EXPRESSION OF INTEREST

BUSINESS PARTNERS REQUIRED FOR VARIOUS SUPPLY AND SERVICES

Vedanta Limited, a subsidiary of Vedanta Resources Plc, is one of the world's leading diversified natural resources companies with business operations in India, South Africa, Australia, Ireland, Namibia, Liberia and Sri Lanka. Vedanta is a leading producer of Oil & Gas, Zinc, Silver, Copper, Iron Ore, Aluminum and commercial power.

Vedanta Aluminum and Power, a division of Vedanta Limited and leading producer of alumina, Aluminum and commercial power in India, invites Expressions of Interest in the following fields:

Particulars	Scope of Work
Heavy Vehicle Deployment	Deployment of Heavy Vehicle at Bauxite Handling area during monsoon season & other area as per requirement.
Tarpaulin Covering at Port and Wagon	Tarpaulin Covering/uncovering of Bauxite stock at vizag port. Bauxite Wagon covering at port and uncovering at Plant.
Single Business Partner for AMC of Instrument	Amc Of All Lab Instruments Like Insmart Systems, Leco Instruments, Eltra Tga, Bomb Digestor, Metrohm Pts & Ic, Bet Surface Area Analyser, Merck Millipore System, Perkin Elmer Instrument, Eastman Crusher Equipment, Panalytical Xrf, Xrd, Kan Tht Induction Fluxer, Nabl Calibration Of Lab Equipment, Werner Finley Chillers.
Scaffolding management service	Erection, certification, dismantling and management of all scaffolding.
WBM Road at BRDA Area	Construction of WBM Road a. 1 Km length, 10m width and 500 mm thick, b. 900m length, 8m width and 500 mm thick
Garland Drain at BRDA area	Construction of garland drain 450 mtr length, height 2.5 to 3 mtr which includes a Hume pipe crossing of 50 mtr length.
Single Business Partner for all Civil Jobs	1. Building & Structural Painting 2. Structural repairing 3. Construction of all type of Road (WBM, RCC & Bitumen) 4. Construction of Building 5. Water proofing activities
Spares	Supply of Bearings and Accessories, Pumps, Valves, Mechanical seals, Hi-Chrome Liners and PU liners, Conveyor belts, Gear Boxes, Agitator, Structural steels, Analyzers, Rake Classifier Spares MOL, Hydrate Classification Disc Filter spares, Process Filter clothes, Flocculants, Deformers, Polymers and Grinding media
Calcined Lime	Supply of 70000 MTPA of Calcined lime

Coal Active Mine Management	Requirement of AMM services for Coal supply from CIL subsidiaries to be dispatched along with timely offering/allotment against our Fuel Supply Agreement
Scrap Sale	Sales of Mixed MS: 250MT, Conveyor belt: 250 MT, Lime Grit: 2000 MT, Vanadium Sludge: 65 MT

Date of Submission: Within 07 days of publication of this advertisement.

Remaining Scope of Work:

1. **Scope of Work: Caustic Sampling and Analysis at Vizag Port and VEDANTA Plant site:-**

Detailed SOP has to be submitted by party for every below mentioned job.
Matrix level of Chemist, Site in-charge, Inspectors, Supervisors & Samplers should be available along with details as name & Qualification etc.

1. Discharge Supervision from Vessel:-
- Initial Ullaging of Ships Tanks to determine the Quantity on board on arrival of vessel in association with vessel representative.
- Sampling of cargo
- Continuous supervision of discharge
- Maintaining time log, Pumping Log Report of Vessel side and Shore side along with the pressure parameters at both the ends
- Final Ullaging / Empty Tank Inspection to determine the quantity discharged by the vessel in association with vessel representative.
- Initial and Final Shore Tank gauging to determine the cargo received in shore tanks in association with Terminal Representative.
- Testing of sample for the quality parameters-
    - Sodium Hydroxide (NaOH)
    - Chlorides (NaCl)
    - Sulphates (Na2SO4)
    - Silicates
    - Iron (Fe)
    - Copper (Cu)
    - Manganese (Mn)
    - Sodium Carbonate
- All quality/quantity analysis reports & certificates etc. to be provided within 48 Hours from the sampling time for CSL testing. If result will not come within time bound period a penalty of 10 % on the subject ship shall be imposed.

2. Discharge Supervision from Shore tanks to tankers:-
- Monitoring of Caustic Soda Lye at terminal including opening and closing stock and concentration of the product on daily basis.
- Physical monitoring of wagon/trucks loading. Inspection and supervision of tank wagon/trucks before, during and after loading including sealing of filled wagon/trucks along with the leakage if any in each individual tankers.

- Circulate the MIS for the above mentioned activities (MIS format to be given by VEDANTA)
- Preparation and handing over of sealed bottle of each tank/wagon/trucks to enable us to check the counter at the receiving end

3. Proper Sealing of Tankers:-
    - To ensure that all the top covers of tankers and the discharge Valve have been sealed properly
    - After the sealing of tankers, MIS to be maintained for the same along with the signature of tanker drivers confirming that the seals are intact and the same to be included in the daily report to be sent to VEDANTA
    - All the seals have to have unique seal numbers along with the logo embedded on the seal.

4. Scope of work for Rail Wagons at loading point (IMC Terminal, Vizag)
    - Rail rake inspection for cleanliness, Leakage proof and loading of material, before and after loading of material. Rail shall consist of wagons, Valves, flanges, pipes etc. Top lid and bottom flange of the wagon should be thoroughly checked to avoid any leakage/spillage.
    - Quantity determination on basis of shore tank.
    - Dips stick measurement of each wagon to ensure that wagon is filled to its carrying capacity.
    - Issuance of certificate for above jobs including total quantity certificate. Also it should have details of dip measurement of each wagon, dip measurement of shore tank before and after loading of material, bill of entry No and supplier name.
    - Composite sampling of rake along with the detail parameters mentioned above and submission of test report.
    - All quality/quantity analysis reports & certificates etc. to be provided within 48 Hours from the sampling time for CSL testing. If result will not come within time bound period a penalty of 10 % on the subject rake shall be imposed.

5. Dip measurement of storage tanks everyday and stock balancing in DMT
    - Dip measurement should be done in shore tanks everyday and the volume should be expressed in DMT and account should be balanced everyday for the discharges made.
    - Stock inventory at shore tanks should match with the discharges made on daily basis before the closure of the day and should be expressed in DMT.
6. Discharge Supervision from wagons/trucks at VEDANTA In-Plant
    - Physical monitoring of wagon/trucks unloading: Inspection and supervision of tank wagon/trucks before, during and after unloading ,sealing & checking of discharge lids/caps of wagon/trucks along with leakage if any in each individual wagon/truck.
    - Dips stick wagon wise measurement & comparison between loading & unloading point dip measurement
    - Initial and final gauging of VEDANTA Caustic Storage tanks by certifying flow-meter readings to determine cargo receipt in Storage tanks.
    - Composite sampling of rake & submission of test report with following detailed parameters mentioned below:
        - Sodium Hydroxide (NaOH)
        - Chlorides (NaCl)
        - Sulphates (Na2SO4)
        - Silicates
        - Iron (Fe)
        - Copper (Cu)
        - Manganese (Mn)

- Sodium Carbonate

- Issuance of comprehensive certificate for both Loading & Unloading points detailing
  - Total quantity (DMT & LMT)
  - Dip measurement of each wagon
  - All quality/quantity analysis reports & certificates etc.to be provided within 48 Hours from the sampling time for CSL testing. If result will not come within time bound period a penalty of 10 % on the subject rake shall be imposed.

7. Circulate MIS: (Format to be given by VEDANTA) Highlighting rake details of Load & Unload point: LMT Qty, NaOH conc & DMT Qty.

(Format to be given by VEDANTA) Monthly Quantity Reconciliation at IMC tanks and at VEDANTA, Lanjigarh.

Rake moment Information: SMS as well as mailer communication for each rake moved from IMC Terminal, Vizag to VEDANTA In-plant within 6 hours from the rake dispatch from IMC Terminal.

Note:- 1.Surveyor/Sampling Supervisor should be a science graduate along with minimum 4 years of experience in the same field.

2.Samplers should be a 10th class qualified along with minimum 2years experience in the same field.

2. Scope of Work (SOW) for Coal Sampling, Sample Preparation and Analysis.

1. Receiving Point:

- Sample Collection, Sample Preparation and Analysis has to take place at VLL Site as per IS and ASTM standards.
- Activities for Sampling, Sample Preparation and Analysis to be done for received rake wise and day composite truck receipt.
- Notifying mixing of Indian coal with imported coal or vice versa immediately if found, as the party has to ensure that there is no mixing of coals and also notifying any foreign material.
- Sample preparation on day 1 after sampling, as per SOP.
- Coal Samples will be tested at VLL LAB and to be submitted one reference sample of minimum 10kg (12.5 mm size), 2kg 3.35 mm and 100 grams of 4 packets each for 212 micron to lab in case of Indian Coal and in case Imported coal 10kg (4.75 mm size), 2kg (2.36 mm) and 100grams of 4 packets each 250 micron to Lab.
- One additional reference has to be submitted to lab on requirement basis.
- Quality analysis report to be provided within 72 Hours after the sampling date and time for Indian Coal (IS Method) and Imported Coal (ASTM Method) also, exception in case of high moisture content Coal and that should be within 96 hours.
- TM(Total Moisture)to be reported within 48 hrs after sample receipt ,exception in case of high content Coal and that should be within 96 hours.
- If result will not get within time bound period a penalty of 10 % on the total contract will be imposed.
- Sample collection should be done on 24*7 hours basis.
- Validity of reference sample will be for 90 days.

- Plastic bags / HDPE bags to be utilized for sample collection. And the sample bag should be properly sealed with Security number seals & Labelled tags to be attached after sample collection. Good quality HDPE to be used without any damage.
- As and when required stack sampling, sample preparation and testing should be done at VLL site.
- The Sample Preparation Room & Laboratory testing area should be cleaned immediately after the sample preparation & analysis, the remaining coal sample to be return back to Coal Yard.

Testing of sample for the following parameters in Lab:

- Total Moisture-VLL LAB
- Inherent Moisture (air dried basis)-VLL LAB
- Ash (air dried basis)-VLL LAB
- Volatile Matter (air dried basis)-VLL LAB
- Fixed Carbon by difference-VLL LAB
- Sulphur (air dried basis) at Third Party LAB
- GCV (air dried basis)-VLL LAB
- Equilibrated moisture for EGCV(by Stability chamber)-VLL LAB

2. Feed Coal:

- The sampling will be conducted 2 hours in A Shift, 2 hours in B Shift and 4 hours in C shift as per average running hours and this may vary w.r.t the type of material received and Bunker Silo Levels ;the day-wise composite sample of Indian / imported coals to be processed at VLL LAB for :
- Total Moisture
- Inherent Moisture (air dried basis)
- Ash (air dried basis)
- Volatile Matter (air dried basis)
- Fixed Carbon by difference
- GCV (air dried basis)
- Quality analysis and TM(Total Moisture) report to be provided within 48 Hours after the sampling preparation date and time , exception in case of high moisture content Coal and that should be within 96 hours.

Sl No Job Category Qualification/Experience

SL No	Position for Received Coal & Feed Coal	Manpower No	Qualification and Experience Criteria
1	Chemist	1	Bsc. with min. 3 Years' experience

2	Inspector	3	Intermediate /Graduate with min. 3 Years' Experience
3	Sampler	12	Semiskilled/Skilled - min 3 years

3. Scope of Work (SOW) for Lime Sampling , Sample Preparation and sample analysis

- Sample collection, sample preparation and sample analysis has to take place at VLL Site as per IS standards.
- Activities for sampling and sample preparation to be done for received rake wise and each truck receipt.
- Lime received in packaged condition (40-50 kg) bags in truck or wagons.
- Sample preparation on day 1 after sampling, as per SOP.
- Sample to be collected during unloading of trucks and wagons.
- Sampling to be done one out of every 50 bags during unloading of each Truck and one out of every 100 bags during unloading of each Wagon.
- Open the bags to collect & draw 1-2 kg sample from each bag by using a scoop from the bag in a clean, dry HDPE bag.
- Tighten the bag & label the bag properly w.r.to truck / wagon number, date of sampling with Security Number Seals.
- Sample collection should be done on 24 hours basis during unloading.
- Draw approx. 20 kg sample from different parts namely front, middle, back and at different depths of each wagon/truck by using 1-2 kg capacity scoop in a clean & dry HDPE bag.
- Plastic bags / HDPE bags to be utilized for sample collection. And the sample bag should be properly sealed with Security number seals & Labelled tags to be attached after sample collection. Good quality HDPE to be used without any damage.
- In case of truck sample, pass the entire sample through 80, 40 & 10 mm sieves before sample preparation.
- In case of rake receipt, select any 4 / 5 wagons sample for preparing wagon composite samples considering as a Sub LOT.
- Pass the entire Rake Sub LOT sample through 80, 40 & 10 mm sieves before sample preparation.
- Pulverize the prepared sample to 150 micron and Pass the sample through 100 mesh Sieve.
- Label the sample packets with vehicle, rake number, date & other details & seal properly.
- Make 4 nos. packet with 200 grams each.
- One more packet to be prepared if required.
- Sample to be submitted within 72 hrs after rake unloading and 24 hrs after Truck unloading.
- If the Sample not submitted within above stipulated time period a penalty of 10 % on the total contract will be imposed.

- Retention Period for final powder sample Reference packets is for 01 week after sample preparation date.

- After Sample preparation dispose all waste/remaining sample to MOL area and clean the preparation Area.
- Lot wise prepared sample to be analysed for Available CaO%, SiO2%

Sl No Job Category Qualification/Experience/Shift Wise Manpower

- Sampling Inspector Intermediate /Graduate with min. 3 Years' Experience.
- Sampler Semiskilled/Skilled
- Each Shift Manpower 2+4 (2 Supervisors and 4 Samplers) for each rake and (1+ 2 Samplers) for each Truck.
- One chemist-Bsc minimum 3 years experience
- Activity for each rake(as per practice) : Sampling -03 Shifts
  Sample Preparation -03 shifts
  Grinding -02 Shifts

4. Scope of Work for Overhauling, maintenance and Repair of motors

The objective of repair shop/ work shop is to ensure availability of spare motor of each rating/specification in ready condition. The scope is limited to rewinding of LT motors up to 132kW, minor repairing of HT motors (LEAD repairing/ replacement, breezing in over hung winding etc) installed in the plant. All materials required for rewinding i.e. double coated winding wires suitable for CL "F" and tem rise limited to CL "B" and all consumables (lugs, sleeves, nomex paper, fastners, varnish, hardner 758 , dobecoat 520F, epoxy gel coat , breezing rod, silicon sealant HT/LT tape, cotton tape, glass tape, oil seal, gasket etc)required for rewinding will be in party's scope. After rewinding the salvage CU wires will be returned to Vedanta' scrap yard as per Vedanta policy. The party has to maintain minimum material required for one motor with any specification as mentioned in the annexure in 24X7 basis, so that emergency job may be taken up with ZERO lead time.

Stator Rewinding (squirrel cage Induction MV Motors) is including but not limited to the followings:

1) Dismantling of motor. Removing rotor from the stator safely and carefully.
2) Complete stripping and cleaning the stator core with suitable cleaning agents. Cleaning the core & conducting hot spot test of core. (If the core is damaged it will be sent outside for restagerring).
3) Detail inspection and preparation of job report.
4) Preparation of former and fixtures for coil preparation. Whole winding shall be replaced by new winding irrespective of the level of fault.
5) Preparing the coils with class „F" insulated wire temp rise limited to CL B.
6) Rewind with class „F" insulated paper of makes VonRoll/Isovolta in the slots & in the overhang portions.
7) Baking the stator after winding, dipping in class „F" Dr.Beck/VonRoll varnish and applying moisture proof paint after varnishing.
8) Replacement of RTDs and BTDs if required. The same shall be procured by the vendor only.
9) Replacement of space heater if required. Space heater will be procured and maintained by the party.

10) space heater is required only on & above 45kw motors & RTD & BTD is required only on & above 75kw motors
11) Winding lead preparation and all finishing jobs.
12) Replacement of oil seals and gaskets if required.
13) Replacement of any broken bolts if required.
14) Replacement of Bearings. (The New Bearings shall be supplied by VL) The old bearing after replacement should be scrapped.
15) In case of minor cracks in the end cover or any other part, material refilling with LH306 Electrode and machining to be done.
16) Assembling of Motor.
17) Testing of Motor :
    a. Winding Resistance Test.
    b. Inductance Test.
    c. Checking the IR.
    d. No load trial run.
    e. Efficiency Calculation (as per BEE recommendation)
18) Painting of motor body and shifting to ready section with tag.
19) Copper lugs (heavy duty) preferably Dowells make to be made available by the vendor required for motor readiness.

Bearing Replacement:

1. The Bearing Replacement Procedure including the tools/Instruments involved should be made by the Vendor and submitted for VL's approval before executing the bearing replacement job.
2. All tools and tackles required for bearing replacement as approved by VL shall be procured and maintained by the party.

