



**Office of the Principal Chief Conservator of Forests,
Wildlife & Chief Wildlife Warden, Jharkhand.**

Van Bhawan, Doranda, Ranchi-834002

Email: pccf-wildlife@gov.in; Phone No. 0651-2481744



Office Order No. **18**.....

Dated **28/04/2025**

Sanction Order of the Site Specific Wildlife Conservation Plan prepared in compliance of the Terms of References (ToRs) laid by the State Level Environment Impact Assessment Authority (SEIAA), Jharkhand for Expansion & Modernization for enhancing the production of 60,000 TPA ingots to 1,48,500 TPA Billets, TMT Bar/ Rods from 21,349 TPA to 2,37,600 TPA and increase installed capacity of reheating furnace and slag crusher of M/s Atibir Hi-Tech Private Limited at Village: Mohanpur, Tehsil: Giridih, Dist.: Giridih, Jharkhand.

The Site Specific Wildlife Conservation Plan (referred to as “the Plan” or “the Instant Plan” hereinafter) has been prepared by INDUOM COSULTANTS PVT LTD., Singhmore, Ranchi in compliance of the Terms of References (ToRs) laid by the letter of State Level Environment Impact Assessment Authority (SEIAA), Jharkhand vide Letter No. EC/SEIAA/2021-22/2437/2021/199 dated 30.10.2021 for Expansion & Modernization for enhancing the production of 60,000 TPA ingots to 1,48,500 TPA Billets, TMT Bar/ Rods from 21,349 TPA to 2,37,600 TPA and increase installed capacity of reheating furnace and slag crusher (referred to as “the Project” hereinafter) in favour of M/s Atibir Hi-Tech Private Limited (referred to as “the Project Proponent” or “the PP” hereinafter) at Village: Mohanpur, Tehsil: Giridih, Dist.: Giridih, Jharkhand.

In reference of the above, the Plan was submitted for its due approval to the office of the undersigned vide Letter no. 148 dated 27.01.2025 of the Additional Principal Chief Conservator of Forests, Bokaro (APCCF, Bokaro).

In order to examine the plan prescriptions a communication was issued to the APCCF, Bokaro, vide this office letter no. 168 dated 18.02.2025, letter no. 240 dated 04.03.2025 and 273 dated 17.03.2025 to arrange a Power-Point Presentation in the office room of the undersigned. The presentation (PPT) was made by the PP on 24.03.2025 in the presence of DFO, Giridih East Forest Division & Shree Basant Mishra, GM, Atibir Hi-Tech Pvt. Ltd. Giridih.

The Plan contains year-wise detailed description of activities and corresponding cost estimates. The summary of the proposed Plan (component wise) with the objective of conservation of forest and wildlife resources as also to mitigate the impacts of the project on forests and wildlife is as follows:

Sl. No.	Work Components	Total (Rs. in lakhs)
1	Infrastructure Development	47.100
2	Habitat Management	94.680
3	Enhancing soil moisture regime	14.260

4	Staff Welfare	23.760
5	Human Wildlife Conflicts	5.400
6	Conservation Awareness	51.000
7	Community Development	20.000
8	Research and Experiment Trials	15.600
9	Monitoring and Evaluation	6.480
	Total-	278.280

The plan with a total financial outlay of Rs. 278.280 Lakhs extends over a period of 10 years (Year 2025-26 to 2034-35).

Considering the proposals under the plan, sanction is hereby accorded to the instant Plan subject to the following conditions:

- (i) That the Project Proponent shall ensure that its officials/ contractors and the work force engaged under the Project shall not commit or abet any forest/ wildlife offence in their area of operation. They will also promptly report any forest/ wildlife offence in the area to the nearest forest office/ official. Further, they will extend their full cooperation to the forest officials in control/ mitigation of any incident, natural or man made, detrimental to forest and wildlife in their area of operation.
- (ii) That the total amount of Rs.278.280 lakhs involved in the Plan shall be deposited by the Project Proponent as per the demand note issued by DFO, Giridih East Forest Division into Govt. Treasury, Giridih in favour of "DFO, Giridih East Forest Division" under the head "Van Preshan Lok Lekha (Praptiyan) Head 8782". DFO, Giridih East Forest Division shall withdraw money from the Treasury for implementation of the activities mentioned in the duly sanctioned Annual Plans of Operation, as described in the following paras, from "8782 Remittance Head" and maintain accounts under "Lok-Lekha Head 8443". DFO, Giridih East Forest Division shall submit monthly account to the Accountant General, Jharkhand as per prevailing norms of the Forest Department.
- (iii) That the Implementing Agencies shall prepare detailed Annual Plan of Operations (APOs) with respect to areas under their control, at the beginning of the Financial Year in accordance with the activities mentioned in the Plan following all the rules, regulations, Schedule of Rates etc. issued from time to time by the State Government/ Forest Department. APCCF, Bokaro shall accord sanction to the said APOs submitted by DFO, Giridih East Forest Division, following due process and he/ she will closely monitor the implementation/ progress of the activities undertaken by the DFO, Giridih East Forest Division as per directions issued by the Forest Department from time to time.
- (iv) The Project Proponent and project personnel will comply with the provisions of Standard SOP/ Guidelines issued by WII, Dehradun for projects.
- (v) That the CF, Territorial Circle, Giridih shall supervise all the activities as per directions issued by the Forest Department from time to time.

- (vi) That the DFO, Giridih East Forest Division shall carry out the activities under the Plan strictly as per the duly sanctioned APOs.
- (vii) That the DFO, Giridih East Forest Division shall ensure that no violation of duly sanctioned Working Plan of Giridih Forest Division takes place during implementation of any of the activities involved in this plan over notified and demarcated forest land.
- (viii) That the Plan may be revisited after every 2 years and a revised plan may be formulated as per need of the impact area and convenience of the implementing agencies. The revised plan, if any, shall be put up before the Principal Chief Conservator of Forests, Wildlife & Chief Wildlife Warden, Jharkhand for its approval.
- (ix) That the Project Proponent shall submit an Undertaking to the DFO, Giridih East Forest Division to the effect that they will deposit extra cost of the Plan beyond the cost escalation provision owing to increase in wage rate, cost of materials etc. in due course of time as well as consequent upon revision of the plan, if any, as and when given effect to by the competent authority.

Sd/-

Principal Chief Conservator of Forests,
Wildlife & Chief Wildlife Warden,
Jharkhand, Ranchi.

Memo No.937(WL)P/2024-25-.....

Dated:

Copy forwarded to Deputy Director General (C), Ministry of Environment, Forests and Climate Change, Integrated Regional Office, 2nd Floor, Jharkhand State Housing Board (HQ), Harmu Chowk, Ranchi -834002 [E-mail: ro.ranchi-mef@gov.in] / Secretary, Department of Forests, Environment and Climate Change, Govt. of Jharkhand, Ranchi/ Principal Chief Conservator of Forests, Jharkhand, Ranchi for information.

Sd/-

Principal Chief Conservator of Forests,
Wildlife & Chief Wildlife Warden,
Jharkhand, Ranchi.

Memo No.937(WL)P/2024-25-.....

Dated:

Copy forwarded to PCCF –cum- Executive Director, Wasteland Development Board, Jharkhand, Ranchi/ Addl. PCCF, CAMPA, Jharkhand, Ranchi with a copy of the Plan.

Sd/-

Principal Chief Conservator of Forests,
Wildlife & Chief Wildlife Warden,
Jharkhand, Ranchi.

Memo No.937(WL)P/2024-25-.....

Dated:

Copy forwarded to Additional Principal Chief Conservator of Forests, Bokaro/
Conservator of Forests, Territorial Circle, Giridih/ Divisional Forest Officer, Giridih East Forest
Division for information and necessary action.

Sd/-

Principal Chief Conservator of Forests,
Wildlife & Chief Wildlife Warden,
Jharkhand, Ranchi.

Memo No.937(WL)P/2024-25-4.13

Dated: 28/04/2025

Copy forwarded to General Manager, Atibir Hi-Tech Pvt. Ltd. Giridih for information
and necessary action.


Principal Chief Conservator of Forests,
Wildlife & Chief Wildlife Warden,
Jharkhand, Ranchi.

28/4/25
28/4/25



CIN No. U37100WB1884PTC134781

ATIBIR

HI-TECH (PVT.) LIMITED

Regd. Office: 208, Abdul Hanif Street,
7th Floor Block-7B, Kolkata - 700 069 (WB)
Corporate Off: Opposite Town Police Station,
Girdih-815 301 (Jharkhand)



TMT Bars,
Wire & Nails

E-mail: atibir@rediffmail.com

(Furnace & Re-Rolling)

Date: 06.08.2021

सहायक
मुख्य अधिकारी
पर्यावरण एवं वन विभाग

The Divisional Forest Officer - Cum - Wildlife Warden,
Girdih Division (II), District - Girdih,
Jharkhand.

Subject: Site Specific Wildlife Conservation Plan for the Schedule-I species (as per Wildlife Protection Act, 1972 as amended on 20th December 2020) within 10 km buffer of proposed expansion project of M/S Atibir Hi-Tech Private Limited - Request for approval.

- References: 1. Wildlife Conservation Plan guideline letter no. 3012 dt. 26.03.2015,
Principal Chief, Conservator of Forest, Wildlife & Chief Wildlife
Warden, Jharkhand, Ranchi.
2. ToR issued by SEIAA, Jharkhand on 30.10.2021 vide letter no.
EC/SEIAA/2021-22/2437/2021/199.

Respected Sir,

With reference to above, we want to bring it to your kind knowledge that we are proposing Expansion & Modernization for enhancing the production of 60,000 TPA Ingot to 1,48,500 TPA Billets, TMT Bar/Rods from 21,349 TPA to 2,37,600 TPA and increase installed capacity of reheating furnace and Slag Crusher, at Village - Mohanpur, Tehsil - Girdih, District: Girdih, Jharkhand.

As per the mandatory requirement and references above, we are submitting the Site-Specific Wildlife Conservation Plan for the Schedule-I faunas found within 10 km buffer of our proposed project, in 6 copies for your consideration and approval.

Thanking you,

Yours Sincerely

For Atibir Hi-Tech Pvt Ltd.

Authorized Signatory

SITE SPECIFIC WILDLIFE CONSERVATION PLAN

For



**M/S ATIBIR HI-TECH PRIVATE
LIMITED**

Expansion & Modernization project for enhancement in the production capacity of TMT Bar in coils & MS Rods from 21,349 TPA to 237,600 TPA through modernization of its existing Re-Rolling Mill from 9 TPH to 50 TPH capacity along with replacement of existing 1x10 TPH Reheating Furnace by 1x30 TPH Reheating furnace and production of 148,500 TPA MS Billets by replacing the existing (2x8T & 1x6T) Induction Furnace by 3x15T induction Furnace along with installation of new 3x2 strand CCM and modernization of existing slag crusher from 5 TPH to 10 TPH capacity.

2024

CONSULTANT



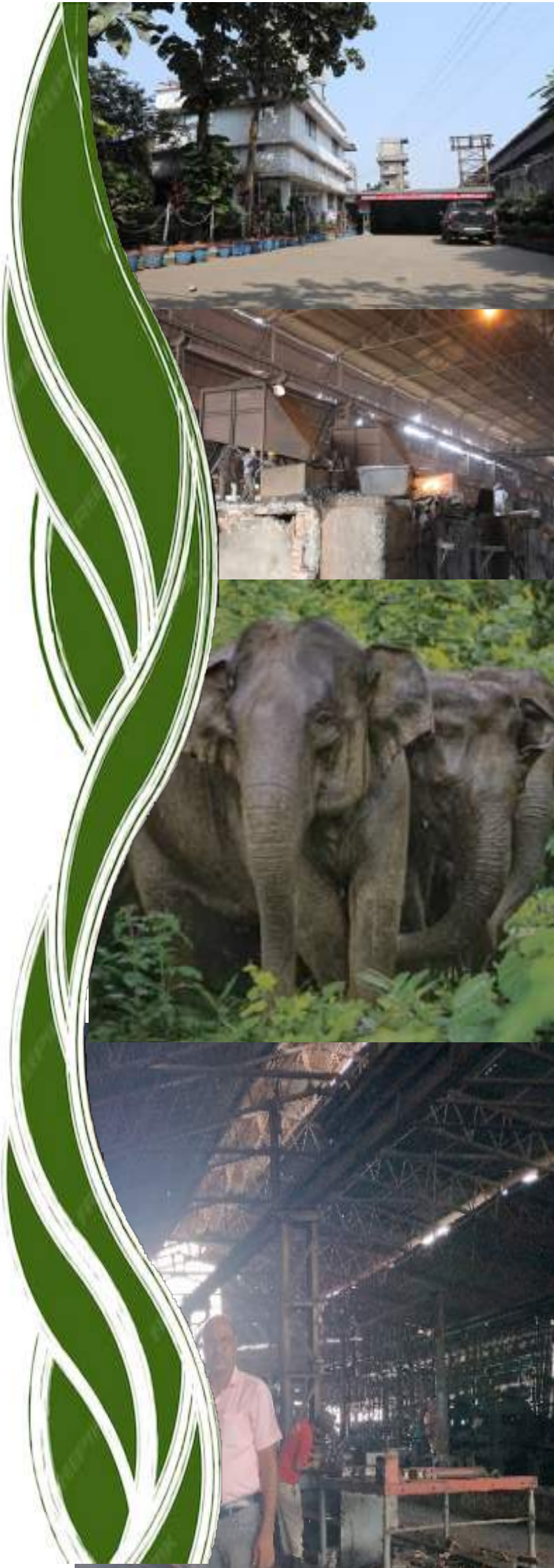
INDUOM CONSULTANTS PVT. LTD.

Ground Floor, Induom Villa, Road No.-9,
Vikash Nagar Latma Road, Singhmore Ranchi-834003
Jharkhand, India.

Email: induomconsultants@gmail.com

PRINCIPLE EXPERT

Dr. Lal Ratnakar Singh, I.F.S. (Retd.)



Project Team

Principle Expert

Dr. Lal Ratnakar Singh, I.F.S.

(Retd. Chief Wildlife Warden, Deptt. of Forest, Environment
& CC, Jharkhand)

Associates

Mr. Om Prakash Singh

(Retd. R.O. of Forests, Jharkhand - Forestry)

Ms. Dipti Thakur

(Ecology & Biodiversity Associate)

Mrs. Anupama Singh

(Sociology Associate)

Ms. Priyanka Kumari

(GIS Associate)

Report formatting & Maps

Mr. Siddhartha Sengupta

Ms. Dipti Thakur

Photographs

Mr. O.P. Singh & Mr. Anil Kumar

Declaration of Project Proponent

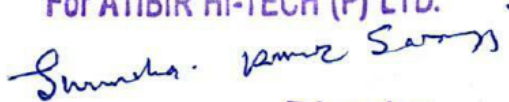
Our Company, M/s Atibir Hi-Tech Private Limited (AHPL), is an existing steel plant located at Village– Mohanpur, PO – Udnabad, District -Giridih, Jharkhand, now proposes to enhance the production of TMT Bar in coils & MS Rods from 21,349 TPA to 237,600 TPA through modernization of its existing Re-Rolling Mill from 9 TPH to 50 TPH capacity along with replacement of existing 1x10 TPH Reheating Furnace by 1x30 TPH Reheating furnace and production of 148,500 TPA MS Billets by replacing the existing (2x8T & 1x6T) Induction Furnace by 3x15T induction Furnace along with installation of new 3x2 strand CCM and modernization of existing slag crusher from 5 TPH to 10 TPH capacity.

In compliance to the TORs issued by SEIAA, Jharkhand, the Site-Specific Wildlife Conservation Plan has been prepared for the Schedule – I faunas (as per Wildlife Protection Act, 1972 as amended on 20th December 2022), identified by field visit (observed and declared) and secondary literature. This Wildlife Conservation Plan is prepared by wildlife experts having requisite knowledge and experience in the field.

This wildlife Conservation Plan has been prepared as per the guidelines letter no. 302 dated 26.03.2015, of Principal Chief Conservator of Forest, Wildlife & Chief Wildlife Warden, Jharkhand, Ranchi. All the applicable details, documents, and information as per the above- mentioned guidelines have been included in this report for the conservation planning.

That the report is factually correct to best of our knowledge and belief. We own this site-specific wildlife conservation plan and assure to comply with the directions and conditions of the approval of the concerned authority.

For M/s Atibir Hi-Tech Private Limited

For ATIBIR HI-TECH (P) LTD.

Director

Declaration by the Experts

M/s Atibir Hi-Tech Private Limited, is an existing steel plant located at Village– Mohanpur, PO – Udnabad, District -Giridih, Jharkhand, now proposes to enhance the production of TMT Bar in coils & MS Rods from 21,349 TPA to 237,600 TPA through modernization of its existing Re-Rolling Mill from 9 TPH to 50 TPH capacity along with replacement of existing 1x10 TPH Reheating Furnace by 1x30 TPH Reheating furnace and production of 148,500 TPA MS Billets by replacing the existing (2x8T & 1x6T) Induction Furnace by 3x15T induction Furnace along with installation of new 3x2 strand CCM and modernization of existing slag crusher from 5 TPH to 10 TPH capacity.

In compliance to the TORs issued by SEIAA, Jharkhand, the Site-Specific Wildlife Conservation Plan has been prepared for the Schedule – I faunas (as per Wildlife Protection Act, 1972 as amended on 20th December 2022), identified by field visit (observed and reported) and secondary literature.

This wildlife Conservation Plan has been prepared by us as per the guidelines prescribed in letter no. 302 dated 26.03.2015, of Principal Chief Conservator of Forest, Wildlife & Chief Wildlife Warden, Jharkhand, Ranchi. All the applicable details, documents, and information as per the above-mentioned guidelines have been included in this report for the conservation planning.

That the report is factually correct to best of our knowledge and belief.

For InduOm Consultants Pvt. Ltd.



Om Prakash Singh

Ex-Range Forest Officer
(Deptt. Of Forest & Environment, GOJ)

Principal Expert



Dr. Lal Ratnakar Singh (IFS, Retd)

Ex. PCCF, Wildlife & CWLW
(Deptt. Of Forest & Environment, GOJ)
Ex. Chairman, Jharkhand Biodiversity Board, GOJ

Letter No. 302/26.03.2015

PCCF, Wildlife, Jharkhand & CWLW, Jharkhand,s Guidelines

– status of compliance

Sl. No.	Chapter Number	Contents
	Chapter 1	Introduction
A	Location of the project and its impact area around with reference to forest block, beat, forest range etc. Extent of project area and land schedule, proposed land use pattern of the project area. Location of the project area should be shown with reference to latitude and longitude. Status of Forest Diversion Proposal (if any) and Environmental Clearance should also be mentioned.	Background of the Project
		Location of the project
		Salient features of the Project site
		Project Activity
		Plant Layout
		Land Use Pattern of Project Area
		Land Use Pattern of Impact Area
		Core Zone
		Forest Block of the Core zone (Project Area)
		Buffer Zone
		Impact Area (10 Km) with respect to Forest Range & Forest Beat
		Land use of the Impact Area (10 Km)
B	Villages and habitations within the project area and project impact area of 10 kms radius. Demographic and occupational profile of these villages along with the existing cropping pattern adopted by the villagers. The extent of biotic pressure by these villages on the study area and especially on the forest growth. Number of families depending upon the NTFP collection the method of collection and its impact on the wildlife of the area.	Status of Forest diversion proposal
		Status of Forest environmental clearance
		Villages & Habitation within the 10 Km. Buffer zone
		Villages and Habitations
		Demographic structure
		Occupational structure
		Existing cropping pattern of villages
		Dependency on Forests, NTFP
C	Descriptions of Topography, natural drainage lines, whether the particular landscape is the source of origin of any stream/river. Presence of water bodies, if any, in the study/plan area.	Household sustenance
		The primary requirements of the population from the forests
		Information about the cattle population and dependency on the forest for grazing.
		Main NTFP
		Topography and Drainage pattern of study area
		The Topography & Geomorphology
		The Drainage System
		Quality of Water
		Climate

Sl. No.	Chapter Number	Contents
D	The details of linear infrastructures such as roads, rail lines, water ways and canals and other developmental structures developed in the project impact zone and adversely affecting the movement of megafauna in the area and possible ameliorative measures. Details of the water reservoirs vertical mining pits and unguarded dug wells in the area should also be mentioned with possible safeguards available and proposed.	The details of linear infrastructure
		List of Industries
E	Descriptions of flora and fauna of the project area as well as project impact area of 10 kms or more radius showing the details of endemic, threatened and scheduled species. Old records including the working plans must be referred to.	Description of Flora & fauna
		Flora
		Rare & Endangered flora in the study area
		Fauna Diversity
		Endangered species
		Aquatic Ecology
		Assessment of aquatic diversity
F	Description of forests and habitat condition, wildlife scenario of the study area (census result if any)	Fish
		List of Fishes in study area
		Aquatic Floral diversity
		Interpretation
		Implementation of working plan prescriptions
		Forests & habitat condition
		Habitat condition
G	Movements of mega wildlife in the impact area for the last 3 completed financial years and for the current year should be depicted on a map and data be submitted. Recorded data and the village level survey may be relied upon in this regard.	Forest types
		Movement Pattern of Mega Wildlife
H	Man- animal conflict and depredations caused by the wild animal in the study area. Data on human kill/injury, cattle kill and crop damage in the area and also the data on animal kill due to various reasons will also be analyzed and mentioned. The data may be depicted on the map approximately. Also, the extent of human- wild animal conflict and the trend of change due to the project implementation should be assessed and recorded.	Human wildlife conflict
		Factors of decimating wildlife
		Traditional Hunting practices
		Degradation of habitat
		Other factors
		Trends
		After assessment of the project
	Survey of Working Plan prescriptions for management of forests and wildlife of the study area, if in vogue, and its status of implementation in consultation with the DFO concerned.	Prescriptions of Working Plan for the management of Forests & Wildlife
		The area (in hect.) abstract of different

Sl. No.	Chapter Number	Contents
I		working circles
		Wildlife (overlapping) working circle
		Elephant Corridors
J	Indicative Plan showing location of other projects utilizing forestlands or otherwise	Location of other Projects in the impact area
	in the zone of impact (10 km radius or more as the case may be) of the present project. The mitigative measures proposed in the Conservation Plans of such projects (within project impact area), prepared if any, are to be summarized and compared with the proposals in the present plan. Consultants may furnish these details in consultation with Divisional Forest Officer and Range Forest Officers concerned.	
K	The list of experts involved in the study and their visit in the area and the methodology and sampling procedure adopted in arriving at the facts and findings.	List of experts involved in the study
		Methodology & sampling procedure
2.	It should address:	
A	Study report on impact of the project on the environment in general and on the soil, vegetation, water regime of the landscape and air over the area in specific.	Impact on land, air, water, noise, soil, ecology, socio-economy etc.
		Identification & characteristics of impacts
B	Quantum of pollutants that may be produced by the project and effect on soil, water, air, vegetation and animals.	Quantum of pollutant and impacts
		Impact of project on Land Environment
		Impact during Construction phase
		Impact during Operation phase
		Impact of project on Air Environment
		During constructional phase
		During operational phase
		Impact of project on Water Environment
		During constructional phase
		During operational phase
		Impact of project on Noise Environment
		Impact during Construction phase

		Impact during operation phase
		Impact of project on Flora and Fauna Environment
		Contents
		During constructional phase
		During operational phase
		Impact on flora
		Impact on Fauna
		Impacts on Ecosystem
		Impact on flora
		Impact on Fauna
		Impacts on Ecosystem
		Impact of project on Flora and Fauna Environment
		During constructional phase
		During operational phase
		Impact of probable increase in vehicular traffic
		During constructional phase
		During operational phase
		Impact of project on Noise Environment
		Impact of project on Water Environment
		Impact of project on Air Environment
		Impact of project on Land Environment
		Survey Team & methodology
		Survey Team
		Methodology
		Inventory, abundance & distribution of plants and animals
		Estimation of plant and sampling methodology
		Estimation of animals and sampling methodology
3.		
A	Objectives of management to address the issues of wildlife conservation against the project implementation.	Objective of managing wildlife issues
		Objectives of Management
		Within the Project Area
		Within the impact area

B	Strategies to mitigate and minimise adverse impacts so observed in the field.	Strategies to mitigate/minimize the adverse impact
		Within the Project Area
		Mitigation of air environment
		Mitigation of water environment
		Mitigation of noise environment
		Mitigation of solid waste
		Solid Waste from Sponge Iron Unit & Power Plant Unit
		Hazardous waste
		Other Solid Waste
		Mitigation of impact on Buffer Zone
		Impact on forests
		Impact on wildlife
		Strategies to conserve the important species
		Aim of the study
		Approaches followed
		Schedule-I Species in the Study Area – identified for Conservation
4.		
A	Interventions to be implemented by the project authorities inside the project area with suitable justifications.	Intervention to be implemented by the project authorities within the project area & vicinity
		Environmental Impact Assessment & Environment Management Plan
		Aim of the interventions within the Project
		Heads of interventions
		Interventions to be done with cost break up
B		During Construction Phase
		During Operation Phase
		Management Strategy to be undertaken by the Project Proponent within the Plant Premises with Wildlife in Focus
	Locations (preferably with GPS coordinates) of the proposed interventions and maps overlaid in the proposed land use plan map.	Recommendations about Green Belt Development within the Plant Premises
		Criteria for selection of plants for Green- Belt
		Choice of Species for Green – Belt
		Management Strategy to be undertaken by the Project Proponent in the impact area
		Health related facilities for villages

		Educational Facilities
		Infrastructural development
		Afforestation Program
		Community Welfare Activities
		Community water conservation
		Community capacity building
C	Relevant provisions of Environment Management Plan for the project and the interventions overlapping in nature are to be specified.	Relevant provisions and intervention overlapping
D	Plan period preferably for initial 10 years with suitable provisions for interim reviews and suitable modifications.	10 yrs. plan interim review and modification
E	The financial forest statement should detail the financial outlay for the interventions to be implemented by the project authorities within the project area. The annual work programme and annual out lay for each component should be clearly given in a table. The cost norms should be as approved by the State Government in each case.	Interventions to be done with cost break up
		During Construction Phase
		During Operation Phase
5.		
5A/B	Interventions to be adopted by the Divisional Forest Officer in the project impact area (Buffer zone of about 10 kms. or beyond around the project boundary). This will include the habitat improvements, measures to reduce the human-animal interface conflicts and the measures to facilitate the movement of megafauna across the man-made linear infrastructures causing hindrance in their movement.	Impact area and Proposed Activities s
		Villages in Impact area
		Elephant depredation
		Proposed Activities
		Infrastructural Strengthening
		Habitat Management
		Enhancing soil moisture regime through appropriate soil & water conservation measures
		Staff Management
		Human wildlife conflict/Elephant depredation
		Conservation Awareness
		Community Development
C	Monitoring and Evaluation arrangement for the activities undertaken.	Implementation of monitoring & evaluation system
D	Plan period preferable for initial 10 years with suitable provision for interim review and suitable modifications.	Plan Period & Midterm review
	The financial forecast should state the financial outlay for the interventions to be implemented by the DFO in the project impact area along with suitable provisions	Financial allocations for Forest Department
		Infrastructural Development
		Habitat Management

E	against cost escalation. The total plan should be summarized into annual work plans and annual outlay in tabular form for each component. The cost norms should be as approved by the State Government in each case. The project proponent should also undertake to prepare subsequent plans in continuation to this plan at least 2 years in advance and submitted not less than 1 year before expiring of the subsisting plan in case the lease period exceeds the period of this plan. This chapter should also have separate single table at the end showing cumulative total of intervention proposed for both the project area and project impact area.	Enhancement of soil & moisture conservation regime
		Staff welfare
		Human Wildlife conflicts Management
		Conservation Awareness
		Community Development
		Research & Experimental Trials
		Monitoring & Evaluation
		Summary
6.	It should state the maps/appendices/plans and cost schedules/relevant orders enclosed to the plan. On the request of the project	
		ToR Letter
		Schedule Rates for Lantana removal (60%) & Grass land Development
		Grassland Development
		Schedule Rates Bamboo Plantation
	Proponent, DFO may supply the authenticated maps of the area for the purpose of integrating the details about the project and other details by them. Maps (in 1:500,000 scale) to be appended are: Land use plan maps of the project (existing and proposed during present diversion) Locations map showing other leases and forest diversions in the project impact area giving details of the projects. Location map with respect to protected areas, elephant corridors and elephant reserves. This map should also show other	Model Estimate for Water harvesting Structure
		Schedule Rate for Loose Boulder Check-Dam
		Map of Ramgarh Forest Division
		Map of sensitive places w.r.t. Elephant sensitive places along railway line
		Toposheet Map of the location & impact zone
		Vicinity Map of the Project

	infrastructures developed in the study area including roads, rail lines, canals and water reservoirs etc. causing obstructions in the movement of wildlife. Map showing location of animal depredation including Human Kill/Injury, Cattle Kill and Crop Damage and also the Wild Animals Kills due to various reason occurred within the study area. Besides above, one Executive Summary touching all the points (in brief) of the plan should be given at the beginning of the Plan. While preparing the plan instructions issued by the PCCF and Govt. of Jharkhand from time to time regarding approved cost norms in formulating the schemes should be followed.	
--	--	--

EXECUTIVE SUMMARY

The instant Wildlife Conservation Plan has been prepared in compliance of the Terms of References (ToRs) prescribed by the State Environment Impact Assessment Authority (SEIAA), Jharkhand.

1. Project Name and Location

Project Proposal

M/s Atibir Hi-Tech Private Limited (AHPL), is an existing steel plant located at Village– Mohanpur, PO – Udnabad, District -Giridih, Jharkhand, now proposes to enhance the production of TMT Bar in coils & MS Rods from 21,349 TPA to 237,600 TPA through modernization of its existing Re-Rolling Mill from 9 TPH to 50 TPH capacity along with replacement of existing 1x10 TPH Reheating Furnace by 1x30 TPH Reheating furnace and production of 148,500 TPA MS Billets by replacing the existing (2x8T & 1x6T) Induction Furnace by 3x15T induction Furnace along with installation of new 3x2 strand CCM and modernization of existing slag crusher from 5 TPH to 10 TPH capacity.

Project Location –

The proposed project is located at Village- Mohanpur, PO- Udnabad, District-Giridih in the state of Jharkhand. Total land requirement for the proposed expansion unit is 10.38 Acres (4.20 ha.) which is already in possession and in industrial use. No forest land is involved in the project site. The Project/plant is coming under non-forest category land. There is no National Park/Wild Life Sanctuary/ Reserve Forest within 10 km from the project site. Usri River is at 1.58 km in East direction, Kako River is at 8.76 km in WNW direction and Barakar River is at 8.98 km in South direction from the proposed project site.

There is no Biosphere Reserve / National Park / Wildlife Sanctuary / Ecological sensitive area /Tiger Reserve/Turtle Nesting/Archeological Monument within 10 km radius from the project site. No reserve forest present in 10 Km radius of plant area. Some of the protected forests are near to project site.

Existing and Proposed Production Facilities and Capacities -

Table 1: Existing and Proposed Production Facilities and Capacities

S. No	Plant Facilities	Existing Installed Units and Capacity		Proposed Units and Capacity		Total after Expansion	
		Unit	Capacity	Unit	Capacity	Unit	Capacity
1.	Induction Furnace	(2x8T & 1x6T)	60,000 TPA MS Ingots	Replacement of existing 2x8T & 1x6T by 3x15T	MS Billets 148,500 TPA	3x15T	MS Billets 148,500 TPA
2.	Continuous Casting Machine	-		3x2 strand		3x2 strand	
3.	Rolling Mill	(1x9TPH)	21,349 TPA	Will be modernized by (1x50TPH)	216,251 TPA Rolled	1x50TPH	237,600 TPA

S. No	Plant Facilities	Existing Installed Units and Capacity		Proposed Units and Capacity		Total after Expansion	
		Unit	Capacity	Unit	Capacity	Unit	Capacity
			MS Bar in coils & MS Rods		Products		Rolled Products
4.	Reheating Furnaces	1x10TPH	22,500 TPA (max.)	Replacement of existing 1x10TPH by 1x30TPH	99,000 TPA (max.)	1x30TPH	Re-heated billets (for rolling) 99,000 TPA
5.	Slag Crusher	1x5TPH	16,500 TPA	Will be modernized by 1x10TPH	16,500 TPA	1x10TPH	33,000 TPA (max)

3. Detail of Environmental Features in 10km Radius from Project Site -

Table 2: Features in 10 Km. radius

Sl. No.	Particulars	Details	
1.	Site Location	Village- Mohanpur, PO- Udnabad, and District- Giridih in the state of Jharkhand	
2.	Khata no. & Plot No.	Khata No.	Plot No.
		68	1526, 1527, 1528, 1529, 1532, 1533 & 1536
		27	1552
		57	1554
		51	1553
		78	1551
		155	1550
		73	1555
		109	1524
		49	1546
		32	1549
		75	1556
		12	1547
		47	1467
		41	1463, 1464
		72	1557
		88	1548
		109	1524
		89	1523

Sl. No.	Particulars	Details		
3.	Topo-sheet Nos. of Project Site	72 L/8		
4.	Topo-sheet Nos. for 10km Study area	72 L/8		
5.	Latitude and Longitude Range of Project site	Latitude: 24°8'4.47"N to 24°8'12.30"N Longitude: 86°21'13.27"E to 86°21'23.53"E		
6.	GPS Corner Coordinates	Points	Latitude	Longitude
		A	24° 8'12.32"N	86°21'14.44"E
		B	24° 8'9.98"N	86°21'13.50"E
		C	24° 8'8.58"N	86°21'13.25"E
		D	24° 8'6.13"N	86°21'17.46"E
		E	24° 8'4.48"N	86°21'23.16"E
		F	24° 8'6.05"N	86°21'21.30"E
		G	24° 8'6.63"N	86°21'23.16"E
		H	24° 8'7.42"N	86°21'22.85"E
		I	24° 8'8.22"N	86°21'23.34"E
		J	24° 8'9.14"N	86°21'23.67"E
		K	24° 8'10.06"N	86°21'20.94"E
		L	24° 8'11.26"N	86°21'21.15"E
		M	24° 8'11.19"N	86°21'19.44"E
7.	Height above MSL	281 meters		
8.	Interstate border	No interstate border within 10 km		
9.	Nearest Habitation	Mohanpur at 0.20 km NW		
10.	Nearest Densely Populated Area	Giridih Town at 6.2km in NW		
11.	Nearest Police Station	Giridih police Station at 6.7 km in NW		
12.	Nearest Post Office	Budhiyadih Post Office at 3.59km in NW		
13.	Nearest Panchayat Office	Mohanpur Panchayat Bhawan-0.46km in NW		
14.	Nearest Hospital	Goenka Hospital at 6.86 km in NW		
15.	Nearest Education Facilities	Shree Durga Mata Shishu Vidya Mandir at 0.23km in West direction		
16.	Monuments/Religious Place	Bajarangbali Mandir at 1.02 km in NNW		
17.	Defense Installation	CRPF Camp at 7.45 km in NNW		
18.	Nearest River/Reservoir/Dam/etc.	Usri River at 1.58 km in East direction Kako River at 8.76 km in WNW direction Barakar river at 8.98kms in South direction		
19.	Nearest Airport	Deoghar Airport at 48.83 km in NE		
20.	Nearest National Highway/ State Highway	SH- 13 (connecting Koderma - Giridih – Tundi – Govindpur Marg) at a distance of 0.16 km in West Direction		
21.	Nearest Railway Station	Giridih Station is at 6.50km in N direction from project site		
22.	Biosphere Reserve / National Park / Wildlife Sanctuary / Ecological sensitive area	Nil		

Sl. No.	Particulars	Details
23.	Reserve Forest / Protected Forest	Only protected forests are present within study area, nearest PF is at 0.25km in SE
24.	Water Requirement	Existing- 105 KLD, Proposed – 185 KLD Total after Expansion: 290 KLD Source: Ground water
25.	Total Power Requirement	Existing: 9.5 MVA, Proposed: 5.5 MVA Total: 15.0 MVA Source: Damodar Valley Corporation Existing DG set – 1x500 kVA Proposed DG set- 1x1000 kVA
26.	Manpower Requirement	Existing – 76, Proposed - 224 Total after Expansion-300
27.	Land Requirement	Expansion will be within the existing plant premises of 4.20Ha. (10.38 Acres)
28.	Project Cost	Existing: Rs. 16.5866 Cr, Proposed: Rs. 34.91 Cr Total: Rs. 51.4966 Cr.

4. Environmental Impacts from Construction to operation Phase –

Main environmental attributes which have the negative impact are land use, Air pollution (Dust & Gas), Noise pollution, Water pollution, Solid waste generation, impact on flora and fauna and socio-economic impacts on local population. Mitigation of all the impacts has been taken care of by the activities to be done by Project Proponent and Forest department.

Human-Wildlife Conflict–Main conflict is Man – Elephant conflict There are 24 wild elephants which move through the impact area and cause damage to life and property. It has been observed that the most affected part of the Elephant depredated Villages are in the adjoining forest range – Dumri and impact area forest range of Giridih. The table below shows the details of human death and injury in last 3 years.

Details of Human death and injury during last 3 years in impact zone

YEAR	Human Death	Human Injury
2020-21	2	4
2021-22	7	3
2022-23	1	4
TOTAL	10	11

5. The activities proposed to be undertaken by the Project Proponent -

The activities proposed to be undertaken by the Project Proponent under the Plan is being summarized in the following table:

- (i) It is recommended that the prescription provided in plan has to be followed strictly and the provision of Central Pollution Control Board's guideline has to be followed in line and spirit.
- (ii) The EIA-EMP has prepared plan for socio- economic development, soil and environmental management, eco- reclamation, water plan to minimize the impact of plant operation. The R&R plan prepared already should be implemented in true sense.

(iii) Greenbelt Development –

The greenbelt development needs to be carried out in 33% of total plant area i.e. 1.40Ha (3.45 Acres). As per the ToR condition, company shall be developing greenbelt under MIYAWAKI method of afforestation on an area of 1 Acre of land out of 3.45 Acres marked for 33% green cover in the plant premises. Proponent has already planted 220 number of trees till date within the project premises.

Total area to be developed as greenbelt is 1.40 hectares. Proponent has to develop green cover in 0.41 hectares of land as per Miyawaki method of Afforestation. In the remaining area of 0.99 hectares greenbelt will be developed as per CPCB guidelines following tree density of 2500 trees/hectares.

Therefore, Capital budget of approx. Rs. 11.00 lakhs shall be kept for afforestation as per Miyawaki Method in 0.41Ha of area within the plant premises and recurring budget of Rs. 1.0 Lakhs shall be kept for its yearly maintenance. budget of Rs. 9.02 lakhs to be spent for plantation of additional trees on the hectares along the boundary and inside the plant area including gap filling plantation to be done in existing green area (to increase tree density to 2500). The greenbelt will be maintained every year and the budget of approx. Rs. 1.0Lakhs shall be kept as yearly maintenance cost.

(iv) Rain Water Harvesting –

The total volume of water generated in project premises from rooftop, road/paved, greenbelt and open area in a single storm on 30 mm peak rainfall intensity would be 599.4 cubic meter. 5 number of recharge structures shall be constructed within the plant premises to accommodate the hourly run-off.

Total capital budget of Rs. 15 Lakhs will be spent on the construction of Five (5) number recharge pits & other necessary facilities for RWH like piping for rooftop water collection, etc., and the recurring budget of Rs. 2.5 Lakhs/ year will be kept for maintenance

(v) Providing Medical facilities –

Project Authorities will organize free Eye operation camps, blood donation camps, free medical checkup camps, wheel chair cycles for people with disabilities and mobility issues. Beds for Health Care centre in Damodarpur village for which the budget has been kept as Rs. 9 Lakhs.

(vi) Plantation Activities –

The project proponent has committed for plantation of trees alongside the boundary of Mohanpur village. The greenbelt of 1000 m length and 10 m wide will ensure proper entrapment of pollutants from industries and heavy vehicle movement. Total no. of trees to be planted will be 2750 and fencing will also be provided for safety purposes. The maintenance of trees will be done by the company from time to time. The total cost of Tree plantation along with fencing is estimated to be Rs. 10 lakhs.

(vii) Renovation of Pond -

The project proponent has committed to renovate Pond (Koiri pokhar) located in Udnabad Village. The total cost of renovation is estimated to be Rs. 5 lakhs.

The project proponent has committed to carry-out the above-mentioned activities within a 2-year timeframe from the grant of EC. The year-wise expenditure of the total budget of Rs. 24 Lakhs for addressing the Public Hearing issues will be properly documented. The maintenance involved in the activities proposed under the action plan will be carried out by company itself and the expenditure on the maintenance will be done under CER of the project.

6. Activities to be performed by Forest Department –

SN	Activity	Amount (in Lakh)
1	Infrastructure Development	06.330
2	Habitat Management	42.680
3	Enhancing soil moisture regime	13.241
4	Staff welfare	06.900
5	Human Wildlife Conflicts	19.550
6	Conservation Awareness	05.750
7	Community Development	03.000
8	Research and Trials	23.00
9	Monitoring and Evaluation	05.180
	TOTAL	125.631

The instant Plan with a total financial outlay of ₹ 125.631 lakh is being proposed to extend over a period of 10 years (Year 2024-25 to 2033-34; tentatively). This amount will be funded by the Project Proponent to Forest Department and spent by The Forest Department.

This outlay is in addition to the outlay required for the activities which will be performed by the project proponent himself, provisions for which has been done in this plan.

Acknowledgement

The principal expert and his team offer sincere thanks to Divisional Forest Officer, Giridih East Forest Division, Assistant Conservator of forests and his staff for providing all help and support in preparation of this plan by extending support and providing the data and other information.

We are also thankful to management of M/s Atibir Hi-Tech Private Limited (AHPL), Giridih for providing support.

We extend our thanks to the village level volunteers, who took pain during survey of Biodiversity and demography in the buffer zone of the project.

We offer our gratitude to all who supported us during this exercise and preparation of the plan document.



(Dr L. R. Singh)

Principal Expert & Team

Table of Contents

1	Introduction	8
1.1	Location, Extent & Details of Project and Impact Area	8
1.1.1	Background of the Project:	8
1.1.2	Location of the project:.....	9
1.1.3	Salient features of the Project Site –	12
1.1.4	Project Activity	14
1.1.5	Land Use Pattern of Project Area	19
1.1.6	The Study Impact Area	20
1.2	Land Use of the Impact Area (10 Km)	29
1.2.1	Status of forest diversion proposal.....	29
1.2.2	Status of forest, environmental clearance	29
1.2.3	Villages and Habitations within the 10 Km. buffer area	29
1.3	Demographic Structure.....	30
1.3.1	Demographic profile of the district.....	30
1.3.2	Existing cropping pattern of Villages	35
1.3.3	Dependency on Forests, NTFP	37
1.4	Topography and Drainage pattern of the study area	38
1.4.1	The Topography & Geomorphology –	38
1.4.2	The Drainage System.....	40
1.4.3	Quality of water	42
1.4.4	Climate.....	42
1.5	List of Industries	43
1.6	Description of Flora & Fauna	44
1.6.1	Flora	44
1.6.2	Fauna Diversity.....	51
1.6.3	Interpretation.....	56
1.7	Implementation of working plan prescription.....	56
1.7.1	Forests and Habitat condition	57
1.8	Movement patterns of the Mega Wildlife i.e. Elephants in forest areas	58
1.8.1	Human-Wildlife Conflict.....	60
1.8.2	Factors of decimating wildlife	61

1.8.3	Prescriptions of Working Plan for the management of Forests & Wildlife-	62
1.9	Wildlife (overlapping) working circle	62
1.9.1	Elephant Corridors:.....	63
1.9.2	Location of other Projects in the impact area	63
1.9.3	List of experts involved in the study and their visit in the area.	63
1.9.4	Methodology and sampling procedure	64
2	<i>Impact of the Project.....</i>	65
2.1	Study on Impacts of the Project	65
2.2	Loss & fragmentation of Habitat	65
2.2.1	Wildlife Mortality	65
2.2.2	Impact of increased traffic	66
2.2.3	Conduits for invasive alien species.....	66
2.2.4	Ecological death traps.....	66
2.2.5	Behavioural changes in animals	66
2.2.6	Impact on aquatic ecosystems.....	66
2.2.7	Industrial activity and pollution	67
2.2.8	Summary of threats to wildlife	67
2.3	Identification & Characterization of Impacts	67
2.4	Quantum of Pollutants and effects	76
2.4.1	Impact of project on Land Environment.....	76
2.4.2	Impact of project on Air Environment.....	76
2.4.3	Impact of project on Water Environment	77
2.4.4	Impact of project on Noise Environment.....	77
2.4.5	Impact of project on Flora and Fauna Environment	79
2.4.6	Impacts on Ecosystem	80
2.4.7	Impact of probable increase in vehicular traffic	80
2.5	Survey team and Methodology.....	83
2.5.1	The Field Survey of Atibir Hi-Tech Expansion, Giridih, Jharkhand.....	83
2.5.2	Methodology	83
3	<i>Objectives of Management & Strategies</i>	85
3.1	Objective of Management	85
3.1.1	Within the Project Area	85
3.1.2	Within the Impact Area.....	85

3.2	Strategies to mitigate/minimize the adverse impact.....	85
3.2.1	Mitigation of adverse impact on Air Environment.....	85
3.2.2	Mitigation of water Environment	86
3.2.3	Mitigation of Noise Environment.....	88
3.2.4	Mitigation of Solid Waste.....	88
3.3	Mitigation of impact on buffer zone	90
3.3.1	Impact on forests.....	90
3.3.2	Impact on wildlife	91
3.4	Strategies to conserve the important species.....	92
3.4.1	Aim of the study	92
3.4.2	Approaches followed	92
3.4.3	Schedule-I Species in the Study Area – identified for Conservation.....	93
3.4.4	Conservation Plan for major Schedule-I Species in the Study Area	94
4	<i>Proposed Management Strategies within Project Site</i>	107
4.1	Interventions to be Implemented by the Project Proponent within the Project Premises	107
4.1.1	Environmental Impact Assessment Report / Environment Management Plan (EIA/EMP)	107
4.1.2	Aim of the interventions within the Project.....	107
4.1.3	Heads of interventions	107
4.1.4	Interventions to be done with cost break up	112
4.2	Management Strategy to be undertaken by the Project Proponent within the Plant Premises with Wildlife in Focus.....	114
4.2.1	Green Belt Development	114
4.2.2	Rain Water Harvesting Plan	121
4.3	Management Strategy to be undertaken by the Project Proponent in the impact area	122
4.3.1	Providing Medical facilities.....	123
4.3.2	Plantation Activities.....	123
4.3.3	Renovation of Pond	123
4.4	relevant provisions and intervention overlapping	123
4.5	10 yrs. plan interim review and modification	123
5	<i>Management Interventions for Forest Department</i>	124

5.1	Impact Area & Proposed Activity	124
5.1.1	Village in Impact Area.....	124
5.2	Proposed Activities	125
5.2.1	Infrastructural Strengthening towards Implementation as well as Monitoring & Evaluation of the Plan	125
5.2.2	Habitat Management.....	125
5.2.3	Enhancing soil moisture regime through appropriate soil & water conservation measures	126
5.2.4	Staff Welfare.....	127
5.2.5	Human-Wildlife Conflict/ Elephant depredation -	127
5.2.6	Conservation Awareness.....	128
5.2.7	Community Development.....	128
5.2.8	Research and Trials.....	128
5.3	Implementation of monitoring & evaluation system.....	129
5.4	Plan Period & Midterm review	129
5.5	Financial allocation for Forest Department	130
5.6	SUMMARY.....	139

List of Tables

Table 1.1-Salient feature of the Proposed Project.....	12
Table 1.2- Existing and Proposed Production Facilities and Capacities.....	15
Table 1.3- Land Use Break-up	19
Table 1.4- Forest Details of Project Site	20
Table 1.5- Land use/ Land cover of total buffer around the Plant site	29
Table 1.6- Summarized demographic structure of the study area.....	30
Table 1.7- Demographic structure of the Villages in study area	31
Table 1.8- Occupational structure of the study area	32
Table 1.9- List of Cropping pattern	35
Table 1.10-Linear Infrastructure	42
Table 1.11- Checklists of Plant species recorded from the study area	44
Table 1.12- Faunal Diversity observed from core & buffer zone	51
Table 1.13- Phytoplankton and Zooplanktons Recorded in the Study Area	54
Table 1.14- Common fish species recorded in Buffer Zone	55
Table 1.15- Wetland/Marshland Diversity of Study area.....	55
Table 1.16- List of Elephant depredated Villages in impacted Forest range area.....	60
Table 1.17-- List of Elephant depredated Villages in adjoining forest range (Giridih District)60	
Table 1.18- Details of Human death and injury during last 3 years in impact zone (Giridih). 61	
Table 2.1- Noise levels of construction equipment.....	78
Table 2.2- Details of Noise levels during operation phase.....	78
Table 2.3- Approximate Noise levels at various distances	79
Table 2.4- PCU for Operation Phase.....	81
Table 3.1-Details of the Water Pollution Control facilities.....	87
Table 3.2- Proposed Noise Pollution Control Devices.....	88
Table 3.3- Solid Waste Generation & Utilization for Existing and Proposed Plant	89
Table 3.4- Hazardous Waste Generation & Utilization after Expansion Proposed Plant	89

Table 3.5- Impact on forest	90
Table 3.6- Impact on Wildlife	91
Table 3.7- Conservation Plan for Schedule-I Species in the Study Area.....	93
Table 4.1- Cost Breakup for Environmental Management Plan during Construction Phase	112
Table 4.2- Cost Breakup for Environmental Management Plan during Operation Phase....	112
Table 4.3- Choice of Species for Green – Belt	116
Table 4.4- List of plant species using in Miyawaki plantation program	119
Table 4.5- Greenbelt Pattern	121
Table 4.6- Data Assumed and/or Available for Rain Water Harvesting	122
Table 5.1- Details of Human death and injury during last 3 years in impact zone (Giridih East Forest Division)	125
Table 5.2- Infrastructural Development.....	130
Table 5.3- Habitat Management	131
Table 5.4- Enhancing soil moisture regime through appropriate soil & water conservation measures.....	132
Table 5.5- Staff Welfare	133
Table 5.6- Human Wildlife Conflict	134
Table 5.7- Conservation Awareness.....	135
Table 5.8- Community Development	136
Table 5.9- Research & Experiment trials.....	137
Table 5.10- Monitoring and Evaluation.....	138
Table 5.11-Summary of the total Expenditure	139

List of Figures

Figure 1.1- Location Map of the Project.....	10
Figure 1.2- Digitized Map of the Buffer Area	11
Figure 1.3-Plant Layout	16
Figure 1.4- Toposheet Map of the Project Site with study area	17
Figure 1.5-500 m Google Imagery of the Project Site	18
Figure 1.6-Site Photographs	19
Figure 1.7-RF & PF within 10km of the Project Site	22
Figure 1.8- Map showing Area of Giridih East Forest Division showing Range, Beat & Village boundaries in 'Buffer Area'	23
Figure 1.9- Satellite Imagery of the 10Km Study Area	24
Figure 1.10- LULC Map of 10 KM study Area	25
Figure 1.11- Contour Map of 10 KM study Area	26
Figure 1.12-Elevation within 10km of the Study Area	27
Figure 1.13-3D DEM Map of 10 KM study Area	28
Figure 1.14-Demographic Structure of the village in the study area	31
Figure 1.15-Occupational Structure of the village in the Study area	32
Figure 1.16-Village Map of the Study Area	34
Figure 1.17- Geological map of the study Area	39
Figure 1.18- Drainage Map of study Are	41
Figure 1.19- Movement pattern of wandering elephants in Giridih East Forest division, Giridih.....	59
Figure 1.20-Site Visit Photo.....	64
Figure 2.1- Characteristics of Environmental Impacts from Construction Phase.....	68
Figure 2.2- Characteristics of Environmental Impacts from Operational Phase	70
Figure 2.3- Transportation Map of the Project site.....	82
Figure 2.4- Transect layout and Sample plots	84
Figure 5.1- Elephant Corridor Map of Giridih East Forest Division	124

1 Introduction

Jharkhand has plenty of small and big industries which are producing steel in different forms. In view of growing steel production in the country and the favourable atmosphere in the Jharkhand state, combined with the enterprising endeavours of big and small players in this field, several plants are expanding their capacity of production in their existing plants and M/s Atibir Hi-Tech Private Limited (AHPL) is one such plant.

