

Title: **The maintenance of the Overland conveyors, Sampling Plant, Reclaim conveyors (OTS) and Staithes Conveyor systems.**

Unique Identifier:

Alternative Reference Number: **N/A**

Area of Applicability: **Maintenance**

Documentation Type: **works instruction**

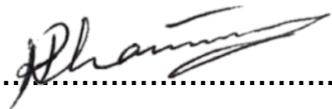
Revision: **0**

Total Pages: **55**

Next Review Date: **Once-off doc**

Disclosure Classification: **CONTROLLED DISCLOSURE**

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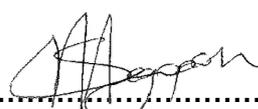


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1. INTRODUCTION

This document details all the work that needs to be done with regards to the maintenance of the Overland conveyors, Sampling Plant, reclaim conveyors (OTS) and top Staithes Conveyor systems at Duvha Power Station. The scope of work is defined in this document.

2. SUPPORTING CLAUSES

2.1 SCOPE

2.1.1 Purpose

The purpose of the document is to give a clear scope of work concerning the maintenance of the Overland conveyors, Sampling Plant, reclaim conveyors (OTS) and top Staithes Conveyor systems at Duvha Power Station.

2.1.2 Applicability

This document applies to the contractor who will be doing the actual work of maintaining Overland conveyors, Sampling Plant, reclaim conveyors (OTS) and top Staithes Conveyor systems at Duvha Power Station.

2.2 NORMATIVE/INFORMATIVE REFERENCES

Parties using this document shall apply the most recent edition of the documents listed in the following paragraphs.

2.2.1 Normative

[1] ISO 9001-Quality Management System

2.2.2 Informative

[2] 32-1033: Eskom Procurement and Supply Chain Management Policy

[3] 32-1034: Eskom Procurement and Supply Management Procedure during the tender process

2.3 DEFINITIONS

None

2.3.1 Classification

Controlled Disclosure: Controlled Disclosure to external parties (either enforced by law, or discretionary).

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2.4 ABBREVIATIONS

Abbreviation	Description
OTS	On Terrance System
SCADA	System Control and Data Acquisition
SOW	Scope of Work
UPS	Uninterrupted Power Supply
N/A	Not Applicable
PF	Pulverised Fuel
OEM	Original Equipment Manufacturer

2.5 ROLES AND RESPONSIBILITIES

2.6 PROCESS FOR MONITORING

N/A

2.7 RELATED/SUPPORTING DOCUMENTS

N/A

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3. SCOPE OF WORK

3.1 EXECUTIVE OVERVIEW

1. Description of the works

1.1.OVERLAND CONVEYOR SYSTEM

The *works* is all maintenance including mechanical, electrical, and civil(steel structural work), plant condition monitoring, supervision, Equipment, Plant and Materials and labour required for the day-to-day maintenance of the:

- Overland coal conveyor system (includes the sampling plant) connecting the South plant of Seriti mine and the staithes 1 and 2 of Duvha Power Station. This includes all auxiliaries of these systems.
- On Terrace System (OTS) conveyor system connecting the reclaim system and the staithes of Duvha Power Station.

The scope includes removal of damaged/old parts or components and replace with new of similar specifications, model and type. All damaged/old parts must be disposed accordingly as per Duvha P/S waste management procedure.

The overland conveyor system consists of transfer houses, lifting equipment, substations, 16 conveyor belts of varying lengths, approximately 18 km long in total, viz:

- Sampling plant
- Conveyors 2A & 2B;
- Conveyors 3A & 3B;
- Conveyors 4A & 4B;
- Conveyors 5A & 5B;
- Conveyors 6A & 6B;
- Conveyors 7A & 7B;
- Conveyors 8A & 8B;
- Link Conveyor 8 A & B to 6 A & B
- Emergency off-loading conveyor

1.2.OTS SYSTEM

The OTS system consist of transfer houses, substation, lifting equipment, 5 buffalo feeders, magnet belt and 4 conveyor belts of varying lengths, approximately 2 km long in total, viz:

Reclaim conveyor

Ramp conveyor

Cross conveyor

Link conveyor

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The *Contractor* provides the complete maintenance of the system in such a manner to provide coal to Duvha Power Station at a continuous rate and in conjunction with the tonnage scheduled for each month, so as not to constrain any operation of the *Employer*.

The *Contractor* provides the Maintenance of both the overland and OTS systems. The remote control of overland conveyor system is done by the *Contractor* using a SCADA system from the Outside Plant Control. The OTS system is under the *Contractor's* control.

2. General background

2.1.OVERLAND CONVEYOR SYSTEM

The overland coal conveyor system has been in operation since 1980.The overland coal conveyor systems delivers between 600 kt/month and 1 300 kt/month per belt to the *Employer*. The belt running times and coaling intervals are controlled by the Duvha Power Station Operating *Contractor* interfacing with the Duvha Power Station and Ifalethu Mine.

2.2.OTS SYSTEM

The OTS system has been in operation since 1990.

The OTS systems by design delivers 2 000 t/hr to the staithes. The belt running times and coaling intervals are controlled by the Duvha Power Station Operating *Contractor* interfacing with the Duvha Power Station Coal Handling Contractor responsible for the strategic stockpile and import coal.

2.3.CONTROL AND OPERATING STATUS

2.3.1. Overland Conveyor System

All Overland conveyors are controlled remotely by the Duvha Power Station Operating *Contractor*, using a SCADA system. Duvha Power Station Operating *Contractor* also does all local operating. All the *Contractor's* personnel, maintenance is in constant 2-way radio (supplied by the *Contractor*) contact with Duvha Power Station Operating *Contractor*. All permits are issued and revoked with the approval of the Duvha Power Station Operating Contractor and/or Employer Operating personnel

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2.3.2. OTS System

The OTS is controlled locally by the Duvha Power Station Operating *Contractor* interfacing with the Duvha Power Station Coal Handling Contractor responsible for the strategic stockpile and import coal. (2-way radio used supplied by contractor)

2.4.MAINTENANCE METHODOLOGY

2.4.1. Overland Conveyor System

The two lines, A & B, are available for operation at all times, except on maintenance days when both lines will be standing as scheduled with Seriti mine for the *Contractor* to do maintenance. Twice a month, the opportunity exists for both lines to be non-operational simultaneously for 12 hours due to Seriti mine requirements.

2.4.2 OTS System

The Duvha Power Station Operating *Contractor* in liaison with the *Supervisor*, Seriti mine and the Duvha Power Station Maintenance Contractor plans the maintenance for the OTS system only when both belts from Seriti Mine are available for production.

Section 2 - Work to be performed by the Contractor

1. General

This section stipulates the work to be performed by the *Contractor* for the *works*, based on the minimum standard of maintenance specified by the *Employer*. The *Contractor* ensures that the plant meets the criteria specified in this section.

The *Contractor*:

- Provides a maintenance plan and schedule, compiled in liaison with Duvha Power Station Operating Contractor. The *Contractor* submits this maintenance schedule to the *Services Manager* for acceptance before the *Contractor* starts with any work on Site.
- Provides complete maintenance of all mechanical plant, electrical plant, civil works and structures.
- Provides 24 hours on-site supervision, suitably qualified to perform electrical resets and plant isolations (HV and LV as Responsible Person according to Eskom Plant Safety Regulations).

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- Performs repairs and provides on-site support for breakdowns on a 24-hour basis (7 days a week). Response times for failures call-outs are 60 minutes from call.
- Collects from the *Employer's* yard, installs (when required) and performs the routine maintenance of the free issued spares.
- Where applicable, procures, delivers and stores all other spares agreed with Services Manager and consumables necessary to maintain the overland conveyor and OTS systems.
- Obtains all maintenance parameters from the Original Equipment Manufacturers (OEMs). This forms the basis of the *Contractor's* maintenance procedures, for acceptance by the *Services Manager*.
- Establishes and maintains a records keeping system, accepted by the *Services Manager*. The *Contractor* records all routine inspections, failures, the causes, the remedial actions taken, etc. SAP PM system (at Duvha Power Station) should be utilised for this purpose as per Eskom's Work management Process.

1.1. Co-operation with Others

The *Contractor* interfaces with *Services Manager* for planned shutdown periods for maintenance purposes, taking due cognisance of the mine's coaling production schedules.

The *Contractor* interfaces with Services Manager for any unplanned maintenance and operating activities (e.g. breakdown recovery, etc.)

The *Employer* will, during the course of the contract, implement modifications or changes to the conveyor system and/or peripheral systems whenever necessary. The *Employer* may choose to utilise others, with whom the *Contractor* will co-operate.

The *Contractor* attends the weekly maintenance meeting, arranged by *Services Manager* at their offices.

The *Contractor* designs maintenance schedules in co-operation with Duvha Power Station Quality Assurance and Quality Control and Operating Contractors' plant log sheets. These are submitted to the *Services Manager* for acceptance before the *Contractor* starts with any work on Site.

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1.2. Supervision

The *Contractor* provides a supervisor or delegated employee(s) on site 24 hours per day, 7 days per week.

The *Contractor's* supervisor and/or delegated employee(s):

- Is/are qualified to perform first-line fault finding when equipment has failed and repair to clear fault.
- Is/are qualified and certified competent as **Responsible Person** in terms of **Eskom's High Voltage Regulations** and **Plant Safety Regulations systems**.
- Apply Permits-to-Work for any such required maintenance work on the *works* information;
- Is, on the initiative of the *Contractor* trained and authorised, for the *Employer's* account in the use of Eskom's Plant Safety Regulations and the Operating Regulations for High Voltage Systems.

1.3. PERMIT-TO-WORK ARRANGEMENTS

- The *Contractor* implements a Permit-to-Work system with lock-out facilities in accordance with the Eskom Plant Safety Regulations and the Operating Regulations for High Voltage Systems.
- Prior to the commencement of any activity that affects the operation of the plant, the *Contractor* arranges for the required work to be done with the Eskom appointed *Operating Contractor*.

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2. Overland Conveyor and OTS Systems

2.1. Electrical Maintenance

2.1.1. Overland Conveyor

The Contractor provides the electrical maintenance, repairs and inspections in accordance with the details and inspection frequencies indicated below, including that which the Contractor stipulates in his Works Information. This includes removal of damaged/ old component from plant and replacing it with new component of the same specification, model and type.