Rewinding of the motors should be done within 2-7 days max depending on the rating of the motor. The party will maintain the updated record of available spare motors, motors pending for rewinding on daily basis. The party has to escalate the repair works beyond its scope and keep update to the owner regarding the pending job.

All rewinding job will be associated with a detail job card report and kept for future reference.

The party has to ensure to hand over the motor after rewinding and testing within the time period mentioned below failing to the same VL will deduct 2% of rewinding cost per week subjected to maximum deduction of 10%.

KW rating of motors	Days for rewinding
Up to 15 KW	5
15 – 30 KW	7

30 – 75 KW	10
75 – 132 KW	12

5. Scope of Work for Bauxite handling O&M and Yard Management

The operations and maintenance of Bauxite Handling (BH) include (but not limited to) the following-

O&M Service Provider shall operate & maintain the plant in such a way that **per day target of 18000 MT** crushed bauxite is fed to Bauxite silos. The monthly tentative plan for crushing and the desired feed mix of bauxite sources will be communicated in advance.
The current Bauxite Handling Area consists of the following equipment –

1. DBNK System – Reclaimer (SR1), CV-102, CV104, CV-104R (reversible), CV-106, Vibrating Screen VS-103, Hammer Crusher CR-104, CV-115, CV-114, CV0103, CV-0102

2. Existing System – Stacker-cum-Reclaimer (SR2), CV103, CV103R (reversible), CV107, CV105, Manually Operated Prism Gate, 02 ABON Roller Screens (VS101/102), & Roller crushers (CR-102/103) , CV113, CV112, CV0101 (Reversible).

In addition to above there is also a 300 TPH mobile feeder, Mist Canons – 02 nos., Sprinkling System - Pump House & Sprinklers and an electric hydrojet machine which needs to be operated and maintained. The associated accessories such as Bag Filter & Dust Extraction System, Air-Blasters, Compressors are also a part of the Bauxite Handling System.
Important –
Till the unavailability of new Stacker Reclaimer (henceforth referred to as "SR-1"), the manual hoppers installed at conveyors – CV-102,103,104,106,107,114 & the mobile feeder feeding to meet the daily crushing target is in the scope. Additional hoppers may also be installed if deemed required. After commissioning and stabilisation of SR-1, the machines for manual feeding may be de-mobilised by the Vendor in agreement with VL.

<u>Resource Deployment for Mechanised Cleaning –</u>
01 Backhoe (JCB), 01 Wheel Bobcat, 01 Chain-mounted Bobcat to be deployed at BH site for mechanised cleaning. Minimum 18 hours per day availability is to be maintained and performance will be monitored through monthly scorecard.

- Operation of single stacker-reclaimer till next 10-12 months and thereafter both the stacker-reclaimers' operation. If any deviation is there, then crushing per day target will be informed officially to the O&M Service Provider.
- Operation of BHP from the respective Control Room PLCs to be done by operators of O&M Service Provider.
- Operation of the two Stacker- Reclaimer with operators having at least 5 years of experience.

- Rated reclamation of material from stock piles & feeding to CV102/103 at the desired feed rate.
- Supervision of manual hopper feeding till the SR- 1 comes in operation.
- Smooth & safe operation of all the conveyors without any spillage at the transfer towers & along the conveyor.
- Feeding of the four Bauxite Silos as per requirement of Central Control Room (CCR).
- All kind of coordination & communications to be done with CCR by the shift O & M In-charge.
- O & M of Dust Suppression system like Sprinklers at the yard & Dry Fog System at transfer towers for effective dust control as per environment norms.
- Operation of Hydrojet Machine "Operation of Airblaster system " Preparation of operational defect list and raising in SAP
- Stone & plastic bag picking from conveyor before fed to silos by O & M Service Provider.
- Monitoring of all the conveyers by deploying qualified operator to report as well as rectify the problems like belt sway, pullcord activation and reset, belt jamming status and cleaning ,roller and pulley condition, air blaster operation , DSS operation , cleaning of impact pad by air etc. Belt feeder O&M.
- Asset management Documentation including 5-S at Bauxite handling. The service provider will bring the required container to establish its office and tool rooms at site. The set-up will be taken by party after contract execution.

Housekeeping of BHP:

The scope of jobs shall be as follows but not limited to:

- VLL- Safety standards as per company policy should be followed during housekeeping of BHP.
- Entire bauxite handling system shall be included in scope of works for housekeeping, party should carry out proper housekeeping as per best industrial practices, smooth & hassle free plant operation as well as per instruction on VL Party shall engage mechanized equipment to perform the housekeeping jobs like Wheel & Chain Mounted Bobcats, JCB.
- Suitable vehicle for housekeeping and spares and other utilities shifting to be deployed.
- Maintaining the safety of all the walkways & platforms.
- Removal of spilled material on war footing basis all over the area.
- Monitoring of CV 112, CV 106 & CV 105 Plate area for which should not be run in jamming Condition.
- Daily Housekeeping report to be submitted in CR4.
- Every shift 18 Manpower with 2 Supervisor & 9 manpower with one Supervisor in G shift must available for execution of housekeeping job.
- Housekeeping to be carried out in such a way that the House keeping score to be achieved more than 90 which is audited by VL audit team.
- 5s awareness programme should be carried in every month.
- Cleaning of discharge chutes by help of Hydro jet machine to be carried as per requirement.
- Cut Resistant Suit – Suitable to use for Hydrojet Pressure – 600 kg/cm^2 is compulsory during hydrojetting.
- The housekeeping manpower should have sufficient Tools for carrying out the cleaning job.

- Raincoat & Gumboots should be provided to the workers for smooth working during monsoon.
- The availability of JCB and Bob Cat should not be less than 18 hrs per day. O&M service provider will arrange at his risk and cost to meet the running hours during any breakdown of his resources.
- The supervisor will monitor all the cleaning job and will follow all the safety norm as well as SOP for cleaning.
- The material cleaned and collected to be disposed immediately at the designated location by using hywa and JCB .
- Cleaning of all the spillages, leakages from the conveying systems & material handling equipment & sizing, screening equipment shall be cleaned & shall be transported to the designated area as per the VL engineer instructions
- Cleaning of all the belt rollers, conveyor walkways, conveyor bottom areas.
- Material from the magnetic separator & metal detector shall be removed as per sop .
- Big sizes of bauxite shall be separated from the bauxite yard & from the stacker conveyor belts and shall be transported to the designated area as per VL engineer instructions.
- Collection of all the foreign material like metal pieces, plastic bags, concrete blocks, coal pieces & transportation to the designated area as per the VL engineer instruction etc.
- Housekeeping of all the roads in the bauxite handling area.
- Housekeeping of all the drains in the area.
- Pump House cleaning
- Cleaning of area below the conveyors if any bauxite spillage occurs
- Cleaning of all rollers and pulleys of all conveyors
- Cleaning of all cable trays and make them free from mud or bauxite deposit
- Separation of metal, coal, and unwanted material from bauxite in the magnetic separator area and stacking the same separately as per VL area in-charge instructions.
- Proper utilisation of hk manpower needs to be utilised to keep area clean by Shift Incharge.

Important –
All the house-keeping activities within the boundary of Bauxite Handling Area till the Ball Mill Silo floor is in the scope of Service Provider.

<u>Bauxite Handling - Yard Management</u>

The heavy machineries deployment must be sufficient to safely receive and handle 400-600 KT/month of bauxite at yard. For carrying out the Yard Management activities and responsibilities, the following machineries are to be deployed at yard through out the contract period –

1. **03 Excavators**
2. **02 Dozers**
3. **03 Hywas**

All the yard machines are to be made available for 24 Hours per day excluding the mutually agreed scheduled fuel filling, Scheduled daily and monthly maintenance.
All the possible and major maintenance activities are to be carried out outside the plant premises. And if need be to carry out the same inside the plant, the VL safety standards are to be followed strictly.

- Safety compliance as per VLL standards and daily TBT register compliance is must.
- Dust suppression & controlling arrangement during dry season.
- Coordination with logistics team for pre shifting protocol signing and getting information about bauxite quantity and source at both siding locations (MS & WT).
- To receive bauxite which is coming from sidings by Hiva in controlled and desired manner with all aspects of safety and 100% adherence to SOP compliance, Yard instructions.
- Ramp Preparation: With proper sloping of 1:6 ratio with both side bund wall of minimum 1 metre.
- Proper shaping of heaps with required gap of 10-15-meter gap to be maintained.
- Need to control dust emission with help of mist canon or with help of water tanker.
- Daily communication of heap wise received and consumed quantity in terms of number of trips received and running hrs of reclaimer with average TPH along with updated heap dimensions.
- Maintaining of heap record with the estimated actual quantity of receipt and consumption.
- Execution of Heap clearance as per SOP.
- Equipment wise OEM recommended PM & maintaining register to be maintained.
- Coordination in stock assessment and monthly PV execution.
- 100% preparedness for monsoon with dewatering pumps.
- Covering of bauxite stock during untimely rains (non-monsoon period)
- De-watering pumps will be supplied by VLL however, the rewinding of motors (upto 5 HP)- if needed, will be carried out by service provider.
- Need to keep minimum one-week diesel stock with all required safety.
- Use of safety tools such as – Flash/signal lights, Safety Cones, B/D vehicle signages etc. to be ensured.
- **“HOT SEAT Relieving” – i.e. Man to Man relieving at the work place is to be ensured.**
- Industrial Grade Portable Torches / Lights are to be used during low illumination.
- Separate Score Card for Yard Management will be implemented, and payment will be linked as per mutually agreed Score Card.

Bauxite Handling Operations – Key Deliverables

Sno.	Deliverables	KPI	Remarks
1	Production	18000 MT Crushing / Day	Advance monthly target will be communicated by VLL
2	Safety	0 Incidents, accidents, LTI, MTI, UA/UCs/	Monthly scorecard will be certified by VLL
3	Area housekeeping	Area cleanliness	Shift wise and as per VLL Schedule, cleanliness report to be updated along with photographic evidence.
4	Machine Guarding	No. of field	All machine and conveyor guarding to be in place.

	Compliance	observations	Shift wise report to be posted.
5	Scrap Disposal	Receipts from VLL Stores	Timely disposal of the area collected scraps to VLL Stores. Monthly report with all the receipts to be recorded.
6	Optimal Equipment Performance	TPH of Each System	KPI & Target tracking through Monthly Review & Performance Scorecard
7	Bauxite Trips Receipt	Readiness for 1000 Trip Receipts- Total 22000 MT/Day	Shift wise receipts tracker to be updated.
8	Yard SOP Adherence	SOP for Heap Clearance adherence	VLL- SOP will be shared
9	Machines Availability	Machines Availability	Per day availability of 20 hrs to be ensured (Fuel filling, weekly and monthly maintt. to be considered)
10	Foreign Material Segregation	Big boulders, Scraps & Gunny bags separation	Photographic evidence to be reported
11	Scrap Collection	Scrap Collection at Yard	Monthly Scrap Yard Disposal Receipt to be tracked
12	Traffic Control	Traffic Management of Incoming Hywas	No congestion and smooth receipts at the Yard to be ensured
13	SR Track Cleaning	Track Length Cleaning	Heaping bauxite to be at least 01 m clear from the SR track to ensure hamper free SR travel.
14	Continuous Improvement	KAIZENS / Month	Active participation for new developments & KAIZENS
16	People Development	Skill Mapping & Trainings	As per Asset Optimisation Guidelines

Bauxite Handling Mechanical Maintenance – Key Deliverables

S.No.	Deliverables	KPI	Remarks
1	Preventative Maintenance	As per Scorecard	Schedule Compliance > 98%
2	LLF (G + A + B + C) Shift	Shift Report	All actionable to be completed on same day. Action plan to be submitted if any Major SD required.
3	Corrective Maintenance	Shift Report	All actionable to be completed on same day. Action plan to be submitted if any Major

			SD required.
4	Reduction of Breakdown Hours	MTBF	Monthly 5% reduction
5	Belt Life Improvement	MTBF	Improvement of Belt life by 10%.
6	Schedule Overhauling / Condition Appraisal	AO Framework Compliance	All actionable / deviation must be completed within Overhauling / Condition Appraisal itself.
7	Fabrication & Erection of Structural Material as per BH Plant Operational and Safety requirement	Monthly Report	Monthly Aprox - 3 MT Max – 7 MT/ Month
8	Daily Maintenance Report	Maintt. Report	DMR to be submitted
9	Shutdown / Major Job Planning	Maintt. Report	MOM & Planning sheet to be circulated. Post S/D Report to be submitted.
10	Spares & Inventory Management	NA	Report to be submitted on the same day
11	Refurbishment of Spares	Maintt. Report	Weekly report to be submitted.
12	Equipment Record Upkeep	Maintt. Report	Report to be submitted daily
13	Scrap Disposal from Site	As per Schedule	Report to be submitted Weekly
14	MHE Availability	Signed Off Log Sheet	24 Hrs availability Excluding Agreed Maintt. Schedule
15	VSAP & Asset Optimisation Requirement	Daily	Involvement for Compliance for all applicable Standards & CAPA Compliance

- Daily Job Planning in Coordination with Operation (without affecting Daily crushing target)
- Service Provider must arrange necessary transport facilities for shifting of material at its own cost.
- After completing all the jobs, Service Provider shall handover the equipment to operation & will ask operation to take trial in his presence.

- In case of stopping of any equipment either due to problem in associated electrical equipment or due to any electrical interlocking, Service Provider must trace the fault & attend/repair/ replace the faulty component in minimum possible time.

- In order to minimize MTTR (Mean time to Repair) Service Provider's staff & technicians has to have very good experience in the maintenance of similar nature of each type of mentioned equipment & understanding of drawings.

- Service Provider also needs to have technologically advanced required tools & tackles i.e. Induction Heater, Bearing Puller, Hydraulic Jack , Pneumatic Spanners ,Torque Wrenches to minimize the MTTR.

- All tools, tackles, testing & measuring instrument, consumables (list as per Annexure) required to execute above jobs shall be procured & maintain by Service Provider along with all Test Certificates.

- In an event of the equipment could not be serviced by site team or the problem not identified within 24 hrs, OEM/external Service Provider has to be called and has to report within 2 to 3 days for resolving the problem and the expenses incurred towards this will be borne by the Service Provider.

- The Service Provider will prepare & submit SMPs for various maintenance activities carried out in VL refinery to VL representative for approval and maintain the same during the contract period.

- Shift Maintenance - The Service Provider must depute adequate skilled manpower in each shift (G, A, B, C) to fulfil plant requirement. Handover and takeover should happen at site and the O&M service provider will arrange pick-up and dropping such that 30 mins overlap should be there at site.

- General-purpose O&M consumables as per enclosed Annexure but not limited to which go permanently into machines.

- **The monthly payment of O&M is to be made based on the mutually agreed Performance Scorecard. 50% of the payment shall be linked to Score Card.**

- All portable lighting arrangements for carrying out the O&M shall be in Vendor's Scope only.

- The vendor to purchase a spare control panel unit & interconnecting cables and hydraulic hand pump with suitable hoses for the Hot Vulcanisation Machine available with VL and depute at site.

Exclusive Services –

The Vendor to arrange for expert / exclusive service requirements **Costing upto – INR 05 Lakh /Year**. The service requirement will be of special skill set and will be outsourced by Vendor as and when required. Few examples (but not limited) of such jobs an such as for -Luffing Cylinder Repair / Replacement, Slew Bearing Replacement for Stacker Reclaimers, Rail Track Repair/ Alignment, Hammers Hardfacing, Specialised Drawing Developments.

Exclusions From Vendor's Scope –

1. All equipment spares.
2. All conveyor belts.
3. Lubricants – Grease, Oils etc.
4. V-Belts, Bearings, Couplings.

5. Electricity, Air, Water, Space for Office Set Up.

Bauxite Handling – Operations during Monsoon

Every year monsoon months of June, July, August, September, October & November require special focus and additional deployment of machines as the bauxite is wet and slushy and yard management becomes challenging.

Following activities and the respective Scope is to be carried out in the monsoon period –

1. Deployment of Extra Heavy machines for Handling of Wet Bauxite (> 8% moisture) as per attached SOW. (July to Nov or till monsoon)

2. Tarpaulin covering-uncovering of bauxite to prevent moisture ingress in bauxite as per attached SOW. (July to Nov or till monsoon)

3. Deployment of additional house keeping manpower to carry out cleaning activities as per attached SOW. (June to Oct or till monsoon)

6. **Scope of Work for C&F of Bauxite in Plant**

The scope of services under this contract shall include but not limited to providing logistics services towards clearing & forwarding of cargo at In-plant railway siding (MVAA). The scope will also include, unloading from railway wagons, stacking, loading into dumpers along with transportation to Bauxite handling yard (Appx. 2 Kms lead) inside plant with correct quantity & quality as specified at the time of loading as per the scope given below:

1. LSP shall ensure proper track clearance for placement of bauxite rake in co-ordination with MVAA.
2. Toolbox Talk (TBT) shall be carried out before performing any job by the supervisor/safety officer and the documents shall be filed.
3. Unloading of the Bauxite from the railway wagons as per SOP defined by VL.
4. Stacking at railway siding & maintenance of the railway siding (Including water sprinkling).
5. Loading into tippers or dumpers and shifting it to Bauxite handling yard.
6. Weighment shall be done on need basis as per VL EIC instruction.
7. Unloading of wagons should be done well within railways stipulated time i.e. within 5 hrs of rake placement without compromising the VL safety standards & without damaging the wagons. Any demurrage incurred due to delay in release of the rake owing to activities being undertaken by LSP, will be charged to LSP.