M/s Atibir Hi-Tech Private Limited (AHPL) is an existing steel plant located at Village– Mohanpur, PO – Udnabad, District -Giridih, Jharkhand. M/s Atibir Hi-Tech Private Limited incorporated on 24th August 1994 under Registrar of Companies; Bihar, vide incorporation certificate No. 03-06200 of 1994-95 (CIN-U37100WB1994PTC134781).

The company now proposes to enhance the production of TMT Bar in coils & MS Rods from 21,349 TPA to 2,37,600 TPA through modernization of its existing Re-Rolling Mill from 9 TPH to 50 TPH capacity along with replacement of existing 1x10 TPH Reheating Furnace by 1x30 TPH Reheating furnace and production of 1,48,500 TPA MS Billets by replacing the existing (2x8T & 1x6T) Induction Furnace by 3x15T induction Furnace along with installation of new 3x2 strand CCM and modernization of existing slag crusher from 5 TPH to 10 TPH capacity.

The proposed project is listed under activity 3(a), Metallurgical Industries (Ferrous & non-ferrous) under the Schedule of EIA Notification, 2006 issued by MoEF&CC, Government of India. As per the notification, prior Environmental Clearance (EC) from State Environment Impact Assessment Authority (SEIAA) is mandatory before installation of the facilities.

The objective of this study report is description of those aspects of the expansion project which are likely to cause impacts on the immediate environment, ecology and ecosystem. The aim shall be to assess the present status of flora/ fauna and habitats of major wildlife species in the project area as well as in its impact area of 10 km buffer area (henceforth called WCP area), probable impacts of the project on the flora and fauna in the study area and to formulate appropriate conservation measures to prevent the degradation of habitat in and around the project area as consequences of the project.

1.1 Location, Extent & Details of Project and Impact Area

1.1.1 Background of the Project:

Company started with establishment of Rolling Mill of capacity 15TPD after obtaining NOC from Bihar State Pollution Control Board (BSPCB) dated on 21.01.1997.

Another NOC was obtained by the company from BSPCB vide Ref. No. T-4512, dated 23.10.2000 for expansion of rolling capacity to 35TPD and vide Ref. No. T-4513, dated 23.10.2000 for 200TPD MS Ingots production through 2x8T & 1x6T Induction Furnace along with 1x5TPH slag crusher unit. Later company has obtained CTE from Jharkhand State Pollution Control Board (JSPCB) vide Ref. No. D-1337(N), dated 29.05.2015 for marking the production capacity of 21,349 TPA MS Bars

in coil and MS Rods through 1x9 TPH capacity Re-Rolling mill along with 1x10 TPH Reheating Furnace.

Company has acquired Consent to Operate (CTO) issued by JSPCB vide ref No. JSPCB/HO/RNC/CTO-9102932/2021/770, dated 12.06.2021 valid up to 31.03.2026 for the production of 21,349 TPA TMT Bar in coils & MS Rods and of 200TPD MS Ingots in the total area of 4.2 ha (10.38 Acres).

Now, the company now proposes to enhance the production of TMT Bar in coils & MS Rods from 21,349 TPA to 2,37,600 TPA through modernization of its existing Re-Rolling Mill from 9 TPH to 50 TPH capacity along with replacement of existing 1x10 TPH Reheating Furnace by 1x30 TPH Reheating furnace and production of 1,48,500 TPA MS Billets by replacing the existing (2x8T & 1x6T) Induction Furnace by 3x15T induction Furnace along with installation of new 3x2 strand CCM and modernization of existing slag crusher from 5 TPH to 10 TPH capacity.

1.1.2 Location of the project:

The proposed project is located at Village - Mohanpur, PO - Udnabad, District - Giridih in the state of Jharkhand. Total land requirement for the proposed expansion unit is 10.38 Acres (4.20 ha.) which is already in possession and in industrial use. No forest land is involved in the project site. The Project/plant is coming under non-forest category land. There is no National Park/Wild Life Sanctuary/ Reserve Forest within 10 km from the project site. Usri River is at 1.58 km in East direction, Kako River is at 8.76 km in WNW direction and Barakar River is at 8.98 km in South direction from the proposed project site. Project location Map is given in Fig.1.1 and Digitized Map of the Area is given in Fig. 1.2.

Project location w.r.t Forest Division –

Forest Division	Forest Range	Beat	Village
Giridih East Forest Division	Giridih Range	Gadi Srirampur	Mohanpur

SITE SPECIFIC WILDLIFE CONSERVATION PLAN OF M/S ATIBIR HI-TECH PRIVATE LIMITED (AHPL)

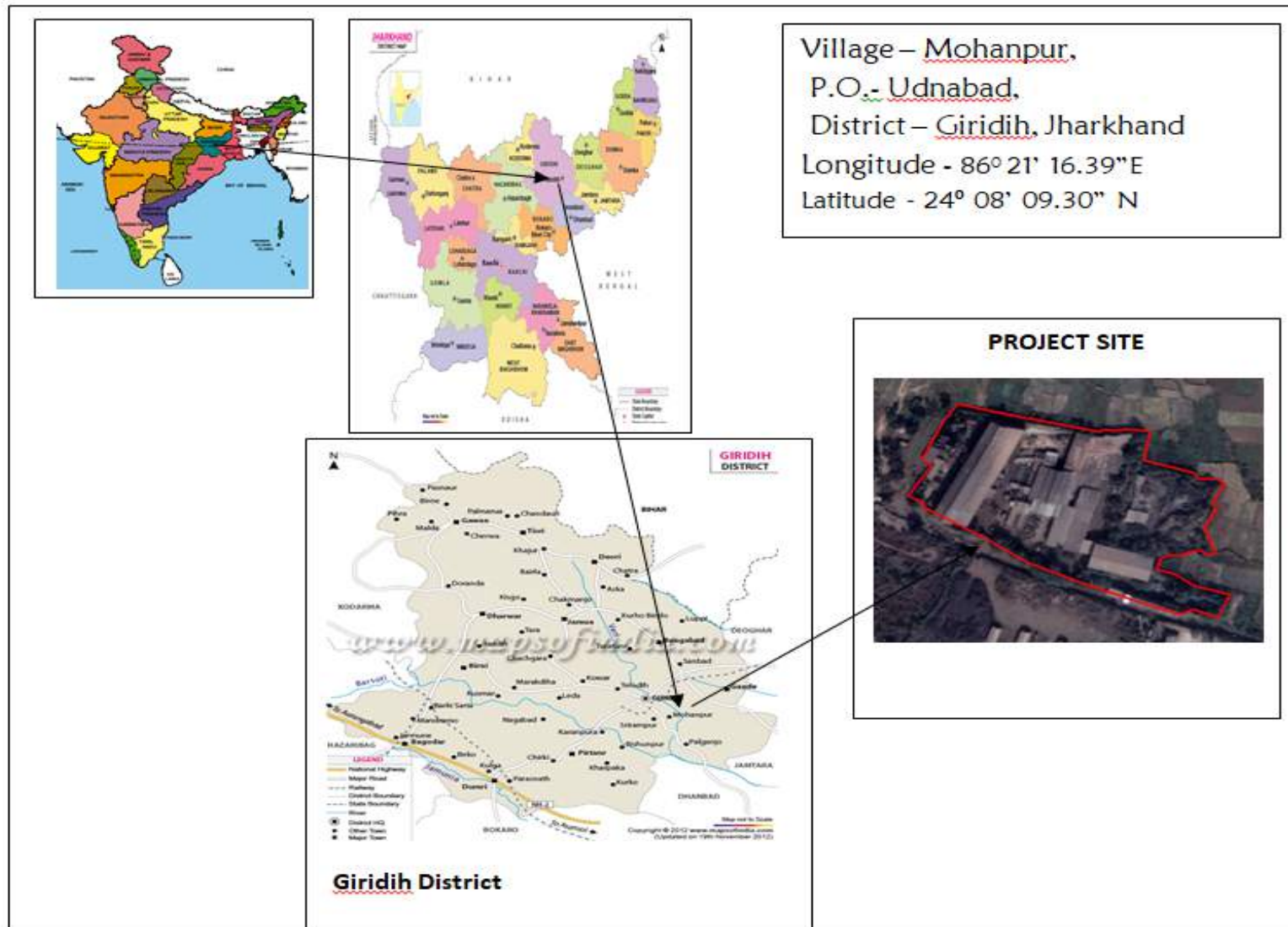


Figure 1.1- Location Map of the Project

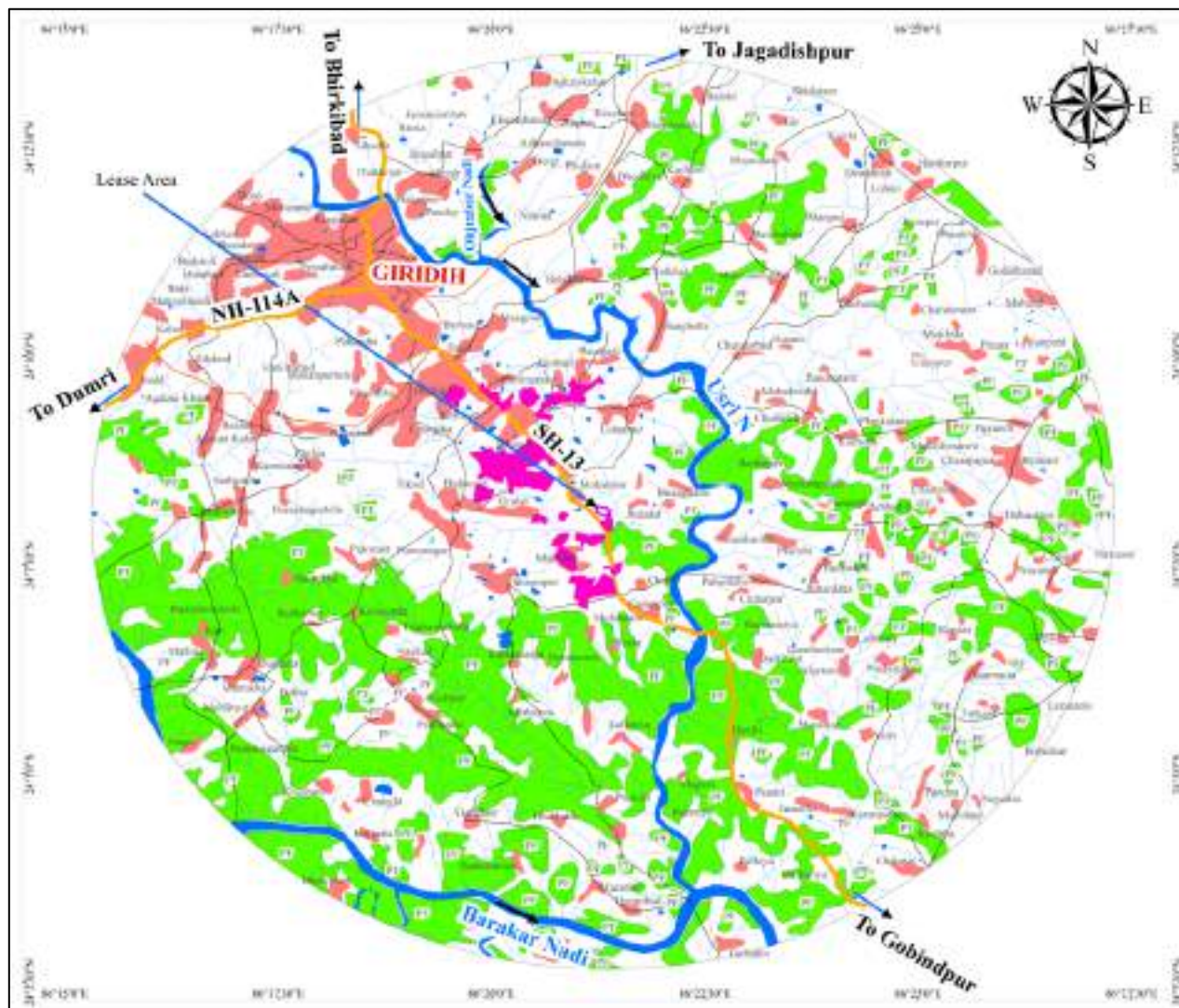


Figure 1.2- Digitized Map of the Buffer Area

1.1.3 Salient features of the Project Site –

The salient features of the project site is given in **Table No. 1.1.**

Table 1.1-Salient feature of the Proposed Project

Sl. No.	Particulars	Details	
1.	Site Location	Village- Mohanpur, PO- Udnabad, and District- Giridih in the state of Jharkhand	
2.	Khata no. & Plot No.	Khata No.	Plot No.
		68	1526, 1527, 1528, 1529, 1532, 1533 & 1536
		27	1552
		57	1554
		51	1553
		78	1551
		55	1550
		73	1555
		109	1524
		49	1546
		32	1549
		75	1556
		12	1547
		47	1467
		41	1463, 1464
		72	1557
		88	1548
		109	1524
		89	1523

Sl. No.	Particulars	Details		
3.	Topo-sheet Nos. of Project Site	72 L/8		
4.	Topo-sheet Nos. for 10km Study area	72 L/8		
5.	Latitude and Longitude Range of Project site	Latitude: 24°8'4.47"N to 24°8'12.30"N Longitude: 86°21'13.27"E to 86°21'23.53"E		
6.	GPS Corner Coordinates	Points	Latitude	Longitude
		A	24° 8'12.32"N	86°21'14.44"E
		B	24° 8'9.98"N	86°21'13.50"E
		C	24° 8'8.58"N	86°21'13.25"E
		D	24° 8'6.13"N	86°21'17.46"E
		E	24° 8'4.48"N	86°21'23.16"E
		F	24° 8'6.05"N	86°21'21.30"E
		G	24° 8'6.63"N	86°21'23.16"E
		H	24° 8'7.42"N	86°21'22.85"E
		I	24° 8'8.22"N	86°21'23.34"E
		J	24° 8'9.14"N	86°21'23.67"E
		K	24° 8'10.06"N	86°21'20.94"E
		L	24° 8'11.26"N	86°21'21.15"E
		M	24° 8'11.19"N	86°21'19.44"E
7.	Height above MSL	281 meters		
8.	Interstate border	No interstate border within 10 km		
9.	Nearest Habitation	Mohanpur at 0.20 km NW		
10.	Nearest Densely Populated Area	Giridih Town at 6.2km in NW		
11.	Nearest Police Station	Giridih police Station at 6.7 km in NW		
12.	Nearest Post Office	Budhiyadih Post Office at 3.59km in NW		
13.	Nearest Panchayat Office	Mohanpur Panchayat Bhawan-0.46km in NW		
14.	Nearest Hospital	Goenka Hospital at 6.86 km in NW		
15.	Nearest Education Facilities	Shree Durga Mata Shishu Vidya Mandir at 0.23km in West direction		
16.	Monuments/Religious Place	Bajarangbali Mandir at 1.02 km in NNW		
17.	Defense Installation	CRPF Camp at 7.45 km in NNW		
18.	Nearest River/Reservoir/Dam/etc.	Usri River at 1.58 km in East direction Kako River at 8.76 km in WNW direction Barakar river at 8.98kms in South direction		
19.	Nearest Airport	Deoghar Airport at 48.83 km in NE		
20.	Nearest National Highway/ State Highway	SH- 13 (connecting Koderma - Giridih – Tundi – Govindpur Marg) at a distance of 0.16 km in West Direction		

Sl. No.	Particulars	Details
21.	Nearest Railway Station	Giridih Station is at 6.50 km in N direction from project site
22.	Biosphere Reserve / National Park / Wildlife Sanctuary / Ecological sensitive area	Nil
23.	Reserve Forest / Protected Forest	Only protected forests are present within study area, nearest PF is at 0.25km in SE
24.	Water Requirement	Existing- 105 KLD, Proposed – 185 KLD Total after Expansion: 290 KLD Source: Ground water
25.	Total Power Requirement	Existing: 9.5 MVA, Proposed: 5.5 MVA Total: 15.0 MVA Source: Damodar Valley Corporation Existing DG set – 1x500 kVA Proposed DG set- 1x1000 kVA
26.	Manpower Requirement	Existing – 76, Proposed - 224 Total after Expansion-300
27.	Land Requirement	Expansion will be within the existing plant premises of 4.20Ha. (10.38 Acres)
28.	Project Cost	Existing: Rs. 16.5866 Cr, Proposed: Rs. 34.91 Cr Total: Rs. 51.4966 Cr.

1.1.4 Project Activity

The total land requirement for the proposed expansion unit is 10.38 Acres (4.20 ha.) which is already in possession and in industrial use. No additional land shall be required for the proposed project. Details of existing and proposed facilities and their capacities are given below:

SITE SPECIFIC WILDLIFE CONSERVATION PLAN OF M/S ATIBIR HI-TECH PRIVATE LIMITED (AHPL)

Table 1.2- Existing and Proposed Production Facilities and Capacities

S. No	Plant Facilities	Existing Installed Units and Capacity		Proposed Units and Capacity		Total after Expansion	
		Unit	Capacity	Unit	Capacity	Unit	Capacity
1.	Induction Furnace	(2x8T & 1x6T)	60,000 TPA MS Ingots	Replacement of existing 2x8T & 1x6T by 3x15T	MS Billets 1,48,500 TPA	3x15T	MS Billets 148,500 TPA
2.	Continuous Casting Machine	-		3x2 strand		3x2 strand	
3.	Rolling Mill	(1x9TPH)	21,349 TPA MS Bar in coils & MS Rods	Will be modernized by (1x50TPH)	2,16,251 TPA Rolled Products	1x50TPH	237,600 TPA Rolled Products
4.	Reheating Furnaces	1x10TPH	22,500 TPA (max.)	Replacement of existing 1x10TPH by 1x30TPH	99,000 TPA (max.)	1x30TPH	Re-heated billets (for rolling) 99,000 TPA
5.	Slag Crusher	1x5TPH	16,500 TPA	Will be modernized by 1x10TPH	16,500 TPA	1x10TPH	33,000 TPA (max)

The proposed plant layout is shown in Fig. 1.3. The Toposheet Map, &Google imagery map are shown in Fig. 1.4 & 1.5 respectively. The site photographs depicted in Fig 1.6.

SITE SPECIFIC WILDLIFE CONSERVATION PLAN OF M/S ATIBIR HI-TECH PRIVATE LIMITED (AHPL)



Figure 1.3-Plant Layout

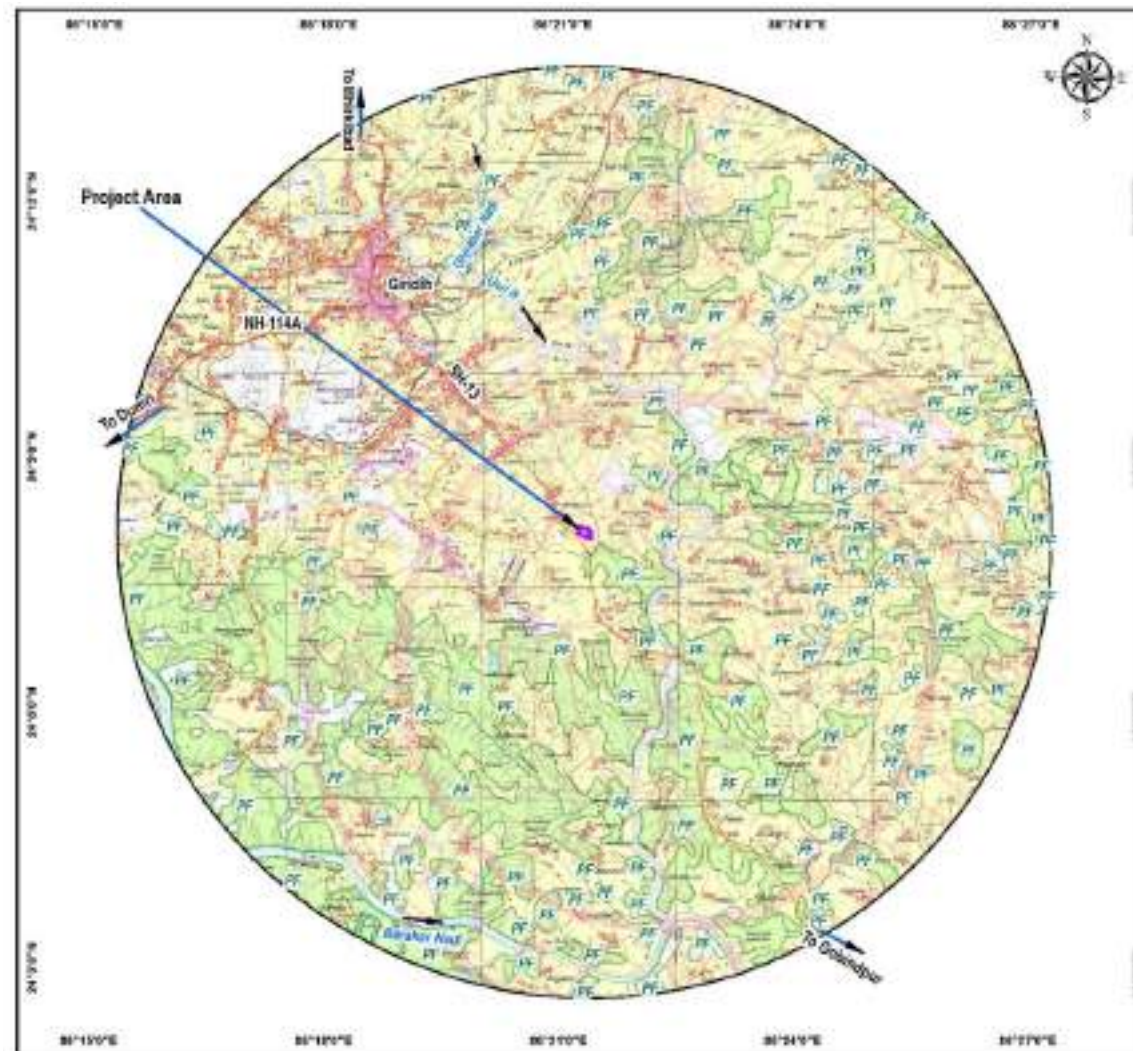


Figure 1.4- Toposheet Map of the Project Site with study area

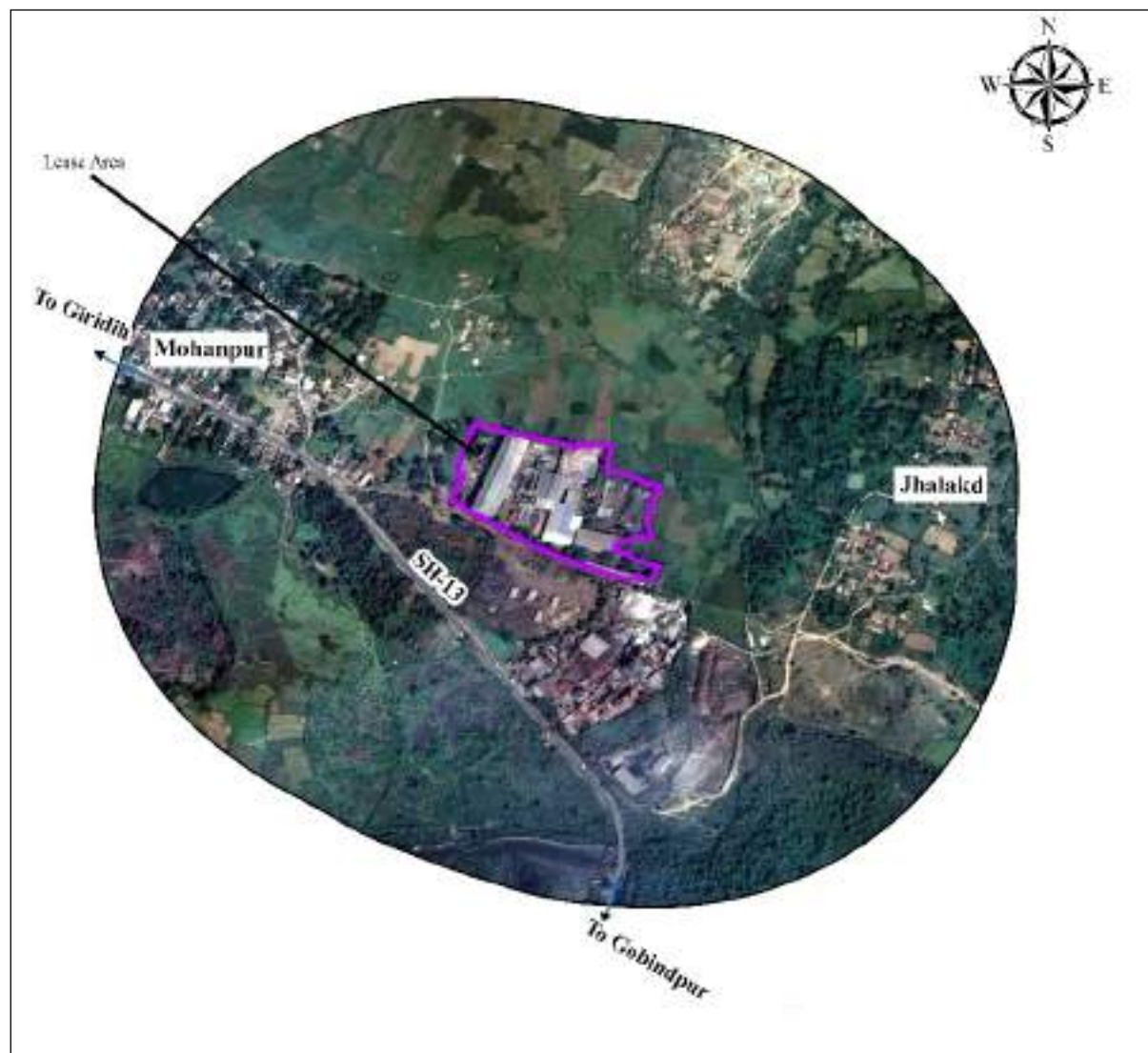


Figure 1.5-500 m Google Imagery of the Project Site

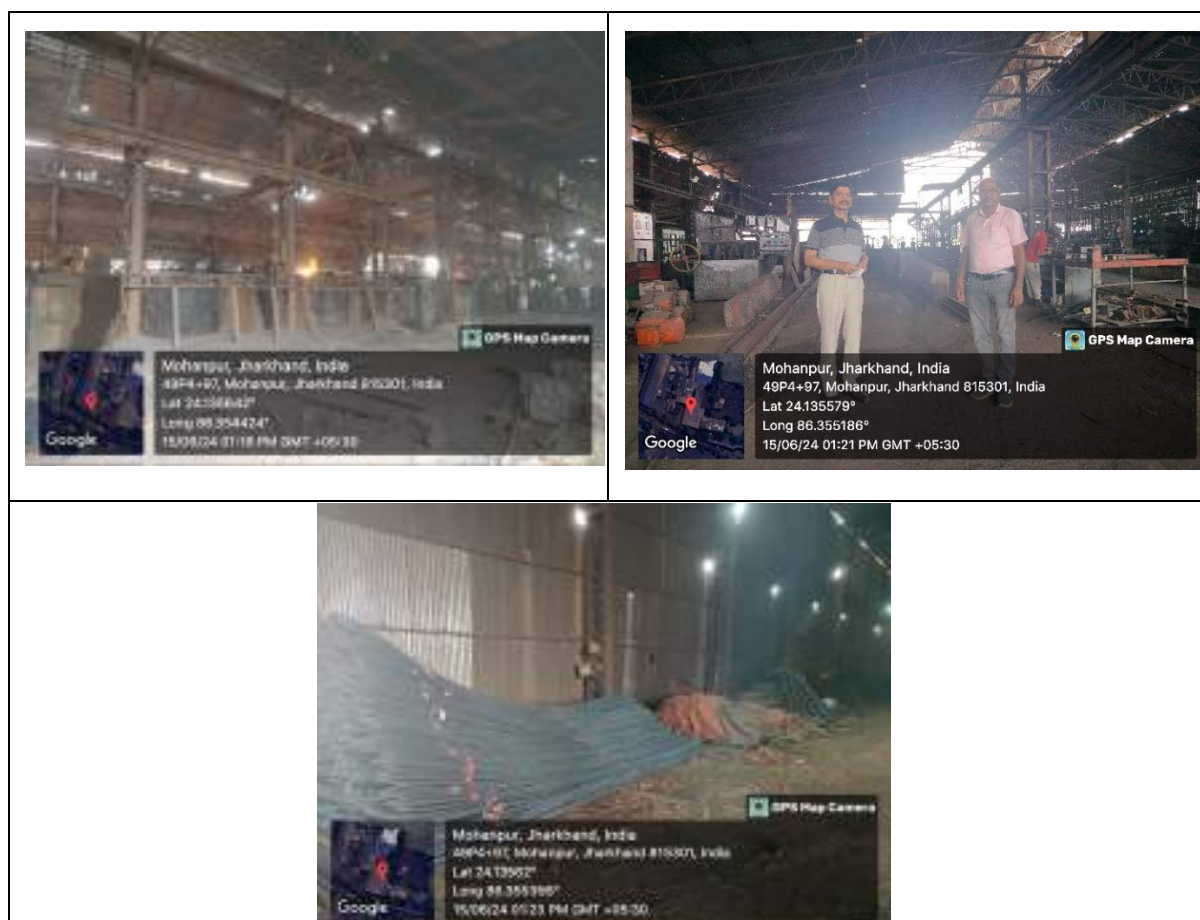


Figure 1.6-Site Photographs

1.1.5 Land Use Pattern of Project Area

The land of the project is located in industrial area and is private land. Plant does not come under the any forest category land. There are no National Park, Wildlife Sanctuary or Natural/Biosphere reserve within 10 Km radius of the project site. Present land use is Industrial. There will be no change in land use, however there will be an increase in intensity of land use.

The proposed project will be installed within the existing plant area. The proposed land use break-up after expansion is as below.

Table 1.3- Land Use Break-up

SL No	TYPE OF USE	AREA (Acres)	AREA (Hectare)
1	Production & Allied facilities	2.40	0.97
2	Admin Building, Stores, Temple Storage yard	1.44	0.58
3	Entrance, Roads and Pavements	1.20	0.49

SL No	TYPE OF USE	AREA (Acres)	AREA (Hectare)
4	Vacant area & Water complex	1.88	0.76
5	Green Belt	3.46	1.40
	TOTAL	10.38	4.20

1.1.6 The Study Impact Area

Study or impact area consists of 10 km radius area around the project site. For ease of study and understanding it has been divided into two zones namely - Core Zone (enclosing the project area) and the Buffer zone (consisting of 10 km radius area around the project site). The details of both are presented below.

1.1.6.1 Core Zone

The core zone or the project area is limited to 4.20 Hectare (10.38 Acre) on which the project activities are taking place and proposed for the expansion. The details of which is as follows:

Table 1.4- Forest Details of Project Site

S.N.	Particulars	Area in Hect.
1	Forest Land Break-up	
	<i>Water Bodies</i>	Nil
	<i>Scrub</i>	Nil
	<i>Open Forest</i>	Nil
	<i>Moderately Dense Forest</i>	Nil
	<i>Very Dense Forest</i>	Nil
2	Non-Forest Land Break-up	
	<i>Water Bodies</i>	Nil
	<i>Raiyati Land</i>	4.20
	TOTAL	4.20

1.1.6.2 Forest Block of the Core zone (Project Area)

The area does not cover the forest land hence does not fall under any forest block. Administratively the land is located w.r.t. forest division, Range and beat as following –

Forest Division	Forest Range	Beat	Village
Giridih East Forest Division	Giridih Range	Gadi Srirampur	Mohanpur

1.1.6.3 Buffer Zone

10 km area around the project area which is susceptible to the impact of the project has been considered as Buffer Zone. This is covered in 72 L/8. Topography is gently undulating for the most part of the buffer zone. However, there are some hillocks in the buffer zone ranging in height from 306 to 372 m above mean sea level.

1.1.6.4 Impact Area (10 Km) with respect to Forest Range & Forest Beat

Forest Division	Forest Range	Forest Beat
Giridih East Forest Div.	Giridih	Gadi Srirampur
	Khurchutta	Gandey
	Khurchutta	Devipur

Detail Map showing the Range, Beat, and villages within the 10 Km impact area of Project location is Given in Fig. 1.7.

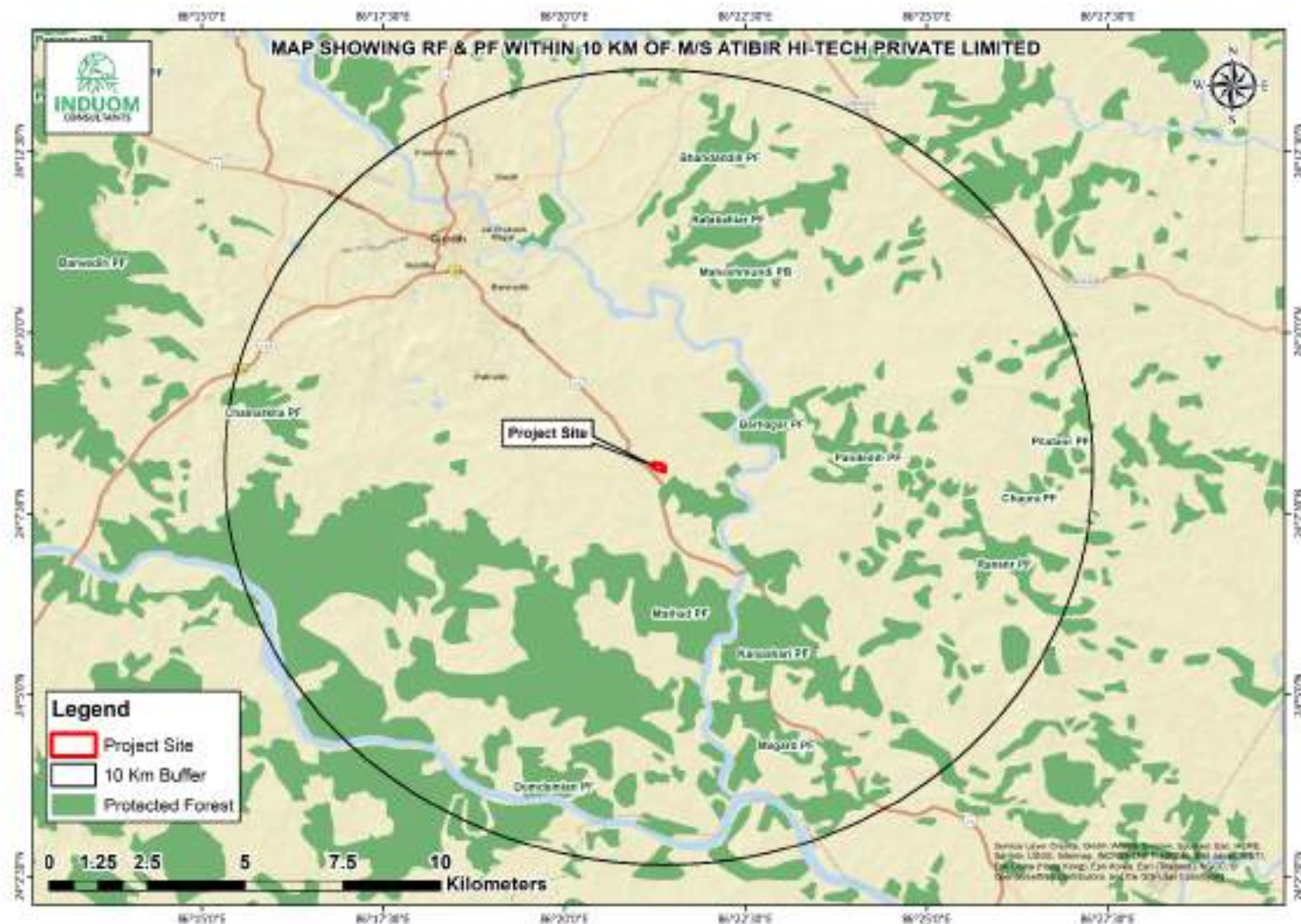


Figure 1.7-RF & PF within 10km of the Project Site

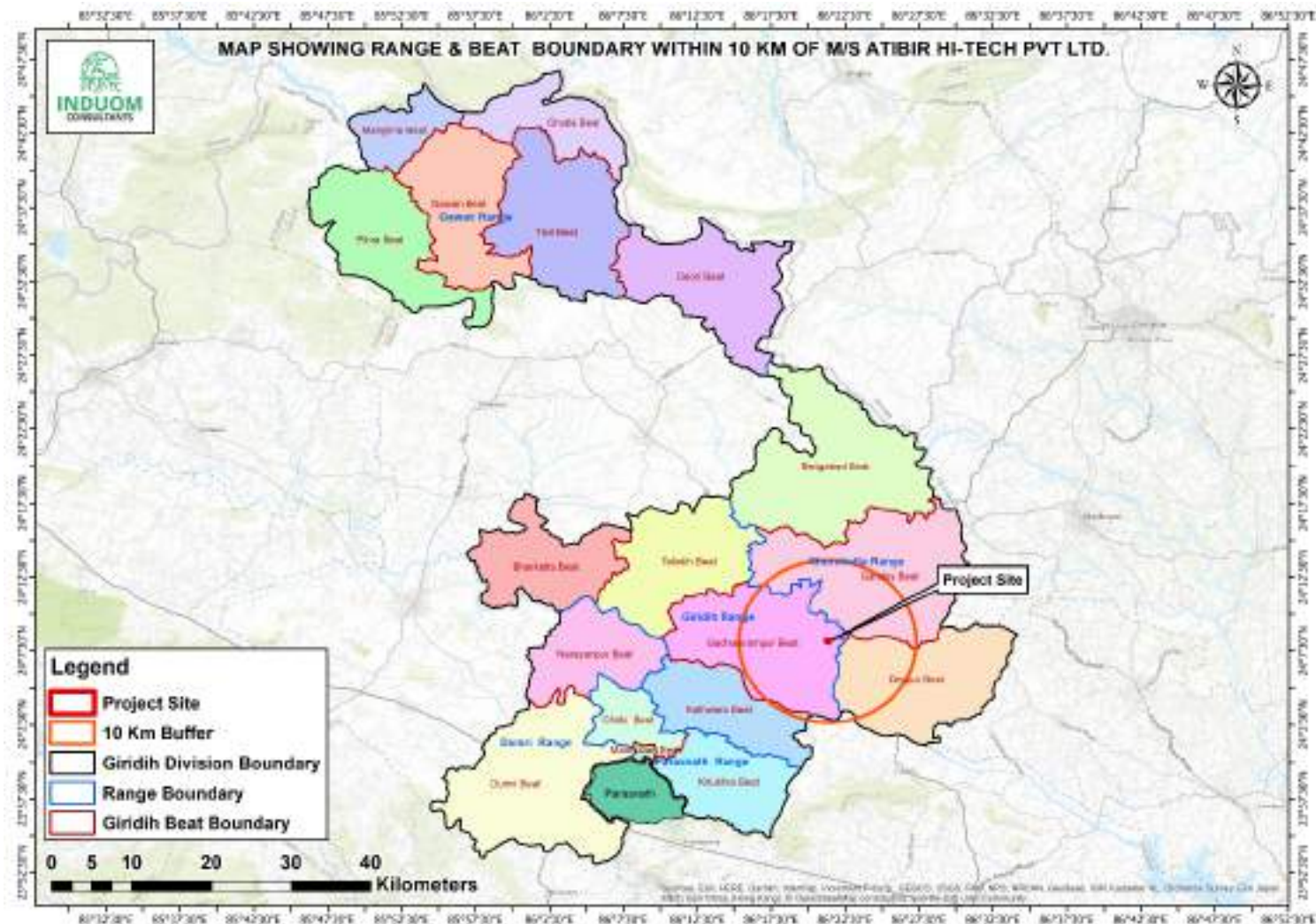


Figure 1.8- Map showing Area of Girdih East Forest Division showing Range, Beat & Village boundaries in 'Buffer Area'

