49	785	112	136
Bandauli	88	71	3	1	13	172	12	133	11	16
Bisraulia	250	3	236	0	11	8	0	7	0	1
Buladpur	98	3	19	6	70	323	6	145	118	54
Burpur Ratni	25	8	16	0	1	62	20	30	1	11
Bura	63	10	27	9	17	193	83	106	4	0
Buraq Chak	40	12	27	0	1	54	22	26	2	4
Burakasia Deyal Chak	287	164	87	5	31	361	96	256	0	9
Burahaddipur	36	18	0	2	16	213	2	208	2	1
Buraf Chak	20	12	0	0	8	27	0	26	0	1
Burak Saura	122	65	19	7	31	323	6	267	33	17
Buragori	511	194	206	20	91	159	35	108	1	15
Buragwanpur	13	10	0	0	3	94	9	67	1	17
Burakandarpur	1292	402	626	20	244	896	70	678	31	117
Burarijpura	471	58	238	12	163	33	1	8	2	22
Buralimapur	118	48	44	2	24	0	0	0	0	0
Buraya	467	70	303	9	85	16	0	12	0	4
Buranpur	70	1	24	2	43	3	1	1	0	1
Burlempur 1	357	171	115	6	65	12	7	1	0	4
Buraya	160	0	57	4	99	57	1	47	2	7
Burampur 1	72	6	8	9	49	146	0	137	0	9
Buratiawan	420	159	131	5	125	218	4	186	13	15
Burashunpur	211	53	60	1	97	119	1	90	12	16
Burayanpur	468	39	393	2	34	69	3	45	7	14
Burapaspur	88	30	50	0	8	32	1	29	0	2
Buruli	404	129	32	4	239	260	6	157	2	95
Buraposi	0	0	0	0	0	64	0	64	0	0
Burarkaul	43	2	1	2	38	87	47	28	2	10
Burampur	169	7	51	2	109	151	1	136	0	14
Burainpura	445	140	273	1	31	161	75	4	6	76
Buradpur	35	11	7	5	12	244	10	213	12	9
Burarauta	486	132	291	0	63	9	2	4	0	3



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BASELINE DATA DESCRIPTION

Project: Sand Mining Project (Jehanabad Block No -15 Sand Ghat) at Riverbed of River Dhab at Mauja Rustamchak, Anchal – Ratani Faridpur, Dist – Jehanabad (Bihar)

Asatpur	217	85	48	37	47	291	12	243	21	15
Aras Bigha	114	49	55	0	10	87	5	73	3	6
Bhia	22	3	18	0	1	221	22	196	3	0
Bndui	662	269	270	6	117	578	72	339	21	146
Bmuawan	713	219	437	7	50	232	188	37	2	5
Bandil	1324	597	508	29	190	435	72	337	3	23
Blempur 2	424	164	247	0	13	3	0	2	0	1
Blam	34	25	4	0	5	100	6	21	0	73
Bkri	273	109	124	1	39	204	66	90	1	47
Balupur	85	53	10	2	20	457	6	448	0	3
Balwa	27	0	27	0	0	12	0	12	0	0
Basidpur	391	138	179	21	53	115	5	102	5	3
Banwan	717	285	387	1	44	229	58	151	13	7
Bnosi	274	97	94	8	75	424	20	326	39	39
Bajidpur	118	88	2	0	28	150	120	18	0	12
Bohanpur	616	19	319	52	226	10	0	0	0	10
Bmain	958	378	525	1	54	236	74	126	27	9
Bazidpur	62	29	22	0	11	43	1	27	0	15
Bkariya	542	210	267	16	49	226	27	188	4	7
Bazipur	51	5	36	0	10	19	0	17	0	2
Barampur	755	88	633	1	33	5	1	2	0	2
Baugarh	692	114	313	4	261	71	35	6	0	30
Bkna Bigha	322	7	305	2	8	20	2	3	0	15
Bazi chak	42	22	0	1	19	53	0	52	0	1
Bahamdipur	Uninhabited Village									
Badaua	81	34	33	0	14	0	0	0	0	0
Banpur Ikil	Uninhabited Village									
Bil khas	509	173	130	31	175	45	1	0	20	24
Bsunpur Pathra	234	54	105	6	69	43	2	25	0	16
Brpur	120	57	4	0	59	13	3	0	0	10
Bgarpur	686	157	347	16	166	37	2	20	9	6
Bandar	422	195	208	0	19	45	3	23	0	19
Bhimpura	717	327	271	19	100	27	7	16	2	2
Bajhos	1035	157	417	222	239	95	5	41	15	34
Boknari Kalan	238	43	84	1	110	95	13	38	8	36



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Project: Sand Mining Project (Jehanabad Block No -15 Sand Ghat) at Riverbed of River Dhab at Mauja Rustamchak, Anchal – Ratani Faridpur, Dist – Jehanabad (Bihar)

hojpura	463	24	384	0	55	11	2	1	1	7
okupur	490	125	127	129	109	112	64	33	6	9
oknari Khurd	195	36	144	1	14	8	0	7	0	1
lhanda	1074	197	636	2	239	367	47	268	1	51
npu	174	35	74	1	64	35	3	19	1	12
er	662	61	402	45	154	218	10	151	12	45
atrasin	392	76	271	9	36	17	0	6	2	9
itia	129	74	39	8	8	12	2	8	2	0
cauna	400	169	135	17	79	203	12	124	16	51
atar	363	35	212	4	112	69	17	31	1	20
arka	447	230	156	8	53	46	3	34	1	8
achhil	205	126	29	1	49	329	86	199	20	24
gpura	487	94	198	114	81	229	1	65	161	2
nanuki	276	14	244	13	5	4	0	1	3	0
hariana	523	141	289	2	91	67	10	35	11	11
apharpur	298	44	231	0	23	3	1	2	0	0
wa	288	68	124	9	87	13	0	5	2	6
usialpur	Uninhabited Village									
akarpur	479	64	351	5	59	466	15	419	14	18
amodarpur	137	115	14	0	8	9	0	8	0	1
ukri Bigha	57	39	0	10	8	1	0	0	1	0
andai	205	61	97	17	30	463	12	211	200	40
hjana	321	20	261	1	39	42	1	17	0	24
nhariyari	1828	364	1197	27	240	451	130	230	16	75
malpur	182	31	123	13	15	3	1	0	0	2
ahewa	458	125	249	9	75	42	0	36	2	4
oghal Bigha	129	35	56	0	38	189	0	189	0	0
achnanwan	981	177	594	13	197	517	107	338	6	66
aja Bigha	67	20	30	1	16	69	1	64	4	0
anu Bigha	312	42	241	7	22	186	1	168	12	5
mailpur	180	6	132	3	39	1	0	1	0	0
pile	437	85	236	35	81	61	2	51	0	8
gdishpur	50	16	34	0	0	32	0	31	0	1
nazipur	54	20	15	7	12	56	16	30	8	2
wati	167	1	151	3	12	5	0	5	0	0



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Project: Sand Mining Project (Jehanabad Block No -15 Sand Ghat) at Riverbed of River Dhab at Mauja Rustamchak, Anchal – Ratani Faridpur, Dist – Jehanabad (Bihar)

bl Bigha	58	3	29	0	26	4	0	0	0	4
narh	858	267	392	59	140	336	39	248	9	40
khana Samha	146	7	17	2	120	110	31	56	0	23
ankaria	905	141	477	43	244	205	4	187	2	12
ahmadpur	423	81	304	6	32	11	0	6	3	2
andea	617	225	229	42	121	198	15	131	31	21
umardih	851	54	236	22	539	94	0	30	1	63
phara	1781	745	769	49	218	183	61	85	3	34
ira Bigha	154	38	30	15	71	132	6	88	14	24
ganwan	2431	881	725	91	734	360	34	193	54	79
ren	3027	370	604	151	1902	768	95	429	21	223
marpur	280	84	162	5	29	2	2	0	0	0
andanpura	379	64	107	18	190	37	1	16	4	16
hta	333	34	136	27	136	100	7	22	18	53
idpur	302	10	258	0	34	0	0	0	0	0
rka	510	167	257	31	55	38	0	37	0	1
arayanpur	223	199	8	0	16	0	0	0	0	0
alanaur	1478	477	867	9	125	432	39	330	29	34
ekuli	467	192	180	17	78	331	33	235	49	14
rthua	933	227	517	16	173	34	1	19	5	9
injumla	Uninhabited Village									
nahda	633	94	408	8	123	341	22	302	3	14
ewari	567	147	287	10	123	58	4	16	0	38
akhdumpur (NP)/19 Wards	6652	1058	1851	302	3441	2717	116	1805	83	713
adarapur	96	73	2	0	21	72	2	31	2	37
akhdumpur	601	134	352	16	99	515	52	390	21	52
apea	178	63	97	0	18	194	11	180	1	2
ampur	168	99	64	0	5	2	1	0	1	0
dpura	0	0	0	0	0	27	2	25	0	0
kuatanr	13	4	8	0	1	185	1	183	0	1
anikpur Baliari	54	3	23	6	22	570	48	501	10	11
araur	169	85	69	3	12	19	5	1	0	13
ipur	504	209	77	151	67	127	9	96	1	21
shunpur urur	578	127	212	35	204	160	13	80	26	41
dhay	1	0	1	0	0	227	37	159	21	10



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Project: Sand Mining Project (Jehanabad Block No -15 Sand Ghat) at Riverbed of River Dhab at Mauja Rustamchak, Anchal – Ratani Faridpur, Dist – Jehanabad (Bihar)

gar	165	8	126	14	17	127	3	63	1	60
odipur	112	76	33	0	3	123	118	2	0	3
hori	301	44	212	17	28	427	49	236	9	133
elda	358	7	320	7	24	12	0	11	0	1
lempur 3	572	26	322	155	69	12	1	7	2	2
utlupur	26	3	2	1	20	255	63	172	1	19
chanpur	250	73	78	7	92	129	59	49	8	13
ahimapur	143	3	98	9	33	39	1	4	2	32
hwara	169	121	15	2	31	322	74	228	10	10
inpur	171	88	66	4	13	20	6	14	0	0
asalpur	171	35	72	7	57	147	48	21	7	71
dipur	32	0	3	1	28	275	52	84	20	119
ohiyakamalpur	412	50	319	10	33	45	5	19	1	20
espa	606	215	273	12	106	79	3	62	0	14
upaspur	1016	92	724	11	189	174	15	117	5	37
lempur 4	32	10	0	2	20	138	52	42	4	40
aulatpur	360	76	165	27	92	1230	10	1074	40	106
arsiwan	700	76	308	24	292	412	16	232	10	154
mpur 2	52	38	4	1	9	14	7	1	0	6
naragpur	Uninhabited Village									
nelampur	290	2	104	5	179	27	1	9	0	17
erpur	92	1	65	16	10	27	0	14	6	7
nairwa	380	9	338	16	17	67	3	40	17	7
msar	747	111	533	13	90	58	16	26	1	15
garnathpur	65	18	42	1	4	17	2	13	0	2
oni	1058	597	374	18	69	210	15	140	0	55
azidpur Sakti	94	21	12	10	51	229	12	53	0	164
nanapur	418	18	262	0	138	226	3	110	1	112
dopur	423	61	60	0	302	417	13	298	8	98
ahopur	138	42	19	7	70	185	45	82	5	53
aid Bigha	634	31	504	15	84	106	4	61	6	35
upaspur	211	41	105	11	54	99	13	61	5	20
narhata Aghatpur	834	0	805	7	22	8	0	6	1	1
uri	658	224	358	17	59	305	103	129	31	42
en	800	246	366	26	162	253	11	85	36	121



Project: Sand Mining Project (Jehanabad Block No -15 Sand Ghat) at Riverbed of River Dhab at Mauja Rustamchak, Anchal – Ratani Faridpur, Dist – Jehanabad (Bihar)

angti	319	149	132	1	37	137	65	62	0	10
priyawan	219	61	79	9	70	890	34	692	24	140
nda Bigha	496	52	386	7	51	80	10	38	0	32
i Bigha	1905	109	433	552	811	915	78	213	177	447
anjhar	784	121	582	17	64	477	20	400	10	47
ormathu	912	328	430	10	144	133	26	72	0	35
glish	Uninhabited Village									
TOTAL (10km)	88309	22278	41287	3703	21041	39502	4707	25529	2484	6782

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 (Jehanabad Block No -15 Sand Ghat) at Riverbed of River Dhab at Mauja Rustamchak, Anchal – Ratani Faridpur, Dist – Jehanabad (Bihar)

Distribution of work participation rate of the study area population is shown in **Table 3.36** as follows;

Table 3.36: Distribution of Work Participation Rate (10km)

Occupation Class	Year, 2011
Main Workers	88309 (23.0%)
Male	69372(78.6%)
Female	18937(21.4%)
Marginal Workers	39502(10.0%)
Male	23077(58.4%)
Female	16425(41.6%)
Non-Workers	259891(67.0%)
Male	109298 (42.0%)
Female	150593(58.0%)
Total Population (10km)	387702
<i>Source: Census of India Records, 2011</i>	

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

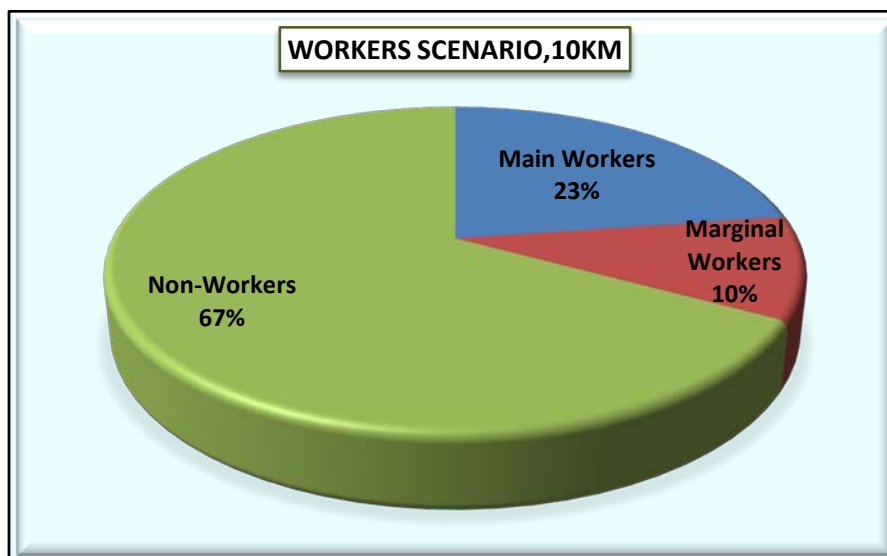


Figure 3.13: Workers Scenario of Study Area

Project: Sand Mining Project (Jehanabad Block No -15 Sand Ghat) at Riverbed of River Dhab at Mauja Rustamchak, Anchal – Ratani Faridpur, Dist – Jehanabad (Bihar)

Composition of Main Workers:

The 'Main Workers' were observed as 88309 persons (23.0%) to the total population (387702) of the study area and its composition is made-up of Casual laborers as 22278 (25.0%), Agricultural laborers as 41287 (47.0%), Household workers 3703 (4.0%) and other workers as 21041 (24.0%) respectively.

