PRE FEASIBILITY REPORT

PROPOSED RAKHA COPPER ORE BENEFICIATION PLANT

THROUGHPUT: 1.5 MTPA

[Area: 36.543 ha]

ROYAM INDUSTRIAL AREA

village Royam, Panchayat Murgaghutu,
Tehsil Musabani, District East Singhbhum,
Jharkhand

MEC/11/S2/Q7N5/FR/2635/R-1 **July, 2022**

PROJECT PROPONENT

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1.0 EXECUTIVE SUMMARY:

Hindustan Copper Limited (HCL), a Public Sector Undertaking under the administrative control of the Ministry of Mines, Government of India, is the only vertically integrated Copper Producing Company in the country, as it operates from the stage of Mining to Beneficiation, Smelting and Refining Copper Metals.

HCL operates Indian Copper Complex (ICC) in East Singhbhum District of Jharkhand. ICC comprises of five underground mines (Surda, Kendadih, Rakha, Musabani & Pathargora; Pathargora and Musabani are closed; Rakha mine had also been closed but is being reopened), a 0.9 Million Tonnes Per Year (MTPA) Copper Beneficiation Plant at Musabani and a 19,200 TPA Copper Smelter-cum-Refinery at Moubhandar on the outskirts of Ghatsila town.

HCL proposes to set up a new 1.5 MTPA Rakha Copper Ore Beneficiation Plant in Royam Industrial Area close to its Rakha Mine. The new Rakha Copper Ore Beneficiation Plant will be a part of ICC. It will process 1.5 Million Tonnes Per Year (MTPA) of copper ore received from HCL's Kendadih Mine (presently operating) and Rakha Mine (being reopened) to produce 0.054 MTPA of beneficiated copper ore (copper concentrate) which will be transported to HCL's Copper Smelter at Moubhandar for Smelting.

The site of the proposed Rakha Copper Ore Beneficiation Plant is spread over 36.543 ha (90.3 acres) and will be installed on a plot, located entirely within Royam Industrial Area. The plot has been acquired by Jharkhand Industrial Area Development Authority (JIADA) – Govt. of Jharkhand entity and allotted to HCL. HCL has taken physical possession of the proposed project site.

Copper Ore contains only ~1% copper. It is necessary to beneficiate the ore to increase the copper content to ~25 – 30% so that it can be smelted to extract the copper. This will be carried out by "Froth Floatation". Primary crushed ore from the mines will be trucked to Rakha Copper Ore Beneficiation Plant. The received ore will be further crushed and ground with water into a slurry. Xanthate and a frother will be added to the slurry which will be mechanically agitated in a series of "Floatation Cells". The agitation will lead to generation of froth. The copper bearing minerals shall adhere to the froth and float to the surface. The froth will be skimmed off, dewatered and filtered through ceramic disc filters to recover the beneficiated copper ore (copper concentrate), which shall be trucked to HCL's Smelter Plant at Moubhandar. The underflow will be tailings. 70% of the tailings shall be sand. The sand shall be settled out and trucked back to HCL's mines to be used as stowing material. The fine tailings (slimes) shall be dewatered to recover excess water for recycling in the process. The dewatered tailings shall be dumped in an engineered tailings pond located within the beneficiation plant premises.

The salient features of the project include:

Proposal	Setting up a Rakha Copper Ore Beneficiation Plant (green field project)
Location of Project	Plot No. R-1, Royam Industrial Area in village Royam, Panchayat Murgaghutu, Tehsil Musabani, District East Singhbhum, Jharkhand
Latitude	22^{o} 38' 04.38" N to 22^{o} 38' 27.30" N
Longitude	86^{o} 22' 56.00" E to 86^{o} 23' 21.70" E
Project Area	36.543 ha (90.3 acres)
Land Ownership of Lease Area	Rakha Copper Ore Beneficiation Plant to be installed on the plot located in Royan Industrial Area and has been allotted to HCL by Jharkhand Industrial Area Development Authority. HCL is in physical possession of the land.
Production capacity	Mineral Throughput: 1.5 MTPA @0.93% Cu (Dry) having 13950 t Cu of Metal in Ore (MIO) Production: 0.054 MTPA beneficiated copper ore (copper concentrate) @24.51% Cu having 13235 t of Metal in Concentrate (MIC)
Process of Ore Beneficiation	Beneficiation of Copper Ore, which will increase copper concentration of ~0.9% in copper ore to ~25% in Beneficiated Copper Concentrates through Froth Floatation Process.
Chemicals Consumption	Xanthate: 22.5 TPA (@15 g/t of ore); Frother: 52.5 m^3 /year (total) (@35 ml/t)
Waste Generation & disposal	Tailing generation: Total 1.446 MTPA tailings, which will be consists of 70% coarse tailing / sand & 30% fine tailing/ slimes • Coarse tailing: 1.0122 MTPA; to be reused in HLC's U/G mines for stowing • Fine tailing: 0.433MTPA; to be kept in engineered tailing pond to be constructed within Plant premises.
Mineral Transport	Ore from HCL's mines to be received in trucks. In return, the same truck will carry coarse tailings to HCL's U/G mine for stowing. Beneficiated copper ore (Copper concentrate) shall be despatched by trucks to HCL's Copper Smelter-cum-Refinery at Moubhandar.
Working Regime	330 working days per year.
Make-up Water Demand	Industrial: 820 m^3/day Potable: 13 m^3/day
Source of water	Industrial: Subarnarekha River Potable: Subarnarekha River
Power Demand	Max. Demand: 5.65 MVA. Annual Electricity Consumption: 28.33 million units
Source of power	Jharkhand Bijli Vitran Nigam Limited (JBVNL)'s new substation at Royam. DG set (1 x 1000 kVA) for emergencies power supply.
Proposed Manpower	206 (6 HCL employees + 200 Contractor's employees)
Infrastructure	It is a greenfield project. The infrastructure will be constructed at site newly.
Proposed Investment	~Rs. 327.85 Crores (on basis of prices prevailing in 3rd quarter of 2021)
CSR Budget	~Rs. 31.99 Lakhs spent during 2020–21 in ICC area

The proposed project will improve the supply of beneficiated copper ore (copper concentrate) to HCL's Moubhandar Copper Smelter which is at present getting beneficiated copper ore brought over long distances from elsewhere. The proposed project will generate both direct and indirect employment. The project will pave the way for peripheral development in a predominantly tribal area.

2.0 INTRODUCTION OF THE PROJECT / BACKGROUND INFORMATION :

2.1 IDENTIFICATION OF PROJECT AND PROJECT PROPONENT:

The proposed project shall be implemented and operated by Hindustan Copper Limited (HCL), Govt. of India Undertaking. HCL is the only primary copper producer from ore in India. HCL's mining operations are spread over three main known copper bearing deposits in Madhya Pradesh, Rajasthan and Jharkhand. HCL is operating four underground mines – two at Indian Copper Complex, Ghatsila (Surda & Kendadih) in East Singhbhum District of Jharkhand and two at Khetri Copper Complex in Jhunjhunu District of Rajasthan (Khetri & Kolihan), and one opencast mine at Malanjkhand Copper Project in Balaghat District of Madhya Pradesh. Malanjkhand Mine is being converted to an underground mine. HCL is also reopening its Rakha underground Copper Mine in East Singhbhum District of Jharkhand.

HCL also operates two Smelters one each at Indian Copper Complex (ICC) at Ghatsila in Jharkhand and another at Khetri Copper Complex (KCC) in Rajasthan with production capacity of 19,200 t per year and 31,000 t per year respectively. Khetri Smelter is non-operational at present. In addition to the Smelters, HCL also runs a 60,000 t/yr capacity Continuous Cast Wire Rod plant at Taloja in Maharashtra and a 50,000 t/yr Secondary Smelting and Refining unit at Jhagadia (Bharuch Dist.), Gujarat.

2.2 BRIEF INFORMATION ABOUT THE PROJECT:

The proposed Rakha Copper Ore Beneficiation Plant shall be a part of the Indian Copper Complex (ICC) of Hindustan Copper Ltd. located in East Singhbhum District of Jharkhand. ICC comprises of five underground mines (of which Rakha mine is being reopened and Pathargora and Musabani are closed), a 0.9 MTPA Copper Ore Beneficiation Plant at Musabani and a 19,200 t/yr Copper Smelter at Moubhandar on the outskirts of Ghatsila town.

The site of the proposed Rakha Copper Ore Beneficiation Plant is spread over 36.543 ha (90.3 acres). The area is located within Royam Industrial Area and has been allotted to HCL by Jharkhand Industrial Area Development Authority vide Order No. LD/AD/SW/00305/2108 dated 12.09.2018 (copy enclosed as Annexure 1). The area has been leased to HCL for a period of 30 years (copy of lease deed enclosed as Annexure 2). HCL has taken physical possession of the proposed project site

(copy of Physical Possession Certificate enclosed as Annexure 3). The area devoid of any Forest Land, habitation or water-body.

Copper ore contains only about 1% copper. It is necessary to increase the copper concentration of the ore to about 25 – 30% so that it can be smelted to extract the copper. This is carried out by "Froth Flotation". The ore is crushed and ground. The grinding is a wet process and the ore is converted into slurry. Xanthate and a "frother" are added to the slurry. Thus the treated slurry is agitated and froth is formed. The copper mineral binds to the froth and floats to the surface. The froth is skimmed off, dewatered and filtered through ceramic disc filters to yield beneficiated copper ore (copper concentrate) suitable for smelting. The tailings produced after recovery of copper minerals from the ore is disposed off to tailings containment structure.

The proposed Rakha Copper Ore Beneficiation Plant will process 1.5 MTPA of copper ore [avg. grade about 0.93% Cu (Dry) having 13950 t Cu of Metal in Ore (MIO)] from HCL's Kendadih and Rakha mines to produce 0.054 MTPA of beneficiated copper ore (copper concentrate) [avg. grade 24.51% Cu having 13235 t of Metal in Concentrate (MIC)] and 1.446 MTPA of tailings (70% coarse tailings & 30% fine tailings). The coarse tailings generated during the beneficiation process (~70% of the total tailings) will be trucked back to HCL's mines for stowing in the underground voids. The fine tailings will be dumped in an engineered tailings pond located within the plant premises. Copper ore, beneficiated copper ore (copper concentrate) and tailings will be transported to and from the beneficiation plant by road through trucks.

2.3 NEED FOR THE PROJECT AND ITS IMPORTANCE TO THE COUNTRY OR REGION :

The major applications of copper are in electrical wires (60%), roofing and plumbing (20%) and industrial machinery (15%). Copper is mostly used as a metal, but when a higher hardness is required it is combined with other elements to make an alloy (5% of total use) such as brass and bronze. A small part of copper supply is used in production of compounds for nutritional supplements, fungicides in agriculture and anti-bio-fouling paints.

India's copper resources are scarce, only about 1% of the world's copper deposits. India has to depend on imports to meet its requirements of copper. The world copper market is extremely volatile and in periods of high demand prices shoot up by leaps and bounds.

HCL is increasing the production of copper ore from its mines by increasing the capacity of the existing Surda Mine, developing a new mine (Kendadih) and reopening Rakha Mine. Although the capacity of the existing copper ore beneficiation plant at Mosabani, Ghatsila is being raised from 0.6 MTPA to 0.9 MTPA, it will still be inadequate to handle to production from all HCL's mines in the region. The new Rakha Copper Ore Beneficiation Plant shall raise the beneficiation capacity commensurate with production of copper ore from all the mines in the region.

The proposed project will contribute towards reducing our dependence on imports. The proposed project will also generate employment for local inhabitants in a predominantly tribal area. HCL will spend part of the profits from the expanded ICC for peripheral development which will benefit local villagers.

2.4 DEMAND AND SUPPLY GAP:

India's copper ore resources are limited. Copper Ore is mined only in Khetri area (in Jhunjhunu District Rajasthan), in Musabani Block of East Singhbhum District of Jharkhand and Malanjkhand in Balaghat District of Madhya Pradesh; Malanjkhand alone produces ~60% of the copper ore mined in India.

India recorded its highest refined copper consumption volume in 2019, with over 0.526 million tonnes (Mt). The following year saw a reduction in consumption volume to about 0.432 Mt. Since 2010, the average annual copper consumption in India has been about 0.5 Mt. The installed copper refining capacity in 2019 was 9,99,500 t/yr. Since copper ore contains only about 1% of the metal, it takes about 100 t of ore to produce 1 t of copper. The ore production in 2018 - 19 was 4.12 Mt ore (i.e. ~41,000 t of copper), whereas the demand of ore for meeting domestic consumption demand of copper was 50 Mt and for meeting the requirements of all refiners was ~100 Mt. Thus India is importing most of its copper ore concentrate to meet demands of domestic refiners.

2.5 IMPORT VS INDIGENOUS PRODUCTION :

Copper refineries are meeting most of their raw material requirements by importing copper ore concentrate from Chile, Indonesia, Australia and Canada.

2.6 EXPORT POSSIBILITIES :

There is no possibility of any export of beneficiated copper ore from India as India imports beneficiated copper ore.

2.7 DOMESTIC / EXPORT MARKET:

Refer clauses 2.4, 2.5 and 2.6 above.

2.8 EMPLOYMENT GENERATION:

The proposed project shall directly employ a total of 206 persons during operation. Of these 6 will be HCL employees and 200 will be contractor's employees. Indirect employment is estimated to be two to three times of direct employment.

3.0 PROJECT DESCRIPTION

3.1 TYPE OF PROJECT INCLUDING INTERLINKED AND INTERDEPENDENT PROJECT

The present project envisages setting up a new 1.5 MTPA capacity Rakha Copper Ore Beneficiation Plant to beneficiate copper ore from Hindustan Copper Ltd.'s nearby mines. The beneficiated ore will be trucked to HCL's Copper Smelter-cum-Refinery at Moubhandar.

HCL's copper smelter at Moubhandar receives beneficiated copper ore (copper concentrate) from Musabani Concentrator Plant. The smelter is grossly underutilized now for want of locally produced beneficiated copper ore (copper concentrate). Of HCL's mines in the area, only Surda and Kendadih are in operation; Rakha mine is being reopened. The capacity of Surda Mine is being raised to 0.9 MTPA. The capacity of Musabani Concentrator Plant is also being raised 0.9 MTPA. Even after expansion, the Musabani Concentrator Plant will not be able to process the entire production from HCL's mines in the area. The new Rakha Copper Ore Beneficiation Plant at Rakha will beneficiates the additional ore produced at HCL's mines in the area (Kendadih & Rakha) and indigenous supply of beneficiated copper ore to the copper smelter at Moubhandar improves.

3.2 LOCATION:

The proposed Rakha Copper Ore Beneficiation Plant is located within Royam Industrial Area (Plot No. R-1) which is being developed by Jharkhand Industrial Area Development Authority (JIADA). The project site is spread over 36.543 ha (90.3 acres) at Royam Industrial Area in village Royam, Panchayat Murgaghutu, Tehsil Musabani, District East Singhbhum, Jharkhand. The site of the new Rakha Copper Ore Beneficiation Plant is located between latitudes 22^{o} 38' 04.38" N to 22^{o} 38' 27.30" N and longitudes 86^{o} 22' 56.00" E to 86^{o} 23' 21.70" E. This area forms part of Survey of India topo-sheet No. 73 J/6. The location of the project site is shown in Fig. 1. Google Earth Image of the project site is given as Fig. 2.