The *Employer* provides the power supply to the *works*. The *Employer's* responsibilities end at the cable connections to the transformers in the transformer yards. The limits of the *Contractor's* responsibilities with regard to power supply are depicted by drawing Appendix B: Overland Electrical System Layout 0.57/518 sheet 4 rev 2 as well as:

- Sub Station 1, situated next to drive house 4 excluding PLCs
- Sub Station 2, situated next to drive house 2 excluding PLCs
- Emergency Offloading Sub Station, situated next to the boom conveyor
- High mast lights
- Sub- Station 3 situated next to 2A&B tail at the mine. The Contractor is responsible for the maintenance of the bus section the two incomers and the two transformers

All safety circuits e.g. hooters, trip wires, under-speed switches, detrain switches, block chute detectors, emergency stops, local stops, take-up car limits and hydraulic coupling limit switches are tested and inspected for correct operation by the *Contractor*, at least once a month.

2.1.2. OTS System

The *Employer* provides the power supply to the work area. The *Employer's* responsibility ends at the cable from the switchgear to the field equipment, including the terminations. The limits of the *Contractor's* responsibilities with regards to power supply, are the terminations of the field equipment (i.e the terminations are the responsibility of the contractor). The *Contractor* also maintains the earthing.

The complete reclaim conveyor system from the Buffalo feeder, up to and including to the last chutes that throws onto conveyor 6A&B and conveyor 8A&B.

Refer to Appendix C: OTS Conveyor System Layout.

2.1.3. All the items referred to in the Titaco Strategic Coal Stockyard Manual

(E5071/2.3.10A, E5071/2.3.11A and E5071/2.3.12A) are included as the *Contractor's* responsibility, excluding: the Moveable conveyors. Note that the shiftable conveyor has been shortened and permanently fixed between the Buffalo feeder and the reclaim conveyor.

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All switchgear

All of these items referred to in the Titaco Strategic Coal Stockyard Manual (E5071/2.3.10A, E5071/2.3.11A and E5071/2.3.12A) are to be serviced and maintained.

2.1.4. Buffalo Feeder Breakers

All the items referred to in the Buffalo feeder breaker manuals and the 3,3kV power supply from the 12 kiosks is included as the *Contractor's* responsibility to maintain.

2.1.5. Motors

The *Contractor* inspects and ensures that motors:

- are kept clean and free from any coal spillage and dust, at all times;
- are not to run if wet, and
- are not submerged in mud or coal slurry.
- are sufficiently lubricated

In the event of any of the above happening, the motor is thoroughly cleaned, dried out and serviced, before being made operational.

The *Contractor* inspects and records motor parameters during weekly inspections.

In addition, the *Contractor* ensures that:

- monthly tests are carried out to monitor electrical current and vibration levels; and
- the findings of the tests are documented to determine when the motor must be serviced, or overhauled.
- motors are not to run with abnormal vibrations; and
- in the event of abnormal vibrations being detected, the motor is rectified immediately.
- motors are not to run when the cooling system is not in operation, or defective; and
- an abnormal rise in temperature is attended to.
- the thermal rating of the motor is not exceeded.
- bearing temperatures to be monitored.

Motors are not started more than that specified by the manufacturer of the motor, within a given time frame.

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2.1.6. Switchgear

All switchgear is inspected and maintained in accordance with OEM specifications which are obtained from the Duvha P/S library. In some instances, the Contractor will be required to execute maintenance with PTM, Eskom protection system maintenance contractor.

The *Contractor* shall execute the following maintenance:

- Remove all panel covers and clean board internally
- Clean and inspect all busbars, links, cable connections
- Clean and inspect VT's
- Reposition cable number tags if required
- Check wear-gap
- Replace vermiculite where necessary
- CT inspection and cleaning
- Replace broken plastic screws on panel covers
- Pressure test Vacuum bottles
- Insulation test Vacuum bottles
- Ductor test Vacuum breakers
- Links to be function checked
- Clean and inspect all breakers
- Lubricate breakers and function checks

2.1.7. Power Supply

The *Employer* is responsible

For the total overland conveyor electrical reticulation, excluding the 11kV incoming feeders from station board 1 and 2.

For 11kV overland conveyor board 2A and 2B maintenance, the *Contractor* is responsible for arranging the high voltage permits.

All the UPS on the plant to be serviced on a three monthly bases

The transformers are fed by an 11kV supply from the IFALETHU grid, and reduced to 3,3kV, 400 & 380V. From the transformers, the following sub stations are fed:

- the sub-station 1 switchgear;
- the sub-station 2 switchgear;
- the sub-station 3 switchgear Bus section incomer
- sub-station 3 transformers and 11kv supply cables
- the OTS sub-station switchgear.

Power supplies to all connections as above are:

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- kept free of dust; and
- cleaned.

2.1.8. OTS Substation Transformer Maintenance

The *Contractor*:

- Repairs oil leaks if any
- Checks all cable connections for any damages, replace if damaged
- Checks and verify the transformer oil levels and top up if required.
- Checks the breathers and the silica gel if still in good condition and replace if required.
- Takes transformer oil samples and analyse for kV, moisture and DGA
- All defects to be reported to System Engineer or supervisor

2.1.9. Junction boxes

The *Contractor* inspects and ensures that:

- all junction boxes are kept closed at all times;
- junction boxes are cleaned weekly;
- the hinges and locking devices are maintained and if found defective, repaired immediately.

2.1.10. Lighting

The *Contractor*:

- replaces defective lamps, fittings and lenses on a daily basis;
- keeps continuity when replacing lamps, fittings and lenses using the same type throughout the plant;
- verifies and maintains the OSHA required light intensity (lux) per area every 6 months;
- cleans all lighting boards;
- cleans all light fittings and lenses.
- Replace lighting cable when necessary

The *Contractor* maintains and cleans all the light systems on the overland and OTS system including:

- entire overland conveyor system lighting
- entire reclaim conveyor system lighting,
- high mast lights at the weigh bridges
- high mast lights at the offloading area
- lights on the 3 Buffalo Feeders
- 4 skid mounted lights

In addition to this the *Contractor* further weekly inspects all the extension cables on the lighting skids to the feeder breakers.

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2.1.11. Pull key and trip wire system

The *Contractor* inspects and ensures weekly that:

- lids on switches remain on tightly;
- switches are sealed to prevent dust or water from entering the electronic circuits;
- pull key switches are mechanically and electrically in working condition; and
- pull wires are well maintained and can move freely.

2.1.12. Rotating speed sensors/switches

The *Contractor* inspects and ensures weekly that:

- the friction slots on the pick-up wheels are clear of dust build up and debris, to ensure wheel traction on the belt at all times.

2.1.13. Belt alignment switches

The *Contractor* inspects and ensures weekly the functionality of:

- Inspect activating arms for wear and tear
- Inspect power cables for any damage
- Inspect casing for physical damages
- Ensure the switch is intact into position

Spots on belts that can damage this equipment are immediately repaired.

2.1.14. Block chute detectors

The *Contractor* inspects and ensures that:

- the sensors; and pickups are cleaned on a weekly basis to prevent trips of the belt; and that
- the functionality of the pick-ups and sensors are maintained at all times.

2.1.15. Belt tension detector

The *Contractor* inspects and ensures that:

- the belt tension detector is functional at all times and inspected weekly.
- the connector between the cell and the transmitter is dry and dust-free at all times; and
- an approved calibrating laboratory (for example, SA Scale) calibrates the load cell used to measure the tension of the belt;
- the test is conducted every 12 months;

2.1.16. Protections

The following are examples of protections:

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- hooters, trip wires, speed switches, detrain switches, block chute detectors, emergency stops, local stops, take-up car limits, fire protections, belt rip detectors and hydraulic coupling limit switches.

In addition to the monthly test for correct operation, the *Contractor* inspects and ensures that:

- all above plant are operational at all times;
- repaired immediately when defective;
- cleaned; and the status is recorded on a weekly basis

2.1.17. Tripper cars

The *Contractor* inspects and ensures that:

- tripper car hot-rails (busbars) and brushes are in good operational condition
- thruster brakes are operational and functional
- Clean tripper car wheel tracks

2.1.18. High mast lights

The *Contractor* inspects and ensures that:

- all lights on the two high masts next to sub-stations 2 & 4 are working and repaired when defective.

2.1.19. Sub stations

The *Contractor* executes maintenance as per the Eskom maintenance strategies in all overland conveyor belts substation 1,2 and 3 including OTS and Driefontein Dam substations:

SYSTEM COMPONENT	ACTION
24V Brds and Chargers	Remove panel covers and clean boards and chargers
	Check all busbars, cabling and switchgear panels
	Check all fuse holders, clip-on terminals and connections
	Check that all the SCR's are operating correctly (phase balancing)
	Check and correct voltage& current settings
	Verify that alarms are received and acknowledged by an operator
	Measure the standing load current
	Measure the ripple voltage from the charger/UPS to the battery bank
	Perform DC integrity test when unit is within the operators control& the plant should not trip
	Clean board internally

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The maintenance of the Overland conveyors, Sampling Plant, Reclaim system conveyors (OTS) and top Staites Conveyor systems.

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	Check and correct alarm settings
	Carry out 24V DC dual supply checks (50 Amp and 16 Amp supplies)
	Check for voltage differences between "O" potential and MZ (non-current caring supply)
	Measure and normalise the ac incoming supply voltage
	Replace indicating lamps
	Record the charger voltage and current
	Ensure the battery charger is in float mode when taking readings
	Ensure the battery voltage does not drop by 10%
	Calibrate chargers
	Check, record and report all alarms to the responsible person
	Perform full functional test
Inverter	Clean inverter panel
	Check all connections, fuse holders and terminals
	Calibrate inverter charger
	Clean filters
	Check if alarm wiring is correct
	Check all alarms
	Perform full functional test
	Tighten and torque the battery cell connections

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Batteries	Check for cracks and leaks on the cells
	Measure voltage on each cell and record it
	Check connectors for corrosion
	Check Flaking of cells
	Inspect the water level and top up if necessary
	Check for hot spots on termination points
	Check battery stands for corrosion
	Based on routine maintenance reading perform equalise charge on every battery bank with cells out of step.
	Measure and record voltage on the all battery cells
	Perform discharge test on the 24V & 220V battery banks and record the results
Electrolyte	Top up the cell if below minimum mark
	Use demineralised was to top up
	Log the volume of water consumed and cell number
	Measure pilot cell Voltage
	Measure pilot cell temperature (25 degrees C)
	Take specific gravity measurements (SG) on the all the cells
Battery Cabinet	Inspect and replace the safety equipments if need be
	Inspect ventilation whether is working
	Inspect lighting
	Inspect and clean the room

The *Contractor* inspects and ensures weekly that:

- the area is clean; and
- lights are maintained.

