

## MCDR INSPECTION Format

**General**

Sl. No.	Particulars	Details
1	Name of the Mine	NADIDIHI IRON & MANGANESE ORE MINE
2	Total Lease Area (Ha) with breakup of Non-forest and forest land	Total Lease area- 117.206 Ha Forest Land- 85.829 Ha (Forest Diverted land: 84.427Ha.) Non-Forest area- 31.377 Ha
3	Mine code	30ORI13073
4	IBM Registration Number under rule 45 of MCDR, 2017	IBM/329/2011
5	Name of the lessee, Address, phone, email and fax number	M/s ESL STEEL LIMITED At-Siyaljori, Post-Jogidih PS-Chandankyari BOKARO, JHARKHAND-828303 Email Id- <a href="mailto:Navnath.Vhatte@vedanta.co.in">Navnath.Vhatte@vedanta.co.in</a> Phone No. 0674-2575702/9765565531
6	Village	RENGALBEDA & NADIKASIRA
7	Taluka/Mandal	KOIRA
8	District	SUNDARGARH
9	Pin code	770048
10	State	ODISHA
11	Post office	KOIRA
12	Nearest police station	KOIRA
13	Nearest Railway station	BARBIL
14	Date of Grant of Mining Lease	17.11.2021
15	Date of Execution	20.11.2021
16	Date of opening of Mine	26.11.2021
17	Date of expiry	19.11.2071
18	Name of the Nominated Owner with Address, phone, email, fax number and date of appointment	Mr. Ashish Gupta ESL Steel Limited Siyaljori, PO-Jogidih, OP-Bangaria Bokaro Steel City Jharkhand-828303 Email-id: <a href="mailto:Ashish.Gupta3@vedanta.co.in">Ashish.Gupta3@vedanta.co.in</a> Phone No. 7763807222 Date of Appointment: 26.10.2023

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19	Name of the Mine Agent with Address, phone, email, fax number and date of appointment	Biswanath Sahoo Nadidihi Iron & Mn Ore Mine ESL Steel Limited Village- Nadidihi Taluka-Bonai P.O.-Koira District-Sundargarh Odisha-770048 Email: <a href="mailto:Biswanath.Sahoo@vedanta.co.in">Biswanath.Sahoo@vedanta.co.in</a> Phone: 9049930239 Date of Appointment- 02.11.2023
20	Name of the Mines Manager with Address, mobile no, email, fax number and date of appointment in mine	Mr. MANJIT NATEKAR M/s ESL Steel Limited, At-Nadidihi, PO-Koira, Taluka-Bonai, district-Sundargarh Odisha-770048 Email-Id- <a href="mailto:Manjit.Natekar@vedanta.co.in">Manjit.Natekar@vedanta.co.in</a> Mob.no. - 9158885898 Date of Appointment- 21.11.2022
21	Name of the Mining Engineer, Qualification and total experience with Address, mobile no, email, fax/phone number and date of appointment in mine	Mr. VIVEK SAMBREKAR Diploma in Mining & Mine Surveying Experience- 31 years ESL Steel Limited, Siyaljori, PO-Jogidih, OP-Bangaria Bokaro steel city JHARKHAND-828303 Email-Id- <a href="mailto:Vivek.Sambrekar@vedanta.co.in">Vivek.Sambrekar@vedanta.co.in</a> Mob.no. -9923176906 Date of Appointment- 20.01.2022
22	Name of the Geologist, Qualification and total experience with Address, mobile no, email, fax number and date of appointment in mine	Mr. ABANI KUMAR DASH M. Sc., M.Phil. (Geology) Experience- 19 years ESL Steel Limited, Siyaljori, PO-Jogidih, OP-Bangaria Bokaro steel city JHARKHAND-828303 Email-Id- <a href="mailto:Abani.Dash@vedanta.co.in">Abani.Dash@vedanta.co.in</a> Mob.no. -9765391978 Date of Appointment- 20.01.2022
23	Date of Approval of Mining Plan/Review of Mining Plan/ their modifications with five-year period and specific condition in approval letter, if any.	Letter No. - BBS/SNG/IRON-MN/2166/MP/2022-23 Date of Approval: 12/05/2022
24	Mineral (s) granted in lease and proved for mining.	IRON & MANGANESE ORE
25	Method of Mining (Opencast, Underground)	Opencast

