

BEFORE THE NATIONAL GREEN TRIBUNAL

PRINCIPAL BENCH, NEW DELHI

ORIGINAL APPLICATION No. 226 of 2020

IN THE MATTER OF:

OM PURI & ORS.

... APPLICANTS

VERSUS

HINDUSTAN ZINC LIMITED & ORS.

... RESPONDENTS

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Dated: 27.9.2021


For Respondent no. 1



**BEFORE THE NATIONAL GREEN TRIBUNAL
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ORIGINAL APPLICATION No. 226 of 2020

IN THE MATTER OF:

OM PURI & ORS.

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**RESPONSE ON BEHALF OF RESPONDENT NO.1 HINDUSTAN ZINC
LIMITED TO THE JOINT COMMITTEE REPORT DATED 7.9.2021**

1. The Respondent No. 1, M/s Hindustan Zinc Limited (hereinafter the "**Respondent HZL**"), is filing this response in terms of the order dated 5.2.2021 passed by this Hon'ble Tribunal granting an opportunity to the Respondent to give its response to the Joint Committee Report dated 7.9.2021 (hereinafter the "**Report**").
2. At the outset, it is pertinent to highlight the following conclusions in the Report of the Joint Committee constituted by this Hon'ble Tribunal's order dated 5.2.2021:
 - (a) The Rampura Agucha Mine of the Respondent HZL (hereinafter the "**Unit**") has valid statutory permissions, including under the Water (Prevention and Control of Pollution) Act, 1974 and Air (Prevention and Control of Pollution) Act, 1981. (*Report, para.2.1*).



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- (b) Underground blasting is done in a very controlled manner. The blast designs, drilling patterns and the quantity of explosives used are approved by Directorate General of Mines Safety (DGMS) and optimised by CSIR-CIMFR, Dhanbad. Blast induced vibration is found to be well within the safe limits for domestic houses as well as industrial building. (*Report, para.2.2*).
- (c) On fugitive emission, the Committee found that the ambient air quality data for PM10 of last three years (2018-2020) compared with air quality data of the year 2017 revealed that air quality was stable with no incremental value in last three years in and around the surrounding villages. The monitoring reports of AAQM carried out by RSPCB during 2018 to 2020 also shows that all location were meeting 24 hourly NAAQS, 2009. (*Report, para.2.3*).
- (d) The ground water monitoring in and around the mine lease area is being carried out through 8 piezometer wells and 11 wells four times a year. The compliance reports for the last three years have shown no significant change in the ground water quality. The piezometer water sampling by RSPCB during 2014-2020 revealed no significant increment trend for any parameter in subsequent years. (*Report, para.2.4*).
- (e) The report of National Environment Engineering Research Institute (NEERI), Nagpur of 2016 has concluded that construction and operation of tailing dam has not posed any threat to ground water resources in the area, and that high values of TDS, Chlorides, Sulphate and Sodium in



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groundwater is attributable to local geological and hydrogeological set of the area. (*Report, para.2.4*). The Committee has recommended a hydrogeological survey of the area in this regard. (*Report, para.3.1*).

- (f) The water level has positively increased in all the 5 locations around the mine area during the last three years. (*Report, para.3.4*).
- (g) On green belt development, the Report finds that Environment Clearance, 2009 (hereinafter the “**EC of 2009**”) condition is violated since actual plantation is 1000 trees per hectare as against the EC condition of 1500 trees per hectare. (*Report, para.2.7*).
- (h) In so far as agricultural production, livestock and health of the villagers are concerned, the Report does not find any adverse impact in the area around the mine. (*Report, paras.3.2, 3.3 & 3.5*).

3. The Committee has noted the plantation cover being found less than that stipulated in the EC of 2009 as a non-compliance, viz., the actual plantation is 1000 trees per hectare against the EC condition of plant density of around 1500 trees per hectare.

4. In paragraph 5.0 of the Report, the Committee has made the following recommendations:

- (a) A monetary value of Rs.90,00,000/- (Ninety Lacs Rupees) against violating the Environment Clearance, 2009 specific



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condition no. xvi for plantation may be imposed on the Respondent HZL.

- (b) The unit should increase the plantation as per the EC condition stipulated under condition no. xvi of EC of 2009.
- (c) The Respondent HZL needs to carry out the hydrogeological survey of the surrounding area to map the current groundwater flow regime and its seasonal dynamics for identifying the cause of pit formation in the surrounding areas.
- (d) The Respondent HZL needs to carry out isotopic analysis of surface and groundwater samples of the area to establish sound linkages between the possible sub-surface pollutants and the industrial activities of the area.
- (e) The unit should ensure regular desiltation of the tailing dam garland drain.
- (f) The unit should increase the number of water sprinklers to curtail fugitive dust emission at crusher area, haul road and others.

5. The Respondent HZL is respectfully submitting its response to each of the recommendations mentioned above.

A. Green Belt Development

6. The plantation of 1000 plants per hectare represents the number of plants that have survived post the plantation during the last three years. The actual plantation done by the Unit is much



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higher. The Unit is located in the semi-arid region of Bhilwara district of Rajasthan. Due to the local conditions and also the fact that plantation is being done in areas such as the waste dump, the survival rate of the plants is comparatively less, being in the range of 60 to 70 per cent.

7. Plantation is a continuing process. At present, a total number of 371,650 saplings are planted in 329.20 hectare (*para 2.7 of the report*), and the density of the plantation comes to 1129 plants per hectare. The Joint Committee has taken into account the plantation done in the last three years to arrive at the figure of 1000 plants per hectare. The density of the plantation is being increased in a phased manner given the survival rate. For effective plantation and the survival of the plants, the Unit has entered into contracts for plantation and for the maintenance of the plants where payment to the contractor is linked with the survival and growth of the plants. In case of mortality, the contractor has to replace the plant with plants of similar age and height. A copy of the Work Order dated 10.8.2019 is annexed as **Annexure R-1**.

8. In addition to the above, the Unit has spread seeds of native plant species on the waste dump slopes and other waste dump areas to increase the density of the plantation. The Unit is placing geotextile (made of coir mat) on the waste dump slopes for stabilization. Vetiver grass, aloe-vera and other species have been planted over these geotextiles. Details of seed spreading during past six years are as under:



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S. No.	Year	Seed spread (in Kg)
1.	2016-17	4000
2.	2017-18	3570
3.	2018-19	7510
4.	2019-20	-
5.	2020-21	5000
6.	2021-22	5000

• There are more than 1000 seeds in every kilogram depending on the variety/size of the seeds.

9. It is pertinent to mention that the number of plantation of 1000 plants per hectare does not include the number of plants grown due to the spreading of these seeds since the Unit has not yet carried out a count of such plants. Moreover, natural regeneration of species such as Babool and Sheesham has also been observed as this area is adequately fenced and plants are being watered on a regular basis. A copy of the Work Order dated 29.7.2020 is annexed herewith and marked as **Annexure R-2**.

10. The Unit will achieve the stipulated plantation of 1500 plants per hectare by increasing the number of plantations and through the plants grown as a result of spreading of seeds. In fact, the Unit has achieved a density of even more than 1500 plants in some patches. Photographs of some dense patches of plantation is annexed herewith and marked as **Annexure R-3**.

11. The Unit's commitment to plantation will also be clear from the fact that plantation has been developed by the Unit in an area of 52.91 hectares outside of the lease area in addition to the EC



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conditions, a fact noticed by the Joint Committee in para.2.7 of the Report.

12. It is respectfully submitted that the number of plantations of 1000 plants per hectare ought not to be treated as violation of the EC condition. The density of 1500 plants per hectare is an approximate density, and not a violation so as to attract a penalty. This is clear from the fact that the EC of 2009 stipulates a density of "around" 1500 plants. Moreover, given the survival rate of the plants, the actual plantation by the Unit is much higher than the 1000 plants per hectare that have since survived. Clearly, the Unit is in substantial compliance with the EC condition given the conditions peculiar to this region. Moreover, the Unit will also increase the plantation to ensure that the condition stipulated in the EC is fully satisfied.

13. In so far as the recommendation to impose a penalty of Rs.90 lakhs on the Unit is concerned, it is respectfully submitted that the Ministry of Environment, Forests and Climate Change (**MoEF & CC**) has been given the power to determine violation of EC conditions and the action, if any, that ought to be taken against the Unit under the statutory scheme, viz., the Environment Protection Act, 1986 and other applicable laws. Even the EC of 2009, in paragraph 4, stipulates to the above. The Unit has regularly furnished the status of plantations in their six-monthly compliance reports. The Unit has also received an amendment to the EC in February 2020 before which a representation was made to the Expert Appraisal Committee (EAC) where also it had disclosed the current status of the plantation. The MoEF & CC



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has so far not considered the current density of the plantation as a non-compliance so as to attract a penalty. On the other hand, as per this Hon'ble Tribunal's order dated 5.2.2021, the Joint Committee was to assess the monetary value of damage to the environment.

14. It is respectfully submitted that the Unit has achieved substantial compliance with the EC condition and is committed to ensure a density of 1500 plants per hectare. In view of the fact and circumstances stated above, the penalty of Rs.90 lakhs ought not to be imposed on the Unit.

B. Hydrogeological survey of areas surrounding the unit

15. The third recommendation of the Joint Committee is for the Unit to carry out hydrogeological survey of the surrounding area to identify the cause of pit formation certain lands.

16. The Joint Committee may note that the nearest pit formation is at a distance of 3 kms. from the mining lease boundary. There are agricultural lands between the mining lease boundary and the said pit where there are no pit formations. In view of the distance between the mining lease boundary and the pit, it is unlikely that the pit formation is on account of any activity attributable to the Unit.

17. That the pit formation cannot be attributable to the operations of the Unit is also clear from a recent study carried out by the Central Institute of Mining & Fuel Research (CIMFR), Council for Scientific and Industrial Research (CSIR), Dhanbad. In its report



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of July 2020, it concluded that subsidence and magnitudes are much lower than the safe limits for causing any significant impact, including on any surface structures. The Unit had submitted this report to the MoEF & CC. Therefore, pit formation in lands at a distance of 3 kms. is not attributable to the Unit's operations. A copy of the CIMFR report of July 2020 is annexed herewith and marked as **Annexure R - 4**.

C. Isotopic analysis of surface and ground water samples

18. The fourth recommendation of the Joint Committee is for the Unit to carry out isotopic analysis of surface and grounds water samples of the area to exclude any linkage between sub-surface pollutants and the industrial activity.
19. The Joint Committee has relied on the NEERI Report of 2016 and its conclusion that the high values of TDS, chlorides, sulphate and sodium observed in the groundwater both upstream and downstream of tailing dam is attributable to the geological and hydrogeological set up of the area. In para.3.1, however, the Committee has noted that the NEERI Report is quite old and therefore, a fresh study ought to be carried out by the Unit. It is respectfully submitted that the hydrogeological conditions have largely remained the same, and would not materially change within the last five years.
20. The Respondent HZL reiterates that the groundwater quality in the villages at a distance of around 10 kms. is attributable to the geological and hydrogeological set up of the area. The PHED analysis tabulated in para.3.1 (Annex. 15) for the period 2017-2021



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when compared to the water samples collected at four locations on 12.7.2021 does not show any wide variations. Moreover, none of the villages mentioned in para.3.1 (at pg.15) are downstream to the Unit and therefore, there cannot be any impact on groundwater quality on account of the Unit's operations.

21. That the quality of the ground water is not affected by the activities of the Respondent HZL is clear from the table in paras.2.4 (v-vi) giving the results of water sampling from nine locations within the lease area over the period 2014 through 2020. It is pertinent to note the following findings of the Joint Committee in this regard:

“v. The ground water monitoring in and around the mine lease area is being carried out through 08 piezometer well & 11 wells; four times in a year. The Six-monthly compliance reports of last 03 years (2018-2020) have shown no significant change in the ground water quality. Copy of the Groundwater report is enclosed as an Annexure -X.

vi. The piezometer named as ADM, P, K & A are in upstream of tailing dam. The piezometers water sampling carried out by Rajasthan State PCB during 2014 to 2020 revealed no significant increment trend for any parameter in consecutive years. The increased value of Hardness, Chloride, Sulphate in one year followed by reduced concentration in next year may be due to the varying sampling schedule. The reports are



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enclosed as an Annexure -XI. The results are as tabulated below:

Given the Committee's findings on the groundwater quality, it is not at all likely that the operations of Unit would affect the groundwater quality in the villages in a radius of 10 kms.

D. Desiltation of garland drain

22. Lined garland drains have been constructed at the toe of the tailing dam and waste dump to collect and channelize for reuse all the water, including rain water. These garland drains are connected with collection sumps and suitable pumping arrangements are made there to pump the water. Even though siltation of the tailing dam garland drains is less likely, all the garland drains are inspected regularly. Provisions are kept in the annual civil maintenance contracts for any correction that is deemed necessary, including desiltation of the garland drain. The Unit has issued a work order dated 15.6.2019, which has been extended from time to time thereafter, towards the annual civil maintenance contract.

E. Increase in the number of water sprinklers

23. The Unit has effectively implemented the environment management plan like dust suppression and extraction systems, which is evident from the Ambient Air Quality of the area. The Unit constantly endeavours to ensure adoption of best environment practices. One such practice is adding dust suppressing bio-chemicals in the water used for sprinkling to



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make the suppression more effective. The Unit will further explore and install water sprinklers/ suppression system wherever required.

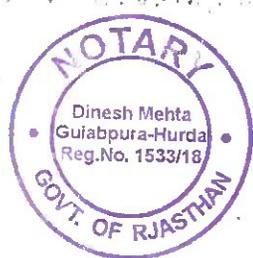
24. The annexures are true copies of their originals.
25. In view of the above and other points to be urged at the time of hearing, the Original Application is devoid of any merit and may kindly be dismissed.



Respondent no. 1

Verification

I, NISHANTH N, son of N. VIJAYAKUMAR., with office at Yashad Bhawan, Swaroop Sagar, Udaipur, Rajasthan, presently at Agucha, Tehsil Hurda, district Bhilwara, Rajasthan, do hereby solemnly affirm and verify that the contents of paras 1-24 are true to my knowledge based on records maintained by the Respondent no. 1 and paras 25-26 is believed to be true based on legal advise, and nothing material has been concealed therefrom.



Place: Agucha.

Date: 27/09/2021



Respondent no.1



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Gulabpura-Hurda



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HINDUSTAN ZINC LTD



REPLY AT :
HEAD OFFICE
YASHAD BHAWAN.
UDAIPUR - 313004

CONTACT To: Ankit Gupta
PHONE:;
FAX:
MAIL:Ankit.Gupta2@vedanta.co.in

SERVICE ORDER

PO No.: 1897704292 / 5100026192

Date:10.08.2019

<p>Mahaveer Prasad Sharma Harinarayan Vas Badi pol Hurda 311022 HURDA INDIA</p>	<p>Vendor: 9000436 Phone : 91-01483-221111 EMAIL : Mahaveer.mama1@gmail.com GST Registration No. : 08BAFPS8432Q1ZU</p>
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HZL is pleased to release this order subject to following terms & conditions:

1. Scope of Work:

Plantation & its maintenance at RA mines and surrounding areas.

- Ornamentals Plants (Ashoka) quantity shall be maximum 5000 no#s out of total 50000 no#s plants.
- Cleaning of Prosopis juliflora and Invasive Shrubs for plantation work shall be in your scope.
- All type of equipment & material & consumables shall be in your scope.
- All work shall be done through only JCB or similar type of machine (Tractor is prohibited)
- Water shall be provided by HZL on FOC basis, transportation shall be in vedor scope.

Scope of work:

50000 nos. plants at RA Mines.

Minimum height of plant should be 4 feet.

Maintenance period & Plant height

- 6 Months: 4.5 ft
- 12 Months: 5 ft
- 18 Months: 5.5 ft
- 24 Months: 6 ft

Regd office , Yashad Bhawan, Swaroop Sagar, Udaipur - 313001.



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(A) Earth work in excavation of pits of 0.6m dia. & 0.6m in depth in size, putting of gunny bags in pits supplied and filled with good earth & manure on the slope and top of the dump along with insecticides, Saplings will be provided by Vendor only.

Transport and planted on the waste dump. The Plantation should be planted as per the SOP provided. Other instructions to be follow as per engineer-in-charge-

Tree Plantation: Standard Operating Procedure (SOP)

Site preparation- levelling and dressing

Marking of pit location in uniform rows # row to row 2 m and plant to plant 2 m

Pit digging (60 cm X 60 cm X 60 cm)

Termite treatment of pit bottom and side walls

Mixing the excavated soil or good earth and FYM @ 10 kg per pit

Backfilling and flooding water in pit

Keep pit idle for 10-15 days for sun treatment

Plant sapling

Basin preparation around 1 m diameter of plant stem

Watering

Regular watering and maintenance

Note:

1. Termite treatment: Thimet @ 10 g/tree OR Phorate @ 10 g/tree OR Chlorophyriphos @ 10 ml/tree.

2. Watering: 2 times/week @ 20-25 litre/tree.

3. Maintenance: weeding and basin preparation # once in a month.

4. Watering and maintenance schedule should be followed for at least two years of plantation.

5. For regular maintenance for 2 years please refer schedule in Table 1.

(B) "Maintenance of plants including watering Mannering, hoeing, deweeding ,trimming& pruning etc. complete as per instruction of Engineer # in # charge including watch & ward to avoid destruction of plants from stray cattle#s as well as wild animals.

Detailed Scope of work is attached.

2. Contract Period: From 12.08.2019 to 11.10.2021

This contract shall be valid for 26 months.

a) Work completion period for Plantation work :- Plantation work shall be completed within two months from the side clearance given by HZL engineer I/C.

b) Contract period for Maintenance work :- Two years from the date of plantation work completion..!!

3. Contract Price: 16,520,000.10

ONE CRORE SIXTY FIVE LAKH TWENTY THOUSAND Rupees TEN Paise

a) Plantation work (Plants to be Supplied by vendor) @ Rs 82.24/- per no.

b) Maintenance of Plant @ Rs 8.24/- per month/no.

This is an item rate contract & payment shall be made on actual basis as per attached rate annexure. However total contract vlaue shall be limited upto Rs 140.00 lacs plus GST extra as applicable.

Wage Rate considered Rs # (650+6.33% DA) i.e. Rs # 691/- per day.

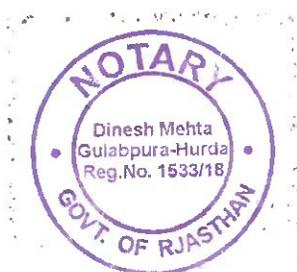
For new manpower the Basis wages shall be 515 Rs per days instead of 650.

Wage Escalation shall be paid extra after the above mentioed rates. (Detailed Wage sheet is attached)

4. Payment Terms: Due within 21 Days, .

Payment terms for plantation work: -

a) 80% payment of excavation and planting of saplings will be released after completion of work.



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b) Balance 20% payment will be released after six months of maintenance.

ii) Payment terms for Maintenance work :-

a) 80 % Payment of maintenance work will be released half yearly based on scheduled maintenance of trees

b) 20 % payment shall be linked with Score card as per existing practice (Score card format attached)

Note :- Payment shall be made on height of plant as per time schedule only on actual basis. (As per attached scope)

5. Security Deposit:

Security deposit is applicable at a fixed amount of 700000 INR. Details as mentioned in terms and conditions of contract shall be applicable.

As a security for the due, proper, faithful fulfilment and performance of the obligations under the Contract, the Contractor shall furnish to the Owner, a Security Deposit of Rs 7.00 lacs[] by way of Bank Draft or in form of a Bank Guarantee in HZL#s prescribed format from a nationalized bank/ or other specified banks within fifteen days from the date of receipt of intimation of Owner's acceptance of the Contract. The Bank guarantee shall be valid for a period of six months in excess to the contractual completion period.

6. Performance Gaurantee:

The Performance Gaurantee is not applicable.

7. Liquidated Damage:

LD will be applicable 0.5 % per week or part thereof basis upto maximum 5 % of the Total Order Value. Details as mentioned in Terms and conditions of the contracts will be applicable.

LD will be applicable at grace period of 0 weeks.

a) Penalty for plantation work :- shall be followed as mentioned in attached scope of work.

b) Penalty on maintenance work :- Growth of plant during the maintenance period is not as per the schedule given above, the penalty clause is applicable in following terms.

Number of plant with poor growth	Penalty
Up to 5%	5% of progressive bill
Above 5% upto 10 %	10% of progressive bill
Above 10% upto 20%	15% of progressive bill
Above 20%	25% of progressive bill

8. Details Of Articles

Sr No	Service Code Detailed description of Service	SAC Code	Rate	Qty.	Unit Amount	Del.Date
00010			14,000,000.10	1	AU	11.10.2021
Plantation work and Maintenance						
	Price		14000000.10		14000000.10	
	IN: Central GST		9.00		1260000.00	
	IN: State GST		9.00		1260000.00	
	Total		16520000.10		16520000.10	

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Sr No	Service Code	SAC Code	Rate	Qty.	Unit	Del.Date
Detailed description of Service						
The Item covers the following Services:						
10	1022020040 SPLY&PLANT SHADY TREE SAPLING	995429	82.24	45,000	NO	3,700,800.00
20	1022060120 MAINT PLANT INCL WATER,WTCH&WARD	999490	8.24	1,200,000	NO	9,888,000.00
30	1022030040 PLANT ORNAMNTL TREE SAPLING	995429	82.24	5,000	NO	411,200.00
40	1022090020 CLEAR JUNGLE INCL UPROOT VEG,GRS,BUSH	995429	100.00	0.001	M2	0.10
Please Deliver to: RAMPURA AGUCHA MINES P.O. AGUCHA - GULABPURA DIST. BHILWARA (RAJASTHAN) 311029						
Total	INR	16,520,000.10	(ONE CRORE SIXTY FIVE LAKH TWENTY THOUSAND Rupees TEN Paise)			

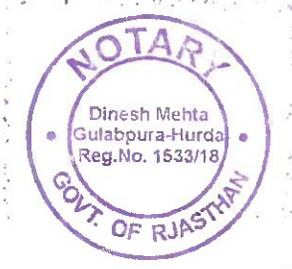
MAY PLS REFER THE BELOW RELEVANT REGISTRATION DETAILS IN YOUR INVOICES

Plant: 3000 :-RAMPURA AGUCHA MINES
GST No : 08AAACH7354K1ZB PAN No :

Please dispatch material only after creation of Advance Shipping Notification (ASN) and send print out of the ASN alongwith the documents being sent.

**GENERAL TERMS & CONDITION
ANNEXURE I**

- 1.1 Definitions:
 - In construing the Agreement, the following words and expressions shall have the meanings hereby assigned to them:
 - 1.1.1 #Affiliate# shall mean with respect to any person, any other person that, directly or indirectly, controls, is controlled by or is under common control of such specified person. For the purposes of this definition, #control# means the direct or indirect beneficial ownership of more than fifty percent (50%) of the issued share capital, stock or other participating interest or the legal power to direct or cause the direction of the general management, of the company, partnership or other person in question, and #controlled# shall be construed accordingly;
 - 1.1.2 #Agreement# shall mean the Purchase Order and the Seller's acceptance of the Purchase Order.
 - 1.1.3 #Applicable Law# shall mean all national (or state) legislation, statutes, ordinances, regulations and by-laws of any legally constituted public authority, in India, having the force of law.
 - 1.1.4 #Claims# shall mean all claims, liabilities, costs, damages and expenses (including court costs and legal fees)
 - 1.1.4 #Conditions# shall mean these General Terms and Conditions as provided under this document.
 - 1.1.5 #Effective Date# shall mean the date of the Purchase Order;
 - 1.1.6 #Goods and Service Tax# means the Central Goods and Service Tax Act, 2017, the Integrated Goods and Service Tax Act, 2017, the Union Territory Goods and Service Tax Act, 2017, the Goods and Service Tax (Compensation to States) Act 2017, the applicable State Goods and Service Tax Act as passed by the concerned State and all the rules made thereunder, relevant notifications, circulars, clarifications and orders issued thereunder and any amendments made thereto and any reference to Goods and Service Tax payable or cess payable means tax payable under any of the aforementioned laws.
 - 1.1.7 #Governmental Authority# shall mean any governmental department, local authority, commission, board, bureau, agency, regulatory authority, instrumentality, court or other judicial or administrative body, central, state, provincial or local having jurisdiction over the matter or matters in question.
 - 1.1.8 #Party# means the Purchaser and the Supplier, individually and "Parties" means the Purchaser and the Supplier, collectively.
 - 1.1.9 #Personnel# shall mean any personnel provided by Supplier and utilized to perform the Services at the specified /



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PO No.: 1897704292 / 5100026192 /10.08.2019

agreed location.

1.1.10 #Purchase Order# shall mean (i) the written instruction by Purchaser issued to Supplier for the provision of Services under this Agreement, which shall include the specific requirements with respect to the scope of work, applicable rates and charges and the location of the Site; and (ii) if applicable, the oral instruction under this Agreement which shall be reduced to writing as soon as practicably possible including the specific requirements described above.

1.1.11 #Purchaser# means Hindustan Zinc Limited, having its registered office at Yashad Bhavan, Udaipur # 313001 and includes its successors and assigns from time to time.

1.1.12 #Purchasing Group# shall mean and include Purchaser and its Affiliates.

1.1.13 #Representative# in respect of the Purchaser and the Supplier to include the persons so identified on the Purchase Order as their representative or such other person(s) notified by the Purchaser or the Supplier in writing to the other from time to time, which will include amongst others consultants engaged by the Party or any Affiliate of the Supplier having commonality of interest with the Supplier.

1.1.14 #Services# means the tools, equipment, materials, supplies and Personnel to be provided by Supplier and the work to be carried out as specified in the Agreement and any Purchase Order.

1.1.15 #Site# shall mean the location where Purchaser wishes Supplier to provide the Services.

1.1.16 #Specification# includes but is not limited to assays, whether typical or otherwise, or the scope or technical parameters of the Services attached to or referred to in this Agreement and/or any Purchase Order.

1.1.17 Supplier# means the party identified as a supplier in the Purchase Order and includes its successors and assigns from time to time. For the avoidance of doubt, the term Supplier or Seller may be used interchangeably for each other in this Agreement.

1.1.18 #Supplier Group or Seller Group# shall mean and include Supplier/Seller, its Affiliates and its and their sub-suppliers and suppliers of any tier and its and their respective Affiliates and the term Supplier or Seller may be used interchangeably for each other.

1.1.19 #Tax# or #Taxes# shall include all taxes, including income tax, withholding tax, dividend distribution tax, capital gains tax, fringe benefit tax, GST, customs duty, wealth tax, gift tax, franchise, property, use, employment, license, occupation tax, governmental charges, fees, cesses, levies or assessments or other taxes, levies, fees, stamp duties, statutory gratuity and provident fund payments or other employment benefit plan contributions, withholding obligations and similar charges levied under Applicable Law and shall include any interest, fines, and penalties related thereto and, with respect to such taxes, any estimated tax, interest and penalties or additions to tax and interest on such penalties and additions to tax together with any other statutory charges which may be payable by the Contractor, its Sub-Contractors and any of their employees, levied under the Applicable Law.