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

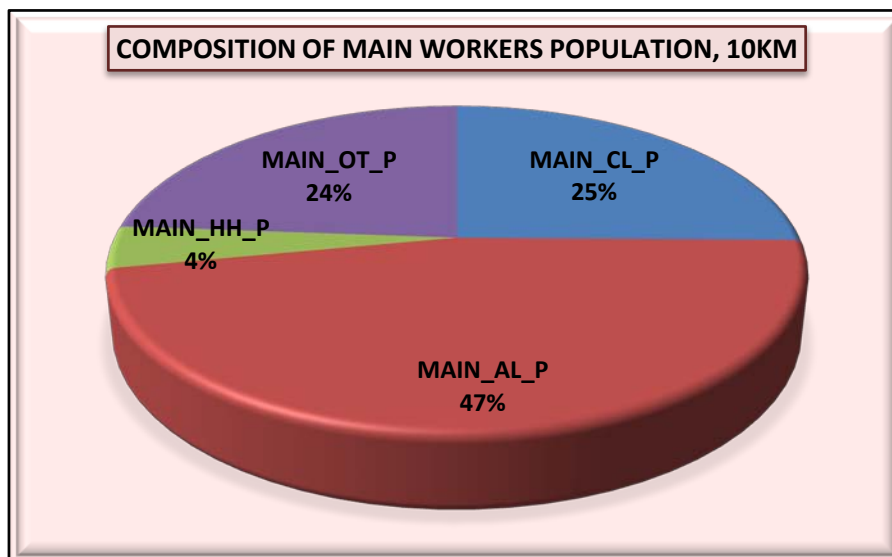


Figure 3.14: Composition of Main Workers Population

Composition of Marginal Workers:

The total marginal workers are observed as 39502 which constitute 10.0% to the total population (387702) comprising of Marginal Casual Laborers as 4707 (12.0%), Marginal Agricultural Laborers as 25529 (65.0%), Marginal Household laborers as 2484 (6.0%) and marginal other workers were also observed as 6782 (17.0%) of the total marginal workers respectively.

Details about marginal workers in the study area are tabulated in **Table 3.36**. Composition of Marginal workers is shown in **Figure 3.15** as follows.

Project: Sand Mining Project (Jehanabad Block No -15 Sand Ghat) at Riverbed of River Dhab at Mauja Rustamchak, Anchal – Ratani Faridpur, Dist – Jehanabad (Bihar)

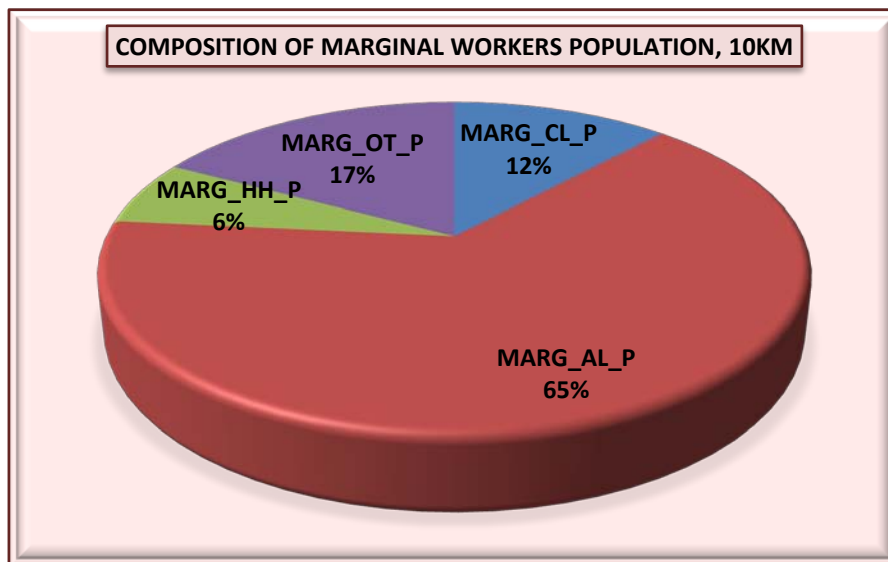


Figure 3.15: Composition of Marginal Workers

Composition of Non-Workers:

The total Non-worker's population was observed as 259891 which accounts 67.0% to the total population (387702) of the study area. Male-female wise Non-worker's population was recorded as 109298 Males (42.0%) and 150593 Females (58.0%) respectively.

Details about Total Non-workers in the study area are compiled in **Table 3.37** Graphical representation of Non-worker's population is shown as follows in **Figure 3.16**.

Table 3.37: Composition of Non-Workers

Non-Workers Population		
Persons	Males	Females
259891	109298 (42.0%)	150593(58.0%)

Project: Sand Mining Project (Jehanabad Block No -15 Sand Ghat) at Riverbed of River Dhab at Mauja Rustamchak, Anchal – Ratani Faridpur, Dist – Jehanabad (Bihar)

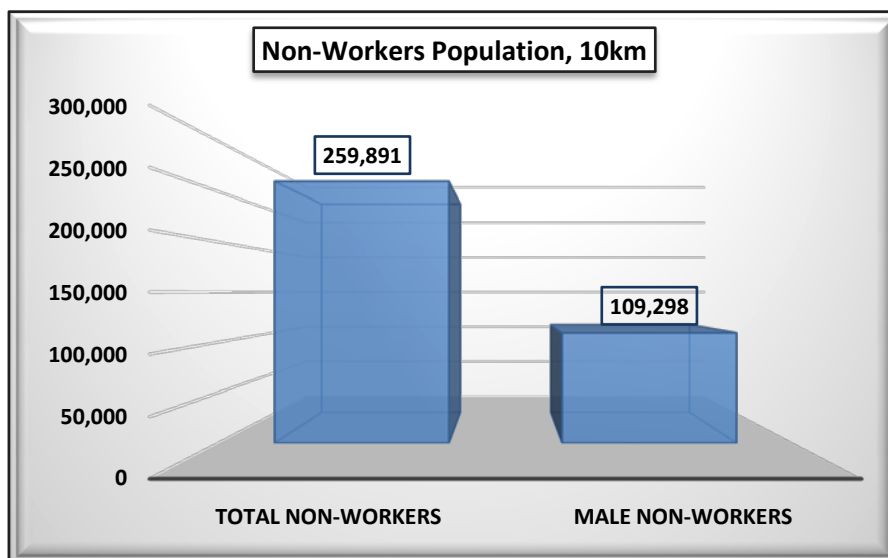


Figure 3.16: Composition of Non-Workers

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, Jehanabad and Gaya districts in Bihar state. The study area has an 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 212 villages and one town named Makhdumpur (NP)/19 Wards lying under Jehanabad and Gaya Districts in Bihar state. Overall study area villages are falling mainly under Six (06) no. of tehsils namely Ratni Faridpur (58 villages), Jehanabad (27 villages), Kako (02 villages), Makhdumpur (72 villages and one town), Tikari (43 villages) and Belaganj (10 villages) of Jehanabad and Gaya districts in Bihar state. About ten (10) villages were found as uninhabited villages in the 10km radial study zone.

Educational Facilities

There is a total no. of 218 Primary schools existing in the 10km radius study area. About 109 no. of Middle schools are found in the study area. About 23 no. of Higher Secondary School (SS) and only 11 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

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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 5to 10km range.

Availability of University Education in Patna District

There are several affiliated and constituted colleges of the Magadh University, Bodh Gaya which imparts under graduate and post graduate education in the district. IGNOU (Indira Gandhi National Open University) has opened study center at Maa Kamia Chandirikajee Management College in Jehanabad where one can study many distance courses of under graduate and post graduate level.

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 9 no of primary health centersexistin 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 42no of Primary Health Sub-Centers exists in the villages of the study area. Only 31no of Mother & Child Welfare Centersarefound in the study area. Noallopathic hospitalexists in the study area. Only 10 no of Medical Dispensaries were 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 213 villages/town,only45 villages (21.1%)are served with River/Canal water in the study area. As per the census records 2011, only one village named Alampur under Tikari tehsil of Gaya district was foundbeing served with Tank/Pond/Lake as potable water facility in the study area.

Communication, Road & Transport Facilities

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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 51 villages(24.0%) 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 Makhdumpur Gaya Railway Station located at a distance of approx. 4.65 km, in East direction. Nearest National Highway, NH-22 passing at 4.35 km away in East direction. Nearest Town is Makhdumpur, situated at 4.51 km in ESE direction. District Headquarters of Jehanabad, is situated at approx. 15.47km away towards North direction. Nearest airport is Gaya International Airport is located at 38.25 km away towards South direction.

Communications (Patna District)

Roads–The district of Jehanabad is well served by a network of roads. Road communication is the main mode of transportation in this district. The roads are classified as the National Highways, State Highways, Major district roads and other district roads. They are maintained by the Public Works Department, the Rural Engineering Organisation, the Zila Parishad and Municipalities. It is also connected with the interior of the district by metalled road. One National Highway (NH) and One State Highway (SH) cross the district. NH- 110 passes through the district. SH-5 also passes through the district.

Railways - The district of Jehanabad has a railway communication system. It is served by East

Central Railway.

Airway - Airways facilities are not available in the district.

Boats – Waterways facilities are not available in the district.

Banking Facility

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

Trade and Commerce

The development of the means of communication has had a great impact on the trade and commerce of the district. The district may now be said to be fairly well- connected by Road and Rail. Jehanabad is hub of the trade and commerce in the district. The trade consists of mainly export of oil-seeds, gur, hides and vegetables. The principal imports are coal, cloth, kerosene oil, tea, timber, tobacco, spices, dried and fresh fruits, paper and other consumer goods. Modernization has also had an impact on choice of items.

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The district is covered with net-work of markets consisting of a number of permanent shops dealing mainly in grains and vegetables. In the rural areas haats (village markets) are held twice a week.

Mines and Minerals

The district is devoid of mines and minerals. The land of district is formed of fertile Gangeticalluvium.

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 101 villages (47.4%) of the study area are electrified for domestic purpose, 80 villages (37.6%) for agricultural purpose, for commercial & for all purposes in the study area. Out of 213 villages/towns in the study area, 97 villages (45.0%) including 10 uninhabited villages were found not electrified for any purpose in the study area.

The district receives its entire power supply from Bihar State Electricity Board. All the towns of Jehanabad district have 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. 318 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 3.38** as follows;

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Project: Sand Mining Project (Jehanabad Block No -15 Sand Ghat) at Riverbed of River Dhab at Mauja Rustamchak, Anchal – Ratani Faridpur, Dist – Jehanabad (Bihar)

Table 3.38: Village wise Basic Amenities Availability

Name of the Village/Town	Educational				Medical						Drinking Water					C T	Community & Transport				Approach to the Village				Power Supply				Nearest Town Distance, km			
	P	M	S	S	C	P	P	M	H	D	F	T	W	H	T		R	T	P	P	B	R	P	K	N	F	E	E		E	E	
			S	S	H	H	H	C			W			P	W		k	O	O	S	S	R	R	W	P	D	A	C	A			
1. District Jehanabad, Bihar																																
Harnakhas	1	0	0	0	0	0	0	0	0	0	0	2	2	1	2	2	2	2	2	2	2	2	2	1	1	2	1	2	2	2	2	Jehanabad,33km
Surahi	1	0	0	0	0	0	0	0	0	0	0	2	2	1	2	2	2	2	2	2	2	2	2	1	1	2	1	2	2	2	2	Jehanabad,32km
Bheriya	Uninhabited Village																											Jehanabad,32km				
Noawan	3	2	1	0	0	1	1	1	0	1	1	2	2	1	2	1	2	2	1	2	2	2	2	1	1	2	1	2	2	2	2	Jehanabad,15km
Salarpur	1	1	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	2	Jehanabad,12km
Gopalpur	Uninhabited Village																											Jehanabad,12km				
Shahmahmad Bigha	1	0	0	0	0	0	0	0	0	0	0	2	2	1	2	1	2	2	2	2	2	2	2	1	1	2	1	1	2	2	2	Jehanabad,12km
Shakurabad	1	1	1	0	0	1	1	1	0	1	1	2	2	1	1	1	2	2	1	1	1	2	2	1	2	2	1	1	2	2	2	Jehanabad,15km
Sisamma	1	0	0	0	0	0	0	0	0	0	0	2	2	1	1	2	2	2	1	2	2	2	2	1	1	1	1	2	2	2	2	Jehanabad,15km
Hasanpura	1	0	0	0	0	0	0	0	0	0	0	2	2	1	2	2	2	2	2	2	2	2	2	2	1	2	1	1	2	2	2	Jehanabad,17km
Uchhta	2	1	0	0	0	0	0	0	0	0	0	2	2	1	1	2	2	2	2	2	2	2	2	1	1	2	1	2	2	2	2	Jehanabad,12km
Faridpur	1	0	0	0	0	1	1	1	0	1	1	2	2	1	2	2	2	1	1	2	2	2	2	2	2	2	1	2	2	2	2	Jehanabad,14km
Ganankura	1	0	0	0	0	0	0	0	0	0	0	2	1	1	2	2	2	2	2	2	2	2	2	2	1	2	1	2	2	2	2	Jehanabad,18km
Mirzapur	1	1	0	0	0	0	0	0	0	0	0	2	2	1	2	2	2	2	2	2	2	2	2	1	2	2	1	2	2	2	2	Jehanabad,20km
Lodhan Chak	Uninhabited Village																											Jehanabad,20km				
Qazi Chak	1	0	0	0	0	0	0	0	0	0	0	2	2	1	2	2	2	2	2	2	2	2	2	1	2	2	1	2	2	2	2	Jehanabad,25km
Kundla	1	1	0	0	0	0	0	0	0	0	0	2	2	1	2	2	2	2	2	2	2	2	2	1	1	2	1	2	2	2	2	Jehanabad,20km
Jagarnath pur	1	0	0	0	0	0	0	0	0	0	0	2	1	1	2	2	2	2	1	2	2	1	1	1	1	1	1	2	2	2	2	Jehanabad,20km
Kundla Ahar	Uninhabited Village																											Jehanabad,20km				
Ratni	1	1	1	1	0	0	1	1	0	0	1	2	1	1	2	2	2	2	1	2	2	2	2	1	2	2	1	2	2	2	2	Jehanabad,17km
Shahbazpur	1	0	0	0	0	0	0	0	0	0	0	2	2	1	2	2	2	2	2	2	2	2	2	1	2	2	1	2	2	2	2	Jehanabad,19km
Kansua	5	1	0	0	0	0	0	0	0	0	0	2	2	1	2	2	2	2	2	2	2	2	2	1	1	2	1	2	2	2	2	Jehanabad,26km
Murgiga Chak	1	0	0	0	0	0	0	0	0	0	0	2	2	1	2	1	2	2	2	2	2	2	2	2	1	2	1	2	2	2	2	Jehanabad,30km
Mudhara	0	0	0	0	0	0	1	1	0	0	1	2	1	1	2	1	2	2	2	2	2	2	2	1	1	2	1	2	2	2	2	Jehanabad,35km