Other industries in the study area of Rakha Plant include Rakha U/G copper mine (adjacent), Kendadih U/G copper mine (~5.6km SE), Surda U/G mine (~9km SE), Jaduguda U/G Uranium mine & Beneficiation Plant (~4km WNW), Bhatin U/G Uranium mine (~6.5km NW), Narwapahar U/G Uranium mine (~12.5km NW), Moubhandar Smelter (~8.0km ESE). Several work-shops have come up in the area for servicing mining machinery and transport vehicles. A CRPF housing complex is located at ~0.5km W. The nearest towns are Rakha (~2.0 km W), Ghatsila (~13 km E) and Musabani (~13 km SE) townships of HCL, Jaduguda (~4.5 km NW) and Galudih (~4.5 km NE).

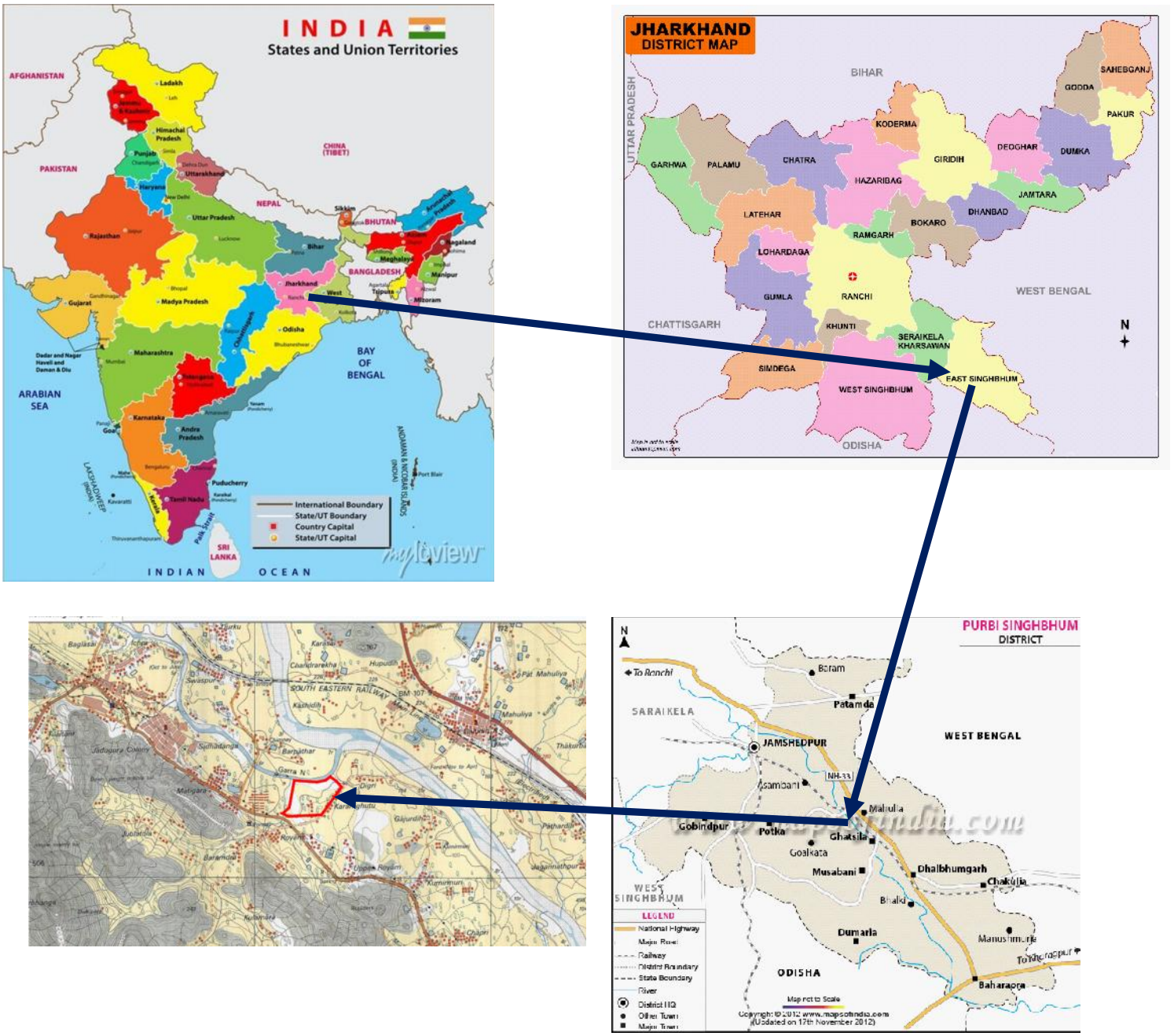


Fig. 1: Location of Proposed Rakha Copper Ore Beneficiation Plant

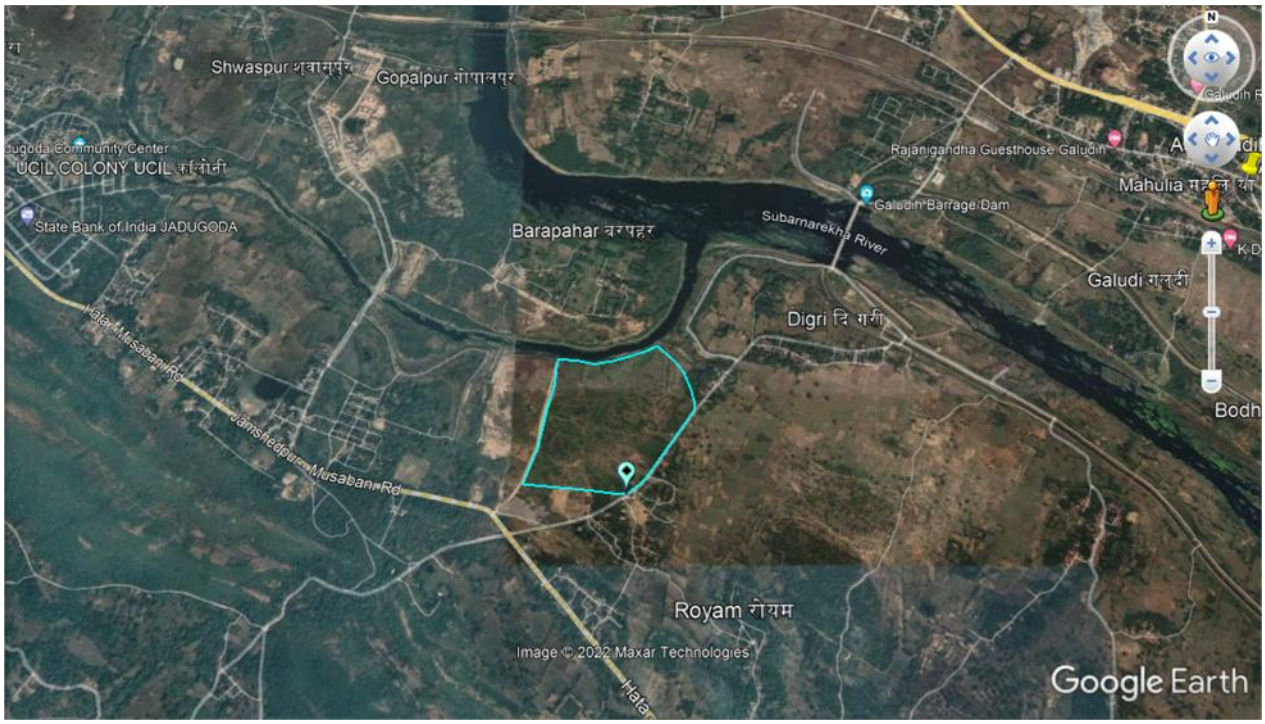


Fig. 2: Google Earth Image of Proposed Rakha Copper Ore Beneficiation Plant

3.3 DETAILS OF ALTERNATE SITE:

HCL learnt that Jharkhand Industrial Area Development Authority (JIADA) – Govt. of Jharkhand entity was planning to set up an Industrial Area close to HCL's Rakha Mine, HCL approached JIADA for allocation of land in the proposed Industrial Area. JIADA allocated Plot No. R-1 in the upcoming Industrial Area to HCL.

3.4 SIZE AND MAGNITUDE OF OPERATION:

The plant shall process 1.5 MTPA of copper ore {0.93% Cu (Dry) having 13950 t Cu of Metal in Ore (MIO)} to produce ~0.054 MTPA of beneficiated copper ore (copper concentrate) {24.51% Cu having 13235 t of Metal in Concentrate (MIC)}.

3.5 PROCESS DESCRIPTION

3.5.1 Process Facilities

The process route has been selected based on batch scale test works conducted by Institute of Minerals and Materials Technology (IMMT) Bhubaneswar and HCL on the ICC complex ore and current industrial practices and beneficiation Plant in the existing HCL plants.

The copper ore beneficiation plant is a grinding & flotation followed by thickening and filtration.

The plant will be fed with the primary crushed ore produced from nearby mines of ICC complex and majority from Rakha, Kendadih and Chapri deposit. Primary crushed ore will undergo secondary and tertiary crushing in cone crushers to produce -10mm crushed ore. The tertiary crushed ore will be fed to Ball mill to produce ground product suitable for optimum flotation results. The ground ore will be fed to flotation cells through conditioning tanks.

The ground ore will be fed initially to rougher cells. The float of the rougher cells will be fed to cleaner cells. The tails will be fed to scavenger. The scavenger concentrate and cleaner tails will be re-circulated to rougher cells whereas scavenger tails will be the tailings. The cleaner cell float will be product. Scavenger tails will be sent to sand-slime separation. Cleaner cell concentrate will be thickened and filtered in press filters to produce concentrate cake will be stored in the product building.

As per base Process Flow Sheet (enclosed at Drawing No. MEC/11/16/Q7GA/01), around 70% of the material will be coarse and will be sent for backfilling in the mines and the balance 30% will be sent to tailings thickener. The slimes after sand slime separation will be deposited in engineered tailing pond.

New Process facilities

The major process facilities considered for copper beneficiation are given below.

General

The mined copper ore shall be processed in the Rakha Copper Ore Beneficiation Plant to produce beneficiated copper ore (copper concentrate). It may be noted that IMMT has tested the ore, however considering existing plant practices, it was decided to prepare the material and water balance flow-sheet considering 0.98% Cu in the mined ore and 0.93% Cu on dry basis which shall be the feed to the Beneficiation plant.

In line with existing practices of HCL Beneficiation Plant, three stage crushing + Ball mill +flotation combination has been considered to obtain beneficiated copper ore (copper concentrate). Ball mill product size has been fixed considering optimum flotation and coarse sand availability.

Process Flow

Ore will be received in dumpers and through ramp will feed to the primary jaw crusher grizzly. In general primary crushed ore will be brought in dumpers, however, a primary Jaw crusher has been envisaged at the beneficiation plant to crush the received material and to handle exigencies. ROM ore (F80, 150-300mm) will be fed through grizzly where the oversize will be reduced by rock breaker and undersize and crushed oversize will be fed to jaw crusher (37"X49") working at 3 inch set size to produce -150 mm. A secondary crusher suitable for handling feed up to 150-200mm has been envisaged.

Primary crushed ore will be stockpiled. The primary crushed material will be reclaimed from stockpile and fed to 278 t/hr scalping screen to separate +40/20mm ore. The separated and secondary crushed ore will be fed to another 278 t/hr scalping screen working in close circuit with tertiary cone crusher to separate +12mm ore. The tertiary crushed -10mm ore will then be fed to grinding circuits to produce 80%, -100 micron material which is the recommended size for the flotation process.

The flotation circuit consists of three stages, namely rougher, scavenger, and cleaner cells.

The overflow slurry from the hydro-cyclone is conditioned in conditioning tanks with a collector [usually sodium isopropyl xanthate (SIPX)] and frother [usually pine oil]. The SIPX could be adsorbed on the surface of copper sulfide minerals (chalcopyrite) and subsequently recovered to the froth product.

Simultaneously, some gangue minerals in the froth products, requires further cleaning to improve the copper grade. The cleaner concentrate will be dewatered through a thickener and a press filters to generate the final beneficiated ore. The rougher tailing will be treated in scavenging cells to recover residual copper present in the tailing. This will improve the overall copper recovery of the plant. The scavenger cells' froth product will be fed to the rougher cells, whereas the non-froth product will be transferred to the tailing pond. The flow-sheet enriches product grade to 24-25% Copper with an overall recovery of around ~94.86%.

The scavenger tails will be subjected to sand-slime separation in hydro-cyclones. The sand will be sent to mines for backfilling. The dumpers bringing the feed to the beneficiation will carry the separated tails while returning.

The process flow sheet has been illustrated in Fig. 3a and Fig. 3b.

