

EXECUTIVE SUMMARY
OF
DRAFT ENVIRONMENT IMPACT ASSESSMENT AND
ENVIRONMENT MANAGEMENT PLAN REPORT
FOR
PUBLIC HEARING
OF

Block - XII Codli Mineral Block,

Auctioned Block Area: 377.0881 ha

With Iron Ore Production 3.50 Million TPA, OB/Waste 8.21

Million TPA (Total Excavation: 11.71 Million TPA)

**Along with Installation 04 Crusher (3 Primary Crusher of 1 x 250
TPH & 2 x 90 TPH and 1 Secondary Crusher of 150 TPH) and 600**

**TPH Dry Processing/Screening Plant & 2 x 300 TPH Wet
Beneficiation Plant with Throughput Capacity 3.50 Million TPA**

At

Village: Codli, Taluka: Dharbandora,

District: South Goa (Goa)

APPLICANT



JSW Steel Limited

**JSW Centre, Bandra Kurla Complex,
Near MMRDA Grounds, Bandra East,
Mumbai -400051 (Maharashtra)**

Email: baswaraj.dalgade@jsw.in

INDEX

POINT NO.	PARTICULAR	PAGE NO.
1.1	INTRODUCTION	1
1.2	NEED FOR THE PROJECT	1
1.3	MINING LEASE STATUS	1
1.4	STATUS OF APPROVAL OF MINING PLAN	1
1.5	PROJECT DETAILS	2
1.6	MINING DETAILS	3
1.7	DESCRIPTION OF THE ENVIRONMENT	4
1.8	ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES	5
1.9	ANALYSIS OF ALTERNATIVES (TECHNOLOGY & SITE)	8
1.10	POST PROJECT ENVIRONMENTAL MONITORING PROGRAM	8
1.11	ADDITIONAL STUDIES	9
1.11.1	HYDRO-GEOLOGICAL STUDY	9
1.11.2	BIOLOGICAL ENVIRONMENT	9
1.11.3	REHABILITATION AND RESETTLEMENT	10
1.11.4	RISK ASSESSMENT & DISASTER MANAGEMENT PLAN	10
1.12	PROJECT BENEFITS	10
1.13	ENVIRONMENTAL MANAGEMENT PLAN	11
1.14	POST MINING LAND USE DETAILS	11
1.15	CONCLUSION	11

LIST OF TABLES

TABLE NO.	PARTICULAR	PAGE NO.
1	PROJECT DETAILS	2
2	MINING DETAILS	3
3	POST PROJECT ENVIRONMENTAL MONITORING PROGRAMME	8



EXECUTIVE SUMMARY OF DRAFT EIA/EMP REPORT

1.1 INTRODUCTION

JSW Steel Limited has s Codli Mineral Block - XII, Auctioned Block Area: 377.0881 ha with Iron Ore production 3.50 Million TPA, OB/Waste 8.21 Million TPA (Total Excavation: 11.71 Million TPA) along with Installation 04 Crusher (3 Primary Crusher of 1 x 250 TPH & 2 x 90 TPH and 1 Secondary Crusher of 150 TPH) and 600 TPH Dry & 2 x 300 TPH Wet Beneficiation Plant with Throughput Capacity 3.50 Million TPA located at Village: Codli, Taluka: Dharbandora, District: South Goa (Goa). As per EIA Notification dated 14th September, 2006 and subsequent amendments vide S.O. 1886(E) dated 20th April 2022, the project falls under Category A (>250 ha) Project or Activity 1(a) "Mining of Mineral" and 2 (b) for Mineral Beneficiation.

1.2 NEED FOR THE PROJECT

- To cater the Iron Ore requirement for the JSW Steel Plant, the Company has proposed this Block - XII Codli Mineral Block with Iron Ore Production: 3.50 Million TPA.
- It will also bridge the gap between demand and supply of Iron Ore to the consumers. The project will help in the overall growth of the region.
- Total 154 persons will be employed directly in this mine. Various indirect employment opportunities are also envisaged. With the proposed development in and around the area, there will be supporting facilities/infrastructure eventually leading to the development of the area. The project will help in the overall growth of the region.
- The Iron Ore produced from the mine will primarily cater to the iron ore requirement of the JSW Steel Plant. Any quantity available after meeting the plant's requirement may be disposed of/sold in the open market, subject to applicable statutory provisions and permissions.