1.1.20 #Trade Usage# refers to generally accepted practice or norms in relation to expected standards, permissible deviation, internationally accepted scientific data, foreseeable consequences attributable to deviation beyond permissible deviation established over a period of time in course of commercial dealing between the parties to this Agreement or their associates.

1.2 Interpretation:

In this Agreement:

1.2.1 Headings are for convenience only and shall not govern or affect the interpretation of the Agreement;

1.2.2 Except where the context otherwise requires, references to one gender include all genders and the singular includes the plural and vice versa;

1.2.3 Except where the context otherwise requires, references to any enactment shall include references to such enactment as re-enacted, amended or extended and any sub-ordinate legislation made under it;

1.2.4 References to persons include companies, corporations, partnerships, associations, and other organizations whether or not having a separate legal personality;

1.2.5 Except where otherwise indicated, reference to clauses, sub-clauses, recitals and annexures shall be to the clauses, sub-clauses, recitals and Annexures of this Agreement;

1.2.6 "including" means "including without limitation";

1.2.7 If the day on which any act, matter or thing is to be done under or pursuant to this Agreement is not a business day as per Trade Usage, that act, matter or thing shall be done on the preceding business day.

1.2.8 Only in the event of inconsistency between the Provisions of these Conditions and the Purchase Order(s), these Conditions will prevail, otherwise both Purchase Order(s) and the Conditions shall be harmoniously construed to give effect to both to the extent possible.

1.2.9 The term #Agreement# or #Contract# may be used interchangeably for each other in this document and shall be construed as referring to the same context.

1.2.10 The rule of construction, if any, that a contract should be interpreted against the Party responsible for the drafting and preparation thereof shall not apply.

2. Representation & Warranties



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2.1 The Supplier represents and warrants that:

- (i) It is a duly organized company/business entity validly existing under the laws where it is incorporated/established, and has experience, expertise, ability and skills as required to supply Materials and perform the Services as detailed in the Scope of Services above and as may be necessary to perform its obligations hereunder in a professional manner.
- (ii) It has all the requisite power, authority and approvals required to enter into this Agreement and will have all the requisite power, authority to perform fully each and every obligation under this Agreement.
- (iii) This Agreement has been duly executed and delivered by its duly authorized representatives and constitutes its legal, valid and binding obligation enforceable against it in accordance with its terms.
- (iv) The execution, delivery and performance of this Agreement and all instruments or addenda required hereunder by it does not contravene, violate or constitute a default of or require any consent under the provisions of any other agreement or instrument to which it is bound, including the constitutional documents thereof, or any order, judgment, decree or injunction of any court of law.
- (v) No order has been made or petition presented for the bankruptcy protection, winding up or dissolution thereof against it.
- (vi) It shall maintain high professional standards to ensure performance of this Agreement as per best business practices and in full compliance with statutory obligations.
- (vii) It has all necessary statutory and regulatory permissions, approvals and permits for the running and operation of its establishment for the conduct of its business;
- (viii) It has full right, title and interest in and to all trade names, trademarks, service marks, logos symbols and other proprietary marks (IPR) (including limited right of use of those owned by any of its vendors, affiliates or subcontractors) which it provides to the Buyer, for use related to the Services, and that any IPR provided by the Supplier shall not infringe the IPR of any third party;

2.2 Each Party hereby warrants that it has not entered into this Agreement relying on any warranty, representation or undertaking except for any warranty, representation or undertaking expressly set out in this Agreement.

2.3 Supplier warrants and guarantees that:

- (i) all Services shall be supplied in accordance with the provisions of the Agreement/Purchase Order and with generally accepted industry standards, Trade Usage with regard to quality, Specification, quantity, measurement, performance and/or functionality and are free from defects in material and workmanship;
- (ii) in the case of Services, be of the best quality and workmanship and shall be free from fault or defect (including latent defect), with such tolerances as stated in the Specification or on the drawings.
- (iii) Time shall be of the essence and any Services performed shall be in strict accordance with any time or schedule specified hereunder.

2.4 Specification Variation Buyer may, at any time, make changes within the general scope of the Agreement and/or Purchase Order by giving written notice to Supplier. Such changes may include changes to the technical Specification of the Material (where such Material are manufactured to order), quantities, method of shipping and/or packing, inspection standards and place of delivery. Upon receipt of such variation request, if any such change affects the purchase price and/or delivery date, Buyer and Supplier shall agree upon an adjustment to the price and/or delivery date. The change to the Specification and /or Purchase Order, together with any adjustment to price and/or delivery date, if any, shall be set forth in a revised Variation Order issued by Buyer and acknowledged by Supplier in writing.

2.5 Obligations of Contractor: Contractor shall comply with all laws, rules, regulations including but not limited to labour laws, rules, regulations or labour tribunal or conciliation officer or court order or directives of any government authority having jurisdiction over Contractor; activities directly or through contract labour whether within or outside the premises of the HZL and shall release, defend and indemnify the Owner against any levies, fines and penalties which may be asserted or assessed against the Owner by reason of violation of such laws, rules, regulations or directives by any member of Contractor Group.

HZL reserves its right to demand adequate security for subsequent transactions as a surety for non-adherence of any statutory laws by the Contractor, in case there is a breach (actual, threatened or perceived) of any statutory laws. Provided however that the exercise of any such right to demand surety by the HZL shall not absolve the Contractor of any of its obligation / liabilities under this Agreement and / or the law.

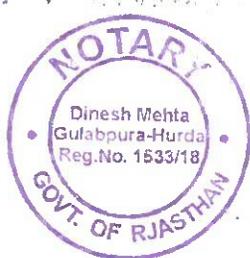
Anything contained under Clause 2.5 above shall be without prejudice and will be in addition to, and not in substitution to any other clause under this agreement including annexures thereof.

2.6 Legal Compliance:

2.6.1 The Contractor shall ensure that the performance of this Agreement and provision of the Services complies to all provisions of the relevant legislations, regulations and by-laws of the central/state/local authorities having jurisdiction at site and, shall, unless mentioned otherwise in technical scope of work, arrange for all necessary statutory approvals at his own cost.

2.6.2 The Contractor shall give all notices required under the said acts, regulations and/or by-laws and shall indemnify the

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Owner towards any omission or commission in this regard.

2.6.3 The Contractor shall be responsible for observing all statutory laws as applicable including following:

Mines Act

Payment of Wages Act and Payment of Bonus Act

Minimum Wages Act

Contract Labour (Regulation and Abolition) Act, 1970

Employees Liability Act

Factories Act, 1965

Payment of Gratuity Act, 1972

Workmen/Employees Compensation Act.

Apprenticeship Act

Employee PF & Miscellaneous Provisions Act, 1952

Family Pension Scheme

Deposit Linked Insurance

Modern Slavery Act 2015

Any other enactment / rule in force or made applicable from time to time.

2.6.4 The contractor shall take Workmen Compensation Insurance Policy to enable him to discharge various liabilities under Workmen/Employees Compensation Act.

2.6.5 The Contractor shall take valid labour license and shall submit the copy of it to the Buyer before commencement of the Services.

2.6.6 The Contractor shall pay to his workers, minimum wages plus other statutory benefits as per the Minimum Wages Act or as prescribed by Buyer for such jobs, whichever is higher. The wages to other semi-skilled & skilled workmen will be proportionally on higher side as applicable.

2.6.7 The Contractor shall obtain group insurance policy for the entire contract period for their employees and the same shall be submitted for verification within seven days of awarding the contract.

2.6.8 Anything agreed in the Contract but prohibited under any provision of the Indian Foreign Exchange Management Act, 1999 and amendments thereof, except with the permission of the Government of India and / or the Reserve Bank of India, shall be done only after such permission is granted.

3. Invoicing, Taxes, Payment and Insurance

3.1 The Supplier shall submit the invoices (both original & duplicate) along with the delivery of the Materials or performance of the Services. The Purchaser reserves the right to reject the Materials or Services received without the invoices.

3.2 The Supplier shall ensure that the invoices submitted in accordance with Clause 3.2 are complete in all respect and shall specify descriptions as required under the Goods and Services Tax and other Applicable Laws.

3.3 The Purchaser shall not be liable for any tax or levies or duties or charges for any reasons whatsoever, unless specifically mentioned in the invoice issued alongwith the delivery of the Materials or performance of the Services.

3.4 To the extent that the input tax credit is available to the Owner, the applicable GST, if any, shall be paid by the Owner, only upon fulfilment of the following conditions cumulatively:

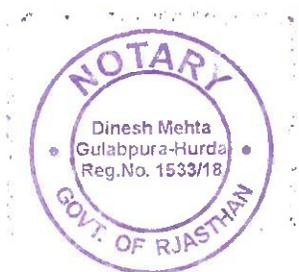
i. the Contractor shall submit valid invoice(s) to the Owner, in accordance with the Applicable Law, so as to enable the Owner to claim GST credits, if any, available to the Owner, under the Applicable Law. Such invoice(s) shall inter alia reflect, the details of the nature of service(s) provided, the breakup of Contract Price charged along with the applicable GST, if any, payable thereon, and all other details/ particulars/ information required to be furnished in this regard, in terms of the Applicable Law. The Owner shall not be bound to make any other payments except for the Contract Price and GST mentioned therein. Any out-of-pocket expenses shall not be payable by the Owner, unless a valid invoice as per the Applicable Law is issued in this regard.

ii. The Contractor shall discharge the liability of GST to the concerned authorities and upload the relevant details and the GST returns in relation to such payments within the stipulated timelines prescribed under the Applicable Law.

iii. If at any time the credit of GST, paid by the Contractor, under any invoice issued by the Contractor, is denied to the Owner, or payment is demanded by statutory authorities due to a deficient invoice or incorrect reporting of transactions or inadequate documents or in the event an invoice or other tax documents do not satisfy the requirements under the Applicable Law or due to the Contractor's failure to deposit any tax collected from the Owner, the Contractor undertakes to defend, indemnify and hold the Owner harmless against any demand or denied tax credits as well as any interest, penalties and all other charges/ expenses imposed on the Owner as a result of claiming such tax credit.

iv. the Contractor shall be responsible for ensuring that it is registered under the Applicable Law including relevant GST legislations during the term of this Contract. In case, the registration of the Contractor is cancelled, withdrawn or surrendered during the term of this Contract, or where, for any reason, whatsoever, the Contractor is not required to obtain

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registration under GST legislations, the Contractor undertakes to intimate the Owner immediately. If at any time, the Contractor fails to intimate the Owner about the de-registration/ cancellation, the Contractor undertakes to defend, indemnify and hold the Owner harmless against any liability including that of any unpaid GST as well as any interest, penalties and any/all other charges/ expenses imposed on the Owner as a result of the same.

3.5 the Contractor undertakes that it shall pass on the benefits of any tax related exemptions or rebates to the Owner and that it shall provide the Owner with any transaction related documentation/ information that it may require in order to avail any tax credits/ rebates/ deductions/exemptions.

3.6 the Contractor shall comply with the Anti-Profiteering measures prescribed under the GST legislations.

3.7 The Owner shall be entitled to retain or withhold any part or whole of the Contract Price including GST, if any, payable thereon, in the event the Contractor breaches any of the material terms of this Contract or is not in compliance with the conditions stipulated under Clause 27.1 above, until the same has been complied with, or the requirements under the Applicable Law in relation to this Contract have been adhered to. Such retention or withholding by the Owner shall not be deemed to constitute a breach of the Owner's obligations under this Contract and the Contractor agrees that it shall not seek any remedy, relief or claim from the Owner in relation thereto.

3.8 Supplier shall submit sufficient supporting document(s) along with its invoice for freight amount paid and consequently claimed by the Supplier, if the accepted freight term as #extra to be paid by the Purchaser#.

3.9 Without prejudice to any other right or remedy, the Purchaser reserves the right to set off any amount owing at any time from the Supplier to the Purchaser against any amount payable by the Purchaser to the Supplier.

3.10 Supplier shall not suspend deliveries for any payment delays on account of genuine disputes.

3.11 In the event of any discrepancy in the invoice submitted by the Supplier, the Purchaser shall give a written notice to the Supplier specifying the discrepancy thereof. Such invoices shall be treated as disputed invoice (Disputed Invoice).

3.12 Upon receipt of a notice from the Purchaser notifying any discrepancy in the Disputed Invoice, the Supplier shall withdraw the Disputed Invoice and submit a rectified invoice for the undisputed amount and the Purchaser shall pay the amount set out in such rectified invoice within a reasonable time. The Purchaser shall not make payment of the amount set out in the Disputed Invoice, if the Purchaser has notified any discrepancy with respect to certain entries in the Disputed Invoice till such time as the discrepancy is resolved by the Parties. For avoidance of doubt, the Purchaser and the Supplier shall endeavour to settle the disputed amount as quickly as possible through good faith negotiations.

3.13 Supplier shall effect and maintain with a reputed insurance company a policy (ies) of insurance providing an adequate level of cover in respect of all risks which may be incurred by the Supplier, arising out of the Supplier's performance of its obligations under the Agreement, including death or personal injury, loss of or damage to property or any other loss. Such insurance shall be maintained throughout during the subsistence of the Agreement.

3.14 Audit and Inquiry:

i. If the Purchaser has a reasonable basis to believe that Supplier or any of its Affiliates has taken or failed to take any action that may expose the Purchaser or any of its Affiliates to any liability under the Applicable Laws or any other non-compliance(s) thereof, the Supplier agrees that the Purchaser shall have the right (but not the obligation) upon written notice to the Supplier, to make due inquiries from the Supplier and its Affiliates to determine, to the Purchaser's reasonable satisfaction, whether any actions or failures to act on behalf of Supplier or its Affiliates may subject Purchaser or any of its Affiliate to such liability and further undertakes to cooperate with the Purchaser in good faith.

ii. Purchaser shall have the right of access to Supplier's premises with a prior written notice to inspect the progress of manufacture; testing and commissioning of the Material or the performance of Services to otherwise satisfy itself as to compliance of the Agreement and agreed delivery dates. The Supplier shall procure similar rights of access for Purchaser at the premises of any sub-supplier, if required. For the avoidance of doubt, any inspection of the progress of manufacture or testing and commissioning of the Material or the performance of the Services, as the case may be, undertaken by the Purchaser shall in no way relieve the Supplier from any of its liabilities and obligations under the Agreement or otherwise.

4. Passing of Ownership, Risk, Copyright, Patents and other Proprietary rights etc. (#IPR#)

4.1 Unless otherwise stated in the Purchase Order, Services shall remain at the risk of the Supplier until delivered in a deliverable state to the Buyer and in the manner specified in the Purchase Order and subject to performance testing by the Buyer as per the requirement of the specifications;

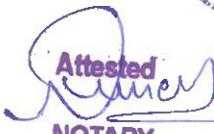
4.3 Where the Buyer rejects any Services in accordance with these conditions, such Services shall be deemed to have remained the property and risk of the Seller at all times.

4.4 (i.) If any Services performed or provided under the Agreement and/or Purchase Order involves a patent, copyright, trademark, or proprietary information (IPR), Supplier hereby grants Purchasing Group a permanent, irrevocable, worldwide, non-exclusive license to use the same without additional charge. Without prejudice to the above, the proprietary rights in relation to IPR of the Supplier shall continue to vest with the Supplier.

(ii) Buyer is the sole owner of IPR in anything developed and delivered under this Agreement / Purchase Order. Supplier shall provide at Purchaser's reasonable request any documentation necessary to confirm Purchaser's ownership interest in

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such IPR. Supplier shall retain ownership of any IPR vested in Supplier prior to this Agreement or created by Supplier outside of its performance of this Agreement during the term of this Agreement.

(iii) Supplier shall at all times be responsible for, shall release and shall defend, protect, indemnify, hold harmless and defend Purchasing Group, from and against any Claim by a third party for infringement of any IPR which may arise out of the sale and/or use of the Services performed and/or provided by Supplier.

5. Consequences of Default

5.1 If the Supplier, breaches any of the warranties or representation under the Contract; or breaches any other provision of the Contract or any of the Services otherwise fail to comply with the provisions of the Contract; the Buyer shall notify the Seller of such failure to comply with the Contract, or the breach of warranty, as the case may be.

5.2 If the Supplier fails to rectify such breach in supply of the Services under this Contract, which being capable of remedy are not remedied within 14 days of notice of such default, the Buyer may at its discretion and without prejudice to other rights and remedies under the Contract or otherwise, avail itself of any one or more of the remedies as hereunder:

i. reject the Services (in whole or in part) which are not in deliverable state as per the conditions of the Contract at the risk and cost of the Seller and Seller shall immediately pay to the Buyer a full refund for the Services so rejected.

ii. give the Supplier the opportunity at the Supplier's expense either to remedy any defect in the Services or substitute Services and carry out any other necessary work to ensure that the terms of the Contract are fulfilled within a reasonable period specified by the Buyer;

iii. refuse to accept any subsequent performance of the Services which the Seller attempts to make, in each case without any liability to the Supplier;

iv. carry out or ensure that some other person carries out, at the Supplier's expense, any work necessary to make the Services comply with the Contract (including but not limited to freight, disassembly and reassembly);

v. instruct the Supplier to suspend performance of its obligations under this Contract with immediate effect and to take such steps as the Buyer may direct in order to remedy such breach at the Supplier's expense;

vi. claim such damages foreseeable or otherwise as may have been sustained consequential to such breach or breaches of the Contract as per terms and conditions of PO or under applicable Trade usage taking into account the prevailing trade practice or scientific data of potential loss attributable to usage of such Services;

vii. opt to use or consume the Services in the event of non-availability of substitute Services or to maintain operations of the plant or to avoid plant shut down but without prejudice to its right to claim damages attributable to consequences arising due to off-spec Services;

viii. obtain substitute Services or purchase substitute services elsewhere and recover from the Seller any expenditure reasonably incurred by the Buyer in obtaining the Services in substitution from another seller.

5.3 If the Buyer exercises its rights under conditions (b), (d) and/or (e) above in respect of Services which do not, in the Buyer's opinion, meet the requirements specified in the Contract, the Supplier shall grant necessary right to the Buyer to utilise the relevant Services until such time as they meet those requirements.

5.4 Notwithstanding anything to the contrary in this Agreement, there shall be no obligation whatsoever on the Purchaser to accept any defective or sub-standard quality Service, and/or performance of the Agreement and it is expressly agreed by the Parties that acceptance of such defective or sub-standard quality Service, and/or delayed performance by the Purchaser in its sole discretion, shall not prejudice any right / claim of the Purchaser to damages for supply of such defective or sub-standard quality Service, and/or delayed performance and / or for breach of the Agreement. In the foregoing, the Purchaser shall reasonably determine the amount of damages that shall be leviable upon / payable by the Supplier. Any damages so determined by the Purchaser shall be paid by the Supplier within fifteen (15) days. The levy of damages / acceptance of performance, as above, shall not prejudice any rights of the Purchaser as per other terms of this Agreement / Purchase order.

5.5 In the event of breach by the Supplier of its obligations under the Contract, the Buyer may terminate the Contract in whole or in part or to rescind the Purchase Order, in each case without any liability to the Purchaser.

6. Risk purchase

In the event of any delay or any breach in performance of the Services, the Buyer shall be at liberty to either (a) continue the contract with due liquidated damages; or (b) engage any other agency, parallel to the Supplier, to complete part of the balance Services at the risk and cost of the Supplier; or (c) cancel the contract and get the balance Services done from any other agency at the sole risk and cost of the Seller. The additional cost and expenses so incurred by the Buyer in procuring the whole or part of Services shall be liable to be recovered from the charges payable to the Seller or the Security deposit or Bank Guarantee so deposited by the Supplier.

7. Permits, licenses, encumbrances, liens etc.

7.1 The Supplier shall ascertain and comply with the Applicable Laws in performance of the Contract and shall obtain and keep in good standing all approvals, permits and licenses, right of way, as the case may be, which are necessary or expedient for the performance of his obligation under the Agreement. These approvals, permits and licenses shall be valid and acceptable under appropriate laws.

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7.2 The Supplier shall not cause or permit any lien, attachment or other encumbrance other than for borrowings in the ordinary course of business.

8. Indemnity

8.1 The Supplier shall defend, indemnify and hold the Purchaser harmless from and against any and all Claims in connection with any taxes, levies, costs and charges which may be imposed on the Supplier or its sub-contractors by any Government Authority arising out of or in connection with the performance of this Agreement which originated from the performance of services by the Supplier Group.

8.2 The Supplier shall be liable for and shall defend, indemnify and hold the Purchaser harmless from and against and all Claims arising out of or in connection with the performance of this Agreement by the Supplier.

8.3 Supplier shall at all times be responsible for, shall release and shall defend, protect, indemnify and hold Purchasing Group harmless from and shall keep Purchaser's equipment and property free and clear of all liens, claims, assessments, fines and levies incurred, created, caused or committed by Supplier Group.

8.4 In the event the Purchaser is entitled to indemnification and intends to seek indemnification under this Clause, Purchaser shall promptly give Supplier notice of such Claim or action and the Supplier shall have the right to assume the defence of any such case at its own cost and expense.

8.5 This indemnity shall be without prejudice to any other rights or remedies, including injunctive or other equitable relief, which the Purchaser may be entitled to.

8.6 Purchaser shall have the right to retain / withhold out of any payment to be made to the Supplier an amount sufficient to indemnify it completely against any such lien, claim, assessment, fine or levy exercised or made and all associated costs.

8.7 It is the express intention of the Parties hereto that the provisions of this Agreement/Purchase Order shall exclusively govern the allocation of risks and liabilities of the Parties, it being acknowledged that the Agreement reflected herein has been based upon such express understanding. It is acknowledged that the compensation payable to Supplier as specified in this Agreement and/or applicable Purchase Order has been based upon the express understanding that risks and liabilities shall be determined in accordance with the provisions of this Agreement and/or applicable Purchase Order.

9. Limitation of Liability

9.1 Except as may be otherwise provided in this agreement, in no event shall either party be liable to the other, whether arising under contract, tort (including negligence), strict liability or otherwise, for any indirect, consequential, special, punitive, exemplary or incidental loss or damages of any nature arising at any time from any cause whatsoever.

9.2 The limitations of liability and exclusion of warranties as set out in the Agreement shall be to the maximum extent permitted by applicable law. Nothing in this Agreement purports to exclude or limit liability for fraud, death or personal injury.

10. Relationship between Parties

Nothing contained in the Agreement is intended to, or shall operate to, create a relationship of partnership or employer-employee or joint venture between the parties. Nothing in the Agreement constitutes either party as the agent or legal representative of the other party or creates any fiduciary relationship between the parties. Neither party shall have authority to act in the name or on behalf of or otherwise to bind the other or commit or purport to bind the other in any way (including the making of any representation or warranty, the assumption of any obligation or liability and the exercise of any right or power) or pledge the credit of the other party for any purpose.

11. Notice and Communication

Any notice required to be given hereunder shall be given by sending the same by registered post or by hand delivery to the address of the addressee shown in this Agreement or to such other address as either party may notify to the other for this purpose in writing. If sending by hand, notice shall be deemed served at the time of dispatch and if sending by post, notice shall be deemed to have been given on the 3rd day on dispatch by post. If notice pertains to any breach of a legal term under the Agreement or otherwise, the same should be addressed to Head Legal, Hindustan Zinc Limited, Yashad Bhawan, Udaipur-313004 (Rajasthan).

12. Termination & Suspension

12.1 Either Party may immediately terminate all or part of this Agreement/Purchase Order as under:

(i) by a written notice to the other Party if the other Party has committed any material breach of the terms of this Agreement and has failed to remedy such breach within 30 days from receiving notice from the other Party.

(ii) if other party (i) ceases, or threatens to cease, to function as a going concern or conduct its operations in the normal course of business, (ii) commences, or becomes the subject of, any bankruptcy, insolvency, reorganization (other than in the course of a corporate re-organization or to an affiliate), administration, liquidation or similar proceedings, (iii) makes, or plans to make, a general assignment for the benefit of its creditors, or (iv) either party's creditors attach or take possession of all or a substantial part of said party's assets; the foregoing shall not apply to any action or proceeding which is (a.) in the reasonable opinion of the party, frivolous or vexatious; or (b.) discharged, stayed or dismissed within ninety (90) days of commencement;

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(iii) if either party is unable to carry out its obligations by reason of Force Majeure events and the force majeure continues for a period more than 60 days, then either Party may, by giving notice in writing, terminate this Agreement with immediate effect. Any such termination shall be without prejudice to any of the right of the Parties accrued prior to the date of such termination.

12.2 The Purchaser may terminate all or part of this Agreement by one (1) months# written notice without assigning any reason whatsoever or if the Supplier fails to obtain any approval required under the terms of this Agreement.

12.3 Upon termination of this Agreement, both Parties shall be relieved of their respective rights and obligations under this Agreement save such obligations and/or liabilities of the Parties set forth herein which (i) that the Parties have expressly agreed will survive any expiration or termination, or (b) by their nature would be intended to be applicable following any such expiration or termination, or (c) have accrued before expiration or termination, as the case may be.

12.4 In the event of Supplier#s breach of its obligations hereunder, no payment shall be due by Purchaser in respect of such order/Purchaser order, or, in the case of suspension, until the failure or breach has been remedied to the reasonable satisfaction of Purchaser.

12.5 Notwithstanding anything to the contrary inthis Agreement, Purchaser may, at its sole discretion, suspend this Agreement / any Purchase Order, in whole or in part, upon twenty-four (24) hours written notice to Supplier for any reason whatsoever. The Purchaser shall promptly notify the Supplier in writing of the same.

12.6 In the event of written notice pursuant to Clause above, Supplier#s failure to perform the Purchase Order to the standards required by the Purchase Order and Supplier#s material breach of any of its obligations under the Agreement, no payment shall be due by Purchaser in respect of such order/Purchaser order, or, in the case of suspension, until the failure or breach has been remedied to the reasonable satisfaction of Purchaser.

12.7 Any non-compliance of the Company#s Life Saving Rules (LSR) of the site shall result in disciplinary action against the Service Provider including termination of the Contract.

13. Force Majeure

13.1 Neither party shall be liable for any delay or failure in the performance of this Agreement due to act of God such as fire, flood, earthquake or like natural calamity, war, riots or civil commotion if they impede the performance of the Agreement or make performance unreasonably onerous and which could not reasonably be foreseen (#Force Majeure Events#).