8. Material unloaded from rake should be evacuated from siding within 24 hrs.
9. Co-ordination with Railway O&M contractor for timely placement & drawn out of rakes, documentation and reconciliation of demurrage.
10. Co-ordination with Railways for any job related to their scope of work e.g. damage & deficiency, wagon damage, safety drive etc. The LSP shall ensure zero damage to wagons during unloading of rake. The damage and deficiency (D&D) charges levied by Indian Railways based on handling of rake at siding will be directly charged to LSP. The invoice raised by Indian Railways on account of heavy damage over and above the D & D charges shall be settled by LSP.
11. Adherence to all railway rules, regulations & Safety standards during handling of rakes at siding.
12. Efficient & sufficient labours should be engaged for unloading of any rake.
13. Shift wise unloading labor to be deputed for wagon cleaning in line with hyva's shift.
14. LSP should deploy a group of dedicated workmen for opening and closing of wagon doors. Machinery should not be used for opening or closing of wagon doors.
15. Proper record keeping of incoming damaged & deficiency of every wagon & report the same to EIC on rake to rake basis.
16. Rectify any damage to the wagons before releasing the rake.
17. Track cleaning after unloading of rake to be done manually by the LSP. No machines shall be used for same.
18. Dedicated labor to be deputed for track cleaning after drawn out of rake from manual siding in shift wise.
19. Any demurrage, detention & wagon damage charges claimed by Railway for any account related to operation shall be borne by LSP's.
20. The labours must be entered through VL main gate only & LSP must comply with all security and safety standards laid by VLL. Any deviation found will be treated as non-compliance and action will be taken as per security/safety policy.
21. All fleet shall be as per VLL vehicle checklist and follow VLL & CMV Acts and rules.
22. LSP needs to have enough machinery, labors, trucks & all infrastructures to shift all the materials from manual siding within 24 hrs. of unloading.
23. No material should be dumped enroute to bauxite yard. Due to Vehicle breakdown or any other inadvertent circumstances, if any material is dumped in enroute it shall be collected in its entirety and shifted within 12 hours to the designated place in Bauxite Handling Yard. Beyond this time, if material is found on the road, then penalty of INR 500/- shall be imposed on LSP.
24. During Bauxite transportation from Siding to Bauxite Handling yard material spillage should be avoided to maximum extent and to recover the spilled material, LSP should carry out scheduled weekly cleaning of road from siding up-to bauxite yard. This collected material should be unloaded at designated place in Bauxite handling yard as per instruction of yard in-charge.

25. LSP should engage appropriate machinery to remove all spillage material from the road.
26. Each & every wagon received in a rake must be cleaned properly and no material should be left inside the wagon. If any material found after unloading & cleaning of the wagons, then material cost shall be recovered from the LSP. VL will be the final authority for taking decision on this based on CCTV recordings.
27. Enough water tankers (minimum two) should be deployed for water sprinkling on siding & approach road to bauxite handling so that dust is suppressed.
28. Efficient & sufficient staff should be deputed by LSP during operational time. The skill levels and qualification of the staff shall be verified by VL officials before deputed at work.
29. LSP shall ensure incessant movement avoiding strike, Local and National Holidays if any.
30. Good conditional fleet as per VL policy shall be deployed for shifting of bauxite. Carry out Maintenance activity on a scheduled basis. Hyva's above age of 10 years not to be engaged for bauxite shifting.
31. LSP shall deploy 10 own hyva's for un-interrupted bauxite shifting and one four-wheeler (preferably Bolero) for movement between manual siding to weigh bridge, material gate, bauxite yard and parking area on round the clock basis to ensure safe transportation.
32. Any damage to the track or VL property found during operation, then recovery shall be done from LSP as per actual.
33. Any foreign particles or material shall be removed before loading of bauxite to the hyva's. Big size boulder and foreign material which is visible & oversized at manual siding shall also to be segregated and removed.
34. Bauxite loading shall be according to the carrying capacity of hyva/tipper.
35. LSP should follow Vedanta Safety Standards while performing all activities and in case of violation, the actions communicated in consequence management of Vedanta safety standard will be taken.
36. All the drivers/operators shall carry their authorization card and gate pass issued by VL while entering the plant. Nobody shall be allowed to operate hyva vehicle/machinery vehicle without a valid authorization card.
37. The gate passes of workmen, drivers, operators and vehicles shall be renewed on time to avoid any interruption in unloading and shifting.
38. Bauxite unloading at yard should be done as per guidance of yard supervisor/in-charge. If indiscipline created by any vehicle twice in a one month, penalty of INR 500/- shall be imposed on the LSP.
39. LSP shall deploy road marshal on the transporting route & safety officers round the clock to ensure safe operation and transportation (MIP attached).
40. Vehicle & equipment checklist to be filled by LSP shift supervisor at the beginning of each shift.
41. Wheel chock should be in place while standing of Hyva's both inside plant & outside parking area.

42. Parking area SOP should be followed by LSP.
43. Zero tolerance for seat belt, Helpers driving, Drink & drive, over speed, over taking, trespass without valid gate pass etc. and actions to be taken as per VL safety and security policies.
44. LSP to deploy house-keeping person on round the clock basis to maintain the cleanliness and hygiene of the washroom at manual siding. The LSP must maintain the hygiene, sanitation, cleanliness of the outside parking area, its washroom and periphery.
45. The parking area is to be manned on round the clock basis (one guard in each shift). CCTV camera shall also be deployed (preferably). Register shall be kept at parking gate to maintain the record of all IN/OUT vehicles to/from the parking area. The entire scope will be with LSP only.
46. Vehicle maintenance is not allowed inside the plant. However, in case of breakdown, authorized maintenance to be carried out as per PTW and Vehicle Isolation with LOTO.
47. AC cabin excavators can be provided to reduce the fatigue level of drivers and operators.
48. Operators and drivers muster roll and shift schedule should be prepared to monitor the fatigue.
49. All breakdown vehicles shall be kept at designated area within the parking and maintenance activity can be carried out there by the vehicle owners.
50. The LSP shall be responsible to mitigate/resolve any unrest arises within their workforce.
51. The LSP shall put traffic barriers (preferably pre-cast concrete barriers) on the transporting road for speed control and safe vehicular movement.
52. The LSP shall be responsible for vegetation removal along the both sides of bauxite transport route to have a clear vision for the hyva drivers.
53. The LSP shall abide by all statutory and legal compliances as per VL policy.

7. O&M of Wagon Tippler at Bauxite Unloading area

Operation and maintenance of Wagon tippler in Bauxite unloading area, unloading of Bauxite rake through wagon tippler.

- Unloading of the materials from the railway wagons.
- Unloading of wagons should be done well within railways stipulated time i.e. within 5 hrs. of rake placement or else demurrage arising out of the delay shall be borne by Contractor for the reasons attributed to the contractor.
- Liaisoning with railways& coordination with O&M contractor for timely placement & drawn out of rakes, documentation and settlement of demurrage charges with railways.
- Ensure zero damage to wagons during unloading of rake.
- Adherence of all railway rules and regulations.
- Adherence of Railway & VL Safety standards.

The estimated quantity per year shall be 4000000 MT/ 3 rakes per day, which may increase/decrease by 40%.

Equipment : Wagon tippler,Vibrating motor, traverse table, tractor,Pusher,Apron feeder-2 nos ,Conveyor system NC1,NC2,NC3,EOT and dewatering pump ,pipe line, compressor ,DSS,Sprinkler ,Discharge chute etc.

Scope Of Work O&M of Bauxite Wagon Tippling System (BWTS)

1. Scope of work: O&M Agency shall be responsible for entire operation and maintenance of BWTS. The brief scope of work is outlinedbelow.

1a. O&M Agency Scope: O&M Agency scope shall be as mentioned but not limited to as follows:

- Operation & Maintenance of all Mechanical, Electrical, Instrumentation equipment from Wagon Tippler to Conveyor Discharge in Bauxite Wagon TipplingSystem.
- Specialized services such as cold/hot Vulcanizing of conveyor belts & rubber lagging of all pulleys Etc.
- Timely calibrations of instruments and submitting the records for thesame.
- HousekeepingofentireBWTSpreferablymechanizedincludingarealikeBuildings/BWTSRoads/Drains /Toilets/ surrounding areas etc. to be taken care by O&M Agency on daily basis.
- Additional resources / manpower required to maintain the plant housekeeping& operational of systems in view of seasonal variation like during rainy season etc. is in the scope ofcontractor.
- Shifting of spares & materials to the working location in the contractor'sscope.
- Preventive Maintenance, condition monitoring jobs as per the Central Condition Monitoring Cell, Corrective & Breakdown Maintenance for all equipment along with submission of equipment healthiness report, equipment history toEIC.
- O&M Agency has to follow all standards for ISO systems (Like check list & SOPsetc.
- Proper material planning in advance and inventory control to beensured.
- Any minor modifications for improvements of the plant to be carried out by the O&MAgency.
- O & M of Dust Suppression system like Sprinklers at the yard & Dust Control System at transfer towers for effective dust control as per environment norms.
- General-purpose O&M consumables as per enclosed Annexure but not limited to which go permanently intomachines.
- Sufficient Walkie-talkies (8 no's) for effectivecommunication.
- O&M Agency will have to tie of with PLC OEM'S for maintenance of PLC's and expertise services and if required duringbreakdown/shutdown.
- O&M Agency shall appoint full time, qualified safety officer who will ensure safety aspects in all activities of BWTS.
- Bush cutting around the rake placement area along with areapremises.
- Surrounding areas scrap shifting to the VL scrap yard is in the scope of O&M agency.
- Track cleaning of pusherside.
- Traverse table area cleaning for smooth operation of traversetable.
- Dewatering of traverse table area & wagon tipplerbunker.
- Drain cleaning and maintenance ofdrain.
- Safety precaution for COVID-19 will be taken care by O&M agency for their employees.
- Left-out material from wagon shall be cleaned by O&M agency by deploying extra manpower apart

from housekeepingmanpower.

- BWTS equipment health check-up report from third party to be submitted by O&M agency in every six months.
- O&M office is in the scope of O&M agency and land will be provided by VLL with in plant premises.
- Spare planning to be done by the contractor and to be submitted 4 months beforerequirement
- Arranging out the r e q u i r e d m o d i f i c a t i o n to make the people safe f o r o p e r a t i o n and maintainenance. Platform,hand railing provision to make the systemsafe.
- Daily report shall be submitted by O&M agency to concernauthority.

1. Maintenancereport.
2. Daily Rake delayreport.
3. LLF report.
4. Daily housekeepingreport.
5. PMreport
6. Wagon cleaning report with photos to be circulated after every completion
7. Bauxite transportation report from WT yard to be circulated on daily basis

- Weekly report shall be submitted by O&Magency.

1. Lubricationreport.
2. Belt report.
3. Liner report
4. Guarding compliance report

- Monthly report shall be submitted by O&Magency.

1. Rake report.
2. Performancereport.
3. Equipment health report.
4. Tools and tackles report
5. 5S compliance report.
6. Rake delay downtime report.

- The service provider will maintain the lifting tools & tacklesmentioned.
- To minimize the human effort in housekeeping the O&M agency will deploy chain BOBCAT & JCB/Excavator/Loader as per plantrequirement (min 16 hrs. availability per day).
- The O&M agency will maintain minimum 10Ltr cold joint solution, filled nitrogen gas cylinder, 10% of each consumable used in system.
- For maintenance work O&M agency should deploy 50T jack (2 no's), 100 T jacks (1 no), hydraulic bearing puller, rail trolley (capacity-5T), 23T hydra, 1utility vehicle (pick-up, camper etc.) with 24 hrs. availability on site,1 passenger vehicle (bolero, Scorpio… etc.).
- Incoming wagon defects to be reported by O&M agency before unloading.
- Damage deficiency cost of wagons to be imposed on O&M agency.
- At no point of time more than 3 rakes material stock at WT yard if shifting clearance available from VLL.
- Demurrage due to yard jamming is in the scope of O&M agency if shifting clearance available from VLL.

- Hygiene & cleanliness at Control Room.
- O&M agency is mandatory to follow ISO (SOP, SMP.HIRADEC etc.) system applicable by VLL.
- Scaffolding for O&M activities as per VLL standard.
- Bauxite covering at WT yard as per plant requirement. (Tarpaulin to be provided by VLL).
- VSAP and AO compliance
- O&M agency should initiate well in advance before 7 days of any shutdown job.
- Manpower availability as per Annexure 3.
- Any third party services up toRs 5 lakhs per annum is in the scope of O&M agency.

1b. VL scope: VL scope shall be limited to as follows:

- Free power supply for operation & maintenance ofBHP.
- Spares for VLfacility
- Supply of Steel required for improvement/modificationworks.
- Condition Monitoring of equipment's.

Performance

- Performance will be evaluated through scorecard as per annexure 4:

Operation of BWTS

Operation of BWTS from the respective Control Room PLCs to be done by operators of O&MAgency.

- Maintaining the safety of all the walkways &platforms.
- Removal of spilled material on war footing basis all over thearea.
- Daily operation Performance report to besubmitted.
- Daily Housekeeping report to besubmitted.
- Penalty for poor housekeeping in conveyor area & drain cleaning(Rs.200/meter).
- Covering of bauxite with tarpaulin during monsoon as per VL'srequirement.
- Waste management to be managed by O & Magency.
- Operator of the Wagon tippler to be done byoperator.
- Operation of the Wagon hauler to be done to take the empty wagon to the **traverse table,** which shall take the empty wagon to the return track.
- Operation of another wagon hauler to be done to empty the traverse table & to position the empty wagon on the returntrack.
- Left-out material in wagons if after rake unloading, cost will imposed to O&M agency.
- Conveying of Bauxite from the Apron feeder to the WNCI & WNC2 conveyors & finally discharging the bauxite at the tipper conveyor (WNC3) to form heaps for loading to trucks by TransportAgency.

PEOPLE QUALIFICATIONS AND MINIMUM COMMITTED MANPOWER STRUCTURE

The minimum qualifications for technical manpower for Operation are mentioned below:

1.	Operation In-charge	:	An engineering degree in mechanical with minimum 10 years' experience/diploma in mechanical with 15 yrs.exp in large material handling plant operation & maintenance with minimum 5 years Managerial experience.
2.	Senior/Planning Engineer	:	An engineering degree with minimum 7 years/diploma with 10 yrs. experience in maintenance planning of large material handling plant.
3.	Safety Officer	:	A degree in engineering and diploma in industrial safety with minimum five years' experience as a safety officer in a continuous chemical/metallurgical Process plant.
4.	Area engineer/ Supervisor/ shift engineer	:	Diploma in mechanical with minimum 8 years' experience or ITI in mechanical with minimum 15 years' experience in O&M of a largesize materialhandling plant.
4.	Area Operator	:	ITI with minimum 5 years' experience or 10^{th} Pass with minimum 10 years' experience in operation of Large raw material handling plant.

Housekeeping Of BWTS

Entire BWTS system shall be included in scope of works for housekeeping, party should carry out proper housekeeping as per best industrial practices, smooth & hassle free plant operation as well as per instruction on VL

Party shall engage mechanized equipment to perform the housekeeping jobs like bobcat, loader, tractor, etc. to perform the housekeeping jobs in a faster and efficient manner.

The scope of jobs shall be as follows but not limited to:

- Wagon Tippler FloorCleaning
- Removal of big bauxite boulders from grisly of wagon tippler discharge chute & breaking of the same to recycle back to thesystem.
- Removal of Big Stone Boulders form the grisly & shifting to designatedarea.
- Cleaning of tail end area of WNC1 &WNC2.
- Cleaning of Bunkerarea
- Cleaning of material spillage below the Conveyors WNC1, WNC2 &WNC3.
- Cleaning at Transfer Tower NTT1 &NTT2.drainage
- Neatness maintaining and bush cutting in and around WTarea

Maintenance Of BWTS

Electrical Maintenance BWTS

Contractor shall perform following Maintenance activities to maintain the 100% availability of electrical installation in entire area:

1. **PreventiveMaintenance**:

   The basic purpose of implementing PM philosophy is to maintain the original condition of equipment as far as possible & to maximize MTBF (Mean time between failures). Owner's engineers shall prepare schedule & standard check sheet of all equipment. The Contractor shall perform all the check points & jobs mentioned in the PM Check sheet with in specified time. If any component is found to be replaced, Owner's engineer will get the item issued from stores & handover to Contractor. Shifting of material from stores to site & vice versa shall be in Contractor's scope. Contractor has to arrange necessary transport facilities for shifting of material at its own cost. After completing all the jobs, Contractor shall handover the equipment to operation & will ask operation to take trial in his presence. In the evening, Contractor will submit all the executed check sheets with his remarks to the Owner's areain-charge.

