

**BEFORE THE HON'BLE NATIONAL GREEN TRIBUNAL,
EASTERN ZONE BENCH KOLKATA**

APPEAL NO. 14 /2026

IN THE MATTER OF:

SHAHANAVAJ KHAN

...APPELLANT

VERSUS

SEIAA BIHAR & ORS

...RESPONDENTS

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Kolkata

21.04.2026

FILED BY: -



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SYNOPSIS

That the Appellant is constrained to prefer the present Appeal under Section 16 of the National Green Tribunal Act, 2010, assailing the single/composite Environmental Clearance dated 12.03.2026 granted by the State Level Environment Impact Assessment Authority, Bihar (Respondent No.1/SEIAA Bihar) in favour of Respondent No.5, M/s Gita Enterprises, for the alleged sand mining project described as "Kishanganj Unit-03 Sand Ghat", situated at villages Andwakol, Lohaghara, Kanchanbari, Tegharia, Anchal at District Kishanganj, Bihar.

That the said "Kishanganj Unit-03 Sand Ghat" measuring 98 Hectare is not one compact, contiguous or homogeneous mining area. It comprises four separate and identifiable sand mining leases/ghats, each having its own area, location, riverine setting, environmental footprint, mineable reserve and site-specific impact, namely:

- a) Andawakol Sand Ghat - area 30 hectares;
- b) Lohaghara Sand Ghat - area 25 hectares;
- c) Kanchan Bari Sand Ghat - area 25 hectares; and
- d) Tegharia Sand Ghat - area 18 hectares.

That the aforesaid four blocks are not situated in one river stretch or in a single contiguous mining patch. The first block, namely Andawakol Sand Ghat, is situated in the riverbed of Mahananda River, whereas the other three blocks, namely Lohaghara, Kanchan Bari and Tegharia, are situated in/along Kankai River. The inter se distance between the four mining areas ranges from 3.70 km to 28.30 km.

That SEIAA Bihar has granted one composite/single Environmental Clearance for all four sand mining ghats by describing them under a coined and omnibus caption, namely "Kishanganj Unit-03 Sand Ghat".

That the Letter of Intent dated 15.04.2023 describes the four mining blocks as a "cluster". It is submitted that the said description is contrary to the statutory and regulatory scheme.

That the MoEF&CC Notification dated 15.01.2016, whereby Appendix-XI was inserted in the EIA Notification, 2006 for environmental clearance of minor mineral projects including cluster situations, specifically provides that a cluster shall be formed when the distance between the peripheries of one lease is less than 500 meters from the periphery of another lease in a homogeneous mineral area.

It is submitted that even in a lawful cluster, each lease/project must be appraised with reference to its own boundaries, mine plan, replenishment data, route, carrying capacity and enforceable EC conditions.

That the impugned Environmental Clearance further permits mining up to a depth of one meter by semi-mechanised method. It is submitted that such a condition is illusory and incapable of effective enforcement. Semi-mechanised operations involving excavators, JCBs, poclains or similar equipment cannot practically maintain excavation with the degree of precision required to ensure that the depth does not exceed one meter across an active riverbed. The permission, therefore, creates a facially lawful condition while enabling uncontrolled and deeper excavation on the ground.

Hence the present Appeal.

**BEFORE THE HON'BLE NATIONAL GREEN TRIBUNAL,
EASTERN ZONE BENCH KOLKATA**

APPEAL NO._____/2026

IN THE MATTER OF:

Shahanavaj Khan
S/o Noor Khan, Gram- Kharadi Tola,
Post- Mirjanhaat, Thana- Babarganj, Kutubganj,
Bhagalpur, Bihar-812005

...Appellant

VERSUS

1. SEIAA BIHAR

State Level Environment Impact Assessment Authority, Bihar
2nd floor, BELTRON Bhawan, Shastri Nagar
Patna, Bihar – 800023
Through Member Secretary
Email: seiaa.ms.br@gmail.com

.....Respondent no.1

2. State of Bihar

Through Chief Secretary
Main Secretariat, Patna
Bihar – 800015
Email: cs-bihar@nic.in

.....Respondent no.2

3. Mines and Geology Department,

Through Director
Vikas Bhawan (New Secretariat),
Bailey Road, Jawahar Lal Nehru Marg,
Punaichak, Veerchand Patel Road Area,
Patna, Bihar – 800015
Email: directormines361@gmail.com

....Respondent no.3

4. District Magistrate

DM Office, NH 31, Near SP Office, Dharamganj,
Kishanganj, Bihar – 855107
Email: Kishanganj.bih@nic.in

....Respondent no.4

5. Geeta Sarawat

M/S Gita Enterprises
Pro- Geeta Sarawat,
S/o Ram Pratap Sharma
AT- C-24 Narayan Vihar Colony

Bikaner, Rajasthan- 334001

Email: geetasarswat1972@gmail.com

...Respondent no.5

APPEAL UNDER SECTION 16(h) OF THE NATIONAL GREEN TRIBUNAL ACT, 2010 CHALLENGING THE ENVIRONMENT CLEARANCE GRANTED TO RESPONDENT NO.5 IN VIOLATION OF THE EIA NOTIFICATION, 2006, THE MOEF&CC NOTIFICATION DATED 15.01.2016, SUSTAINABLE SAND MINING MANAGEMENT GUIDELINES, 2016 AND ENFORCEMENT & MONITORING GUIDELINES FOR SAND MINING, 2020.

Most Respectfully Showeth:

1. That the Appellant is constrained to prefer the present Appeal under Section 16 of the National Green Tribunal Act, 2010, assailing the Environmental Clearance dated 12.03.2026 granted by the State Level Environment Impact Assessment Authority, Bihar (Respondent No.1/SEIAA Bihar) in favour of Respondent No.5, M/s Gita Enterprises, for the alleged sand mining project described as "Kishanganj Unit-03 Sand Ghat", situated at villages Andwakol, Lohaghara, Kanchanbari, Tegharia, Anchal at District Kishanganj, Bihar.

The copy of the Environment Clearance dated 12.03.2026 granted in favour of Respondent no.5 is annexed as **ANNEXURE A/1**.

2. That the said "Kishanganj Unit-03 Sand Ghat" measuring 98 Hectare is not one compact, contiguous or homogeneous mining area. It comprises four separate and distinct sand mining leases/ghats, each having its own area, location, riverine setting, environmental footprint, mineable reserve and site-specific impact, namely:
 - a) Andawakol Sand Ghat - area 30 hectares;
 - b) Lohaghara Sand Ghat - area 25 hectares;
 - c) Kanchan Bari Sand Ghat - area 25 hectares; and
 - d) Tegharia Sand Ghat - area 18 hectares.

3. That the aforesaid four blocks are not situated in one river stretch or in a single contiguous mining patch. The first block, namely Andawakol Sand Ghat, is situated in the riverbed of **Mahananda River**, whereas the other three blocks, namely Lohaghara, Kanchan Bari and Tegharia, are situated in/along **Kankai River**. The inter se distance between the four mining areas ranges from 3.70 km to 28.30 km, which itself demonstrates that the blocks are geographically distinct and cannot be artificially treated as one project or one cluster. The distances are as follows:

- Andawakol to Tegharia - 20.60 km
- Andawakol to Lohaghara - 28.30 km
- Andawakol to Kanchan Bari - 26.80 km
- Tegharia to Kanchan Bari - 13.30 km
- Tegharia to Lohaghara - 17.60 km
- Kanchan Bari to Lohaghara - 3.70 km

The Google Map showing the inter se distance between the 4 mining areas is annexed as **ANNEXURE A/2**.

4. That despite the above admitted distances and distinct riverine locations, SEIAA Bihar has granted one composite/single Environmental Clearance for all four sand mining ghats by describing them as "Kishanganj Unit-03 Sand Ghat". The said description is a device to amalgamate four independent mining blocks into one paper unit, thereby avoiding separate, site-specific environmental appraisal and separate Environmental Clearance conditions for each block.
5. That the impugned procedure adopted by Respondent No.1 amounts to a fraud on the environmental clearance process. Environmental Clearance is not an empty formality or a post-facto administrative endorsement. It is a prior, project-specific environmental decision founded on identification of the project area, carrying capacity,

hydrology, replenishment, river morphology, access roads, transportation route, impact on local habitations and cumulative ecological consequences. A single clearance for four far-separated blocks defeats the very purpose of prior Environmental Appraisal.

6. That the Letter of Intent dated 15.04.2023 describes the four mining blocks as a "cluster". It is submitted that the said description is contrary to the statutory and regulatory scheme. Under the Sustainable Sand Mining Management Guidelines, 2016 and the Enforcement & Monitoring Guidelines for Sand Mining, 2020 issued by MoEF&CC, clustering is contemplated only for mining leases situated within the prescribed proximity so that their cumulative impacts can be assessed together. In the present case, even the closest distance between two blocks is 3.70 km, whereas all other distances range up to 28.30 km. Such blocks cannot, in law or on facts, be treated as one cluster, one contiguous cluster or one homogenous mineral area.

The copy of Letter of Intent dated 15.04.2023 issued in favour of Respondent no.5 is annexed as **ANNEXURE A/3**.

7. That the MoEF&CC Notification dated 15.01.2016, whereby Appendix-XI was inserted in the EIA Notification, 2006 for environmental clearance of minor mineral projects including cluster situations, specifically provides that a cluster shall be formed when the distance between the peripheries of one lease is less than 500 meters from the periphery of another lease in a homogeneous mineral area. It is submitted that the present blocks fail this test at the threshold. The distance of 3.70 km between Kanchan Bari and Lohaghara alone is more than seven times the prescribed 500 meter threshold, and the distance of other blocks is several kilometres away. Further as per EMGSM 2020 Guidelines 4.1 (k) the total area of mining leases in a

cluster should not be more than 10 Hectares. So on this count also the subject matter mining blocks cannot be considered as Cluster. Thus, the so-called cluster is ex facie illegal and dehors Appendix-XI.

The copy of the MoEF &CC Notification dated 15.01.2016 is annexed as **ANNEXURE A/4**.

8. That in the EIA study, the Respondent no.5 has itself stated that "*The proposed mining sites not fall in cluster situation*". It is submitted that when the Respondent no.5 itself do not treat the 4 mining blocks as Cluster then how can a single Environment Clearance be granted for all the 4 separate mining blocks.

The copy of the EIA study dated 25.01.2026 is annexed as **ANNEXURE A/5** and the relevant page is __78__.

9. That even otherwise, the legal consequence of a valid cluster is not that separate mining leases lose their individuality or that one omnibus Environmental Clearance may be mechanically issued for all blocks irrespective of distance and site conditions. The cluster mechanism is intended to ensure cumulative EIA/EMP appraisal of leases falling within the legally recognised cluster; thereafter, the mitigative measures emerging from such cluster EIA/EMP are required to be reflected in the Environmental Clearance conditions of the individual project proponents/individual mining leases. Therefore, even in a lawful cluster, each lease/project must be appraised with reference to its own boundaries, mine plan, replenishment data, route, carrying capacity and enforceable EC conditions. The impugned clearance, by clubbing four separate blocks, reverses the statutory scheme.
10. That the SSMG 2016 lays down that "**3. The EIA Notification, 2006 does not provide for cluster EC, it provides for issuance of EC to individual project proponents....**"

The copy of the relevant chapter of the SSMG 2016 "The issues and Management of Mining in cluster" is annexed as **ANNEXURE A/6.**

11. That the impugned Environmental Clearance further permits mining up to a depth of one meter by semi-mechanised method. It is submitted that such a condition is illusory and incapable of effective enforcement. Semi-mechanised operations involving excavators, JCBs, poclains or similar equipment cannot practically maintain excavation with the degree of precision required to ensure that the depth does not exceed one meter across an active riverbed. The permission, therefore, creates a facially lawful condition while enabling uncontrolled and deeper excavation on the ground. Thus, semi-mechanised method allowed in Environment Clearance is illusory and untenable.

GROUND

- A. Because the Hon'ble Supreme Court in various cases has recognised the adverse ecological consequences of unregulated minor mineral mining, and the Hon'ble Supreme Court has reiterated that strict adherence to sand mining regulations is non-negotiable.
- B. Because the SSMG 2016 in the chapter "The issues and Management of Mining in cluster" lays down that-

"The Hon'ble Supreme Court, NGT, SEAC/EAC and the Project Proponents have raised issue of cluster in mine lease allotment and environment clearance for the same, so following conditions need to be ensured for cluster of mines:

1. To address the concern of adverse impact of minor mineral mining on environment it is proposed that all mining activity including river sand mining (above 5 hectare individual or cluster) will need to prepare Environment Impact Assessment Report and Environment Management Plan before grant of environment clearance. These reports (EIA /EMP) can be prepared by the State or State nominated Agency / the Project Proponent (s).

2.

3. The EIA Notification, 2006 does not provide for cluster EC, it provides for issuance of EC to individual project proponents and the same has also been upheld in the judgment of Hon'ble Supreme Court in Vijay Bansal vs. State of Haryana case. So EC will have to be applied for and issued to the individual project proponent.

4. A cluster shall be formed when the distance between the peripheries of one lease is less than 500 meters from the periphery of other lease in a homogeneous mineral area."

C. Because merely upon the fact that LOI uses the term cluster, the SEIAA cannot dispense with the requirement of separate EC for each of the distinct mining areas in the project.

D. Because the operation of multiple, geographically separate sand mining blocks under one vague and combined clearance is ex facie illegal, arbitrary and contrary to the EIA Notification, 2006 as amended on 15.01.2016, the Sustainable Sand Mining Management Guidelines, 2016 and the Enforcement & Monitoring Guidelines for Sand Mining, 2020. The Hon'ble Supreme Court in Deepak Kumar & Ors. v. State of Haryana & Ors., (2012) 4 SCC 629, has held that mining of minor minerals, including sand, cannot be permitted without prior environmental clearance and that environmental impacts of minor mineral mining cannot be ignored merely because the individual lease area may appear small. The Hon'ble Tribunal in Satendra Pandey v. Ministry of Environment, Forest & Climate Change & Anr., O.A. No.186/2016, order dated 13.09.2018, reiterated that the safeguards envisaged in Deepak Kumar cannot be diluted in the case of minor mineral mining and that proper appraisal through the competent expert body is mandatory. These judgments clearly prohibit casual, composite and non-site-specific clearances for sand mining projects.

- E. Because riverbed excavation through machinery disturbs river morphology, alters flow, lowers riverbed levels, affects replenishment and causes bank erosion. The impugned EC, while restricting the depth to one meter on paper, simultaneously permits semi-mechanised mining, thereby making the restriction ineffective and unenforceable.
- F. Because the permission for semi-mechanised mining up to one meter depth is inherently impracticable and arbitrary. It is not supported by any reasoned analysis as to how Respondent No.5 would maintain depth control, how depth would be monitored in each block, what survey methodology would be used before and after excavation, what equipment would be prohibited, what real-time monitoring mechanism would be deployed, and how the riverbed would be protected from over-extraction. In absence of such conditions, the impugned EC is not capable of protecting river ecology.
- G. Because the Environmental Clearance has been granted without without lawful cluster determination, without separate appraisal of each distinct mining block and without examining whether four sand ghats situated at distances up to 28.30 km and across two rivers can ever be treated as one project. The decision-making process is thus vitiated by non-application of mind, perversity, procedural illegality and violation of mandatory environmental safeguards governing sand mining.
- H. Because the cause of action for filing the present Appeal arose on 12.03.2026 when the impugned Environmental Clearance was granted by Respondent No.1 in favour of Respondent No.5 and continues to subsist from day to day so long as the impugned EC remains operative and mining activities are permitted thereunder. The present Appeal is being filed bona fide and in the larger interest of environmental protection.

- I. Because this Hon'ble Tribunal has jurisdiction to entertain and adjudicate the present Appeal under Section 16 of the National Green Tribunal Act, 2010, as the impugned Environmental Clearance is an appealable order/decision. The Appellant has no equally efficacious alternative remedy for redressal of the grievances raised herein.

LIMITATION

That the cause of action arose on 12.03.2026 when the EC has been issued. The initial statutory limitation is 30 days. Therefore there is delay of 10 days till the date of signing of this appeal i.e, till 21.04.2026. However, any further delay after 21.04.2026 may be accounted as per the date of filing. It is further submitted that a separate Interlocutory Application seeking condonation of delay is filed along with the Appeal.

PRAYER

In view of the facts and circumstances stated hereinabove, it is most respectfully prayed that this Hon'ble Tribunal may be pleased to:

- a) Quash and set aside the Environmental Clearance dated 12.03.2026 granted by Respondent No.1/SEIAA Bihar in favour of Respondent No.5, M/s Gita Enterprises, for the project described as "Kishanganj Unit-03 Sand Ghat", District Kishanganj, Bihar;
- b) Stay the operation and effect of the Environmental Clearance dated 12.03.2026 and restrain Respondent No.5, from carrying out any mining, excavation, transportation or allied activity pursuant to the impugned Environmental Clearance during the pendency of the present Appeal;
- c) Pass such further order(s), direction(s) or relief(s) as this Hon'ble Tribunal may deem fit and proper in the interest of justice,

environmental protection and sustainable sand mining governance.

AND FOR THIS ACT OF KINDNESS, THE APPELLANT AS IN DUTY BOUND SHALL EVER PRAY

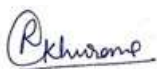
Kolkata

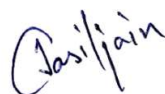
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Appellant

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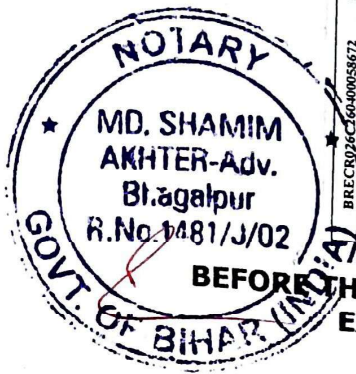






RAHUL KHURANA, HASIL JAIN, ISHAN SHARMA

Advocates for the Appellant



BEFORE THE HON'BLE NATIONAL GREEN TRIBUNAL,
EASTERN ZONE BENCH KOLKATA

APPEAL NO. _____/2026

IN THE MATTER OF:

SHAHANAVAJ KHAN

...APPELLANT

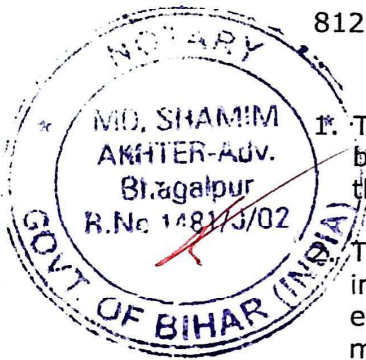
VERSUS

SEIAA BIHAR & ORS

...RESPONDENTS

AFFIDAVIT

I, Shahanavaj Khan S/o Noor Khan aged about 52 years R/o Kharadi Tola, Post Mirjanhaat Thana- Babarganj, Kutubganj, Bhagalpur, Bihar- 812005 do hereby solemnly affirm and declare as under:



1. That I am the Appellant in the accompanying Appeal and well being and acquainted with facts and circumstances of the case and thus competent to swear this affidavit.

That the Appeal has been drafted by my counsel under my instructions and contents thereof have been read over and explained to me in my vernacular which are true and correct to my knowledge, the contents thereof may kindly be read as part and parcel to this affidavit also and not repeated herein.

3. The contents as stated above are true and correct to my knowledge and belief.

शहानवाज खान

DEPONENT

Verification

It is verified at _____ on _____ that the contents of the present application are true and correct and nothing has been concealed therefrom.

Identified by
K. Kumar Adv.
21/04/2026

DEPONENT

शहानवाज खान

Deponent... Shahanavaj Khan
Who is identified by... K. Kumar
solemnly affirm and declare
before me

Md. Shamim Akhter
Notary, Bhagalpur

21/4/26



सत्यमेव जयते

File No.: SIA/1(a)/2447/2023
Government of India
Ministry of Environment, Forest and Climate Change
(Issued by the State Environment Impact Assessment
Authority(SEIAA), BIHAR)



Dated 12/03/2026



To,

GEETA SARSWAT
 MS GITA ENTERPRISES, PRO - GEETA SARWAT, S/O - RAM PRATAP SHARMA, AT- C-24
 NARAYAN, VIHAR COLONY, BIKANER, RAJASTHAN, BIKANER, RAJASTHAN, 334001
 geetasarswat1972@gmail.com

Subject: Grant of prior Environmental Clearance (EC) to the proposed Mining Project under the provisions of EIA Notification 2006-regarding

Sir/Madam,

This is in reference to your application submitted to SEIAA, Bihar vide proposal number SIA/BR/MIN/566733/2026 dated 29/01/2026 for grant of prior Environmental Clearance (EC) to the project under the provision of the EIA Notification 2006-and as amended thereof.

2. The particulars of the proposal are as below :

(i) EC Identification No.	EC26B0107BR5963714N
(ii) File No.	SIA/1(a)/2447/2023
(iii) Clearance Type	Fresh EC
(iv) Category	B1
(v) Project/Activity Included Schedule No.	1(a) Mining of minerals
(vii) Name of Project	Sand Mining Project, Kishanganj Unit 03 Sand Ghat of District- Kishanganj, State-Bihar
(viii) Location of Project (District, State)	KISHANGANJ, BIHAR
(ix) Issuing Authority	SEIAA, Bihar
(x) Applicability of General Conditions	No

3. In view of the particulars given in the Para 1 above, the project proposal interalia including Form-1(Part A, B and C)/ EIA & EMP Reports were submitted to the SEIAA, Bihar for an appraisal by the SEIAA under the provision of EIA notification 2006 and its subsequent amendments.

4. The above-mentioned proposal has been considered by SEIAA, Bihar in the meeting held on 06/03/2026. The

minutes of the meeting and all the project documents are available on PARIVESH portal which can be accessed from the PARIVESH portal by scanning the QR Code above.

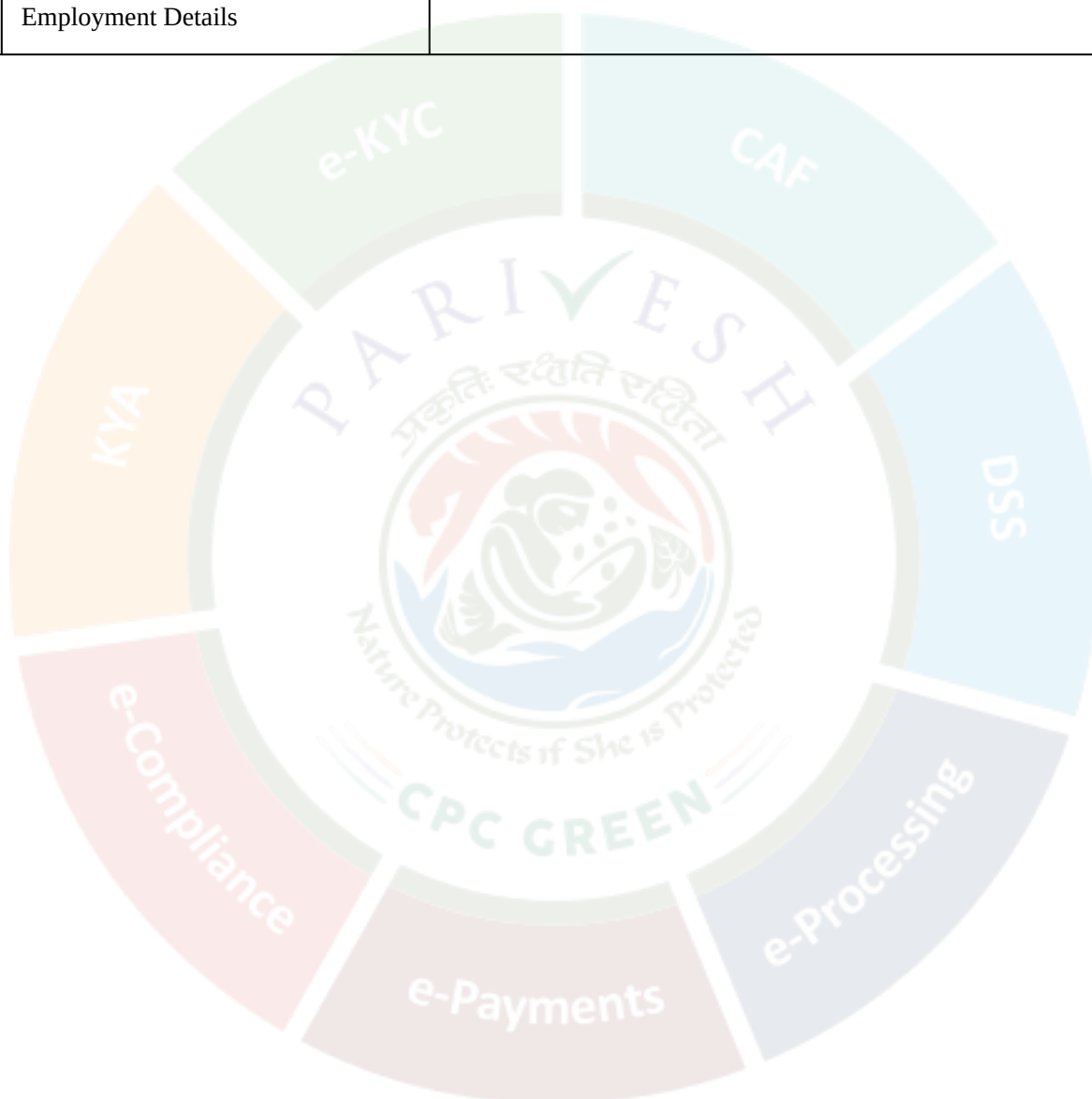
5. The SEIAA, Bihar in its meeting held on 06/03/2026, based on information submitted viz: Form 1 (Part A, B and C), EIA/EMP report etc & clarifications provided by the project proponent and after detailed deliberations on all technical aspects and public hearing issues and compliance thereto furnished by the Project Proponent, recommended the proposal for grant of Environment Clearance under the provision of EIA Notification, 2006 and as amended thereof subject to stipulation of Specific and Standard EC conditions as detailed in the point below.
6. The SEIAA, Bihar has examined the proposal in accordance with the provisions contained in the Environment Impact Assessment (EIA) Notification, 2006 & further amendments thereto and based on the recommendations of the SEAC hereby accords Environment Clearance for the instant proposal to M/s. GEETA SARSWAT under the provisions of EIA Notification, 2006 and as amended thereof subject to compliance of the Specific and Standard EC conditions as given in Annexure (2)
7. The SEIAA, Bihar reserves the right to stipulate additional conditions, if found necessary.
8. The Environmental Clearance to the aforementioned project is under provisions of EIA Notification, 2006. It does not tantamount to approvals/consent/permissions etc. required to be obtained under any other Act/Rule/regulation. The Project Proponent is under obligation to obtain approvals /clearances under any other Acts/ Regulations or Statutes, as applicable, to the project.
9. The PP is under obligation to implement commitments made in the Environment Management Plan, which forms part of this EC.
10. Any appeal against this EC shall lie with the National Green Tribunal, if preferred, within a period of 30 days as prescribed under Section 16 of the National Green Tribunal Act, 2010.
11. This issue with an approval of the Competent Authority.

Annexure 2

Details of the Project

S. No.	Particulars	Details	
a.	Details of the Project	Sand Mining Project, Kishanganj Unit 03 Sand Ghat of District-Kishanganj, State-Bihar	
b.	Latitude and Longitude of the project site	26.20945555690095,87.95051857451946 26.21635928404797,87.9547394569413	
c.	Land Requirement (in Ha) of the project or activity	Nature of Land involved	Area in Ha
		Non-Forest Land (A)	98.0
		Forest Land (B)	0
		Total Land (A+B)	98.0
d.	Date of Public Consultation	Public consultation for the project was held on 2025-06-26	

S. No.	Particulars	Details
e.	Rehabilitation and Resettlement (R&R) involvement	NO
f.	Project Cost (in lacs)	535.1
g.	EMP Cost (in lacs)	19.8
h.	Employment Details	



STATE LEVEL ENVIRONMENT IMPACT ASSESSMENT AUTHORITY, BIHAR

F. No.:- SIA/1(a)/2447/2023

Sub: Sand Mining Project“(Kishanganj Unit-03 Sand Ghat)”on River Bed of Mahananda & Kankai River at Village - Andwakol, Lohaghara, Kanchanbari, Tegharia, Anchal - Kishanganj, Teragachh, Bahaduraganj, District - Kishanganj, State:- Bihar; Area:- 98.0 Ha. [Total Production Capacity: - 588000 cum per Annum] – Environmental Clearance regarding.

- Reference:-1.** MoEF&CC ToR Proposal No. - SIA/BR/MIN/432531/2023, MoEF&CC EC Proposal No. - SIA/BR/MIN/566733/2026& SEIAA File No.:- SIA/1(a)/2447/2023.
2. Scrutiny fee submission dated 28-06-2023.
 3. ToR issued date 28-03-2025.
 4. Online Final EIA submission dated 25-01-2026.
 5. SEAC meeting held on 26-02-2026(For EC).
 6. SEIAA meeting held on 06-03-2026 to 07-03-2026 (For EC).

Sir,

This has reference to your online application for River Sand Mining Project by **M/s Geeta Enterprises**, for Mining “(Kishanganj Unit-03 Sand Ghat)” on River Bed of Mahananda & Kankai River at Village - Andwakol, Lohaghara, Kanchanbari, Tegharia, Anchal - Kishanganj, Teragachh, Bahaduraganj, District - Kishanganj, State:- Bihar; The details of the projects as mentioned in application are as below:-

Sl. No.	Item	Details			
1.	Name of the project	Sand Mining Project at“(Kishanganj Unit-03 Sand Ghat)” on River Bed of Mahananda & Kankai River;			
2.	Area of the project	98.0 Ha.			
3.	Proposed Production	588000 cum per Annum			
4.	Depth of Mining	01 Meter			
5.	Name of River	River Bed of Mahananda & Kankai River			
6.	Name of Mineral	Sand			
7.	No of Trees to be Planted	980 Plants			
8.	Location of the Project	Village-Andwakol, Lohaghara, Kanchanbari, Tegharia, Anchal - Kishanganj, Teragachh, Bahaduraganj, District- Kishanganj, State:- Bihar;			
		Sand Ghat	Khata	Khesra	Thana
		Andwakol	780	45, 46	01

		Sand Ghat			
		Lohaghara Sand Ghat	145, 49, 157, 202, 147, 225, 167, 155, 28, 154, 72, 317	7, 8, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 101, 102, 37, 38, 39, 181, 182, 183, 184, 185, 186, 187, 189, 192, 241	84
		Kanchan Bari Sand Ghat	56, 101, 24, 127, 74, 81, 100, 39, 47, 63, 113	26, 27, 29, 30, 31, 149, 150, 152, 153, 165, 167	81
		Tegharia Sand Ghat	51, 82, 86, 92, 96, 97, 100, 107, 108	54, 56, 57, 58, 59, 60, 61, 66, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 36, 37, 30, 32, 523, 26, 28, 34, 31, 33, 35, 25, 153	211
9.	Latitude & Longitude	Co-ordinates			
		Andwakol Sand Ghat	A	26°12'59.01"N 87°57'1.87"E	
			B	26°12'58.00"N 87°57'17.07"E	
			C	26°12'34.18"N 87°57'16.97"E	
			D	26°12'34.26"N 87°57'3.55"E	
		Lohaghara Sand Ghat	A	26°25'26.97"N 87°46'50.58"E	
			B	26°25'18.89"N 87°46'58.73"E	
			C	26°25'3.08"N 87°46'38.15"E	
			D	26°25'11.46"N 87°46'30.30"E	
		Kanchan Bari Sand Ghat	A	26°23'23.99"N 87°45'17.58"E	
			B	26°23'21.83"N 87°45'26.12"E	
			C	26°22'51.73"N 87°45'16.19"E	
			D	26°22'53.79"N 87°45'6.84"E	
		Tegharia Sand Ghat	A	26°15'40.08"N 87°44'47.40"E	
			B	26°15'34.83"N 87°44'58.60"E	
			C	26°15'20.98"N 87°44'50.74"E	
			D	26°15'27.18"N 87°44'38.02"E	
10.	Water Requirement	Domestic Water – 2.0KLD Dust Suppression – 7.5KLD Green Development – 3.0KLD Total Water Requirement – 12.50KLD			
11.	Manpower	73			
12.	Environment Management Plan Cost	Description	Capital Cost (Lakh)	Recurring Cost (Lakh)	
		Pollution Control and Dust Suppression	Nil	1.5	

		Pollution Monitoring i) Air ii) Water iii) Noise	--	2.0
		Plantation and salary for one gardener (Part time basis)	9.80	2.0
		Haul road Maintenance Cost	10.0	8.0
		Total	19.80	13.5
13.	Project Cost of Project Site	Total Project Cost – ` 5,35,10,000/-		

In view of the fact that the Lohagarh sand ghat (Area-25 Ha.) on the Kankai River is near to the international border and mining activity in such proximity to the border can have potential consequences, it has been decided to seek opinion of Mines & Geology Department, Government of Bihar, Water Resource Department, Government of Bihar and District Magistrate, Kishanganj regarding Lohagarh sand ghat. Environmental Clearance is hereby granted for mining at all sand ghat in this LoI except the Lohagarh sand ghat.

PREMISES OF THE ENVIRONMENTAL CLEARANCE

This Environmental Clearance is being issued on the premises which have been substantiated / described in detail in the format of application along with enclosed affidavits / certificates / undertakings etc. furnished therewith by the project proponent:-

- (i) Information provided, descriptions mentioned are complete, true and actual and no relevant fact has been concealed to obtain Environmental Clearance deceitfully by the project proponent.
- (ii) River Sand Mining shall not be done in rainy Season (mid June to mid October) of each calendar year.
- (iii) The Environmental Clearance holder shall take all possible precautions and safeguards for protection of Environment and control of pollution as well as road safety and mining shall be done in socially responsible manner.

Air, water, Noise pollution and visual impact due to mining operations / extraction / Transportation of mined mineral / over burden etc. shall be kept within prescribed limits in the operational area.



- (iv) Mining shall only be done after obtaining valid mining lease / permit from the competent authorities and operations shall take place only within validity period of lease / permit.
All the provisions made and restrictions imposed as covered in the relevant minor mineral Rule, shall be complied with, particularly regarding EMP.
- (v) *Dept. of Mines & Geology, Govt. of Bihar shall keep a strict vigil in the compliance of relevant provisions of applicable Bihar Minerals (Concession, Prevention of Illegal mining, Transportation and Storage) Rule 2019 and its amendment especially scientific execution of mining plan (as approved by they themselves) and report violations if any is found as well as action taken for the same.*
- (vi) Project Proponent shall submit (to the SEIAA, Bihar, Regional Office of MoEF&CC at Ranchi, Bihar State Pollution Control Board) six monthly compliance report with evidence of the conditions within a fortnight after the end of every six month till validity period of Environmental Clearance.
- (vii) *Environmental Clearance shall be liable to be revoked if furnished information, provided description / Certificates / Affidavits / Undertaking etc. are found false / concocted at any stage of its validity.*
- (viii) *This Environmental Clearance is issued without affecting any court order / statutory other institutions as well as relevant other laws enacted by MoEF&CC, GoI, New Delhi.*
- (ix) Mining and transportation of mined material from mine site to stock yard shall be done in the day time only to avoid noise pollution in the nearby human habitation area.
- (x) No part of the mining area is in a protected or Reserve forest and it also does not fall either within a wildlife protected area or within its eco-sensitive zone.
- (xi) Project Proponent shall intimate SEIAA immediately if there is any change in their official address / E-mail / Ph. No / Cell. noetc failing which communication sent to them on old address shall be considered as delivered.

A. Specific Condition

1. The Project Proponent shall obtain all necessary clearance/ permission from all concerned departments before commencement of mining works.
2. The Environmental Clearance will be valid for mine lease period subject to a ceiling of 5 years.

3. The project proponent before starting any activity /preparation of ground, on the leased area shall demarcate his lease hold by RCC pillars erected at the cost of lease holder after certification of the mining officer. On each pillar Geo-Coordinate and fore bearing/ back bearing shall be written with permanent paint mark as described in the mining plan. All the pillars should remain intact at same geo-coordinate. Establishment/ labeling of Benchmark at each pillars or ground control points.
4. Extraction of sand beyond annual production capacity is not permitted.
5. The Project Proponent should undertake the sand mining limited to 01 meter (one meter) depth by semi-mechanised method without using any heavy machine, preferably by manual excavation.
6. Extraction will be carried out up to a maximum depth of 01 meters from surface of mineral deposit and not less than one meter from the water level of the River channel whichever is earlier.
7. No mining shall be carried out in the areas prominently used by wild animals (birds and reptiles) for nesting. Restricted working hours- Sand mining operation has to be carried out between 6 am to 7 pm.
8. No mining shall be carried out in 3 meter wide strip from the river bank in a River flood plain and within flowing/live water channel.
9. To maintain the safety and stability of Riverbanks, 3 meter or 10% of the width of the River whichever is more will be left intact as "No Mining Zone".
10. No stream shall be diverted for the purpose of sand mining. No natural water course and / or water reservoirs shall be obstructed due to mining operations.
11. The pollution due to transportation load on the environment will be effectively controlled & water sprinkling will also be done regularly. Vehicles with PUCC only will be allowed to ply. The mineral transportation shall be carried out through covered vehicles / trucks only and the vehicle shall not be overloaded. Project should obtain 'PUC' certificate for all the vehicles from authorized pollution testing centre.
12. The stacking area of mined-out sand which shall be situated near the mining site within a fenced area from all sides to avoid being spread in the nearby areas by high winds and the height of stacking should not exceed 2 meter. Transportation shall be confined to day time only that is from sunrise to sunset, to avoid inconvenience to local population in anyway.
13. Rubbish burial shall not be done in the Rivers.

14. Adequate steps shall be taken to check soil erosion and control of debris flow etc. by constructing engineering structures.
15. Mining activity shall not be done for mine lease where mining can cause danger to site of flood protection works, places of cultural, religious, historical, and archaeological importance.
16. The approach road from loading point upto main road shall be properly developed with proper width and geometry required for safe movement of traffic by lease holder at his own cost.
17. Main haulage road in the mine shall be provided with permanent water sprinklers and other roads shall be regularly wetted with water tankers fitted with sprinklers.
18. Transportation of the Minerals by road passing through the village shall not be allowed. A 'bypass' road should be constructed (say, leaving a gap of at least 200 meters) for the purpose of transportation of the minerals so that the impact of sound, dust and accidents could be mitigated. The Project Proponent shall bear the cost towards the widening and strengthening of existing public road-network in case the same is proposed to be used for the Project. No road movement should be allowed on existing village road network without appropriately increasing the carrying capacity of such roads.
19. The project proponent shall comply with the provisions contained in this Ministry's OM vide F.No. 22-65/2017-IA.III dated 1st May 2018, as applicable, regarding Corporate Environment Responsibility.
20. Project Proponent shall appoint a Monitoring committee to monitor the replenishment study, traffic management, levels of production, river Bank erosion and maintenance of Road etc.
21. Project Proponent shall submit the annual replenishment report certified by an authorized agency. In case the replenishment is lower than the approved rate of production, then the mining activity / production levels shall be decreased / stopped accordingly till the replenishment is completed.
22. Regular monitoring of the flow rate of the springs and seasonal stream flowing in and around the mine lease shall be carried out and records maintained. Regular monitoring of water quality upstream and downstream of water bodies shall be carried out and record of monitoring data should be maintained and submitted to the SEIAA, Bihar, Regional office, Ranchi, Central Ground water Authority, Regional Director, Central Ground water Board, State Pollution Control Board and Central Pollution Control Board.
23. The project proponent shall abide by the Hon'ble Supreme Court order dated 08.01.2020 [Writ Petition 9 (s) (Civil No. (s) 114/2014]. Proposal of re-grassing the mining area and any

other area which may have been disturbed due to their mining activities and restore the land to a condition which is fit for growth of fodder, flora, fauna etc. In compliance to the direction dated 8th January, 2020 of Hon'ble Supreme Court in Writ Petitioner(s) Civil No. 114/2014, Common Cause Vs Union of India &Ors.

24. The individual sand ghat-miner will take appropriate measures to avoid parking of empty / loaded vehicles on nearest highway/ public roads to avoid traffic congestion.
25. Project Proponent will adhere to all applicable provisions of Sustainable Sand Mining Management Guidelines 2016 and Enforcement & Monitoring Guidelines for Sand Mining, 2020 (EMGSM – 2020) issued by Ministry of Environment, Forest and Climate Change, Government of India. In case, any ambiguity or variation between the provision of both these document arises, the provision made in "Enforcement and Monitoring Guidelines for Sand Mining – 2020" shall prevail.
26. All specific and general conditions which are of public concern at large shall be permanently displayed at a prominent place for public along with address and contact details of authority where the violation of EC conditions can be reported.
27. Project proponent shall erect a signboard on his project site and display information regarding name of the project, No. & date of validity period of EC, annual production capacity of the mineral and other relevant information for the general public.

B. General condition

1. No stacking of sand is allowed on road side of any public road including national highways/ State highways.
2. No labour camp shall be allowed in riverbed.
3. Provision shall be made for housing labour with all necessary infrastructure and facilities (outside mining Block and river-bed) such as fuel for cooking, toilets / mobile toilets, safe drinking water, First-Aid facilities, crèche etc. The housing may be in the form of temporary structures to be removed after the completion of the project.
4. Labour & Personnel working in dusty areas shall wear protective respiratory devices and they shall also be provided with adequate training and information on safety and health aspects. Occupational health surveillance program of the workers shall be undertaken periodically to observe any adverse health impact due to exposure to dust and take corrective measures, if needed.

5. The Project Proponent shall make arrangements for safe drinking water, first aid facility along With anti-venom injection, in case of emergency for the workers.
6. The project proponent shall maintain register for production and dispatch of mineral and submit periodic return (six-monthly) to the SEIAA, Bihar / Regional Office of Ministry of Environment, Forest and Climate Change, Government of India, Ranchi. If the remaining period of lease is for less than a year, the Project Proponent shall submit a monthly return of production.
7. The EC holder shall keep a correct account of quantity of mineral mined out, dispatched from the mine, mode of transport, registration number of vehicle and mine plan. This should be produced before officers of Central and State Government for inspection whenever asked for.
8. Regular monitoring of ground water table shall be carried out at the upstream and depth of water available in the adjoining dug-well.
9. Monitoring of Ambient Air Quality, Water Quality & Noise Quality shall be carried out as per the Notification, as amended from time to time by the Central Pollution Control Board. Water sprinkling should be increased at places of loading and unloading points & transfer points to reduce all sorts of fugitive emissions.
10. The funds earmarked for environmental protection measures should be kept in a separate bank account and should not be diverted for other purpose. Year-wise expenditure should be reported to the SEIAA, Bihar.
11. The Project proponent shall provide all necessary logistic support to the authorized officer of this authority as and when required. They will facilitate and assist the authority in site inspection and monitoring.
12. All the provisions made and restrictions imposed as envisaged in the Bihar Minor Mineral Rule, shall be complied with; particularly regarding Environment Management and payment of compensation to the affected land owner(s).
13. No change in mining technology and scope of working should be made without prior approval of the SEIAA, Bihar.
14. The Ministry / SEIAA may alter / modify the above conditions or stipulate any additional condition(s) in the interest of environment.

15. Concealing of factual data or submission of false/fabricated data and failure to comply with any of the conditions mentioned above may result in withdrawal/suspension of this clearance and attract action under the provisions of the Environment (Protection) Act, 1986.
16. The instruction contained herein above regarding air and noise pollution and details of mining proposals shall be displayed on Signboard in Hindi for the public information.
17. The SEIAA may impose additional conditions in the interest of Environment & Ecology whenever it becomes necessary to do so.
18. Any appeal against this environmental clearance shall lie with the Hon'ble National Green Tribunal, if preferred, within a period of 30 days as prescribed under section 16 of the National Green Tribunal Act, 2010.

C. Special Conditions

1. The proposed plantation consisting of mixture of indigenous and fast-growing species of trees must be done and proper care must be taken. Plantation of a minimum of 6 feet tall plants must be done in the 1st year of lease period itself and properly maintained till the validity of Environmental Clearance and preserve the existing trees at the proposed site. Apart from this, submit the KML file area with correct latitude / longitude along with the colour photograph of the tree plantation done.
2. As per the Office Memorandum F. No. IA3-22/3/2024-IA.III (E-241594) dated 24.07.2024 of MoEF&CC, GoI, plantation of saplings shall be carried out in the earmarked greenbelt area as a part of the tree plantation campaign "Ek Ped Ma Ke Naam".
3. The Project Proponent shall execute and conduct measurable CER activities like facilities for drinking water supply, solar light, rain water harvesting, solid waste management facilities & sanitation for the nearby villages, local government schools or Anganwadi Kendra and also donating furniture to the local government schools or Anganwadi Kendra. A display board of the CER activities must be fixed for the information to the public at the project site/mining site before start of the mining and proper records should be maintained to be presented during inspection etc.
4. The Project Proponent has to fix display board on mining site mentioning thereupon various activities to be done under Environment Management Plan (EMP).
5. The Project Proponent must maintain nearby existing ponds if any.
6. Proper care should be taken during transportation of sand from the sand mining site by covering the loaded sand. There should be a freeboard of atleast 03 inches from the body level

of the vehicle, so that the sand doesn't get spilled over on the road and doesn't affect the air quality as well.

7. Lessee to appoint an environment professional to facilitate sustainable mining in terms of mining plan and environmental norms.
8. The Proponent must submit high resolution satellite images with stereoscopic 3D view from the National Remote Sensing Centre (NRSC), Hyderabad for the month of June and December every year, along with the respective half-yearly compliance report in hard and soft copy.
9. Temporary Extraction path (Iron Bridge / Hume pipe) constructed for local transport from the mining site should be compulsorily dismantled before the onset of rainy season (1st July). So that natural flow of water through the active river channel may not get disturbed.
10. Sand transportation shall be strictly prohibited during the period from one hour before to one hour after the opening and closing times of schools located in route, on working days. For example, if a school opens at 10:00 AM and closes at 4:00 PM, sand transportation shall be prohibited from 9:00 AM to 11:00 AM and from 3:00 PM to 5:00 PM, respectively.
11. Mining activity will be prohibited in the active channel of the river. Its regular monitoring will be done by the District Mining Officer.

