

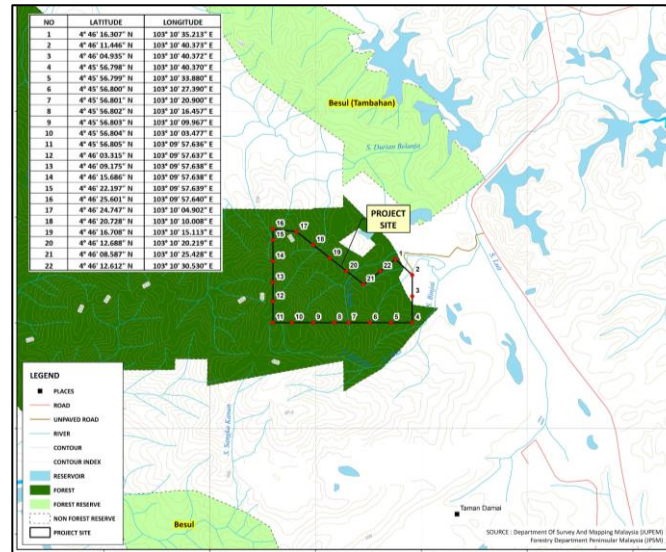
EXECUTIVE SUMMARY

PROJECT TITLE

PROPOSED IRON ORE MINING WITH AN AREA OF 80.93 HA (200 ACRES) ON LOT 11284BUKIT BETONG, BUKIT BATU TIGA, BUKIT PUTERI, BUKIT BESI, MUKIM JERANGAU, DAERAH DUNGUN, TERENGGANU DARUL IMAN

PROJECT LOCATION

- Located within Dungun district with an area of 80.93 hectares
- The proposed site is accessible via Jalan Jerangau – Jabor FT14, which connects Felda Jerangau in the north to Al-Muktafi Billah Shah in the south.
- The area is mainly covered by secondary forests, especially in the north and west, with logging being common in the nearby hills. To the south and southwest, land use is primarily focused on iron ore mining.



PROJECT DESCRIPTION

The total project area is 80.93 HA. The land involves 1 mining leases

- The State Authority has approved a conditional Mining Lease to the Project Proponent, Lembaga Tabung Amanah Warisan Negeri Terengganu (LTAWNT) under Section 4, Mineral Enactment (Terengganu) 2002, covering an area of about 80.93 ha.

LEGISLATIVE REQUIREMENTS

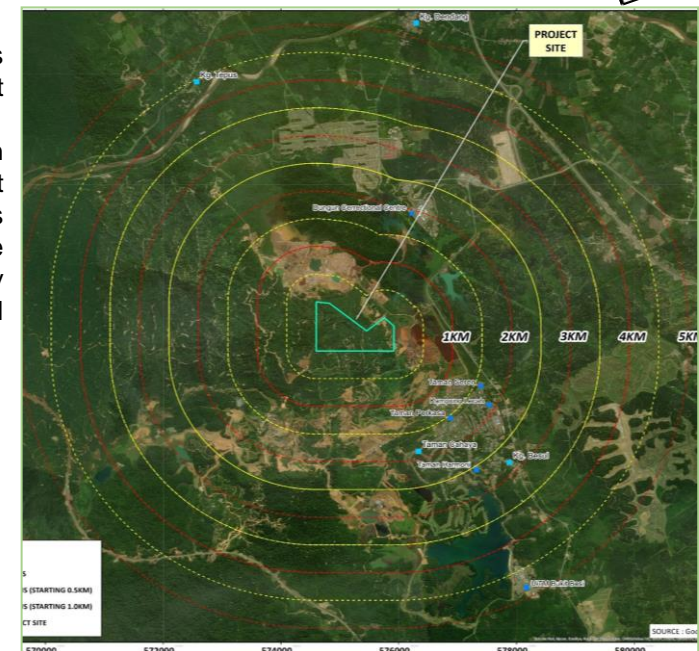
Environmental Quality Act 1974, Environmental Quality (Prescribed Activities) (Environmental Impact Assessment) Order 2015

- **Schedule 1, Activity 13** : Development or land clearing less than 50 percent of an area with slope greater than or equal to 25° but less than 35°
- **Schedule 2, Activity 8 (a)** : Mining of minerals in new areas involving large-scale operation.
- **Schedule 2, Activity 8 (b)** : mining of minerals within or adjacent to or near to the environmentally sensitive area.