The *Contractor*, every 3 months, inspects and cleans vacuum breakers (3,3kV breakers) and when doing so, obtains a permit to work and ensures that the vacuum breaker is racked out when the front panel is removed.

The *Contractor*:

- cleans the breaker motor;
- visually inspects for the appearance of moisture in the vacuum tubes; glossy silver colour for normal conditions and milky white or transparent colour indicating deterioration; and replaces it if defective;
- inspects all insulated parts for cracks;
- inspects current carrying components for corrosion and cleans if corroded;
- tightens all connections and bolts;
- inspects mechanism for free moving parts;

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- inspects and cleans auxiliary contacts;
- inspects electrode for wear;
- inspects cable connections at back of panels for security;
- cleans panel, (excluding PLC panel);
- visually inspects all contactors and relays for free movement.

2.1.20. Substation 1, 2 and 3 Transformer Maintenance

The *Contractor*:

- Repairs oil leaks if any
- Checks all cable connections for any damages, replace if damaged
- Checks and verify the transformer oil levels and top up if required.
- Checks the breathers and the silica gel if still in good condition and replace if required.
- Takes transformer oil samples and analyse for kV, moisture and DGA
- All defects to be reported to System Engineer or supervisor
- Sub- Station 3 situated next to 2A&B tail at the mine. The Contractor is responsible for the maintenance of the bus section the two incomers and the two transformers

2.1.21. Instrumentation

The *Contractor* maintains all instrumentation, indicators, pressure switches, flow switches on the plant.

2.2.MECHANICAL MAINTENANCE OF OVERLAND CONVEYOR AND OTS SYSTEMS

Contractor is responsible for all plant within the Site. Refer to Appendix A: Overland Conveyor System Layout. The following buildings and civil works form part of the scope of the *works*, to be maintained by the *Contractor*:

Structures:

- sub- stations;
- drive and transfer houses
- Conveyor structures and cladding
- All the crawl beams in the plant to be inspected and load test once a year

The *Contractor* provides the routine mechanical maintenance, repairs and inspections in accordance with the details and inspection frequencies indicated below.

2.2.1. Gearboxes

The *Contractor* inspects all gearboxes weekly for;

- oil leaks;
- excessive operating temperature, noise, vibrations; and check
- loose bolts
- exhaust breather and replaces:
- worn seals;
- Silica gel

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The *Contractor* performs condition monitoring of all gearboxes, performs fault diagnosis when faults are detected; and tops-up oil, whenever necessary. Replace damaged or defective gearboxes and perform laser alignment of the entire system. The *Contractor*, furthermore, greases all backstops and anti-run back devices on all drive gearboxes on a weekly basis.

2.2.2. Pin and fluid drive couplings

The *Contractor* inspects, once a week:

- for uneven running due to damaged components; and
- removes covers and inspect for faulty or damaged couplings
- uneven running, due to alignment
- bearings; and
- for non-functional fusible plugs, due to low oil level or overload.
- Oil leaks
- Damaged coupling rubber buffers

The *Contractor*:

- realigns where necessary; and
- replaces bearings, where necessary.

2.2.3. Holdback Units

The *Contractor* daily:

- performs visual inspections, and
- inspects oil levels regularly and re-fills, if and when necessary.
- Inspect for normal running temperatures and if there is a concern rectify

The *Contractor*, once a week:

- Inspects for oil leaks; and
- Do oil changes to the unit
- Visually inspects condition of arm and locking pins

The *Contractor* monthly cleans internals with degreasing agent and inspects stop lugs for wear/damage. If lugs are damaged or worn, replace with new. (Never use grease for internal lubrication of backstops.)

2.2.4. Conveyor Idlers and frames

The *Contractor* daily inspects for:

- Idlers running noisy
- worn shells or end caps
- broken idler bases
- Damaged idler frames
- material build-up and
- clean dirty areas and
- replaces worn or defective idlers
- replace seized idlers and running with high temperatures

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- Replace damaged idler frames with correct frames

Idler frames are stencil marked by the *Contractor* for unique identification for idler replacement purposes. Replace damaged idler frame with correct frames to be provided by the employer.

2.2.5. Wire Rope

The *Contractor*, every two weeks:

- inspects for damage and corrosion
- clean and re-grease if required
- replaces elongated or worn rope, or and when cut short. Replacement must be done using correct wire diameter and must be rubber emberded
- replace switches if not functional

2.2.6. Pulleys, bearings and plummer blocks

The *Contractor*, weekly, inspects and repairs for:

- Noisy bearings or bearings running at high temperature
- Replaces worn bearings and seals
- Rectifies the damaged pulley lagging and replaces. Only lagging, accepted by the Services Manager is used.
- Lubricate all bearings in accordance with the accepted planned maintenance schedule.
- Replace all worn pulleys
- Check pulleys for worn bend shafts or damaged shafts

2.2.7. Routine Belt Maintenance (ST1000 and Class 800, 3ply, 1500mm width)

The *Contractor* visually inspects all steelcord belts and ply belts conveyor belting weekly. Perform belt scanning on steelcord belts yearly and provide a report. Do belt thickness test every six months and provide report. Replace belts as per agreed schedule with the Employer.

The following faults are specifically noted

Belt detrainng: In such event the *Contractor* immediately trains the belt. Plant in operation permit will be used.

Splice separation (condition): In such event the *Contractor* immediately adjusts the scraper or repairs the splice based on the condition after detailed assessment. If splices start to pull apart, the complete splice must be replaced.

Steel cord integrity inspection (belt scanning) is performed every six months by Engineering and the copies of the reports for each steel cord belt are presented to the *Services Manager* for acceptance. The reports contain all the radiographic pictures taken during the inspection.

2.2.8. Belt Splicing

All conveyor belt splicing is subject to accepted industry standards, the standard and procedure employed being subject to acceptance by the *Contract Manager*. Both hot and cold splices will be applicable based on the Contract Managers' decision.

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The *Contractor* marks each splice with a unique number for registration and capturing. This includes splice number, date of splicing and company name. insert done on all steelcord belt should be to a minimum of 60m long.

Damaged or cut out conveyor belt pieces must be removed by the *Contractor* and taken to the *Employer's* facility for scrapping.

Maximum steelcord splicing duration is 8hrs to 10hrs for splicing.

Maximum ply belt splicing duration is 7hrs to 9hrs. Mechanical clip joints are only allowed under emergency situation and can only be run not for more than 2 weeks.

Eskom procedure unique identifier 240-120532564 to be used as a benchmark when constructing a splice joint on site.

2.2.9. Scrapers

The *Contractor* inspects weekly for improper belt cleaning, in such event the *Contractor*:

- Immediately replaces the blade when worn/damaged; and
- Adjusts blade tension.
- Ensures when tensioning the scraper that damage to conveyor belt part is been taken into consideration.
- The contractor will also replace old scrapper units with new when required.

Scraper replacement: only blades need to be replaced and frames should be reused. During inspection it is the responsibility of Contract to clean spillages within the scraper for proper visual inspection. In the situation of frame being damaged, Employer will provide with a complete new scraper.

Note: Duvha is using Martin engineering scrapers, Brelko scrapers and also Flexco scrapers

2.2.10. Rubber Skirtings

The *Contractor* inspects weekly for material build up, wear and tear, physical damages and gaps

- In such event the *Contractor* adjusts skirtings to prevent spillages.
- Replace damaged skirtings with new

2.2.11. Chutes

The *Contractor*:

- Inspects chute liners for wear and erosion and repairs if necessary.
- Inspects for missing liners and replaces if necessary.
- All chutes to be lined up with 25mm thick ceramic tile liners on the mainstream flow and 12mm on the sides.
- Check for leaking chutes and repair properly
- Ensure that all inspection doors are intact and closing properly

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2.2.12. Take-up car and counter weight

The *Contractor*

- inspects on a weekly basis for any type failure including damaged structures.
- Ensure all weights are intact and not catching on the main pole.
- ensure that sheave wheels are greased yearly.
- Ensure take-up carriages are in good condition and freely moving on the rails.
- Ensure take-up pulley is properly running and not misaligned
- Check for any damages on the structure due to belt rubbing on or bend
- Ensure the take-up carriage is not running in coal spillages

2.2.13. Tripper cars

The *Contractor*:

- inspects gearbox oil once a month.
- Check gearbox oil every six month and replace where necessary
- inspects pulley bearings once a week.
- inspects rails for deformation once a week and aligns if necessary.
- inspects belt detraining through tripper car once a week and aligns if necessary.
- inspects wheels for shape and functionality once every 6 months.
- inspects and function checks the effective operation of the tripper car brakes once a week.
- Inspection of grizzly bars every week and repair if required.
- Inspection of rails every month and repair if required

2.2.14. Overland conveyor belt and drive house cladding

The *Contractor*:

- maintains all cladding; and
- repairs and replace loose and missing cladding.

Cladding is removed to do maintenance work on plant areas, which are difficult to access, and is replaced immediately after completion of the work.

2.2.15. Coal Staithes

The *Contractor*:

- maintains all walkways, grizzly bars, platforms, rails, fire pipes and sheeting. Replace if need arise.

2.2.16. Safety signs

The *Contractor*:

- ensures that all safety loading signs and general safety signs are visible and clean at all times,
- ensures that the “NO UNAUTHORISED ENTRY” signs at drive houses are displayed at all doors, and

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- repaint or refit signs whenever damaged or faded.

2.2.17. Access Control

The *Contractor*:

- ensures that all the main doors at the bottom and the top levels of drive houses are always available for Operating to lock

2.3.CONDITION MONITORING OF OVERLAND CONVEYORS AND OTS SYSTEMS

The *Contractor* performs condition monitoring on all conveyor belting, bearings, gearboxes, pulleys, motors, fluid-drive couplings and switchgear in total. The service includes data collecting, data trending, reporting, problem solving and technical recommendations in the form of an electronic report issued monthly by the *Contractor* to the *Services Manager*.

2.3.1. Condition monitoring activities

This service includes the following routine type monitoring as a minimum: this service will be provided by (Rotek Condition Monitoring) but it is the responsibility to put on a request should a need arise.