13.2 The party, which is not able to perform its obligations under this Agreement on account of Force Majeure Event(s), shall without any delay, notify in writing the other party on the initiation and cessation of such Force Majeure Event(s) and shall use diligent efforts to end the failure or delay in performance to minimise effects of such Force Majeure Event. In such a situation, the party, which is not able to perform its obligations under this Agreement on account of Force Majeure Event(s), shall not be liable to the other party for the default or breach of this Agreement for the period of failure or delay.

13.3 If the Force Majeure Event(s) continues beyond 30 days, the parties shall make efforts to find an amicable solution for future course of action agreeable to both parties in a fair and equitable manner.

(iv) Both Parties agree to use their respective reasonable efforts to cure any event of Force Majeure to the extent that it is reasonably possible to do so.

14. Arbitration

14.1 Any dispute or difference whatsoever arising between the parties out of or relating to the interpretation, meaning, scope, operation or effect of this Agreement or the existence, validity, breach or anticipated breach thereof or determination and enforcement of respective rights, obligations and liabilities of the parties thereto shall be amicably settled by way of mediation. If the dispute is not conclusively settled within a period of twenty-one (21) days from the date of commencement of mediation or such further period as the parties shall agree in writing, the dispute shall be referred to and finally resolved by arbitration under Indian Arbitration and Conciliation Act 1996. The arbitration shall be conducted as follows:

(i) The Arbitration shall be conducted by a forum of three arbitrators with one arbitrator nominated by each Party and the presiding arbitrator selected by the nominated arbitrators.

(ii) The language of the mediation and arbitration proceedings shall be English. The seat of arbitration shall be Udaipur, India.

(iii) The award made in pursuance thereof shall be final and binding on the parties.

Notwithstanding the existence of any Dispute being referred to arbitration, the Parties shall continue to perform their respective obligations under this Agreement.

15. Governing Law and Jurisdiction

This Agreement shall be governed by, construed and enforced in accordance with the laws of India.

The parties submit to the exclusive jurisdiction of the courts of Udaipur, India and any courts that may hear appeals from those courts in respect of any proceedings in connection with this Agreement.

16. Assignment and Subcontracting

16.1 Supplier may not assign, sublet or subcontract its rights or obligations under any Purchase Order, in whole or in part, to any third party without the prior written consent of Purchaser, which the Purchaser may at its sole discretion accept or

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 Dinesh Mehta
 Gulabpura-Hurda

PO No.: 1897704292 / 5100026192 /10.08.2019

refuse. Supplier shall have a written contract in place for each approved sub-supplier prior to such sub-supplier performing any Services. Supplier shall assume full responsibility for the acts or omissions of Supplier's sub-suppliers of any tier. All of Supplier's subcontracts, if any, for performance of the Services shall contain terms and conditions substantially similar to those contained in this Agreement and/or the applicable Purchase Order which protect and do not restrict Purchaser's rights as set forth in this Agreement and/or in the applicable Purchase Order.

16.2 Purchaser shall have the right to assign the Agreement / Purchase Order to its Affiliate or any third party customer. This Agreement shall inure to and be binding upon the respective successors and assignees of the Parties.

17. Recourse of the Parties

17.1 Supplier shall look only to Purchaser for the due performance of the Purchase Order and nothing therein contained shall impose any liability upon, or entitle Supplier to commence any proceedings against any third party customer or any person not a party to the Agreement or the Purchase Order.

17.2 Purchaser shall be entitled to enforce any Purchase Order on behalf of any third party customer in connection with the Agreement / Purchase Order as well as for itself and for this purpose, only Purchaser may commence proceedings against Supplier. The obligations and liabilities of Purchasing Group issuing Purchase Orders are several and not joint.

17.3 It is clarified that under no circumstances, by virtue of this Agreement, will the employee/workers of the Supplier be deemed to have any privity of contract with the Company nor would they or any of their heirs, assigns or successors would claim any benefit / privilege, whatsoever, from the Company.

18. Waiver and Remedies

A failure or delay in exercising any right, power or privilege in respect of this Agreement will not be presumed to operate as a waiver, and a single or partial exercise of any right, power or privilege will not be presumed to preclude any subsequent or further exercise, of that right, power or privilege or the exercise of any other right, power or privilege. All waivers under this Agreement must be made in writing.

19. Severability

If any clause or provision of this Agreement is prohibited, invalid or unenforceable in any jurisdiction, that provision will, as to that jurisdiction, be ineffective to the extent of the prohibition, invalidity or unenforceability without affecting or invalidating the remaining provisions of this Agreement or affecting the validity or enforceability of that provision in any other jurisdiction, unless it materially alters the nature or material terms of this Agreement.

20. Amendment

This Agreement may be amended, modified, renewed or extended only by a written instrument signed by each of the parties hereto.

21. Code of Conduct

Supplier confirms having read and understood the Code of Conduct of Hindustan Zinc Limited (the "Company"), a copy of which has been provided to the supplier and is also available at <http://intranet.hzlmets.com/Departments/Secretarial/Shared%20Documents/HZL_BUSINESS_ETHICS_CODE_OF_CONDUCT_19_10_2015.pdf> and which inter alia includes (i) measures for prevention of corrupt practices, unfair means and illegal activities including compliance of all anti-bribery and anti-corruption laws and regulations of India, Foreign Corrupt Practices Act, 1977 of USA and UK Bribery Act, 2010 ; and (ii) adherence to the insider trading prohibition laws and regulations of all jurisdictions where securities of the company or its Affiliates may be listed including but not limited to SEBI (Prohibition of Insider Trading) Regulations, 2015 [SEBI (PIT) Regulations, 2015], which inter alia prohibits the supplier and its employees and associates from trading in the securities of the Purchaser based on any Unpublished Price Sensitive Information. The Supplier confirms that he/she has read the relevant regulations stated above and policies of the Purchaser at the time of entering into this Agreement and undertakes to abide by the terms thereof to the fullest extent at all times. The Supplier affirms that it has formulated a Code of Conduct and instituted appropriate measures to comply with the requirements of SEBI (PIT) Regulations, 2015 as amended from time to time.

The Code of Conduct enlists compliance with the following acts and regulations:

The UK Bribery Act ("UKBA")

The Foreign Corrupt Practices Act (the "FCPA")

SEBI (PIT) Regulations, 2015

The Sexual Harassment of Women at Workplace (Prevention, Prohibition and Redressal) Act, 2013 (the "Prevention of Workplace Sexual Harassment Act")

the Modern Slavery Act, 2015

Annexure I- Code of Conduct to these General Terms & Conditions shall be deemed accepted by Supplier as an integral part of this document.

If at any time during execution or performance of this Agreement the Contractor is faced with any undue demand, request for gratification or favor from any employee of the Company or a person connection with such employee, the Contractor must report the same immediately at hzl.whistleblower@vedanta.co.in



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22. Mistake, Fraud, Misrepresentation etc.

No rights shall accrue to the Seller or any obligation arise for the Buyer, if it is discovered at any time that the consent of the Buyer was obtained through fraud or misrepresentation or cheating or inducing mistake as to any fact material to such consent by Seller or any Representative of the Seller.

23. Confidentiality

23.1 Each party hereto shall, save as otherwise provided herein, maintain in strict confidence, and not disclose or use for a purpose other than the purpose set out herein, any confidential and/or proprietary information ("Confidential Information") of any party including this Agreement and the terms and conditions hereof. The foregoing covenant shall not restrict a party from disclosing Confidential Information to the extent required in connection with any legal proceeding(s) or required for filing with govt. agencies, courts, stock exchanges or other regulatory agencies under applicable laws and regulations.

23.2 The parties shall restrict access to the Confidential Information only to its own employees or professional advisers who need to have such access for the purposes of performing the obligations or enforcing the rights under this Agreement and who have agreed with such party to abide by the obligations of confidentiality equivalent to those contained herein with such party. The disclosing party shall remain vicariously liable for such disclosure.

23.3 Unless otherwise agreed, this clause shall continue to remain in force for a period of 2 years after the expiry or termination of this Agreement.

23.4 For the purposes of this Agreement, the term "Confidential Information" includes such non-public information which is disclosed by either party to the other party, whether or not marked confidential, and which includes inter alia, business policies or practices, business plans, dealings, customer lists or requirements, price lists or pricing structures, technical data, employee or officers' data, product lines, designs, research and development activities and findings, ideas, concepts, know-how, financial statements and other non-generic information whether tangible or intangible, written or oral, relating to any released

or unreleased concepts, ideas, projects and services, the marketing or promotion of products and any other information received from any source which would be deemed as confidential or proprietary.

23.5 Each Party agrees that it will not use the name or logo of the other party, without the prior written consent of the other party(ies) hereto.

24. Non-solicitation and declaration

The Parties agree that during the term of the Contract and for a period of one year following termination, they shall not without the prior written consent of the other party directly or indirectly solicit for employment, engage, hire, employ or contract with any employee or ex-employee of the other party, who has worked in connection with fulfilment by the such party of its obligations hereunder in a key capacity, within six months of their departure.

25. Miscellaneous Provisions

25.1 Entire Agreement: This Agreement along addendums and with all annexures, if any constitutes the entire agreement and understanding between the parties with respect to its subject matter and overrides and supersedes all previous agreements, representations, written documents, correspondence and understanding of the parties, whether in writing or otherwise.

25.2 Counterpart: This Agreement may be executed in one or more counterparts, each of which will be deemed to be an original Agreement and all of which, when taken together, will constitute one and the same instrument

25.3 Validation: This Agreement shall come into effect when authorized representatives of both Company and Supplier execute and affix their signature hereto in their due capacity, within 3 working days after confirmation of business by Company and constitutes the entire agreement between the Parties relating to its subject matter. Any alteration, amendment or addition to any of the terms of this Agreement shall become binding only when such alteration, amendment or addition is evidenced in writing and is executed by the authorized representatives of the both parties in their due capacity.

25.4 Costs: Each Party shall bear its own legal, professional and advisory fees, commissions and other costs and expenses incurred by it in connection with this Agreement.

25.5 Language of the Agreement: English shall be the language of the Agreement and all documentation prepared in relation to it. All of the parties' management staff engaged in work arising out of or in connection with this Agreement shall be fluent in English.

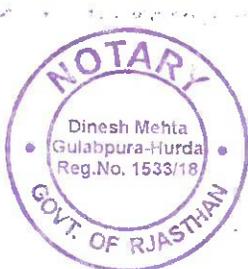
25.6 Remedies cumulative: Except as expressly provided in this Agreement, all remedies available to the Parties for breach of this Agreement are cumulative and may be exercised concurrently or separately, and the exercise of any one remedy shall not be deemed an election of such remedy to the exclusion of other remedies.

[END OF CONDITIONS OF CONTRACT]

#h This document "General Terms & Conditions" being uploaded in the website of "Hindustan Zinc Ltd;" the Uniform Resource Locator (URL) for which shall be communicated in the corresponding Purchase Order along with the Annexure "K: Special Terms and Conditions shall be deemed to be an integral part of the Purchase Order. Order Acknowledgement by the Seller shall cover acknowledging this document and the general terms and conditions mentioned herein as well.

#h These Conditions along with the Special Terms & Conditions shall apply and shall be incorporated by reference/deemed incorporated in any Purchase Order issued hereunder and shall prevail at all times between the Parties over any other terms

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and conditions with respect to the provision of Services or supply of Materials or Services, except as modified, supplemented, or amended either: (i) by formal written amendment of this Agreement; or (ii) by incorporation of any special conditions into any Purchase Order. This Agreement, together with the Purchase Order, shall solely and exclusively form the contract between Purchaser and Supplier for the purchase of the Materials or Services to the exclusion of all other terms and conditions (including any terms or conditions which Supplier purports to apply to any purchase order, confirmation of order, specification, invoice or other document).

For & behalf of Hindustan Zinc Limited

Anshuman Srivastva
AGM - Commercial



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1. Submission of Documents

The supplies/ service bills made/ submitted against this order should invariably be accompanied with documents as specified in the check list as given below. Bill processing for Supplies without the requisite documents are likely to be delayed/rejected.

- a. Invoice with PAN and STNo and Proper Address
- b. Detailed Statement of Calculation for Work Executed
- c. HR Clearance Certificate
- d. Manpower Deployed Details Attendance



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Scope of work:**50000 nos. plants at RA Mines.**Minimum height of plant should be 4 feet.**Maintenance period & Plant height**

1. 6 Months: 4.5 ft
2. 12 Months: 5 ft
3. 18 Months: 5.5 ft
4. 24 Months: 6 ft

(A) Earth work in excavation of pits of 0.6m dia. & 0.6m in depth in size, putting of gunny bags in pits supplied and filled with good earth & manure on the slope and top of the dump along with insecticides, Saplings will be provided by Vendor only.

Transport and planted on the waste dump. The Plantation should be planted as per the SOP provided.

Other instructions to be follow as per engineer-in-charge-

Tree Plantation: Standard Operating Procedure (SOP)

- Site preparation- levelling and dressing
- Marking of pit location in uniform rows – row to row 2 m and plant to plant 2 m
- Pit digging (60 cm X 60 cm X 60 cm)
- Termite treatment of pit bottom and side walls
- Mixing the excavated soil or good earth and FYM @ 10 kg per pit
- Backfilling and flooding water in pit
- Keep pit idle for 10-15 days for sun treatment
- Plant sapling
- Basin preparation around 1 m diameter of plant stem
- Watering
- Regular watering and maintenance

Note:

1. Termite treatment: Thimet @ 10 g/tree OR Phorate @ 10 g/tree OR Chlorophyriphos @ 10 ml/tree.
2. Watering: 2 times/week @ 20-25 litre/tree.
3. Maintenance: weeding and basin preparation – once in a month.
4. Watering and maintenance schedule should be followed for at least two years of plantation.
5. For regular maintenance for 2years please refer schedule in Table 1.

(B) "Maintenance of plants including watering Manner, hoeing, dweeding ,trimming& pruning etc. complete as per instruction of Engineer # in # charge including watch & ward to avoid destruction of plants from stray cattle's as well as wild animals.

Table 1. Schedule of Operations and Maintenance of Trees and Shrubs

S.No.	Activity	Frequency/Quantity	Remarks
1.	Watering		20-25 liter per tree/time
	Summer (March-June)	1 times/week	
	Rainy Season (July-September)	1 time/ in two weeks (if no rain)	
	Winter (October-February)	1 time/week	
2.	Weeding and Hoeing in Basin	Once in a month	As per direction of HZL
3.	Basin Preparation	Once in a month	Before pouring water

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4.	Application of FYM	4-5 kg/tree once a year	During April/May
5.	Termite Treatment	10 ml/tree, 20 % EC Chlorophyriphos, once in three months	During March, June, September and December
6.	Application of Chemicals	Phorate, 10 g/tree, once in six months	During March and September

PAYMENT TERMS : 80% payment of excavation and planting of saplings will be released after completion of work. Balance 20% payment will be released after six months of maintenance.

100 % Payment of maintenance work will be released half yearly on the basis of scheduled maintenance of trees

PENALTY : Applicable

50% penalty will be imposed on maintenance bill in case of not follow the maintenance schedule as follows:

S.No.	Activity	Frequency/Quantity	Penalty in case not follow
1.	Watering		25%
	Summer (March-June)	2 times/week	
	Rainy Season (July-September)	1 time/ in two weeks (if no rain)	
	Winter (October-February)	1 time/week	
2.	Weeding and Hoeing in Basin	Once in a month	5%
3.	Basin Preparation	Once in a month	5%
4.	Application of FYM	4-5 kg/tree once a year	5%
5.	Termite Treatment	10 ml/tree, 20 % EC Chlorophyriphos, once in three months	5%
6.	Application of Chemicals	Phorate, 10 g/tree, once in six months	5%
Total			50%

Selected Endangered and Threatened Plant Species (Hindi Names)

Gugal,, Shyonaka, paras pipal, Ratanjot , Inli , Gular, Karanj, Mahuaa, Semal, Arjun, Khejari, Mopane, Silver Okh, Jamun, Bakhan, Harshringar ,Sitafal etc.

Ornamental Plants :- maximum 5000 nos.

Ashoka , Gulmohar (Flamboyant Flame Tree), saptparni etc.

Note : In the event of mortality of any plants during contract period the contractor shall replace the plant of same age, growth and species at own cost and shall maintain it at contractor's own cost.



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/// ** DRAFT COPY **///
HINDUSTAN ZINC LTD



REPLY AT :
 HEAD OFFICE
 YASHAD BHAWAN,
 UDAIPUR - 313004

CONTACT To: Ankit Gupta
 PHONE:;
 FAX:
 MAIL:Ankit.Gupta2@vedanta.co.in

SERVICE ORDER

PO No.: 2537988066 / 5100028491

Date:29.07.2020

Mahaveer Prasad Sharma Harinarayan Vas Badi pol Hurda 311022 HURDA INDIA	Vendor: 9000436 Phone : 91-01483-221111 EMAIL : Mahaveer.mama1@gmail.com GST Registration No. : 08BAFPS8432Q1ZU
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HZL is pleased to release this order subject to following terms & conditions:

1. Scope of Work:

Procurement, transport & spread Seeds on west Dump at Rampura Agucha Mines as per attached scope annexure.
 Refer annexure-II for Vehicle & Driver Movement at HZL

2. Contract Period: From 01.08.2020 to 31.07.2021

This contract shall be valid for One year.

3. Contract Price: 1,180,000.00

ELEVEN LAKH EIGHTY THOUSAND Rupees

Freight term: PAID basis

Insurance: In Suppliers Account

Packing & Forwarding: Inclusive

Tax - GST extra if applicable

The Rate shall be Rs 100/- per KG. & total contract value shall be Rs 10.00 lacs plus GST extra as applicable.

This is an item rate contract & payment shall be made on actual basis

4. Payment Terms: 100% Payment shall be made within 21 days from the date of invoice submission subject to certification by engineer in-charge, receipt of correct Invoice, mandatory documents, bank guarantee etc.(if/as applicable) at respective HZL unit.

Invoice submission will be on Monthly basis.

5. Security Deposit:

Regd office , Yashad Bhawan, Swaroop Sagar, Udaipur - 313001.

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The security deposit is not applicable.

6. SD-Cum-PBG:

SD-Cum-PBG is not applicable.

7. Liquidated Damage:

The Liquidated Damage is Not Applicable.

Penalty/any deduction:

Not Applicable

8. Details Of Articles

Sr No	Service Code Detailed description of Service	SAC Code	Rate	Qty.	Unit Amount	Del.Date
00010			1,000,000.00	1	AU	31.07.2021
	Procurement, transport, spread Seeds					
	Price		1000000.00		1000000.00	
	IN: Central GST		9.00		90000.00	
	IN: State GST		9.00		90000.00	
	Total		1180000.00		1180000.00	
The Item covers the following Services:						
10	5502070040 SPLY SEED&SPREAD ON WASTE DUMP	999490	100.00	10,000 KG		1,000,000.00
Please Deliver to:						
RAMPURA AGUCHA MINES P.O. AGUCHA - GULABPURA Rampura, DIST. BHILWARA 311029						
Total	INR		1,180,000.00	(ELEVEN LAKH EIGHTY THOUSAND Rupees)		

MAY PLS REFER THE BELOW RELEVANT REGISTRATION DETAILS IN YOUR INVOICES

Plant: 3000 :-RAMPURA AGUCHA MINES

GST No : 08AAACH7354K1ZB PAN No :

Please dispatch material only after creation of Advance Shipping Notification (ASN) and send print out of the ASN alongwith the documents being sent.

**GENERAL TERMS & CONDITION
ANNEXURE I**

1.1 Definitions:

In construing the Agreement, the following words and expressions shall have the meanings hereby assigned to them:

1.1.1 #Affiliate# shall mean with respect to any person, any other person that, directly or indirectly, controls, is controlled by or is under common control of such specified person. For the purposes of this definition, #control# means the direct or indirect beneficial ownership of more than fifty percent (50%) of the issued share capital, stock or other participating interest or the legal power to direct or cause the direction of the general management, of the company, partnership or other person in question, and #controlled# shall be construed accordingly;

1.1.2 #Agreement# shall mean the Purchase Order and the Seller's acceptance of the Purchase Order.

1.1.3 #Applicable Law# shall mean all national (or state) legislation, statutes, ordinances, regulations and by-laws of any legally constituted public authority, in India, having the force of law.

1.1.4 #Claims# shall mean all claims, liabilities, costs, damages and expenses (including court costs and legal fees)

1.1.4 #Conditions# shall mean these General Terms and Conditions as provided under this document.

1.1.5 #Effective Date# shall mean the date of the Purchase Order;

1.1.6 #Goods and Service Tax# means the Central Goods and Service Tax Act, 2017, the Integrated Goods and Service Tax

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Act, 2017, the Union Territory Goods and Service Tax Act, 2017, the Goods and Service Tax (Compensation to States) Act 2017, the applicable State Goods and Service Tax Act as passed by the concerned State and all the rules made thereunder, relevant notifications, circulars, clarifications and orders issued thereunder and any amendments made thereto and any reference to Goods and Service Tax payable or cess payable means tax payable under any of the aforementioned laws.

1.1.7 #Governmental Authority# shall mean any governmental department, local authority, commission, board, bureau, agency, regulatory authority, instrumentality, court or other judicial or administrative body, central, state, provincial or local having jurisdiction over the matter or matters in question.

1.1.8 #Party# means the Purchaser and the Supplier, individually and "Parties" means the Purchaser and the Supplier, collectively.

1.1.9 #Personnel# shall mean any personnel provided by Supplier and utilized to perform the Services at the specified / agreed location.

1.1.10 #Purchase Order# shall mean (i) the written instruction by Purchaser issued to Supplier for the provision of Services under this Agreement, which shall include the specific requirements with respect to the scope of work, applicable rates and charges and the location of the Site; and (ii) if applicable, the oral instruction under this Agreement which shall be reduced to writing as soon as practicably possible including the specific requirements described above.

1.1.11 #Purchaser# means Hindustan Zinc Limited, having its registered office at Yashad Bhavan, Udaipur # 313001 and includes its successors and assigns from time to time.

1.1.12 #Purchasing Group# shall mean and include Purchaser and its Affiliates.

1.1.13 #Representative# in respect of the Purchaser and the Supplier to include the persons so identified on the Purchase Order as their representative or such other person(s) notified by the Purchaser or the Supplier in writing to the other from time to time, which will include amongst others consultants engaged by the Party or any Affiliate of the Supplier having commonality of interest with the Supplier.

1.1.14 #Services# means the tools, equipment, materials, supplies and Personnel to be provided by Supplier and the work to be carried out as specified in the Agreement and any Purchase Order.

1.1.15 #Site# shall mean the location where Purchaser wishes Supplier to provide the Services.

1.1.16 #Specification# includes but is not limited to assays, whether typical or otherwise, or the scope or technical parameters of the Services attached to or referred to in this Agreement and/or any Purchase Order.

1.1.17 Supplier# means the party identified as a supplier in the Purchase Order and includes its successors and assigns from time to time. For the avoidance of doubt, the term Supplier or Seller may be used interchangeably for each other in this Agreement.

1.1.18 #Supplier Group or Seller Group# shall mean and include Supplier/Seller, its Affiliates and its and their sub-suppliers and suppliers of any tier and its and their respective Affiliates and the term Supplier or Seller may be used interchangeably for each other.

1.1.19 #Tax# or #Taxes# shall include all taxes, including income tax, withholding tax, dividend distribution tax, capital gains tax, fringe benefit tax, GST, customs duty, wealth tax, gift tax, franchise, property, use, employment, license, occupation tax, governmental charges, fees, cesses, levies or assessments or other taxes, levies, fees, stamp duties, statutory gratuity and provident fund payments or other employment benefit plan contributions, withholding obligations and similar charges levied under Applicable Law and shall include any interest, fines, and penalties related thereto and, with respect to such taxes, any estimated tax, interest and penalties or additions to tax and interest on such penalties and additions to tax together with any other statutory charges which may be payable by the Contractor, its Sub-Contractors and any of their employees, levied under the Applicable Law.

1.1.20 #Trade Usage# refers to generally accepted practice or norms in relation to expected standards, permissible deviation, internationally accepted scientific data, foreseeable consequences attributable to deviation beyond permissible deviation established over a period of time in course of commercial dealing between the parties to this Agreement or their associates.

1.2 Interpretation:

In this Agreement:

1.2.1 Headings are for convenience only and shall not govern or affect the interpretation of the Agreement;

1.2.2 Except where the context otherwise requires, references to one gender include all genders and the singular includes the plural and vice versa;

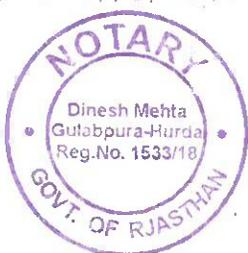
1.2.3 Except where the context otherwise requires, references to any enactment shall include references to such enactment as re-enacted, amended or extended and any sub-ordinate legislation made under it;

1.2.4 References to persons include companies, corporations, partnerships, associations, and other organizations whether or not having a separate legal personality;

1.2.5 Except where otherwise indicated, reference to clauses, sub-clauses, recitals and annexures shall be to the clauses, sub-clauses, recitals and Annexures of this Agreement;

1.2.6 "including" means "including without limitation";

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1.2.7 If the day on which any act, matter or thing is to be done under or pursuant to this Agreement is not a business day as per Trade Usage, that act, matter or thing shall be done on the preceding business day.

1.2.8 Only in the event of inconsistency between the Provisions of these Conditions and the Purchase Order(s), these Conditions will prevail, otherwise both Purchase Order(s) and the Conditions shall be harmoniously construed to give effect to both to the extent possible.

1.2.9 The term #Agreement# or #Contract# may be used interchangeably for each other in this document and shall be construed as referring to the same context.

1.2.10 The rule of construction, if any, that a contract should be interpreted against the Party responsible for the drafting and preparation thereof shall not apply.

2. Representation & Warranties

2.1 The Supplier represents and warrants that:

(i) It is a duly organized company/business entity validly existing under the laws where it is incorporated/established, and has experience, expertise, ability and skills as required to supply Materials and perform the Services as detailed in the Scope of Services above and as may be necessary to perform its obligations hereunder in a professional manner.

(ii) It has all the requisite power, authority and approvals required to enter into this Agreement and will have all the requisite power, authority to perform fully each and every obligation under this Agreement. (iii) This Agreement has been duly executed and delivered by its duly authorized representatives and constitutes its legal, valid and binding obligation enforceable against it in accordance with its terms.

(iv) The execution, delivery and performance of this Agreement and all instruments or addenda required hereunder by it does not contravene, violate or constitute a default of or require any consent under the provisions of any other agreement or instrument to which it is bound, including the constitutional documents thereof, or any order, judgment, decree or injunction of any court of law.

(v) No order has been made or petition presented for the bankruptcy protection, winding up or dissolution thereof against it.

(vi) It shall maintain high professional standards to ensure performance of this Agreement as per best business practices and in full compliance with statutory obligations.