1.3 MINING LEASE STATUS

- JSW Steel Limited has been successfully declared as the "Preferred Bidder" for the grant of Block - XII Codli Mineral Block, Auctioned Block Area: 377.0881 ha with located at Village: Codli, Taluka: Dharbandora, District: South Goa (Goa) through e-auction conducted by Government of Goa.
- Letter of Intent Vide Letter No. DGM/28/Auction Cell/3rd NIT/2023/2703 dated 10.12.2024 for grant of mining lease over 377.0881 ha for 3 years.

1.4 STATUS OF APPROVAL OF MINING PLAN

Mining Plan along with Progressive Mine Closure Plan for Block - XII Codli Mineral Block over an area of 377.0881 ha has been approved by Indian Bureau of Mines (IBM), Goa vide letter No. MCDR-MPCoFE/6/2025-GOA-IBM_RO_GOA dated 06.08.2025.

Block - XII Codli Mineral Block, Auctioned Block Area: 377.0881 ha with Iron Ore Production 3.50 Million TPA, OB/Waste 8.21 Million TPA (Total Excavation: 11.71 Million TPA) along with Installation 04 Crusher (3 Primary Crusher of 1 x 250 TPH & 2 x 90 TPH and 1 Secondary Crusher of 150 TPH) and 600 TPH Dry Processing/Screening Plant & 2 x 300 TPH Wet Beneficiation Plant with Throughput Capacity 3.50 Million TPA located at Village: Codli, Taluka: Dharbandora, District: South Goa (Goa).

Executive Summary of Draft EIA/ EMP Report

1.5 PROJECT DETAILS

Table - 1
Project Details

S.N.	Particulars	Details
A.	Nature of project	Opencast Fully Mechanized Iron Ore Mine
B.	Size of project	
1.	Area	377.0881 ha (Govt. Land: 236.3482 ha, Private Land: 58.9087 ha, Alvara Land: 15.8626, Forest Land: 65.9686 ha)
2.	Project Proposal	Iron Ore: 3.50 Million TPA OB/Waste: 8.21 Million TPA Total Production: 11.71 Million TPA Crusher: 1 x 250 TPH & 2 x 90 TPH - Primary Crusher & 150 TPH of Secondary Crusher Dry Beneficiation/Screening Plant: 600 TPH Wet Beneficiation Plant: 2 x 300 TPH
C	Project Location	
1.	Villages	Codli
2.	Tehsil	Dharbandora
3.	District	South Goa
4.	State	Goa
5.	Latitude & Longitude	Latitude: 15°21'15.638" N to 15°19'42.607" N Longitude: 74°7'10.922" E to 74°8'39.034" E
6.	SOI Toposheet No.	Core Zone: D43C3_48I/3 Buffer Zone: D43C3_48I/3, D43B15_48E/15, D43C4_48I/4
D	Environmental Settings	
1.	Nearest Village	Codli (Adjacent in North Direction)
2.	Nearest Town / City	Sanvadem (~7.5 Km in SSW Direction)
3.	Nearest State/National Highway	➤ SH-7 (Adjacent in WNW Direction) ➤ NH-748 (~3.0 Km in NNE Direction)
4.	Nearest Railway Station	Sanvadem Chuch Railway Station (~7.8 Km in SSW Direction)
5.	Nearest Airport	Dabolim International Airport (~30.0 Km in WNW Direction)
6.	National Park, Wildlife Sanctuaries, Biosphere Reserves, Wildlife corridors, Tiger/Elephant Reserves etc. within 10 Km radius study area	There are no National Park, Biosphere reserve or corridor present within 10 Km radius of study area. 2 Wildlife sanctuaries are present that are: ➤ Bhagvan Mahavir Wildlife Sanctuary (~1.52 Km in SE Direction) ➤ Bondla Wildlife Sanctuary (~6.5 Km in NNW Direction)
7.	Eco-Sensitive Zoness	➤ ESZ of Bhagvan Mahavir Wildlife Sanctuary (~0.52 Km in SE Direction) ➤ ESZ of Bondla Wildlife Sanctuary (~5.5 Km in NNW Direction)

Block - XII Codli Mineral Block, Auctioned Block Area: 377.0881 ha with Iron Ore Production 3.50 Million TPA, OB/Waste 8.21 Million TPA (Total Excavation: 11.71 Million TPA) along with Installation 04 Crusher (3 Primary Crusher of 1 x 250 TPH & 2 x 90 TPH and 1 Secondary Crusher of 150 TPH) and 600 TPH Dry Processing/Screening Plant & 2 x 300 TPH Wet Beneficiation Plant with Throughput Capacity 3.50 Million TPA located at Village: Codli, Taluka: Dharbandora, District: South Goa (Goa).