- vibration data collection (as and when required)
- oil analysis every 3 months
- Thermal heat scanning of electrical equipment (as and when required)
- Thermal heat scanning of idlers, pulleys, motors and gearbox bearings (as and when required)
- Thermal heat scanning of coal staithe and coal stockyard (as and when required)

The Contractor responsibility: Below condition monitoring cope will be provided by the Contractor

- non-destructive testing to determine steelcord belt condition and integrity (yearly).
- Laser Alignment (As and when required)

The *Contractor*:

- provides maintenance predictions and recommendations, and
- establishes and reports on causes of adverse trends.

The *Contractor*:

- notifies faults for abnormal conditions within 24 hours of the event,
- compiles detailed monthly reports, and recommends corrective action on reported issues.
- Provide belt maps monthly

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2.3.2. Monitoring of gearboxes, pulleys, fluid couplings, motors & buffalo feeders:

This includes gearboxes, Motors, fluid couplings and pulleys. Scope will includes monthly oil analysis (P&T), monthly thermal scan, and monthly vibration analysis on gearboxes (P&T), motors and fluid coupling.

- Gearboxes x 24: Check vibration levels, temperature ranges on input shaft, output shaft and on all body of gearbox. Take oil samples as per schedule for analysis.
- Fluid couplings x 24: Check vibration levels, do oil sampling as per schedule for analysis.
- Motors x 24: Check vibration levels, temperature range, and lubrication on rear, front and along motor body.
- Sampling Plant: Condition Monitoring shall be conducted on a monthly basis: Check vibration levels, temperature ranges and oil qualities.
- Buffalo feeder gearboxes x 7: Check vibration levels, temperature ranges on input shaft, output shaft and on all body of gearbox. Take oil samples as per schedule for analysis.
- Buffalo feeder motors x 7: Check vibration levels, temperature range, and lubrication on rear, front and along motor body.
- Buffalo feeder fluid couplings x 4: Check vibration levels, do oil sampling as per schedule for analysis.

2.3.3. Laser alignment for all drives:

Do laser alignment for all drives when required.

Item NO	Conveyor NO	Gearbox size	Motor frame	Motor size
1	2A & 2B	500/700	D355 L	300 KW
2	3A & 3B	500/700	D355 L	250 KW
3	4A & 4B	300/420	D250 M	75 KW
4	5A & 5B	400/560	D355 L	200 KW
5	6A & 6B	460/630	D355 L	220 KW
6	7A & 7B	17"	D250 S	75 KW
7	8A & 8B	500/700	D355 L	300 KW
8	Reclaim conveyor	BT 440-20	D355 LX	300 KW
9	Cross conveyor	BT 320-02	D355 LM	160 KW
10	Link conveyor	BD 260-06	D280 MD	110 KW

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11	Ramp conveyor	BT 320-05	D250 SP	55 KW
12	Boom conveyor	KEA 200	D250 M	75 KW
13	Shuttle conveyor	KEA 160	D 250 S	55 KW
14	5 x Buffalo feeder	HDO 120	D 280 S	80/55 KW

2.3.4. Conveyor belt names and lengths:

OVERLAND AND OTS BELTS	TOTAL LENGTH in (m)
2A	3307
2B	3315
3A	2820
3B	2835
4A	149
4B	160
5A	661
5B	653
6A	662
6B	671
7A	90
7B	104
8A	1038
8B	1040
CROSS CONV	482
RECLAIMER	2508
SHUTTLE CONV	31
BOOM CONV	65
LINK CONV	86
SHIFTABLE/ramp CONV	119

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2.3.5 South Plant Payment Sampling Station

- 2.3.5.1 The contractor will maintain the above Payment Sampling Plant in an acceptable working condition, with normal planned maintenance carried out during the main plants shutdown times using but not limited to the guidelines showing the attached scope of work schedule.
- 2.3.5.2 Further to this, the contractor will be on stand-by for 7 days per week for any unforeseen break down within the payment sampling plant. The response time should be no more than 45 minutes from time of call.
- 2.3.5.3 All spare parts to be supplied by the purchaser. The contractor will provide all the relevant tools, equipment and consumables to perform the maintenance. The contractor to issue a report on a monthly basis to the purchaser advising which spare and quantities will be required for the next planned maintenance. The contractor must also compile a list of critical spares and quantities that the purchaser should have in stock at all times.
- 2.3.5.4 The supplier/contractor will adhere to all the MMS safety regulations, including but not limited to all induction, PPE, vehicle, works acts, lock out procedures and documentation requirements.
- 2.3.5.5 The contractor to supply own transport of personnel.
- 2.3.5.6 The supplier/contractor will on a monthly basis issue a report on the status of the payment sampling plant and all the work carried out for the previous months.
- 2.3.5.7 Battery limits
 - 2.3.5.7.1 The contractor is responsible for the maintenance of the Payment Sampling plant from the primary hammer sampler on Conveyor 24 to the final sample collection bins B1 through B4 and A1 through A2, and all associated equipment. The contractor is also responsible for the maintenance of the equipment within the sample preparation area, excluding the calibration of balances and ovens.
 - 2.3.5.7.2 The contractor is also responsible for all electrical works serving both the Payment Sampling Plant and the joint sample preparation area.
- 2.3.5.8 Exclusions

All lighting requirements- Seriti Mine's responsibility

All security equipment, including but not limited to CCTV cameras, access equipment such as card entrance points and equipment locks.

Equipment	Time Period		Maintenance Description	Action
Hammer Sampler	2 Weekly	1	Check that rubber wiper is cleaning the entire belt.	Adjust/Replace if require.
		2	Check that the nylon brush is cleaning the entire belt	Adjust/Replace if require.

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		3	Check that rubber side skirts are containing spillage.	Replace if required.
		4	Check that rubber side deflectors are containing spillage	Replace if required.
		5	Check for any foreign material or build up in the cutter.	Clear if required.
	Monthly	1	Check oil level in the gearbox	Top up if required.
		2	Check grease in bearings	Top up if required.
		3	Check condition of clutter's leading edges	Dress/replace if required.
	6 Monthly	1	Replace gearbox oil	Drain old oil and replace with correct oil at the correct quantity. (Quantities are indicated in the equipment manuals).
		2	Replace bearing grease	Open and clean old grease from bearing housing and top up to the correct quantity (Quantities are defined in equipment manuals).
Mini Conveyor belt	2 Weekly	1	Check for spillages	Clean when required
		2	Check that all idlers are in good working order and free from spillage.	Clean/replace as required.
		3	Ensure that the belt scrapper is cleaning the entire belt.	Adjust/replace as required.
		4	Check that belt is tracking in the centre with an without load	Adjust as required.
	Monthly	1	Check gearbox oil level	Top up if required
		2	Check bearing grease level	Top up if required
		3	Check the condition of the conveyor	Replace worn section as required.

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		4	Check the condition of the pulley/pulley lagging.	Replace when required.
	6 Monthly	1	Replace gearbox oil	Drain old oil and replace with correct oil at the correct quantity. (Quantities are defined in equipment manuals.)
		2	Replace bearing grease	Open and clean old grease from bearing housings. Replace with correct grease, replace close bearing housing and top up to the correct quantity. (Quantities are indicated in equipment manuals).
Impact crusher	Monthly	1	Check the screen gap	Replace when it reaches 11mm or it holes.
		2	Check linear plate thickness	Replace before it holes. (Minimum thickness is detailed in the equipment manual)
		3	Check grease level in bearings	Top up if required
		4	Listen for bearing noise	Replace bearings if noisy.
		5	Check impact bar conditions	Replace worn bars, before they break.
		6	Check condition of rota	Replace when worn.
		7	Check all nuts and bolts	Tighten if loose.
		8	Check 'V' belt tension	Adjust if required.
		9	Check condition of "V" belts	Replace when required.
		6 Monthly	1	Replace bearing grease.
Turnstile Dividers	2 Weekly	1	Check the top scrapper is clearing the entire top table surface.	Adjust/replace rubbers if required.
		2	Check that bottom scrapper is clearing the	Adjust/replace rubbers if required.

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		entire bottom table surface.	
	3	Check that paddle wipers are clearing all rejects in housing	Replace rubbers if required.
	4	Check cutter gaps are adjusted to correct settings.	Adjust to the correct settings as specified by the process personnel. Lock cutters in these positions.
	5	Check nuts and bolts	Tighten if loose
Monthly	1	Check gearbox oil	Top up if required.
	2	Check bearing grease	Top up if required
	3	Check condition of top table	Replace once 5mm thick or unevenly worn
	4	Check condition of top plate	Replace once 5mm thick or unevenly worn.
	5	Check motor brake clearance	Adjust to correct setting as stipulated in manual if required.
	6	Check condition of paddle arm	Replace if bent
6 Monthly	1	Replace gearbox oil	Drain old oil and replace with correct oil at the correct quantity. (Quantities are indicated in the equipment manuals).
	2	Replace bearing grease.	Open and clean old grease from bearing housings. Replace with correct grease, replace close bearing housing and top up to the correct quantity. (Quantities are indicated in equipment manuals).

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		2	Check linear plate thickness	Replace before it holes. (Minimum thickness is detailed in the equipment manual)
		3	Check grease level in bearings	Top up if required.
		4	Listen for bearing noise	Replace bearing if noisy.
		5	Check all nuts and bolts	Tighten if loose.
		6	Check "V" belt tension	Adjust if required
		7	Check condition of "V" belts	Replace when required
	6 Monthly	1	Replace bearing grease	Open and clean old grease from bearing housings. Replace with correct grease, replace close bearing housing and top up to the correct quantity. (Quantities are defined in equipment manuals).
		2	Replace toggle and toggle spring	Remove old toggle and spring and replace with new toggle.
Drying Ovens	Weekly	1	Check that all elements are in working	Replace when required.
		2	Check temperature settings on dryers	Set to 40 or 80 degrees if required
		3	Check that fan is running correctly	Repair as required.
Pulveriser	2 Weekly	1	Check pulveriser plates	Replace when required. (Minimum thickness is detailed in equipment manual)
		2	Check grease level in bearings	Top up if required
		3	Listen for bearing noise	Replace bearing if noisy
		4	Check all nuts and bolts	Tighten if loose
	6 Monthly	1	Replace bearing grease	Open and clean old grease from bearing housings. Replace with correct grease, replace close bearing housing and top up to the correct quantity. (Quantities are defined in equipment manuals).
Sieve	2 Weekly	1	Check screens are in working order	If screen cloth is holed or blind replace screen with one of same aperture

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		2	Check bearings	Replace if noisy.
General	Monthly	1	Check all walkways	Remove anything obstructing walkways. Tighten any loose grating.
		2	Check all stair treads	Tighten if loose and replace any damage treads.
		3	Check all hand railings	Replace any damaged railings and secure any loose railings.
		4	Check all safety signs	Replace any damaged signs and secure
		5	Check condition of fire extinguishers	Refill if any seals are broken or the units are damaged in any way.
		6	Check extraction fan	Replace motor bearing when required.