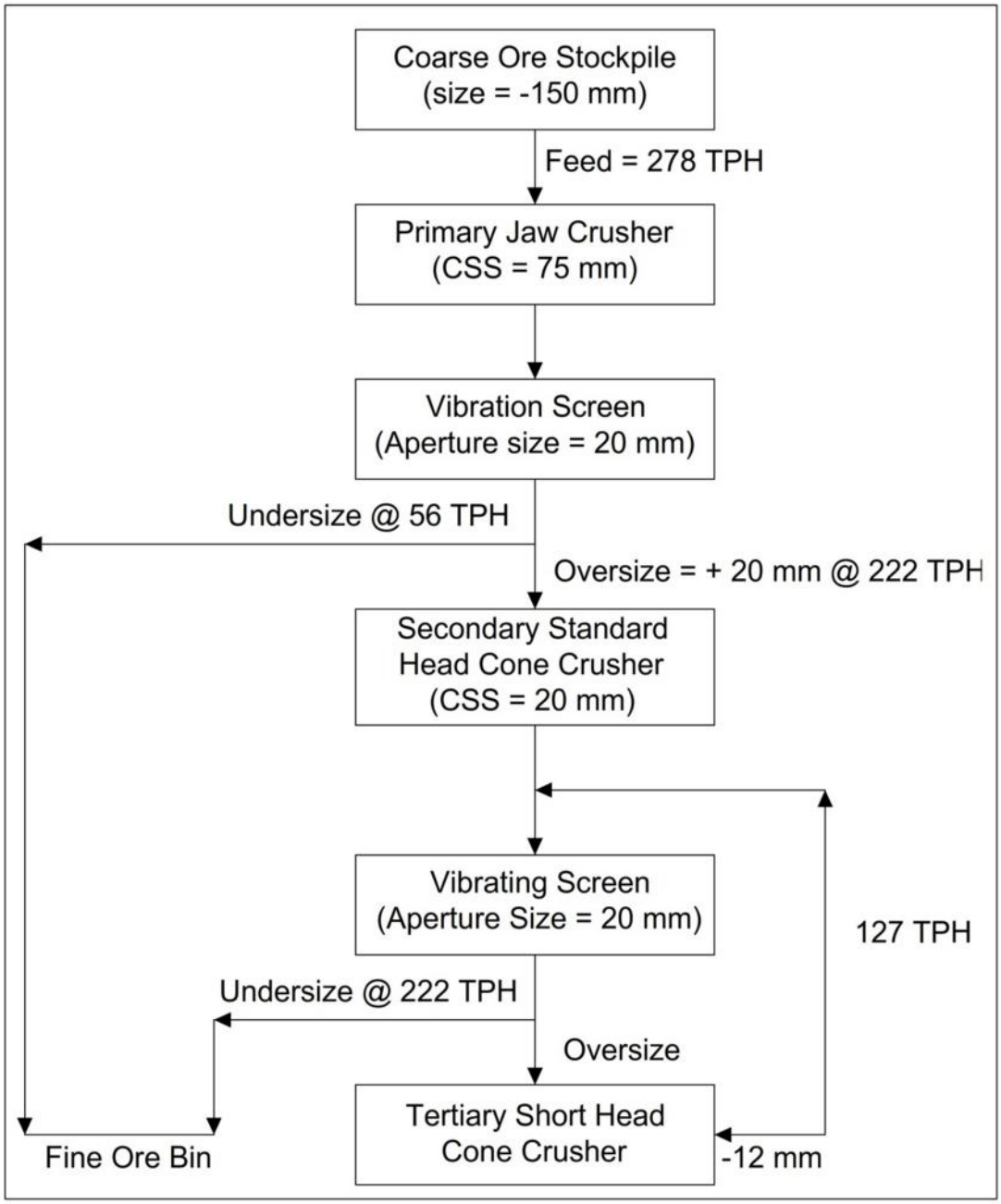


Fig. 3a: Flow Sheet Showing Crushing Circuit

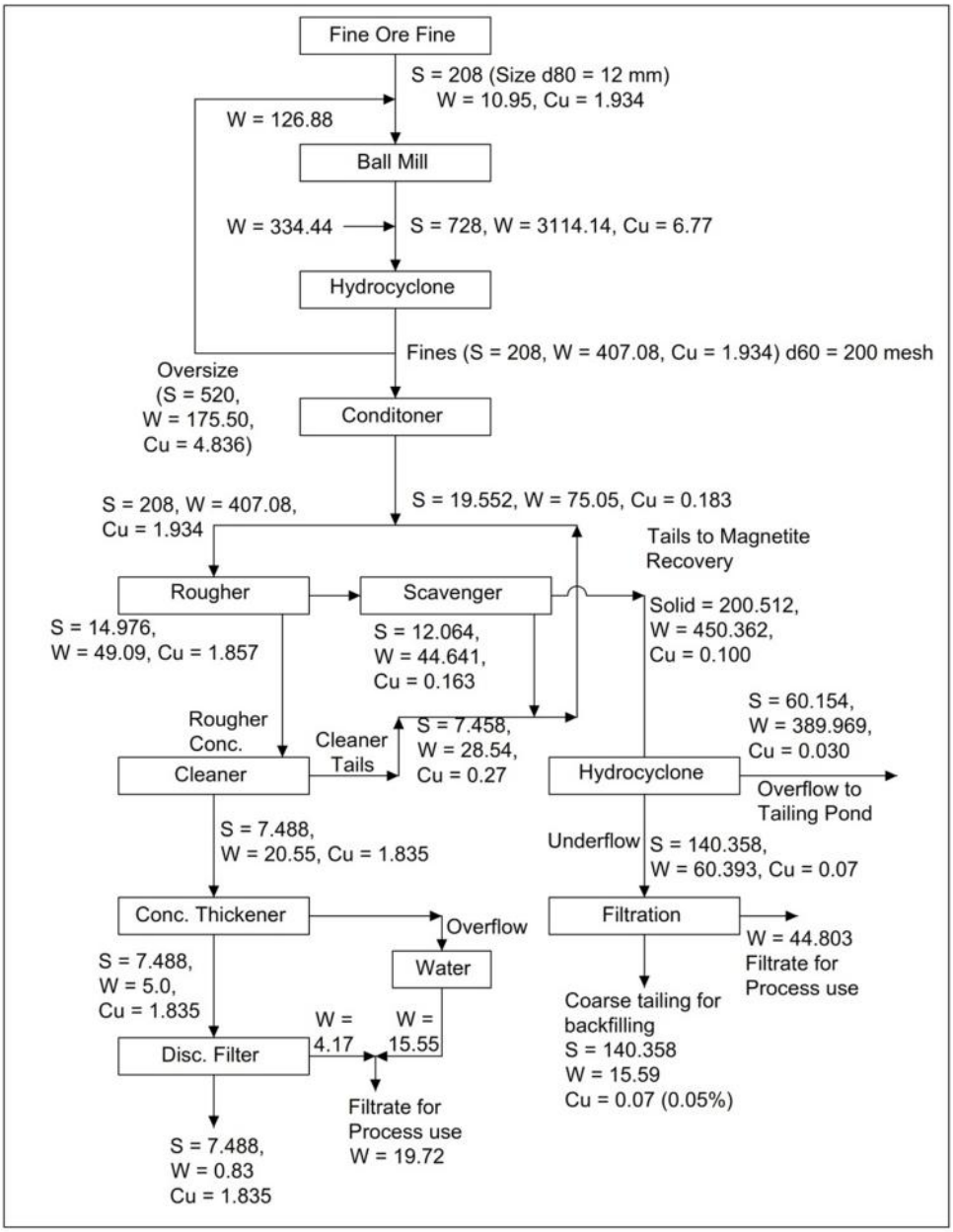


Fig. 3b: Flow Sheet Showing Beneficiation Circuit

Primary Crushing (Jaw Crusher)

The mined copper ore from nearby mines will be received and will be fed to jaw crusher for primary crushing to produce -150 mm material. A static grizzly Rails (150mm X 1500mm) has been considered above jaw crusher. A vibrating grizzly has been considered before jaw crusher to reduce the load on the primary crusher and to minimize the potential for choking due to wet, sticky ore and

separate the fines. Oversize of the Grizzly will be further crushed by rock breaker and the undersize will be fed to Jaw Crusher. The primary crushing plant will operate for 300 days per annum in three shifts.

The R.O.M. ore having size of (-) 300mm will be unloaded by dumpers in the feed hopper above jaw crusher through ramps and static grizzly.

The crushed material from the jaw crusher and the undersize material from the vibrating grizzly will be conveyed by a belt conveyor and will be discharged and stored in stockpile or will be directly fed to the secondary and tertiary cone crushers.

Necessary weightometer to weigh the plant feed, metal detector, tramp remover, conveyors have been considered for smooth operation of the primary jaw crushing plant.

Necessary handling, hoisting & dust extraction facilities have been considered. The major parameters of the primary crushing plant are as follows:

- Annual Feed to Jaw Crusher : 1,500,000 t/yr
- Annual days : 330
- Availability hours per day : 20
- Effective working hours per day : 18
- Rated capacity : 278 t/hr
- Feed sizing (80% passing) : 150 – 200 mm (max. 500 mm)
- Output sizing (80% passing) : 100 – 150 mm

From the crushing plant, ore will be stockpiled in a 15000 t stockpile by means of conveyor.

<u>15000 t feed Stockpile & reclamation</u>

Primary crushed material from the jaw crusher will be fed to belt conveyor BC-01. Conveyor BC-01 will convey the material up to junction house JH-01 where the material will be transferred to a tripper conveyor BC-02 installed in the Primary covered storage shed.

Tripper Conveyor, BC-02 has been envisaged for stacking of primary crushed copper ore inside the covered storage shed. The Stock Pile capacity shall be of 15000 t inside the storage shed. The size of storage shed will be 100 m (L) x 30 m (W) x 17 m (H) and size of pile is expected to be nearly 90 m (L) x 20m (W) x 8m (H). Two nos. retaining walls (height 1.5m, length 90m) will be provided along the length of storage shed to protect ore for falling on to conveyor structures.

Two numbers reclaiming belt conveyors BC-03 and BC-04 shall be installed at the ground level on either side inside of the shed running along the length of the shed for further transportation of the copper ore. Pay-loader shall be used for reclaiming of stacked material and transferring the same to the reclaiming belt conveyors. Three numbers ground hoppers shall be installed above each belt conveyor for receiving material from the pay loader. The rated capacity of BC-3 & BC-4 shall be 278 tph. Both the belt conveyors BC-03 & BC-04 shall transport copper ore up to junction house JH-02 & JH-02A and fed to conveyor BC-05 which shall further transport the material to Fine Crushing Building.

Secondary & Tertiary Crushing, Screen House & Silo

278 t/hr one working and one stand by line of Secondary & tertiary crushing have been envisaged to reduce the primary crushed 100 – 150 mm ore to -10 mm suitable for ball milling in line with existing HCL beneficiation.

The crushing plant feed conveyor will discharge to a scalping screen equipped with 40 / 20 mm square opening. The screen will separate fines and coarse to minimize crusher downtime and to take of sticky ore in the crusher cavity. The oversize will be discharged to the secondary crusher and the undersize will fall, through a chute, on to the sizing screen feed conveyor.

The secondary crushers will be standard cone type of size ~5.5 ft / newer generation cone crushers having extra coarse chamber suitable to take coarse feed up to 200mm. The crusher with closed side setting at 20 mm will produce a discharge top size of 60 mm. The crusher discharge along with the bypassed fines from scalping screen will be transported by a conveyor and will be fed to the sizing screens in the screen house. Another stand by line of same crusher has been envisaged to maximize the availability of the crushing line.

The screen house will comprise of two sizing screens each of 2.1 m x 6.4 m and will comprise two single deck screens equipped with 10 mm square opening screen decks. Normally, both the screens will operate simultaneously except in case of maintenance of a screen when the other screen can be operated on partial load corresponding to approximately 80 – 85% of circuit design capacity.

Screen oversize at plus 12 mm will be recycled on a conveyor system comprising two conveyors to a 40 tonne capacity tertiary crusher surge bin with two outlets. Tertiary crushing will comprise two >4ft cone crushers / newer generation crushers, working at 12 mm closed side setting, will discharge minus 25 mm product. Each tertiary crusher will receive controlled feed from surge bin by means of respective vibratory feeder and belt feeder, and discharge on to the control screen feed conveyor.

Similar line of tertiary crusher has been envisaged to maximize the crushing plant availability and will be installed matching shaft commissioning.

The tertiary crushed -10 mm ore will be sent to six bins each of 400 t. Material from the silo will be reclaimed by conveyor to feed to three working grinding mill lines The standby secondary & tertiary lines will provide higher availability of the secondary and tertiary crushing system. Six bins each of 200-250 m^3 have been considered to provide ore to each Mill on continuous & sustained basis.

Electro magnet before secondary crusher feed and Metal detector for non-magnetic material is also envisaged before secondary crusher to protect the crusher.

Necessary handling and hoisting system in secondary and tertiary crusher will be provided.

Two Electric Overhead Traveling (EOT) cranes each of 10t lifting capacity will be provided.

Necessary dust suppression system will also be provided to keep the dust level lower than allowed statutory norms.

Grinding Mills

Three working lines of Ball Mill of capacity 69.33 t/hr has been considered to grind –12mm of crushed ore to 80% -100 micron working in close circuit @250% re-circulating load to produce ground ore suitable for optimum flotation.

The ball mill product will be classified in 26” hydro-cyclone to produce product as specified above. Hydro-cyclone under flow will be re-circulated to ball mill for further grinding whereas hydro-cyclone overflow will be sent to conditioning tanks in flotation area by gravity through launders.

The weightometer on the mill feed conveyor will actuate the vibratory feeder to control the feed to a predetermined tonnage rate manually set in the mill control panel. This predetermined tonnage rate will also control a proportional mill water addition to control the primary mill discharge density. Controlled water will be added to the cyclone feed sump, level switch actuating the controller, to maintain a constant level in the sump Density-meter, flow-meter, level switch etc. along with facility for inter-changeability of instrument control terminals will be provided.

Floatation

As per test results and existing plant practices of HCL, copper ore beneficiation by flotation have been envisaged. The wet feed copper ore contains 0.98% cu. The flotation will float Cu concentrate and rejects will be obtained as sink after doing flotation in series of flotation cells.

Flotation of 208.33 t/hr (approximate) has been considered using sodium isopropyl Xanthate (SIPX) as collector and Somfroth as frother @ 30-35 % solids. Ground and classified product will be sent by gravity to flotation conditioning tanks where it will be conditioned for around 3-5 minutes with reagents and then fed to flotation cells.

Rougher, scavenger and cleaner flotation cells have been envisaged as per available details. Four no of rougher cells of 30 m3, 2 (two) nos. of scavenger cells of 30 m^3 and 2 (two) nos. of cleaner cells of 5 m^3 volume each have been envisaged for flotation circuit. These cells have been considered based on available details however the same will be firmed up after further detail test works.
Required instrumentation has been envisaged to meet the operational standards and efficiency parameters.

Beneficiated Ore (Copper Concentrate) and Tails Thickener

Flotation product will be thickened in 10 m dia high rate thickener for water recovery. The feed to the thickener will be at approximately 25 % solid (w/w) whereas the under flow will contain around 52-60% solid (w/w) in the underflow.

Sand-slime separation plant hydro-cyclone o/f will be thickened in 25 m dia hi rate thickener for water recovery.

The feed to the thickener will be at approximately 15% whereas the under flow will contain around 50% solids in the underflow. The underflow from the tailing thickener will be extracted by one of the two variable speed pumps and delivered to tailing pumps for slurry mix tanks to pumping to tailing pond while the recovered water will be recycled back.

Sand Slime Separation plant

The slurry will be pumped to set of 10“ hydro cyclones. The coarse underflow which will be used for sand backfilling in the underground mines and will be collected in underflow chute and diverted by gravity from an adequate height to a self-draining conical sand pad. The drained water will be collected in a sump and pumped back to the tailing thickener. The cyclones overflow will gravitate to tailing thickener. Provisions will be made for bypassing sand slime separation plant during non-

requirement of its operation to deliver the neutralized slurry either to tailing thickener or directly to the sump of slurry mix tanks in tailing disposal pumps depending on the slurry consistency.

3.5.2 Tailings Pond

After beneficiation process, there will be generation of coarse tailings (70% of the total tails) & fine tailings (30% of the total tails). Coarse tailings (70% of the total tailings) will be sand and the same will be used for stowing in HCL's nearby underground mines. Rest 30% of the total tails will pass from the hydro cyclones in the form of slurry, where overflow i.e. slimes will be pumped to tails thickener to thicken the slurry from 30% to 50% and to recover the water which will be re circulated/ used as a process water. The tails thickener underflow (fine tailings) will be deposed in engineered tailing pond.

For 1.5 MTPA capacity Beneficiation Plant annual generation of 0.433 MTPA (0.294 Mm^3) of dry tailings from the Beneficiation Plant has been considered.

A HT transmission line crosses through the Plant area which divides the layout of Beneficiation Plant in two parts. The tailing pond will be located on the south-western side on of this HT transmission line and the Beneficiation plant unit and other facilities shall be located on the other north-eastern side of HT transmission line. The Garra Nala is situated on the northern side of the proposed tailing pond.

Existing Ground Levels (EGL), in the proposed tailing pond site, varies to a large extent. As per the contour survey drawing of the proposed site, levels vary from as low as 91 m RL to as high as 119m RL. In fact, a definite trend of downward slope has been noted from 119m RL to all around direction, within the proposed pond area.

Considering the wide variation in ground terrain and the Geotechnical properties & Chemical properties of tested slurry revealed that the tailing material is not suitable for construction of tailing pond with dykes/ dams of greater heights and the targeted life envisaged in technological chapter, construction of Earthen Dam all around the tailing pond has been found as optimal solution to accommodate disposal of approximate tailings.

Moreover, considering the available detail on lithological logging of MCRB-26 with HCL, the Hard Weathered Rock encounters at a depth of 7m below Existing Ground Level (EGL) and the varying terrain at the proposed site calls for excavation of considerable volume of earth, quantity of which is more than sufficient for Earthen dam construction. It is assumed that the soil excavated at the site will have all relevant engineering properties suitable for Earthen Dam construction.

The tailing pond will be constructed in two phases i.e. Phase-1 and Phase-2. In Phase-1, tailing pond will be constructed upto 112 mRL and in Phase-2 it will be constructed beyond 112 mRL.