Sd/-
(Alok Kumar)
Member-Secretary
SEIAA, Bihar

Copy, through email, for information and necessary action to :-

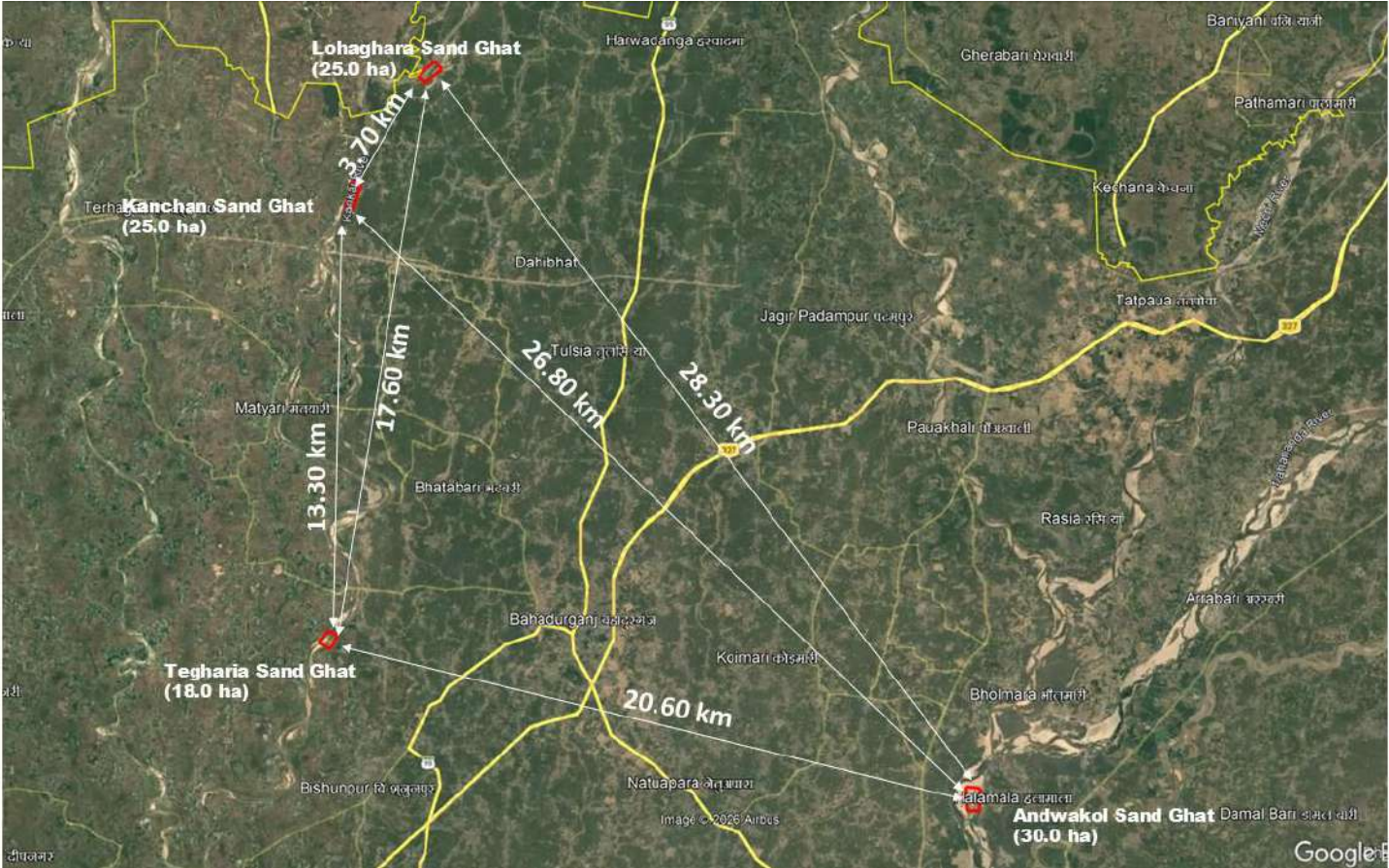
1. The Additional Chief Secretary, Environment, Forest and Climate Change Deptt., Govt. of Bihar, Sinchai Bhawan, Patna – 15.
2. The Chairman, SEAC, Bihar.
3. The Member Secretary, Bihar State Pollution Control Board, Patna – 23.
4. The Director, Mines and Geology Deptt., Govt. Of Bihar, Vikash Bhawan, Patna – 15.
5. MoEF&CC, Integrated Regional Office, Ranchi, 2nd Floor, Headquarter - Jharkhand State Housing Board, Harmu Chowk, Ranchi, Jharkhand-834002.
6. Guard file.

(Alok Kumar)
Member Secretary,
SEIAA, Bihar

Signature Not Verified

Digitally Signed by : Alok Kumar IFS
Member Secretary SEIAA

Date: 12/03/2026



बिहार सरकार
समाहरणालय, किशनगंज
किशनगंज-855107
(खनन शाखा)

दूरभाषा 06456-222353 (आवास)
06452-222520 (आवास)
06456-222626 (आवास फ़ैक्स)
06456-222530 (कार्या)
06456-225480 (कार्या फ़ैक्स)
email: dm-kishanganj.bih@nic.in

पत्रांक-302...../जिला खनन, किशनगंज, दिनांक-15/04/2023

प्रेषित,

गीता इन्टरप्राइजेज
प्रो-गीता सारस्वत
पिता-राम प्रताप शर्मा,
पता-C-24नारायण, विहार कॉलोनी,
बीकानेर राजस्थान।
पिन-कोड- 334001
ई-मेल geetasarawat1972@gmail.com

विषय :-

जिलान्तर्गत महानंदा नदी, कनकई नदी के बालूघाट/कलस्टर संख्या-03 की आगामी पाँच वर्षों के लिए बन्दोबस्ती हेतु दिनांक-13.02.2023 को सम्पन्न ई-नीलामी में उच्चतम डाकवक्ता घोषित होने के फलस्वरूप सैद्धांतिक स्वीकृत्यादेश के संबंध में।

महाशय,

उपर्युक्त विषयक किशनगंज जिलान्तर्गत महानंदा नदी, कनकई नदी, के बालूघाट/कलस्टर संख्या-03, रकवा-98 हेक्टेयर की आगामी पाँच वर्षों के लिए बन्दोबस्ती हेतु दिनांक-13.02.2023 को सम्पन्न ई-नीलामी में आपके द्वारा मो0-44100000/- के विरुद्ध उच्चतम डाक की राशि मो0-4,85,10,000/- (चार करोड़ पचासी लाख दस हजार) रुपये की बोली के फलस्वरूप उच्चतम डाकवक्ता घोषित हुए। निविदा दस्तावेज की कंडिका-20 (i) के आलोक में आपके द्वारा नीलामी राशि की 25 प्रतिशत राशि (जमा अग्रधन राशि समायोजनोपरान्त) प्रतिभूति राशि मो0-1,21,27,500/- (एक करोड़ ईक्विस लाख सताईस हजार पाँच सौ) रुपये के भुगतान का साक्ष्य दिनांक-03.04.2023 को कार्यालय में प्रस्तुत किया गया है।

निविदा दस्तावेज की कंडिका 20(i)(ii)(iii)(iv)(v) के आलोक में जिलान्तर्गत महानंदा नदी, कनकई नदी, के बालूघाट/कलस्टर संख्या-03 का सैद्धांतिक स्वीकृति के शर्त एवं बंधेज निम्नवत् हैं :-

1. बालूघाट/कलस्टर संख्या-03 से संबंधित विवरणी निम्नवत् है :-

1. बालूघाट/कलस्टर संख्या-03 से संबंधित विवरण

किशनगंज जिलान्तर्गत आगामी पाँच वर्षों के लिए बन्दोबस्ती हेतु बालूघाटों की विवरणी:-									
क्र. सं.	नदी का नाम	बालूघाट / कलस्टर का नाम	बलूघाट/कलस्टर का पूरा पता	कुल रकवा (हे0)	Geo-co-ordinates		Mineral Quantity (M ³)	Minimum Reserve Price (In Rs.)	EMD (25%) (In Rs.)
कलस्टर नं0-03									
1	महानंदा नदी	अन्दावाकोल बालूघाट	ग्राम-अन्दावाकोल पोस्ट-किशनगंज थाना-किशनगंज अंचल-किशनगंज	30	A	26°12'59.01"N 87°57'1.87"E	180000	13500000	3375000
					B	26°12'58.00"N 87°57'17.07"E			
					C	26°12'34.18"N 87°57'16.97"E			
					D	26°12'34.26"N 87°57'3.55"E			
2	कनकई नदी	लोहागड़ा बालूघाट	ग्राम- लोहागड़ा पोस्ट-धंतोला थाना-गरवंतोला अंचल-टेढ़ागाछ	25	A	26°25'26.97"N 87°46'50.58"E	150000	11250000	2812500
					B	26°25'18.89"N 87°46'58.73"E			
					C	26°25'3.08"N 87°46'38.15"E			
					D	26°25'11.46"N 87°46'30.30"E			
3	कनकई नदी	कंचनबाड़ी बालूघाट	ग्राम- कंचनबाड़ी पोस्ट-कोरोबाड़ी थाना- कोरोबाड़ी अंचल-टेढ़ागाछ	25	A	26°23'23.99"N 87°45'17.58"E	150000	11250000	2812500
					B	26°23'21.83"N 87°45'26.12"E			
					C	26°22'51.73"N 87°45'16.19"E			
					D	26°22'53.79"N 87°45'6.84"E			

4	कनकई नदी	टेघरिया बालूघाट	ग्राम— टेढ़ागाछ पोस्ट—विशनपुर थाना— बहादुरगंज अंचल—बहादुरगंज	18	A	26°15'40.08"N	87°44'47.40"E	108000	8100000	2025000
					B	26°15'34.83"N	87°44'58.60"E			
					C	26°15'20.98"N	87°44'50.74"E			
					D	26°15'27.18"N	87°44'38.02"E			
कुल—98 हेक्टेयर								588000	44100000	11025000

2.	वन क्षेत्र से दूरी	लागू नहीं
3.	सुरक्षित क्षेत्र/वन अभ्यारण्य क्षेत्र/पक्षी अभ्यारण्य/वन्य जीव आश्रयण क्षेत्र से दूरी	लागू नहीं
4	बालूघाट/कलस्टर से 500 मीटर के अन्दर खनन पट्टा क्षेत्र की स्थिति	हाँ, (कलस्टर रकवा 98 हेक्टेयर)
5	पुरातात्विक स्थल से दूरी	लागू नहीं
6	खनन योग्य मात्रा	588000 घनमीटर

1. भुगतान की शर्तें:-

- नीलामीत-राशि केवल प्रथम वर्ष के लिए बंदोबस्ती की राशि मानी जाएगी। दूसरे वर्ष और उसके अनुक्रमी वर्षों में बंदोबस्ती की राशि गत वर्ष की बंदोबस्ती राशि के 120 प्रतिशत अथवा समय-समय पर सरकार द्वारा निर्धारित निदेशों के अनुरूप होगा।
- प्रतिभूति जमा के अतिरिक्त आपको निम्नलिखित समय सारणी/भुगतान अनुसूची के अनुसार बंदोबस्ती की राशि का भुगतान करना होगा :-

किस्त	भुगतान की नियत तारीख
प्रथम किस्त(50%)	(क) पट्टा संविदा निष्पादन से पहले (पहले वर्ष के लिए) (ख) प्रथम वर्ष में पट्टा संविदा निष्पादन की तिथि से एक वर्ष पूरा होने के 60 दिन पूर्व और अनुक्रमिक वर्षों में इसी प्रक्रिया का पालन करते हुए जमा किया जायेगा।
द्वितीय किस्त(25%)	पट्टा संविदा निष्पादन की तिथि से 03 महीना पूरा होने से पहले।
तृतीय किस्त(25%)	पट्टा संविदा निष्पादन की तिथि से 06 महीना पूरा होने से पहले।

- GST का भुगतान :-**जी0एस0टी0 के रूप में प्रचलित दर के अनुसार राशि वाणिज्य कर विभाग को भुगतान करना होगा। जिला खनन कार्यालय, किशनगंज में जी0एस0टी0 भुगतान का प्रमाण प्रत्येक किस्त के साथ देना होगा।
- आयकर/अन्य करों का भुगतान:-**आयकर अधिनियम के तहत आयकर एवं उस पर नियमानुसार देय अधिभार का भुगतान आयकर विभाग के प्रचलित दर के अनुसार एक मुश्त करना होगा। यह राशि बंदोबस्ती राशि के प्रत्येक किस्त के साथ देय होगी। जिला खनन कार्यालय, किशनगंज द्वारा यह राशि आयकर मद में जमा करा दी जायेगी।
- जिला खनिज फाउण्डेशन:-**Bihar Mineral District Foundation Rules, 2018 के अनुसार बंदोबस्ती राशि की दो (2) प्रतिशत राशि जिला खनिज फाउण्डेशन, किशनगंज के नाम भुगतान बैंक ड्राफ्ट के माध्यम से करना होगा।
- वैधानिक अनापत्ति:-**बालूघाट संचालन हेतु आवश्यक समस्त वैधानिक अनापत्ति/अनुमति यथा:- खनन योजना, पर्यावरणीय स्वीकृति, जल एवं वायु सहमति आदि आपके द्वारा सैद्धांतिक स्वीकृत्यादेश (LOI) निर्गत तिथि से तीन माह की अवधि के अन्दर प्राप्त करना सुनिश्चित करेंगे। वैधानिक अनापत्ति/अनुमति प्राप्त करने के पश्चात् ही बालू खनन प्रारंभ किये जाने हेतु कार्यदेश निर्गत किया जा सकेगा। वैधानिक अनापत्ति/अनुमति निम्नानुसार है:-
 - खनन योजना:-**खनन योजना प्रभावी नियमों में उल्लिखित प्रावधानों के अनुसार सफल डाकवक्ता/बंदोबस्तधारी द्वारा QCI/NABET से मान्यता प्राप्त Professional RQP से तैयार कर निदेशक, खान या विभाग द्वारा प्राधिकृत पदाधिकारी के समक्ष लेटर ऑफ इंटेन्ट निर्गत होने से 30 दिनों के अन्दर अनुमोदन के लिए प्रस्तुत करेगा। खनन योजना बनाने पर होने वाले व्यय का वहन संबंधित खनिज डाकवक्ता/बंदोबस्तधारी द्वारा किया जायेगा। साथ ही खनन योजना की जाँच हेतु समाहर्ता/विभाग अन्य

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- ऐजेंसी चयनित कर सकेगा, जिसका निर्धारित फीस/खर्च भी बंदोबस्तधारी को ही वहन करना होगा। सफल डाकवक्ता/बंदोबस्तधारी खनन योजना के अनुसार खनन करना सुनिश्चित करेंगे।
- ii. **पर्यावरणीय स्वीकृति:**— सफल डाकवक्ता/बंदोबस्तधारी खनन योजना अनुमोदन के 15 दिनों के अन्दर पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय, भारत सरकार के सक्षम प्राधिकार के समक्ष पर्यावरणीय स्वीकृति (EC) के लिए प्रस्ताव समर्पित करेगा। समयबद्ध रीति से पर्यावरणीय एवं अन्य वैधानिक स्वीकृति प्राप्त करना सफल डाकवक्ता की जिम्मेवारी होगी। अपेक्षित पर्यावरणीय स्वीकृति एवं अन्य आवश्यक स्वीकृति प्राप्त करने में किसी भी प्रकार की देरी के लिए सफल डाकवक्ता स्वयं जिम्मेवार होंगे एवं इस संबंध में किसी भी प्रकार की क्षतिपूर्ति के लिए कोई भी दावा मान्य नहीं होगा।
 - iii. **जल एवं वायु सहमति:**—पर्यावरणीय स्वीकृति प्राप्त करने के पश्चात सफल डाकवक्ता अधिकतम 07 (सात) दिवस के अंदर जल (प्रदूषण निवारण एवं नियंत्रण) अधिनियम, 1974 तथा वायु (प्रदूषण निवारण एवं नियंत्रण) अधिनियम, 1981 के अधीन सक्षम पदाधिकारी के समक्ष सहमति/ Consent to Establish/ Consent to Operate प्राप्त करने हेतु आवेदन प्रस्तुत करेगा।
 - iv. **खनन के लिए अनुमत मात्रा:**—खनन योजना, पर्यावरणीय स्वीकृति तथा जल (प्रदूषण निवारण एवं नियंत्रण) अधिनियम, 1974 तथा वायु (प्रदूषण निवारण एवं नियंत्रण) अधिनियम, 1981 के तहत प्राप्त सहमति में वर्णित बालू की मात्रा (इनमें से जो भी कम हो) तक ही खनन अनुमान्य होगा। यदि अनुमोदित खनन योजना, पर्यावरणीय स्वीकृति तथा जल एवं वायु सहमति में खनन योग्य मात्रा कम किये जाने पर भी वार्षिक देय बंदोबस्ती राशि किसी स्थिति में कम नहीं की जाएगी।
 - v. बिना किसी वैध कारण के पर्यावरणीय स्वीकृति, Consent to Establish/ Consent to Operate /जल एवं वायु सहमति प्राप्त नहीं कर पाते हैं या प्राप्त करने में रुचि नहीं लेते हैं तो, समाहर्ता द्वारा अग्रधन की राशि जप्त कर पुनः नीलामी की कार्यवाई की जाएगी।
6. **बंदोबस्ती विलेख/पट्टा संविदा (डीड) निष्पादन करना :—**
- i. सफल डाकवक्ता द्वारा सभी वैधानिक अनापत्ति प्राप्त करने के उपरान्त 5 वर्षों की अवधि के लिए बालू खनन करने हेतु समानुदान/बंदोबस्ती स्वीकृत किया जाएगा। सफल डाकवक्ता विहित प्रपत्र में संबंधित नियमानुसार बंदोबस्ती विलेख अथवा उसके समरूप एक प्रपत्र, कार्य आरंभ करने के पहले, निष्पादित करेगा तथा विहित अपेक्षित राशि संबंधित विभाग में जमा देगा। बंदोबस्तधारी के पट्टे की अवधि विलेख/संविदा निष्पादन की तिथि से पाँच वर्षों के लिए विधिमान्य होगा।
 - ii. बंदोबस्तधारी को निष्पादित संविदा का निबंधन संबंधित विभाग के प्रचलित नियमों के अधीन 01 माह के अन्दर कराना अनिवार्य होगा।
7. सफल डाकवक्ता/बंदोबस्तधारी द्वारा बंदोबस्ती प्रत्यर्पण/कारोबार छोड़ने का विकल्प बिहार खनिज (समनुदान, अवैध खनन, परिवहन एवं भण्डारण निवारण) नियमावली, 2019 के नियम-50 के अनुरूप किया जा सकेगा।
8. **सामान्य शर्तें :—**
- (i) बंदोबस्तधारी नदी तट से बालू प्रेषण के बिन्दु पर एक साईनबोर्ड एवं सीमा स्तंभ का अधिष्ठापन करायेगा जिस पर बंदोबस्तधारी का नाम एवं पता, बंदोबस्ती की अवधि, स्थानीय मैनेजर का नाम एवं पता तथा बालू का विक्रय मूल्य प्रदर्शित किया जाएगा। यदि साईन बोर्ड निरीक्षण में नहीं पाया गया तो शास्ति अधिरोपित की जाएगी।
 - (ii) बंदोबस्तधारी श्रम विधियों के प्रावधानों के अनुसार आश्रय गृह, पीने का पानी, शिशु गृह (क्रेचेज) तथा फर्स्ट एड किट की व्यवस्था संबंधित बालूघाटों में लगे श्रमिकों के लिए करेगा।
 - (iii) बंदोबस्तधारी संबंधित क्षेत्रों का निरीक्षण करेगा तथा स्वयं/ अथवा अपने द्वारा अधिकृत प्रतिनिधियों के माध्यम से बालूघाटों का प्रचालन करेगा। किसी रूप में किये गये उप पट्टा (सबलेटिंग) के लिए बंदोबस्ती रद्द कर दी जाएगी। बालूघाटों/नदी तल तक बालू के परिवहन के प्रयोजनार्थ पहुँच-पथ (अप्रोच रोड) का निर्माण सफल डाकवक्ता/बंदोबस्तधारी द्वारा स्वयं अपने खर्च से किया जाएगा।
 - (iv) बालूघाट की सुरक्षा की जिम्मेदारी सफल डाकवक्ता/बंदोबस्तधारी की होगी।
 - (v) सफल डाकवक्ता/बंदोबस्तधारी बंदोबस्त क्षेत्र के भीतर किसी अवैध खनन के लिए जिम्मेवार होंगे और पाई गई किसी शिकायत पर गंभीरता से विचार किया जाएगा तथा सफल डाकवक्ता/बंदोबस्तधारी के विरुद्ध नियमानुसार कार्यवाई की जाएगी।
 - (vi) सफल डाकवक्ता/बंदोबस्तधारी समाहर्ता द्वारा बालूघाटों के संचालन के संबंध में लोकहित में जारी निबंधनों और शर्तों तथा निदेशों का पालन करेगा।

- (vii) यथोक्त शर्तों, बंधेजों एवं निर्बंधनों का पालन नहीं करने पर कारण पृच्छा निर्गत कर बंदोबस्ती रद्द करने की कार्रवाई की जा सकेगी।
- (viii) सफल डाकवक्ता/बंदोबस्तधारी को खनन राजस्व/जी0एस0टी0/आयकर/स्टाम्प शुल्क/रजिस्ट्रेशन फीस का भुगतान नहीं करने की दशा में 30 दिनों के अंदर कारण स्पष्ट करने हेतु नोटिस दी जायेगी। निर्धारित अवधि के अंदर सफल डाकवक्ता/बंदोबस्तधारी द्वारा बकाया का भुगतान करने में असफल रहने की दशा में राशि वसूली की कार्रवाई के साथ-साथ बंदोबस्ती रद्द करने की भी कार्रवाई की जाएगी।
- (ix) नीलामी हेतु प्रस्तावित बालूघाटों से संबंधित तकनीकी तथा अन्य बिन्दुओं यथा भूमि के अंचल, थाना, मौजा, खाता, खेसरा, रकबा तथा GPS Co-ordinate के संबंध में विवाद/त्रुटि पाए जाने पर संशोधन का अधिकार समाहर्ता, किशनगंज/जिला खनन कार्यालय, किशनगंज का होगा। बालूघाटों का सीमांकन एवं नियमानुसार निर्धारित आयाम/विशिष्टियों का सीमा स्तंभ का अधिष्ठापन GPS Co-ordinate के अनुसार बालू बंदोबस्तधारी को कराना होगा तथा खनन के क्रम में संधारित कराना सफल डाकवक्ता/बंदोबस्तधारी की जवाबदेही होगी, जिसे RQP/अंचलाधिकारी की उपस्थिति में प्रमाणित कर बालूघाटों के निर्धारित क्षेत्र का Reduced Level (RL)/Pre-Level (PL) एवं Satellite images खनन कार्य प्रारंभ करने के पहले जिला खनन कार्यालय, किशनगंज में समर्पित करना होगा।
- (x) बालूघाट से लिक रोड और बालूघाट के बीच कोई प्राकृतिक जल मार्ग सिंचाई नहर पड़ती हो सफल डाकवक्ता/बंदोबस्तधारी जल संसाधन विभाग की पूर्व अनुमति से अस्थायी संरचनाएँ खड़ा कर सकेगा। पूर्व अनुमति के लिए ऐसे आवेदन जल संसाधन विभाग के संबंधित मुख्य अभियंता के समक्ष दिए जाएंगे।
- (xi) बालूघाट में रैयती/बंदोबस्त जमीन होने पर संबंधित रैयत से सहमति प्राप्त कर बालू का खनन करना होगा। यह जिम्मेदारी पूर्णतः बंदोबस्तधारी की होगी एवं विभाग से कोई क्षति पूर्ति का दावा मान्य नहीं होगा।
- (xii) बंदोबस्तधारी द्वारा बंदोबस्ती अवधि के दौरान किसी भी कारण से खनन कार्य नहीं करने की स्थिति में किसी भी प्रकार का मुआवजा/नुकसान एवं क्षतिपूर्ति का दावा मान्य नहीं होगा।
- (xiii) ई-नीलामी एवं बालूघाट की बंदोबस्ती अवधि के दौरान उत्पन्न किसी भी प्रकार का विवाद बिहार खनिज (समानुदान, अवैध खनन, परिवहन एवं भंडारण निवारण) नियमावली 2019, (यथा संशोधित) के अधीन होगा।
- (xiv) सफल डाकवक्ता/बंदोबस्तधारी को इलेक्ट्रॉनिक माध्यम से भेजी गयी कोई भी सूचना/निदेश/आदेश इत्यादि IT-Act के तहत स्वीकार्य साक्ष्य के रूप में माना जायेगा।


समाहर्ता,
किशनगंज।

- 10 का.आ. 562(अ) तारीख 26 फरवरी 2014;
11. का.आ. 637(अ) तारीख 28 फरवरी 2014;
12. का.आ. 1599(अ) तारीख 25 जून 2014;
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14. का.आ. 2600(अ) तारीख 9 अक्टूबर 2014
15. का.आ. 3252(अ) तारीख 22 दिसम्बर 2014;
16. का.आ. 382(अ) तारीख 3 फरवरी, 2015;
17. का.आ. 811(अ) तारीख 23 मार्च, 2015;
18. का.आ. 996(अ) तारीख 10 अप्रैल 2015;
19. का.आ. 1142(अ) तारीख 17 अप्रैल 2015;
20. का.आ. 1141(अ) तारीख 29 अप्रैल 2015;
21. का.आ. 1834(अ) तारीख 6 जुलाई 2015;

MINISTRY OF ENVIRONMENT, FOREST AND CLIMATE CHANGE

NOTIFICATION

New Delhi, the 15th January, 2016

S.O. 141(E).—Whereas in exercise of the powers conferred by sub-section (1) and clause (v) of sub-section (2) of section 3 of the Environment (Protection) Act, 1986 (29 of 1986), a draft notification for making certain amendments in the Environment Impact Assessment Notification, 2006, issued *vide* number S.O. 1533(E), dated the 14th September 2006, was published under sub-rule (3) of rule (5) of the Environment (Protection) Rules, 1986, *vide* number S.O. 2588(E), dated 22nd September, 2015, inviting objections and suggestions from all persons likely to be affected thereby, within a period of sixty days from the date of publication on which copies of Gazette containing the said notification were available to the public;

And whereas, copies of said notification were made available to the public on 22nd September 2015;

And whereas, all objections and suggestions received in response to the above mentioned draft notification have been duly considered by the Central Government;

And whereas, in pursuance to the order of Hon'ble Supreme Court dated the 27th February, 2012 in I.A. No.12-13 of 2011 in Special Leave Petition (C) No.19628-19629 of 2009, in the matter of Deepak Kumar etc. Vs. State of Haryana and Others etc., prior environmental clearance has now become mandatory for mining of minor minerals irrespective of the area of mining lease;

And whereas, as a result of the above said Order of Hon'ble Supreme Court, the number of cases which are now required to obtain prior environmental clearance has increased substantially;

And whereas, the Hon'ble National Green Tribunal, *vide* its order dated the 13th January, 2015 in the matter regarding sand mining has directed for making a policy on environmental clearance for mining leases in cluster for minor minerals;

And whereas, the State Governments have represented for streamlining the process of environmental clearance for mining of minor mineral;

And whereas, the Ministry of Environment, Forest and Climate Change in consultation with State Governments has prepared Guidelines on Sustainable Sand Mining detailing the provisions on environmental clearance for cluster, creation of District Environment Impact Assessment Authority and proper monitoring of sand mining using information technology and information technology enabled services to track the mined out material from source to destination;

Now, therefore, in exercise of the powers conferred by sub-section (1) and clause (v) of sub-section (2) of section 3 of the Environment (Protection) Act, 1986 read with clause (d) of sub-rule (3) of rule 5 of the Environment (Protection) Rules, 1986, the Central Government hereby makes the following amendments in the said notification, namely:-

In the said notification,-

(a) in paragraph 2, after the words “in the said Schedule”, the following words shall be inserted, namely:-
“and at District level, the District Environment Impact Assessment Authority (DEIAA) for matters falling under Category ‘B2’ for mining of minor minerals in the said Schedule”;

(b) after paragraph 3, the following paragraph shall be inserted, namely:-

“3 A. District Level Environment Impact Assessment Authority:-

- (1) A District Level Environment Impact Assessment Authority hereinafter referred to as the DEIAA shall be constituted by the Central Government under sub-section (3) of section 3 of the Environment (Protection) Act, 1986 comprising of four members including a Chairperson and a Member-Secretary.
- (2) The District Magistrate or District Collector shall be the Chairperson of the DEIAA.
- (3) The Sub-Divisional Magistrate or Sub-Divisional Officer of the district head quarter of the concerned district of the State shall be the Member-Secretary of the DEIAA.
- (4) The other two members of the DEIAA shall be the senior most Divisional Forest Officer and one expert. The expert shall be nominated by the Divisional Commissioner of the Division or Chief Conservator of Forest, as the case may be. The term and qualifications of the expert fulfilling the eligibility criteria are given in Appendix VII to this notification.
- (5) The members of the DEIAA who are serving officers of the concerned State Government or the Union territory Administration shall be *ex-officio* members except the expert member.
- (6) The District Level Expert Appraisal Committee hereinafter referred to as the DEAC shall comprise of eleven members, including a Chairman and a Member-Secretary.
- (7) The senior most Executive Engineer, Irrigation Department in the district of respective State Governments or Union territory Administration shall be the Chairperson of the DEAC.
- (8) The Assistant Director or Deputy Director of the Department of Mines and Geology or District Mines Officer or Geologist of the district shall be the Member-Secretary of the DEAC in that order.
- (9) A representative of the State Pollution Control Board or Committee, senior most Sub-Divisional Officer (Forest) in the district, representative of Remote Sensing Department or Geology Department or State Ground Water Department, one occupational health expert or Medical Officer to be nominated by the District Magistrate or District Collector, Engineer from Zila Parishad, and three expert members to be nominated by the Divisional Commissioner or Chief Conservator of Forest, as the case may be, shall be the other members of the DEAC. The term and qualifications of the experts fulfilling the eligibility criteria are given in Appendix VII to this notification.
- (10) The members of the DEAC who are serving officers of the concerned State Government or the Union territory Administration shall be *ex-officio* members except the expert members.
- (11) The District Magistrate or District Collector shall notify an agency to act as Secretariat for the DEIAA and the DEAC and shall provide all financial and logistic support for their statutory functions.
- (12) The DEIAA and DEAC shall exercise the powers and follow the procedure as specified in the said notification, as amended from time to time.
- (13) The DEAC shall function on the principle of collective responsibility and the Chairman shall endeavor to reach a consensus in each case and if consensus cannot be reached, the view of the majority shall prevail.”;
- (c) in paragraph 4, after sub-paragraph (iii), the following sub-paragraph shall be inserted, namely:-
“(iv) The ‘B2’ Category projects pertaining to mining of minor mineral of lease area less than or equal to five hectare shall require prior environmental clearance from DEIAA. The DEIAA shall base its decision on the recommendations of DEAC, as constituted for this notification.”;
- (d) for paragraph 5, the following paragraph shall be substituted, namely:-

“5. Screening, Scoping and Appraisal Committees:-

The same Expert Appraisal Committees (EACs) at the Central Government, SEACs at the State or Union territory level and DEAC at the district level shall screen, scope and appraise projects or activity in category ‘A’, ‘B1 and B2’ and ‘B2’ projects for mining of minor minerals of lease area less than and equal to five hectare respectively. EAC, SEACs and DEACs shall meet at least once every month.

(a) The composition of the EAC shall be as given in Appendix VI. The SEAC at the State or the Union territory level shall be constituted by the Central Government in consultation with the concerned State Government or the Union

territory Administration with identical composition. DEAC at the district level shall be constituted by the Central Government as per the composition given in paragraph 3 A.

(b) The Central Government may with the prior concurrence of the concerned State Governments or the Union territory Administration constitute one SEAC for more than one State or Union territory for reasons of administrative convenience and cost.

(c) The EAC and SEAC shall be reconstituted after every three years.

(d) The authorised members of the EAC, SEACs and DEACs concerned, may inspect any site connected with the project or activity in respect of which the prior environmental clearance is sought for the purpose of screening or scoping or appraisal with prior notice of at least seven days to the project proponent who shall provide necessary facilities for the inspection.

(e) The EAC, SEACs and DEACs shall function on the principle of collective responsibility. The Chairperson shall endeavor to reach a consensus in each case and if consensus cannot be reached the view of the majority shall prevail.”;

(e) for paragraph 6, the following paragraph shall be substituted, namely:-

“6. Application for Prior Environmental Clearance (EC):-

An application seeking prior environmental clearance in all cases shall be made by the project proponent in the prescribed Form 1 annexed herewith and Supplementary Form 1A, if applicable, as given in Appendix II after the identification of prospective site (s) for the project and/or activities to which the application relates; and in Form 1M for mining of minor minerals up to five hectare under Category ‘B2’ projects, as given in Appendix VIII, before commencing any construction activity, or preparation of land, or mining at the site by the project proponent. The project proponent shall furnish along with the application, a copy of the pre-feasibility project report, in addition to Form 1, Form 1A, and Form 1M; and in case of construction projects or activities (item 8 of the Schedule), a copy of the conceptual plan shall be provided instead of pre-feasibility report.”;

(f) in paragraph 7,-

(i) in sub-paragraph (i), under the heading “I. Stage (1)- Screening:”, the existing sub-paragraph shall be lettered as sub-paragraph “(A)” and after sub-paragraph as so lettered, the following sub-paragraph shall be inserted, namely:-
“(B) The cases as specified in Appendix IX shall be exempted from prior environmental clearance.”;

(ii) after sub-paragraph 7 (ii), the following sub-paragraph shall be inserted, namely:-

“7 (iii) Preparation of District Survey Report for Sand Mining or River Bed Mining and Mining of other Minor Minerals:

(a) The prescribed procedure for preparation of District Survey Report for sand mining or river bed mining and mining of other minor minerals is given in Appendix X.

(b) The prescribed procedure for environmental clearance for mining of minor minerals including cluster situation is given in Appendix XI.”;

(g) in paragraph 8,-

(i) for the letters and word “EAC or SEAC”, the words and letters “EAC or SEAC or DEAC” shall be substituted;

(ii) for the words “Expert Appraisal Committee or State Level Expert Appraisal Committee” wherever they occur, the words “Expert Appraisal Committee or State Level Expert Appraisal Committee or District Level Expert Appraisal Committee” shall be substituted;

(h) in paragraph 9, in sub-paragraph (i),-

for the words “Expert Appraisal Committee or State Level Expert Appraisal Committee”, the words “Expert Appraisal Committee or State Level Expert Appraisal Committee or District Level Expert Appraisal Committee” shall be substituted;

(i) in paragraph 10, after sub-paragraph (iii), the following sub-paragraph shall be inserted, namely:-

“(iv) The prescribed procedure for sand mining or river bed mining and monitoring is given in Appendix XII.”;

(j) in paragraph 11, -

for the words “Expert Appraisal Committee or State Level Expert Appraisal Committee”, the words “Expert Appraisal Committee or State Level Expert Appraisal Committee or District Level Expert Appraisal Committee” shall be substituted;

(k) in the Schedule,-

(i) for item 1 (a) and the entries relating thereto, the following item and entries shall be substituted, namely:-

(1)	(2)	(3)	(4)	(5)
“1(a)	(i) Mining of minerals	≥50 ha of mining lease area in respect of non-coal mine lease >150 ha of mining lease area in respect of coal mine lease Asbestos mining	<50 ha of mining lease area in respect of non-coal mine lease ≤150 ha of mining lease area in respect of coal mine lease	General Conditions shall apply except: (i) for project or activity of mining of minor minerals of Category ‘B2’ (up to 25 ha of mining lease area); (ii) River bed mining projects on account of inter-state boundary.

		irrespective of mining area		Note: (1) Mineral prospecting is exempted. ”; (2) The prescribed procedure for environmental clearance for mining of minor minerals including cluster situation is given in Appendix XI.”; (3) The mining leases which have obtained environmental clearance under Environment Impact Assessment Notification, 1994 and Environment Impact Assessment Notification, 2006 shall not require fresh environmental clearance during renewal provided the project has valid and subsisting environmental clearance.
	(ii) Slurry pipelines (coal lignite and other ores) passing through national parks or sanctuaries or coral reefs, ecologically sensitive areas.	All projects.		

(I) after Appendix VI, the following appendices shall be inserted, namely:-

“APPENDIX VII

(See paragraph 3 A)

Qualifications and terms for the Experts in DEIAA and DEAC

1. **Qualification:** The person should have at least (i) 5 years of formal University training in the concerned discipline leading to a MA or M Sc Degree or (ii) in case of Engineering/ Technology/ Architectural discipline, 4 years formal training course together with prescribed practical training in the field leading to a B. Tech/ B.E./ B. Arch. Degree, or (iii) Other professional degree (e.g. MBA etc.) involving a total of 5 years of formal University training and prescribed practical training, or (iv) Prescribed apprenticeship/ article ship and pass examinations conducted by the concerned professional associations (e.g. Chartered Accountancy) or (v) a University degree, followed by two years of formal training in a University or Service Academy (e.g. MBA/MPA etc.). In selecting the individual professionals, experience gained by them in their respective fields will be taken note of.
2. **Expert:** A professional fulfilling the above eligibility criteria with at least 10 years of relevant experience in the field or with an advanced degree (e.g. Ph. D) in a concerned field with at least 5 years of relevant experience.
3. **Age:** Below 70 years. However, in the event of non-availability of paucity of experts in a given field, the maximum age of a member may be allowed up to 75 years.
4. **Fields:** Experts in Mining, Geology, Hydrology, Remote Sensing, Environment Quality, Environment Impact Assessment Process, Risk Assessment, Life Sciences, Marine Sciences, Forestry and Wildlife, Environmental Economics, Bio-diversity, and River Ecology.

5. **Tenure:** The maximum tenure of expert members shall be for two terms of three years each.
6. The Expert Members may not be removed prior to expiry of the tenure without cause and proper enquiry.

APPENDIX VIII

(See paragraph 6)

FORM 1 M

APPLICATION FOR MINING OF MINOR MINERALS UNDER CATEGORY 'B2' FOR LESS THAN AND EQUAL TO FIVE HECTARE

(II) Basic Information

- (viii) Name of the Mining Lease site:
 (ix) Location / site (GPS Co-ordinates):
 (x) Size of the Mining Lease (Hectare):
 (xi) Capacity of Mining Lease (TPA):
 (xii) Period of Mining Lease:
 (xiii) Expected cost of the Project:
 (xiv) Contact Information:

Environmental Sensitivity

Sl. No.	Areas	Distance in kilometer / Details
1.	Distance of project site from nearest rail or road bridge over the concerned River, Rivulet, Nallah etc.	
2.	Distance from infrastructural facilities Railway line National Highway State Highway Major District Road Any Other Road Electric transmission line pole or tower Canal or check dam or reservoirs or lake or ponds In-take for drinking water pump house Intake for Irrigation canal pumps	
3.	Areas protected under international conventions, national or local legislation for their ecological, landscape, cultural or other related value	
4.	Areas which are important or sensitive for ecological reasons - Wetlands, watercourses or other water bodies, coastal zone, biospheres, mountains, forests	
5.	Areas used by protected, important or sensitive species of flora or fauna for breeding, nesting, foraging, resting, over wintering, migration	
6.	Inland, coastal, marine or underground waters	
7.	State, National boundaries	
8.	Routes or facilities used by the public for access to recreation or other tourist, pilgrim areas	
9.	Defence installations	
10.	Densely populated or built-up area, distance from nearest human habitation	
11.	Areas occupied by sensitive man-made land uses (hospitals, schools, places of worship, community facilities)	
12.	Areas containing important, high quality or scarce resources (ground water resources, surface resources, forestry, agriculture, fisheries, tourism, minerals)	
13.	Areas already subjected to pollution or environmental damage. (those where existing legal environmental standards are exceeded)	
14.	Areas susceptible to natural hazard which could cause the project to present environmental problems (earthquakes, subsidence, landslides, erosion, flooding or extreme or adverse climatic conditions)	

15.	Is proposed mining site located over or near fissure / fracture for ground water recharge	
16.	Whether the proposal involves approval or clearance under the following Regulations or Acts, namely:- (a) The Forest (Conservation) Act, 1980; (b) The Wildlife (Protection) Act, 1972; (c) The Coastal Regulation Zone Notification, 2011. If yes, details of the same and their status to be given.	
17.	Forest land involved (hectares)	
18.	Whether there is any litigation pending against the project and/or land in which the project is propose to be set up? (a) Name of the Court (b) Case No. (c) Orders or directions of the Court, if any, and its relevance with the proposed project.	

(Signature of Project Proponent
Along with name and address)

APPENDIX – IX

[See paragraph 7(i) (B)]

EXEMPTION OF CERTAIN CASES FROM REQUIREMENT OF ENVIRONMENTAL CLEARANCE

The following cases shall not require prior environmental clearance, namely:-

1. Extraction of ordinary clay or sand, manually, by the Kumhars (Potter) to prepare earthen pots, lamp, toys, etc. as per their customs.
2. Extraction of ordinary clay or sand, manually, by earthen tile makers who prepare earthen tiles.
3. Removal of sand deposits on agricultural field after flood by farmers.
4. Customary extraction of sand and ordinary earth from sources situated in Gram Panchayat for personal use or community work in village.
5. Community works like de-silting of village ponds or tanks, construction of village roads, ponds, bunds undertaken in Mahatama Gandhi National Rural Employment and Guarantee Schemes, other Government sponsored schemes, and community efforts.
6. Dredging and de-silting of dams, reservoirs, weirs, barrages, river, and canals for the purpose of their maintenance, upkeep and disaster management.
7. Traditional occupational work of sand by Vanjara and Oads in Gujarat *vide* notification number GU/90(16)/MCR-2189(68)/5-CHH, dated the 14th February, 1990 of the Government of Gujarat.
8. Digging of well for irrigation or drinking water.
9. Digging of foundation for buildings not requiring prior environmental clearance.
10. Excavation of ordinary earth or clay for plugging of any breach caused in canal, nala, drain, water body, etc., to deal with any disaster or flood like situation upon orders of District Collector or District Magistrate.
11. Activities declared by State Government under legislations or rules as non-mining activity with concurrence of the Ministry of Environment, Forest and Climate Change, Government of India.

APPENDIX - X

[See paragraph 7 (iii) (a)]

PROCEDURE FOR PREPARATION OF DISTRICT SURVEY REPORT

The main objective of the preparation of District Survey Report (as per the Sustainable Sand Mining Guideline) is to ensure the following:

Identification of areas of aggradations or deposition where mining can be allowed; and identification of areas of erosion and proximity to infrastructural structures and installations where mining should be prohibited and calculation of annual rate of replenishment and allowing time for replenishment after mining in that area.

The report shall have the following structure:

1. Introduction
2. Overview of Mining Activity in the District
3. The List of Mining Leases in the District with location, area and period of validity
4. Details of Royalty or Revenue received in last three years
5. Detail of Production of Sand or Bajari or minor mineral in last three years
6. Process of Deposition of Sediments in the rivers of the District
7. General Profile of the District
8. Land Utilization Pattern in the district: Forest, Agriculture, Horticulture, Mining etc.

9. Physiography of the District
10. Rainfall: month-wise
11. Geology and Mineral Wealth

In addition to the above, the report shall contain the following:

- (a) District wise detail of river or stream and other sand source.
- (b) District wise availability of sand or gravel or aggregate resources.
- (c) District wise detail of existing mining leases of sand and aggregates.

A survey shall be carried out by the DEIAA with the assistance of Geology Department or Irrigation Department or Forest Department or Public Works Department or Ground Water Boards or Remote Sensing Department or Mining Department etc. in the district.

Drainage system with description of main rivers

S. No.	Name of the River	Area drained (Sq. Km)	% Area drained in the District

Salient Features of Important Rivers and Streams:

S. No.	Name of the River or Stream	Total Length in the District (in Km)	Place of origin	Altitude at Origin

Portion of the River or Stream Recommended for Mineral Concession	Length of area recommended for mineral concession (in kilometer)	Average width of area recommended for mineral concession (in meters)	Area recommended for mineral concession (in square meter)	Mineable mineral potential (in metric tonne) (60% of total mineral potential)

Mineral Potential

Boulder (MT)	Bajari (MT)	Sand (MT)	Total Mineable Mineral Potential (MT)

Annual Deposition

S. No.	River or Stream	Portion of the river or stream recommended for mineral concession	Length of area recommended for mineral concession (in kilometer)	Average width of area recommended for mineral concession (in meters)	Area recommended for mineral concession (in square meter)	Mineable mineral potential (in metric tonne) (60% of total mineral potential)
Total for the District						

A Sub-Divisional Committee comprising of Sub-Divisional Magistrate, Officers from Irrigation department, State Pollution Control Board or Committee, Forest department, Geology or mining officer shall visit each site for which environmental clearance has been applied for and make recommendation on suitability of site for mining or prohibition thereof.

Methodology adopted for calculation of Mineral Potential:

The mineral potential is calculated based on field investigation and geology of the catchment area of the river or streams. As per the site conditions and location, depth of minable mineral is defined. The area for removal of the mineral in a river or stream can be decided depending on geo-morphology and other factors, it can be 50 % to 60 % of the area of a particular river or stream. For example in some hill States mineral constituents like boulders, river born Bajri, sand up

to a depth of one meter are considered as resource mineral. Other constituents like clay and silt are excluded as waste while calculating the mineral potential of particular river or stream.

The District Survey Report shall be prepared for each minor mineral in the district separately and its draft shall be placed in the public domain by keeping its copy in Collectorate and posting it on district's website for twenty one days. The comments received shall be considered and if found fit, shall be incorporated in the final Report to be finalised within six months by the DEIAA.

The District Survey Report shall form the basis for application for environmental clearance, preparation of reports and appraisal of projects. The Report shall be updated once every five years.

APPENDIX - XI

[See paragraph 7 (iii) (b)]

PROCEDURE FOR ENVIRONMENTAL CLEARANCE FOR MINING OF MINOR MINERALS INCLUDING CLUSTER

The following policy shall be followed for environmental clearance of mining of minor minerals including cluster situation:-

- (1). The data provided by the States (Sustainable Sand Mining Guidelines) shows that most of the mining leases for minor minerals are of lease area less than 5 hectare. It is also reported that in hill States getting a stretch in river with area more than 5 hectare is very uncommon. So the size of lease for minor minerals including river sand mining will be determined by the States as per their circumstances.
- (2). The mining of minor minerals is mostly in clusters. The Environment Impact Assessment or Environment Management Plan are required to be prepared for the entire cluster in order to capture all the possible externalities. These reports shall capture carrying capacity of the cluster, transportation and related issues, replenishment and recharge issues, geo-hydrological study of the cluster area. The Environment Impact Assessment or Environment Management Plan shall be prepared by the State or State nominated Agency or group of project proponents in the Cluster or the project proponent in the cluster.
- (3). There shall be one public consultation for entire cluster after which the final Environment Impact Assessment or Environment Management Plan report for the cluster shall be prepared.
- (4). Environmental clearance shall be applied for and issued to the individual project proponent. The individual lease holders in cluster can use the same Environment Impact Assessment or Environment Management Plan for application for environmental clearance. The cluster Environment Impact Assessment or Environment Management Plan shall be updated as per need keeping in view any significant change.
- (5). The details of cluster Environment Impact Assessment or Environment Management Plan shall be reflected in each environmental clearance in that cluster and DEAC, SEAC, and EAC shall ensure that the mitigative measures emanating from the Environment Impact Assessment or Environment Management Plan study are fully reflected as environmental clearance conditions in the environmental clearance's of individual project proponents in that cluster.
- (6). A cluster shall be formed when the distance between the peripheries of one lease is less than 500 meters from the periphery of other lease in a homogeneous mineral area.
- (7). Form 1M, Pre-Feasibility Report and mine plan for Category 'B2' projects for mining of minor minerals shall be prepared by the Registered Qualified Person or Accredited Consultants of Quality Council of India, National Accreditation Board for Education and Training. The Environment Impact Assessment or Environment Management Plan for Category 'A' and Category 'B1' projects shall be prepared by the accredited consultants of Quality Council of India, National Accreditation Board for Education and Training.
- (8). The SEIAAs shall have supervisory jurisdiction over the DEIAAs and decisions of DEIAA shall be reviewed by the SEIAA without prejudice to any provisions under any existing law.