2.3.5. Inspection of the conveyor belts and mechanical/electrical equipment

The service includes the belts men to inspect, Monitor, analysis , record and report conveyor belts mechanical, civil and electrical condition from Seriti Mine to Duhva power station (Sampling plant), 2 A and B till 8 A and B), Reclaim Conveyor, Stockpile, Cross Conveyor, Link Conveyor, Shuttle Conveyor and Boom conveyor according to the following scope of work:

- Identify and mark all faulty idlers on top and bottom of the belt frames. Identify the common failure area so as to allow changes for better plant reliability.
- Identify condition of the Ply, and Steel cord belt. Check for cuts, rips, tear, pilling off, holes, broken steel cords. Identify any misalignment on the belt system in order to achieve maximum optimisation of the system and prevent breakdowns due damages on the belt.
- Visually check conditions of the spliced belts and identify any visible damages. Check for splice pilling off and straightness to avoid belt mis-tracking.
- Visual inspection of gearbox oil leaks, thermal condition by hand touch, checks for cleanliness, check vibrations by hand touch feel and identify abnormal noises.
- Visual inspection of Condition, check for any damage, check the bearing temperatures, leakages, cleanliness, vibration by hand touch and identify abnormal noisy.

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- Visual inspection of scrapper conditions, check the blades conditions, check adjustment position, check for any coal build-up which can affect the scrapper functionality.
- Identify any roof leaks that lead to belts being exposed to rain of any foreign weather conditions.
- Identify and log belts that are running without coal.
- Monitor the condition of the belts (Thickness top/bottom, derailing and scrappers). Check for the shore hardness of the rubber and that must range in between 60 to 70 %.
- Provide the belts management (Quality control procedure and replacement). This must include the belt maps, the splice quality control procedure and belt assessment method.
- Monitor plumber blocks bearing temperatures, physical conditions and re-grease if required leakages. Ensures that all plumber blocks are well tight on the structure and aligned.
- Check substations locking status, cleanness and no physical structural damages.
- Measure and log nip guards' clearances.
- Inspect guards conditions and availability where required.
- Provide splice management (Quality control procedure and register). The following items to be checked during splicing of belt, Humidity to be less 50%, expiry dates of material used for splicing, correct tool must be used to avoid damage on the belt plies, check the shore hardness of the splice 60 – 70%. The company and date of splice must also be recorded on the quality control document and also on the spliced area.
- Provide pulley lagging management (Quality control procedure and installations). All drive pulleys must always have ceramic lagging and the rest of other pulleys to have diamond rubber lagging. Also humidity must be check to ensure high quality work (less 50%). Ensure the shore hardness of the lagging to 65% -67%. Minimum tensile strength of 15.7 Mpa, Minimum elongation at break of 500% and Maximum abrasion loss of 84 mm³.
- Provide idler management (Quality checks according to Eskom idler specification standard, numbering of frames and prioritise according to the belt damages)
- Inspect counterweight structure, mountings on the concrete, sheave wheels conditions and wire rope conditions.

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- Inspect conveyor belt structures, check for cracks, bends, twist and wobbling conditions.
- Check belts, outside structure and drive houses housekeeping and report for cleaning purpose.
- Provide a detailed daily, weekly and monthly report that consists of the defects list and repairs progress of the plant.
- Compiled reports should be done electronically and handed to The Services Manager for acceptance on daily, weekly and monthly basis.
- Keep electronic records of all repairs and defects on the plant for history purposes on Duvha power station maintenance Sap system.
- Report all tile condition on all the chutes and leaks due to damages on the chutes. Check the functioning of chute detectors.
- Check the belt tripping sequence functionality, check hooters functionality, and check emergency device functionality and fire extinguisher expiry dates.

2.3.6. Conveyor idler inspection:

Conveyor NO	Frames T/R	Roll size(T)	Roll size(R)	Trough NO	Return NO
2A & 2B	1371/546	340x127x25	580x127x25	5	2
3A & 3B	1163/456	340x127x25	580x127x25	5	2
4A & 4B	63/20	340x127x25	580x127x25	5	2
5A & 5B	276/104	340x127x25	580x127x25	5	2
6A & 6B	263/106	340x127x25	580x127x25	5	2
7A & 7B	45/12	340x127x25	580x127x25	5	2
8A & 8B	424/161	340x127x25	580x127x25	5	2
Reclaim conveyor	967/319	560x127x25	580x127x25	3	2
Cross conveyor	189/63	560x127x25	580x127x25	3	2
Link conveyor	39/12	560x127x25	580x127x25	3	2
Ramp conveyor	13/7	560x127x25	580x127x25	3	2
Boom conveyor	25/8	560x127x25	580x127x25	3	2
Shuttle conveyor	11/5	560x127x25	580x127x25	3	2

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2.3.7. Conveyor belt monitoring

- **Belt ex-rays scanning:** on the steelcord belt which are 2A & B, 3A & B, Reclaim belt every 6 months. Report to be submitted to the Services manager electronically and also on hardcopy. The contractor must present the report to CMD so that proper planning can be done in time to avoid breakdowns.
- **Hardness test and wear profiling:** Different wear profile occurred on the belt due to different problems and these must be eliminated to prolong the life of the belt. Belt hardness test must be done to ensure the flexibility of the rubber and its protection ability. Any type of wear must be reported for proper root cause analysis and action plan to minimise that.
- **Belt tracking:** Good belt tracking ensures free damage belt which improve the belt life. It also reduces the spillage for good housekeeping of the plant.

2.3.8. Mobile buffalo feeder inspections

- House keeping. Ensure that no coal spillages on the machine protected equipment.
- Loading of the feeder according to operational specifications.
- Chute loading status: Check if the chute is load centrally on the belt to avoid belt mis-tracking.
- Check if the emergency lights are working.
- Check the greasing system functionality and report if not working.
- Check for any physical damages which occurred on the machines and report for repair.

2.3.9. Quality of work

The specifications referred to below, are the guideline/standard for all condition monitoring performed on the plant.

- Condition Monitoring, GGG 0330.
- In-service monitoring of lubricating oils and hydraulic fluids, GGG 3653.

2.3.10. Reports

Monthly reports on condition monitoring are electronically submitted to the *Services Manager* on the last day of each month. These reports are created using MS Office or Microsoft Excel. The details and layout of these reports are accepted by the *Services Manager* prior to the submission of the first report

2.4.STRUCTURES AND CIVIL WORKS

2.4.1. STRUCTURES:

The *Contractor*:

CONTROLLED DISCLOSURE

- inspects on a monthly basis, all structures under his control to determine the condition and corrective action to be taken and performs all wear and tear related maintenance.
- reports major structural faults to the Services Manager who determines further action.
- All crawl beams on the plant to inspect and load test once a year
- All catwalks and cat ladders to be inspect and repaired
- The shaker/roller bars must be maintained and kept clean

The *Contractor* ensures that:

- all roofs and gutters are cleared of debris, annually;
- all walls and ceilings are repaired and painted, when necessary;
- structures are cleaned, repaired and painted, to the *Employer's* color codes.

2.4.2. CIVIL WORKS:

The *Contractor*:

- Maintains all fences and gates along the length of the entire conveyor belt system.

3. ENVIRONMENTAL RESPONSIBILITIES

3.1.GENERAL

To protect the *Employer's* environmental interests, the *Contractor* complies with all relevant and appropriate environmental legal requirements contained in governmental notices, laws and regulations promulgated by the national and provincial governments.

The *Contractor* accepts all responsibility, accountability and liability associated with such legal requirements.

The *Contractor* provides the *Employer* with a product and service falling in the scope of Act 36 of 12874 or Hazardous Substances Act no 15 of 1973. The *Contractor* provides the *Employer* with all the necessary information to comply with the legal requirements of Government Notice R1179 in Government Gazette No 16596 of 25 August 1995 (Exposure of employees to Hazardous Chemical Substances) and Section 10 of the Fertilizers, Farm Feeds, Agricultural Remedies and Stock Remedies Act, No 36 of 1947 (Registered pesticides, fertilizers and agricultural remedies, including herbicides ("weed killer").

The *Contractor* adheres to all environmental legislation.

CONTROLLED DISCLOSURE

3.2.FIRE PREVENTION

The *Contractor* takes all necessary precautions for fire prevention on the *site*.

The *Contractor* ensures that the plant is kept clean of combustible debris.

The *Contractor* maintains all fire protection equipment and fixed installations. This exclude refilling of fire extinguisher bottles which is done by Employer. It is the responsibility of the Contractor to ensure that all fire equipment in plant are clearly marked and up to date.

3.3.EROSION CONTROL

The *Contractor* takes all the necessary precautions to eliminate or minimise erosion of the *works*. Any work done is subject to acceptance by the *Services Manager*.

Any erosion damage must be repaired and the areas restored to their original condition. Such repair work is carried out as soon as possible after damage occurred.

4. SAFETY

The *Contractor* complies with the Occupational Health and Safety Act.

The *Contractor* complies with the Eskom Plant Safety Regulations and the Operating Regulations for High Voltage Systems when performing activities on the *works*.

4.1.SAFETY PLAN

The *Contractor* maintains a safety plan in accordance with the OHSA.

The *Contractor* provides safety statistical information on a monthly basis to the *Services Manager*, on the 15th of every month. Details of the reporting format and information required, are obtained from the *Services Manager*.

5. DAILY DIARIES

The *Contractor* maintains a daily diary of people, Equipment, running hours Plant, Materials, progress reports and weather conditions. All of which are submitted electronically to and agreed by the *Supervisor* on a daily basis.

6. QUARTERLY REPORT

This report is divided into the various plant areas.