(vii) It has all necessary statutory and regulatory permissions, approvals and permits for the running and operation of its establishment for the conduct of its business;

(viii) It has full right, title and interest in and to all trade names, trademarks, service marks, logos symbols and other proprietary marks (IPR) (including limited right of use of those owned by any of its vendors, affiliates or subcontractors) which it provides to the Buyer, for use related to the Services, and that any IPR provided by the Supplier shall not infringe the IPR of any third party;

2.2 Each Party hereby warrants that it has not entered into this Agreement relying on any warranty, representation or undertaking except for any warranty, representation or undertaking expressly set out in this Agreement.

2.3 Supplier warrants and guarantees that:

(i) all Services shall be supplied in accordance with the provisions of the Agreement/Purchase Order and with generally accepted industry standards, Trade Usage with regard to quality, Specification, quantity, measurement, performance and/or functionality and are free from defects in material and workmanship;

(ii) in the case of Services, be of the best quality and workmanship and shall be free from fault or defect (including latent defect), with such tolerances as stated in the Specification or on the drawings.

(iii) Time shall be of the essence and any Services performed shall be in strict accordance with any time or schedule specified hereunder.

2.4 Specification Variation Buyer may, at any time, make changes within the general scope of the Agreement and/or Purchase Order by giving written notice to Supplier. Such changes may include changes to the technical Specification of the Material (where such Material are manufactured to order), quantities, method of shipping and/or packing, inspection standards and place of delivery. Upon receipt of such variation request, if any such change affects the purchase price and/or delivery date, Buyer and Supplier shall agree upon an adjustment to the price and/or delivery date. The change to the Specification and /or Purchase Order, together with any adjustment to price and/or delivery date, if any, shall be set forth in a revised Variation Order issued by Buyer and acknowledged by Supplier in writing.

2.5 Obligations of Contractor: Contractor shall comply with all laws, rules, regulations including but not limited to labour laws, rules, regulations or labour tribunal or conciliation officer or court order or directives of any government authority having jurisdiction over Contractor's activities directly or through contract labour whether within or outside the premises of the HZL and shall release, defend and indemnify the Owner against any levies, fines and penalties which may be asserted or assessed against the Owner by reason of violation of such laws, rules, regulations or directives by any member of Contractor Group.

HZL reserves its right to demand adequate security for subsequent transactions as a surety for non-adherence of any statutory laws by the Contractor, in case there is a breach (actual, threatened or perceived) of any statutory laws. Provided however

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that the exercise of any such right to demand surety by the HZL shall not absolve the Contractor of any of its obligation / liabilities under this Agreement and / or the law.

Anything contained under Clause 2.5 above shall be without prejudice and will be in addition to, and not in substitution to any other clause under this agreement including annexures thereof.

2.6 Legal Compliance:

2.6.1 The Contractor shall ensure that the performance of this Agreement and provision of the Services complies to all provisions of the relevant legislations, regulations and by-laws of the central/state/local authorities having jurisdiction at site and, shall, unless mentioned otherwise in technical scope of work, arrange for all necessary statutory approvals at his own cost.

2.6.2 The Contractor shall give all notices required under the said acts, regulations and/or by-laws and shall indemnify the Owner towards any omission or commission in this regard.

2.6.3 The Contractor shall be responsible for observing all statutory laws as applicable including following:

Mines Act

Payment of Wages Act and Payment of Bonus Act

Minimum Wages Act

Contract Labour (Regulation and Abolition) Act, 1970

Employees Liability Act

Factories Act, 1965

Payment of Gratuity Act, 1972

Workmen/Employees Compensation Act.

Apprenticeship Act

Employee PF & Miscellaneous Provisions Act, 1952

Family Pension Scheme

Deposit Linked Insurance

Modern Slavery Act 2015

Any other enactment / rule in force or made applicable from time to time.

2.6.4 The contractor shall take Workmen Compensation Insurance Policy to enable him to discharge various liabilities under Workmen/Employees Compensation Act.

2.6.5 The Contractor shall take valid labour license and shall submit the copy of it to the Buyer before commencement of the Services.

2.6.6 The Contractor shall pay to his workers, minimum wages plus other statutory benefits as per the Minimum Wages Act or as prescribed by Buyer for such jobs, whichever is higher. The wages to other semi-skilled & skilled workmen will be proportionally on higher side as applicable.

2.6.7 The Contractor shall obtain group insurance policy for the entire contract period for their employees and the same shall be submitted for verification within seven days of awarding the contract.

2.6.8 Anything agreed in the Contract but prohibited under any provision of the Indian Foreign Exchange Management Act, 1999 and amendments thereof, except with the permission of the Government of India and / or the Reserve Bank of India, shall be done only after such permission is granted.

3. Invoicing, Taxes, Payment and Insurance

3.1 The Supplier shall submit the invoices (both original & duplicate) along with the delivery of the Materials or performance of the Services. The Purchaser reserves the right to reject the Materials or Services received without the invoices.

3.2 The Supplier shall ensure that the invoices submitted in accordance with Clause 3.2 are complete in all respect and shall specify descriptions as required under the Goods and Services Tax and other Applicable Laws.

3.3 The Purchaser shall not be liable for any tax or levies or duties or charges for any reasons whatsoever, unless specifically mentioned in the invoice issued alongwith the delivery of the Materials or performance of the Services.

3.4 To the extent that the input tax credit is available to the Owner, the applicable GST, if any, shall be paid by the Owner, only upon fulfilment of the following conditions cumulatively:

i. the Contractor shall submit valid invoice(s) to the Owner, in accordance with the Applicable Law, so as to enable the Owner to claim GST credits, if any, available to the Owner, under the Applicable Law. Such invoice(s) shall inter alia reflect, the details of the nature of service(s) provided, the breakup of Contract Price charged along with the applicable GST, if any, payable thereon, and all other details/ particulars/ information required to be furnished in this regard, in terms of the Applicable Law. The Owner shall not be bound to make any other payments except for the Contract Price and GST mentioned therein. Any out-of-pocket expenses shall not be payable by the Owner, unless a valid invoice as per the Applicable Law is issued in this regard.

ii. The Contractor shall discharge the liability of GST to the concerned authorities and upload the relevant details and the

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GST returns in relation to such payments within the stipulated timelines prescribed under the Applicable Law.

iii. If at any time the credit of GST, paid by the Contractor, under any invoice issued by the Contractor, is denied to the Owner, or payment is demanded by statutory authorities due to a deficient invoice or incorrect reporting of transactions or inadequate documents or in the event an invoice or other tax documents do not satisfy the requirements under the Applicable Law or due to the Contractor's failure to deposit any tax collected from the Owner, the Contractor undertakes to defend, indemnify and hold the Owner harmless against any demand or denied tax credits as well as any interest, penalties and all other charges/ expenses imposed on the Owner as a result of claiming such tax credit.

iv. the Contractor shall be responsible for ensuring that it is registered under the Applicable Law including relevant GST legislations during the term of this Contract. In case, the registration of the Contractor is cancelled, withdrawn or surrendered during the term of this Contract, or where, for any reason, whatsoever, the Contractor is not required to obtain registration under GST legislations, the Contractor undertakes to intimate the Owner immediately. If at any time, the Contractor fails to intimate the Owner about the de-registration/ cancellation, the Contractor undertakes to defend, indemnify and hold the Owner harmless against any liability including that of any unpaid GST as well as any interest, penalties and any/all other charges/ expenses imposed on the Owner as a result of the same.

3.5 the Contractor undertakes that it shall pass on the benefits of any tax related exemptions or rebates to the Owner and that it shall provide the Owner with any transaction related documentation/ information that it may require in order to avail any tax credits/ rebates/ deductions/exemptions.

3.6 the Contractor shall comply with the Anti-Profiteering measures prescribed under the GST legislations.

3.7 The Owner shall be entitled to retain or withhold any part or whole of the Contract Price including GST, if any, payable thereon, in the event the Contractor breaches any of the material terms of this Contract or is not in compliance with the conditions stipulated under Clause 27.1 above, until the same has been complied with, or the requirements under the Applicable Law in relation to this Contract have been adhered to. Such retention or withholding by the Owner shall not be deemed to constitute a breach of the Owner's obligations under this Contract and the Contractor agrees that it shall not seek any remedy, relief or claim from the Owner in relation thereto.

3.8 Supplier shall submit sufficient supporting document(s) along with its invoice for freight amount paid and consequently claimed by the Supplier, if the accepted freight term as extra to be paid by the Purchaser.

3.9 Without prejudice to any other right or remedy, the Purchaser reserves the right to set off any amount owing at any time from the Supplier to the Purchaser against any amount payable by the Purchaser to the Supplier.

3.10 Supplier shall not suspend deliveries for any payment delays on account of genuine disputes.

3.11 In the event of any discrepancy in the invoice submitted by the Supplier, the Purchaser shall give a written notice to the Supplier specifying the discrepancy thereof. Such invoices shall be treated as disputed invoice (Disputed Invoice).

3.12 Upon receipt of a notice from the Purchaser notifying any discrepancy in the Disputed Invoice, the Supplier shall withdraw the Disputed Invoice and submit a rectified invoice for the undisputed amount and the Purchaser shall pay the amount set out in such rectified invoice within a reasonable time. The Purchaser shall not make payment of the amount set out in the Disputed Invoice, if the Purchaser has notified any discrepancy with respect to certain entries in the Disputed Invoice till such time as the discrepancy is resolved by the Parties. For avoidance of doubt, the Purchaser and the Supplier shall endeavour to settle the disputed amount as quickly as possible through good faith negotiations.

3.13 Supplier shall effect and maintain with a reputed insurance company a policy (ies) of insurance providing an adequate level of cover in respect of all risks which may be incurred by the Supplier, arising out of the Supplier's performance of its obligations under the Agreement, including death or personal injury, loss of or damage to property or any other loss. Such insurance shall be maintained throughout during the subsistence of the Agreement.

3.14 Audit and Inquiry:

i. If the Purchaser has a reasonable basis to believe that Supplier or any of its Affiliates has taken or failed to take any action that may expose the Purchaser or any of its Affiliates to any liability under the Applicable Laws or any other non-compliance(s) thereof, the Supplier agrees that the Purchaser shall have the right (but not the obligation) upon written notice to the Supplier, to make due inquiries from the Supplier and its Affiliates to determine, to the Purchaser's reasonable satisfaction, whether any actions or failures to act on behalf of Supplier or its Affiliates may subject Purchaser or any of its Affiliate to such liability and further undertakes to cooperate with the Purchaser in good faith.

ii. Purchaser shall have the right of access to Supplier's premises with a prior written notice to inspect the progress of manufacture; testing and commissioning of the Material or the performance of Services to otherwise satisfy itself as to compliance of the Agreement and agreed delivery dates. The Supplier shall procure similar rights of access for Purchaser at the premises of any sub-supplier, if required. For the avoidance of doubt, any inspection of the progress of manufacture or testing and commissioning of the Material or the performance of the Services, as the case may be, undertaken by the Purchaser shall in no way relieve the Supplier from any of its liabilities and obligations under the Agreement or otherwise.

4. Passing of Ownership, Risk, Copyright, Patents and other Proprietary rights etc. (#IPR#)

4.1 Unless otherwise stated in the Purchase Order, Services shall remain at the risk of the Supplier until delivered in a

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deliverable state to the Buyer and in the manner specified in the Purchase Order and subject to performance testing by the Buyer as per the requirement of the specifications;

4.3 Where the Buyer rejects any Services in accordance with these conditions, such Services shall be deemed to have remained the property and risk of the Seller at all times.

4.4 (i.) If any Services performed or provided under the Agreement and/or Purchase Order involves a patent, copyright, trademark, or proprietary information (IPR), Supplier hereby grants Purchasing Group a permanent, irrevocable, worldwide, non-exclusive license to use the same without additional charge. Without prejudice to the above, the proprietary rights in relation to IPR of the Supplier shall continue to vest with the Supplier.

(ii) Buyer is the sole owner of IPR in anything developed and delivered under this Agreement / Purchase Order. Supplier shall provide at Purchaser's reasonable request any documentation necessary to confirm Purchaser's ownership interest in such IPR. Supplier shall retain ownership of any IPR vested in Supplier prior to this Agreement or created by Supplier outside of its performance of this Agreement during the term of this Agreement.

(iii) Supplier shall at all times be responsible for, shall release and shall defend, protect, indemnify, hold harmless and defend Purchasing Group, from and against any Claim by a third party for infringement of any IPR which may arise out of the sale and/or use of the Services performed and/or provided by Supplier.

5. Consequences of Default

5.1 If the Supplier, breaches any of the warranties or representation under the Contract; or breaches any other provision of the Contract or any of the Services otherwise fail to comply with the provisions of the Contract; the Buyer shall notify the Seller of such failure to comply with the Contract, or the breach of warranty, as the case may be.

5.2 If the Supplier fails to rectify such breach in supply of the Services under this Contract, which being capable of remedy are not remedied within 14 days of notice of such default, the Buyer may at its discretion and without prejudice to other rights and remedies under the Contract or otherwise, avail itself of any one or more of the remedies as hereunder:

i. reject the Services (in whole or in part) which are not in deliverable state as per the conditions of the Contract at the risk and cost of the Seller and Seller shall immediately pay to the Buyer a full refund for the Services so rejected.

ii. give the Supplier the opportunity at the Supplier's expense either to remedy any defect in the Services or substitute Services and carry out any other necessary work to ensure that the terms of the Contract are fulfilled within a reasonable period specified by the Buyer;

iii. refuse to accept any subsequent performance of the Services which the Seller attempts to make, in each case without any liability to the Supplier;

iv. carry out or ensure that some other person carries out, at the Supplier's expense, any work necessary to make the Services comply with the Contract (including but not limited to freight, disassembly and reassembly);

v. instruct the Supplier to suspend performance of its obligations under this Contract with immediate effect and to take such steps as the Buyer may direct in order to remedy such breach at the Supplier's expense;

vi. claim such damages foreseeable or otherwise as may have been sustained consequential to such breach or breaches of the Contract as per terms and conditions of PO or under applicable Trade usage taking into account the prevailing trade practice or scientific data of potential loss attributable to usage of such Services;

vii. opt to use or consume the Services in the event of non-availability of substitute Services or to maintain operations of the plant or to avoid plant shut down but without prejudice to its right to claim damages attributable to consequences arising due to off-spec Services;

viii. obtain substitute Services or purchase substitute services elsewhere and recover from the Seller any expenditure reasonably incurred by the Buyer in obtaining the Services in substitution from another seller.

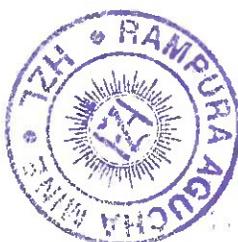
5.3 If the Buyer exercises its rights under conditions (b), (d) and/or (e) above in respect of Services which do not, in the Buyer's opinion, meet the requirements specified in the Contract, the Supplier shall grant necessary right to the Buyer to utilise the relevant Services until such time as they meet those requirements.

5.4 Notwithstanding anything to the contrary in this Agreement, there shall be no obligation whatsoever on the Purchaser to accept any defective or sub-standard quality Service, and/or performance of the Agreement and it is expressly agreed by the Parties that acceptance of such defective or sub-standard quality Service, and/or delayed performance by the Purchaser in its sole discretion, shall not prejudice any right / claim of the Purchaser to damages for supply of such defective or sub-standard quality Service, and/or delayed performance and / or for breach of the Agreement. In the foregoing, the Purchaser shall reasonably determine the amount of damages that shall be leviable upon / payable by the Supplier. Any damages so determined by the Purchaser shall be paid by the Supplier within fifteen (15) days. The levy of damages / acceptance of performance, as above, shall not prejudice any rights of the Purchaser as per other terms of this Agreement / Purchase order.

5.5 In the event of breach by the Supplier of its obligations under the Contract, the Buyer may terminate the Contract in whole or in part or to rescind the Purchase Order, in each case without any liability to the Purchaser.

6. Risk purchase

In the event of any delay or any breach in performance of the Services, the Buyer shall be at liberty to either (a) continue the



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contract with due liquidated damages; or (b) engage any other agency, parallel to the Supplier, to complete part of the balance Services at the risk and cost of the Supplier; or (c) cancel the contract and get the balance Services done from any other agency at the sole risk and cost of the Seller. The additional cost and expenses so incurred by the Buyer in procuring the whole or part of Services shall be liable to be recovered from the charges payable to the Seller or the Security deposit or Bank Guarantee so deposited by the Supplier.

7. Permits, licenses, encumbrances, liens etc.

7.1 The Supplier shall ascertain and comply with the Applicable Laws in performance of the Contract and shall obtain and keep in good standing all approvals, permits and licenses, right of way, as the case may be, which are necessary or expedient for the performance of his obligation under the Agreement. These approvals, permits and licenses shall be valid and acceptable under appropriate laws.

7.2 The Supplier shall not cause or permit any lien, attachment or other encumbrance other than for borrowings in the ordinary course of business.

8. Indemnity

8.1 The Supplier shall defend, indemnify and hold the Purchaser harmless from and against any and all Claims in connection with any taxes, levies, costs and charges which may be imposed on the Supplier or its sub-contractors by any Government Authority arising out of or in connection with the performance of this Agreement which originated from the performance of services by the Supplier Group.

8.2 The Supplier shall be liable for and shall defend, indemnify and hold the Purchaser harmless from and against and all Claims arising out of or in connection with the performance of this Agreement by the Supplier.

8.3 Supplier shall at all times be responsible for, shall release and shall defend, protect, indemnify and hold Purchasing Group harmless from and shall keep Purchaser's equipment and property free and clear of all liens, claims, assessments, fines and levies incurred, created, caused or committed by Supplier Group.

8.4 In the event the Purchaser is entitled to indemnification and intends to seek indemnification under this Clause, Purchaser shall promptly give Supplier notice of such Claim or action and the Supplier shall have the right to assume the defence of any such case at its own cost and expense.

8.5 This indemnity shall be without prejudice to any other rights or remedies, including injunctive or other equitable relief, which the Purchaser may be entitled to.

8.6 Purchaser shall have the right to retain / withhold out of any payment to be made to the Supplier an amount sufficient to indemnify it completely against any such lien, claim, assessment, fine or levy exercised or made and all associated costs.

8.7 It is the express intention of the Parties hereto that the provisions of this Agreement/Purchase Order shall exclusively govern the allocation of risks and liabilities of the Parties, it being acknowledged that the Agreement reflected herein has been based upon such express understanding. It is acknowledged that the compensation payable to Supplier as specified in this Agreement and/or applicable Purchase Order has been based upon the express understanding that risks and liabilities shall be determined in accordance with the provisions of this Agreement and/or applicable Purchase Order.

9. Limitation of Liability

9.1 Except as may be otherwise provided in this agreement, in no event shall either party be liable to the other, whether arising under contract, tort (including negligence), strict liability or otherwise, for any indirect, consequential, special, punitive, exemplary or incidental loss or damages of any nature arising at any time from any cause whatsoever.

9.2 The limitations of liability and exclusion of warranties as set out in the Agreement shall be to the maximum extent permitted by applicable law. Nothing in this Agreement purports to exclude or limit liability for fraud, death or personal injury.

10. Relationship between Parties

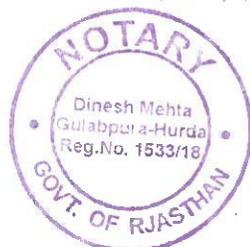
Nothing contained in the Agreement is intended to, or shall operate to, create a relationship of partnership or employer-employee or joint venture between the parties. Nothing in the Agreement constitutes either party as the agent or legal representative of the other party or creates any fiduciary relationship between the parties. Neither party shall have authority to act in the name or on behalf of or otherwise to bind the other or commit or purport to bind the other in any way (including the making of any representation or warranty, the assumption of any obligation or liability and the exercise of any right or power) or pledge the credit of the other party for any purpose.

11. Notice and Communication

Any notice required to be given hereunder shall be given by sending the same by registered post or by hand delivery to the address of the addressee shown in this Agreement or to such other address as either party may notify to the other for this purpose in writing. If sending by hand, notice shall be deemed served at the time of dispatch and if sending by post, notice shall be deemed to have been given on the 3rd day on dispatch by post. If notice pertains to any breach of a legal term under the Agreement or otherwise, the same should be addressed to Head Legal, Hindustan Zinc Limited, Yashad Bhawan, Udaipur-313004 (Rajasthan).

12. Termination & Suspension

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12.1 Either Party may immediately terminate all or part of this Agreement/Purchase Order as under:

- (i) by a written notice to the other Party if the other Party has committed any material breach of the terms of this Agreement and has failed to remedy such breach within 30 days from receiving notice from the other Party.
- (ii) if other party (i) ceases, or threatens to cease, to function as a going concern or conduct its operations in the normal course of business, (ii) commences, or becomes the subject of, any bankruptcy, insolvency, reorganization (other than in the course of a corporate re-organization or to an affiliate), administration, liquidation or similar proceedings, (iii) makes, or plans to make, a general assignment for the benefit of its creditors, or (iv) either party's creditors attach or take possession of all or a substantial part of said party's assets; the foregoing shall not apply to any action or proceeding which is (a.) in the reasonable opinion of the party, frivolous or vexatious; or (b.) discharged, stayed or dismissed within ninety (90) days of commencement;
- (iii) if either party is unable to carry out its obligations by reason of Force Majeure events and the force majeure continues for a period more than 60 days, then either Party may, by giving notice in writing, terminate this Agreement with immediate effect. Any such termination shall be without prejudice to any of the right of the Parties accrued prior to the date of such termination.

12.2 The Purchaser may terminate all or part of this Agreement by one (1) months# written notice without assigning any reason whatsoever or if the Supplier fails to obtain any approval required under the terms of this Agreement.

12.3 Upon termination of this Agreement, both Parties shall be relieved of their respective rights and obligations under this Agreement save such obligations and/or liabilities of the Parties set forth herein which (i) that the Parties have expressly agreed will survive any expiration or termination, or (b) by their nature would be intended to be applicable following any such expiration or termination, or (c) have accrued before expiration or termination, as the case may be.

12.4 In the event of Supplier's breach of its obligations hereunder, no payment shall be due by Purchaser in respect of such order/Purchaser order, or, in the case of suspension, until the failure or breach has been remedied to the reasonable satisfaction of Purchaser.

12.5 Notwithstanding anything to the contrary in this Agreement, Purchaser may, at its sole discretion, suspend this Agreement / any Purchase Order, in whole or in part, upon twenty-four (24) hours written notice to Supplier for any reason whatsoever. The Purchaser shall promptly notify the Supplier in writing of the same.

12.6 In the event of written notice pursuant to Clause above, Supplier's failure to perform the Purchase Order to the standards required by the Purchase Order and Supplier's material breach of any of its obligations under the Agreement, no payment shall be due by Purchaser in respect of such order/Purchaser order, or, in the case of suspension, until the failure or breach has been remedied to the reasonable satisfaction of Purchaser.

12.7 Any non-compliance of the Company's Life Saving Rules (LSR) of the site shall result in disciplinary action against the Service Provider including termination of the Contract.

13. Force Majeure

13.1 Neither party shall be liable for any delay or failure in the performance of this Agreement due to act of God such as fire, flood, earthquake or like natural calamity, war, riots or civil commotion if they impede the performance of the Agreement or make performance unreasonably onerous and which could not reasonably be foreseen (#Force Majeure Events#).

13.2 The party, which is not able to perform its obligations under this Agreement on account of Force Majeure Event(s), shall without any delay, notify in writing the other party on the initiation and cessation of such Force Majeure Event(s) and shall use diligent efforts to end the failure or delay in performance to minimise effects of such Force Majeure Event. In such a situation, the party, which is not able to perform its obligations under this Agreement on account of Force Majeure Event(s), shall not be liable to the other party for the default or breach of this Agreement for the period of failure or delay.

13.3 If the Force Majeure Event(s) continues beyond 30 days, the parties shall make efforts to find an amicable solution for future course of action agreeable to both parties in a fair and equitable manner.

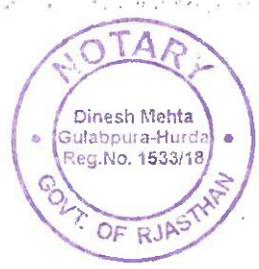
(iv) Both Parties agree to use their respective reasonable efforts to cure any event of Force Majeure to the extent that it is reasonably possible to do so.

14. Arbitration

14.1 Any dispute or difference whatsoever arising between the parties out of or relating to the interpretation, meaning, scope, operation or effect of this Agreement or the existence, validity, breach or anticipated breach thereof or determination and enforcement of respective rights, obligations and liabilities of the parties thereto shall be amicably settled by way of mediation. If the dispute is not conclusively settled within a period of twenty-one (21) days from the date of commencement of mediation or such further period as the parties shall agree in writing, the dispute shall be referred to and finally resolved by arbitration under Indian Arbitration and Conciliation Act 1996. The arbitration shall be conducted as follows:

(i) The Arbitration shall be conducted by a forum of three arbitrators with one arbitrator nominated by each Party and the presiding arbitrator selected by the nominated arbitrators.

(ii) The language of the mediation and arbitration proceedings shall be English. The seat of arbitration shall be Udaipur, India.



[Handwritten Signature]
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(iii) The award made in pursuance thereof shall be final and binding on the parties.

Notwithstanding the existence of any Dispute being referred to arbitration, the Parties shall continue to perform their respective obligations under this Agreement.

15. Governing Law and Jurisdiction

This Agreement shall be governed by, construed and enforced in accordance with the laws of India.

The parties submit to the exclusive jurisdiction of the courts of Udaipur, India and any courts that may hear appeals from those courts in respect of any proceedings in connection with this Agreement.

16. Assignment and Subcontracting

16.1 Supplier may not assign, sublet or subcontract its rights or obligations under any Purchase Order, in whole or in part, to any third party without the prior written consent of Purchaser, which the Purchaser may at its sole discretion accept or refuse. Supplier shall have a written contract in place for each approved sub-supplier prior to such sub-supplier performing any Services. Supplier shall assume full responsibility for the acts or omissions of Supplier's sub-suppliers of any tier. All of Supplier's subcontracts, if any, for performance of the Services shall contain terms and conditions substantially similar to those contained in this Agreement and/or the applicable Purchase Order which protect and do not restrict Purchaser's rights as set forth in this Agreement and/or in the applicable Purchase Order.

16.2 Purchaser shall have the right to assign the Agreement / Purchase Order to its Affiliate or any third party customer. This Agreement shall inure to and be binding upon the respective successors and assignees of the Parties.

17. Recourse of the Parties

17.1 Supplier shall look only to Purchaser for the due performance of the Purchase Order and nothing therein contained shall impose any liability upon, or entitle Supplier to commence any proceedings against any third party customer or any person not a party to the Agreement or the Purchase Order.