Executive Summary of Draft EIA/ EMP Report

S.N.	Particulars	Details																											
8.	Reserve/Protected Forest within 10 Km radius study area	Unclassified Forest – Core zone Reserve Forest – ~0.5 Km in ENE Direction, ~1.0 Km in West Direction, ~2.5 Km in West Direction, ~4.0 Km in South Direction, ~6.5 Km in WSW Direction, ~7.0 Km in NNE Direction, ~8.0 Km in WSW Direction, ~8.5 Km in NW Direction, ~9.0 Km in West Direction.																											
9.	Water bodies within 10 Km radius study area	There is total 8 water bodies present within 10 km of study area: <table border="1"> <thead> <tr> <th>S.N.</th><th>Water Body</th><th>Distance & Direction</th></tr> </thead> <tbody> <tr> <td>1.</td><td>Khandepar River</td><td>Adjacent in North Direction</td></tr> <tr> <td>2.</td><td>Kale Nala</td><td>~0.7 Km in ESE Direction</td></tr> <tr> <td>3.</td><td>Udnai Nala</td><td>~1.5 Km in West Direction</td></tr> <tr> <td>4.</td><td>Panduranga Nala</td><td>~5.0 Km in SW Direction</td></tr> <tr> <td>5.</td><td>Ragada Nala</td><td>~7.0 Km in NNE Direction</td></tr> <tr> <td>6.</td><td>Sanguem or Zuvari River</td><td>~8.0 Km in South Direction</td></tr> <tr> <td>7.</td><td>Jamboli Nala</td><td>~9.0 Km in NE Direction</td></tr> <tr> <td>8.</td><td>Paroda River</td><td>~9.0 Km in SSW Direction</td></tr> </tbody> </table>	S.N.	Water Body	Distance & Direction	1.	Khandepar River	Adjacent in North Direction	2.	Kale Nala	~0.7 Km in ESE Direction	3.	Udnai Nala	~1.5 Km in West Direction	4.	Panduranga Nala	~5.0 Km in SW Direction	5.	Ragada Nala	~7.0 Km in NNE Direction	6.	Sanguem or Zuvari River	~8.0 Km in South Direction	7.	Jamboli Nala	~9.0 Km in NE Direction	8.	Paroda River	~9.0 Km in SSW Direction
S.N.	Water Body	Distance & Direction																											
1.	Khandepar River	Adjacent in North Direction																											
2.	Kale Nala	~0.7 Km in ESE Direction																											
3.	Udnai Nala	~1.5 Km in West Direction																											
4.	Panduranga Nala	~5.0 Km in SW Direction																											
5.	Ragada Nala	~7.0 Km in NNE Direction																											
6.	Sanguem or Zuvari River	~8.0 Km in South Direction																											
7.	Jamboli Nala	~9.0 Km in NE Direction																											
8.	Paroda River	~9.0 Km in SSW Direction																											
10.	Critically Polluted Area	No, the Site doesn't fall under the critically polluted area.																											
11.	Seismic Zone	Zone – III As Per IS: 1893 (Part-I): 2016																											
E	Total Water requirement	1716 KLD (Mine Sump Water and Ground water)																											
F	Cost Details																												
1.	Total Project Cost	Rs. 500 Crores																											
2.	EMP Cost	Capital Cost: Rs. 544.02 Lakhs Recurring Cost: Rs. 117.0 Lakhs/Annum																											

Source: Site Visit & Pre- Feasibility Report

1.6 MINING DETAILS

Table - 2
Mining Details

S.N.	Particulars	Details
1.	Method of mining	Fully Mechanized Opencast Mining
2.	Total Geological Resources	48.50 Million Tonnes
3.	Mineable Reserves	27.32 Million Tonnes
4.	Life of Mine	8 Years As per Mineable Reserves 14 Years As per Reserves & Resources
5.	Bench Height	7 m
6.	Bench width	9 m
7.	Ultimate Pit Slope	<38°
8.	Elevation Range	-76 m AMSL to 109 m AMSL
9.	Average Ground Level	16.5 m AMSL

S.N.	Particulars	Details
10.	Existing depth of the Pit	-76 m AMSL (146 m bgl)
11.	Working Depth during Plan Period	112 m bgl
12.	Ultimate Working Depth	164.48 m bgl
13.	Number of Working Days	300
14.	Number of shifts per day	3

Source: Approved Mining Plan with Progressive Mine Closure Plan

1.7 DESCRIPTION OF THE ENVIRONMENT

Baseline data for the environmental studies has been collected during Summer Season (March to May, 2025) to carry out the Environment Impact Assessment study for the proposed Project.