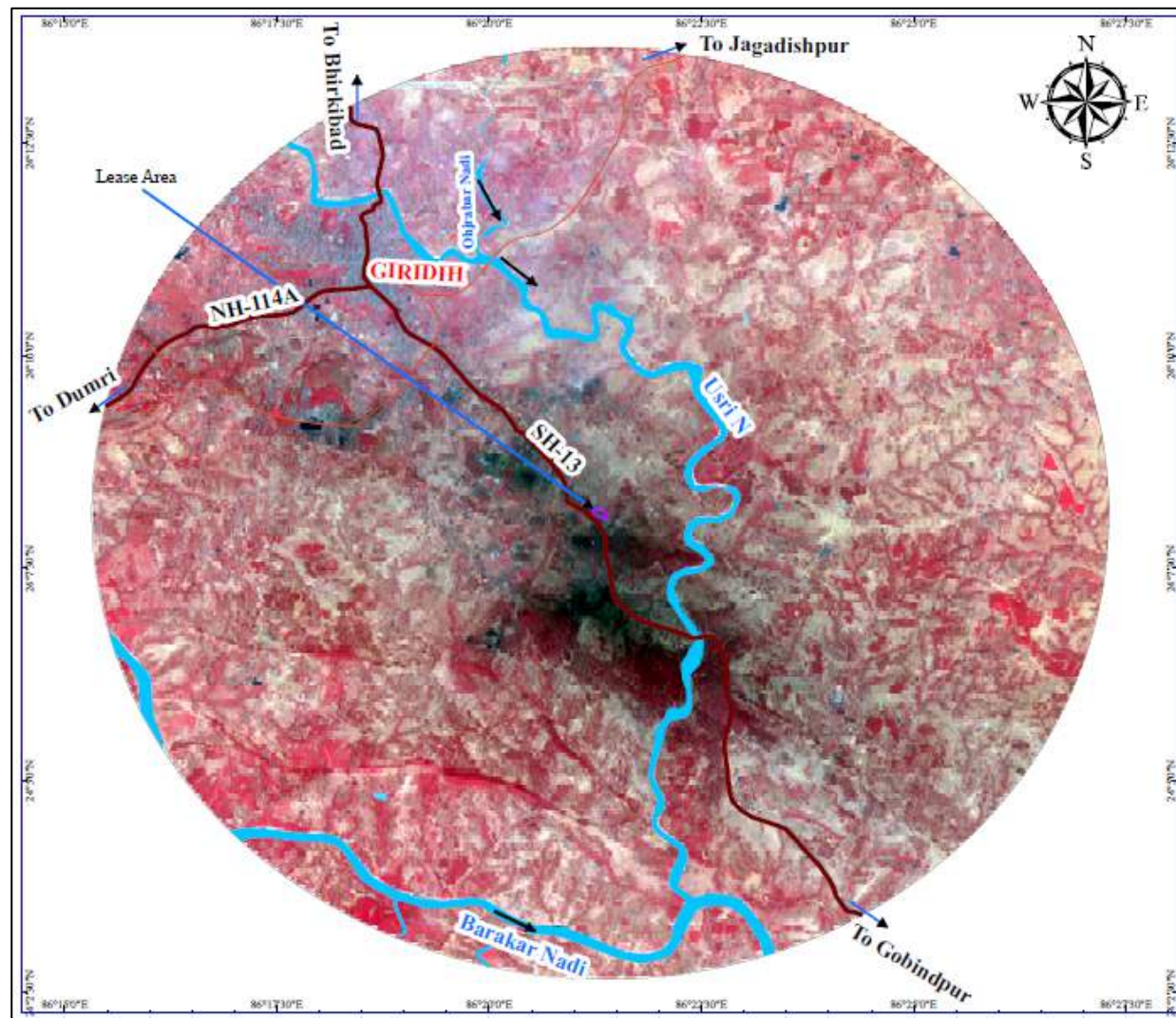


Figure 1.9- Satellite Imagery of the 10Km Study Area

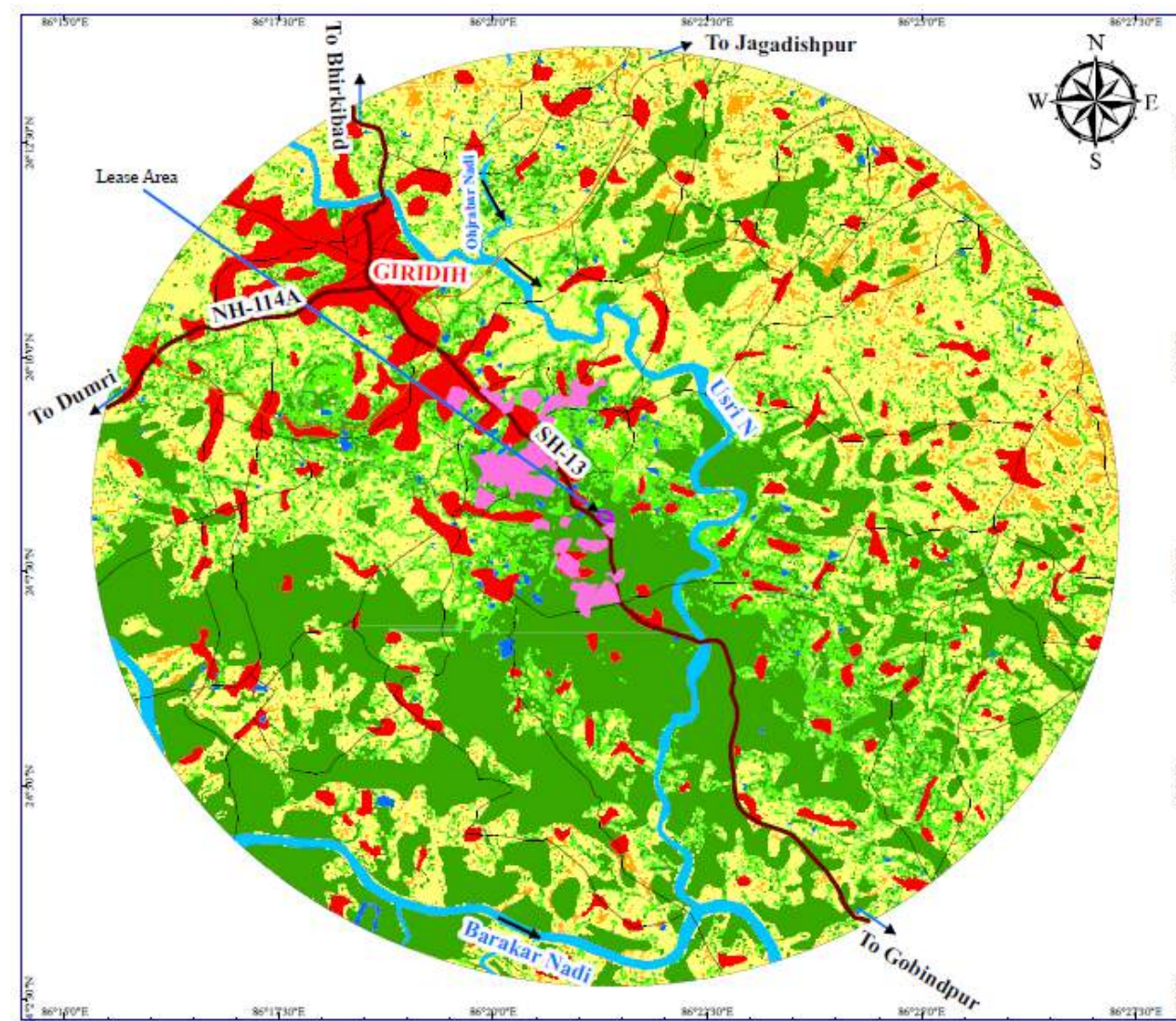


Figure 1.10- LULC Map of 10 KM study Area

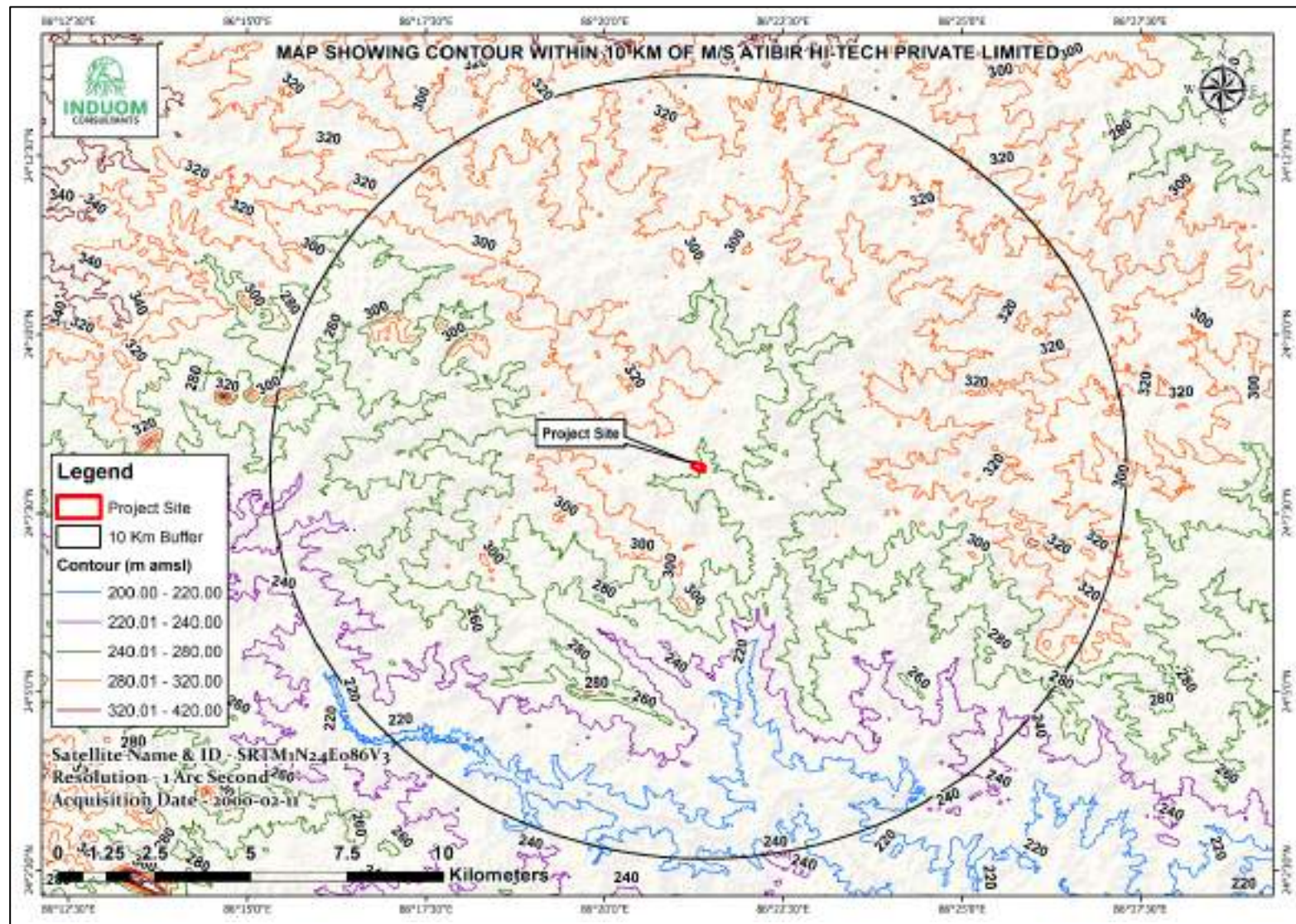


Figure 1.11- Contour Map of 10 KM study Area

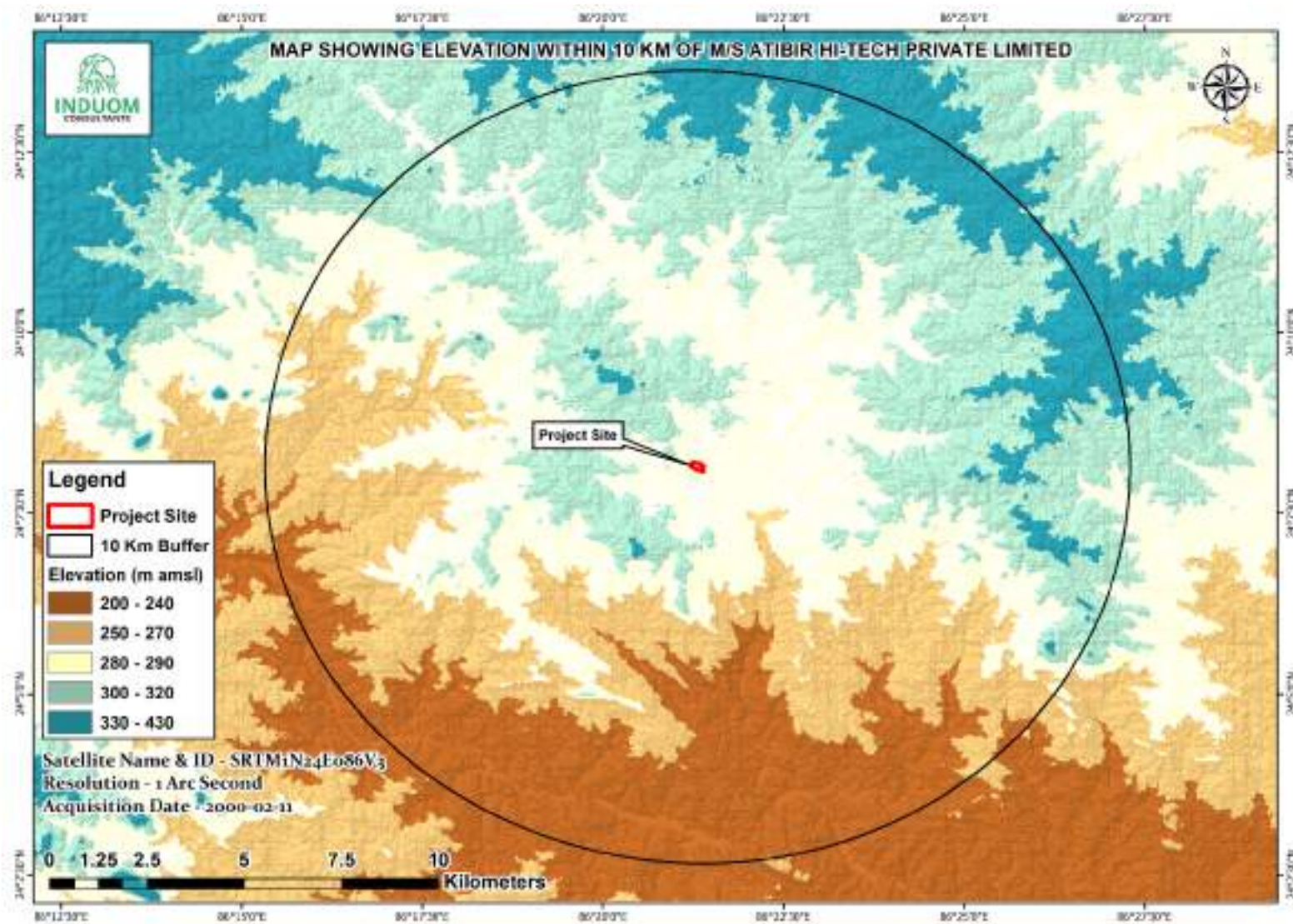


Figure 1.12-Elevation within 10km of the Study Area

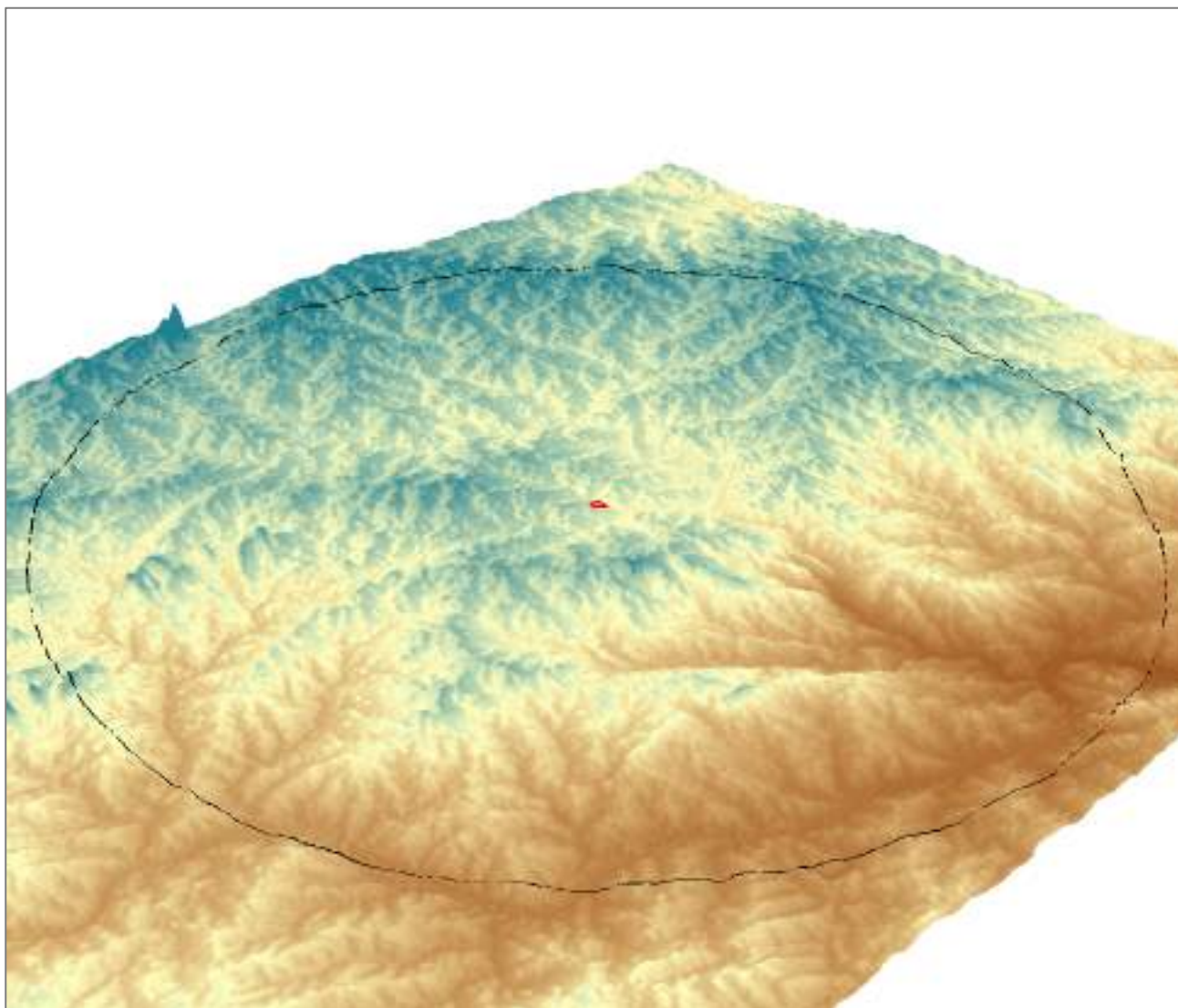


Figure 1.13-3D DEM Map of 10 KM study Area

1.2 Land Use of the Impact Area (10 Km)

Table 1.5- Land use/ Land cover of total buffer around the Plant site

Land use	Area (in Hectares)	% Area
Waterbody	1040.8	3.1
Forest	12671.9	37.6
Open Scrub	4261.6	12.7
Builtup	3383.4	10.0
Industry	337.4	1.0
Agricultural Land	11075.7	32.9
Fallow Land	907.2	2.7
Total Area	33678	100

Satellite imagery, LULC Map and Contour Map of 10 Km study area are given in Fig 1.8, 1.9 & 1.10 respectively.

1.2.1 Status of forest diversion proposal

Forest diversion is not applicable for the project. The project area does not involve any forest land and no jungle-jhari in khatiyon of land records within the core zone hence no forest diversion proposal required.

1.2.2 Status of forest, environmental clearance

The project does not require any forest clearance as no forest diversion is involved as detailed above. The environment clearance of the proposal is under process and various activities for the same has been carried out as detailed below. The proposal is for expansion of its production of TMT Bar in coils & MS Rods from 21,349 TPA to 2,37,600 TPA through modernization of its existing Re-Rolling Mill from 9 TPH to 50 TPH capacity along with replacement of existing 1x10 TPH Reheating Furnace by 1x30 TPH Reheating furnace and also for production of 1,48,500 TPA MS Billets by replacing the existing (2x8T & 1x6T) Induction Furnace by 3x15T induction Furnace along with installation of new 3x2 strand CCM and modernization of existing slag crusher from 5 TPH to 10 TPH capacity within the existing plant premises of 4.20Ha (10.38 Acres).

The ToR for the expansion has been obtained vide letter No. – EC/SEIAA/2021-22/2437/2021/199 dated 30/10/2021 from SEIAA, Jharkhand.

1.2.3 Villages and Habitations within the 10 Km. buffer area

1.2.3.1 Villages and Habitations

The study area was defined as an area within 10 km radius around the project site which includes total 98 villages that are Giridih, Gande, and Bengabad Tehsil of Giridih district of Jharkhand State.

1.3 Demographic Structure

Demographic structure of the study area was estimated for the selected parameters as households, population, sex ratio, scheduled caste, scheduled tribes, literacy from primary census abstract, CD 2011 of Jharkhand. The summarized demographic structure of the study area is presented in Table, while the details of the parameters of demographic structure of the villages and urban area within 10 kms are shown in Table.

Table 1.6- Summarized demographic structure of the study area

Sl. No.	Parameter	Study Area
1	No. of Villages	98
2	Households	18211
3	Household Ratio	5.9
4	Total Population	107528
5	Male Population	55587(51.69%)
6	Female Population	51941(48.30%)
7	Population (0-6Years %)	21232(19.74%)
8	Sex Ratio	934
9	Child Sex Ratio	934
10	Scheduled Caste%	16494(15.35%)
11	Scheduled Tribes%	18755(17.44%)
12	Literates %	53352(49.61%)
13	Main Workers%	18681(17.37%)
	• Cultivators	1571(8.40%)
	• Agricultural • Laboure's	1183(6.33%)
	• Household • Laboure's	663(3.54%)
	• Other Workers	15264(81.70%)
14	Marginal Workers%	19141(17.80%)
15	Non-Workers%	69706(64.82%)

1.3.1 Demographic profile of the district

Giridih district ranks third in terms of total population in the state and fourth regarding decadal population growth rate (2001-11) among the twenty-four districts. With a sex ratio of 944, it ranks seventh in the state. The district comprises of thirteen blocks Gawan, Tisri, Deori, Dhanwar, Jamua, bengabad, Gandey, Giridih, Birni, Bagodar, Sariya, Dumri and Pirtand. As per Census 2011, the district has 2558 villages and 5 towns distributed in four assembly constituencies. Census 2011 figures indicated that the percentage share of scheduled caste population to total population was 13.31 percent while that of scheduled

tribes was 9.74 percent. As in the number of total rural households in Census 2011 and BPL Revision Survey of 2010-11 the percentage of BPL households in rural area is 63.77percent.

1.3.1.1 Household and Population

Total number of households in the study area is about 18211 with total population of about 107528 in with male population about 55587 (51.69%) and female population is 51941(48.30%). The average family size i.e., persons per family is about 5.9 in the study area. Out of the total population, the population of children within the age of 0-6age-group in rural area is about 21232(19.74%).

Table 1.7- Demographic structure of the Villages in study area

Sl. No.	Villages	House holds	Total Population	Population 0-6 Years	Scheduled Caste	Scheduled Tribes	Literates
Giridih District							
Giridih Tehsil							
		13351	78532	15180	13526	11212	40229
Gande Tehsil							
		4265	25257	5230	1963	7361	11627
Bengabad Tehsil							
		595	3739	822	1005	182	1496
Grand Total		18211	107528	21232	16494	18755	53352

Source: Primary Census Abstract 2011, Jharkhand

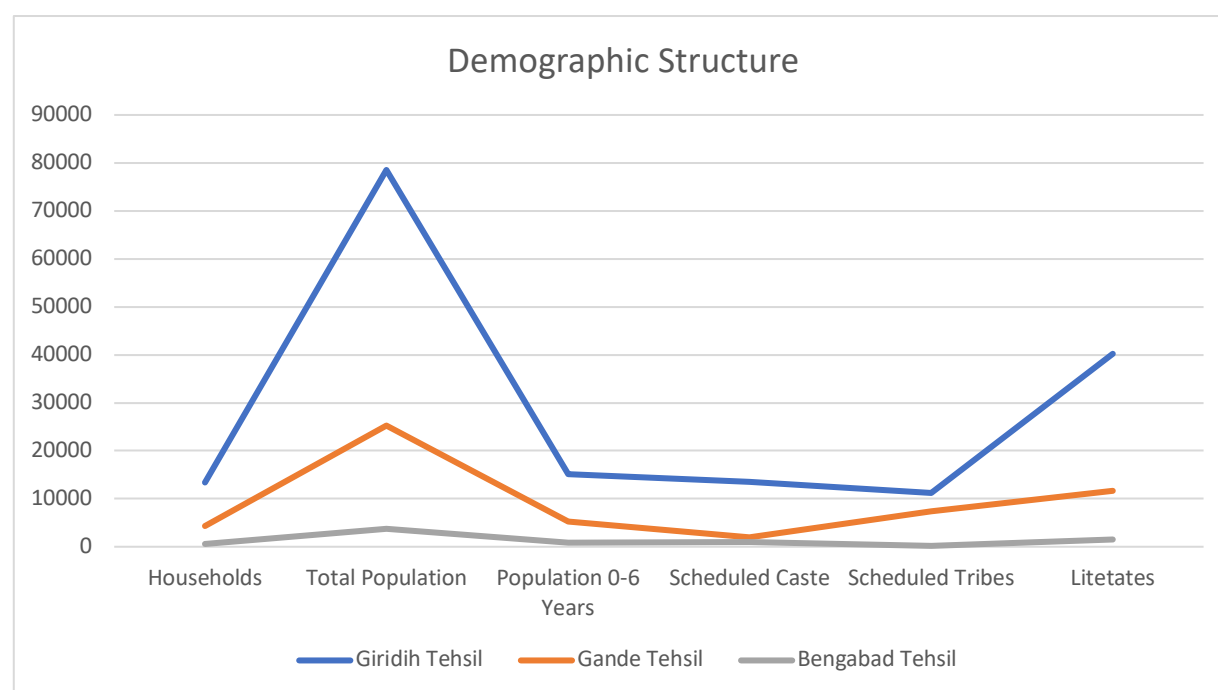


Figure 1.14-Demographic Structure of the village in the study area

Table 1.8- Occupational structure of the study area

Sr. No.	Villages	Total Main Workers	Main Workers				Marginal Worker s	Non-Worker s
			Cultivator s	Agricultural Laborers	Household Laborers	Other Worker s		
Giridih District								
Giridih Tehsil								
		14658	1085	474	434	12665	9662	54212
Gande Tehsil								
		3275	406	700	227	1942	8121	13861
Bengabad Tehsil								
		748	80	9	2	657	1358	1633
Grand Total		18681	1571	1183	663	15264	19141	69706

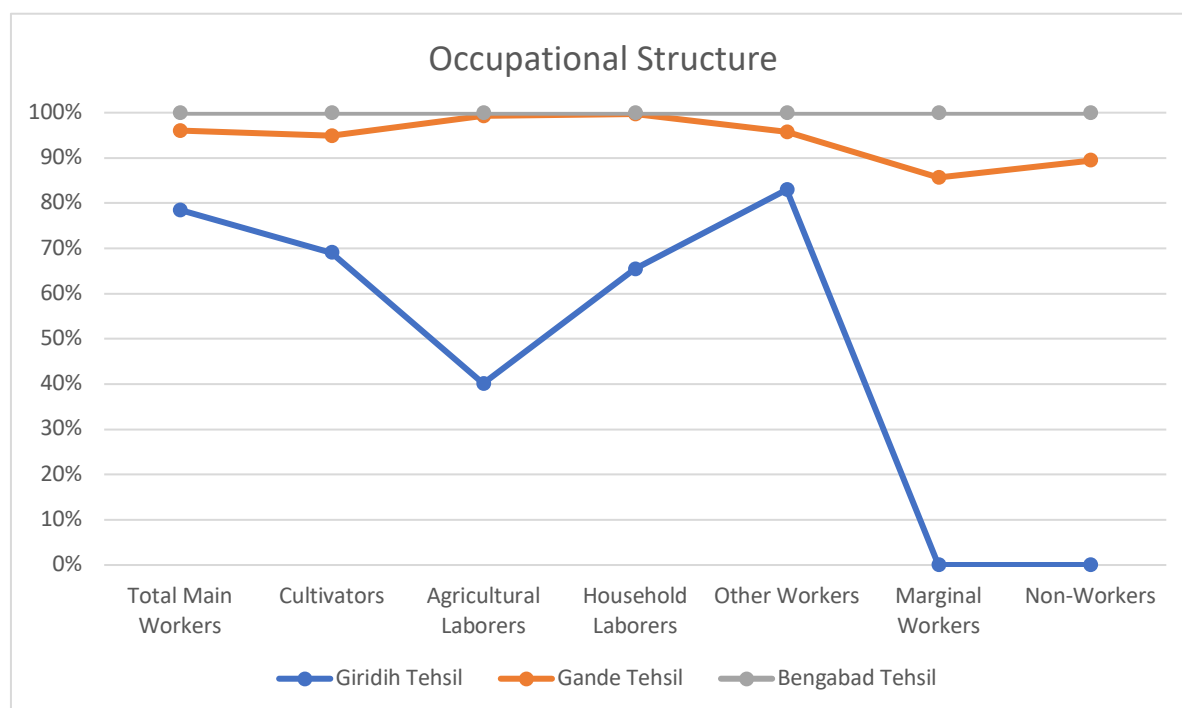


Figure 1.15-Occupational Structure of the village in the Study area

Salient Observations of Socio-Economic Survey in the Study Areas

- i. **Housing pattern:** The types of housing pattern in the study area varied from kuccha to pucca (pakka) houses. 30% houses were in pucca form, 20% in semi pakka and 50% houses were observed in kuccha form.
- ii. **Employment:** Main occupation in the study area is categorized into other activity that includes labour work, small business; private jobs etc. The labours were getting daily wags in the range of Rs. 300-350 per day.
- iii. **Fuel:** The primary sources of cooking fuel were firewood, cow dung cake, coal etc. Very few villagers were using LPG facility
- iv. **Main crops:** The principal crops grown in agricultural farm were, Rice Maize, Mustard, Pulses, onion, potato and Vegetables etc.
- v. **Sanitation:** Toilet facility is one of the most basic facilities required in a house. It has been Observed that more than 50-60% of the households were not having toilet facilities in there is no proper drainage facility in the villages mostly the villagers have open drainage system and open nallas in the study area.
- vi. **Drinking water Facilities:** During the survey it was observed various sources of drinking water supply in villages. Major source of drinking water in the study area is through uncovered well, Hand Pumps and Tap water. During the survey people from some villages in the core zone stated that there is shortage of water in summer season.
- vii. **Education facilities:** Most of the villages had education facilities in the form of Anganwadi and primary schools. Higher education facilities were available in Giridih and Gande town.
- viii. **Transportation facility:** For transportation purpose auto, jeep and private bus services were available in the study area; however, villagers reported that transportation facilities were not frequently available. Private vehicles like bicycles & motorcycles were also used by villagers for transportation purpose.
- ix. **Road connectivity:** Most of the roads were pucca and very few pucca roads are in poor condition in need of repair and maintenance.
- x. **Communication facilities:** For communication purpose mainly mobile phones & post offices are present in the villages of study area.
- xi. **Medical facilities:** In some of the villages primary health sub centres were available. Hospitals and other better health centres were available in the range of 5-10 km at town place.
- xii. **Electricity:** All villages were availing electricity facility for domestic and agriculture purposes.

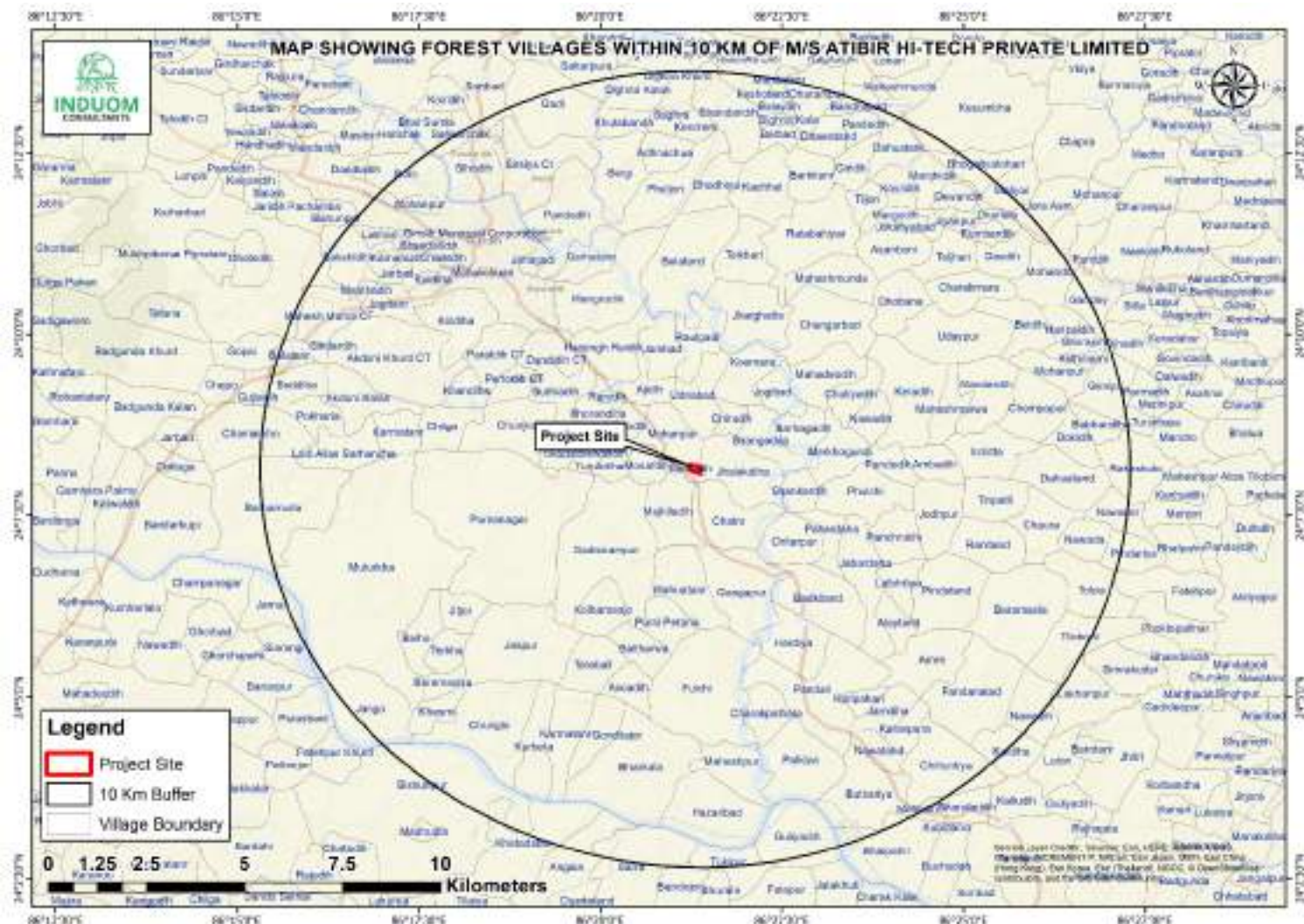


Figure 1.16-Village Map of the Study Area

1.3.2 Existing cropping pattern of Villages

Paddy, maize and wheat are the major crops raised in the study area. Followed by Bajra, Arhar, Moong, Gram, Sarso. The various vegetable and horticulture plants are also raised.

Table 1.9- List of Cropping pattern

Sl. No.	Local Name	Botanical Name	Family
CEREALS			
1	Paddy	<i>Oryza sativa</i>	Poaceae
2	Maize	<i>Zea mays</i>	Poaceae
3	Wheat	<i>Triticum aestivum</i>	Poaceae
4	Barley	<i>Hordeum vulgare</i>	Poaceae
5	Bajra	<i>Pennisetum typhoides</i>	Poaceae
PULSES			
1	Arhar	<i>Cajanus cajan</i>	Leguminosae
2	Gram	<i>Cicer arietinum</i>	Leguminosae
3	Lentil	<i>Lens culineris</i>	Leguminosae
4	Mung	<i>Phaseolus aureus</i>	Leguminosae
5	Khesari	<i>Lathyrus sativus</i>	Leguminosae
6	Kulthi	<i>Macrotyloma uniflorum</i>	Leguminosae
7	Urad	<i>Phaseolus mungo</i>	Leguminosae
8	Barbati	<i>Vigna unguiculata</i>	Leguminosae
OIL YIELDING PLANTS			
1	Mustard	<i>Brassica campestris</i>	Cruciferae
2	Castor	<i>Ricinus communis</i>	Linaceae
SPICES			
1	Chilly	<i>Capsicum annum</i>	Solanaceae
2	Garlic	<i>Allium sativum</i>	Liliaceae
3	Adrak	<i>Zingiber officinale</i>	Zingiberaceae
4	Dhania	<i>Coriander sativum</i>	Apiaceae
VEGETABLES			
1	Lady Fingers	<i>Abelmoschus esculentus</i>	Malvaceae
2	Potato	<i>Solanum tuberosum</i>	Solanaceae
3	Tomato	<i>Lycopersicon esculentum</i>	Solanaceae

Sl. No.	Local Name	Botanical Name	Family
4	Cabbage	<i>Brassica oleracea variety oleracea</i>	Brassicaceae
5	Cauliflower	<i>Brassica oleracea Variety botrytis</i>	Brassicaceae
6	Brinjal	<i>Solanum melogena</i>	Solanaceae
7	Sponge gourd (Nenua)	<i>Luffa cylindrica</i>	Cucurbitaceae
8	Peas	<i>Pisum sativum</i>	Fabaceae
9	Green chilly	<i>Capsicum frutescens</i>	Solanaceae
10	Pumpkin	<i>Cucurbita pepo</i>	Cucurbitaceae
11	Bean	<i>Phaseolus vulgaris</i>	Leguminosae
12	Jhinga	<i>Luffa acutangula</i>	Cucurbitaceae
13	Kundari	<i>Coccinea grandis</i>	Cucurbitaceae
14	Kakori	<i>Momordica dioca</i>	Cucurbitaceae
15	Sahjan	<i>Moringa oleifera</i>	Moringaceae
16	Kohra	<i>Cucurbita maxima</i>	Cucurbitaceae
17	Onion	<i>Allium cepa</i>	Amaryllidaceae
18	Bottle gourd (Louki)	<i>Lagenaria sicereria</i>	Cucurbitaceae
FRUITS			
1	Guava	<i>Psidium guava</i>	Myrtaceae
2	Jamun	<i>Syzygiumcumini</i>	Myrtaceae
3	Aam	<i>Mangifera indica</i>	Anacardiaceae
4	Lemon	<i>Citrus limon</i>	Rutaceae
5	Ber	<i>Zyziphusmauritiana</i>	Myrtaceae
6	Papaya	<i>Carica papaya</i>	Caricaceae
7	Bel	<i>Aegle marmelos</i>	Myrtaceae
8	Toot	<i>Morus alba</i>	Moriaceae
9	Kathal	<i>Artocarpus interifolia</i>	Moraceae

The village crop productivity is low as the cultivation is mostly rain fed. The low area is cultivated with Paddy which is most favored crop. The upland is cultivated with maize in combination with Arhar and Til. The irrigated area has Wheat and Barley also. The Potato is cultivated by everyone more or less. However, the production is not much. Very few sell Potato in the market.

1.3.3 Dependency on Forests, NTFP

Although there is no forest area covers within the core zone of the project, the surveyed villages are very less dependent upon forest within the buffer zone for their household sustenance. The forest area in the buffer zone includes Scrub, open forest and mod. Dense forest.

1.3.3.1 Local Requirements

The primary requirements of the population from the forests are firewood; poles, small timber and bamboo for house building and agriculture purposes and grasses and leaves to be used as fodder for cattle. There is a good demand for bamboo for basket making industry also. Non-Timber Forest Produce (NTFP) like Mahua flowers, Mahua seeds, Sal seeds, Sawai grass, Kendu leaves, Chironji etc. provide the poor villagers an additional source of income for sustenance. The need for fencing material is immense as the agricultural crops need to be protected from free roaming cattle. A considerable amount of forest produce in the form of poles is consumed by the villagers every year for fencing and house building purposes. The fencing material is used in the previous year is burnt as firewood etc.

The forests provide firewood, household timber requirement, agriculture requirement, fencing, MFP, medicinal plants for own use and for sale, grazing hunting for wild boar and rodents, birds etc. The household survey in the sample villages indicates that each household consumes approximately 4800 KG of fire wood, for agriculture, housing, and burning during winter.

An average of 6 cattle/household graze in the forest. The MFP like Mahua, Sal Seeds, Honey, Piar, Jamun, Kathal, Mushroom, Satawar, Kendu leaves etc. provide the average income of Rs.8000/- / annum /household. Most of the forests are in degraded stage. The consumption and extraction is more than the regeneration capacity of the forest.

The **main items of forest origin** that are brought to the markets and weekly hats apart from firewood and timber are being enumerated as follows:

- | | |
|----------------------|---------------------------------------|
| • Sal seeds | • Bahera |
| • Mahua flowers | • Amla |
| • Mahua seeds | • Chiraunji |
| • Palas seeds | • Karanj seeds |
| • Lac | • Agricultural tools made out of wood |
| • Tasar Silk cocoons | • Kendu leaves |
| • Harra | • Gums |
| | • Medicinal plants etc. |

The above list is only illustrative and many other herbs, seeds, roots of medicinal value are traded in the markets. The Kendu leaves are collected and marketed by JSFDC. The villagers collect Kendu leaves from the forests and bring these to a specified place called 'Phanri' and the payment is made by the JSFDC to the villagers.



Kendu Leaves in Forests



Kendu Leaves Polas during treatment

1.4 Topography and Drainage pattern of the study area

1.4.1 The Topography & Geomorphology –

The topography of the project site is generally flat. Geomorphologically, the district represents a hilly and undulating terrain and structurally controlled by rock types occurring in the area, which are hard consolidated and semi- consolidated formations. The district can be divided into three divisions namely-

1. The Central Plateau
2. The lower plateau and
3. The Damodar valley

The central area of the district is occupied by the central plateau, which is surrounded by lower plateaus from all sides except in the west where a ridge connects the central plateau to the Palamu district. The lower plateau with average height of 1300 ft is undulating in nature. In the north and North West, the lower plateaus form tablelands until they reach ghats when they drop in height to 700 ft. in the north and North West part and the Damodar valley occurs along the southern part of the district.

There is a famous Parasnath hill, which lies in the district having the highest peak of the state with an altitude of 4479 ft above MSL.

Geomorphologically the study area cover-up with Low dissected hills and valleys of structural and Dendritic origin, Channel Bar, Dyke/sill ridge, Pediment, Pediment-Core stone-Tor-Composite, Pediplain, Residual hill, Ridges and waterbodies.

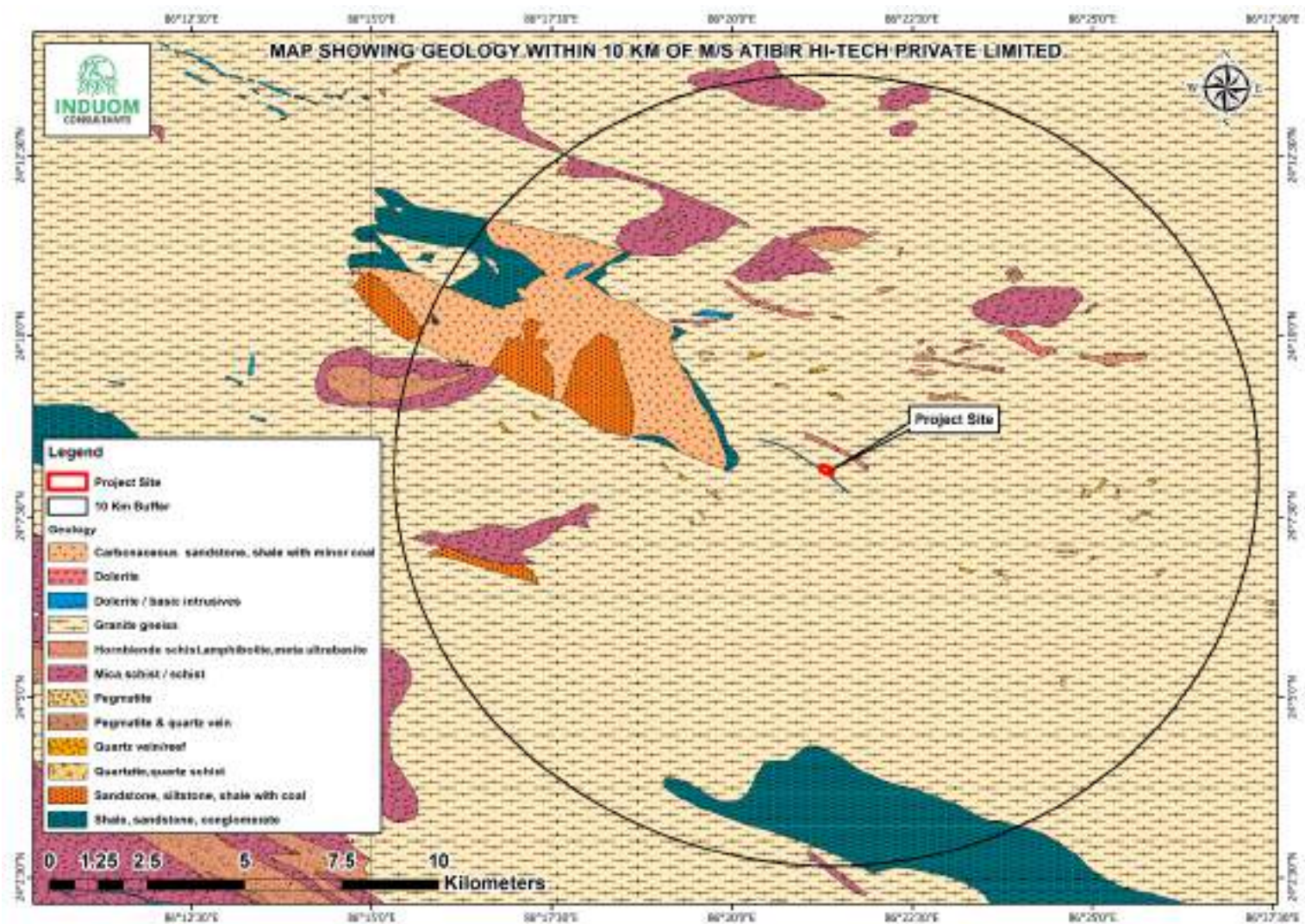


Figure 1.17- Geological map of the study Area

1.4.2 The Drainage System

The district is divided into two main watersheds viz-

1. The Barakar River
2. The Sakri River

The Barakar River drains through major portion of the district, enters the district near the Birni block and also flows through Pirtand block. The Sakri River passes through the areas of Deori and Gawan blocks. A major part of the district is having dendritic drainage pattern, controlled mainly by the topography the area. The nearest river is the Usri Nadi which is at 2.5 Km away from the project site.

All the rivers in the district area are seasonal in nature. During summer the flow of Barakar River is minimal. One of the major rivers is the Barakar river, which flows in NW-SE direction. The Usri Nadi, which flows in NW-SE direction, takes turn near Rautgadi Dhirabar nadi near Garatanr village and starts flowing almost in N-S direction. The details are given below: -

#	Name of the River or Stream	Place of origin
1.	Usri River	Manikabad
2.	Irga River	Dumardiha
3.	Barakar River	Itkhor
4.	Pataro River	Pindrabad
5.	Kuberi River	Dhaniadeh
6.	Sakri River	Kenduwa
7.	Chorgarwa Nadi	Tilaiya
8.	Chirki River	Madhuban
9.	Barki River	Hesla
10.	Jamuniya River	Partanrtola
11.	Mokhli River	Siari
12.	Tanra River	Jamdilla

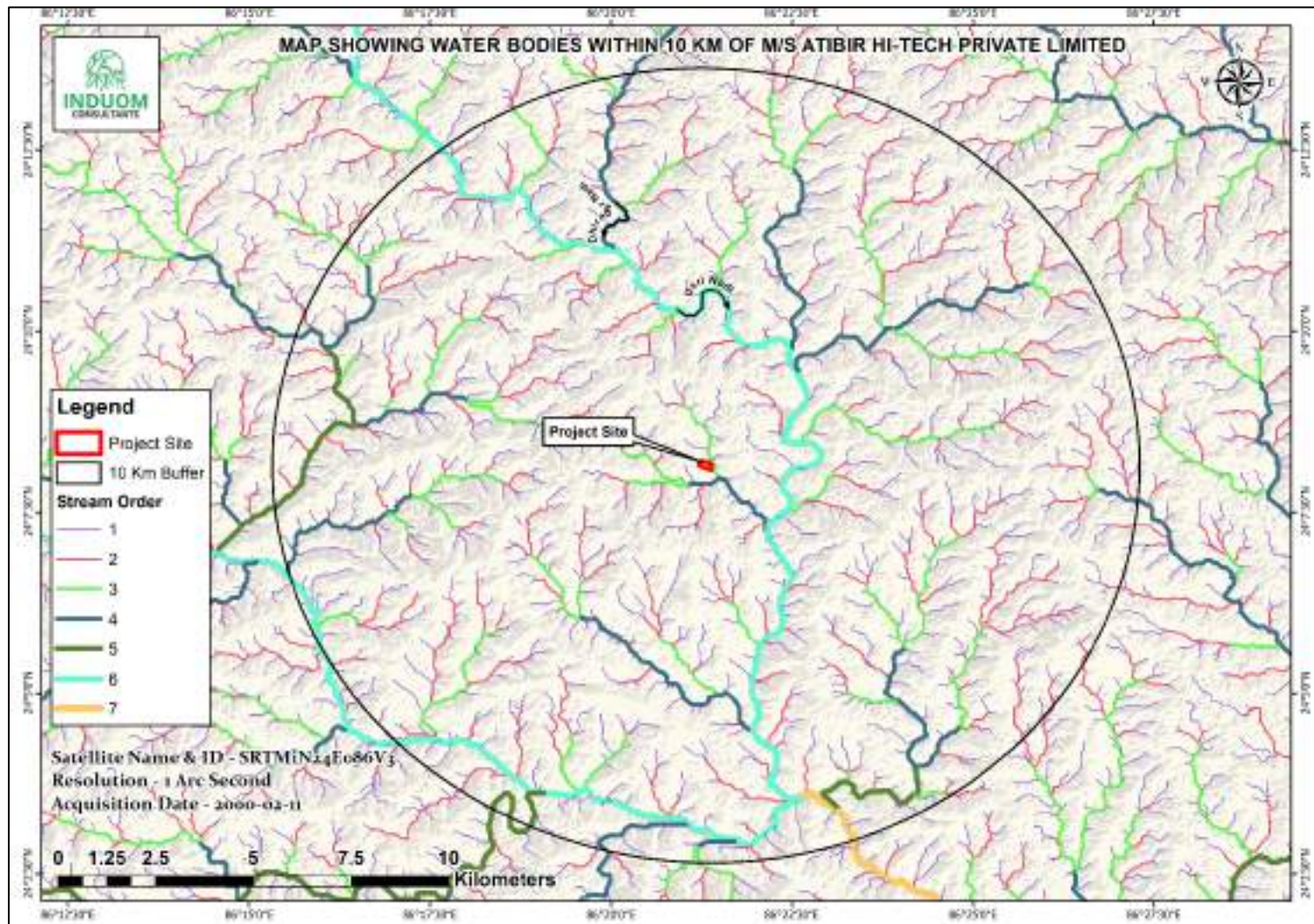


Figure 1.18- Drainage Map of study Are

1.4.3 Quality of water

- The major ground water bearing formations are weathered & fractured granite gneiss and sandstone.
- On the basis of depth of water level of the study area, the pre monsoonal and post monsoonal depth to water level varies from about 3.8- 6.9 mbgl to 2.9 – 5.1 mbgl in study area.
- As per the dynamic ground water resources of India (2022), the total annual ground water recharge of Giridih district is 41663.51 (ham) while total annual ground water extraction from Irrigation, Industrial and Domestic is 14545.08 (ham) and stage of ground water development is 37.80 %.
- The block wise Ground Water Resources assessment has been carried out in year 2022. According to this assessment, Out of the 13 blocks of the Giridih district, 12 blocks are fall under Safe Categories while remaining one Assessment unit 'Giridih' fall under the semi-critical Category.
- A number of tanks have been constructed in the study area trapping the overland flow of water during monsoon season, by constructing earthen bunds. Within project area, no perennial source of surface water exists.
- It is observed that the physico-chemical parameters present in ground water as well as surface water are well within the permissible limits specified by IS: 10500 - 2012 for drinking purposes.