17.2 Purchaser shall be entitled to enforce any Purchase Order on behalf of any third party customer in connection with the Agreement / Purchase Order as well as for itself and for this purpose, only Purchaser may commence proceedings against Supplier. The obligations and liabilities of Purchasing Group issuing Purchase Orders are several and not joint.

17.3 It is clarified that under no circumstances, by virtue of this Agreement, will the employee/workers of the Supplier be deemed to have any privity of contract with the Company nor would they or any of their heirs, assigns or successors would claim any benefit / privilege, whatsoever, from the Company.

18. Waiver and Remedies

A failure or delay in exercising any right, power or privilege in respect of this Agreement will not be presumed to operate as a waiver, and a single or partial exercise of any right, power or privilege will not be presumed to preclude any subsequent or further exercise, of that right, power or privilege or the exercise of any other right, power or privilege. All waivers under this Agreement must be made in writing.

19. Severability

If any clause or provision of this Agreement is prohibited, invalid or unenforceable in any jurisdiction, that provision will, as to that jurisdiction, be ineffective to the extent of the prohibition, invalidity or unenforceability without affecting or invalidating the remaining provisions of this Agreement or affecting the validity or enforceability of that provision in any other jurisdiction, unless it materially alters the nature or material terms of this Agreement.

20. Amendment

This Agreement may be amended, modified, renewed or extended only by a written instrument signed by each of the parties hereto.

21. Code of Conduct

Supplier confirms having read and understood the Code of Conduct of Hindustan Zinc Limited (the "Company"), a copy of which has been provided to the supplier and is also available at <http://intranet.hzlmets.com/Departments/Secretarial/Shared%20Documents/HZL_BUSINESS_ETHICS_CODE_OF_CONDUCT_19_10_2015.pdf> and which inter alia includes (i) measures for prevention of corrupt practices, unfair means and illegal activities including compliance of all anti-bribery and anti-corruption laws and regulations of India, Foreign Corrupt Practices Act, 1977 of USA and UK Bribery Act, 2010 ; and (ii) adherence to the insider trading prohibition laws and regulations of all jurisdictions where securities of the company or its Affiliates may be listed including but not limited to SEBI (Prohibition of Insider Trading) Regulations, 2015 [SEBI (PIT) Regulations, 2015], which inter alia prohibits the supplier and its employees and associates from trading in the securities of the Purchaser based on any Unpublished Price Sensitive Information. The Supplier confirms that he/she has read the relevant regulations stated above and policies of the Purchaser at the time of entering into this Agreement and undertakes to abide by the terms thereof to the fullest extent at all times. The Supplier affirms that it has formulated a Code of Conduct and instituted appropriate measures to comply with the requirements of SEBI (PIT) Regulations, 2015 as amended from time to time.

The Code of Conduct enlists compliance with the following acts and regulations:

The UK Bribery Act ("UKBA")



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The Foreign Corrupt Practices Act (the "FCPA")
SEBI (PIT) Regulations, 2015

The Sexual Harassment of Women at Workplace (Prevention, Prohibition and Redressal) Act, 2013 ("Prevention of Workplace Sexual Harassment Act")

#h Modern Slavery Act, 2015

Annexure I- Code of Conduct to these General Terms & Conditions shall be deemed accepted by Supplier as an integral part of this document.

If at any time during execution or performance of this Agreement the Contractor is faced with any undue demand, request for gratification or favor from any employee of the Company or a person connection with such employee, the Contractor must report the same immediately at hzi.whistleblower@vedanta.co.in

22. Mistake, Fraud, Misrepresentation etc.

No rights shall accrue to the Seller or any obligation arise for the Buyer, if it is discovered at any time that the consent of the Buyer was obtained through fraud or misrepresentation or cheating or inducing mistake as to any fact material to such consent by Seller or any Representative of the Seller.

23. Confidentiality

23.1 Each party hereto shall, save as otherwise provided herein, maintain in strict confidence, and not disclose or use for a purpose other than the purpose set out herein, any confidential and/or proprietary information ("Confidential Information") of any party including this Agreement and the terms and conditions hereof. The foregoing covenant shall not restrict a party from disclosing Confidential Information to the extent required in connection with any legal proceeding(s) or required for filing with govt. agencies, courts, stock exchanges or other regulatory agencies under applicable laws and regulations.

23.2 The parties shall restrict access to the Confidential Information only to its own employees or professional advisers who need to have such access for the purposes of performing the obligations or enforcing the rights under this Agreement and who have agreed with such party to abide by the obligations of confidentiality equivalent to those contained herein with such party. The disclosing party shall remain vicariously liable for such disclosure.

23.3 Unless otherwise agreed, this clause shall continue to remain in force for a period of 2 years after the expiry or termination of this Agreement.

23.4 For the purposes of this Agreement, the term "Confidential Information" includes such non-public information which is disclosed by either party to the other party, whether or not marked confidential, and which includes inter alia, business policies or practices, business plans, dealings, customer lists or requirements, price lists or pricing structures, technical data, employee or officers; data, product lines, designs, research and development activities and findings, ideas, concepts, know-how, financial statements and other non-generic information whether tangible or intangible, written or oral, relating to any released

or unreleased concepts, ideas, projects and services, the marketing or promotion of products and any other information received from any source which would be deemed as confidential or proprietary.

23.5 Each Party agrees that it will not use the name or logo of the other party, without the prior written consent of the other party(ies) hereto.

24. Non-solicitation and declaration

The Parties agree that during the term of the Contract and for a period of one year following termination, they shall not without the prior written consent of the other party directly or indirectly solicit for employment, engage, hire, employ or contract with any employee or ex-employee of the other party, who has worked in connection with fulfilment by the such party of its obligations hereunder in a key capacity, within six months of their departure.

25. Miscellaneous Provisions

25.1 Entire Agreement: This Agreement along addendums and with all annexures, if any constitutes the entire agreement and understanding between the parties with respect to its subject matter and overrides and supersedes all previous agreements, representations, written documents, correspondence and understanding of the parties, whether in writing or otherwise.

25.2 Counterpart: This Agreement may be executed in one or more counterparts, each of which will be deemed to be an original Agreement and all of which, when taken together, will constitute one and the same instrument.

25.3 Validation: This Agreement shall come into effect when authorized representatives of both Company and Supplier execute and affix their signature hereto in their due capacity, within 3 working days after confirmation of business by Company and constitutes the entire agreement between the Parties relating to its subject matter. Any alteration, amendment or addition to any of the terms of this Agreement shall become binding only when such alteration, amendment or addition is evidenced in writing and is executed by the authorized representatives of the both parties in their due capacity.

25.4 Costs: Each Party shall bear its own legal, professional and advisory fees, commissions and other costs and expenses incurred by it in connection with this Agreement.

25.5 Language of the Agreement: English shall be the language of the Agreement and all documentation prepared in relation to it. All of the parties' management staff engaged in work arising out of or in connection with this Agreement shall be fluent in English.

25.6 Remedies cumulative: Except as expressly provided in this Agreement,

Page 11 of 13.



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Gulabpura-Hurda

PO No.: 2537988066 / 5100028491 /29.07.2020

all remedies available to the Parties for breach of this Agreement are cumulative and may be exercised concurrently or separately, and the exercise of any one remedy shall not be deemed an election of such remedy to the exclusion of other remedies.

[END OF CONDITIONS OF CONTRACT]

#h This document ;§General Terms & Conditions;” being uploaded in the website of ;§Hindustan Zinc Ltd;” the Uniform Resource Locator (URL) for which shall be communicated in the corresponding Purchase Order along with the Annexure ;K: Special Terms and Conditions shall be deemed to be an integral part of the Purchase Order. Order Acknowledgement by the Seller shall cover acknowledging this document and the general terms and conditions mentioned herein as well.

#h These Conditions along with the Special Terms & Conditions shall apply and shall be incorporated by reference/deemed incorporated in any Purchase Order issued hereunder and shall prevail at all times between the Parties over any other terms and conditions with respect to the provision of Services or supply of Materials or Services, except as modified, supplemented, or amended either: (i) by formal written amendment of this Agreement; or (ii) by incorporation of any special conditions into any Purchase Order. This Agreement, together with the Purchase Order, shall solely and exclusively form the contract between Purchaser and Supplier for the purchase of the Materials or Services to the exclusion of all other terms and conditions (including any terms or conditions which Supplier purports to apply to any purchase order, confirmation of order, specification, invoice or other document).

Guidelines for Vehicle & Driver entry at HZL

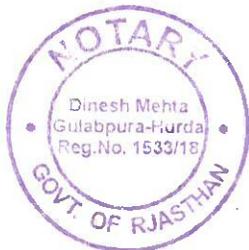
ANNEXURE-2

1. Register yourself on (<https://tms.hzlmets.com>) - New user (Registration process available in Help Tab). after registration, Code will generate through system, which needs to approve through respective HZL Plant Store Head. after approval your ID & Password will come on mail ID mention during registration.
2. Log in through your ID & password in TMS and register your vehicle & driver (Registration process document available in Help tab) which needs to be self-certified by you after checking its correctness.
3. FasTag is mandatory requirement for vehicle entry inside the plant. Before deploying the vehicle for HZL, ensure vehicle should have FasTag and verify that FasTag through TMS (Document available in Help Tab).
4. Allow-slip/trip to be create through TMS before vehicle entry into HZL parking Premises. (document available in Help Tab).
5. Vehicle & Driver needs to comply with HZL NO-GO Criteria (HZL NO-GO Criteria & penalty Provision available in Help Tab).
6. Driver needs to follow all HZL Safety rules, in case of any violation you will be responsible for the same.
7. Vehicle & driver all documents correctness is your's responsibility, if anything found incorrect then action to be taken as per No Go criteria penalty provision.



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1. Submission of Documents

The supplies/ service bills made/ submitted against this order should invariably be accompanied with documents as specified in the check list as given below. Bill processing for Supplies without the requisite documents are likely to be delayed/rejected.

- a. Invoice with PAN and STNo and Proper Address
- b. Detailed Statement of Calculation for Work Executed



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Hindustan Zinc Limited
Rampura Agucha Mines

Annexure R-3

Plantation photographs

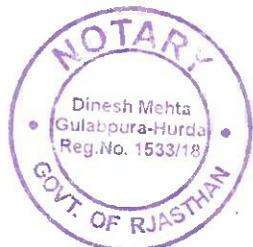


LATITUDE – 25° 50' 25.741" N, LONGITUDE – 74° 45' 25.741" E



LATITUDE- 25° 50' 30.738" N, LONGITUDE- 74° 44' 54.763" E

Sensitivity: Public (C4)



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Hindustan Zinc Limited Rampura Agucha Mines

Plantation photographs

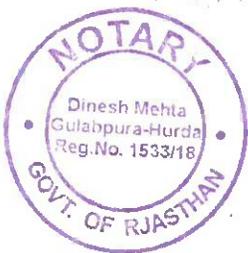


LATITUDE – 25° 49' 50.2" N, LONGITUDE – 74° 43' 50.94" E



LATITUDE – 25° 49' 51.35"N, LONGITUDE – 74° 43' 46.2" E

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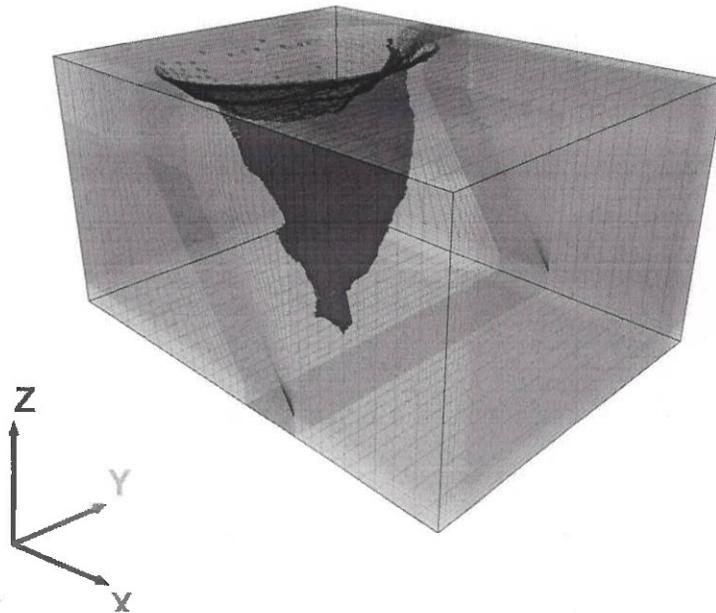


CENTRAL INSTITUTE OF MINING & FUEL RESEARCH
 (Council of Scientific & Industrial Research)
 Barwa Road, Dhanbad – 826 001, Jharkhand
 Nagpur Research Center, Unit-1
 17/C, Telenkhedi Area, Civil Line, Nagpur 440001, Maharashtra

Report on

**Numerical Modelling Studies for Subsidence Prediction at Rampura Agucha
 Mine, HZL**

PO No.: 2353084587 / 5100027984 Date:07.04.2020



Proj. No. SSP/N/493/2020-2021

July – 2020



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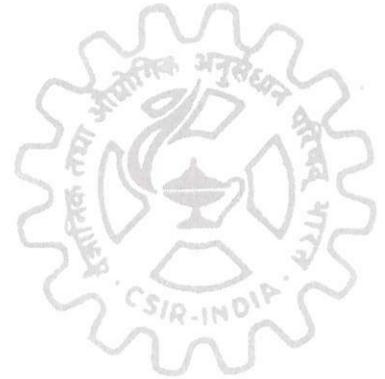
Report on

**Numerical Modelling Studies for Subsidence Prediction at
Rampura Agucha Mine, HZL**

PO No.: 2353084587 / 5100027984 Date:07.04.2020

By

Dr. John Loui Porathur, Senior Principal Scientist
Dr. A. K. Soni, Chief Scientist
Dr. Chandrani Prasad Verma, Principal Scientist
Mr. Deep Narayan Sharma, Technician
Dr. More Ramulu, Senior Principal Scientist
Dr. Partho Choudhury, Senior Principal Scientist
And
Dr. P K Singh, Director



Signature of the Project Proponents

(Project Leader)
(Dr. John Loui Porathur)

(Project Coordinator)
(Dr. A.K. Soni)

(HoS/HoRG)

CSIR-CIMFR AUTHORIZED SIGNATORY

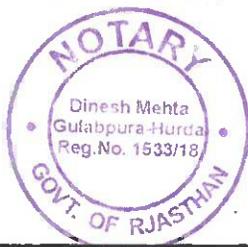
(Dr. P. K. Mishra)
Sr. Principal Scientist and HoS
Project Planning and Monitoring

(Dr. R. V. K. Singh)
Chief Scientist and Coordinator
Project Planning and Industry Interface

SSP/N/493/2020-2021

July – 2020

This report is meant for internal use of your organisation only and it should not be published in full or part by your organisation or staff. It should not be communicated / circulated to outside parties except concerned government departments. CIMFR reserves the right to publish the results of research for the benefit of the industry.



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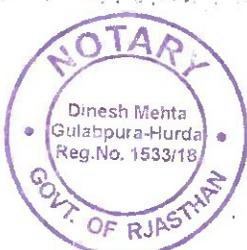
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Executive Summary

Hindustan Zinc Limited is extracting Lead-Zinc deposit by underground stoping methods at deeper horizons below the currently operating open-pit mine. The open-pit has reached a depth of about 400 m from the surface. Even though the open pit is exhausted the ore body is being exploited by underground extraction with cemented paste backfilling. The underground stoping is planned to a depth of about 1500 m from the surface after leaving a minimum of 60 m parting with the open pit. Anticipated surface movements due to underground stoping are predicted using three dimensional numerical modeling and following conclusions and recommendations are made.

- The anticipated subsidence and associated strains are mostly in the hanging wall (eastern) side of the open pit and over the hanging wall slope of the pit.
- There is no significant movement predicted in the footwall side of the pit, where the tailing pond is located.
- The maximum subsidence (vertical displacement) predicted on the surface is at the eastern side and is only about 0.33 m, and the maximum subsidence predicted over the pit is only about 0.35 m in the hanging wall slope, after the complete excavation of the underground stopes till a depth of 1500 m from the surface and settlement of the overlying rock mass. The predicted maximum subsidence is very nominal and may occur on the surface only after several years after the underground excavation in hard rock mining scenario like that of Rampura Agucha Mine.
- The effect on surface features due to the occurrence of subsidence is indicated by the associated differential horizontal displacements (strains) rather than the magnitude of vertical displacement (subsidence). The hanging wall (eastern) side of the pit on the surface is expected to experience strains of tensile nature; the predicted maximum tensile strain is only +0.18 mm/m. The above maximum tensile strain is well below +2.0 mm/m and hence will not cause any significant effect on the surface.
- The open pit bottom portion shall experience strains of compressive nature, with a maximum magnitude of -1.5 mm/m. Though compressive strains are of little significance in regard to surface damage, the above predicted maximum value is also very low.
- The predicted strain magnitudes are much lower than the safe limits for causing any significant impact on the tailing dam, the open pit benches, or any other surface structures.
- From the ground subsidence point of view, the entire surface including the eastern and western sides of the ultimate pit is in the safe zone and will not be significantly affected by subsidence on a long-term basis.
- During underground extractions, the surface movements need to be monitored on the footwall (western) side and on the hanging wall (eastern) side within the lease boundary where ever suitable location are available and at a few points along the haulage roadways in the open pit. The survey pillars should be placed



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along a few survey lines passing across the strike direction (East-West), and one along the strike (North-South) of the pit with survey pillars. A few subsidence survey points should be placed along the toe of the tailing dam facing the open pit.

- The absolute displacements and relative movements between adjacent survey pillars need to be monitored on a regular basis using suitable level instrument/ Total Station Survey.
- The open pit benches, at a few locations, especially in the hanging wall side need to be monitored with suitable monitoring system.



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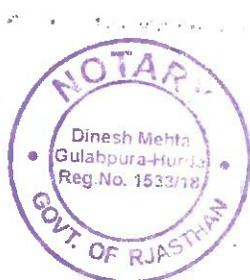
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1.0 Introduction

Hindustan Zinc Limited is extracting Lead-Zinc deposit by underground stoping methods at deeper horizons below the currently operating open-pit mine. The open-pit has reached an RL of 0 mRL, 400 m from the surface. Even though the open pit is exhausted the ore body is being exploited by underground extraction with cemented paste backfilling. It is a well-known fact that underground exploitation of minerals often leads to surface movements. These surface movements, viz. subsidence (vertical movements) and strains (differential horizontal movements) can have devastating effect on the surface properties. The mine management is concerned about the possible surface subsidence/ground movement associated with the complete extraction and backfilling of the proven resource. The surface plan of the mine is shown in the Figure 1. From the surface plan, the surface features to be protected from surface subsidence comprises mainly of the open pit, which shall hold water at the sump portion (deepest part) and a mill tailing pond existing near the footwall (west side) pit limit. The mill tailing pond, lying at about 75m from the ultimate pit limit, may be treated as a water body. As per the safe limit guidelines for subsidence and its impact on various surface features, the maximum tensile strain caused by subsidence should be less than 3.0mm/m, so as to avoid any significant impact on the water bodies. For stability of the exhausted open pit, though there is no specific guideline, it will be safe if the compressive and tensile strains occurring on the benches are also restricted to 3.0mm/m.

In this report, three dimensional numerical modeling studies are undertaken for the prediction of movements on the surface and the ultimate pit benches due to the ongoing and the proposed underground pastefilled stoping down to 1500 m below ground level. From the surface movements obtained from the models their possible impact on the open pit and the mill tailing pond is discussed.



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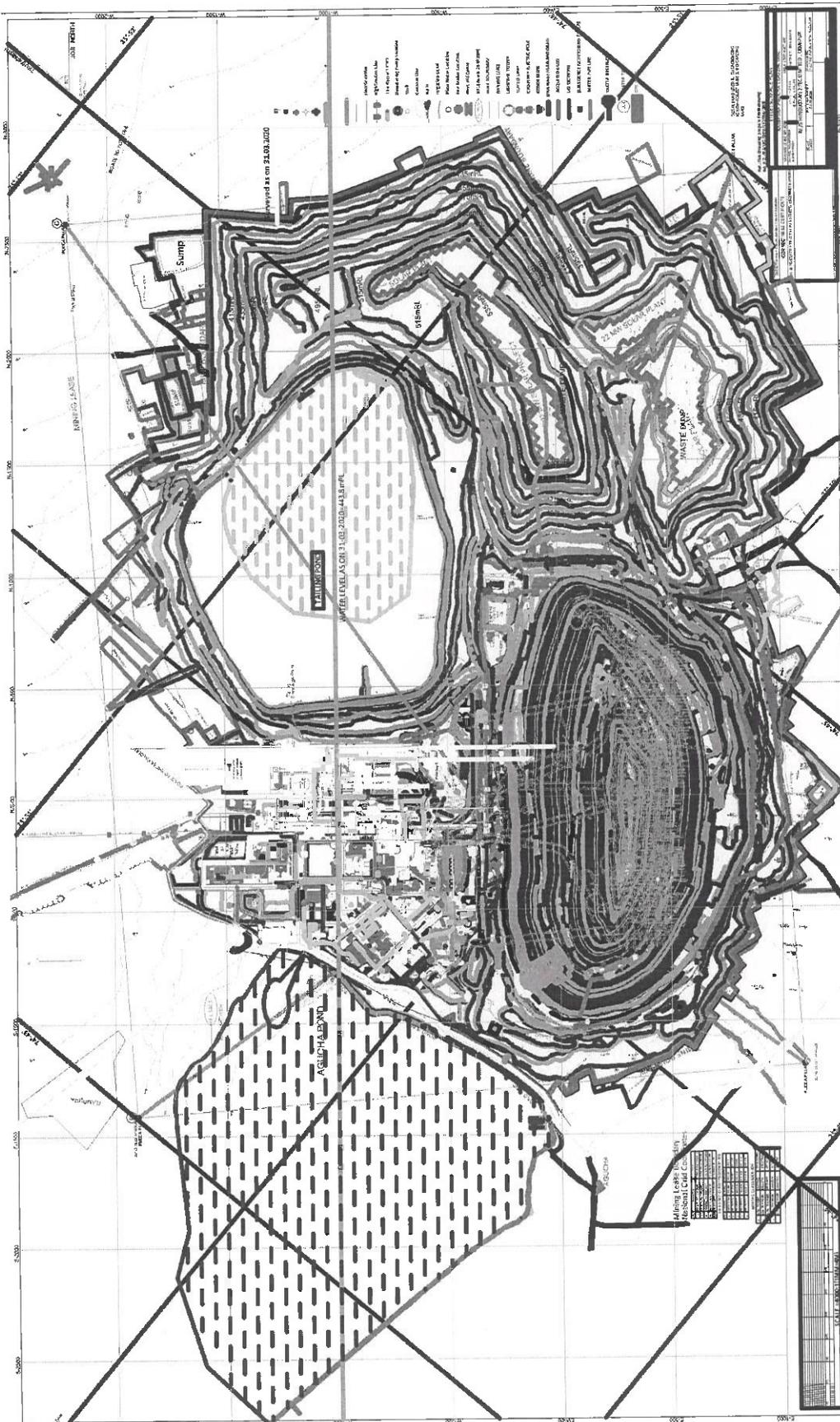


Figure 1 : The surface plan of the mine



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2.0 Geology

The lead-zinc deposit of Rampura Agucha Mine occurs within a Pre-Cambrian banded gneiss complex. The graphite-mica-sillimanite gneiss is the host rock for mineralization. The sulphide deposit is a lens shaped ore body with a NE-SW strike length of about 1550 m and width varying from a few meters in the NE widening to as much as 100m in the central to SW section. The deposit has been explored to a depth of about 1400 m. The mine is having a reserve of over 100 million tons. The ore body dips to the SE at between 50° and 80° (with an average of 60°). The sequence of rocks from hanging wall to footwall can be broadly grouped as under:

1. Garnet-biotite-sillimanite gneiss (GBSG) with intermittent bands of calc-granulites amphibolites and aplites/ pegmatites.
2. Graphite –mica-sillimanite schist
3. Calc-silicate rocks
4. Amphibolites
5. Mylonite rocks
6. Pegmatite
7. Granite gneiss.

The wall rocks mainly comprises of GBSG, the properties of which are considered for the current numerical modeling analysis.

3.0 Numerical Modelling

Numerical modelling study is performed using **FLAC3D** of ITASCA Consulting Groups Inc., Minnesota, U.S.A which computes in finite difference method. The various parameters which are used for the calculations include the physicomechanical properties of rock mass and fill material, in-situ stress, geometry of the stopes/orebody and open pit.



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3.1 Rock properties

The core samples collected from the bore holes such as AGT9C, AGT10C, AGT11C, AGT12C from the foot wall of the orebody were tested for determining the Physico-mechanical properties in the mechanical laboratory of CIMFR, Dhanbad. The test result is shown in the Table 1.

Table 1: Intact rock properties

Young's Modulus (GPa)	Poisson's ratio	Compressive Strength, σ_c (MPa)	Tensile strength, σ_t (MPa)	Rock density, (Kg/m ³)
11.57	0.15	40.48	7.03	2814

The Rock Mass Rating (RMR) estimated by AMC Consultant private limited based on the Bieniawski classification is given in Table 2.

Table 2: Rock Mass Rating

	RMR
Hanging wall	45
Foot wall	50
Orebody	40
Average RMR	45

The rock mass properties used for numerical modelling is shown in the Table 3.

Table 3: Rock mass properties used for numerical modeling

Deformation Modulus, (GPa)	Poisson's ratio	Rock mass Cohesion (MPa)	Rock mass friction (deg)	Tensile strength, σ_t (MPa)	Rock mass density (kg/m ³)
3.554	0.15	3	37	1	2814



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3.2 Fill material properties

The mine operates in blast hole stoping method, here the mine uses Cemented Paste Fill (CPF). The properties of the pastefill are shown in the Table 4.

Table 4: Properties of Cemented Paste Fill (CPF)

Young's Modulus, (MPa)	Poisson's ratio	Wet density (kg/m ³)
250	0.25	2000

3.3 Insitu stress

The insitu stress measurement was measured from three bore hole in Rampura Agucha by Mesy India Pvt. Ltd. The average stress field measured from the tests (AGT-35 Borehole) reads as,

$$SH = 13.02 + 0.0219 \cdot H \text{ MPa}$$

$$Sh = 7.064 + 0.0092 \cdot H \text{ MPa}$$

$$Sv = 0.02814 \cdot H \text{ MPa}$$

The maximum principal stress is considered parallel to the strike of the orebody in the numerical modelling. The stress field is higher than the theoretically estimated values. The measured insitu stress is used for the modelling studies.

3.4 Three-Dimensional Numerical modeling methodology

The simulation is performed in a 3-dimensional finite difference grid and the geometry of the pit and orebody modelled is shown in the Figure 2. The simulation is performed in 3 stages, the virgin state followed by the open pit extraction, which is then followed by the complete extraction and backfilling of the entire orebody leaving a minimum barrier of about 60 m between the open pit and underground stopes. The displacements obtained after the final stage are analysed on the surface, pit surface,



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and along some sections for vertical movements as well as differential horizontal movements.