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Gopalpur	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	2	Jehanabad,35km
Ghejan	1	1	0	0	0	0	0	0	0	0	0	2	1	1	2	1	2	2	1	2	1	2	1	1	2	1	2	2	2	2	Jehanabad,20km	
Gyani Bigha	1	1	0	0	0	0	0	0	0	0	0	2	2	1	2	1	2	2	1	2	2	2	1	1	2	1	2	2	2	2	Jehanabad,20km	
Rustan Chak	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	2	2	2	2	Jehanabad,20km	
Utra Patti	1	1	0	0	0	1	1	1	0	1	1	2	1	1	2	2	2	2	2	2	2	2	1	1	2	1	2	2	2	2	Jehanabad,31km	
Pokhanwan	1	1	0	0	0	0	1	1	0	0	1	2	2	1	2	2	2	2	2	2	2	2	1	1	2	1	1	2	2	2	Jehanabad,30km	
Bijulipur	0	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	Jehanabad,33km	
Shankar Bigha	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	2	2	2	2	Jehanabad,27km	
Hajampur	1	0	0	0	0	0	0	0	0	0	0	2	1	1	2	2	2	1	2	2	2	2	1	1	2	1	1	2	2	2	Jehanabad,27km	
Kakhaura	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	Jehanabad,31km	
Pandaul	1	1	0	0	0	1	1	1	0	1	1	2	2	1	2	1	2	2	1	2	2	2	1	2	2	1	1	2	2	2	Jehanabad,25km	
Bedauli	1	1	0	0	0	0	0	0	0	0	0	2	2	1	2	2	2	2	2	2	2	2	1	2	2	1	1	2	2	2	Jehanabad,31km	
Misraulia	0	0	0	0	0	0	0	0	0	0	0	2	1	1	2	2	2	2	2	2	2	2	2	1	2	1	2	2	2	2	Jehanabad,32km	
Fauladpur	1	0	0	0	0	0	0	0	0	0	0	2	1	1	2	2	2	2	2	2	2	2	1	1	2	1	2	2	2	2	Jehanabad,20km	
Nirpur Ratni	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	2	2	2	2	Jehanabad,21km	
Aira	1	1	1	0	0	0	0	0	0	0	0	2	2	1	2	2	2	1	2	2	2	2	1	1	2	1	2	2	2	2	Jehanabad,27km	
Ishaq Chak	0	0	0	0	0	0	0	0	0	0	0	2	1	1	2	2	2	2	2	2	2	2	1	2	2	1	2	2	2	2	Jehanabad,22km	
Rakasia Deyal Chak	1	1	1	0	0	0	1	1	0	0	1	2	2	1	2	2	2	2	2	2	2	2	1	2	2	1	2	2	2	2	Jehanabad,16km	
Mahaddipur	1	0	0	0	0	0	1	1	0	0	1	2	1	1	2	2	2	2	2	2	2	2	1	1	2	1	2	2	2	2	Jehanabad,18km	
Arif Chak	0	0	0	0	0	0	1	1	0	0	1	2	1	1	2	2	2	2	2	2	2	2	1	2	2	1	2	2	2	2	Jehanabad,18km	
Chak Saura	1	1	0	0	0	0	1	1	0	0	1	2	1	1	2	2	2	2	2	2	2	2	1	2	2	1	2	2	2	2	Jehanabad,18km	
Chagori	2	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	Jehanabad,18km	
Bhagwanpur	1	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	1	1	1	1	Jehanabad,16km	
Sikandarpur	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	2	2	2	2	Jehanabad,15km	
Pirijpura	1	0	0	0	0	0	0	0	0	0	0	2	2	1	2	2	2	2	2	2	1	2	1	2	1	1	2	2	2	2	Jehanabad,15km	
Galimapur	1	0	0	0	0	0	0	0	0	0	0	2	2	1	1	2	2	2	2	2	2	2	1	2	2	1	2	2	2	2	Jehanabad,18km	
Sareya	1	1	0	0	0	0	0	0	0	0	0	2	2	1	2	2	2	2	2	2	2	2	1	1	2	1	2	2	2	2	Jehanabad,15km	
Manpur	1	0	0	0	0	0	0	0	0	0	0	2	2	1	2	1	2	2	2	2	2	1	2	1	2	2	1	2	2	2	Jehanabad,19km	
Salempur 1	1	1	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	Jehanabad,20km	
Saraya	1	0	0	0	0	0	0	0	0	0	0	2	1	1	2	2	2	2	2	2	2	2	1	2	2	1	2	2	2	2	Jehanabad,19km	
Rampur 1	0	0	0	0	0	0	0	0	0	0	0	2	2	1	2	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	Jehanabad,20km	
Patiawan	1	1	0	0	0	0	0	0	0	0	0	2	1	1	2	2	2	2	1	2	2	2	1	2	2	1	2	2	2	2	Jehanabad,20km	
Bishunpur	1	0	0	0	0	0	0	0	0	0	0	2	1	1	2	1	2	2	2	2	2	2	1	1	2	1	2	2	2	2	Jehanabad,22km	



Chapter-III

BASELINE DATA DESCRIPTION

Project: Sand Mining Project (Jehanabad Block No -15 Sand Ghat) at Riverbed of River Dhab at Mauja Rustamchak, Anchal – Ratani Faridpur, Dist – Jehanabad (Bihar)

Narayanpur	1	0	0	0	0	0	0	0	0	0	0	2	1	1	2	1	2	2	2	2	2	2	2	2	1	2	1	2	2	2	2	Jehanabad,22km
Rupaspur	1	0	0	0	0	0	0	0	0	0	0	2	2	1	2	2	2	2	2	2	2	2	2	1	1	2	1	1	2	2	2	Jehanabad,12km
Tali	1	1	0	0	0	0	0	0	0	0	0	2	2	1	2	2	2	2	2	2	1	2	1	1	2	1	2	2	2	2	Jehanabad,5km	
Ghosi	1	0	0	0	0	0	0	0	0	0	0	2	2	1	2	2	2	2	2	2	2	2	2	1	2	1	2	2	2	2	Jehanabad,10km	
Turkaul	0	0	0	0	0	0	0	0	0	0	0	2	2	1	2	1	2	2	2	2	2	1	2	2	1	2	1	2	2	2	Jehanabad,10km	
Alampur	1	1	0	0	0	0	0	0	0	0	0	2	2	1	2	2	2	2	2	2	1	2	2	2	2	2	1	2	2	2	Jehanabad,10km	
Chainpura	1	1	0	0	0	0	1	1	0	0	1	2	2	1	2	2	2	2	2	2	1	2	1	1	2	1	1	2	2	2	Jehanabad,10km	
Imadpur	1	0	0	0	0	0	0	0	0	0	0	2	2	1	2	2	2	2	2	2	1	2	1	1	2	1	1	2	2	2	Jehanabad,10km	
Karauta	1	0	0	0	0	0	0	0	0	0	0	2	2	1	2	2	2	2	2	2	1	2	1	1	2	1	1	2	2	2	Jehanabad,10km	
Basatpur	1	1	0	0	0	0	0	0	0	0	0	2	2	1	2	2	2	2	2	2	1	2	1	1	2	1	1	2	2	2	Jehanabad,10km	
Paras Bigha	1	1	0	0	0	0	1	1	0	0	1	2	2	1	1	2	2	2	2	2	2	2	1	1	2	1	2	2	2	2	Jehanabad,7km	
Dohia	1	0	0	0	0	0	0	0	0	0	0	2	2	1	1	2	2	2	2	2	2	2	2	1	2	1	1	1	2	2	Jehanabad,5km	
Pandui	1	1	1	0	0	0	0	0	0	0	0	2	2	1	1	1	2	2	1	2	1	2	1	2	1	1	1	1	2	2	Jehanabad,5km	
Jamuawan	1	1	0	0	0	0	0	0	0	0	0	2	2	1	1	2	2	2	2	2	2	2	2	2	2	1	1	1	2	2	Jehanabad,6km	
Mandil	1	1	0	1	0	0	1	1	0	0	1	2	2	1	1	1	2	2	1	2	2	2	1	1	1	1	1	1	2	2	Jehanabad,8km	
Salempur 2	0	0	0	0	0	0	0	0	0	0	0	2	2	1	2	2	2	2	2	2	2	2	2	1	2	1	2	2	2	2	Jehanabad,10km	
Lilam	1	0	0	0	0	0	0	0	0	0	0	2	2	1	2	2	2	2	2	2	2	2	2	1	2	1	2	2	2	2	Jehanabad,9km	
Pakri	1	1	0	0	0	0	0	0	0	0	0	2	2	1	1	2	2	2	2	2	2	1	2	1	1	2	1	1	2	2	Jehanabad,11km	
Kalupur	1	1	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	Jehanabad,10km	
Balwa	0	0	0	0	0	0	0	0	0	0	0	2	2	1	2	2	2	2	2	2	2	2	2	1	1	2	1	2	2	2	Jehanabad,10km	
Rasidpur	1	0	0	0	0	0	0	0	0	0	0	2	2	1	2	2	2	2	2	2	2	2	2	1	1	2	1	1	2	2	Jehanabad,10km	
Ganwan	1	1	0	0	0	0	1	1	0	0	1	2	2	1	2	2	2	2	2	2	1	2	1	1	2	1	1	2	2	2	Jehanabad,10km	
Ghosi	1	0	0	0	0	0	0	0	0	0	0	2	2	1	2	2	2	2	2	2	1	2	1	1	2	1	2	2	2	2	Jehanabad,10km	
Bajidpur	1	0	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	1	2	2	Jehanabad,6km	
Mohanpur	1	0	0	0	0	0	1	1	0	0	1	2	2	1	2	2	2	2	2	2	2	2	2	1	2	1	1	2	2	2	Jehanabad,10km	
Amain	1	1	0	0	0	0	0	0	0	0	0	2	2	1	1	2	2	2	1	2	2	2	1	1	2	1	1	1	2	2	Jehanabad,10km	
Bazidpur	0	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	2	2	2	2	Jehanabad,10km	
Sikariya	1	1	1	0	0	1	1	1	0	1	1	2	2	1	1	2	2	2	1	2	1	2	1	1	2	1	1	2	2	2	Jehanabad,16km	
Niazipur	1	0	0	0	0	0	0	0	0	0	0	2	1	1	1	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	Jehanabad,10km	
Dharampur	2	2	0	0	0	0	0	0	0	0	0	2	2	1	1	2	2	2	1	2	2	2	1	1	2	1	2	2	2	2	Jehanabad,6km	
Naugarh	1	1	0	0	0	0	0	0	0	0	0	2	2	1	2	2	2	2	2	2	2	2	1	2	1	1	1	1	2	2	Makhdumpur,9km	
Sukna Bigha	1	0	0	0	0	0	0	0	0	0	0	2	2	1	2	2	2	2	2	2	2	2	2	1	2	1	1	2	2	2	Makhdumpur,12km	
Kazi chak	1	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	Makhdumpur,10km	



Chapter-III

BASELINE DATA DESCRIPTION

Project: Sand Mining Project (Jehanabad Block No -15 Sand Ghat) at Riverbed of River Dhab at Mauja Rustamchak, Anchal – Ratani Faridpur, Dist – Jehanabad (Bihar)