In Phase-1, top level of Earthen Dam all around the tailing pond shall be kept at 112m RL which accounts for available approximate volume of 2.532 Mm^3 considering freeboard of 1.5 m. Afterwards in Phase-2, construction of dam will be carried out by raising height of the dam of in six phases of 6m vertical height intervals. This will give additional capacity to accommodate the tailings up to approximate 3.271 Mm^3. Therefore, the total approx. volume for disposal of tailings will be 5.80 Mm^3.

Key Features of Earthen Tailing Dam

- The Earthen dam construction will be all around the tailing pond area, from low line area of Garra Nala in the North to the high altitude of the concrete road south of the tailing pond
- For the base of the earthen dam, the soil at the pond site proposed to be excavated up to a depth of approximately 7 m from the existing ground level as per terrain where hard weathered rock is likely to be encountered in such a profile that it will provide the base width for the earthen dam to be constructed by Downstream Method with Earthwork above exiting ground as per terrain and up to 112mRL. Depth is Indicative, however, hard work strata to be exposed. This will ensure the safety of the Dam from liquefaction of underneath soil and shear collapses.
- Hard weathered rock for the base of earthen dam is a must to withstand the weight of the disposed tailings considering the bearing capacity of soil approximately 50 tons/m^2 at base level.
- Gradually Complete site of the Pond shall be excavated up to Hard weathered rock level to with stand the weight of the disposed tailings above 112m RL while considering the Earthen Dam Profile.
- Assuming the excavated earth from the site meets the engineering properties required for dam construction will itself be used for construction but also, excess earth will be used for earth work filling to achieve terrace level of the plant area.
- The Construction of the earthen dam including excavation will be done in phases in Downstream Method to meet the requirement of earth for progressive construction of Dam and topping material.
- The construction of the earthen dam shall start from the north side (the low line area near Garra Nala) and shall end at the south side (the high altitude area near concrete road).
- The Slope of the Earthen Dam will be as per the design engineering requirement but not less than in 1V : 2.5H and will be raised at interval of 6m of vertical height.
- At every raised height, 7m wide bench shall be provided with compacted layers of GSB and WBM on top for Earth movers, Truck Trippers, Dumpers etc.
- Earthen approach Ramp of 7m width with adequate slope, Compacted layers of GSB and WBM

on top shall be provided for vehicle movement from one bench to another. Slope shall be as per DGMS guidelines for mines.

- ❖ At the top level of Dam a minimum 7m wide platform / bench shall be maintained and will be final surface level of the Earthen Dam.
- ❖ The inside surface of the earthen dam and surface of the pond shall be lined with EPDM rubber sheet which will come in direct contact with the tailings, to avoid contamination of Water table underneath with waste water from slurry.
- ❖ A rock Toe drain system will be provided to drain the excess water & rain water outside all around the downstream slope of earthen dam to facilitate drainage of excess pore pressure without affecting the d/s slope and will finally discharge the water to Garra Nala. Proper slope protection measures are also suggested to protect the slopes from erosion.

Key Features of Tailing Dam being constructed with disposed off tailings.

- ➢ After 112 m RL with a 7m wide provisioned bench on Earthen dam, the disposed tailings/ earth as per design engineering and slope stability analysis will be used for construction of dam at an interval of 6m of vertical and having suitable slope subject to slope stability analysis.
- ➢ The compaction and stability of the slope of dam with tailings will be checked and ensured by HCL.
- ➢ At every raised height of 6m, a 7m wide bench shall be provided with compacted layers of GSB and WBM on top for Earth movers, Truck Trippers, Dumpers etc.
- ➢ Approach Ramp of 7m width with adequate slope, Compacted layers of GSB and WBM on top shall be provided for vehicle movement from one bench to another. Slope shall be as per DGMS guidelines for mines.
- ➢ Outside surface of each raised height of the dam from disposed tailings shall include minimum of 2.5 wide layer of earthen fill/ jacket to provide stability to the slope.
- ➢ The inside surface of the tailing dam and surface of the pond shall be lined with EPDM rubber sheet of 1.5mm thickness at every raise which will come in direct contact with the tailings, to avoid contamination of Water table underneath from waste water from slurry.

Key Features of Phase-I Construction of Earthen Tailing Dam up to 105mRL.

- For construction of earthen dam up to 105mRL, required earth from the pond site inside the Dam will be excavated up to approximate depth of 7m from EGL to achieve hard weathered rock. Depth is indicative however, hard rock strata to be exposed.
- While excavation base preparation for the dam height of 112mRL shall be done simultaneously.
- This construction of the dam will be as per the terrain of the site such that the construction will take place on North, East and West side of the pond where the existing ground levels are lower than 105mRL. Whereas, coming to the south side of the site the existing ground level of 105mRL

and above will naturally act as a wall of the Dam for the Phase-I.

- The same approx. 7 m deep pit/ pond will be lined with EPDM rubber sheet of 1.5 mm thickness at base and wall surface.
- Finally, this pit will be filled with tailings for the Phase-I and will provide a tailing storage approximate capacity of 5,92,000 m^3.
- Gradually, the whole tailing pond site inside of earthen dam will be excavated and lined with EPDM rubber sheet and the same excavated earth will be used to raise the height of dam above 105 mRL in Downstream method.
- With Phase-I Earthen Dam up to 105 mRL, the approximate capacity of the dam will provide additional tailing disposal capacity of 12,00,000 m^3.
- However for the balance Disposal of the tailings from the total capacity of disposable tailing quantity, with simultaneous activity of Disposal of tailings in to the pond with EPDM lining, the raising of earthen dam will go up to 112mRL.

At the end of the life of the tailing pond, the area will be fenced and the bund height will be raised. A layer of rocks will be spread over the final tailing surface and over the rock layer 1m top soil will be spread. The rock layer will increase the stability for steeper slopes and prevent capillary movement of water from tailings to the soil layer. Subsequently non-edible plants (shrubs and herbs) will be planted in the soil layer. The rock layer between soil and tailings will prevent tailing constituents getting taken up by the plants grown over the soil layer.

Further periodic monitoring of ground water quality in nearby villages will be carried out in the upstream and downstream of the tailing pond area. Surface plan showing Beneficiation Plant alongwith tailing pond have been shown in Fig. 4 and in Drawing No. MEC/11/14/Q7GA/02 (attached at end of report). Cross-sections of tailing pond has been shown in Fig. 5.

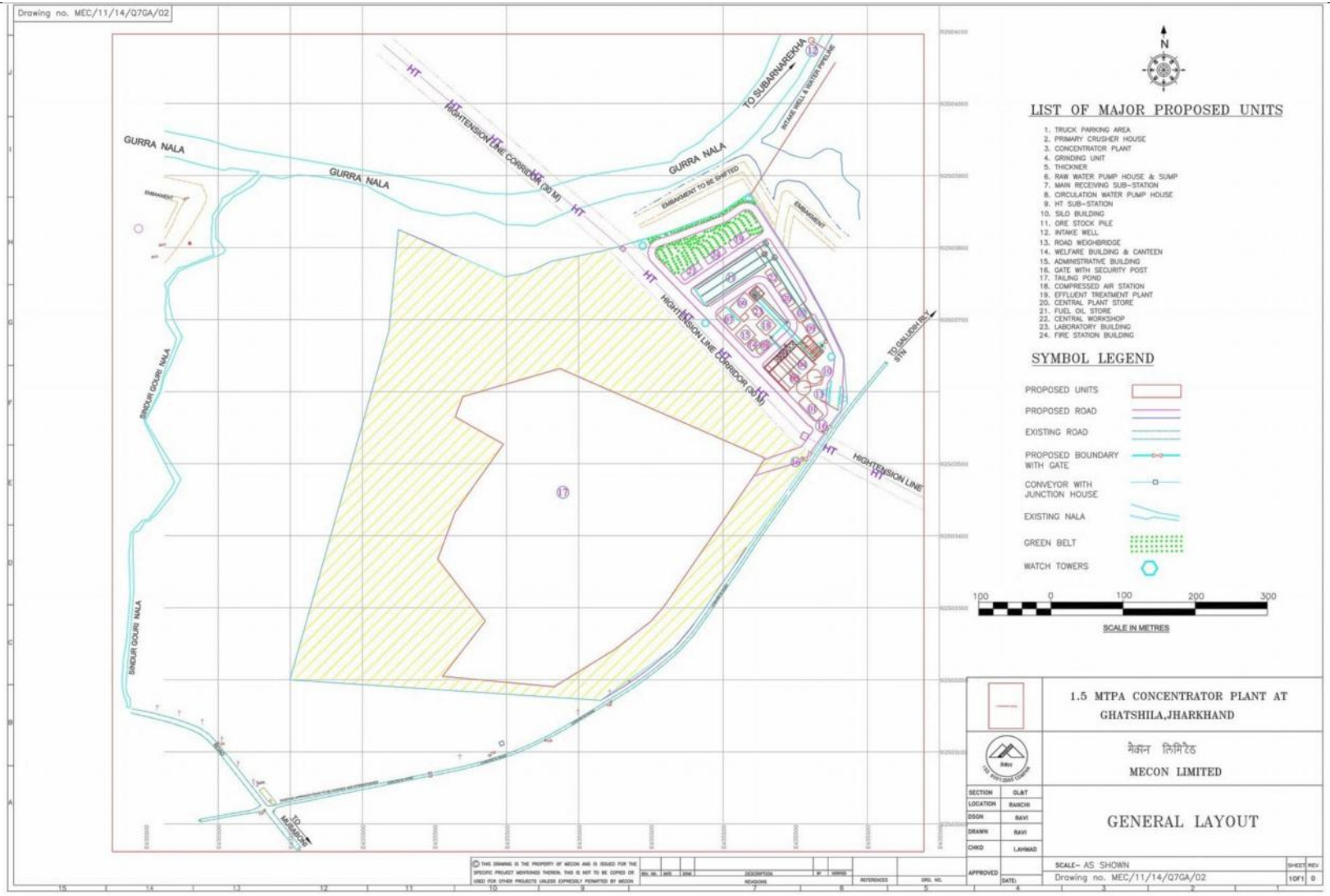


Fig. 4: Layout plan of Rakha Copper Ore Beneficiation Plant

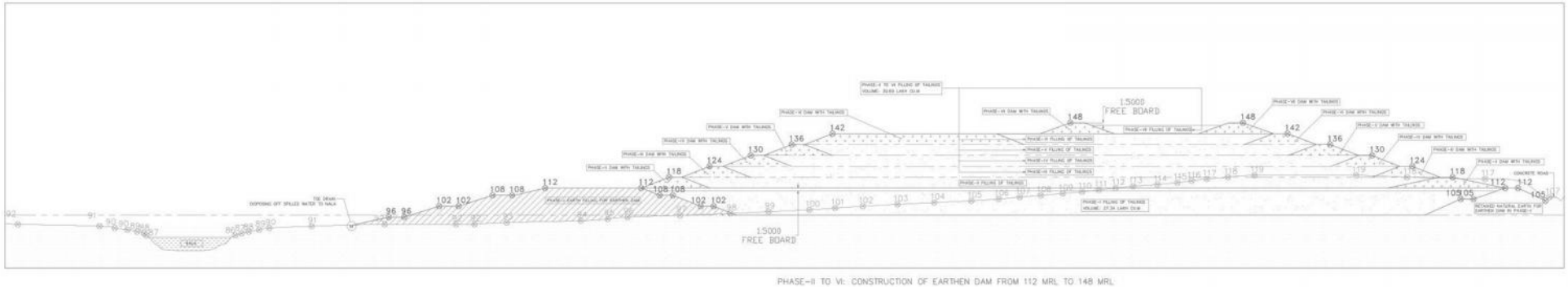


Fig. 5: Cross Section of Tailing Pond of Rakha Copper Ore Beneficiation Plant

3.6 RAW MATERIALS

The only raw materials required for the project are xanthate and a frother. Some lime shall also be required from maintaining the pH of the ore slurry.

The estimated requirements of xanthate and the frother are:

- Xanthate: 22.5 TPA (@15 g/t of ore)
- Frother: 52.5 m^3/yr (@35 ml/t of ore)

Xanthate, frother and lime shall be transported to the plant site by road truckers and stored in dedicated places prior to use.

3.7 RESOURCE OPTIMIZATION / RECYCLING AND RESOURCE

About 44.8 m^3/hr of water shall be recovered from dewatering of fine tailings. 19.72 m^3/hr. of water will be recovered from filtration of beneficiated copper ore. The water thus recovered will be recycled to the process.

70% of the tailings generated at the plant will be trucked back to the mines for use as stowing material in the underground voids. The balance 30% will be dumped in engineered tailings pond within the project site. In future it will be explored whether at least some of the accumulated fine tailings can be used as stowing material. It is expected that some waste water will be generated from the plant's canteen. This water will be channelized to the plant's green belt.

3.8 SITE SERVICES

3.8.1 Water Requirement:

Industrial make-up water requirement for the plant has been estimated to be 820 m^3/day considering water consumption rate of 0.66 m^3/t of ore and 330 days working annually. About 13 m^3/day drinking water (@ 65 litres per day for 200 persons) will also be required. Water for industrial as well as potable purposes will be drawn from Subarnarekha River.

3.8.2 Power Requirement

The power demand of the proposed project is estimated to be 5.65 MVA; Annual electricity consumption – 28.33 million kWh, will be drawn from the grid (Royam substation of Jharkhand Bijli Vitaran Nigam Ltd., which is being built ~ 2km from the project site). Power will be received at 33 kV from the grid, stepped down to the appropriate voltages for distribution to various consumers in the plant. Power supply line will be installed. For emergency power, 1 no. diesel generating set of 1000 kVA shall be installed.

3.8.3 Amenities

The plant will have locker-rooms, canteen, toilets & washing facilities for workers. There will also be a First Aid Centre. For medical emergencies, help will be summoned from HCL's nearby Rakha Mine or from Kendadih Mine or even from HCL's Moubhandar Works Hospital.

HCL has a township at Moubhandar for its staff and workers which has all amenities. Amenities are also available at the nearby towns – Rakha, Jaduguda, Galudih, Ghatsila and Musabani. HCL staff employed at the beneficiation plant will be housed in HCL's Moubhandar township whereas contractor's employees will stay in nearby towns and villages.

3.9 WASTES

The proposed Rakha Copper Ore Beneficiation Plant will process 1.5 MTPA of ore to produce 0.054 MTPA of beneficiated copper ore (copper concentrate) and 1.446 MTPA of tailings will be generated.

It is expected that 70% of the tailings (1.012 MTPA) will be sand and the balance will be slimes. The sand will be trucked to HCL's nearby underground mines and used for stowing in the underground voids.

Rest 30% of the total tails will pass from the hydro cyclones in the form of slurry, where overflow i.e. slimes will be pumped to tails thickener to thickened the slurry from 30% to 50% and to recover the water which will be re circulated / used as a process water. The tails thickener underflow will be pumped to tailing pond area for disposal in engineered tailing pond.

4.0 SITE ANALYSIS

4.1 CONNECTIVITY

The project site can be approached from the all-weather road linking Jamshedpur with Musabani via Jaduguda. Just after crossing Rakha village, a road branches off from the Jamshedpur – Musabani Road and goes northwards crossing the Subarnarekha River over Galudih Barrage and leads to NH-18 after passing through Galudih town. The proposed plant site can be approached through this road. The nearest National Highway is NH-18, which is at an aerial distance of ~2.5 km from the project site and can be approached via Galudih.

The nearest railway station is Galudih on SE Railway's main BG Howrah – Mumbai line. Galudih Rly. Station is at an aerial distance of ~2.5 km NE of the project site.