REGIONAL SETTING

- Rancangan Tempatan Daerah Dungun 2035 (Pengubahan)
- Proposed Project site is zoned as the Forestry and Agriculture area.
- Jadual Kelas Kegunaan Tanah for forest and agricultural land use, where the presence of economically viable mineral potential has been identified, is permitted on the condition that mining activities are conducted in the designated area

NEIGHBOURING PROJECT

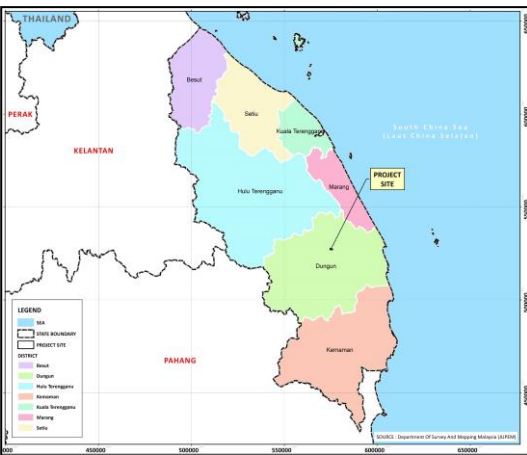


- There are around 9 mining projects within 5 kilometers of the project location
- The surrounding area is well known for iron ore mining activities. Bukit Besi, rich in iron ore deposits, has been home to active mines since the British colonial era in the early 20th century, with some still operating today.

STATEMENT OF NEEDS



- Indirectly create employment opportunities
- To fulfil the iron ore market's need
- It provides revenue to developers and the state government, allowing them to invest in the country's development

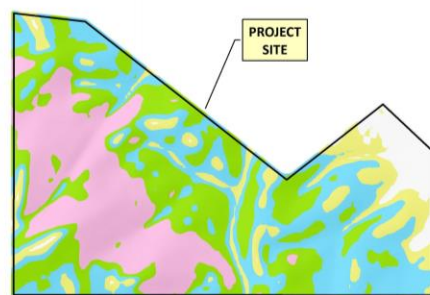


MINING LEASE HOLDER
Lembaga Tabung Amanah Warisan Negeri Terengganu (LTAWNT)