2. **PredictiveMaintenance**:

   Predictive maintenance (Pd.M.) techniques help determine the condition of in-service equipment in order to predict when maintenance should be performed. This approach offers cost savings

over routine or time-based preventive maintenance, because tasks are performed only whenwarranted.

The main value of Predicted Maintenance is to allow convenient scheduling of corrective maintenance, and to prevent unexpected equipment failures. The key is "the right information in the right time". By knowing which equipment needs maintenance, maintenance work can be better planned (spare parts, people etc.) and what would have been "unplanned stops" are transformed to shorter and fewer "planned stops", thus increasing plant availability. Other advantages include increased equipment lifetime, increased plant safety, fewer accidents with negative impact on environment, and optimized spare parts handling.

The vendor needs to conduct predictive maintenance for critical equipment like all Transformers and other single line equipment based on the data available from oil BDV tests, thermo-graphic study, vibration analysis, LLF observations and any other tools if required. Predictive maintenance should also be carried out for Batteries, Battery charger andUPS.

3. **Breakdown/Repair Maintenance** – In case of stopping of any equipment either due to problem in associated electrical equipment or due to any electrical interlocking, Contractor has to trace the fault & attend/ repair/ replace the faulty component in minimum possible time. In order to minimize MTTR (Mean time to Repair) Contractor's staff & technicians has to have very good experience in the maintenance of similar nature of each type of mentioned equipment & understanding of the electrical drawings. Contractor also needs to have technologically advanced required tools & tackles to minimize the MTTR. The Contractor has to record complete failure analysis with all jobs done in daily logbook. All tools, tackles, testing & measuring instrument, consumables (list given below) required to execute above jobs shall be procured & maintain by Contractor. All spares shall be provided by Owner. In an event of the equipment could not be serviced by site team or the problem not identified within 24 hrs. , OEM/external agency has to be called and has to report within 2 to 3 days for resolving the problem and the expenses incurred towards this will be borne by the contractor. In case of major repair or dismantling of equipment PO shall be directly released to external agency byVL.

ROOT CAUSE FAILURE ANALYSIS

The contractor will report each failure through a breakdown format (AO format) along with Daily maintenance report.Major breakdown (as recommended by HOD of VL) will be terminated with a full and final RCFA report done by the contractor within 5 days for performance evaluation.

The contractor will prepare & submit SMPs for various maintenance activities carried out in VL refineryto VL representative for approval and maintain the same during the contract period.

Shift Maintenance – The Contractor has to depute adequate skilled manpower in each A, B & C shift to fulfill plant requirement.

a. Breakdown jobs- Immediate attention is to be paid for the breakdown defects, problems

for all Lighting, control & Power circuits and to be rectified in minimum possibletime.

b. Energy meters readings of Transformers & majormotors.

c. Isolation & restoration of feeders as per demand ofoperation.

d. Taking current reading of critical motors (list to be provided by M/s VL) and maintain a log sheet for loadanalysis.

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6. **Lighting Maintenance**- Lighting maintenance of office buildings, Plant street, area lighting, The Contractor shall provide electrical connection to hand lamps, distribution boards at job site/inside tanks/welding machines connections wherever required by any workingagency.

7. **Shutdown/Planned Maintenance** – During planned shutdown of any unit or equipment, Contractor needs to mobilize all required resources to execute jobs in given time frame. In case of major shutdown jobs contractor shall arrange extra manpower if required to complete the job within stipulated time. M/s VL shall intimate shutdown date and job details 1 day inadvance

8. **Housekeeping of Substations & peripheral area –** Housekeeping is the most vital part of maintenance activity. The contractor will maintain all substations & 5 mtr peripheral area around the substations, panels, transformer body, yards & electrical job site. All electrical scraps generated from site during maintenance will be shifted and dumped in designated area by the contractor's crew. The Quality of housekeeping will be taken into consideration to evaluate the performance. The minimum requirement for all substations and its periphery and work shop area including store and relay testing laboratory shall be maintained as 5Sconcept.

9. Preparation and submission of daily report mentioning outages and breakdown maintenance attended accidents and failure reporting, energy consumption etc. Further Contractor has to submit reports on monthly basis containing details of Preventive Maintenance, Inventory Consumption, Plant Availability/Down Time, Failure Analysis, Consumable availability and energy consumptionetc.

10. The Contractor has to obtain all statutory approvals & clearances, conducting periodical inspection & complying to the inspection report from the office of electrical inspectorate & any other statutory bodies. Financial transaction shall be conducted directly by VL with respectiveauthority.

11. The Contractor should take care of the safety for Men and Machinery. For that the Contractor should arrange the required earth/ discharge rods, hand gloves, fuse Pullers, Torch light and insulated tools etc. The Contractor will ensure the supply and usage of all the safety and personnel protective equipment (PPE's) prescribed under the factory act and rules/ Contractor's safety manual/Owner's Safety manual, for the specific job for which they are engaged. Violation of the standard safety norms/guide lines will lead a penalty as decided by theowner.

12. Small additions/ deletions/ modification works involved in the cable route, cable tray, panel cutouts, lighting fixtures, relocating LCS, Welding sockets etc. should be carried out by

Contractor as and when required without claiming any additionalcharge.

13. Ensuring Quality workmanship for the Maintenance work carried out inplant.

14. The Contractor shall prepare and submit to the Owner: (i) two sets of a preliminary draft of the maintenance Manuals for review and comment by the Owner after one month of award of Contract (ii) two sets of a final draft of the Manuals for review and approval by the Owner after fifteen days of providing comments on preliminary draft, and (iii) six complete sets of the final maintenance Manuals for reference and record by the Owner not later than seven days after the clearance on the final draft of manual. All the above shall be submitted in soft copy as well hardcopy.

The maintenance manuals shall be based on the Manufacturer's Manuals of individual instruments, standard maintenance practices in the industry, various Indian and international standards, other procedures with respect to the operation of the Plant.

15. Training & awareness program, Competency mapping for employees:

The contractor has to arrange on job / class room/ off job training & awareness program for its own employees on regular basis to enhance their technical knowledge about preventive/ breakdown/ shutdown maintenance activities of various equipment installed in the plant. At least 3 nos. of such programs has to be arranged in each quarter of a financial year to increase the competency of employees. The contractor will do competency mapping of its employees on quarterly basis and job allocation will be done accordingly as agreed by owner.

ACTIVITIES TO BE CARRIED OUT BY CONTRACTOR

TRANSFORMERS

a) Routine, scheduled, preventive and Breakdown maintenance ofDistribution transformers.
b) Cleaning, Checking, repair and replacement of gaskets/ oil seals/ fasteners/ bushings/ OFFLTC/ oil level in conservator and bushings/ silica gel and breather/ temperature controller/ pressure relief diaphragm.
c) Testing of control & power circuits/ oil filtration/ BDV, Moisture, acidity testing of oil/ DGA analysis (on yearly basis)/ insulation resistance / interlocks/ trip and closing contacts/ ventilationsystem.
d) Tightness of control and power connections/ earth pits and connections/ safetyrequirements.
e) Checking & maintain the earth pits/ NGR/ Temperature measurements/ resistance of earth pits/ filtration of oil/ replacement of oil/ top up of oil. Transformer oil shall be provided byVL.
f) Arresting oilleakages.
g) Removing/ Replacement/ Transportation/ Alignment/ Earth connections etc. will be in O&M Contractor's scope. Paint touch up job shall be undertaken by contractor as a part of transformer PM.Total painting jobs shall be billed to VL as per agreed unitrate.
h) Faultfindingand rectification of thetransformershallberestrictedtominorrepairof the Transformer at installedlocation.

MOTORS

Preventive, Predictive and Breakdown maintenance of motors.

a) Checking of insulation value & Tightness of power cableterminations.
b) Disconnection & connection of power & controlcables.
c) Greasing of motor bearing as per schedule & needbased.
d) Cleaning of motor body & coolingtubes.
e) Checking/ Repairing/ jointing/ re-lugging of overheated power cables inside/ near to terminalbox.
f) Checking & tightness of Heater and auxiliaryconnections.
g) Half yearly thermography of all critical LT panels subject to availabilityofinspection windows. All VCBs and ACBs contact resistance and release shall be tested once in a year.

MCC PANELS, LOCAL CONTROL PANELS, LOCAL PUSH BUTTON, LIGHTING PANELS, AUXILIARY SWITCHBOARDS and JBs,

Preventive, scheduled, and breakdown maintenance of all panels.

a) Overhauling of all ACBs installed in refinery electrical system has to be carried out by the contractor. OEM representatives has to be called for the same or internal crew may be trained by OEM experts for successful overhauling of ACBs. The cost for overhauling the ACBs will be borne by thecontractor.
b) De-dusting, Cleaning, checking, repair and replacement of control and power bus bars/fuses/ indication lights/ fixed and moving contacts/ arcing chutes/ control and power circuits/ insulation values of switch gear and bus/operation (close and open) of Circuit breaker, MCCB and Contactor related interlocks/ tightness of power and controlcircuits.
c) Measuring load current & maintain transducers/ ammeters/ energy meters/ relays/ CT/ PT/ control transformer/ earthingconnections.
d) Lubrication of moving parts of breaker &panels.
e) Checking tightness of power & control cable connections. Disconnection & connection of cables. Re- routing of Power and control cables as and when any modification, safety, maintenance requirement jobs are beingdone.
f) Fault finding & rectification of faults in Switchgear panels. Understanding control circuits & various electrical & processinterlocking.
g) Painting of outdoor JBs on need basis.

PROTECTION SYSTEM

a) Cleaning, checking of all the bi-metal & numeric relays
b) Check the tightness of control circuits/ auxiliary supply/ signal and protectiverelays.
c) Testing and calibration of protective relays/ trip circuits/ coordination settings/ earthing.

VFD PANELS, UPS, AND BATTERY CHARGER

a) Preventive & breakdown maintenance of VFD panels, Battery charger& UPS.
b) De-dusting, Cleaning, checking ofpanels.
c) Checking/ replacing electronic cards, IGBT, Thyristors, and Capacitors.
d) Checking tightness of control & power circuits, Insulation values/ fuses of control and power circuits/ voltmeters/ammeters.
e) Testing of control system of UPS, float and float cum boostchargers.
f) Fault finding & rectification of faults. Understanding controlcircuits.
g) Minor repairing/ soldering/ de-soldering of electroniccards.

BATTERY BANK

a) Cleaning, checking of individual battery leads terminations and ensurestightness.
b) Testing with health monitoring kit quarterly, deep discharge test once in a year. The appropriate tool will be supplied by M/s VL and will be maintained by thecontractor.
c) Measure individual battery voltages and record the same.

STREET/PLANT/OFFICE LIGHTING, PLANT EARTHING AND EXHAUST FANS

a) Replacement of fused bulbs, chokes, ballasts, starters of entire lightingsystem.
b) Cleaning and checking of fixtures/ tightness of control circuits/ photo lighting system/ high mast/ semi mast/ sockets, MLDB/ SLDB.
c) Testing of ELCB and other portable equipment's regularly. Repair and replacement of Exhaust fans.
d) Tools and instruments test certificate to be maintained by the contractor as per electrical standard practices Connection of damaged earth strips where ever damaged/missing.

CABLE AND CABLE TRAYS

a) Cable connection/ disconnection as & whenneeded.
b) Repairing/ jointing/ re-lugging/ termination of cables including excavation and backfilling if required.
c) Tracing of fault using latest equipment like fault locater. The Jointing kit/Termination kit will be provided by the owner.

EARTH PITS

a) Checking earth resistance of individual earth pits twice a year in dry soil condition and maintain a record.
b) Conditioning of earth pits to maintain the lowresistance.
c) Maintenance of earth pits (terminal cleaning, soil/ chemical treatment of the pitetc.

OVERHAULING & REWINDING OF HT, LT MOTORS

All HT and LT motors overhauling and rewinding are in M/s VL scope. **However small winding jobsof less than INR 2000 per motor shall be carried out by the contactor without any extra claim.**

SCOPE FOR IMPROVEMENT/ MODIFICATION

Contractor will insist it's employees to take initiatives for any improvements / modifications to existing system for increasing in productivity, equipment reliability, safety of

personals,reduction of revenue cost etc. The owner may implement some scheme for bonus/ incentives for each such efforts mentioned above for individual or group asapplicable.
Contactor should report near misses and highlight the Kaizens, SGAs which are being identified in area every month.

SPARESPARTS

TheOwnershallprocurethe sparesof allelectricalequipmentasperOEMrecommendation.

CONSUMABLES

The Contractor shall be responsible for procurement, storage and safekeeping of regular consumables items.

List of Testing, Measuring Instrument, tools &Tackels

S.No	Description	Qty
1	500/1000v Insulation tester	1
2	True RMS Multimeter	1
3	3 1/2 digit Digital multimeter	1
4	Tong tester	1
6	Earth Tester	1
7	Motor Checker	2
8	Micro ohm meter	1
10	Infrared thermometer	1
11	Tachometer	1
12	Vibration meter	1
13	SPM Meter	1
14	Hydraulic Crimping tool	1
15	Mechanical crimping tool	2
18	Electrician toolbox consist of tools & tackles	5
19	Fitter toolbox	3
20	Electrical drilling m/c 12mm,25mm	2
21	Hot air blower	2
22	Air blower	2
23	Welding Generator	1
24	Bearing puller	2
25	Lux meter	1
26	Fuse puller	2
27	Vacuum cleaner	3
28	Extension board, test board, torch lights	10
29	Vernier Calipers inside & outside	1
30	Self-supporting & adjustable ladder for lighting maint.	2
32	Soldering & De soldering iron station	2
33	Hydraulic jacks/screw jacks up to 5ton	1
34	Grease gun	2

35	Battery load tester	1
36	Grounding rod	1
37	Hand tools set	2
38	Phase sequence meter	5
39	Feeler gauge	2
Note-	**Above is the tentative list only. Contractor has to keep all other tools & tackles as per the requirement**	

Equipment details:

1. List ofPanels

Sl. No.	**SS/SWR**	**6.6 KV Switch gear panels (VCB-Alstom/Siemens)**	**415 V Switchboard (PCC/MCC -L&T)**	**415v DB (L&T)**	**415 v VFD**
1	Wagon Tippler		2	3	6

2. Transformers

Sl. No.	**SS/SWR**	**6.6/415 V (Voltamp/ Kirloskar)**
1	Wagon Tippler	2*1MVA

3. Motors: HTMotors - 00Nos LTMotors - **32**

Along with other major equipment mentioned above maintenance of approximately 100 lighting fixtures (Bajaj/ Philips), 2 Nos. High/ Semi Masts, Lighting/ Power panels, 1 Nos. 5/10KVA UPS, 03 Nos. numeric relays, 05 Nos. earth pits and 0.5 KM of plant-earthing system, and other electrical equipment has to be carried out by the Contractor.

The above list is a tentative list. The Contractor has to maintain all the equipment installed in Bauxite Wagon Tippler area. Further any minor addition of electrical equipment in future shall also be taken care by theContractor.

MAINTENANCE CONTRACTOR'S STAFF

1. The following guidelines shall be followed for recruiting right people for rightjob:

Site Manager: An engineering degree with minimum 10 years experience in plant maintenance out of which at least three years as an in-charge of electrical of a large size process plant. He also must possess valid HT license approved from the statutory authority of Orissa.

Supervisor: All the supervisors should have valid license approved from the statutory authority with 5-10 yrs of experience in electrical & power electronic equipment maintenance of a large size plant.

Technician: Technical qualification in electrical/ electronic trade having either 'A', 'B' or 'C' license & at least 3 years hands on experience in maintenance of a process plant. At least one certified cable jointer and one skilled technician in electronics area should be part of the site team.

Preference shall be given to recruit people from the local area. The Contractor shall give equal opportunity for employment from all section of society irrespective of domicile, caste, religion or gender.

The Contractor shall ensure the best compensation package and human resources management for their employees to retain talented people for longer period.

1 The personnel provided by the Contractor in the performance of the Services shall be employees of the Contractor, of its Affiliates, or of qualified sub-contractors (approved by Owner)**.** Owner representative may involve in the recruitment process of Contractor's staff/technicians on mutualagreement.

All personnel engaged in the performance of the Services shall be qualified to perform and experienced in the maintenance of electrical & power electronic equipment described in this document and shall meet the requirements under the Maintenance Manuals and in accordance with Utility Good Practices. The working hours, rates of compensation and all other matters relating to the employment of personnel performing the services shall be consistent with the relevant labour agreements entered into by the Contractor with respect to suchemployees.

The Contractor shall be solely responsible for the employment policies in consistent with any labour agreement entered into by the Contractor and conform to Labour Laws in force.

Owner reserves the right to reject any staff of Maintenance Contractor, based on the performance, character or behavior of the staff.

The Contractor shall find means and ways to motivate its employees and implement the same in consent with the owner to increase the efficiency.

2 Contractor shall demonstrate to Owner that the personnel provided under the Maintenance Contract is properly trained, competent to perform the work in charge, and is cognizant of site environmental, health and safetyprocedures.

3 Contractor has to identify & arrange on site& classroom training to the staff & technicians to carry out any repairing, PM & breakdown jobs of all equipment mentioned in thisdocument.