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26	Category (Fully Mechanized, Others or Manual)	Fully Mechanized
27	Captive/Non-Captive	Non-Captive
28	Present EC Capacity	7.451 MTPA (For Production of 6 MTPA of Iron ore + Dry Screening & Crushing of 1.451 MTPA of low-grade iron ore/reworking of old dumps.)

**Exploration:**

Sl.No.	Item	Proposals (FY 2022-23)	Actual work	Remarks
1a	Backlog of previous year	Not Applicable	Not Applicable	Ex-Lesse: 301Nos, FY-22-23: 71 Nos FY-23-24: 13 Nos. Boreholes
1b	Exploration over lease area for Geological axis 1 or 2.	No Proposal	71 Boreholes done in FY2023 to bring the 21.638 Ha G2 & 7.184 Ha Unexplored area in G1. (Report is under progress)	-G1: 88.384 Ha. -G2: 21.638 Ha. -Area proved as non-mineralized: 40.085 Ha. -Area to be explored: 7.184Ha.
1c	Exploration Agency & Expenditure in lakh Rupees during the year	No Proposal	Drilling Partner: M/s Maheshwari Mining Pvt. Ltd. Technical Partner: SRK Mining Services (India) Private Ltd. Expenditure: 370.052 Lakhs	
1d	Balance area to be explored to bring Geological axis in 1 or 2	Not Applicable	G2: 21.638 Ha. Area unexplored: 7.184 Ha	71 Boreholes done in FY2022-2023 to bring the 21.638 Ha G2 & 7.184 Ha Unexplored area in G1.
1e	Balance reserves as on 31.03.2023	10512330.00 Metric Tonnes	11,359,375.00 Metric Tonnes	
		The Nadidih Iron and manganese ore deposit forms a part of pre-cambrian sedimentary formation known as the Iron-ore series developed in Singhbhum-Keonjhar-Bonai area. The general strike of the formation in Northern Singhbhum is NNE-SSW, but gradually changing over to NW-SE in the eastern part. The strike of the bedding planes varies from N30°W to S30°E, N-S to N30°E to S30°W with dips of 20° to 45° towards NW to W in shale.		

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**Development: -**

Sl.No.	Item	Proposals (FY 2022-23)	Actual work	Remarks
2a	Location of development w.r.t. lease area	319470 E to 320210 E 2429130 N to 2430310 N	North Pit: 319506 E to 319857 E 2429737 N to 2430294 N South Pit: 319760 E to 320208 E 2429142 N to 2429705 N	Violation of Rule 11(1) issued for developing pit upto 501 mRL instead of 475
2b	Separate benches in topsoil, overburden, and mineral	North Pit: Topsoil-----0 Overburden-----4 Mineral-----3  South Pit: Topsoil-----0 Overburden-----3 Mineral -----9	Type No. of Benches  North Pit: Topsoil 0 Overburden 4 Mineral 3  South Pit: Topsoil 0 Overburden 3 Mineral 5	
2c	Stripping ratio or ore to OB ratio	1:0.26	1:0.29	No Significant Change
2d	Quantity of topsoil generation in m3	No Proposal	Nil	No top soil generated during the reporting year.
2e	Quantity of overburden generation in m3	635700 m3	535518 m3	Less OB achieved vis-à-vis the production of ROM.
General remarks of inspecting officers on development of pit w.r.t. type of deposit etc		The mine workings are confined to 2 pits viz North and South Pits. The work is being broadly carried out as per proposals in the approved modification of MP.		