Schematic Presentation of Requirements on Environmental Clearance of Minor Minerals including cluster situation

Area of Lease (Hectare)	Category of Project	Requirement of EIA / EMP	Requirement of Public Hearing	Requirement of EC	Who can prepare EIA/ EMP	Who will apply for EC	Authority to appraise/ grant EC	Authority to monitor EC compliance
EC Proposal of Sand Mining and other Minor Mineral Mining on the basis of individual mine lease								
0 – 5ha	'B2'	Form –1M, PFR and Approved Mine Plan	No	Yes	Project Proponent	Project Proponent	DEAC/ DEIAA	DEIAA SEIAA SPCB CPCB MoEFCC Agency

> 5 ha and < 25 ha	‘B2’	Form –I, PFR and Approved Mine Plan and EMP	No	Yes	Project Proponent	Project Proponent	SEAC / SEIAA	nominated by MoEFCC
≥ 25ha and < 50ha	‘B1’	Yes	Yes	Yes	Project Proponent	Project Proponent	SEAC/ SEIAA	
≥ 50 ha	‘A’	Yes	Yes	Yes	Project Proponent	Project Proponent	EAC/ MoEFCC	
EC Proposal of Sand Mining and other Minor Mineral Mining in cluster situation								
Cluster area of mine leases up to 5 ha	‘B2’	Form –IM, PFR and Approved Mine Plan	No	Yes	State, State Agency, Group of Project Proponents, Project Proponent	Project Proponent	DEAC/ DEIAA/	DEIAA SEIAA SPCB CPCB MoEFCC Agency nominated by MoEFCC
Cluster area of Mine leases > 5 ha and < 25 ha with no individual lease > 5 ha	‘B2’	Form –I, PFR and Approved Mine Plan and one EMP for all leases in the Cluster	No	Yes	State, State Agency, Group of Project Proponents, Project Proponent	Project Proponent	DEAC/ DEIAA/	
Cluster of mine leases of area ≥ 25 hectares with individual lease size < 50ha	‘B1’	Yes	Yes	Yes	State, State Agency, Group of Project Proponents, Project Proponent	Project Proponent	SEAC/ SEIAA	
Cluster of any size with any of the individual lease ≥ 50ha	‘A’	Yes	Yes	Yes	State, State Agency, Group of Project Proponents, Project Proponent	Project Proponent	EAC/ MoEFCC	

APPENDIX - XII

[See paragraph 10 (iv)]

PROCEDURE FOR MONITORING OF SAND MINING OR RIVER BED MINING

1. The security feature of Transport Permit shall be as under:

- (a) Printed on Indian Banks’ Association (IBA) approved Magnetic Ink Character Recognition (MICR) Code paper.
- (b) Unique Barcode.
- (c) Unique Quick Response (QR) code.
- (d) Fugitive Ink Background.
- (e) Invisible Ink Mark.
- (f) Void Pantograph.
- (g) Watermark.

2. Requirement at Mine Lease Site:

- (a) Small Size Plot (Up to 5 hectare): Android Based Smart Phone.

- (b) Large Size Plots (More than 5 hectare): CCTV camera, Personal Computer (PC), Internet Connection, Power Back up.
 - (c) Access control of mine lease site.
 - (d) Arrangement for weight or approximation of weight of mined out mineral on basis of volume of the trailer of vehicle used.
3. Scanning of Transport Permit or Receipt and Uploading on Server:
- (a) Website: Scanning of receipt on mining site can be done through barcode scanner and computer using the software;
 - (b) Android Application: Scanning on mining site can be done using Android Application using smart phone. It will require internet availability on SIM card;
 - (c) SMS: Transport Permit or Receipt shall be uploaded on server even by sending SMS through mobile. Once Transport Permit or Receipt get uploaded, an unique invoice code gets generated with its validity period.
4. Proposed working of the system:
- The State Mining Department should print the Transport Permit or Receipt with security features enumerated at Paragraph 1 above and issue them to the mine lease holder through the District Collector. Once these Transport Permits or Receipts are issued, they would be uploaded on the server against that mine lease area. Each receipt should be preferably with pre-fixed quantity, so the total quantity gets determined for the receipts issued.
- When the Transport Permit or Receipt barcode gets scanned and invoice is generated, that particular barcode gets used and its validity time is recorded on the server. So all the details of transporting of mined out material can be captured on the server and the Transport Permit or Receipt cannot be reused.
5. Checking On Route:
- The staff deployed for the purpose of checking of vehicles carrying mined mineral should be in a position to check the validity of Transport Permit or Receipt by scanning them using website, Android Application and SMS.
6. Breakdown of Vehicle:
- In case the Vehicle breakdown, the validity of Transport Permit or Receipt shall be extended by sending SMS by driver in specific format to report breakdown of vehicle. The server will register this information and register the breakdown. The State can also establish a call centre, which can register breakdowns of such vehicles and extend the validity period. The subsequent restart of the vehicle also should be similarly reported to the server or call centre.
7. Tracking of Vehicles:
- The route of vehicle from source to destination can be tracked through the system using check points, RFID Tags, and GPS tracking.
8. Alerts or Report Generation and Action Review:
- The system will enable the authorities to develop periodic report on different parameters like daily lifting report, vehicle log or history, lifting against allocation, and total lifting. The system can be used to generate auto mails or SMS. This will enable the District Collector or District Magistrate to get all the relevant details and shall enable the authority to block the scanning facility of any site found to be indulged in irregularity. Whenever any authority intercepts any vehicle transporting illegal sand, it shall get registered on the server and shall be mandatory for the officer to fill in the report on action taken. Every intercepted vehicle shall be tracked.
- The monitoring of mined out mineral, environmental clearance conditions and enforcement of Environment Management Plan will be ensured by the DEIAA, SEIAA and the State Pollution Control Board or Committee. The monitoring arrangements envisaged above shall be put in place not later than three months. The monitoring of enforcement of environmental clearance conditions shall be done by the Central Pollution Control Board, Ministry of Environment, Forest and Climate Change and the agency nominated by the Ministry for the purpose.”.

[No. Z-11013/98/2014-IA-II (M)]

MANOJ KUMAR SINGH, Jt. Secy.

Note: The principal rules were published in the Gazette of India, Extraordinary, Part II, Section 3, Sub-section (ii) *vide* number S.O. 1533 (E), dated the 14th September, 2006 and subsequently amended *vide* the following numbers :-

1. S.O. 1737 (E) dated the 11th October, 2007;
2. S.O. 3067 (E) dated the 1st December, 2009;
3. S.O. 695 (E) dated the 4th April, 2011;
4. S.O. 2896 (E) dated the 13th December, 2012;
5. S.O. 674 (E) dated the 13th March, 2013;
6. S.O. 2204 (E) dated the 19th July 2013;
7. S.O. 2555 (E) dated the 21st August, 2013;
8. S.O. 2559 (E) dated the 22nd August, 2013;
9. S.O. 2731 (E) dated the 9th September, 2013;
10. S.O. 562 (E) dated the 26th February, 2014;
11. S.O. 637 (E) dated the 28th February, 2014;
12. S.O. 1599 (E) dated the 25th June, 2014;
13. S.O. 2601 (E) dated the 7th October, 2014;
14. S.O. 2600 (E) dated the 9th October, 2014
15. S.O. 3252 (E) dated the 22nd December, 2014;
16. S.O. 382 (E) dated the 3rd. February, 2015;
17. S.O. 811 (E) dated the 23rd March, 2015;
18. S.O. 996 (E) dated the 10th April, 2015;
19. S.O. 1142 (E) dated the 17th April, 2015;
20. S.O. 1141 (E) dated the 29th April, 2015;
21. S.O. 1834 (E) dated the 6th July, 2015.

**ENVIRONMENTAL IMPACT ASSESSMENT
AND
ENVIRONMENTAL MANAGEMENT PLAN
OF
SAND MINING PROJECT (KISHANGANJ UNIT 03 SAND GHAT)
(RIVER BED OF MAHANANDA & KANKAI RIVER)
DISTRICT- KISHANGANJ**

SAND BLOCK	KISHANGANJ UNIT- 03 SAND GHAT		
PROPOSAL NO	SIA/BR/MIN/566733/2026		
TOR NO	SIA/1(a)/2447/2023		
AREA		Andwakol Sand Ghat	30.0 Ha
		Lohaghara Sand Ghat	25.0 Ha
		Kanchanbari Sand Ghat	25.0 Ha
		Tegharia Sand Ghat	18.0 Ha
		Total	98.0 Ha
PRODUCTION	588000 cum per annum or 1501680 TPA		
LOCATION	At Village- Andwakol, Lohaghara, Kanchanbari, Tegharia, Anchal– Kishanganj, TeraGachh, Bahadurganj, District – Kishanganj, Bihar		

APPLICANT

Geeta Enterprises

Prop.- Geeta Sarswat

S/o- Ram Pratap Sharma

**Add.- C-24 Narayan Vihar Colony, Bikaner,
Rajasthan, Pin Code- 334001.**



CONSULTANT
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A QCI –NABET Accredited Organization
Regional Office: 201, Mangal Market,
Raja Bazaar, Patna, Bihar



EIA/EMP for the Sand Mining Project (Kishanganj Unit- 03 Sand Ghat) at Riverbed of Mahananda & Kankai River at Village- Andwakol, Lohaghara, Kanchanbari, Tegharia, Anchal– Kishanganj, TeraGachh, Bahadurganj, District – Kishanganj (Bihar).

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SL NO.	ANNEXURE
1.	TOR
2.	LOI
3.	Mine Plan With Approval Letter
4.	Public Hearing Proceeding
5.	Satellite Imageries Map Last 03 Year
6.	2.5 Km Study Area Map
7.	No Mining Activity Letter Issued By District Mining Officer
8.	Questionnaire
9.	Affidavit
10.	No Man's Land Certificate
11.	QCI Accreditation

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

EIA/EMP for the Sand Mining Project (Kishanganj Unit- 03 Sand Ghat) at Riverbed of Mahananda & Kankai River at Village- Andwakol, Lohaghara, Kanchanbari, Tegharia, Anchal– Kishanganj, TeraGachh, Bahadurganj, District – Kishanganj (Bihar).

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)



EIA/EMP for the Sand Mining Project (Kishanganj Unit- 03 Sand Ghat) at Riverbed of Mahananda & Kankai River at Village- Andwakol, Lohaghara, Kanchanbari, Tegharia, Anchal– Kishanganj, TeraGachh, Bahadurganj, District – Kishanganj (Bihar).

received from SEIAA, Bihar under EIA notification of the MoEF & CC dated 14th September, 2006 and its subsequent amendment there-off and also the EIA Guidance Manual for Mining of Minerals of MoEF & CC, Govt. of India, for seeking environmental clearance for mining of Sand in the applied mining lease area.

1.1 IDENTIFICATION OF PROJECT, PROJECT PROPONENT

The Proposed Sand Mining Project is located on (Kishanganj Unit- 03 Sand Ghat) Sand Mining Project (Kishanganj Unit- 03 Sand Ghat) at Riverbed of Mahananda & Kankai River at Village- Andwakol, Lohaghara, Kanchanbari, Tegharia, Anchal– Kishanganj, TeraGachh, Bahadurganj, District – Kishanganj, Bihar. LOI has been given to Geeta Enterprises; Prop.- Geeta Sarswat vide 302/Jila khanan dated. 15.04.2023 by District Mining Office, Kishanganj.

The Proposed Production is 588000 cum/year or 1501680 Tonnes per annum and Area of the project site is 98.0 ha.

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

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

The details of the project are given below:

Name & Address of the Mine	Kishanganj Unit- 03 Sand Ghat		Sand Mining Project (Kishanganj Unit- 03 Sand Ghat) at Riverbed of Mahananda & Kankai River at Village- Andwakol, Lohaghara, Kanchanbari, Tegharia, Anchal– Kishanganj, TeraGachh, Bahadurganj, District – Kishanganj, Bihar.	
		Ghat Name	Ghat Address	



CHAPTER-I**INTRODUCTION**

EIA/EMP for the Sand Mining Project (Kishanganj Unit- 03 Sand Ghat) at Riverbed of Mahananda & Kankai River at Village- Andwakol, Lohaghara, Kanchanbari, Tegharia, Anchal– Kishanganj, TeraGachh, Bahadurganj, District – Kishanganj (Bihar).

	Andwakol Sand Ghat	Vill: Andwakol, PO: PS &Anchal: Kishanganj Dist: Kishanganj Bihar
	Lohaghara Sand Ghat	Vill: Lohaghara, PO: Dhantola, PS: GarwanTola, Anchal: TeraGachh, Dist: Kishanganj Bihar
	Kanchanbari Sand Ghat	Vill: Kanchanbari & PO: Korobari, PS: Korobari &Anchal: Teragachh, Dist: Kishanganj Bihar
	Tegharia Sand Ghat	Vill: Tegharia, PO: Bisanpur, PS & Anchal: Bahadurganj, Dist: Kishanganj Bihar
River	Mahananda & Kankai River	
Mineral	Sand	
Area (ha.)	Total Area - 98.0 Ha. Andwakol Sand Ghat – Area – 30.0 Hect. Lohaghara Sand Ghat – Area – 25.0 Hect. Kanchanbari Ghat – Area – 25.0 Hect. Tegharia Sand Ghat – Area – 18.0 Hect.	
Production	588000 cum/year or 1501680 TPA	
Applicant and Address	Geeta Enterprises Prop.- Geeta Sarswat S/o- Ram Pratap Sharma Add.- C-24 Narayan Vihar Colony, Bikaner, Rajasthan, Pin Code- 334001	
Status of Mine	Fresh application for Environmental Clearance.	
Project Cost	Rs- 5,35,10,000 /-	
CER Cost	CER cost will be 2% of the total project cost. This amount will be used for social welfare. CER Cost is Rs. 5,35,10,000 /- x 2% = Rs. 10,70,200 /-	

EIA/EMP for the Sand Mining Project (Kishanganj Unit- 03 Sand Ghat) at Riverbed of Mahananda & Kankai River at Village- Andwakol, Lohaghara, Kanchanbari, Tegharia, Anchal– Kishanganj, TeraGachh, Bahadurganj, District – Kishanganj (Bihar).

1.2 BRIEF DESCRIPTION OF PROJECT

The proposed project is open cast semi-mechanized mining of sand with a proposed production of 1501680 TPA for applied lease. Detail has been given below:

The proposed project is over an area 98.0 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 Production & Project cost

Sand Ghat Block	Area (Ha.)	Khata	Khesra	Thana	Production	Project Cost (Rs.)
Andwakol Sand Ghat	30.0	780	45, 46	01	588000 cum per annum 1501680 TPA	5,35,10,000 /-
Lohaghara Sand Ghat	25.0	145, 49, 157, 202, 147, 225, 167, 155, 28, 154, 72, 317	7, 8, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 101, 102, 37, 38, 39, 181, 182, 183, 184, 185, 186, 187, 189, 192, 241	84		
Kanchan Bari Sand Ghat	25.0	56, 101, 24, 127, 74, 81, 100, 39, 47, 63, 113	26, 27, 29, 30, 31, 149, 150, 152, 153, 165, 167	81		
Tegharia Sand Ghat	18.0	51, 82, 86, 92, 96, 97,	54, 56, 57, 58, 59, 60, 61, 66,	211		

CHAPTER-I**INTRODUCTION**

EIA/EMP for the Sand Mining Project (Kishanganj Unit- 03 Sand Ghat) at Riverbed of Mahananda & Kankai River at Village- Andwakol, Lohaghara, Kanchanbari, Tegharia, Anchal– Kishanganj, TeraGachh, Bahadurganj, District – Kishanganj (Bihar).

		100, 107, 108	38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 36, 37, 30, 32, 523, 26, 28, 34, 31, 33, 35, 25, 153			
Total	98.0				1501680 TPA	5,35,10,000 /-

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

**Table: 1.2 Mine lease Pillar Co-ordinates
Kishanganj Unit- 01 Sand Ghat**

Name of Ghat	Area (Ha)	Coordinates		Ghat/ Address	River Name
Andwakol Sand Ghat	30.0	A	26°12'59.01"N 87°57'1.87"E	Vill: Andwakol, PO: PS &Anchal: Kishanganj Dist: Kishanganj Bihar.	Mahananda
		B	26°12'58.00"N 87°57'17.07"E		
		C	26°12'34.18"N 87°57'16.97"E		
		D	26°12'34.26"N 87°57'3.55"E□		
Lohaghara Sand Ghat	25.0	A	26°25'26.97"N 87°46'50.58"E	Vill: Lohaghara, PO: Dhantola, PS: GarwanTola, Anchal: TeraGachh, Dist: Kishanganj Bihar	Kankai
		B	26°25'18.89"N 87°46'58.73"E		
		C	26°25'3.08"N 87°46'38.15"E		
		D	26°25'11.46"N 87°46'30.30"E		
Kanchan Bari Sand Ghat	25.0	A	26°23'23.99"N 87°45'17.58"E	Vill: Kanchanbari & PO: Korobari, PS: Korobari &Anchal: Teragachh, Dist: Kishanganj Bihar.	Kankai
		B	26°23'21.83"N 87°45'26.12"E		
		C	26°22'51.73"N 87°45'16.19"E		
		D	26°22'53.79"N 87°45'6.84"E□		



CHAPTER-I**INTRODUCTION**

EIA/EMP for the Sand Mining Project (Kishanganj Unit- 03 Sand Ghat) at Riverbed of Mahananda & Kankai River at Village- Andwakol, Lohaghara, Kanchanbari, Tegharia, Anchal- Kishanganj, TeraGachh, Bahadurganj, District – Kishanganj (Bihar).

Tegharia Sand Ghat	18.0	A	26°15'40.08"N 87°44'47.40"E	Vill: Tegharia, PO: Bisanpur, PS & Anchal: Bahadurganj, Dist: Kishanganj Bihar	Kankai
		B	26°15'34.83"N 87°44'58.60"E		
		C	26°15'20.98"N 87°44'50.74"E		
		D	26°15'27.18"N 87°44'38.02"E		

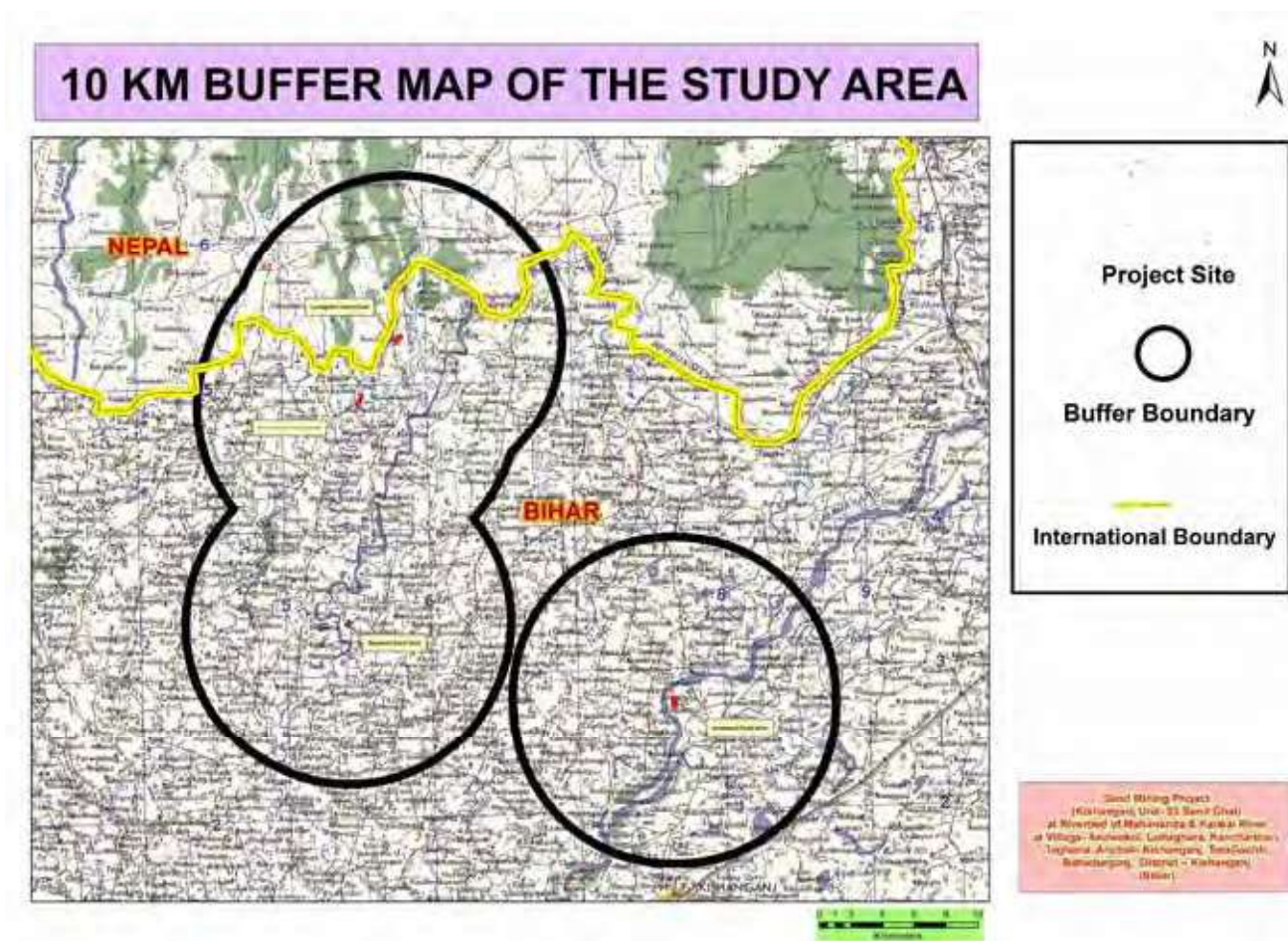


Figure 1.1, 10 km buffer map

EIA/EMP for the Sand Mining Project (Kishanganj Unit- 03 Sand Ghat) at Riverbed of Mahananda & Kankai River at Village- Andwakol, Lohaghara, Kanchanbari, Tegharia, Anchal– Kishanganj, TeraGachh, Bahadurganj, District – Kishanganj (Bihar).

Table: 1.3, Connectivity Details given below

Nearest Habitation/ town	Blocks	Village	Distance (Km) Direction
	Andwakol Sand Ghat	Andwakol	Approx. 0.42 km, towards East direction.
	Lohaghara Sand Ghat	Lohaghara	Approx. 0.28 km, towards East direction.
	Kanchanbari Sand Ghat	Kanchanbari	Approx. 0.24 km, towards East direction.
	Tegharia Sand Ghat	Tegharia	Approx. 0.20 km, towards ESE direction.
Nearest Railway Station	Kishanganj Railway station at distance of 12.40 km in South-East from Andwakol Sand Ghat & Kishanganj Railway station at distance of 26.50 km in South-East from Tegharia Sand Ghat		
Nearest Airport	JPN International Airport at a distance of 276 km in SW direction from Tegharia Sand Ghat.		
Nearest Highway	NH 27 at distance of approx. 10.0 km in South-East direction from Andwakol Sand Ghat & SH- 99 at distance of approx. 5 Km in South -East from Tegharia Sand Ghat.		

1.3 Details of environmental settings

Sl. No.	Particulars	Details
1	Ecological Sensitive Areas (National Park, Wildlife Sanctuaries)	There is no any Ecological Sensitive Areas Like National Park, Wildlife Sanctuaries, etc are found within 10 km of the study area.
2	Nearest water body	Project site is located on Mahananda & Kankai River.
3	State & International boundary	Bihar-West Bengal State boundary at a distance of 1.23 km in North from Dubanochi Sand Ghat; India-Nepal International boundary at distance of approx. 16.94 km in NNE from Andwakol Sand Ghat.

CHAPTER-I**INTRODUCTION**

EIA/EMP for the Sand Mining Project (Kishanganj Unit- 03 Sand Ghat) at Riverbed of Mahananda & Kankai River at Village- Andwakol, Lohaghara, Kanchanbari, Tegharia, Anchal– Kishanganj, TeraGachh, Bahadurganj, District – Kishanganj (Bihar).

		India-Nepal International boundary at distance of approx. 0.01 km in West from Lohaghara Sand Ghat. India-Nepal International boundary at distance of approx. 2.0 km in North from Kanchanbari Sand Ghat. India-Nepal International boundary at distance of approx. 16.39 km in North from Tegharia Sand Ghat.
4	Seismic Zone	Zone- V <i>Source: BMTC</i>

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.



EIA/EMP for the Sand Mining Project (Kishanganj Unit- 03 Sand Ghat) at Riverbed of Mahananda & Kankai River at Village- Andwakol, Lohaghara, Kanchanbari, Tegharia, Anchal– Kishanganj, TeraGachh, Bahadurganj, District – Kishanganj (Bihar).

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
(ToR File No- SIA/1(a)/ 2447/2023)

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.	--

CHAPTER-I**INTRODUCTION**

EIA/EMP for the Sand Mining Project (Kishanganj Unit- 03 Sand Ghat) at Riverbed of Mahananda & Kankai River at Village- Andwakol, Lohaghara, Kanchanbari, Tegharia, Anchal– Kishanganj, TeraGachh, Bahadurganj, District – Kishanganj (Bihar).

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. 302/Jila khaman, Kishanganj, dated. 15.04.2023	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 and should be in the name of the lessee.	The documents including mine plan and EIA report submitted are compatible with one another w.r.t. to following information: Mining Lease Area- 98.0 Hectare Lessee: Geeta Enterprises Prop.- Geeta Sarswat S/o- Ram Pratap Sharma Add.- C-24 Narayan Vihar Colony, Bikaner, Rajasthan, Pin Code- 334001 Waste generation- No waste will be generated. Mining Method-Opencast semi-mechanized method	Annexure- III Mine plan All details has been complied in 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



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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 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.	The Lease area is dry part of 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.	Chapter II & III
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	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



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	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.		
8	Issues relating to Mine safety, including subsidence study in case of underground mining and slope study in case of open cast mining, blasting study etc. should be detailed. The proposed safeguard measures in each case should also be provided.	Issue related to mine safety has been given in of chapter 7.	
9	The study area will comprise of 10 km 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 use pattern of 10 km from the periphery of the lease area has	Land-use of the study area Figure



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	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.	been prepared and incorporated with the report. The study area lies in Mahananda & Kankai River. There is no any Wild Life sanctuary & National Park, protected forest within the study area.	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, such as extent of land area, distance from mine lease, its land use ,R&R Issues, if any, should be given.	There is no overburden outside the mine lease area.	
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	There is no forest land within the lease area.	---

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	mentioned above be issued. In all such cases, it would be desirable for representative of the State Forest Department to assist the Expert Appraisal Committees.		
13	Status of forestry clearance for the broken up area and virgin forestland involved in the Project including deposition of net present value (NPV) and Compensatory afforestation (CA) should be indicated. A copy of the forestry clearance should also be furnished.	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	The details Impacts & there mitigation measures are given in chapter IV of EIA/EMP Report.	Chapter IV



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	furnished. Impact of the project on the wildlife in the surrounding and any other protected area and accordingly, detailed mitigative measures required, should be worked out with cost implications and submitted.		
17	Location of National Parks, Sanctuaries, Biosphere Reserves, Wildlife Corridors, Ramsar site Tiger / Elephant Reserves / (existing as well as proposed), if any, within 10 km of the mine lease should be clearly indicated, supported by a location map duly authenticated by Chief Wildlife Warden. Necessary clearance, as may be applicable to such projects due to proximity of the ecologically sensitive areas as mentioned above, should be obtained from the Standing Committee of National Board of Wildlife and copy furnished.	No National Parks, Sanctuaries, Biosphere Reserves, Wildlife Corridors, Ramsar site Tiger / Elephant Reserves / (existing as well as proposed) are found within 10 km of the study area.	Chapter III Section 3.1.6 Biological Environment
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	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



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	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.		
19	Proximity to Areas declared as ‘Critically Polluted’ or the Project areas attracting court restrictions for mining operations, should also be indicated and where so required, clearance certifications from the prescribed Authorities, such as the SPCB or State Mining Dept. Should be secured and furnished to the effect that the proposed mining activities could be considered.	Proposed project does not come under critically polluted area.	
20	R&R Plan/compensation details for the Project Affected People (PAP) should be furnished. While preparing	There is no R & R involved in this project.	



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	the R&R Plan, the relevant State/National Rehabilitation & Resettlement Policy should be kept in view. In respect of SCs /STs and other weaker sections of the society in the study area, a need based sample survey, family-wise, should be undertaken to assess their requirements, and action programmes prepared and submitted accordingly, integrating the sectoral programmes of line departments of the State Government. It may be clearly brought out whether the village(s) located in the mine lease area will be shifted or not. The issues relating to shifting of village(s) including their R&R and socio-economic aspects should be discussed in the Report.		
21	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	Base line study was carried out for Winter season December 2024 to February 2025. Details are provided in EIA/EMP Report. The locations of the monitoring stations were decided on the basis of prevailing meteorological conditions (Wind direction & wind speed) of the study area. The wind rose has been given in	Chapter III Section 3.1.2 Air Environment



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	date-wise in the EIA and EMP Report" Site-specific meteorological data should also be collected. The location of the monitoring stations should be such as to represent whole of the study area and justified keeping in view the pre-dominant downwind direction and location of sensitive receptors. There should be at least one monitoring station within 500 m of the mine lease in the pre-dominant downwind direction. The mineralogical composition of PM10, particularly for free silica, should be given.	chapter III of EIA/EMP Report. One location has been selected in downwind direction within 500 m from the lease boundary. The location of the monitoring sites has been shown in map.	
22	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	A detailed study on Air quality modeling details given chapter 04 in EIA/EMP report.	

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	direction may also be indicated on the map.		
23	The water requirement for the Project, its availability and source should be furnished. A detailed water balance should also be provided. Fresh water requirement for the Project should be indicated.	The water requirement for Kishanganj Unit- 03 is 12.50 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
24	Necessary clearance from the Competent Authority for drawl of requisite quantity of water for the Project should be provided.	Water requirement will be fulfilled by private water tanker. So, no clearance is required.	Chapter II
25	Description of water conservation measures proposed to be adopted in the Project should be given. Details of rainwater harvesting proposed in the project, if any required should be provided.	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. No artificial rainwater harvesting is proposed for the present project in lease area, however if any such project proposed by State Government PP will help out for the above.	
26	Impact of the Project on the water quality, both surface and	Mining activity will be done on Dry Bed of River so there is no	Chapter II



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	groundwater, should be assessed and necessary safeguard measures, if any required, should be provided".	impact on surface water. Mining will be up to 1.0 m below ground level or above the ground water table whichever comes first. This will not intersect the ground water table.	
27	Based on actual monitored data , it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided. In case the working will intersect groundwater table, a detailed Hydro Geological Study should be undertaken and Report furnished. The Report inter – alia, shall include details of the aquifers present and impact of mining activities on these aquifers. Necessary permission from Central Ground Water Authority for working below ground water and for pumping of ground water should also be obtained and copy furnished.	The mining will be done only upto 1.0 m depth. The detailed impact and control measure w.r.t the quality of water in the surrounding area is discussed under Chapter 4.	
28	Details of any stream, seasonal or otherwise, passing through the lease area and modification / diversion proposed, if any, and the impact of the same on the hydrology should be brought out.	The project site lies on Mahananda & Kankai River. No diversion is proposed.	

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29	Information on site elevation, working depth, groundwater table etc. Should be provided both in AMSL and bgl. A schematic diagram may also be provided for the same.	The mining will be done as per the approved mining plan and 1.0 meter bgl whichever is comes first.	
30	A time bound Progressive Greenbelt Development Plan shall be prepared in a tabular form (indicating the linear and Quantities coverage, plant species and time frame) and Submitted keeping in mind the same will have to be executed up front on commencement of the Project. Phase-wise plan of plantation and compensatory afforestation should be charted clearly indicating the area to be covered under plantation and the species to be planted. The details of plantation already done should be given. The 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.	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 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	Chapter IX Section 9.5
31	Impact on local transport infrastructure due to the Project should be indicated. Projected	The projection has been done based on the mineral transportation.	Chapter IV Section 4.6 Traffic Analysis



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	increase in truck traffic as a result of the Project in the present road network (including those outside the Project area) should be worked out, indicating whether it is capable of handling the incremental load. Arrangement for improving the infrastructure, if contemplated (including action to be taken by other agencies such as State Government) should be covered. Project Proponent shall conduct Impact of Transportation study as per Indian Road Congress Guidelines.	The details of traffic analysis are discussed in the report.	Fig 4.2, Table 4.3(i), 4.3(ii)
32	Details of the onsite shelter and facilities to be provided to the mine workers should be included in the EIA Report	A temporary rest shelter will be provided for the workers near to the site with provisions of water, first aid facility, protective equipments, etc. Details are given in the EIA/EMP Report.	Chapter II Section 2.12.2
33	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.	
34	Occupational Health impacts of the Project should be anticipated and the proposed preventive measures spelt out in detail. Details of pre-	Occupational health impact mainly is expected due air pollution due to fugitive dust emission because of movement of	Chapter VII Section 7.2



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	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.	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 VIII Section 8.3
35	Public health implications of the Project and related activities for the population in the impact zone should be systematically evaluated and the proposed remedial measures should be detailed along with budgetary allocations.	The proposed project being a small scale semi-mechanized 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
36	Measures of socio economic significance and influence to the local community proposed to be provided by the Project Proponent should be indicated. As far as possible, quantitative dimensions may be given with time to time for implementation.	Socio-economic significance provided to the local community i.e. to the nearby villagers is given in the EIA/EMP Report.	Chapter VI Section 6.4 Chapter VII Section 7.2

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37	Detailed environmental management plan (EMP) to mitigate the environmental impacts which, should inter-alia include the impacts of change of land use, loss of agricultural and grazing land, if any, occupational health impacts besides other impacts specific to the proposed Project	The detailed environmental management plan to mitigate the environmental impacts has been mentioned in of the EIA/EMP Report.	Chapter IX						
38	Public Hearing points raised and commitment of the Project Proponent on the same along with time bound Action Plan with budgetary provisions to implement the same should be provided and also incorporated in the final EIA/EMP Report of the Project.	Public hearing has been conducted details has been provided in chapter 7 of EIA/EMP report.	chapter 7						
39	Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project should be given.	No litigation is pending against the project.							
40	The cost of the Project (capital cost and recurring cost) as well as the cost towards implementation of EMP should be clearly spelt out.	The capital cost & recurring cost for has been earmarked for EMP. Chapter IX <table><tr><th>Block</th><th>Capital Cost</th><th>Recurring Cost</th></tr><tr><td>Kishanganj Unit-03</td><td>19.80 Lakh</td><td>13.5 lakh</td></tr></table>	Block	Capital Cost	Recurring Cost	Kishanganj Unit-03	19.80 Lakh	13.5 lakh	Chapter IX
Block	Capital Cost	Recurring Cost							
Kishanganj Unit-03	19.80 Lakh	13.5 lakh							

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41	A Disaster management Plan shall be prepared and included in the EIA/EMP Report".	A Disaster management Plan has been given in EIA report.	Chapter VII
42	Benefits of the Project if the Project is implemented should be spelt out. The benefits of the Project shall clearly indicate environmental, social, economic, employment potential, etc.	2% of the total cost of the project has been earmarked towards the Enterprise Social Commitment which will be used for the development of village.	Chapter VIII
43	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.	

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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 reasons for such changes and permission should be sought, as the TOR may also have to be altered. Post Public Hearing changes in structure and content of the draft EIA/EMP (other than modifications arising out of the P.H. process) will entail conducting the PH again with	Agreed	

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	the revised documentation.		
h	As per the circular no. J-11011/618/2010-IA. II (I) dated 30.5.2012, certified report of the status of compliance of the conditions stipulated in the environment clearance for the existing operations of the project, should be obtained from the Regional Office of Ministry of Environment, Forest and Climate Change, as may be applicable.	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 dumps, if any, clearly showing the land features of the adjoining area.	Compiled With EIA report.	
B.	Additional Conditions:-		
1	Submit a report based on cumulative assessment of increase in air pollutants due to increase in traffic load in view of proposed mining activities on all the roads located within aerial distance of 10 km using suitable air model.	ISCST3 modelling has been used detail has been given in chapter 4.	



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2	If the proposed mining lease has overlapping areas with previously allotted mining lease or already working or worked out mining lease, the same should be clearly shown and details about quantity of sand extracted from overlapped area should be furnished duly certified by the District Mining Officer	The details about quantity of sand extracted from overlapped area duly certified from the concerned District Mining Officer are attached as Annexure VII .	
3	The satellite imageries (high resolution) of last three years for summer, rainy and winter seasons of proposed mining lease shall be submitted.	Last 3 Year Satellite map is attached as Annexure V .	
4	Submit a map on appropriate scale to show extraction paths to be used outside the mining lease boundary to approach major public roads (Rural/District road or State/National Highway). Alternative route shall be explored if extraction path is passing through dense population human settlements. Also submit cumulative traffic management plan for cluster sand mining proposal.	No transportation route has been proposed through any human settlement.	Chapter-IV
5	Submit a map of the area falling within 2.5 km radius from boundary of mining lease showing all man-made public utility features such as	Noted. It has been attached as Annexure-VI	

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	bridge/public civil structure (including water untake points), culverts etc. and highways, and a table showing distance of the above mentioned man-made features from the mining lease boundary to facilitate decision making pertaining to relevant rules Guidelines		
6	Submit a report of the cumulative EIA/EMP study for the cluster sand mining blocks of the proposed mining site.	The proposed mining sites not fall in cluster situation.	
7	The Project Proponent Shall Submit information regarding the location of proposed mining site respect to the no- man's land viz. weather they are inside or outside the no- man's land. The information must be duly verified by the Department of mines & Geology.	No- man's land Certificate is attached as Annexure X .	

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2.0 TYPE OF PROJECT

The project is proposed is for Kishanganj Unit- 03 Sand Ghat for the excavation of sand from the bed of river Mahananda & Kankai River. The proposed project is opencast semi-mechanized/OTFM mining project.

2.1 NEED FOR THE PROJECT

The project site lies on Mahananda & Kankai 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 (Kishanganj Unit- 03 Sand Ghat) Sand Mining Project (Kishanganj Unit- 03 Sand Ghat) at Riverbed of Mahananda & Kankai River at Village- Andwakol, Lohaghara, Kanchanbari, Tegharia, Anchal– Kishanganj, TeraGachh, Bahadurganj, District – Kishanganj, Bihar.

The Proposed Production is 588000 cum/year or 1501680 Tonnes per annum and Area of the project site is 98.0 ha.

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



CHAPTER-2**PROJECT DESCRIPTION**

EIA/EMP for the Sand Mining Project (Kishanganj Unit- 03 Sand Ghat) at Riverbed of Mahananda & Kankai River at Village- Andwakol, Lohaghara, Kanchanbari, Tegharia, Anchal- Kishanganj, TeraGachh, Bahadurganj, District – Kishanganj (Bihar).

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

Geo Coordinate of Lease Area:

**Table 2.1, Mine lease Pillar Co-ordinates
Kishanganj Unit- 03 Sand Ghat**

Name of Ghat	Area (Ha)	Coordinates		Ghat/ Address	River Name
Andwakol Sand Ghat	30.0	A	26°12'59.01"N 87°57'1.87"E	Vill: Andwakol, PO: PS & Anchal: Kishanganj Dist: Kishanganj Bihar.	Mahananda
		B	26°12'58.00"N 87°57'17.07"E		
		C	26°12'34.18"N 87°57'16.97"E		
		D	26°12'34.26"N 87°57'3.55"E□		
Lohaghara Sand Ghat	25.0	A	26°25'26.97"N 87°46'50.58"E	Vill: Lohaghara, PO: Dhantola, PS: GarwanTola, Anchal: TeraGachh, Dist: Kishanganj Bihar	Kankai
		B	26°25'18.89"N 87°46'58.73"E		
		C	26°25'3.08"N 87°46'38.15"E		
		D	26°25'11.46"N 87°46'30.30"E		
Kanchan Bari Sand Ghat	25.0	A	26°23'23.99"N 87°45'17.58"E	Vill: Kanchanbari & PO: Korobari, PS: Korobari & Anchal: Teragachh, Dist: Kishanganj Bihar.	Kankai
		B	26°23'21.83"N 87°45'26.12"E		
		C	26°22'51.73"N 87°45'16.19"E		
		D	26°22'53.79"N 87°45'6.84"E□		
Tegharia Sand Ghat	18.0	A	26°15'40.08"N 87°44'47.40"E	Vill: Tegharia, PO: Bisanpur, PS & Anchal: Bahadurganj, Dist: Kishanganj Bihar	Kankai
		B	26°15'34.83"N 87°44'58.60"E		
		C	26°15'20.98"N 87°44'50.74"E		
		D	26°15'27.18"N 87°44'38.02"E		



CHAPTER-2**PROJECT DESCRIPTION**

EIA/EMP for the Sand Mining Project (Kishanganj Unit- 03 Sand Ghat) at Riverbed of Mahananda & Kankai River at Village- Andwakol, Lohaghara, Kanchanbari, Tegharia, Anchal– Kishanganj, TeraGachh, Bahadurganj, District – Kishanganj (Bihar).

Connectivity

Nearest Habitation/ town	Blocks	Village	Distance (Km) Direction
	Andwakol Sand Ghat	Andwakol	Approx. 0.42 km, towards East direction.
	Lohaghara Sand Ghat	Lohaghara	Approx. 0.28 km, towards East direction.
	Kanchanbari Sand Ghat	Kanchanbari	Approx. 0.24 km, towards East direction.
	Tegharia Sand Ghat	Tegharia	Approx. 0.20 km, towards ESE direction.
Nearest Railway Station	Kishanganj Railway station at distance of 12.40 km in South-East from Andwakol Sand Ghat & Kishanganj Railway station at distance of 26.50 km in South-East from Tegharia Sand Ghat		
Nearest Airport	JPN International Airport at a distance of 276 km in SW direction from Tegharia Sand Ghat.		
Nearest Highway	NH 27 at distance of approx. 10.0 km in South-East direction from Andwakol Sand Ghat & SH- 99 at distance of approx. 5 Km in South -East from Tegharia Sand Ghat.		

CHAPTER-2

PROJECT DESCRIPTION

EIA/EMP for the Sand Mining Project (Kishanganj Unit- 03 Sand Ghat) at Riverbed of Mahananda & Kankai River at Village- Andwakol, Lohaghara, Kanchanbari, Tegharia, Anchal- Kishanganj, TeraGachh, Bahadurganj, District – Kishanganj (Bihar).



Mahananda River Andwakol Sand Ghat – Area – 30.0 Hect.



Kankai River Lohaghara Sand Ghat – Area – 25.0 Hect.

EIA/EMP for the Sand Mining Project (Kishanganj Unit- 03 Sand Ghat) at Riverbed of Mahananda & Kankai River at Village- Andwakol, Lohaghara, Kanchanbari, Tegharia, Anchal- Kishanganj, TeraGachh, Bahadurganj, District – Kishanganj (Bihar).



Kankai River Kanchan Bari Sand Ghat – Area – 25.0 Hect.



Kankai River Tegharia Sand Ghat – Area – 18.0 Hect.

Figure 2.1:- Pillar Coordinate Map

CHAPTER-2**PROJECT DESCRIPTION**

EIA/EMP for the Sand Mining Project (Kishanganj Unit- 03 Sand Ghat) at Riverbed of Mahananda & Kankai River at Village- Andwakol, Lohaghara, Kanchanbari, Tegharia, Anchal- Kishanganj, TeraGachh, Bahadurganj, District – Kishanganj (Bihar).

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 (Ha.)	Khata	Khesra	Thana	Production	Project Cost (Rs.)
Andwakol Sand Ghat	30.0	780	45, 46	01	588000 cum per annum 1501680 TPA	5,35,10,000 /-
Lohaghara Sand Ghat	25.0	145, 49, 157, 202, 147, 225, 167, 155, 28, 154, 72, 317	7, 8, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 101, 102, 37, 38, 39, 181, 182, 183, 184, 185, 186, 187, 189, 192, 241	84		
Kanchan Bari Sand Ghat	25.0	56, 101, 24, 127, 74, 81, 100, 39, 47, 63, 113	26, 27, 29, 30, 31, 149, 150, 152, 153, 165, 167	81		
Tegharia Sand Ghat	18.0	51, 82, 86, 92, 96, 97, 100, 107, 108	54, 56, 57, 58, 59, 60, 61, 66, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 36,	211		



			37, 30, 32, 523, 26, 28, 34, 31, 33, 35, 25, 153			
Total	98.0				1501680 TPA	5,35,10,00 0 /-

LOCATION MAP

KISHANGANJ
Bihar

LOCATION MAP

KISHANGANJ UNIT 03 SAND GHAT
 MAHANANDA RIVER ANDWAKOL SAND GHAT - AREA - 30.0 HECT.
 KANKAI RIVER LOHAGHARA SAND GHAT - AREA - 25.0 HECT.
 KANKAI RIVER KANCHAN BARI SAND GHAT - AREA - 25.0 HECT.
 KANKAI RIVER TEGHARIA SAND GHAT - AREA - 18.0 HECT.

SETTLER - GEETA ENTERPRISES
PROP. - GEETA SARSWAT

AREA: 30.0 + 25.0 + 25.0 + 18.0 = 98.0 HECT.

PREPARED BY : ER. PRAVIN KR SINHA
REG. NO. - ROP/BIH/SR NO 20 LETTER NO: 3825 DATED 07/11/2019

SIGNATURE

II-7

EIA/EMP for the Sand Mining Project (Kishanganj Unit- 03 Sand Ghat) at Riverbed of Mahananda & Kankai River at Village- Andwakol, Lohaghara, Kanchanbari, Tegharia, Anchal– Kishanganj, TeraGachh, Bahadurganj, District – Kishanganj (Bihar).

2.3 TOPOGRAPHY & GEOLOGY

2.3.1 Topography

Kishanganj maintains wonderful topography. Most areas are plains and in few regions mineral deposits have also been found in recent past. As several ancient remains are found in this district, the region welcomes its archaeologist and geologist visitors on regular intervals. They usually research to learn more about the golden past of this region. Tourist attractions are tea gardens, a lake besides several rivers which remain notable attractions in Kishanganj District. Prominent rivers Mahananda, Kankai, Mechi, Donk, Rauta and Ramzan are key sources of irrigation water meant for agriculture in Kishanganj District. Rice, wheat, oilseeds, pulses and maize are major crop produces in the area in and around this district. Few factories too have been established in this region in the recent decades.

Source: Mining plan

2.3.2 GEOMORPHOLOGY

Kishanganj 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. In the district the main aquifer materials consist of fine to medium sand or fine sand mixed with silts with occasional kankar and gravels. In shallow aquifer zones the ground water is generally under water table condition whereas deeper aquifers are under semi confined to confined condition. 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 Main rivers Kosi and Mahananda carry a tremendous load of sediments, the soil are mostly light textured except in backwaters of river Ganga and Kosi.

Three broad soil association groups have been identified in this zone are:

1. Recent alluvial tarai soil
2. Recent alluvial non calcareous soil, and



EIA/EMP for the Sand Mining Project (Kishanganj Unit- 03 Sand Ghat) at Riverbed of Mahananda & Kankai River at Village- Andwakol, Lohaghara, Kanchanbari, Tegharia, Anchal- Kishanganj, TeraGachh, Bahadurganj, District – Kishanganj (Bihar).