4 The Contractor shall ensure experienced technical support during the period of the Contract in order to be able to face to any situation within its scope ofactivities.

The Contractor shall stipulate the level of technical support required during the period of the Contract and describe how this technical support will be provided.

Mechanical Maintenance of BWTS

Mechanical Maintenance contractor to carry out all maintenance activities for the complete BWTS which include preventive maintenance, condition monitoring based-predictive maintenance, proactive maintenance, daily maintenance, shift maintenance, emergency break down maintenance and planned shutdown maintenance, inspection of all relevant items by Statutory Authorities, housekeeping, record keeping of all activities through CMMS etc.

The contractor shall be fully conversant with the all maintenance techniques, activities and shall be conversant with computerized maintenance management systems.

The Contractor shall carry out all Mechanical maintenance work in the entire **bauxite Wagon tippling system**. The work includes all preventive / scheduled maintenance Shut down / turns around maintenance, statutory maintenance, breakdown & corrective maintenance, Shift maintenance. The Contractor must have adequate manpower, mobile equipment, consumables, tools/tackles, scaffolding kits and PPE to complete all the above jobs safely in the specified time.

a) PREVENTIVEMAINTENANCE:

Different teams for different areas shall be formed to carry out routine maintenance as per the preventive maintenance schedule. The annual preventive maintenance plan shall be submitted by Owner at the beginning of each year. However, maintenance schedule shall be prepared on monthly basis by the Contractor in consultation with the Owner's engineer-in-charge and shall be fed into SAP. A daily work schedule shall be finalized by the Owner's engineer-in-charge based on both PM schedule and work orders generated by production department. The Contractor shall do co-ordination with Owner's maintenance and operation team for taking work permit and isolation of equipment, if required, from the mechanical systems. The Contractor shall always follow the isolation and permit system.

b) BREAKDOWN / CORRECTIVEMAINTENANCE:

A dedicated taskforce shall be engaged by the Contractor to attend any problem as per work order raised by operation department and/or condition monitoring group. It is necessary on the part of the Contractor to close the work order on the same day it is generated unless agreed by Owner's engineer. The Owner's engineer depending on their priority may define the sequence of attending the problems. Removal of electrical or instrumentation equipment such as motors, valves etc. shifting to and from central work shop and re installing shall be the responsibility of the mechanical maintenance contractor. However, the over

hauling of all types of motors, valves and pumps in central workshop is not in scope of maintenance Contractor.

The contractor shall actively participate in RCFA resulting from failure of any equipment for which he has maintenance responsibility. Owner's area engineer will be responsible to ensure that RCFA is conducted for all failures in his respective area and will ensure that recommended action items are implemented by contractor. RCFA report shall be recorded in SAP.
Work order raised by condition monitoring group shall form part of a backlog from which jobs are to be scheduled on a priority basis, based on criticality and impact on plant performance. Area engineer shall be notified as soon as each job is completed. CM group shall be required to perform verification checks as soon as possible after completion, after which work order isclosed.

c) SHIFT MAINTENANCE:

Maintenance Contractor shall also be responsible for attending all mechanical equipment problems in shifts. For this, a team comprising of engineers, vulcanisers, fitters, welders, millwrights, helpers, riggers shall be on duty in each shift (8 hours) or as per the mutually agreed shift schedule by rotation for seven days a week. All problems and exigency job must be rectified in the respective shift. Any major problem may be referred to general shift only after consultation with Owner's area engineer. In case of exigency/emergency on shifts, the Contractor shall consult with area engineer and arrange additional manpower if so required. A log book shall be maintained by the shift supervisors to record each problem reported, by time of notification, nature of job performed, time of completion, plant down time (if any) and a note to general shift if any work ispending.

d) MAJOR SHUT DOWNMAINTENANCE:

Shutdown maintenance jobs such as turnarounds involving major overhauling, cleaning, equipment replacement and necessary rectifications shall be carried out by the Contractor. Each shutdown has a finite duration and all scheduled tasks should be completed within the duration of plant shut-down.

The Contractor shall be informed prior to shutdown, to arrange for additional manpower and special tools/tackles to be engaged during shut-down period. The shutdown jobs shall be completed within stipulated timeframe.

e) STATUTORY MAINTENANCE ANDAPPROVAL:

Contractor shall plan all the statutory maintenance in consultation with the Owner's engineer In charge. All statutory obligations like pressure vessel testing, lifting equipment testing, tools testing, measurement instruments calibration, elevators testing etc. by Competent person as per the Orissa Factories Act for Owner's as well as Contractor's equipment shall be carried out/arranged by the Contractor. Approvals by different statutory authorities like factory inspector annual inspection shall be arranged & complied by the Contractor during the Contract Period. Fees deposited against the Owner's equipment shall be reimbursed to Contractor at cost on submission of actualchallan.

f) PIPING NETWORKMAINTENANCE

The total plant piping network having different sizes of pipe lines for transportation of different process fluids such as bauxite slurry, spent liquor, mother liquor, water, air, lime, F.O, flocculent etc. The Contractor shall complete the piping maintenance from time to time as per instructionsof

Owner's engineer in charge.

g) OEM Services and extra minorjob

Maintenance contractor shall be responsible for extra minor job and OEM Service visit. The detail is as follows,

1. NDT, Radiography & stress relieving test as per plant requirement after any major welding over applicable equipment like Wagon Tippleretc.
2. Statutory compliance requirement as per plant requirement on call basis as per due date & testing schedule. (On chargeable basis. Payment shall be made on production of proof of expenses.)
3. Any equipment which Contractor is not in a position to rectify must be carried out with thehelp of OEMs engineers/expert servicemen from India at theircost.

REPAIRING TO BE CARRIED OUTSIDE

All Major repair work including balancing, machining, fabrication, repairing of all mechanical equipment and spares, which cannot be completed inside the plant with available infrastructure and within the required time and with required quality shall be at OEM Works or any authorized shop after consulting with VL engineers. Transportation, correspondence with vendor & other required formalities to affect repair to this equipment shall be under contractor scope. All expenditure incurred shall be payable as per mutually agreed prices on receipt of necessary supporting documents & actual bills

EQUIPMENT LIST

The scope covers all the equipment (Stationary and rotary), all the structures, and the entire pipeline in the **Bauxite Wagon Tippling System.**

Sl No	Name Of The Equipment	Quantity
1	Wagon Tippler	1
2	Tractor	1
3	Pusher	1
4	Traverse Table	1
5	Apron Feeder	2
6	Belt Conveyor- WNC1	1
7	Belt Conveyor- WNC2	1
8	Belt Conveyor- WNC3 (Tipper Conveyor)	1
9	Transfer Tower- NTT1	1
10	Transfer Tower- NTT2	1
11	Wagon Tippler Discharge Hopper	1
12	Ventilation System	1

13	De-watering pumps	3
14	DSS	1

MAINTENANCE MANUAL

The contractor shall prepare and submit to the Owner: (i) two sets of a preliminarydraft ofthemaintenance Manuals for review and comment by the Owner after one month ofawardof contract(ii) twosetsofafinaldraftoftheManualsforreviewandapprovalbytheOwnerafterfifteen daysof providing commentsonpreliminarydraft,and(iii)sixcompletesetsofthefinalmaintenance ManualsforreviewandrecordbytheOwnernotlaterthansevendaysaftertheclearance onthefinal draftofmanual.Alltheaboveshallbesubmittedinsoftcopyaswell.Theforegoingreviewand approvalprocedureshallapplyequallytoeachrevisionofthemanuals submitted to the owneruntilthe maintenance manuals submitted by the contractor arecomplete, accurate and to the satisfaction of the owner.

The maintenance manuals shall be based on the Manufacturers' Manuals of individual equipment and mechanical systems, standard and best maintenance practices in the industry, various Indian and international standards, other procedures with respect to the operation of thePlant

Prepare checklist for job and get it rectified through

owner'sengineer. MAINTENANCE SCHEDULE ANDREPORT

1. Preparation & periodic review of PMschedule.

2. Records of equipment inspection as per good engineering practices, records of maintenance and repairs carriedout.

3. Periodic maintenance reports on daily, weekly, monthly and yearly basis. Report on stock ofspares and consumables under Contractor's custody. The Contractor shall prepare the safety stock & reordering levels of all tools & tackles, consumables & shelf life items in consultation with Owner's engineer in charge & maintained accordingly. Review of the safety stock shall be done depending upon the consumption from time totime.

4. The contractor shall maintain the statutory maintenance schedule as per the factory safety act 1947 and shall submit the monthly report on statutory compliancereport.

5. The Contractor shall maintain the complete material receipt record and shall submit the reconciliation statement on monthly basis. The Contractor shall submit a separatereconciliation

Report on monthly basis for lubricants, paints, SS welding electrodes and steel or any other itemon mutually agreedbasis.

6. The Contractor shall submit computerized attendance report of the complete manpower on daily as

well as monthlybasis.

7. The Contractor shall submit the monthly consumables stock & consumption during the month along with the safety stock under contractor's custody. If any job is delayed or likely to be delayed because of non-availability of tools & tackles and consumables, the same may be arranged by the owner at the cost & risk ofcontractor.

SAFETY AND HOUSE KEEPING

Safety rules that apply to employees of Owner shall be applicable to contractor.
Contractor shall have a site safety officer that has overall responsibility for coordinating contractor safety activities including auditing and reporting and for interfacing with Owner's HSE department.

1. Contractor shall maintain an inventory of approved PPE and supply each of his employees with PPE as required and shall ensure that such PPE are used in accordance withOwner's HSE guidelines
2. Routinely conduct safety meetings and submit monthly MOM to Owner'srepresentative.
3. Participate in hazard control program by identifying, correcting and eliminating hazards inwork place.
4. Ensure that employees receive safety training; can demonstrate and habitually practicesafety in activities in which they areengaged
5. Use approved fall protection device when working at elevation in excess of two (2) meters aboveground
6. Promote an injury free work place by including safety activity in daily assignment
7. Report and investigate all incidents and accidents involving contractoremployees
8. Inspect and test and record test results of all lifting devices (cranes, slings, chain falls, etc)per statutory requirements.
9. Routinely perform housekeeping activities and ensure that work sites and work areas are maintained to good industrystandards.

In case of the violation of the standard guidelines on safety, Owner can impose Penalty and /or Owner can take disciplinary action against the concerned.

The contractor shall ensure good housekeeping of the area under its control. In case poorhouse keeping is Noticed by the Owner, Owner can engage their own agency for housekeeping at the cost of the Contractor/impose penalty on contractors.

The Contractor shall submit the house keeping report on the equipment cleaning and site clearance on

monthly basis. The Contractor shall follow the best safety practices. The Contractor shall follow

the Owner's procedures and PPE and the Contractor's safety policy and HSE.

The maintenance contractor will ensure the supply and usage of all the safety and personnel protective Equipment (PPE) prescribed under the factory act and rules/Owners Safety manual, for the specific job for
Which they are engaged. In case of the violation of the standard guidelines on safety, Owner can impose Penalty and /or Owner can take disciplinary action against the concerned.

The contractor shall ensure good housekeeping of the area under its control. In case poorhouse keeping is noticed by the Owner, Owner can engage their own agency for housekeeping at the cost of the Contractor/impose penalty on contractors.

The Contractor shall submit the house keeping report on the equipment cleaning and site clearance on monthly basis. The Contractor shall follow the best safety practices. The Contractor shall follow the Owner's procedures and PPE and the Contractor's safety policy andHSE.

PEOPLE QUALIFICATIONS AND MINIMUM COMMITTED MANPOWERSTRUCTURE

The minimum qualifications for technical manpower are mentioned below:

1.	Site Manager	:	An engineering degree in mechanical with minimum 15 years' experience / 20 yrs experience (with diploma in mechanical) in large material handling plant operation & maintenance with minimum 5 years Managerial experience.
2.	Senior/Planning Engineer	:	An engineering degree with minimum 8years' experience in maintenance planning of large material Handling plant.
		:	
4.	Area engineer/ Supervisor	:	Diploma with minimum 8 years' experience or degree with minimum 5 years' experience in maintenance of A large size plant.

5.	Mill Wright	:	Fitter with fitting qualifications and with eight years' experience in erection, overhauling & alignment of various rotating equipment in largematerial handling plant
6.	Fitter	:	ITI with mechanical trade with at least 5 years hands on experience of similar job.
7.	Welders	:	Welders with minimum 5 years' experience of UT quality in all the positions up to 6G.
08.	Conveyor belt jointers	:	Conveyor belt jointers shall have minimum 5 years' experience in conveyor belts jointing, repairing, rubber lagging.
09.	Riggers	:	Riggers shall have minimum 5 years' experience in erection of large equipment, structural erection, replacement of high capacity equipment in large process plants

- As far as possible, the preference shall be given to recruit qualified persons from the local area. The Contractor shall give equal opportunity for employment from all section of society irrespective of domicile, caste, religion orgender.

- Whenever Contractor's responsible staff is scheduled to take long leave, the Contractor shall arrange for his/her replacement to be at site to ensure smooth transition before the existing person proceeds for leave. Leave shall be scheduled so that day to day activities are not negativelyimpacted.
- Holidays for Contractor's employees shall be as per Owner's holidaylist.
- The Owner shall approve the Contractor's staff to be posted at site including any supervisory personnel after reviewing their resume and subsequent interview by theOwner.

- The Contractor shall ensure the best compensation package and human resources management for their employees. The Contractor must have a transparent and effective performance appraisal policy to retain talented people for longerperiod.
- The Contactor shall be responsible for the acts and omissions of all its employees acting within the scope and conduct of their respective duties at the Owner'ssite.

- All personnel engaged in the performance of the services shall be qualified to perform and experienced in the duties to which they are assigned. The entire Contractor's staff shall be given proper training in respective areas and the cost of such training shall be born by the Contractor. However, the Contractor's staff can receive on-site training from different suppliers during commissioning of the plant. Co-ordination with the vendor for such training shall be of Contractor'sresponsibility.
- The working hours, rates of compensation and all other matters relating to the employment of personnel performing the services shall be consistent with the relevant labour laws with respect to suchemployees.

- The Contractor shall observe directives relating to minimum age for employment, acceptable conditions of work with respect to minimum wages, hours of work, and occupational health and safety and all other StatutoryNorms.
- Owner reserves the right to reject any staff of the Contractor, based on the performance, character or behavior of thestaff.

- The Contractor shall identify the technical skills required for maintenance of the plant and accordingly shall made & submit the skill matrix of the employees. The contractor shall mobilize the multi-skill manpower as much aspossible.

- The Contractor shall identify the core skills requirement for the maintenance of critical equipment like Wagon Tippler, Traverse table, conveyorsetc.

- The Contractor shall ensure their experienced engineers to be available at site or call the experts from various suppliers as may be required time to time to rectify the problems within fixed time period. All the costs (boarding, lodging, transportation, local conveyance, per diem charges etc.) involved shall be borne

by theContractor.

- The Contractor must engage trained and experienced manpower only, to carry out all the maintenance works as specified in the document. Any damage caused to Equipment/Spares or loss of production due to wrong handling by Contractor's person shall be back charged to the Contractor from the monthlybills.

- The Contractor shall carry out the repair and maintenance work as per approved written maintenance manual. In case it is required to adopt other methods to rectify the problems the same shall be done after consultation with respective manufacturer and prior intimation to Owner's engineerIn charge.
- The Contractor shall co-ordinate and work as a team with all other agencies deployed by the Owner for various purposes for fast rectification of problems and smooth operation ofplant.

- The Contractor to submit required Nos. of passport size photographs and detailed particulars in prescribed form for each employee before their engagement atsite.

- The Contractor shall not dispose of any document, material or asset received from the Owner to any third party without written consent from Owner. The Contractor shall refrain from exchanging any information related to process technology, equipment details, operation and maintenance practices and other plant /production relateddata.

- The Contractor shall not take any action that would invalidate any equipment warranty givenby the LSTK contractors, or release the LSTK contractors from their obligations under the contracts the Owner had withthem.

MATERIAL, TOOLS AND CONSUMABLES

- All the general, special tools & tackles required for carrying out the scope of work under AMC(as per annexure II) except lifting equipment for Pumps shall be in the scope ofParty.
- All protective & safety equipment for the men and machines required for carrying out the scope of work under AMC shall be provided by Party. Party shall follow and maintain safety practices as per international benchmark. Party shall update safety requirements from time to time as per the guidelines specified by VL safetydepartment.
- Consumables e.g. waste cotton; MS electrodes, oxygen & acetylene gas cylinders, MS, HT, SS fasteners, grease nipples shall be provided byParty.
- All special tools & tackles viz bearing heaters, bearing pullers, bearing mounting & dismounting tools required for overhauling of pumps shall be in the scope ofParty.
- Material & spares (except pumps and parts of pumps which need handling equipment) transportation from the stores, and return of the old used spares in

stores, shall be in Party's scope.