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**Exploitation: -**

Sl.No.	Item	Proposals (FY 2022-23)	Actual work	Remarks
3a	Number of pits proposed for production	02 nos.	02 nos.	1. South Pit (L*W*H): 635*412*61 2. North Pit (L*W*H): 498*336*47
3b	Quantity of ROM mineral production proposed	3480765 Metric Tonnes	2633720 Metric Tonnes	Production within EC limit.
3c	Recovery of salable/usable mineral from ROM production	100 (2993458 Metric Tonnes)	(2249027 Metric Tonnes)	Recovery is 85.00% of the proposed.
3d	Quantity of mineral reject generation	487307 Metric Tonnes	384693 Metric Tonnes	As per AR for 2022-23
3e	Grade of mineral reject generation and threshold value declared	45 Fe % to 55 Fe % Threshold value 45 % Fe content	45 Fe % to 55 Fe % Threshold value 45 % Fe content	
3f	Quantity of sub-grade mineral generation	No proposal	Nil	
3g	Grade of sub-grade mineral generation	No proposal	Not Applicable	
3h	Manual / Mechanized method adopted for segregating from ROM	Mechanised method proposed for segregating from ROM	Mechanised method adopted for segregating from ROM	Dry crushing & screening. Crusher =250 TPH (7 nos.) & 200 TPH (1 nos.).
3i	Any analysis or beneficiation study proposed & carried out for sub-grade mineral and reject	No Proposal	No beneficiation study carried out.	
3j	Provision of drilling & blasting in mineral benches	Drilling and Blasting proposed in mineral benches.	Drilling and blasting was carried out in mineral benches.	Drill hole diameter is 110 mm with spacing of 3.8 m and burden of 3.3m. Blasting is carried out with Class-II Solar prime/aqua dyne cartridge formed explosives.
3k	Provision of mining machineries in mineral benches	Use of HEMMs is proposed in Mineral Benches.	Mechanized O/C mining is carried out with engaging HEMMs in mineral benches.	Mining is carried out by Shovel (3.5 m3) Dumper (35 tonne) combination.

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3l	Whether height of benches in overburden and mineral suitable for method of mining proposed in MP/SOM	Height of the benches proposed to be maintained as 9 mtrs Width: 10 to 12 mtrs	The height of benches is 9 mtrs and width of 10 mtrs	Violation of Rule 11(1) issued for not maintaining bench height at some places.
3m	Total area covered under excavation/pits	40.55 Ha	39.911 Ha.	North Pit: 15.848 Ha South Pit: 24.063 Ha
3n	Ore to OB ratio for the pit/mine during the year	1:0.26	1:0.29	No significant change
3o	Total area put in use under different heads at the end of year.	Area under Mining- 40.55 Ha OB /Waste dumping- 20.48 Ha Infrastructure- 2.29 Ha Mineral Storage: 6.76 Ha Roads- 2.08 Ha Garland Drain, Retaining Wall, Settling Tank: 2.50 Ha	Area under Mining- 39.911 Ha OB /Waste dumping- 20.48 Ha Infrastructure- 2.29 Ha Mineral Storage: 6.76 Ha Roads- 2.08 Ha. Garland Drain, Retaining Wall, Settling Tank: 2.493 Ha	As per AR 2022-23
3p	Production of ROM mineral during <b>last five-years period</b> , as applicable	2017-18- Nil 2018-19- Nil 2019-2020- Nil 2021-22: 236018 MT 2022-23: 3480765 MT	2017-18- Nil 2018-19- Nil 2019-2020- Nil 2021-22: 236018 MT 2022-23: 2633720 MT	All units in Metric Tonnes. Actual production is within the proposed limit.
General remarks of inspecting officers on method of mining etc.		Open-cast fully mechinsed mining method with Shovel-Dumper combination, with 9m height and 10-12m width benches with deep drilling and blasting is being broadly carried as per approved modified MP.		