1.4.4 Climate

Climate of Giridih is dry. The summer season starts in the month of April, however, May-June are considered hottest months of the year with temperature soaring up to 42 degree C. The highest temperature recorded in the district is 47-degree C. The humidity level increases during the rainy season. The month of June brings pre-monsoon rains during the rainy season. The winter season is very pleasant, and the temperature remains moderate.

The details of linear infrastructures –

The site is well connected to the local transport infrastructure. The details are given below in Table:

Table 1.10-Linear Infrastructure

SL. No	Description	Distance with Direction from the Plant Site
1.	Nearest State Highway	SH- 13 (connecting Koderma - Giridih – Tundi – Govindpur Marg) at 0.16 km in West Direction
2.	Nearest Railway Station	Giridih Railway Station at 6.5 km in North direction from the Project site.

SL. No	Description	Distance with Direction from the Plant Site
3.	Nearest Airport	Deoghar Airport at 48.83 km in NE
4.	Nearest Town/City	Giridih Town at 6.2km in NW
5.	Nearest Habitation	Mohanpur at 0.20 km NW
6.	Nearest River/Reservoir/Dam etc.	Usri River at 1.58 km in East direction Kako River at 8.76 km in WNW direction Barakar river at 8.98kms in South direction
7.	Defense Installation	CRPF Camp at 7.45 km in NNW

1.5 List of Industries

The proposed project is located in the industrial area. Many industries are located in the vicinity of the project site. The details of such industries are furnished below:

Table 1.10: List of Industries within 10 km radius

SL. No	List of Industries	Distance with Direction
1.	Rebanta Steels Pvt. Limited	0.09kmNW
2.	Samridhi Hard Coke Industries Pvt.Ltd.	1.50kmSW
3.	Mundra Agro Pvt.Ltd.	0.40kmSE
4.	Zoya Steel Pvt. Ltd.	0.56kmSE
5.	Saluja Gold TMT Bars	0.77kmSE
6.	Allied India Iron & Steel Pvt. Ltd.	1.13kmSE
7.	Lal Ferro Alloy Co.Pvt.	0.11kmSW
8.	Shree Venketeshwara Electro cast Pvt.	0.76kmNE
9.	Ruby Oxygen Private Ltd.	1.00kmNE
10.	Shailputra Iron & Steel	1.35kmNE
11.	Sri Langta Baba Steel (P)Ltd.	1.82kmNE
12.	Shivam Iron & Steel (SMSDivision)	2.13kmNE
13.	Kasturi Multi Solutions Pvt.Ltd.	1.72kmNE
14.	Sri Guru Industries Rope	1.95kmNE
15.	Shree Nath Jee Steel	1.99kmNE
16.	Allied Steel	1.26kmSE
17.	Sarvamangal Kraft Tech	1.83kmSE
18.	Swati Concast & Power Pvt.	2.64kmSE
19.	BalmukundPvt.Ltd.	3.70kmSE
20.	Mongia Pvt. Ltd.	3.34kmSE
21.	Reliable Industries Pvt.	3.25kmSE
22.	Santpuria Alloys Pvt.Ltd.	2.60kmSE
23.	NN Industries	2.96kmNW
24.	Shiv Shakti Udyog	3.77kmNW
25.	Barnwal Micanite Industries	5.01kmNW

SL. No	List of Industries	Distance with Direction
26.	Prismat Industries	4.97kmNW
27.	Smith Alloy	5.45kmNW
28.	Mahto Industries	6.42kmNE
29.	Rawat Aluminium Industries	7.29kmNW
30.	MountHill Industries	9.04kmNW

1.6 Description of Flora & Fauna

The site and study area were visited by the experts for collecting the primary data, along with ground truthing of the secondary data. Detail list of flora and fauna present in project area and impact area of 10 Km. radius as observed/reported and recorded is given below:

1.6.1 Flora

Table 1.11- Checklists of Plant species recorded from the study area

Sl. No.	Botanical Name	Local Name	Family	IUCN Status
Trees				
1.	<i>Acacia auriculiformis</i>	Aakashmuni	Fabaceae	LC
2.	<i>Acacia pennata</i>	Feather Acacia	Mimosaceae	LC
3.	<i>Alstoniascholaris</i>	Chatim	Apocynaceae	LC
4.	<i>Aegle marmelos</i>	Bel	Rutaceae	NT
5.	<i>Anogeissus latifolia</i>	Dhawra	Combretaceae	NA
6.	<i>Albizia lebbeck</i>	Siris	Mimosaceae	LC
7.	<i>Albizia odoratissima</i>	Kala Siris	Leguminosae	LC
8.	<i>Albizia procera</i>	Safed Siris	Mimosaceae	LC
9.	<i>Artocarpus heterophyllus</i>	Kathal	Moraceae	LC
10.	<i>Azadirachta indica</i>	Neem	Meliaceae	LC
11.	<i>Semecarpus anacardium</i>	Bhilwa	Combretaceae	LC
12.	<i>Bauhinia vahlii</i>	Mahul	Sapotaceae	NA
13.	<i>Bauhinia variegata</i>	Kachnar, Papri	Leguminosae	LC
14.	<i>Bombax ceiba</i>	Semal	Bombaceae	LC
15.	<i>Butea monosperma</i>	Dhak, Palah	Fabaceae	LC
17.	<i>Cassia angustifolia</i>	Indian senna	Fabaceae	LC
18.	<i>Cassia fistula</i>	Amaltas	Fabaceae	LC
19.	<i>Diospyros melanoxylon</i>	Kendu	Ebenaceae	NA
20.	<i>Dalbergia sissoo</i>	Shisham	Fabaceae	LC
21.	<i>Delonix regia</i>	Gulmohar	Fabaceae	LC
22.	<i>Embllica officinalis</i>	Amla	Leguminosae	LC
23.	<i>Enterolobiumcyclocarpum</i>	Elephant ear	Mimosaceae	LC

Sl. No.	Botanical Name	Local Name	Family	IUCN Status
24.	<i>Erythrina variegata</i>	Indian coral tree	Fabaceae	LC
25.	<i>Erythrina suberosa</i>	Dhaul, Padiara	Fabaceae	NA
26.	<i>Eucalyptus globulus</i>	Eucalyptus	Myrtaceae	LC
27.	<i>Flacourtia indica</i>	Indian Plum	Flacourtiaceae	LC
28.	<i>Ficus benghalensis</i>	Bar, Bargad	Moraceae	NA
29.	<i>Ficus glomerata</i>	Gular	Moraceae	NA
30.	<i>Ficus religiosa</i>	Peepal	Moraceae	LC
31.	<i>Grevillea robusta</i>	Silver oak	Proteaceae	LC
32.	<i>Lagerstroemia speciosa</i>	Banaba	Lythraceae	NA
33.	<i>Holarrhena antidysenterica</i>	Kutaja	Apocynaceae	LC
34.	<i>Jacaranda mimosifolia</i>	Jacaranda	Bignoneaceae	VU
35.	<i>Lagerstroemia parviflora</i>	Sidha	Lythraceae	LC
36.	<i>Leucaena leucocephala</i>	Subabul	Fabaceae	CD
37.	<i>Mangifera indica</i>	Aam	Anacardiaceae	DD
38.	<i>Madhuca longifolia</i>	Mahua	Sapotaceae	NA
39.	<i>Melia azadirachta</i>	Bakain	Meliaceae	LC
40.	<i>Magnolia champaca</i>	Champaka	Magnoliaceae	LC
41.	<i>Millingtonia hortensis</i>	Indian Cork Tree	Bignoniaceae	NA
42.	<i>Moringa oleifera</i>	Sanjna	Moringaceae	LC
43.	<i>Pithecellobium dulce</i>	Jangli jalebi	Fabaceae	LC
44.	<i>Peltophorumpterocarpum</i>	Copper-pod	Caesalpiniaceae	NA
45.	<i>Phoenix sylvestris</i>	Kahjur	Arecaceae	NA
46.	<i>Polyalthia longifolia</i>	Mast tree	Annonaceae	NA
47.	<i>Pongamia pinnata</i>	Karanj	Papilionaceae	LC
48.	<i>Prosopis juliflora</i>	Vilaitikikar	Mimosaceae	NA
49.	<i>Psidium guajava</i>	Amrud	Myrtaceae	LC
50.	<i>Shorea robusta</i>	Sal	Dipterocarpaceae	LC
51.	<i>Schleicheraleosa</i>	Kusum	Sapindaceae	LC
52.	<i>Syzygiumcumini</i>	Jamun	Myrtaceae	LC
53.	<i>Tamarindus indica</i>	Imli	Fabaceae	LC
54.	<i>Tectona grandis</i>	Teak	Lamiaceae	NA
55.	<i>Terminalia arjuna</i>	Arjun	Combretaceae	NA
56.	<i>Terminalia bellirica</i>	Bahera	Combretaceae	LC
57.	<i>Terminalia alata</i>	Asan	Combretaceae	NA
58.	<i>Ziziphus mauritiana</i>	Ber	Rhamnaceae	LC
Bamboo				
59.	<i>Bambusaarundinacea</i>	Kanta bans	Poaceae	NA
60.	<i>Dendrocalamusstrictus</i>	Bamboo	Poaceae	NA

Sl. No.	Botanical Name	Local Name	Family	IUCN Status
SHRUBS				
61.	<i>Alangiumsalvifolium</i>	Ankula	Alangiaceae	NA
62.	<i>Abutilon indicum</i>	Kanghi	Malvaceae	NA
63.	<i>Adhatodavasica</i>	Vasaka	Acanthaceae	LC
64.	<i>Agave americana</i>	Ram Ban	Agavaceae	LC
65.	<i>Calotropis procera</i>	Shet-akanda	Asclepiadaceae	NA
66.	<i>Calotropis gigantea</i>	Akanda	Asclepiadaceae	NA
67.	<i>Cassia sophera</i>	Kolokasunda	Caesalpiniaceae	NA
68.	<i>Chromolaena odorata</i>	Christmas bush	Asteraceae	NA
69.	<i>Clerodendrumplomidis</i>	Aarni	Lamiaceae	LC
70.	<i>Cleistanthuscollinus</i>	Garrar	Euphorbiaceae	VU
71.	<i>Combretum decandrum</i>	Combretums	Combretaceae	NA
72.	<i>Dodonaeaviscosa</i>	Mehndar	Sapindaceae	LC
73.	<i>Durantaerecta</i>	Duranta	Verbenaceae	LC
74.	<i>Euphorbia sp.</i>	Euphorbia	Euphorbiaceae	LC
75.	<i>Eupatorium cannabinum</i>	Ayapana	Asteraceae	NA
76.	<i>Gossypium herbaceum</i>	Kapas	Malvaceae	DD
77.	<i>Hibiscus rosa-sinensis</i>	Jaba	Malvaceae	NA
78.	<i>Ipomoea carnea</i>	Bara Kalmi	Convolvulaceae	NA
79.	<i>Indigofera pulchella</i>	Kathi, Nil	Fabaceae	NA
80.	<i>Jatropha glandulifera</i>	Lal-bharenda	Euphorbiaceae	NA
81.	<i>Jatropha gossypifolia</i>	Verenda	Euphorbiaceae	NA
82.	<i>Leonotisnepetifolia</i>	Lal guma	Lamiaceae	NA
83.	<i>Lantana camara</i>	Chotra	Verbenaceae	NA
84.	<i>Meynalaxiflora</i>	Mayna	Rubiaceae	NA
85.	<i>Mimosa rubicaulis</i>	Karingan	Fabaceae	NA
86.	<i>Ocimumgratissimum</i>	Ramotulsi	Lamiaceae	NA
87.	<i>Polygonum capitatum</i>	Smartweed	Polygonaceae	NA
88.	<i>Ricinus communis</i>	Rehri	Euphorbiaceae	NA
89.	<i>Sida cordifolia</i>	Berela	Malvaceae	NA
90.	<i>Sidarhombifolia</i>	Lal berela	Malvaceae	NA
91.	<i>Tabernaemontanadivaricata</i>	Tagar	Apocynaceae	LC
92.	<i>Urena lobata</i>	Bon okra	Malvaceae	LC
93.	<i>Vitex negundo</i>	Bana	Lamiaceae	LC
94.	<i>Woodfordiafruticosa</i>	FireFlame Bush	Lythraceae	LC
95.	<i>Zizyphusmauritiana</i>	Beri	Rhamnaceae	NA
HERBS				
96.	<i>Achyranthes aspera</i>	Apang	Amaranthaceae	NA

Sl. No.	Botanical Name	Local Name	Family	IUCN Status
97.	<i>Acalypha indica</i>	Muktajhurih	Euphorbiaceae	NA
98.	<i>Ageratum conyzoides</i>	Dochunty	Asteraceae	LC
99.	<i>Amaranthus spinosus</i>	Katanotey	Amaranthaceae	NA
100.	<i>Anisomeles indica</i>	Bhuta-airi	Lamiaceae	NA
101.	<i>Andrographis paniculata</i>	Kalmegh	Acanthaceae	NA
102.	<i>Argemone mexicana</i>	Seyalkanta	Papaveraceae	NA
103.	<i>Barleriapronitis</i>	Daskaranta	Acanthaceae	LC
104.	<i>Boerhaviadiffusa</i>	Punarnaba	Nyctaginaceae	NA
105.	<i>Boerhavia repens</i>	Ghodapuruni	Nyctaginaceae	NA
106.	<i>Centella asiatica</i>	Thankuni	Umbelliferae	LC
107.	<i>Cleome viscosa</i>	Hurhure	Cleomaceae	NA
108.	<i>Commelinabenghalensis</i>	Kansiri	Commelinaceae	LC
109.	<i>Croton bonplandianum</i>	Kbon-tulsi	Euphorbiaceae	NA
110.	<i>Cassia tora</i>	Chakundo	Caesalpiniaceae	NA
111.	<i>Cyperus rotundus</i>	Motha	Cyperaceae	LC
112.	<i>Crotalaria retusa</i>	Atasi	Papilionaceae	NA
113.	<i>Datura stramonium</i>	Dhatura	Solanaceae	NA
114.	<i>Dentella repens</i>	Bhuiyat	Rubiaceae	LC
115.	<i>Ecliptaprostrata</i>	Kesutti	Asteraceae	LC
116.	<i>Eicchornia crassipes</i>	Kachuripana	Pontedeniaceae	NA
117.	<i>Euphorbia hirta</i>	Boro-karni	Euphorbiaceae	NA
118.	<i>Hyptissuaveolens</i>	Vilayti Tulsi	Lamiaceae	NA
119.	<i>Hygrophila longifolia</i>	Kantakalia	Acanthaceae	LC
120.	<i>Heliotropium indicum</i>	Hatisur	Boraginaceae	NA
121.	<i>Ixora coccinea</i>	Rangan	Rubiaceae	NA
122.	<i>Limnophila indica</i>	Karpur	Scrophulariaceae	LC
123.	<i>Lippianodiflora</i>	Bhui okra	Verbenaceae	LC
124.	<i>Leonurus sibiricus</i>	Raktadrones	Lamiaceae	NA
125.	<i>Leucas aspera</i>	Shetadrones	Lamiaceae	NA
126.	<i>Mimosa pudica</i>	Lajjabati	Mimosaceae	LC
127.	<i>Musa x paradisiaca</i>	Kanch-kala	Musaceae	LC
128.	<i>Musa balbisiana</i>	Kodoli	Mosaceae	LC
129.	<i>Nymphaea pubescens</i>	Saluk	Nymphaeaceae	LC
130.	<i>Ocimum sanctum</i>	Tulasi	Lamiaceae	NA
131.	<i>Physalis minima</i>	Bon-tepari	Solanaceae	VU
132.	<i>Phyllanthus urinaria</i>	Hazarmani	Phyllanthaceae	NA
133.	<i>Ruellia tuberosa</i>	Popping pod	Acanthaceae	NA
134.	<i>Solanum nigrum</i>	Kakmachi	Solanaceae	NA
135.	<i>Tridax procumbens</i>	Tridaksha	Asteraceae	NA
136.	<i>Typha elephantina</i>	Hogla	Typhaceae	LC
CLIMBERS				

Sl. No.	Botanical Name	Local Name	Family	IUCN Status
137.	<i>Asparagus racemosus</i>	Satamuli	Liliaceae	NA
138.	<i>Bauhinia vahlii</i>	Gront	Caesalpiniaceae	NA
139.	<i>Combretum roxburghii</i>	Punk	Combretaceae	NA
140.	<i>Coccinia grandis</i>	Telakucha	Cucurbitaceae	NA
141.	<i>Dioscorea bulbifera</i>	Gachalu	Dioscoriaceae	NA
142.	<i>Dioscorea oppositifolia</i>	Shora-alu	Dioscoriaceae	NA
143.	<i>Mukiamaderaspatana</i>	Bilavi	Cucurbitaceae	NA
GRASSES				
144.	<i>Apluda varia</i>	Chunkarki	Poaceae	NA
145.	<i>Aristida depressa</i>	Lambi	Poaceae	NA
146.	<i>Chrysopogon fulvus</i>	Dholu	Poaceae	NA
147.	<i>Chrysopogongryllus</i>	Dholu	Poaceae	NA
148.	<i>Chrysopogonmontanus</i>	Dholu	Poaceae	NA
149.	<i>Cynodondactylon</i>	Dhoob	Poaceae	NA
150.	<i>Eragrostistenella</i>	Bharbusi	Poaceae	NA
151.	<i>Eragrostisunioloides</i>	Kush	Poaceae	LC
152.	<i>Heteropogoncontortus</i>	Lamb, Sariala	Poaceae	NA
153.	<i>Imperata cylindrica</i>	Oolu	Poaceae	LC
154.	<i>Pennisetum orientale</i>	Fountain Grass	Poaceae	LC
155.	<i>Thysanolaena maxima</i>	Phulijharu ghas	Poaceae	NA

Abbreviations: LC: Least Concern, NA: Not assessed, DD: Data Deficient, VU: Vulnerable, NT: Near Threatened.

1.6.1.1 Rare and Endangered Flora in the Study Area

The IUCN Red List is the world's most comprehensive inventory of the global conservation status of plant and animal species. It uses a set of criteria to evaluate the extinction risk of thousands of species and subspecies. These criteria are relevant to all species and all regions of the world. With its strong scientific base, the IUCN Red List is recognized as the most authoritative guide to the status of biological diversity. Out of 17,000 species of higher plants known to occur in India, nearly 614 higher plant species were evaluated by IUCN. Among them 247 species are under threatened category (IUCN, 2008). Among the enumerated flora in the study area, none of them were assigned any threat category by Red data book of Indian Plants (Jain and Sastry, 1984; Nayar and Sastry, 1987; 1988; 1990; Oldfield et al., 1998; Kholia and Bhakuni, 2009) and Red list of threatened Vascular plants (IUCN, 2010).



Achyranthes aspera L.



Bidens pilosa L.



Boerhavia diffusa L.



Centella asiatica (L.) Urb.



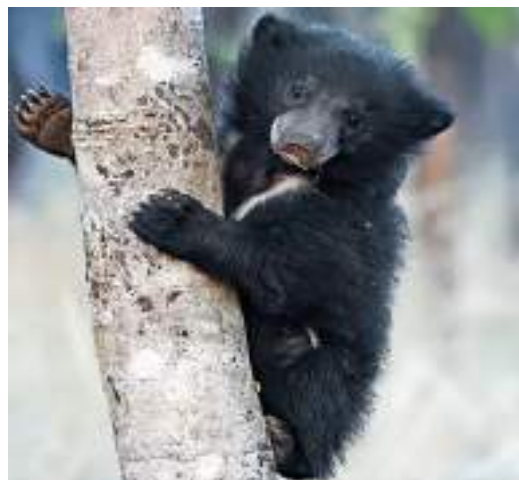
Coccinia grandis (L.) Voigt.



Ipomoea aquatica Forssk.



Indian Pangolin (*Manis crassicaudata*)



Sloth Bear (*Melurus ursinus*)



Indian Grey Hornbill (*Ocyrceros birosiris*)



Indian Rock Python (*Python molurus*)



Monitor lizard (*Varanus Bengalensis*)



Indian Porcupine (*Hystrix indica*)

1.6.2 Fauna Diversity

To prepare a detailed report on the status of wildlife biodiversity within 10 km radial area along the proposed project to assess the impacts due to the project activity and evolve suitable mitigation measures to protect and conserve wildlife biodiversity following components were studied:

- Wildlife Survey (Diversity)
- Habitat Study (Feeding, Breeding and Roosting areas)
- Distribution/Status of Birds
- Rare & Endangered species of Fauna
- Specific local characteristics of biodiversity in the study area.

The domestic animals observed in the study area are listed in the Table 14. In presence of natural forest, there is an abundance of wild animals in the study area. A list of birds, reptiles, amphibians and rodents based on information gathered from local enquiries and Forest department is presented in Table-14.

Table 1.12- Faunal Diversity observed from core & buffer zone

S. No.	English Name	Scientific Name	Status/ Schedule	IUCN Status
Mammals				
1.	Monkey	<i>Macca camulata</i>	Schedule-II	NA
2.	Common Langur	<i>Semnopithecus entellus</i>	Schedule-II	LC
3.	Five Striped Palm Squirrel	<i>Funambulus pennanii</i>	Schedule-IV	LC
4.	Grey Mongoose	<i>Herpestes edwardsii</i>	Schedule-I	LC
5.	Indian Porcupine	<i>Hystrix indica</i>	Schedule-I	LC
6.	Wild Boar	<i>Sus scrofa</i>	Schedule-II	LC
7.	Jungle Cat	<i>Felis chaus</i>	Schedule-I	LC
8.	Jackal	<i>Canis aureus</i>	Schedule-I	LC
9.	Striped Hyaena	<i>Hyaena hyaena</i>	Schedule-I	NT
10.	Hare	<i>Lepus nigricolis</i>	Schedule-II	NA
11.	Bengal Fox	<i>Vulpus bengalensis</i>	Schedule-I	NA
12.	Chital	<i>Axis axis</i>	Schedule-II	LC
13.	Indian Pangolin	<i>Manis crassicaudata</i>	Schedule-I	EN
14.	Nilgai	<i>Boselaphus tragocamelus</i>	Schedule-II	LC
15.	Asiatic Elephant	<i>Elephas maximus</i>	Schedule-I	EN
16.	Grey Wolf	<i>Canis lupus</i>	Schedule-I	EN
17.	Sloth Bear	<i>Melursus ursinus</i>	Schedule-I	Vu

S. No.	English Name	Scientific Name	Status/ Schedule	IUCN Status
Herpato-fauna				
1.	Common Indian Krait	<i>Bungarus caeruleus</i>	Schedule-IV	LC
2.	Common garden lizard	<i>Calotes versicolor</i>	NA	LC
3.	Russel Viper	<i>Daboia siamensis</i>	Schedule-II	LC
4.	Common Indian Toad	<i>Duttaphrynus melanostictus</i>	NA	LC
5.	Harhara or Whip Snake	<i>Ahaetulla nasuta</i>	NA	NA
6.	House gecko	<i>Hemidactylus flaviviridis</i>	NA	NA
7.	Indian Python	<i>Python molurus</i>	Schedule-I	NT
8.	Indian Cobra	<i>Naja naja</i>	Schedule-I	LC
9.	Indian rat snake	<i>Ptyas mucosa</i>	Schedule-I	NA
10.	Indian pond frog	<i>Rana hexadactylus</i>	Schedule-II	NA
11.	Bengal Monitor	<i>Varanus bengalensis</i>	Schedule-I	NT
Butterflies				
1.	White, orange tip	<i>Ixias marianne</i>	Common	NA
2.	Lime butterfly	<i>Papiliodemoleus</i>	Common	NA
3.	Common crow	<i>Euploea core</i>	Common	LC
4.	Common map	<i>Cyrestis thyodamas</i>	Common	NA
5.	Common mormon	<i>Papiliopolytes</i>	Common	NA
6.	Common Grass Yellow	<i>Eurema hecabe</i>	Fairly Common	NA
7.	Stripped Tiger	<i>Danaus genutia</i>	Common	NA
8.	Danaid Egg Fly	<i>Hypolimnasmisippus</i>	Common	NA
9.	Common Bush Brown	<i>Mycalesis perseus</i>	Common	NA
Aves				
1.	House Crow	<i>Corvus splendens</i>	Schedule-II	LC
2.	Rock Pigeon	<i>Columba livia</i>	Common	LC
3.	Jungle babbler	<i>Turoides striatus</i>	Schedule-II	NA
4.	Common Myna	<i>Acridotheres tristis</i>	Schedule-II	LC
5.	Green bee-eater	<i>Merops orientalis</i>	NA	LC
6.	Indian roller	<i>Coracias benshalensis</i>	Schedule-II	LC
7.	Black Drongo	<i>Dicrurus macrocercus</i>	Schedule-II	NA
8.	Common swift	<i>Apus apus</i>	Schedule-II	LC
9.	House swift	<i>Apus affinis</i>	Schedule-II	LC
10.	Cuckoo	<i>Eudynamis scolopaceus</i>	Schedule-II	LC
11.	Wood Pecker	<i>Dinopium benghalense</i>	Schedule-IV	LC
12.	Cattle Egret	<i>Bubulcus ibis</i>	Schedule-II	LC

S. No.	English Name	Scientific Name	Status/ Schedule	IUCN Status
13.	Little Egret	<i>Egretta garzetta</i>	Schedule-II	LC
14.	Red wattled lapwing	<i>Vanellus indicus</i>	Schedule-II	LC
15.	Quail	<i>Coturnix coturnix</i>	Schedule-II	LC
16.	Jungle Fowl	<i>Gallus sonneratti</i>	Schedule-II	NA
17.	Kite	<i>Milvus migrans</i>	Schedule-II	LC
18.	Crested serpent Eagle	<i>Spilornis cheela</i>	Schedule-I	LC
19.	White-Rumped Vulture	<i>Gyps bengalensis</i>	Schedule-I	CR
20.	Great Coucal	<i>Centropus sinensis</i>	Schedule-II	LC
21.	White Rumped Munia	<i>Lonchura striata</i>	Schedule-II	LC
22.	White wagtail	<i>Motacilla alba</i>	Schedule-IV	LC
23.	Ring dove	<i>Streptopelia decaocto</i>	Schedule-II	LC
24.	Spotted Dove	<i>Streptopelia chinensis</i>	Schedule-II	NA
25.	White throated Kingfisher	<i>Halcyon smyrnensis</i>	Schedule-II	LC
26.	Pied Kingfisher	<i>Ceryle rudis</i>	Schedule-II	LC
27.	House Sparrow	<i>Passer domesticus</i>	Schedule-II	LC
28.	Red Vented Bulbul	<i>Pycnonotus cafer</i>	Schedule-II	LC
29.	Common Babbler	<i>Turdoides caudatus</i>	Schedule-II	LC
30.	Rose Ringed Parakeet	<i>Psittacula krameri</i>	Schedule-II	LC
31.	Eurasian Eagle Owl	<i>Bubo bubo</i>	Schedule-I	LC
32.	Indian Peafowl	<i>Pavocristatus</i>	Schedule-I	LC

Abbreviations: LC: Least Concern, NA: Not assessed, DD: Data Deficient, VU: Vulnerable, NT: Near Threatened

1.6.2.1 Endangered Species:

As per list of **The Indian Wildlife (Protection) Act, 1972**, and further amended **The Wild Life (Protection) Amendment Act, 2022**, Fauna coming under the **Schedule - I** is treated as endangered species. The status of the species prepared on the basis of revised IWPA 1972 (20 Dec 2022). The **Schedule - I** fauna as per reconnaissance survey are animals like *Herpestes edwardsi*, *Hystrix indica*, *Manis crassicaudata*, *Python molurus*, *Varanus bengalensis*, *Pavocristatus*, and *Gyps bengalensis*. *Felis chaus*, *Canis aureus*, *Hyaena hyaena*, *Vulpus benghalensis*, *Manis crassicaudata*. Reptiles like *Python molurus*, *Naja naja* & *Varanus bengalensis*. Birds like *Spilornis cheela*, *Gyps bengalensis*, *Bubo bubo* & *Pavocristatus* although these are very common species and found in every locality, even in villages, certain steps should be taken to conserve the critical wild life:

- I. Programs for the conservation of wildlife will be formulated and implemented outside the protected areas by educating the local communities with help of local public agencies, and other stakeholders including the environment division officers of our company, in order to reduce the scope of man-animal conflict.
- II. It will be ensured that human activities on the fringe of the protected areas do not degrade the habitat.

Over all, the status of wildlife in a region is an accurate index of the state of ecological resources, and thus, of the natural resources base of human well-being. This indicates the interdependent nature of ecological entities (the web of life), in which wild life is a vital link and a base of eco-tourism. Thus, the importance of conserving and protecting wildlife will be spread among the local people.

1.6.2.2 Aquatic Ecology

The biological species are the best indicators of environmental quality. This includes different species, such as, phytoplankton, zooplankton, benthos, fishes etc. Studies on biological aspects of certain ecosystems are an important part of any environmental impact assessment in view of the need for conservation of environmental quality and safety of aquatic life.

From the baseline survey on existing aquatic environmental conditions in and around the proposed Project on the Usri River, Dhirabar Nadi, Barakar River and other drainages the following data were generated:

- Biological characteristics of river water
- Inventorization of phytoplankton and Zooplankton
- Present status of riverine fish fauna: Identification of fish species
- Assessment of local catches during the field trips to assess the fish fauna

1.6.2.2.1 Assessment of Aquatic diversity

The samples for qualitative and quantitative analysis of planktons were collected from the sub surface layer at knee depth. Water samples were filtered through plankton net of 20 μ mesh size (APHA, 1971). The filtered samples were concentrated by using the centrifuge. By using Lackey's drops method and light microscope (Lackey, 1938), the qualitative analysis was carried out for phytoplankton and zooplankton (Table 3.26). The standard flora and other literature were followed for the qualitative evaluation of Plankton.

Table 1.13- Phytoplankton and Zooplanktons Recorded in the Study Area

Sl. No.	Phytoplankton Species	Sl. No.	Zooplankton Species
1.	Cyanophceae Anabaena Nostoc Oscillatoria Formosa Phormidium Lyngbya Oscillatoria princeps	1.	Rotifers Ascomorphasaltans Colurella obtuse polyarthra
		2.	Protozoa Amoeba proteus chlamydomonas
2.	Bacillarophyceae Fragilaria Synedra Navicula cylindrotheca	3.	Cladocera Daphnia laevis
3.	Chlorophyceae Spirogyra	4.	Copepoda Cyclops spp.

	Chlorella vulgaris Microspora Ulothrix Zygnema		Nauplii
--	---	--	---------

1.6.2.3 Fish

Fish occurrences were determined by collecting samples using different fishing gears like cast net, scoop net, hand net, hook-line, pot and open local devices methods. Also visual observations in different habitats were made. Fishes were identified up to the species level with the help of keys of Jayaram (1981), Menon (1987) and Talwar and Jhingran (1997). IUCN red data list (2006) was compared to assess threatened, endangered and vulnerable species in the study area.

1.6.2.3.1 List of Fishes in the Study Area

Fishes are the integral component of stream and rivers which are not only the best sources of food and animal protein for the human population but provides a source of income for the local inhabitants. People capture fishes for their consumption and in some cases to sell in local markets as an alternative means for procurement of foods and other requirement of daily needs.

Table 1.14- Common fish species recorded in Buffer Zone

No.	Common name	Scientific name	IUCN Status
1.	Katla	<i>Catlacatla</i>	Least Concern
2.	Rohu	<i>Labeorohita</i>	Least Concern
3.	Garai	<i>Channa punctata</i>	Least Concern
4.	Chanda	<i>Chanda nama</i>	Least Concern
5.	Mangur	<i>Clarias batrachus</i>	Least Concern
6.	Mrigal	<i>Cirrhinus mrigala</i>	Least Concern
7.	Singhi	<i>Heteropneustes fossilis</i>	Least Concern
8.	Kursa	<i>Labeocalbasu</i>	Least Concern

1.6.2.4 Aquatic Floral Diversity

Wetlands are very useful to us. By producing resources, enabling recreational activities and controlling flood and pollution, they contribute to the national and local economies and environmental consequences. Wetlands provide important and incredible services to society, these services can neither be sold nor do they have the market value and tried to give wetlands an economic value.

Table 1.15- Wetland/Marshland Diversity of Study area

Family	Botanical Name	Local Name
Salviniaceae	<i>Azolla pinnata</i>	Mosquito Fern
Commelinaceae	<i>Commelinabenghalensis</i>	Kana
Cyperaceae	<i>Cyperus alternifolius</i>	Umbrella Sedge

Family	Botanical Name	Local Name
Poaceae	<i>Echinochloa colona</i>	Shama
Pontederiaceae	<i>Eichhornia crassipes</i>	Jal Kumbhi
Lemnaceae	<i>Lemna minor</i>	Duck Weed
Onagraceae	<i>Ludwigia adscendens</i>	Water Primrose
Marsileaceae	<i>Marsilea quadrifolia</i>	Four Leaf Clover
Oxalidaceae	<i>Oxalis corniculata</i>	Amrul
Ranunculaceae	<i>Ranunculus sceleratus</i>	Aglaon
Typhaceae	<i>Typha angustata</i>	Patera

1.6.3 Interpretation

- The area is sparsely populated and is undulated and interspersed with small hillocks and hilly terrain.
- The main economic activity in the district is agriculture. Paddy and Maize are the two main crops in the district. The agro climatic condition of the district is suitable for cultivation of a variety of fruits like mango, guava, jack fruit and vegetables like cauliflower, tomato, brinjal etc.
- The dominant herbs in the ground vegetation are *Achyranthes aspera*, *Amaranthus spinosus*, *Argemone Mexicana*, *Solanum nigrum*, *Tridax procumbens*, *Cassia tora*, *Ocimum sanctum*, *Tridax procumbens* etc.
- The forests are characterized by the presence of broad-leaved deciduous trees like Sal (*Shorea robusta*), Asan (*Terminalia alata*), Palash (*Butea monosperma*), Piasal (*Pterocarpus marsupium*) and *Eucalyptus Sp.* etc. The understory consists of bamboo clumps, lantana and Christmas bushes. Climbers like Bush willow (*Combretum decandrum*), Air potato (*Dioscorea bulbifera*), Satamuli (*Asparagus racemosus*) etc. are found in close association with the trees and shrubs
- The major Fauna found in the area are- The Schedule - I fauna as per reconnaissance survey are Mammals like *Herpestes edwardsi*, *Hystrix indica*, *Manis crassicaudata*, *Python molurus*, *Varanus bengalensis*, *Pavocristatus*, and *Gyps bengalensis*. *Felis chaus*, *Canis aureus*, *Hyaena hyaena*, *Vulpus benghalensis*. Reptiles like *Python molurus*, *Naja naja* & *Varanus bengalensis*. Birds like *Spilornis cheela*, *Gyps bengalensis*, *Bubo bubo* & *Pavocristatus*.

1.7 Implementation of working plan prescription

As per the discussion with DFO, Giridih Forest Division, the Forest department is under taking the plantation work as per the working plan prescriptions.

1.7.1 Forests and Habitat condition

1.7.1.1 Habitat condition

The habitat is in various stages of degradation owing to severe anthropogenic factors like grazing, firewood collection and sale, NTFP collection and sale etc. The customary rights and concession are also factors.

The past record of presence of Tigers, Ratel, Gaur, wild Dog and Grey Wolf could not be confirmed.

There is no wildlife census record available from the area.

The pre-dominant tree species includes Sal, kendu, Dhavra, Palash, Sidha, Salai, Keonjhi, Piar, Mahua, etc. Some of the forest area/hills are totally devoid of tree vegetation and heavily infested with invasive like *Eupatorium odoratum*, *Hyptissuaveolens*, and *Lantana camara*. *Acacia auriculiformis*, an exotic species and *Cassia siamea* and *acacia auriculiformis* has been found successful in many plantation areas in the buffer zone.

1.7.1.2 Forest Types

The structure and type of vegetation depends on climatic conditions and physiographic conditions, as well as requirements of the local inhabitants of the area. The type of forest cover found in Jharkhand state consists of the district categories, namely tropical moist deciduous, tropical dry deciduous and subtropical broad-leaved hill forest.

The forest vegetation of Giridih district varies from rich sal forest to miscellaneous forests and sparsely covered grasslands. Main species of Giridih district forests are Sal (*Shorea robusta*), Asan (*Terminalia tomentosa*), Dhaura (*Anogeissus latifolia*), Gamhar (*Gmelina arborea*), and Mahua (*Madhuca indica*) etc. the main forest types of Giridih district are described below:

A. Moist Peninsular Low-level Sal Forest [3C/C2e(ii)]:

This type has a fairly wide distribution and occurs in several valleys on their gentle and sheltered slopes usually on Northern aspects. Where the soil is derived from haematites-quartzite, Sal is usually pure and well stocked with trees of 120 feet and more in height.

The chief associates of Sal are *Buchanania lanzan*, *Diospyros melanoxylon*, *Terminalia tomentosa*, *Lagerstroemia parviflora*, *Cassia fistula* and *Anogeissus latifolia*. Characteristic shrubs include *Moghaniachappar*, *Indigofera pulchella*, *Randia spinosa*, *Croton oblongifolius* etc.

B. Dry Peninsular Sal Forest (5B/C1c):

Sal is the dominant species of this forest type and comprises more than 50% of the forest. The associated species are *Terminalia tomentosa*, *Adina cordifolia*, *Diospyros melanoxylon*, *Mitragynaparvifolia*, *Schleichera oleosa*, *Cochlospermum religiosum*, *Sterculia villosa*, *Lanneacoromandelica*, *Buchanania lanzan*, *Boswellia serrata*, etc. these form dense patches at

places. Most common shrubs of these forests are *Nyctanthesarbostris*, *Carissa opaca*, *Woodfordiafruticosa*, *Caesaria tomentosa*, etc. important climbers are: *Bauhinia vahlii*, *Millettia auriculata*, *Butea superb*, etc.

C. Northern Dry Mixed Deciduous Forest (5B/C2):

The general appearance of the Northern Tropical Dry Deciduous Forest is similar to that of its southern counterpart. This type is formed by a mixture of trees practically all of which are deciduous during the dry season. Some characteristic vegetation species form extensive consociations, notably *Anogeissus latifolia*, *Adina cordifolia*, *Mitragynaparvifolia*, *Gardenia latifolia*, *Cleistanthuscollinus*etc.

Comparatively drier lands are covered with this type of forest with low frequency of Sal. Major components of this forest are: *Terminalia tomentosa*, *Adina cordifolia*, *Mitragynaparvifolia*, *Lagerstroemia parviflora*, *Cleistanthuscollinus*, *Madhuca longifolia*, *Garuga pinnata*, *Butea monosperma*, *Pterocarpus marsupium*, *Gmelina arborea*, Chilloi (*Holoptelea integrifolia*), Sandan (*Ougeiniaoojeinensis*), Semal(*Bombax ceiba*), Rohan (*Soymidafebrifuga*), *Buchananialanzan*, *Boswellia serrata*, *Sterculia villosa*, *Diospyros melanoxylon*, Bhurhul(*Chloroxylon swietenia*), Paper (*Gardenia latifolia*), *Schleicheraoleosa*, Belsai(*Limoniaacidissima*), Dhola (*Alangiumlamarckii*), andSissoo (*Dalbergia latifolia*) etc. these forest harbor a number of economically important plants. This type is generally found in whole of the Jharkhand State.

D. Dry Deciduous Scrub (5/DS1):

The forests described above have been reduced to dry deciduous scrubs near human habitations and mining/industrial areas. The only species left in these areas in addition to heavily lopped Sal trees are Khair (*Acacia catechu*), Katahi (*Flacourtia indica*), Ratend (*Combretum roxburghii*), *Carissa opaca*, Kathber (*Zizyphusxylophora*) etc. this forest type represents degradational stages of Sal and miscellaneous forest. This type is generally found in whole of the Jharkhand State.

1.8 Movement patterns of the Mega Wildlife i.e. Elephants in forest areas

A wildlife corridor or green corridor is an area of habitat connecting wildlife populations separated by human activities. This allows an exchange of individuals between populations, which may help prevent the negative effects of inbreeding and reduced genetic diversity that often occur within isolated populations. The destruction of wildlife habitat and part of corridors means the destruction of biodiversity of the region.

Corridors may also facilitate the re-establishment of populations that have been reduced or eliminated due to random events. This may potentially moderate some of the worst effects of habitat fragmentation. Wildlife corridors are susceptible to edge effects; habitat quality along the edge of a habitat fragment is often much lower than in areas further from the habitat edge.

Wildlife corridors are important for large species requiring significant sized ranges; however, they are also vital as connection corridors for smaller animals and plants as well as ecological connection.

Elephant corridors are narrow strips of land that allow elephants to move from one habitat patch to another. There are 88 identified elephant corridors in India. The elephant habitats of central India are spread over an area of 17,000 km² in the states of Jharkhand, Orissa and a part of southern West Bengal. The 2500 elephants in the range occupy the most fragmented elephant habitat of the country that has been degraded and fragmented due to mining, shifting cultivation and developmental activities (The Right of Passage, Wildlife Trust of India). A total of 14 elephant corridors has already been identified in India.

Jharkhand has two distinct elephant populations, viz. Palamau and Singhbhum elephants, which constitutes more than half of the population of elephants in Jharkhand. The Palamau population occupies about 1306 km² of the Betla National Park, Palamau Tiger Reserve and adjoining areas. The Singhbhum population occupies about 2570 km² of the available forest area of Dalma Wildlife Sanctuary and the forest of Saranda, Porhat, Kolhan, Saraikala (formerly North Chaibasa) and Dhalbhum Forest Divisions. (The Right of Passage, Wildlife Trust of India). In recent past wandering Elephants movements have been reported in the Giridih forests as they move from Dumka to Gumla and beyond. In the process they sometime reported to wander into Giridih Forest areas. Below is given movement pattern of wandering elephants in Giridih forest division. Movement of elephants in group is from 2 points namely Jamtara and Tundi and exit from Tundi only. Solo movements of elephants are reported from areas Bagodar to Parasnath to Bokaro.

Besides human death and injury, damage to houses, stored grains and standing crop is immense and a huge amount is paid in compensation.



Figure 1.19- Movement pattern of wandering elephants in Giridih East Forest division, Giridih

1.8.1 Human-Wildlife Conflict

There are 24 wild elephants which move through the impact area and cause damage to life and property. It has been observed that the most affected part of the Elephant depredated Villages is in the adjoining forest range – Dumri and impact area forest range of Giridih. The table below shows the affected villages and corresponding forest ranges.

Fig 30 shows the movement of these elephants.

Table 1.16- List of Elephant depredated Villages in impacted Forest range area

SN	Name of Village/Tola	Name of Block	Name of Forest Range
1	Nawadih	Pirtanr	Giridih
2	Karanpura	Pirtanr	Giridih
3	Tilaiya	Pirtanr	Giridih
4	Kawariabera	Pirtanr	Giridih
5	Keshodih	Birni	Giridih
6	Sakhbara	Birni	Giridih
7	Barab	Birni	Giridih
8	Chuglo	Giridih	Giridih
9	Madrua	Giridih	Giridih
10	Matrakha	Giridih	Giridih
11	Mirjadih	Giridih	Giridih
12	Simaria	Giridih	Giridih
13	Gadi	Giridih	Giridih

Table 1.17-- List of Elephant depredated Villages in adjoining forest range (Giridih District)

Sl. No.	Name of Village/Tola	Name of Block	Name of Forest Range
1	Naglo	Dumri	Dumri
2	Tengrakalan	Dumri	Dumri
3	Surahi	Dumri	Dumri
4	Ghutbali	Dumri	Dumri
5	Puraiya	Dumri	Dumri
6	Khudisar	Dumri	Dumri
7	Basgohra	Dumri	Dumri
8	Kustonawadih	Dumri	Dumri
9	Bermo	Dumri	Dumri
10	ChotkiBermo	Dumri	Dumri
11	Khutargiroh	Dumri	Dumri
12	Jeetkundi	Dumri	Dumri
13	Karipahri	Dumri	Dumri

Sl. No.	Name of Village/Tola	Name of Block	Name of Forest Range
14	Bishubera	Dumri	Dumri
15	Nagabad	Dumri	Dumri
16	Sakharakho	Dumri	Dumri
17	Naitanr	Dumri	Dumri
18	Majhladih	Dumri	Dumri
19	Chalmo	Dumri	Dumri
20	Baledih	Dumri	Dumri
21	Mathgopali	Dumri	Dumri
22	Belatanr	Dumri	Dumri

Table 1.18- Details of Human death and injury during last 3 years in impact zone (Giridih)

YEAR	Human Death	Human Injury
2020-21	2	4
2021-22	7	3
2022-23	1	4
TOTAL	10	11

1.8.2 Factors of decimating wildlife

Traditional hunting practices- Hunting is not common due to low animal density, but animals sighted are do killed, especially snakes and birds.

Degradation of habitat- stone mining inside the forest, crushers, Canal construction work, Sand mining from river Kharkai.

Other Factors- increased population, threat to forest, NTFP collected from forest like sal leaves, branches, grasses, mahua flowers, fruits, forest mushrooms, etc.

Trends. There is no past record of animal census in the area so it is difficult to analyze the trend but the information gathered from locals suggests that there is declining trends in most of the wildlife. The trend of decline could be reversed through habitat management, awareness creation and implementation of wildlife prescription as per working plan.

After Assessment of the project. The project will impact on various parameters of the wildlife management –

1. Arrival of more people for various plant operation components who will utilize the same natural resources which are available now.

2. The impact of noise, air pollution, semi –urbanization, lighting, transportation of materials and machineries. The entire ecology of the area might change due to activities.
3. The socio-economic factors will also impact the wildlife habitats.