TOOLS AND TACKLES

The Measuring instruments like various Vernier calipers, micrometers(inside & outside), depth gauges, thickness measurement instruments, inside and outside calipers, dial indicator gauges, pitch gauges, feeler gauges, brazing soldering equipment, hand operated, bench mounted machines like various grinding m/c, drill m/c, ferruling m/c, tube cutter, tube bender, all types of tools/tackles like spanners, pipe ranges, screw drivers, hexagonal wrenches , pneumatic tools, crimper, stripper, hydraulic tool set, welding machines, gas cutting sets, plasma cutting machines, plate cutters, chain pulley blocks, torque wrenches, bearing puller, hydraulic jack & screw jack up to 50 T, required to carry out all maintenance works shall be supplied by the Contractor. The indicative list is as attached below.

S.No	Tools & Tackles
1	All tools like spanners, Pipe wrenches, Screwdrivers, Hexagonal wrenches , Pneumatic tools, Hydraulic tool set , Special tools etc.
2	Welding machines
3	Gas cutting sets
4	Ferruling m/c
5	Measuring instruments like various vernier calipers, micrometers, dial indicator gauges, pitch gauges, feeler gauges
6	Pneumatic & Hydraulic tools
7	Bearing mounting & dismounting tools
8	Grinding machine
9	Drilling machine
10	Brazing soldering equipment
11	Dies & Tap set of metric (Fine & coarse series),BSW, BSF & BSP standards etc. (Size : M30 or equivalent inch series & up to 3" pipe for pipe threads .
12	Sling and lifting belts (assorted) 'D' Shackles (assorted)
13	Tachometer
14	1 ton chain block -2 nos
15	2 ton chain block -2 nos
16	3 ton chain block – 2 nos
17	5 ton chain block – 2 nos
18	50 ton jack normal/ pedestal- 2 nos
19	16mmrope- 100mtrs

20	Sheave pulley 5 ton- 2nos
21	Mach puller2 ton- 1nos
22	
Note:	Above is the tentative list only. Contractor has to keep all other tools & tackles as per the job requirement.

CONSUMABLES

Consumables such as washers, screws, all sizes & types of bolt and nuts (except SS nuts & bolts), ferrules, fuses, small screw, bolts, lugs, cable tie etc. will be in the Contractor's scope and should be replaced as and when required. Supply of all consumables including all type of welding electrodes (except SS electrodes), belt vulcanization compounds, Teflon tape, PVC tape, rust removers, sealant, adhesives, Loctite, diesel, oil, grease, cotton wool, soap solutions etc. shall be under Contractor's scope. Provision of Rs 50000/- per month will be kept for consumable other than the normal consumable. The indicative Consumables are as attached below: The Contractor shall be responsible for the storage and safe keeping of equipment, spares and replacement of any used spares.

Sl. No.	Consumables
1	All type of general purpose welding electrodes
2	Hot & Cold vulcanizing kits for belt jointing
3	Grinding wheels
4	Ana bond
5	Araldite
6	Cleaning cloth
7	Battery (pencil)
8	Battery torch cell
9	Cleaning brush
10	Cotton tape roll
11	Cotton waste
12	Emery tape
13	Petrol, diesel
14	DA gas, oxygen gas, nitrogen gas
15	Drill bits
16	Emery sheet (coarse and fine)
17	Welder tools
18	Fevicol, feviquick
19	Petroleum jelly

21	Marking cloth
22	Gasket (rubber)
23	Gasket oil sheets
24	Gland rope
25	Hacksaw blades (all types)
26	All types of soldering rods
27	Emery rolls
28	Hose clamps
29	Kerosene
30	Lead wire
31	Loctite (flange sealant, thread sealant, bearing retainer)
32	M seal
33	M.S. & HT fasteners like different sizes & shape of stand. Bolts, Nuts & Washers.
34	Different size neoprene rubber cord depending on requirement.
35	Hydraulic Fittings, O-rings, doughty seal, all types of clamps.

CONTRACTOR'S COMMITMENT

In furtherance of the obligations and responsibilities of the contractor as specified in the respective Clauses the contractor shall perform the following Services at different phases of the contract.

COMMITMENT DURING THE COMMISSIONING PERIOD

- Co-operate with LSTK contractors as reasonably necessary during and after commissioningof each area of the plant for smooth and trouble free startup.
- Review and provide written comments on the preparation and submission of as-built drawings by the LSTKcontractors.
- Assist the Owner by providing required technical manpower for the trial run andcommissioning of different sections of theplant.
- Consolidate data for all equipment and furnish the same to Owner to implementcomputerized maintenance management system (SAP R3) including details of spare parts, monitoring, control and management for spare partsinventory.
- Checking completeness of documents handed over by the LSTK contractors and pointedout to the owner about theshortfall.

COMMITMENT DURING THE OPERATION OF PLANT

- Perform, monitor and manage daily and preventative maintenance, periodic scheduled inspections,andscheduledplannedmaintenance,majormaintenancerepairs,andoverhauls for all the plant equipment as per the approved Maintenance Plan and perform unplanned repairs and maintenance during emergency plant/equipment shut down.
- Ensure the safety of all of the Contractor's staff including development and observance of an appropriate safety program.
- Maintain plant equipment and mechanical Systems of the plant so as to achieve zero down time of the plant, including taking all reasonable corrective actions approved by the Owner to achieve the same.
- Notify the Owner immediately after discovery of any abnormal operating condition of any unit or adverse characteristic of any equipment and take prompt action in an effort to prevent any damage to the process, persons orproperty.
- Prepare and submit to the Owner maintenance manuals, Annual Maintenance Plans, monthly preventive maintenance schedule, and implement procedures for predictive and preventative maintenance so as to maximize equipment and plant reliability, efficiency andavailability.
- Adopt and use quality management systems and modern maintenance techniques such as TPM/TQM.
- Comply with all norms and practices and prepare necessary documentation to obtain within reasonable time the ISO 9001, ISO 14001 & ISO 18001 certificate for quality, environmental and safety accreditation respectively in all spheres of operation and maintenanceactivities.
- Establish and maintain good relations with personnel of the existing Facility and with the local community.
- Review the spare parts lists and prepare spare parts inventory recommendations and confirm that the spare parts inventory in the plant are sufficient to support all types of maintenance work.

- Preventive Maintenance (PM) shall be done as per SAP generated sheet along with daily checks of the equipment. The PM compliance shall be done as per the attachedSOP.
- Central Lubrication Team to be formed along with responsible engineer to implement all activities like greasing of bearings, oil top up, oil replacement, maintenance of Centralized Lubrication systemetc.
- Corrective maintenance shall be done as per daily check & PM of equipment on war footing basis before its lead to majorbreakdown.
- All Breakdowns shall be taken up on immediate basis to avoid unnecessary delay which affects theproduction.
- Maintenance of bauxite sampling room
- Minor modifications required for system as well as safety improvement atsite
- Maintenance of the hydro jet machine located at Tertiary CrusherHouse.
- Submission of Daily Maintenance Report on regularlybasis.

- Submission of Shutdown report on regularbasis.
- Submission of Lubrication Report on daily & summary report on fortnightlybasis.
- Submission of breakdown report including RCFA within 3 days of breakdown to besubmitted.
- Monthly Review Presentation to be done as per VL'sformat.
- Maintenance of high mast lights.
- Annual maintenance contract to be taken up with OEMs as required. However any foreign OEM required for same shall be provided byowner.
- Party to carry out third party statutory inspection for all the lifting tools, tackles, EOT crane, pressure vessels as per the factorynorms.
- All repair & modification required for smooth & hassle free operation shall be executed by party without any extra price fromowner.

Instrumentation Maintenance of BWTS

1. RESPONSIBILITY.

Contractor should be performance based and should be accessed through monthly score card and shall carry out all Instrument maintenance work in the entire **Bauxite Wagon Tippling System**. The work includes all preventive/scheduled maintenance; Shut down maintenance, breakdown/work order maintenance, Shift maintenance, OEM Service, Air conditioning Instruments. The agency should have adequate manpower, tools/tackles and consumable to complete all the above jobs safely in the specified time.

i. Preventive Maintenance: Different teams for different areas shall be formed to carry out routine maintenance as per the preventive maintenance schedule. Maintenance planning shall be provided by VL to Contractor at the beginning of each year. However, PM scheduling through SAP shall be done on monthly basis by VL's engineer-in-charge. A daily work schedule shall be finalized by the VL engineer-in-charge based on both PM schedule and notifications generated by production department. Co-ordination with operation for taking work permit and isolation of instruments from control loop shall be done by VLengineer.

ii. Breakdown maintenance: A dedicated taskforce shall be engaged by contractor to attend the problem as per notifications raised by operation dept. It is necessary on the part of contractor to close the notifications on the same day it is generated unless agreed by VL engineer. The sequence of attending the problems may be defined by the VL's engineer depending on their priority. If any instrument is required to be repaired or calibrated in Instrument shop, the same is to be done by contractor. Dismantling, shifting to and from shop and re-fixing of instrument shall be done by contractor. However, removal of in-line instruments like control valves, Flow elements etc. shall be done by contractor(mechanical).

iii. Shift Maintenance: Contractor shall also be responsible for attending Instrument

problems at shifts. For this, a team comprising of technicians and supervisors shall be in duty in each shift by rotation for seven days a week. All the reported problems must be rectified in the respective shift itself. Any major problem may be referred to general shift only after consultation with VL engineer responsible for that area. A log book shall be maintained by the shift supervisors to maintain the records like problems notified, reported by, time of notification, jobs carried out, time of completion, plant down time if any, note to general shift if any work ispending.

iv. Major shut down maintenance: All the shutdown maintenance jobs like major overhauling, cleaning, de-scaling, bench calibration and site modification jobs shall also be carried out by contractor during plant shut-down. Contractor shall be informed fifteen days in advance to arrange for additional manpower and special tools/tackles to be engaged during shut-down period. However, no extra payment shall be made for the persons who will be continuously posted at site as part of this contract, though they will be engaged for shut-downjobs.

v. Instrument Shop: Contractor shall run both electronic and pneumatic shop. Contractor shall be responsible for overhauling, repairing/reconditioning and calibrations of all types of field instruments installed in the refinery and make them ready for use (However, for component level repairing, the instrument shall be sent to manufacturer at owner's cost). Contractor has to ensure timely completion of jobs and the reliability of the equipment after repair. Hence Contractor's supervisor/technicians shall be thoroughly familiar with the latest models of various field instruments. Contractor has to provide necessary manpower, consumables, tools and tackles required for this purpose. However, the existing Lab facility shall be made available by Vedanta to Contractor and the maintenance of all equipment of the shop shallbe on contractor's scope. Spares (except fuses) for each instrument shall be supplied by VL and bringing of spares/equipment from stores to place of repair and sending faulty equipment to stores shall be in contractor's scope.

2. ASSIGNMENT

A-to-Z of Maintenance for all field instruments, control panel, control system of the entire Bauxite Wagon Tippling System including shall be in contractor's scope. As a minimum, the following jobs shall be carried out by contractor within the scope of this contract.

i. Calibration, dismantling, cleaning, overhauling, repair, mounting, routine maintenance, preventive maintenance, replacement of damaged items with the spare and checking the operating condition while on site and in the laboratory for all the field instruments viz. – pressure indicators, pressure switches, differential pressure indicators, differential pressure switches, level switches, pressure transmitters, differential pressure transmitters, level transmitters, flow transmitters, level switches, temperature indicators, temperature indicating switches, temperature elements (RTD's, Thermocouples), limit switches, solenoid valves, on- line analyzers, analytical

instruments and all other instruments installed in the plant and not mentionedhere.

i. Contractor has to periodically check/inspect the field instruments, panel instruments, control valves, actuators, impulse lines etc. In case of any damage/misalignment/mal- operation/abnormal conditions/ leakage of gland packing, contractor will have to immediately rectify/change the packing and inform the same to OwnerEngineers.

ii. Removing the indicators, recorders, transmitters, and other field instruments, of the entire plant and

   i. Transporting them to stores/laboratory and vice versa for servicing, repair and re- fixing them in their appropriateplaces.

iv. Removal, Cleaning (with the help of vacuum cleaner) and re-fixing of all modules, parts, components of DCS and PLC as per maintenanceschedule.

v. Minor maintenance works of PC's like cleaning of computers/printers/mouse, removing paper jam in printers, changing the printer cartridges, fitting of paper roll in printers etc. for all machines involved in plant automation andoffices.

vi. All maintenance/repair/overhauling etc. for the pneumatic/motorized/hydraulicactuators.

vii. Loop continuity-checking of instruments/telephones, cable/impulse line-tracing, sequence of operation checking, trip setting are to be carried out by contractor at the discretion/guidance/assistance of Owner Engineers.

viii. Contractor shall have to change the wiring, if required, and shall terminate the cable in its correct position after dressing properly as per instruction of VLengineers.

ix. Contractor to prepare as-built drawings as and when changes are made from the original documents within one week from the date ofchange.

x. Contractor using the laboratory equipment provided by Owner will carry out all calibration works in the laboratory or if possible in the field itself whichever isapplicable.

xi. The routine/preventive maintenance in the laboratory such as charging/replacing batteries for electronic equipment, minor rectification/repair jobs, cleaning of laboratory will be in contractor scope.

xii. Small additions/deletions/modification works involved in the cable route, cable tray, impulse lines, instruments, panel cutouts etc. shall be carried out by contractor as and whenrequired.

xiii. Fabrication and installation of small items like canopies, junction boxes, and mounting brackets for any field mounted instruments.

xiv. Routine checking of control power supply/Instrument power supply/cable terminations, connection tightness for all the wiring in the field as well as in the controlpanels.

xv. Checking of impulse line tightness, leakage detection and arresting for all the pneumatic actuators and tightness associated with the hydrauliclines.

xvi. Contractor has to arrange for temporary power supply from the point provided in plant by Owner for site calibration, maintenance, and repair works execution. Contractor shall provide all the hardware required for making thesearrangements.

xvii. Contractor has to arrange for temporary instrument air supply line, from the point provided at site for calibration, maintenance, and repair works execution.

Contractor shall provide all the hardware required for making thesearrangements.

xviii. Routine cleaning/removal of oil strains, dust, rust from panels, actuators, junction boxes, flame scanners, field instruments and its supports, other equipment etc. will be in contractorscope.

xix. Painting of damaged, dismantled, and rusted portions etc. in field instrumentation /panels/ junction boxes, supports etc. shall be done by contractor. Paint will be supplied byContractor.

xx. Applying lubricant, cleaning filters, removing chokes in the tapping point/impulse line, filters, plugging leaksetc.

xxi. Attending Trouble shooting and other emergency jobs promptly as reported by owner's engineer.

xxii. Managing all the three shifts round the clock for immediate attention of any problemreported.

xxiii. Contractor shall do the maintenance of Dust Suppression system like Sprinklers at the yard & Dry Fog System at transfer towers for effective dust control as per environmentnorms.

xxiv. Sufficient Walkie Talkies for effectivecommunication

xxv. Contractor will have to tie of with PLC OEM'S for maintenance of PLC's and expertise services thrice a year and provision of emergency visit additional duringbreakdown/shutdown.

xxvi. Contractor shall appoint full time, qualified safety officer who will ensure safety aspects in all activities

xxvii. Contractor will have to engage OEM for Belt scale calibration & Wagon tippler weighingscale.

xxviii. Contractor shall do all the maintenance activities and all above activities(PM,CM,Breakdown
, RCFA etc.) Involved in the BWTS system

3. EXCLUSIONS

Removal and fixing of heavy on-line instruments e.g. control valves, magnetic flow tubes and orifice flange assemblies shall be done by contractor (mechanical). However, removal and fixing of all other instruments like various transmitters, RTD/thermocouple with thermo well, rotameters, conductivity meter, density meter etc. shall be in contractor's scope.

i. Transportation of heavy instruments which require hydra or A-frame shall be in the scope of contractor (mechanical). Shifting of all other instruments including small size (below 4") control valves, magnetic flow meter, density meter etc shall be shifted from area to shop and vice versa shall be in contractor'sscope.

ii. Major maintenance of Distributed Control System and Programmable Logic Controller like repairing of modules/cards/boards shall be excluded from

contractor'sscope.

ii. Major overhauling and maintenance of control valves shall be done by a separate agencies in the workshop. However, site maintenance like gland tightening, change of gland packing, gasket, diaphragm etc, greasing, calibration of control valves and maintenance of valve accessories like filter regulator, positioned, I/P converter, position transmitter shall be in contractor'sscope.

4. **CONTRACTORSOBLIGATION**

a) Maintenance schedule andreport

1. Preparation of daily schedule for preventive Maintenance work and daily checksheet.
2. Records of equipment inspection as per good engineering practices, records of maintenance and repairs carriedout.
3. Periodic maintenance reports on daily, weekly, monthly and yearly basis. Report on stock of spares, tools and consumables under contractor'scustody.
4. Timely calibrations of instruments and submitting the records for thesame.

b) Safety and Housekeeping

1. Contractor will ensure the supply and usage of all the safety and personnel protective equipment (PPE) prescribed under the factory act and will follow the guidelines as per owner's Safety manual attached with this document, for the specific job for which they are engaged. In case of the violation of the guidelines on safety, Owner can impose penalty and /or Owner can take disciplinary action against theconcerned.

2. Contractor shall ensure good housekeeping of the area under its control. Contractor shall ensure regular cleaning of all the control rooms and control stations of refinery section of the plant. In case poor housekeeping is noticed by the Owner, Owner can engage their own agency for housekeeping at the cost of contractor/impose penalty oncontractor.