**Solid Waste Management-Dumping: -**

Sl.No.	Item	Proposals (FY 2022-23)	Actual work	Remarks
4a	Separate dumping of topsoil, OB & mineral reject (Rule 32, 33)	-No Topsoil -OB is proposed to dump separately.	-No Topsoil -OB is dumped separately. -Mineral Reject is stored separately or blended with Ore (having grade >55 % Fe) as per Market demand.	
4b	Location of topsoil, OB & mineral reject dumps	<b>OB:</b> 320164 E to 319912 E 2430500 N to 2430660 N <b>Proposed Stack/Stockpile area for FY23 (Mineral Reject):</b> 319745 E to 320260 E 2430100 N to 2429720 N	<b>OB:</b> 320160 E to 319920 E 2430510 N to 2430660 N <b>Mineral Reject:</b> 319792 E to 320169 E 2430050 N to 2429800 N	

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4c	Number of dumps within lease area and outside lease area	1 no. of dumps is present within the lease area.	1 no. of dumps is present within the lease area.	
4d	Location of dumps w.r.t. ultimate pit limit	<b>OB:</b> 320164 E to 319912 E 2430500 N to 2430660 N	<b>OB:</b> 320160 E to 319920 E 2430510 N to 2430660 N	
4e	Number of active & alive dumps	1	1	2430279N 320048E
4f	Number of dead dumps	0	0	
4g	Number of dumps stabilized	0	0	
4h	Whether Retaining wall or garland drain all along dumps are there	Retaining wall proposed all along the dumps	Retaining wall made all along the dumps	
4i	Length of Retaining wall or garland drain all along dump	700 mtrs length retaining wall is proposed around waste dumps.	700 mtrs length retaining wall is constructed around waste dumps.	
4j	Number of settling ponds	No proposal	Maintenance of 3 existing settling Ponds.	
Specific comments of inspecting Officer on waste dump management.		Overburden, mineral and mineral reject management is broadly as per proposal are being carried out as per the approved proposals.		

**Solid Waste Management-Backfilling: -**

SL.No.	Item	Proposals (FY 2022-23)	Actual work	Remarks
5a	Status on part or full extraction of mineral from mined out area before starting backfilling.	No Backfilling proposed	Not Applicable	
5b	Area under backfilling of mined out area	Not Applicable	Not Applicable	
5c	Concurrent use of topsoil for restoration or rehabilitation of mined out area	Not Applicable	Not Applicable	
5d	Total area fully reclaimed & rehabilitated	Not Applicable	Not Applicable	
General remarks of inspecting officers on backfilling and reclamation etc.		No backfilling has been proposed as the area is not matured for Backfilling.		

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**Progressive Mine Closure Plan: -**

Sl.No.	Item	Proposals (FY 2022-23)	Actual work	Remarks
6a	Whether Annual report on PMCP submitted on time and correctly - Rule 26(2). (Hard copy same provided)	Annual report on PMCP to be submitted on 1 <sup>st</sup> July every year.	PMCP Report Submitted.	Submitted on 30.06.2023.
6b	Management of worked/ mined out benches. i) Area available for rehabilitation (ha) ii) Afforestation done (ha) iii) No. of saplings planted during the year iv) Cumulative no. of plants  v) Any other specific method of rehabilitation vi) Cost incurred on watch & care during the year	Not Applicable  No Proposal  No Proposal  117376 (Existing no. of plants as on 31.03.2022).  Not Applicable  No Proposal	Not Applicable  0.40 Ha  780  118156  Not Applicable  5.46 Lakhs	
6c	Compliance on reclamation and rehabilitation by backfilling i) Voids available for backfilling (L X B X D) ii) Void filled by waste/tailings iii) Afforestation on the backfilled area iv) Rehabilitation by making water reservoir v) Any other specific means	No Proposal  No Proposal  No Proposal  No Proposal  No Proposal	Not Applicable  Not Applicable  Not Applicable  Not Applicable  Not Applicable	
6d	Compliance of Rehabilitation of waste land within lease i) Afforestation ii) Area rehabilitated (ha) iii) Method of rehabilitation	No afforestation proposed.	780 number of saplings planted	780-Within ML