3. Recent alluvial calcareous soil.

SOILS

The two broad soil groups are available in the district.

a) Recent Alluvium non-calcareous non-saline groups found over major part of the district.

It is mostly light to medium textured and acid to neutral in nature. It also formed layered sediments having no horizontal differentiation.

b) Recent Alluvium-Tarai soils found as a small patch in the northeast corner of the district.

It is mixture of highly disturbed recent alluvium along the course of river. It is light to heavy textured and poorly drained.

Source: Mining plan

2.3.3 REGIONAL GEOLOGY

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.

Table 2.2. Showing the Geological Succession and their geographic distribution

Age	Geology	Occurrences
Quaternary	Alluvial Deposits (Sand, Clay, Silt, Fragments)	North Bihar Plain & Central Bihar Plain
Tertiary	Sand Stones & Clay Stones	North Champaran Hills
Gondwana	Coal Measures, Forming a series of Small outlier basins	Banka District
Vindhya	Sandstones, Shales, Limestones, etc.	Parts of Bahbhua and Rohtas dist
Satpura	Schist, Phyllite, Quartzite	Part of Aurangabad, Gaya, Nawada, Nalanda, Sheikhpura and Munger District
Proterozoic	Mica Schist, amphibolites, quartzite, granite, dolerite and pegmatite	Nawada, Jamui and Banka



CHAPTER-2**PROJECT DESCRIPTION**

EIA/EMP for the Sand Mining Project (Kishanganj Unit- 03 Sand Ghat) at Riverbed of Mahananda & Kankai River at Village- Andwakol, Lohaghara, Kanchanbari, Tegharia, Anchal- Kishanganj, TeraGachh, Bahadurganj, District – Kishanganj (Bihar).

Archaean	Gneisses, Granites, Schists, Phyllites, quartzite, amphibolites & intrusive all metamorphosed sedimentary and igneous rocks	Part of Aurangabad, Gaya, Nawada, Jamui, Banka and Bhagalpur
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2.3.4 LOCAL GEOLOGY OF THE AREA

The area forms a part of the recent formation having alluvial soil deposit which is Quaternary Alluvial Deposit. Sand and silt are deposited in the middle of the river whereas fine sand and soil are deposited at the fringe of the river banks. Soil/ alluvium varying in thickness from 0.20m to 0.60 m constitute the top horizons in the area suitable for agriculture.

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

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

Gravel: 1/8" to 1/16"



Source: Mining Plan

2.3.5 CLIMATE

The district is characterised by moist humid climate. The winter season commences in November and lasts till February. January is the coldest month with mean daily temperature in the range of 5-10oC and mean daily maximum temperature in the range of 20-25°C.

EIA/EMP for the Sand Mining Project (Kishanganj Unit- 03 Sand Ghat) at Riverbed of Mahananda & Kankai River at Village- Andwakol, Lohaghara, Kanchanbari, Tegharia, Anchal- Kishanganj, TeraGachh, Bahadurganj, District – Kishanganj (Bihar).

Summer season starts from March and lasts up to June. It is followed by the monsoon season and lasts till September. October is transitional period. The district is known as “Cherapunji of Bihar”, as it experiences maximum rainfall than any other districts in the state of Bihar.

Source:http://cgwb.gov.in/AQM/NAQUIM_REPORT/Bihar/Kishanganj%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. Specific Gravity is taken Mahananda River 2.54 (g/cm³) & Kankai River 2.56 (g/cm³)

Proved Mineral Reserves (111): All quantities of sand occurring up to depth of 1m from surface has been considered as proved reserves.

Table-2.3:- Proved Mineral Reserves

Mahananda River Andwakol Sand Ghat

Classification	Code	Quantity of Sand
A) Mineral Reserves		Cum
1) Proved Mineral Reserve	111	300000
Total		300000

Geological Reserve = 300000 cum. or 762000 tonnes.

Kankai River Lohaghara Sand Ghat

Classification	Code	Quantity of Sand
A) Mineral Reserves		Cum
1) Proved Mineral Reserve	111	250000
Total		250000

Geological Reserve = 250000 cum. or 640000 tonnes.

Kankai River Kanchan Bari Sand Ghat

Classification	Code	Quantity of Sand
A) Mineral Reserves		Cum

CHAPTER-2**PROJECT DESCRIPTION**

EIA/EMP for the Sand Mining Project (Kishanganj Unit- 03 Sand Ghat) at Riverbed of Mahananda & Kankai River at Village- Andwakol, Lohaghara, Kanchanbari, Tegharia, Anchal- Kishanganj, TeraGachh, Bahadurganj, District – Kishanganj (Bihar).

1) Proved Mineral Reserve	111	250000
Total		250000

Geological Reserve = 250000 cum. or 640000 tonnes.

Kankai River Tegharia Sand Ghat

Classification	Code	Quantity of Sand
A) Mineral Reserves		Cum
1) Proved Mineral Reserve	111	180000
Total		180000

Geological Reserve = 180000 cum. or 460800 tonnes.

Total Geological Reserve of Mahananda River Andwakol Sand Ghat, Kankai River Lohaghara, Kanchan Bari, Tegharia Sand Ghat, Kankai River Kanchan Bari Sand Ghat, = 980000 cum or 2502800 tonnes.

Source: Mining Plan

2.4.1 Mineable Reserves:

Mineable reserves have been computed up to 1 m depth from surface. The volume multiplied by Specific Gravity is taken Mahananda River 2.54 (g/cm³) & Kankai River 2.56 (g/cm³) to get the tonnage.

Table-2.4:- Summary of minable reserves of Kishanganj - 01 Sand Ghat

Andawakol Sand Ghat

Bench Level (mRL)	Length (m)	Width (m)	Depth (m)	Volume (cum)	Tonnes
75-74	735	379	1	278565	707555
Total				278565	707555

Lohagara Sand Ghat

Bench Level (mRL)	Length (m)	Width (m)	Depth (m)	Volume (cum)	Tonnes
90-89	812	286	1	232232	232232
Total				232232	594514



EIA/EMP for the Sand Mining Project (Kishanganj Unit- 03 Sand Ghat) at Riverbed of Mahananda & Kankai River at Village- Andwakol, Lohaghara, Kanchanbari, Tegharia, Anchal- Kishanganj, TeraGachh, Bahadurganj, District – Kishanganj (Bihar).

KANCHABARI Sand Ghat

Bench Level (mRL)	Length (m)	Width (m)	Depth (m)	Volume (cum)	Tonnes
85-84	960	239	1	229440	587366
Total				229440	587366

TEGHARIA Sand Ghat

Bench Level (mRL)	Length (m)	Width (m)	Depth (m)	Volume (cum)	Tonnes
73-72	463	240	1	111120	284467
Total				111120	284467

Total Mineable Reserve of Mahananda River Andwakol Sand Ghat, Kankai River Lohaghara Sand Ghat, Kankai River Kanchan Bari Sand Ghat, Kankai River Tegharia Sand Ghat = 851357 cum or 2173902 tonnes.

Table-2.5:- Classification Mineral Reserves

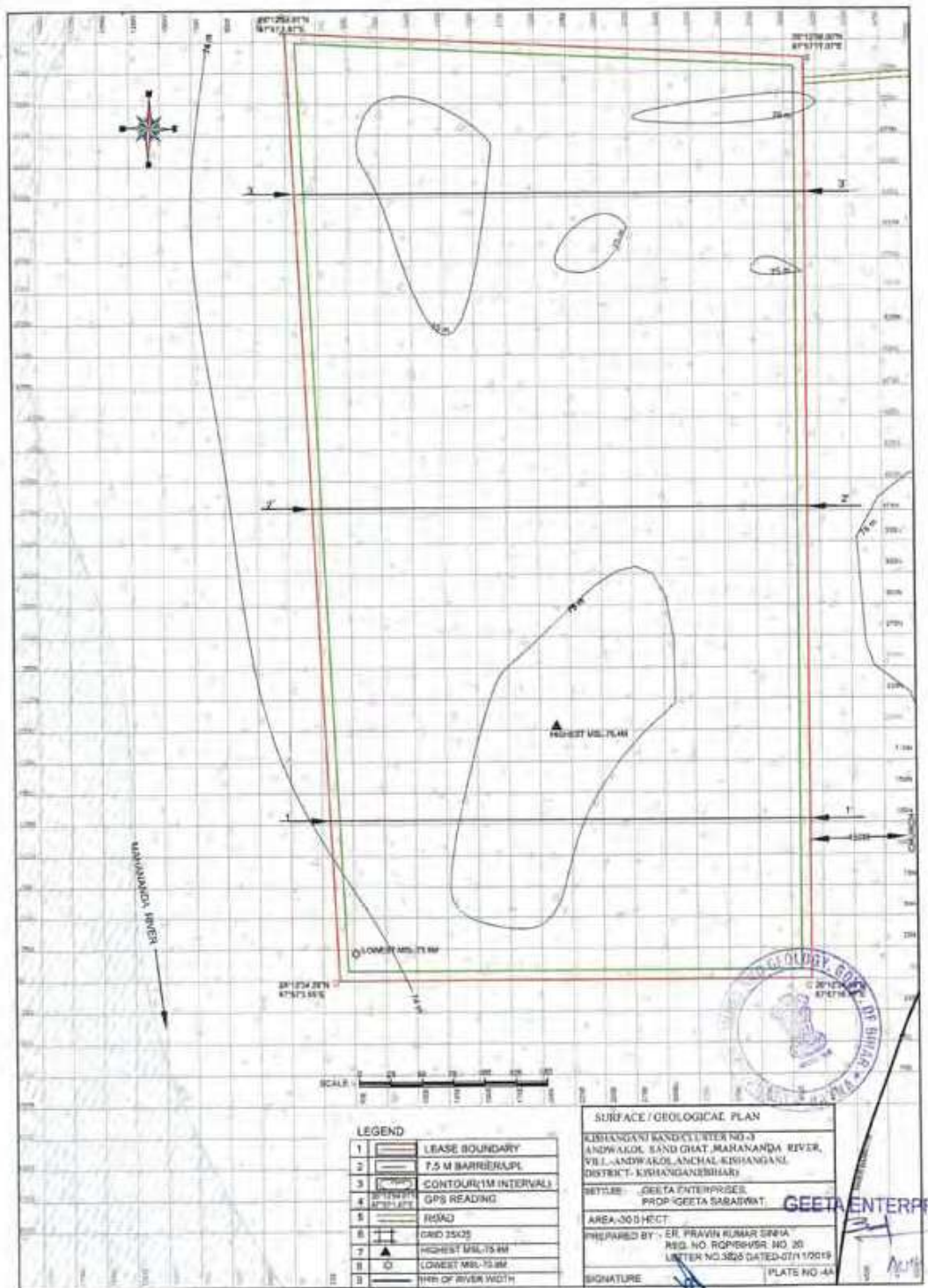
Sand Ghat	Area (Hect)	Geological Reserves (m3)	Mineable Reserves (m3)	Annual Permitted Reserve As per LoI (m3)	Annual Permitted Reserve (tonnes)
Andawakol	30.0	300000	278565	180000	457200
Lohagara	25.0	250000	232232	150000	384000
Kanchabari	25.0	250000	229440	150000	384000
Tegharia	18.0	180000	111120	108000	276480
Kishanganj Unit 03	98.0	980000	851357	588000	1501680

The annual extractable RBM comes to 588000 cum or 1501680 tonnes. It will be replenished after rainy season every year.

CHAPTER-2

PROJECT DESCRIPTION

EIA/EMP for the Sand Mining Project (Kishanganj Unit- 03 Sand Ghat) at Riverbed of Mahananda & Kankai River at Village- Andwakol, Lohaghara, Kanchanbari, Tegharia, Anchal- Kishanganj, TeraGachh, Bahadurganj, District – Kishanganj (Bihar).

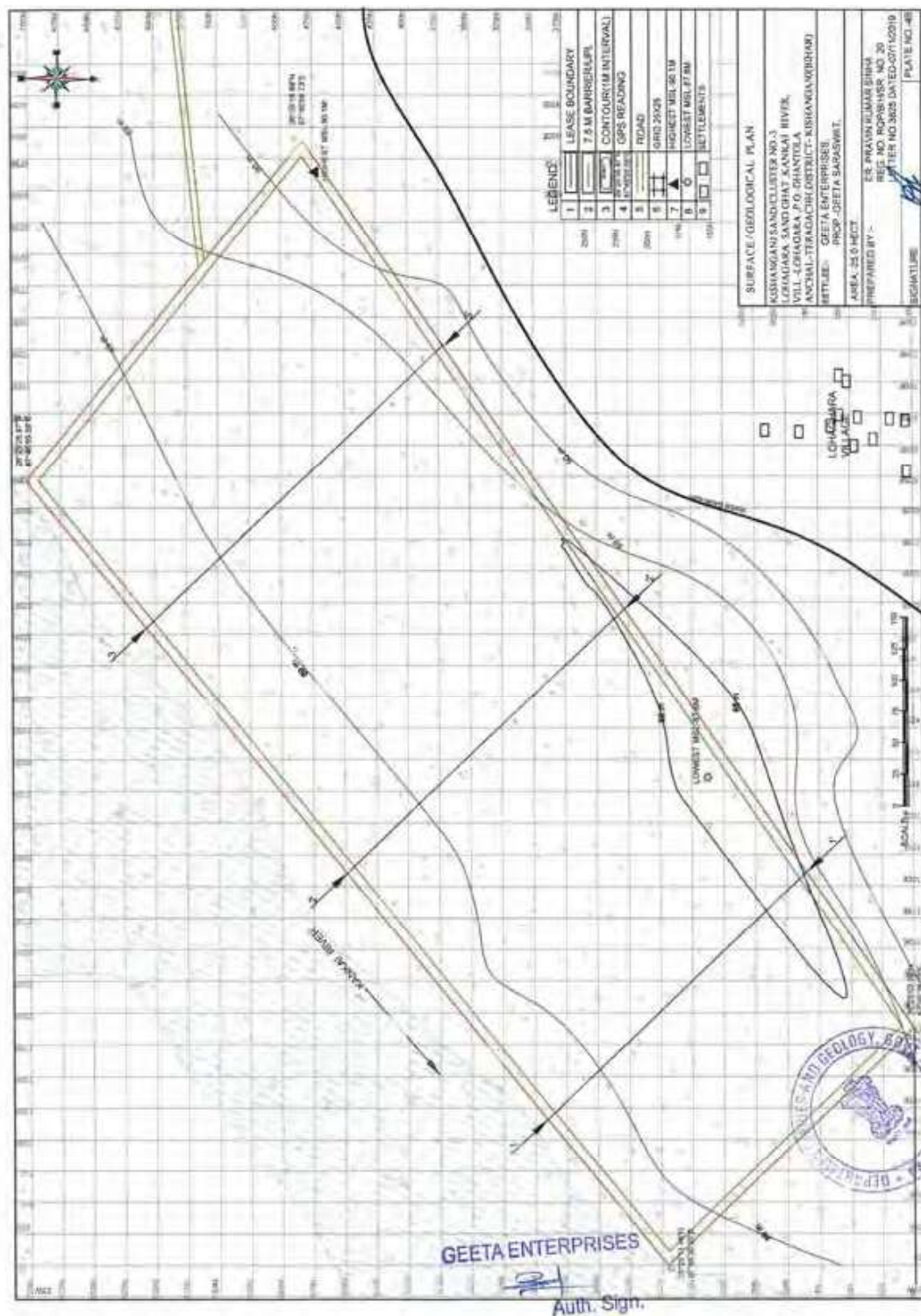


Andwakol Sand Ghat – Area – 30.0 Hect.

CHAPTER-2

PROJECT DESCRIPTION

EIA/EMP for the Sand Mining Project (Kishanganj Unit- 03 Sand Ghat) at Riverbed of Mahananda & Kankai River at Village- Andwakol, Lohaghara, Kanchanbari, Tegharia, Anchal- Kishanganj, TeraGachh, Bahadurganj, District – Kishanganj (Bihar).

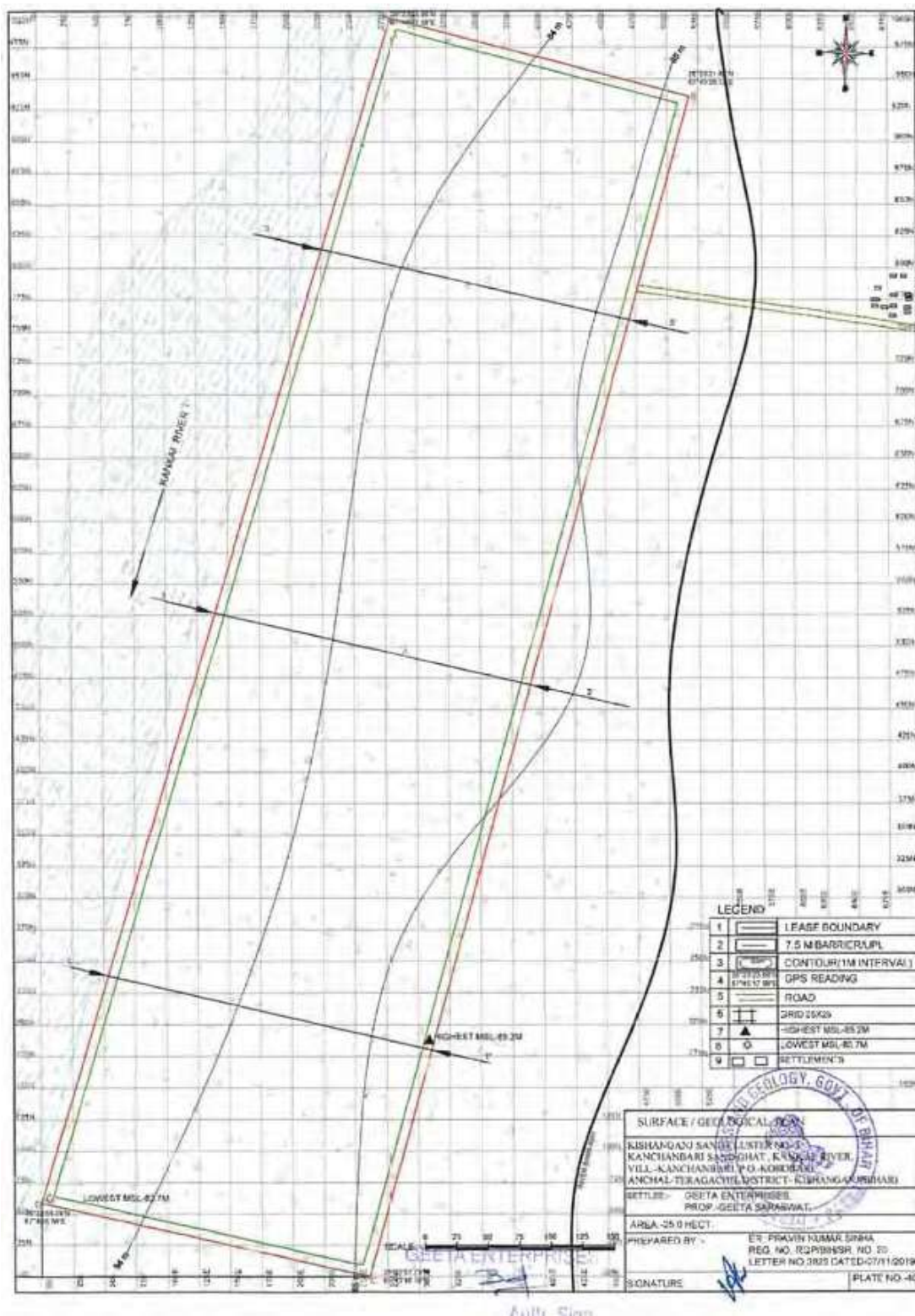


Lohaghara Sand Ghat – Area – 25.0 Hect.

CHAPTER-2

PROJECT DESCRIPTION

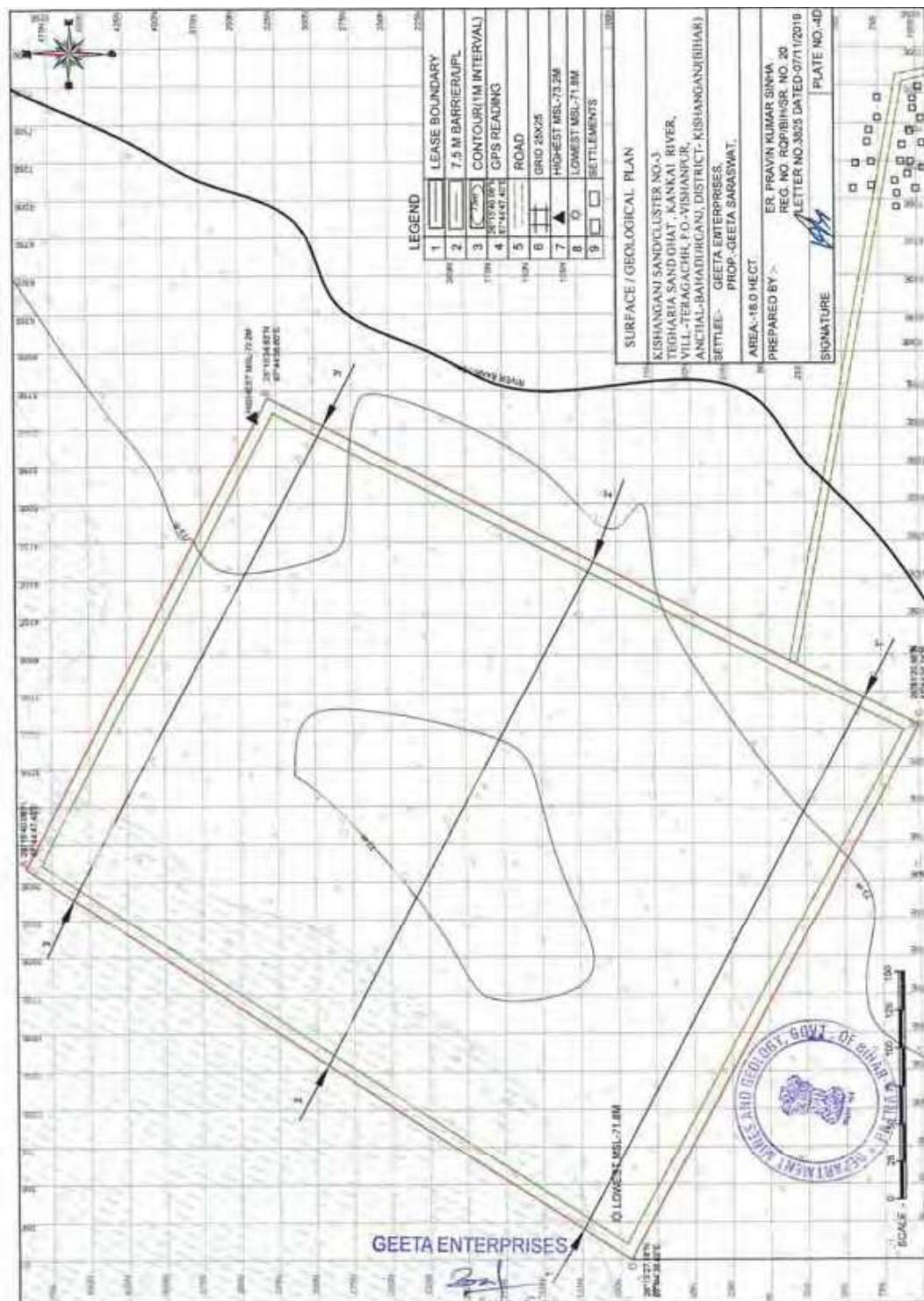
EIA/EMP for the Sand Mining Project (Kishanganj Unit- 03 Sand Ghat) at Riverbed of Mahananda & Kankai River at Village- Andwakol, Lohaghara, Kanchanbari, Tegharia, Anchal- Kishanganj, TeraGachh, Bahadurganj, District – Kishanganj (Bihar).



Kanchanbari Ghat – Area – 25.0 Hect.



EIA/EMP for the Sand Mining Project (Kishanganj Unit- 03 Sand Ghat) at Riverbed of Mahananda & Kankai River at Village- Andwakol, Lohaghara, Kanchanbari, Tegharia, Anchal- Kishanganj, TeraGachh, Bahadurganj, District – Kishanganj (Bihar).



Tegharia Sand Ghat – Area – 18.0 Hect.

Figure 2.3:- Surface cum Geological Section of Kishanganj Unit 03

EIA/EMP for the Sand Mining Project (Kishanganj Unit- 03 Sand Ghat) at Riverbed of Mahananda & Kankai River at Village- Andwakol, Lohaghara, Kanchanbari, Tegharia, Anchal- Kishanganj, TeraGachh, Bahadurganj, District – Kishanganj (Bihar).

2.4.2 Type of Mining

- Mining will be done as per the guidelines of Bihar Mineral (Concession Prevention of illegal Mining Transportation & Storage) Rules, 2019.
- This is an open-cast mining project. The operation will be semi-mechanized/OTFM with use of excavators/JCBs truck /tractors combination or Manually etc. The sand will be collected in its existing form.
- Sand Mining will be carried out only upto a depth of 1 m bgl or above ground water level (whichever is less), for river bed block.
- No drilling /blasting are required as the material is loose in nature.
- Proper benching of 1.5 m height and 6m width will be maintained for mining blocks as per guideline M.M.R-2019, under rule 115(1).
- Mining will be done only during the day time and completely stopped during the monsoon season.

2.4.3 Year Wise Production Schedule:

The bench wise annual exploitation of sand from Kishanganj Unit- 03 Sand Ghat are given below :-

Table 2.6: Year wise Production Details

YEAR	ROM sand (cum)
1 st Year	588000
2 nd Year	588000
3 rd Year	588000
4 th Year	588000
5 th Year	588000

The annual extractable RBM comes to **588000 cum or 1501680 Tonnes**. It will be replenished after rainy season every year.

Source: Mining Plan

EIA/EMP for the Sand Mining Project (Kishanganj Unit- 03 Sand Ghat) at Riverbed of Mahananda & Kankai River at Village- Andwakol, Lohaghara, Kanchanbari, Tegharia, Anchal- Kishanganj, TeraGachh, Bahadurganj, District – Kishanganj (Bihar).

2.5 Conceptual Mining Plan

Mine Applied Area will be worked for Kishanganj Unit- 03 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 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 6.0 m. River bank side will be protected by working in dry part of the river and by leaving safety distance of the width of the river of 5 meter. Bank side natural slope will not be disturbed. This will prevent collapse of bank and erosion. However, the height of the bank with respect to river bed is varying from 3-4 meters.

(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 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.



EIA/EMP for the Sand Mining Project (Kishanganj Unit- 03 Sand Ghat) at Riverbed of Mahananda & Kankai River at Village- Andwakol, Lohaghara, Kanchanbari, Tegharia, Anchal- Kishanganj, TeraGachh, Bahadurganj, District – Kishanganj (Bihar).

2.7 GENERAL FEATURES

2.7.1 Land-use pattern

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

2.7.2 Surface drainage pattern

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

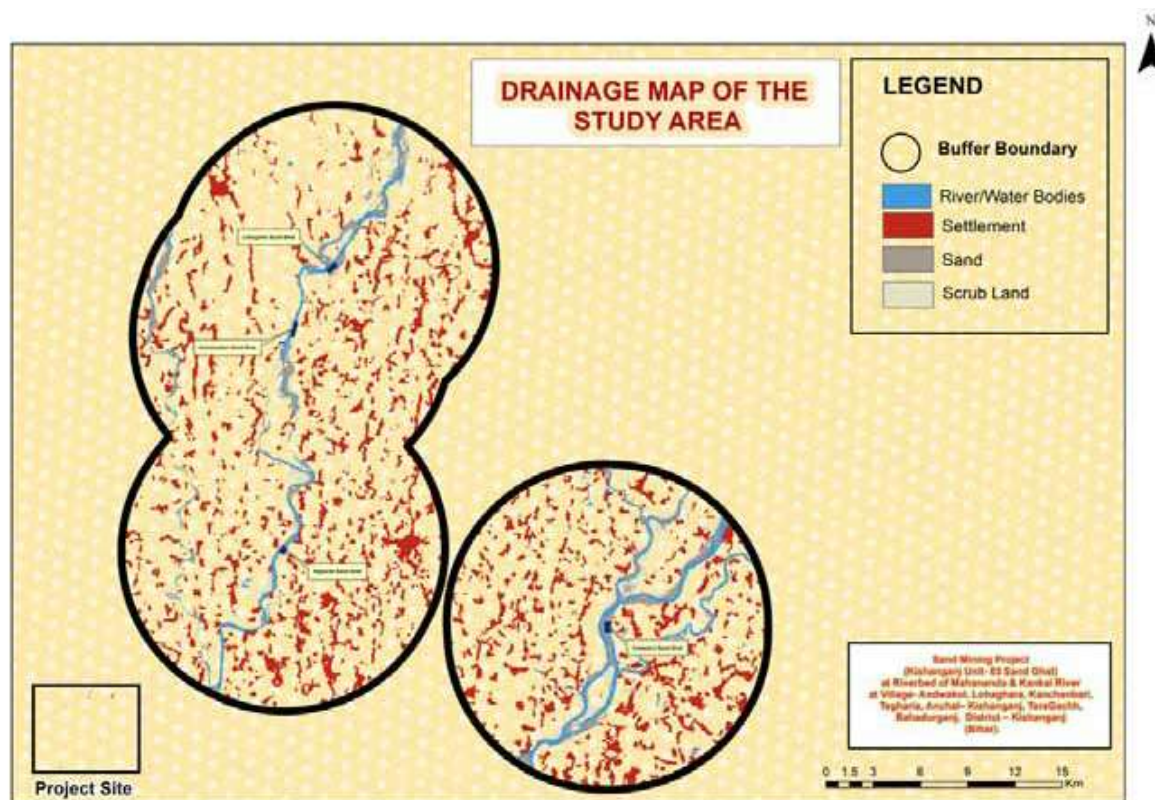


Fig-2.4, Drainage Map

2.7.3 Man power requirement

The manpower requirement for the proposed project will be around 73 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 2.7**.

EIA/EMP for the Sand Mining Project (Kishanganj Unit- 03 Sand Ghat) at Riverbed of Mahananda & Kankai River at Village- Andwakol, Lohaghara, Kanchanbari, Tegharia, Anchal- Kishanganj, TeraGachh, Bahadurganj, District – Kishanganj (Bihar).

Table 2.7 Manpower Requirement

S. No.	Category	Numbers
1.	Administration	1
2.	Supervisor	4
3.	Skilled	8
4.	Un-skilled	60
TOTAL		73

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 2.8 - Water requirement

Activity	Round off Figure in KLD
Drinking	2.0
Dust Suppression	7.5
Plantation	3.0
Total	12.50

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.

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2.7.6 Extent of mechanization

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

2.7.7 Statutory requirements

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

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

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

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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 December 2024 to February 2025.

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 PM₁₀, PM_{2.5}) at different location in the study area for the collection of primary air pollutant and analyze the existing air conditions.
- ✓ Carrying out a detailed biological study for the Core and Buffer Zone

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- ✓ 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 (December 2024 to February 2025) 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**.

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Table 3.1: Land Use Cover of the Project Study Area

Landuse Type	Area (Ha)
Scrub Land	2186.93
Forest	4676.39
River/Water Bodies	3329.51
Settlement	16045.84
Vegetation	2544.22
Agriculture	83567.44
AREA	112350.33

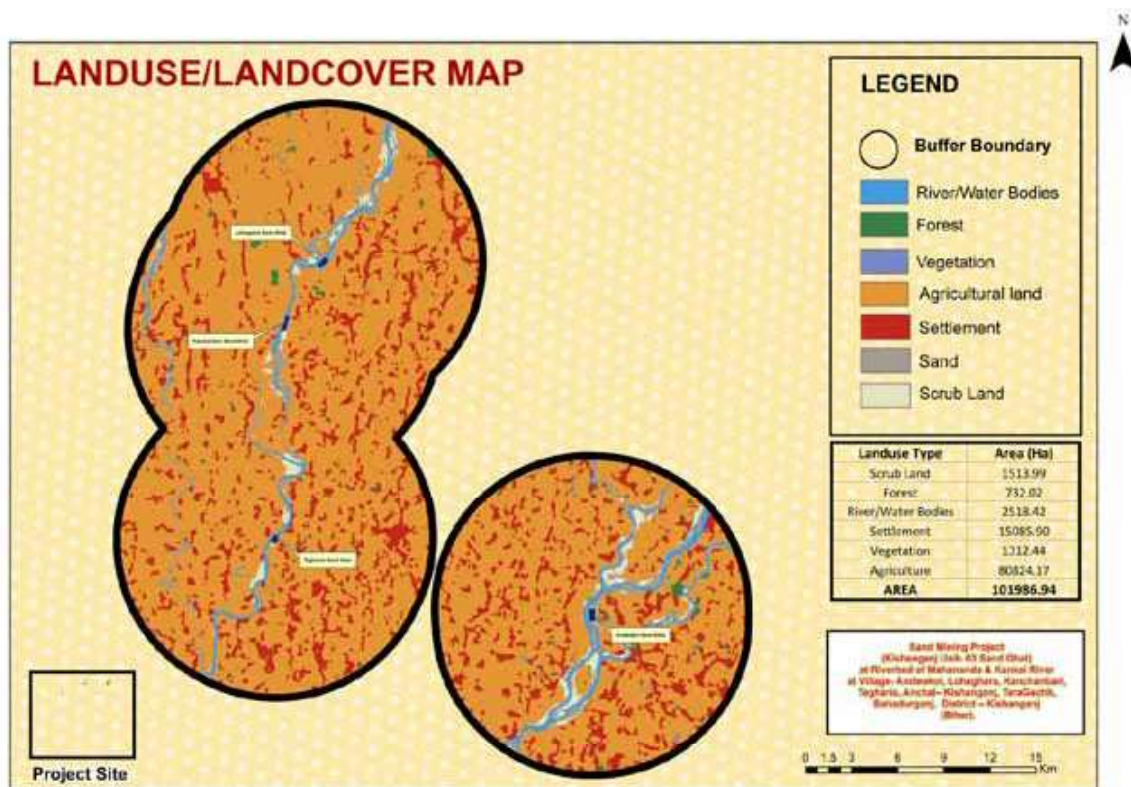


FIGURE 3.1: LAND USE COVER OF THE PROJECT STUDY AREA

3.2 Water Environment

Water quality assessment is one of the essential components of EIA study. Such assessment helps in evaluating the existing health of water body and suggesting appropriate mitigation

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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 December 2024 to February 2025. 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		
SITE	Location	Distance (Km) and Direction
GW1	Motihara village From (Andwakol Sand Ghat)	3.60 Km,E
GW2	Gangi village From (Andwakol Sand Ghat)	5.87 Km, W
GW3	Harwadanga village From (Lohaghara Sand Ghat)	6.67 Km, East
GW4	Harhibhita village From (Lohaghara Sand Ghat)	4.0 Km, NE
GW5	Lachhmipur village From (Kanchanbari Sand Ghat)	3.60 Km, E
GW6	Pipra From (Kanchanbari Sand Ghat)	3.50 Km, WSW
GW7	Birpur From (Tegharia Sand Ghat)	3.93 Km, ESE
GW8	Baigna Village From (Tegharia Sand Ghat)	3.41 Km, W

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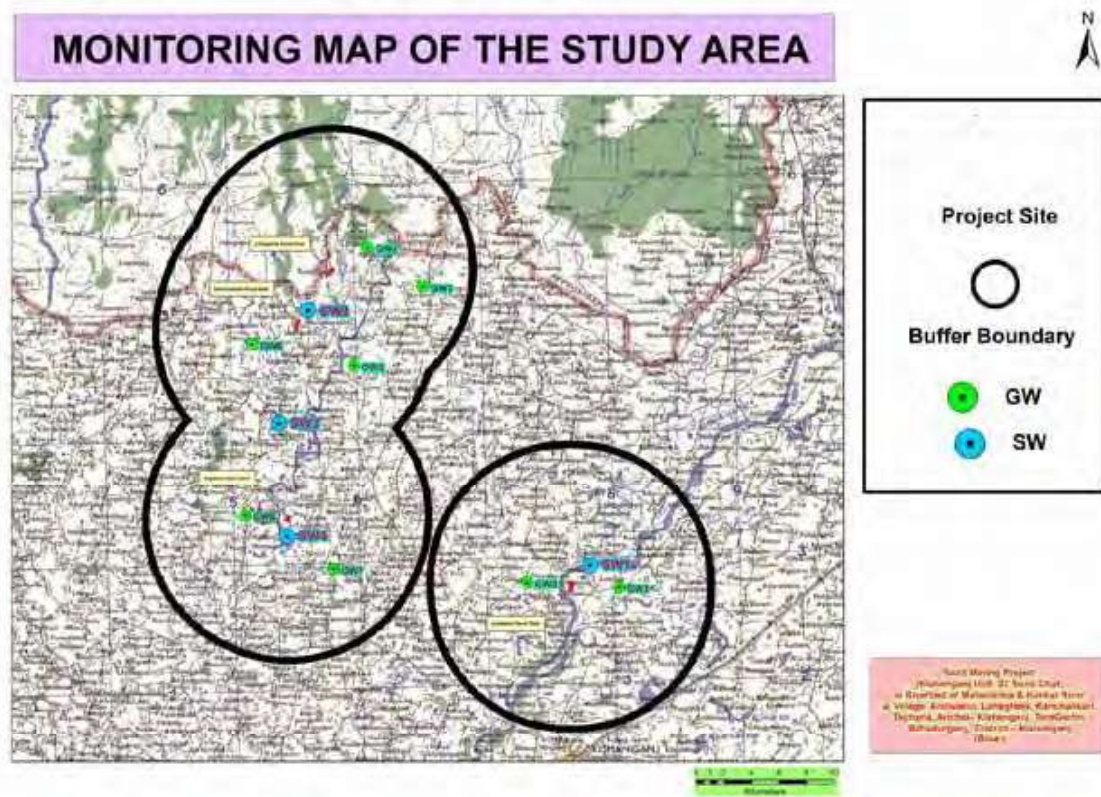


Figure 3.2 Water Sampling Location Map

Table 3.3 Ground Water Quality Monitoring Result

S. No.	Parameter	Unit	Motihara village From (Andwakol Sand Ghat)	Gangi village From (Andwakol Sand Ghat)	Harwadanga village From (Lohaghara Sand Ghat)	Harhibhita village From (Lohaghara Sand Ghat)	Lachhampur village From (Kanchanbari Sand Ghat)	Limit (as per IS:10500:2012)RA:2023	
								Requirement (Acceptable Limit)	Permissible Limit in absence of alternate source
1	Colour	Hazen	<1.0	<1.0	<1.0	<1.0	<1.0	5	15
2	Odour	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	-
3	Taste	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	-
4	Turbidity	NTU	<1.0	<1.0	<1.0	<1.0	<1.0	1	5
5	pH	-	7.78	7.24	7.36	7.54	7.42	6.5-8.5	No Relaxation
6	Total Hardness (as CaCO ₃)	mg/l	265.0	280.0	272.0	260.0	251.0	200	600
7	Iron (as Fe)	mg/l	0.146	0.125	0.138	0.114	0.157	1.0	No Relaxation
8	Chlorides (as Cl)	mg/l	50.2	54.8	48.4	51.5	56.8	250	1000
9	Fluoride (as F)	mg/l	0.48	0.51	0.62	0.40	0.56	1	1.5
10	TDS	mg/l	596.0	622.0	680.0	580.0	541.0	500	2000
11	Calcium(as Ca ²⁺)	mg/l	54.80	48.59	51.02	46.50	50.22	75	200

CHAPTER-3

BASELINE DATA DESCRIPTION

EIA/EMP for the Sand Mining Project (Kishanganj Unit- 03 Sand Ghat) at Riverbed of Mahananda & Kankai River at Village- Andwakol, Lohaghara, Kanchanbari, Tegharia, Anchal- Kishanganj, TeraGachh, Bahadurganj, District – Kishanganj (Bihar).

12	Magnesium (as Mg ²⁺)	mg/l	18.96	14.20	16.40	10.60	14.06	30	100
13	Copper (as Cu)	mg/l	<0.01	<0.01	<0.01	<0.05	<0.05	0.05	1.5
14	Manganese(as Mn)	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	0.1	0.3
15	Sulphate (as SO ₄)	mg/l	26.80	30.12	26.40	34.6	27.8	200	400
16	Nitrate(as NO ₃)	mg/l	5.40	6.80	5.08	4.98	6.65	45	No Relaxation
18	Mercury (as Hg)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	0.001	No Relaxation
19	Cadmium (as Cd)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	0.003	No Relaxation
20	Selenium (as Se)	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	No Relaxation
21	Arsenic (as As)	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	No Relaxation
22	Cyanide (as CN)	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	0.05	No Relaxation
23	Lead (as Pb)	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	No Relaxation
24	Zinc (as Zn)	mg/l	0.138	0.124	0.115	0.140	0.127	5	15
25	Anionic Detergent (as MBAS)	mg/l	<0.10	<0.10	<0.10	<0.10	<0.10	0.2	1
26	Chromium (as Cr ⁶⁺)	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	No Relaxation
27	Mineral oil	mg/l	<0.50	<0.50	<0.50	<0.50	<0.50	0.5	No Relaxation
28	Alkalinity as CaCO ₃	mg/l	218.0	275.0	254.0	211.0	196.0	200	600
29	Aluminium (as Al)	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	0.03	0.2
30	Boron (as B)	mg/l	<0.10	<0.10	<0.10	<0.10	<0.10	0.5	2.4
31	Total Coliform	MPN /100ml	Absent	Absent	Absent	Absent	Absent	Absent/100ml	
32	<i>E. coli</i>	E.coli /100ml	Absent	Absent	Absent	Absent	Absent	Absent/100ml	

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S. No.	Parameter	Unit	Pipra From (Kanchanbari Sand Ghat)	Birpur From (Tegharia Sand Ghat)	Baigna Village From (Tegharia Sand Ghat)	Limit (as per IS:10500:2012)RA:2023	
						Requirement (Acceptable Limit)	Permissible Limit in absence of alternate source
1	Colour	Hazen	<1.0	<1.0	<1.0	5	15
2	Odour	-	Agreeable	Agreeable	Agreeable	Agreeable	-
3	Taste	-	Agreeable	Agreeable	Agreeable	Agreeable	-
4	Turbidity	NTU	<1.0	<1.0	<1.0	1	5
5	pH	-	7.38	7.16	7.54	6.5-8.5	No Relaxation
6	Total Hardness (as CaCO ₃)	mg/l	227	210	238	200	600
7	Iron (as Fe)	mg/l	0.148	0.134	0.156	1.0	No Relaxation
8	Chlorides (as Cl)	mg/l	76.80	82.50	72.10	250	1000
9	Fluoride (as F)	mg/l	0.36	0.41	0.38	1	1.5

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10	TDS	mg/l	566.0	521.0	498.0	500	2000
11	Calcium(as Ca ²⁺)	mg/l	54.20	46.80	45.40	75	200
12	Magnesium (as Mg ²⁺)	mg/l	12.05	10.54	11.96	30	100
13	Copper (as Cu)	mg/l	<0.05	<0.05	<0.05	0.05	1.5
14	Manganese(as Mn)	mg/l	<0.05	<0.05	<0.05	0.1	0.3
15	Sulphate (as SO ₄)	mg/l	38.60	41.20	30.31	200	400
16	Nitrate(as NO ₃)	mg/l	6.45	4.80	5.26	45	No Relaxation
18	Mercury (as Hg)	mg/l	<0.001	<0.001	<0.001	0.001	No Relaxation
19	Cadmium (as Cd)	mg/l	<0.001	<0.001	<0.001	0.003	No Relaxation
20	Selenium (as Se)	mg/l	<0.01	<0.01	<0.01	0.01	No Relaxation
21	Arsenic (as As)	mg/l	<0.01	<0.01	<0.01	0.01	No Relaxation
22	Cyanide (as CN)	mg/l	<0.01	<0.01	<0.01	0.05	No Relaxation
23	Lead (as Pb)	mg/l	<0.01	<0.01	<0.01	0.01	No Relaxation
24	Zinc (as Zn)	mg/l	0.136	0.142	0.148	5	15
25	Anionic Detergent (as MBAS)	mg/l	<0.10	<0.10	<0.10	0.2	1
26	Chromium (as Cr ⁶⁺)	mg/l	<0.05	<0.05	<0.05	0.05	No Relaxation
27	Mineral oil	mg/l	<0.50	<0.50	<0.50	0.5	No Relaxation
28	Alkalinity as CaCO ₃	mg/l	210.0	242.0	298.0	200	600
29	Aluminium (as Al)	mg/l	<0.01	<0.01	<0.01	0.03	0.2
30	Boron (as B)	mg/l	<0.10	<0.10	<0.10	0.5	2.4
31	Total Coliform	MPN /100ml	Absent	Absent	Absent	Absent/100ml	
32	<i>E. coli</i>	E.coli /100ml	Absent	Absent	Absent	Absent/100ml	

Observation:

Analysis of results of ground water reveals the following: -

- pH varies from **7.16 to 7.78**.
- Total hardness varies from **210 mg/l to 280 mg/l**.
- Total dissolved solids vary from **498 mg/l to 680 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.