Ambient Air Quality: Ambient Air Quality Monitoring results reveals that the concentrations of PM_{2.5} and PM₁₀ for all the 11 AAQM Locations were selected between 15.3 to 40.1 µg/m³ and 33.0 to 72.9 µg/m³ respectively.

As far as the gaseous pollutants SO₂ and NO₂ are concerned, the prescribed limit of 80 µg/m³ has never surpassed at any station. The concentrations of SO₂ and NO₂ were found to be in range from 4.1 to 14.5 µg/m³ and 9.0 to 26.4 µg/m³ respectively. CO concentration was found only in Villages Kale and Sanvordem between the range of 0.51 to 0.72 mg/m³ or in remaining villages it's found below detection limit (0.5 mg/m³). The concentration of Ozone and Ammonia were found to be in range from 5.6 µg/m³ to 26.0 µg/m³ and 7 µg/m³ to 29.0 µg/m³. The concentrations of AAQ parameters at all monitoring locations are found well within the prescribed limits of NAAQS.

Ambient Noise Levels: Ambient noise levels were measured at 11 locations around the project site. Noise levels varied from 46.2 to 56.8 Leq dB (A) during day time and from 38.1 to 44.4 Leq dB(A) during night time.

The maximum noise levels during day time as well as night time were found at Village Sanvordem as this place is densely populated as compared to other locations, therefore, there may be increased human activities and more vehicular movement along with other commercial activities. Whereas, the minimum noise level was found within ~500m of Mine site during day time as well as during night time; as there is no major source of noise pollution. From the above study and discussions, it can be concluded that noise levels in the study area are well within the standards as prescribed by the CPCB.

Surface Water Quality: The Surface water analysis sampling locations show that pH of the water bodies was found 6.72 to 7.65, Total hardness (15.0 to 64.0 mg/l), Total Dissolved Solids (24.0 to 101.0 mg/l), Alkalinity (15.82 to 50.37 mg/l) and Conductivity (38 to 151 µs/cm) were found to be within standards in water samples. The COD (4.0 to 16.0 mg/l) and BOD (1.3 to 2.8 mg/l). The nutrients were also found in less quantity viz. Sulphate (1.3 to 7.5 mg/l), Calcium (3.97 to 13.89 mg/l), Sodium (3.0 to 9.0 mg/l), Potassium (1.0 to 2.0 mg/l), Magnesium (1.24 to 8.33 mg/l), Iron (0.23 to 0.73 mg/l), Zinc (0.02 to 0.2 mg/l), Chloride (3.26 to 20.46 mg/l), indicated clean water bodies. Dissolved Oxygen (7.1 to 7.8 mg/l) indicated that the water bodies are safe for aquatic biodiversity. Although, the physico-chemical quality is good and safe for aquatic biodiversity.

Fluoride was found 0.1 mg/l only in Jamboli Nala and in other locations it's found Below Detection Limit (BDL 0.05 mg/l). Total Suspended Solid were found 2 mg/l only in Sanguem/Zuvari River water.

Ground Water Quality: The Ground water analysis for all the 10 sampling locations shows that pH varies from 6.41 to 7.26, Total hardness varied from 35.0 to 218.0 mg/l, Total dissolved solids varied from 68.0 to 255.0 mg/l, Chloride varied from 11.68 to 24.3 mg/l, SO₄ varied from 1.85 to 12.06 mg/l, Ca varied from 3.97 to 61.5 mg/l, Fluoride varied from 0.07 to 0.54 mg/l, Magnesium varied from 3.69 to 15.66 mg/l, Alkalinity varied from 31.1 to 221.5 mg/l, Magnesium varied from 3.69 to 15.66 mg/l, Sulphate varied from 1.85 to 12.06 mg/l, Nitrate varied from 0.18 to 1.87 mg/l, Iron varied from 0.14 to 0.58 mg/l, Sodium varied from 3.0 to 13.0 mg/l, Potassium varied from 1.0 to 6.0 mg/l & Conductivity (102.0 to 370.0 µS/cm) Thus can be conclude from the baseline sampling results for groundwater that all the samples, were observed to be in the permissible limits and complies to the drinking water standard (IS: 10500-2012).