MINING OPERATOR
Besi Berani Lestari Sdn Bhd

ENVIRONMENTAL CONSULTANT
Nilaimas Services

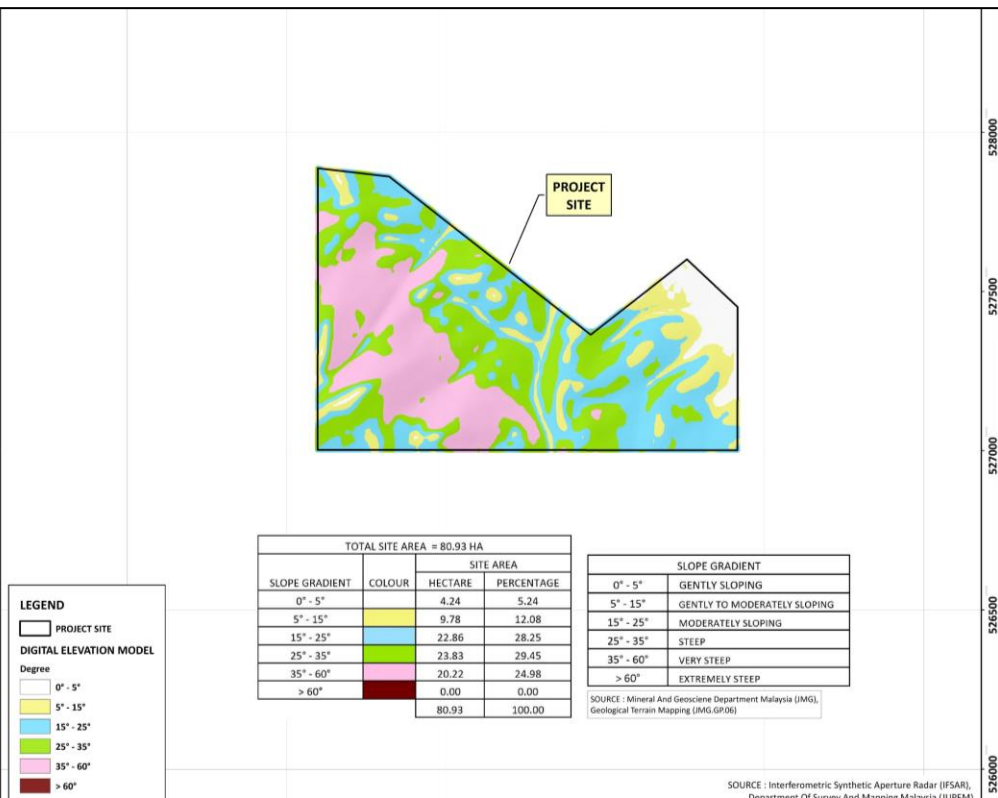
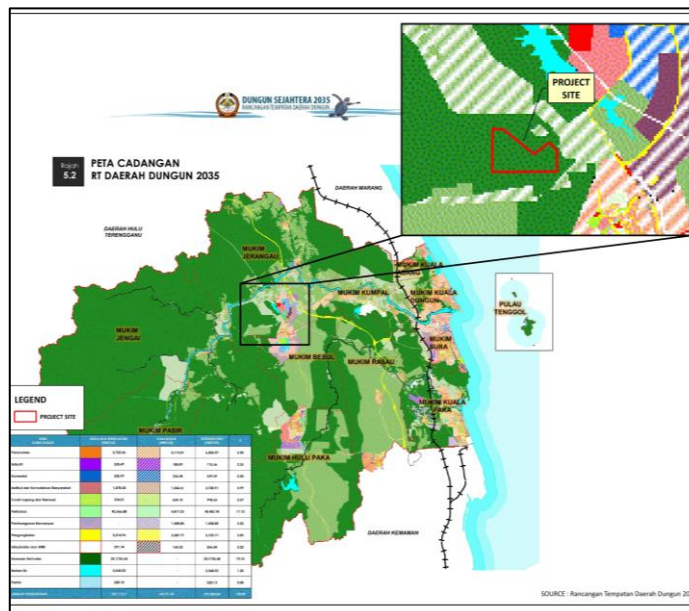
SLOPE ANALYSIS














TOTAL SITE AREA = 80.93 HA			
SLOPE GRADIENT	COLOUR	SITE AREA	
		HECTARE	PERCENTAGE
0° - 5°		4.24	5.24
5° - 15°		9.78	12.08
15° - 25°		22.86	28.25
25° - 35°		23.83	29.45
35° - 60°		20.22	24.98
> 60°		0.00	0.00
		80.93	100.00




SOURCE : Mineral And Geoscience Department Malaysia (IMG), Geological Terrain Mapping (IMG.GP06)

SOURCE : Interferometric Synthetic Aperture Radar (IFSAR), Department Of Survey And Mapping Malaysia (JPEMA)