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The *Contractor* submits a quarterly report electronically to the *Services Manager* regarding the plant, which includes the following areas:

- general; and detail performance of the plant;
- availability of the plant;
- the amount; and areas of maintenance done;
- work outstanding;
- particular problem areas; and the nature of these problems;
- proposed corrective actions, to rectify these problems;
- Proposed modifications; and response to instructions received from the *Services Manager*.

The layout of the report and specific detail reported is subject to acceptance by the *Services Manager* prior to submission.

7. MEETINGS

The *Contractor* attends meetings as instructed by the *Services Manager*. Daily and monthly meetings are envisaged, as a minimum.

8. QUALITY

Quality Management shall comply to the *Employer's* standard GGS0462 - Quality Requirements for Engineering and Construction Works, as required in form A & B of the *Employer's* standard GGS0462, included in the Works Information.

SECTION 3 - WORK AND THINGS FOR THE WORKS SUPPLIED BY THE EMPLOYER

9. GENERAL

This section stipulates the work and things for the *works* provided by the *Employer*.

10. ELECTRICAL POWER SUPPLY

The *Employer* provides the power supply to the *works*.

The *Employer* arranges access with IFALETHU MINE for maintenance/protection function checks of the 11kV overland conveyor incoming, inter-connector, as well as the bus-section breakers.

11. FREE ISSUE ITEMS

The following items are free issued by the *Employer* at his stores and are collected by the *Contractor*.

CONTROLLED DISCLOSURE

- Conveyor pulleys (not idlers)
- Conveyor gearboxes
- Conveyor motors
- Conveyor belts and insert pieces
- Conveyor fluid drive couplings
- Conveyor drive 3.3kV circuit breakers and motors
- Conveyor Idlers and frames
- Plummer blocks and bearings

12. SITE YARD

A yard with no infrastructure is provided inside the Duvha Power Station perimeter fencing.

13. CRANE

On Site, a mobile crane with a crane driver is supplied by the *Employer*. ***Eskom will be liable for any delay damages due to crane unavailability.***

The *Contractor* supplies his own:

- Slings
- Riggers
- Assistance
- Transport etc.

SECTION 4 - PROGRAMMING AND PLANNING

14. PURPOSE

This section specifies the programming and planning that the *Contractor* does for the *works*.

General Contractor will provide the maintenance strategy to be adopted for the duration of the service. The strategy must include the organogram for the structure that will cater for the sub-contracting.

The *Contractor* implements a maintenance program that meets the minimum production and maintenance, reliability, availability and quality requirements of this contract.

15. THE *CONTRACTOR'S* PLANNING SYSTEM

The *Contractor* provides a computer which will be connected to Eskom's planning system, SAP. for maintenance schedules, the planning of work packages, recording Material and Equipment history, tracking assets and a maintenance database. On the database the following services are to be created complete with detail activities, safe working procedures, standard isolation requirements, resource planning, skill requirements and activity scheduling. The *Contractor* obtains the *Services Manager's* acceptance for the system.

CONTROLLED DISCLOSURE

16. REQUIREMENTS

The *Contractor* uses the data collected as described above, to motivate changes, replacements and modifications to the plant.

On completion of the contract, the system including all information and data collected on the planning system by the *Contractor* is handed over to the *Employer* on software.

Such information becomes the property of the *Employer*.

SECTION 5 - COMPLETION

This section specifies what the *Contractor* has to do for Completion.

17. GENERAL

Completion of the whole of the *works* is when all activities in the Works Information are completed.

Section 6 - Services

18. SITE ROADS

- The *Contractor's* vehicles may use the roads. Vehicle access to some conveyor belts is restricted.
- Any costs incurred from damage caused to underground services, structures, roads, etc. as a result of the *Contractor* not using the prescribed routes, will be recovered from the *Contractor*.

19. ELECTRICITY AND WATER SUPPLY

The *Employer* supplies the following for the purpose of the *works* only:

- Electrical supply (220 V AC & 380 V AC) for installation purposes from existing points. Uninterrupted supply is not guaranteed.
- Water supply for installation purposes from existing points. Uninterrupted supply is not guaranteed.

20. ACCOMMODATION

The provision of accommodation for the *Contractor's* personnel shall be the responsibility of the *Contractor*.

21. EMPLOYER'S CATERING FACILITIES

- The *Contractor* or any of his employees or Sub *Contractors* will not be allowed to use the *Employer's* dining facilities, unless a specific agreement has been made between the *Contractor* and Eskom Catering and Accommodation Services (ECAS).

CONTROLLED DISCLOSURE

- The *Contractor* or any of his employees or Sub *Contractors* may purchase take-away meals from the fast foods outlet on site.

22. TOILET FACILITIES

The *Employer* provides the *Contractor* access to toilet facilities, free of charge.

23. MEDICAL FACILITIES

- The *Contractor* provides a first aid service to his employees and Subcontractors. In the case where these prove to be inadequate, like in the event of a serious injury, the *Employer's* medical centre and facilities will be available.
- Outside the *Employer's* office hours, the *Employer's* first aid services will only be available for serious injuries and life-threatening situations.
- The *Employer* shall be entitled, however, to recover the costs incurred, through the use of the above *Employer's* facilities, from the *Contractor*.

24. REFUSE DISPOSAL

- For the full duration of the *works*, the *Contractor* is responsible to keep the work areas clean of any rubble, and to dispose all refuse at designated areas at site.
- All waste introduced and/or produced on Eskom's premises by the *Contractor* for this Contract, must be handled in accordance with the minimum requirements for the Handling and Disposal of Hazardous Waste in terms of Government Legislation as proclaimed by the Department of Water Affairs and Forestry Act 1994 Ref.: ISBN0621 - 16296-5.

25. PROVISIONS FOR ENTERING THE MINE'S PREMISES.

LICENCES

- All drivers, who drive on site, must produce their provincial license.
- Any person operating a mobile crane must have an appropriate license and a certified license by an accredited authority.

VEHICLES

- All vehicles shall be in a roadworthy condition.
- All vehicles entering the Duvha premises shall be fitted with safety belts. (This includes all delivery vehicles).
- All vehicles entering the Duvha area shall be equipped with a fire extinguisher. .
- All vehicles transporting passengers on the back shall be fitted with the canopy and the approved seats with seat belts.
- All contractors working on site shall apply at security for a contractor vehicle sticker to gain entrance to the mine. (Contractors entering for short periods (less than 13 days) shall obtain an access permit from the head of department).

CONTROLLED DISCLOSURE

- All vehicles shall be checked and inspected weekly by a competent person and the results recorded in a logbook.

26. PROVISIONS FOR ENTERING THE *EMPLOYER'S* PREMISES.

SECURITY ARRANGEMENTS

- The *Contractor* applies for temporary access permits (*Contractor's Permit*) at the Security gate. The *Contractor's* personnel shall be required to be in the possession of a *Contractor Permit* at all times.
- All *Contractor* personnel shall be issued with a temporary access permit (*Contractor Permit*) which will contain the following information:
 - Name
 - ID Number
 - Company
 - Validity date
- All *Contractor* permits must be submitted to Protective Services when the workers leave the Site after completion of the works.
- In order to assist Protective Services with the issuing of permits and the identification of personnel on Site, the *Contractor* is to supply a list of all personnel that he intends using on Site, at least 24 hours prior to entering the Security area. This list must be delivered to Protective Services, or can be faxed to (013) 690 0348. The list identified with the *Contractor's* name, is to contain the following information:
 - Employee Name.
 - Employee ID Number.
 - Eskom Safety Co-ordinators signature.
 - Eskom Services Manager's signature.
 - Copy of the first page of the ID book of every employee of the Contractor, photocopied to reduce the size to 65%.
- The list of details has to be completed on the special form appended to the *Contractor's* Safety Manual.
- To speed up the process of gaining access to the Site, the Contractor must compile detailed lists of all tools and equipment to be taken on Site before arriving at the Power Station Security gate. A special Tool List form is available at Protective Services. An authorised copy of this list must be retained and used again when the tools and Equipment is removed from Site after completion of the works.
- The Contractor's visitors and personnel shall conform to the security arrangements in force at the Site at all times. Application forms for visitors must be filled in by the Contractor's site manager and approved by the Employer, one day before the visit and submitted to the Employer's Protective Services office. Visitors will not be allowed on Site if the necessary forms are not in the possession of security staff.
- The Chief of Protective Services may, with valid cause, remove any of the *Contractor's* personnel from Site, either temporarily or permanently. He may deny access to the Site to any person whom, in the opinion of the said Chief of Protective Services, constitutes a security risk.
- No unauthorised vehicles will be allowed on Site. Contract vehicle application should be directed to the *Services Manager*.

CONTROLLED DISCLOSURE

- The *Contractor* will be limited to the *working areas* associated with the *works*. The *Contractor* is forbidden to enter any other areas, and must ensure that his employees abide by these regulations.
- Parking inside the power station is strictly forbidden, except for loading proposes.
- No recruiting of casual labour may be done on Eskom premises, including the area outside the power station security gate.

27. SAFEGUARDING OF PLANT AND MATERIAL

The *Contractor* is responsible for the safeguarding, care and security of all items whilst in the *Contractor's* custody and control, until the *Employer* has taken over the *works*.

28. HEALTH AND SAFETY

The *Contractor* complies with the Occupational Health and Safety Act 85 of 1993.

PERSONAL PROTECTIVE EQUIPMENT

The *Contractor* supplies, maintains and ensures that his personnel at all times wear personal protective equipment as required, including at least hard hats, safety glasses, overalls, hearing protection and safety shoes.

SAFETY REGULATIONS OF THE *EMPLOYER*

- The *Contractor* shall conform to the Eskom Plant Safety Regulations and the Operating Regulations for High Voltage Systems.
- The *Employer* shall on request, make available a copy of the latest revision of the Plant Safety Regulations available to the *Contractor*.

HEALTH AND SAFETY ARRANGEMENTS

- The *Contractor* must ensure that all his personnel attend a Health and Safety Induction Course prior to starting with any work. The Induction Course is presented by the *Employer's* Safety Risk Department at Duvha Power Station. Arrangements are to be made with Safety Risk Management by the *Contractor*.
- The *Contractor* shall comply with the guidelines set out in the Duvha Power Station Safety Manual SAS 0012. The sheet on the first page must be completed by the *Contractor* and submitted to the *Services Manager* before starting any work. This sheet will be valid for the duration of the contract.
- Safety Risk Management has the right and authority to visit and inspect the *Contractor's* work place or site yard and the *working areas* to ensure that tools; machinery and Equipment comply with the minimum safety requirements.
- The *Services Manager* may instruct the *Contractor* to stop work, where the *Contractor's* personnel fail to conform to safety standards or contravene health and

CONTROLLED DISCLOSURE

safety regulations. Such stop-work order is not a compensation event. The *Services Manager* may instruct the *Contractor* to discipline his employees and to submit a disciplinary action report to the *Services Manager*. The *Contractor* shall implement additional health and safety precautions where necessary.