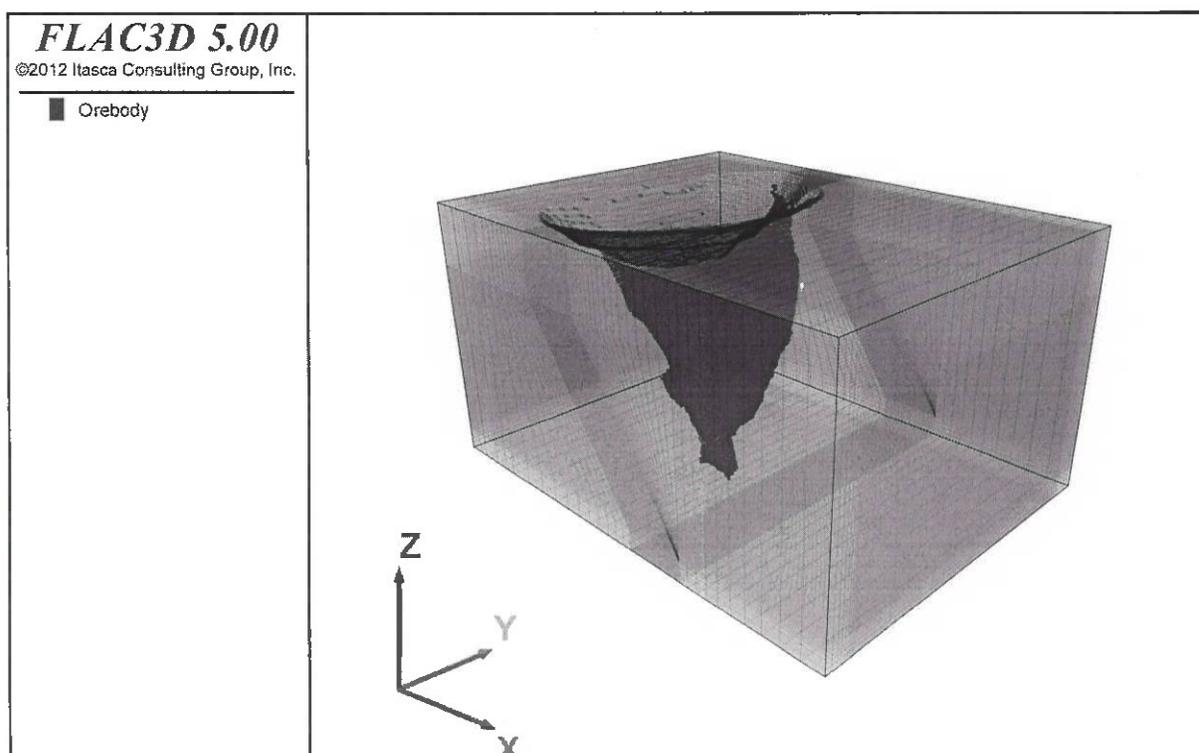


Figure 2 : Three-dimensional grid used for the modelling with the excavations

4.0 Results and Discussion

The effect of the mining activity on the surface is studied from the numerical modelling results. Results from the numerical modeling studies are presented in terms of grid point displacements caused due to the planned underground excavations.

4.1 Displacements

The vertical displacement associated with the extraction of orebody is studied from various cross-sections ranging from -700 N to +1000 N at an interval of 100 m as shown in Figure 3 -Figure 19. The resultant displacement on the surface is also shown as vectors in the figures. Vertical component of the displacement vector is also called ground subsidence. The anticipated vertical movement/subsidence is more prominent in the hanging wall side. The maximum displacement magnitudes



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will be at the hanging wall contact of the filled stopes as indicated by the contours. It can be seen from figures that in the footwall side there is no significant vertical movement, except for some upward movement towards the mined out orebody. The surface at the footwall side is also relatively unaffected except for some heaving (upward movement). Hence the footwall side is quite unaffected by underground mining. Most of the vertical movements are anticipated above the hanging wall side, due to the inclined nature of the orebody. The displacement magnitude, reduces upwards, and can result in some surface movements. These movements may occur over a period of time during and after the underground stoping operations.

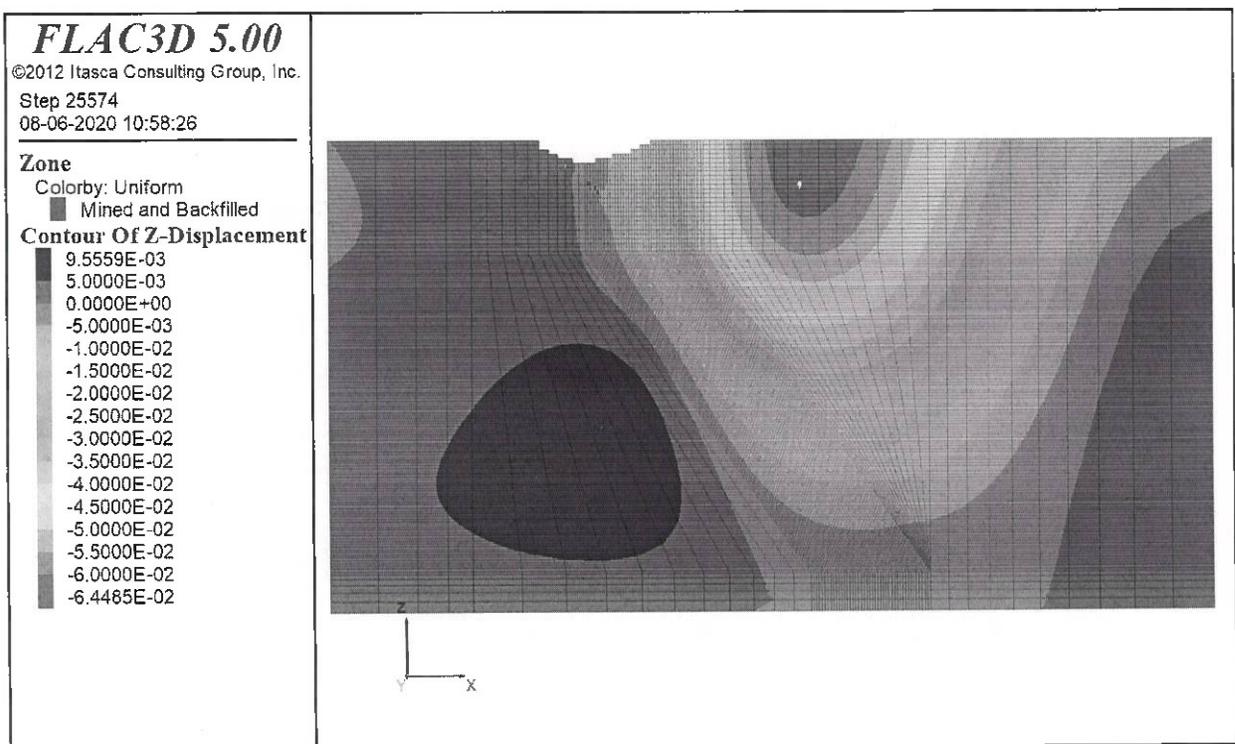


Figure 3 : Displacement across N 900



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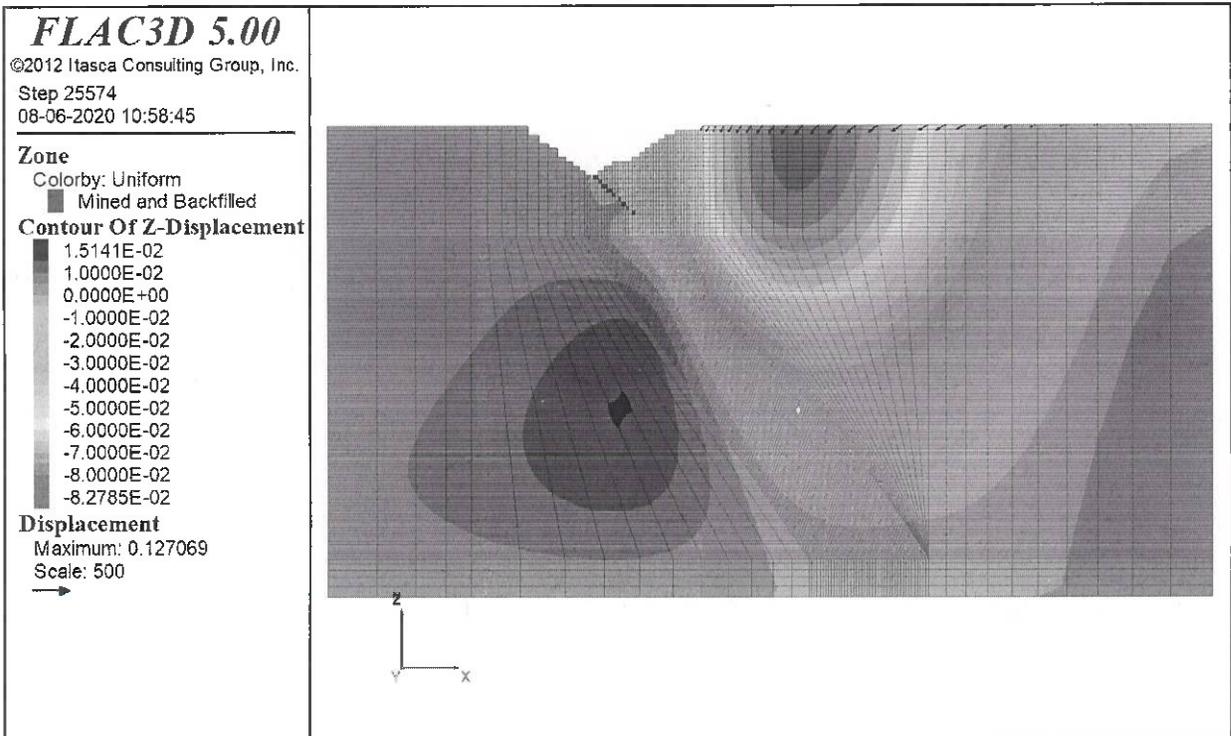


Figure 4 : Displacement across N 800

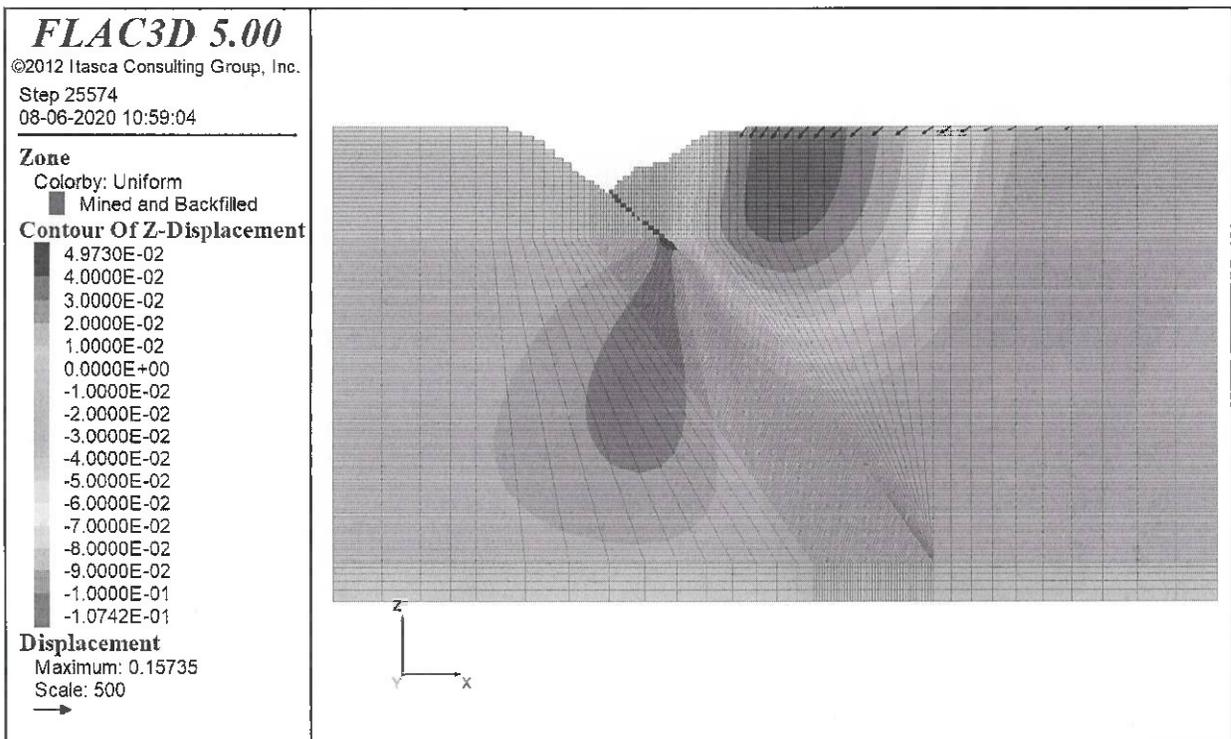


Figure 5 : Displacement across N 700



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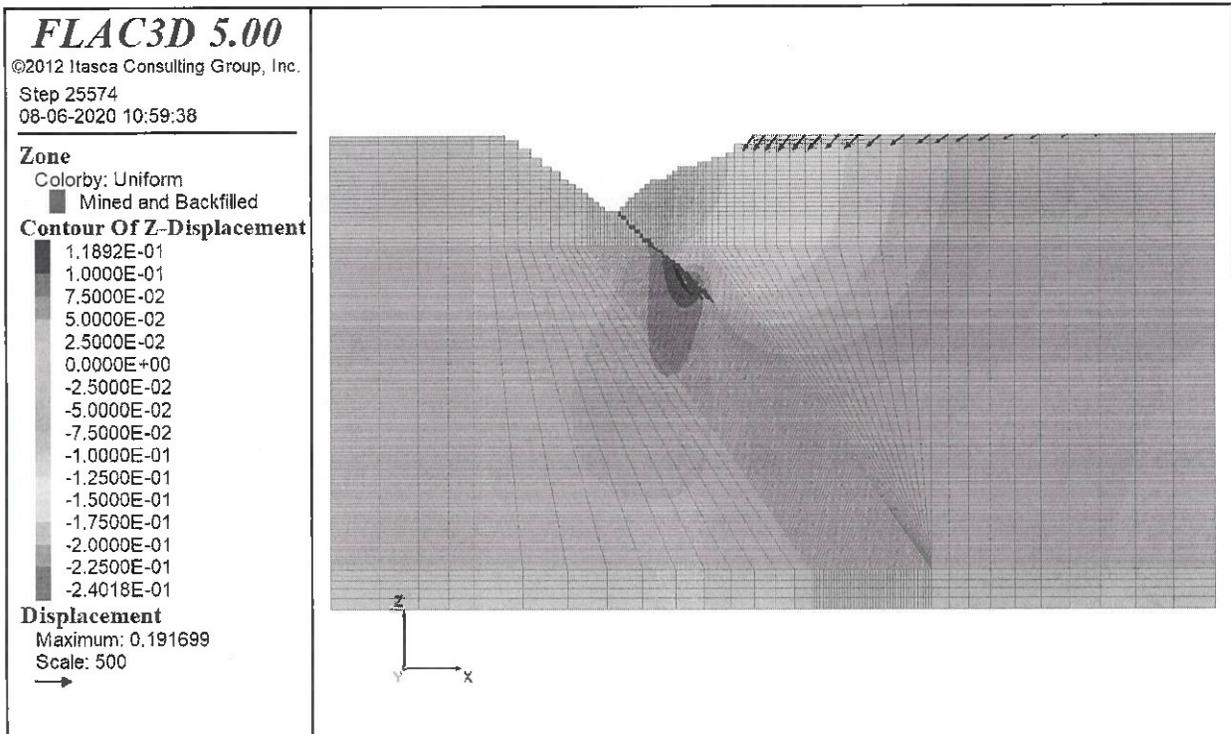


Figure 6 : Displacement across N 600

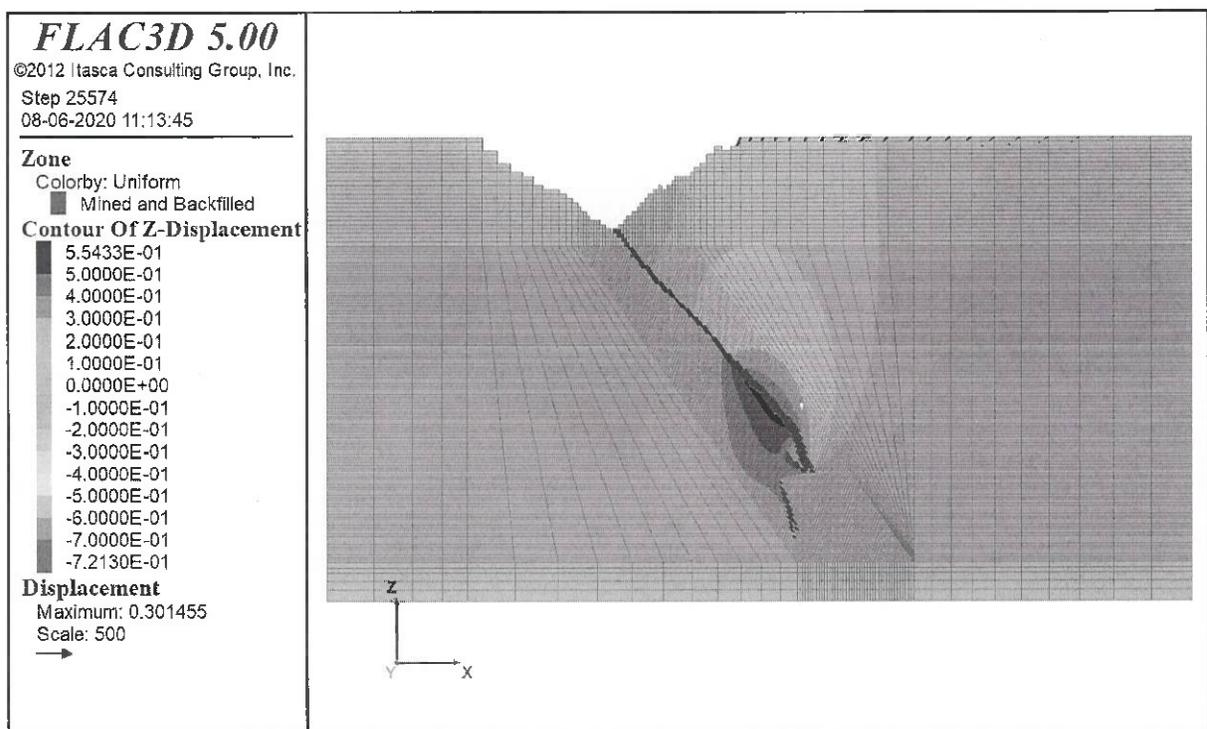


Figure 7 : Displacement across N 500



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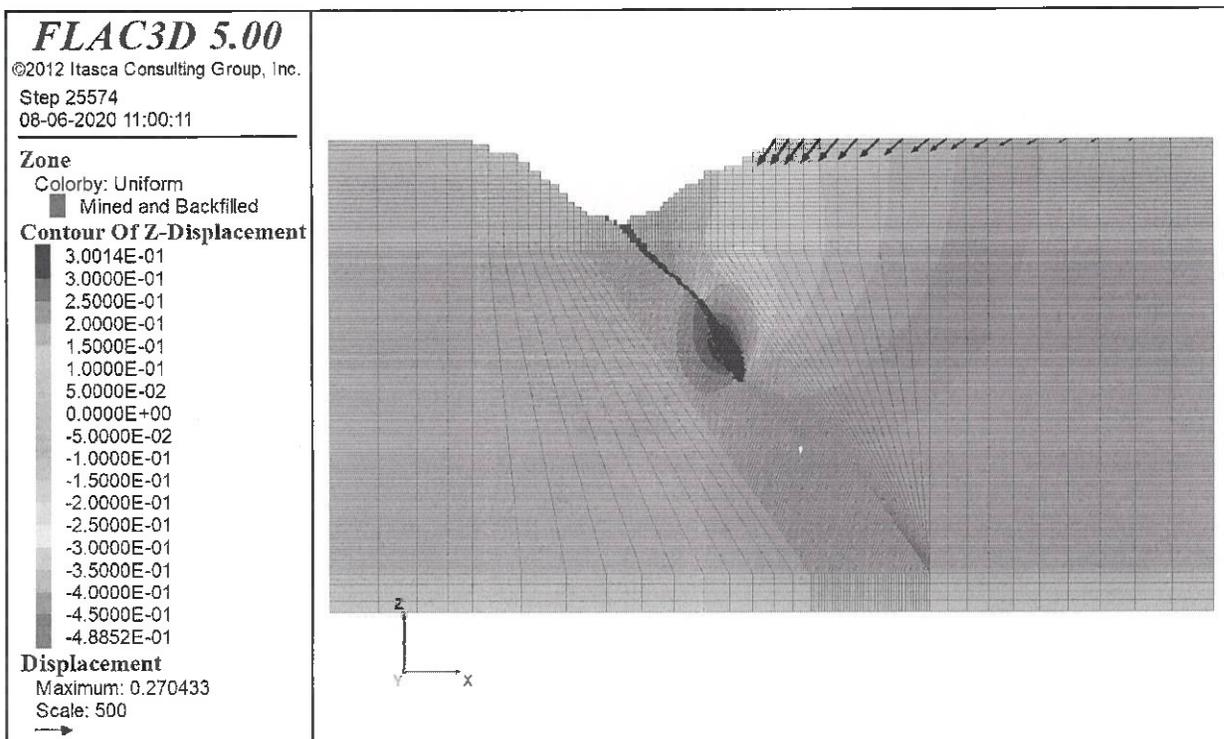


Figure 8 : Displacement across N 400

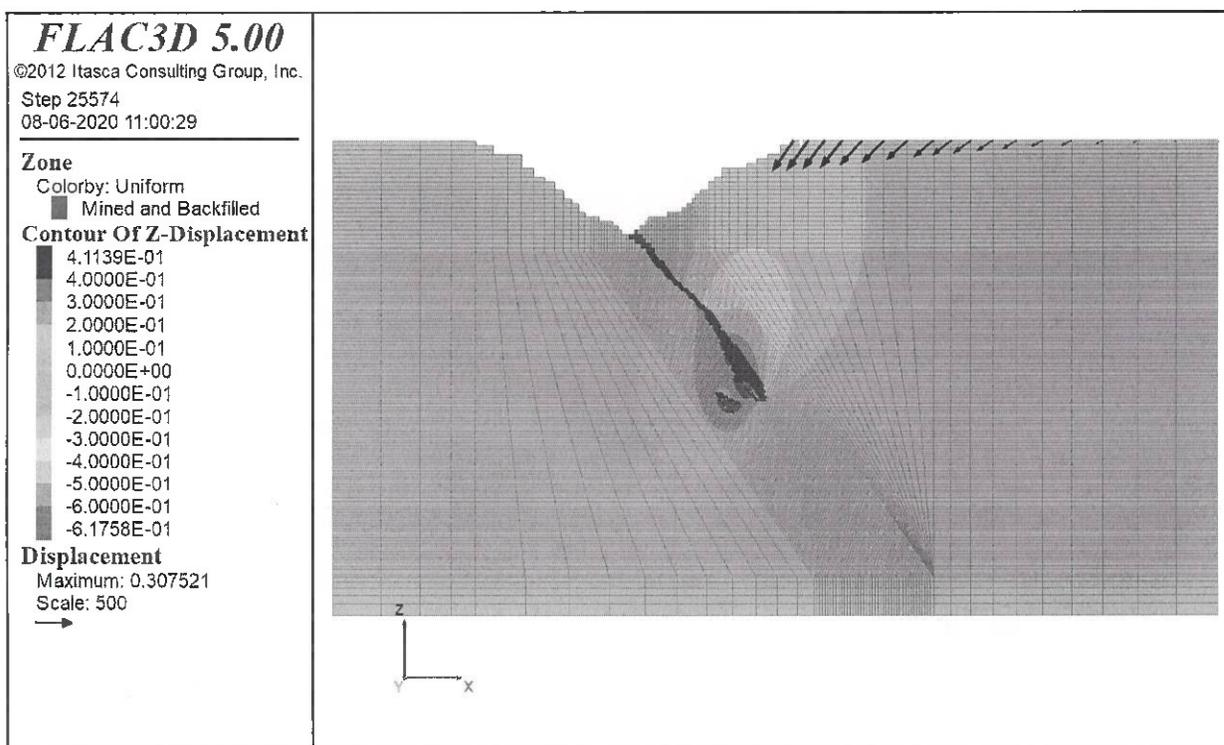


Figure 9 : Displacement across N 300



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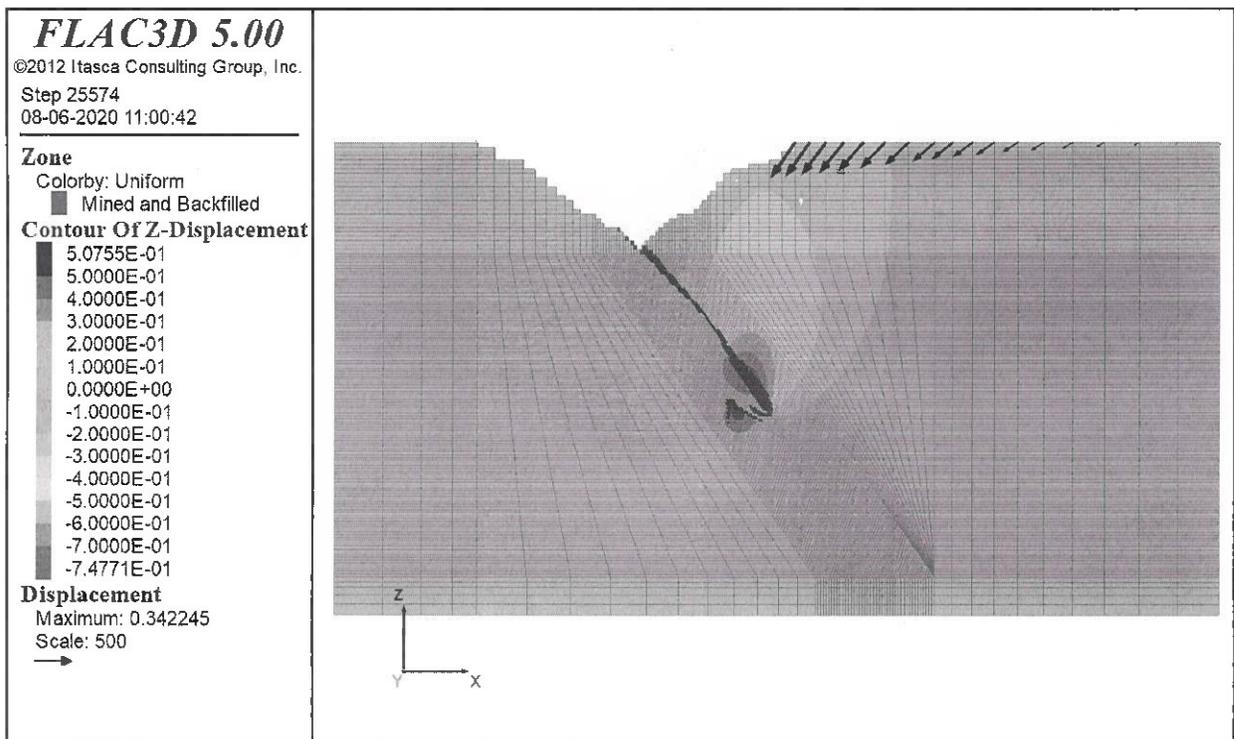