 **EXISTING ENVIRONMENT** 

 Landuse	<ul style="list-style-type: none"> The current land use of the project site is primarily secondary forest.
 Topography	<ul style="list-style-type: none"> Highest level is 433.0 m & lowest level 21.0 m The terrain in the locality is generally undulating comprising gentle to steep slopes Slope analysis indicates that the study area exhibits a range of terrain gradients, with slopes classified from Class I to Class IV.
 Climate	<ul style="list-style-type: none"> Mean monthly relative humidity ranges from 79.7% and 90.6%, reflecting consistently humid tropical conditions Monthly mean temperature range from 25.1°C and 28.5°C. The mean wind speed recorded from the year 2018 to 2022 is 2.0 m/s, suggesting relatively calm wind conditions in the area The highest recorded gust speed is 20.5 m/s, occurring on 21 February 2020, with a direction of 60° (northeast) Annual raindays range from 85 days (2019) to 184 days (2018).
 Water Intake	<ul style="list-style-type: none"> There are (4) water treatment plants (WTP) available known as WTP Tepus, WTP Dungun, WTP Serdang and WTP Bukit Bauk The nearest water intake is located at Sungai Dungun downstream of Project Site.
 Water Quality	<ul style="list-style-type: none"> Water quality was assessed at 21 stations, measuring parameters such as pH, temperature, DO, COD, BOD₅, TSS, turbidity, NH₃-N, O&G, and E. coli and Heavy metals Water quality varies seasonally across all sampling stations. During the dry season, it falls within Class II to Class III of the Water Quality Index (WQI), while in the wet season, it ranges from Class II to Class IV. Most stations are classified as Class II (Clean) or Class III (Slightly Polluted), with some reaching Class IV (Polluted). Water quality monitoring across various sampling stations has revealed significant heavy metal contamination, particularly in the concentrations of iron (Fe) and manganese (Mn)
 Geology, Hydrogeology & Geochemistry	<ul style="list-style-type: none"> The site primarily consists of dominance shale, quartzite, limestone; intrusion rocks of granite and quartz vein, and metasediment rocks. Exhibits permeability values generally between 3.50 x 10⁻⁸ m/s and 1.44 x 10⁻⁷ m/s The groundwater quality in all monitoring wells scored between 77.62 to 98.86 Samples BB4 and BB5 fall within the acid-generating region, indicating a potential for acid generation. In contrast, the remaining samples are positioned at the axes origin, suggesting they are either non-acid generating or in an uncertain category.
 Ambient Air	<ul style="list-style-type: none"> 4 samples taken at the surrounding project area consisting of parameters PM10 and PM2.5, SO₂, NO₂, O₃, CO). Results recorded for all parameters were within the stipulated limit.
 Noise & Vibration	<ul style="list-style-type: none"> 4 samples were taken at the sensitive receptors surrounding the project area All sampling stations are fall under the permissible limit of designated guideline for noise and vibration.
 Flora	<ul style="list-style-type: none"> A total of 120 species from 44 families of plants were recorded from both line transect and plot enumeration methods.
 Fauna	<ul style="list-style-type: none"> Survey for fauna was carried out and ten (10) camera traps were installed From the 21st of March 2023 to 28th of December 2023 A total of 12 mammals, 33 avifauna and 10 herpetofauna species were recorded.
 Fish	<ul style="list-style-type: none"> No fish found on-site, but Tilapia and Patin from Sungai Dungun and Sungai Paka were tested for food safety. Heavy metal levels in fish were highest for Fe, with overall low toxicity in both rivers.

 Health	<ul style="list-style-type: none"> The proposed mining project could impact public health, so strong environmental and health management plans are needed to protect healthcare resources and improve health outcomes. Surface water requires treatment, but health risks are low; air and noise impacts are minimal with proper mitigation during construction and operation.
 Traffic	<ul style="list-style-type: none"> The proposed site is accessible via Jalan Jerangau – Jabor FT14, which connects Felda Jerangau in the north to Al-Muktafi Billah Shah in the south.
 Socio-economy	<ul style="list-style-type: none"> 181 respondents from 7 settlements were surveyed. 66.0% of the respondents agree with the project, 14.0% disagree and 20.0% no opinion.