3. The checking instruments like millimeters, meggers, clamp meter, portable loop (mA) calibrator, pneumatic receiver gauges, soldering station, machines like grinding m/c, drill m/c, ferruling m/c, tube cutter, tube bender, hydraulic pipe bending machine, all types of tools/tackles like spanners, pipe ranges, screwdrivers, line tester, Allen keys, crimper, stripper etc. required to carry out all maintenance works shall be provided by contractor to their work force.

4. Spares like fuses, washers, small screws, bolts and nuts, ferrules, lugs, cable tie,SS fittings etc. will be in contractor scope and should be replaced as and when required. Supply of all consumables including cutting gases,welding electrode, Teflon tape, PVC tape, rust removers, sealant, adhesives, grease, lubricant, cotton wool, Amery paper,

soap solutions etc. shall be under contractor'scope.

5. Contractor shall be responsible for storage and safekeeping of equipment, spares and replacement of any usedspares.

6. Transportation of Instruments/spares from stores/laboratory to installation site and vice versa for servicing, repair and re-fixing them in their appropriateplaces.

7. Contractor shall arrange radio sets for their staff inside the plant for propercommunication.

8. All the arrangements for their employees like accommodation, conveyance, fooding, traveling etc. shall be made by contractor at theirown.

9. Contractor shall comply with all statutory requirements and contract labour act applicable at Odisha state by their own effort andcost.

10. Insurance coverage, accident claim and other labour oriented disputes related to contractor's manpower shall be entirely contractor's responsibility with no direct or indirect involvement of VL. Contractor to cover their supervisory staff under suitable "Group Personal Accident Insurance Policy" and all their workmen under any group insurance policy as required by workmen compensation act as per latestamendment.

11. Contractor shall ensure their experienced engineers to be available at site or call the experts from various suppliers as may be required time to time to rectify the problems within fixed time period. All the costs (boarding, lodging, transportation, local conveyance, per diem charges etc.) involved shall be borne bycontractor.

12. Contractor must engage trained and experienced manpower only, to carry out all the maintenance works as specified in the document. Any damage caused to Instruments or loss of production due to wrong handling by Contractor's person shall be back charged to Contractor.

13. Contractor shall carry out the repair and maintenance work as per approved written maintenance manual. In case it is required to adopt other methods to rectify the problems the same shall be done after consultation with respective manufacturer and prior intimation to VL engineer.

14. Contractor shall co-ordinate and work as a team with all other agencies deployed by the owner for various purposes for fast rectification of problems and smooth re start-up ofplant.

15. Contractor to submit required nos. of passport size photographs and detailed particulars in prescribed form for each employee before their engagement atsite.

16. Contractor shall not dispose of any document, material or asset received from

owner to any third party without written consent from VL. Contractor shall refrain from exchanging any information related to process technology, equipment details, operation and maintenance practices and other plant /production relateddata.

17. Contractor shall not take any action that would invalidate any equipment warranty given by the LSTK contractors, or release the LSTK contractors from their obligations under the contracts the owner had withthem.

5. COMMITMENT

In furtherance of the obligations and responsibilities of contractor as specified in the respective clauses, contractor shall perform the following Services at different phases of the contract.

a) Commitment during the operation ofPlant

1. Perform, monitor and manage daily preventive maintenance, periodic scheduled inspections, and scheduled planned maintenance, major maintenance repairs, and overhauls for all the field instruments as per the approved Maintenance Plan and perform unplanned repairs and maintenance during emergency plant/equipment shutdown.

2. Ensure the safety of all of contractor's staff including development and observance of an appropriate safetyprogram;

3. Maintain Instrumentation system of the plant so as to achieve zero down time of the plant, including taking all reasonable corrective actions approved by the Owner to achieve thesame.

4. As and when required by the Owner, perform checking and testing of any instrument and provide the Owner with written reports on the resultsthereof.

5. Notify the Owner immediately after discovery of any abnormal operating condition of any unit or adverse characteristic of any equipment and take prompt action in an effort to prevent any damage to the process, persons orproperty.

6. Prepare and submit to the Owner maintenance manuals and maintenance procedures for predictive and preventative maintenance so as to maximize equipment and plant reliability, efficiency andavailability.

7. Adopt and use quality management systems and modern maintenance techniques such as TPM/TQM.

8. Comply with all norms and practices and prepare necessary documentation to obtain within reasonable time the ISO 9001, ISO 14001 & ISO 18001 certificate for

quality, environmental and safety accreditation respectively in all spheres of operation and maintenanceactivities.

9. Establish and maintain good relations with personnel of the existing Facility and with the localcommunity.

10. Review the Spare Parts lists and prepare Spare Parts inventory recommendations and confirm that the Spare Parts inventory in the plant are sufficient to support all types of maintenancework.

b) Commitment during De-mobilizationPeriod

1. In addition to the other Services and any other obligations expressly surviving the termination of the O&M Agreement, contractor shall, as soon as reasonably practicable, following the commencement of the Demobilization Period:

2. Prepare and hand over an updated inventory stock list of all consumables and spares which are the property ofVL.

3. Hand over all items of tools, equipment, machinery, and materials belonging to VL, buildings, facilities along with all documentations, drawings etc., in the condition in which such items were originally received bycontractor.

4. Remove all of Contractor's tools, equipment and materials from the Site after getting Owners writtenapproval.

5. Assist in smooth take over by the other party engaged by Owner, as instructed byOwner.

6. PERFORMANCE

Contractor shall be responsible for at least 99 % availability of the Instrumentation system and no production loss should occur due to fault on the part of contractor with respect to delay in rectifying problems, mishandling due to lack of proper knowledge and insufficient manpower at site.

Contractor must comply the following performance parameters failing which VL may initiate actions at the risk and cost of contractor.

i) 100 percent compliance on PMactivities.
ii) 100 percent compliance on planned shutdownactivities.
iii) All work order job shall be attended on the same day it is generated.
iv) 99 percent C&I systemavailability.
v) 100 percent compliance on Safetynorms.

vi) 100 percent availability of tools andtackles.
vii) 100 percent availability of listedconsumables.
viii) 100 percent availability of minimum guaranteed manpower at sitealways.

For any unsatisfactory performance affecting the plant performance/production, owner shall have the right to deduct penalty under the following situations.

1. VL may engage any alternate agency to carry out the work of contractor's scope if contractor is found to be incompetent for the job and the cost of the same shall be recovered fromContractor.
2. Contractor shall be penalized for any breakdown of plant and damage of equipment if it happens due to lack of technical expertise, poor workmanship or unavailability of manpower, tools, tackles, consumables etc. on theirpart.
3. In case the maintenance activities suffer due to shortage of manpower, VL will deploy requisite number of manpower and cost of such deployment shall be deducted from Contractor'sbill.
4. Monthly Contractor's billing to be approved/certified by Instrumentation Department Engineer before bill processing as per performance parameters any deviation VL will deduct from Monthly Contractor'sbill.

7. MANPOWER

Manpower availability should be linked with scorecard and according to that score payment shall be deducted from monthly payment of contractor's bill

Site Manager: An engineering degree with minimum 10 years' experience in plant maintenance out of which at least three years as in-charge of Instrument section of a large size processplant.
Planning/Area Engineer: An engineering degree with minimum 5 years' experience in maintenance of Instrument section in a large continuous process plant.
Supervisor: Engineering professional with min. 6 years' experience in Instrument maintenance of a large size plant. Exposure of managing shift maintenance is must for each supervisor.
Technician: Technical qualification in Instrumentation/electronic trade with at least 3 years hands on experience of similar job in a process plant.

As far as possible, the preference shall be given to recruit people from the local area. Contractor shall give equal opportunity for employment from all section of society irrespective of domicile, caste religion orsex.

Contractor shall ensure the best compensation package and human resources management for their employees. Contractor must have a transparent and effective performance appraisal policy to retain talented people for longerperiod.

Contractor shall be responsible for the acts and omissions of all its employees acting within the scope and conduct of their respective duties at owner'ssite.

All personnel engaged in the performance of the services shall be qualified to perform and experienced in the duties to which they are assigned. The entire contractor's staff shall be given proper training in respective areas and the cost of such training shall be borne by contractor. However, contractor's staff can receive on-site training from different suppliers during commissioning of the plant. Co-ordination with the vendor for such training shall be of contractor'sresponsibility.

The working hours, rates of compensation and all other matters relating to the employment of personnel performing the services shall be consistent with the relevant labour laws with respect to suchemployees.
Contractor shall observe directives relating to minimum age for employment, acceptable conditions of work with respect to minimum wages, hours of work, and occupational health and safety and all other Statutory Norms.

Owner reserves the right to reject any staff of contractor, based on the performance, character or behavior of the staff.

8. VL'SOBLIGATIONS

Owner shall furnish to contractor, at Owner's expense, all the information, drawing/documents and spare equipment necessary to carry out the maintenance work. All such items shall be made available at such times and in such manner as may be reasonably required by contractor. All materials and documents furnished to contractor by Owner shall be delivered to the Owner upon expiration of theTerm.
Owner shall carry out at its expense any up-gradation, modernization, expansion, or changes to be necessary for the improvement/capacity enhancement ofprocess.

Owner shall obtain or acquire at its cost and expense any statutory clearances required from time to time in connection with the operation of the plant. However, all the clearances required by contractor to perform the services at site shall be in contractor's scope.

The Owner shall provide contractor with facilities for offices as available, Instrument laboratory, storage of materials according to the needs. However, the office furniture and all types of stationary shall be arranged by contractor.

Contractor shall make their own arrangement for their accommodation. VL will not be responsible for their accommodation.

Telephone (intercom) and LAN connection shall be made available at contractor's site office. First-aid facility shall be provided to contractor's employee inside the plant as

and when necessary. But Medicals for their employees and family members shall be arranged by contractor at their own.

The Owner shall be responsible for the security of the plant and materials under owner's possession

Annexure-3

Manpower	NOS
Shift	
Shift in-charge	2
Control room operator	2
House keeping	8
Coupling/de-coupling operators	3
Belt operator	2
Mechanical tech	2
Instrumentation tech	1
Instrumentation engineer	1
Electrical tech	1
TOTAL PER SHIFT	22
TOTAL SHIFT MANPOWER PER DAY	**66**

General	NOS
O&M in charge	1
Planning engineer	1
Stores in charge	1
Operation in charge	1
Field engineer mechanical	2
Electrical in charge	1
Electrical engineer	1
Electrical tech	1
C&I in charge	1
C&I technician	1
Housekeeping	10
Fitter	2
Welder	2
Rigger	2
Hydraulic tech	2
Belt jointer	1
Helper	3
Mechanical engineer	1
Mechanical in charge	1
TOTAL	**101**

Annexure-4

Vedanta Alunmina Lanjigarh - WT Operations and Maintenance Scorecard					Month		
Dimesion	**Criteria**	**Description**	**Unit**	**Weightage**	**Scoring Criteria**	**Actual Score**	**Effective Score**
Safety (20%)	Safety Score	From Safety Dept Score Card	Score	15%	Audit score on scale of 1 to 5	5	15%
Execution (30%)	Equipment Availability	Equipment availability considering all the planned and unplanned downtimes	%	15%	Availability > 85% : 5 , >80% : 4, >75% : 3, >70% : 2, else 0	5	15%
	Shutdown KPI adherence	Timeline defined for equipment turnaround/shutdown activities	Actual vs Planned	5%	If actual vs planned >= 99%, 5, if > 95%,4, if > 90%,3, else 0	5	5%
	Maintenance activity compliance	Schedule adherence of maintenance activities	% Schedule Adherence	15%	<95% = 0; 95-98% = 3; >98% = 5	5	15%
Quality (20%)	Housekeeping of wagon tippler and surrounding area	Checklist of housekeeping activity	Audit score	10%	Audit score on scale of 1 to 5	5	10%
	MTBF critical equipment	Mean time to failure against benchmark	No of failures>MTBF	5%	5*(No of failures>MTBF/Total Failures)	5	5%
	MTTR critical equipment	Mean time to repair against benchmark	No of repairs<MTTR	5%	5*(No of repair<MTTR/Total Failures)	5	5%
Process Enablers (30%)	Mapower availability	Availability of manpower as described in contract with requisite skill level	Actual vs Contract	10%	If actual vs planned >= 85%, 5, else if > 80%,3, if > 75%,1, else 0	5	10%
	Skill training of manpower	No of trainings conducted as per schedule	% Schedule Adherence	10%	if % Schedule Adherence>=95%,5, >=90% 4, >=85% 3, >=80%, 2, else 0	5	10%
	CAPA Compliance of RCA & CBM	Implementation of CAPA generated after RCA and CBM	%	5%	If Compliance>95% 5, >90% 4, >85% 3, >80% 2 else 0	5	5%
	Availability of Tools, tackles and consumables	Availability of tools, tackels and spares should be within the inventory norms agreed in contract	Actual vs Contract	5%	If availability>95%, 5, if>90% ,4, if>85% 3, else 0	5	5%
Critical Parameters	Major equipment failure	Major equipment failure leading to production loss	No of failures		2% score reduction for each major failure	0	0%
	Mobile Equipment Avaialbility	All mobile equipment should be available 95%	% availability		Penalty for every hour of unaviability	0	0.00%
							100%

Contractor is responsible for ensuring statutory compliance
10% of the billing amount will be depended on scorecard
Score>=85% No deduction
Score>=82% 5% deduction on 10% of billing amount
Score>=80% 10% deduction on 10% of billing amount
score>=75% deduction of 20% on 10% billing amount
Score < 75% deduction of 10% of billing amount

8. **Scope for Maintenance & Development of Horticulture & Landscaping area, Maintenance and development of Greenbelt & Nursery and Bush cutting.**

Scope of Work: Limited to Plant and Other outside area as per the requirement

Vendor's Scope:- To start the job at the earliest after receiving the service order. The job wise scope is as follows:-

Maintenance & Development of Horticulture & Landscaping area

1. Machinery: - The party must use 03 lawn mower (battery/diesel), 03 bush cutter(battery/diesel), 03 hedge cutter (battery/diesel), 01 tree prunner (battery/diesel), 01 hacksaw tree cutter (battery/diesel)
2. Manpower: - The party must engage all the present workers (30 ladies+ 6 gents), supervisors (2) +1 – horticulturist / site-in-charge).
3. The job is to be carried out by maximum engagement of Local SHGs and local people or through HR dept.).
4. All watering hoses to be maintained & procured by vendor.
5. In areas where there is no irrigation line, watering must be done manually.
6. All water pipeline should be maintained properly.
7. The grass and lawn should be cut regularly in every month with the help of lawn mower and after cutting, fertilizer (both chemical like urea, gromor, DAP and bio fertilizer) will be

applied with sufficient water as per SOP. Application of fertilizer and pesticide should be on regular basis. At any condition, damage of plantation by insect will not be allowed. In areas where lawn grass is not planted, even then the entire area has to be maintained.

8. Frequency of application of manures and pesticides on monthly basis and details of that to be submitted to Env. Dept.

9. All weeds, bushes, shredded trees shall be disposed to the designated location with the help of tractor. The bio compost shall be used as fertilizer in the horticulture. There should not be any type of open burning of the garden waste. The hedges will be cut on regular basis or on requirement. The width should be of 500mm and height as per requirement.

10. There should not be any dry leaves in the plants and all the areas should be free from all civil debris, wastes of any type and dry leaves etc.

11. All landscaping areas and their surroundings should be cleaned on regular basis.

12. The flowerpots present at the site is to be maintained and in case of mortality should be replaced. A minimum of 200 nos. of flowerpots to be supplied and prepared for indoor and outdoor decoration.

13. In case of mortality of any plant like Herbs, Shrubs, Hedges, Trees during the maintenance period, it will be replaced within 15 days. No extra cost will be reimbursed for the same.

14. In case of any request by VLL to develop some new area or to plant some new species of plants, party should be ready to do the same.

15. The persons to be engaged for work should have required gate pass and PPEs as per the VLL norms.

16. Training and awareness about the job is to be given to our trade technicians.

17. The seasonal flower garden has to be developed on the basis of requirement and you have to maintain it as per SOP.

Maintenance and development of Greenbelt & Nursery

1. The maintenance, plantation and replacement area includes inside plant, RMP, PWL, Ash Pond, township, approach road from township to plant, boundary wall of plant, from plant to material gate and other areas inside and outside the Plant premises as required from time to time.

2. The maintenance work includes area leveling, pit digging, termite control, manuring, pit processing, planting the sapling, watering and maintenance.

3. The fertilizer and pesticide application must be done as per the requirement of the plant and as and when suggested by user department.

4. The watering , manuring weeding must be done on day to day basis.

5. The job is to be carried out by maximum engagement of local people.

6. The plant is to be replaced by the party if any plant dies. The plant from the nursery is to be utilised.

7. Party should supply & plant 10000 new saplings of size 6-8 ft(species details shall be provided by user) as per the instruction of user dept after receiving the order.(avenue species

and fruit species as per direction of Env. Dept.) The species and number of the plants must includes neem - 4000, mango -250, black plum -250, almond - 250, jackfruit- 250 nos.