FIRE PRECAUTIONS

- Any tampering with the *Employer's* fire equipment is strictly forbidden.
- All exit doors, fire escape routes, walkways, stairways, stair landings and access to electrical distribution boards must be kept free of obstruction, and not be used for work or storage at any time. Fire fighting equipment must remain accessible at all times.
- In case of fire, the *Contractor* reports the location and extent of the fire to the Electrical Operating Desk at extension 2222.
- The *Contractor* takes the necessary action to safeguard the area to prevent injury and the spreading of the fire.

REPORTING OF ACCIDENTS

- The *Employer* follows an accident prevention policy that includes the investigation of all accidents involving personnel and property. This is done with the intention of introducing control measures to prevent a recurrence of the same incidents. The *Contractor* is expected to fully co-operate to achieve this objective. The *Services Manager* must be informed immediately of any Category B and C incidents. Category A incidents and any damage to property or equipment must be reported to the *Supervisor* within 24 hours.
- NOTE! This report does not relieve the *Contractor* of his legal obligations to report certain incidents to the Department of Labour, or to keep records in terms of the Occupational Health and Safety Act, and Compensation for Occupational Injuries and Diseases Act.

OCCUPATIONAL HEALTH AND SAFETY ACT 85 OF 1993 – SECTION 37

- In accordance with Section 37 (2) of the Act, the *Contractor* is appointed by the *Employer* as a mandatory to assume the duties and responsibilities as stipulated in Annexure 9 to the Contract. The *Contractor* ensures compliance with all requirements of the Act and any instruction or notification that enhances those requirements.
- The *Contractor's* person appointed on the form in Annexure 9 is a competent person as defined in the General Machinery Regulations, Section 2.1 of the Act.
- The *Contractor* acknowledges that he is fully aware of all the requirements of the Occupational Health and Safety Act and undertakes to employ only staff who have

CONTROLLED DISCLOSURE

been duly authorised in terms thereof and who receive sufficient safety training to ensure that they can comply therewith.

- The *Contractor* undertakes not to do, and not to allow anything to be done which will contravene any of the provisions of the Act, Regulations or Safety and Operating Procedures.
- The *Contractor* shall appoint a person who liaises with the Eskom Safety Officer, responsible for the premises relevant to the Contract. The person appointed shall on request:
 - Supply the Eskom Safety Officer with copies of minutes of all Health and Safety Committee meetings, whenever required.
 - Supply the Eskom Safety Officer with copies of all appointments in respect of employees employed on this contract, in terms of the Act and Regulations and shall notify the Eskom Safety Officer of any changes thereto.
- Eskom may, at any stage during the currency of this contract:
 - perform safety audits at the *Contractor's* premises, its work place and its employees;
 - refuse any employee, subcontractor or agent of the *Contractor* access to its premises if such person is found to commit any unsafe act or any unsafe working practice or is found not to be duly authorised nor qualified in terms of the Act;
 - issue the *Contractor* with a stop work order or a compliance order should the *Employer* become aware of any unsafe working procedure or condition or any non-compliance with the Act, Regulations and Procedures referred to in the Occupational Health and Safety Act - and all Regulations made thereunder as well as all the *Employer's* Safety and Operating Procedures.
- Any stop work order resulting from the stipulations of the afore going clause is not a compensation event. Furthermore, no amendments to the act or the Regulations or reasonable amendment to the *Employer's* Safety and Operating Procedures will entitle the *Contractor* to claim any additional costs or time incurred in complying therewith, from the *Employer*.

RADIATION PROTECTION

The *Contractor* conforms to the *Employer's* procedure HMS0002 when performing any industrial radiography.

HAZARDOUS SUBSTANCES

It is required in terms of the General Administrative Regulation (Regulation 7) of the Act that any manufacturer, importer, seller or supplier of hazardous chemical substances shall supply the receiver, free of charge with sufficient information for the user, to enable the user to introduce the necessary measures as regards the protection of the health and safety of persons. It is therefore the responsibility of the supplier (dealing directly with the *Employer*) to supply the information. If information is not available for whatever reason, the supplier must indicate and give reasons to the *Employer*.

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ENVIRONMENTAL MANAGEMENT

The *Contractor* is required to ensure that all goods, services or *works* supplied in terms of the contract conform to all applicable environmental legislation. Where work is done on the Site, the goods, services or *works* supplied will also conform to the *Employer's* environmental specifications.

HOUSEKEEPING

The *Contractor's* Equipment does not impair the operation of the plant or access to the plant.

SECTION 7 - SUB-CONTRACTING

29. SCAFFOLDING

The Employer will provide scaffolding for all works when required:

SECTION 8 - INTERPRETATIONS

30. DEFINITIONS

CONVEYOR LINE

A Conveyor Line is a complete set of conveyor belts according to the following table.

Overland A Line	Overland B Line	OTS Line
Conveyor 2A	Conveyor 2B	Buffalo 3 (Long Buffalo)
Conveyor 3A	Conveyor 3B	Short Conveyor
Conveyor 4A	Conveyor 4B	Reclaim Conveyor
Conveyor 5A	Conveyor 5B	Cross Conveyor
Conveyor 6A	Conveyor 6B	Link Conveyor
Conveyor 7A	Conveyor 7B	Conveyor 8B
Conveyor 8A	Conveyor 8B	

SECTION 9 - SPECIFICATIONS AND PROCEDURES

31. LIST OF STANDARD SPECIFICATIONS, REGULATIONS AND DRAWINGS APPLICABLE TO THIS CONTRACT

GENERAL

- OPR 6204 Operating regulations for high voltage systems.

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- OPR 3305 Regulations for the protection and safety of persons who work on plant under the control of Eskom (Plant Safety Regulations)
- SAS0012 Contractor's Safety Manual

MECHANICAL SPECIFICATIONS

- GGSS 0317 Specification for horizontal and vertical flat base storage tanks
- GGG 0330 Condition Monitoring.
- GGG 0428 In-service monitoring of lubricating oils and Hydraulic fluids.
- SANS 1173 – textile reinforced belting
- SANS 1366 – steelcord belting
- ESKOM Specification – Steelcord belting unique identifier 240-120532564
- ESKOM Specification – Textile reinforced unique identifier 240-120532564
- ESKOM Specification – Quality Purchasing Belting GGG 0924
- ESKOM Specification – Splice Design GGP 0922
- ESKOM Specification – Steelcord storage GGGP 0923
- ESKOM Specifications – Standard Specifications for Conveyor belt Rolls GGSS 0983
- ESKOM Specification – idlers
- SANS 1313-1 Idlers
- SANS 1313-2 Idlers
- BS 970/1 – steel idlers
- SANS 567/3 – steel tubing idlers

SECTION 10 - TITLE

32. TITLE OF SITE MATERIAL.

The *Contractor* has title to no Site material

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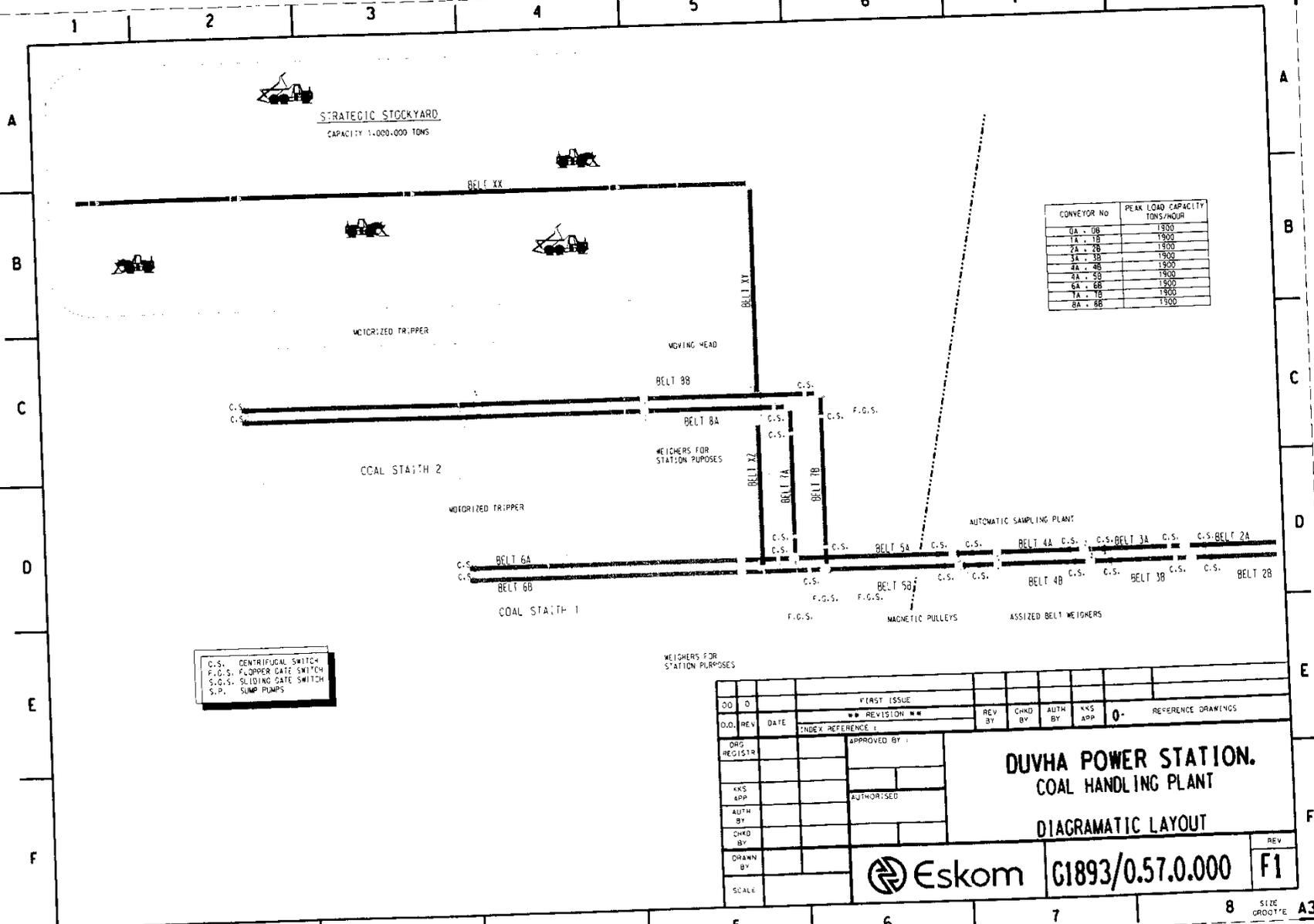
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Appendix A: The maintenance of the Overland conveyors, Sampling Plant, Reclaim system conveyors (OTS) and Top Staitthes