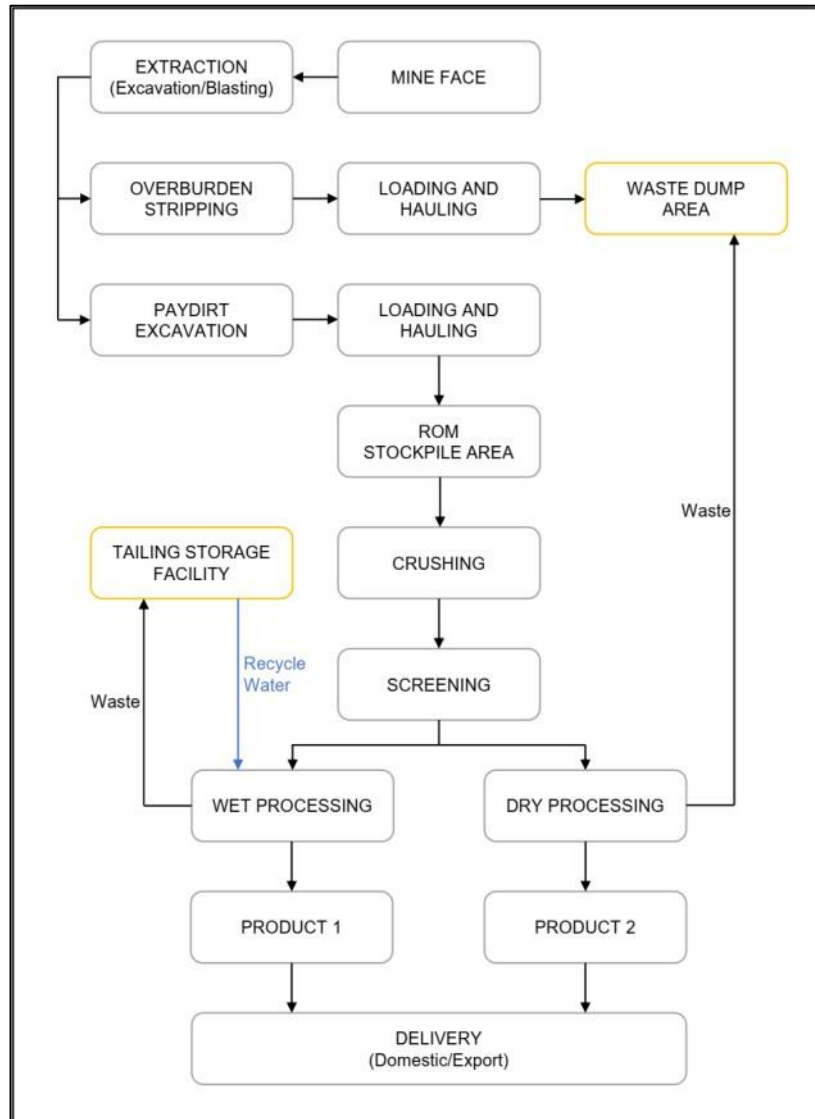


SUMMARY OF IMPACTS AND THEIR MITIGATION MEASURES

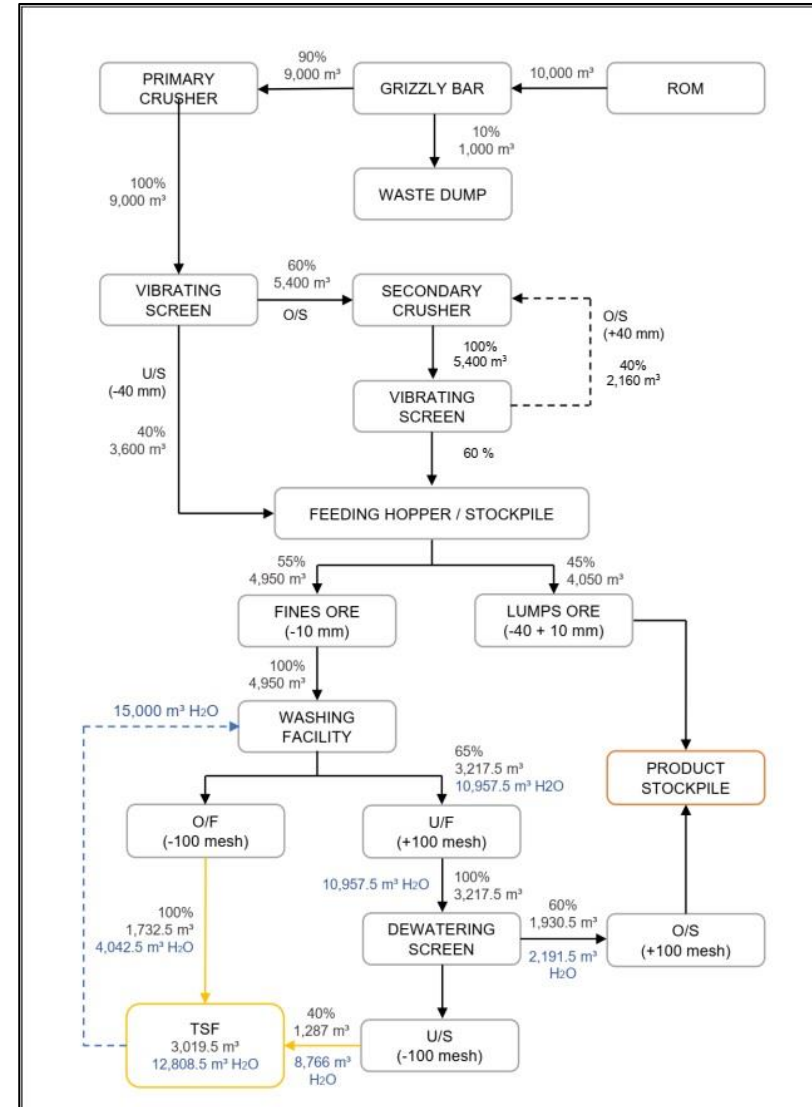
Significant Potential Impacts	Mitigation Measures
<ol style="list-style-type: none"> Soil erosion and sedimentation Loss of topsoil Water pollution and degradation of water quality Groundwater contamination 	<ul style="list-style-type: none"> Schedule of phasing, staging and sequencing Grow cover crop Implementing Land Disturbing Pollution prevention and Mitigation Measures (LD-P2M2) Regular water quality monitoring and buffer zone monitoring
Deteriorating air quality	<ul style="list-style-type: none"> Implant wet suppression Track spraying Wheel-washing facilities
Noise and vibration pollution	<ul style="list-style-type: none"> Low noise equipment shall be used Workers shall be provided with suitable safety apparels Silencers or mufflers on equipment shall be utilized and properly maintained during the operation Scheduled Maintenance for Equipment Limiting Operations During Sensitive Times
Production of waste <ul style="list-style-type: none"> Solid waste Cut vegetation Construction waste Scheduled waste 	<ul style="list-style-type: none"> Open burning shall be prohibited Provide proper waste and storage area Schedules waste must be treated and disposed properly