1.8.3 Prescriptions of Working Plan for the management of Forests & Wildlife-

Working Plan in respect of Giridih East Forest Division has been prepared for the period 2011 – 12 to 2020 – 21, the plan was finally approved/ sanctioned by Govt. of India in October 2020. The new working plan is yet to be finally prepared and approved. As per the discussion with the D.F.O., Giridih east Forest division, the plantations and other works are being done in view of the last working plan.

The previous working plan had 5 working circles Wildlife Conservation (Overlapping) working circle

- (i) NTFP (Overlapping) working circle
- (ii) Coppice selection working circle
- (iii) Plantation cum soil conservation working circle
- (iv) Protection working circle

The area (in hect.) abstract of different working circles in Giridih East Division is as following –

Name of Range	Total demarcated area	Coppice selection W.C.	Rehabilitation W.C	Plantation cum Soil Cons. W.C.	Protection W.C.
Dumri	13909.02	0	1329.58	3274.02	4520.91
Parasnath	7035.58	0	831.92	1847.01	9340.63
Giridih	22750.22	940.75	948.48	1927.47	19511.20
Gawan	57211.39	4225.29	3694.92	14169.64	32534.36
Khurchutta	21136.39	2120.77	837.29	6094.56	11822.08
TOTAL	122042.6	7286.81	7642.19	27312.07	77729.18

1.9 Wildlife (overlapping) working circle

Management prescriptions suggested in working plan are:

- Public Awareness
- Public participation in protection of wildlife
- Education
- Nature Interpretation Centers
- Coordination and trust between Forest department and local people

1.9.1 Elephant Corridors:

Wild Elephant movement is frequent from nearby forest areas in search of food. These elephants move in between Giridih – Jamtara – Dumka. At present herd is of 24 elephants and the no. is increasing every year. It was 12 in 2006. Giridih Range village Gadi Dharampur is elephant corridor. They move from Gadi Dharampur of Giridih Range to Dumri range during October to December. During movement, they raid the crop, destruction of houses and causality of human beings also take place. Single male elephants is the major cause of damage when it was thrown away by the group.

To deal with the situation, many times a team of experts are hired to drive the elephants from human habitation. They are provided with kerosine oil, torches, tyre-tubes, and crackers with two vehicles. For the damage to life and property, compensation is paid.

1.9.2 Location of other Projects in the impact area

Details of other industries located in the impact area has already been discussed in section 1.D.1 above.

1.9.3 List of experts involved in the study and their visit in the area.

The field survey of the plant area was conducted for assessment of flora, fauna, and socioeconomics of the core block and also 10 kms buffer zone. The survey team, under the overall supervision of Dr. Lal Ratnakar Singh conducted the survey in different stages. The members of the team are

1. **Dr. L.R. Singh, I.F.S. (Retd.)** -Former Principal Chief Conservator of Forests & Chief Wildlife Warden, Jharkhand/Chairman Jharkhand Biodiversity Board Principal Investigator
2. **Sri Om Prakash Singh**, Range officer of Forests (Retd.), Department of Env. & Forests, Jharkhand
3. **Ms. Dipti Thakur**, M.Tech.(Env. Engg.), M.Sc. (Env. Sci.) – Ecology Biodiversity Associate
4. **Mrs. Anupama Singh**, M.A. (Sociology) - Social Survey associate
5. **Mrs. Priyanka Kumari**, GIS and Maps associate.

The survey was conducted by using standard formats for socioeconomics. The 10 villages were selected for random sampling on socioeconomics and results were analysed to assess the present socioeconomics of the villages, likely impact and strategy to mitigate. The assessment of flora and fauna was carried out by using standard line transect and quadrat laying and surveying methodology. The direct and indirect evidence were collected for fauna study.



Figure 1.20-Site Visit Photo

1.9.4 Methodology and sampling procedure

This report is based on the observation on a random assessment of biodiversity in the forest surrounding the existing Steel Plant area. This report is based on the study carried out during the month June and July 2023. Quadrates were laid at every 100 m along transect. The tree species along with number of each within 10 m radius plots were recorded. The same procedure was followed in 5 m radius plots for shrubs and 1 x 1 m plots for herbs and grass species. The observations were recorded in a Proforma.

- The study followed detailed surveys of the impact area for the major floral and faunal species, water regime, and drainage pattern, wildlife usage of the area and interface conflict in order to develop an appropriate management strategy for conserving the ecology while effectively utilizing the available natural resources.
- The subject matter experts and consultants assessed the impact area for probable degradation of the forest and habitats due to project implementation and chalked out mitigative strategies through discussion with the local peoples, other stakeholders in the locality and forest staff. The existing land use pattern and rural economic structure were also analyzed against the probable changes due to project implementation.
- Provisions of all relevant Acts and regulations including important Court orders in respect of Wildlife Conservation and Environmental Protection have been strictly adhered to while preparing the plan.
- All the studies and components under this Wildlife Conservation Plan when prepared, are further validated and authenticated by competent local forest authority.

2 Impact of the Project

2.1 Study on Impacts of the Project

The developmental projects in the form of industries during and after establishment, expansion and operations have a significant ecological and environmental impacts and social and cultural consequences. It is well known that wild animals wander inside the forests and adjoining areas in search of food and shelter. Although protected areas are important for wild life conservation yet there is a consensus that a greater number of wildlife has been reported from forests areas other than protected areas. That is why the developmental projects passing through forests areas other than protected areas are much more important for wildlife management and mitigation measures.

Major threat to wildlife includes habitat destruction, degradation, fragmentation, overexploitation, hunting, pollution, climate change and illegal wildlife trade.

2.2 Loss & fragmentation of Habitat

One of the major impacts due to industries is the loss and fragmentation of habitat. Fragmentation creates a barrier that prevents wild animals from locating their basic supplies in an efficient manner. Many animals migrate each day in search of food, water and shelter. This barrier causing obstruction is more critical in extreme weather when food and water may not be available within close range. This forces the wild animals to move in areas that may not be beneficial for them and thus affect their health and welfare and sometimes survival.

Habitat fragmentation leads to habitat destruction. Plants and other sessile organisms in these areas are usually destroyed. Mobile species such as amphibians, reptiles, birds and mammals, retreat into remnant patches of habitat. This can lead to crowding effects and increased competitions.

Moreover, habitat fragmentation leads to edge effects. Micro-climatic changes in light, temperature and wind can alter the ecology around the fragment, and in the interior and exterior portions of the fragment. Owing to drop in the humidity and increase in wind and temperature, incidences of fire increases. In such a disturbed environment, exotic and pest species may establish themselves easily. Habita along the edge of a fragment has a different climate and favours different species from the interior habitat. Small fragments are therefore unfavourable for species which require interior habitat.

2.2.1 Wildlife Mortality

Industry represents an obstacle to maintenance of ecological connectivity and viable wildlife population. Reduced landscape connectivity and impeded movements due to railway lines/roads etc. This results in higher mortality (kill/injury/accident), lower reproduction and ultimately smaller populations and lower population viability. Several incidences of kills specially of rodents, reptiles, cats, deer and mega herbivores have been reported in past.

2.2.2 Impact of increased traffic

A flash of artificial light causes an animal to become temporarily blind, popularly called the 'deer – in – the – headlights' effect, reducing its chances of avoiding collisions with vehicles. Artificial lights may disorient birds, disturb breeding and foraging behaviour in birds, repel spiders and beetles, and influence the behaviour of nocturnal frogs.

Headlight glare can interfere with the flights of birds and bats, it can disrupt homing behaviour and mating calls (croaking) of amphibians in wetland habitats and influence navigational ability and decline in population of reptiles.

2.2.3 Conduits for invasive alien species

Increase in transportation activities favour the exotic weed species. A road also provides a movement corridor for the dispersal of weeds and animal pests alien to the surrounding forest habitat. Such invasive species may spread into adjoining natural ecosystems and affect the natural recruitment of native plant species. Besides plants, many animal species of other vegetation types, including feral and domestic species may spread along railway track into natural ecosystems.

2.2.4 Ecological death traps

Many species such as Pigeon, doves, Mynas, kite and rodents often get attracted to road for scraps of food thrown by the passengers passing through road. Some reptiles such as lizards and snakes also get attracted to bask on the hot surface of road on a sunny day in winter. In all such cases road becomes an ecological death trap for these animals.

2.2.5 Behavioural changes in animals

The species richness and abundance of several nocturnal primates, smaller ungulates, and carnivores, many of which are affected by changes in forest structure, become significantly depressed within 30 mt of roads. Animals get seriously stressed or change their behaviour in the vicinity of project site.

2.2.6 Impact on aquatic ecosystems

Aquatic habitats adjoining the project site is affected by erosion, sedimentation, flow pattern and channelization, with subsequent impact on aquatic and stream bank life both up and down stream. Alteration of stream flow, siltation and sediment loading, and pollution are some main degradation concerns.

2.2.7 Industrial activity and pollution

Land, water, air and sound pollution may adversely impact the general health and fertility of wild animals (and livestock). Material transporting, coal, petroleum products, liquefied and compressed gases, chemicals and other toxic or hazardous materials are similar to factories in their potential impacts. The impacts of labour camps also affects the wildlife adversely.

2.2.8 Summary of threats to wildlife

- Air, water and noise pollution.
- Increased fire incidences.
- Increased man – animal conflict.
- Shortage of food, cover, and water base for wild fauna are expected due to habitat fragmentation in the corridor area.
- Disturbance in the movement of elephant in the area.
- Domestic animals grazing in the area
- Disturbance in nesting & breeding grounds of various species.
- Significant mortality of invertebrates and vertebrate animals particularly as amphibians, reptiles, jackal, birds and soil fauna.

2.3 Identification & Characterization of Impacts

The major project activities and the anticipated environmental impacts of the proposed expansion are discussed below under the following categories:

- Impacts and mitigation measures due to project location.
- Impacts and mitigation measures due to project design.
- Impacts and mitigation measures during construction.
- Impacts and mitigation measures during operation.

SITE SPECIFIC WILDLIFE CONSERVATION PLAN OF M/S ATIBIR HI-TECH PRIVATE LIMITED (AHPL)

Figure 2.1- Characteristics of Environmental Impacts from Construction Phase

Activity	Environmental attributes	Cause	Impact characteristics			
			Nature	Duration	Reversibility	Significance, Mitigative measures
Dismantling of Existing Induction Furnace	Air Pollution (Dust)	Excavation of the area, Gas cutting etc.	Direct Negative	Short Term	Reversible	Significant. Personnel Protective Equipment (PPE) shall be used.
	Noise Pollution	Noise generation from hammering / dismantling activities	Direct Negative	Short Term	Reversible	Significant. Personnel Protective Equipment (PPE) shall be used.
	Land use	Storing of scrap, waste refractory bricks	Direct Negative	Short Term	Reversible	Insignificant, as storage is temporary
	Water Pollution	Potential for seepage from the waste storage area.	Direct Negative	Short Term	Reversible	Significant, Proper care of the storage area shall be taken. Temporary check dam along temporary storage area shall be made, if required.
Site clearing	Air Pollution (Dust)	Excavation of the area	Direct Negative	Short Term	Reversible	Insignificant. Personnel Protective Equipment (PPE) shall be used.
	Noise Pollution	Noise generation from earth moving equipment	Direct Negative	Short Term	Reversible	Insignificant. Personnel Protective Equipment (PPE) shall be used.
	Land use	Change of Land use	Direct Negative	Long Term	Irreversible	Insignificant, as the proposed expansion shall be within the land already acquired.
	Ecology	Removal of vegetation and loss of flora & fauna	Direct Negative	Long Term	Reversible	Insignificant, No cutting of trees
Transportation of spares and construction	Air Pollution (Dust & Gases)	Transportation of Spares and Construction material in trucks	Direct Negative	Short Term	Reversible	Medium, Water sprinkling shall be practiced. Raw materials will be transported, covered with tarpaulin.

SITE SPECIFIC WILDLIFE CONSERVATION PLAN OF M/S ATIBIR HI-TECH PRIVATE LIMITED (AHPL)

Activity	Environmental attributes	Cause	Impact characteristics			
			Nature	Duration	Reversibility	Significance, Mitigative measures
material to the Site						Regular emission checks shall be performed.
	Noise Pollution	Noise generated from loading / unloading and movement of vehicles	Direct Negative	Short Term	Reversible	Insignificant, Regular vehicle maintenance shall be done. PPE shall be provided.
Construction activities	Air Pollution (Dust & Gases)	Operation of construction machinery, welding & others	Direct Negative	Short Term	Reversible	Insignificant. PPE shall be provided to workers
	Noise Pollution	Generation from construction activities	Direct Negative	Short Term	Reversible	Significant. PPE shall be provided to workers
	Land use	Storage of spares, Refractory	Direct Negative	Short Term	Reversible	Insignificant. Storage is temporary and during construction period only
Disposal of scrap / waste material (including refractory)	Air Pollution (Dust & Gases)	Due to movement of Vehicles	Direct Negative	Short Term	Reversible	Significant. PPE shall be provided to workers
	Noise Pollution	Due to loading / unloading	Direct Negative	Short Term	Reversible	Insignificant. Regular vehicle maintenance and pollution check shall be done. PPE shall be provided to workers

Figure 2.2- Characteristics of Environmental Impacts from Operational Phase

Activity	Environmental attributes	Cause	Impact characteristics			
			Nature	Duration	Reversibility	Significance, Mitigative measures
Induction Furnace						
Transportation of Sponge Iron, Pig Iron & Alloys to the site	Air Pollution (Dust & Gases)	Haul road dust emission. Gaseous emissions due to Vehicle exhaust	Direct Negative	Short Term	Reversible	• Water sprinkling shall be done on ‘kaccha haul road’. • Regular vehicle maintenance and pollution check shall be done. • Raw material will be covered with tarpaulin during transportation • Besides, the management will ensure proper usage of the personal protective equipment by the workers to avoid any exposure to dust.
	Noise Pollution	Noise pollution due to vehicle movement	Direct Negative	Short Term	Reversible	• Low, the unloading will be done in covered area from low height. • PPE shall be provided to the workers working in the area.
Charging of Material in Induction Furnace crucible	Air Pollution (Fugitive emission)	Fugitive emission due to charging	Direct Negative	Short Term	Reversible	Bag Filter shall be provided to control fugitive emissions during charging
Operation of Induction Furnace	Air Pollution, (Fugitive emission)	Generation of flue gas and fugitive emissions during melting of Sponge iron, scrap, pig iron and alloys in IF.	Direct Negative	Long Term	Reversible	Dust extraction system with Bag filter system shall be augmented with the new IFs to keep particulate matter emissions from stack below 30

SITE SPECIFIC WILDLIFE CONSERVATION PLAN OF M/S ATIBIR HI-TECH PRIVATE LIMITED (AHPL)

Activity	Environmental attributes	Cause	Impact characteristics			
			Nature	Duration	Reversibility	Significance, Mitigative measures
						mg/Nm ³ and to control the fugitive emissions.
	Water Pollution	Backwash water from Softening Plant	Direct Negative	Long Term	Reversible	Significant. Neutralization Pit shall be installed to treat the waste water and shall be used for slag quenching.
	Noise Pollution	Due to operation of Furnace	Direct Negative	Long Term	Reversible	Management will ensure proper usage of the personal protective equipment by the workers to avoid any exposure to dust.
	Solid waste generation	During liquid steel making process slag will be generated	Direct Negative	Long Term	Irreversible	Slag generated during the process shall be used for road / area and land development after metal recovery.
		Bag Filter Dust	Direct Negative	Long Term	Irreversible	Bag Filter dust shall be sent to Metal Recovery Plant for extraction of useful materials. Remaining dust shall be sent to landfill.
Slag Crushing Unit						
Crushing of IF Slag for metal recovery	Resource Conservation (Recovery of metal)	Crushing and separating of metal by magnet	Direct Positive	Long Term	Reversible	Reused in Induction Furnace
	Solid Waste Generation (IF slag)	Remaining slag after Metal Recovery	Direct Negative	Long Term	Irreversible	Will be used as aggregates after crushing, as construction material
Billet Caster						

SITE SPECIFIC WILDLIFE CONSERVATION PLAN OF M/S ATIBIR HI-TECH PRIVATE LIMITED (AHPL)

Activity	Environmental attributes	Cause	Impact characteristics			
			Nature	Duration	Reversibility	Significance, Mitigative measures
Casting of Billets	Consumption of water	Cooling of mould and billets	Direct Negative	Long Term	Reversible	Insignificant. Water recycled back after cooling in Cooling Towers. Only make-up water is required
	Solid waste generation	Generation of Scale	Direct	Long Term	Reversible	Scale shall be recovered in Settling Tank and will be reused in Induction Furnace or shall be given to the Sinter Plant.
		Generation of scrap (end cuts)	Direct	Long Term	Reversible	Reused in IF
	Noise pollution	Caster rollers (rolling noise)	Direct	Short Term	Reversible	Ear plug/muff shall be provided to the employees working in that area
Reheating Furnace						
Re-heating of Purchased Billets	Air Pollution, (Fugitive emission)	Generation of flue gas and fugitive emissions during reheating of billets	Direct Negative	Long Term	Reversible	Dust extraction system with Bag filter system shall be augmented with the new RHF to keep particulate matter emissions from stack within limits.
	Water Pollution	Backwash water from Softening Plant	Direct Negative	Long Term	Reversible	Significant. Neutralization Pit shall be installed to treat the wastewater and shall be used for slag quenching.
	Noise Pollution	Due to operation of Furnace	Direct Negative	Long Term	Reversible	Management will ensure proper usage of the personal protective equipment by the workers to avoid any exposure to dust.

SITE SPECIFIC WILDLIFE CONSERVATION PLAN OF M/S ATIBIR HI-TECH PRIVATE LIMITED (AHPL)

Activity	Environmental attributes	Cause	Impact characteristics			
			Nature	Duration	Reversibility	Significance, Mitigative measures
	Solid waste generation	During heating process of billet ash will be generated	Direct Negative	Long Term	Irreversible	Supplied to fly ash block manufacturers.
		Bag Filter Dust	Direct Negative	Long Term	Irreversible	Bag Filter dust shall be sent to Metal Recovery Plant for extraction of useful materials. Remaining dust shall be sent to landfill.
Rolling Mill						
Rolling of Billets	Resource Depletion (Water) & Water Pollution	Cooling of rollers and flushing of scales	Direct Positive	Short Term	Reversible	Water for cooling of rollers along with mill scale generated during rolling process shall be taken to settling tank where oil and mill scale shall be removed and treated water shall be recycled
	Noise Pollution	Rolling operation	Direct Negative	Short Term	Reversible	Proper lubrication and maintenance of Rollers shall be done. Ear plug/muff shall be provided to the employees working in that area.
	Solid Waste Generation	Oil used for lubrication of rollers	Direct Negative	Long Term	Irreversible	Oil will be removed in oil collection system provided. Oil collected shall be sold to the registered recycler.
		Mill scale	Direct Negative	Short Term	Reversible	Mill scale shall be removed from settling pit time to time and shall be

SITE SPECIFIC WILDLIFE CONSERVATION PLAN OF M/S ATIBIR HI-TECH PRIVATE LIMITED (AHPL)

Activity	Environmental attributes	Cause	Impact characteristics			
			Nature	Duration	Reversibility	Significance, Mitigative measures
						given to nearby Sinter plant or Ferro-alloy plant
		Cobbles, end cuts (Scrap)	Direct	Short Term	Reversible	End cuts shall be collected and will be charged back into Induction Furnace as revert scrap.
DG Set						
Operation of the DG Set	Air Pollution	Flue gas emission, used oil generation	Direct Negative	Short Term	Reversible	The DG will be operated in case of power failure only. Green DG sets shall be installed
	Noise Pollution	Generation of noise during DG Set operation	Direct Negative	Short Term	Reversible	The DG Sets will have acoustic enclosure to minimize the noise.
Domestic Waste						
Operation and of Domestic utilities	Water Pollution	Operation of Washroom, toilets – Wastewater generation	Direct Negative	Long Term	Reversible	The sewage will be disposed into septic tank and soak pits. No discharge from Soaking Pits
Greenbelt Development						
Development and maintenance of Greenbelt	Reduction in Air Pollution and Noise Pollution	Plantation of trees within premises. to cover 33% of the area	Direct Positive	Long Term	Reversible	Positive Impact due to development of a proper greenbelt along the periphery of the premises. This will act as barrier for air emission and noise
Socio-economic Development						

SITE SPECIFIC WILDLIFE CONSERVATION PLAN OF M/S ATIBIR HI-TECH PRIVATE LIMITED (AHPL)

Activity	Environmental attributes	Cause	Impact characteristics			
			Nature	Duration	Reversibility	Significance, Mitigative measures
Employment Generation			Direct Positive			Positive Impact due to direct employment of persons from the nearby area.
						Substantial benefits in the form of contracts to local agencies for different services.
						Employment generation in transport sector for transportation of raw material and finished goods.

2.4 Quantum of Pollutants and effects

Main sources of pollution has already been given in detail in the above chart. Impact of the project on land, air, and water environment is given below -

2.4.1 Impact of project on Land Environment

Impact during Construction phase

Since the proposed expansion shall be carried out within the existing plant area., no additional land shall be required for the project. Considering no land required for the proposed expansion, no change in land use is envisaged. No trees shall be removed for the project. Hence there will be no change in land use pattern or soil quality. Topsoil shall be used for Greenbelt development. Spillage of cement, paints and oils on top soil may affect the soil adversely. On the topography, the impact is not significant however it will invite positive benefits in the form of land leveling and tree plantations in the plant vicinity.

Impact during Operation phase

Leakage/ spillage of material may cause negative impacts on land/ soil. The runoff from the plant may cause soil erosion. Heavy vehicular movement on loose soils during dry seasons will cause dust emissions. Deposition of dust from the stack emissions will also cause soil contamination. On land disposal of wastewater can cause soil contamination.

2.4.2 Impact of project on Air Environment

Impact during Construction phase

Dust is expected to be the main pollutant, which is associated with general construction activity including excavation, leveling and material handling. In this case, pollution emission sources are distributed throughout the project site and shall fall under the category of area source. Concentration of SO₂, NO_x and CO may slightly increase due to increased vehicular traffic. The impact of such activities would be temporary and restricted to the constructed phase. The impact will be confined within the project boundary.

The construction phase will have minor negative impact, within a few 100 meters from the source within the site, on the ambient air quality under the worst conditions, which are mitigated by implementing environmental management plan including greenbelt development. However, no significant impacts are expected on the overall ambient air quality due to construction activities, at the sensitive receptors outside the project premises.

Impact during operation phase

Production of sponge iron in DRI kilns will produce dust and gaseous emissions which generates huge quantities of hot flue gases carrying considerable sensible heat.

Fugitive emissions are expected to generate from different operations in sponge iron plant, due to Raw Material & Product Handling area and due to vehicular movement.

2.4.3 Impact of project on Water Environment

Impact during Construction phase

Leaching of construction waste into the ground water source during construction activity for the proposed development can have minor impact on hydrology and ground water quality of the area. Potential sources of impacts on the hydrology and groundwater quality during the construction phase are as follows:

- Spillage of oil and grease from the vehicles and wastewater generated on site activities such as vehicles washing, workshop etc.
- Improper disposal of construction debris leading to off-site contamination of water resources.
- Soil runoff from the site leading to off-site contamination (particularly during rainy season).

Impact during Operation phase

Since the water is most important raw material required for iron and steel industry, total water requirement after the proposed expansion will be 290 KLD (Existing 105 KLD & additional 185 KLD) and shall be met from ground water. The water will be mainly used for cooling and domestic purpose only. Potable water is required for plant personnel.

Withdrawal of ground water may impact the hydrology of the area as it may result in ground water depletion.

2.4.4 Impact of project on Noise Environment

Impact during Construction phase

During the construction phase, noise generated from various construction activities are listed below:

- Movement of vehicles carrying construction materials and loading & unloading activities.
- Excavation machines, concrete mixer and other construction machines including pneumatic tools and compressors.
- Operation of DG sets.
- Concreting, hammering.
- Mechanical operations, like fabrication, drilling, fitting, etc.

All the above-mentioned sources will be intermittent and would be experienced occasionally. The expected noise levels from these activities are as per given hereunder.

Table 2.1- Noise levels of construction equipment

Description	Noise Levels dB(A)	Combined Effective Noise levels dB(A)
Earth Movers		
Front End Loaders	78	84
Tractors	82	
Scrapers, Graders	76	
Pavers	72	
Material Handlers		
Concrete mixers	77	84
Concrete pumps	75	
Cranes (movable)	80	
Trucks	81	
Stationary Equipment		
Pumps	65	79
Generators	76	
Compressors	77	
Total		87

The resultant maximum noise level for the above sources as calculated using combined equivalent noise equation in EIA study is 87 dB(A) at source.

Impact during operation phase

The main noise generating sources in the plant are Steam leakages, ID fans, Compressors, DG Sets etc. All these sources will generate continuous noise. The equipment shall be designed to comply with the stipulated limit of 85 dB(A).

In order to predict ambient noise levels due to the operation of the equipment in the project, the noise modelling has been done during EIA study. For computing the noise levels at various distances with respect to the plant site, the sound pressure levels at increasing distances were calculated.

Table 2.2- Details of Noise levels during operation phase

Sl. No	Source	Noise levels at 1 m distance
1	Compressor House	85 dB(A)
2	ID Fans	82 dB(A)
3	Rolling mill	80 dB(A)
4	Induction furnace	76 dB(A)
5	DG Set	75 dB(A)
Lp (Total)		88 dB(A)

Table 2.3- Approximate Noise levels at various distances

Sl. No.	Noise Levels dB(A)	Distance from source (m)
1	88	1
2	82	2
3	76	4
4	70	8
5	64	16

It is observed that the noise levels may marginally increase due to the proposed project, but the effect is limited to the nearby receptors only. The receptors at distance will not be affected even if attenuation by the mitigation measures is not considered.

2.4.5 Impact of project on Flora and Fauna Environment

Impact during Construction phase

Construction activities at the site involving human and vehicular movement will disturb aerial and wild animals in the area. Terrestrial micro flora and fauna at the site are also affected. However, the adverse effects are reduced by shortening the construction phase period and development of greenery along the plant boundary.

Impact during operation Phase

Impact on flora

During the operation Phase, air emissions and increase in dust levels may result in

- restricted growth,
- less regeneration and
- degradation of sensitive vegetation.
- These emissions will be continuous and long term, thus, will have direct impact on the nearby vegetation.
- The increase in vehicular movement due to the expansion might increase the risk of introducing obnoxious or exotic species.

This impact shall mostly remain insignificant as there is already a road network and existing traffic in the region. The increase in population may result in tree cutting, lopping and grazing in the nearby regions.

Impact on Fauna

The noise generated during the operational phase might impact the existing fauna. The increase in human activity may also pose a threat

- due to illegal hunting and poaching in the nearby areas.
- The air emissions might reduce the abundance of sensitive species like butterflies and birds.

- The increased traffic may result in road kills of wildlife while crossing. The vehicular movement and road traffic may result in the introduction of unwanted species.

These alterations will have low impacts in the future course of proposed development; thus, the impacts will be low from ecosystem functioning point of view.

2.4.6 Impacts on Ecosystem

The proposed activity may result in

- degradation of surrounding habitat,
- introduction of weeds,
- habitat fragmentation and
- reduce ecosystem resilience.

The proposed project area may impose negative ecological attributes and might result in overall reduction in ecosystem resilience of the habitat if the activities are not managed properly. Since the proposed project is expansion within the existing project area, the overall impacts are predicted to be low.

The addition of the project with the existing activities shall give **cumulative impacts**. Existence of other industries and projects in the region attribute to overall high disturbance to the ecosystems. Further the secondary impacts that occur are due to increase in human pressure resulting in tree cutting logging/cattle grazing, poaching and removal of large mature trees.

2.4.7 Impact of probable increase in vehicular traffic

The Project site is well connected to SH-13. SH-13 (Koderma - Giridih – Tundi –Govindpur Marg) is located at a road distance of 0.16 km from the project site. This road is near to the project site and is/will be used as medium for transportation of construction or final products to and from the project area.

During the baseline study it was observed that the traffic density on the road is much less than its allowable limits for which existing traffic scenario came out to be “Very Good “falling under Level of Service “B”.

Due to construction and production activities at Atibir Hitech Pvt. Ltd, traffic volume on the above-mentioned roads will increase due to movement of medium and heavy vehicles considering the overall size and nature of the project. Vehicles used for transportation of construction or raw materials as well as finished products would be trucks. Other vehicles used for various purposes would be Jeeps, cars and 2 wheelers.

Impact during Construction phase

During construction phase, adverse impacts include.

- Delays and traffic congestion caused by the additional traffic volume of construction traffic.
- Loss of parking spaces
- Additional traffic at conflict points, at construction access and egress gates.
- Safety hazards associated with moving heavy equipment and oversized loads.

Although avoiding these impacts may not be practical or even possible, they must be mitigated for the construction activity of project to earn an acceptable rating both environmentally and socially.

Impact during Operation phase

Considering the overall size and nature of the expansion project, traffic volume on road will increase due to increase in number of medium and heavy vehicles used for the transportation of material to and from industry. The materials will be mainly transported through trucks using the road under study SH-13 which is near to the project site. Transportation Map of Project site is given below as Figure.

Details of survey done during EIA study is given in following table.

Table 2.4- PCU for Operation Phase

S. No.	Material for Transportation	Proposed Material & Products for Transportation (TPA)	Working Days	TPD	Truck Capacity	Number of Trucks	PCU /Day
1.	Sponge iron	70,800	330	214.55	25	9.0	27
2.	Pig Iron	26,550	330	80.45	25	3.0	9
3.	Scrap	13,275	330	40.23	25	2.0	6
4.	Ferro Alloys	177	330	0.54	25	1.0	3
5.	Purchased Billets	93,852	330	284.4	25	2.0	6
6.	Coal/Furnace Oil for re-heating furnace	2,380	330	7.21	25	1.0	3
7.	Long Products	216,251	330	655.31	25	26.0	78
	Total	423,285		1282.68		44.0	132.0

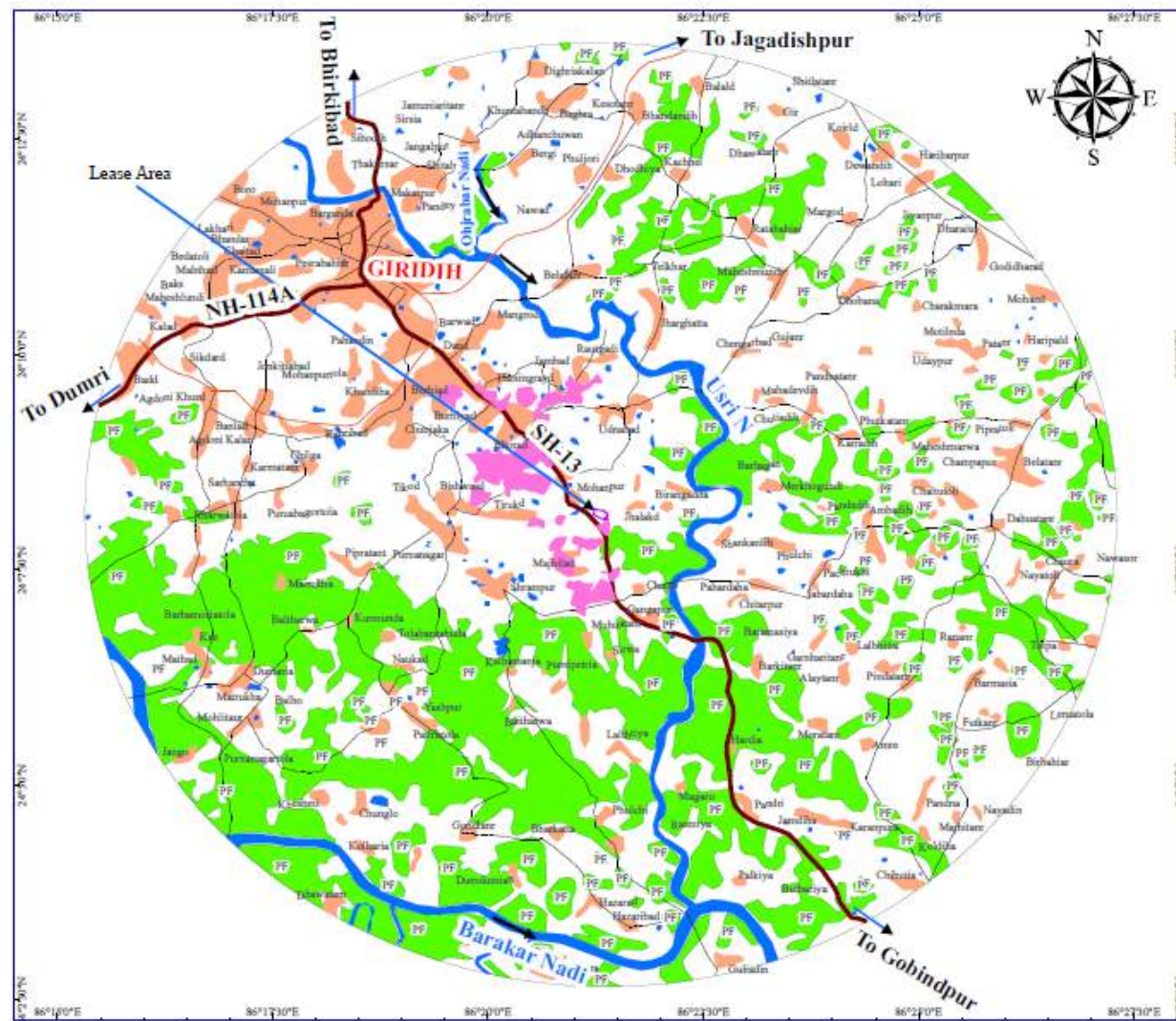


Figure 2.3- Transportation Map of the Project site

2.5 Survey team and Methodology

2.5.1 The Field Survey of Atibir Hi-Tech Expansion, Giridih, Jharkhand

The field survey of the steel plant and its expansion was conducted for assessment of flora, fauna, and socioeconomics of the core block and also 10 kms buffer zone. The survey team of INDUOM Consultant Pvt. Ltd., under the overall supervision of Dr. Lal Ratnakar Singh conducted the survey in different stages. The members of the team are

1. **Dr. L.R. Singh, I.F.S. (Retd.)** -Former Principal Chief Conservator of Forests & Chief Wildlife Warden, Jharkhand/Chairman Jharkhand Biodiversity Board Principal Investigator
2. **Sri Om Prakash Singh**, Range officer of Forests (Retd.), Department of Env. & Forests, Jharkhand
3. **Ms. Dipti Thakur**, M.Tech.(Env. Engg.), M.Sc. (Env. Sci.) – Ecology Biodiversity Associate
4. **Mrs. Anupama Singh**, M.A. (Sociology) - Social Survey associate
5. **Mrs. Priyanka Kumari**, GIS and Maps associate.

At the time of commencement of work, it was felt necessary to collect information on flora, distribution of plants and animals, the changes in the landscape during the last few years and also the villager's dependence on forests for their livelihood. Considering these, the following methods were adopted for collecting the required information on random basis.

The basic maps and records were procured from Atibir Hi-tech Private Limited and forest department for Site Specific Wildlife Conservation plan for enhancement of the production for the proposed plant. The team also interacted with local people and local community members for their inputs.

The assessment of flora and fauna was carried out by using standard line transect and quadrature laying and surveying methodology. The direct and indirect evidence were collected for fauna study.

2.5.2 Methodology

This report is prepared on the basis of observation on a random assessment of biodiversity in the forest surrounding the Steel Plant and its expansion area. The documents of EIA and working plan of the Giridih East Forest Division was also considered. This report is based on the study carried out during the month June and July 2023.

2.5.2.1 Inventory and Distribution of Plants and Animals –

For inventory of plants and animals, the areas in and around were covered on foot. Looking at almost all possible habitats and microhabitats was taken care of. In addition, transects were laid and covered recording the plants and animal signs observed. Transects were also laid away from the plant area. The observation was made in 40 quadrates laid along the 40 transects at different locations of the Project area including 10 km buffer zone at random.

For preparation of Wildlife Management Plan, the major objective of this survey is to collect primary data on flora and fauna and to prepare an inventory of plants and animals along with their abundance and distribution details, the survey aims to:

- (a) Provide description and mapping of vegetation types occurring in the study area; identification of any vegetation types of particular conservation significance and; collation of information regarding any rare flora or other flora of conservation interest;
- (b) Place the information from the study area in regional context by comparison with available data from other localities; and
- (c) To identify major flora and fauna within the project area and study area of 10 km around the project.
- (d) To prepare an inventory of plant and animal species along with their distribution details.
- (e) Preparation of authenticated map identifying the forests in the areas along with plant and animal species distribution (Quadrates) of the study area.
- (f) Provide management recommendations to minimize impact to vegetation types and flora species of conservation significance within the study area.

2.5.2.2 Estimation of Plant and sampling Method

- (i) Quadrates were laid at every 100m for 1 km transect and at 200 m for every 2 km transect. The tree species along with number of each within 10 x 10 m sampling plots were recorded. The same procedure was followed in 5 x 5 m sampling plots for shrubs and climbers, and 1 x 1 m for herbs and grass species.
- (ii) The observations were recorded and extrapolated.

For seedlings – Plot of 1Mt. radius
For Shrubs & Saplings – 5 mt. radius
For trees - 10 mt. radius

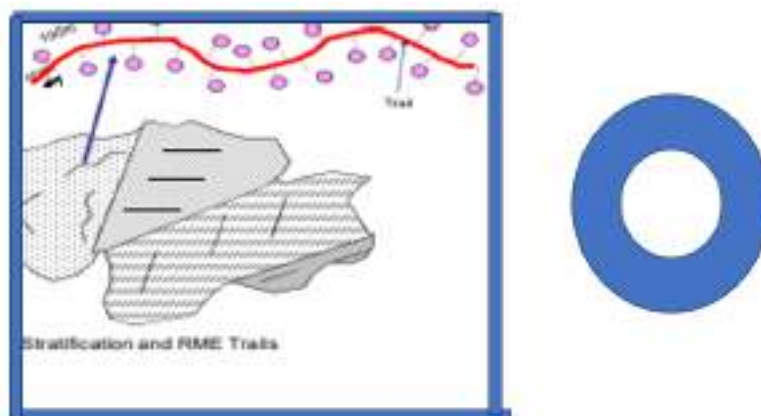


Figure 2.4- Transect layout and Sample plots

2.5.2.3 Estimation of animals and sampling Method

Considering almost the nil sightings of animals indicating low abundance, it was decided to depend on the indirect evidence such as hoof mark/foot print/pellets/scats/scratches in the quadrates. The quadrates of 10 x 10 m at every 100 m along transects were used for the purpose. The quadrates were searched for indirect evidence of mammals and recorded in a standard format. The quadrates were searched thoroughly for amphibians and reptiles recording the species sighted along with the number of each (Heyer et al., 1994). In addition, the villagers were also asked about the species sighted in the area with the help of pictorial/field guides. The birds and butterflies encountered during the field visits were also noted. Since it was not possible to use the nets in most of the rivers/streams, fish specimen was not sampled. The maps were made available from plant, Forest Survey of India and ISRO. The maps were digitized and used in the plan preparation and assessments.

3 Objectives of Management & Strategies

3.1 Objective of Management

The Management objectives can be categorized as:

3.1.1 Within the Project Area

It is very important that the adverse impact of Project must be minimized and controlled from the source itself. The project area is the industrial activity zone from where the factors of impact may arise. The objective of management starts from control of pollutants and other engineering and technological measures to minimize the impacts at the source itself. It includes measures for control of air pollution, water pollution, noise pollution, soil pollution etc. and is the integral part of the EMP developed by the project.

Other objective is preservation and development of greenery, plantation, water bodies etc. This is to be taken care of by development of "Green belt" and plantation within the project and the township in the immediate vicinity. The water bodies are regularly cleaned and maintained.

There is scope of better soil and moisture conservation activity within this area. Appropriate planting technique can be adopted to conserve maximum amount of moisture.

3.1.2 Within the Impact Area

In the project impact area appropriate soil and moisture conservation models, habitat improvement, eco-development etc. needs to be adopted in order to improve the condition. The impact area can be categorized broadly in two parts:

- **Area with root stock** - The impact area having root stock will benefit immensely from improved protection and reduction of anthropogenic pressures.
- **Areas devoid of vegetation and infected with unwanted weed.**

The objectives of management, therefore, have to be geared towards this-both by reducing demand and providing alternative supply sources. The specific, succinct objectives of management are provided below which have been elucidated in the next chapters of the management plan.

3.2 Strategies to mitigate/minimize the adverse impact

3.2.1 Mitigation of adverse impact on Air Environment

Dispersion of different air pollutants released from an industrial project into the atmosphere have significant impacts on the neighborhood air environment. Dust is expected to be the main pollutant, which is associated with general construction activity including excavation, levelling and material handling. In this case, pollution emission sources are distributed throughout the

project site and shall fall under the category of area source. Concentration of SO₂, NO_x and CO may slightly increase due to increased vehicular traffic. The impact of such activities would be temporary and restricted to the constructed phase. Following mitigation measures are required:

-
- Air Pollution control devices shall be provided to control the gaseous emissions during Sponge Iron production, and steel melting operation.
- Measures shall also be taken to ensure control on fugitive emissions arising during raw material handling, production processes, vehicular movement, etc.
- Green belt and greenery development around storage yards, around plants, either side of roads and around the periphery of the industry.
- Water spray and sprinkling is practiced at loading unloading locations.
- Trucks carrying coal and other raw material are covered with tarpaulin to prevent spreading of dust during transportation.
- Internal roads are sprinkled with water at regular intervals for which water tankers with sprinkler arrangement are deployed premises to prevent road dust emission.
- All internal roads in the premise are paved /tarred.
- Speed limit of 10 km/h is enforced for vehicles in the plant premises to prevent road dust emission.
- The conveyors of fuel are suitably covered with hood or enclosures to control fugitive emissions.
- All pollution control equipment shall be checked on half yearly basis for any wear and tear and suitable repair/maintenance shall be carried out.
- BS-IV or higher quality diesel shall be used for operating DG Sets
- Emergency plan shall be laid out tackle pollution control equipment failures. All equipment failures shall be reported to CPCB/SPCB/Regional Office of MoEF&CC on 6 monthly basis with investigation report and corrective actions taken.
- The site environmental/designated officer shall certify the emission data on daily basis. The records shall be maintained and submitted as part of half yearly compliance report
- Regular ambient air quality monitoring shall be performed at all baseline stations for checking compliance with NAAQ standards. Online monitoring system shall be established as per Govt. guidelines

3.2.2 Mitigation of water Environment

Construction activities for the proposed development can have minor impact on hydrology and ground water quality of the area if the construction waste leaches into the ground water source. Potential sources of impacts on the hydrology and groundwater quality during the construction phase are as follows:

- Soil runoff from the site leading to off-site contamination (particularly during rainy season).
- Improper disposal of construction debris leading to off-site contamination of water resources.

- Spillage of oil and grease from the vehicles and wastewater generated on site activities such as vehicles washing, workshop etc.

Mitigation measures are as follows –

- Water shall not be allowed to leave the construction site.
- Disposal of construction debris shall only be done in approved areas.
- Installing oil and grease traps in construction workshop.
- Construction activities like earth work includes cutting and filling of soil during rainy season the surface runoff may contain more of eroded soil and other loose matter. Therefore, as far as possible, these activities shall be avoided during rainy days and will be completed in summer and winter season.
- Construction of storm water diversion channels to divert storm run-off from flowing over the construction areas
- With segregation of construction area with proper drainages contamination of water due to soil erosion shall be prevented.
- Settling pond is planned for storage and recycling of surface water for use in the plant area.
- Toilets with septic tanks shall be made available at site for construction workers.
- No plant effluent will be discharged in to public water ways or drains. Hence, the plant will be designed for zero liquid discharges (ZLD).
- **Recycle & Reuse of water** - In order to minimize consumption of fresh water from the source, AHPL has adopted recirculating systems which permit reuse of water therefore, reducing the requirement of fresh water.

Thus, the overall impacts on water environment due to proposed activity would be temporary and marginal.

Table 3.1-Details of the Water Pollution Control facilities

S. No.	Unit	Type of Pollution Control System	Quantity (KLD)	Usages
1.	Softening Plant for SMS	Neutralization Pit	12.5	Slag cooling, Dust suppression
2.	Cooling Tower blow down from SMS	-	15	Plantation
3.	Rolling Mill	ETP	-	Recycled
4.	Domestic wastewater	STP	11.0	Plantation
Total Discharge			38.5 KLD	

Thus, the plant has been designed based on maximum recycling and zero liquid effluent discharge and will have less impact on hydrology and quality of ground water as well as surface water in this region.

3.2.3 Mitigation of Noise Environment

Any industrial complex in general consists of several sources of noise in clusters or single. This clusters/single source may be housed in buildings of different dimensions made of different materials or installed in open or under sheds. The material of construction implies different attenuation co-efficient. The main noise generating sources in the plant are Steam leakages, ID fans, Compressors, DG Sets etc. All these sources will generate continuous noise. The equipment shall be designed to comply with the stipulated limit of 85 dB(A).

Following mitigation measures are required: -

- Selection of low noise generating machinery/equipment.
- Engineering specifications shall be stipulated during tendering as a condition to maintain noise level equal to or less than 85 dB (A) at 1 m from each source.
- Provision of rubber padding/noise isolators/silencers to modulate the noise generated by machinery/equipment, wherever possible.
- Provision of protective devices like earmuff/ plugs to the workers.
- Preventive maintenance of machinery/equipment and vehicles.
- The high noise zones at site will be properly marked and provided with enclosures & barriers wherever possible.
- Information on noise, the risks of exposure to noise and the appropriate control measures shall be displayed at the workplace.
- Appropriate training and education will be given to the workers.
- Regular monitoring of ambient noise level as per monitoring plan.

Table 3.2- Proposed Noise Pollution Control Devices

Acoustic Enclosure	1 No.	Turbo Generator Set
Compressor House with acoustic paneling	1 No.	For placing Compressor

Low noise design and suitable enclosures will ensure that the noise levels are restricted well within the stipulations of the SPCB's (below 75 dB at 1m).

3.2.4 Mitigation of Solid Waste

Solid Waste from Plant Unit - Common anticipated wastes are concrete, empty paint cans, plastic bags and metal scrap, etc. Improper disposal of solid waste generated will create a negative impact on the surrounding environment. The laborers will be taught as how and where

to disposal of waste materials. Wet and dry waste bins will be supplied to them. Waste generated from construction labor will be handed over to municipal authorities. Metal scrap generated will be utilized in the existing plant as raw material. The concrete waste will be kept separately and used for filling in the low-lying areas. Cans and bags will be given to authorized recyclers. The details are following -

Table 3.3- Solid Waste Generation & Utilization for Existing and Proposed Plant

Units	Solid Wastes	Qty. In TPA	Disposal Practice
Induction Furnace	Slag	31185	After metal extraction (approx. 12%of slag), in In House Slag crusher, will be supplied to outside parties for construction filling.
Rolling Mill	Mill Scale & cuttings	4752	Will be charged back as scrap in the induction furnace for In-House Reuse.
Bag Filter Dust from process	Dust from process	222	Supplied to outside parties for construction filling
Re-heating furnace	Ash & Bag filter dust	1815*	Supplied to fly ash block manufacturers. *No generation if furnace oil is used.

Hazardous waste - Following hazardous wastes likely to be generated from the process:

Table 3.4- Hazardous Waste Generation & Utilization after Expansion Proposed Plant

Type of Waste	Mode of Disposal
Used Oil	Shall be used in smoothening machineries within plant premises.

Approximate quantity of 'Used Oil' generation will be approx. 0.3 KL per year. Used Oil shall be temporary stored in barrels on concrete flooring with bund wall all around to contain spillage, if any 'Used Oil' will be sold to the register recycler (Shall be used in smoothening machineries within plant premises).

Other Solid Waste

The solid waste generated other than the above-mentioned waste will be E-Waste and Plastic Waste.