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6e	Compliance of Environmental monitoring (core zone & buffer zone)	Environmental monitoring in Core zone and buffer zone proposed as per MOEFCC and SPCB guidelines.	Monitoring of Noise, Water etc done.	Monitoring is being done by third party viz. EHS Labs. Env. parameters were observed to be within the permissible limit
General remarks of inspecting officers on PMCP compliance and progressive closure operations etc.		The lessee has done adequate plantation and is regularly monitoring the Environmental Parameters.		

**Mineral Conservation: -**

SL.No.	Item	Proposals ((FY 2022-23)	Actual work	Remarks
7a	ROM Mineral dispatch or grade-wise sorting within lease area	Fines & Lumps dispatch with Grade >55% Fe content.	Fines & Lumps dispatch with Grade >51% Fe content.	Dispatch as per market demand.
7b	Method of grade-wise mineral sorting i.e. manual or mechanical	Mechanical method of Sorting proposed.	Mechanical method of Sorting adopted.	Mechanical methods used for sorting by using Excavator, Wheel-loader, Rock-breaker and Mobile Screening plant.
7c	Different grade of mineral sorted out at mines	45.55% Fe content & >55% Fe content	45-51 % Fe content, 51-55 % Fe content, 55-58 % Fe content, 58-60 % Fe content, 60-62 % Fe content, 62-65 % Fe content	
7d	Any beneficiation process at mines	No proposal	Not done	Screening and Classification by Mobile Screening Plant with capacity of 250 TPH (7 nos.) & 200 TPH (1 nos.).
General remarks of inspecting officer on Mineral Conservation and beneficiation issues.		No Beneficiation is carried out by the lessee except Grade wise sorting by screening and crushing within lease area.		

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**Environment: -**

SL.No.	Item	Proposals ((FY 2022-23)	Actual work	Remarks
8a	Separate removal and utilization of topsoil	No proposal for generation of top soil during reporting year.	No top soil was generated during the reporting year.	
8b	Concurrent use or storage of topsoil	No top soil generation is proposed.	No top soil was generated during the reporting year.	
8c	Separate dumps for overburden, waste rock, rejects and fines	OB: 320164 E to 319912 E 2430500 N to 2430660 N  Proposed Stack/Stockpile area for FY23 (Mineral Reject): 319745 E to 320260 E 2430100 N to 2429720 N	OB: 320160 E to 319920 E 2430510 N to 2430660 N  Mineral Reject: 319792 E to 320169 E 2430050 N to 2429800 N	Separate dumps for overburden/waste rock, rejects and fines done as per proposed plan. (Mineral rejects stored in proposed stack/Stockpile area or blended with Ore (having grade > 55 % Fe) as per Market demand.)
8d	Use of overburden, waste rock, rejects and fines dumps for restoring the land to its original use	No such proposal	Not done	
8e	Phased restoration, reclamation and rehabilitation of lands affected by mining operations (Pits, dumps etc)	No such proposal	Not done	
8f	Baseline information on existence of plantation & additional plantation done		Plantation in 2022-23= 780	
8g	Survival rate	No Proposal 80 % (For Existing)	70 % (FY23)	As per AR for year 2022-23
8h	Water sprinkling on roads to control airborne dust	Water sprinkling proposed on haul roads to suppress the dust.	Water tankers are dedicated used for water sprinkling on roads to control airborne dust. Fixed water sprinkling system is also in operation.	2 number of water tankers having capacity of 18000 and 16000 ltrs deployed for suppressing dust.
General remarks of inspecting officer on aesthetic beauty in and around mines area.		Aesthetic beauty in & around mines area is well maintained. The lessee is implementing the PMCP proposal and has carried out adequate plantation. Sprinkling of water on Haul roads and transport roads using water tanker is done to suppress the dust.		