There is an abandoned WWII airstrip at Dhalbhumgarh ~22 km SE of the project site. The nearest functional airport is Birsa Munda Airport, Ranchi which is about 132 km NW (aerial distance) of the project site.

4.2 LAND FORM, LAND USE, OWNERSHIP

The proposed Rakha Copper Ore Beneficiation Plant wll be located in Royam Industrial Estate which is being developed by Jharkhand Industrial Area Development Authority (JIADA).

The land earmarked for the proposed project (Plot No. R-1 of the Industrial Estate) is declared industrial area. The land is devoid of any Forest Land, human habitation or water body.

JIADA has acquired the land and allotted it to HCL. The HCL has taken physical possession of the land (see Annexure 3-attached at end of report).

4.3 TOPOGRAPHY

The proposed project site is more or less flat with slight undulations and sloping gently towards the north. The site lies between altitude of ~119 m above mean sea level (AMSL) on the south-eastern corner and ~91 m AMSL on the northern boundary. A perennial stream the Garra Nala flows along the northern boundary to join the Subarnarekha River. The River is a major perennial river and is ~0.75 km north of site.

4.4 LAND USE

The project site is located within Royam Industrial Estate which is being developed by the Govt. of Jharkhand (through Jharkhand Industrial Area Development Authority [JIADA]). JIADA has acquired the land and allotted the same to HCL and other entrepreneurs. The land is non-forest land.

4.5 EXISTING INFRASTRUCTURE

The proposed project is a green-field project so other than the approach road from the Jamshedpur-Musabani road, there is no infrastructure at the site. However, HCL has several installations in the area including well developed townships for housing operational staff.

4.6 SOIL CLASSIFICATION

As per the District Planning Map of Purbi Singhbhum, published by National Atlas and Thematic Mapping Organisation, Kolkata the soil of the area is located is classified as “Red Loamy Soil”.

4.7 CLIMATE

The study area lies in tropical region where climate is characterized by very hot summers and cool winters. The nearest observatory of India Meteorological Department (IMD) is at Kadma Colony in Jamshedpur, about 40 km away.

Summer is typically from mid-March to mid-June when temperature ranges from a maximum of 40.1°C during day time to a minimum of 18.6°C at night. Winter is from December to February when the maximum temperature during day goes up to 29.4°C and minimum temperature at night becomes 11.6°C. The average annual rainfall is 1321 mm. The South-west monsoon lasts from mid-June to mid-September and the area gets more than 80% of the annual rainfall during this period.

4.8 SOCIAL INFRASTRUCTURE AVAILABLE:

The nearest towns are Jaduguda and Galudih, which are about 4.5 km and 4.0 km by road from the project site respectively. Rakha, Ghatsila and Musabani townships of HCL are about 2.0 km, 13 km and 17 km respectively by road from the project site. These towns have all basic social infrastructure including schools, markets, banks, health care facilities, places of worship, recreational facilities, etc. Jamshedpur city, which is the largest city of Jharkhand, is about 25 km away by road.

HCL's townships in the area have schools, markets, banks, recreational facilities, play grounds, health centres, places of worship, etc. HCL has a large hospital at its township at Moubhandar on outskirts of Ghatsila.

5.0 PLANNING BRIEF:

5.1 PLANNING CONCEPT:

On receipt of necessary clearances, orders shall be placed for main technological equipment almost immediately. It is expected that the plant will be commissioned within 130 (one hundred and thirty) weeks of the date of placement of order for main technological equipment.

A bar chart showing the project implementation schedule is given as Drawing No. MEC/11/PY/Q6GA/FR/01 (R-0) (attached at end of report).

5.2 LAND USE PLANNING:

At present the project area is devoid of any Forest Land, habitation or water body. Land utilization for various purposes in the project area is:

a) Plant Proper : 05.261 ha
b) Tailings containment area : 28.449 ha
c) Green Belt & Plantations : 01.619 ha
d) Corridor HT line : 01.214 ha

The layout of the proposed plant is given in Fig. 4 above and also as Drawing No. MEC/11/14/Q7GA/02 (attached at end of report).

5.3 ASSESSMENT OF INFRASTRUCTURE DEMAND

As the project is a green-field project, all infrastructure, will be constructed at site newly.

5.4 AMENITIES / FACILITIES

The project shall have Administrative Building, quality control laboratory, weigh-bridge, workshops, material stores, First Aid Centre and necessary amenities such as rest rooms, canteens, etc.

6.0 PROPOSED INFRASTRUCTURE:

Since the proposed project is a green-field project, the entire plant and infrastructure has to be developed. The following facilities will be created at the proposed project.

1. Compressor House and Compressors
2. Electric Sub Station and Power distribution net work
3. Weighbridge
4. Security watch-towers
5. Workshop
6. Quality Control Laboratory
7. Stores
8. Office
9. Canteen
10. Toilets & Rest Room for workers

HCL carries out various development works in the villages in and around ICC. During 2020 – 21, HCL incurred an expenditure of Rs.31,99,340/- towards various works under CSR activities in ICC area. CSR works covered providing technical guidance & material assistance to small farmers for organic farming and yield improvement of rice crop, assistance to self-help groups (SHGs) in villages, holding medical camps in villages, support to sports and cultural activities in villages, repair & maintenance of drinking water supply structures (Jal-Minars) in villages,

material support to Dhalbhumgarh ITI, improving infrastructure in village schools (especially Kasturba Gandhi Balika Vidyalays) etc.

7.0 REHABILITATION & RESETTLEMENT (R&R) PLAN :

The project site is located within Royam Industrial Estate which is being developed by Jharkhand Industrial Area Development Authority (JIADA) – a Govt. of Jharkhand entity. JIADA has acquired the land and compensated the land owners. JIADA has allotted the land to HCL. Hence, there is no R&R issue.

8.0 PROJECT SCHEDULE & COST ESTIMATE

8.1 LIKELY DATE OF START OF CONSTRUCTION AND LIKELY DATE OF COMPLETION:

On receipt of necessary clearances, orders shall be placed for main technological equipment almost immediately. It is expected that the plant will be commissioned within 130 weeks of the date of placement of order for main technological equipment.

8.2 ESTIMATED PROJECT COST AND ECONOMIC VIABILITY OF THE PROJECT

The estimated capital cost of the project is Rs.327.85 Crores (Rupees Three Hundred and Twenty-seven Crores and Eighty-five lakhs only) based on prices prevailing in the in 3rd quarter of 2021.

The cost of beneficiated copper ore production is estimated to be about ~Rs. 72,798/- per tonne of beneficiated ore. The Production cost (Per ton of Metal in Concentrate) has been estimated to be Rs. 2,97,015 per tonne. The production cost estimates are based on 3rd Quarter, 2021 price levels and do not take into account any future escalation in input material prices, costs of purchased utilities & services and labour rates.

The average production cost (in Rs./t of Metal in concentrate) has been estimated to be Rs.2,97,017/- (Rupees Two lakhs ninety-seven thousand and fifteen only) per tonne. The average price of the metal in concentrate has been estimated to be Rs. 6,95,600/- (Rupees Six lakhs ninety-five thousand and six hundred only) per tonne. Thus the net margin is Rs. 3,98,585/- (Rupees Three lakhs ninety-eight thousand, five hundred and eighty-five only) per tonne. Net present value (NPV) at discount rate of 10% over the 20 years of operating period have been calculated to be Rs. 2679.32 Crores (Rupees Two thousand six hundred and seventy-nine crores and thirty-two lakhs only).

9.0 ANALYSIS OF PROPOSAL (FINAL RECOMMENDATION)

The proposed project will have the following benefits:

- Improve supply of indigenous beneficiated copper ore (copper concentrate) and thereby reduce imports.
- Improve the economics of HCL's Moubhandar Copper Smelter-cum-refinery which is forced to bring beneficiated copper ore (copper concentrate) from Malanjkhand Mine.
- Generate direct as well as indirect employment.
- Pave way for peripheral development of a predominantly tribal area.

The project will directly employ 206 persons. All the unskilled workers and majority of semi-skilled workers will be local villagers. A significant proportion of the skilled workers are also likely to be from nearby towns and villages. Additional indirect employment is likely to be generated on account of mineral transportation and ancillary services and to provide services to the persons employed at the plant. Peripheral development by HCL will benefit local villagers.

ANNEXURES

Land Allotment Certificate

*This is to certify that M/S…**Hindustan Copper Limited** ..represented by Proprietor/Partner/Director/Karta/Authorised Representative namely, Mr./Ms/Mrs/M/S… **Hindustan Copper Limited** ..has been allotted the plot/plots/sheds as detailed below on terms and conditions given in this Provisional Land Allotment Order and the applicable terms & conditions of Jharkhand Industrial Area Development Authority regulations 2016 & referred to given Terms & Conditions with this certificate.*

Description of Land allotment

Application No…**2000000510**…Allotment order no…**LA/AD/SW/00305/2018**..Issuing Date…**12-09-2018**
For, Plot No…**R-1**…Total Area in Sq.ft…**3,933,468**Date of PCC…**18.07.2018**..Date of LAC…**18.07.2018**
Name of Region…**Adityapur**..District Name…**Purbi Singhbhum**..Industrial Area…**Ruam Mauza, Musabini Block**..
Address:**Hindustan Copper Limited Indian Copper Complex P.O. Ghatsila Dist. – Singhbhum(E) Jharkhand**

1. Name of Applicant …**Hindustan Copper Limited**

2. Nature of Enterprises/Industrial Units…**Ancilliary Activity**

3. Address of the Industrial Unit…**Plot No. :R-1, Industrial Area:Ruam Mauza, Musabini Block, District :Purbi Singhbhum**

4. Type of Constitution of the Unit …**State/Central Public Sector Undertaking**

5. Product/Products…**Copper Concentrate, Mo Concentrate and Magnetite Concentrate**

6. Lease contract Period…**30 Years**

7. Premium Land Price of the Plot:**37,493,463**(Reserve Price/ Bid Value/ Floor Price)

8. Percentage of Incentive in Land cost, if any:**N/A** (As Jharkhand Gov. Policy)

9. Total Amount Paid (After Incentive, if any): **37,493,463** (Amt.:**37,493,463** GST:**0** Interest: **0)**

10. 10 equal half early instalments payable in spread of 5 years (with Applicable GST)**N/A**

11. Annual Land rent payable(+ 18% GST)…**879,865**

12. Annual Maintenance charge payable(+18% GST)…**1,231,791**

13. Others Charges (+18% GST) if any :**N/A**

Land Schedule: Details of land/Plot/Plots/Shed to be leased out

Unit name..**Hindustan Copper Limited** .....Industrial Area.....**Ruam Mauza, Musabini Block**.....
Village.....**Ruwam**.....Thana No.....**91**.....Thana...**Ghatsila** District....**Purbi Singhbhum**...Corresponding to Industrial Plot No....**R-1**...

S. No.	Khata No.	Survey Plot No.	Area in Sq.ft/Acre
1	**9**	**123, 124, 171**	**1.13 acre**
2	**10**	**170**	**0.23 acre**
3	**68**	**125, 126**	**0.36 acre**
4	**16**	**50**	**0.11 acre**

Digital Signature……

5	**18**	**32, 38, 41, 111, 112, 119, 120, 32/1203, 33/1204, 114**	**2.92 acre**
6	**229**	**42,77,76,66,109,135(P),141,30,35,42,54,65,81,89, 79,115, 107, 108, 127**	**59.89 acres**
7	**108**	**116,117,118,34/1205, 40/1206**	**1.65 acres**
8	**111**	**31,40**	**0.68 acre**
9	**107**	**33,34,36,37,39,53**	**2.04 acres**
10	**31**	**18(P), 22**	**0.43 acre**
11	**32**	**23,25,121,122,**	**1.02 acres**
12	**33**	**138, 139, 142**	**2.81 acres**
13	**34**	**137**	**0.82 acre**
14	**35**	**160(P)**	**0.58 acre**
15	**159**	**144**	**0.11 acre**
16	**144**	**110**	**0.88 acre**
17	**46**	**83, 87**	**0.33 acre**
18	**47**	**90**	**0.10 acre**
19	**51**	**94, 95**	**0.37 acre**
20	**54**	**92, 93**	**0.32 acre**
21	**61**	**24, 27, 29/1201**	**0.56 acre**
22	**64**	**26, 28, 29/1200, 27/1202**	**1.26 acres**
23	**63**	**29, 27/1208**	**0.52 acre**
24	**65**	**136**	**0.55 acre**
25	**70**	**106**	**0.63 acre**
26	**83**	**105**	**0.05 acre**
27	**91**	**103, 104**	**0.26 acre**
28	**88**	**59, 56, 61, 62, 63, 59**	**0.56 acre**
29	**87**	**43, 44, 45, 46, 47, 48, 51, 52, 55, 57, 58, 60**	**2.73 acres**
30	**92**	**98**	**0.10 acre**
31	**93**	**97**	**0.02 acre**
32	**94**	**85, 96**	**0.32 acre**
33	**22**	**91**	**0.01 acre**
34	**133**	**96**	**0.59 acre**
35	**156**	**64, 71, 75, 78**	**0.53 acre**
36	**168**	**130, 132**	**0.06 acre**
37	**169**	**128, 129, 131, 133, 134**	**0.28 acre**
38	**170**	**67, 69, 72, 73, 74, 80, 82**	**0.73 acre**
39	**173**	**68, 70, 88**	**0.89 acre**
40	**185**	**101, 102**	**0.54 acre**
41	**199**	**113**	**0.10 acre**
42	**208**	**140, 141/1226**	**0.25 acre**
43	**210**	**100**	**1.57 acres**
44	**220**	**99**	**0.08 acre**
45	**227**	**21**	**0.33 acre**
		Total	**90.3**

Boundary: As per Survey Plot No.	
North	Gudra River
South	Plot NO. 176/1224, 174, 173, 172 & R-8
East	Village: Digri, No. 1108, and road
West	Plot No. 20, 18(P), 21/1210,15,146,145, 160(P), 161, 162, 169, 168, 172, R-2, R-4, R-6

Possession taken over the plot on dated:..**N/A**

With reference to your application for allotment of land/ shed under the command area of this Authority for setting up unit and Resolution of Joint PCC/LAC held on **18.07.2018** in its meeting, decision have been taken to allot the land for 30 (thirty) years only as detailed in the land schedule (Page-1) on the basis of the **following terms and conditions:-**

1. That the unit have deposited the land price payable and GST, only in one lump towards full premium of land/shed, per acre/ shed within 30 (Thirty) days from the date of the order by way of online payment system/NEFT/RTGS or online payment in favour of the Authority. Any amount paid earlier by the unit during application seeking allotment of land/shed except scrutiny fee shall be set off with the amount of premium without interest.

2. As per JIADA Regulations, 2016; special incentive is given to labour intensive industries, such as Textile, Garment, Footwear, Minor Forest produce processing sector, Herbal Processing sector, Agri& Food processing sector, IT and ITeS sector; in the payment of land premium.. This incentive is available for 5 years only. The incentive is as follows:

- The Land Premium will be 50% of Reserve Price/Bid Value
- Such Concessional Land Premium is to be paid in 10 Equal instalments spread in 5 years without any interest.