Figure 10 : Displacement across N 200

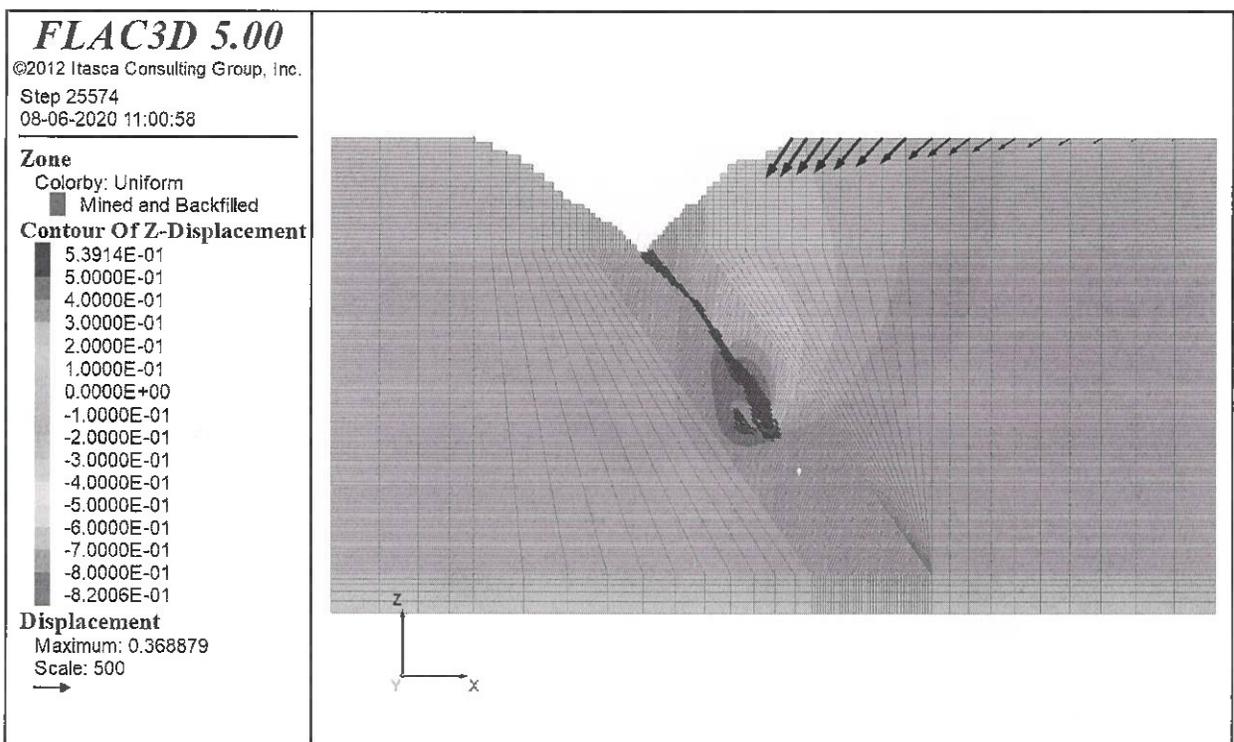


Figure 11 : Displacement across N 100



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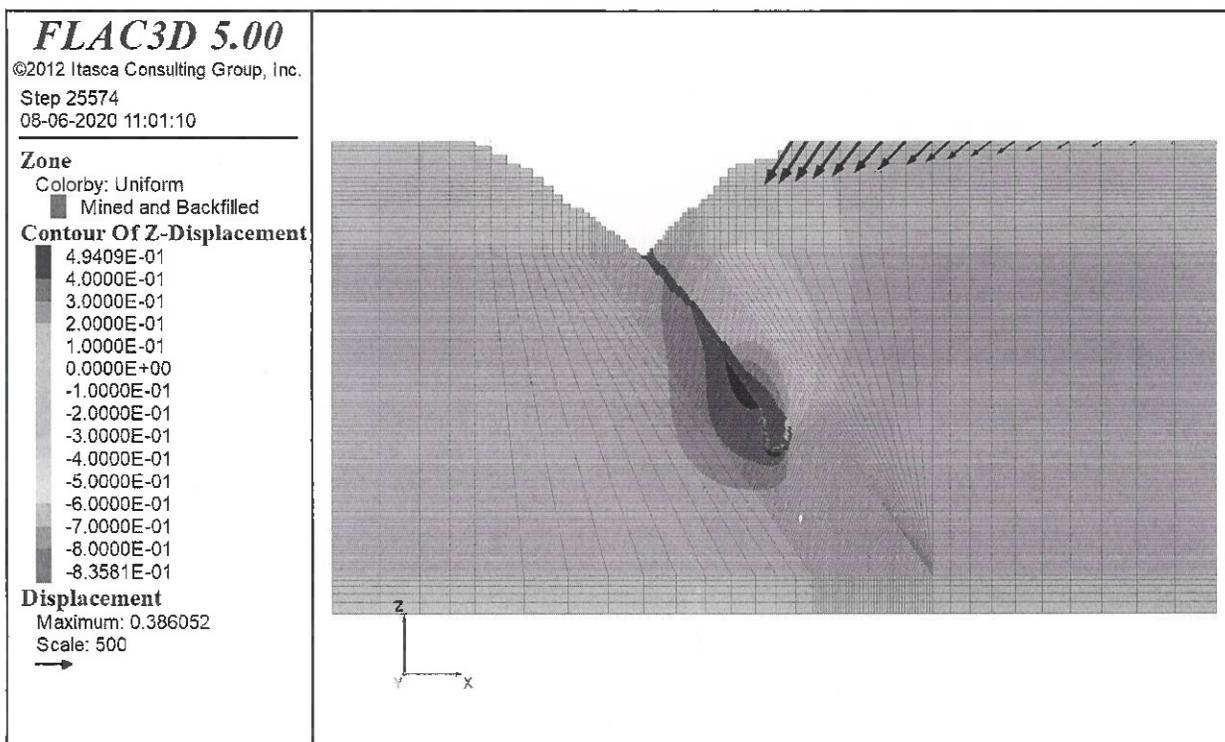


Figure 12 : Displacement across N/S 0

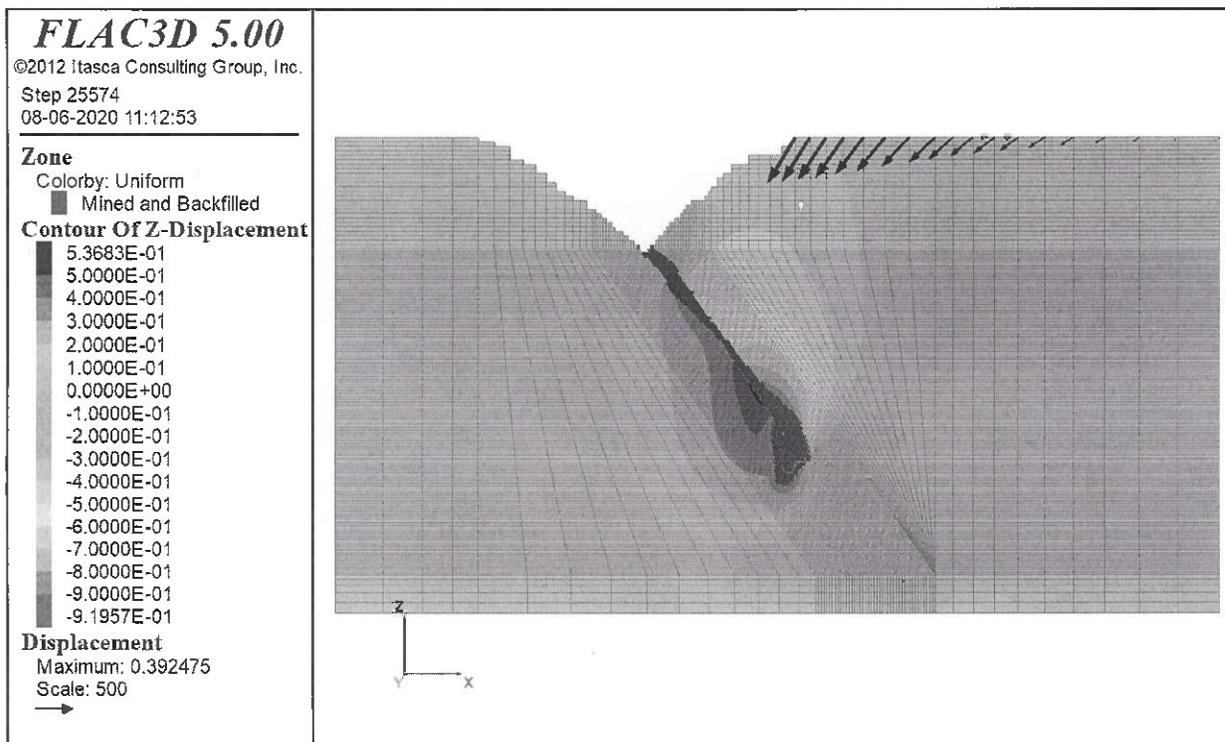


Figure 13 : Displacement across N -100



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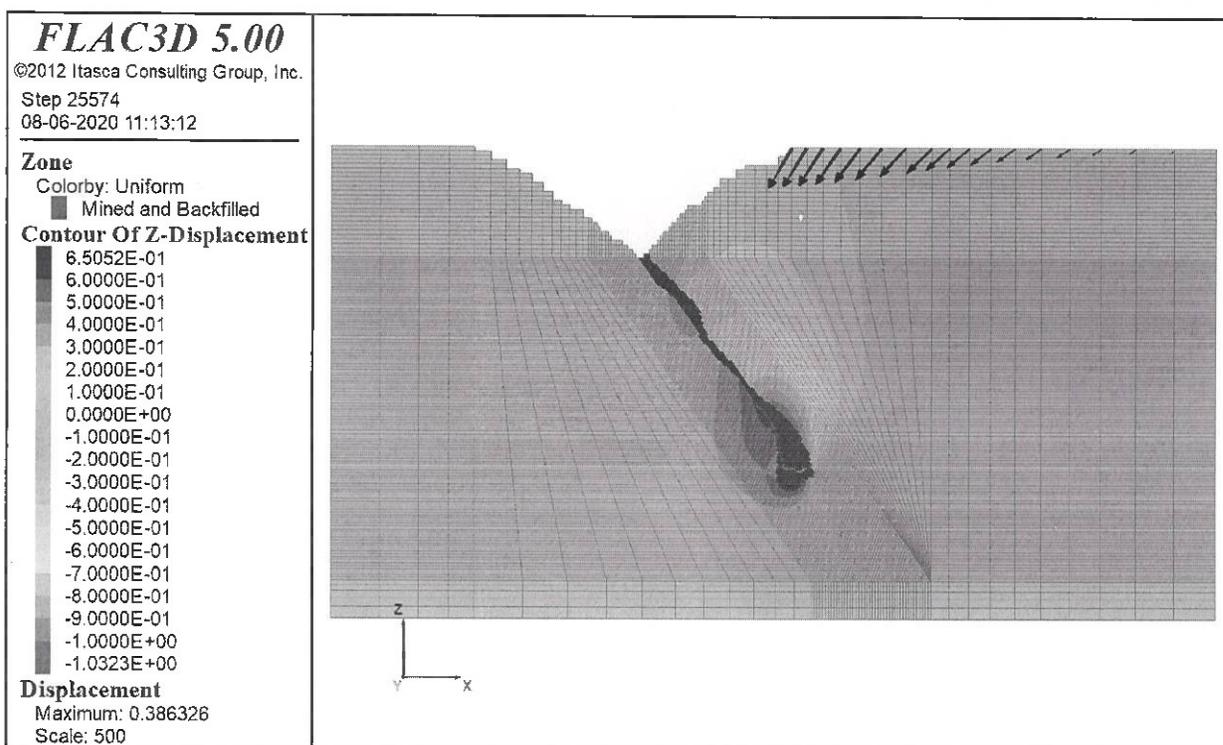


Figure 14 : Displacement across N -200

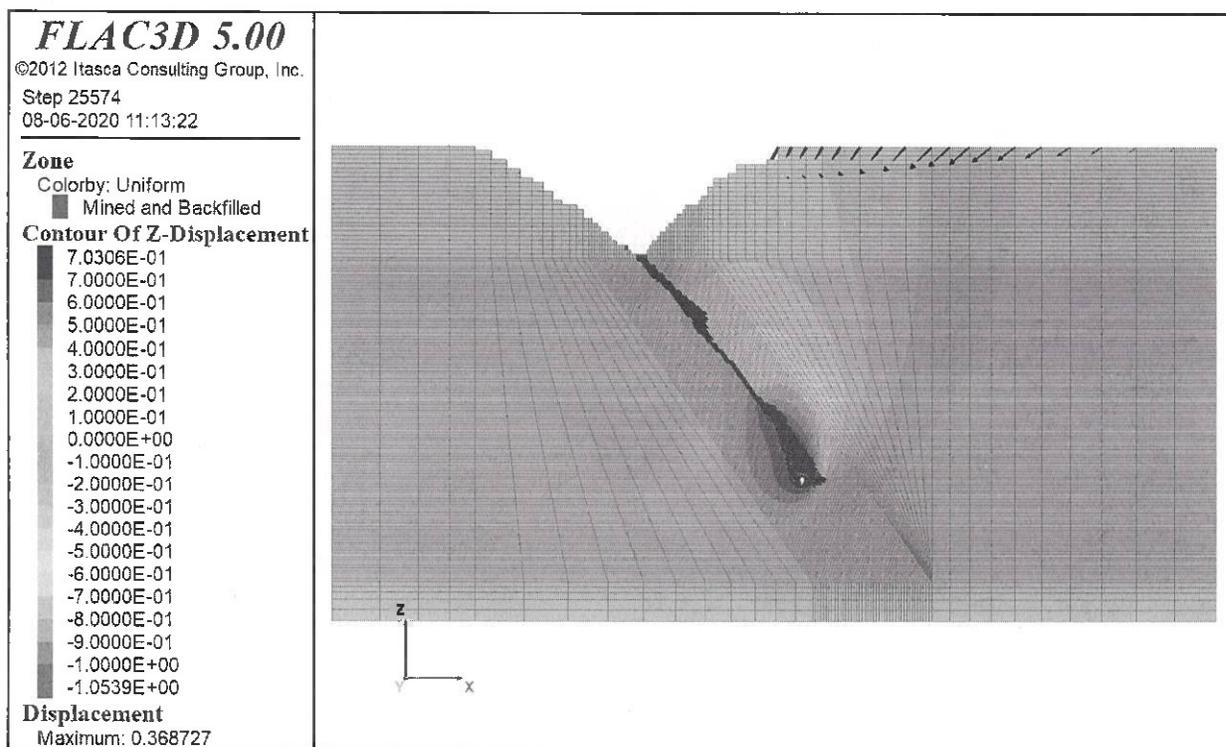


Figure 15 : Displacement across N -300



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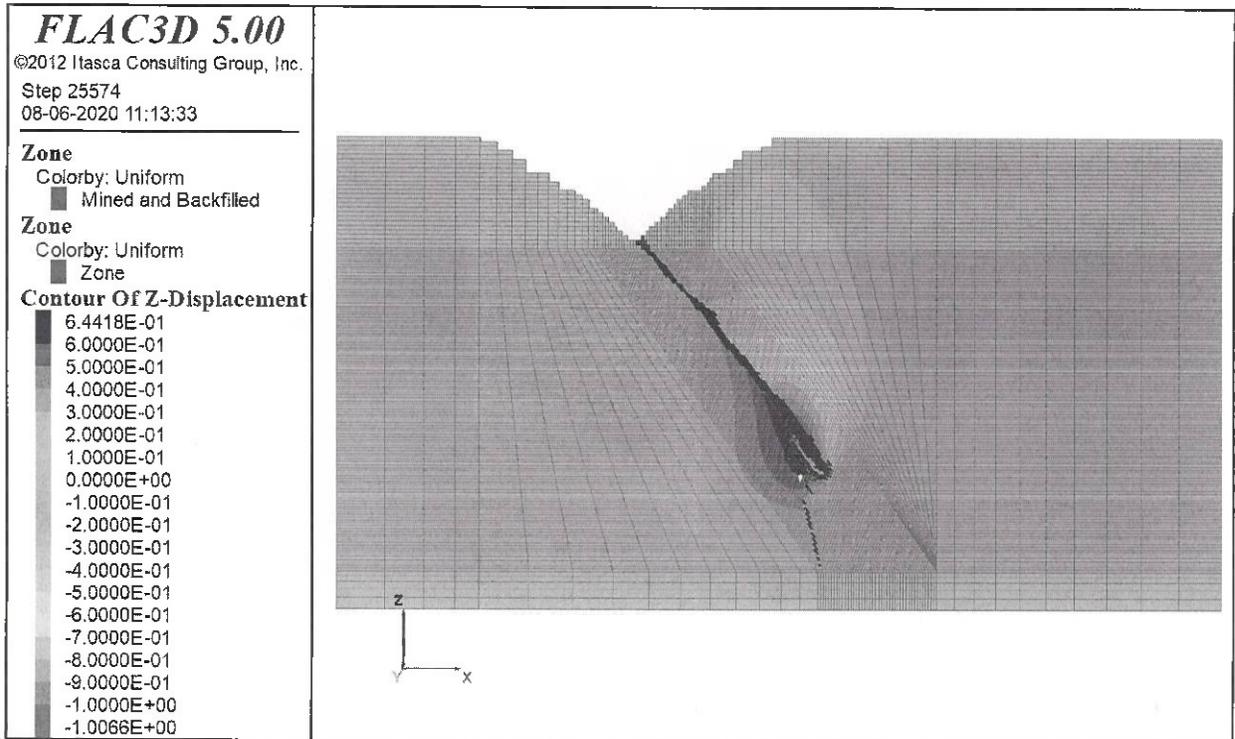


Figure 16 : Displacement across N -400

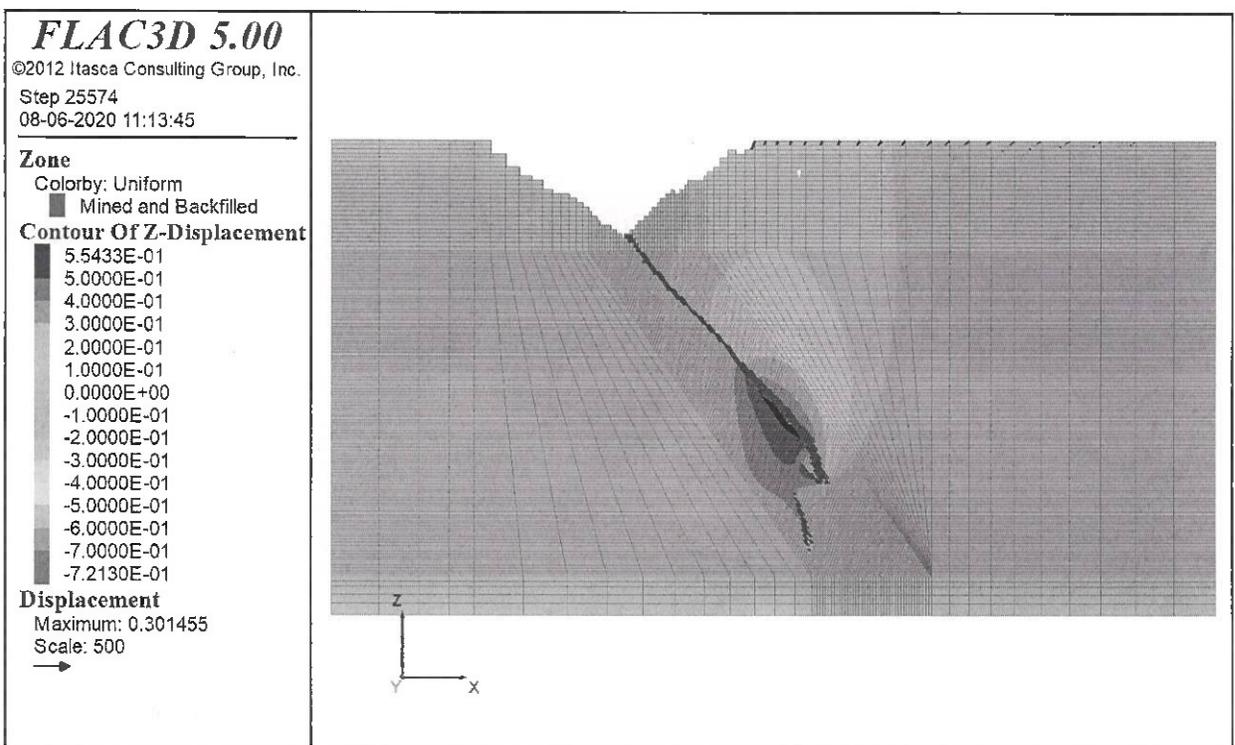
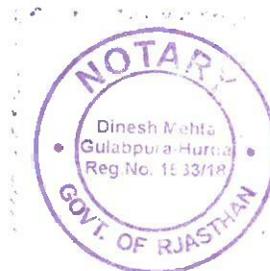


Figure 17 : Displacement across N -500



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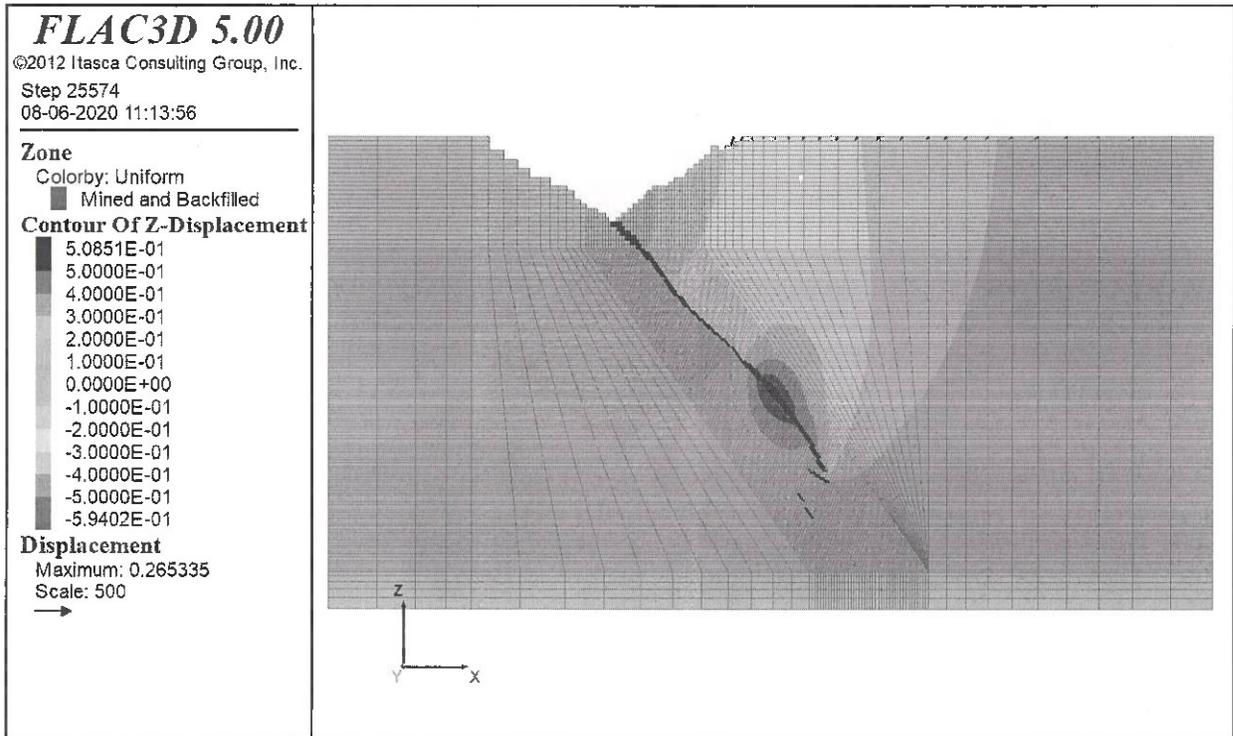


Figure 18 : Displacement across N -600

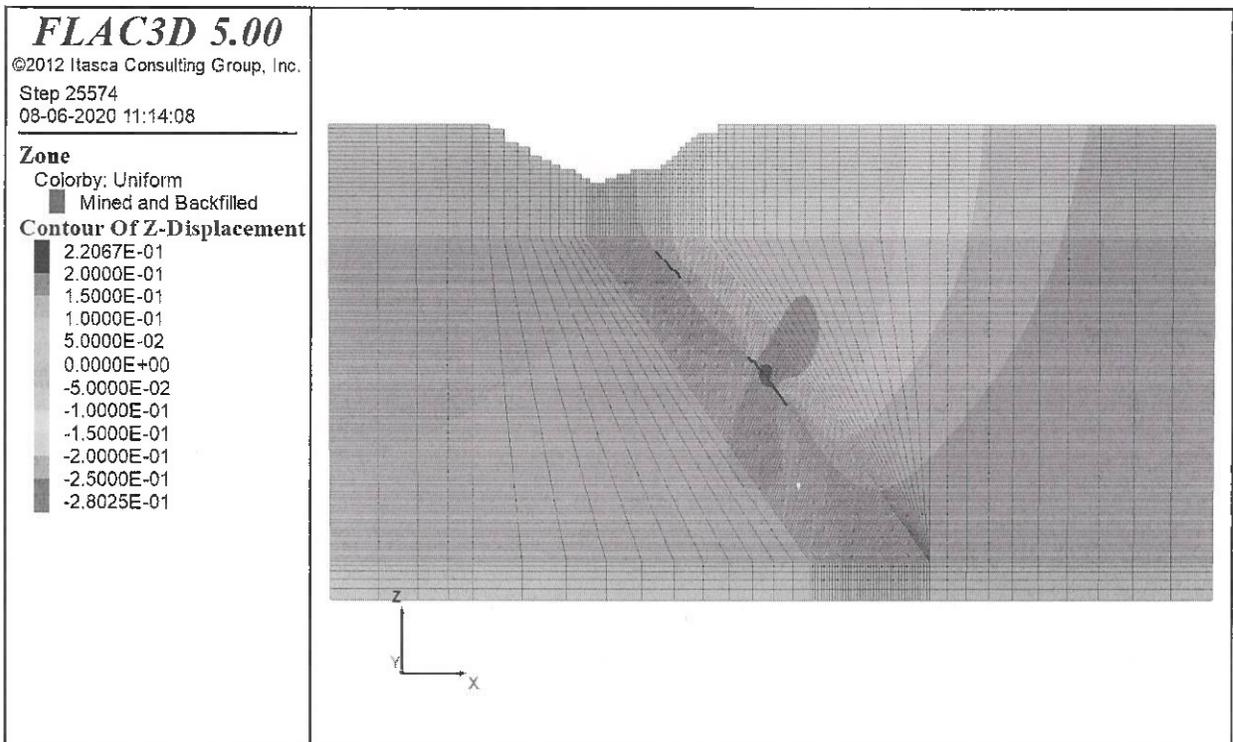


Figure 19 : Displacement across N -710



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4.2 Anticipated surface subsidence

The anticipated surface subsidence caused due to the mining activity is calculated from the numerical modeling results. The contours of vertical displacements (subsidence) on the surface are shown in Figure 20. Only very mild surface movements are anticipated due to the proposed excavations. The maximum vertical movement anticipated is only about 33 cm on the surface. The anticipated surface subsidence that may occur on the pit floor is shown in the Figure 21. On the pit floor, the maximum anticipated subsidence is only about 35 cm on the hanging wall pit slope and close to the surface. In the footwall slope we can mostly anticipate mild upward movement (heaving) to a maximum of only about 4.5 cm.