Soil Quality: The soil samples exhibit brownish, reddish brown or dull yellowish brown which indicates good fertility and presence of organic matter in the soil samples. The organic matter (0.59% to 1.23%) and organic carbon (0.34% to 0.78%) present in the soil observed to be appropriate for the plant growth. The texture of the soil samples were Clay, Sandy Loam and Silty Loam. All soil samples have moderately acidic to neutral having pH ranging from 5.52 to 7.21 which is an optimal range for most the plant to thrive and grow. All the essential nutrients were observed to be present in medium to average amount than the other micro nutrient and macro nutrient such as Nitrogen (187.08 to 316.15 kg/ha), Phosphorous (9.03 to 33.48 kg/ha), Potassium (77.73 to 357.22 kg/ha), Magnesium (125.68 to 226.89 mg/kg), Calcium (224.02 to 1038.65 mg/kg). Less calcium values in the soil sample are due to the presence of moderately acidic to neutral soil in nature within the area, thus would not affect the plant growth. These results indicate that the soil quality within the study area is of a good quality and contains sufficient macronutrients which is vital for healthy plant life. These results show that there is a need to replenish phosphorus to improve the productivity of the agricultural land in the study area and should be taken care in green belt development.

1.8 ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

➤ AMBIENT AIR ENVIRONMENT

Impact:

The key air emissions from the mining activities (Loading, Excavation, Hauling and Transportation) are Particulate Matter. No Drilling & Blasting will be carried out. Gaseous emissions generated from HEMM & transportation of vehicles. The key emissions due to crushing in the mine are Particulate Matter.

Mitigation Measures:

Proper mitigation measures will be taken like Water spraying on haul roads, loading, unloading and transfer points, Wheel wash arrangement during the exit of trucks, Ventilation and air conditioning systems at Beneficiation plant, etc. and development of greenbelt/plantation area to

control the fugitive emission. Better maintenance of equipment also helps to reduce such emissions. At crushing site, measures such as use of Bag filters, Mist Fog canons regular water spraying on Crusher hopper to arrest dust from becoming air-borne and flexible curtains will be installed/adopted at crusher unloading area to avoid fugitive emission. Development of green belt at ML periphery and plantation all around in the vicinity of the crusher to trap fugitive dust will be carried out. Atomized water sprinkler will be installed at crusher hopper.

➤ **WATER ENVIRONMENT**

Surface Water

No water bodies i.e. nalla, river or streams are present within the lease area. Besides this, 3 Rivers and 5 Nalas exist within the 10 Km radius of study area viz. Khandepar River, Kale Nala, Udnai Nala, Panduranga Nala, Ragada Nala, Sanguem or Zuvari River, Jamboli Nala, Paroda River. These water bodies will not be impacted due to the mining activities.

- The Khandepar is present adjacent to the mine lease area which will not be disturbed during mining. A proper mitigation measures has been adopted for protection of the river.
- Garland drain having siltation pond will be provided at the toe of the dumps, to channelize the runoff water from dumps into the water reservoir (i.e. mined out pits). All the garland drains at the toe of the dump are proposed to be connected with a series of settling tanks which will ultimately allow the setting of silt from the water.
- Retaining wall will be constructed around waste dump to control the surface run off.
- Catch drains and siltation ponds will also be constructed within the area to check flow of surface runoff as well as to prevent siltation of natural courses.
- The rainwater falling directly into the mine pits will be stored and used for plantation & dust suppression.
- Waste water generated from mine workshop (after treatment in oil-grease separator) will be reused for dust suppression. Waste water generated from wheel wash system will also be recycled.
- Domestic waste water generated from mine office, toilets & canteen will be treated in ETP and treated waste water will be used for dust suppression.
- There will be no discharge of wastewater outside the lease area. Therefore, no significant impact of proposed mining on surface water.
- Regular monitoring of surface water quality will be carried out.

Ground Water

Working depth during the plan period will be 112 m bgl and at conceptual stage, ultimate working depth will be 164.48 m bgl. According to groundwater level monitoring, depth of water level in core zone during pre-monsoon is around 16.0 m bgl and during post-monsoon season it rises slightly to 15.0 m bgl. Hence, the groundwater will be intersected during the mining operation. Prior permission will be obtained from Water Resource Department, Goa (WRD) prior to ground

water intersection. The mineral Iron Ore and associated rocks that do not contain any toxic substances so there will not be any adverse impact on ground water quality. Regular monitoring of ground water level & its quality will be carried out.

➤ **NOISE & VIBRATION**

Major noise generating sources of the mining activity are excavation, crushing and HEMM deployed for loading & transportation of Iron Ore. No Drilling and Blasting operations will be carried out, thereby eliminating the risk of high-intensity and impulsive noise generation. Proper maintenance, oiling and greasing of machines at regular intervals will be done to reduce generation of noise PPEs like earplugs/earmuffs will be provided to mine workers. HEMMs equipped with acoustic cabins will be provided for the operators. Proper maintenance, oiling and greasing of HEMMs will be done.