8. Party should maintain & develop the nursery for supply of 30000 saplings of avenue species.

9. Man power details:- Maintenance greenbelt- 5 labourers, Maintenance Nursery-2 labourers, site-in charge-1

10. Party has to arrange to provide manpower for guarding, watering & maintenace of new & existing plants & trees to ensure minimum 90% survival of new plants & zero cases of tree cutting by outsiders.

Bush cutting

1. Providing minimum 13 labours (minimum 9 male) with 2 supervisor for grass cutting, bush cutting, tree pruning, tree cutting inside, outside the refinery along the patrolling road and the area which will be shown by user department with all equipment necessary to execute the assigned job with all type of PPEs.

2. The area is not limited to plant and township only. Labourers will be engaged as per the requirement of user department.

3. The materials which were removed must immediately be shifted to the designated place by engaging a shifting vehicle as per Vedanta standard.

4. The job is to be carried out by engagement local people or through HR dept.

Vedanta's Scope:-

- Providing the water for watering purpose.
- Providing technical and operational guidance for making the landscape area the best.

HSE & Compliance:-

- Contractor's responsibility is to ensure safety at site operation and shall comply to Vedanta PPE norms.
- The men power engaged must have the required PPEs..

Other Terms & conditions if any:-

- The payment will be made strictly on the basis of scorecard. There will be no deduction up to the score of 90 points. After which for each point deduction, a deduction of 2% of the monthly maintenance bill will be imposed. The score card will be provided by user dept.

9. SCOPE OF WORK FOR BUSH CUTTING IN NON GARDEN AREA INSIDE TOWNSHIP.

Scope of Work.

1. Party has to provide service for bush cutting in non-garden area of township, road side bush cutting & its cleaning, and disposal of the same in designated place as instructed by area in charge.
2. Non garden area limited to area like OISF field, cricket field, children park, hostel & canteen surrounding, road side area, B type front area, hospital & school surroundings, swimming pool outside area, market complex-c type surrounding, prefab hostel surrounding, row house GYM area, helipad field, STP area entry of township up to Hanuman temple & any open non garden area inside township (as instructed by VL in charge) where vegetation growth observes.
3. Party has to ensure all the road point area should be free from bush & need to clean regularly.
4. Party has to provide service of bush cutting in air strip area as & when required.
5. Uprooting of all the bushes and leveling thereafter by the party.
6. Total manpower requirement 08 Nos. (07 Nos workmen, 01-Supervisor) throughout the year except rainy season. Party has to mobilize additional manpower during rainy season(2months) without any cost implication,
7. Party shall provide 02 no's bush cutters for the job.
8. Party has to clear all the bushes & dispose the same at the designated place in discussion with Admin In charge.
9. Party shall provide one tractor & along with tiller Machine as and when required for carried out the job inside the township.
10. Party has to provide daily progress report to the admin in charge.

Safety:

1. Party has to follow all the safety rules and regulation as per the VL guidelines only.
2. Party shall be solely responsible for the adequacy, stability and safety of operations on the Site.
3. Vehicle Safety & Standards will be followed.

10. Scope of work for horticulture maintenance job at VL, Lanjigarh Township.

The detail scope of work is as follows:

1. Coverage: The scope of work for landscaping maintenance in VEDANTA Township includes following areas: Guest house area (Inside & Outside), Hostel area(Inside & Outside), B Type Garden, C Type garden, E Type Garden and D Type Garden, Two Entrance gate area, DAV School, Medicinal garden, road side/ Hospital front Area row house area, prefab hostel area .

The Maintenance is to be carried and to maintain very high cleanliness standards in VEDANTA Township. It will involve deployment of various equipment, manpower and consumables required for the job.

Scope of the Contractor:

A. Minor areas / tasks within the prescribed Township if not specifically mentioned will be covered by the Service Provider within the existing resources with no change in cost.

B. The principal task of the Service Provider is to provide Township Horticulture Maintenance Services.

C. The scope includes maintenance of lawn, flowering trees, shrubs, trees and entire garden all through the year in VEDANTA Township.

D. The party should maintain and develop seasonal flowers all through the year in VEDANTA Township.

E. The Maintenance services will be carried out with maximum mechanization and latest equipment to be deployed, g. He should engage 2 Supervisor, 1 Mali (Gardner) and gardening staff to maintain the entire garden as mentioned in the scope of work.

F. Repair of Pumps (submersible and de watering pump), sprinkler, pipes, starter and other equipment used for supply of water should be in party scope.

G. All types of garden waste should be in party scope for disposal.

H. the Vendor will provide seasonal flower for all the season. (Mainly four times in a year specifically in winter, summer, spring and autumn)

I. Propagation of plant to be done through cutting and grafting inside Township.

J. Maintenance of guest house fountain, market complex fountain, and horticulture area developed around the area, and water cascade at Township, all spares and electrical consumables to be provided by the party and to be reimbursed on submission of appropriate bills and duly certified by the officer in charge.

K. Maintenance of submersible pump, de watering pump, panel board, sprinklers and pipe lines will be in parties' scope. Replacement of spares in case of damage will be reimbursed by on submission of appropriate bill duly certified by the officer in charge.

L. The grass should be cut periodically with the help of lawn mower and after cutting fertilizer (both chemical like urea, gromor, DAP and bio fertilizer) will be applied with sufficient water as per SOP. Application of fertilizer and pesticide should be on regular basis. At any condition damage of plantation by insect will not be allowed. In areas where lawn grass is not planted, even then the entire area has to be maintained.

M. Removal of weeds from the lawn area will be on regular basis and its disposal to our integrated solid waste disposal site with the help of tractor or any other trolley. There should not be any type of open burning of the garden waste.

N. The hedges will be cut on regular basis or on requirement. The width should be of 500mm and height as per requirement.

O. The shrubs, cycas, ficus and royal palms will be maintained properly. The cutting, trimming will done on regular basis

P. The seasonal flower garden has to be developed on the basis of requirement and you have to maintain it as per SOP. Payment to be reimbursed on the basis of actuals.

Q .Contractor shall provide all necessary safety gadgets as applicable for the work area, like safety shoes, safety helmets, and hand gloves Etc.

Payment will be released on the basis of scorecard

The follow activities need to undertake during the contract.

1. Irrigation
2. weeding
3. Cleaning

4. Trimming & pruning
5. Fertilizer & soil application
6. Plan protection measure
7. Lawn
8. Shrub
9. Maintenance of tree, palm & accent plants.
10. Mortality replacement- Party shall be responsible for any mortality to trees, palms, accent plants, shrub, groundcover beds, flower beds, Lawn area etc. in the contract. Party shall replace the same with plants
11. Work done checklist will be made
12. DPR should be submitted on daily basis.

Following Resources are required:

1 Total Manpower 34- Nos.

2 Petrol/Diesel operated lawn mower 1 Nos.

3 Bush Cutter Machine 4 Nos.

4 Tractor with hydraulic trolley 1 No.

5 Power Hedge Trimmer 1 No

6 Manual Hedge Trimmer 3 Nos.

7 Garden Fork 05 Nos

9 Knapsack Sprayer 1 No

10 Pick Axe 5 Nos.

11 Water Hose Pipe 500 Mtr.

12 Sickle 15 Nos.

13 Garden shear 3 Nos.

14 Spade 5 Nos.

ALL machines should be Petrol/ Diesel operated

All fuels, lubes, other consumables, spares, tools etc. for Operation & Maintenance all equipment will be in the scope of SERVICE PROVIDER.

11. Scope of Work for carrying out covering and uncovering of bauxite heaps during monsoon season inside the plant premises.

To prevent water ingress into the bauxite stored at Bauxite handling Yard, Manual and Wagon Tippler sidings, we require professional services for covering and uncovering activity of bauxite heaps using tarpaulins as per the attached SOW.

Benefit –

Prevention of moisture ingress into the feed bauxite during rains in monsoon.

Reason –

To prevent water ingress into the bauxite stored at Bauxite handling Yard, Manual and Wagon Tippler sidings, we require professional services for covering and uncovering activity of bauxite heaps using tarpaulins as per the attached SOW.

1. **Tarpaulin covering-uncovering contract during monsoon at the following locations inside plant –**

A. **Bauxite Handling Yard – Area required to be covered – 45000 sq-m.**

SOW -

- Service provider to supply HDPE heavy duty tarpaulins in enough nos. to cover an area of atleast 45000 sq-m along with the manpower to provide the service of covering-uncovering of bauxite heap activity during rains and as and when required basis.
- Service provider should be able to cover Min. area of 45000 sq-m (base of bauxite heap) at any point of time.
- Manpower supply is included in the scope of service.
- **Minimum 12 nos. of manpower and 02 supervisors to be present on per shift basis. (24 Hrs X 07 Days). Per day gate entry should be minimum 35 nos.**
- **Tarpaulin quality should prevent water seepage to the heaps and should be such as to prevent uncovering due to winds for which provision of weight fixing at the edges should be provided in the tarpaulins. (Preferably 200 GSM and above)**
- Total bauxite stock shall be covered with tarpaulin to ensure no water seepage into stockpile.
- Tarpaulin cover on bauxite to be removed during feeding (reclaim) & stock dumping by trucks as per EIC instructions.
- After completion of feeding or stock dumping, immediately back cover the left-out stock in yard is to be ensured.
- Storage, safety, and prevention of theft of tarpaulins at Plant site will be the responsibility of the service provider.
- Collecting the uncovered tarpaulin at safe place without contaminating with bauxite.
- Taking back the received tarpaulin from the plant premises at Service Providers own arrangements with proper approval as per refinery guidelines.

- **Agency shall ensure all safety precautions and PPE's during work inside the plant premises and obey the Vedanta safety policy. Gum boots, Helmets, Mono-goggles, Nose-masks, Handgloves, Ear-muffs, reflective vests, and rain coats are mandatory PPEs. They should be supplied to each manpower by the service provider.**
- In addition to the above scope, Service provider must get all required procedures for manpower entry gate pass approvals to be done as soon as possible.
- Along with all PPE service provider must ensure availability of required raincoat and gum boots for the field manpower along with supervisor who is competent to receive, understand and execute timely instructions from EIC or yard in charge.
- Service provider need to consider round the clock operation with sufficient trained manpower with one supervisor who can deliberately get the work done as per Bauxite handling Yard shift in charge instructions with a pickup van facility for easy and quick shifting of manpower with tarpaulins for covering as per instructions received.
- **Each shift safety tool room talk is must and online updating of the same must be done on daily basis.**
- Vendor need to ensure all required PPE during the time of plant entry and while working.
- Supervisor must maintain record area of covered and uncovers in each shift and get it signed by yard in charge at the end of the shift.
- **Any safety violation to attract a penalty (INR 5000/- per incident).**
- **The service provider to ensure that even during rains, the covering and uncovering activity is not hampered. Any non-performance, will attract a penalty of at least INR 15000/- per hour in delay of covering – uncovering and multiples thereof.**
- **Any shortage in tarpaulins to cover the designated area, will attract a penalty on Pro-Rata basis mentioned in the PO terms.**
- **Any shortage in minimum manpower mentioned in the PO, will attract a deduction as per the monthly wages as per the skill of the manpower.**

TARPAULIN SCOPE OF WORK

Scope of the work for Bauxite stock yard covering with tarpaulin at GPL siding and cover all the rail wagon to protect the bauxite stock from rain water. The detailed scope of Services shall be as under:

12. Bauxite Stack Yard covering at GPL Port :

a. Covering the bauxite yard at port with Tarpaulin after receipt at yard/plot.
b. Total bauxite stock shall be covered with tarpaulin to ensure no water seepage into cargo.
c. Tarpaulin cover to be removed during rake loading as per loading supervisor instructions.
d. Post rake loading completion, again cover back the left out stock in yard/plot
e. Agency shall ensure all safety precautions and PPE#s during work inside the port premises and obey the Port safety policy and covid precautions & measures

f. Tarpaulins used shall be of good quality as per proposed quality specs of 200GSM & 60ft x 60ft size
g. Vendor will station workers at the site for day to day supervision of covering, and As and when required vendor shall uncover the heap during shifting/ high stacking of cargo as per planning of port people/stevedores. Manpower to be deployed in shifts to take up covering / uncovering job on round the clock basis.
h. Party need to ensure 100% covering of heaps except during shifting/ high stacking/rake loading of cargo time to time
i. Damaged tarpaulins should be replaced on time to time basis.
j. Stack wise covering reporting should be shared to Vedanta via mail
k. No extra charge should be charged for multiple uncovering and covering of plot.
l. Daily MIS of tarpaulin stock, % covering, wagons covered, manpower deployed should be circulated in mail
m. All measures to be taken w.r.t covid-19 govt guidelines during the execution of contract period
n. 40 no of manpower required for stack covering (20 persons in Day shift & 20 persons in night shift)
Break up (40 no) : Unskilled – 16, Semi skilled – 20, skilled - 04

Scope of supply tarpaulins for Plot :
1. Supply of 400 pieces (or pro rata) of plot tarpaulin (200 GSM) of size 60ft x 60ft of specs and required ropes and gunny bags are also to be included
2. Extra stock of minimum 50 pieces to be maintained by party after taking Vedanta concurrence

Payment Terms for supply & service of plot covering :

- 100% payment shall be released within 30 days from the date of receipt and acceptance of materials at port subject to receipt of all relevant and error-free documents and quality clearance certificate by VL QC team (Rate to be quoted as Rs per tarpaulin piece)
- Payments will be done for procurement of plot tarpaulin pieces only as per actuals basis
- Vendor need to procure all the tarpaulin material after confirmation of VL Quality team and for quality check, total tarpaulin piece will be used for weighment for checking GSM
- Post procurement of same quality tarpaulin (**200 GSM**), VL quality team will issue the quality certificate after which vendor need to cover the heaps.
- % Covering report of Vendor for the stack / plot should be certified by Third party (if appointed)
- During Contract period, 40 no of manpower payment based on monthly attendance as certified by third party/Vedanta

Penalty :

- LD of 5% of the total contract value shall be deducted for delay in mobilization beyond 7-10 days from the date of mail intimation by VL representative.

TARPAULIN SCOPE OF WORK

Scope of the work for Bauxite stock yard covering with tarpaulin at GPL siding and cover all the rail wagon to protect the bauxite stock from rain water. The detailed scope of Services shall be as under:

13. **Scope of Work for BOXN wagon covering at Port for bauxite commodity :**

- To cover all the rail wagon with good quality tarpaulin to protect the bauxite loaded into wagon from rainwater while dispatching from GPL Port to Lanjigarh plant.
- Covering of wagons with Tarpaulin from GPL of bauxite commodity and collect the same on receipt of rake at Lanjigarh refinery.
- The service provider shall be responsible for covering of all the wagons of bauxite rake loaded at GPL within permitted time by railways
- Ensure there should not be any blow out of Tarpaulin en-route.
- Ensure loaded NBOX wagon should be covered with tarpaulin with no damage.
- Ensure proper removal of tarpaulin at unloading yard immediately on arrival of the rake at Lanjigarh refinery (MVAA Siding) as per the unloading supervisor/in charge
- Accumulation of Tarpaulin at unloading side will be at service provider account.
- Collecting the uncovered tarpaulin at safe place without contaminating with bauxite.
- Take back the received tarpaulin from the plant premises at their own arrangements with proper approval as per refinery guidelines.
- Agency shall ensure all safety precautions and PPE#s during work execution at the loading and unloading point and comply the Health & Safety norms of VL
- High quality standard box type tarpaulin should be used for covering of rakes dispatched to MVAA
- Daily compliance report of wagon covering and acknowledgement by our supervisors at siding on the report on daily basis.
- For safety and operation control, person must be deputed on 24/7 basis.
- Tarpaulin Stock of minimum 40 rakes shall be maintained at MGPV siding at any point of time for the period of the contract.

Other Points

- Any penalty/other charges levied by Railways on VL related to improper tarpaulins covering shall be paid by the tarpaulin party.
- Prior wagon wise checklist will be prepared and maintained by agency on day to day basis and verified by our supervisor on which both will acknowledge status of covering and uncovering of wagons and tarpaulin party will report through mail to all concerned on daily basis with remarks/comments.
- VL shall not be responsible for loss of tarpaulin covered on wagons in transit and at loading & unloading point.
- We propose 10 to 12 no of manpower at Plant for uncovering of wagons complying all HSE regulations, factory policies and at loading point sufficient manpower to be deployed for wagon covering considering minimum 3 rakes/day loading at port

- All measures to be taken w.r.t covid-19 govt guidelines during the execution of contract period
- The party need to borne any financial impact/penalties imposed by railways to VL due to damage of railway property for reasons solely related to improper covering of rakes and undertaking letter need to be submitted to railway and Vedanta Limited

Quantity

Total quantity of about **297 rakes/17532 wagons** to be covered throughout the contract duration (which may increase or decrease based on rake and material availability at siding)

Payment terms :

- 100% payment shall be released within 30 days from the date of receipt and acceptance of invoice subject to receipt of all relevant and error-free documents certified by VL representative/third party supervisor (appointed by VL)
- Payment will be done on Rs per wagon covered at loading point basis based on countersigned wagon wise checklist