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06



CONVEYOR NO	PEAK LOAD CAPACITY TONS/HOUR
0A - 0B	1900
1A - 1B	1900
2A - 2B	1900
3A - 3B	1900
4A - 4B	1900
5A - 5B	1900
6A - 6B	1900
7A - 7B	1900
8A - 8B	1900

C.S. CENTRIFUGAL SWITCH
 F.G.S. FLOPPER GATE SWITCH
 S.G.S. SLIDING GATE SWITCH
 S.P. SUMP PUMPS

WEIGHERS FOR STATION PURPOSES

DD	D	FIRST ISSUE	REV	CHKD	AUTH	XKS	0-	REFERENCE DRAWINGS
D.O.	REV	DATE	** REVISION **	BY	BY	BY	APP	
DRG REGISTER			INDEX REFERENCE	APPROVED BY				
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CHKD BY								
DRAWN BY								
SCALE								

DUVHA POWER STATION.
COAL HANDLING PLANT
DIAGRAMATIC LAYOUT



G1893/0.57.0.000

REV F1

SIZE GROUPE A3L

Appendix A The Maintenance of the Cleveland System Dray Sampling Plant, Reclaim system conveyors (OTS) and top Staithes Conveyor systems

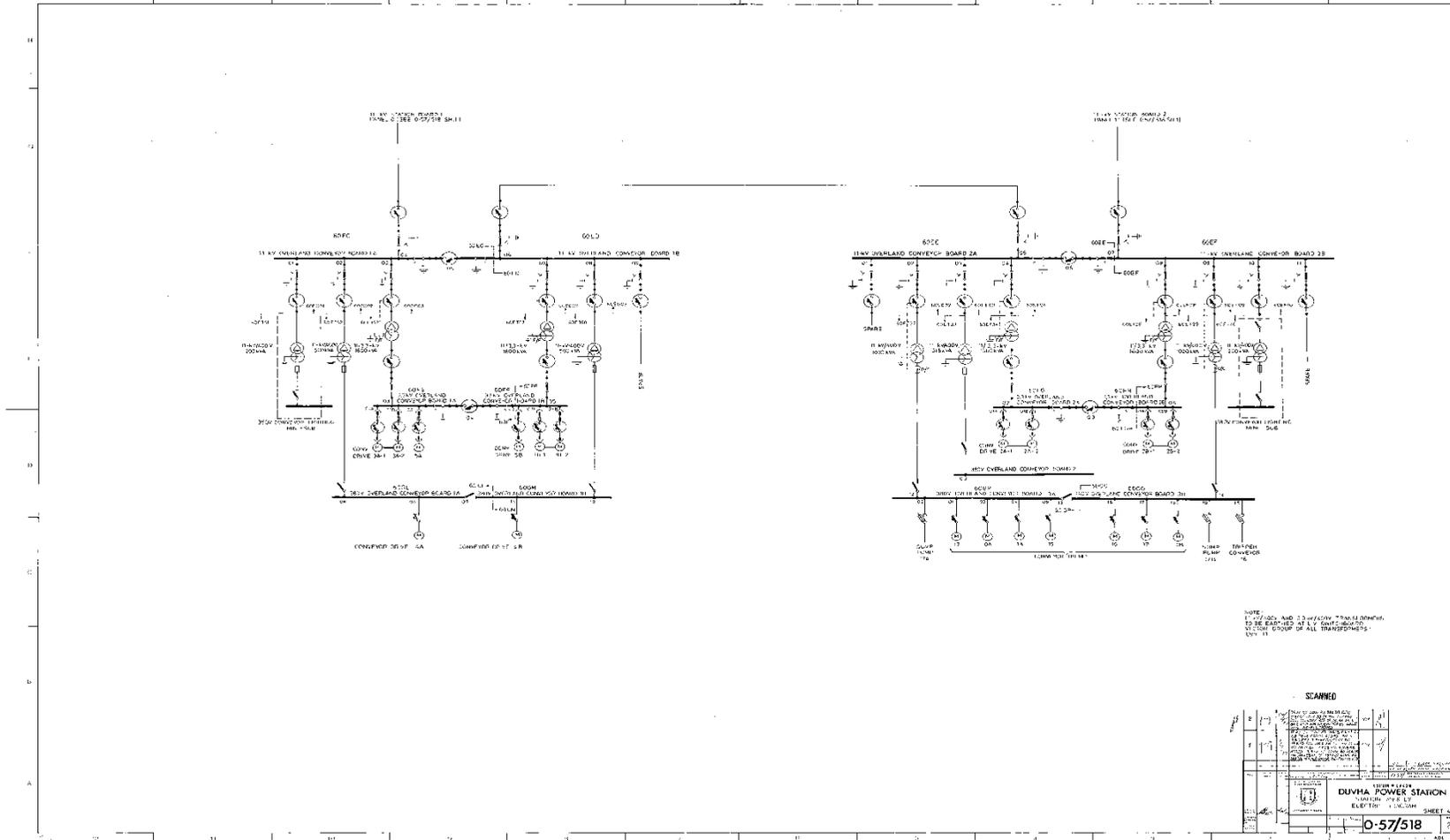
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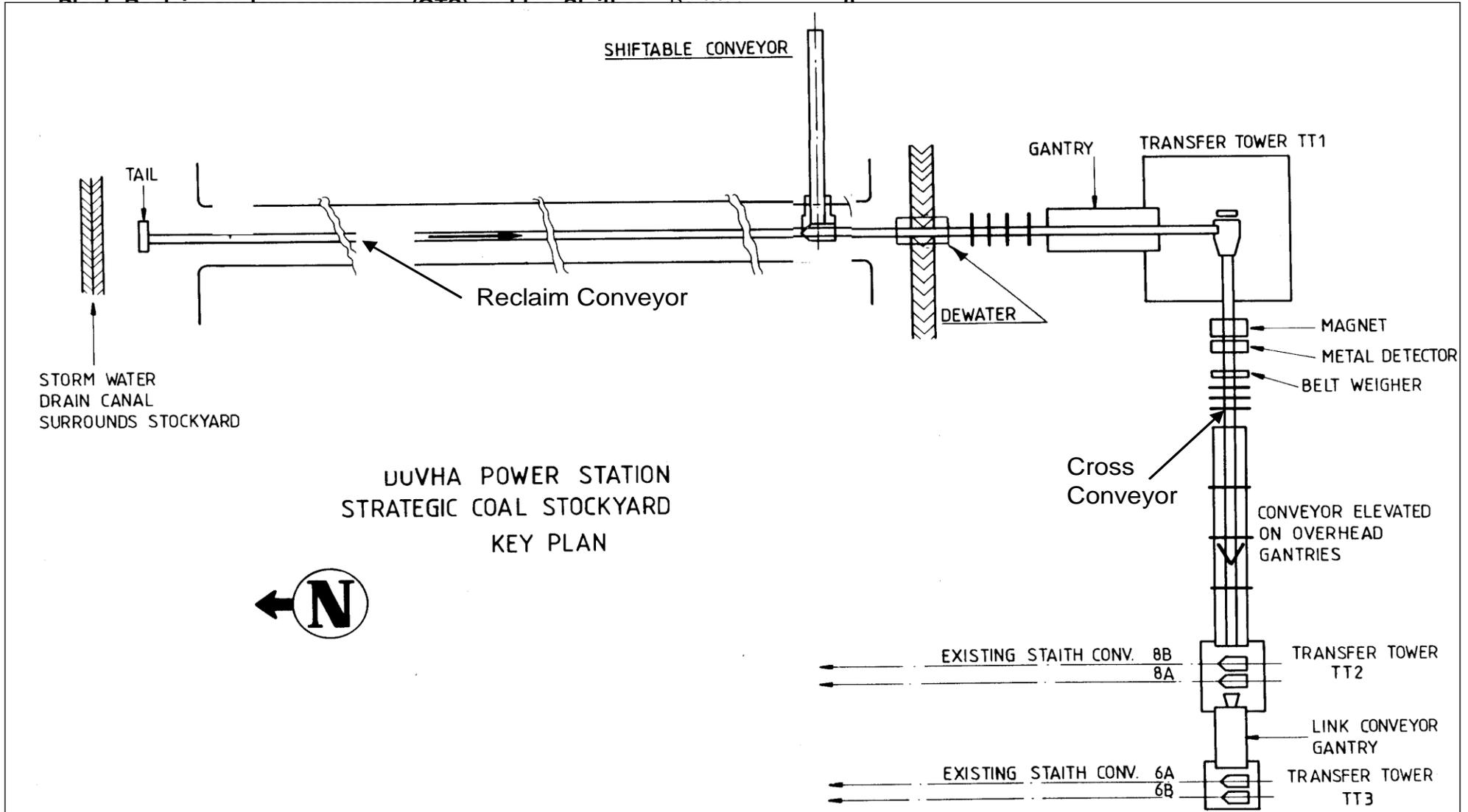
Revision:

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C4 Site Information

Geotechnical
Topographical
Plant area

1. Topographical

Duvha Power Station is situated in the Mpumalanga Province on the Bethal road off the

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Johannesburg-Witbank N12 motorway

2. Plant Area

Duvha Power Station Overland Conveyor and On Terrace Stockpile.

33. AUTHORISATION

This document has been seen and accepted by:

Name	Designation
Ndweleni Tshivhase	Boiler engineering manger
Tembeka Tshamano	Technical support service manager

34. REVISIONS

Date	Rev.	Compiler	Remarks
November 2021	0	Sanny Masombuka	Document created

35. DEVELOPMENT TEAM

The following people were involved in the development of this document:

Petrus Ngwato

36. ACKNOWLEDGEMENTS

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