Crushing process will generate noise. Proper mitigation measures i.e. Insulators & sheet cladding will be provided in the crusher to control the noise pollution. Development of greenbelt along ML boundary and plantation in the vicinity of the crusher and at other locations within the ML area will help in reducing the noise levels.

➤ **LAND ENVIRONMENT**

Impact:

The total mining lease area of the Block - XII Codli Iron Ore Block is 377.0881 ha, out of which 236.3482 ha is Govt. land, 58.9087 ha is Private land, 15.8626 ha is Alvara land and 65.9686 ha is Forest land. The land use of the mine area will be altered due to mining operations including pits, OB/Waste dumps, greenbelt/plantation, reservoir etc. but will not have any significant effect on the surface features of the surrounding areas.

Mitigation Measures:

The total mining lease area is 377.0881 ha which spreads over the parts of Village: Codli, Taluka: Dharbandora, District: South Goa of Goa. Total ML area of Block - XII Codli Mineral Iron Ore Mine is 377.0881 ha. At conceptual stage, out of the total mine lease area, total mined out area will be 301.1521 ha, out of which 51.95 ha will be backfilled and 249.2021 ha will be covered under water reservoir, 14.5597 ha area will be under utility services, 10.8981 ha area will be under Mineral Separation Plant, 6.87 ha under dump rehabilitated by plantation, 17.45 ha under greenbelt and 26.1582 ha will be covered under plantation.

At Conceptual Stage, total greenbelt/plantation will be developed along 7.5 block periphery covering an area of 17.45 ha, 51.95 ha area will be backfilled and subsequently rehabilitated through plantation, 6.87 ha on dump plantation and 26.1582 ha area under tailing dam rehabilitated by plantation. Thus, total Greenbelt/Plantation area is 102.4282 ha. 20% of the overall plantation is 20.49 ha from which 10.24 ha will be developed on the backfilled area and remaining 10.25 ha will be developed on tailing dam area using the Miyawaki plantation technique. Local &

fruit bearing species will be planted after consultation with local forest officer and as per CPCB guidelines are as follows: Neem, Arjuna, Mango, Jamun, Kindal, Kaju etc. will be planted by JSW Steel Ltd. in consultation with the State Forest Department.

➤ **TOP SOIL & SOLID WASTE GENERATION AND MANAGEMENT**

Top Soil: There are no top soil present in the ML area.

Waste generation & Management: At present; there are total 6 waste dumps present at the mine site, out of which 4 dumps have 8.96 Million Tonnes waste present in 32.23 ha and 2 waste dumps which are stabilized by plantation. During plan period; approx. 23.43 Million Tonnes of Waste will be generated which will be dumped in existing waste dump D4 and in 2 new dumps over an area of 46.84 ha at their designated place. And during conceptual stage; 68.0 Million Tonnes of waste will be generated which will be used in backfilling in the mined-out area.

Tailing Disposal Plan: About 0.628 Million TPA of tailings will be generated from the Wet Processing Plant in the form of filter press cake with a moisture content of approximately 10–12% and an Fe content of 27.83% which will be stacked in safe & scientific manner in an area of 26.16 ha within the mine lease area and later will be stored in abandoned/exhausted pits or dump areas within the mine lease.

1.9 ANALYSIS OF ALTERNATIVES (TECHNOLOGY & SITE)

The mine site is selected on the basis of occurrence of mineral for suitable end use. The project or activity is site specific. Hence, no alternative site has been considered.

Company will explore the feasibility to use of alternative energy sources, such as hydrogen and electric vehicles (EVs) and solar operated vehicles, after checking the availability/presence of such vehicles in market in consultation with the vendors to reduce the pollution load.

1.10 POST PROJECT ENVIRONMENTAL MONITORING PROGRAMME

Table – 3
Post Project Environmental Monitoring Programme

S.N.	Description	Frequency of Monitoring
1.	Micro-Meteorological Data	Hourly (Online)
2.	Ambient Air Quality Monitoring	Online CAAQMS & Manual as per CPCB Guideline
3.	Ground Water Quality & Level Monitoring	Quarterly
4.	Surface Water Quality Monitoring	Seasonal
5.	Noise Level Monitoring	Quarterly
6.	Soil Quality Monitoring	Once in a year
7.	Crusher Stack Monitoring (Crusher, Plant operation stacks, D. G. Sets)	Monthly
8.	Medical Checkup of employees	Annually to 5 Year ➤ Age of workers <40 years: After every 5 years ➤ Age of workers >40 years: Annually
9.	Digital Mapping of the ML Area	Once in 5 years

1.11 ADDITIONAL STUDIES

Additional Studies i.e., Hydro-Geological Study and along with Ground Water Modelling Report, Risk Assessment & Disaster Management Plan, Biological Study & Wildlife Conservation Plan for Schedule I species, Land use/Land Cover maps by Satellite Imagery, Traffic Study and Cumulative Impact Assessment Study are covered with this Draft EIA/ EMP Report as per the Terms of Reference granted by MoEF&CC, New Delhi.