Sohjana	1	1	0	0	0	0	0	0	0	0	0	2	2	1	2	2	2	2	2	2	2	2	1	1	2	1	2	2	2	2	Makhdumpur,5km	
Chhariyari	6	2	1	0	0	0	1	1	0	0	1	2	2	1	2	2	2	1	2	2	2	2	1	1	2	1	2	1	2	2	Makhdumpur,6km	
Jamalpur	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	2	2	2	2	Makhdumpur,6km	
Mahewa	2	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	2	2	2	2	Makhdumpur,5km	
Moghal Bigha	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	Makhdumpur,3km	
Kachnanwan	1	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	1	2	2	2	Makhdumpur,4km	
Raja Bigha	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	1	1	1	1	Makhdumpur,5km	
Danu Bigha	1	0	0	0	0	0	0	0	0	0	0	2	2	1	2	1	2	2	2	2	2	2	2	1	2	2	1	1	1	2	2	Makhdumpur,7km
Ismailpur	1	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	Makhdumpur,6km	
Koile	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	Makhdumpur,6km	
Jagdishpur	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	Makhdumpur,9km	
Ghazipur	0	0	0	0	0	0	0	0	0	0	0	2	2	1	2	1	2	2	2	2	2	2	1	2	2	1	2	2	2	2	Makhdumpur,5km	
Sewati	1	1	0	0	0	0	0	0	0	0	0	2	2	1	2	2	2	2	2	2	2	2	1	2	2	1	1	1	2	2	Makhdumpur,10km	
Gol Bigha	1	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	1	1	2	2	Makhdumpur,10km	
Charh	2	2	0	0	0	0	0	0	0	0	0	2	2	1	1	2	2	2	1	2	2	2	1	1	2	1	1	1	2	2	Makhdumpur,13km	
Lakhan Samha	2	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	1	1	2	2	Makhdumpur,9km	
Kankaria	2	1	0	0	0	0	0	0	0	0	0	2	2	1	2	1	2	2	1	2	1	2	1	1	2	1	1	1	2	2	Makhdumpur,10km	
Mahmadpur	1	0	0	0	0	0	0	0	0	0	0	2	2	1	2	1	2	2	2	2	2	2	1	1	2	1	2	2	2	2	Makhdumpur,9km	
Bandea	1	1	0	0	0	0	0	0	0	0	0	2	2	1	2	2	2	1	2	2	2	2	1	1	2	1	1	1	2	2	Makhdumpur,4km	
Kumardih	1	1	0	0	0	0	0	0	0	0	0	2	2	1	1	1	2	2	2	2	2	2	1	1	1	1	1	1	2	2	Makhdumpur,9km	
Kohara	1	1	0	0	0	0	0	0	0	0	0	2	2	1	1	2	2	2	1	2	2	2	1	2	2	1	1	1	2	2	Makhdumpur,10km	
Mira Bigha	2	0	0	0	0	0	0	0	0	0	0	2	2	1	2	2	2	2	2	2	2	2	1	1	2	2	1	1	2	2	Makhdumpur,6km	
Suganwan	2	2	0	0	0	0	0	0	0	0	0	2	2	1	1	1	2	2	1	2	2	2	1	2	1	1	1	1	1	1	Makhdumpur,6km	
Saren	2	3	2	0	0	0	1	1	0	0	1	2	1	1	2	1	2	2	1	2	2	1	1	1	1	1	1	1	1	1	Makhdumpur,3km	
Amarpur	1	0	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	1	2	2	Makhdumpur,3km	
Nandanpura	2	0	0	0	0	0	0	0	0	0	0	2	2	1	1	2	2	2	2	2	2	2	1	2	2	1	1	2	2	2	Makhdumpur,3km	
Tehta	3	2	1	1	0	0	0	0	0	0	0	2	2	1	1	2	2	2	1	2	2	1	1	1	2	1	1	1	1	1	Makhdumpur,4km	
Saidpur	2	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	1	1	1	Makhdumpur,2km	
Surka	0	0	0	0	0	0	0	0	0	0	0	2	2	1	1	2	2	2	2	2	2	1	2	1	2	2	1	1	2	2	Makhdumpur,3km	
Narayanpur	1	1	0	0	0	0	0	0	0	0	0	2	2	1	2	2	2	2	2	2	2	2	1	1	2	1	2	2	2	2	Makhdumpur,3km	
Kalanaur	1	2	0	0	0	0	0	0	0	0	0	2	2	1	2	2	2	2	1	2	2	2	1	1	2	1	1	2	2	2	Makhdumpur,10km	
Dekuli	1	1	0	0	0	0	0	0	0	0	0	2	2	1	2	2	2	2	2	2	2	2	1	1	1	2	1	1	1	1	Makhdumpur,8km	
Sarthua	1	0	0	0	0	1	1	1	0	1	1	2	2	1	1	2	2	1	1	2	2	2	1	1	1	1	2	2	2	2	Makhdumpur,10km	



Chapter-III

BASELINE DATA DESCRIPTION

Project: Sand Mining Project (Jehanabad Block No -15 Sand Ghat) at Riverbed of River Dhab at Mauja Rustamchak, Anchal – Ratani Faridpur, Dist – Jehanabad (Bihar)

Minjumla	Uninhabited Village																										Makhdumpur,10km							
Punahda	1	0	0	0	0	0	0	0	0	0	0	0	0	2	2	1	2	2	2	2	2	2	2	2	2	1	2	2	1	1	1	2	2	Makhdumpur,11km
Newari	1	0	0	0	0	0	0	0	0	0	0	0	0	2	2	1	2	2	2	2	1	2	2	2	2	1	2	2	1	1	1	2	2	Makhdumpur,18km
Makhdumpur (NP)	Urban Part																										Makhdumpur (NP)							
2. District Gaya, Bihar																																		
Madarpur	1	1	0	0	0	0	0	0	0	0	0	0	0	2	2	1	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	Tikari,12km
Makhdumpur	1	1	1	0	0	0	1	0	0	0	0	0	0	2	2	1	1	2	2	2	1	2	2	2	2	2	1	2	1	2	2	2	2	Tikari,10km
Kapea	1	1	0	0	0	0	0	0	0	0	0	0	0	2	2	1	1	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	Tikari,16km
Alampur	1	0	0	0	0	0	0	0	0	0	0	0	0	2	2	1	1	1	1	2	2	2	2	2	2	2	1	2	1	2	2	2	2	Tikari,15km
Ridpura	1	0	0	0	0	0	0	0	0	0	0	0	0	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	Tikari,11km
Takuatanr	1	0	0	0	0	0	0	0	0	0	0	0	0	2	2	1	1	1	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	Tikari,10km
Manikpur Baliari	1	1	1	1	0	0	0	0	0	0	0	0	0	2	2	1	2	2	2	2	1	1	1	1	1	1	1	1	1	1	2	2	2	Tikari,10km
Garaur	1	1	0	0	0	0	0	0	0	0	0	0	0	2	2	1	1	2	2	2	2	2	2	2	2	1	1	2	1	1	1	1	1	Tikari,12km
Alipur	1	1	0	0	0	0	0	0	0	0	0	0	0	2	2	1	1	2	2	2	2	2	2	2	1	2	1	1	2	1	1	1	1	Tikari,10km
Bishunpur urur	1	1	0	0	0	0	0	0	0	0	0	0	0	2	2	1	1	2	2	2	2	2	2	2	2	1	1	2	1	1	1	1	1	Tikari,14km
Sidhay	1	0	0	0	0	0	0	0	0	0	0	0	0	2	2	1	2	2	2	2	2	2	2	2	2	1	1	2	1	1	1	1	1	Tikari,12km
Agar	1	0	0	0	0	0	0	0	0	0	0	0	0	2	2	1	1	2	2	2	2	2	2	2	2	1	2	2	1	1	1	1	1	Tikari,15km
Lodipur	1	1	0	0	0	0	0	0	0	0	0	0	0	2	2	1	1	2	2	2	2	2	2	2	1	2	1	1	2	1	1	1	1	Tikari,18km
Ithori	1	0	0	0	0	0	0	0	0	0	0	0	0	2	2	1	2	2	2	2	2	2	2	2	2	1	2	1	2	2	2	2	2	Tikari,14km
Melda	1	0	0	0	0	0	1	0	0	0	0	0	0	2	2	1	1	1	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	Tikari,15km
Salempur 3	1	1	0	0	0	0	1	0	0	0	0	0	0	2	2	1	1	2	2	2	2	2	2	2	2	1	1	2	1	1	1	1	1	Tikari,15km
Kutlupur	1	0	0	0	0	0	1	1	0	0	0	0	0	2	2	1	1	2	2	2	2	2	2	2	2	1	2	1	1	1	1	1	1	Tikari,16km
Akhanpur	1	0	0	0	0	0	0	1	0	0	0	0	0	2	2	1	1	1	2	2	2	2	2	2	2	1	1	1	1	2	2	2	2	Tikari,12km
Mahimapur	1	1	0	0	0	0	0	0	0	0	0	0	0	2	2	1	1	2	2	2	2	2	2	2	2	1	2	1	1	1	1	1	1	Tikari,16km
Sahwara	1	0	0	0	0	0	1	0	0	0	0	0	0	2	2	1	2	2	2	2	2	2	2	2	1	2	2	1	1	1	1	1	1	Tikari,15km
Idinpur	1	1	0	0	0	0	0	0	0	0	0	0	0	2	2	1	2	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2	Tikari,16km
Rasalpur	1	0	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	1	1	1	1	1	Tikari,13km
Sadipur	1	0	0	0	0	0	0	0	0	0	0	0	0	2	2	1	1	2	2	2	2	2	2	2	1	2	2	1	1	1	1	1	1	Tikari,16km
Bohiyakamalpur	1	1	0	0	0	0	1	1	0	0	0	0	0	2	2	1	1	2	2	2	1	2	2	2	1	1	2	1	1	1	1	1	1	Tikari,16km
Kespa	1	1	1	1	0	1	1	1	0	1	1	1	1	2	1	1	1	2	2	2	1	2	2	2	1	1	2	1	1	1	1	1	1	Tikari,16km
Rupaspur	1	0	0	0	0	0	0	0	0	0	0	0	0	2	2	1	2	2	2	2	2	2	2	1	2	2	2	2	1	1	1	1	1	Tikari,18km
Salempur 4	1	0	0	0	0	0	0	0	0	0	0	0	0	2	2	1	2	2	2	2	2	2	2	1	2	2	2	2	1	1	1	1	1	Tikari,16km
Daulatpur	1	0	0	0	0	0	0	0	0	0	0	0	0	2	2	1	2	2	2	2	2	2	2	1	2	2	2	2	1	1	1	1	1	Tikari,14km



Chapter-III

BASELINE DATA DESCRIPTION

Project: Sand Mining Project (Jehanabad Block No -15 Sand Ghat) at Riverbed of River Dhab at Mauja Rustamchak, Anchal – Ratani Faridpur, Dist – Jehanabad (Bihar)

Barsiwan	1	0	0	0	0	0	0	0	0	0	0	2	2	1	2	2	2	2	2	2	1	2	2	2	2	2	2	2	2	Tikari,16km		
Rampur 2	1	1	1	1	0	0	0	0	0	0	0	2	2	1	2	2	2	2	1	1	1	1	1	1	1	1	2	2	2	2	Tikari,15km	
Kharagpur	Uninhabited Village																										Tikari,15km					
Bhelampur	1	1	0	0	0	0	1	0	0	0	0	2	2	1	1	2	2	2	2	2	2	2	1	1	2	1	1	1	1	1	Tikari,20km	
Sherpur	1	0	0	0	0	0	0	0	0	0	0	2	2	1	2	2	2	2	2	2	1	2	1	1	2	1	1	1	1	1	Tikari,20km	
Bhairwa	1	0	0	0	0	0	0	0	0	0	0	2	2	1	2	1	2	2	2	2	2	2	1	2	2	1	2	2	2	2	Tikari,18km	
Nimsar	1	1	0	0	0	0	1	0	0	0	0	2	2	1	2	1	2	2	1	2	2	2	2	1	2	1	2	2	2	2	Tikari,14km	
Jagarnathpur	1	1	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	1	1	1	Tikari,14km	
Noni	1	1	0	0	0	0	0	0	0	0	0	2	2	1	2	1	2	2	2	2	2	2	2	1	1	1	1	1	1	1	Tikari,14km	
Bazidpur Sakti	1	0	0	0	0	0	0	0	0	0	0	2	2	1	1	2	2	2	2	2	2	2	2	1	1	2	1	1	1	1	1	Tikari,8km
Thanapur	1	0	0	0	0	0	0	0	0	0	0	2	2	1	1	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	Tikari,14km
Sadopur	1	1	0	0	0	0	1	1	0	1	0	2	2	1	1	2	2	2	1	2	2	2	2	1	1	2	1	1	1	1	1	Tikari,14km
Shahopur	1	0	0	0	0	0	1	0	0	0	0	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	Tikari,10km
Baid Bigha	1	0	0	0	0	0	0	0	0	0	0	2	2	1	2	2	2	2	2	1	1	2	1	1	2	1	1	1	1	1	1	Tikari,3km
Rupaspur	1	1	0	0	0	0	0	0	0	0	0	2	2	1	1	2	2	2	2	2	2	2	2	1	1	2	1	1	1	1	1	Tikari,2km
Charhata Aghatpur	1	1	0	0	0	0	1	0	0	0	0	2	2	1	2	2	2	2	1	2	2	2	2	1	2	1	1	1	1	1	1	Gaya,32km
Turi	1	1	0	0	0	0	1	0	0	0	0	2	2	1	1	1	2	2	1	2	2	2	2	1	2	1	2	2	2	2	2	Gaya,32km
Men	1	1	0	0	0	0	1	0	0	0	0	2	2	1	2	1	2	2	1	2	2	2	2	1	2	1	1	1	1	1	1	Gaya,35km
Gangti	1	0	0	0	0	0	0	0	0	0	0	2	2	1	2	1	2	2	2	2	2	2	2	1	2	1	2	2	2	2	2	Gaya,36km
Koriyawan	1	1	1	1	0	0	1	0	0	0	0	2	2	1	2	1	2	2	1	2	2	2	2	1	2	1	2	2	2	2	2	Gaya,35km
Panda Bigha	1	1	0	0	0	0	0	0	0	0	0	2	2	1	1	1	2	2	1	2	2	2	2	1	2	1	2	2	2	2	2	Gaya,38km
Pai Bigha	5	2	1	1	0	1	1	1	0	1	1	2	2	1	2	1	2	2	1	2	2	2	1	1	2	1	1	1	1	1	1	Gaya,36km
Manjhar	1	1	0	0	0	0	1	0	0	0	0	2	2	1	2	2	2	2	1	2	1	2	1	1	1	1	1	1	1	1	1	Gaya,30km
Kormathu	1	1	1	1	0	0	1	0	0	0	0	2	2	1	2	1	2	2	1	2	2	2	2	1	2	1	1	1	1	1	1	Gaya,33km
Inglish	Uninhabited Village																										Gaya,29km					
TOTAL (10km)	2	1	2	1	0	9	4	3	1	0	26	<i>Status for Availability and Non-Availability is shown as A (1) & NA (2) respectively</i>																				

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

Abbreviations:

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

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

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



Project: Sand Mining Project (Jehanabad Block No -15 Sand Ghat) at Riverbed of River Dhab at Mauja Rustamchak, Anchal – Ratani Faridpur, Dist – Jehanabad (Bihar)

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: Project (Jehanabad Block No -15 Sand Ghat) at Riverbed of River Dhab at Mauja Rustamchak, Anchal – Ratani Faridpur, Dist – Jehanabad (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;

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

Anand Garh Palace - It is situated at about 5 km away in southwest from Karpi, the C.D. Block headquarters. The palace is known for its panoramic surroundings, elegant gardens and beautiful tanks.

Bhelawar Known for ancient temples of Lord Shiva, Bhelawar village is situated in Kako C.D. Block at about 11 km South-west of Jehanabad railway station. Sculptures of Hindu and Muslim periods have been found here. Every year a large fair is held on the eve of Shivaratri.

Bhaikh - Bhaikh village is at a distance of about 11 km from Makhdumpur, the C.D. Block headquarters. It has a hillock of Barabar hills and is known as Sidheshwar Nath, as on its summit there is a divine emblem of Lord Shiva. The hill contains two caves, Karanchaupar and Sudama, attributed to emperor Ashok.

Ghejan - Under Kurtha C.D. Block, Ghejan is an ancient village situated about 19 km South-east of Jehanabad town. It contains an old fortress where stone images of Lord Buddha and other images of Gupta period were excavated.

Kako - Kako village is the headquarters of Kako C.D. Block and is 10 Km East of Jehanabad Rly. Station on the Jehanabad Biharsharif Road. As per local legend, Kaikeyi, the step mother of Lord Ramchandra lived here for some time and the village owes its name from her. The village has a tomb of Hazrat Bibi Kamal Sahiba, a great Muslim lady saint. It is believed that this lady was the aunt of Hazrat Makhdumpur Saheb of Biharsharif.