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3.2 (b) SURFACE WATER

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

Table 3.4: Surface water sampling locations

Surface Water Monitoring Locations		
SW1	Mahananda River Near village Andwakol	-
SW 2	Kankai River Near village Kanchanbari	-
SW 3	Kankai River Near village Malitola	-
SW 4	Kankai River Near village Tegharia	-

Table 3.5: Physio-chemical properties of surface water

S. No	Parameter	Test Method	Units	SW1 Mahananda River Near village Andwakol	SW2 Kankai River Near village Kanchanbari	SW3 Kankai River Near village Malitola	SW4 Kankai River Near village Tegharia
1.	pH (at 25 ⁰ C)	IS:3025(Part-11)	---	7.27	7.48	7.52	7.36
2.	Temperature	IS:3025(Part-9)	⁰ C	18.0	20.0	23.0	21.0
3.	Turbidity	IS:3025(Part-10)	NTU	4.2	5.6	3.4	4.5
4.	Electric Conductivity @25 ⁰ C	IS:3025(Part-14)	μS/cm	415	428	367	354
5.	Sulphate (SO ₄)	IS:3025(Part-24)	mg/l	25.0	34.0	24.0	26.0
6.	Nitrate (NO ₃)	IS:3025(Part-34)	mg/l	2.60	3.48	3.21	2.80
7.	Total Hardness (as CaCO ₃)	IS:3025(Part-21)	mg/l	172.0	186.0	154.0	165.0
8.	Chloride (as Cl)	IS:3025(Part-32)	mg/l	48.8	65.5	41.0	45.6
9.	Fluoride (as F)	APHA 4500F	mg/l	0.23	0.30	0.25	0.28
10.	COD (as O ₂)	APHA-5220 B	mg/l	21.0	24.0	18.0	25.0
11.	Iron (as Fe)	IS:3025(Part-53)	mg/l	0.16	0.20	0.25	0.16
12.	Dissolve Oxygen	IS-3025(Part-38)	mg/l	7.2	6.5	6.8	7.5

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13.	Total Dissolved Solid	IS:3025(Part-16)	mg/l	296	312	247	302
14.	BOD (3 days at 27 ⁰ C)	IS:3025 (P-44)	mg/l	5.8	6.5	4.2	5.6
15.	Calcium (as Ca)	IS:3025(Part-40)	mg/l	51.8	54.4	48.6	51.0
16.	Magnesium (as Mg)	IS:3025(Part-46)	mg/l	10.5	14.2	8.5	10.0
17.	Arsenic (as As)	IS:3025(Part-37)	mg/l	BDL (<0.01)	BDL (<0.01)	BDL (<0.01)	BDL (<0.01)
18.	Lead (as Pb)	IS:3025(Part-47)	mg/l	BDL (<0.01)	BDL (<0.01)	BDL (<0.01)	BDL (<0.01)
19.	Copper (as Cu)	IS:3025(Part-42)	mg/l	BDL (<0.05)	BDL (<0.05)	BDL (<0.05)	BDL (<0.05)
20.	Zinc (as Zn)	IS:3025(Part-49)	mg/l	BDL (<0.01)	BDL (<0.01)	BDL (<0.01)	BDL (<0.01)
21.	Manganese (as Mn)	IS:3025(Part-59)	mg/l	BDL (<0.10)	BDL (<0.10)	BDL (<0.10)	BDL (<0.10)
22.	Total Chromium (as Cr)	IS:3025(Part-52)	mg/l	BDL (<0.05)	BDL (<0.05)	BDL (<0.05)	BDL (<0.05)
23.	Sodium (as Na)	IS:3025(Part-45)	mg/l	21.8	24.5	20.5	23.4
24.	Potassium (as K)	IS:3025(Part-45)	mg/l	1.54	1.78	1.24	1.89
25.	Total Alkalinity (as CaCO ₃)	IS:3025(Part-23)	mg/l	164	166	150	148
26.	Phosphate (as P)	IS:3025(Part-31)	mg/l	0.23	0.27	0.25	0.29
27.	Nitrite (as NO ₂)	IS:3025(Part-34)	mg/l	0.18	0.21	0.18	0.16
28.	Total Suspended Solid	IS:3025(Part-17)	mg/l	9.2	10.5	7.5	8.5
29.	Faecal Coliform	IS-1622	MPN/100 ml	1.6 × 10 ³	1.8 × 10 ³	1.4 × 10 ³	1.6 × 10 ³
30.	Total Coliform	IS-1622	MPN/100 ml	3.0 × 10 ³	4.6 × 10 ³	2.8 × 10 ³	2.4 × 10 ³

3.2.1 Sampling frequency

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

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

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

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

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

3.2.2 Result & Conclusion:

Surface water Observation:

- The analysis results indicate that the pH ranges between **7.27 to 7.52**.
- Dissolved Oxygen (DO) was observed in the range of **6.5 to 7.5 mg/l** against the minimum requirement of 4 mg/l.
- BOD values were observed to be in the range of **4.2 to 6.5 mg/l**.

Based on the results it is evident that most of the parameters of the samples comply with 'Category 'C' standards of CPCB (Table 3.5) are indicating their suitability

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for only Drinking water source after conventional treatment and disinfections.

3.3 Air Environment

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

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

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

- Wind speed
- Wind Direction
- Air Temperature

Table-3.7, Summarized project site meteorological data for winter Season

Month	Temperature °C			Wind Speed (Km/Hr)	
	Min	Average	Max	Average	Max
December 2024	15	20	26	6.3	10.5
January 2025	14	20	26	7.8	12.2
February 2025	15	22	29	8.9	14.7

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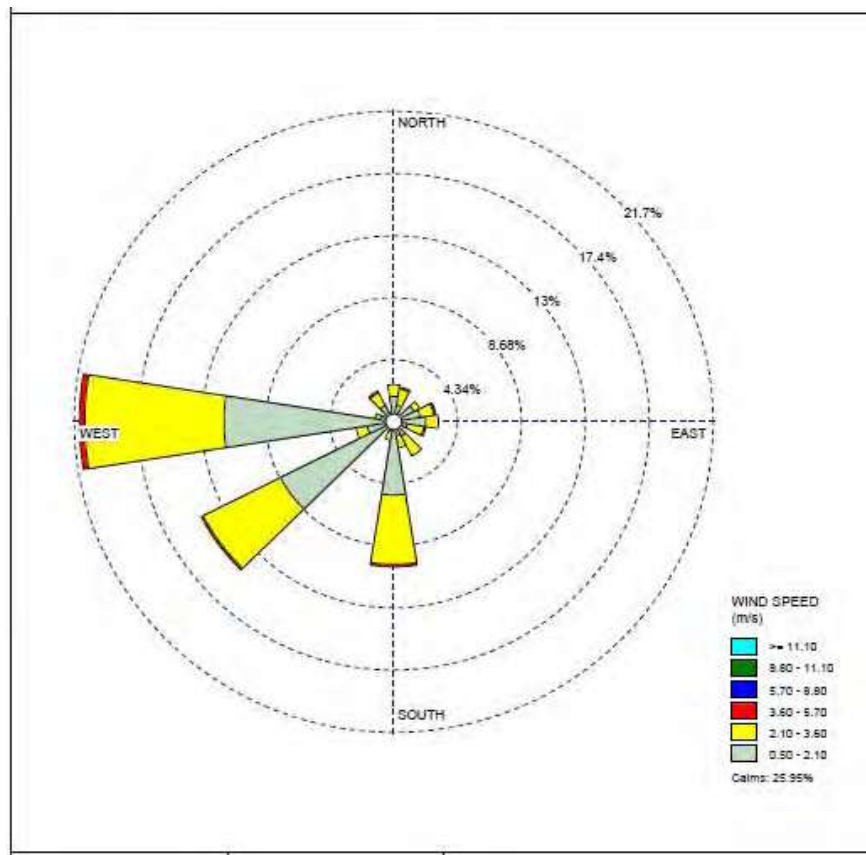


Figure 3.3: Wind Rose Diagram

The meteorological data is collected from the IMD- Purnea is about 73 km from project site, which is the nearest operating IMD station to the project site. The data collected from IMD includes wind speed, wind direction, temperature, relative humidity and rainfall for the year 1981-2010. The monthly maximum, minimum and average values are collected for all the parameters except wind speed and direction. The collected data is tabulated in **Table-3.6**

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

3.3.2 Comparison of primary and secondary data

The India Meteorological Department (IMD) records the data twice a day viz. 0830 hr and 1730 hr while the site-specific data has been recorded at an hourly interval. On comparison of site specific data generated for study period vis-à-vis the IMD data, slight variations were observed. The following observations are brought out:

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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.

METHOD OF MONITORING

The Central Pollution Control Board (CPCB) has published comprehensive document on emission testing regulations (“Emission Regulations Part-3, 1985”). Those procedures relevant to the particulate monitoring are summarized in Table

Methods adopted for PM2.5, PM10, SO2 and NOX (as NO2)

Parameters	Technique	Technical Protocol	Minimum Detectable Limit
PM2.5	Gravimetric method	US EPA Method	5 (µg/m ³)
PM10	Gravimetric method	IS 5182 (Part-XXIII)	5 (µg/m ³)
Sulphur Dioxide	West and Gaeke	IS-5182 (Part-II)	3 (µg/m ³)
Nitrogen Oxide	Jacob & Hochheiser	IS-5182 (Part-VI)	7 (µg/m ³)

i. Particulate Matter (PM):-

The CPCB method and IS 5182 (Part-XXIII) adopt a very similar approach to particulate sampling. There are some differences in the expressions used, but they are generally of no practical significance. It is recommended that CPCB method is adapted.

ii. Equipment calibration:

For accurate testing of emission sources, the components of the sampling train is calibrated by outsource and supplier (Master Calibrator) standards and solutions are used, calibrated under certified reference material.

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

Ambient air quality monitoring was carried out twice a week with a frequency of 24 hours for three months during the study period. The common air pollutant namely Particulate Matter-10 (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-3.8, Table-3.9, Table-3.10& Table 3.11**. These are compared with the standards prescribed by Central PollutionControl Board (CPCB) for industrial, residential and rural zone.

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Table 3.8: Ambient Air Quality Monitoring Stations

Location Id	Location	Distance (Km) and Direction
AAQ1	Near Project site (Andwakol Sand Ghat)	0.30 km, E
AAQ2	Near Project site Lohaghara village from (Lohaghara Sand Ghat)	0.26 Km, E
AAQ3	Near Project site Kanchanbari village from (Kanchanbari Sand Ghat)	0.22 Km, E
AAQ4	Near Project site Tegharia village From (Tegharia Sand Ghat)	0.20 Km, ESE
AAQ5	Motihara village From (Andwakol Sand Ghat)	3.60 Km,E
AAQ6	Tengramari village From (Andwakol Sand Ghat)	5.37 Km, SSE
AAQ7	Gangi village From (Andwakol Sand Ghat)	5.87 Km, W
AAQ8	Harwadanga village From (Lohaghara Sand Ghat)	6.67 Km, East
AAQ9	Harhibhita village From (Lohaghara Sand Ghat)	4.0 Km, NE
AAQ10	Satkaua village From (Lohaghara Sand Ghat)	4.16 Km, SE
AAQ11	Lachhmipur village From (Kanchanbari Sand Ghat)	3.60 Km, E
AAQ12	Bibiganj From (Kanchanbari Sand Ghat)	3.36 Km, SE
AAQ13	Pipra From (Kanchanbari Sand Ghat)	3.50 Km, WSW
AAQ14	Birpur From (Tegharia Sand Ghat)	3.93 Km, ESE
AAQ15	Jhingakata Taufir From (Tegharia Sand Ghat)	3.0 Km, NE
AAQ16	Bishunpur From (Tegharia Sand Ghat)	4.60 Km, SSE
AAQ17	Baigna Village From (Tegharia Sand Ghat)	3.41 Km, W

EIA/EMP for the Sand Mining Project (Kishanganj Unit- 03 Sand Ghat) at Riverbed of Mahananda & Kankai River at Village- Andwakol, Lohaghara, Kanchanbari, Tegharia, Anchal- Kishanganj, TeraGachh, Bahadurganj, District – Kishanganj (Bihar).

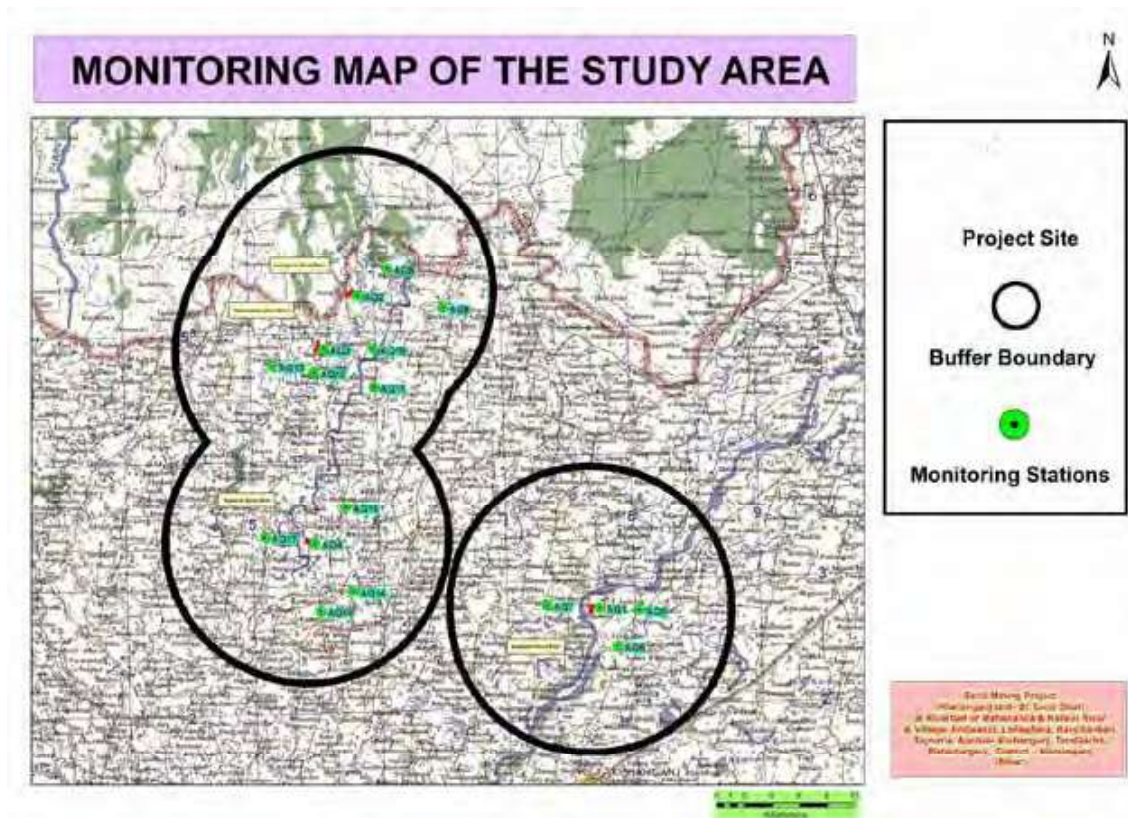


Figure 3.4 Ambient Air Quality Monitoring Stations

EIA/EMP for the Sand Mining Project (Kishanganj Unit- 03 Sand Ghat) at Riverbed of Mahananda & Kankai River at Village- Andwakol, Lohaghara, Kanchanbari, Tegharia, Anchal- Kishanganj, TeraGachh, Bahadurganj, District – Kishanganj (Bihar).

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

Location Code	PM2.5 ($\mu\text{g}/\text{m}^3$)				
	Location	Min	Max	Average	98 th Percentile
AAQ1	Near Project site (Andwakol Sand Ghat)	35.82	44.58	39.34	43.91
AAQ2	Near Project site Lohaghara village from (Lohaghara Sand Ghat)	34.04	41.88	37.99	41.51
AAQ3	Near Project site Kanchanbari village from (Kanchanbari Sand Ghat)	33.1	39.28	35.76	38.85
AAQ4	Near Project site Tegharia village From (Tegharia Sand Ghat)	34.73	41.21	37.52	40.76
AAQ5	Motihara village From (Andwakol Sand Ghat)	28.51	36.98	32.54	36.86
AAQ6	Tengramari village From (Andwakol Sand Ghat)	31.17	37.79	33.52	37.29
AAQ7	Gangi village From (Andwakol Sand Ghat)	34.52	49.38	40.41	48.98
AAQ8	Harwadanga village From (Lohaghara Sand Ghat)	26.21	35.85	31.7	35.42
AAQ9	Harhibhita village From (Lohaghara Sand Ghat)	27.58	38.31	32.58	37.38
AAQ10	Satkaua village From (Lohaghara Sand Ghat)	29.56	36.58	32.99	36.45
AAQ11	Lachhmipur village From (Kanchanbari Sand Ghat)	27.09	41.22	35.99	41.21
AAQ12	Bibiganj From (Kanchanbari Sand Ghat)	31.51	48.17	37.75	47.59
AAQ13	Pipra From (Kanchanbari Sand Ghat)	34.17	43.91	39.19	43.77
AAQ14	Birpur From (Tegharia Sand Ghat)	26.81	34.86	30.33	34.39
AAQ15	Jhingakata Taufir From (Tegharia Sand Ghat)	24.25	33.00	29.32	32.68
AAQ16	Bishunpur From (Tegharia Sand Ghat)	26.73	36.78	33.95	36.78
AAQ17	Baigna Village From (Tegharia Sand Ghat)	24.88	32.09	29.42	32.04

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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
AAQ1	Near Project site (Andwakol Sand Ghat)	77.04	88.34	83.1	88.15
AAQ2	Near Project site Lohaghara village from (Lohaghara Sand Ghat)	74.49	86.87	79.16	85.93
AAQ3	Near Project site Kanchanbari village from (Kanchanbari Sand Ghat)	73.04	85.2	79.64	85.01
AAQ4	Near Project site Tegharia village From (Tegharia Sand Ghat)	75.71	84.03	80.14	83.84
AAQ5	Motihara village From (Andwakol Sand Ghat)	71.03	80.88	75.06	80.28
AAQ6	Tengramari village From (Andwakol Sand Ghat)	73.19	81.45	77.88	81.37
AAQ7	Gangi village From (Andwakol Sand Ghat)	66.72	87.3	76.64	85.85
AAQ8	Harwadanga village From (Lohaghara Sand Ghat)	50.23	74.71	68.5	74.65
AAQ9	Harhibhita village From (Lohaghara Sand Ghat)	52.97	76.78	69.08	76.53
AAQ10	Satkaua village From (Lohaghara Sand Ghat)	56.59	78.31	69.58	78.25
AAQ11	Lachhmipur village From (Kanchanbari Sand Ghat)	51.59	76.35	61.7	75.32
AAQ12	Bibiganj From (Kanchanbari Sand Ghat)	58.32	79.78	68.39	78.75
AAQ13	Pipra From (Kanchanbari Sand Ghat)	75.61	81.08	78.31	81.06
AAQ14	Birpur From (Tegharia Sand Ghat)	68.74	77.95	74.25	77.85
AAQ15	Jhingakata Taufir From (Tegharia Sand Ghat)	67.77	76.43	72.24	76.28
AAQ16	Bishunpur From (Tegharia Sand Ghat)	70.74	77.69	74.16	77.61
AAQ17	Baigna Village From (Tegharia Sand Ghat)	64.68	73.73	69.38	73.38

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

Location Code	SO ₂ (µg/m ³)				
	Name of the station	Min	Max	Average	98 th Percentile
AAQ1	Near Project site (Andwakol Sand Ghat)	7.92	11.0	9.1	10.51
AAQ2	Near Project site Lohaghara village from (Lohaghara Sand Ghat)	7.87	10.01	8.79	9.93
AAQ3	Near Project site Kanchanbari village from (Kanchanbari Sand Ghat)	6.7	8.39	7.66	8.36
AAQ4	Near Project site Tegharia village From (Tegharia Sand Ghat)	6.84	8.57	7.83	8.54
AAQ5	Motihara village From (Andwakol Sand Ghat)	5.76	7.78	6.76	7.74
AAQ6	Tengramari village From (Andwakol Sand Ghat)	6.23	7.91	7.09	7.87
AAQ7	Gangi village From (Andwakol Sand Ghat)	7.46	13.45	10.52	13.41
AAQ8	Harwadanga village From (Lohaghara Sand Ghat)	7.12	9.65	8.77	9.42
AAQ9	Harhibhita village From (Lohaghara Sand Ghat)	8.61	10.12	9.74	10.1
AAQ10	Satkaua village From (Lohaghara Sand Ghat)	7.91	11.24	10.12	11.23
AAQ11	Lachhmipur village From (Kanchanbari Sand Ghat)	7.85	8.96	8.2	8.88
AAQ12	Bibiganj From (Kanchanbari Sand Ghat)	9.23	12.12	10.68	12.12
AAQ13	Pipra From (Kanchanbari Sand Ghat)	7.24	9.66	8.13	9.54
AAQ14	Birpur From (Tegharia Sand Ghat)	5.82	7.39	6.63	7.36
AAQ15	Jhingakata Taufir From (Tegharia Sand Ghat)	5.37	7.19	6.24	7.12
AAQ16	Bishunpur From (Tegharia Sand Ghat)	5.78	7.9	6.52	7.58
AAQ17	Baigna Village From (Tegharia Sand Ghat)	5.77	6.85	6.18	6.85

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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
AAQ1	Near Project site (Andwakol Sand Ghat)	16.33	20.6	18.15	20.38
AAQ2	Near Project site Lohaghara village from (Lohaghara Sand Ghat)	16.26	19.9	18.07	19.87
AAQ3	Near Project site Kanchanbari village from (Kanchanbari Sand Ghat)	13.07	16.89	14.88	16.66
AAQ4	Near Project site Tegharia village From (Tegharia Sand Ghat)	13.64	17.63	15.53	17.39
AAQ5	Motihara village From (Andwakol Sand Ghat)	11.42	15.23	13.66	15.16
AAQ6	Tengramari village From (Andwakol Sand Ghat)	11.71	15.3	13.35	15.27
AAQ7	Gangi village From (Andwakol Sand Ghat)	12.97	18.63	15.5	18.19
AAQ8	Harwadanga village From (Lohaghara Sand Ghat)	9.89	13.14	11.27	13.11
AAQ9	Harhibhita village From (Lohaghara Sand Ghat)	10.23	14.58	12	13.83
AAQ10	Satkaua village From (Lohaghara Sand Ghat)	10.25	15.68	13.55	15.53
AAQ11	Lachhmipur village From (Kanchanbari Sand Ghat)	10.01	12.26	11.16	12.24
AAQ12	Bibiganj From (Kanchanbari Sand Ghat)	13.24	16.64	14.87	16.63
AAQ13	Pipra From (Kanchanbari Sand Ghat)	14.21	18.7	16	18.18
AAQ14	Birpur From (Tegharia Sand Ghat)	11.10	14.51	12.66	14.48
AAQ15	Jhingakata Taufir From (Tegharia Sand Ghat)	11.27	14.12	12.47	13.88
AAQ16	Bishunpur From (Tegharia Sand Ghat)	12.17	15.63	13.52	15.55
AAQ17	Baigna Village From (Tegharia Sand Ghat)	11.91	14.83	12.89	14.59

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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 **24.25 µg/m³ to 49.38 µg/m³**. Table 3.9 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., 60µg/m³ 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 **50.23 µg/m³ to 88.34 µg/m³**. 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 µg/m³ for PM₁₀ in industrial, residential, rural and other areas.

Sulphur Dioxide (SO₂)

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

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

Sulphur dioxide in atmosphere is significant because of its toxicity; Sulphur dioxide is capable of causing illness and lung injury. Further it can combine with water in the air to

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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 **5.37 µg/m³ to 13.45 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 **9.89 µg/m³ to 20.6 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

Free Silica	Free Silica (µg/m ³)		
	Name of the station	Min	Max
AAQ1	Near Project site (Andwakol Sand Ghat)	0.59	1.44
AAQ2	Near Project site Lohaghara village from (Lohaghara Sand Ghat)	0.61	1.20

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AAQ3	Near Project site Kanchanbari village from (Kanchanbari Sand Ghat)	0.77	1.07
AAQ4	Near Project site Tegharia village From (Tegharia Sand Ghat)	0.48	0.92
AAQ5	Motihara village From (Andwakol Sand Ghat)	0.25	0.47
AAQ6	Tengramari village From (Andwakol Sand Ghat)	0.31	0.58
AAQ7	Gangi village From (Andwakol Sand Ghat)	0.82	0.95
AAQ8	Harwadanga village From (Lohaghara Sand Ghat)	0.71	0.99
AAQ9	Harhibhita village From (Lohaghara Sand Ghat)	0.37	0.71
AAQ10	Satkaua village From (Lohaghara Sand Ghat)	0.79	0.91
AAQ11	Lachhmipur village From (Kanchanbari Sand Ghat)	0.74	0.93
AAQ12	Bibiganj From (Kanchanbari Sand Ghat)	0.24	0.47
AAQ13	Pipra From (Kanchanbari Sand Ghat)	0.67	1.32
AAQ14	Birpur From (Tegharia Sand Ghat)	0.33	0.64
AAQ15	Jhingakata Taufir From (Tegharia Sand Ghat)	0.26	1.03
AAQ16	Bishunpur From (Tegharia Sand Ghat)	0.24	1.15
AAQ17	Baigna Village From (Tegharia Sand Ghat)	0.34	0.88

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 08 locations and analyzed as per CPCB norms. The soil sampling locations are marked in **Figure 3.5** and shown in **Table 3.12**. The physico-chemical characteristic of these soil samples is given in **Table 3.13**.

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Table 3.13: Description of soil sampling locations

Soil monitoring locations		
SITE	Location	Distance, direction
SQ1	Near Project site (Andwakol Sand Ghat)	0.30 km, E
SQ2	Near Project site Lohaghara village from (Lohaghara Sand Ghat)	0.26 Km, E
SQ3	Near Project site Kanchanbari village from (Kanchanbari Sand Ghat)	0.22 Km, E
SQ4	Near Project site Tegharia village From (Tegharia Sand Ghat)	0.20 Km, ESE
SQ5	Motihara village From (Andwakol Sand Ghat)	3.60 Km,E
SQ6	Harwadanga village From (Lohaghara Sand Ghat)	6.67 Km, East
SQ7	Lachhmipur village From (Kanchanbari Sand Ghat)	3.60 Km, E
SQ8	Birpur From (Tegharia Sand Ghat)	3.93 Km, ESE

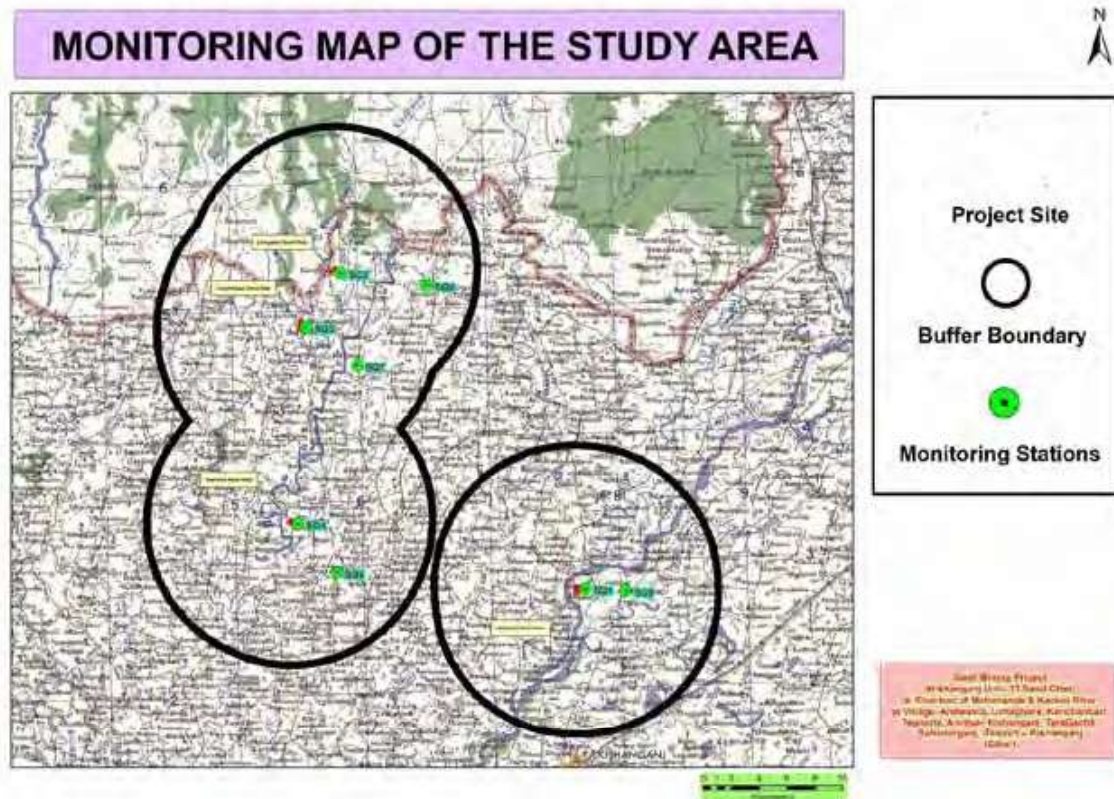


Figure 3.5, Soil Sampling Locations

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Table 3.14 :Physico-chemical properties of soil

		Location	SQ1 Near Project site (Andwakol Sand Ghat)	SQ2 Near Project site Lohaghara village from (Lohaghara Sand Ghat)	SQ3 Near Project site Kanchanbari village from (Kanchanbari Sand Ghat)	SQ4 Near Project site Tegharia village From (Tegharia Sand Ghat)
Sr. No.	Parameters	Units	Results	Results	Results	Results
1	pH	-	7.89	7.80	8.02	7.33
2	Conductivity	µmhos/cm	518.0	362.0	480.0	512.0
3	Sodium (as Na)	mg/kg	64.70	65.0	76.21	68.80
4	Water holding capacity	%	32.0	40.02	28.16	30.26
5	Potassium (as K)	Kg/ Hectare	298.0	286.20	258.0	289.2
6	Sand	%	66.0	66.0	62.0	67.0
7	Clay	%	25.0	24.0	18.0	21.0
8	Silt	%	9.0	10.0	20.0	12.0
9	Calcium (as Ca)	mg/kg	454.00	460.02	512.00	542.00
10	Magnesium (as Mg)	mg/kg	168.10	136.02	253.80	216.60
11	SAR	-	0.95	0.98	1.55	1.40
12	CEC	meq/100gm	2.12	2.26	2.34	2.20
13	Phosphorus (as P)	Kg/ Hectare	10.80	12.20	14.76	16.44
14	Organic carbon	%	0.43	0.50	0.35	0.42
15	Porosity	%	38.00	40.02	45.6	35.6
16	Permeability	cm/hr	1.82	1.86	1.88	1.76
17	Bulk Density	kg/cm ³	1.41	1.52	1.38	1.45
18	Available Nitrogen (N)	Kg/ Hectare	0.026	0.036	0.039	0.028

SQ5-SQ8

		Location	SQ5 Motihara village From (Andwakol Sand Ghat)	SQ6 Harwadanga village From (Lohaghara Sand Ghat)	SQ7 Lachhmipur village From (Kanchanbari Sand Ghat)	SQ8 Birpur From (Tegharia Sand Ghat)
Sr. No.	Parameters	Units	Results	Results	Results	Results
1	pH	-	7.60	7.55	7.64	7.42

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2	Conductivity	μmhos/cm	480.0	416.0	379.00	351.00
3	Sodium (as Na)	mg/kg	56.15	76.20	73.24	90.21
4	Water holding capacity	%	29.05	28.94	34.69	35.94
5	Potassium (as K)	Kg/ Hectare	249.23	250.16	267.51	283.26
6	Sand	%	56.00	64.00	66.00	68.00
7	Clay	%	26.00	22.0	18.00	19.00
8	Silt	%	18.00	14.0	16.00	13.00
9	Calcium (as Ca)	mg/kg	441.00	545.00	456.00	568.21
10	Magnesium (as Mg)	mg/kg	173.09	253.56	172.85	249.57
11	SAR	-	1.49	1.55	1.39	1.42
12	CEC	meq/100gm	2.12	2.34	2.64	2.73
13	Phosphorus (as P)	Kg/ Hectare	12.50	12.76	12.59	11.87
14	Organic carbon	%	0.41	0.35	0.51	0.51
15	Porosity	%	36.89	45.6	45.00	42.00
16	Permeability	cm/hr	1.60	1.88	1.72	1.83
17	Bulk Density	kg/cm3	1.44	1.38	1.36	1.49
18	Available Nitrogen (N)	Kg/ Hectare	0.023	0.030	0.021	0.028

Observations:

Samples collected from identified locations indicate the soil is sandy type and the pH value ranging from **7.33 to 8.02**, which shows that the soil is alkaline in nature.

3.5 NOISE ENVIRONNENT

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

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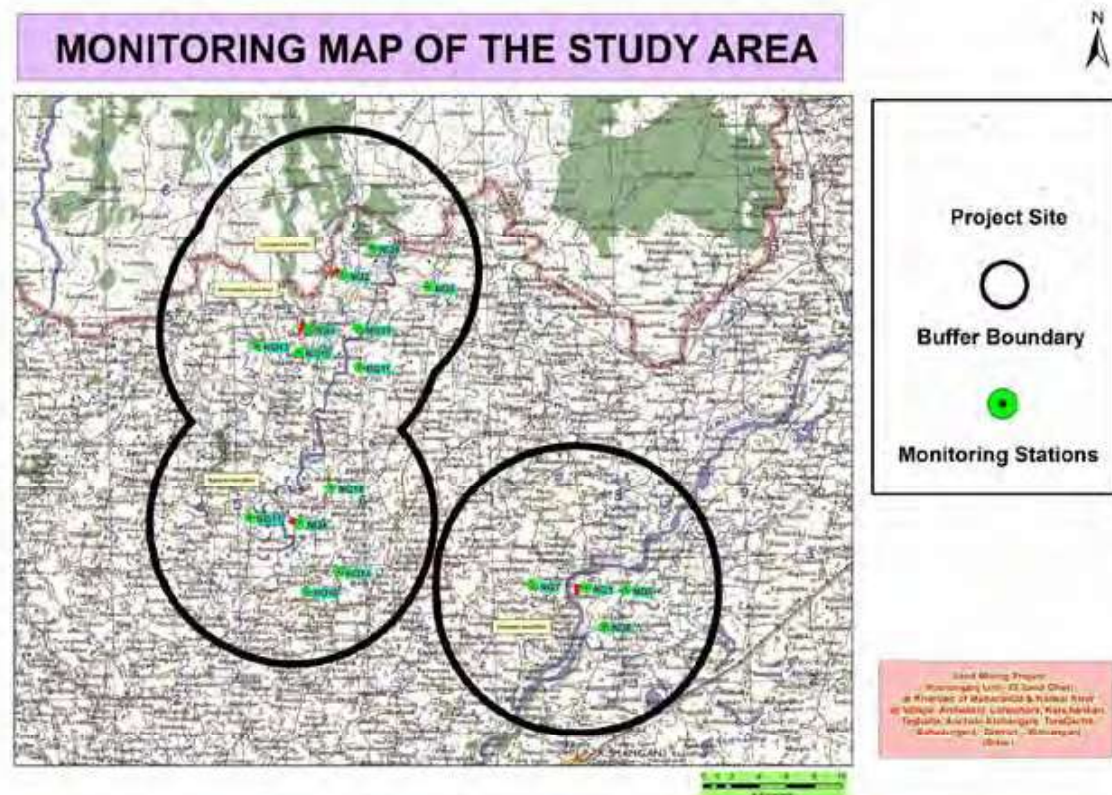


Figure 3.6 Noise Monitoring Stations

Table 3.15: NoiseQuality Monitoring Stations

Location Id	Location	Distance, direction
NQ1	Near Project site (Andwakol Sand Ghat)	0.30 km, E
NQ2	Near Project site Lohaghara village from (Lohaghara Sand Ghat)	0.26 Km, E
NQ3	Near Project site Kanchanbari village from (Kanchanbari Sand Ghat)	0.22 Km, E
NQ4	Near Project site Tegharia village From (Tegharia Sand Ghat)	0.20 Km, ESE
NQ5	Motihara village From (Andwakol Sand Ghat)	3.60 Km,E
NQ6	Tengramari village From (Andwakol Sand Ghat)	5.37 Km, SSE
NQ7	Gangi village From (Andwakol Sand Ghat)	5.87 Km, W
NQ8	Harwadanga village From (Lohaghara Sand Ghat)	6.67 Km, East
NQ9	Harhibhita village From (Lohaghara Sand Ghat)	4.0 Km, NE
NQ10	Satkaua village From (Lohaghara Sand Ghat)	4.16 Km, SE

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NQ11	Lachhmipur village From (Kanchanbari Sand Ghat)	3.60 Km, E
NQ12	Bibiganj From (Kanchanbari Sand Ghat)	3.36 Km, SE
NQ13	Pipra From (Kanchanbari Sand Ghat)	3.50 Km, WSW
NQ14	Birpur From (Tegharia Sand Ghat)	3.93 Km, ESE
NQ15	Jhingakata Taufir From (Tegharia Sand Ghat)	3.0 Km, NE
NQ16	Bishunpur From (Tegharia Sand Ghat)	4.60 Km, SSE
NQ17	Baigna Village From (Tegharia Sand Ghat)	3.41 Km, W

Table 3.16: Noise Monitoring Results

S.No.	SITE	ZONE	Leq LIMIT (as per CPCB Guidelines), in dB(A)		Leq Value monitored, in dB(A)	
			DAY*	NIGHT*	DAY*	NIGHT*
1	NQ1	Industrial Area	55	45	58.8	43.1
2	NQ2	Industrial Area	55	45	53.2	41.2
3	NQ3	Industrial Area	55	45	51.1	42.3
4	NQ4	Industrial Area	55	45	52.6	43.5
5	NQ5	Residential Zone	55	45	53.5	40.2
6	NQ6	Residential Zone	55	45	51.8	38.6
7	NQ7	Residential Zone	55	45	53.6	43.0
8	NQ8	Residential Zone	55	45	53.1	42.5
9	NQ9	Residential Zone	55	45	54.0	40.2
10	NQ10	Residential Zone	55	45	52.4	38.8
11	NQ11	Residential Zone	55	45	51.8	41.6
12	NQ12	Residential Zone	55	45	52.5	42.4
13	NQ13	Residential Zone	55	45	52.4	41.6
14	NQ14	Residential Zone	55	45	54.0	42.4
15	NQ15	Residential Zone	55	45	53.1	43.0
16	NQ16	Residential Zone	55	45	52.8	41.8
17	NQ17	Residential Zone	55	45	53.6	40.2

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Day time	Leq in dB(A) (6.00AM TO 10.00PM)
Night time	Leq in dB(A) (10.00PM TO 6.00AM)

Results

Noise monitoring reveals that the minimum & maximum noise levels at day time were recorded as **51.1 dB(A) to 58.8 dB(A)** respectively. The minimum & maximum noise levels at night time were found to be **38.6 dB (A) & 43.5dB(A)** respectively.

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

3.6 BIOLOGICAL ENVIRONMENT

3.6.1.1 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, on Mahananda & Kankai River at Kishanganj Unit- 03 Sand Ghat.

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3.6.2 Description of the study area

The Proposed Sand Mining Project (Kishanganj Unit- 03 Sand Ghat) at Riverbed of Mahananda & Kankai River at Village- Andwakol, Lohaghara, Kanchanbari, Tegharia, Anchal– Kishanganj, TeraGachh, Bahadurganj, District – Kishanganj (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 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/conserv 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.

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- 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 Winter Season (December 2024 to February 2025). Both terrestrial and aquatic ecosystems have been studied to understand the biological environment. Secondary data were collected from authentic sources like the Forests Department, Fisheries Department, Agriculture Department, 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 ≥ 10 cm 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

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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.

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 samplingsitewere 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 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 Kishanganj 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 *Aegle marmelos* (Bel), *Azadirachta indica* (Neem), *Emblica officinalis* (Amla), *Dalbergia sissoo* (Sisam), *Ficus bengalensis* (Bargad), *Musa paradisiacal* (Kela), *Syzygiumcumini* (Jamun), *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

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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 09 selected sites of the core (Kishanganj district) and the details are given in table 4. These crops are similar to the crops of buffer zone also. So, the same information is applicable for the core and buffer zone.

Table 3.18: 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	Fabaceae
5	<i>Coriander sativum</i>	Dhaniya	Apiaceae
6	<i>Abelmoschus esculentus</i>	Bhendi	Amaranthaceae
7	<i>Mamordica charanta</i>	Karela	Cucurbitaceae
8	<i>Capsicum annum</i>	Mirchi	Solanaceae
9	<i>Lycopersicon lycopersicum</i>	Tomato	
10	<i>Solanum melongena</i>	Brinjal	
11	<i>Capsicum annum</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			

3.6.9.3 Aquatic Flora of Core zone (Phytoplankton/ Macrophytes).

Aquatic floral details of the core zone were collected from 08 selected sites of the study area. Some sites were located buffer zone adjacent to the present alignment, however some were located in the core & buffer zone. Details of phytoplankton and macrophytic vegetation of the core and the buffer zone are given in tables.

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Phytoplankton: Most of the phytoplankton species recorded from the core zone was similar to the buffer zone also. So, the same information is applicable for the core and buffer zone. Phytoplankton species were collected and identified from 08 selected sampling sites of the study area. A total of 69 phytoplankton species were recorded from the different water bodies of the study area, out of which 27 species were of class Chlorophyceae, 17 species of Cyanophyceae, 19 species of Bacillariophyceae, and 6 species of Euglenophyceae. Details of Phytoplankton species are given in table 3.19.

Table 3.19: List of Phytoplankton species present in different water bodies in study area (Core and Buffer Zone).

S.N.	Taxonomic Details	S-1	S-2	S-3	S-4	S-5	S-6	S-7	S-8	Schedule Status in WPA (1972)	IUCN Status
	Chlorophyceae									NA	NA
1	<i>Arthrodesmus</i> sp.	+		+	+		+		+	NA	NA
2	<i>Ankistrodesmus falcatus</i>		+	+			+	+	+	NA	NA
3	<i>Chlorococcum</i> sp.	+	+	+			+		+	NA	NA
4	<i>Closteriopsis</i> sp.	+	+		+	+		+		NA	NA
5	<i>Cosmarium formii</i>	+	+	+	+	+	+		+	NA	NA
6	<i>Cosmarium margaritatum</i>	+		+	+		+	+		NA	NA
7	<i>Crucigenia</i> sp.	+	+	+	+		+			NA	NA
8	<i>Chlorella vulgaris</i>	+		+	+	+			+	NA	NA
9	<i>Oocystis crassa</i>	+	+			+	+	+	+	NA	NA
10	<i>Pediastrum simplex</i>			+	+	+				NA	NA
11	<i>Scenedesmus armatus</i>	+	+	+		+	+	+	+	NA	NA
12	<i>Scenedesmus bijugatus</i>	+		+	+	+	+		+	NA	NA
13	<i>Spirogyra</i> sp.	+	+	+		+	+	+		NA	NA
14	<i>Tetraedron trigonum</i>				+		+		+	NA	NA
15	<i>Tetrastrum</i> sp.	+	+	+		+	+		+	NA	NA
16	<i>Ulothrix</i> sp.	+	+	+	+	+	+	+		NA	NA
17	<i>Ulothrix zonata</i>	+		+		+	+		+	NA	NA

CHAPTER-3

BASELINE DATA DESCRIPTION

EIA/EMP for the Sand Mining Project (Kishanganj Unit- 03 Sand Ghat) at Riverbed of Mahananda & Kankai River at Village- Andwakol, Lohaghara, Kanchanbari, Tegharia, Anchal- Kishanganj, TeraGachh, Bahadurganj, District – Kishanganj (Bihar).

18	<i>Volvox</i> sp.	+	+	+		+	+			NA	NA
	Total	19	15	23	16	17	24	12	17		
	Cyanophyceae									NA	NA
1	<i>Anabaena</i> sp.		+	+	+	+	+		+	NA	NA
2	<i>Anabaena circinalis</i>	+	+	+	+	+	+	+		NA	NA
3	<i>Aphanocapsa</i> sp.	+		+	+	+	+	+	+	NA	NA
4	<i>Aphanothece</i> sp.	+	+		+	+			+	NA	NA
5	<i>Chroococcus</i> sp.	+		+	+	+	+	+		NA	NA
6	<i>Gloeocapsa</i> sp.	+	+	+			+		+	NA	NA
7	<i>Lyngbya</i> sp.	+	+		+	+	+	+	+	NA	NA
8	<i>Merismopedia</i> sp.	+	+	+		+	+	+	+	NA	NA
9	<i>Merismopedia tenuissima</i>	+		+	+	+	+			NA	NA
10	<i>Microcystis</i> sp.		+		+			+	+	NA	NA
11	<i>Microcystis aeruginosa</i>	+		+			+			NA	NA
12	<i>Nostoc</i> sp.		+		+	+	+	+	+	NA	NA
	Total	12	11	11	12	13	15	9	12		
	Bacillariophyceae									NA	NA
1	<i>Amphora ovalis</i>	+				+	+		+	NA	NA
2	<i>Amphora</i> sp.	+	+	+	+	+		+		NA	NA
3	<i>Cyclotella</i> sp.			+		+	+	+	+	NA	NA
4	<i>Cymbella affinis</i>	+		+	+		+		+	NA	NA
5	<i>Eunotia major</i>	+	+		+	+		+		NA	NA
6	<i>Fragillaria pinnata</i>		+	+		+	+		+	NA	NA
7	<i>Gomphonema</i> sp.	+			+		+	+	+	NA	NA
8	<i>Gomphonema lanceolatum</i>	+	+	+	+	+			+	NA	NA
9	<i>Melosira</i> sp.	+	+	+	+	+	+			NA	NA
10	<i>Navicula similis</i>	+	+	+	+		+	+	+	NA	NA
11	<i>Navicula subrhyncocephala</i>	+	+		+		+		+	NA	NA
12	<i>Nitzschia palea</i>	+	+		+	+	+			NA	NA
13	<i>Pinnularia</i> sp.	+	+	+				+	+	NA	NA
14	<i>Synedra acus</i>	+				+	+		+	NA	NA
15	<i>Synedra ulna</i>		+		+	+	+	+	+	NA	NA

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	Total	16	12	9	13	11	15	10	13		
	Euglenophyceae									NA	NA
1	<i>Euglena acus</i>	+	+	+	+	+	+	+	+	NA	NA
2	<i>Euglena</i> sp.	+			+	+	+		+	NA	NA
3	<i>Euglepha</i> sp.	+	+	+	+	+	+	+	+	NA	NA
4	<i>Phacus</i> sp.		+				+			NA	NA
5	<i>Phacus caudatus</i>	+			+	+	+	+	+	NA	NA
6	<i>Trachelomonas</i> sp.	+	+	+	+	+	+	+		NA	NA
	Total	5	4	3	5	5	6	4	4		
Source: Primary Survey Data of P&M Solution Pvt. Ltd., Noida											

Table 3.20: Site wise Qualitative list of Phytoplankton species recorded from the Core and Buffer Zone

Class	S-1	S-2	S-3	S-4	S-5	S-6	S-7	S-8
Chlorophyceae	19	15	23	16	17	24	12	17
Bacillariophyceae	16	12	9	13	11	15	10	13
Euglenophyceae	5	4	3	5	5	6	4	4
Total No. of Species	52	42	46	46	46	60	35	46

Macrophytes: The aquatic vegetation recorded from the core zone was similar to the aquatic vegetation of the buffer zone also. So, the same information is applicable for the core and buffer zone. The maximum number of aquatic vegetation was recorded at sites 06 and 08 due to the perennial nature of the water bodies. On the other hand, other water bodies support less vegetation due to a lack of water (monsoon-fed streams), and moisture. The details of Macrophytes species are given in table 3.21.

Table 3.21: List of Aquatic Macrophytic vegetation of Core and Buffer Zone

S.No.	Name of the Taxa	Family Name	IUCN Status	S-1	S-2	S-3	S-4	S-5	S-6	S-7	S-8
1	<i>Azolla pinnata</i>	Salviniaceae	LC	+	+	+	+	+	+	+	+
2	<i>Cyperus alopecuroides</i>	Cyperaceae	LC	+	+			+	+	+	+
3	<i>Cyperus difformis</i>	Cyperaceae	LC	+		+	+		+	+	+
4	<i>Eichhornia crassipes</i>	Pontederiaceae	LC	+	+	+		+	+		+

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5	<i>Hydrilla verticillata</i>	Hydrocharitaceae	LC				+			+	+
6	<i>Ipomea aquatica</i>	Convolvulaceae	LC		+	+	+	+	+		+
7	<i>Ipomea carnea</i>	Convolvulaceae	LC	+	+	+	+		+	+	+
8	<i>Lemna minor</i>	Araceae	LC	+	+			+	+	+	+
9	<i>Ludwigia parviflora</i>	Onagraceae	LC	+	+	+	+		+	+	+
10	<i>Nelumbo sp.</i>	Nelumbonaceae	LC		+			+			
11	<i>Nymphoides aquatica</i>	Menyanthaceae	LC	+		+		+	+	+	+
12	<i>Phragmites karka</i>	Poaceae	LC						+		
13	<i>Pistia stratiotes</i>	Araceae	LC		+		+			+	+
14	<i>Polygonum glabrum</i>	Polygonaceae	LC	+	+	+		+	+	+	+
15	<i>Typha latifolia</i>	Typhaceae	LC						+		+
16	<i>Typha orientalis</i>	Typhaceae	LC		+		+	+	+	+	
Total No. of Species				9	8	8	8	9	13	11	13

3.6.10 Flora of Buffer zone

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

During the present survey, a total of 77 species of plant species were observed from the study area. Out of 77 plant species, 42 species of tree, 18 species of shrubs/herbs, 6 species of climbers, and 10 species of Grass 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 different locations and data supported by the Department of Forest, Kishanganj of Bihar. The details of vegetation of the buffer zone is given in Table 3.22.