3. All the payment/fees/levies/charges will be online.

4. That if the unit is a mega IT industry it shall have option to pay the total land premium, land development charges calculated and fixed by the Authority, in five equal instalments spread over period of three years. The unit shall pay the land premium in remaining four instalments which shall be spread over period of three years within one month of demand from the Authority. For deferred payment, the Authority shall charge interest on balance amount @15% p.a subject to revision by the Authority from time to time. If the unit fails to make payment of any instalment within the time frame fixed by the Authority, additional charge at prevailing rate accruing upon the footing of yearly computed interest shall be borne by the unit. No rebel shall be admissible in this regard and the Authority reserves its right to make change in the rate of interest. Delivery of possession of land/ shed shall be made to the unit by the Authority on payment of first instalment and the schedule for payment for the remaining four instalments are fixed

5. That the unit have deposited the aforesaid sum by way of online payment system/NEFT/RTGS in the account of the Authority and applicable GST.

6. That the unit shall have to pay an annual rent per acre (including taxes, if applicable) annual maintenance charges per acre (including Taxes, if applicable) on or before 31st March of each year and applicable other charges as: Maintenance Charges, Street Light Charges, Rent of Building, Advertisement/Hording Charges, Mobile Tower-Rental Charges, Rights of Way for Electric /OFC/Cables, Library Charges, Land rent & cess, etc. The rent, and the maintenance charges shall be revised from time to time by the Authority and shall be payable by the unit along with applicable GST.

7. That if the rent and other charges or any part thereof remains unpaid by the unit to the Authority after 31st March of each year, the Authority shall charge interest @ 15% p.a compounded yearly which shall be paid by the unit. No rebate shall be admissible in this regard and the Authority reserves its right to make changes in the rate of interest.

8. That the unit shall have to execute an indemnity bond giving its declaration and undertaking about acceptance of terms and conditions as contained in the letter of allotment within 7 (seven) days from the date of receipt of this letter/Certificateor at the time of making payment of Land Premium.

9. That on payment of full premium of land/payment of 1st instalment, if special provisions made (in terms of land premium divided in 10 or 5 equal instalments)and execution of indemnity bond as abovethe unit shall be handed over physical possession of land/ shed within 10 (Ten) days from the date of issue of formal allotment order. At the time of taking physical possession of the allotted plot/shed, the representative of the unit shall remain present along with man and material for demarcation of the plot, physical possession of which shall be handed over to the representatives of the unit by the officials of the Authority.

10. That upon completion of aforementioned requirements the unit shall have to get the lease deed executed by the Authority in its favour within a period of three months from the date of taking physical possession of the land/ shed. The cost of execution of lease deed, registration thereof and the expenses incidental thereto shall have to be borne by the unit.

11. That the Authority shall organize periodic inspection of allotted plot/ shed/ land to the allottee to ensure proper utilization of allotted land/ shed/ plot and progress about factory/ shed/ building as per plan towards implementation of the project and the allottee binds itself/ himself/ herself to extend all co-operation to the inspecting personnel and provide realistic information and shall not conceal any aspect of the ongoing activities on the plot, failing which, the allottee shall make itself/ himself/ herself liable for initiation for action for cancellation of plot/shed. Non co-operation of the lessee shall also mean and include avoiding and refusing to receive any valid communication including notice from the Authority by the lessee including its/his/her representative, not allowing entry of the officials of the Authority inside the factory/plot and refusing to sign on the on-spot report prepared by the inspecting officials.

12. That in the matter of employment the unit shall give preference to the local persons and if required shall make proper arrangement for imparting training to them.

13. That the unit shall pay possession fee against expenses incurred or such amount as decided by the Authority from time to time, to the Authority before taking delivery of possession of the allotted plot/ land/ shed.

14. That the status of the unit shall be of the licensee until the lease deed is executed and registered by the Authority in favour of the unit and the unit shall abide by the provisions relating to its/his/her being a licensee in respect of the property during the period.

15. That the unit shall submit a plan of the factory/ shed or and building plan etc.. along with necessary documents within

six months from the date of taking delivery of possession of the allotted plot/land/shed for approval of the Managing Director of the Authority as 'Controlling Authority' under the Building Bye Laws of the Authority/ Jharkhand Restrictions of Uses of Land/ Shed Act for approval of Chief Inspector of Factories, Jharkhand through Inspector of Factories of the Circle concerned. Failure on the part of the unit in submitting factory/ shed plan/ building plan for approval shall entail late action fee @ Rs.1.00 per sqft per month and the unit shall be liable to pay late action fee at the aforesaid rate to the Authority on demand. The Chief Inspector of Factories, Jharkhand/ Inspector of Factories shall dispose of application for factory/ shed and/or building plan within thirty days of the date of receipt of plan from Managing Director of the Authority. The Managing Director of the Authority/ Controlling Authority shall respond to the unit within ninety days from the date of submission of plan with necessary approval. However, if warranted the Authority may ask for any clarification/ modification and submission of revised plan. In case no communication is received from the Authority within 90 days from the date of submission of plan/ revised plan, it shall be construed and deemed to have been approved/ sanctioned by the competent authority and the unit shall commence construction/ further activity as per plan/ revised plan submitted for approval.All the process under BPAMS will be automated and systematic application to be done through system.

16. That the unit shall start construction as per approved factory/ shed/ building plan within 6 (six) months from the approval/ deemed approval of plan. In the event of failure of the above, late action charges @ Rs.1.00 per sqft per month shall be Paid by the unit to the Authority on demand and in the event of failure on the part of the unit in payment of demanded amount, the unit shall make itself liable for action as warranted under the facts and circumstances of the case.

17. That the unit in the event of making any construction without prior approval of Managing Director of the Authority or any deviation from the approved plan of construction or use of land/ shed for any non-industrial purposes or the unit putting the land to use for purposes other than the purposes for which it was allotted, the Managing Director of the Authority shall have option to charge the cost and rent of the land/ shed of the entire period of remaining in use of such land/ shed at the prevailing/ current market rate to be determined by the Managing Director of the Authority and shall have option to cancel the allotment, terminate the lease deed, if executed, and forfeit the land premium and resume land/ shed in question after thirty days from the date of order of cancellation and no compensation shall be Paid to the unit either for the unexpired period of lease or for the structure, building, installations and immoveable assets in any shape/ form erected thereon.

18. That in the event of the unit either not utilizing or underutilizing the allotted land/ plot/ shed for the purpose it was allotted, the Managing Director of the Authority shall initiate action for cancellation of under/unutilized portion of land/plot/ shed in accordance with the principles of natural justice. In reply to the show cause, if the unit gives an undertaking to utilize the under/unutilized portion of land/plot/ shed within a specified time frame, then in that event of violation of such undertaking, the unit shall be liable for payment of non-action charges @ Rs.10.00 per sqft per month from the date of execution of undertaking. Even after imposition of said non action charges, if the unit fails to abide by the undertaking so given, the allotment of such concerned portion of land/plot/ shed shall be cancelled by observing the principles of natural justice, lease deed, if executed, terminated and land premium forfeited by the Managing Director of the Authority and action shall be taken for recovery of non-action charges under Bihar & Orissa Public Demand Recovery Act, 1914.

19. That the unit shall go into production or show substantial progress towards the implementation of the project within six months from the date of approval/ deemed approval of plan and shall start construction work with the margin money shown in the project report. Similarly, upon installation of machinery etc..the unit shall start production with its/his/her share of working capital.

20. That in case the proposed project/ factory of the unit is not set up or comes into production within a period of two years in case of micro or small enterprise and within the period of five years in case the proposed project is other than micro and small enterprise or within such extended period as allowed by the Authority after considering the circumstances, unit's deposit towards land premium/shed along with the construction, installation, fixtures etc...thereupon shall be liable to be forfeited by the Authority. In case necessary effective steps are not taken within the fixed/ extended period to establish the project/ industry by the unit, the Managing Director of the Authority shall in such condition shall cancel the allotment order of the allotted plot/ shed and also forfeit the amount towards land premium by observing the principles of natural justice.

21. That in case of violation of provision 29(ii) of the Authority's Regulations 2016, the unit shall be punishable with fine which may extend upto Rs.10, 000.00 or simple imprisonment for a term which may extend to six months or both and in case of continuance of violation with a further fine which may extend to Rs.100.00 per day after conviction as above.

22. That the unit shall not make any change either in the name of the unit or the constitution of the unit or lease hold right of the unit or merge/ demerge/amalgamate the unit without prior permission of the Managing Director of the Authority.

23. That under no circumstances the unit shall be entitled to transfer the lease hold right in respect of the allotted plot/land/ shed to it/him/her and hand over physical possession of the said plot to any other person/ entity/ entrepreneur

without prior written consent/ approval/permission of the Managing Director of the Authority. Transfer of allotted plot/shed by the unit in any manner whatsoever without prior written consent/ approval/ permission of Managing Director of the Authority shall be illegal and not binding on the Authority and the unit shall be liable for prosecution under criminal law. Violation of this undertaking by the unit shall entail cancellation of allotment order, termination of lease deed, if executed, and forfeiture of land/ shed premium deposited by observing principles of natural justice.

24. That the unit shall not be entitled to sublease or handover physical possession of the allotted plot/land/shed, either upon cancellation or upon surrender, to any person/ entity/ entrepreneur/ organization except the Authority. Violation of this condition of the bond shall entail penalty as contemplated under Regulation 22 (vi) of the Authority's Regulation 2015.

25. That the unit shall obtain water, drainage and power connection by making application in prescribed form to the respective authorities.

26. That if the unit hands over physical possession of the plot allotted to it/him/her to any other person/ entity/ entrepreneur/ organization without having been authorized by the Authority, the Authority shall treat possession of that person/ entity/ entrepreneur/ organization over the plot/land/shed as unauthorized and take recourse for recovery of possession including invoking the provisions of Public Premises (Eviction of Unauthorized Occupants) Act, 1971 for recovery of possession. The unit shall be liable to pay irregularity charges @ Rs.5.00 per sqft per month to the Authority besides making itself/ himself/ herself liable for initiation of cancellation proceeding. Recovery of irregularity charges as above shall be subject to Bihar & Orissa Public Demand Recovery Act, 1914.

27. That if subsequently any part or parts of the allotted plot/land/shed is required by the State government or the Authority for public purposes, of which the State government or the Authority shall be the sole judge, or if it is found that any portion of the land/ shed is not required by the unit for the purposes it was allotted, the unit shall on being asked by the State government or the Authority transfer such part or parts of the shed/land/plot as the State government or the Authority shall specify to be necessary for the purpose aforesaid and in consideration of such transfer the State government or the Authority, as the case may be, shall pay back to the unit a sum proportionate or equal as the case may be, the cost of land/shed/ plot and its development, if any earlier realized from the unit together with compensation for buildings and other structures constructed/erected with approval in writing of the Authority on such part or parts of the land/shed/plot at the valuation to be determined by the State government or the Authority on obtaining report from the Civil Engineer authorized by them in this behalf and the decision of the State government or the Authority shall not be questioned before any Authority or in any Court of law.

28. That the trees standing on the allotted plot/land shall be the property of the Authority and shall not be removed by the unit without prior persimmon of the Authority in writing. The unit shall erect tree guard of the plants in its/his/her boundary at its/his/her cost.

29. That the unit shall obtain the consent to establish or No Objection Certification (whichever applicable) before construction work and the consent to operate, as applicable, before commencement of production in the unit from Jharkhand State Pollution Control Board and ensure that the activities of the unit are environment friendly.

30. Land/Shed allotted to the entrepreneur for setting up their industrial units on lease of 30 (thirty)years from the date of allotment on annual rent and other charges as decided by the Chief Executive Officer of the region with option of renewal. The renewal of the lease shall be considered by the Chief Executive Officer of the region on written request of the lessee three months prior to the expiry date of the lease period, and renewal will be automatic for units on payment of processing fee as mentioned in clause 13 of JIADA regulation 2016 as (Submission of Scrutiny Fee Processing Fee -Along with Application Form, applicant shall deposit a Non-refundable & Non-adjustable scrutiny fee/Processing fee of Rs. 10,000.00 for land requirement up to 1.0 acres, Rs. 25,000.00 for over 1.0 acres up to 3.0 acres and Rs.50,000.00 for over 3.0 acres o. as decided by the Authority, from time to time. On furnishing declaration by the Authority that it/he/she shall utilize the land only for the purpose it has been allotted and that the conditions of allotment order, indemnity bond and lease deed is acceptable to it/him/her and that the allottee is not in default in payment of dues of the Authority and any statutory dues or dues of any financial institution Paid by the unit.

31. That the unit shall abide by the rules and regulations framed by the Authority and the instructions issued from time to time regarding use of land/shed, any charges or other allied matters. The unit shall comply with the rules and regulations of the Authority or Jharkhand Industrial Policy applicable to the Authority.

32. That the unit shall keep the allotted land for plantation for maintenance of ecological balance in the industrial area and shall utilize that portion accordingly as per approved building/ shed plan.

33. That any violation of the conditions of land/ shed allotment order, lease deed, indemnity bond or Regulations of the

Authority or provisions of Jharkhand Industrial Policy as applicable or provisions of Bihar Industrial Area Development Authority Act, 1974 (Bihar Act 16 of 1974 and Bihar Act 24 of 1992) as adopted by the Government of Jharkhand vide Notification No.339 dated 02.03.2001 issued by the Secretary, Department of Science Technology, Information Technology and Industry as Jharkhand Industrial Area Development Authority Act, 2001 shall entitle the Managing Director of the Authority to cancel the allotment order, terminate the lease deed and forfeit the land premium and take possession of the cancelled plot/ shed/land by observing the principles of natural justice and pass order to the effect.

34. That in case of breach of any of the conditions of terms of allotment or this indemnity bond and the lease deed, if executed, the Managing Director of the Authority shall have right to resume and enter upon the allotted land/ plot/shed without payment of any compensation to the unit and shall also forfeit the land premium, if any, paid and other sums paid by the unit and thereafter the interest of the unit in the plot/land/shed shall cease and lease deed, if executed, shall stand terminated.

35. That under no circumstances sale of the allotted plot/land/shed shall be allowed/ be permissible by the unit. In the event of non-requirement or inability of the unit to utilize the allotted plot/land/shed, the unit shall surrender the same to the Authority and Authority alone and to none else and violation of this term shall result in cancellation of allotment, forfeiture of land premium and termination of lease deed if executed and also the unit shall be prosecuted under penal law of the land.

36. That if the unit continues to be in possession of the cancelled plot and carry out any activity either alone or with co-operation of somebody else, possession and use of such plot/ shed shall be treated as unauthorized for which the unit shall be liable for payment of penalty @ Rs.15.00 per sqft per month to the Authority until the unit hands over vacant possession of the plot/shed in question to the Authority. The unit shall make payment of entire amount of penalty as above within 30 (Thirty) days of the date of demand to the Authority failing which the Authority shall recover the same by invoking the provisions of Bihar & Orissa Public Demand Recovery Act, 1914. The penalty as above, if not paid voluntarily by the unit, shall be subject to recovery by invoking the provisions Bihar & Orissa Public Demand Recovery Act, 1914. Recovery of possession of plots/ shed as above shall be made by the Authority if not voluntarily handed over by the unit to the Authority, by invoking the provisions of Public Premises (Eviction of Unauthorized Occupants) Act, 1971.Old dues of previous allottee if any to be paid by the new allottee.

37. Allotee should use the Plot for the product or services for which he has applied and in no circumstances he will change the line of product or services without prior approval of the Authority.