<ol style="list-style-type: none"> Vegetation loss Human-wildlife conflict 	<ul style="list-style-type: none"> Phasing/Directional clearing Allocation of Riparian Buffer Zone and BMPs Incident reporting Prohibition of wildlife poaching and trapping Signage on prohibition of wildlife hunting Implement Human-wildlife conflict management Progressive rehabilitation
Abandonment or Project Closure	<ul style="list-style-type: none"> The area should be cleaned up, and any amenities that aren't needed should be removed Re-vegetated the area with suitable species



OVERALL ACTIVITIES



FLOWCHART OF MINING OPERATION



ENVIRONMENTAL PERFORMANCE MONITORING (PM)

LD-P2M2 Tools	Parameters	Recommended
Sediment trap/ Basin	Silt Marker	2/3 of the height of silt marker
Check dam	Structure	After 12.5 mm of heavy rainfall
Wash Trough	Structure	Weekly
Temporary or Permanent Waterway Crossing (culvert/bridge)	Structure	After 12.5 mm of heavy rainfall



ENVIRONMENTAL IMPACT MONITORING (IM)

Impact	Guidelines	Frequency
Air Pollution	New Malaysia Ambient Air quality Standard	Quarterly
Noise Level	Schedule of Permissible Sound Levels, Schedule 1	Quarterly
Vibration Level	Second Schedule - Vibration Limits for Human Response and Annoyance from Steady State Continuous Vibrations	Quarterly
Surface Water Quality	National Water Quality Standard (NWQS, IIB)	Monthly
Effluent	Mineral Development (Effluent) Regulations 2016 (Limit 3)	Monthly and After 12.5 mm of heavy rainfall
Groundwater	National Groundwater Quality Index (NGWQI)	Quarterly



ENVIRONMENTAL COMPLIANCE MONITORING (CM)