Table 3.22: 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>Acacia leucophloea</i>	Safed babul	Mimosaceae
4	<i>Aegle marmelos</i>	Bel	Rutaceae

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5	<i>Ailanthus excels</i>	Adusa	Simaroubaceae
6.	<i>Albizzia amara</i>	Siris	Mimosoideae
7	<i>Albizzia lebbeck</i>	Sirish	Mimosaceae
8	<i>Alstonia scholaris</i>	Saptarni	Apocynaceae
9	<i>Anogeissus latifolia</i>	Dhaura,	Combretaceae
10	<i>Anthocephalus cadamba</i>	Kadamb	Rubiaceae
11	<i>Artocarpus heterophyllus</i>	Jack fruit	Moraceae
12	<i>Azadirachta indica</i>	Neem	Meliaceae
13	<i>Bauhinia racemosa</i>	Apta	Leguminosae
14	<i>Bauhinia variegata L.</i>	Kachnar	Leguminosae
15	<i>Bombax ceiba</i>	Semal	Malvaceae
16	<i>Bombax malabaricum</i>	Semal tree	Malvaceae
17	<i>Borassus flabellifer</i>	Nariyal	Palmae
18	<i>Butea monosperma</i>	Palas	Leguminosae
19	<i>Dalbergia latifolia</i>	Shisam	Leguminosae
20	<i>Dalbergia sissoo</i>	Shisam	Leguminosae
21	<i>Delonix regia</i>	Gulmohar	Fabaceae
22	<i>Dendrocalamus strictus</i>	Bamboo	Poaceae
23	<i>Diospyros melanoxylon</i>	Tendu	Ebenaceae
24	<i>Ficus benghalensis</i>	Bargad	Moraceae
25	<i>Ficus religiosa</i>	Pipal	Moraceae
26	<i>Madhuca longifolia</i>	Mohua tree	Sapotaceae
27	<i>Magnifera indica</i>	Aam	Anacardiaceae
28	<i>Melia azedarach</i>	Bukkam Neem	Meliaceae
29	<i>Moringa olerifera</i>	Munga	Moringanaceae
30	<i>Nerium oleamder</i>	Kaner	Apocynaceae
31	<i>Phoenix sylvestris</i>	Date palm	Arecaceae
32	<i>Phyllanthus emblica</i>	Awla	Euphorbiaceae
33	<i>Pisidium guava</i>	Guava	Myrtaceae
34	<i>Pongamia pinnata</i>	Karanj	Leguminosae
35	<i>Prosopis juliflora</i>	Vilayati babool	Fabaceae
36	<i>Sarracca indica</i>	Ashok	Annonaceae

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37	<i>Shorea robusta</i>	Sal	Depterocarpaceae
38	<i>Syzygium cumini</i>	Jamun	Myrtaceae
39	<i>Tectona grandis</i>	Sagwan	Verbenaceae
40	<i>Terminalia arjuna</i>	Arjun	Combretaceae
41	<i>Terminalia chebula</i>	Harhar	Combretaceae
42	<i>Zizyphus jujube</i>	Ber	Rhamnaceae
Shrub & Herbs			
43	<i>Acanthospermum hispidum</i>	Kanti	Asteraceae
44	<i>Acheranthus aspera</i>	Aghada	Amaranthaceae
45	<i>Argemone mexicana</i>	Pila dhtura	Papaveraceae
46	<i>Bougainvillia glabra</i>	Paper flower	Nyctaginaceae
47	<i>Calotropis procera</i>	Aakra	Asclepiadaceae
48	<i>Cassia auriculata</i>	Tarwar	Fabaceae
49	<i>Cassia tora</i>	Tarota /Takla	Caesalpiniaceae
50	<i>Chenopodium album</i>	manure weed	Amaranthaceae
51	<i>Dalura metel</i>	Dhotra	Solanaceae
52	<i>Ipomoea carnea</i>	Besharam	Convolvulaceae
53	<i>Jatropha gossipifolia</i>	cotton-leaf	Euphorbiaceae
54	<i>Lantana camara</i>	Ghaneri	Verbenaceae
55	<i>Mimosa pudica</i>	Chui Mui	Mimosaceae
56	<i>Ocimum sanctum</i>	Tulsi	Labiatae
57	<i>Parthenium hysterophorus</i>	Gajar grass	Asteraceae
58	<i>Ricinus communis</i>	Arand	Euphorbiaceae
59	<i>Ricinus communis</i>	castor oil plant	Euphorbiaceae
60	<i>Tridax procumbens</i>	Kambarmodi	Asteraceae
Grasses			
61	<i>Apluda mutica</i>	Mauntian grass	Poaceae
62	<i>Commelina benghalensis</i>	Bokna	Commelinaceae
63	<i>Cynodon dactylon</i>	Doob	Poaceae
64	<i>Cyperus rotundus</i>	Motha	cyperaceae
65	<i>DactylSeptemberenum aegyptium</i>	Crow foot grass	Poaceae
66	<i>Pennisetum purpureum</i>	Elephant grass	Poaceae

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Climbers			
67	<i>Antigonon leptopus</i>	Anantalata	Polygonaceae
68	<i>Bougainvillea glabra</i>	Booganbel	Nyctaginaceae
69	<i>Celastrus paniculata</i>	Kujari	Celastraceae
70	<i>Cissampelos pareira</i>	Khariya lata	Menispermaceae
71	<i>Clitoria ternatea</i>	Blue pea	Fabaceae
72	<i>Coccinia grandis</i>	Jungli Kundru	Cucurbitaceae
73	<i>Combretum indicum</i>	Madhu Malati	Combretaceae
74	<i>Cuscuta reflexa</i>	Amarbel	Convolvulaceae
75	<i>Cuscuta reflexa</i>	Amar bel	Convolvulaceae
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, Kishanganj 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) and the details are given in Table 3.17.

3.6.10.3 Aquatic Flora of Buffer zone (Phytoplankton/ Macrophytes/ Aquatic Weeds)

Phytoplankton: The diversity of Phytoplankton species was similar in the core and buffer zone. The details of macrophytic vegetation of the buffer zone are given in Table 3.19 & 3.20 and Figure 3.10.

Macrophytes: The diversity of aquatic macrophytes was similar in both core and buffer zone. The details of macrophytic vegetation of the buffer zone are given in Table 3.21 and Figure 3.11.

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; Buffalo (*Bubalis bubalis*); Ass (*Equus hemionus*), Cow (*Bos primigenius*); Goat (*Capra aegagrus*) Horse (*Equus caballus*); 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 3.23.

Table 3.23: 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.	Jungle cat	<i>Felis chaus</i>	Felidae	II	LC
2.	Five striped palm squirrel	<i>Funambulus pennanti</i>	Sciuridae	IV	LC
3.	Indian Fulvous Fruit-Bat	<i>Rousettus leschenaultia</i>	Pteropodidae	V	LC
4.	Indian Field Mouse	<i>Mus booduga</i>	Muridae	V	LC
5.	Common House Rat	<i>Rattus rattus</i>	Muridae	V	LC
6.	Bandicoot Rat	<i>Bandicotabengalensis</i>	Muridae	V	LC

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7.	Indian Grey Mongoose	<i>Herpestesedwardsi</i> <i>edwardsi</i>	Herpestidae	II	LC
Reptiles & Amphibians					
8.	Garden lizard	<i>Calotes versicolor</i>	Agamidae	IV	NE
9	King cobra	<i>Ophiophagus hannah</i>	Elapidae	II	LC
10	Cobra	<i>Naja naja</i>	Elapidae	II	LC
11.	Pit viper	<i>Crotolus</i> sp	Viperadae	II	LC
12	Garden lizard	<i>Calotes versicolor</i>	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>Amandava amandava</i>	Red munia	Estrildidae	IV	LC
4	<i>Ardea cinerea</i>	Grey heron	Ardeidae	IV	LC
6	<i>Bubulcus ibis</i>	Cattle egret	Ardeidae	IV	LC
7	<i>Columba livia</i>	Pigeon	Columbidae	IV	LC
5	<i>Corvus macrorhynchos</i>	Jungle crow	Corvidae	IV	LC
6	<i>Corvus splendens</i>	Crow	Corvidae	V	LC
7	<i>Gallinule chloropus</i>	Common moorhen	Rallidae	IV	LC
8	<i>Milvus migrans</i>	Black Kite	Accipitridae	IV	LC
9	<i>Passer domesticus</i>	House sparrow	Passeridae	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	Leiothrichidae	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, district of Bihar					

Table 3.24: 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

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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, district of Bihar

3.6.12.3 Aquatic Fauna of Core zone (Zooplankton/ Macro-invertebrates/ Fishes/ Amphibians/ Turtles etc.)

All the aquatic fauna recorded from the core zone were also recorded from the buffer zone and most of the sampling sites are the same for the core and buffer zone as given in table 3.17. So, the list of aquatic fauna of the core zone is merged with the details of the buffer zone and is given in Table 3.25 to 3.27.

3.6.12.4 Fauna of Buffer zon

To prepare a detailed report on the status of faunal biodiversity of the present study area (1 km buffer) of Kishanganj 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

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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 3.25.

Table 3.25: 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 auris</i>	Jackal	Pteropodidae	V	LC
3	<i>Felis 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>Rattus rattus</i>	Common House Rat	Muridae	V	LC
13	<i>Rousettus leschenaultia</i>	Indian Fulvous	Muridae	V	LC

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		Fruit- Bat			
14	<i>Suncus murinus</i>	Grey musk Shrew	Muridae	V	LC
15	<i>Sus scrofa</i>	Wild Boar	Canidae	III	LC
16	<i>Vulpes bengalensis</i>	Indian fox	Felidae	II	LC
Reptiles and Amphibians					
1	<i>Bufo melanostictus</i>	Common toad	Bufoidea	IV	LC
2	<i>Bungarus caeruleus</i>	Krait	Elapidae	IV	NE
3	<i>Calotes versicolor</i>	Garden lizard	Agamidae	IV	NE
4	<i>Crotalus</i> sp.	Pit viper	Viperidae	II	LC
5	<i>Enhydryis enhydryis</i>	Smooth water snake	Homalopsidae	IV	LC
6	<i>Euphlyctis hexadactyla</i>	Common frog	Dicroglossidae	IV	LC
7	<i>Hemidactylus flaviviridis</i>	House Gecko	Gekkonidae	--	NE
8	<i>Naja naja</i>	Cobra	Elapidae	II	LC
9	<i>Ophiophagus hannah</i>	King cobra	Elapidae	II	LC
10	<i>Ptyas mucosa</i>	Rat Snake	Colubridae	II	NE
11	<i>Rana temporaria</i>	Common frog	Ranidae	IV	LC
12	<i>Varanus</i> sp.	Monitor lizard	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, District.					

ii. Avian Fauna

Table 3.26: 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

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4	<i>Amandava amandava</i>	Red munia	Estrildidae	IV	LC
5	<i>Ardea cinerea</i>	Grey heron	Ardeidae	IV	LC
6	<i>Ardeola grayii</i>	Indian pond heron	Ardeidae	IV	LC
7	<i>Athene brama</i>	Spotted Owlet	Strigidae	IV	LC
8	<i>Bubulcus ibis</i>	Cattle egret	Ardeidae	IV	LC
9	<i>Centropus sinensis</i>	Crow pheasant	Cuculidae	IV	LC
10	<i>Ceryle rudis</i>	Pied kingfisher	Alcedinidae	IV	LC
11	<i>Charadrius dubius</i>	Little ringed plover	Charadriidae	IV	LC
12	<i>Ciconia episcopus</i>	White-necked stork	Ciconidae	IV	NT
13	<i>Cinnyris asiaticus</i>	Purple Sunbird	Psittaculidae	IV	LC
14	<i>Columba livia</i>	Pigeon	Columbidae	IV	LC
15	<i>Corvus macrorhynchos</i>	Jungle crow	Corvidae	IV	LC
16	<i>Corvus splendens</i>	Crow	Corvidae	V	LC
17	<i>Dicrurus adsimilis</i>	Black drongo	Dicruridae	IV	LC
18	<i>Egretta alba</i>	Larger egret	Ardeidae	IV	LC
19	<i>Egretta garzetta</i>	Little egret	Ardeidae	IV	LC
20	<i>Francolinus pondicerianus</i>	Titar	Phasianidae	IV	LC
21	<i>Gallinule chloropus</i>	Common moorhen	Rallidae	IV	LC
22	<i>Gallus gallus</i>	Jungle hen	Phasianidae	IV	LC
23	<i>Halcyon smymensis</i>	White-throated kingfisher	Alcedinidae	IV	LC
24	<i>Milvus migrans</i>	Black Kite	Accipitridae	IV	LC
25	<i>Passer domesticus</i>	House sparrow	Passeridae	IV	LC
26	<i>Phalacrocorax carbo</i>	Great cormorant	Phalacrocoracidae	IV	LC
27	<i>Phalacrocorax niger</i>	Little cormorant	Phalacrocoracidae	IV	LC
28	<i>Pluvialis fulva</i>	Pacific golden plover	Charadriidae	IV	LC
29	<i>Pseudibis papillosa</i>	Red-naped ibis	Threskiornithidae	IV	LC
30	<i>Psittacula krameri</i>	Rose ringed Parakeet	Psittacidae	IV	LC
31	<i>Pycnonotus cafer</i>	Red-vented bulbul	Pycnonotidae	IV	LC
32	<i>Saxicoloides fulicatus</i>	Indian robin	Psittaculidae	IV	LC

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

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

iii. Butter Flies

Table 3.27: Butterflies observed from the Buffer zone of the study area

S.No.	Scientific Name	Common Name	Family	IUCN Status
1	<i>Catopsilia pomona</i>	Common emigrant	Pieridae	LC
2	<i>Chlosyne lacinia</i>	Sunflower/Bordered Patch	Nymphalidae	LC
3	<i>Danaus chrysippus</i>	Plain Tiger	Nymphalidae	LC
4	<i>Danaus genutia</i>	Stripped Tiger	Nymphalidae	LC
5	<i>Euploea core</i>	Common crow	Nymphalidae	LC

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

3.6.12.7 Aquatic Fauna of Buffer zone (Zooplankton/ Macro-invertebrates/ Fishes/Amphibians /Turtles etc.)

Aquatic fauna is referred to as any form of an animal that has adapted to living in the aquatic environments such as rivers, lakes, ponds, dams, streams, etc.). Mahananda, Kankai River and its adjoining streams are formed the drainage in the study area. Few other seasonal water bodies like village ponds, streams, and nallas are also present in the study area. In general, faunal account of any water bodies can be divided into following categories, *i.e.*,

- (i) zooplankton,
- (ii) Macro-invertebrates/Insects/Benthos
- (iii) Fishes
- (iv) Amphibians/ Reptiles/ etc.

Details of Zooplankton; Macro-invertebrates/insects/benthos;Amphibians/Reptiles and Fishes recorded from the different water bodies of the study area (Kishanganj district) are given in Tables 3.28 to 3.31.

i. Zooplankton

Zooplankton is commonly found in all types of aquatic habitats. These are recognized as secondary producers and considered as one of the best tools for the environmental monitoring program. During the present study period, a total of 49 zooplankton species was recorded and

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identified comprising of class Protozoa (8 species), Rotifera (20 species), Cladocera (10 species), Copepoda (8 species), and Ostracoda (3 species). The details of the zooplankton diversity of different habitats are given in Table 3.28 and Fig 3.12.

Table 3.28: Zooplankton species found in the different water bodies situated in the buffer zone

S.No.	Name of the Taxa	S-1	S-2	S-3	S-4	S-5	S-6	S-7	S-8	Schedule Status in WPA (1972)	IUCN Status
	Protozoa										
1	<i>Arcella</i> sp.	+	+	+		+	+		+	NA	NA
2	<i>Arcella discoides</i>	+	+	+	+	+	+	+	+	NA	NA
3	<i>Arcella vulgaris</i>	+	+	+	+	+	+	+	+	NA	NA
4	<i>Centropyxis</i> sp.	+	+	+	+	+	+	+		NA	NA
5	<i>Centropyxis ecornis</i>		+			+	+		+	NA	NA
6	<i>Euglypha</i> sp.	+		+	+	+	+	+	+	NA	NA
7	<i>Metopus</i> sp.		+	+	+		+			NA	NA
8	<i>Opercularia</i> sp.	+	+	+		+			+	NA	NA
	Total	8	9	8	7	8	9	5	8		
	Rotifera										
1	<i>Anuraeopsis</i> sp.	+		+	+	+	+	+	+	NA	NA
2	<i>Anuraeopsis fissa</i>				+	+	+	+	+	NA	NA
3	<i>Asplanchna</i> sp.	+	+	+		+	+	+	+	NA	NA
4	<i>Asplanchna brightwelli</i>		+		+	+	+	+	+	NA	NA
5	<i>Brachionus</i> sp.	+		+	+	+	+	+		NA	NA
6	<i>Brachionus angularis</i>		+						+	NA	NA
7	<i>Brachionus calyciflorus</i>	+	+	+	+		+	+	+	NA	NA
8	<i>Brachionus quadridentata</i>		+	+	+		+	+		NA	NA
9	<i>Brachionus falcatus</i>	+			+	+	+	+		NA	NA
10	<i>Brachionus forficula</i>	+		+		+	+		+	NA	NA
11	<i>Cephalodella gibba</i>	+	+		+	+	+	+		NA	NA
12	<i>Filinia</i> sp.	+					+	+	+	NA	NA

CHAPTER-3

BASELINE DATA DESCRIPTION

EIA/EMP for the Sand Mining Project (Kishanganj Unit- 03 Sand Ghat) at Riverbed of Mahananda & Kankai River at Village- Andwakol, Lohaghara, Kanchanbari, Tegharia, Anchal- Kishanganj, TeraGachh, Bahadurganj, District – Kishanganj (Bihar).

13	<i>Filinia longiseta</i>		+	+		+		+	+	NA	NA
14	<i>Keratella</i> sp.	+		+		+			+	NA	NA
15	<i>Keratella Cochlearis</i>	+	+	+	+	+	+	+	+	NA	NA
16	<i>Monostyla quadridentatus</i>		+	+						NA	NA
17	<i>Mytilina</i> sp.	+			+	+	+	+	+	NA	NA
18	<i>Polyarthra vulgaris</i>	+		+		+			+	NA	NA
19	<i>Testudinella patina</i>		+		+		+	+		NA	NA
20	<i>Trichocerca</i> sp.	+		+		+	+		+	NA	NA
	Total	15	11	13	13	15	18	16	16		
	Cladocera										
1	<i>Alona</i> sp.	+	+	+	+	+	+	+	+	NA	NA
2	<i>Alona intermediate</i>		+		+		+	+		NA	NA
3	<i>Bosmina</i> sp.	+		+	+	+	+	+	+	NA	NA
4	<i>Bosmina longirostris</i>	+		+			+	+		NA	NA
5	<i>Ceriodaphnia</i> sp.		+	+		+	+		+	NA	NA
6	<i>Chydorus sphaericus</i>	+	+		+		+	+		NA	NA
7	<i>Daphnia</i> sp.	+		+	+		+	+		NA	NA
8	<i>Leydgia</i> sp.		+	+		+	+		+	NA	NA
9	<i>Moina daphnia</i>	+			+		+	+	+	NA	NA
10	<i>Simocephalus</i> sp.	+	+	+		+			+	NA	NA
	Total	9	7	8	7	6	11	8	7		
	Copepoda										
1	<i>Cyclops</i> sp.	+	+	+	+	+	+	+	+	NA	NA
2	<i>Diaptomus</i> sp.	+	+	+	+	+	+		+	NA	NA
3	<i>Eucyclops</i> sp.	+	+	+			+	+	+	NA	NA
4	<i>Heleodiptomus viduus</i>	+	+			+	+			NA	NA
5	<i>Mesocyclops</i> sp.	+	+		+		+	+	+	NA	NA
6	<i>Nauplius larvae</i>	+	+	+	+	+	+	+	+	NA	NA
7	<i>Neodiptomus</i> sp.		+		+		+		+	NA	NA
8	<i>Nitzii amphibia</i>	+	+	+	+	+	+	+		NA	NA
	Total	10	10	8	9	7	11	7	9		
	Ostracoda										

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1	<i>Cyprinotus</i> sp.	+		+	+	+	+	+	+	NA	NA
2	<i>Cypris</i> sp.	+	+	+	+		+	+	+	NA	NA
3	<i>Stenocypris malcolmsoni</i>	+	+	+	+	+	+		+	NA	NA
	Total	4	3	4	4	3	4	3	4		

Source: Primary Survey data of P&M Solution, Noida.

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 3.29.

Table 3.29: 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</i> sp.	+	+	+	+	+	+	+	+	NA	NE
5	<i>Damsel flies nymphs</i>	+			+		+			NA	NE
6	<i>Hirudineria</i> sp.	+	+	+			+	+	+	NA	NE
7	<i>Limnodrillus hoffmeisteri</i>	+					+			NA	NE
8	<i>Mayflies nymphs</i>		+		+		+	+	+	NA	NE
9	<i>Mosquitos larvae</i>	+	+	+	+	+	+	+	+	NA	NE
10	<i>Ranatra elongata</i>	+	+			+	+	+	+	NA	NE
	Total	12	10	10	11	9	16	11	11		
	Mollusca										
1	<i>Bellamya bengalensis</i>	+		+	+	+	+	+	+	NA	NE
2	<i>Corbicula fluminalis</i>		+	+	+	+	+	+	+	NA	NE
3	<i>Corbicula</i> sp.	+	+	+	+	+	+			NA	NE
4	<i>Gyraulus convexiculus</i>	+		+			+	+	+	NA	NE

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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</i> (apple snail)		+		+		+		+	NA	NE
10	<i>Unio tigridis</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 3.30. None of the Amphibians and 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 3.30: 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>Bufo melanostictus</i>	Common toad	+	+	+	+	+	+	+	+	IV	LC
2	<i>Bungarus caeruleus</i>	Common Krait	+	+	+	+	+	+	+	+	IV	LC
3	<i>Bungarus fasciatus</i>	Banded Krait	+	+	+	+	+	+	+	+	IV	LC
4	<i>Euphlyctis cyanophlyctis</i>	Indian skipper frog	+	+	+	+	+	+	+	+	IV	LC
5	<i>Hoplobatrachus tigerinus</i>	(Indian bullfrog).	+	+	+	+	+	+	+	+	IV	LC
6	<i>Chamelion calcarata</i>	Chameleon	+	+	+	+	+	+	+	+	II	LC
7	<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

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Forest, Kishanganj District, Bihar.

(iii) Fishes

The study area of the present Project development project has several lentic and lotic water bodies in which few are perennial and most of the water bodies are seasonal or monsoon fed. Jammuaririver is a major lotic system in the study area. Some private ponds are also present in the study area which are mainly used for the culture of fishes. All these water bodies support fish species. Fishes found in the study area are listed in Table 3.31 and their site wise species variation is shown in Fig. 3.14.

Table 3.31: Fish Fauna found in different seasonal and perennial water bodies in the study area

S.No.	Name of the Taxa	Family Name	S-1	S-2	S-3	S-4	S-5	S-6	S-7	S-8	IUCN Status	Schedule Status in WPA (1972)
1	<i>Catla catla</i>	Cyprinidae	+	+	+	+		+		+	VU	NA
2	<i>Channa stiatius</i>	Chandadae					+	+	+		LC	NA
3	<i>Channa punctatus</i>	Chandadae			+	+	+		+	+	LC	NA
4	<i>Labeo bata</i>	Cyprinidae		+		+				+	LC	NA
5	<i>Labeo rohita</i>	Cyprinidae	+		+	+		+			LC	NA
6	<i>Macrobrachium malcomsoni</i>	Palaemonidae	+		+	+	+	+	+	+	LC	NA
7	<i>Mystus bleekeri</i>	Bagridae		+			+	+			LC	NA
8	<i>Mystus tengara</i>	Bagridae	+	+	+	+	+	+	+	+	LC	NA
9	<i>Puntius sarana</i>	Cyprinidae			+			+	+	+	LC	NA
10	<i>Puntius sophore</i>	Cyprinidae	+	+	+		+			+	LC	NA
11	<i>Puntius stigma</i>	Cyprinidae			+	+		+			LC	NA
12	<i>Puntius ticto</i>	Cyprinidae		+	+	+			+	+	LC	NA
	Total		7	7	10	9	7	10	6	9		

Note: VU= Vulnerable, LC= Least Concern and NA= Not Application.

Source: Primary Survey data of P&M Solution, Noida and data supported by Department of Fisheries, Kishanganj District, Bihar.

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3.6.13 Observations of Present Study (Flora & Fauna)

3.6.13.1 Flora

Most of the parts of the present study area (Kishanganj district) are agricultural fields, villageland. 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 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

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 district, Census data 2011, for Kishanganj district in Bihar state was compiled and placed in the form of tabulation and graphical representation.

Demography of the Kishanganj District

As per the census records 2011, the district of Kishanganj, with a population of 16, 90,400 persons followed by 8, 66,970 males (51.3%) and 8, 23,430 (48.7%) females respectively. The decadal variation of the district has been seen at 30.4% during the decade of 2001-11. The Rural area of the district has attained a higher decadal variation of 31.0% as compared to that of urban area at 24.9%.

As per the census records 2011, the sex ratio of the district is observed as 950 females per 1,000 males. The same for rural and urban areas of the district stands at 952 and 926 respectively. It is observed from the census records that sex ratio of population in the age group 0-6, which works out to 971, is much higher than the sex ratio of the total population

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(950) in the district of Kishanganj while the sex ratio of (0-6) population in the rural areas of the district is 972, the sex ratio of (0-6) population for the urban areas is only 967 females per 1000 males.

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 6.7% & 3.8% respectively. For rural areas, the respective proportion of scheduled castes and scheduled tribes to the total population of the district comes out to be 6.3% & 4.0% respectively. Similarly, in urban areas, the percentage of scheduled castes and scheduled tribe's population to the total population of the district comes out to be 10.8% & 2.0% respectively.

As per the census records 2011, It is observed that the district has registered a literacy rate of 55.6%. As regards to rural and urban areas of the district the literacy rates have been registered 53.7% & 71.2% respectively. The gap in the male-female literacy rates has been 16.9% point as it is 63.7% male and 46.8% female respectively. For the district as a whole, the literacy rate of males is much higher than that of females.

As per the census records 2011, the work participation rate (WPR) at C.D Block level in Kishanganj district is 22.4% as main workers and 9.0% as marginal workers. Proportion of non workers in the district is 68.8%. Among the main worker's male participation rate in the district is 38.1% while that of females is 6.0%.

Religions

The population of the Kishanganj district during 2011 was 1,690,400. Hindus constitute 31.4% of the population in the district followed by Muslims 68.0%. All other four major religious communities have almost negligible percentages.

Mother Tongue

As per the census records, for Kishanganj District, the main mother tongue of the district was returned, Urdu, the main mother tongue of the district was returned by 47.4% of the population. The corresponding percentage for the Hindi, the second most prominent language spoken in Kishanganj district, was 43.3% Speakers of other Schedule languages were very thin in number than the two described above.

Methodology

In order to assess the Demographic & Socio-economic features along with the 10km distance based on field surveys and public consultations undertaken during the baseline field study

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period and Census records 2011, for Kishanganj district of Bihar State was compiled and placed in the form of tabulation and graphical representation. Entire study area is observed predominantly rural.

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. Male-Female wise population distribution is given as follows in **Table 3.32 & 3.33**

Table:3.32 Population Distribution of the District

Name of the District		No of Households	Total Population			Child Population (0-6 Years)		
			Persons	Male	Female	Persons	Male	Female
Kishanganj	TOTAL	338445	1690400	866970	823430	346904	175962	170942
	RURAL	306497	1529277	783318	745959	320066	162319	157747
	URBAN	31948	161123	83652	77471	26838	13643	13195
Source-Census of India, 2011								

Table: 3.33 SC & ST Population Distribution of the District

Name of the District		Total Population	Scheduled Castes			Scheduled Tribes		
			Persons	Males	Females	Persons	Males	Females
Kishanganj	TOTAL	1690400	113118	57964	55154	64224	32506	31718
	RURAL	1529277	95770	49079	46691	60968	30877	30091
	URBAN	161123	17348	8885	8463	3256	1629	1627
Source-Census of India, 2011								

Sex Ratio

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

The ‘Sex Ratio’ was observed as 950 females per 1000 males in the District. The child (0-6 yr age) sex ratio of the district was observed as 971 female children per 1000 male children.

The village wise male-female population distribution for the study area is depicted and shown by graphical representation in **Table 3.34 & Figure 3.7**

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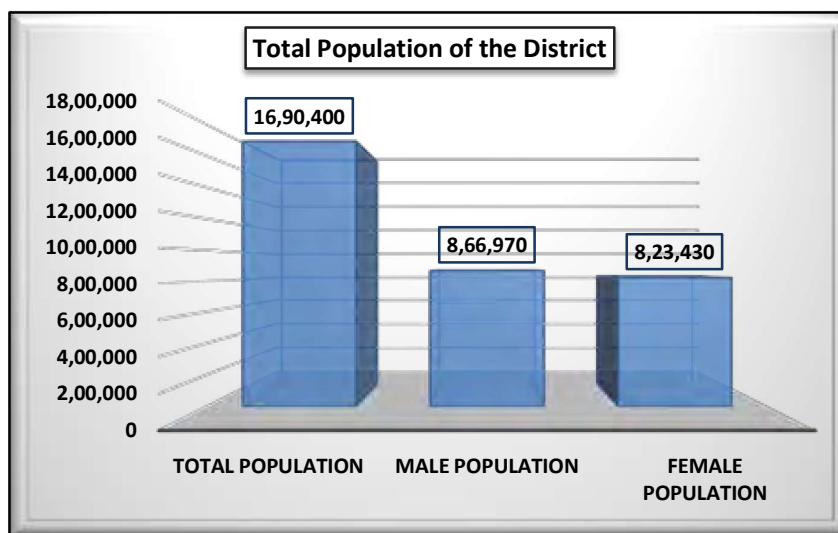


Figure 3.8 :Male-Female Wise Population Distribution

Scheduled Caste & Scheduled Tribe Population

On the basis of the SC & ST population distribution of the district during 2011, the 'Scheduled Castes' population was observed as 113118 persons consisting of 57964 males and 55154 females respectively in the district which accounts as 6.7% to the total population (1690400 persons) of the district. Scheduled Tribes ('ST') population was observed as 64224 persons, accounts as 3.8% to the total population of the district consisting of 32506 males and 31718 females in the district. It implies that the rest 89.5% 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 3.9 & 3.10 as follows.

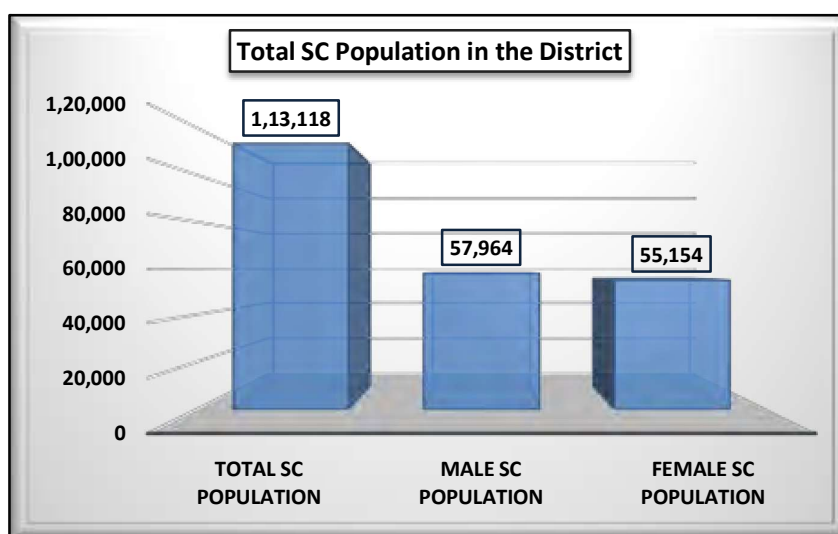


Figure 3.9 :Scheduled Caste Population in the Study Area

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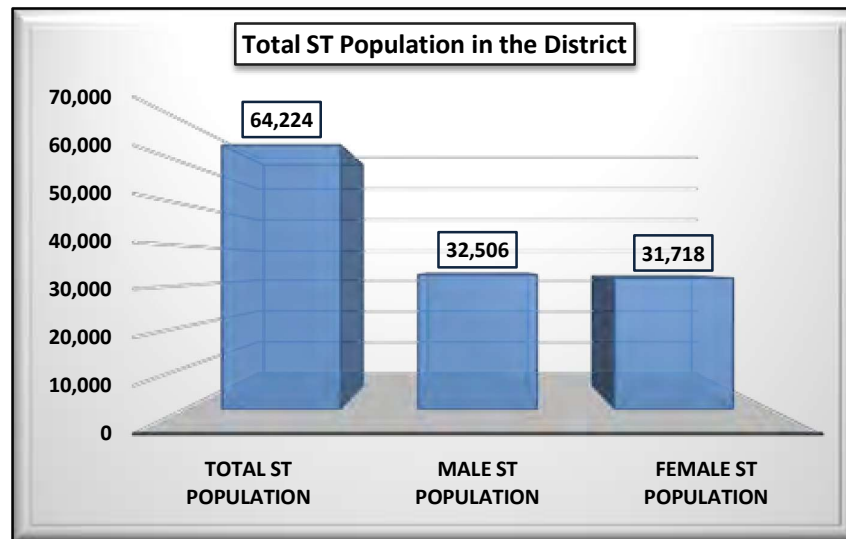


Figure 3.10: Scheduled Tribes Population in the Study Area

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 7,45,056 persons (44.0%) in the study area. Table 3.34 reveals that Male-Female wise literates are observed as 4,39,921 & 3,05,135 persons respectively, implies that the 'Literacy Rate' is recorded as 44.0% with male-female wise percentages being 26.0% & 18.0% respectively.

The Male-Female wise graphical representation of literates & illiterate's population in study area villages/town is shown in Figure 3.11

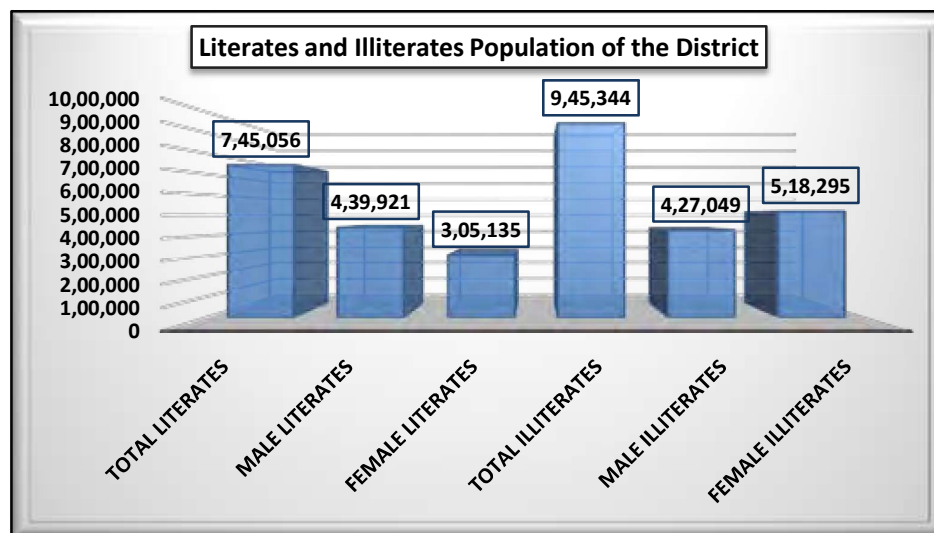


Figure 3.11 : Literates & Illiterates Persons in the District

EIA/EMP for the Sand Mining Project (Kishanganj Unit- 03 Sand Ghat) at Riverbed of Mahananda & Kankai River at Village- Andwakol, Lohaghara, Kanchanbari, Tegharia, Anchal- Kishanganj, TeraGachh, Bahadurganj, District – Kishanganj (Bihar).

Table 3.34 : Literates and Illiterates Persons in the District

Name of the District		Total Population	Literates			Illiterates		
			Persons	Males	Females	Persons	Males	Females
Kishanganj	TOTAL	1690400	745056	439921	305135	945344	427049	518295
	RURAL	1529277	649466	386310	263156	879811	397008	482803
	URBAN	161123	95590	53611	41979	65533	30041	35492
Source-Census of India, 2011								

Economic Profile of Kishanganj District:

The economy of the district is solely based on agriculture. Some of its chief agricultural products are paddy, wheat, maize, Jute, etc. Almost all people of the district are engaged in agriculture since it is scantily industrialized. Only a few industries and factories of jute, plywood, silk, poultry farming, tea processing, etc are found in it which also helps in its economy to some extent.

In 2006 the Ministry of Panchayati Raj declared Kishanganj district as one of the economically distressed district in Bihar and currently receiving funds from the Backward Regions Grant Fund Programme (BRGF). Kishanganj is the only tea producing district in Bihar.

Workers Scenario:

Occupational studied to assess the skills of people in the district. Occupational pattern helps in identifying major economic activities of the region. In the district, the Main and Marginal Workers population was observed as 384416(23.0%) and 144648(8.0%) to the total population (1690400), while the remaining 1161336(69.0%) persons were recorded as non-workers. Thus it implies that the semi-skilled and non-skilled work-force required for the project is available in aplenty.

The village-wise main and marginal worker's population with further classification as casual, agricultural, households and other workers is shown as follows in **Table 3.35**

CHAPTER-3**BASELINE DATA DESCRIPTION**

EIA/EMP for the Sand Mining Project (Kishanganj Unit- 03 Sand Ghat) at Riverbed of Mahananda & Kankai River at Village- Andwakol, Lohaghara, Kanchanbari, Tegharia, Anchal- Kishanganj, TeraGachh, Bahadurganj, District – Kishanganj (Bihar).

Table 3.35 : Occupational Pattern of the District

Name of the District		MAIN WORK P	MAIN_CL P	MAIN_AL_P	MAIN_HH_P	MAIN_OT_P	MARG WORK P	MARG_CL P	MARG_AL P	MARG_HH_P	MARG_OT_P
Kishanganj	TOTAL	384416	90347	220301	5832	67936	144648	17515	101566	5801	19766
	RURAL	342315	87453	212968	4574	37320	135595	17213	98550	5305	14527
	URBAN	42101	2894	7333	1258	30616	9053	302	3016	496	5239

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

EIA/EMP for the Sand Mining Project (Kishanganj Unit- 03 Sand Ghat) at Riverbed of Mahananda & Kankai River at Village- Andwakol, Lohaghara, Kanchanbari, Tegharia, Anchal– Kishanganj, TeraGachh, Bahadurganj, District – Kishanganj (Bihar).

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

Table 3.36 : Work Participation Rate of the District

Occupation Class	Year, 2011
Main Workers	384416(23.0%)
Male	334500(87.0%)
Female	49916(13.0%)
Marginal Workers	144648(8.0%)
Male	86692 (60.0%)
Female	57956(40.0%)
Non-Workers	1161336(69.0%)
Male	445778(38.4%)
Female	715558(61.6%)
Total Population (10km)	1690400
<i>Source: Census of India Records, 2011</i>	

Graphical representation of Workers Scenario is given below as **Figure 3.12**

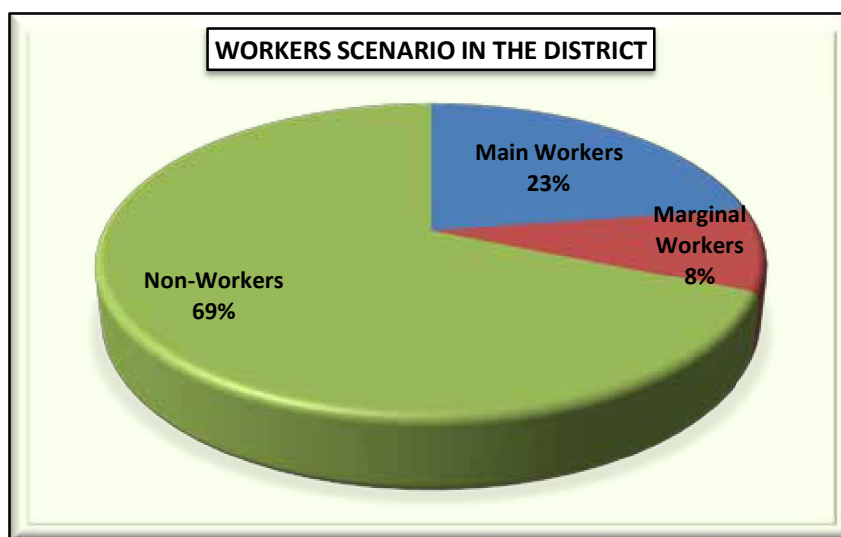


Figure 3.12 :Workers Scenario of the District

Composition of Main Workers:

The 'Main Workers' were observed as 384416 persons (23.0%) to the total population (1690400) of the district and its composition is made-up of Casual laborers as 90347 (23.0%), Agricultural laborers as 220301 (57.0%), Household workers 5832 (2.0%) and other workers as 67936 (18.0%) respectively.

. Composition of Main workers is shown below as **Figure 3.13**

EIA/EMP for the Sand Mining Project (Kishanganj Unit- 03 Sand Ghat) at Riverbed of Mahananda & Kankai River at Village- Andwakol, Lohaghara, Kanchanbari, Tegharia, Anchal– Kishanganj, TeraGachh, Bahadurganj, District – Kishanganj (Bihar).

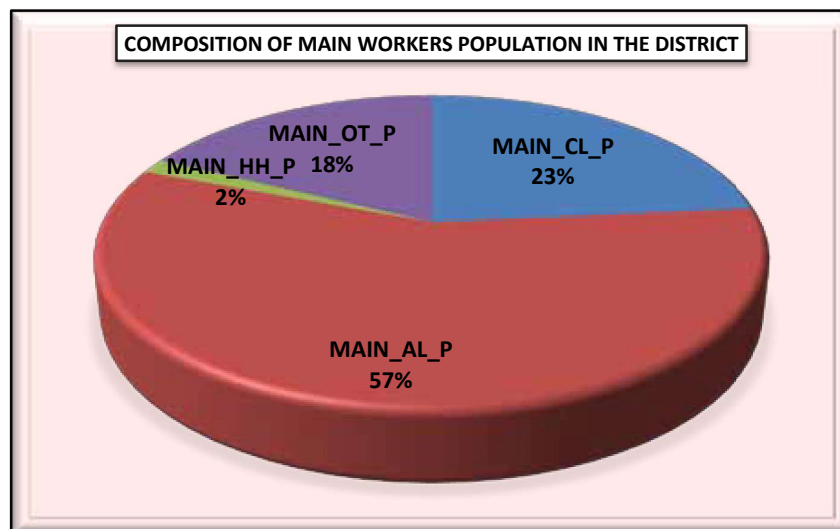


Figure 3.13 :Composition of Main Workers Population

Composition of Marginal Workers:

The total marginal workers are observed as 144648 which constitute 8.0% to the total population (1690400) comprising of Marginal Casual Laborers as 17515 (12.0%), Marginal Agricultural Laborers as 101566(70.0%), Marginal Household laborers as 5801 (4.0%) and marginal other workers were also observed as 19766 (14.0%) of the total marginal workers respectively.

Details about marginal workers in the study area are tabulated in Table Composition of Marginal workers is shown in Figure 3.14 as follows.

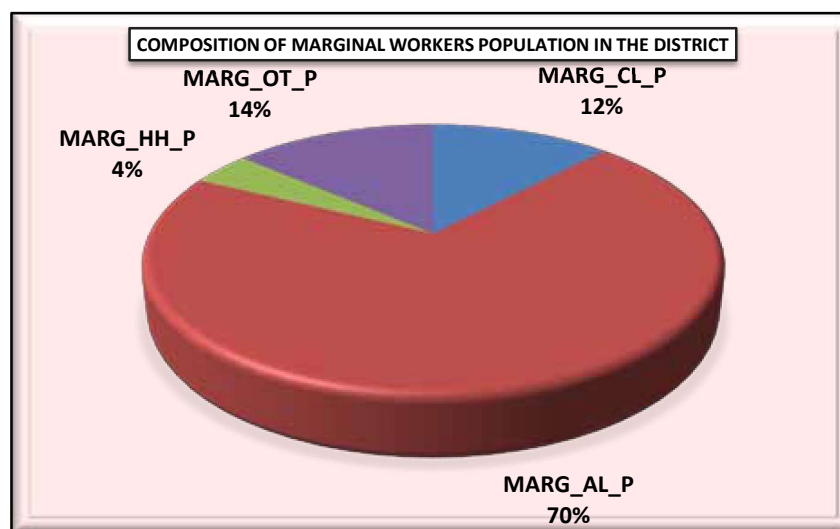


Figure 3.14 :Composition of Marginal Workers

EIA/EMP for the Sand Mining Project (Kishanganj Unit- 03 Sand Ghat) at Riverbed of Mahananda & Kankai River at Village- Andwakol, Lohaghara, Kanchanbari, Tegharia, Anchal– Kishanganj, TeraGachh, Bahadurganj, District – Kishanganj (Bihar).

Composition of Non-Workers:

The total Non-worker's population was observed as 1161336 persons which accounts 69.0% to the total population (1690400) of the study area. Male-female wise Non-worker's population was recorded as 445778 Males (38.4%) and 715558 Females (61.6%) respectively.

Details about Total Non-workers in the district are compiled in **Table 3.38** Graphical representation of Non-worker's population is shown as follows in **Figure 3.15**

Table 3.38 :Composition of Non-Workers

Non-Workers Population		
Persons	Males	Females
1161336	445778 (38.4%)	715558 (61.6%)

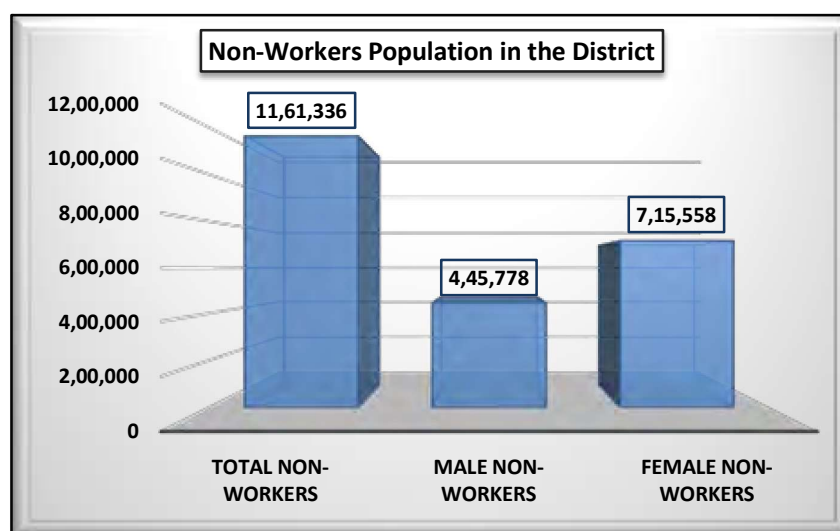


Figure 3.15: Composition of Non-Workers

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 district inhabited villages of Kishanganj District in Bihar state. The district villages have average level of basic infrastructure facilities like educational, medical, potable water and power supply and transport & communication network.