Manikpur - Manikpur is situated nearly 6 km south of Kurtha. Cattle fair are held here on the occasions of Ramnavami and Ganga Dussehra, which lasts for a week on each occasion.

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

Ghosi - The village is headquarters of the C.D. Block of same name. It is situated at a distance of 16 km from Jehanabad Court railway station on the Patna Gaya branch line. The village has a big earthen mound known as Chandra-diha. As local tradition avers, the palace of a Hindu king, Chandrasena lies buried below the mound.

Keur- It is under Ghosi C.D. block at a distance of nearly 22 km south of Ghosi. The village has the ruins of a brick-building spread over a large area. According to some people it is the ruins of the old Vikramshila University. Only excavations can throw light about the fact.

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In the district of Jehanabad, no major social or cultural event has taken place during the decade. However, the district has been famous for fairs held at different places throughout the year. Fairs and festivals are held regularly in the district.

Rehabilitation & Resettlement (R & R)

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

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 landuse 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 Dhab 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

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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 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 over burden by trucks operated per hour on haul road. Emission of PM10 due to transportation of sand

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on haul road was 1.65×10^{-4} g/s/m² 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.

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.
- ✓ 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.

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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 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.
6.0	92	
4.0	95	
3.0	97	
2.0	100	
1 ½	102	
1	105	
¾	107	
½	110	
¼	115	

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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 Dhab 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.

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

Fauna

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

Mitigation measures

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.

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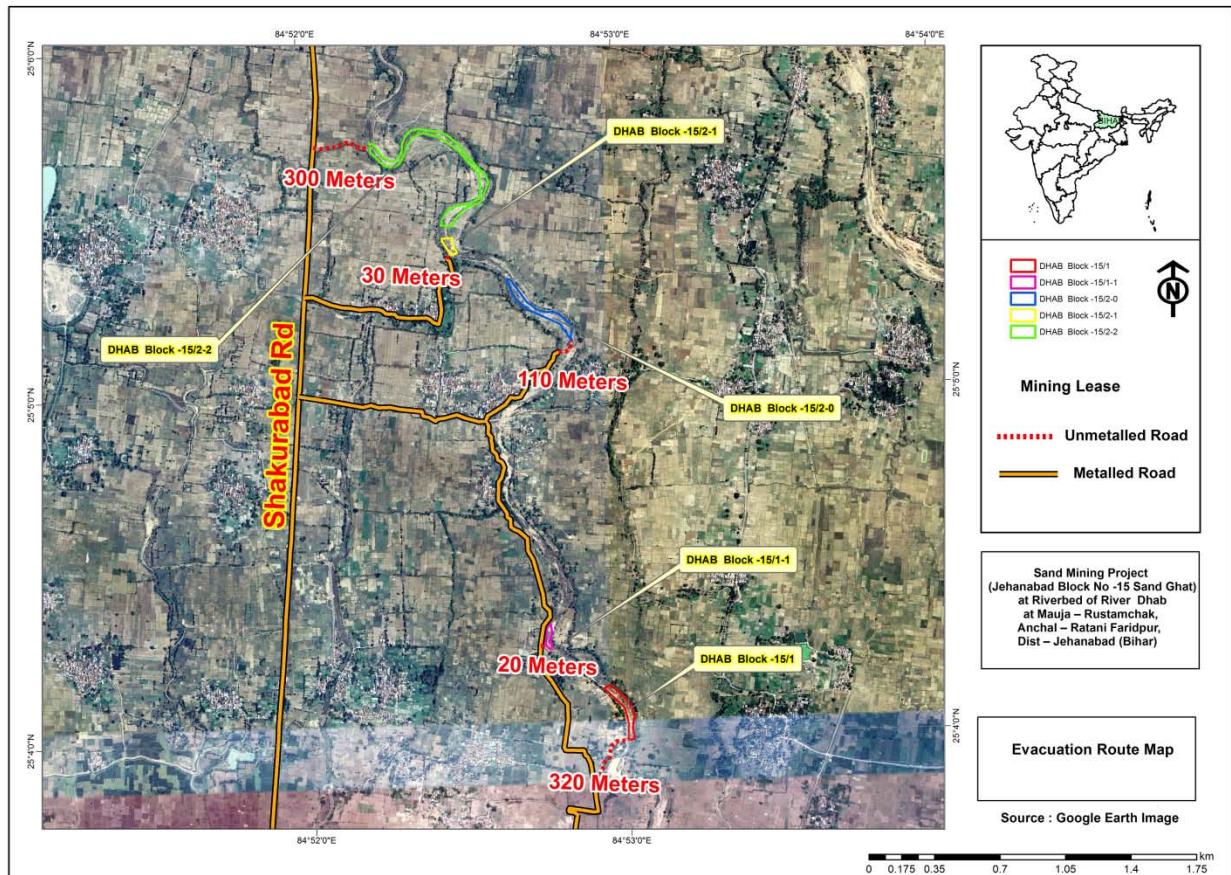


FIGURE 4.1 MAP SHOWING EVACUATION ROUTE

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.

Table 4.2 (i): Existing Traffic Scenario & LOS for Block 15

Road	V	C	Existing V/C Ratio	LOS
Highway NH-22	2500	15,000	0.16	A

Source: Capacity as per IRC: 64-1990

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

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

V/C	LOS	Performance
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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 **Block 15**

Proposed Capacity of Mine/annum : 135475 TPA

No. of working days : 250 days

Proposed Capacity of mine/day : 541.9

Truck Capacity : 16 tonnes

No. of trucks deployed/day : 33.8 or 34

Increase in PCU/day (34*3) : 102

Table 4.2 (ii): Modified Traffic Scenario & LOS

Road	V	C	Modified V/C Ratio	LOS
Highway NH-22	2500+102=2602	15000	0.17	B

Results

From the above analysis it can be seen that the LOS has changed from 0.16 to 0.173 at Highway intersection that is Remain '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.

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
2	Water Quality (Surface & Groundwater)	Once a season for 4 seasons in a year
3	Soil Quality	Once in a year in project area

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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.

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:

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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.
- ✓ Substitute something safer.
- ✓ Use engineering/design controls.

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- ✓ 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.

Risk analysis is done for:

- Forecasting any unwanted situation
- Estimating damage potential of such situation

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- 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

Table7.2, 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
C2 Major	3	5	8	12	16
C3 Moderate	6	9	13	17	20

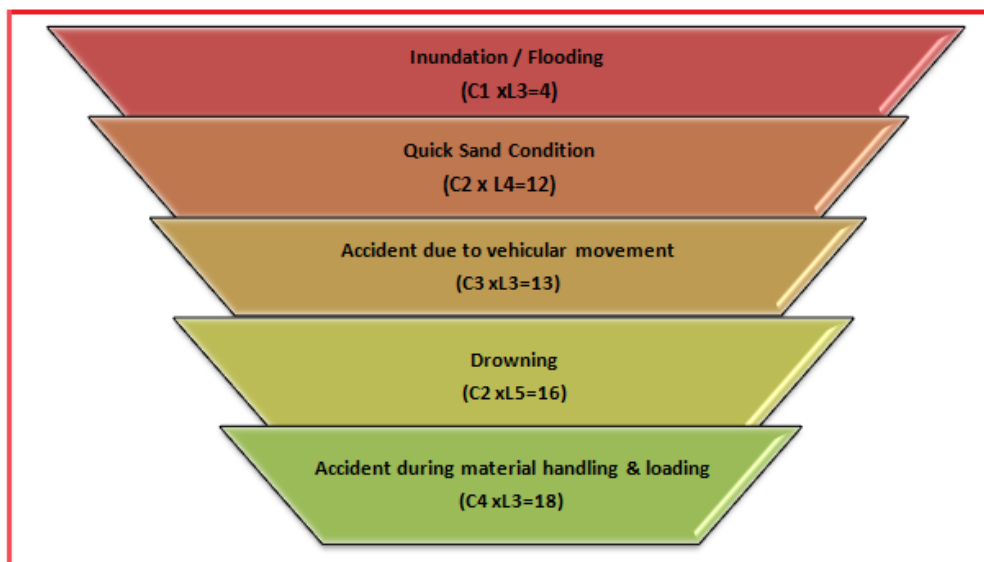
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C4 Minor	10	14	18	21	23
C5 Insignificant	15	19	22	24	25

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 sandmining and to assess its consequences of such events occurring and the likelihood based on above Table 7.1 (ii) are as:-

The Risk rating of such hazards is as follows:

7.2.1 INUNDATION/FLOODING

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

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

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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 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.

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2. The Vehicles will be maintained/repared and checked thoroughly by the competent person.
3. A statutory provision of constant education, training etc. will go a long way in reducing the incidents of such accidents.
4. Overloading will not be permitted and will be covered with tarpaulin.
5. The maximum permissible speed limit will be ensured.
6. The truck drivers will have valid driving license.

7.2.4 DROWNING

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

Measure to Prevent Drowning

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

7.2.5 ACCIDENT DURING MATERIAL HANDLING & LOADING

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

Measures to Prevent Accidents during material handling & loading

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

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.

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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: Jehanabad 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.

(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

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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 Jehanabad 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 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

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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.

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 31 people will get employment in this mining project for a period of ten months in a year. It is a positive impact of the

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

Impact on road development

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

Income to Government

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

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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 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.

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- 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 Ghat Mining Project (Jehanabad Block No -15 Sand Ghat) at Riverbed of River Dhab at Rustamchak, Anchal – Ratani Faridpur, Dist – Jehanabad (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.

Project: Sand Mining Project (Jehanabad Block No -15 Sand Ghat) at Riverbed of River Dhab at Mauja-Rustamchak, Anchal – Ratani Faridpur, Dist – Jehanabad (Bihar)

8.0 GENERAL

Various benefits are envisaged while planning for the mining of sand from Dhab 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 Dhab River bed quarry site have been found suitable from techno-economic consideration.

8.1 PHYSICAL BENEFITS

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

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

8.2 SOCIAL BENEFITS

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

Project: Sand Mining Project (Jehanabad Block No -15 Sand Ghat) at Riverbed of River Dhab at Mauja-Rustamchak, Anchal – Ratani Faridpur, Dist – Jehanabad (Bihar)

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.	0.50
	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.
- Reducing aggradations of river level.
- Protection of crops being cultivated along the bank.
- A check on illegal mining activity.

Project: Sand Mining Project (Jehanabad Block No -15 Sand Ghat) at Riverbed of River Dhab at Mauja-Rustamchak, Anchal – Ratani Faridpur, Dist – Jehanabad (Bihar)

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.

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

CSR COST is $77,60,800 \times 2\% = \text{Rs. } 1,55,216/-$

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 (Jehanabad Block No -15 Sand Ghat) at Riverbed of River Dhab at Mauja-Rustamchak, Anchal – Ratani Faridpur, Dist – Jehanabad (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:

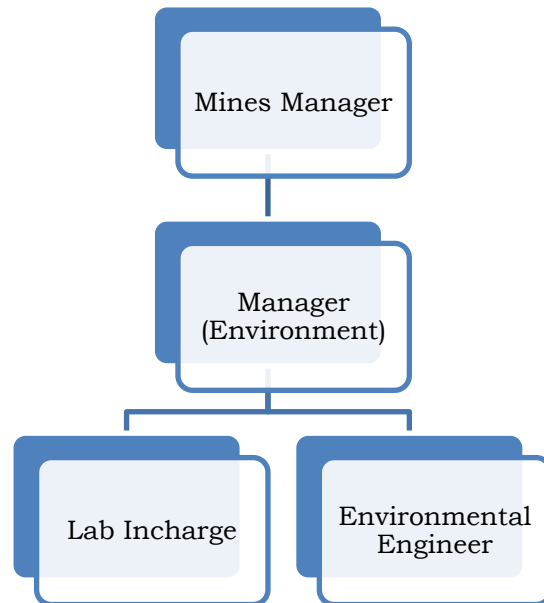


Figure 9.1 Environment Management Cell

Project: Sand Mining Project (Jehanabad Block No -15 Sand Ghat) at Riverbed of River Dhab at Mauja-Rustamchak, Anchal – Ratani Faridpur, Dist – Jehanabad (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 (Jehanabad Block No -15 Sand Ghat) at Riverbed of River Dhab at Mauja-Rustamchak, Anchal – Ratani Faridpur, Dist – Jehanabad (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 3.0m 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 (Jehanabad Block No -15 Sand Ghat) at Riverbed of River Dhab at Mauja-Rustamchak, Anchal – Ratani Faridpur, Dist – Jehanabad (Bihar)

- Proper maintenance of all machines is being carried out, which help in reducing generation of noise during operations.
- No other equipments except 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 (Jehanabad Block No -15 Sand Ghat) at Riverbed of River Dhab at Mauja-Rustamchak, Anchal – Ratani Faridpur, Dist – Jehanabad (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, as 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. 68 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 plants 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.
- Total Number of plants for cluster of Sand Bloks are given below.

Sand Ghat	Area (Ha)	Plants
Block 15	6.72	6.72*10 Plants= 67.2 plants
Total Plants		68 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>Scigiumcumuni</i>	Jamun	To stop river bank erosion
2	<i>Terminaliaarjuna</i>	Arjun	To stop river bank erosion
3	<i>Populus ciliate</i>	Poplar	Fast growing, broad leaf
4	<i>Mangiferaindica</i>	Aam	Tolerant to Dust control
5	<i>Tectonagrandis</i>	Sagon	Tolerant to Dust control
6	<i>Ficusbenghalensis</i>	Bargad	Tolerant to Dust control
7	<i>Ficusreligiosa</i>	Peepal	Dust particles absorbance
8	<i>Acacia nilotica</i>	Babul	Tolerant to SO ₂
9	<i>Azadirachtaindica</i>	Neem	Tolerant to SO ₂
10	<i>Pithecolibiumducle</i>	Jungle jalebi	Tolerant to SO ₂ and Dust control

Project: Sand Mining Project (Jehanabad Block No -15 Sand Ghat) at Riverbed of River Dhab at Mauja-Rustamchak, Anchal – Ratani Faridpur, Dist – Jehanabad (Bihar)

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 2.0 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 Alok Kumar S/o – Shri Jay Singh Address : - Vill – Viraha, P.O – Dhawal Bigha Thana - Hulashganj, Jehanabad (Bihar) 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 (Jehanabad Block No -15 Sand Ghat) at Riverbed of River Dhab at Mauja-Rustamchak, Anchal – Ratani Faridpur, Dist – Jehanabad (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

Alok Kumar S/o –Shri Jay Singh Address : - Vill – Viraha, P.O – Dhawal Bigha Thana - Hulashganj, Jehanabad (Bihar) (Sand Block 15) 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.