E-Waste is mostly generated from the discarded electrical parts that from the machineries or the Discarded computer parts. The plant will produce almost 0.01TPA of Electrical Waste that will be stored on impervious concrete floor for a maximum of 180 days. The parts that can be reused will be recovered and the remaining will be sold to Authorized Recycler.

Plastic Waste is mostly generated from the packing units and raw material unit. It is estimated that the Plastic Waste that is generated in the plant will be approx. 0.04 TPA. This Plastic Waste will be sold to Authorized Recycler.

Municipal Solid Waste is mostly generated from canteens and other areas in the plant. The estimated quantity of MSW that may be generated will be 9.8TPA which will be handled and disposed-off as per the Solid Waste Management Rules, 2016.

The Project proponent will be taking initiative to reduce and reuse these types of waste generated so as to prevent pollution.

3.3 Mitigation of impact on buffer zone

3.3.1 Impact on forests

Table 3.5- Impact on forest

S.N.	Impact component	Strategy
1	Degradation of forest area due to various anthropogenic and plant activities	1. Restoration of forest area through ANR and plantation activities involving Village panchayats. 2. The local plant species should be used in plantation only to restore the ecology. 3. The permanent nursery of local plants should be created with the participation of local community.
2	Reduction of dependency of local community on forests	1. Promotion of horticulture in impact villages. Each household should be provided with 10 fruit plants for Bari Plantation from nursery raised by JFMPC. 2. Promotion of cultivation of medicinal plants in the villages with market linkages. 3. Creation of nurseries of medicinal plants impact villages. 4. Livelihood promotion in impact villages particularly to women through capacity building and income generation activities. 5. Preparation of 5-year village development plan for all impact villages.
3	Public education and Awareness generation	On forest conservation and climate change in local schools, marketplaces; celebration of important days etc.
4	Arrival of external work force for plant and allied activities	1. Establishment of temporary workers shed at least 1 km away from forest area. 2. Provision of cooking gas to work force.
5	Over Grazing in the forest	1. Planning of breed improvement of local cattle for stall feeding in impact village. 2. Development of village pasture in cooperation with panchayats
6	Prevention of accidental fire occurrences due to plant activity	1. Fire control planning and precautions by plant. 2. Support to forest department in fire control measures.

S.N.	Impact component	Strategy
		3. Control of coal fires on dumps.
7	Consumption as firewood @ 3000Kg/ year/ household	1.Promotion of at least 10 firewood plant/HH in impact villages. 2. Provision of Free fuel supply/ improved chulhas for each household in impact villages

3.3.2 Impact on wildlife

Table 3.6-Impact on Wildlife

S.N.	Impact component	Strategy
1	Reduced Wildlife density	1. Support to create rescue and rehabilitation program through Forest Department.
2	Wild Elephant Movement.	1. Habitat Improvement Program through Forest Department in buffer area forests. 2. Provision of water facilities in the buffer forest. 3. Support to Elephant anti-depredation measures in the impact villages. 4. Permissible level of disturbances in plant activities. 5. Support to create congenial atmosphere for elephant presence in the area. 6. All affluent/ plant discharges has to be under permissible limit and to be monitored strictly. 7. Provision of Rs. 3.00 Lakh (one time payment) emergency fund for DFO, Giridih East Forest Division to meet any eventuality in wildlife depredation.
3	Poaching due to increased presence of workers & others.	1. Provision of anti-poaching support to forest department. 2. Increased awareness generation in villages and general mass on importance of wildlife
4	Maintenance of water holes in the sanctuary and other impact area.	Sufficient water availability within the habitat will reduce the man animal conflict. New source of water and maintenance of existing water holes needs to be done so as to provide adequate water to the wildlife.
5	Maintenance & creation of salt licks	Shortage of sodium in the plants which are eaten by wildlife could motivate the game to eat a lot of soil at the lick (Ayeni, 1972). Apart from maintenance of natural and existing salt licks new source of salt licks particularly near water holes are also required to be created.

S.N.	Impact component	Strategy
6	Habitat management for species of birds	In order to attract birds for roosting, tree species like Kadam, Mitragyna parvifolia, Jamun Syzygium cuminii and Babul Acacia nilotica could be planted in and around water bodies. Other trees that attract a number of birds like Parakeets, Orioles, Barbets and Horn bills are Palash Butea monosperma, Semal Bombax ceiba Udar Sterculia alata; Neem Azadirachta indica, Coral Tree Erythrina indica; Jackfruit and other Ficus species.
7	Vaccination and immunization of the village cattle	cattle graze freely inside the forest area there is likelihood of catching mouth and foot disease and other diseases to the wild animals. Village cattle require to be vaccinated to immunize for diseases.
8	Eco Development Activities	1. The rays of different development activities are yet to reach villager's doorsteps effectively. It is therefore desirable to cater their domestic need of safe drinking water, health care and enhancement of livelihood opportunity, education and communication primarily by forest departments. This practice will motivate them for the protection and conservation of wildlife and forest along with assistance to forest department in carrying out management activities. 2. Provision of solar lights in the villages will also help in reducing man-animal conflict.

3.4 Strategies to conserve the important species

3.4.1 Aim of the study

The aim /objective of this plan shall be to assess the present status of flora/ fauna and habitats of major wildlife species in the project area as well as in its impact area of 10 km buffer area (henceforth called WCP area), probable impacts of the project on the flora and fauna in the study area and to formulate appropriate mitigative measures to prevent the degradation of habitat in and around the project area as consequences of the project.

3.4.2 Approaches followed

- The study followed detailed surveys of the WCP area for the major floral and faunal species, water regime, and drainage pattern, wildlife usage of the area and interface conflict in order to develop an appropriate management strategy for conserving the ecology while effectively utilizing the available natural resources.

- The subject matter experts and consultants assessed the WCP area for probable degradation of the forest and habitats due to project implementation and chalked out mitigative strategies through discussion with the local peoples, other stakeholders in the locality and forest staff. The existing land use pattern and rural economic structure were also analyzed against the probable changes due to project implementation.
- Provisions of all relevant Acts and regulations including important Court orders in respect of Wildlife Conservation and Environmental Protection have been strictly adhered to while preparing the plan.
- All the studies and components under this WCP when prepared, are further validated and authenticated by competent local forest authority.

3.4.3 Schedule-I Species in the Study Area – identified for Conservation

To meet the objective of this plan following schedule-I species, as per the Wild Life (Protection) Amendment Act, 2022 has been identified for conservation. A total of 18 schedule-I species comprising of 10 mammals, 4 herpetofauna and 4 aves have been identified as below:

Table 3.7- Conservation Plan for Schedule-I Species in the Study Area

S. No.	English Name	Scientific Name	Status/Schedule	IUCN Status
Mammals				
1.	Grey Mongoose	<i>Herpestes edwardsii</i>	Schedule-I	LC
2.	Indian Porcupine	<i>Hystrix indica</i>	Schedule-I	LC
3.	Jungle Cat	<i>Felis chaus</i>	Schedule-I	LC
4.	Jackal	<i>Canis aureus</i>	Schedule-I	LC
5.	Striped Hyaena	<i>Hyaena hyaena</i>	Schedule-I	NT
6.	Bengal Fox	<i>Vulpus bengalensis</i>	Schedule-I	NA
7.	Indian Pangolin	<i>Manis crassicaudata</i>	Schedule-I	EN
8.	Indian Elephant	<i>Elephas maximus</i>	Schedule-I	EN
9.	Wolf	<i>Canis lupus</i>	Schedule-I	EN
10.	Sloth Bear	<i>Melursus ursinus</i>	Schedule-I	Vu
Herpetofauna				
1.	Indian Python	<i>Python molurus</i>	Schedule-I	NT
2.	Indian Cobra	<i>Naja naja</i>	Schedule-I	LC
3.	Indian rat snake	<i>Ptyas mucosa</i>	Schedule-I	NA
4.	Monitor lizard	<i>Varanus bengalensis</i>	Schedule-I	NT
Aves				
1.	Crested serpent Eagle	<i>Spilornis cheela</i>	Schedule-I	LC
2.	White-Rumped Vulture	<i>Gyps bengalensis</i>	Schedule-I	CR
3.	Eurasian Eagle Owl	<i>Bubo bubo</i>	Schedule-I	LC

4.	Indian Peafowl	<i>Pavocristatus</i>	Schedule-I	LC
----	----------------	----------------------	-------------------	----



Asian Elephant (*Elephas maximus indicus*)



Striped Hyena (*Hyaena hyaena*)



Jungle Cat (*Felis chaus kutas*)



Indian Peafowl (*Pavo cristatus*)

3.4.4 Conservation Plan for major Schedule-I Species in the Study Area

Name - Asian Elephant (*Elephas maximus indicus*)

Habitat -

Asian elephants inhabit grasslands, tropical evergreen forests, semi-evergreen forests, moist deciduous forests, dry deciduous forests and dry thorn forests, in addition to cultivated

and secondary forests and scrublands forests, moist deciduous forests, dry deciduous forests and dry thorn forests, in addition to cultivated and secondary forests and scrublands.

Ecology & Behavior –

Asian elephants are crepuscular, mega herbivores having a diet up to 150 kg per day. They are known to feed on more than 100 different plant species including most commonly of the order Malvales, as well as the legume, palm, sedge and true grass families. They drink at least once a day and need plenty water for bathing that's why they never move far from a permanent source of fresh water. Cows and calves move about together as groups, while bulls disperse from their mothers upon reaching adolescence. They produce three basic sounds: growls, squeaks and snorts. Growls are used for short distance communication, squeaks come in two forms, chirpings and trumpets. Chirping consists of multiple short squeaks and signal conflict and nervousness whereas trumpets are lengthened squeaks with increased loudness and produced during extreme arousal. Snorts signal changes in activity and increase in loudness during mild or strong arousal.

Threats –

Loss, degradation and fragmentation of its habitat are the major threats associated with this animal, which leads to increasing conflicts between humans and elephants. Poaching for ivory and a variety of other products including meat and leather are the other prominent threats.

Conservation Strategies –

The people living in the surrounding area and employees of the steel company would be motivated toward the protection of the animal. Though the elephant was not spotted/reported in the core area, the plant area is not the part of elephant corridor, its presence is confirmed in the outer buffer zone, yet the following strategies will be adopted:

- One-time grant for providing immediate compensation for loss of life & property as emergency fund which will be replenished as soon as the govt. fund is received by the D.F.O., Giridih East Forest division.
- Habitat improvement activities enriching soil, water, vegetal cover, etc.) will be ensured to enhance the food density in the study area.

Striped Hyena (*Hyaena hyaena*)

Habitat -

The striped hyena lives in arid, mountainous regions with scrub woodland. It dens in rocky hills, ravines, and crevices. It also inhabits open savannah areas with dense grassland in some regions. grassland in some regions.

Ecology & Behavior –

It is solitary but has some social organization. It forages individually and is rarely seen in groups. It does, however, associate in small family groups at the den. Immature family members will help feed younger siblings by bringing food back to the den. It consists mainly of soft growls and other sounds used during intraspecific encounters. Territoriality is not a prominent feature in striped hyena behavior but does exist to some extent. Dens are often used merely for short periods of

time, and therefore rarely need to be defended. The striped hyena is not a favored prey species of any predator. They keep a safe distance, usually around 50 meters, from larger, carnivorous mammals like lions and tigers. They also have the ability to chase or keep leopards and cheetahs away from food sources. The striped hyena has some benefit in that it consumes unwanted human refuse. striped hyena is predominantly a scavenger; its diet consisting mainly of carrion and human refuse. It scavenges large and medium-sized mammals. It supplements its diet with fruit, insects, and occasionally by killing small animals like hare rodents, reptiles, and birds. The striped hyena forages principally at night, individually travelling throughout its home range searching for food in no apparent pattern. Travelling speeds average 2-4 km/h, occasionally increasing to 8 km/h when trotting.

Threats –

Habitat degradation, decreased prey population, retaliatory killing by poisoning, poaching and road kills are found to be the major threats to these endangered scavengers.

Conservation Strategies –

- Habitat will be managed by implementing habitat improvement activities (enriching soil, water, vegetal cover, etc.) in the study area.
- Awareness campaign will be organized to disseminate the importance of hyena for human beings as the coexistence of hyenas and humans in the shared landscape is supported by mutual benefits, where hyenas get benefits from food and humans benefit from waste removal.

Jungle Cat (*Felis chaus kutas*)

Habitat -

A habitat generalist, the jungle cat inhabits places with adequate water and dense vegetation, such as swamps, wetlands, littoral and riparian areas, grasslands and shrub. It is common in agricultural lands, such as fields of bean and sugarcane, across its range, and has often been sighted near human settlements.

Ecology & Behaviour –

It is typically diurnal and hunts throughout the day. Its activity tends to decrease during the hot noon hours. It rests in burrows, grass thickets and scrubs. It often sunbathes on winter days. Jungle cats have been estimated to walk 3–6 km (1.9–3.7 mi) at night, although this likely varies depending on the availability of prey. It is solitary in nature, it does not associate with conspecifics, except in the mating season. The only prominent interaction is the mother-kitten bond. Territories are maintained by urine spraying and scent marking; some males have been observed rubbing their cheeks on objects to mark them. Primarily a carnivore, the jungle cat prefers small mammals such as gerbils, hares and rodents. It also hunts birds, fishes, frogs, insects and small snakes

Threats –

Habitat loss such as the destruction of wetlands, dam construction, environmental pollution, industrialization and urbanization. India exported jungle cat skins in large numbers, until this trade was banned in 1979; some illegal trade continues in the country.

Conservation Strategies –

- Habitat and prey density (gerbils, hares, rodents, birds, fishes, frogs, insects and small snakes) will be managed through implementing habitat improvement activities (enriching soil, water, vegetal cover, etc.) in the study area. Under the habitat improvement program, swamps, wetlands, littoral and riparian areas, and grasslands will be focused on a priority basis as the cat prefers these areas.

Wolf (*Canis lupus*)

Habitat -

Indian wolves are found in India, Pakistan, Afghanistan, Nepal, Bhutan, Israel, Turkey, Iran, and Syria. They live in open grasslands, thorn forests, and scrublands.

Ecology & Behavior –

The habits of these animals are similar to those of other Grey wolf subspecies. However, Indian wolves generally live in smaller packs rarely exceeding 6-8 individuals. They are also relatively less vocal and have rarely been known to howl. Indian wolves are territorial and hunt during the night. Each member of the pack will hunt for its own food; however, when targeting big prey such as antelopes, they prefer to hunt in pairs. One wolf usually is acting as a decoy while the other attacks from behind. They prey mainly on antelopes, rodents, hares, and raccoons. Indian wolves are monogamous and mate for life. They tend to breed from mid-October to late December.

Threats –

Main threats to Indian wolves include habitat loss, unregulated hunting, and loss of prey. Even though these animals are protected they still are frequently killed due to being considered as livestock predators. Indian wolves also may attack humans and it is believed this is due to the lack of food in their natural environment.

Conservation Strategies –

- Maintain high ungulate population density through forestry intervention (Progressive plantation, distribution of seeds, seedlings and grasses).
- There is a provision of warning signs and speed limits sign at wildlife crossing points to avoid roadkill.
- Reduce the number of vehicle-wolf collisions through awareness campaigns and in order to change negative attitudes and behavior toward wolves in the study area.

Golden jackal (*Canis aureus*)

Habitat -

The golden jackal occurs in North and East Africa, Southeastern Europe and South Asia to Burma. The golden jackal is the most northerly of jackal species, and also the most widely distributed. It overlaps biotopes only with the black-backed jackal in East African savannas. Golden jackals prefer dry open country, arid short grasslands and steppe landscapes.

Ecology & Behaviour –

Golden jackals live in mated pairs and are strictly monogamous. In most jackal families, there are one or two adult members called "helpers." Helpers are jackals who stay with the parents for a year after reaching sexual maturity, without breeding, to help take care of the next litter. The basic social unit of the golden jackal is a mated pair or a mated pair and its young. Golden jackal pairs forage and rest together. All of their behavior is highly synchronized. Cooperative hunting is important to the jackals. Golden jackals are strictly nocturnal in areas inhabited by humans, but may be partly diurnal elsewhere. They dig caverns for shelter, or use crevices in rocks, or caverns that were dug by other animals. Golden jackals live in pairs and are friendly to one another, scratching their partners all over their bodies. However, if strange jackals meet each other, most of the behavior expresses subordination, superiority, or eagerness to attack. Golden jackals consume 54% animal food and 46% plant food. They are opportunistic foragers with a very varied diet, which consists of young gazelles, rodents, (especially during winter), hares, ground birds and their eggs, reptiles, frogs, fish, insects and fruit.

Threats –

The main identified threats are legal culling, deliberate illegal killing and indiscriminate poisoning. Traffic accidents are also important throughout the species range.

Conservation Strategies –

- Habitat improvement activities (enriching soil, water, vegetal cover, etc.) will be ensured for safeguarding the existing habitat patches and to facilitate communication between jackal populations in the study area.
- People living in or frequenting jackal habitat will be educated about the role of the animal in the ecosystem through organizing awareness campaigns.
- Illegal killing, indiscriminate poisoning and traffic accidents shall be managed through general public awareness by organizing awareness campaigns in the study area.

Bengal fox (*Vulpes bengalensis*)

Habitat -

Bengal foxes generally prefer foothills and non-forested regions such as open grassland, thorny scrub, semi-desert and arid environments. They can also be found in agricultural fields, as they are not generally fearful of humans. Bengal foxes inhabit burrows built approximately two to three feet below ground surface. These burrows have several openings converging towards the center burrow area. Many of these openings are blind while others lead towards a large, central breeding space.

Ecology & Behaviour –

Bengal foxes are predominantly crepuscular and nocturnal; while individuals may sometimes become active during cool periods of daytime, they typically spend warmer daylight hours under vegetation or in subterranean dens.

They use three distinct types of den: basic, compact dens with two openings used for short rest periods, complex dens with multiple openings, and dens under rocks or rock crevices. Bengal foxes are omnivorous and opportunistic feeders, feeding primarily on insects, small mammals, reptiles, small birds, and fruits. Their diet consists mainly of orthopterans, termites, ants, beetles, spiders, soft-furred rat, little Indian field mouse, Indian gerbil, Indian mynah, grey partridge and ashy-crowned finch lark. Less common prey items include ground lizards, oriental rat snake, Madras hedgehog and Indian hare. They feed on fruits of ber, neem, mango, jamun and bargad. Bengal foxes make a wide range of vocalizations. A common vocalization is a "chattering cry" that seems to have a significant role in establishing territoriality and may also be used as a warning call. Throughout most of its range, the mating season occurs in December to January and after a gestation period of around 50–53 days.

Threats –

Bengal foxes are threatened by habitat loss and degradation, roadkills, persecution and changes to native species populations due to parasites or pathogens. Hunting for its flesh, skin and body parts, the latter for traditional medicine, and for sport, and conversion of its habitat to industry, agriculture and, in particular, bio-fuel plantations, are further threats. Another major threat is disease, including rabies and canine distemper virus from the large populations of dogs that range freely throughout its area.

Conservation Strategies –

- Habitat degradation and habitat loss are the measure threats associated with this species and these threats will be compensated by executing various habitat improvement activities (progressive plantation, distribution of seeds and seedlings, etc.) in the project area.
- Road kills, persecution by dogs and hunting shall be managed through general public awareness by organizing awareness campaigns in the study area.
- Identification and conservation of Dens present in the study area with the help of forest department. It will ensure that there is no movement in dens' areas during the mating season occurs in December to January.
- Habitat improvement activities (enrich soil, water, vegetal cover, etc.) will be ensured to enhance the pray density in the study area.



Wolf (*Canis lupus*)



Golden jackal (*Canis aureus*)



Grey Mongoose (*Herpestes edwardsii*)



Bengal fox (*Vulpes bengalensis*)

Sloth bear (*Melursus ursinus*)

Habitat -

Sloth bear is found throughout India, Sri Lanka, and further north into Bangladesh, Nepal, and Bhutan. Sloth bears live mainly in tropical areas. They can be found in forested areas and grasslands. They are more frequently found at lower elevations and seem to prefer drier forests and areas with rocky outcrops. It occurs in a wide range of habitats including moist and dry

tropical forests, savannahs, scrublands and grasslands below 1,500 m (4,900 ft) on the Indian subcontinent

Ecology & Behaviour –

Sloth bears are mainly nocturnal. Their sense of smell is well developed but their sight and hearing are poor. Adult sloth bears may travel in pairs. Males are often observed to be gentle with cubs. They may fight for food. They walk in a slow, shambling motion, with their feet being set down in a noisy, flapping motion. They are capable of galloping faster than running humans. Although they appear slow and clumsy, both young and adult sloth bears are excellent climbers. They occasionally will climb to feed and to rest, though not to escape enemies, as they prefer to stand their ground. Sloth bear mothers carry their cubs up trees as the primary defense against attacks by predators instead of sending them up trees. To mark their territories, sloth bears scrape trees with their forepaws, and rub against them with their flanks. Sloth bears are recorded to produce several sounds and vocals. Howls, squeals, screams, barks and trumpet-like calls are made during aggressive encounters while huffing is made as a warning signal. In India, they mate in April, May, and June, and give birth in December and early January, while in Sri Lanka, it occurs all year. Sows gestate for 210 days, and typically give birth in caves or in shelters under boulders. Sloth bears are expert hunters of termites and ants, which they locate by smell. On arriving at a mound, they scrape at the structure with their claws till they reach the large combs at the bottom of the galleries and disperse the soil with violent puffs. The termites are then sucked up through the muzzle, producing a sucking sound which can be heard 180 m away. Sloth bears are omnivorous, although their diet typically includes a large proportion of insect foods. Their diet includes leaves, honey, flowers, and fruits. During the months of March through June, fruits are more common and on occasion may make up 50% of these bears' diet. They prefer termite or bee nests and will do everything to get at them. These bears only risk predation from large predators such as tigers and leopards. Female sloth bears with cubs will occasionally vary from their nocturnal tendencies to avoid these nocturnal predators. Since these bears include some fruit in their diet, they disperse the seeds of the fruit they eat. Also, by feeding on numerous amounts of termites, they keep the termite populations in check.

Threats –

Despite being protected under the law of the land, this unique species is faced with threats such as poaching, wildlife trafficking, habitat fragmentation and human-wildlife conflict.

Conservation Strategies –

Following conservation measures will be executed in order to maintain the population of sloth bears in the study area:

- The buffer area will be enriched through planting of native tree species (fruit-bearing or otherwise), which can serve as both hiding and/or escape areas and food resources (Progressive plantation and distribution of seeds and seedlings).
- Long-term monitoring of the population with the help of forest department.
- Public education–awareness through organizing awareness campaigns which will help secure the future of the species. The focus of these awareness programs would be on the conservation of the species along with reducing human-bear conflicts.

- Sloth bears are highly nocturnal animals and are fond of sweets and fruits. Therefore Jaggery, honey and seasonal fruits will put in some strategic points to attract sloth bears as a sweet lick.

Indian Porcupine (*Hystrix indica*)

Habitat -

The Indian porcupine (*Hystrix indica*) is found throughout southeast and central Asia and in parts of the Middle East, including such countries as India, Nepal, Bhutan, Bangladesh, Sri Lanka, Pakistan, Israel, Iran and Saudia Arabia. The Indian porcupine is highly adaptable to multiple environments. Although they usually favor rocky hill sides, the species can also be found in tropical and temperate scrublands, grasslands, and forests. They are also found throughout the Himalayan mountains, reaching up to elevations of 2400 meters.

Ecology & Behaviour –

Indian porcupines are nocturnal, with the species seeking shelter in caves, between rocks, or in its burrow during the day. The burrow is usually self-constructed, with a long entrance tunnel, multiple exits and a large inner chamber. The Indian crested porcupine is semi fossorial. They live in natural caves or in excavated burrows. Because they do not climb or jump well, they spend most of their lives on or under the ground. However, they are good swimmers. Indian crested porcupines mate in February and March. Gestation lasts an average of 240 days. A female gives birth to one brood of two to four offspring per year. The main food source for the Indian porcupine is vegetable material of all kinds, including fruits, grains, and roots. They have also been known to chew on bones, in search of minerals (such as calcium) that help their spines grow. The species utilizes both natural plants and agricultural crops as food sources.

Threats –

These porcupines can act as substantial habitat modifiers when excavating for tubers. They are also considered serious agricultural pests in many parts of their range due to their taste for agricultural crops. For these reasons, they are often regarded as a nuisance. Indian porcupines are hunted for their meat. They are also commonly trapped by local people due to being considered a pest species. On the other hand, these rodents currently face habitat degradation because of urbanization, infrastructure development and use of pesticides.

Conservation Strategies –

- Habitat of the species will be improved through various habitat improvement program (plantation, water filling in water holes, greenbelt, etc.).
- Awareness campaigning in the villages and among mining staff for the conservation and hunting of the species.
- Identification and conservation of natural caves in the study area with the help of forest department.
- Encourage forest department for distribution of seed tubers along with seeds and seedlings through awareness generation.

Russell's viper (*Daboia russelii*)**Habitat -**

Russell's vipers are found in India, Sri Lanka, Bangladesh, Nepal, Myanmar, Thailand, Pakistan, Cambodia, Tibet, China (Guangxi, Guangdong), Taiwan, and Indonesia (Endeh, Flores, east Java, Komodo, and Lomblen Islands). These snakes are not restricted to any particular habitat but do tend to avoid dense forests. They are mostly found in open, grassy, or bushy areas, but may also be found in second-growth forests (scrub jungles), on forested plantations, and on farmland. Russell's vipers are most common in plains, coastal lowlands, and hills of suitable habitat. Humid environments, such as marshes, swamps, and rainforests, are avoided. They are also often found in highly urbanized areas and settlements in the countryside because of the abundance of rodents.

Ecology & Behaviour –

Russell's vipers are solitary terrestrial creatures. They are primarily nocturnal foragers. However, during cool weather, they become more active during the day. These snakes like to bask in the sun during the day. The rest time is spent hiding in the caves, in cracks in the soil, or under the leaf litter. Adults move slowly and sluggishly unless they are threatened; after that, they can become very aggressive. Juveniles are generally more nervous in nature. When threatened, Russell's vipers form a series of S-loops, raise the first third of the body, and produce a hiss that is supposedly louder than that of any other snake. When striking from this position, they can exert so much force that even a large individual can lift most of their body off the ground in the process. These snakes are strong and may react violently to being picked up. The bite may be a snap, or they may hang on for many seconds. Venom of this species is delivered by means of solenoglyphous dentition. The quantity of venom produced by individual specimens is considerable. Venom yields for adult specimens have been reported as 130-250 mg, 150-250 mg, and 21-268 mg. Russell's vipers are carnivores. They feed primarily on rodents but will also eat small reptiles, land crabs, scorpions, and other arthropods. Juveniles hunt lizards. As they grow and become adults, they begin to specialize in rodents. Russell's vipers are ovoviviparous which means that females give birth to live young. Mating usually occurs early in the year, although pregnant females may be found at any time.

Threats –

The main threats to Russell's vipers include illegal collection and trade for food and skins. They are also often killed because of fear.

Conservation Strategies –

- Awareness campaigning in the villages and among mining staff for the conservation and illegal trade of the species.
- Identification and conservation of sun basking sites, caves and cracks with the help of Forest Department.
- Progressive plantation of broad-leaved species and other afforestation programmes which enrich the forest ground with thick layers of leaf litter and help the species in hiding.

Bengal monitor (*Varanus bengalensis*)**Habitat -**

The Bengal monitor is a large monitor lizard widely distributed over the Indian Subcontinent, as well as parts of Southeast Asia and West Asia. Bengal monitors are among the most widely distributed of varanid lizards ranging from Iran to Java. They are found in river valleys in eastern Iran, Afghanistan, India, Nepal, Sri Lanka, Pakistan, Bangladesh, and Burma. The subspecies, Clouded monitor, occurs in southern Burma, Vietnam, Cambodia, Thailand, Malaysia, Sumatra, Java and the Sunda Islands. Bengal monitors are found both in dry semiarid desert habitats to floodplains, scrubland, and moist forest. They are also often found in agricultural areas.

Ecology & Behaviour –

Males are generally larger than females. Young monitor lizards are more colourful than adults. Young have a series of dark crossbars on the neck, throat, and back. Bengal monitors are solitary and usually found on the ground but can climb well. The young are often seen on trees and may also climb trees to escape from predators. The larger ones prefer to escape on the ground. On the ground, Bengal monitors sometimes stand on the hind legs to get a better view or when males fight other males. They can also swim well and can stay submerged for at least 17 minutes. Bengal monitors usually shelter in burrows they dig or crevices in rocks and buildings or in tree hollows. They can also use trees and bushes or abandoned termite mounds for shelter. Bengal monitors, like other varanids, sleep at night and are diurnal, becoming active around 6 AM and bask in the morning sun. During winter, in the colder parts of their distribution range, they may take shelter and go through a period of reduced metabolic activity. They are not territorial and may change their range seasonally in response to food availability. Bengal monitors are usually shy and avoid humans. Bengal monitors are carnivores and scavengers. Their typical diet consists of beetles, grubs, orthopterans, scorpions, snails, ants, and other invertebrates. They may also feed on frogs, fish, lizards, snakes, rodents and ground birds. Bengal monitors are also scavengers. They sometimes feed on dead animals. In areas where livestock is common, they often visit dung, where they forage for beetles and other insects. Bengal monitors are polygynandrous (promiscuous) meaning that both males and females have multiple partners. The main breeding season takes place from June to September.

Threats –

The main threat to Bengal monitors is hunting. They are hunted for skin, meat, and sometimes because of fear. The fat of Bengal monitors is also used in traditional medicine.

Conservation Strategies –

- Protection of snags and large trees from felling or from fire as the species has a great affinity towards snags.
- Awareness campaigning in the villages and among mining staff for the conservation of the species.
- Forest enrichment within the Buffer Zone area will be undertaken (Progressive plantation/distribution of seeds and seedlings) as part of the plan to enhance - quality of habitat and availability of food indirectly.
- Existing water holes will be filled with water in the Buffer Zone area.

- The burrowed pits and anthill mounds can be searched (forest department) and should be conserved as a part of habitat improvement.

Indian Peafowl (*Pavo cristatus*)

Habitat -

Indian peafowl are resident breeders across the Indian subcontinent and inhabit the drier lowland areas of Sri Lanka. They are found in moist and dry-deciduous forests near water, in montane forests, and can also adapt to live in cultivated regions and around human habitations.

Ecology & Behaviour –

Indian peafowl live mainly on the ground where they forage in small groups that usually have a cock and 3 to 5 hens. After the breeding season, the groups tend to be made up only of females and young. They are found in the open early in the morning and tend to stay in cover during the heat of the day. Indian peafowl often dust-bathe and at dusk and groups walk in single file to a favorite waterhole to drink. When disturbed, they usually escape by running and rarely take to flight. During the night, peafowl roost in groups on tall trees but may sometimes make use of rocks, buildings, or pylons. Birds arrive at dusk and call frequently before taking their position on the roost trees. Indian peafowl produces loud calls, especially in the breeding season. They may call at night when alarmed and neighboring birds may call in a relay-like series. The most common calls are a loud 'pia-ow' or 'may-awe'. They also make many other calls such as a rapid series of 'ka-aan..ka-aan' or a rapid 'kok-kok'. They often emit an explosive low-pitched honk! When agitated. Indian peafowl are omnivorous and eat seeds, insects, fruits, small mammals, and reptiles. They feed on small snakes but keep their distance from larger ones. Around cultivated areas, peafowl feed on a wide range of crops such as groundnut, tomato, paddy, chili, and even bananas. Indian peafowl are polygynous (one male to several females), and their breeding season usually depends on the rain. The peak season in southern India is April to May, and June in northern India.

Threats –

Illegal poaching for their meat and feathers and accidental poisoning by feeding on pesticide-treated seeds are known threats to wild birds. In parts of India, these birds can also be a nuisance to agriculture as they damage crops. Habitat loss and shortage of tall trees for roosting and for providing shade during hot summer months.

Conservation Strategies –

We proposed the following measures for the conservation and welfare of the population of peafowls in the study area:

- Whenever there is a scarcity of natural food and water sources at different sites in the study area, peafowls will be provided with grains (wheat/pulses) and water artificially.
- Forest fires, cutting of trees, firewood collection, and dumping of garbage, plastic wastes, and waste materials from mining sites will be strictly avoided.
- Grazing of cattle, goats, and sheep will be avoided during the period of peafowl breeding for the conservation of grasses that are used for nesting

- Greenbelt and progressive plantation will provide perching ground and food for peafowl fauna.
- School-level awareness programs will be conducted for conservation by organizing competitions during 'wildlife week' and 'Van Mahotsav'.
- Water will be filled in the existing (selected by the forest department) water holes.

	
Sloth bear (<i>Melursus ursinus</i>)	Indian Porcupine (<i>Hystrix indica</i>)
	
Russell's viper (<i>Daboia russelii</i>)	Bengal monitor (<i>Varanus bengalensis</i>)

4 Proposed Management Strategies within Project Site

4.1 Interventions to be Implemented by the Project Proponent within the Project Premises

4.1.1 Environmental Impact Assessment Report / Environment Management Plan (EIA/EMP)

The environment management plan is prepared with a view to facilitate effective environmental management of the project, in general and implementation of the mitigation measures in particular. This plan helps in formulation, implementation and monitoring of the environmental parameters during and after commissioning of the project. The Environmental Management Plan describes in brief, the management plan for proper and adequate implementation of treatment and control system for air and liquid pollutants and for maintaining the environment. It also includes the development of green belt in and around the plant proper safety of the workers, noise control, fire protection systems and measures.

4.1.2 Aim of the interventions within the Project

The EMP aims at following:

- Abatement treatment and disposal off all the pollutants viz. liquid, gaseous and solid waste so as to meet statutory requirements (Relevant Pollution Control Acts) with appropriate technology.
- To support and implement work to achieve environmental standards and to improve the methods of environmental management.
- To promote green-belt development.
- To encourage good working conditions for employees.
- To reduce fire and accident hazards.
- Budgeting and allocation of funds for environment management system.
- To adopt cleaner production technology and waste minimization program.

4.1.3 Heads of interventions

Out of the various heads of the EMP following management/mitigation measure will have direct and/or indirect impact on the conservation of the flora & fauna of the study area, thus the same has been considered in this report:

- Habitat Management for Flora and Fauna
- Food Management
- Water Management
- Cover Management

- Lantana Management
- Wildlife Health
- Illicit Felling
- Fire Management
- Ecodevelopment work in surrounding villages to reduce the conflict
- Research and Monitoring

4.1.3.1 Habitat Management for Flora and Fauna

The grasses and palatable shrubs are very sparsely distributed and so unable to fulfill the requirement of herbivores. The area should be managed in such a way that plenty of food should be available round the year for herbivores. It will be done by ensuring habitat protection and its improvement by developing grassland and other browse species like *Zyzyphus*, *Bija*, *Sissoo*, *Bauhinia*, *Karanj*, *Bamboos* etc, fruit trees such as Bargad, Pipal, Wild fig, Amla, Bel, Tut etc. at suitable places. Similarly, a number of salt licks should be provided at different places in the forest area. *Heteropogon controtus*, *Chrysopogon species*, *Dicanthium sp.*, *Saccharum sp.* are the main grasses constituting the ground cover. The grasslands have been deteriorated due to weed infestation. This needs proper management. The scrub forest supports food requirement of other ungulates, Hyena, Jackal, Fox and bush living birds like Jungle Fowl, Quails, Warblers etc.

4.1.3.2 Food and Feeding Habits of main Species

In the food chain of a forest ecosystem, herbivores play an important role. The carnivores of the area feed mostly on the small herbivores and occasionally kill village cattle, Goats etc. Hyena and Jackal thrive mostly on smaller domesticated animals like Goat, Rabbits and birds like Hen, Peacock, Jungle fowl etc. The food and feeding habitat of some species like Blue bull, Wild Boar etc. creates severe problems for villagers leading to conflicting situation and causing concern for management. So they are being dealt separately.

(i) Elephant - Elephants have been found to prefer, Karils and leaves of bamboos, Bark, leaves and twigs of *Bauhinia* spp., *Bridellia retusa* etc. Elephants are also often seen to attack neighboring agricultural crops like paddy, maize, wheat, banana etc.

(ii) Spotted deer- The Deer mostly eat grasses on the forest floor, browse on the leaves, young shoots, flowers and fruits of the following species viz. *Nyctanthes arbortristis*, *Bauhinia* species, *Eugenia dalbergioides*, *Terminalia* species, *Zizyphus* species, Leaves of bamboo, Tender leaves of sal.

(iii) Monkeys and Langurs – Monkeys and langurs have been observed to thrive on: Tender shoots of *Bauhinia* spp, Semal, Bamboo, Leaves and fruits of *Acacia* Spp, *Ficus* spp., *Morus* spp., *Kend* (*Diospyros melanoxylon*)., *Kadamb* (*Anthocephalus kadamba*), *Zizyphus* spp, *Aegel marmelos* etc.

(iv) Birds - The birds mostly feed upon insects and fruits of the species like: *Fiscus bengalensis*, *Fiscus glomerata*, *Kend* (*Diospyros mel anoxylon*), *Piar* (*Buchanania latifolia*), *Zizyphus* spp., *Bridellia retusa* etc. Emphasis should be given for plantation of fruit bearing plant species

mentioned above especially near water source or reservoir for providing perching and nesting site. Apart from this the fruit yielding tree species listed in site specific survey should be encouraged for habitat improvement of birds since they are the native flora of the area.

4.1.3.3 Water Management

Both in-situ and ex-situ conservation of water should be done by various means because Water is essential not only for animals but also for plants, microbes and all ecological processes. It will be ensured that catchments remain covered with vegetation at all times by protection and plantation, so that erosion and run off will be kept at the minimum.

Activities for retention and conservation of water like creation of contour trenches; gully plugging etc. will be carried out wherever necessary from time to time through annual plans. De-siltation of main reservoirs even in the villages will also be done periodically, so that water will remain available even in summer months.

It is important to take special measures for creation of at least pond for water management on both side of elephant crossing proposed. This will motivate, trail the elephant including other wild animals to guide them towards the underpass. During extreme scarcity of water in summer the animals will become adapted to passes through the under pass for drinking water, avoiding crossing the railway track. Apart from this the management of water in all respect will be done per suggestion of DFOs of both the concerned Division during the annual plan in the light of existing situation.

The water becomes an important threat to wild animals immediately after March. The condition remains same up to July. After rainy season water is localized at few places. Such condition has arisen due to siltation of all streams which has reduced their water holding capacity. A series of check dam/ water bodies (ponds) is required around the surrounding areas project site to improve the water regime of the habitat. Since water is an important component for survival of species and requirement of water is increased during summer, so management of water is a must for improving the water regime for the purpose of Wildlife Conservation. In any case, if there is a water course (small or large may be) should not be disturbed and water should be allowed to flow uninterrupted except for making series of check dam and treatment of catchment area.

4.1.3.4 Cover Management

Cover or shelter is another important requirement for the welfare of the species. The cover may be natural or artificial. Caves or holes are required for their resting and breeding period for carnivores and reptiles. Lack of such natural caves or holes is limiting factor for animals. These animals will never stay in an area which is devoid of above type of shelter.

In case of herbivores, sufficient cover of either grass, wood, brushwood etc. is required for shelter, protection and breeding. Woods are used as cover for small animals as well as big animals during hot summer days. It also acts as shelter for birds. Grasses are used for breeding for hares, deer's and other species. Small bushes provide breeding, resting and protective

shelters for birds like Jungle Fowl, Quails and Partridge. Shrubs provide protective shelters for herbivores and other prey animals from predators.

It can be ensured by strict protection of habitat. The occurrence of fire incidence greatly hampers the availability of nesting and reproductive cover for birds. Therefore, incidence of fire should be checked efficiently.

4.1.3.5 *Lantana Management*

Lantana weed has become a menace in some parts of the degraded forest areas. In the interest of the wildlife, therefore, it has to be cleared by uprooting as far as possible. People may be allowed and encouraged to collect it from forest for fuel or fencing purpose. The eradication of lantana should be based on scientific knowledge i.e. root cut back method. In this process lantana should be cut 5 cm below ground level. Afterwards it should be turned upside down and grass species should be planted.

However, care should be taken to eradicate lantana in phase wise because it is good soil cover and hiding place for some wild animals. Besides varieties of insects and butterflies thrive on them. So, Lantana should be eradicated in phase wise manner and such areas should be developed as grassland or for plantation of fodder species.

4.1.3.6 *Wild Life Health*

Efforts will be made to immunize the domestic animals in and around the proposed area against contagious diseases like Food & Mouth disease, Rinderpest etc. In order to avoid the spread of disease the stall feeding should be encouraged by supporting grassland development on community or private fellow land. The villagers should be given incentive to change crop pattern and simultaneously motivated to reduce the number of cattle and rear hybrid breed of cattle.

4.1.3.7 *Fire Management*

Most of the fires in forest are intentional fires set by villagers for obtaining new flush of grasses for grazing and for the collection of Mahua flower or Sal seed or Kendu leaves suitable for bidi making. In addition, sometimes accidental fires are caused by throwing of cigarette butts or bidis without extinguishing from running trains.

These fires naturally go against the conservation values of the area as the food and cover base of the wild fauna is destroyed and the soil is exposed to the danger of erosion and run off, weed infestation and, therefore, replacement of natural flora with unnatural and unpalatable species.

It is always better to have controlled burning as a management tool. Otherwise, fire is harmful because it leads to loss of cover of herbivores as well as destruction of eggs and nests of ground birds like Jungle fowl quail, peafowl and partridge or bush living birds. Besides it accelerates soil erosion, deteriorate the forest and ultimately reduce the aesthetic value of the forest. The adverse impact of fire should be highlighted by signboard & distribution of pamphlets. Based on

requirement creation of new fire line after careful study and survey work can be undertaken in project zone.

4.1.3.8 Eco - development work in surrounding village to reduce conflict

The conservation of wildlife or forest cannot be dealt in isolation. The need of the people who were traditionally depended on forest for their livelihood, should get benefit from the project so that their support in wildlife conservation measures can be obtained. Eco-development measures can help in winning confidence of local people. Specific issues related to conflicting situation between wildlife conservation versus human development are cattle grazing, need for small wood and fuel wood, agricultural productivity and unawareness about the importance of wildlife.

4.1.3.9 Research and Monitoring

The research component used to be given less priority in forestry. There has never been an attempt to conduct or promote research by any project to generate information about ecology, biology etc. of various species which are involved in conflict with the human eg. Elephant, Sloth Bear, Wild Boar, Jackal, Blue bull, Hyena, etc. As a result of this, information on many aspects is highly inadequate to make suitable plans and strategies for different species. Lack of priority and funding for this purpose have been the main cause behind this.

In order to overcome this deficiency, information on many aspects, which do not involve any technical expertise, like animals sighted, number, age/sex distribution, location, habitat description, general activity, plant phenology, fire outbreaks, extent of burnt area, animal killings, observations pertaining to dens, caves etc. should be initiated by the department on its own or through support by project authorities.

On the other hand, for those aspects which need considerable skill and technical expertise like ecology and biology of important wild animals eg. Elephant, Sloth Bear, Jackal, Blue Bull, Hyena, reptiles, amphibians, fishes, Birds, invertebrates and aquatic flora and fauna etc., causes of decline in wild life populations, making detailed inventories of flora and fauna, contractual engagements or consultancies with experience NGOs working in the field of Wildlife & Environment or University should be made. The detailed inventory of invertebrates, lower plants, medicinal plants, amphibians, reptiles, birds, lesser known animals etc. for carrying out research to elicit information on habit and habitat of different species, their distribution, population trends, densities etc.

In addition, a rainfall gauge and best quality scientific digital thermometer should be placed at different location within project area and regular data should be noted down beginning from the first year of the plan. The forest staff deployed can be trained to take observation and the report should be sent monthly to the concerned Forest Division. The data will be used for preparation of next ten years plan.

4.1.4 Interventions to be done with cost break up

Table 4.1- Cost Breakup for Environmental Management Plan during Construction Phase

Components	Items	Capital Cost (Rs. in Lakhs)	Recurring Cost (Rs. in Lakhs /Annum)
Air	Water Sprinklers	4.0	1.0
	Tarpaulin Covers for vehicles for use during transportation of construction materials		
	Shed for cement storage		
Water	Sanitary Facilities - construction Workers	1.0	0.2
	Oil & Grease Traps		
Soil	Shed for storage of topsoil	5.0	1.0
	Cementing of Floor for storage of paint & LDO		
Noise	Ear plugs and muffs	0.4	0.1
OH&S	PPE, first aid facility, drinking water facility.	2.0	0.2
Total		12.4	2.5

Table 4.2- Cost Breakup for Environmental Management Plan during Operation Phase

Sl. No.	Environmental Protection Measures	Capital Cost Rs. In lakhs	Recurring Cost Rs. In lakhs/year
1	Air Pollution Measures		
	Installation of 2 Nos. of Spark Arrester with Pulse jet Bag Filter with induction furnaces and Cyclone Separator with Pulse jet Bag Filter with reheating furnace	35	3.5
	Water sprinklers (6 Nos.)	1.5	0.2
	Dust Suppression System	1.5	0.2
	Sub Total (A) Air Pollution Control Measures	38.0	3.9
2	Water Pollution Control Measures and Rainwater Harvesting		
	Augmentation of Neutralization Pit (1 Nos. of 12.5 KL)	5.0	0.2
	Settling /Collection Pit	2.0	0.2

	STP (1 Nos. of 15 KLD)	5.0	0.5
	Sub Total (B) Water Pollution Control Measures	12.0	0.9
3	Noise Pollution Control Measures		
	Acoustic enclosure DG Sets	8.0	1.0
	Sound attenuation Panels/Cabins	2.0	0.5
	Silencers, Mufflers, Rubber mountings, isolators	2.0	0.5
	Sub Total (C) Noise Pollution Control Measures	12.0	2.0
4	Solid & hazardous Waste management		
	Concrete platform for temporary storage of Bag filter Dust, Slag, Mill Scale, End Cut / Reject along with tarpaulin sheets	5.0	1.0
	Concrete platform with bund wall and oil collection system for storage of HSD, and other Oil Drums and Used Oil	5.0	1.0
	Sub Total (D) Solid & hazardous Waste management	10.0	2.0
5	Environmental Monitoring Program		
	Cost of monitoring of environmental parameters for Ambient Air, Fugitive Emission, Work-Zone Emissions, Stack emissions, Effluent, Ground water, Soil Quality, Ambient & Work Zone Noise Levels monitoring, TCLP Test	--	3.82
	Installation of 1 nos. CAAQMS	50.0	2.50
	Installation of 2 nos. of OCEMS with Induction Furnace Plant & SAF plant	60.0	4.50
	Installation of Web camera at STP outfall	5.0	0.50
	Monitoring of Health of Workers	--	2.00
	Monitoring of Performance of Pollution Control Equipment	--	2.00
	Sub Total (E) Environmental Monitoring Program	115.0	15.32
	Occupational Health & Safety	10.0	17.5
	Rain Water Harvesting	15.0	2.5
	Greenbelt Development and Landscaping	20.2	2.0
	Total	232.2	46.12
Budget for implementation of commitments made to address the issues raised during the public hearing		24.0	

Total EMP Budget Including Budget for Addressing Public Hearing Issues	256.2	46.12
---	--------------	--------------

The Capital Expenditure and Operational Expenditure have been estimated under the said EMPs. The Company is expected to implement the proposed activities therein in right earnest and in furtherance of the rules and regulations of State and Central Pollution Control Boards. The instant Plan, therefore, is being restricted to wildlife-centric management strategies keeping in mind the prevalent practices of management of the forest areas in the Zone of Influence in general and the Sanctuary in particular.