Educational Facilities

The educational facilities have been further strengthening now and a number of private public schools and colleges are also functioning in the surroundings of the study area. Besides, there are Engineering and Medical colleges available in Towns and District headquarters only. Higher education facilities are available in Towns of the district. There is a considerable improvement in educational facility. The villages of the study area have no such facilities can reach within 5 to 10 km range.

There are as many as 643 villages accounting for 87.84 percent of the total number of inhabited villages (732) in the district where educational facility is available. Among the C.D.

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Blocks, Bahadurganj has the largest proportion of villages with 96.1% education facility where as smallest proportion of villages with educational facility is observed inThakurganj C.D. Block with 76.5%.

Availability of University Education in Kishanganj District

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

Medical Facilities

The medical facilities are provided by different agencies like Govt. & Private individuals and voluntary organizations in the district. Overall villages in the district are served by moderate level of medical facilities. Specialized medical facilities are available only in towns and District Headquarter (HQ) only.

The availability of medical amenity in the villages is quite low and only40.3% villages have got it. Among the C.D. Blocks, Kishanganj has the largest proportion ofvillages with 76.5% medical facility, it is followed by Terhagachh and Pothia C.D. Blockswith 61.5 and 56.7% respectively. On the other hand, Thakurganj has the minimumproportion of villages (6.72%) where medical amenity is available.

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.

There are as many as 732 villages accounting for 100 percent of the totalinhabited villages in the district where improved drinking water facility is available

Communication, Road & Transport Facilities

Apart from Post &Telegraph Office (PTO) services, transport is the main communication linkage in the district study area. As per the Census records 2011, data shows that the area has good postal facilities in the district.

Postal facility is available in 117 villages (16.0%) out of 732 inhabitedvillages in the district. Pothia C.D. Block has the maximum proportion of villages having postalfacility (24.1%) followed by Thakurganj C.D. Block with 17.7%. Kishanganj C.D. Blockhas the minimum proportion of villages having postal facility (8.8%).

Connectivity - Sand Mining Project, Kishanganj Unit Sand Ghat is well connected to the nearest metalled roads/Highways. The approach road will be maintained and dust suppression will be done regularly.

Communications (Kishanganj District)

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Transport communication facilities are available only in 144 villages (19.7%) out of 732 inhabited villages in the district. Kochadhamin C.D. Block has the maximum proportion of villages with 38.5% which are connected by bus or rail or navigable river/canal services, etc, followed by Thakurganj C.D. Block with 22.7% while Terhagachh C.D. Block has the minimum proportion of villages with only 5.1%.

Roads: The district of Kishanganj is well served by a network of roads. The roads are classified as the National Highways, State Highways, Major District Roads and Other District Roads. They are maintained by the P.W.D., the Rural Engineering Organisation, the Zila Parishad and the municipalities. All the 7 Block headquarters are connected with pucca roads. The district is connected by NH-31 from Barhi (Hazaribagh, Jharkhand) and Guwahati (Assam). SH-63 also passes through the district. East –West corridor also passes through this district.

Railway: The district is served by railways. Kishanganj the district headquarters, itself is connected with both the broad and metre gauges.

Airways: The district has a landing ground at Kishanganj which is suitable only for the landing of small aeroplanes. There are no air services available at present.

Banking Facility

The study area has almost all the schedule commercial banks with ATM facility at urban areas and the district HQ. Banking facility is available only in 77 villages (10.52%) out of 732 inhabited villages in the Kishanganj district. Among the C.D. Blocks, Pothia has the maximum proportion (20.0%) of villages having banking facility and Kishanganj has the minimum proportion of villages having banking facility with 3.0%.

Agricultural Credit Societies

Agricultural credit societies are available in 154 villages (21.04%) out of 732 inhabited villages in the district. Among the C.D. Blocks, Bhadurganj has the maximum proportion of villages having Agricultural credit society facility with 29.1% while Dighalbank has minimum proportion of villages having agricultural Credit Societies facility with 12.5%.

Approach by Pucca Road

This facility is available in 592 villages (80.9%) out of 732 inhabited villages in the district. Among the C.D. Blocks, Bahadurganj has the maximum proportion of villages having 100% Approach by pucca road while Terhagachh has the minimum proportion of villages having pucca approach road with only 42.3% of total inhabited villages.

Trade and Commerce

Kishanganj is essentially an agricultural district. The trade and commerce of the district have also been affected by its geophysical condition. It has close commercial relations with the border areas and with Nepal since time immemorial. In Kishanganj district trade consists mainly of export of jute, paddy, rice, maize, mustard seed, tobacco, bamboos, timbers, gunny

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bags and hides, and of import of cloth, salt, kerosene oil, vegetable oil, sugar, cement, lime and other manufactured goods.

Kishanganj is the important trade centre in the district – The Chief Commercial Commodity of the district is jute, the main determining factor of the centre of trade. The wholesale mandi of jute is also located at Kishanganj. Most of the internal trade is carried on in the village hats which are held on fixed days twice or thrice a week, Bhadarpur on Galgalia side is the main trade centre of Nepal with which Kishanganj district has regular and close commercial relations. The market of this place is virtually in the hands of the Indian merchants.

Mines and Minerals

As per the census records 2011, the geological formation of the district consists almost entirely of alluvium and there are no minerals of any importance in the district.

Power Supply

It is revealed from the census data on amenities availability as per the census record of 2011; most of the villages and towns of the district are electrified for Domestic, Agriculture, and Commercial & for all purposes.

The district receives its entire power supply from Bihar State Electricity Board. The Government is trying to extend electric line to the maximum number of villages by implementing various schemes for rural electrification. 479 Villages of the district are electrified.

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;

Andhasur-The village lies about 13 km west of the block headquarters and Kochadhamin and is noted for its Shiva temple. A large fair, lasting for a month, is held annually on the occasion of Shivaratri.

Dighalbank- The village is the headquarters of the block bearing the same name and is situated on the northern border of the district with Nepal. It has a semal tree in the compound of the police station, believed by tradition to be the tree on which the pandava, prince Arjuna, had kept his Gandiva (bow).

JiranGachh - The village lies in Thakurganj block and is situated on the Garga-Darjeeling Road, about 9 km from Thakurganj railway station. According to tradition, the pandavas are believed to have spent apart of the period of their exile in this village. To commemorate this, an annual fair is held in the month of Chaitra.

Tulshia- A big village, situated about 32 km north of Kishanganj town and 6 km from the block headquarters at Dighalbank, is an important commercial centre in the locality. It has a temple of Shiva around which a fair is held annually on the occasion of Shivaratri.

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Kishanganj- The town is the headquarters of the district of Kishanganj the same name is situated on the Ganga-Darjeeling Road and is rail head. It has three jute processing factories and is an important centre for export of jute.

Bishunpur- A large village situated at the distance of 10 km from the block headquarters of Kochadhamin, is noted for its market and believed to be one of the largest in Kishanganj district.

Social and Cultural Events

No major social and cultural events has taken place in the district during the decade. However, the district has been famous for fairs and melas held at different places throughout the year. There is a brief lull during the two months of rainy season.

Rehabilitation & Resettlement (R & R)

Policy to be adopted (Central/State) in respect of the project affected persons including home or land oustees and landless labour. There is no structure or habitation in the core zone mining lease area, hence, any planning with respect to Rehabilitation & Resettlement is not applicable.

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4.0 GENERAL

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

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

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

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

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

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4.1 LAND ENVIRONMENT

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

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

Anticipated Impacts:

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

Mitigation measures:

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

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

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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 Mahananda & Kankai River. Hence, none of the project activities affect the water environment directly. In the project, it is not proposed to divert or truncate any stream in monsoon season only. No proposal is envisaged for pumping of water either from the *River* (in monsoon) or tapping the ground water.

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

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

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

4.3 AIR ENVIRONMENT

Impact On Air Quality

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

The mining is proposed to be carried out by opencast manual method. The air borne particulate matter (PM₁₀) generated by ore and waste handling operations, transportation and screening of ore is the main respirable air pollutant. The emissions of Sulphur dioxide (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

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content 10-20% mine. It is assumed that moisture content was 10% and further moisture content will be increased to 10-20% to reduce emission of PM₁₀ during unloading and average wind speed was 0.92 m/s as observed with site data as shown in wind rose and discussion of local meteorology of the area.

Haul Road - US EPA, 2006, revision of emission factor for AP-42 was used to calculate emission of particulate matter released into the atmosphere during transportation of ore and overburden by trucks operated per hour on haul road. Emission of PM₁₀ due to transportation of sand on haul road was 1.65×10^{-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.

Based on the above consideration that there was low emission of PM₁₀ during transportation of ore and overburden, however during loading & unloading, transportation of ore over the haul road, emission of PM₁₀ of the exposed area due to wind erosion and movement of light vehicles on the road were not considered and combined with mining activities. US EPA based Dispersion ISCST-3 model was used for prediction of impact with 24-h meteorological data of the study period for the assessment of GLC.

4.3.2 Meteorological Data

The meteorological data recorded at hourly interval during the month of December 2024 to February 2025 on wind speed 0.92 m/s, wind direction, dry & wet bulb temperature, humidity, cloud cover and rainfall was processed to extract hourly mean meteorological data as per the guidelines of CPCB/MoEF for prediction of impacts from the area source. Stability was computed by Turner's method and mixing height was obtained from publication of IMD "Atlas of Hourly Mixing Height in India, 2008.

Data recorded from authorized source/Govt. agency were used as meteorological input for Dispersion Model which was stored in the computer for further analysis and interpretation to study the local meteorology of the study area. It was observed that westerly & north westerly was pre-dominant wind during summer as shown in wind rose (Figure 4.1) with low wind speed

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and 13.6 % calm condition was observed during study period at the site which was very much close and cumbersome with long term meteorological data of IMD. Average wind speed was 0.92m/s. Impact of the pollutants was anticipated in southeast sector under influence of northeasterly & westerly winds. Ambient air quality locations were selected based on the long term wind rose pattern of the area. Air quality sampling locations were finalized to study the baseline status around the proposed site and to study impact at various locations. 24-h maximum impact of PM10 was envisaged in southeast sector at very short distance from the site due to moderate to low wind speed.

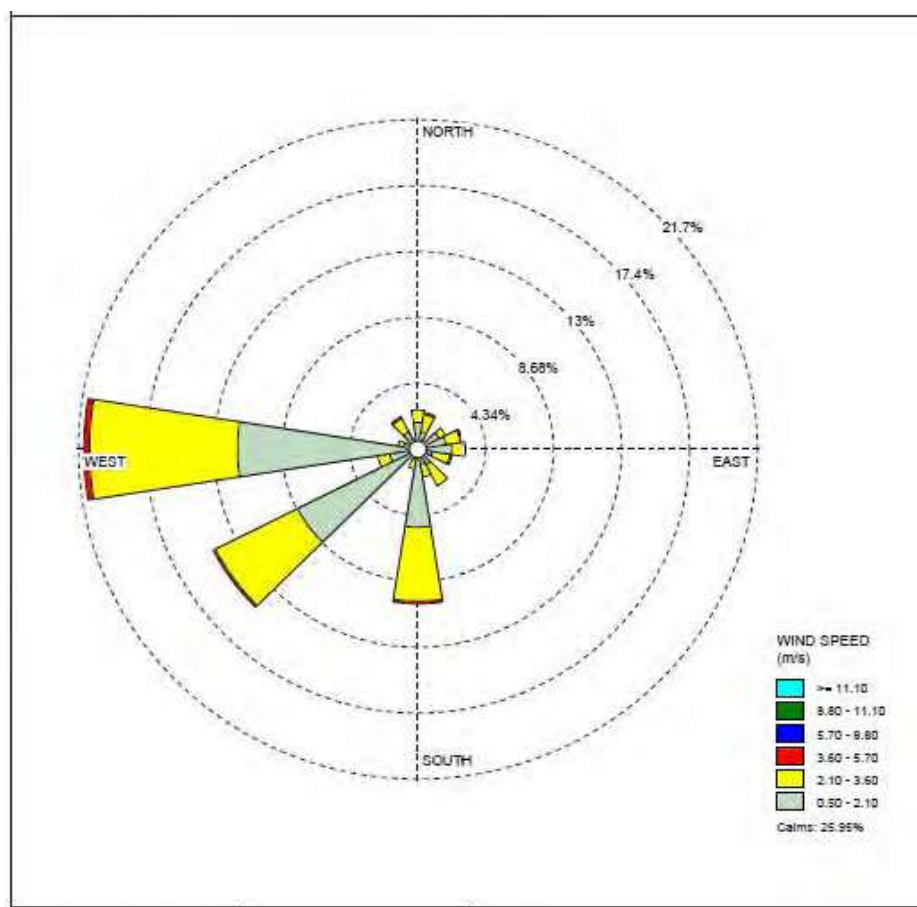


Figure 4.1: Wind Rose Diagram

Stable atmospheric condition E & F dominates in early morning and night hours and B, C & D in day hours were observed. Pollutants were dispersed from the proposed source under influence of

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local meteorology and dispersed on the ground in downwind direction close (~100 m) to the source under influence of moderate to low wind speed. High temperature and low humidity were observed at site with high temperature in day hours and low during night. There was no significant rain fall received and sky was clear of clouds in most of the days.

4.3.3 Frame work of Computation & Model details

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

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

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

EIA/EMP for the Sand Mining Project (Kishanganj Unit- 03 Sand Ghat) at Riverbed of Mahananda & Kankai River at Village- Andwakol, Lohaghara, Kanchanbari, Tegharia, Anchal- Kishanganj, TeraGachh, Bahadurganj, District – Kishanganj (Bihar).

4.3.4 Model Results

The Air Quality Impact Prediction has been done by using “Industrial Source Complex Short Term version 3 (ISCST3), of USEPA”. The main sources of air pollution with regard to the proposed project for the purpose of estimation of increase in PM10 are identified due to –

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

Combined impact of PM10 was considered due to mining activities occurred simultaneously on various sampling locations is given in below table:

Table 4.1 Incremental Concentration of PM10 in the Study Area

Location ID	Location name	Distance (Km) and Direction	98 th Percentile	Incremental Value	Total Value
AAQ1	Near Project site (Andwakol Sand Ghat)	0.30 km, E	88.15	4.5	92.65
AAQ2	Near Project site Lohaghara village from (Lohaghara Sand Ghat)	0.26 Km, E	85.93	4.0	89.93
AAQ3	Near Project site Kanchanbari village from (Kanchanbari Sand Ghat)	0.22 Km, E	85.01	3.0	88..01
AAQ4	Near Project site Tegharia village From (Tegharia Sand Ghat)	0.20 Km, ESE	83.84	3.5	87.34
AAQ5	Motihara village From (Andwakol Sand Ghat)	3.60 Km,E	80.28	0.5	80.78
AAQ6	Tengramari village From (Andwakol Sand Ghat)	5.37 Km, SSE	81.37	<0.001	81.37
AAQ7	Gangi village From (Andwakol Sand Ghat)	5.87 Km, W	85.85	<0.001	85.85
AAQ8	Harwadanga village From (Lohaghara Sand Ghat)	6.67 Km, East	74.65	<0.001	74.65
AAQ9	Harhibhita village From (Lohaghara Sand Ghat)	4.0 Km, NE	76.53	<0.001	76.53
AAQ10	Satkaua village From	4.16 Km, SE	78.25	<0.001	78.25

Chapter-4**Anticipated Environmental Impact And Mitigation Measures**

EIA/EMP for the Sand Mining Project (Kishanganj Unit- 03 Sand Ghat) at Riverbed of Mahananda & Kankai River at Village- Andwakol, Lohaghara, Kanchanbari, Tegharia, Anchal- Kishanganj, TeraGachh, Bahadurganj, District – Kishanganj (Bihar).

	(Lohaghara Sand Ghat)				
AAQ11	Lachhmipur village From (Kanchanbari Sand Ghat)	3.60 Km, E	75.32	0.5	75.82
AAQ12	Bibiganj From (Kanchanbari Sand Ghat)	3.36 Km, SE	78.75	<0.001	78.75
AAQ13	Pipra From (Kanchanbari Sand Ghat)	3.50 Km, WSW	81.06	<0.001	81.06
AAQ14	Birpur From (Tegharia Sand Ghat)	3.93 Km, ESE	77.85	<0.001	77.85
AAQ15	Jhingakata Taufir From (Tegharia Sand Ghat)	3.0 Km, NE	76.28	0.5	78.78
AAQ16	Bishunpur From (Tegharia Sand Ghat)	4.60 Km, SSE	77.61	<0.001	77.61
AAQ17	Baigna Village From (Tegharia Sand Ghat)	3.41 Km, W	73.38	<0.001	73.38

EIA/EMP for the Sand Mining Project (Kishanganj Unit- 03 Sand Ghat) at Riverbed of Mahananda & Kankai River at Village- Andwakol, Lohaghara, Kanchanbari, Tegharia, Anchal- Kishanganj, TeraGachh, Bahadurganj, District – Kishanganj (Bihar).

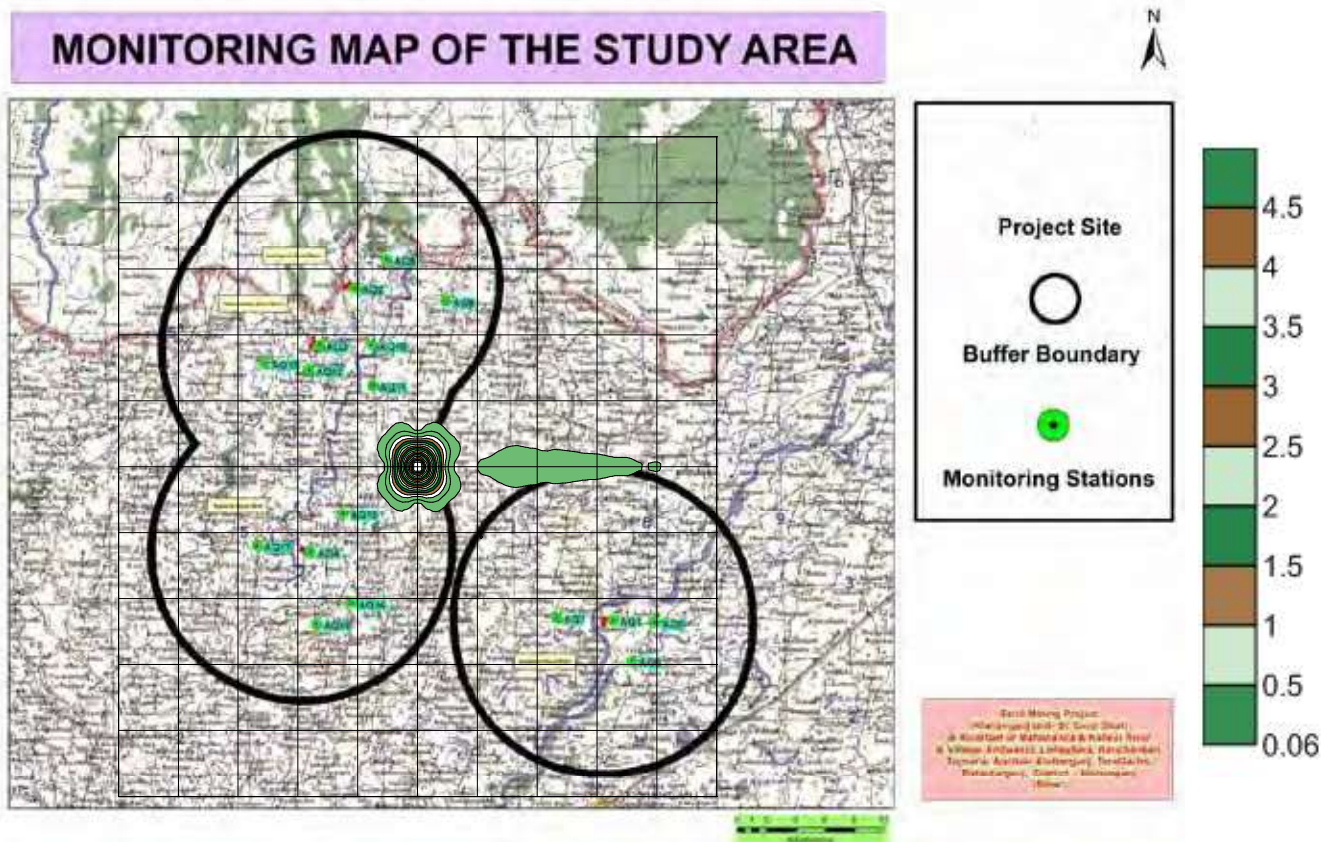


Figure 4-1, Iso-pleth of PM10

(Iso-pleth of PM10 is $4.5 \mu\text{g}/\text{m}^3$ occurred near the project site (AQ1) at 2000 m x2000 m grid network during

- loading and unloading and
- Transportation of ore over the haul road.

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.

EIA/EMP for the Sand Mining Project (Kishanganj Unit- 03 Sand Ghat) at Riverbed of Mahananda & Kankai River at Village- Andwakol, Lohaghara, Kanchanbari, Tegharia, Anchal- Kishanganj, TeraGachh, Bahadurganj, District – Kishanganj (Bihar).

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

4.4 NOISE ENVIRONMENT

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

Anticipated Impacts:

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

EIA/EMP for the Sand Mining Project (Kishanganj Unit- 03 Sand Ghat) at Riverbed of Mahananda & Kankai River at Village- Andwakol, Lohaghara, Kanchanbari, Tegharia, Anchal- Kishanganj, TeraGachh, Bahadurganj, District – Kishanganj (Bihar).

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	2. No exposure in excess of 115 dB (A) is permissible.

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.

EIA/EMP for the Sand Mining Project (Kishanganj Unit- 03 Sand Ghat) at Riverbed of Mahananda & Kankai River at Village- Andwakol, Lohaghara, Kanchanbari, Tegharia, Anchal- Kishanganj, TeraGachh, Bahadurganj, District – Kishanganj (Bihar).

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

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

Fauna

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

EIA/EMP for the Sand Mining Project (Kishanganj Unit- 03 Sand Ghat) at Riverbed of Mahananda & Kankai River at Village- Andwakol, Lohaghara, Kanchanbari, Tegharia, Anchal- Kishanganj, TeraGachh, Bahadurganj, District – Kishanganj (Bihar).

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

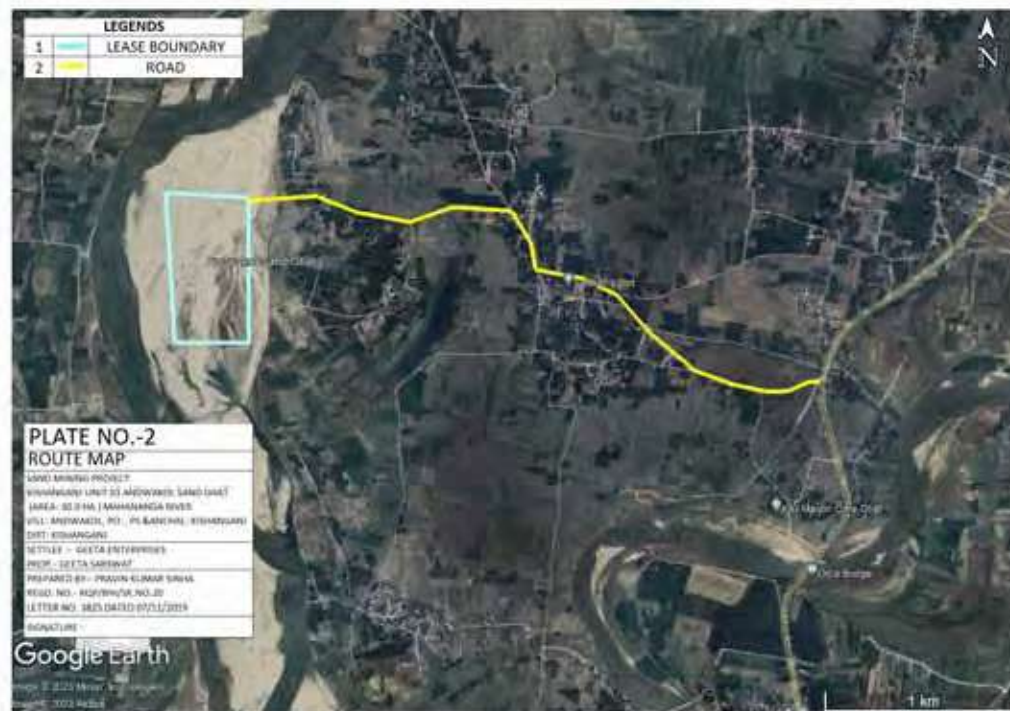
Transportation Route:

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.

Chapter-4

Anticipated Environmental Impact And Mitigation Measures

EIA/EMP for the Sand Mining Project (Kishanganj Unit- 03 Sand Ghat) at Riverbed of Mahananda & Kankai River at Village- Andwakol, Lohaghara, Kanchanbari, Tegharia, Anchal- Kishanganj, TeraGachh, Bahadurganj, District – Kishanganj (Bihar).

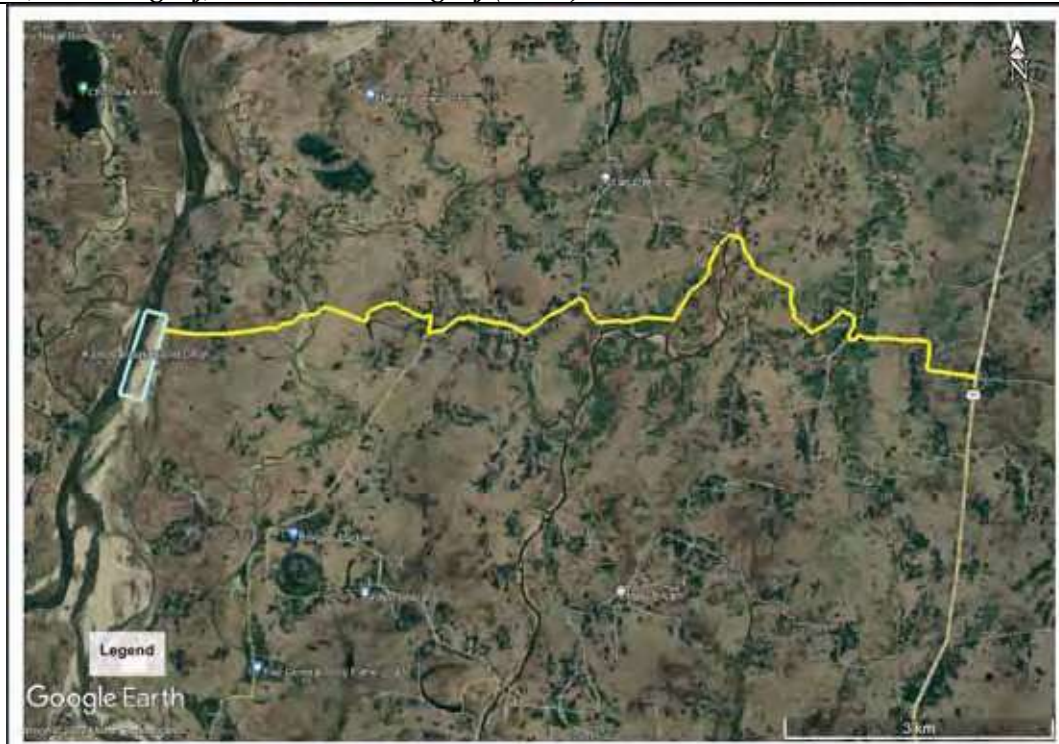


Andwakol Sand Ghat – Area – 30.0 Hect.

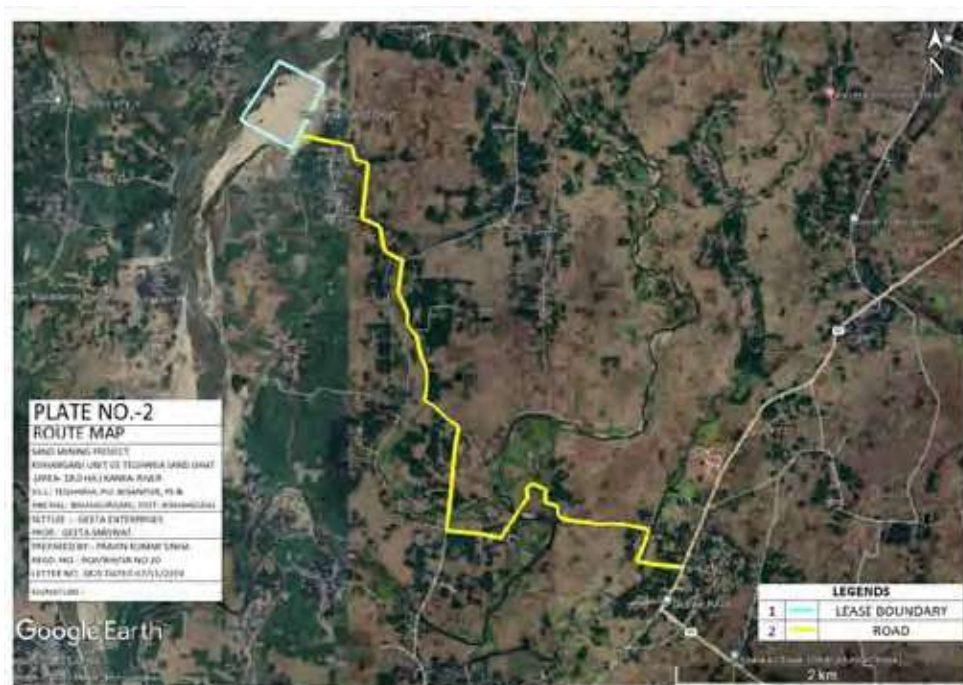


Lohaghara Sand Ghat – Area – 25.0 Hect.

EIA/EMP for the Sand Mining Project (Kishanganj Unit- 03 Sand Ghat) at Riverbed of Mahananda & Kankai River at Village- Andwakol, Lohaghara, Kanchanbari, Tegharia, Anchal- Kishanganj, TeraGachh, Bahadurganj, District – Kishanganj (Bihar).



Kanchanbari Ghat – Area – 25.0 Hect.



Tegharia Sand Ghat – Area – 18.0 Hect.

FIGURE 4.2 MAP SHOWING EVACUATION ROUTE

EIA/EMP for the Sand Mining Project (Kishanganj Unit- 03 Sand Ghat) at Riverbed of Mahananda & Kankai River at Village- Andwakol, Lohaghara, Kanchanbari, Tegharia, Anchal- Kishanganj, TeraGachh, Bahadurganj, District – Kishanganj (Bihar).

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

Table 4.2 (i): Existing Traffic Scenario & LOS

Road	V	C	Existing V/C Ratio	LOS
NH-27	2500	15000	0.16	A
SH-99	1100	8000	0.13	A

Source: Capacity as per IRC: 64-1990

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

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

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

Reference: ENVIS Technical Report, IISc, Bangalore.

During Mine operation for **Kishanganj Unit- 03 Sand Ghat**

Proposed Capacity of Mine/annum	:	1501680 TPA
No. of working days	:	250 days
Proposed Capacity of mine/day	:	6006.72 or 6007
Truck Capacity	:	16 tonnes
No. of trucks deployed/day	:	376
Increase in PCU/day (376*3)	:	1128

Table 4.2 (ii): Modified Traffic Scenario & LOS

Road	V	C	Modified V/C Ratio	LOS
NH-27	2500 + 1128 = 3628	15000	0.24	B
SH-99	1100 + 1128 = 2228	8000	0.27	B

EIA/EMP for the Sand Mining Project (Kishanganj Unit- 03 Sand Ghat) at Riverbed of Mahananda & Kankai River at Village- Andwakol, Lohaghara, Kanchanbari, Tegharia, Anchal– Kishanganj, TeraGachh, Bahadurganj, District – Kishanganj (Bihar).

Results

From the above analysis it can be seen that the LOS has changed from 0.16 to 0.24 at NH 27 & 0.16 to 0.24 at SH-99 intersection that remains 'B' i.e ' Very Good '. 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.

EIA/EMP for the Sand Mining Project (Kishanganj Unit- 03 Sand Ghat) at Riverbed of Mahananda & Kankai River at Village- Andwakol, Lohaghara, Kanchanbari, Tegharia, Anchal– Kishanganj, TeraGachh, Bahadurganj, District – Kishanganj (Bihar).

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.

EIA/EMP for the Sand Mining Project (Kishanganj Unit- 03 Sand Ghat) at Riverbed of Mahananda & Kankai River at Village- Andwakol, Lohaghara, Kanchanbari, Tegharia, Anchal– Kishanganj, TeraGachh, Bahadurganj, District – Kishanganj (Bihar).

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.



EIA/EMP for the Sand Mining Project (Kishanganj Unit- 03 Sand Ghat) at Riverbed of Mahananda & Kankai River at Village- Andwakol, Lohaghara, Kanchanbari, Tegharia, Anchal– Kishanganj, TeraGachh, Bahadurganj, District – Kishanganj (Bihar).

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.



EIA/EMP for the Sand Mining Project (Kishanganj Unit- 03 Sand Ghat) at Riverbed of Mahananda & Kankai River at Village- Andwakol, Lohaghara, Kanchanbari, Tegharia, Anchal– Kishanganj, TeraGachh, Bahadurganj, District – Kishanganj (Bihar).

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



CHAPTER-6**ENVIRONMENTAL MONITORING PROGRAMME**

EIA/EMP for the Sand Mining Project (Kishanganj Unit- 03 Sand Ghat) at Riverbed of Mahananda & Kankai River at Village- Andwakol, Lohaghara, Kanchanbari, Tegharia, Anchal- Kishanganj, TeraGachh, Bahadurganj, District – Kishanganj (Bihar).

2	Water Quality (Surface & Groundwater)	Once a season for 4 seasons in a year
3	Soil Quality	Once in a year in project area
4	Noise Level	Twice a year for first two years & then once a year
5	Socio-economic Condition	Once in 3 years
6	Plantation Monitoring	Once in a season

6.4 MONITORING SCHEDULE - IMPLEMENTATION

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

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

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

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



CHAPTER-6**ENVIRONMENTAL MONITORING PROGRAMME**

EIA/EMP for the Sand Mining Project (Kishanganj Unit- 03 Sand Ghat) at Riverbed of Mahananda & Kankai River at Village- Andwakol, Lohaghara, Kanchanbari, Tegharia, Anchal– Kishanganj, TeraGachh, Bahadurganj, District – Kishanganj (Bihar).

6.5 BUDGET ALLOCATION FOR MONITORING

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

Table 6.3, Budget for monitoring

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

6.6 REPORTING SCHEDULES OF THE MONITORING DATA

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



EIA/EMP for the Sand Mining Project (Kishanganj Unit- 03 Sand Ghat) at Riverbed of Mahananda & Kankai River at Village- Andwakol, Lohaghara, Kanchanbari, Tegharia, Anchal- Kishanganj, TeraGachh, Bahadurganj, District – Kishanganj (Bihar).

7.0 PUBLIC CONSULTATION

As per EIA Notification dated 14th September, 2006 (amended thereof), The committee has suggested various Terms of Reference (ToRs) for the preparation of the Environmental Impact Assessment (EIA) Report and Environmental Management Plan (EMP) vide their letter no. / F. No. – SIA/1(a)/2447/2023 dated 28.03.2025. The following Additional Studies is to be carried out as per Terms of Reference:

1. Public Hearing
2. Risk Assessment &
3. Disaster Management Plan

7.1 Public Hearing

Public hearing was successfully executed on date 26.06.2025 at 11:00 AM, as per the guidelines given in EIA Notification 14th September' 2006 and its subsequent amendment.

Public Hearing was conducted in the presence of Shri. Sandeep Kumar, District Land Acquisition Officer, Kishanganj, Shri Sain Kumar-Regional Officer Bihar Pollution Control Board, Purnea and District Mining Officer, Kishanganj, at At Block Office Kishanganj. In Public Hearing local persons participate & raise their issues & concern in the environmental impacts of the project. Proper video recording was done for this meeting. The Public Hearing was arranged by the Regional office of Bihar State Pollution Control Board, Purniya (BSPCB).

Table-7.1: Public Hearing Details

Particular	Description
Advertisement for Public Hearing:	
➤ Date of Advertisement in Newspapers	• 21.05.2025
➤ Name of Newspapers:	• Dainik Jagran & Dainik Bhaskar (Hindi)
Date of Public Hearing:	26.06.2025 at 11:00 AM,
Venue:	At Block Office Kishanganj.

EIA/EMP for the Sand Mining Project (Kishanganj Unit- 03 Sand Ghat) at Riverbed of Mahananda & Kankai River at Village- Andwakol, Lohaghara, Kanchanbari, Tegharia, Anchal- Kishanganj, TeraGachh, Bahadurganj, District – Kishanganj (Bihar).

Particular	Description
Members:	• Shri. Sandeep Kumar, District Land Acquisition Officer, Kishanganj • Shri Sain Kumar-RO, BSPCB, Purnea • District Mining Officer, Kishanganj

The Technical Consultant briefed the public about the purpose of organizing the hearing and asked the project proponent to explain the salient features of project with specific reference to the impacts on environment, its management and social welfare measures including community development activities proposed.

The public hearing proceedings & related papers are attached as **Annexure-IV**.



EIA/EMP for the Sand Mining Project (Kishanganj Unit- 03 Sand Ghat) at Riverbed of Mahananda & Kankai River at Village- Andwakol, Lohaghara, Kanchanbari, Tegharia, Anchal- Kishanganj, TeraGachh, Bahadurganj, District – Kishanganj (Bihar).



Fig 7.1: Public Hearing Photographs.

दैनिक जागरण
भागलपुर, 21 मई, 2025

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EIA/EMP for the Sand Mining Project (Kishanganj Unit- 03 Sand Ghat) at Riverbed of Mahananda & Kankai River at Village- Andwakol, Lohaghara, Kanchanbari, Tegharia, Anchal- Kishanganj, TeraGachh, Bahadurganj, District – Kishanganj (Bihar).

[illegible]

Fig 7.2: Public Hearing Advertisement.

EIA/EMP for the Sand Mining Project (Kishanganj Unit- 03 Sand Ghat) at Riverbed of Mahananda & Kankai River at Village- Andwakol, Lohaghara, Kanchanbari, Tegharia, Anchal– Kishanganj, TeraGachh, Bahadurganj, District – Kishanganj (Bihar).

Issues raised during Public Hearing and Commitment

Action Plan to address the issues raised during public hearing is discussed in **Table-7.2**.

Conclusion on Public Hearing

After the questions raised by the public present during the public hearing, were suitably replied to their satisfaction and no further questions were coming, the Regional Officer, Bihar Pollution Control Board Purniya, summed up the Proceedings of the Public hearing and declared the Public Hearing as over. The details of persons attended and representations received in writing during the public hearing are enclosed along with the minutes of the public hearing.

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Table-7.2: Details of Action Plan for the issues raised during the Public Hearing

क्रमांक	नाम एवं पता	प्रतिक्रिया/सुझाव
1.	मो० गुलाम सरवर, पिता स्व० अब्दुल करीम, ग्राम-कंचनबाड़ी, दिघलबैंक, किशनगंज।	इनके द्वारा सुझाव दिया गया कि बालू खनन के दौरान कार्यरत श्रमिकों के लिए स्थल पर पानी पीने की सुविधा होनी चाहिए। घाट के आस-पास में पेड़-पौधा लगाना चाहिए। परियोजना सलाहकार द्वारा बताया गया कि बालू खनन परियोजना शुरू होने पर श्रमिकों के लिए शुद्ध पानी पीने का व्यवस्था किया जायेगा तथा सड़क के दोनों ओर वृक्षारोपण एवं जल छिड़काव का कार्य किया जायेगा।
2.	मो० फकर आलम, पिता स्व० वाहिद आलम, ग्राम-बेलवा, जिला-किशनगंज।	इनके द्वारा सुझाव दिया गया कि बालू खनन जब चालु होगा तब आस-पास के लोगों को रोजगार मिलना चाहिए। बालू परिवहन के दौरान धूलकण रोकने हेतु रास्ते पर जल छिड़काव होना चाहिए तथा खनन स्थल पर श्रमिकों के लिए शेड की व्यवस्था होनी चाहिए। पर्यावरणीय सलाहकार द्वारा बताया गया कि प्राथमिकता के आधार पर स्थानीय लोगों को रोजगार प्रदान किया जायेगा। प्रत्यक्ष एवं अप्रत्यक्ष रूप से रोजगार का सृजन होगा। सड़क के दोनों ओर वृक्षारोपण एवं जल छिड़काव का कार्य किया जायेगा। बालू खनन परियोजना शुरू होने पर श्रमिकों के लिए अस्थायी विश्राम स्थल का निर्माण किया जायेगा।
3.	मो० समसीर आलम, पिता स्व० हासीम, जिला-किशनगंज।	इनके द्वारा सुझाव दिया गया कि 1. बालू खनन हेतु खनन स्थल के रास्ते/सड़क समय-समय पर मरम्मत होनी चाहिए। साथ ही पर्यावरण संरक्षण हेतु रास्तों पर नियमित रूप से जल छिड़काव एवं वृक्षारोपण किया जाय। 2. बालू का परिवहन वाहन को ढक कर किया जाय। परियोजना में स्थानीय निवासियों को रोजगार दिया जाये। खनन स्थल पर पानी एवं शौचालय की व्यवस्था होनी चाहिए।

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		पर्यावरणीय सलाहकार द्वारा बताया गया बालू खनन स्थल से मुख्य सड़क तक बालू परिवहन हेतु उपयोग किये जाने वाले सड़क/रास्ता का मरम्मत एवं समय-समय पर सफाई कार्य संवेदक द्वारा किया जायेगा। बालू परिवहन के दौरान धूलकण उड़कर आस-पास नहीं गिरे। इसके लिए बालू परिवहन के दौरान वाहन को तिरपाल से ढक कर ही चलाया जायेगा एवं नियमित रूप से रास्ता पर जल का छिड़काव किया जायेगा। बालू खनन परियोजना शुरू होने पर श्रमिकों के लिए अस्थायी विश्राम स्थल का निर्माण किया जायेगा। सड़क के दोनों ओर वृक्षारोपण एवं जल छिड़काव का कार्य किया जायेगा। उनके द्वारा बताया गया कि प्राथमिकता के आधार पर योग्यतानुसार स्थानीय लोगों को रोजगार प्रदान किया जायेगा। प्रत्यक्ष एवं अप्रत्यक्ष रूप से रोजगार का सृजन होगा।
4.	मो० तनवीर आलम, पिता स्व० अब्दुल वाहिद, ग्राम-बेलवा, जिला-किसनगंज।	इनके द्वारा सुझाव दिया गया कि बालू खनन स्थल से मुख्य सड़क तक आने हेतु सड़क पर जल छिड़काव एवं दोनों ओर वृक्षारोपण किया जाना चाहिए। पर्यावरणीय सलाहकार द्वारा बताया गया कि बालू परिवहन के दौरान प्रयुक्त होने वाले रास्ते का रख-रखाव एवं मरम्मत कार्य नियमित रूप से संवेदक द्वारा किया जायेगा। सड़क के दोनों ओर वृक्षारोपण एवं जल छिड़काव का कार्य किया जायेगा।

7.2 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.

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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.
- ✓ 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

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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
- Decision making to control such situation
- Evaluating effectiveness of control measures

Table 7.3, 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	Likely	Known to have occurred "has	C2	Permanent disability	Major

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	(often)		happened"			
L3	Has happened (occasionally)	Possible	Could occur or "heard of it happening"	C3	Medical/hospital or lost time	Moderate
L4	Happens irregularly (almost never)	Unlikely	Not likely to occur	C4	First aid or no lost time	Minor
L5	Improbable (never)	Rare	Practically impossible	C5	No injury	Insignificant

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

Table 7.4, Qualitative Risk Assessment

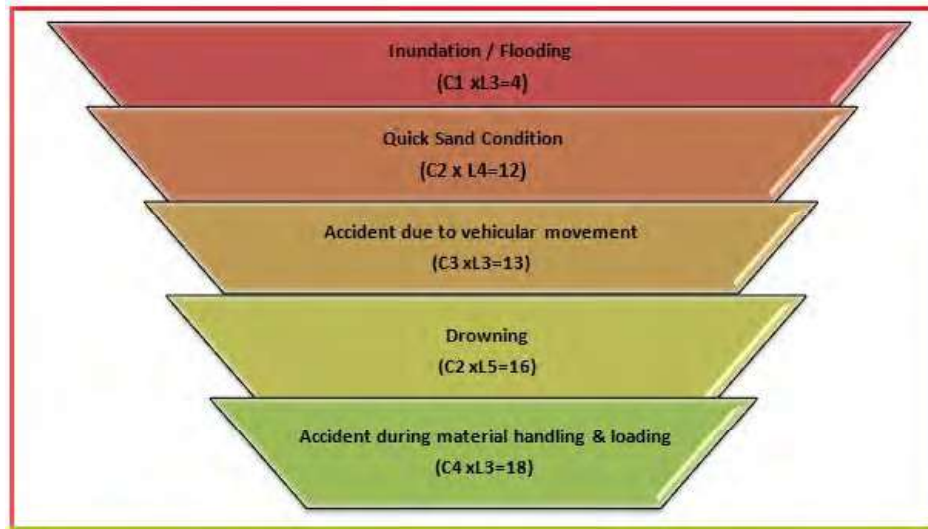
Risk Rank	L1	L2	L3	L4	L5
Likelihood Consequence	Almost certain	Likely	Possible	Unlikely	Rare
C1 Catastrophic	1	2	4	7	11
C2 Major	3	5	8	12	16
C3 Moderate	6	9	13	17	20
C4 Minor	10	14	18	21	23
C5 Insignificant	15	19	22	24	25

RISK RATING:

HIGH RISK 1-6	MEDIUM RISK 7-15	LOW RISK 16-25
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7.3 RISK ASSESSMENT

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

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

The Risk rating of such hazards is as follows:

7.3.1 INUNDATION/FLOODING

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

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

Measures to prevent consequences of inundation/flooding

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

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

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7.3.2 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.

7.3.3 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.
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.

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7.3.4 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.

7.3.5 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.

7.5 DISASTERS & ITS MANAGEMENT

7.5.1 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.

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2. Earth Quake: Kishanganj District like other areas of Bihar is moderately vulnerable to earthquake as it exists in Zone V. 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.

7.5.2 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 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

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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 Kishanganj District has been prepared through incorporation of the features of Community Based Disaster Management and involvement of local governments, Municipalities etc.

7.6 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

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.

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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 **73 people** will get employment in this mining project for a period of ten months in a year. It is a positive impact of the project since it is providing employment opportunities to the local people. The project will not affect the vulnerable groups of people.