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**Compliance of Rule 45**

Sl.No	Item	COMMENTS		Remarks.
9a	Status of submission of Monthly and Annual returns	M.R. Submitted upto Nov-2023 A.R. submitted for 2022-23.		AR Submitted on 30.06.2023
S.N.	Item	Details GIVEN in A.R.	Actual in field	
9b	Scrutiny of Annual return for information on Mining Engineer, Geologist and Manager	-Mining Engineer: Mr. Vivek Sambrekar  -Geologist: Mr. Abani Kumar Dash  -Mines Manager: Mr. Manjit Natekar	-Mining Engineer: Mr. Vivek Sambrekar  -Geologist: Mr. Abani Kumar Dash  -Mines Manager: Mr. Manjit Natekar	
9c	Scrutiny of Annual return on land use pattern for area under pits, reclaimed area, dumps etc.	Area under pits=39.11 ha Reclaimed Area=0.00 ha Dump=20.480	Area under pits=39.911 ha Reclaimed Area=0.00 ha Dump=20.480 ha	
9d	Scrutiny of Annual return on afforestation	780 plants (70 % Survival rate)	780 plants (70 % Survival rate)	All within lease
9e	Scrutiny of Annual return on mineral reject generation (Grade & quantity)	384693 Metric Tonnes  <b>Grade:</b> 45 Fe %	Appears to be correct	
9f	Scrutiny of Annual return on ROM stock and/or graded ore	-Opening Stock: 26282.000 Tonnes - ROM Production: 2633720.0 Tonnes - ROM Closing Stock: 832082.0 Tonnes	Appears to be correct	
9g	Scrutiny of Annual return on sale value, Ex. Mine price & production cost	-Ex. Mine Price: (58-60% Fe, Lumps) Rs: 4497.87  -Ex. Mine Price: (60-62% Fe, Lumps) Rs: 5809.23  Ex. Mine Price -(51-55% Fe, Fines) Rs: 2806.80	Appears to be correct	

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		<p>Ex. Mine Price -(55-58% Fe, Fines) Rs: 2672.61</p> <p>Ex. Mine Price -(58-60% Fe, Fines) Rs: 2351.03</p> <p>Ex. Mine Price -(60-62% Fe, Fines) Rs: 3634.30</p> <p>Ex. Mine Price -(62-65% Fe, Fines) Rs: 3584.74</p> <p>Ex. Mine Price -(&lt;62% Fe, CLO) Rs: 4778.11</p> <p>Ex. Mine Price -(62-65% Fe, CLO) Rs: 6198.13</p> <p>- Production Cost: Rs: 3779.67</p>		
9i	Scrutiny of Annual return on fixed assets	- <b>Rs:</b> 2074165125.00	Appears to be correct	
9k	Scrutiny of Annual return on mining machineries	<p>Excavator (Backhoe): 07</p> <p>Wheel loader: 5 Nos.</p> <p>Tipper: 15 Nos.</p> <p>Drilling Machine: 02 Nos.</p> <p>Dozer: 2 Nos.</p> <p>Mobile Screen Plant: 8 Nos.</p> <p>Dumper: 25 Nos.</p> <p>Water Sprinkler: 2 Nos.</p> <p>Diesel Generator: 9 Nos.</p> <p>LMV (75 HP): 1 Nos.</p>	<p>Blast Drill Hole-01</p> <p>Excavator (Backhoe): 07</p> <p>Wheel loader: 5 Nos.</p> <p>Dozer: 2 Nos.</p> <p>Water Tanker-02</p> <p>Diesel Generator-09</p> <p>Tipper: 15 Nos.</p> <p>Mobile Screen Plant: 8 Nos.</p> <p>Dumper: 25 Nos.</p>	