4.2 Management Strategy to be undertaken by the Project Proponent within the Plant Premises with Wildlife in Focus

4.2.1 Green Belt Development

Since the Atibir Hitech Private Limited is operational within a highly urbanized industrial complex, the wildlife aspect is of practically negligible significance within the Company premises. However, the Greenbelt development Program proposed in the EIA-EMP has considerable significance towards whatever little mitigating effort one can envisage in terms of wildlife conservation.

The mitigation measures proposed towards Air, Water, Soil and Noise environments under the EMP is expected to give a boost to the wildlife conservation within the plant premises. The objective of the Greenbelt Development Program is not only enhancement of green cover area but also strengthening the preventive efforts against dust and noise pollution. The green belts act as a natural barrier to noise and buffer of air pollutants that also boost eco-restoration and aesthetics of the area. Leaves adsorb pollutants on their surface, especially near the tree crown thus effectively reducing pollutant concentration in the ambient air. Often the adsorbed pollutants are incorporated in the metabolic pathway and the air is purified.

Apart from the function as pollution sink, greenbelts also provide suitable habitats for birds and other small animals. Checking soil erosion, restoring water balance and enhancing micro climatic conditions are some of the other objectives of greenbelt development.

4.2.1.1 Recommendations about Green Belt Development within the Plant Premises

Control of Pollution at the source itself is the best way for the industries. Numerous mechanical devices are available for controlling pollution at the process level itself. Some trace amount however, is still likely to get released. This is especially true of air pollutants from industrial exhausts etc. It is often stated that zero pollution process is only hypothetical. With more than 99% efficiency of pollution abatement machinery/measures, some amount of pollution still gets released in the atmosphere. Such pollution too is of wide occurrence.

Green belts are thought to be effective in such scenarios, where green plants form a surface capable of sorbing air pollutants and forming sinks for pollutants. Leaves with their vast area in a tree crown sorbs pollutants on their surface, thus effectively reduce their concentrations in the ambient air. Often, the sorbed pollutants are incorporated in metabolic stream and thus the air is purified. Plants grown in such a way as to function as pollutant sinks are collectively referred as green belts.

An important aspect of a green belt, sometimes overlooked, is that the plants constituting green belts are living organisms, with limits to their tolerance towards air pollutants. As a result, crossing the threshold limits in terms of pollution load, would lead to injury to plants causing death of tissues and reducing their adsorption potential. Sink efficiency of unhealthy and dead tissues and leaves is known to be extremely low, thus defeating the very purpose of a green belt. In short, a green belt is effective as pollution sink only within the tolerance limits of constituent plants.

4.2.1.2 *Criteria for selection of plants for Green- Belt*

For effective removal of pollutants, it is necessary that:

- (i) the plants grow under conditions of adequate nutritional supply for health and vigour of growth.
- (ii) there is absence of water stress to maintain openness of stomatal apertures and form of epidermal structures; and
- (iii) the plants are well exposed to atmospheric conditions of light and breeze i.e., away from engineering structures hindering free flow of air to maintain free interaction with gases.

The characteristics of plants including shapes of crowns considered necessary for effecting absorption of pollutant gases and removal of dust particles are as follows:

For absorption of gases:

- (i) Tolerance towards pollutants in question, at concentrations that are not too high to be instantaneously lethal.
- (ii) Longer duration of foliage.
- (iii) Freely exposed foliage, through:
 - (a) Adequate height of crown
 - (b) Openness of foliage in canopy
 - (c) Big leaves (long and broad laminar surfaces)
 - (d) Large number of stomatal apertures
 - (e) Well exposed stomata

For removal of suspended particulate matter:

- (i) Height and spread of crown
- (ii) Leaves supported on firm petioles
- (iii) Abundance of surfaces on bark and foliage, through:
 - (a) Roughness of bark
 - (b) Epidermal outgrowths on petioles
 - (c) Abundance of axillary hairs

(d) Hairs or scales on laminar surfaces

(e) Stomata protected by wax, arches/rings, hairs etc.

It may be noted that all tolerant plants are not necessarily good for green belts. For example, Xerophytes with sunken stomata can withstand pollution by avoidance but are poor absorbers of pollutants due to low gaseous exchange capacity. It is unrealistic to expect, barring exceptions, that atmosphere in an industrial area will constitute only one species of air pollutant. More commonly, one comes across several pollutants, especially SO₂, NO₂ and oxidants, and SPM and also HF in the same region. Hence, it is advisable to choose for cultivation of a green belt, plant species capable of sorption of chemicals as well as dust pollutants. Combined efficacy of a variety of species should contribute to reach the goals of green belt.

Table 4.3- Choice of Species for Green – Belt

S.N .	Botanical Name	Common Name	Tree (T)/ Shrub (S)	Height (m.)/ Growth Rate/Crown Shape	Flowering Season
1	<i>Acacia catechu</i>	Khair	T	3m./ Quick /Oblong	May-Aug
2	<i>Acacia nilotica</i>	Babul	T	8m./Quick/Spreading	Aug-Jan
3	<i>Adina cordifolia</i>	Haldu	T	20m/Slow/Oblong/Round	
4	<i>Aegle marmelos</i>	Bel	T	12m./ Slow/Oblong	May-July
5	<i>Ailanthus excelsa</i>	Maharukh	T	20m./Quick/Round	Feb-Mar
6	<i>Albizia amara</i>	Krishna Siris	T	10m/Quick/Spreading	Apr-Jun
7	<i>Albizia lebbeck</i>	Siris	T	20m/Quick/Round/Spreading	Apr-May
8	<i>Albizia procera</i>	Safed Siris	T	20m/Quick/Round/Oblong	Jun-Sept
9	<i>Alistoniascholaris</i>	Saptparni/Chhatwan	T	15m/Quick/Round	Dec-Mar
10	<i>Anogeissus latifolia</i>	Dhaura	T	20m/Slow/Round/Oblong	May-Jul
11	<i>Anthrocephalus chinensis</i>	Kadam	T	20m/Quick/Spreading	Nov-Feb
12	<i>Azadirachta indica</i>	Neem	T	20m/Quick/Spreading	Jan-Mar
13	<i>Bambusaarundinacea</i>	Kanta bans	S	20m/Quick/Oblong -	
14	<i>Bambusa vulgaris</i>	Baans	S	15m/Quick/Oblong	
15	<i>Bauhinia purpurea</i>	Kaniyar	T	7m/Quick/Oblong	Sep-Nov
16	<i>Bauhinia racemosa</i>	Astha	T	5m/Quick/Oblong	Mar-Jun
17	<i>Bauhinia variegata</i>	Kachnar	T	5m/Quick/Oblong	Nov
18	<i>Bugainvillea spectabilis</i> <i>Bougainvillea</i>	Bougainvillea	S	8m/Quick/Oblong/Round	Throughout the year

S.N .	Botanical Name	Common Name	Tree (T)/ Shrub (S)	Height (m.)/ Growth Rate/Crown Shape	Flowering Season
19	<i>Buchananialanzan</i>	Chironji	T	13m/Quick/Round	Jan-Mar
20	<i>Callistemon citrinus</i>	Bottle Brush	T	5m/Slow/Conical	Throughout the year
21	<i>Calotropis gigantea</i>	Safed Aak	S	5m/Quick/Oblong/Round	Feb-Jul
22	<i>Cassia fistula</i>	Amaltas	T	12m/Quick/Round	Mar-May
23	<i>Cassia javonica</i>	Pink cassia	T	12m/Quick/Round	May-Jun
24	<i>Cassia siamea</i>	Kassod	T	12m/Quick/Oblong	Aug-May
25	<i>Ceiba pentandra</i>	Safed Semal	T	15m/Quick/Oblong	Mar-July
26	<i>Citrus aurantium</i>	Sweet Orange	T	5m/Quick/Round/Oblong	Sept-Nov
27	<i>Citrus limon</i>	Bara Nimbu	S	3m/Slow/Oblong	Nov-Jan
28	<i>Cordia dichotoma</i>	Lasora	T	10m/Quick/Round/Oblong	Mar-Apr
29	<i>Dalbergia sisoo</i>	Sisam	T	10m/Quick/Round	Mar-Jun
30	<i>Delonix regia</i>	Gulmohar	T	15m/Quick/Spreading	Apr-Jun
31	<i>Dendrocolomusstrictus</i>	Baans	S	12m/Quick -	
32	<i>Diospyros melonoxylon</i>	Tendu	T	10m/Slow/Oblong	Feb-Apr
33	<i>Drypterosburghii</i>	Putranjiva	T	15m/Slow/Round	Mar-May
34	<i>Embllica officinalis</i>	Amla	T	15m/Quick/Oblong	Feb-Jul
35	<i>Eucalyptus hybrid</i>	Eucalyptus	T	20m/Quick/Conical	Feb-Apr
36	<i>Ficus benghalensis</i>	Bargad	T	20m/Slow/Spreading	Apr-Jun
37	<i>Ficus glomerata</i>	Gular	T	15m/Quick/Spreading	Aug-Oct
38	<i>Ficus religiosa</i>	Peepal	T	20m/Slow/Round/Oblong	Jan-May
39	<i>Ficus virens</i>	Pakar	T	10m/Slow/Oblong	Jan-May
40	<i>Grevillea robusta</i>	Silver Oak	T	20m/Quick/Oblong	Feb-Apr
41	<i>Grevillea robusta</i>	Silver Oak	T	T 20m/Quick/Oblong	Feb-Apr
42	<i>Holopteliaintegrifolia</i>	Chilbil	T	15m/Quick/Oblong	Feb-Apr
43	<i>Juniperus communis</i>	Juniper	T	10m/Quick/Round/Oblong	Mar-Apr
44	<i>Lagerstroemia parviflora</i>	Dhaura	T	20m/Quick/Round/Oblong	June
45	<i>Madhuca longifolia</i>	Mahuwa	T	15m/Quick/Oblong	Feb-Apr

S.N .	Botanical Name	Common Name	Tree (T)/ Shrub (S)	Height (m.)/ Growth Rate/Crown Shape	Flowering Season
46	<i>Mallotus philippensis</i>	Sinduri	T	12m/Slow/Oblong/Round	Nov-Jan
47	<i>Mangifera indica</i>	Nov-Jan	T	15m/Quick/Round/Oblong	Feb-Apr
48	<i>Melia azederack</i>	Bakain	T	20m/Quick/Oblong	Mar-May
49	<i>Ouginia ojeinensis</i>	Sandan	T	12m/Quick	Feb-Mar
50	<i>Peltophorum pterocarpum</i>	Peela Gulmohar	T	15m/Quick/Oblong/Round	May-Sep
51	<i>Polyalthia longifolia</i>	Ashok	T	15m/Quick/Conical/Round	Apr-Jun
52	<i>Psidium guava</i>	Amrud	T	5m/Quick/Oblong	
53	<i>Ricinus communis</i>	Castor	S	6m/Quick/Oblong	Sep-Oct
54	<i>Saraca asoka</i>	Ashok	T	5m/Quick/Spreading	Dec-May
55	<i>Syzygium cumini</i>	Jamun	T	20m/Quick/Oblong/Spread	Mar-May
56	<i>Tomorindus indica</i>	Imli	T	20m/Slow/Spreading	Apr-Oct
57	<i>Tectona grandis</i>	Teak	T	20m/Quick/Oblong/Round	Jun-Sep
58	<i>Terminalia elliptica</i>	Asan	T	20m/Quick/Oblong/Round	May-Jul
59	<i>Terminalia arjuna</i>	Arjun	T	15m/Quick/Oblong/Round	Apr-Jul
60	<i>Terminalia bellerica</i>	Bahera	T	15m/Quick/Oblong/Round	Apr-May
61	<i>Terminalia chebula</i>	Harre	T	15m/Quick/Round/Oblong	Mar-Oct
62	<i>Zizyphus mauritiana</i>	Ber	T	10m/Quick/Round	Apr-Oct

4.2.1.3 Green Belt Development Plan

The greenbelt development needs to be carried out in 33% of total plant area i.e. 1.40Ha (3.45 Acres). As per the ToR condition, company shall be developing greenbelt under MIYAWAKI method of afforestation on an area of 1 Acre of land out of 3.45 Acres marked for 33% green cover in the plant premises. Proponent has already planted 220 number of trees till date within the project premises, list of which is provided in table 4.3:

Total area to be developed as greenbelt is 1.40 hectares. Proponent has to develop green cover in 0.41 hectares of land as per Miyawaki method of Afforestation. In the remaining area of 0.99

hectares greenbelt will be developed as per CPCB guidelines following tree density of 2500 trees/hectares.

(A) Plantation as per Miyawaki Method – The brief description of various steps involved in the development of green cover as per Miyawaki Method is given below:

a) Soil Texture Preparation and Maintenance

- **Perforator:** It will be used to improve perforation and allow roots to grow quickly. Options include Rice husk, Wheat husk, Corn husk (chipped) and Groundnut shells (chipped).
- **Water retainer:** It will help retain soil moisture and water. Sugarcane stalk is easily available in the area. Also, coco peat will be used if available.
- **Organic Fertilizers:** Manure will be used as it will provide small amount of nutrient over an extended period of time.
- **Mulch:** To protect the young saplings, especially the 6-8 months old, and to prevent evaporation. It can be accomplished by Rice straw, Wheat straw, Corn stalk or Barley stalk.

b) Tree Species for Plantation

- Sapling height: Ideal height is 60 – 80 centimetres.
- Major Species: These will consist about 40% – 50% of total number of trees. Trees occurring in the locality will be preferred.
- Supporting Species: These will make up the remaining 25% to 40% of the trees. 3 supporting species have been identified as
 - Helianthus annuus L - Common Sunflower
 - Pithecellobium dulce – Manila Tamarind
 - Caesalpinia pulcherrima – Peacock Flower Plant

Table 4.4- List of plant species using in Miyawaki plantation program

S. No.	Scientific Name	Plant Name
1	<i>Citrus limon</i>	Nimbu
2	<i>Azadiracta indica</i>	Neem
3	<i>Pongamia pinnata</i>	Papdadi
4	<i>Delonix regia</i>	Gul Mohar
5	<i>Terminalia arjuna</i>	Arjun
6	<i>Dalbergia sissoo</i>	Shisham
7	<i>Polyalthia longifolia</i>	China Ashoka
8	<i>Ficus religiosa</i>	Pipal
9	<i>Artocarpus heterophyllus</i>	Kathal
10	<i>Ficus virens</i>	Pilkan
11	<i>Ailanthus exalsa</i>	Maharukh
12	<i>Thevitia nerifolia</i>	Kaner
13	<i>Ficus varigata</i>	Ornamental ficus
14	<i>Syzygium cumini</i>	Jamun

S. No.	Scientific Name	Plant Name
15	<i>Cordia dichotoma</i>	Lasoda
16	<i>Aegle Marmalos</i>	Bel
17	<i>Ficus benghalensis</i>	Bad
18	<i>Ficus glomarata</i>	Gular
19	<i>Melia azadirach</i>	Bakain
20	<i>Psidium guajava</i>	Amrud
21	<i>Morus alba</i>	Sahtut
22	<i>Mangifera indica</i>	Aam
23	<i>Punica granatum</i>	Anar
24	<i>Manilkara zapota</i>	Chiku
25	<i>Pterocarpus marsupium</i>	Bija Sal
26	<i>Plumaria alba</i>	Kanak champa
27	<i>Callistemon lanceolatus</i>	Bottle brush
28	<i>Phyllanthes amarus</i>	Aonla
29	<i>Alstonia scholaris</i>	Chatwan
30	<i>Cassia fistula</i>	Amaltas

c) Design

- Area of Plantation: Area of plantation is 0.41 Ha.
- Watering Plan: Water pipeline will be laid down in the area for watering. Details will be included in layout plan.
- Planning Project Execution: Approach road to the plantation area and material storage for saplings/equipment etc shall be made.

Capital budget of approx. Rs. 11.00 lakhs shall be kept for afforestation as per Miyawaki Method in 0.41Ha of area within the plant premises and recurring budget of Rs. 1.0 Lakhs shall be kept for its yearly maintenance.

d) Greenbelt development on remaining 0.99 Ha. area

For the Greenbelt development on the remaining area of Ha plantation shall be done as per CPCB guidelines, maintain the tree density of 2500 trees/hectare. Based on the local land quality and climatic conditions, around 20% mortality in the plantation has been observed. The same number of plants shall be replaced annually to compensate the mortality. The detailed action plan is provided below:

- Total greenbelt area to be covered = 0.99hectares
- Tree density as per guidelines = 2500 trees per hectares
- Total number of trees to be planted in 0.99ha =2475
- Additional number of trees to be planted considering 80% survival= 495
- Number of trees planted till date: 220

e) Tier Plantation along the Boundary

A three-tier plantation is proposed comprising of an outermost belt of taller trees which will act as barrier, middle core acting as air cleaner and the innermost core which may be termed as absorptive layer consisting of trees which are known to be particularly tolerant to pollutants. The interspaces will be planted with grasses, bushes and hedges with the plants of medicinal value. The tree species to be selected for the plantation are pollutant tolerant, fast growing, wind firm, deep rooted.

Plantation along the boundary wall plays a very important role by reducing pollution and noise going outside the plant boundary, greening the area, increasing the shady area, increasing aesthetic value and for eco-development of the area. The approach roads to project site, colony, etc. can be planted with flowering trees. Trees can be planted to increase aesthetic value as well as shady area along the boundary / roads.

The trees and shrubs selected, based on its availability shall be, planted as greenbelt of 9 m width around the plant boundary. The plantation will be in this recommended pattern:

Table 4.5- Greenbelt Pattern

Tier	Habit	Height (m)	Rows
1 st Tier (Towards boundary)	Trees	10-20 m	4
2 nd Tier (Middle Layer)	Small Trees	5-10 m	6
3 rd Tier (Towards Plant)	Shrubs	1-2 m	Thick Pattern

f) Budget for Greenbelt Development

- Expenditure per plant Rs. 400
- Total Expenditure = $400 \times 2255 \approx 9.02$ lakhs/-

Therefore, budget of Rs. 9.02 lakhs to be spent for plantation of additional trees on the hectares along the boundary and inside the plant area including gap filling plantation to be done in existing green area (to increase tree density to 2500). The greenbelt will be maintained every year and the budget of approx. Rs. 1.0Lakhs shall be kept as yearly maintenance cost.

4.2.2 Rain Water Harvesting Plan

Rainwater can be collected from surface runoffs or roofs, and in many places the water collected is redirected to a deep pit (well, shaft, or borehole), a reservoir with percolation, or collected from dew or fog with nets or other tools. Rain water harvesting is the accumulation and deposition of rainwater for reuse on-site or recharge in ground water, rather than allowing it to runoff.

Table 4.6- Data Assumed and/or Available for Rain Water Harvesting

S. No.	Details	Values m ²
1.	Roof top Area (Plant & Storage area + Administrative offices, canteen, security, temple) (m ²)	15500
2.	Paved Area (Roads + Floor + Parking) (m ²)	4900
3.	Greenbelt Area (m ²)	14000
4.	Open Land Area (m ²)	7600
5.	Average Annual rainfall (mm) for Giridih & surrounding areas (Source: Indian Metrological Dept.)	1316.8
6.	Hourly Rainfall intensity (m)	0.030
7.	Duration of Peak rainfall (minutes)	20
8.	Runoff coefficient for roof top 0.80-0.90	0.85
9.	Runoff coefficient for yard & paved area 0.60-0.65	0.65
10.	Runoff coefficient for greenbelt 0.10-0.20	0.15
11.	Runoff coefficient for open area 0.10-0.15	0.20

Number of Recharge Structures –

- The total volume of water generated in project premises from rooftop, road/paved, greenbelt and open area in a single storm on 30 mm peak rainfall intensity would be 599.4 cubic meter
- 5 number of recharge structures shall be constructed within the plant premises to accommodate the hourly run-off

Budget for Water Harvesting –

Total capital budget of Rs. 15 Lakhs will be spent of the construction of Five (5) number recharge pits & other necessary facilities for RWH like piping for rooftop water collection, etc and the recurring budget of Rs. 2.5 Lakhs/ year will be kept for maintenance

4.3 Management Strategy to be undertaken by the Project Proponent in the impact area

So far as the Project Proponent is concerned, their involvement is proposed to be limited to the following activities:

- Providing Medical facilities.
- Plantation activities
- Renovation of Pond

4.3.1 Providing Medical facilities

Project Authorities will organize free Eye operation camps, blood donation camps, free medical checkup camps, wheel chair cycles for people with disabilities and mobility issues. Beds for Health Care centre in Damodarpur village for which the budget has been kept as **Rs. 9 Lakhs**.

4.3.2 Plantation Activities

The project proponent has committed for plantation of trees alongside the boundary of Mohanpur village. The greenbelt of 1000 m length and 10 m wide will ensure proper entrapment of pollutants from industries and heavy vehicle movement. Total no. of trees to be planted will be 2750 and fencing will also be provided for safety purposes. The maintenance of trees will be done by the company from time to time. The total cost of Tree plantation along with fencing is estimated to be **Rs. 10 lakhs**.

4.3.3 Renovation of Pond

The project proponent has committed to renovate Pond (Koiri pokhar) located in Udnabad Village. The total cost of renovation is estimated to be **Rs. 5 lakhs**.

The project proponent has committed to carry-out the above-mentioned activities within 2-year timeframe from the grant of EC. The year-wise expenditure of the total budget of **Rs. 24 Lakhs** for addressing the Public Hearing issues will be properly documented. The maintenance involved in the activities proposed under the action plan will be carried out by company itself and the expenditure on the maintenance will be done under CER of the project.

4.4 relevant provisions and intervention overlapping

The other projects within the buffer zone are industries, mining, and crushers. The activity under CSR is being carried out by those projects. Intervention overlapping is being avoided.

4.5 10 yrs. plan interim review and modification

As this plan is dynamic, it is proposed that the plan should be reviewed every two years and modification made as the prevailing situation in the field.

5 Management Interventions for Forest Department

5.1 Impact Area & Proposed Activity

5.1.1 Village in Impact Area

Existing Atibir Hitech Private Limited plant and its expansion is situated in Giridih East Forest Division. The area of the existing steel plant remains as such, only the capacity enhancement is proposed in the existing area only. There are 98 villages falling in the buffer zone of 10 km in Giridih districts.

5.1.2 Elephant depredation –

Man, Elephant conflict is the major conflict in the area as per the records available from the Giridih East Forest Division and data collected from field, nearly 35 villages are affected by elephant depredation in which 10 villages fall under elephant movement route but far away from the core project area Fig. No. - 43 show the Elephant movement and Depredated villages.

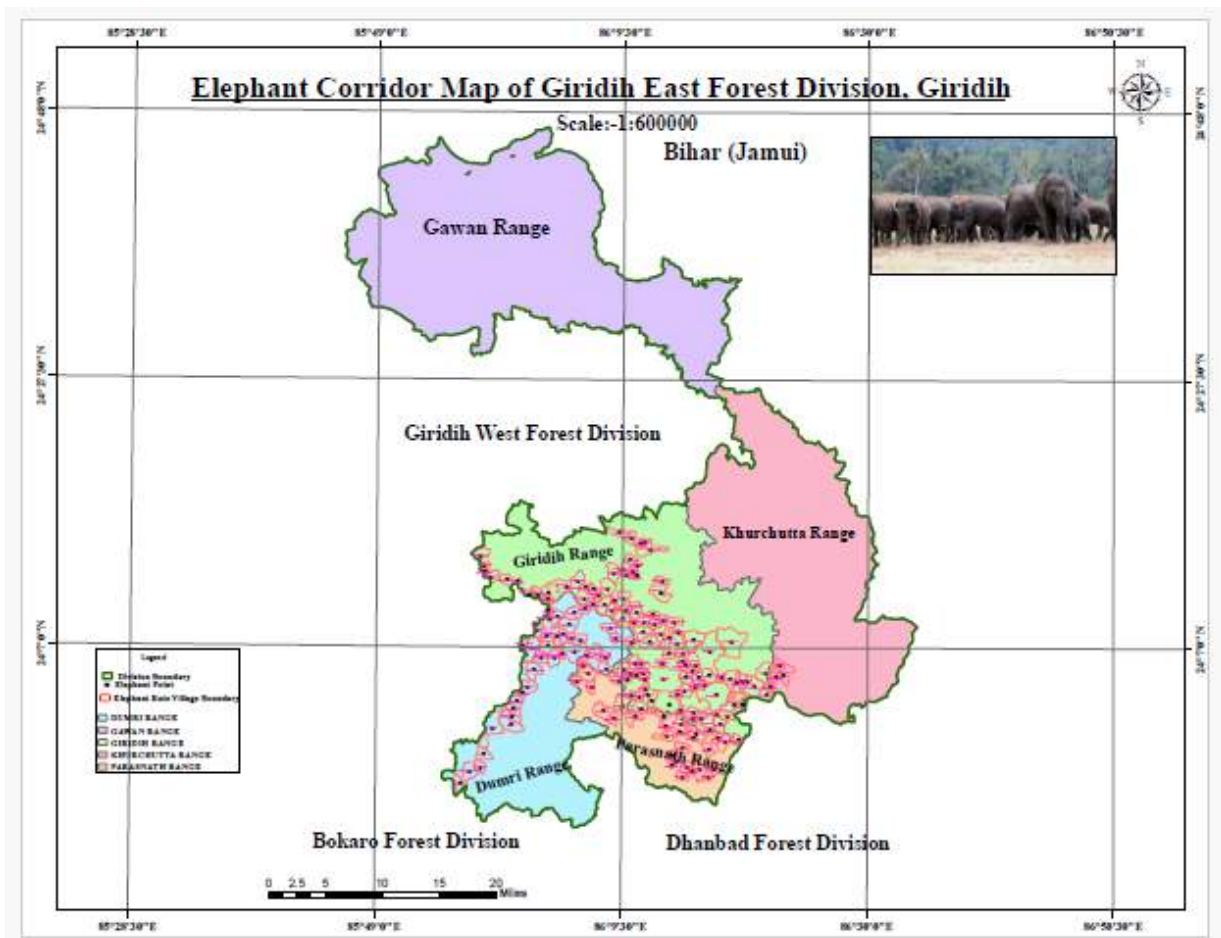


Figure 5.1- Elephant Corridor Map of Giridih East Forest Division

Table 5.1- Details of Human death and injury during last 3 years in impact zone (Giridih East Forest Division)

YEAR	Human Death	Human Injury
2020-21	2	4
2021-22	7	3
2022-23	1	4
TOTAL	10	11

5.2 Proposed Activities

A discussion with Forest Officers before field survey to finalize the various activities proposed under mitigation measures on steel plant expansion project. As per the discussion held, the activities proposed in working plan of the Forest Division are being implemented in the forest division which includes rehabilitation and other plantation schemes, so the present mitigation measures have not such activities for habitat management which are being implemented by the forest division. The following activities included under proposed activities are based on important mitigation measures needed urgently in the Giridih East Forest Division.

The following programs are proposed to mitigate the negative impacts of project although it is very low in effect due to the steel plant operation.

5.2.1 Infrastructural Strengthening towards Implementation as well as Monitoring & Evaluation of the Plan

Presently the infrastructure particularly with regard to mobility of the forest staff is quite insufficient and therefore the instant Plan proposes -

- A. **Purchase of motor bikes, Fuel and Maintenance:** At present, most of the field staff is utilizing their own two wheelers even for official purposes. Currently, 1 no. of motor bike could be allotted to the Patrolling Station of the Giridih Forest Range.
- B. **Equipment (Camera/ binoculars, GPS):** Procurement of cameras, binoculars, GPS, Rangefinder, animal cages, snake catching forceps etc. is proposed. The one set will consist of 1 field cameras, 1 binoculars, 1 GPS, 1 Rangefinder, 1 cage and 1 snake catching forceps etc.

5.2.2 Habitat Management

Habitat is the key to any forest/wildlife conservation. This is also the livelihood source of thousands of villagers. The habitat is under stress during the steel plant activities. The issues related to habitat are addressed through the following.

a) Fire Management - Fire is one of the most damaging biotic factors leading to degradation of the habitat and hence measures are suggested to prevent/ control fire. The fire management should be carried out through the help of village community/ Panchayat/ JFM committees. The incentive of no fire should be provided to the villagers. The forest area should have fire line laying and involvement of fire protectors during summer. The JFMC should be entrusted for no fire in their area and each committee should be given an incentive of Rs. 5,000 to control fire. A Lump Sum amount of Rs. 3 Lakh will be kept with DFO, Giridih East for this activity.

b) Grassland development after weed removal – After the removal of Lantana and other weeds, grassland would be developed in 20 hect. land with the species liked by elephants and other wild herbivores.

c) Modern nursery raising of native plant and fruit plants species - One of the measures for addressing the degradation is the augmentation and funds are proposed for raising saplings for the purpose. The involvement of JFMPC is suggested. The native fruit plants should be raised also in addition to local fuel, fodder and timber species. The raising of Lathi Bans (*Dendrocalamus*Sps) should be more as it will recoup the wildlife area and also very good for forest and economic growth. One such nursery under Giridih Range of Giridih East Forest Division is proposed. One time investment of the Rs. 10 Lakh will be recycled through sale of plants to others to sustain the nursery. This amount can be used for further extension of already existing nursery if needed.

5.2.3 Enhancing soil moisture regime through appropriate soil & water conservation measures

A) Creation of Pond -

Ponds are mainly meant for the purpose of storing the surface runoff. The ponds and water harvesting structures constructed in the low-lying areas contribute to the conservation of excess rain water and the replenishment of ground water. These water harvesting structures are constructed as masonry/earthen structures. The impounded water also provides irrigation to the lands in the adjacent areas. It will increase the soil moisture regime around the structure for increased crop production and recharge the ground water. Grass/fruit bearing/fodder trees could be planted on the berm of such ponds which will provide additional income by way of fodder /fruit apart from providing better reinforcement.

B) De-siltation & renovation of existing Ponds –

Many ponds in the Impact Area require de-siltation and renovation etc. to strengthen the banks etc. Increasing the depth of ponds shall augment the water storage in these structures. Further, bamboo gabion plantation on the berm of such ponds and plantation of fruit/fodder species should be taken up around ponds.

C) Temporary Check Dams –

These are constructed in small and medium gullies and intended to function until the vegetation cover in the gully gets established and provides permanent protection. The temporary dams trap water and soil and thus facilitate vegetation growth. These are usually made of brush, wire, poles or loose rock.

D) Loose Stone Check Dam: Loose stone check dams made of relatively small rocks are placed across the gully. The main objectives for these dams are to control channel erosion along the gully bed, and to stop waterfall erosion by stabilizing gully heads. Loose stone check dams are used to stabilize the incipient and small gullies and the branch gullies of a continuous gully or gully network.

E) Creation of Water holes with salt licks –Two suitable places within the forest area would be selected for creation of waterholes with salt licks for providing water and salt requirement of wild animals.

5.2.4 Staff Welfare

Capacity Building for staff (Training) –

The staffs are not exposed to recent developments in the field of forestry and wildlife including elephant anti depredation technique etc. The staff requires capacity building and training on various Act provisions such as forest act, wildlife act, biodiversity act, technique on wildlife estimation and handling of field equipment and monitoring etc. This will be regular exercise carried out each year for various staff.

5.2.5 Human-Wildlife Conflict/ Elephant depredation -

One of the major conservation issues in the area is the human-wildlife conflict. Elephant is reported to be responsible for majority of the conflict incidences in Giridih East Forest Divisions falling under buffer zone of the project. The conflict is mostly in the form of crop raiding and raiding of granaries.

a) Community Grainary (Golas) –

The elephants are reported to come to the residential areas for raiding the grains stored in temporary storage places made of bamboo mats or similar structures inside the houses. It is proposed that two plastic tanks buried in the soil should be provided in 5 most affected villages in buffer zone of Giridih East Forest Division. The 5 most affected villages should be selected under this programme on experimental basis.

b) Formation of elephant anti- depredation squad (GajMitr) –

The Joint Forest Management Committee of 5 most affected villages of Giridih East Forest Division will be empowered to manage elephant depredation. Each committee will be trained with 4 people on elephant management and will be provided with elephant depredation materials. This squad will be under control of JFMPC. This squad will be paid for three months by JFMPC. The Forest Division will provide Rs. 0.25 lakh to the account of JFMC for expenditure in the initial stage. The rest of the fund will be with DFO for further release after the requisition from JFMPC.

c) Emergency fund –

The DFOs are handicapped without fund on elephant depredation for immediate action. It is proposed that Rs. 3 Lakh emergency fund is kept with DFO, Giridih East Forest Division for emergency use during any wildlife depredation in the villages. The amount will be one time only and will be replenished when the government fund is released for the purpose.

5.2.6 Conservation Awareness

Well informed public is all the important for conserving the forests and wildlife. Currently, there is no systematic effort to reach the public and make them aware of the values of the forests and the role in their life. The project envisages several programmes for outreach. This includes printing and distribution of pamphlets, brochures, creation of website, competition and program in school, collages, Panchayats etc. the signages with conservation messages and celebration of important dates like world Environment Day, earth day, wildlife week etc. should be celebrated.

5.2.7 Community Development

The Joint Forest Management and protection Committee (JFMPC) in which 5 most elephant depredated villages are included will be provided with seed money of Rs. 0.50 Lakh for income generation activity and capacity building. This amount will be one time and will circulate in the village on various incomes generation activities. The promotion of alternate cropping system like raising and processing of aromatic grasses in elephant depredated villages should be undertaken. This money will be used as revolving fund and will be plough back in the village. A dedicated NGO should be involved in the activity.

5.2.8 Research and Trials

Due to disturbance after establishment or expansion of industries, behavioural changes are imminent in the wild animals in order to cope with the changed environment. Research on this aspect has been proposed in this plan so that appropriate mitigation measures can be taken in future.

Similarly, in most of the cases Paddy attracts the wild elephants towards the agricultural crops leading to man – elephant conflicts. The high yielding rice seeds not liked by elephants developed by Rice research institutes should be given to sensitive areas for encouraging their cultivation in periphery of the villages on pilot basis. The same thing would be done with vegetables and fruits.

5.3 Implementation of monitoring & evaluation system

For successful implementation of conservation initiative, a committee under the chairmanship of Conservator of Forests, Giridih Circle is being proposed to be constituted. The Committee shall consist of the Divisional Forest Officer, Giridih East & Giridih West Forest Divisions, and such institution/NGO having sufficient experience in monitoring and evaluation of conservation efforts. This committee shall prepare different formats for monitoring and evaluation of the Plan and decide the periodicity of such exercise. Based on the framework, timely reports shall be prepared and transmitted to higher officials of the Forest Department for suggesting mid-course correction, if any, and other steps as may be required towards better Plan outcomes.

This should be an annual exercise after second year of programme implementation.

5.4 Plan Period & Midterm review

Wild life management plan is for 10 years, and it should be reviewed any time during its period preferably after every 2 years.

5.5 Financial allocation for Forest Department

Table 5.2- Infrastructural Development

SN	Item	Physical Target	Unit cost (Rs.in lakh)	Years																				Total in lakh
				1st		2nd		3rd		4th		5th		6th		7th		8th		9th		10th		
				PT	FT	PT	FT	PT	FT	PT	FT	PT	FT	PT	FT	PT	FT	PT	FT	PT	FT	PT	FT	PT
1	Purchase of Motor Bikes	1	1.50	1	1.50		0.25		0.25		0.25		0.25		0.25		0.25		0.25		0.25		0.25	3.75
2	Equipment's (1 Camera,1 Bino cular,1 Range find er, 1 Cage, 1 snake catching forceps etc.)	1 set	2.00	1	2.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.75
3	Cost esca-lation / & contingency 15% of total Cost)																							0.83
Total																								6.33

SITE SPECIFIC WILDLIFE CONSERVATION PLAN OF M/S ATIBIR HI-TECH PRIVATE LIMITED (AHPL)

Table 5.3- Habitat Management

SN	Item	Physical Target	Unit cost (Rs.in lakh)	Years																				Total in lakh
				1st		2nd		3rd		4th		5th		6th		7th		8th		9th		10th		
				PT	FT	PT	FT	PT	FT	PT	FT	PT	FT	PT	FT	PT	FT	PT	FT	PT	FT	PT	FT	
1	Fire Mana gement	Lumpsum	3.0	1	3.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3.00
2	Grass land dev. after weed removal	20 hect	1.206	20 Hect.	7.39	-	10.68	-	3.02	-	3.02													24.11
3	Modern nursery	1	10,0	1	5.00	-	5.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	00	10.00
4	Cost escalation and Maintenance (15% of total Cost)																							5.57
Total																								42.68

SITE SPECIFIC WILDLIFE CONSERVATION PLAN OF M/S ATIBIR HI-TECH PRIVATE LIMITED (AHPL)

Table 5.4- Enhancing soil moisture regime through appropriate soil & water conservation measures

SN	Item	Physical Target	Unit cost (Rs.in lakh)	Years																				Total in lakh
				1st		2nd		3rd		4th		5th		6th		7th		8th		9th		10th		
				PT	FT	PT	FT	PT	FT	PT	FT	PT	FT	PT	FT	PT	FT	PT	FT	PT	FT	PT	FT	
1	Creation of Pond	1 [100' x 100' x 12']	3.01	1	3.01																			3.01
2	De-siltation/ Renovation of Existing Ponds	2	1.50 each	2	3.00																			3.00
3	Temporary Check Dams – Loose Boulder Structures (LBS) 6 [10 m L x 2.0 m H]	2 [10 m L x 2.0 m H]	1.651	2	3.301																			3.301
4	Creation of Water holes with Saltlicks	2	1.10	2	2.20																			2.20
5	Cost escalation and Maintenance (15% of total Cost)																							1.73
Total																								13.241

SITE SPECIFIC WILDLIFE CONSERVATION PLAN OF M/S ATIBIR HI-TECH PRIVATE LIMITED (AHPL)

Table 5.5- Staff Welfare

SN	Item	Physical Target	Unit cost (Rs.in lakh)	Years																				Total in lakh
				1st		2 nd		3rd		4th		5th		6th		7th		8th		9th		10th		
				PT	FT	PT	FT	PT	FT	PT	FT	PT	FT	PT	FT	PT	FT	PT	FT	PT	FT	PT	FT	
1	Capacity building for staff (training)	L.S	0.60 each year For Giridih East F.Div.	1	0.6	1	0.6	1	0.6	1	0.6	1	0.6	1	0.6	1	0.6	1	0.6	1	0.6	1	0.6	6.00
2	Cost escalation and Maintenance (!5% of total Cost)																							0.90
Total																								6.90

SITE SPECIFIC WILDLIFE CONSERVATION PLAN OF M/S ATIBIR HI-TECH PRIVATE LIMITED (AHPL)

Table 5.6- Human Wildlife Conflict

SN	Item	Physical Target	Unit cost (Rs.in lakh)	Years																				Total in lakh
				1st		2nd		3rd		4th		5th		6th		7th		8th		9th		10th		
				PT	FT	PT	FT	PT	FT	PT	FT	PT	FT	PT	FT	PT	FT	PT	FT	PT	FT	PT	FT	
1	Community Grainery (Golas)	2 for 5 Village	0.15	10	1.50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.50
2	Elephant Anti-depression squad 4 persons for 3 months	for 5 most affected villages	0.25 lakh for each village per Yr	5	1.25	5	1.25	5	1.25	5	1.25	5	1.25	5	1.25	5	1.25	5	1.25	5	1.25	5	1.25	12.50
3	Emergency Fund for Giridih East Forest Div.	1	3	1	3.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3.00
4	Cost Escala tion/ &Maintenance (!5% of total Cost)																							2.55
Total																								19.55

Table 5.7- Conservation Awareness

S N	Item	Physic al Target	Unit cost (Rs.i n lakh)	Years																				Tot al in lak h
				1st		2nd		3rd		4th		5th		6th		7th		8th		9th		10th		
				PT	FT	PT	FT	PT	FT	PT	FT	PT	FT	PT	FT	PT	FT	PT	FT	PT	FT	PT	FT	
1	Awareness Pamphlets / brochures/Audio-visuals/sinages	0.50 lakh each year	0.50	1	0.50	0	0.50	0	0.50	0	0.50	0	0.50	0	0.50	0	0.50	0	0.50	0	0.50	0	0.50	5.00
2	Cost escalation																							0.75
Total																								5.75

Table 5.8- Community Development

S N	Item	Physi cal Targe t	Uni t cos t (Rs. in lak h)	Years																				Tot al in lak h
				1st		2nd		3 rd		4th		5th		6th		7th		8th		9th		10th		
				PT	FT	PT	FT	PT	FT	PT	FT	PT	FT	PT	FT	PT	FT	PT	FT	PT	FT	PT	FT	
1	See d Mon ey for 5 JFM PC	0.50 lakh for each JFMP Cr	0.6 0	5	3.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3.0
Total																								3.00

SITE SPECIFIC WILDLIFE CONSERVATION PLAN OF M/S ATIBIR HI-TECH PRIVATE LIMITED (AHPL)

Table 5.9- Research & Experiment trials

SN	Item	Physical Target	Unit cost (Rs.in lakh)	Years																				Total in Lakhs
				1st		2nd		3rd		4th		5th		6th		7th		8th		9th		10th		
				PT	FT	PT	FT	PT	FT	PT	FT	PT	FT	PT	FT	PT	FT	PT	FT	PT	FT	PT	FT	
1	Supply of seeds for Planting of high yielding rice varieties developed by ICAR /IRRI not liked by Elephants in elephant sensitive villages	1	1.0	1	1.0	1	1.0	1	1.0	1	1.0	1	1.0	1	1.0	1	1.0	1	1.0	1	1.0	1	1.0	10.00
2	Specific research on behavioral changes in wild flora & fauna	1	1.0	1	1.0	1	1.0	1	1.0	1	1.0	1	1.0	1	1.0	1	1.0	1	1.0	1	1.0	1	1.0	10.00

SITE SPECIFIC WILDLIFE CONSERVATION PLAN OF M/S ATIBIR HI-TECH PRIVATE LIMITED (AHPL)

	based on local activities																							
3	Cost escalation																							3.0
Total																								23.0

Table 5.10- Monitoring and Evaluation

SN	Item	Physical Target	Unit cost (Rs.in lakh)	Years																				Total in lakh	
				1st		2nd		3rd		4th		5th		6th		7th		8th		9th		10th			
				PT	FT	PT	FT	PT	FT	PT	FT	PT	FT	PT	FT	PT	FT	PT	FT	PT	FT	PT	FT		
1	One evaluation each year from 2 nd year	1	0.50	0	0	1	0.5	1	0.5	1	0.5	1	0.5	1	0.5	1	0.5	1	0.5	1	0.5	10	0.5	4.50	
2	Cost escalation etc. (15%)																							0.68	
Total																								5.18	

5.6 SUMMARY

Table 5.11-Summary of the total Expenditure

SN	Activity	Amount (in Lakh)
1	Infrastructure Development	06.330
2	Habitat Management	42.680
3	Enhancing soil moisture regime	13.241
4	Staff welfare	06.900
5	Human Wildlife Conflicts	19.550
6	Conservation Awareness	05.750
7	Community Development	03.000
8	Research and Trials	23.00
9	Monitoring and Evaluation	05.180
	TOTAL	125.631

Annexures

Annexure-1



State Level Environment Impact Assessment Authority, Jharkhand

Nursery Complex, Near Dhurwa Bus Stand, P.O-P.S-Dhurwa, Ranchi, Jharkhand-834 004

E-mail: seviaa.jh@gmail.com / chr-seiaajhr@gov.in

website: www.jseiaa.org

Letter No.-EC/SEIAA/2021-22/2437/2021/197.

Ranchi, Date: 30.10.2021.

Sub: Prescribing of ToR to "Expansion & Modernization for enhancing the production of 60,000 TPA ingots to 1,48,500 TPA Billets, TMT Bar / Rods from 21,349 TPA to 2,37,600 TPA and increase installed capacity of reheating furnace and slag crusher of M/s Atibir Hi-Tech Private Limited at Village : Mohanpur, Tehsil : Giridih, Dist. : Giridih, Jharkhand (Proposal No. SLA/JH/IND/66100/2021) - regarding.

Ref: Your application no.- AHPL/EC/rpc, dated - 28.09.2021.

It is in reference to the project "Expansion & Modernization for enhancing the production of 60,000 TPA ingots to 1,48,500 TPA Billets, TMT Bar / Rods from 21,349 TPA to 2,37,600 TPA and increase installed capacity of reheating furnace and slag crusher of M/s Atibir Hi-Tech Private Limited at Village : Mohanpur, Tehsil : Giridih, Dist. : Giridih, Jharkhand" submitted by you for seeking Terms of Reference (ToR).

This is an expansion & modernization project which has been taken for appraisal on 22.10.2021.

The proposal was considered by the committee to determine the "Terms of Reference (TOR)" for undertaking detailed EIA study for the purpose of obtaining environmental clearance in accordance with the provisions of the EIA Notification, 2006 and amendments thereafter. For this purpose the Project Proponent has submitted the prescribed Form - I & PFR the proposed project falls under item 3 (a) Metallurgical Industries (Ferrous & Non-Ferrous) as per EIA Notification, 2006.

M/s Atibir HiTech Private Limited (AHTPL) is an existing steel plant at Village – Mohanpur, PO – Udaabad, District -Giridih, Jharkhand.

Atibir Hi-Tech Private Limited was incorporated on 24th August 1994 under Registrar of Companies, Bihar, vide incorporation certificate No. 03-06200 of 1994-95 (CIN- U37100WB1994PTC134781).

Company obtained NOC from Bihar State Pollution Control Board (BSPCB) for the establishment of Rolling Mill of capacity 15 TPD dated 21.01.1997. Later company obtained NOC from BSPCB vide Ref. No. T-4512, dated 23.10.2000 for expansion of rolling capacity to 35 TPD and vide Ref. No. T-4513, dated 23.10.2000 for 200 TPD MS Ingots production through 2x8T & 1x6T Induction Furnace along with 1x5TPH slag crusher unit. Company has obtained current Consent to Operate (CTO) from the JSPCB vide ref No. JSPCB/HO/RNC/CTO-

9102932/2021/770, dated 12.06.2021, valid upto 31.03.2026 for the 21,349 TPA MS Bar, coils & MS Rods and 200 TPD M.S. Ingots.

Company now proposes to obtain Fresh Environmental Clearance for enhancing the production of TMT bars/Rods from 21,349 TPA to 237,600 TPA through modernization of its existing Re-Rolling Mill from 9TPH to 50TPH capacity along with replacement of existing 1x10TPH Reheating Furnace by 1x30TPH Reheating furnace and also for production of 148,500 TPA MS Billets by replacing the existing (2x8T & 1x6T) Induction Furnace by 3x15T induction Furnace along with installation of new 3x2strand CCM and modernization of existing slag crusher from 5TPH to 10TPH capacity. M/s Atibir Hi-Tech Private Limited has proposed for expansion of its existing plant by modernizing and expansion of facilities in the total plant area of 4.2Ha (10.38Acres).

Cost of the existing facilities is Rs. 16.5866 Crs. The estimated cost of the project after the proposed expansion will be Rs. 51.4966 Crs.