Monitoring	Parameters	Recommended Limit
Air Quality	<i>PM₁₀</i>	100 µg/m ³
	<i>PM_{2.5}</i>	35 µg/m ³
	<i>SO₂</i>	250 µg/m ³
	<i>NO₂</i>	280 µg/m ³
	<i>O₃</i>	30 mg/m ³
Noise	<i>L_{Aeq}</i>	Day: 60 dBA Night: 55 dBA
Surface Water Quality	<i>TSS</i>	50 mg/L
	<i>Turbidity</i>	50 NTU
	<i>BOD₅</i>	3 mg/L
	<i>COD</i>	25 mg/L
	<i>pH</i>	6-9
	<i>DO</i>	5-7
	<i>NH₃-N</i>	0.3 mg/L
	<i>E.coli</i>	400 count/100ml
	<i>Hg</i>	0.001 mg/L
	<i>Cr</i>	0.05 mg/L
	<i>CN</i>	0.02 mg/L
	<i>WAD CN</i>	0.5 mg/L
	<i>Pb</i>	0.05 mg/L
	<i>Cu</i>	0.02 mg/L
	<i>Ni</i>	0.05 mg/L
	<i>Sn</i>	-
	<i>Zn</i>	5 mg/L
	<i>B</i>	1 mg/L
	<i>Fe</i>	1 mg/L
	<i>Al</i>	-
	<i>Ba</i>	1 mg/L
	<i>Se</i>	0.01 mg/L
<i>As</i>	0.05 mg/L	
<i>Mn</i>	0.1 mg/L	

Monitoring	Parameters	Recommended Limit
Discharge from Silt trap/ Sediment trap	<i>Al</i>	10 mg/L
	<i>As</i>	0.05 mg/L
	<i>Ba</i>	1.0 mg/L
	<i>BOD₅</i>	20 mg/L
	<i>B</i>	1.0 mg/L
	<i>Cd</i>	0.01 mg/L
	<i>Cr (VI)</i>	0.05 mg/L
	<i>Cr (III)</i>	0.20 mg/L
	<i>Free Cyanide</i>	0.1 mg/L
	<i>Fluoride</i>	2.0 mg/L
	<i>Formaldehyde</i>	1.0 mg/L
	<i>Free Chlorine</i>	1.0 mg/L
	<i>Fe</i>	1.0 mg/L
	<i>Pb</i>	0.10 mg/L
	<i>Hg</i>	0.005 mg/L
	<i>Oil and Grease</i>	1.0 mg/L
	<i>pH</i>	6.0 – 9.0
	<i>Phenol</i>	0.001 mg/L
	<i>Se</i>	0.02 mg/L
	<i>Ag</i>	0.1 mg/L
	<i>Sulphide</i>	0.50 mg/L
	<i>Suspended Solids</i>	50 mg/L
	<i>Temperature</i>	40 °C
	<i>Zn</i>	2.0 mg/L
	<i>Cu</i>	0.20 mg/L
	<i>Mn</i>	0.20 mg/L
	<i>Ni</i>	0.20 mg/L
	<i>Sn</i>	0.20 mg/L

Monitoring	Parameters	Recommended Limit
Groundwater	<i>pH</i>	5.5-9.0
	<i>Total Dissolved Solid</i>	1500 mg/L
	<i>Phenol</i>	0.002 mg/L
	<i>Chloride</i>	250 mg/L
	<i>Fluoride</i>	1.5 mg/L
	<i>Sulphate</i>	250 mg/L
	<i>Total Cyanide</i>	0.07 mg/L
	<i>Nitrate as NO₃</i>	10 mg/L
	<i>Manganese</i>	0.2 mg/L
	<i>Iron</i>	1 mg/L
	<i>Copper</i>	1 mg/L
	<i>Zinc</i>	3 mg/L
	<i>Arsenic</i>	0.01 mg/L
	<i>Selenium</i>	0.01 mg/L
	<i>Cadmium</i>	0.003 mg/L
	<i>Lead</i>	0.05 mg/L
	<i>Total Escherichia coli Count</i>	5000 CFU/100 mL