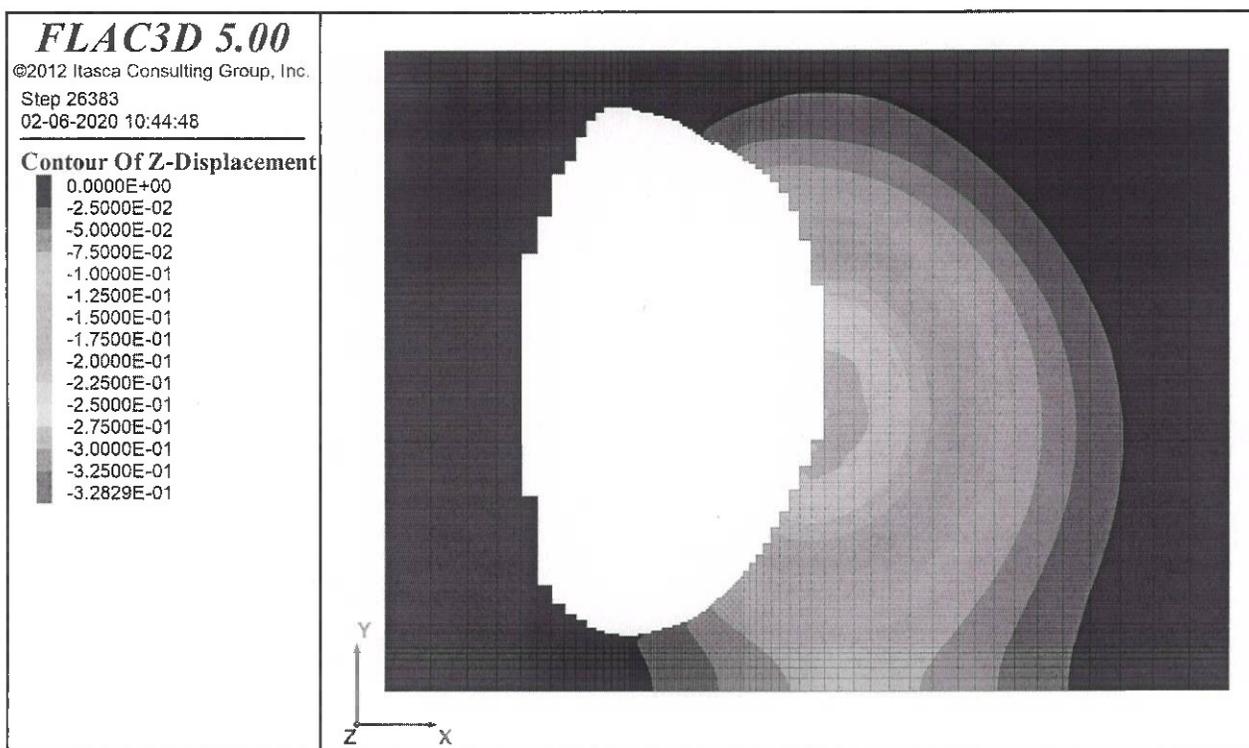
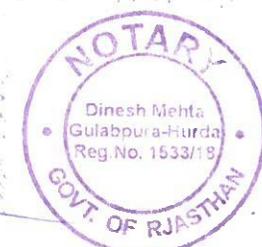


Figure 20 : Contours of anticipated surface subsidence



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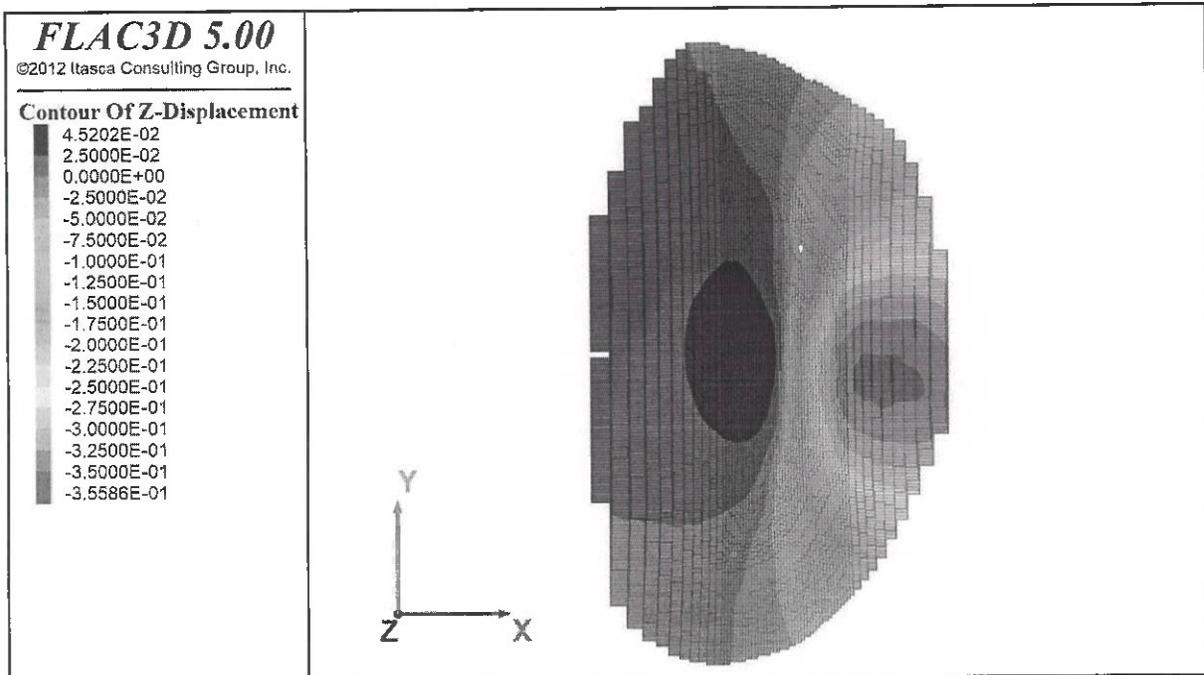


Figure 21 : Contours of anticipated subsidence on the pit floor

4.3 Subsidence and Horizontal strain profile

The subsidence and horizontal strain along select cross sections are studied to analyze the effect of the complete extraction of the orebody. The subsidence at various easting is graphically calculated on the surface along the cross sections. Ground movements will result in horizontal displacements as well, those have more significance on the possible impact on the surface. These horizontal displacements will result in horizontal strains of compressive (-ve) as well as tensile (+ve) nature. This is measured by the following method,

$$Sx_{i/i+1} = \frac{dx_i - dx_{i+1}}{D}$$

where $Sx_{i/i+1}$ is the horizontal strain between two adjacent surface grid points i and i+1, dx_i and dx_{i+1} are the horizontal (x) displacements of the points i and i+1, respectively and D is the distance between the points. However, it is difficult to determine strain over a stoping surface. Therefore, over the open pit slopes, the strains are determined along the benches on the hanging wall and footwall slopes, and therefore the strains obtained over the pit are not continuous curves. The



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horizontal strain and subsidence profiles along N -400, N 0 and N 400 are shown in Figure 22 - 26.

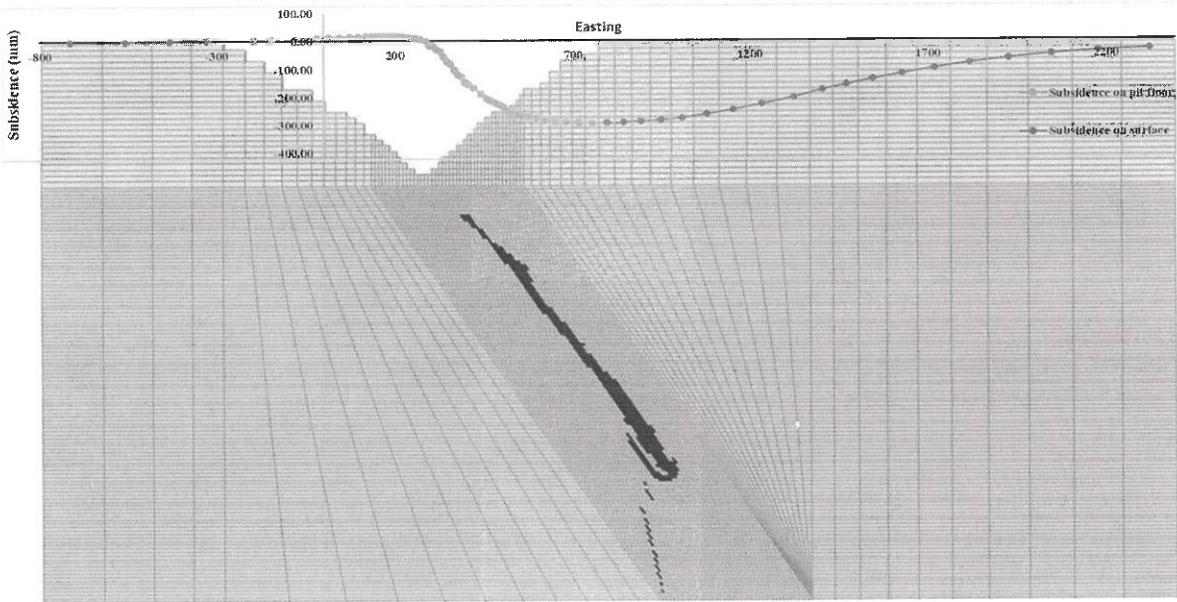


Figure 22: Subsidence profile across N -400

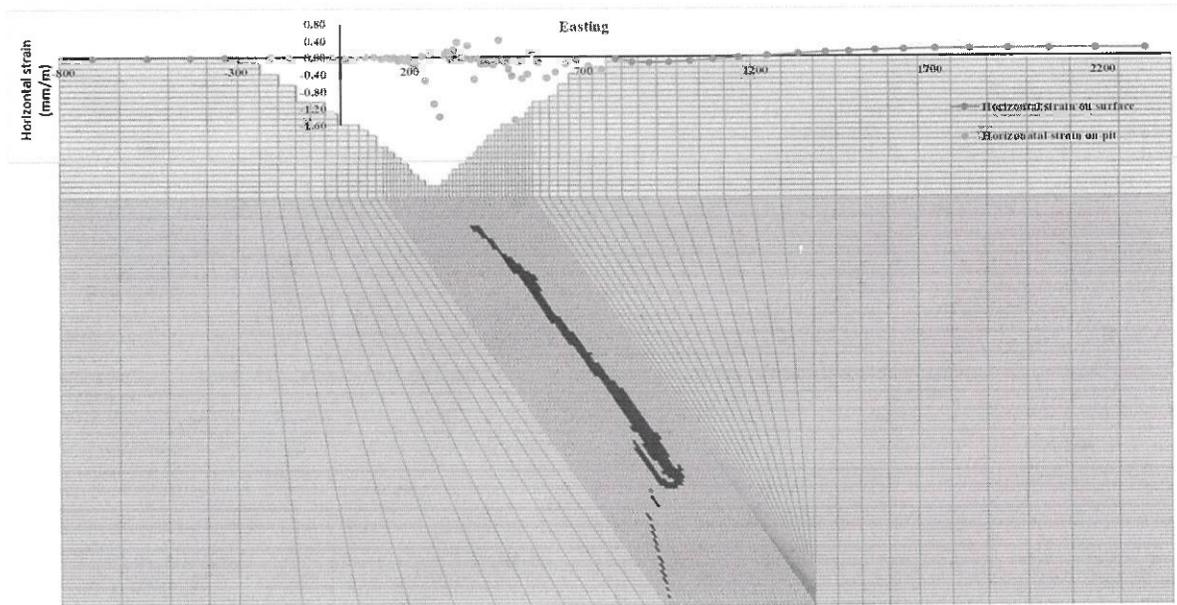


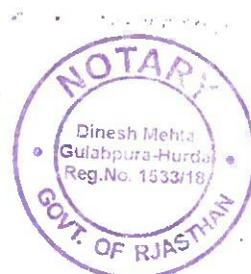
Figure 23: Horizontal strain profile across N -400



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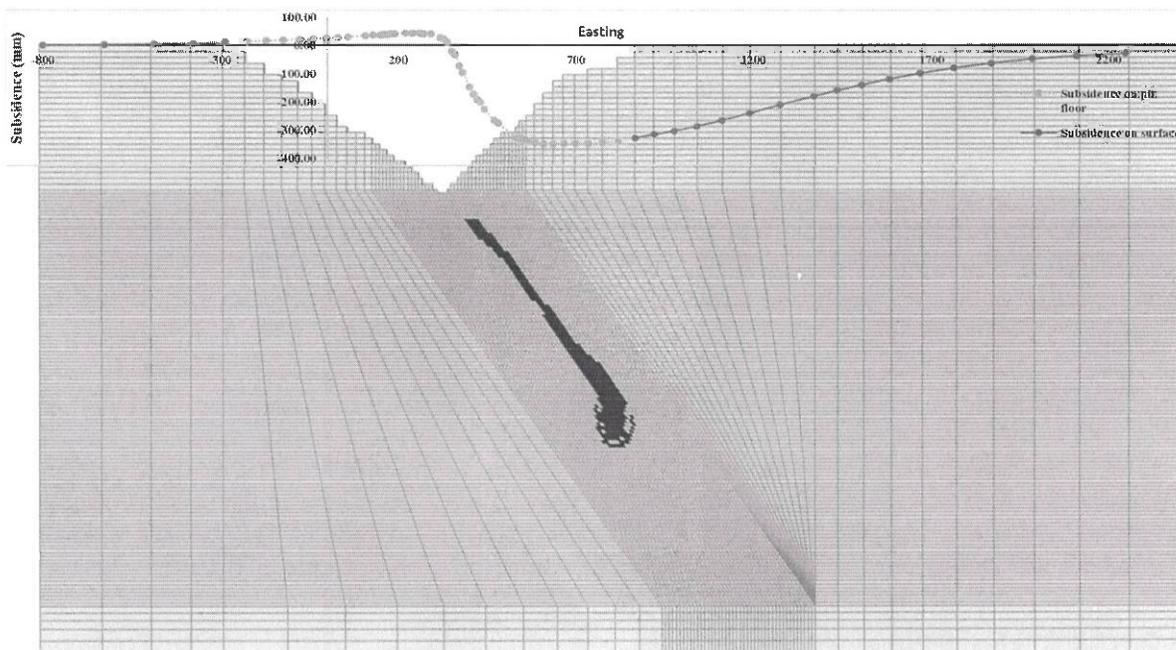


Figure 24: Subsidence profile across N 0

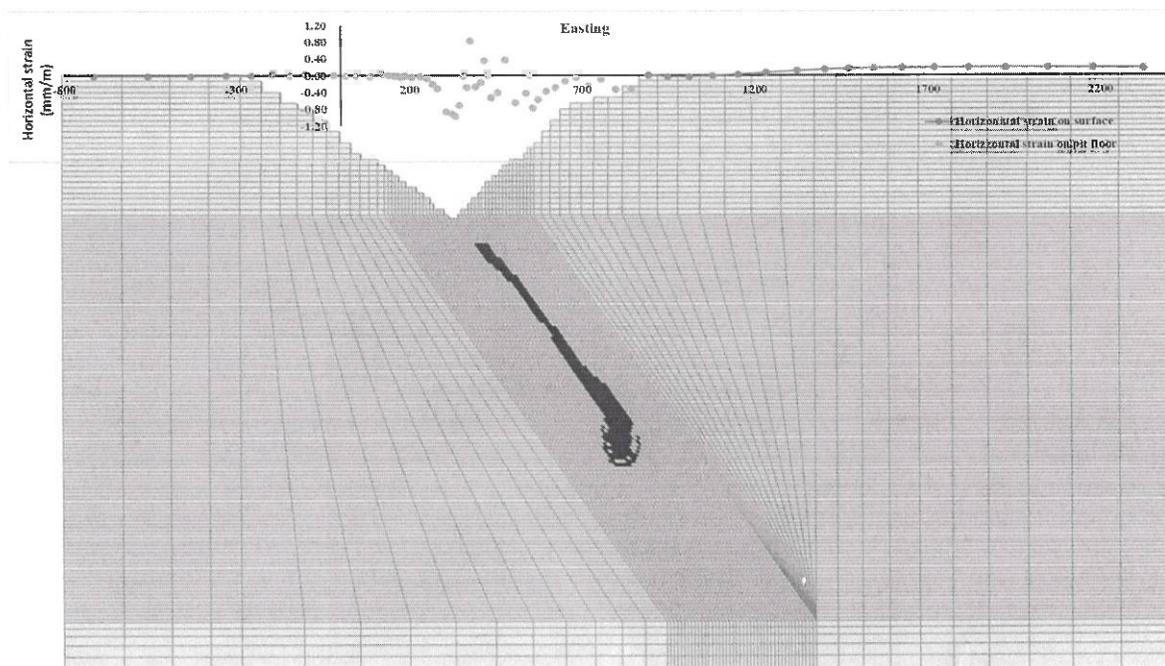


Figure 25: Horizontal strain profile across N 0

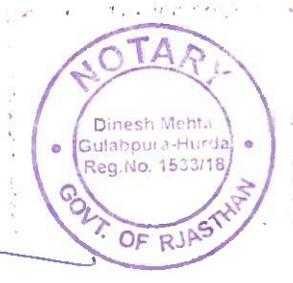


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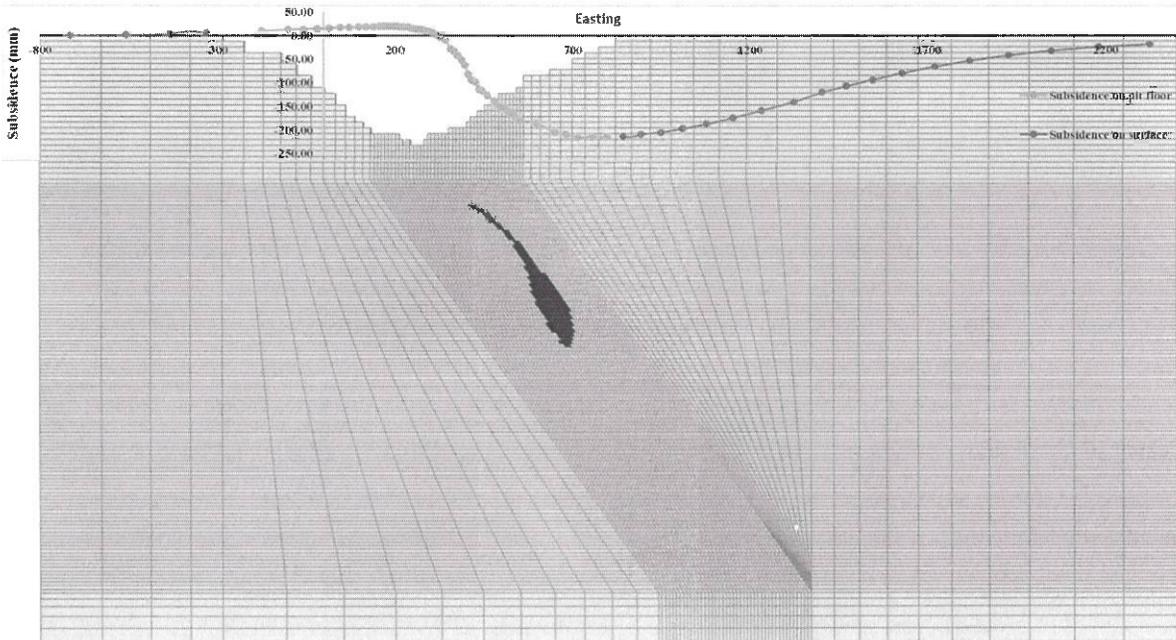


Figure 26: Subsidence across profile N 400

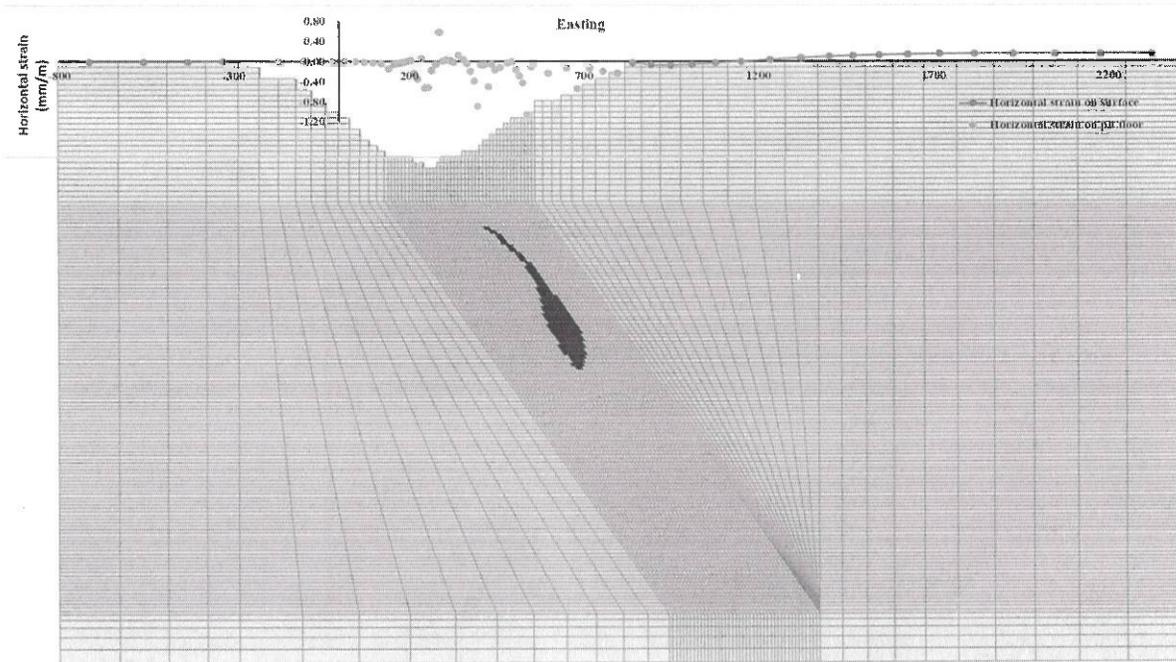
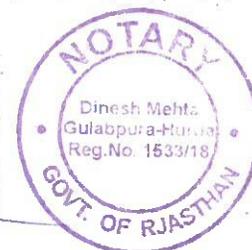


Figure 27: Horizontal strain profile across N 400



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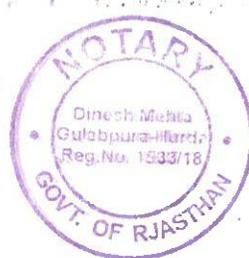
5.0 Conclusions and Recommendations

From the three dimensional numerical modeling studies for subsidence prediction, following are concluded.

- The anticipated subsidence and associated strains are mostly in the hanging wall (eastern) side of the open pit and over the hanging wall slope of the pit.
- There is no significant movement predicted in the footwall side of the pit, where the tailing pond is located.
- The maximum subsidence (vertical displacement) predicted on the surface is at the eastern side and is only about **0.33 m**, and the maximum subsidence predicted over the pit is only about **0.35m** in the hanging wall slope, after the complete excavation of the underground stopes till a depth of 1500 m from the surface and settlement of the overlying rock mass. The predicted maximum subsidence is very nominal and may occur on the surface only after several years after the underground excavation in hard rock mining scenario like that of Rampura Agucha Mine.
- The effect on surface features due to the occurrence of subsidence is indicated by the associated differential horizontal displacements (strains) rather than the magnitude of vertical displacement (subsidence). The hanging wall (eastern) side of the pit on the surface is expected to experience strains of tensile nature; the predicted maximum tensile strain is only **+0.18mm/m**. The above maximum tensile strain is well below +2.0mm/m and hence will not cause any significant effect on the surface.
- The open pit bottom portion shall experience strains of compressive nature, with a maximum magnitude of **-1.5mm/m**. Though compressive strains are of little significance in regard to surface damage, the above predicted maximum value is also very low.
- The predicted strain magnitudes are much lower than the safe limits for causing any significant impact on the tailing dam, the open pit benches, or any other surface structures.



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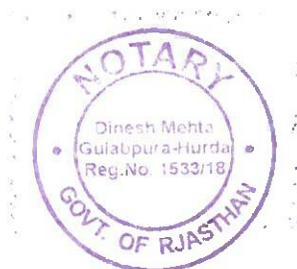


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- From the ground subsidence point of view, the entire surface including the eastern and western sides of the ultimate pit is in the safe zone and will not be significantly affected by subsidence on a long-term basis.
- During underground extractions, the surface movements need to be monitored on the footwall (western) side and on the hanging wall (eastern) side within the lease boundary where ever suitable location are available and at a few points along the haulage roadways in the open pit. The survey pillars should be placed along a few survey lines passing across the strike direction (East-West), and one along the strike (North-South) of the pit with survey pillars. A few subsidence survey points should be placed along the toe of the tailing dam facing the open pit.
- The absolute displacements and relative movements between adjacent survey pillars need to be monitored on a regular basis using suitable level instrument/ Total Station Survey.
- The open pit benches, at a few locations, especially in the hanging wall side need to be monitored with suitable monitoring system.



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