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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.

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.

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Table 9.2, Budget of EMP (Block-15)

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).	0.68	0.5
4	Haul road Maintenance Cost	1.95	1.5
TOTAL		2.63	5.5

Note: *68 plants * 1000 Rs (for each plants including hedges and fences) =Rs 68,000/-

- Salary of Labour for haul road maintenance 2 labor*300=600 per day
- 600* 250= 1,50,000/-
- * 2.5 lakh per kilometer (2,50,000 *0.780 km haul road) = 1,95,000/-)

Project: Sand Mining Project (Jehanabad Block No -15 Sand Ghat) at Riverbed of River Dhab at Mauja- Rustamchak, Anchal – Ratani Faridpur, Dist – Jehanabad (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 Dhab River at Block No – 15 Sand Ghat at Mauja- Rustamchak, Anchal- Ratani Faridpur Riverbed of Dhab River (Jehanabad Block No- 15 Sand Ghat), District - Jehanabad, Bihar, over an area of 6.72 hectares. The state government has given consent for Sand mining to Alok Kumar S/o –Shri Jay Singh Address :- Vill – Viraha, P.O – Dhawal Bigha Thana - Hulashganj, Jehanabad (Bihar).

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. Block No.- 15 Sand Ghat fall in Sand Ghat, Mauja– Rustamchak, Anchal- Ratani Faridpur, District- Jehanabad (Bihar) over an area of 6.72 hectares.

10.3 BRIEF DESCRIPTION OF PROJECT

The proposed project is Open Cast Semi-Mechanized Mining of Sand with a proposed production of 135475 Tonnes per annum. The project has been proposed by (Block 15 - Alok Kumar S/o –Shri Jay Singh Address :- Vill – Viraha, P.O – Dhawal Bigha Thana - Hulashganj, Jehanabad (Bihar).

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The proposed project is over an area 6.72 ha on Dhab River at Mauja– Rustamchak, Anchal- Ratani Faridpur, District- Jehanabad (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 **Sand Block 15 - Rs Rs- 77,60,800 /-** (including auction cost).

The proposed mining lease area falls in Survey of India Toposheet 72C/16, 72D/13.

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

Table: 10.1 Mine lease Co-ordinates (Block 15)

JEHANABAD DHAB-1	6.72	1	25.06646171	84.88346841
		2	25.06642519	84.88320086
		3	25.06720123	84.88320639
		4	25.06796055	84.88301
		5	25.06891902	84.88196555
		6	25.0690832	84.88223808
		7	25.06903526	84.88232437
		8	25.06856811	84.88287395
		9	25.06800659	84.88333891
		10	25.06755412	84.88349044
		11	25.06693453	84.88340073
		12	25.06661088	84.8834876
		13	25.06646171	84.88346841
JEHANABAD DHAB-1-1		1	25.07207851	84.87922142
		2	25.07164916	84.87927101
		3	25.07127379	84.87914765
		4	25.07120594	84.87921543
		5	25.07094179	84.87923583
		6	25.07087701	84.8791469
		7	25.07112888	84.87890746
		8	25.07148572	84.87896602
		9	25.07180866	84.87900104
		10	25.07196906	84.87905555
		11	25.07207851	84.87922142
JEHANABAD DHAB-2-0		1	25.08631741	84.88076821
		2	25.08571804	84.88077984
		3	25.0857083	84.88073166
	4	25.08585554	84.88070671	

Project: Sand Mining Project (Jehanabad Block No -15 Sand Ghat) at Riverbed of River Dhab at Mauja- Rustamchak, Anchal – Ratani Faridpur, Dist – Jehanabad (Bihar)

		5	25.08651098	84.88016844
		6	25.08723485	84.87850293
		7	25.08774511	84.87781648
		8	25.08856699	84.8774636
		9	25.08872208	84.87741695
		10	25.08871024	84.87760174
		11	25.08761871	84.87844275
		12	25.08725557	84.87894173
		13	25.08712638	84.87931308
		14	25.08709189	84.8798426
		15	25.08693994	84.88016971
		16	25.08641266	84.88072896
		17	25.08631741	84.88076821
JEHANABAD DHAB-2-1		1	25.09008208	84.87482133
		2	25.08997947	84.87457125
		3	25.08999576	84.87449211
		4	25.09064857	84.87405583
		5	25.09078005	84.87403689
		6	25.09080099	84.87458783
		7	25.09074591	84.87457349
		8	25.09024398	84.87469558
		9	25.09022076	84.87476
		10	25.09008208	84.87482133
JEHANABAD DHAB-2-2		1	25.09142174	84.87400842
		2	25.09165624	84.87405756
		3	25.09195812	84.87427499
		4	25.09221493	84.87454574
		5	25.09237021	84.87508114
		6	25.09241494	84.87550292
		7	25.09258981	84.87590176
		8	25.09280836	84.87609503
		9	25.09338554	84.87615313
		10	25.09382048	84.87607355
		11	25.09503544	84.8749596
		12	25.09564157	84.87398104
		13	25.09585566	84.87319215
		14	25.09566254	84.87262465
		15	25.09524535	84.87233701
		16	25.09464851	84.8720883

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17	25.09437125	84.8718891
18	25.09426236	84.87163648
19	25.09431927	84.87116155
20	25.09456627	84.87080948
21	25.09497473	84.87044435
22	25.09540758	84.87029329
23	25.09537134	84.87056551
24	25.09476613	84.87100412
25	25.09452423	84.87151046
26	25.09458645	84.87173481
27	25.09478503	84.87195439
28	25.094933	84.87201589
29	25.09538754	84.87209116
30	25.09573477	84.87223719
31	25.09597655	84.87254546
32	25.09605573	84.87299379
33	25.09584821	84.87407528
34	25.09569177	84.8743952
35	25.09518126	84.8751445
36	25.0946386	84.87556765
37	25.09368032	84.87646192
38	25.09339769	84.87658018
39	25.09246096	84.87612539
40	25.09221028	84.87534911
41	25.09183259	84.87490243
42	25.09142875	84.87459766
43	25.09137223	84.8746066
44	25.09136417	84.87434369
45	25.09142174	84.87400842

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– Rustamchak, Anchal- Ratani Faridpur, District-

Project: Sand Mining Project (Jehanabad Block No -15 Sand Ghat) at Riverbed of River Dhab at Mauja- Rustamchak, Anchal – Ratani Faridpur, Dist – Jehanabad (Bihar)

Sr. No.	Particulars	Details
		Jehanabad (Bihar) over an area of 6.72 hectares.
b	Tehsil	Ratani Faridpur
c	District	Jehanabad
d	State	Bihar
2	Elevation above	Block No.-15 (72.5 mRL -75.5 mRL)
3	Nearest National Highway/State Highway	NH 22: Approx. 8.85 KM towards East direction. SH 69: Approx. 7.35 KM towards West direction.
4	Nearest Railway station	Makhdumpur Gaya Railway Station, approx. 9.95 km towards SW direction.
5	Nearest Airport	Gaya International Airport Bihar, approx. 35.75 km towards S 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.
7	Seismic Zone	Zone- IV <i>Source BMTC 2nd edition</i> https://www.bmtpc.org/disaster%20resistnace%20technolgies/ZON E%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 (Jehanabad Block No -15 Sand Ghat) at Riverbed of River Dhab at Mauja–Rustamchak, Anchal- Ratani Faridpur, District- Jehanabad (Bihar) over an area of 6.72 hectares.
2	Mining Capacity	80640 cum/year or 135475 TPA

Project: Sand Mining Project (Jehanabad Block No -15 Sand Ghat) at Riverbed of River Dhab at Mauja- Rustamchak, Anchal – Ratani Faridpur, Dist – Jehanabad (Bihar)

Sr. No.	Parameter	Description
3	Method of mining	Open cast semi-mechanized mining/OTFM
4	Total ML area	6.72 ha
5	Depth of mining	2 m depth
6	Manpower	31 persons
9	Water Requirement	BLOCK 15 – 5.33 KLD
10	Source of Water	Tanker/ Nearby village.

10.4.2 Mineral Reserves and production

Mineable reserves have been computed up to 2 m depth from surface. The volume multiplied by bulk density (1.68 g/cm³) to get the tonnage.

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

Table 10.4 Classification Mineral Reserves

Sand Ghat	Area (Hect)	Geological Reserves (m ³)	Mineable Reserves (m ³)	Annual Mineable Permitted Reserve As per LoI (m ³)
Jehanabad Block No.-15	6.72	134400	96502	80640

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 Jehanabad Dhab River Block No 15 Sand Ghat. However, as the digging depth will be restricted to 2.0 m only. This will be further replenished during rainy season. Sand Ghat will be worked systematically as the width is limited while length is much more. As the lease period is only 5 (Five) years, some of the area will be left un-worked at the end of lease period.

Project: Sand Mining Project (Jehanabad Block No -15 Sand Ghat) at Riverbed of River Dhab at Mauja- Rustamchak, Anchal – Ratani Faridpur, Dist – Jehanabad (Bihar)

(i) Final Slope Angle to Be Adopted: Height of the bench is limited to 1.0 m while width of individual bench shall be kept 6.0m. River bank side will be protected by working in dry part of the river and by leaving safety distance of the width of the river of 5 meter. Bank side natural slope will not be disturbed. This will prevent collapse of bank and erosion. However, the height of the bank with respect to river bed is varying from 3-4 meters.

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

(iii) Ultimate Capacity of Dumps: There will be no OB removal / during the plan period. Therefore no proposal has been envisaged for its separate dumping. No outside material will be filled up in the extracted zone.

The conceptual plan & section of each mining plots are attached with mine plan.

10.4.4 Method of Mining

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

10.5 AFFORESTATION PROGRAMME

Topsoil if any would be utilized for intensive plantation and greenbelt development, all along the bank of the river. The details of plantation and number of saplings to be planted are given below. Approx. 68 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

Three soil samples were collected in and around the mine lease area to assess the present soil quality of the region. The pH of the soil indicates that the soil is slightly alkaline in nature. Based on the results, it is evident that the soils are not contaminated by any polluting sources.

10.7.2 Meteorology

Project: Sand Mining Project (Jehanabad Block No -15 Sand Ghat) at Riverbed of River Dhab at Mauja- Rustamchak, Anchal – Ratani Faridpur, Dist – Jehanabad (Bihar)

Meteorological data at the site was monitored during March 2023 to May 2023 representing winter season. It was observed that the during study period, temperature ranged from 21 °C to 44.0 °C.

10.7.3 Ambient Air Quality

Ambient Air Quality Monitoring (AAQM) has been carried out at 14 locations. The Particulate Matter (PM₁₀) conc. ranged of 58.6µg/m³ to 94.5 µg/m³. The Particulate Matter (PM_{2.5}) ranged from of 31.3 µg/m³ to 55.8 µg/m³. Sulphur dioxide (SO₂) between 3.3 µg/m³ to 13.1 µg/m³. Oxides of Nitrogen (NO₂) between 5.0 µg/m³ to 25.3µg/m³. 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

To assess the physical and chemical properties of water in the region, water samples from 06 locations were collected from various water sources around the mine lease area. The pH was varying for ground waters from 7.24 to 7.54. The total dissolved solids are varying from 272 mg/l to 326 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 46.4 dB(A) to 52.4 dB(A) respectively. The minimum & maximum noise levels at night time were found to be 38.9 dB (A) & 43.8 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

Project: Sand Mining Project (Jehanabad Block No -15 Sand Ghat) at Riverbed of River Dhab at Mauja- Rustamchak, Anchal – Ratani Faridpur, Dist – Jehanabad (Bihar)

mine site. The mineral will be transported by road through covered tarpaulin trucks/tippers to reduce the fugitive emission caused by the wind.

10.8.2 Impact on Water Environment

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

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

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

Project activity will be carried out only in the dry part of the Dhab 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

Project: Sand Mining Project (Jehanabad Block No -15 Sand Ghat) at Riverbed of River Dhab at Mauja- Rustamchak, Anchal – Ratani Faridpur, Dist – Jehanabad (Bihar)

channel bed and banks, increase in channel slope, and change in channel morphology if, the operations are not carried out systematically.

The systematic and scientific removal of sand will not cause bed degradation. The silt and clay generated as waste will be used for plantation or filling up low lying area elsewhere. The mining is planned in non monsoon seasons only, so that the excavated area gets replenished gradually during the monsoons each year.

10.8.6 Impact on flora and fauna

As the proposed mining will be carried out in a scientific manner, not much significant impact is anticipated. No mining will be carried out during the monsoon season to minimize impact on aquatic life which is mainly breeding season for many of the species. The mining site has no vegetation; no clearance of vegetation will be done. Haul roads will be sprinkled with water which would reduce the dust emission, thus avoiding damage to the crops.

10.8.7 Impact on Socio - Economic Aspects

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:

Project: Sand Mining Project (Jehanabad Block No -15 Sand Ghat) at Riverbed of River Dhab at Mauja- Rustamchak, Anchal – Ratani Faridpur, Dist – Jehanabad (Bihar)

- Establishment of reclamation program with plantation of local/native & fast growing species
- Establishment of restoration plan during the closure of mine at the onset of monsoon season.
- Establishment of effective Disaster Management Plan to take timely precautionary measures to avoid effects of impending disasters.
- Establishment of effective Monitoring Program monitored by Environment Management Cell.

10.10 ENVIRONMENTAL MONITORING PROGRAM

Table 10.5: Post project environmental monitoring

S.No.	Description of Parameters	Schedule of Monitoring
1	Air Quality	24 hourly samples twice a week in each season except monsoon
2	Water Quality (Surface & Groundwater)	Once a season for 4 seasons in a year
3	Soil Quality	Once in a year in project area
4	Noise Level	Twice a year for first two years & then once a year
5	Socio-economic Condition	Once in 3 years
6	Plantation Monitoring	Once in a season

10.11 ENVIRONMENTAL PROTECTION COST

The details of the cost to be incurred for successful monitoring of environmental parameters and implementation of control measures are given in **Table-10.6**.