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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 Mahananda, & Kankai 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 have been law & order problem if the workers were migrants and lived in shanties closed

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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 Mining Project (Kishanganj Unit- 03 Sand Ghat) at Riverbed of Mahananda & Kankai River at Village- Andwakol, Lohaghara, Kanchanbari, Tegharia, Anchal– Kishanganj, TeraGachh, Bahadurganj, District – Kishanganj (Bihar) provides employment to local people who are in search of the same. The granting of environment clearance to make mining of sand legally valid and it will generate revenue for the state. It is expected that prospective entrepreneurs will venture to set up industrial units in the vicinity in the near future making the area a mixed society, dependent on industry, trade and business. With the implementation of the project the occupational pattern of the people in the area will change making more people engaged in mining, industrial and business activities rather in agriculture only. The study area is still lacking in health and educational facilities. It is expected that same will improve to a great extent with opening of the project and associated industrial & business activities.

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8.0 GENERAL

Various benefits are envisaged while planning for the mining of sand from Mahananda & Kankai 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 Mahananda & Kankai 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



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

Table-8.1, Budget for Public Health

S. No.	Activities recommended for communities level services	Tentative cost (Lakh Rs) For Each Mine
1	Awareness campaigns regarding health issues in the nearby villages.	1.0
2	Provide free health checkups & medicines to the nearby villagers of the project site.	1.0
3	Assistance to set up a temporary health center during the lease tenure.	0.5
	Total	2.5

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

Table 8.2, Budget for Occupational Health

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

8.3 ENVIRONMENTAL BENEFITS

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



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- d. Protection of crops being cultivated along the bank.
- e. A check on illegal mining activity.

8.4 CORPORATE ENVIRONMENTAL RESPONSIBILITY

2% of capital cost of the project cost will be allotted for the Corporate Environmental Responsibility as per OM dated 1st May 2018. The following has been proposed considering the needs & demand of the people.

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

CER COST is Rs.. 5,35,10,000 /- x 2% = Rs. 10,70,200 /-

Sl. No.	Activity	Approx Cost (in Rs.)
1	Provision of libraries in primary school in village Andwakol, Lohaghara, Kanchanbari, Tegharia,	2,00,000
2	Distribution of sewing machines in villages Andwakol, Lohaghara, Kanchanbari, Tegharia,	2,00,000
3	Health camp and medical assistance (Free health check-ups, distribution of medicines)	2,00,000
4	Street Lights / Solar Lights (Solar/LED lights on village roads)	2,00,000
5	Village Panchayat Building / Community Hall Support (Repairs, painting, furniture)	2,70,200
TOTAL		10,70,200 /-

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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:

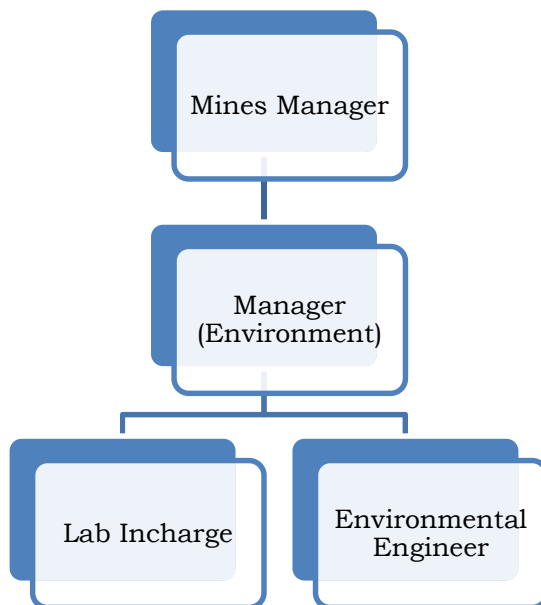


Figure 9.1 Environment Management Cell



EIA/EMP for the Sand Mining Project (Kishanganj Unit- 03 Sand Ghat) at Riverbed of Mahananda & Kankai River at Village- Andwakol, Lohaghara, Kanchanbari, Tegharia, Anchal– Kishanganj, TeraGachh, Bahadurganj, District – Kishanganj (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.



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

9.3 WATER POLLUTION CONTROL MEASURES

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

- Water requirements for drinking, plantation and dust suppression will be met by tanker supply on the daily basis.
- Local people will be employed and no permanent housing will be done so no permanent drainage pattern for sewerage system is required as domestic sewage shall be disposed off into septic tank followed by soak pits.
- Mining in the area will be done up to depth of 1.0m maximum from the surface level well above the ground water table, therefore impact on water regime is not anticipated.
- Monitoring of water quality of nearby surface water, ground water and domestic water will be conducted once in every season except monsoon to evaluate the performance of the mitigation measures.

9.4 NOISE POLLUTION CONTROL MEASURES

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



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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.

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

9.5 BIOLOGICAL ENVIRONMENT

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

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



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- No discard of food, polythene waste etc. will be allowed in the lease area which would distract/attract the wildlife.
- No night time mining will be allowed which may catch the attention of wild life.
- Workers will be made aware of the importance of the wildlife and signage will be displayed at the sensitive areas to caution the workers & other passerby.
- **Greenery development:** The project will not lead to any tree cutting. However, 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. 980 trees will be planted around haul road during the plan period.
- The trees proposed for plantation are:
- As per Sustainable Sand Management & Mining Guidelines 2016, minimum 05 plant per hectare will be proposed for development of greenbelt but in this project 10 plants per hectare will be proposed for better condition of environment.
- Total Number of plants for Kishanganj Unit- 03 Sand Blocks are given below.

Year	Plantation along both sides of approach road	No. of plants distributed in Schools, Anganwadi or village Panchayat
1 st Year	Excavation for plantation	
2 nd year	200	780
3 rd year	Care / protection of plants	
4 th year		
5 th Year		
Total	980 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



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1	<i>Acacia nilotica</i>	Babul	Tolerant to SO ₂
2	<i>Mangifera indica</i>	Aam	Tolerant to Dust control
3	<i>Tectona grandis</i>	Sagon	Tolerant to Dust control
4	<i>Azadirachta indica</i>	Neem	Tolerant to SO ₂
5	<i>Pithecolibium dulce</i>	Jungle jalebi	Tolerant to SO ₂ and Dust control
6	<i>Scigium cumuni</i>	Jamun	To stop river bank erosion
7	<i>Terminalia arjuna</i>	Arjun	To stop river bank erosion
8	<i>Populus ciliate</i>	Popular	Fast growing, broad leaf

9.6 LAND USE PLANNING

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

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

9.7 OCCUPATIONAL HEALTH & SAFETY

Occupational safety and health is very closely related to productivity and good employer-employee relationship. The factor of occupational health in Sand Ghat of Geeta Enterprises



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Prop.- Geeta Sarswat S/o- Ram Pratap Sharma Add.- C-24 Narayan Vihar Colony, Bikaner, Rajasthan, Pin Code- 334001. (Kishanganj unit- 03 Sand Ghat), is mainly dust. Safety of employees during operation and maintenance etc. shall be as per Mines rules and regulations. To avoid any adverse effect on the health of workers due to various pollutants, sufficient measures relating to safety and health will also be practiced:

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



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9.9 ENVIRONMENT POLICY

Geeta Enterprises, Prop.- Geeta Sarswat S/o- Ram Pratap Sharma Add.- C-24 Narayan Vihar Colony, Bikaner, Rajasthan, Pin Code- 334001. (Kishanganj unit- 03 Sand Ghat), of Sand Ghat believes that responsible environmental stewardship comprises diligent application of well-established natural resource management, controls and practices for the protection of the mined out land, preservation of biodiversity and proper disposal of waste if any following the best environmental practices during the process of mining.

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



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- 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.

Table 9.2, Budget of EMP

Sl. No	Description	Capital Cost (lakh)	Recurring Cost (lakh)
1	Pollution Control & Dust Suppression	--	1.5
2	Baseline Monitoring i) Air ii) Water iii) Soil iv) Noise	--	2.0
3	Plantation and salary for one gardener (part time basis).	9.80	2.0
4	Haul road Maintenance Cost	10.0	8.0
TOTAL		19.80	13.5

Note: *980 plants * 1000 Rs (for each plants including hedges and fences) =Rs 9,80,000/-

- 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 *4.0 km haul road) = 10,00,000 /-



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10.0 INTRODUCTION

10.1 Purpose of the Report

Environmental Impact Assessment report is prepared to comply with the Terms of Reference (TOR) received from SEIAA, Bihar under EIA notification of the MoEF&CC dated 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 (Kishanganj Unit- 03 Sand Ghat) Sand Mining Project (Kishanganj Unit- 03 Sand Ghat) at Riverbed of Mahananda & Kankai River at Village- Andwakol, Lohaghara, Kanchanbari, Tegharia, Anchal– Kishanganj, TeraGachh, Bahadurganj, District – Kishanganj, Bihar. LOI has been given to Geeta Enterprises; Prop.- Geeta Sarswat vide 302/Jila khana dated. 15.04.2023 by District Mining Office, Kishanganj.

The Proposed Production is 588000 cum/year or 1501680 Tonnes per annum and Area of the project site is 98.0 ha.

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

10.3 BRIEF DESCRIPTION OF PROJECT

The proposed project is Open Cast Semi-Mechanized Mining of Sand with a proposed production of 588000 cum/year or 1501680 Tonnes per annum. The project has been proposed by (Geeta Enterprises, Prop.- Geeta Sarswat S/o- Ram Pratap Sharma Add.- C-24 Narayan Vihar Colony, Bikaner, Rajasthan, Pin Code- 334001)

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The proposed project is over an area 98.0 ha on Mahananda & Kankai River at (Kishanganj Unit- 03 Sand Ghat) Sand Mining Project (Kishanganj Unit- 03 Sand Ghat) at Riverbed of Mahananda & Kankai River at Village- Andwakol, Lohaghara, Kanchanbari, Tegharia, Anchal– Kishanganj, TeraGachh, Bahadurganj, District – Kishanganj, Bihar.

As per MoEF, New Delhi Gazette dated 14th September 2006 and amended thereof, the proposed mining project is categorized as Category 'B-1'.

The estimated project cost for the proposed project is Rs- 5,35,10,000 /- (including auction cost).

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

**Table: 10.1 Mine lease Co-ordinates
Kishanganj Cluster- 03 Sand Ghat**

Name of Ghat	Area (Ha)	Coordinates		Ghat/ Address	River Name
Andwakol Sand Ghat	30.0	A	26°12'59.01"N 87°57'1.87"E	Vill: Andwakol, PO: PS &Anchal: Kishanganj Dist: Kishanganj Bihar.	Mahananda
		B	26°12'58.00"N 87°57'17.07"E		
		C	26°12'34.18"N 87°57'16.97"E		
		D	26°12'34.26"N 87°57'3.55"E□		
Lohaghara Sand Ghat	25.0	A	26°25'26.97"N 87°46'50.58"E	Vill: Lohaghara, PO: Dhantola, PS: GarwanTola, Anchal: TeraGachh, Dist: Kishanganj Bihar	Kankai
		B	26°25'18.89"N 87°46'58.73"E		
		C	26°25'3.08"N 87°46'38.15"E		
		D	26°25'11.46"N 87°46'30.30"E		
Kanchan Bari Sand Ghat	25.0	A	26°23'23.99"N 87°45'17.58"E	Vill: Kanchanbari & PO: Korobari, PS: Korobari &Anchal: Teragachh, Dist: Kishanganj Bihar.	Kankai
		B	26°23'21.83"N 87°45'26.12"E		
		C	26°22'51.73"N 87°45'16.19"E		
		D	26°22'53.79"N 87°45'6.84"E□		
Tegharia Sand Ghat	18.0	A	26°15'40.08"N 87°44'47.40"E	Vill: Tegharia, PO: Bisanpur, PS & Anchal: Bahadurganj, Dist:	Kankai
		B	26°15'34.83"N		

EIA/EMP for the Sand Mining Project (Kishanganj Unit- 03 Sand Ghat) at Riverbed of Mahananda & Kankai River at Village- Andwakol, Lohaghara, Kanchanbari, Tegharia, Anchal- Kishanganj, TeraGachh, Bahadurganj, District – Kishanganj (Bihar).

			87°44'58.60"E	Kishanganj Bihar	
	C		26°15'20.98"N 87°44'50.74"E		
	D		26°15'27.18"N 87°44'38.02"E		

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	Andwakol, Lohaghara, Kanchanbari, Tegharia
b	District	Kishanganj
c	State	Bihar
2	Elevation above	Mahananda River Andwakol Sand Ghat (75 ASML to 74 ASML) Kankai River Lohaghara Sand Ghat (90 ASML to 89 ASML) Kankai River Kanchan Bari Sand Ghat (85 ASML to 84 ASML) Kankai River Tegharia Sand Ghat (73 ASML to 72 ASML)
3	Nearest National /State Highway	NH 27 at distance of approx. 10.0 km in South-East direction from Andwakol Sand Ghat & SH- 99 at distance of approx. 5 Km in South -East from Tegharia Sand Ghat.
4	Nearest Railway station	Kishanganj Railway station at distance of 12.40 km in South East from Andwakol Sand Ghat & Kishanganj Railway station at distance of 26.50 km in South-East from Tegharia Sand Ghat
5	Nearest Airport	JPN International Airport at a distance of 276 km in SW direction from Tegharia Sand Ghat.
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.

EIA/EMP for the Sand Mining Project (Kishanganj Unit- 03 Sand Ghat) at Riverbed of Mahananda & Kankai River at Village- Andwakol, Lohaghara, Kanchanbari, Tegharia, Anchal– Kishanganj, TeraGachh, Bahadurganj, District – Kishanganj (Bihar).

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

10.4 PROJECT DESCRIPTION

10.4.1 Salient features of mine lease

The salient features of mine lease are given below:

Table-10.3: Salient features of mine lease

Sr. No.	Parameter	Description
1	Name of the Mine	Sand Mining Project (Kishanganj Unit- 03 Sand Ghat) at Riverbed of Mahananda & Kankai River at Village- Andwakol, Lohaghara, Kanchanbari, Tegharia, Anchal– Kishanganj, TeraGachh, Bahadurganj, District – Kishanganj (Bihar).
2	Mining Capacity	588000 cum per annum 1501680 TPA
3	Method of mining	Open cast semi-mechanized mining/OTFM
4	Total ML area	98.0 ha
5	Depth of mining	1.0 m depth
6	Manpower	73 persons
9	Water Requirement	12.50 KLD
10	Source of Water	Tanker/ Nearby village.

10.4.2 Mineral Reserves and production

Mineable reserves have been computed up to 1 m depth from surface. The volume multiplied by Specific Gravity is taken Mahananda River 2.54 (g/cm³) & Kankai River 2.56 (g/cm³) to get the tonnage.

EIA/EMP for the Sand Mining Project (Kishanganj Unit- 03 Sand Ghat) at Riverbed of Mahananda & Kankai River at Village- Andwakol, Lohaghara, Kanchanbari, Tegharia, Anchal- Kishanganj, TeraGachh, Bahadurganj, District – Kishanganj (Bihar).

Table 10.4 Classification Mineral Reserves

Sand Ghat	Area (Hect)	Geological Reserves (m3)	Mineable Reserves (m3)	Annual Permitted Reserve As per LoI (m3)	Annual Permitted Reserve (tonnes)
Andawakol	30.0	300000	278565	180000	457200
Lohagara	25.0	250000	232232	150000	384000
Kanchabari	25.0	250000	229440	150000	384000
Tegharia	18.0	180000	111120	108000	276480
Kishanganj Unit 03	98.0	980000	851357	588000	1501680

The annual extractable RBM comes to 588000 cum or 1501680 tonnes. It will be replenished after rainy season every year.

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 Kishanganj Unit- 03 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 much more. As the lease period is only 5 (Five) years, some of the area will be left un-worked at the end of lease period.

(i) Final Slope Angle to Be Adopted: Height of the bench is limited to 1 m while width of individual bench shall be kept 6.0 m. River bank side will be protected by working in dry part of the river and by leaving safety distance of the width of the river of 5 meter. Bank side natural slope will not be disturbed. This will prevent collapse of bank and erosion. However, the height of the bank with respect to river bed is varying from 3-4 meters.

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

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(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. 980 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

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

10.7.2 Meteorology

Meteorological data at the site was monitored during December 2024 to February 2025 representing winter season. It was observed that the during study period, temperature ranged from 14 °C to 29°C.

10.7.3 Ambient Air Quality

Ambient Air Quality Monitoring (AAQM) has been carried out at 17 locations. The minimum and maximum level of PM10 recorded within the study area was in the range of 50.23 µg/m³

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to $88.34 \mu\text{g}/\text{m}^3$. The Particulate Matter ($\text{PM}_{2.5}$) range of $24.25 \mu\text{g}/\text{m}^3$ to $49.38 \mu\text{g}/\text{m}^3$. Sulphur dioxide (SO_2) between $5.37 \mu\text{g}/\text{m}^3$ to $13.45 \mu\text{g}/\text{m}^3$. Oxides of Nitrogen (NO_2) between $9.89 \mu\text{g}/\text{m}^3$ to $20.6 \mu\text{g}/\text{m}^3$. The results thus obtained indicate that the concentrations of PM_{10} , SO_2 and NO_2 in the ambient air are well within the National Ambient Air Quality (NAAQ) standards for Residential and Rural areas.

10.7.4 Water quality

The Ground water sampling was taken from 08 locations. The analysis results indicate that the pH ranges between 7.16 to 7.78. Total hardness varies from 210 mg/l to 280 mg/l & Total dissolved solids vary from 498 mg/l to 680 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 **51.1 dB(A) to 58.8 dB(A)** respectively. The minimum & maximum noise levels at night time were found to be **38.6 dB (A) & 43.5dB (A)** respectively.

10.7.6 Ecological Environment

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

10.8 ANTICIPATED ENVIRONMENTAL IMPACTS

10.8.1 Impact on Air Environment

The proposed mining activities loading and movement of other transport vehicles used in mining will generate dust (SPM/RSPM). Proper water sprinkling shall be carried out at the mine site. The mineral will be transported by road through covered tarpaulin trucks/tippers to reduce the fugitive emission caused by the wind.

10.8.2 Impact on Water Environment

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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 Mahananda, Kankai River. Hence, none of the project activities affect the water environment directly. In the project, it is not proposed to divert or truncate any stream in monsoon season only. No proposal is envisaged for pumping of water either from the *River* (in monsoon) or tapping the ground water.

10.8.3 Impact on Water Quality

Analysis results of water samples collected from the buffer zone indicate that the pH, total dissolved solids (TDS) are well below the prescribed limits.

No wastewater generation is envisaged due to the mining operations. The sanitary wastewater will be sent to septic tanks.

10.8.4 Impact on Noise Environment

The proposed mining activity is semi-mechanized/OTFM in nature. No drilling & blasting is envisaged for the mining activity. Hence, the only impact is anticipated is due to movement of vehicles deployed for transportation of minerals. The vehicles will be maintained in good running condition so that noise will be reduced to minimum possible level.

10.8.5 Impact on Land Environment

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

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

10.8.6 Impact on flora and fauna

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

10.8.7 Impact on Socio - Economic Aspects

The mine area does not cover any habitation. Hence the mining activity does not involve any displacement of human settlement. No public buildings, places, monuments etc exist within the lease area or in the vicinity. The mining operation will not disturb/ relocate any village or need resettlement. Thus no adverse impact is anticipated. The impact of mining activity in the area is positive on the socio-economic environment of the region. Sand mining will be providing employment to local people whenever there is requirement of manpower.

10.9 ENVIRONMENTAL MANAGEMENT PLAN

- Extraction will be done from the bed leaving safety zone from bank.
- The maximum working depth will remain above ground water table of the area.
- Provide health facilities to the workers & surrounding people in the impact area to reduce the health impacts.
- Ensuring wildlife protection & arranging awareness campaigns for the same.
- Minimize activities that release fine sediment to the river.
- Effective mitigation measures will be adopted to minimize disturbance during transportation & handling of minerals:
- Establishment of reclamation program with plantation of local/native & fast growing species

EIA/EMP for the Sand Mining Project (Kishanganj Unit- 03 Sand Ghat) at Riverbed of Mahananda & Kankai River at Village- Andwakol, Lohaghara, Kanchanbari, Tegharia, Anchal– Kishanganj, TeraGachh, Bahadurganj, District – Kishanganj (Bihar).

- Establishment of restoration plan during the closure of mine at the onset of monsoon season.
- Establishment of effective Disaster Management Plan to take timely precautionary measures to avoid effects of impending disasters.
- Establishment of effective Monitoring Program monitored by Environment Management Cell.

10.10 ENVIRONMENTAL MONITORING PROGRAM

Table 10.5: Post project environmental monitoring

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

10.11 ENVIRONMENTAL PROTECTION COST

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

Table 10.6: Cost of Environmental Protection Measures
Budget of EMP (Kishanganj Unit- 03 Sand Ghat)

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

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2	Baseline Monitoring i) Air ii) Water iii) Soil iv) Noise	--	2.0
3	Plantation and salary for one gardener (part time basis).	9.80	2.0
4	Haul road Maintenance Cost	10.0	8.0
TOTAL		19.80	13.5

Note: *980 plants * 1000 Rs (for each plants including hedges and fences) =Rs 9,80,000/-

- 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 *4.0 km haul road) = 10,00,000 /-

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

Public hearing was successfully executed on date 26.06.2025 at 11:00 AM, at At Block Office Kishanganj District – Kishanganj (Bihar) as per the guidelines given in EIA Notification 14th September' 2006 and its subsequent amendment.

EIA/EMP for the Sand Mining Project (Kishanganj Unit- 03 Sand Ghat) at Riverbed of Mahananda & Kankai River at Village- Andwakol, Lohaghara, Kanchanbari, Tegharia, Anchal- Kishanganj, TeraGachh, Bahadurganj, District – Kishanganj (Bihar).

10.13 PROJECT BENEFITS

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

Social Benefits: Increase in Employment Potential, Contribution to the Exchequer, Increased Health related activities, Educational attainments & Strengthening of existing community facilities.

Environmental Benefits:

- Controlling river channel and protection of banks.
- Reducing submergence of adjoining agricultural lands due to flooding.
- Reducing aggradation of river level.
- A check on illegal mining activity.

Corporate Social Responsibility

2% of capital cost of the project cost will be allotted for the Corporate Environmental Responsibility as per OM dated 1st May 2018. The following has been proposed considering the needs & demand of the people.

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

CER COST is Rs. 5,35,10,000 /- x 2% = Rs. 10,70,200 /-

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.

EIA/EMP for the Sand Mining Project (Kishanganj Unit- 03 Sand Ghat) at Riverbed of Mahananda & Kankai River at Village- Andwakol, Lohaghara, Kanchanbari, Tegharia, Anchal- Kishanganj, TeraGachh, Bahadurganj, District – Kishanganj (Bihar).

CONSULTANTS ENGAGED

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
Creating an Ecospaces for Quality

NABET

**National Accreditation Board
for Education and Training**

Certificate of Accreditation

P and M Solution, Noida

C-88, Sector-65, Noida, Uttar Pradesh- 201301

The organization is accredited to upgraded as **Category-A** under the QCI-NABET Scheme for Accreditation of EIA Consultant Organization, Version 3: for preparing EIA-EMP reports in the following Sectors –

S.No	Sector Description	Sector (as per)		Cat.
		NABET	MoEFCC	
1	Mining of minerals including opencast/underground	1	1 (a) (i)	A
2	River Valley projects	3	1 (c)	A
3	Coal washeries	6	2 (a)	B
4	Metallurgical industries (ferrous & non-ferrous)	8	3 (a)	A
5	Cement plants	9	3 (b)	A
6	Highways	34	7 (f)	A
7	Building and construction projects	38	8 (a)	B
8	Townships and Area development projects	39	8 (b)	B

Note: Names of approved EIA Coordinators and Functional Area Experts are mentioned in RAAC minutes dated July 18, 2023, and Supplementary Assessment minutes dated May 17, 2024, posted on QCI-NABET website.

The Accreditation shall remain in force subject to continued compliance to the terms and conditions mentioned in QCI-NABET's letter of accreditation bearing no QCI/NABET/ENV/ACC/23/2846 dated August 09, 2023 and QCI/NABET/ENV/ACC/24/3300 dated July 5, 2024. The accreditation needs to be renewed before the expiry date by P and M Solution, Noida following due process of assessment.

NABET

Sr. Director, NABET
Dated: July 5, 2024

Certificate No.
NABET/EIA/2326/RA 039R_Rev.01

Valid up to
May 07, 2026

For the updated List of Accredited EIA Consultant Organizations with approved Sectors please refer to the QCI-NABET website.

EIA/EMP for the Sand Mining Project (Kishanganj Unit- 03 Sand Ghat) at Riverbed of Mahananda & Kankai River at Village- Andwakol, Lohaghara, Kanchanbari, Tegharia, Anchal- Kishanganj, TeraGachh, Bahadurganj, District – Kishanganj (Bihar).




National Accreditation Board for
Testing and Calibration Laboratories

NABL

CERTIFICATE OF ACCREDITATION

NOIDA TESTING LABORATORIES LLP

has been assessed and accredited in accordance with the standard

ISO/IEC 17025:2017

"General Requirements for the Competence of Testing & Calibration Laboratories"

for its facilities at

GT - 20, SECTOR -117, NOIDA, GAUTAM BUDDHA NAGAR, UTTAR PRADESH, INDIA

in the field of

TESTING

Certificate Number: TC-15964

Issue Date: 03/12/2025

Valid Until: 02/12/2029

This certificate remains valid for the Scope of Accreditation as specified in the annexure subject to continued satisfactory compliance to the above standard & the relevant requirements of NABL.
(To see the scope of accreditation of this laboratory, you may also visit NABL website www.nabl-india.org)

Name of Legal Entity: NOIDA TESTING LABORATORIES LLP

Signed for and on behalf of NABL




Anuja Anand
Director



Dr. Ramanand N. Shukla
Chief Executive Officer

CHAPTER-11**DISCLOSURE OF CONSULTANT**

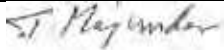
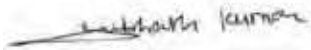
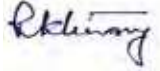
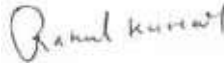
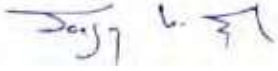
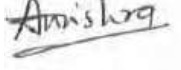
EIA/EMP for the Sand Mining Project (Kishanganj Unit- 03 Sand Ghat) at Riverbed of Mahananda & Kankai River at Village- Andwakol, Lohaghara, Kanchanbari, Tegharia, Anchal- Kishanganj, TeraGachh, Bahadurganj, District – Kishanganj (Bihar).

Lab Certificate**Consultant Contact Details:**

P and M Solution

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Mobile No. - 8377871554, 8826287364

S No	Name	EC/FAE	DETAILS	Signatures
1	Pravin Kumar Sinha	EC	EC	
2	Tapan Majumdar	FAE	HG, GEO	
3	Subhash Kumar	FAE	AP,SC	
4	Manoj Kumar	FAE	EB	
5	R K Tiwary	FAE	RH,WP	
6	Rahul Kumar	FAE	AQ	
7	Sanjay Kumar	FAE	NV	
8	Abhay Nath Mishra	FAE	SE	
9	Mayank Kumar	FAE	SW	
10	Poonam Kumari Mangalam	FAE	LU	



MINISTRY OF ENVIRONMENT, FOREST AND CLIMATE CHANGE - GOVERNMENT OF INDIA



THE ISSUES AND MANAGEMENT OF MINING IN CLUSTER

In I.A. No. 12-13 of 2011 in SLP Nos. 729-731 / 2011, 21833 / 2009, 12498-499 / 2010, SLP (C) CC ... 16157 / 2011 & CC 18235 / 2011 (Deepak Kumar and Ors. Vs. State of Haryana and Ors. etc.) Hon'ble Supreme Court in its order dated 27.02.2012 on the subject of cluster has quoted the submission of affidavit dated 23.11.2011 of MOEFCC. It says that "The Ministry is of the opinion that where the mining area is homogeneous, physically proximate and on identifiable piece of land of 5 ha. or more, it should not be broken into smaller sizes to circumvent the EIA Notification, 2006 as the EIA Notification, 2006 is not applicable to the mining projects having lease area of less than 5 ha. The Report of Committee on Minor Minerals, under the Chairmanship of Secretary (E&F) with representatives of various state governments as members including the State of Haryana and Rajasthan recommended a minimum lease size of 5 ha for minor minerals for undertaking scientific mining for the purpose of integrating and addressing environmental concerns. Only in cases of isolated discontinued mineral deposits in less than 5 ha, such mining leases may be considered keeping in view the mineral conservation".

The order further quotes that "Cluster of Mine Approach for Small Sized Mines: Considering the nature of occurrence of minor mineral, economic condition of the lessee and the likely difficulties to be faced by Regulatory Authorities in monitoring the environmental impacts and implementation of necessary mitigation measures, it may be desirable to adopt cluster approach in case of smaller mine leases being operated presently. Further these clusters need be provided with processing / crusher zones for forward integration and minimizing excessive pressure on road infrastructure. The respective State Governments / Mine Owners Association may facilitate implementation of Environment Management Plans in such cluster of mines." The order has further quoted the letter dated 1.06.2010 written by the then Minister of Environment, Forest and Climate Change which says on the subject that "A cluster approach to mines should be taken in case of smaller mines leases operating currently". The Hon'ble Court has ordered that "The State of Haryana and various other States have not so far implemented the above recommendations of the MoEF or the Guideliness issued by the Ministry of Mines before issuing auction notices granting short term permits by way of auction of minor mineral boulders gravel, sand etc., in the river beds and elsewhere of less than 5 hectares. We therefore, direct to all the States, Union Territories, MoEF and the Ministry of Mines to give effect to the recommendations made by MoEF in its report of March 2010 and the model Guideliness framed by the Ministry of Mines, within a period of six months from today and submit their compliance reports."

"We in the meanwhile, order that leases of minor mineral including their renewal for an area of less than five hectares be granted by the States/ Union Territories only after getting environmental clearance from the MoEF."



The Ministry vide O.M. No. L-11011/47/2011-IA.II (M) dated 18th May 2012 said that "In order to ensure compliance of the above referred order of the Hon'ble Supreme Court dated 27.02.2012, it has now been decided that all mining projects of minor minerals including their renewal, irrespective of the size of the lease would henceforth require prior environment clearance. Mining projects with lease area up to less than 50 ha including projects of minor mineral with lease area less than 5 ha would be treated as Category 'B' as defined in EIA Notification, 2006 and will be considered by the respective SEIAAs notified by MoEF and following the procedure prescribed under EIA Notification, 2006."

On the issue of cluster, the Notifications No. S.O. 2731 (E) dated 09.09.2013 and Notification No. S.O. No. 2601 (E) of 07.10.2014 were issued.

The above Notifications in Schedule at Item No. 1 (a) in Conditions mentions that "General Conditions shall apply except for projects or activity of less than 5 ha of mining lease area:

Provided that the above exception shall not apply for project or activity if the sum total of the mining lease area of the said project or activity and that of existing operating mines and mining projects which were accorded environment clearance and are located within 500 meters from the periphery of such projects or activity equals or exceeds 5 ha. The Office Memorandum No. J-13012/12/2013-IA-II (1) dated 24.12.2013 is about Guideliness for consideration of proposals for grant of environment clearance under Environment Impact Assessment Notification 2006 and its amendments - regarding categorization of Category 'B' projects/ activities into Category 'B1' & 'B2'.

The above O.M. besides categorizing the Category B into Category B1 & B2 also has directions on mining of brick earth / ordinary earth and river sand mining. These provisions are as follows:

"Mining of minor minerals:

As of now, mining projects of minor minerals with less than 50 hectare of mining lease areas are categorized as Category 'B' as per Notification S.O. 2731 (E) dated 9th September 2013. Also vide O.M. No. L-11011/47/2011-IA-II (M) dated 24.06.2013, Guideliness has been issued regarding categorization of mining projects of brick earth and ordinary earth having lease areas less than 5 hectare as Category 'B2' subject to stipulations stated therein.

In the above backdrop, the projects of mining of minor minerals, categorized as Category 'B' are hereby categorized as 'B2' as per the following:

- (i) 'Brick Earth' / 'Ordinary Earth' mining projects having lease area less than 5 ha will be considered for granting EC as per the aforesaid Guideliness issued by MOEF on 24.06.2013.
- (ii) 'Brick Earth' / 'Ordinary Earth' mining projects with mining lease area more than equal to 5 ha but less than equal to 25 ha and all other minor , mineral mining projects with mining lease area < 25 ha, except for river sand mining projects will be appraised as Category 'B2' projects.



These projects will be appraised based on the following documents:

- (a) Form-1 as per the Appendix-I under the EIA Notification 2006
- (b) Pre-feasibility report of the project
- (c) Mining plan approved by the authorized agency of the concerned State Government.

Provided in case the mining lease area is likely to result into a cluster situation, i.e. if the periphery of one lease area is less than 500 meter from the periphery of another lease area and the total lease area equals or exceeds 25 ha, the activity shall become Category 'B1' Project under the EIA

Notification, 2006. In such a case, mining operations in any of the mine lease areas in the cluster will be allowed only if the environmental clearance has been obtained in respect of the cluster.

About river sand mining it says that:

- (iii) No river sand mining project, with mine lease area less than 5 ha, may be considered for granting EC. The river sand mining projects with lease area more than equal to 5 ha but less than 25 ha will be categorized as 'B2'. In addition to the requirement of documents, as brought out above under sub-para (ii) above for appraisal, such projects will be considered subject to the following stipulations:
 - (a) The mining activity shall be done manually. The depth of mining shall be restricted to 3 m / water level, whichever is less.
 - (b) For carrying out mining in proximity to any bridge and / or embankment, appropriate safety zone shall be worked out on case to case basis to the satisfaction of SEAC / SEIAA, taking into account the structural parameters, locational aspects, flow rate etc., and no mining shall be carried out in the safety zone so worked out. No in-stream mining shall be allowed.
 - (c) The mining plan approved by the authorized agency of the State Government shall inter-alia include study to show that the annual replenishment of sand in the mining lease area is sufficient to sustain mining operations at levels prescribed in the mining plan and that the transport infrastructure is adequate to transport the mines material. In case of transportation by road the transport vehicles will be covered with the tarpaulin to minimize dust/ sand particle emissions.
 - (d) EC will be valid for mine lease period subject to a ceiling of 5 years.

Provided, in case the mining lease area is likely to result into a cluster situation i.e. if the periphery of one lease area is less than 1 km from the periphery of another lease area and total lease area equals to or exceeds 25 ha., the activity shall become Category 'B1' Projects under EIA Notification, 2006. In such a case, mining operation in any of the mine lease area in the cluster will be allowed only if the environment clearance has been obtained in respect of the cluster.



The NGT order dated 13.01.2015 in O.A. No. 123 of 2014 and M.A. No. 419 of 2014 has following directions on the issue of cluster: "In light of the judgment of the Supreme Court and what has emerged from the various cases that are subject matter of this Judgment, we direct the Ministry of Environment and Forest to formulate a uniform cluster policy in consultation with the States for permitting minor mineral mining activity including its regulatory regime, in accordance with law.

Notification S.O. 1559 (E) dated 25th June 2014 provides that "Any project or activity specified in Category 'B' will be appraised at the Central Level as Category 'A', if located in whole or in part within 5 km. from the boundary of: (i) Protected Areas; (ii) CEPI; (iii) ESA; (iv) I n t e r - s t a t e boundaries or international boundaries".

The NGT vide its order dated 13.01.2015 has quashed the Notification dated 9th September 2013, but similar provision on clusters exists in Notification dated 7th October 2014.

The EIA Notification 2006, as amended makes it clear that projects in respect of non-coal mine leases, where the area is more than equal to 50 hectares would require prior Environmental Clearance from MoEFCC, while the projects of area less than 50 hectares would be appraised for prior Environmental Clearance at the level of SEIAA.

The EIA Notification of 2006 in Clause 7 specifies the stages through which projects for grant of Environmental Clearance are required to be passed and processed. The stages include Screening, Scoping, Public Consultation and Appraisal, upon which, the Expert Appraisal Committee makes recommendation to the MoEF/SEIAA. Under 'Screening', this Clause 7 also provides for a further bifurcation of projects falling under category 'B' into 'B 1' and 'B 2'. The relevant part of Clause 7, dealing with this aspect, reads as under: "Stage (1) - Screening (Only for Category 'B' projects and activities): In case of Category 'B' projects or activities, this stage will entail the scrutiny of an application seeking prior environmental clearance made in Form 1 by the concerned State level Expert Appraisal Committee (SEAC) for determining whether or not the project or activity requires further environmental studies for preparation of an Environmental Impact Assessment (EIA) for its appraisal prior to the grant of environmental clearance depending up on the nature and location specificity of the project . The projects requiring an Environmental Impact Assessment report shall be termed Category 'B1' and remaining projects shall be termed Category 'B2' and will not require an Environment Impact Assessment report. For categorization of projects into B1 or B2 except item 8 (b), the Ministry of Environment and Forests shall issue appropriate Guideliness from time to time."

The Ministry on 24th December, 2013, issued Office Memorandum for consideration of proposals for grant of Environmental Clearance regarding categorisation of Category 'B' projects into Category 'B1' and 'B2'. Mining of minor minerals had been separately dealt with in this Office Memorandum. Such area up to 25 hectares would be categorised as 'B 2' and such projects were to be considered, subject to the stipulations stated therein.



The EIA Notification, 2006 does not provide for issuance of Environment Clearance to Cluster of mines. It provides for EC to individual lease holders / project proponents. This position has also been upheld by the Hon'ble Supreme Court in its judgment of Vivek Bansal Vs. State of Haryana that EC should be applied for and granted to the individual lease holder.

There has been rising concerns about adverse impact of mining on small leases (less than 5 hectare) in case the numbers of such leases are large and they are located in close proximity to each other. This leads to the definition of Cluster. To avoid the rigors of environment impact assessment studies, environment management plan and the environment clearance there has been a tendency to break the leases into size which does not attract the provisions of environment impact assessment studies, environment management plan, public consultation and the environment clearance. In Deepak Kumar's case Hon'ble Supreme Court also encountered this situation and in its order dated 27.02.2012 mandated that no mining lease or renewal be done without environment clearance irrespective of size.

It is seen that the categorization of mines into 'B1' and 'B2' category in which Category 'B2' leases are being exempted from the requirement of Environment Impact Assessment, Environment Management Plan, and Public Consultation for grant of EC, in many cases now the mining leases are being given for 25 hectares or less. This defeats the purpose and intent of Hon'ble Supreme Court Judgment which orders environment clearance for all mining leases irrespective of size. The environment clearance without Environment Impact Assessment, Environment Management Plan, and Public Consultation does not serve the purpose of environment clearance which is to ensure environmentally sustainable and socially responsible mining. So if a cluster or individual lease size exceeds 5 hectare, the EIA/ EMP should be completed in the process of grant of prior environment clearance.

The EIA Notification, 2006 and subsequent amendments to that or any O.M. issued by the Ministry do not provide for procedures and Competent Authority for environment clearance for cluster. In a cluster there will mostly be situation where there are a number of different lease holders and as per the settled law the lease holder has to do the working of mine and the lease holder is the one who can apply for and get the environment clearance. The conditions stipulated in the environment clearance have to be complied by the EC holder and any violation of that empowers the authority to cancel the environment clearance or prosecute the EC holder if necessitated by the circumstances.

For cluster there is no mechanism about who will apply for EC, EC will be issued in whose name, and who will be responsible for compliance of EC conditions.

The intent of cluster assessment is to have a holistic knowledge of the impact on environment by different mines operating in close proximity of each other. There are also requirement of mitigative measures which need implementation in concerted manner by different EC holders of that cluster. To ensure that it is important that there should be an integrated Environment Impact Assessment /



Environment Management Plan for the cluster to be presented before the authority appraising the projects and considering the proposals for grant of EC. This integrated EIA/ EMP can be prepared by either the lease holder, group of lease holders, State or the State Agencies. This EIA/ EMP need to be prepared by the accredited consultants / Registered Qualified Persons of the State Governments. The application for EC and grant of EC should be done in the name of individual lease holders in the background of the integrated EIA/EMP report. The Competent Authority (SEIAA/ SEAC / EAC) will entertain individual lease holder's application for grant of EC to individual mining lease projects in that cluster in the name of lease holders. The conditions related to mitigative measures necessitated by the integrated EIA/EMP may run across more than one lease holder or EC holders, that should figure in each EC accordingly and its compliance be ensured by the individual EC holders.

The Hon'ble Supreme Court, NGT, SEAC/EAC and the Project Proponents have raised issue of cluster in mine lease allotment and environment clearance for the same, so following conditions need to be ensured for cluster of mines:

1. To address the concern of adverse impact of minor mineral mining on environment it is proposed that all mining activity including river sand mining (above 5 hectare individual or cluster) will need to prepare Environment Impact Assessment Report and Environment Management Plan before grant of environment clearance. These reports (EIA /EMP) can be prepared by the State or State nominated Agency / the Project Proponent (s).
2. As can be seen from the data provided by the States most of the mining leases for minor minerals are of lease area less than 5 hectare. It is also reported that in hill states getting a stretch in river with area more than 5 hectare is very uncommon. So the size of lease for minor minerals including river sand mining will be determined by the States as per their circumstances.
3. The EIA Notification, 2006 does not provide for cluster EC, it provides for issuance of EC to individual project proponents and the same has also been upheld in the judgment of Hon'ble Supreme Court in Vijay Bansal vs. State of Haryana case. So EC will have to be applied for and issued to the individual project proponent.
4. A cluster shall be formed when the distance between the peripheries of one lease is less than 500 meters from the periphery of other lease in a homogeneous mineral area.
5. The mining of minor minerals is mostly in clusters. The Environment Impact Assessment or Environment Management Plan are required to be prepared for the entire cluster in order to capture all the possible externalities. These reports shall capture carrying capacity of the cluster, transportation and related issues, replenishment and recharge issues, geo-hydrological study of the cluster area. The Environment Impact Assessment or Environment Management Plan shall be prepared by the State or State nominated Agency or group of project proponents



- in the Cluster or the project proponent in the cluster.
6. The individual lease holders in cluster can use the same Environment Impact Assessment or Environment Management Plan for application for environmental clearance. The cluster Environment Impact Assessment or Environment Management Plan shall be updated as per need keeping in view any significant change.
 7. There shall be one public consultation for entire cluster after which the final Environment Impact Assessment or Environment Management Plan report for the cluster shall be prepared.
 8. The details of cluster Environment Impact Assessment or Environment Management Plan shall be reflected in each environmental clearance in that cluster and District Expert Appraisal Committee (DEAC), SEAC, and EAC shall ensure that the mitigative measures emanating from the Environment Impact Assessment or Environment Management Plan study are fully reflected as environmental clearance conditions in the environmental clearance's of individual project proponents in that cluster.
 9. As the sand is mostly mined from rivers and majority of the rivers which are important source of sand also form boundary between States, so because of General Conditions most of the sand mining projects become Category 'A' project. So the General Conditions will not apply in case of river sand and gravel mining projects on account of being in 5 kilometer of inter-state boundary.
 10. The Committee headed by the District Magistrate or District Collector will be empowered to appraise and grant EC for mining leases up to 5 ha in case of individual lease and up to 25ha in case of cluster for sand mining.
 11. In case the mining leases are in cluster (if periphery of one lease is within 500 meters), following are the categorization of projects:-
 - Category 'B2'Project: Cluster area of mine leases up to 5 ha and to be dealt at DEIAA/ DEAC level
 - Category 'B2'Project: Cluster area of Mine leases > 5 ha and < 25 ha with no individual lease > 5 ha and to be dealt at DEIAA/DEAC level
 - Category 'B1'Project: Cluster of mine leases of area > 25 hectares with individual lease size < 50ha and to be dealt at SEIAA/SEAC level
 - Category 'A' Project: Cluster of any size with any of the individual lease >50ha and to be dealt at MoEFCC/EAC level



MINISTRY OF ENVIRONMENT, FOREST AND CLIMATE CHANGE - GOVERNMENT OF INDIA

The schematic presentation of requirements on Environmental Clearance of Sand Mining including cluster situation is detailed as below:-

Area of Lease (Hectare)	Category of Project	Requirement of EIA / EMP	Requirement of Public Hearing	Requirement of EC	Who can prepare EIA/ EMP	Who will apply for EC	Authority to appraise/ grant EC	Authority to monitor EC compliance
EC Proposal of Sand Mining in cluster situation								
Cluster area of mine leases up to 5 ha	'B2'	Form-1M, PFR and Approved Mine Plan	No	Yes	State, State Agency, Group of Project Proponents, Project Proponent	Project Proponent	DEAC/ DEIAA/	DEIAA SEIAA SPCB CPCB MoEFCC Agency nominated by MoEFCC
Cluster area of Mine leases > 5 ha and < 25 ha with no individual lease > 5 ha	'B2'	Form-I, PFR and Approved Mine Plan and one EMP for all leases in the Cluster	No	Yes	State, State Agency, Group of Project Proponents, Project Proponent	Project Proponent	DEAC/ DEIAA/	
Cluster of mine leases of area > 25 hectares with individual lease size < 50ha	'B1'	Yes	Yes	Yes	State, State Agency, Group of Project Proponents, Project Proponent	Project Proponent	SEAC/ SEIAA	

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Cluster of any size with any of the individual lease > 50ha	'A'	Yes	Yes	Yes	State, State Agency, Group of Project Proponents, Project Proponent	Project Proponent	EAC/ MoEFCC	
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VAKALATNAMA

BEFORE NATIONAL GREEN TRIBUNAL, EASTERN ZONE BENCH, KOLKATA

Appeal No. _____/2026

In the matter of:

Shahanavaj Khan

Appellant

Versus

SEIAA Bihar & Ors

Respondents

KNOW ALL to whom these present shall come that I, Shahanavaj Khan S/o Noor Khan aged about 52 years R/o Kharadi Tola, Post Mirjanhaat Thana- Babarganj, Kutubganj, Bhagalpur, Bihar- 812005, the Appellant

Do hereby appoint

RAHUL KHURANA Adv & HASIL JAIN & Ishan Sharma
Adv(D/2183/2008) (D/2880/2013) (D/11097/2025)
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(herein after called the advocate/s) to be my/our Advocate in the above-noted case authorised him:-

To act appear and plead in the above-noted case in this Court or in any other Court in which the same may be tried or heard and also in the appellate Court including High Court subject to payment of fees separately for each court by me/us.

To sign file verify and present pleadings, appeals cross-objections or petitions for executive on review, revision, withdrawal, compromise or other petitions or affidavits of other documents as may be deemed necessary or proper for the prosecution of the said case in all its stages.

To file and take back documents including original documents, to admit and/or deny the documents of opposite party.

To withdraw or compromise the said case or submit to arbitration any differences or disputes that may arise touching or in any manner relating to the said case. To take execution proceedings.

And I/we undertake that I/we or my/our duly authorised agent would appear in the Court on all hearings and will inform the Advocates for appearance when the case is called.

And I/we the undersigned do hereby agree that in the event of the whole or part of the fee agreed by me/us to be paid to the advocate remaining unpaid he shall be entitled to withdraw from the prosecution of the said case until the same is paid up. The fee settled is only for the above case and above Court. I/we hereby agree that once the fee is paid. I/we will not be entitled for the refund of the same in any case whatsoever. If the case lasts for more than three years, the advocate shall be entitled for additional fee equivalent to half of the agreed fee for every addition three years, or part thereof.

IN WITNESS WHEREOF I/we do hereunto set my/our hand to these presents the contents of which have been understood by me/us on this _____ day April 2026

Accepted subject to the terms of fees.

Advocate

Clients

R Khurana

Hasil Jain

21st April 2026