1.11.1 HYDRO-GEOLOGICAL STUDY

Total water requirement for the proposed mining project will be 1716 KLD which will be fulfilled from Mine Sump water and well water for drinking purpose.

No waste water will be discharged outside lease boundary. Therefore, no adverse impact on water quality is envisaged due to the proposed mining project.

Working depth during the plan period will be 112 m bgl and at conceptual stage, ultimate working depth will be 164.48 m bgl. According to ground water level monitoring, it is found that the depth of water level in core zone during pre-monsoon is around 16.0 m bgl and during post-monsoon season it rises slightly to 15.0 m bgl. Hence, the groundwater will be intersected during the mining operation.

The groundwater modelling results indicate that the Radius of Influence (ROI) of the Codli Mineral Block remains confined within the mine lease boundary. Beyond the lease area, the groundwater levels show negligible variation from the initial groundwater head, indicating that the proposed mining activities are unlikely to cause any significant drawdown outside the mine lease area.

The Project Proponent (PP) has already submitted an application for obtaining the required NOC from WRD on 14.08.2026.

1.11.2 BIOLOGICAL ENVIRONMENT

Flora Diversity: Dominant species of trees and shrubs that was prevailing in the core and buffer area are Earleaf acacia, Coconut, Kaju; shrubs like Aak, Indian jujube and Herbs like Tulasi, Dub etc. There are no National Park, Biosphere Reserves, Tiger/Elephant Reserves, Wildlife Corridors present within 10 of study area. 2 Wildlife sanctuaries are present that are:

- Bhagvan Mahavir Wildlife Sanctuary (~1.52 Km in SE Direction) & ESZ of Bhagvan Mahavir Wildlife Sanctuary (~0.52 Km in SE Direction)
- Bondla Wildlife Sanctuary (~6.5 Km in NNW Direction) & ESZ of Bondla Wildlife Sanctuary (~5.5 Km in NNW Direction)
- Forests and Reserve Forests are also present within buffer zone of the mine site.

Fauna Diversity: There are 19 species listed under Schedule I [Including 10 Mammals, 04 Reptiles and 05 Avi Fauna (Birds)]: Gaur / Indian Bison, Golden Jackel, Wild dog /Dhole, Indian Crested Porcupine, Bonnet Macaque, Sloth bear, Mouse deer, Leopard, Malabar giant squirrel, Grey Mongoose, Marsh crocodile, Indian Cobra, Rat Snake, Monitor Lizard, Shikra, Brahminy Kite,

Crested Hawk Eagle, Indian Peafowl and Brown Wood Owl species as per the Wildlife (Protection) Amendment Act, 2022, found within the study area of Project Site. For the conservation of Schedule I species, Wildlife Conservation Plan has been prepared and submitted to DCF, South Goa, Goa on dated 10.10.2026. Budget earmarked for the conservation of Schedule- I species is Rs. 50.90 Lakhs.

Authenticated Map from DCF, Goa indicating the shortest distance between the ESZ of Wildlife Sanctuaries and Mine Lease Boundary was obtained on 10.10.2025.

1.11.3 REHABILITATION AND RESETTLEMENT

The total mining lease area is 377.0881 ha (Govt. Revenue Land – 236.3482 ha, Private Land – 58.9087 ha, Alvara Land – 15.8626, Forest Land – 65.9686 ha). There are no habitations present within the Mineral Block. Hence, no displacement of human settlement is proposed.

JSW Steel Limited will obtain the required surface rights for the land proposed to be utilized for mining and associated activities through mutual agreement and payment of applicable compensation, as per the prevailing statutory provisions, including the Goa, Daman and Diu Land Revenue Code, 1968 and the MMDR Act, 1957, as applicable. There is no proposal for land acquisition for the project.

Since there are no habitations, households, or affected families within the mining lease area and no displacement or resettlement is envisaged, no Rehabilitation and Resettlement (R&R) Plan is applicable or proposed for the project.