Yours Faithfully

For MD, Jharkhand Industrial Area Development Authority
Regional Director, JIADA Adityapur

Annexure - 2

805

786

INDIA NON JUDICIAL

Government of Jharkhand

e-Stamp

सत्यमेव जयते

Certificate No.	:	**IN-JH258163528125785**
Certificate Issued Date	:	27-Jan-2020 04:44 PM
Account Reference	:	SHCIL (FI)/ jhshcil01/ BISTUPUR/ JH-ES
Unique Doc. Reference	:	SUBIN-JHJHSHCIL01373396740649578
Purchased by	:	HINDUSTAN COPPER LIMITED ICC UNIT
Description of Document	:	Article 35 Lease
Property Description	:	PLOT NO R1, AREA 39,33,468 SQUARE FEET
Consideration Price (Rs.)	:	4,83,29,463 (Four Crore Eighty Three Lakh Twenty Nine Thousand Four Hundred And Sixty Three only)
First Party	:	JHARKHAND INDUSTRIAL AREA DEVELOPMENT AUTHORITY
Second Party	:	HINDUSTAN COPPER LIMITED ICC UNIT
Stamp Duty Paid By	:	HINDUSTAN COPPER LIMITED ICC UNIT
Stamp Duty Amount(Rs.)	:	19,34,000 (Ninteen Lakh Thirty Four Thousand only)

Please write or type below this line

मुहर अवर निबन्धक का कार्यालय * गादीला, पूर्वी सिंहभूम *

Regional Deputy Director
Jharkhand Indl. Area Dev. Authority
Adityapur Region

SANJAY KR. SINGH
DY.GENERAL MANAGER IN-CHARGE
(UNIT HEAD / I C C

SR 0001242775

Statutory Alert:

1. The authenticity of this Stamp Certificate should be verified at "www.shcilestamp.com". Any discrepancy in the details on this Certificate and as available on the website renders it invalid.
2. The onus of checking the legitimacy is on the users of the certificate.
3. In case of any discrepancy please inform the Competent Authority.

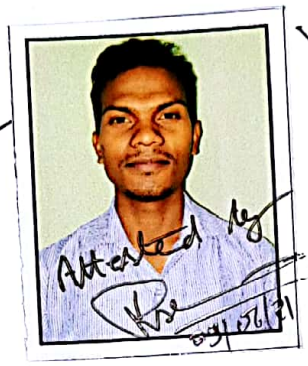
Lease
30 year
49,50,000/-

P.S.
Musabani

Stamp
19,34,000/-

नियम 21 के अधीन [illegible] अधिनियम 1899
नियम छोटानागपुर [illegible] अधिनियम धारा 46
अनुसूची 1 या 1क. सं० 35.....को अधीन यथावत
स्टाम्प सहित (~~या स्टाम्प शुल्क से विमुक्त~~ या स्टाम्प
~~शुल्क~~ अपेक्षित नहीं)

Regional Deputy Director
Jharkhand Ind. Area Dev. Authority
Adityapur Region



SANJAY KR. SINGH
DY.GENERAL MANAGER IN-CHARGE
(UNIT HEAD/ICC

Online Fee Paid
Ari 1450500:00
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S.F.Fee 1320:00

22/6/21

दस्तावेज जाँचा

LEASE DEED

THIS DEED OF LEASE IS made on this the 09 day of June 2021 at **Ghatsila.**

BETWEEN

The **Jharkhand Industrial Area Development Authority, Adityapur Region, Vikash Bhawan, Adityapur** Represented by its Regional Director authorised **Sri PREM RANJAN**, Regional Dy. Director/his authorized representative Sri Kita Mohan Tubid S/o. Late Sadhu Singh Tubid Grandson of Late M. P. Singh Tubid aged about 31 years, by Faith – Christian, Nationality – Indian, Local Resident of B/2, Aiada Nagar, Adityapur, Near Ashiana, Adityapur, Seraikela-Kharsawan, State – Jharkhand, Addhar Card No. – 8836 7552 3592 hereinafter to be referred to as the 'Authority' which terms shall include its successors in office, hereinafter to be referred to as the 'LESSOR' or the 'AUTHORITY' which expression shall, where in the context show admits or implies, includes successor in office and permitted assign of the first part

Regional Deputy Director
Jharkhand Indl Area Dev. Authority
Adityapur Region

SANJAY KR. SINGH
DY.GENERAL MANAGER IN-CHARGE
(UNIT HEAD/ICC

AND

M/s. Hindustan Copper Limited (A Govt. of India Enterprise), Indian Copper Complex Plot No. **R-1,** Royam Phase, JIADA Adityapur Region represented by its Authorized Representative **Sri Sanjay Kumar Singh** Unit Head, S/o Sri Raghunath Singh Grandson of Late Devendra Singh aged about 48 years, by occupation Service , by Faith Hindu, Nationality Indian, and Local Resident of **STB-2, HCL/ICC Colony P.O. Moubhandar, P.S. Ghatsila, District East Singhbhum Jharkhand.** EMAIL ID **singh_sk@hindustancopper.com Addhar No. 361998535683**, company PAN No. **AAACH7409R** of hereinafter to be referred to as the 'LESSEE' which terms shall include the legal heirs, successors, legal representatives, assigns of the other part.

PART-I

SHORT RECITAL

1. Whereas, the lessor is an Authority created under section 3 of Bihar Industrial Area Development Authority Act, 1974 as adopted by the Government of Jharkhand vide Notification No.339 dated 02.03.2001 issued by the Department of Science Technology, Information Technology and Industry as Jharkhand Industrial Area Development Authority Act, 2001 and is committed for planned development of industrial area and promotion of industry and matters appurtenant thereto under its command area.

2. Whereas, for fulfillment of its objective the lessor Authority has been making the land available to the intending entrepreneur on lease term basis for setting up industry as per actual requirement and subject to the provisions of Jharkhand Industrial Area Development Authority Act, 2001 as amended from time to time, Jharkhand Industrial Area Development Authority Rules, 2001, Jharkhand Industrial Policy as applicable on the relevant date and the Regulations 2015 of the Authority made in exercise of powers conferred under section 15 of Jharkhand Industrial Area Development Authority Act, 2001.

Regional Deputy Director
Jharkhand Indl. Area Dev. Authority
Adityapur Region

SANJAY KR. SINGH
DY.GENERAL MANAGER IN-CHARGE
(UNIT HEAD/ICC

3. Whereas, the lessee applied for allotment of **3933468 Sq. Ft.** of land for setting **copper concentrate plant** in the command area of the lessor and the lessor after considering the requirement of land of the lessee, allotted **3933468 Sq. Ft.** area of land, more fully described in the Land Schedule below, vide **allotment order No. LA/AD/SW/00305/2018 dated 12-09-2018** and upon payment of **Rs. 37,493,463/- (Rupees Three crore seventy four lakha ninety three thousand four hundred sixty three only)** towards full premium of land. The current value of the land comes to Rs. **41,336,543**/- (**Rupees Four crore thirteen lakha thirty six thousand five hundred forty-three only**). The lessee has been handed over physical possession of allotted land on **03-07-2019.**

4. Whereas, in terms of Authority's Regulations 2015, the lessee has to get the lease deed executed by the lessor and registered within a period of three months from the date of taking possession of the allotted land/ shed. Since the lessee has fulfilled the conditions for execution of lease deed, the lessor executes the lease deed.

LAND SCHEDULE

DETAILS OF LAND TO BE LEASED OUT **M/s. Hindustan Copper Limited,**

Mousa:	Royam, Adityapur Region (JIADA).
Village:	ROYAM
Thana No.:	91
Thana:	GHATSILA
Dist.:	EAST-SINGHBHUM
Corresponding to Industrial Plot No.-	Plot No R-1 Phase Royam, Jharkhand Industrial Area Development Authority.

Regional Deputy Director
Jharkhand Indl. Area Dev. Authority
Adityapur Region

SANJAY KR. SINGH
DY.GENERAL MANAGER IN-CHARGE
(UNIT HEAD)ICC

Sl No	S. Plot No	Khata No
1	18 (P)	31
2	21	227
3	22	31
4	23	32
5	24	61
6	25	32
7	26	64
8	27	61
9	28	64
10	29	63
11	30	229
12	31	111
13	32	18
14	33	107
15	34	107
16	35	229
17	36	107
18	37	107
19	38	18
20	39	107
21	40	111
22	41	18
23	42	229
24	43	87
25	44	87
26	45	87
27	46	87
28	47	87
29	48	87
30	50	16
31	51	87
32	52	87
33	53	107
34	54	229
35	55	87

Sl No	S. Plot No	Khata No
36	56	88
37	57	87
38	58	87
39	59	88
40	60	87
41	61	88
42	62	88
43	63	88
44	64	156
45	65	229
46	66	229
47	67	170
48	68	173
49	69	170
50	70	173
51	71	156
52	72	170
53	73	170
54	74	170
55	75	156
56	76	229
57	77	229
58	78	156
59	79	229
60	80	170
61	81	229
62	82	170
63	83	46
64	84	91
65	85	94
66	87	46
67	88	173
68	89	229
69	90	47
70	91	222

Regional Deputy Director
Jharkhand Indl. Area Dev. Authority
Adityapur Region

SANJAY KR. SINGH
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(UNIT HEAD) ICC

Sl No	S. Plot No	Khata No
71	92	54
72	93	54
73	94	51
74	95	51
75	96	94
76	97	93
77	98	92
78	99	220
79	100	210
80	101	185
81	102	185
82	103	91
83	104	91
84	105	83
85	106	70
86	107	229
87	108	229
88	109	229
89	110	144
90	111	18
91	112	18
92	113	199
93	114	18
94	115	229
95	116	108
96	117	108
97	118	108
98	119	18
99	120	18
100	121	32
101	122	32
102	123	9
103	124	9
104	125	68
105	126	68

Sl No	S. Plot No	Khata No
106	127	229
107	128 (P)	169
108	129 (P)	169
109	130 (P)	168
110	131(P)	169
111	132	168
112	133	169
113	134	169
114	135 (P)	229
115	136	65
116	137	34
117	138	33
118	139	33
119	140	208
120	141	229
121	142	33
122	144	159
123	160 (P)	35
124	170 (P)	10
125	171 (P)	9
126	29/1200	64
127	29/1201	61
128	27/1202	64
129	32/1203	18
130	33/1204	18
131	34/1205	108
132	40/1206	108
133	27/1208	63
134	141/1226	208

Total Area 3,933,468 Sq. Ft.

Regional Deputy Director
Jharkhand Indl. Area Dev. Authority
Adityapur Region

SANJAY KR. SINGH
DY.GENERAL MANAGER IN-CHARGE
(UNIT HEAD) I C C

BOUNDARY

As per Survey Plot No./Survey Map		As per Industrial Plot No/ Phase Map
North	: 2 (GUDRA NADI)	- JIADA BOUNDARY & RIVER GUDRA
South	: 135(P), 131(P), 130(P), 129(P), 127(P), 109(P), 20, 21/1210	- JIADA LAND
East	: 71, MOUZA No. 1108	- JIADA BOUNDARY & VILLAGE ROAD
West	: 20, 21/1210, 18(P), 15(P), 146,143, 160(P)	- R-2, 45'0'' WIDE ROAD & GOVT. LAND

Possession taken over the plot on: **03-07-2019**

PART-II

TERMS AND CONDITIONS OF LEASE DEED

The lessor and the lessee hereby covenants and agrees as follows: -

1. That the scheduled land has been allotted to the lessee by the lessor for setting **Copper Concentrate Plant** industry in the command area of the lessor for manufacturing of **Copper Concentrate**.

2. That the period of tenure of lease in respect of the scheduled land/ shed shall be for a period of **30 (Thirty) years** from the date of allotment i.e. **12-09-2018** and will remain force till **11-09-2048** and annual rent and other charges shall be paid by the lessee to the lessor as decided by the Regional Director of the Authority.

3. That the tenure of lease as above shall be subject to renewal at the option of the parties. In order to get the tenure of lease renewed, the lessee shall make a written request to the lessor three months prior to expiry of lease period. After

IN WITNESS WHEREOF THE HAND OF **Sri PREM RANJAN** Regional Deputy Director/Authorized Representative of the Regional Director, Jharkhand Industrial Area Development Authority, Adityapur Region for and on behalf of the Jharkhand Industrial Area Development Authority, Adityapur Region has been a fixed on the date and year first above written.

Regional Deputy Director
Jharkhand Indl. Area Dev. Authority
Adityapur Region

Regional Dy. Director/Authorised Representative of the Regional Director.

WITNESSES:

1. Deepak Srivastava
(Deepak Srivastava)
S/o Sh Y.P. Srivastava

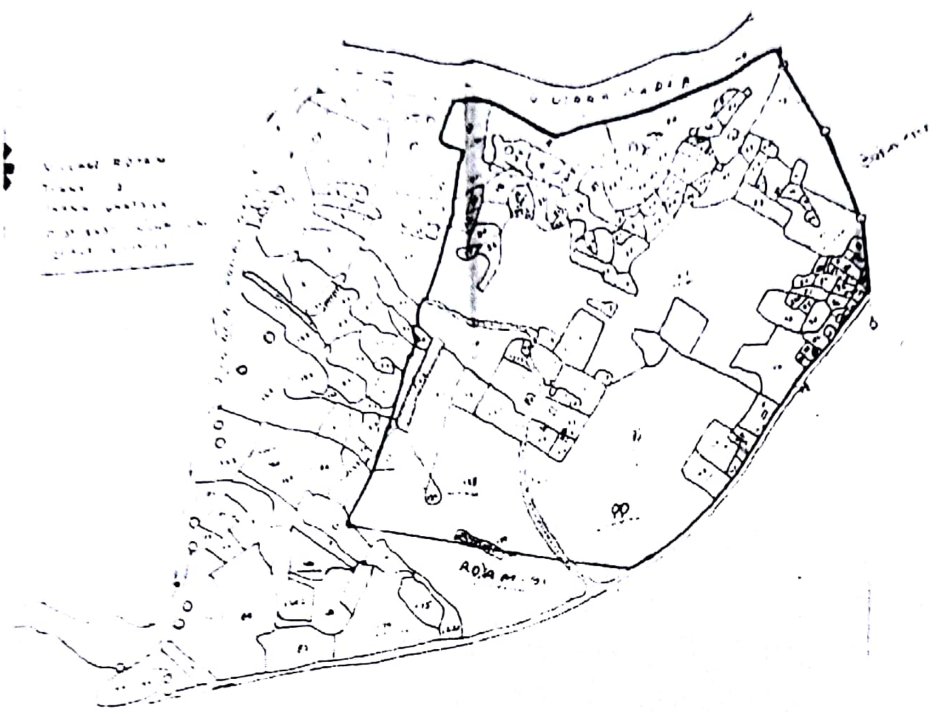
2. (AMIT DEGVEKAR)
S/o Narayan Degvekar

Certified that the original lease deed are reproduction of each contains 6469 words.

For and on behalf of
M/s. Hindustan Copper Limited, Indian Copper Complex.