Table 10.6: Cost of Environmental Protection Measures

Sl. No	Description	Capital Cost (lakh)	Recurring Cost (lakh)
1	Pollution Control & Dust Suppression	--	1.5

Project: Sand Mining Project (Jehanabad Block No -15 Sand Ghat) at Riverbed of River Dhab at Mauja- Rustamchak, Anchal – Ratani Faridpur, Dist – Jehanabad (Bihar)

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).	0.68	0.5
4	Haul road Maintenance Cost	1.95	1.5
TOTAL		2.63	5.5

Note: *68 plants * 1000 Rs (for each plants including hedges and fences) =Rs 68,000/-

- Salary of Labour for haul road maintenance 2 labor*300=600 per day
- 600* 250= 1,50,000/-
- * 2.5 lakh per kilometer (2,50,000 *0.780 km haul road) = 1,95,000/-)

10.12 ADDITIONAL STUDIES

10.12.1 Risk Assessment

The complete mining operation will be carried out under the management control and direction of a qualified mine manager holding. The DGMS have been regularly issuing standing orders, model, standing orders and circulars to be followed by the mine management in case of disaster, if any.

10.12.2 Disaster Management Plan

Emergency preparedness is an important aspect in the planning of Disaster Management. Personnel would be trained suitably and prepared mentally and physically in emergency response through carefully planned, simulated procedures. Similarly, the key personnel and essential personnel shall be trained in the operations.

10.12.3 Public Consultation

This is a draft EIA report. Public Hearing will be incorporated in FEIA report.

10.13 PROJECT BENEFITS

Physical Benefits: Road Transport, Market, Enhancement of green cover & Creation of community assets.

Project: Sand Mining Project (Jehanabad Block No -15 Sand Ghat) at Riverbed of River Dhab at Mauja- Rustamchak, Anchal – Ratani Faridpur, Dist – Jehanabad (Bihar)

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.

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

CSR COST is Rs Rs 77,60,800 x 2% = Rs. 1,55,216/-

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

10.14 CONCLUSIONS

- The mining operations will meet the compliance requirements of MoEF&CC;
- Community impacts will be beneficial, as the project will generate significant economic benefits for the region;
- Monitoring program will be followed till the mining operations continue.
- With the effective implementation of the Environment Management Plan (EMP) during the mining activities, the proposed project can proceed without any significant negative impact on environment.

Project: Sand Mining Project (Jehanabad Block No -15 Sand Ghat) at Riverbed of River Dhab at Mauja- Rustamchak, Anchal – Ratani Faridpur, Dist – Jehanabad (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 Mining Project (Jehanabad Block No -15 Sand Ghat) at Riverbed of River Dhab at Mauja- Rustamchak, Anchal – Ratani Faridpur, Dist – Jehanabad (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

Institute of Town Planners India, 6th Floor, 4-A, Ring Road, I.P Estate, New Delhi-110 002, India
Tel. : +91-11-233 23 416, 417, 418, 419, 420, 421, 423 E-mail : ceo.nabet@qcin.org Website : www.qcin.org

Project: Sand Mining Project (Jehanabad Block No -15 Sand Ghat) at Riverbed of River Dhab at Mauja- Rustamchak, Anchal – Ratani Faridpur, Dist – Jehanabad (Bihar)

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5	Manoj Kumar Pandey	FAE	EB
6	R K Tiwary	FAE	RH,AP
7	Rahul kumar	FAE	AQ
8	AbhayNath Mishra	FAE	SE
9	HussainZiauddin	FAE	WP
10	PoonamKumariMangalam	FAE	LU
11	Jatin kumar srivastava	FAE	NV

EXECUTIVE SUMMARY

FOR

**SAND MINING PROJECT ON DHAB RIVER
(JEHANABAD BLOCK NO -15 SAND GHAT)**

At

**Mauja- Rustamchak, Anchal- Ratani Faridpur,
District - Jehanabad, State - Bihar**

**Area : 6.72 Ha.
Production: 135475 TPA**

PROJECT PROPONENT

Alok Kumar Singh

S/o –Shri Jay Singh

**Address : - Vill – Viraha, P.O – Dhawal Bigha
Thana - Hulashganj, Jehanabad (Bihar)**

Environment Consultant



**P and M Solution
(Accredited by QCI/NABET)**

Accreditation No. : NABET/EIA/1992/IA0053

C-88, Sector 65 Noida

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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.

Jehanabad Block 15

The project has been proposed by Alok Kumar Singh . The Proposed Sand Mining Project is located on Dhab River at Jehanabad Block 15 Sand Ghat At Mauza – Rustamchak, Anchal- Ratani Faridpur, District- Jehanabad, (Bihar). LOI issued to lessee via letter no 1178 dated 23-11-2022. 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 03-02-2023.

It has been proposed to mine around 135475 TPA for applied lease. The estimated project cost for the proposed project is **Rs 77,60,800** /- (including auction cost).

PROJECT DESCRIPTION

LOCATION

The proposed mining lease area falls in Survey of India Toposheet Topo sheet No- 72C/16, 72D/13. The lease area is located in Mauza – Rustamchak, Anchal- Ratani Faridpur, District- Jehanabad, (Bihar). The mine lease co-ordinates are listed below:

JEHANABAD DHAB-1	6.72	1	25.06646171	84.88346841
		2	25.06642519	84.88320086
		3	25.06720123	84.88320639
		4	25.06796055	84.88301
		5	25.06891902	84.88196555
		6	25.0690832	84.88223808
		7	25.06903526	84.88232437
		8	25.06856811	84.88287395
		9	25.06800659	84.88333891
		10	25.06755412	84.88349044
		11	25.06693453	84.88340073

	12	25.06661088	84.8834876
	13	25.06646171	84.88346841
JEHANABAD DHAB-1-1	1	25.07207851	84.87922142
	2	25.07164916	84.87927101
	3	25.07127379	84.87914765
	4	25.07120594	84.87921543
	5	25.07094179	84.87923583
	6	25.07087701	84.8791469
	7	25.07112888	84.87890746
	8	25.07148572	84.87896602
	9	25.07180866	84.87900104
	10	25.07196906	84.87905555
	11	25.07207851	84.87922142
JEHANABAD DHAB-2-0	1	25.08631741	84.88076821
	2	25.08571804	84.88077984
	3	25.0857083	84.88073166
	4	25.08585554	84.88070671
	5	25.08651098	84.88016844
	6	25.08723485	84.87850293
	7	25.08774511	84.87781648
	8	25.08856699	84.8774636
	9	25.08872208	84.87741695
	10	25.08871024	84.87760174
	11	25.08761871	84.87844275
	12	25.08725557	84.87894173
	13	25.08712638	84.87931308
	14	25.08709189	84.8798426
	15	25.08693994	84.88016971
	16	25.08641266	84.88072896
	17	25.08631741	84.88076821
JEHANABAD DHAB-2-1	1	25.09008208	84.87482133
	2	25.08997947	84.87457125
	3	25.08999576	84.87449211
	4	25.09064857	84.87405583
	5	25.09078005	84.87403689
	6	25.09080099	84.87458783
	7	25.09074591	84.87457349
	8	25.09024398	84.87469558
	9	25.09022076	84.87476
	10	25.09008208	84.87482133
	1	25.09142174	84.87400842

JEHANABAD
DHAB-2-2

2	25.09165624	84.87405756
3	25.09195812	84.87427499
4	25.09221493	84.87454574
5	25.09237021	84.87508114
6	25.09241494	84.87550292
7	25.09258981	84.87590176
8	25.09280836	84.87609503
9	25.09338554	84.87615313
10	25.09382048	84.87607355
11	25.09503544	84.8749596
12	25.09564157	84.87398104
13	25.09585566	84.87319215
14	25.09566254	84.87262465
15	25.09524535	84.87233701
16	25.09464851	84.8720883
17	25.09437125	84.8718891
18	25.09426236	84.87163648
19	25.09431927	84.87116155
20	25.09456627	84.87080948
21	25.09497473	84.87044435
22	25.09540758	84.87029329
23	25.09537134	84.87056551
24	25.09476613	84.87100412
25	25.09452423	84.87151046
26	25.09458645	84.87173481
27	25.09478503	84.87195439
28	25.094933	84.87201589
29	25.09538754	84.87209116
30	25.09573477	84.87223719
31	25.09597655	84.87254546
32	25.09605573	84.87299379
33	25.09584821	84.87407528
34	25.09569177	84.8743952
35	25.09518126	84.8751445
36	25.0946386	84.87556765
37	25.09368032	84.87646192
38	25.09339769	84.87658018
39	25.09246096	84.87612539
40	25.09221028	84.87534911
41	25.09183259	84.87490243
42	25.09142875	84.87459766

	43	25.09137223	84.8746066
	44	25.09136417	84.87434369
	45	25.09142174	84.87400842

Area & production: The total ML area is 6.72 Ha. Proposed rate of production will be 135475 TPA.

Connectivity:

Sand Ghat is well connected to the nearest metalled road 0.780 km distance from the lease. NH-22: Approx. 8.85 KM towards East direction. SH 69 :Approx. 7.35 KM towards West direction. Makhdumpur Gaya Railway Station approx. 9.95 km towards SW direction. Gaya International Airport Bihar, approx. 35.75 km towards S direction.

Salient Features of Project

Name of the applicant	Alok Kumar Singh
Address of Lessee	Alok Kumar Singh S/o –Shri Jay Singh Address : - Vill – Viraha, P.O – Dhawal Bigha Thana - Hulashganj, Jehanabad (Bihar)
Name of Mine	Sand Mining Project (Jehanabad Block No -15 Sand Ghat) at Riverbed of River Dhab
Village	Rustamchak
District & State	Jehanabad, Bihar
Mineral	Sand
Man Power	31
Area (ha.)	6.72 hectare

MINING

The mining process is opencast semi-mechanized method without drilling & blasting. This is an open-cast mining project. The operation will be semi-mechanized/OTFM with use of excavators/JCBs truck /tractors combination or Manually etc. The sand will be collected in its existing form.

The mining will be done in a rotational way. As the working is going to be methodical i.e. mining will be done in benches. There would be no risk to the employee working in the mines.

Mining will be done in layers.

The deposit will be worked from the surface of the bed up to 2 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 2 m depth from surface. The volume multiplied by bulk density (1.68 g/cm³) to get the tonnage.

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

Table Summary of minable reserves of Jehanabad Block 15 Sand Ghat

Bench Level (mRL)	Length (m)	Width (m)	Depth (m)	Volume (cum)	Tonnes
75.5-74.5	2201	25	1	55025	92442
74.5-73.5	2183	19	1	41477	69682
Total				96502	162124

Total Mineable Reserve = **96502 cum or 162124 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 water of 5.33 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	21	38	10.3	18.5
April 2023	27	44	14.8	24.9
May 2023	28	44	14.0	25.0

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 31.3 $\mu\text{g}/\text{m}^3$ to 55.8 $\mu\text{g}/\text{m}^3$ respectively; PM10 was in the range of 58.6 $\mu\text{g}/\text{m}^3$ to 94.5 $\mu\text{g}/\text{m}^3$ As far as the gaseous pollutants SO ₂ and NO ₂ are concerned, the prescribed CPCB limit of 80 $\mu\text{g}/\text{m}^3$ 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 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 7.92 to 8.34, which shows that the soil is slightly alkaline in nature.
Ecology and Biodiversity	There is no Eco-Sensitive Areas in 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 Dhab 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 **Jehanabad Block 15** will be 2% of the total project cost. This amount will be used for social welfare. CSR COST is Rs. 77,60,800 x 2% = Rs. 1,55,216/-

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

❖ PLANTATION:

- The project will not lead to any tree cutting. However, asocial responsibility, greenery will be developed along the both sides of road and the bank of river. Community services will be deployed in raising these plantations. Trees of economic importance and native origin such as fruit trees shall be planted.
- Approx. 68 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 projects 10 plants per hectare will be proposed for better condition of environment.
- Peepal, Arjun, Jamun, 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 (Jehanabad Block 15)

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).	0.68	0.5
4	Haul road Maintenance Cost	1.95	1.5
TOTAL		2.63	5.5

Note: *68 plants * 1000 Rs (for each plants including hedges and fences) =Rs 68,000/-

- Salary of Labour for haul road maintenance 2 labor*300=600 per day
- 600* 250= 1,50,000/-
- * 2.5 lakh per kilometer (2,50,000 *0.78 km haul road) = 1,95,000/-)

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

बालू खनन परियोजना
(जहानाबाद ब्लॉक नंबर-15 बालू घाट)
के लिए

मौजा- रुस्तम चाक, अंचल- रतनी फरीदपुर,
जिला-जहानाबाद, बिहार

क्षेत्रफल- 6.72 हेक्टेयर
उत्पादन: 135475 टन प्रति वर्ष

आवेदन कर्ता

आलोक कुमार

पुत्र श्री जय सिंह

पता:- ग्राम- विरहा, पी.ओ.- धवल बिगहा
थाना - हुलाशगंज, जहानाबाद (बिहार)

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।

जहानाबाद ब्लॉक 15

परियोजना के प्रस्ताव आलोक कुमार ने दिया है। प्रस्तावित बालू खनन परियोजना मौजा- रुस्तम चाक, अंचल- रतनी फरीदपुर, जिला- जहानाबाद (बिहार) में ब्लॉक संख्या - 15 बालू घाट पर धाब नदी पर स्थित है। पत्र संख्या 1178/एम दिनांक 23.11.2022 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 03.02.2023 द्वारा जारी किया गया है।

आवेदित पट्टे के लिए प्रति वर्ष लगभग 135475 टन खनन प्रस्तावित किया गया है, प्रस्तावित परियोजना के लिए अनुमानित परियोजना लागत 77,60,800/- रुपये (नीलामी लागत सहित) है।

परियोजना विवरण

स्थिति:

प्रस्तावित खनन पट्टा क्षेत्र सर्वे ऑफ इंडिया टोपोशीट टोपो शीट संख्या- 72C/16, 72D/13 के अंतर्गत आता है। पट्टा क्षेत्र मौजा- रुस्तम चाक, अंचल- रतनी फरीदपुर, जिला-जहानाबाद, राज्य- बिहार में स्थित है। खान पट्टा समन्वय नीचे सूचीबद्ध हैं:

JEHANABAD DHAB-1	6.72	1	25.06646171	84.88346841
		2	25.06642519	84.88320086
		3	25.06720123	84.88320639
		4	25.06796055	84.88301