1.11.4 RISK ASSESSMENT & DISASTER MANAGEMENT PLAN

A Hazard Identification and Risk analysis is a systematic way to identify and analyze hazards to determine their scope, impact and the vulnerability of the built environment to such hazards and its purpose is to ensure that there is a formal process for hazard identification, risk assessment and control to effectively manage hazards that may occur within the workplaces. Excessive dust, noise and vibration are the chief health hazards for the miners besides physical hazards.

The objective of disaster management plan for the Iron Ore Mine is to be in a state of perpetual readiness through training and development to immediately control and arrest any emergency situation so as to avert a full-fledged disaster and the consequence of human and property damage and in the event of a disaster still occurring, to manage the same so that the risk of the damage to life and property is minimized.

1.12 PROJECT BENEFITS

Employment: The total manpower requirement 154 person. Preference will be given to the locals as per their eligibility. Beside this, the mining activity will also create lot of indirect employment opportunities to the local people in various activities like afforestation, canteen, transportation, workshops and other petty shops etc. Further, there would be a lot of indirect employment opportunities arising due to the proposed Iron Ore project.

Social Benefits: The mining activity will generate revenue in the form of contribution of additional revenue to state exchequer as notified by Indian Bureau of Mines time to time, beside this, Royalty and other taxes would be additional benefit, particularly in the form of contribution to the District Mineral Foundation (DMF). DMF will be utilized by local administration for the development of socio-economic infrastructure and wellbeing of the local population. The various activities proposed through CSR and Enterprise Social Commitment would help in upgradation of basic infrastructure, amenities.

Economic Benefits: The proposed project will contribute additional revenue to the State and Central Govt. in the form of Royalty, cess and other taxes etc. It is estimated that the project will generate revenue of 275.68 Crores/Annum with the production of 3.50 Million TPA Iron Ore.

1.13 ENVIRONMENT MANAGEMENT PLAN

JSW Steel Ltd. will have a full-fledged Environmental Management Cell (EMC) for environmental monitoring and control. A group of qualified and efficient engineers with technicians will be available for maintenance, up keeping and monitoring of mining machinery & equipment, to keep them in working mode at the best of their efficiencies. The EMC shall oversee and implement the various functions with mining team to ensure that environmental status of the area remains will within the statutory standard of MoEF&CC and SPCB. Total Cost of the project is Rs. 500.0 Crores. Capital cost for EMP is Rs. 544.02 Lakhs and recurring cost for the EMP is Rs. 117.0 Lakhs/Annum. The study area as a whole possesses average of infrastructural facilities however more attention and care will be taken so that the needs and demand of the population of the influence area should be met and can get more exposure to modern facilities of education and development to a bright future.

1.14 POST MINING LAND USE DETAILS

Total ML area of Block - XII Codli Mineral Iron Ore Mine is 377.0881 ha. At conceptual stage, out of the total Mine Lease Area, total mined out area will be 301.1521 ha, out of which 51.95 ha will be backfilled and 249.2021 ha will be covered under water reservoir, 14.5597 ha area will be under utility services, 10.8981 ha area will be under Mineral Separation Plant, 6.87 ha under dump rehabilitated by plantation, 17.45 ha under greenbelt and 26.1582 ha will be covered under plantation. Out of the plantation, 20.49 ha will be developed under the Miyawaki Plantation technique.

At Conceptual Stage, total Greenbelt/Plantation will be carried out on 102.4283 ha (Greenbelt along ML Boundary: 17.45 ha, 51.95 ha area under backfilled rehabilitated by plantation, 6.87 ha on Dump Plantation and 26.1582 ha area under Tailing dam rehabilitated by plantation).

1.15 CONCLUSION

This EIA/ EMP study was conducted as per the approved ToR issued by MoEF&CC. Baseline data of land, air, water, noise, biological and socio-economic environment was duly assessed by

conducting field investigation as well as by having an access to the available secondary information. The impacts were identified & evaluated and EMP is suggested to mitigate the environmental concerns arising from the project.

The project will prove beneficial to the local people as direct and indirect employment opportunity will be generated. There will be increase in revenue generation to the government by way of government taxes etc. Further improvement in infrastructure will take place like education, roads, availability of drinking water, medical facilities in adjacent Villages. There will be increase in earnings of local villagers, as they will get employment in the Iron Ore mine, which ultimately will result in better standard of living of the villagers.

There will be no significant pollution of air, water, soil and noise. Regular monitoring of all the components of environment will be done and mitigation measures will be adopted. Increased social welfare measures taken by the Company will bring overall development in the near-by Villages.