SANJAY KUMAR SINGH
DY. GENERAL MANAGER
IN-CHARGE (UNIT HEAD) I C C
HINDUSTAN COPPER LIMITED
(A. GOVT. OF INDIA ENTERPRISE)
INDIAN COPPER COMPLEX
P.O.- MOUBHANDAR-832103
JHARKHAND

LAND PLAN OF M/S. HINDUSTAN COPPER LIMITED



18(P)	81	89	229
21	221	90	97
22	51	91	222
23	52	92	14
24	61	93	71
25	53	94	71
26	64	95	71
27	61	96	70
28	64	97	53
29	63	98	20
30	227	99	210
31	11	100	189
32	18	101	187
33	101	102	71
34	101	103	71
35	229	104	70
36	101	105	70
37	161	106	229
38	18	107	227
39	161	108	227
40	11	109	179
41	18	110	18
42	221	111	18
43	81	112	18
44	8	113	199
45	8	114	18
46	8	115	229
47	81	116	108
48	81	117	109
50	16	118	108
51	61	119	18
52	81	120	18
53	101	121	53
54	229	122	5
55	87	123	9
56	88	124	9
57	81	125	69
58	87	126	68
59	88	127	37
60	87	128(P)	167
61	88	129(P)	167
62	88	130(P)	168
63	88	131(P)	167
64	156	132	168
65	229	133	167
66	229	134	167
67	170	135(P)	225
68	115	136	65
69	110	137	54
70	173	138	55
71	156	139	53
72	70	140	208
73	70	141	229
74	170	142	55
75	156	143	151
76	224	150(P)	35
77	229	170(P)	10
78	156	171(P)	9
79	229	23/1200	4
80	170	23/1201	61
81	229	27/1202	64
82	190	30/1203	18
83	49	31/1204	18
84	91	30/1205	109
85	94	30/1206	108
87	49	31/1208	65
89	173	31/1222	206

AREA - 90.30 ACRES

BOUNDARY

	AS PER SURVEY PLOT NO / SURVEY MAP	AS PER INDUSTRIAL PLOT NO/PHASE MAP
NORTH	2 (GUDRA NADI)	JIADA BOUNDARY & RIVER GUDRA
SOUTH	133(P), 131(P), 130(P), 125(P), 127(P), 128(P), 20, 21/1210	JIADA LAND
EAST	TO MOUZA - DIGRI BOUNDARY	JIADA BOUNDARY & VILLAGE ROAD
WEST	20, 21/1210, 18(P), 19(P), 140, 143, 166(P), 169, 170(P), 171(P), 172, 135(P)	D-2, 45 ft WIDE ROAD & GOVT LAND

SANJAY KR. SINGH

Scanned with CamScanner

Annexure - 3

PHYSICAL POSSESION CERTIFICATE

This is to certify that in compliance of order No. 799/AR dated 30.11.18 for giving physical possession of plot/shed we, Circle Inspector of the Authority in presence of Industries Extension Officer and Draftsman –cum- Surveyor handed over physical possession of Plot No/Shed R-1 Phase Royam of Industrial Area, Adityapur Region Measuring an area of 90.3 Acres Acre/sqft of land as per plan and plot schedule enclosed in Vill/ Mouza Royam Thana No _____ Dist. of Seraikela-Kharsawan to M/s Hindustan copper ~~co~~ limited represented by Mr Sanjay Kumar Singh on this the 3rd day of July 2019 at 11.00 am.

C.I., JIADA

I.E.O., JIADA

Allottee Unit

SANJAY KUMAR SINGH
DY. GENERAL MANAGER
IN-CHARGE (UNIT HEAD / C C
HINDUSTAN COPPER LIMITED
(A. GOVT. OF INDIA ENTERPRISE)
INDIAN COPPER COMPLEX
P.O.- MOUBHANDAR-832103
JHARKHAND

I, Mr. Sanjay Kumar Singh authorized representative of M/s Hindustan copper limited received physical possession of land/shed of plot /shed No. R-1 Phase Royam Industrial Area, Adityapur Region measuring an area of 90.3 Sqft/ Acre of land as per plan and plot schedule enclosed in Village/ Mouza Royam Thana No. _____ Dist. of Seraikela-Kharsawan from Circle Inspector of the Authority in presence of Industries Extension Officer and Draftsman –cum- Surveyor on this the 3rd day of July 2019 at 11.00 am

C.I., JIADA

8/7/19

I.E.O.,JIADA

Representative of the Allottee Unit

SANJAY KUMAR SINGH
DY. GENERAL MANAGER
IN-CHARGE (UNIT HEAD / C C
HINDUSTAN COPPER LIMITED
(A. GOVT. OF INDIA ENTERPRISE)
INDIAN COPPER COMPLEX
P.O.- MOUBHANDAR-832103
JHARKHAND

DRAWINGS

DRG No-MEC//11/16/Q7JGA/02

CRUSHING CIRCUIT

ROM ORE BY DUMPER.

GRIZZLY (300mm X 300mm)

ROCK BREAKER -450mm

JAW CRUSHER, 278 t/hr, 110 kw

-200mm

15000t Stockpile at Surface

278 t/hr

DD Scalping Screen (1W+1S), 40,12mm, 278 t/hr

Cone Crusher (1W), CSS-20mm,

DD Sizing Screen (1W+1S), 25,10 mm

Short head Cone Crusher (1W), CSS-12mm

BIN, 6 No, 200m3

Note : Provision for 20m3/hr water for dedusting sealing etc shall be kept

FLOTATION AREA

208.33	33.773
408.53	0.931
1.940	0.00

FROM GRINDING CIRCUIT

35.00 SF(g/t)

15.00 SIPX (g/t)

CONDITIONING TANK

227.89	33.85
480.3	0.931
2.12	559.1

ROUGHER CELL , 10m3

212.91	33.06
431.17	0.126
0.268	504.84

SCAVEN. CELL, 10m3

12.06	21.28	200.85	34.19
44.64	1.35	386.53	0.05
0.163	48.82	0.105	456.03

14.98	23.38
49.09	12.40
1.86	54.27

CLEANER CELL

Conc	Tails		
		7.49	28.54
		20.78	0.29
		0.022	31.13

7.49	26.71
20.55	24.51
1.835	23.14

CLEANER CELL CONC

SAND-SLIME SEPN HC

TAILS AREA

200.85	34.19
386.53	0.05
0.10	456.03

SAND SLIME SEPARATION HYDROCYCLONES

60.154	15.572	140.69	69.97
326.137	0.057	60.39	0.05
0.035	346.952	0.07	109.08

TAILS THICKENER, 24m Dia

60.15	50.00	-
60.15	0.06	265.98
0.03	80.97	-

PRESS FILTER

60.15	75.00	-
20.05	0.06	40.10
0.03	40.87	-

TAILING POND

Daily, m3	891.619
Daily, T (Dry Ore)	1312.451
Annual, Mm3	0.294
Annual, MT	0.433

MINE BACKFILLING

Daily, m3	2379.821
Daily, T (Dry Ore)	3069.629
Annual, Mm3	0.785
Annual, MT	1.013

LEGEND

T/hr (Wet)	% Solids
Water, m3	Cu %
Cu (Solid), t/hr	Slurry, m3/hr

FLOTATION REAGENT CONSUMPTION

Sl No	Reagent	Unit		/t of ROM	Annual, t
1	**Flotation**				
a	SIPX	g/t		15.00	22500
b	Frother	ml/t		35.00	52500

GRINDING & NEUTRAL FILTER AREA

126.9 m3/hr

208.33	95.00
10.96	0.93
208.33	

Ball Mill, 3 lines each of 69.33t/hr

208	60.18
137.84	0.93
1.940	

Ball Mill, 3 X 69.33 t/hr

271 m3/hr

Sump, 20m3

Classifying Cyclone for each mill

208	33.77
408.53	0.93
1.940	0

Conditioner Tank, Flotation

208.333	33.773
408.53	486.56
1.940	479.17

Note : Provision for 10m/hr water for dedusting sealing etc shall be kept

PRODUCT AREA

CLEANER CELL CONC

7.49	26.71
20.55	24.51
1.835	23.14

CONC THICKENER

7.488	51.90	-	-
6.9	24.51	13.61	-
1.835	9.53	-	

13212

DISC FILTER (1W+1S)

		-	-
		6.11	-
		-	

7.488	90.02
0.83	24.51
1.84	3.42

PRODUCT BAGS

19.72

CIRCULATION WATER

WATER, REAGENT ETC

AREA	Unit	Application	Consumpt	Return
Crushing	m3/hr	Dedusting	20	
Grinding	m3/hr	Grinding	397.6	
Grinding	m3/hr	Sealing	10	
Flotation	m3/hr	Dosing	5	
Product	m3/hr	Recovery		19.72
Tails	m3/hr	Recovery		306.09
Total			432.6	325.8

CONCURRED BY

REVISIONS

DATE ZONE

HINDUSTAN COPPER LIMITED

MECON LIMITED

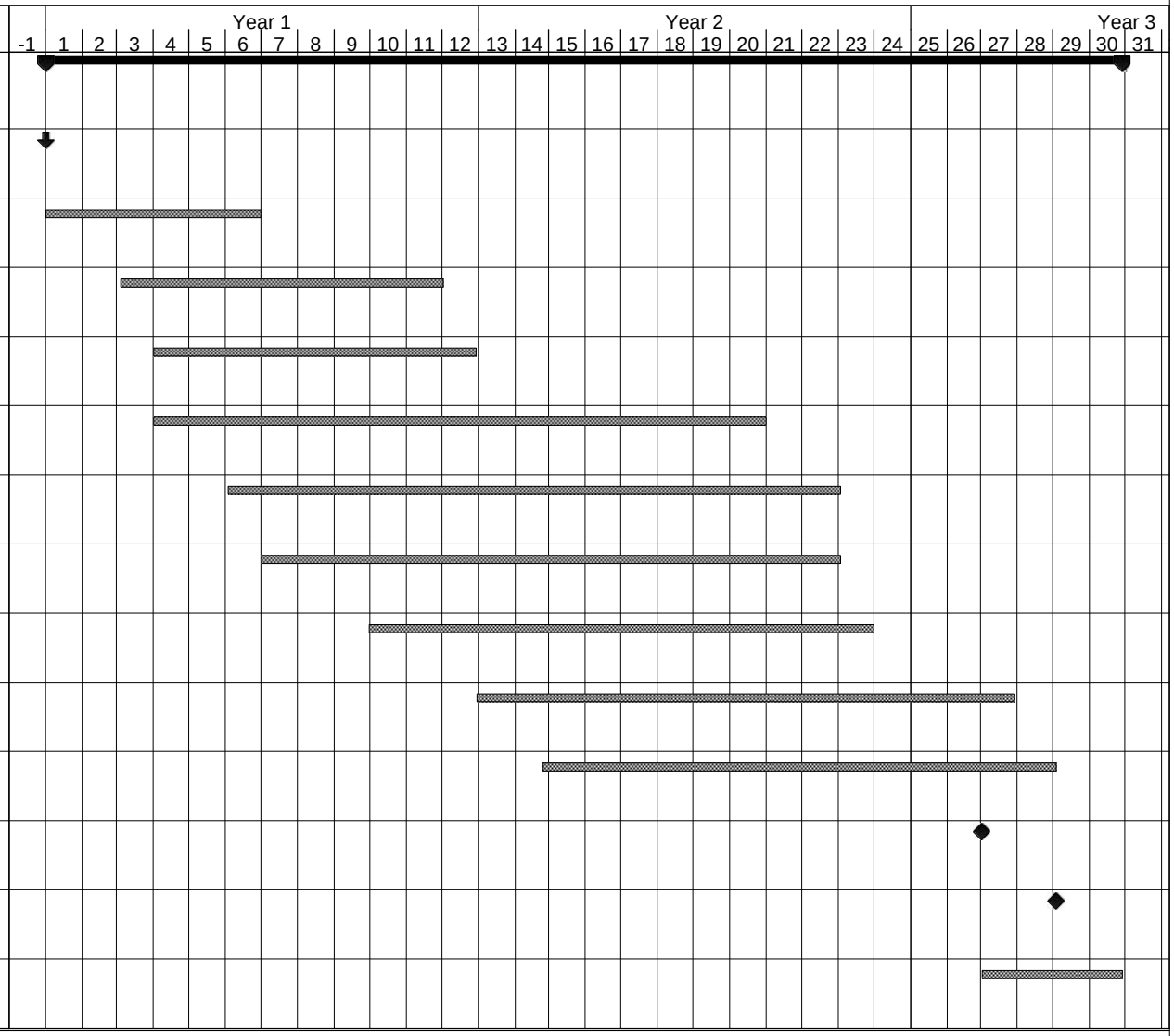
SECTION	GMMB	1.5 MTPA RAKHA CONCENTRATOR
LOCATION	Ranchi	
DESIGNED	Kumud	PROCESS FLOWSHEET
DRAWN	Kumud	
CHECKED & VERIFIED	SK	
APPROVED	Sig Date: 21.07.21	SCALE- SHEET Rev DRG No-MEC//11/16/Q7GA/02 0

HINDUSTAN COPPER LIMITED

FR FOR 1.5 MTPA RAKHA CONCENTRATOR PLANT AT GHATSHILA FOR HCL

PROJECT IMPLEMENTATION SCHEDULE

ID	Activity	Dur (wks)
1	**1.5 MTPA RAKHA CONCENTRATOR PLANT AT GHATSHILA FOR HCL**	**130 w**
2	**Zero Date (Order Placement on Main Technological Eqpt)**	**0 w**
3	**Basic Engineering**	**26 w**
4	**Preparation & Issue of TS of Auxiliaries**	**39 w**
5	**Tendering & Ordering of Auxiliaries**	**39 w**
6	**Detailed Design & Engineering**	**74 w**
7	**Civil Work**	**74 w**
8	**Fabrication & Delivery of Structures**	**70 w**
9	**Erection of Structures**	**61 w**
10	**Delivery of Equipment**	**65 w**
11	**Erection of Equipment**	**62 w**
12	**Readiness of Services (Water, Power, Compressed Air etc..)**	**0 w**
13	**Ready for Cold Test- Concentrate Plant**	**0 w**
14	**Testing, Trial-run & Commissioning**	**17 w**



Task Milestone Summary Zerodate

Prepared & Checked By : R.Roobikala
Approved By: B.K.Das

Drawing no. MEC/11/14/Q7GA/02

N

LIST OF MAJOR PROPOSED UNITS

1. TRUCK PARKING AREA
2. PRIMARY CRUSHER HOUSE
3. CONCENTRATOR PLANT
4. GRINDING UNIT
5. THICKNER
6. RAW WATER PUMP HOUSE & SUMP
7. MAIN RECEIVING SUB–STATION
8. CIRCULATION WATER PUMP HOUSE
9. HT SUB–STATION
10. SILO BUILDING
11. ORE STOCK PILE
12. INTAKE WELL
13. ROAD WEIGHBRIDGE
14. WELFARE BUILDING & CANTEEN
15. ADMINISTRATIVE BUILDING
16. GATE WITH SECURITY POST
17. TAILING POND
18. COMPRESSED AIR STATION
19. EFFLUENT TREATMENT PLANT
20. CENTRAL PLANT STORE
21. FUEL OIL STORE
22. CENTRAL WORKSHOP
23. LABORATORY BUILDING
24. FIRE STATION BUILDING

SYMBOL LEGEND

PROPOSED UNITS

PROPOSED ROAD

EXISTING ROAD

PROPOSED BOUNDARY WITH GATE

CONVEYOR WITH JUNCTION HOUSE

EXISTING NALA

GREEN BELT

WATCH TOWERS

100 0 100 200 300

SCALE IN METRES

1.5 MTPA CONCENTRATOR PLANT AT GHATSHILA,JHARKHAND

मेकॉन लिमिटेड

MECON LIMITED

GENERAL LAYOUT

SECTION	GL&T
LOCATION	RANCHI
DSGN	RAVI
DRAWN	RAVI
CHKD	I.AHMAD
APPROVED	
DATE:	

SCALE– AS SHOWN

Drawing no. MEC/11/14/Q7GA/02

SHEET 1OF1 REV 0

REV. NO.	DATE	ZONE	DESCRIPTION	BY	VERIFIED
			REVISIONS		

REFERENCES

DRG. NO.