Salient Features of the project :

Sl. No.	Particulars	Details	
1.	Project name	Expansion & Modernization of Atibir Hi-Tech Private Limited for enhancing the production of TMT Bar/Rods from 21,349 TPA to 237,600 TPA	
2.	Location of the Project	Village- Mohanpur, PO- Udnabad, and District- Giridih in the state of Jharkhand	
3.	Khata No. & Plot No.	Khata No.	Plot No.
		68	1526, 1527, 1528, 1529, 1532, 1533 & 1536
		27	1552
		57	1554
		51	1553
		78	1551
		55	1550
		73	1555
		109	1524
		49	1546
		32	1549
		75	1556
		12	1547
		47	1467
		41	1463, 1464
		85	1459
		72	1557
		88	1548

[Signature]

[Signature]

[Signature]

		109	1524
		89	1523
4.	Topo-sheet Nos.	72 L/8	
5.	Latitude	24° 08' 09.30"N	
6.	Longitude	86° 21' 16.39"E	
7.	Area of the Plant	Ha (10.38 Acres)	
8.	Existing Units	Induction Furnace- 2x8T & 1x6T Slag Crusher- 1x5TPH Rolling Mill- 1x9TPH Reheating Furnace- 1x10TPH	
9.	Production as per the existing capacity	MS Ingots- 60,000 TPA TMT Bar/ Rods- 21,349 TPA	
10.	Proposed Expansion	Replacement of existing 2x8T & 1x6T Induction Furnace with 3x15T Induction Furnace Installation of new Continuous Casting Machine- 3x28strand Modernization of Rolling Mill from 9TPH capacity to 50TPH Replacement of 1x10TPH Reheating Furnace with 1x30TPH Reheating Furnace Modernization of existing Slag crusher from 1x5TPH to 1x10TPH capacity	
11.	Production Capacity after the expansion	MS Billets- 148,500TPA TMT Bar/Rods- 237,600TPA	
12.	Cost of the proposed expansion	Total after expansion- Rs. 51.4966Crs.	
13.	Manpower Requirement	Total after expansion- 300	
14.	Requirement of Water	Total 290 m ³ /day after Expansion, Source: Groundwater	
15.	Requirement of Power and Fuel	Total 15MVA after expansion Source: DVC DG set 1x500KVA has been installed and additional 1x1000KVA will be installed for expansion.	

Configuration and Production Capacities of the existing & Proposed Units :

Sl. No	Plant Facilities	Existing Configuration	Proposed New Configuration	Final Production Capacity (TPA)
1	Induction Furnace	60,000 TPA	148,500 TPA	MS Billets

af

By

1

		MS Ingots (2x8T & 1x6T) Will be replaced	MS Billets (3x15 T)	148,500 TPA
	Continuous Casting Machine	-	3 x 2 strand (for 148,500 TPA)	
2	Rolling Mill	21,349 TPA (1x9TPH) Will be modernized	237,600 TPA (1x50TPH)	Roll Products (TMT Bars/Rods etc.) 237,600 TPA
3	Re-heating Furnace	1x10 TPH (max. 22,500 TPA) Will be replaced	1 x 30 TPH (max. 99,000 TPA)	Re-heated billets (for rolling) 99,000 TPA
4	Slag Crusher	1x5 TPH (max. 16,500 TPA)	1x 10TPH (max. 33,000 TPA)	Crushed Slag 33,000 TPA

Raw Material details:

Raw Materials	Total after Expansion
For Steel Melt Shop	
Sponge Iron	118800
Pig Iron	44550
Purchased + Return Scrap	22275
Ferro-alloy	297
Total	185922
For Rolling Mill	
Hot Billets/M.S. Billets	242,352 TPA
Fuel for Reheating Furnace	
Coal/Furnace Oil	6,580 TPA or 3,300 KL per year

Pollution Control Equipment:

Section	Source of Pollution	Pollutants	Air pollution control Measures
Induction Furnace & CCM	Charging of raw materials in Furnace, Melting in Induction Furnace and Continuous Casting	Particulate matter, Fumes and gases	Fume extraction system with spark arrestor and Bag Filter.
Rolling Mill	Re-heating furnace	Particulate matter,	Fume extraction

Ar

By

h

& Re-heating furnace	charging and use of Coal/Furnace Oil	Fumes and gases	system with Bag Filter.
Over all Plant area	Open space	Fugitive dust emission	Pucca roads within the premises, water sprinkling in dusty areas and green belt/green cover to arrest the fugitive dust emission.

Connectivity :

Site Location	Village- Mohanpur, PO- Udnabad, District- Giridih in the state of Jharkhand
Height above MSL	281 meters
Road Connectivity	The site is connected to SH- 13 (connecting Koderma - Giridih - Tundi - Govindpur Marg) at a distance of 0.15 km, which connects by pucca road.
Rail Connectivity	Giridih Station is at 6.50km in North direction from project site
Nearest Airport	Ranchi Airport, Jharkhand (140 kms) in SW
Nearest River	Usri River at 1.58 km in East direction Barakar river at 8.98kms in South direction

Land Use :

SL No	TYPE OF USE	AREA (acres)	AREA (ha)
1	Production & Allied facilities	2.40	0.97
2	Admin Building, Stores, Temple etc.	0.20	0.08
3	Entrance, Roads and Pavements	1.20	0.49
4	Storage yard, vacant area etc.	2.42	0.98
5	Water complex & RWH pond	0.70	0.28
6	Green Belt	3.46	1.40
	TOTAL	10.38	4.20

STATUTORY CLEARANCES :

1	CO	:	The CO, Giridih Sadar vide letter no. 1093, dated 08.09.2021 has mentioned the plot nos. of the project is not recorded as "Jangle Jhari".
---	----	---	--

GA

Key

1

2	DFO Wild Life	:	DFO, Wildlife Hazaribagh vide letter no. 1674, dated 06.09.2019 certified that the National Park & Wildlife Sanctuary is not within 10 km from project site and proposed project is not situated in any ESZ.
3	DFO Forest Distance	:	DFO, Giridih East Division vide letter no. 2103, Dated 31.08.2018 certified that the distance of notified forest is 528 m from proposed project site.

SEAC, Jharkhand has suggested the ToRs in its 92nd meeting dated 20th, 21st, 22nd & 23rd October, 2021 and SELAA, Jharkhand has approved the ToRs in its 93rd meeting held on 26th, 27th & 28th October, 2021.

The TORs prescribed for undertaking detailed EIA study are as follows:

A. Standard Terms of Reference

B. The project Authority has to be developed a model of "MIYAWAKI METHOD OF AFFORESTATION" with the help of indigenous species in 1 Acre of land from their proposed green belt area.

1. Executive Summary

2. Introduction

- i. Details of the EIA Consultant including NABET accreditation.
- ii. Information about the project proponent.
- iii. Importance and benefits of the project.

3. Project Description

- i. Cost of project and time of completion.
- ii. Products with capacities for the proposed project.
- iii. If expansion project, details of existing products with capacities and whether adequate land is available for expansion, reference of earlier EC if any.
- iv. List of raw materials required and their source along with mode of transportation.
- v. Other chemicals and materials required with quantities and storage capacities.
- vi. Details of Emission, effluents, hazardous waste generation and their management.
- vii. Requirement of water, power, with source of supply, status of approval, water balance diagram, man-power requirement (regular and contract).
- viii. Process description along with major equipments and machineries, process flow sheet (quantitative) from raw material to products to be provided.
- ix. Hazard identification and details of proposed safety systems.
- x. Expansion/modernization proposals:
 - a. Copy of all the Environmental Clearance(s) including Amendments thereto obtained for the project from MOEF/SELAA shall be attached as an Annexure. A certified copy of the latest Monitoring Report of the Regional Office of the Ministry of Environment and Forests as per circular dated 30th May, 2012 on

024

Ky

h

the status of compliance of conditions stipulated in all the existing environmental clearances including Amendments shall be provided. In addition, status of compliance of Consent to Operate for the ongoing / existing operation of the project from SPCB shall be attached with the EIA-EMP report.

- b. In case the existing project has not obtained environmental clearance, reasons for not taking EC under the provisions of the EIA Notification 1994 and/or EIA Notification, 2006 shall be provided. Copies of Consent to Establish/No Objection Certificate and Consent to Operate (in case of units operating prior to EIA Notification 2006, CTE and CTO of FY 2005-2006) obtained from the SPCB shall be submitted. Further, compliance report to the conditions of consents from the SPCB shall be submitted.

4. Site Details

- i. Location of the project site covering village, Taluka/Tehsil, District and State. Justification for selecting the site, whether other sites were considered.
- ii. A toposheet of the study area of radius of 10km and site location on 1:50,000/1:25,000 scale on an A3/A2 sheet. (including all eco-sensitive areas and environmentally sensitive places).
- iii. Details w.r.t. option analysis for selection of site
- iv. Co-ordinates (lat-long) of all four corners of the site.
- v. Google map-Earth downloaded of the project site.
- vi. Layout maps indicating existing unit as well as proposed unit indicating storage area, plant area, greenbelt area, utilities etc. If located within an Industrial area/Estate/Complex, layout of Industrial Area indicating location of unit within the Industrial area/Estate.
- vii. Photographs of the proposed and existing (if applicable) plant site. If existing, show photographs of plantation/greenbelt, in particular.
- viii. Landuse break-up of total land of the project site (identified and acquired), government/ private - agricultural, forest, wasteland, water bodies, settlements, etc shall be included. (not required for industrial area)
- ix. A list of major industries with name and type within study area (10km radius) shall be incorporated. Land use details of the study area
- x. Geological features and Geo-hydrological status of the study area shall be included.
- xi. Details of Drainage of the project upto 5km radius of study area. If the site is within 1 km radius of any major river, peak and lean season river discharge as well as flood occurrence frequency based on peak rainfall data of the past 30 years. Details of Flood Level of the project site and maximum Flood Level of the river shall also be provided. (mega green field projects)
- xii. Status of acquisition of land. If acquisition is not complete, stage of the acquisition process and expected time of complete possession of the land.
- xiii. R&R details in respect of land in line with state Government policy.

02

By

12

5. Forest and Wildlife related issues (if applicable):

- i. Permission and approval for the use of forest land (forestry clearance), if any, and recommendations of the State Forest Department. (if applicable).
- ii. Landuse map based on High resolution satellite imagery (GPS) of the proposed site delineating the forestland (in case of projects involving forest land more than 40 ha)
- iii. Status of Application submitted for obtaining the stage I forestry clearance along with latest status shall be submitted.
- iv. The projects to be located within 10 km of the National Parks, Sanctuaries, Biosphere Reserves, Migratory Corridors of Wild Animals, the project proponent shall submit the map duly authenticated by Chief Wildlife Warden showing these features vis-à-vis the project location and the recommendations or comments of the Chief Wildlife Warden thereon.
- v. Wildlife Conservation Plan duly authenticated by the Chief Wildlife Warden of the State Government for conservation of Schedule I fauna, if any exists in the study area
- vi. Copy of application submitted for clearance under the Wildlife (Protection) Act, 1972, to the Standing Committee of the National Board for Wildlife.

6. Environmental Status:

- i. Determination of atmospheric inversion level at the project site and site-specific micro- meteorological data using temperature, relative humidity, hourly wind speed and direction and rainfall.
- ii. AAQ data (except monsoon) at 8 locations for PM10, PM2.5, SO2, NOX, CO and other parameters relevant to the project shall be collected. The monitoring stations shall be based CPCB guidelines and take into account the pre-dominant wind direction, population zone and sensitive receptors including reserved forests.
- iii. Raw data of all AAQ measurement for 12 weeks of all stations as per frequency given in the NAQPM Notification of Nov. 2009 along with - min., max., average and 98% values for each of the AAQ parameters from data of all AAQ stations should be provided as an annexure to the EIA Report.
- iv. Surface water quality of nearby River (100m upstream and downstream of discharge point) and other surface drains at eight locations as per CPCB/MoEF & CC guidelines.
- v. Whether the site falls near to polluted stretch of river identified by the CPCB/MoEF & CC, if yes give details.
- vi. Ground water monitoring at minimum at 8 locations shall be included.
- vii. Noise levels monitoring at 8 locations within the study area.
- viii. Soil Characteristic as per CPCB guidelines.
- ix. Traffic study of the area, type of vehicles, frequency of vehicles for transportation of materials, additional traffic due to proposed project, parking arrangement etc.
- x. Detailed description of flora and fauna (terrestrial and aquatic) existing in the study area shall be given with special reference to rare, endemic and endangered species. If

Q4

Q4

Q4

Schedule-I fauna are found within the study area, a Wildlife Conservation Plan shall be prepared and furnished.

- xi. Socio-economic status of the study area.

7. Impact and Environment Management Plan:

- i. Assessment of ground level concentration of pollutants from the stack emission based on site-specific meteorological features. In case the project is located on a hilly terrain, the AQIP Modelling shall be done using inputs of the specific terrain characteristics for determining the potential impacts of the project on the AAQ. Cumulative impact of all sources of emissions (including transportation) on the AAQ of the area shall be assessed. Details of the model used and the input data used for modelling shall also be provided. The air quality contours shall be plotted on a location map showing the location of project site, habitation nearby, sensitive receptors, if any.
- ii. Water Quality modelling - in case of discharge in water body
- iii. Impact of the transport of the raw materials and end products on the surrounding environment shall be assessed and provided. In this regard, options for transport of raw materials and finished products and wastes (large quantities) by rail or rail-cum road transport or conveyor-cum-rail transport shall be examined.
- iv. A note on treatment of wastewater from different plant operations, extent recycled and reused for different purposes shall be included. Complete scheme of effluent treatment. Characteristics of untreated and treated effluent to meet the prescribed standards of discharge under E(P) Rules.
- v. Details of stack emission and action plan for control of emissions to meet standards.
- vi. Measures for fugitive emission control.
- vii. Details of hazardous waste generation and their storage, utilization and management. Copies of MOU regarding utilization of solid and hazardous waste in cement plant shall also be included. EMP shall include the concept of waste-minimization, recycle / reuse / recover techniques, Energy conservation, and natural resource conservation.
- viii. Proper utilization of fly ash shall be ensured as per Fly Ash Notification, 2009. A detailed plan of action shall be provided.
- ix. Action plan for the green belt development plan in 33 % area i.e. land with not less than 1,500 trees per ha. Giving details of species, width of plantation, planning schedule etc. shall be included. The green belt shall be around the project boundary and a scheme for greening of the roads used for the project shall also be incorporated.
- x. Action plan for rainwater harvesting measures at plant site shall be submitted to harvest rainwater from the roof tops and storm water drains to recharge the ground water and also to use for the various activities at the project site to conserve fresh water and reduce the water requirement from other sources.
- xi. Total capital cost and recurring cost/annum for environmental pollution control measures shall be included.
- xii. Action plan for post-project environmental monitoring shall be submitted.



- xiii. Onsite and Offsite Disaster (natural and Man-made) Preparedness and Emergency Management Plan including Risk Assessment and damage control. Disaster management plan should be linked with District Disaster Management Plan.

8. Occupational health:

- i. Plan and fund allocation to ensure the occupational health & safety of all contract and casual workers.
- ii. Details of exposure specific health status evaluation of worker. If the workers' health is being evaluated by pre designed format, chest x rays, Audiometry, Spirometry, Vision testing (Far & Near vision, colour vision and any other ocular defect) ECG, during pre placement and periodical examinations give the details of the same. Details regarding last month analyzed data of above mentioned parameters as per age, sex, duration of exposure and department wise.
- iii. Details of existing Occupational & Safety Hazards. What are the exposure levels of hazards and whether they are within Permissible Exposure level (PEL). If these are not within PEL, what measures the company has adopted to keep them within PEL so that health of the workers can be preserved.
- iv. Annual report of health status of workers with special reference to Occupational Health and Safety.

9. Corporate Environment Policy:

- i. Does the company have a well laid down Environment Policy approved by its Board of Directors? If so, it may be detailed in the EIA report.
- ii. Does the Environment Policy prescribe for standard operating process / procedures to bring into focus any infringement / deviation / violation of the environmental or forest norms / conditions? If so, it may be detailed in the EIA.
- iii. What is the hierarchical system or Administrative order of the company to deal with the environmental issues and for ensuring compliance with the environmental clearance conditions? Details of this system may be given.
- iv. Does the company have 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? This reporting mechanism shall be detailed in the EIA report.

- 10.** Details regarding infrastructure facilities such as sanitation, fuel, restroom etc. to be provided to the labour force during construction as well as to the casual workers including truck drivers during operation phase.

11. Enterprise Social Commitment (RSC)

- i. Adequate funds (at least 2.5 % of the project cost) shall be earmarked towards the Enterprise Social Commitment based on Public Hearing issues and item-wise details along with time bound action plan shall be included. Socio-economic development activities need to be elaborated upon.



12. Any litigation pending against the project and/or any direction/order passed by any Court of Law against the project, if so, details thereof shall also be included. Has the unit received any notice under the Section 5 of Environment (Protection) Act, 1986 or relevant Sections of Air and Water Acts? If so, details thereof and compliance/ATR to the notice(s) and present status of the case.
13. A tabular chart with index for point wise compliance of above TOR.

C. SPECIFIC TERMS OF REFERENCE FOR EIA STUDIES FOR METALLURGICAL INDUSTRIES (FERROUS & NON FERROUS)

1. Complete process flow diagram describing each unit, its processes and operations, along with material and energy inputs & outputs (material and energy balance).
2. Details on blast furnace/ open hearth furnace/ basic oxygen furnace/ladle refining, casting and rolling plants etc.
3. Details on installation/activation of opacity meters with recording with proper calibration system
4. Details on toxic metals including mercury, arsenic and fluoride emissions
5. Details on stack height requirement for integrated steel
6. Details on ash disposal and management -Non-ferrous metal
7. Complete process flow diagram describing production of lead/zinc/copper/ aluminium, etc.
8. Raw materials substitution or elimination
9. Details on smelting, thermal refining, melting, slag fuming, and Waelz kiln operation
10. Details on Holding and de-gassing of molten metal from primary and secondary aluminum, materials pre-treatment, and from melting and smelting of secondary aluminium
11. Details on solvent recycling
12. Details on precious metals recovery
13. Details on composition, generation and utilization of waste/fuel gases from coke oven plant and their utilization.
14. Details on toxic metal content in the waste material and its composition and end use (particularly of slag).
15. Trace metals Mercury, arsenic and fluoride emissions in the raw material.
16. Trace metals in waste material especially slag.
17. Plan for trace metal recovery
18. Trace metals in water

D. ADDITIONAL TOR FOR INTEGRATED STEEL PLANT

1. Respirable Suspended particulate matter (RSPM) present in the ambient air must be analyzed for source analysis - natural dust/RSPM generated from plant operations (trace elements). The RSPM shall also be analyzed for presence of poly-aromatic hydrocarbons (PAH), i.e. Benzene soluble fraction, where applicable. Chemical characterization of RSPM and incorporating of RSPM data.



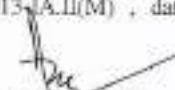




2. All stock piles will have to be on top of a stable liner to avoid leaching of materials to ground water.
3. Plan for the implementation of the recommendations made for the steel plants in the CREP guidelines.
4. Plan for slag utilization
5. Plan for utilization of energy in off gases (coke oven, blast furnace).

E. Other

1. Changes, if any made in the basic scope and project parameters (as submitted in Form-I and the F.R for securing the TOR) should be brought to the attention of SEIAA, Jharkhand with reasons for such changes and permission should be sought, as the TOR may also have to be altered.
2. After preparing the draft EIA (as per the generic structure prescribed in Appendix- III of the EIA Notification, 2006) covering the above mentioned issues, the proponent will get the public hearing conducted and take further necessary action for obtaining environmental clearance in accordance with the procedure prescribed under the EIA Notification, 2006.
3. The prescribed TORs would be valid for a period of three years for submission of the EIA / EMP reports, as per the O.M. No. J-11015/109/2013 JA.II(M) , dated 12.01.2017.


Member Secretary
State Level Environment Impact
Assessment Authority, Jharkhand.





Annexure-2

Schedule Rate For construction of Pond

Model estimates of Water Harvesting Structure (WHS) /Farm Pond through Hydraulic Machine PIA-DAO, Saraikela-Kharsawan						
Specification	Length (ft)	Width (ft)	Depth (ft)	E/W Volume (cft)	E/w Volume (Cum)	
Length of (ft) - 100ft	100.00	100.00	2.00	20000.00	566.35	
Width of (ft) - 100 ft	94.00	94.00	2.50	22090.00	625.53	
Depth of (ft) - 12 ft in 5 Steps.	88.00	88.00	2.50	19360.00	548.22	
	82.00	82.00	2.50	16810.00	476.02	
	76.00	76.00	2.50	14440.00	408.90	
			12.00	92700.00	2625.02	
S.N	SoR Item No as on July 2022 (WRD)	Item of Work	Unit	Quantity	Rate (In Rs)	Amount (In Rs)
1	7.1.43.1	E/W in canal by the hydraulic excavator as per design section in all kind of soil, soil mixed up to 300 mm size and disposal of spoil upto 10 m with all lifts all complete as per specification and direction of E/I. Total 20% of Total Earth Work (2625.02Cum- 2100.02Cum=525.00 Cum)	Cum	525.00	50.53	26528.25
2	7.1.43.2	E/W in canal by the hydraulic excavator as per design section in all kind of soil, soil mixed with kankar, pebble & boulder up to 300mm size and disposal of soil upto 500 m with all lifts by tipper including construction and maintenance of haul road all complete as per specification and direction of E/I Total 60 % of Total Earth work (2625.02Cum- 1050.00Cum=1575.02 Cum)	Cum	1575.02	105.09	165518.85
3	7.1.43.6	E/W in excavation in canal by hydrolic Excavator as per design section in soft rock (Where blasting is not needed) vide type of Soil Item C with disposal of spoil up to 500 meter with all lifts by tipper including construction and maintenance of haul road etc. All Complete as per specification and Direction of E/I Total 20 % of Total Earth work (2625.02Cum- 2100.02Cum=525.00 Cum)	Cum	525.00	139.34	73153.50
4	7.1.42.1	Pine dressing canal banks or embankments and sowing with 12 mm thick grass sods, obtained within lead of 150 M, including the cost of watering the grass surface till it acquires greenness as per specification and direction W/I Total sodding area= 4-30 m-4.5 m = 552 sqm	per % sqm	552.00	15.02	8291.04
5	7.6.1.3 (corrigendum)	Labour for laying fitting and fixing NP2 Hume pipe with collars in line, level and gread as well as — as per E/I	M	20	361.90	7238.00
Total						280729.64
Contractor profit Deduction 9.09% of S. No 1, 2, 3, 4 & 5						25518.32
Sub Total						255211.32
6	Page No. 84 (Sl. No. 14)	Hume Pipe NP2 RCC with collar as per I.S. 54 Hume Pipe Np2 RCC with collar as per I.S. 5458 - 1971 300 mm dia pipe with silt trap	M	20	510.00	10200.00
7		Dressing and compaction of the excavated soil (2215 cum) (01 Man Days for 1000 CFT Board	M.D	92	326.85	30070.20
8		Display Board	No.	-	L5	4000.00
9		Contingency (Lay out String, Marking powder, Seeds i. e Papiya Drumstick, Vegetable etc)	No.	-	L5	2000.00
Grand Total						301481.52
Total Rupees Three lakhs One Thousand Only.						301000.00

Cross Sectional view of New Dug out Pond (100ft x 100ft x 12ft)

Berm - 10ft in all the 4 side inside, outer dimension 100ft x 100ft, Bed Level dimension 76ft x 76ft



Schedule Rate for Loose Boulder Check-Dam

PROPOSED LOOSE BOULDER STRUCTURE AT (P.S.R. - CHAS), BLOCK- CHAS, BORARDI FOREST DIVISION, JHARKHAND
BASED ON S.O.R. W.R.D.GOVY. OF JHARKHAND EFFECTIVE FROM 28/07/2022/DSR-2631/TVS

Length of Structure	10	Mt.	Wage Rate	₹	346.01
Height of Structure	2	Mt.			
Top Width of Structure	1.5	Mt.			
Bottom Width of Structure	5.50	Mt.			
Side Slope	01:01				

[illegible]

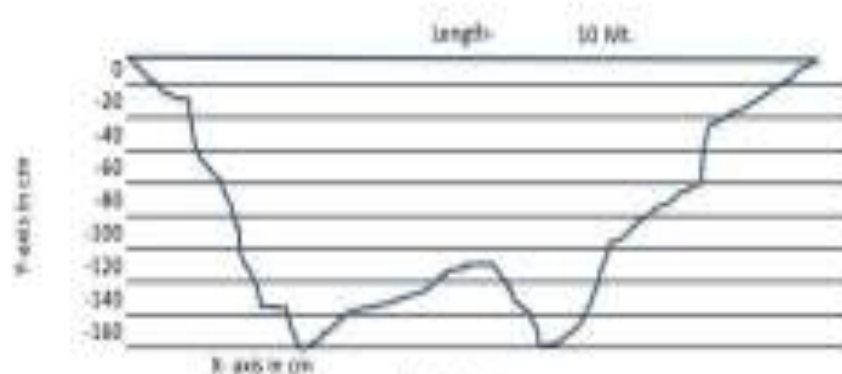
		Add contingency & consultancy @ 2%								₹	3,286.73
		Grand Total								₹	185,073.00
		Sep								₹	185,073.00

Submitted by:-

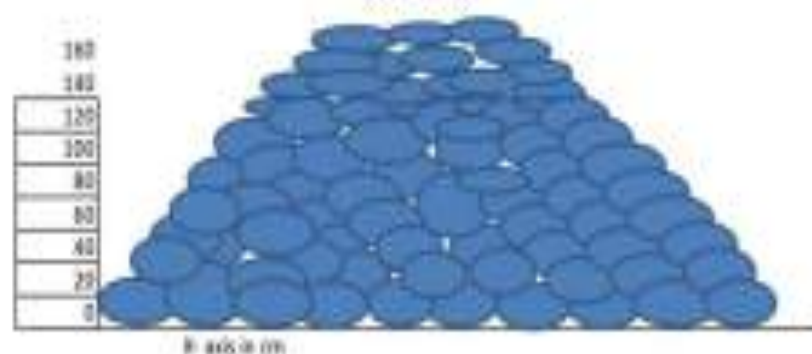
Cosigned:-

R.O.F.
Chau

Divisional Forest Officer
Bakaro



Long Section



Cross Section

Annexure-4

Schedule Rates Grass land Development after removing Weed (Lantana) 40-60%


कार्यालय : प्रधान मुख्य वन संरक्षक, विकास,
झारखण्ड, राँची।
 वन भवन, झोरखड़ा, राँची
 e-mail : pccf-development@gov.in ☎ - 0651-2481813/9304727852

कार्यालय आदेश

संख्या-01/योजना-30/2020- 13

दिनांक 18/06/2024

वन एवं पर्यावरण विभाग के अधिसूचना संख्या संसो-4/योजना-42/2010-2371 य090, दिनांक 06.06.2015 द्वारा वृक्षारोपण एवं पौधशाला कार्य हेतु दर निर्धारण के लिए राज्य स्तर पर एक स्थायी समिति का गठन किया गया।

अपर प्रधान मुख्य वन संरक्षक, विकास, झारखण्ड, राँची के अध्यक्षता में राज्य स्तरीय दर निर्धारण समिति की बैठक दिनांक 25.04.2024 को आयोजित की गई।

समिति द्वारा समीक्षणीयता खरपतवार का उन्मूलन कर (घनत्व 40-60%) घास मैदान को विकास हेतु कार्य कर हेतु का अनुशुचित कार्यदर की अनुमति की गई। समिति की अनुमति पर प्रधान मुख्य वन संरक्षक, झारखण्ड, राँची का अनुमोदन प्राप्त है। यह दर तत्काल प्रभाव से वित्तीय वर्ष 2024-25 के लिए लागू होगी एवं अगले पुनरीक्षण तक प्रभावी रहेगी।

खरपतवार का उन्मूलन कर (घनत्व 40-60%) घास मैदान के विकास हेतु कार्य दर तालिका (2024-25)

मजदूरी दर प्रति मानव दिवस रु० 495.00 कार्य दर प्रति हे०

क्रम सं०	कार्य विवरण	मानव दिवस	कार्य दर (रुपये में)		
			मजदूरी	आपूर्ति एवं सामग्री	योग (8+9)
1	2	3	4	5	6
I	वित्तीय वर्ष 2024-25 के अंतिम कार्य (क्रयन वर्ष)				
i	सर्पेक्षण एवं लेन-देन कार्य	3	1215.00	1500.00	2715.00
ii	Local palatable पौध, Herbivores एवं लेग्युम के बीज का संग्रहण	30	12150.00	1000.00	13150.00
iii	सर्पेक्षण भात मैदान से मछड़े एवं सभी खरपतवारों, झाड़ी तथा जड़ों का संग्रहण कर जलाने का कार्य :-				
क	मछली बार : मछ जुलाई - अगस्त	18	7290.00		7290.00
ख	पुसरी बार : माह सितम्बर - अक्टूबर	12	4860.00		4860.00
ग	लीटरी बार : माह नवम्बर - दिसम्बर	9	3645.00		3645.00
iv	विशिष्ट व्यय/ लाईसेंस आदि		0.00	5000.00	5000.00
v	लेबर सेस मजदूरी का 1 प्रतिशत			291.60	291.60
	योग :	72	29160.00	7791.60	36951.60

क्रम सं०	कार्य विवरणी	मानव दिनस	कार्य दर (रुपये में)		
			मजदूरी	आपूर्ति एवं सामग्री	योग (4+5)
1	2	3	4	5	6
2	वित्तीय वर्ष 2025-26 में समापन कार्य (द्वितीय वर्ष)				
i	लकड़ी के छप्पे के साथ हरे रंग के कपड़े से धोना कार्य	30	12150.00	10000.00	22150.00
ii	घास के बीजों का बालू एवं बिट्टी से मिश्रण के साथ रोपण	15	6075.00		6075.00
iii	खरपतवार को उखाड़ने और रिक्त स्थानों पर स्थानीय घास के बीज बोने का दूसरा चक्र तथा पानी पटवण का कार्य :-				
क	पहली निकोनी, बीजरोपण : माह जुलाई - अगस्त	20	8100.00		8100.00
ख	दूसरी निकोनी एवं पटवण : माह सितम्बर - अक्टूबर	15	6075.00		6075.00
ग	तीसरी निकोनी एवं पटवण : माह नवम्बर - दिसम्बर	10	4050.00		4050.00
iv	Local palatable घास के बीजों का संग्रहण	10	4050.00	500.00	4550.00
v	विविध व्यय / साईनेज आदि		0.00	2000.00	2000.00
vi	लेबर सेस मजदूरी का 1 प्रतिशत		0.00	405.00	405.00
	योग :	100	40500.00	12905.00	53405.00
3	वित्तीय वर्ष 2026-27 में सम्प्लोषण कार्य (तृतीय वर्ष)				
i	बचे हुए खरपतवार को उखाड़ने और रिक्त स्थानों पर स्थानीय घास के बीज बोने का तीसरा चक्र :-				
क	पहली निकोनी, बीजरोपण : माह जुलाई - अगस्त	12	4860.00		4860.00
ख	दूसरी निकोनी एवं पटवण : माह सितम्बर - अक्टूबर	10	4050.00		4050.00
ग	तीसरी निकोनी एवं पटवण : माह नवम्बर - दिसम्बर	10	4050.00		4050.00
ii	विविध व्यय / साईनेज आदि		0.00	2000.00	2000.00
iii	लेबर सेस मजदूरी का 1 प्रतिशत		0.00	129.60	129.60
	योग :	32	12960.00	2129.60	15089.60
4	वित्तीय वर्ष 2027-28 में सम्प्लोषण कार्य (चतुर्थ वर्ष)				
i	बचे हुए खरपतवार को उखाड़ने और रिक्त स्थानों पर स्थानीय घास के बीज बोने का चतुर्थ चक्र				
क	पहली निकोनी, बीजरोपण : माह जुलाई - अगस्त	12	4860.00		4860.00
ख	दूसरी निकोनी एवं पटवण : माह सितम्बर - अक्टूबर	10	4050.00		4050.00

क्रम सं०	कार्य विवरणी	मानव दिवस	कार्य दर (रुपये में)		
			मजदूरी	आपूर्ति एवं शामग्री	योग (4+5)
1	2	3	4	5	6
i	तौलरी निडोनी एवं पटवन : माह नवम्बर - दिसम्बर	10	4050.00		4050.00
ii	विविध व्यय/ साईनेज आदि		0.00	2000.00	2000.00
iii	लेबर सेस मजदूरी का 1 प्रतिशत		0.00	129.60	129.60
योग :		32	12960.00	2129.60	15089.60
कुल योग :		236	95580.00	24955.80	120535.80

प्रधान मुख्य वन संरक्षक, विकास
झारखण्ड, राँची

ज्ञापक-01/यो0ब0-30/2020- 473 दिनांक-18/06/2024

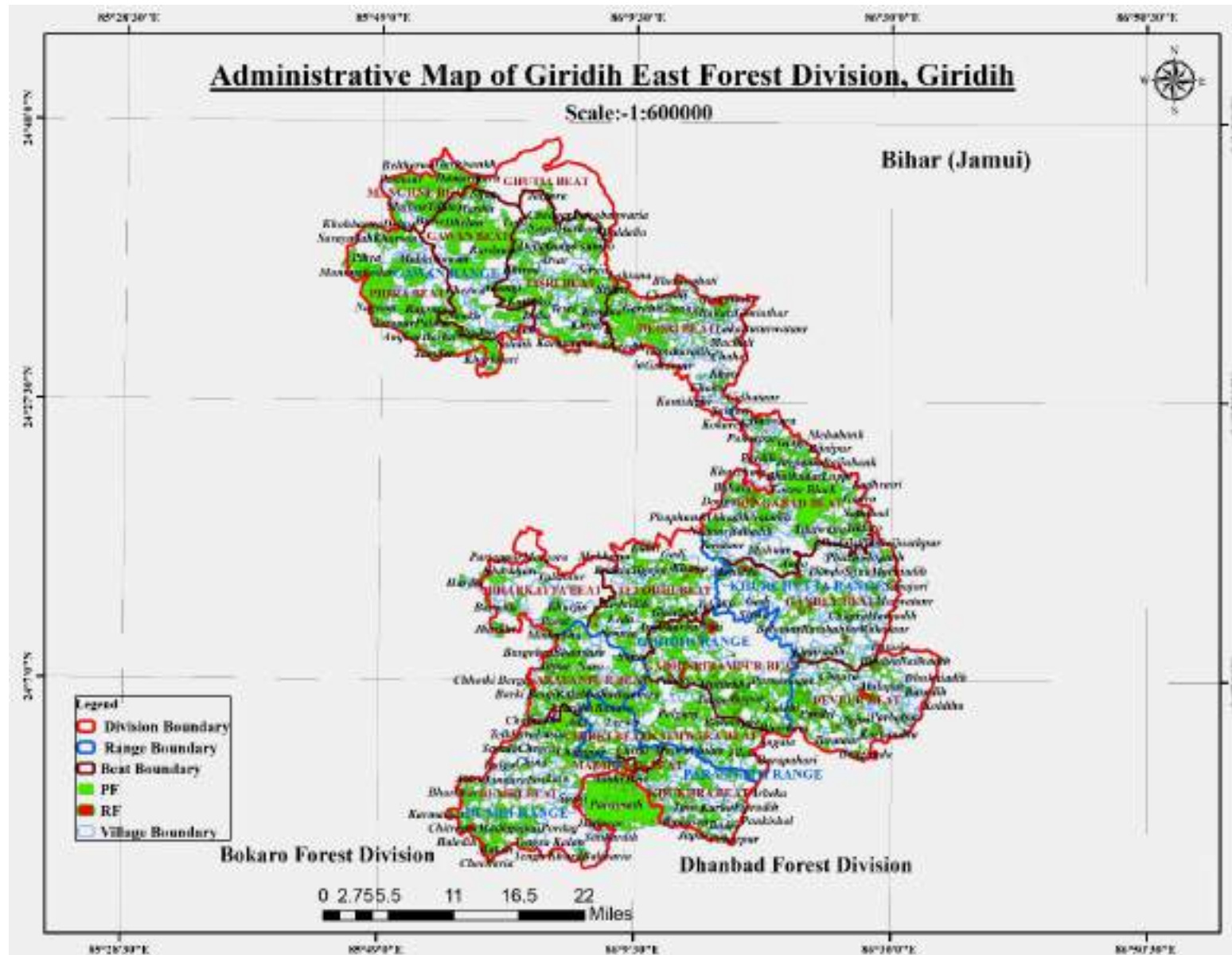
प्रतिलिपि :

1. सभी प्रधान मुख्य वन संरक्षक।
2. सभी अपर प्रधान मुख्य वन संरक्षक।
3. सभी क्षेत्रीय मुख्य वन संरक्षक।
4. सभी मुख्य वन संरक्षक।
5. सभी वन संरक्षक।
6. सभी उप वन संरक्षक।
7. सभी वन प्रमण्डल पदाधिकारी।

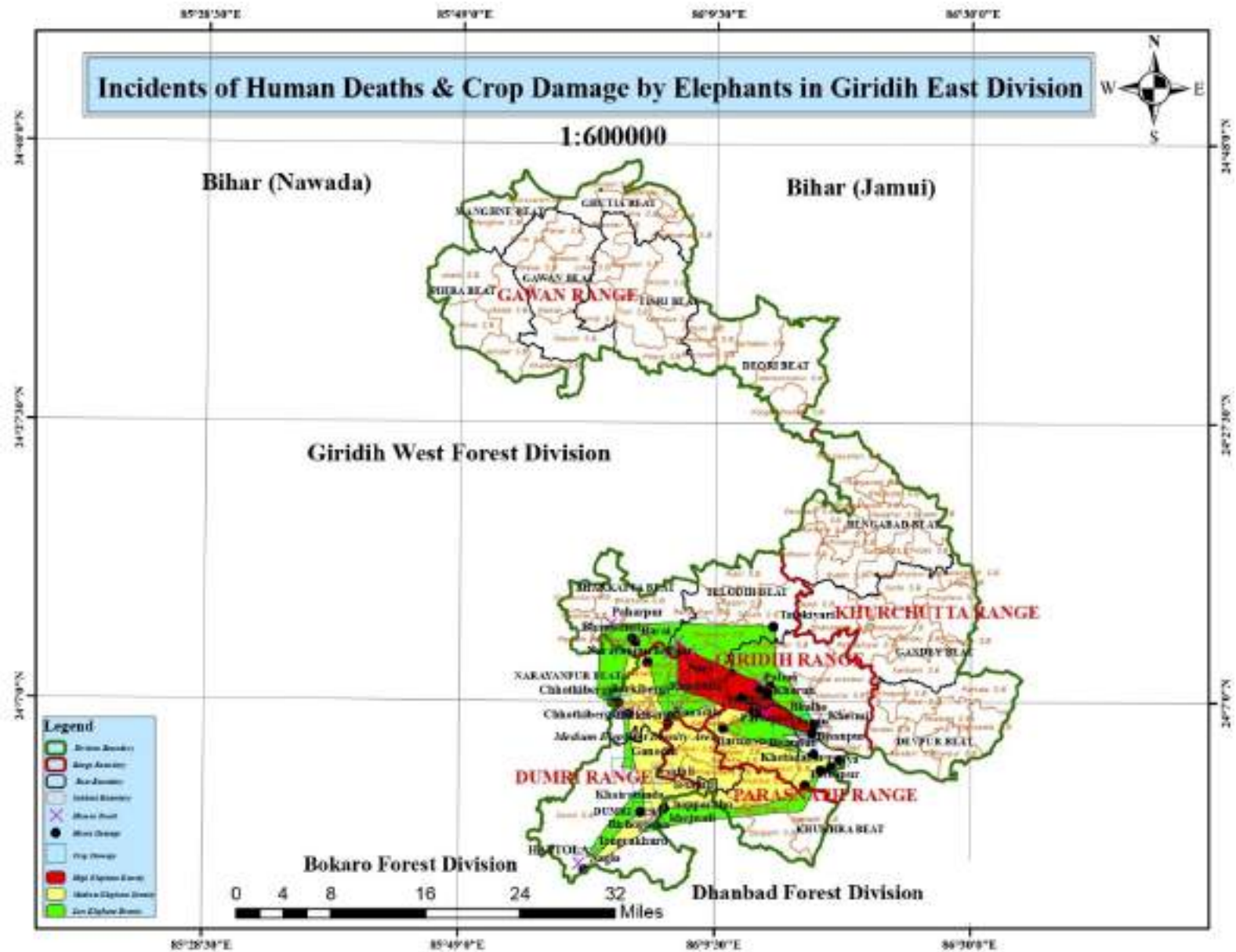
को सुवनार्थ एवं आवश्यक कार्रवाई हेतु प्रेषित।

प्रधान मुख्य वन संरक्षक, विकास
झारखण्ड, राँची

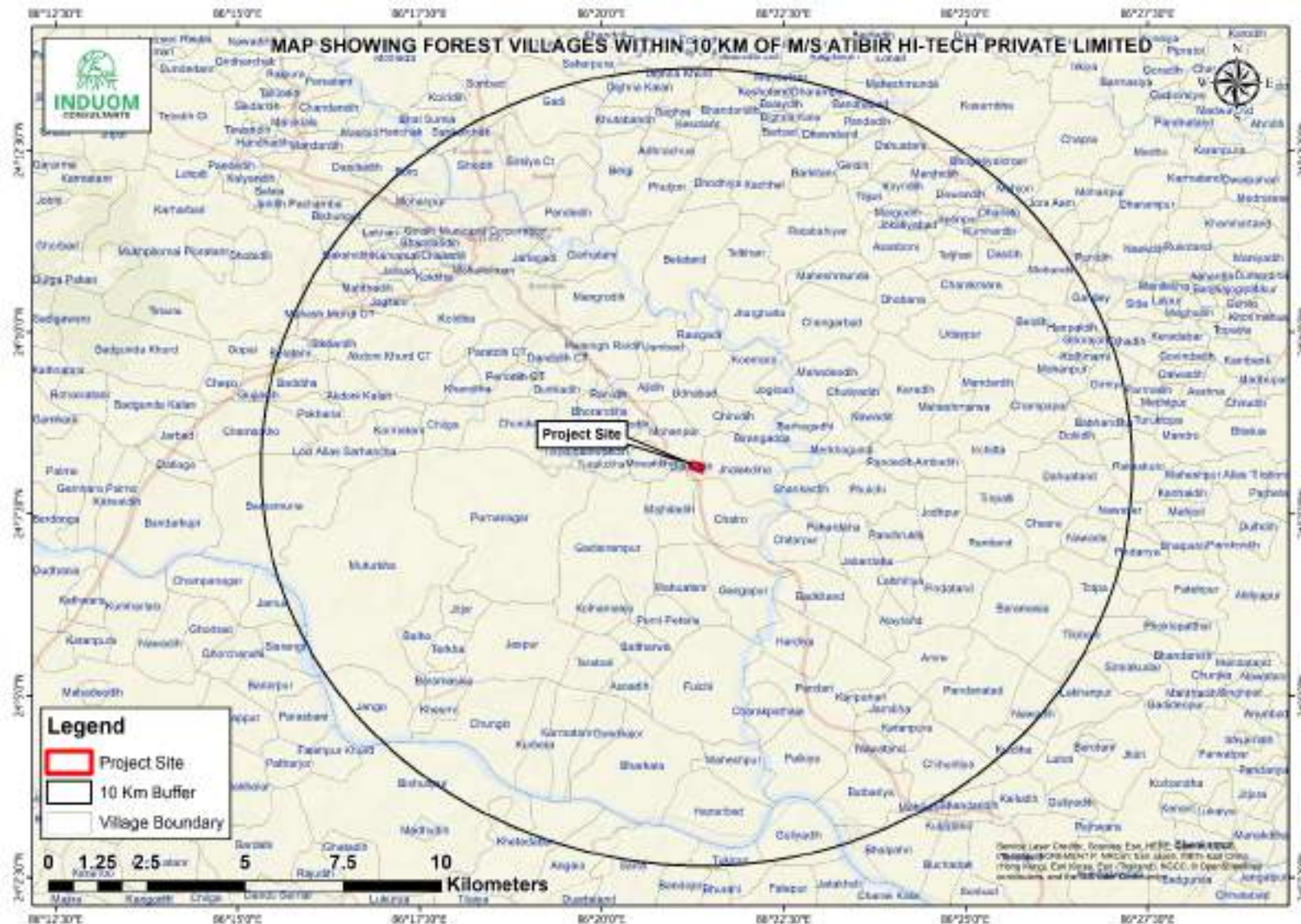
Annexure-5



Annexure-6

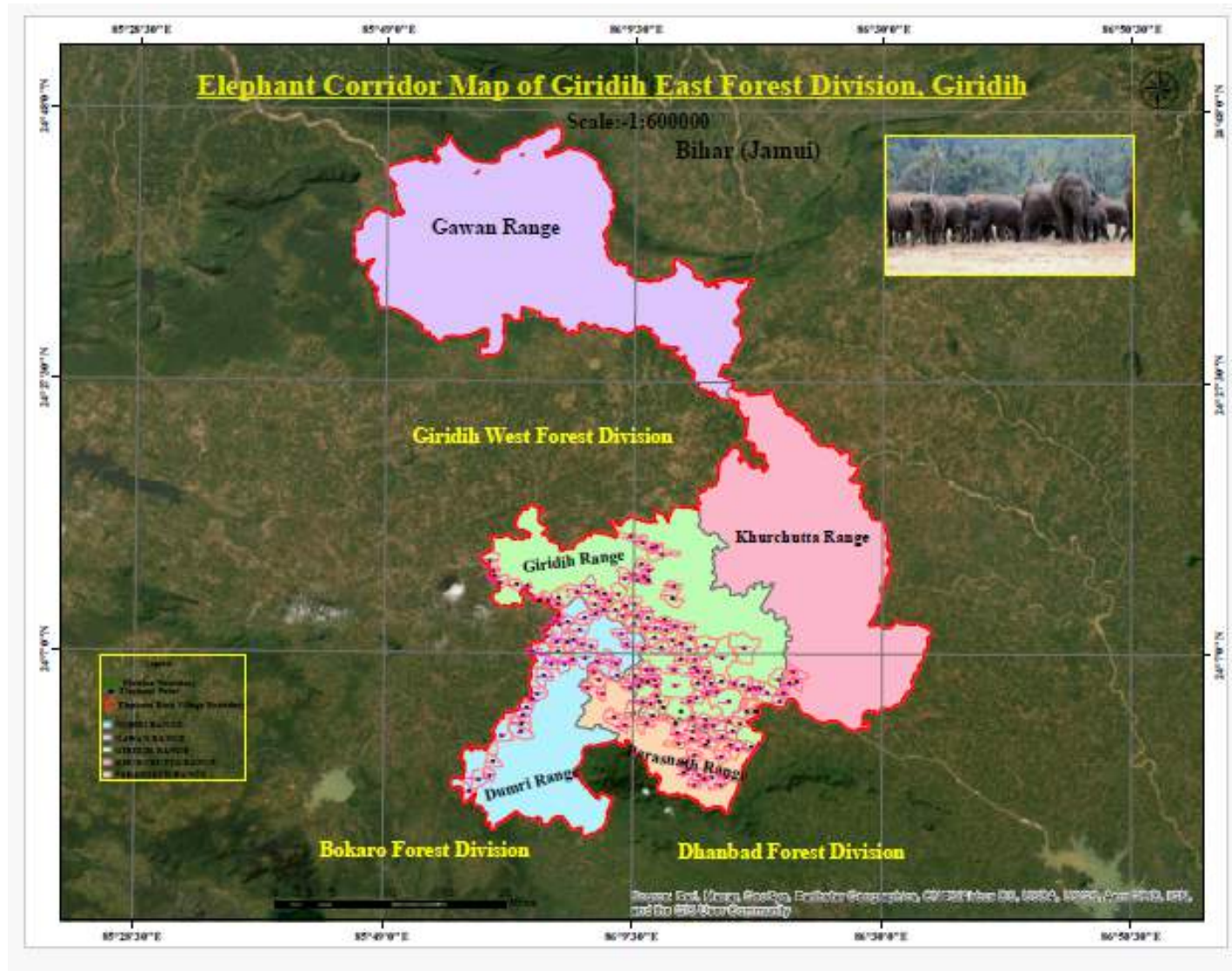


Map Showing Villages in the 10 km impact area of Project Site



Annexure-8

Map Showing Elephant Movement and depredated areas of Giridih Forest Division on Google Earth



Annexure-9

Map Showing RF & PF within the Buffer Area of the Project Site