	5	25.06891902	84.88196555
	6	25.0690832	84.88223808
	7	25.06903526	84.88232437
	8	25.06856811	84.88287395
	9	25.06800659	84.88333891
	10	25.06755412	84.88349044
	11	25.06693453	84.88340073
	12	25.06661088	84.8834876
	13	25.06646171	84.88346841
JEHANABAD DHAB-1-1	1	25.07207851	84.87922142
	2	25.07164916	84.87927101
	3	25.07127379	84.87914765
	4	25.07120594	84.87921543
	5	25.07094179	84.87923583
	6	25.07087701	84.8791469
	7	25.07112888	84.87890746
	8	25.07148572	84.87896602
	9	25.07180866	84.87900104
	10	25.07196906	84.87905555
		11	25.07207851
JEHANABAD DHAB-2-0	1	25.08631741	84.88076821
	2	25.08571804	84.88077984
	3	25.0857083	84.88073166
	4	25.08585554	84.88070671
	5	25.08651098	84.88016844
	6	25.08723485	84.87850293
	7	25.08774511	84.87781648
	8	25.08856699	84.8774636
	9	25.08872208	84.87741695
	10	25.08871024	84.87760174
	11	25.08761871	84.87844275
	12	25.08725557	84.87894173
	13	25.08712638	84.87931308
	14	25.08709189	84.8798426
	15	25.08693994	84.88016971
	16	25.08641266	84.88072896
		17	25.08631741

JEHANABAD DHAB-2-1	1	25.09008208	84.87482133
	2	25.08997947	84.87457125
	3	25.08999576	84.87449211
	4	25.09064857	84.87405583
	5	25.09078005	84.87403689
	6	25.09080099	84.87458783
	7	25.09074591	84.87457349
	8	25.09024398	84.87469558
	9	25.09022076	84.87476
	10	25.09008208	84.87482133
JEHANABAD DHAB-2-2	1	25.09142174	84.87400842
	2	25.09165624	84.87405756
	3	25.09195812	84.87427499
	4	25.09221493	84.87454574
	5	25.09237021	84.87508114
	6	25.09241494	84.87550292
	7	25.09258981	84.87590176
	8	25.09280836	84.87609503
	9	25.09338554	84.87615313
	10	25.09382048	84.87607355
	11	25.09503544	84.8749596
	12	25.09564157	84.87398104
	13	25.09585566	84.87319215
	14	25.09566254	84.87262465
	15	25.09524535	84.87233701
	16	25.09464851	84.8720883
	17	25.09437125	84.8718891
	18	25.09426236	84.87163648
	19	25.09431927	84.87116155
	20	25.09456627	84.87080948
	21	25.09497473	84.87044435
	22	25.09540758	84.87029329
	23	25.09537134	84.87056551
	24	25.09476613	84.87100412
	25	25.09452423	84.87151046
	26	25.09458645	84.87173481
	27	25.09478503	84.87195439

28	25.094933	84.87201589
29	25.09538754	84.87209116
30	25.09573477	84.87223719
31	25.09597655	84.87254546
32	25.09605573	84.87299379
33	25.09584821	84.87407528
34	25.09569177	84.8743952
35	25.09518126	84.8751445
36	25.0946386	84.87556765
37	25.09368032	84.87646192
38	25.09339769	84.87658018
39	25.09246096	84.87612539
40	25.09221028	84.87534911
41	25.09183259	84.87490243
42	25.09142875	84.87459766
43	25.09137223	84.8746066
44	25.09136417	84.87434369
45	25.09142174	84.87400842

❖ **क्षेत्र और उत्पादन:** कुल क्षेत्रफल 6.72 हेक्टेयर है। उत्पादन की प्रस्तावित दर 135475 टीपीए है।

❖ **संयोजकता**

बालू घाट पट्टे से 0.78 कि.मी. की दूरी पर निकटतम पक्की सड़क से अच्छी तरह से जुड़ा हुआ है। NH-22: लगभग 8.85 किमी पूर्व दिशा में है SH 69 लगभग 7.35 किमी पश्चिम दिशा में है मखदुमपुर गया रेलवे स्टेशन, लगभग 9.95 किमी दक्षिण पश्चिम दिशा की ओर है। गया अंतर्राष्ट्रीय हवाई अड्डा, लगभग 35.75 किमी दक्षिण दिशा की ओर है।

परियोजना की मुख्य विशेषताएं

आवेदक का नाम	आलोक कुमार
पट्टेदार का पता	आलोक कुमार पुत्र श्री जय सिंह पता:- ग्राम- विरहा, थाना.- धवल बिगहा थाना - हुलाशगंज, जहानाबाद (बिहार)
परियोजना का नाम	बालू खनन परियोजना (जहानाबाद ब्लॉक नंबर 15 बालू घाट)
गाँव	मौजा - रुस्तम चाक
जिला और राज्य	जहानाबाद, बिहार
खनिज	बालू
श्रमशक्ति	31
क्षेत्र (हेक्टेयर)	6.72 हेक्टेयर

❖ ड्रिलिंग

ड्रिलिंग और ब्लास्टिंग की आवश्यकता नहीं है।

❖ खनिज का उपयोग

बालू 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 मैनुअल आदि के उपयोग के साथ संचालन अर्ध-मशीनीकृत/ओटीएफएम होगा। बालू 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।

निकषेप को संस्तर की सतह से 02 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 02 मीटर की गहराई तक की गई है। टनभार प्राप्त करने के लिए वॉल्यूम को बल्क डेंसिटी (1.68 g/cm³) से गुणा किया जाता है।

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

बेंचवार बालू का वार्षिक दोहन नीचे दिया गया है:

खनन योग्य भंडार जहानाबाद ब्लॉक 15

बेंच स्तर (mRL)	लंबाई (M)	चौड़ाई (M)	गहराई (M)	मात्रा (घन मीटर)	टन
75.5-74.5	2201	25	1	55025	92442
74.5-73.5	2183	19	1	41477	69682
कुल				96502	162124

कुल खनन योग्य रिजर्व = 96502 घन मीटर या 162124 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 बालू से भर जाएगा (रिप्लेनिशमेंट) और क्षेत्र अपनी मूल स्थलाकृति बहाल को कर देगा।

❖ साइट सुविधाएं और उपयोगिताएँ

• जलापूर्ति

श्रमिकों को पीने व घरेलू उपयोग के लिए पानी उपलब्ध कराया जाएगा। धूल के दमन के लिए भी पानी की आवश्यकता होगी। प्रस्तावित परियोजना के लिए 5.33 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 सीज़न 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	औसतन	अधिकतम
मार्च 2023	21	38	10.3	18.5
अप्रैल 2023	27	44	14.8	24.9
मई 2023	28	44	14.0	25.0

आधारभूत पर्यावरणीय स्थिति

गुण	आधारभूत स्थिति
एम्बिएंट(परिवेशी) वायु गुणवत्ता	एम्बिएंट (परिवेशी) वायु गुणवत्ता निगरानी से पता चलता है कि सभी 14 AQ निगरानी स्टेशनों में PM2.5 की न्यूनतम और अधिकतम सांद्रता

	क्रमशः 31.3 µg/m ³ से 55.8 µg/m ³ पाई गई; PM10 58.6 µg/m ³ से 94.5 µg/m ³ की सीमा में था जहां तक गैसीय प्रदूषकों SO ₂ और NO ₂ का संबंध है, आवासीय और ग्रामीण क्षेत्रों के लिए 80 µg/m ³ की निर्धारित CPCB सीमा किसी भी स्टेशन पर पार नहीं की गई है।
शोर का स्तर	शोर के निगरानी कार्यक्रम के परिणामों ने संकेत दिया कि निगरानी किए गए सभी स्थानों पर दिन और रात दोनों समय एनएएक्यूएस की निर्धारित सीमा के भीतर थे।
पानी की गुणवत्ता	सभी स्रोतों से भूजल पीने के उद्देश्यों के लिए उपयुक्त रहता है क्योंकि सभी घटक IS: 10500 द्वारा प्रख्यापित पेयजल मानकों द्वारा निर्धारित सीमा के भीतर हैं।
मिट्टी की गुणवत्ता	चिन्निहित किए गए स्थानों से एकत्र किए गए नमूने इंगित करते हैं कि मिट्टी रेतीली प्रकार की है और पीएच मान 7.92 से 8.34 के बीच है, जो दर्शाता है कि मिट्टी प्रकृति में थोड़ी क्षारीय है।
पारिस्थितिकी और जैव विविधता	अध्ययन क्षेत्र में कोई पर्यावरण-संवेदनशील क्षेत्र नहीं है।
सामाजिक आर्थिक	नदी तल पर बालू खनन परियोजना के कार्यान्वयन से स्थानीय लोगों को प्रत्यक्ष और अप्रत्यक्ष दोनों तरह के रोजगार के अवसर मिलेंगे। अध्ययन क्षेत्र में शिक्षा, स्वास्थ्य, आवास, पानी, बिजली आदि को और बेहतर किया जा सकता है। उम्मीद है कि प्रस्तावित खनन परियोजना और संबद्ध औद्योगिक और व्यावसायिक गतिविधियों के कारण इसमें काफी हद तक और सुधार होगा।

❖ अनुमानित पर्यावरणीय प्रभाव

• वायु पर्यावरण पर प्रभाव

प्रस्तावित खनन गतिविधियां खनन में प्रयुक्त अन्य परिवहन वाहनों की लोडिंग और आवाजाही से धूल (SPM/RSPM) उत्पन्न होगी। खदान स्थल पर उचित जल छिड़काव किया जाएगा। हवा से होने वाले क्षणिक उत्सर्जन को कम करने के लिए खनिज को ढके हुए तिरपाल ट्रकों/टिप्परों के माध्यम से सड़क मार्ग से ले जाया जाएगा।

• जल पर्यावरण पर प्रभाव

नदी के भीतर या उसके पास से बालू 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 धाब 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।

बालू 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। बालू खनन से स्थानीय लोगों को जब भी श्रमबल की आवश्यकता होगी रोजगार उपलब्ध होगा।

पोस्ट प्रोजेक्ट पर्यावरण निगरानी

क्रम संख्या	पैरामीटर्स का विवरण	निगरानी की अनुसूची
1	हवा की गुणवत्ता	मानसून को छोड़कर प्रत्येक मौसम में सप्ताह में दो बार/तीन बार 24 घंटे के नमूने
2	जल गुणवत्ता (सतह और भूजल)	साल में 4 सीजन के लिए एक बार
3	मिट्टी की गुणवत्ता	परियोजना क्षेत्र में वर्ष में एक बार
4	शोर स्तर	साल में दो बार पहले दो साल और फिर साल में एक बार
5	सामाजिक-आर्थिक स्थिति	3 साल में एक बार
6	वृक्षारोपण निगरानी	एक बार एक मौसम में

❖ अतिरिक्त अध्ययन

• सार्वजनिक सुनवाई

जन सुनवाई अभी बाकी है।

❖ जोखिम आकलन

पूर्ण खनन कार्य एक योग्य खदान प्रबंधक होल्डिंग के प्रबंधन नियंत्रण और निर्देशन में किया जाएगा। डीजीएमएस नियमित रूप से स्थायी आदेश, मॉडल स्थायी आदेश और आपदा, यदि कोई हो, के मामले में खान प्रबंधन द्वारा पालन किए जाने वाले परिपत्र जारी करता रहा है। साथ ही खनन कर्मचारियों को सतर्क रखने के लिए समय-समय पर रिफ्रेशर कोर्स में भेजा जाएगा।

❖ आपदा प्रबंधन योजना

आपदा प्रबंधन की योजना में आपातकालीन तैयारी एक महत्वपूर्ण पहलू है। कर्मिकों को उचित रूप से प्रशिक्षित किया जाएगा और सावधानीपूर्वक नियोजित, सिम्युलेटेड प्रक्रियाओं के माध्यम से आपातकालीन प्रतिक्रिया में मानसिक और शारीरिक रूप से तैयार किया जाएगा। इसी तरह, प्रमुख कर्मियों और आवश्यक कर्मियों को संचालन में प्रशिक्षित किया जाएगा।

❖ परियोजना लाभ

- **भौतिक लाभ:** सड़क परिवहन, बाजार, हरित आवरण में वृद्धि और सामुदायिक संपत्तियों का निर्माण।
- **सामाजिक लाभ:** रोजगार क्षमता में वृद्धि, राजकोष में योगदान, स्वास्थ्य संबंधी गतिविधियों में वृद्धि, शैक्षिक उपलब्धियां और मौजूदा सामुदायिक सुविधाओं का सुदृढीकरण।

❖ पर्यावरणीय लाभ:

- ❖ नदी चैनल को नियंत्रित करना और बैंकों की सुरक्षा करना।
- ❖ बाढ़ के कारण आसपास की कृषि भूमि के डूबने को कम करना।
- ❖ नदी के स्तर के उन्नयन को कम करना।
- ❖ अवैध खनन गतिविधि पर एक जांच।

❖ कॉर्पोरेट की सामाजिक जिम्मेदारी

दिनांक 1 मई 2018 के कार्यालय ज्ञापन के अनुसार परियोजना लागत की पूंजीगत लागत का 2% कॉर्पोरेट पर्यावरणीय उत्तरदायित्व के लिए आवंटित किया जाएगा। लोगों की जरूरतों और मांग को ध्यान में रखते हुए निम्नलिखित प्रस्तावित किया गया है।

जहानाबाद ब्लॉक 15 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 77,60,800 /- x 2%= रु. 1,55,216/-

प्रत्येक गतिविधि के लिए प्रस्तावक द्वारा निर्धारित की जाने वाली धनराशि का निर्धारण जन सुनवाई के दौरान स्थानीय प्राधिकारी/लोगों एवं हितग्राहियों से चर्चा के बाद किया जायेगा। सीईआर कार्यक्रम के तहत की जाने वाली गतिविधियों का समवर्ती मूल्यांकन करने की योजना बनाई गई है।

❖ वृक्षारोपण:

- परियोजना से कोई पेड़ नहीं कटेगा। तथापि, असामाजिक उत्तरदायित्व, सड़क के दोनों ओर और नदी के किनारे हरियाली विकसित की जाएगी। इन वृक्षारोपण को बढ़ाने के लिए सामुदायिक सेवाओं को तैनात किया जाएगा। आर्थिक महत्व के पेड़ और देशी मूल के पेड़ जैसे फलों के पेड़ लगाए जाएंगे।
- लगभग योजना अवधि में हॉल रोड के आसपास 68 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, 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 (जहानाबाद ब्लॉक 15)

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	--	2.0

	iv) ध्वनि प्रदूषण		
3	वृक्षारोपण और वेतन एक माली के लिए (अंशकालिक आधार पर)	0.68	0.5
4	परिवहन सड़क रखरखाव लागत	1.95	1.5
कुल		2.63	5.5

नोट: *68 पौधे * 1000 रुपये (हेज और बाड़ सहित प्रत्येक पौधे के लिए) = 68,000/- रुपये

- ढोना सड़क रखरखाव के लिए श्रम का वेतन 2 श्रमिक*300=600 प्रति दिन
- 600* 250= 1,50,000/-
- *2.5 लाख प्रति किलोमीटर (2,50,000*0.78 किमी लंबी सड़क) = 1,95,000/-

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।
