

**Works Information****Engineering**

Title: **Grootvlei Power Station
Lubrication Service
Information**

Unique Identifier:

Alternative Reference Number:

Area of Applicability: **Engineering**

Documentation Type: **Works Information**

Revision: **0**

Total Pages: **24**

Next Review Date: **N/A**

Disclosure Classification: **CONTROLLED
DISCLOSURE**

Compiled by**Penuell Fakude**

Senior Technician

17/04/2023

Date:

Functional Responsibility**Sibusiso Nkosi**P&T Engineering Manager
(Acting)

17/04/2023

Date:

Authorised by**Thabo Montja**

Engineering Manager

Date: 17/04/2023.....

CONTENTS

	Page
1. INTRODUCTION	3
2. SUPPORTING CLAUSES	3
2.1 SCOPE	3
2.1.1 Purpose	3
2.1.2 Applicability	3
2.2 NORMATIVE/INFORMATIVE REFERENCES	3
2.2.1 Normative	3
2.2.2 Informative	3
2.2.3 Disclosure Classification	3
2.3 ABBREVIATIONS	4
2.4 ROLES AND RESPONSIBILITIES	4
3. LUBRICATION SERVICE COMPLIANCE- WORKS INFORMATION	4
3.1 TENDER RETURNABLES	4
3.1.1 Technical gatekeeper requirements	4
3.1.2 General Requirements	4
3.1.3 Technical Evaluation Criteria	5
3.2 LUBRICATION COMPLIANCE PROJECT- SCOPE OF WORK	5
3.2.1 Description of the works to be provided by the Contractor	5
4. AUTHORISATION	23
5. REVISIONS	23
6. DEVELOPMENT TEAM	23

CONTROLLED DISCLOSURE

When downloaded from the EDMS, this document is uncontrolled and the responsibility rests with the user to ensure it is in line with the authorised version on the system.

1. INTRODUCTION

This works Information specifies the scope of work which will lead to the compliance of Lubrication service to be rendered at Grootvlei Power Station.

2. SUPPORTING CLAUSES

2.1 SCOPE

This document defines the technical scope of work to be performed by the Contractor for the compliance of lubrication service.

2.1.1 Purpose

The objective of this lubrication project primarily is to

- Reduce friction.
- Prevent wear.
- Protect the equipment from corrosion.
- Control temperature (dissipate heat)
- Control contamination (carry contaminants to a filter or sump)
- Transmit power (hydraulics)
- Provide a fluid seal. And
- To save cost of having to replace damaged equipment due to failure's led by insufficient lubrication

2.1.2 Applicability

This document shall apply to Grootvlei Power Station only.

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 Systems
- [2] Occupational Health and Safety Act No.85 of 1993

2.2.2 Informative

- [1] GVLE 003: Environmental spillage Management
- [2] GVLE 002: Waste management procedure
- [3] Eskom GGL 36 - 53 Rev 0, for oil and lubricating fluids
- [4] GGSS 1181 – Specification for chemical product and material used in a power plant
- [5] GGA 1182 – Control of chemical products in a power station

2.2.3 Disclosure Classification

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

CONTROLLED DISCLOSURE

When downloaded from the EDMS, this document is uncontrolled and the responsibility rests with the user to ensure it is in line with the authorised version on the system.

2.3 TABLE1: ABBREVIATIONS

Abbreviation	Description
P&T	Performance and testing
PA	Primary air
FD	Force draught
OHSA	Occupational Health and Safety Act
SOW	Scope of Work
CEP	Condensate Extraction Pump
ID	Induced Draft
KPI	Key Performance Indicator

2.4 ROLES AND RESPONSIBILITIES

This document shall be managed and maintained by P&T Engineering at Grootvlei Power Station.

3. LUBRICATION SERVICE COMPLIANCE- WORKS INFORMATION

3.1 TENDER RETURNABLES

Evaluation shall be carried out according to the *Technical Evaluation Criteria as provided*.

3.1.1 Technical gatekeeper requirements

Table 1: Gate Keeper - Mandatory Criteria

Mandatory Criteria (Gate Keeper)			
No.	Mandatory Technical Criteria Description	Reference to Technical Specification / Tender Returnable	Motivation for use of Criteria
1	All Lab equipment to comply with SANS	The tenderer to provide a certified copy of the Certificate of compliance Lab that meets international or SANS standard	ISO 9001 Quality Management Systems

3.1.2 General Requirements

The Contractor/Tenderer shall:

- Have Industrial knowledge and previous work associated with lubrication and tribology and provide list of references minimum 4 years' experience.
- Supply proof of lubrication technician's qualification (matric certificate or NQF 3) with a minimum of 4 years' experience.
- Provide a tribologist with 5 years of experience executing similar scope in a heavy industry CV needed.
- Provide a detailed proposal of how to perform the works as per works info or SOW. Provide at least 2 previous reports for similar works previously executed.
- Provide the previous customer evaluation report where work was executed.

CONTROLLED DISCLOSURE

When downloaded from the EDMS, this document is uncontrolled and the responsibility rests with the user to ensure it is in line with the authorised version on the system.

3.1.3 Technical Evaluation Criteria

3.2 LUBRICATION COMPLIANCE PROJECT- SCOPE OF WORK

3.2.1 Description of the works to be provided by the Contractor

The contractor shall provide routine Lubrication and Oil analysis services as detailed on Annexure A.

A. Fixed Services:

- Continuous assessment and improvement of Lubrication and Oil analysis programs, measurement techniques, analysis of data, reports etc.
- Capturing and trending of information on problematic plant, Employer shall get a copy of database where all results are stored.
- Providing Maintenance and Engineering solutions and recommendations.
- Reporting serious plant problems immediately to Engineering, Maintenance and Operating.
- Providing a monthly Tribology and reports as detailed on Annexure A.
- Providing Lubrication and Oil analysis reports within five working days from data collection.
- Performing follow up test on the maintained plant as part of commissioning of these plants listed on Annexure A.
- Reviewing and discussing monthly reports and recommendation with clients.
- Providing a 3 monthly management report with combined Lubrication and Oil analysis matrix that shows all Lubrication and Oil analysis done per plant as detailed on Annexure A

B. On-Demand Services or Call-Outs:

The contractor shall provide the detailed services on annexure A on request by the employer at any time for any of the following purposes:

- To return equipment to service after plant breakdown or plant opportunity maintenance.
- Support investigations.

The On-Demand Services or Call-Outs shall be provided by the contractor on request by the employer at no extra cost provided the services will be performed within the normal working hours

The On-Demand Services or Callouts shall be provided by the contractor on request by the employer at agreed rates of the called-out personnel provided the services will be performed outside the normal working hours. Once agreed the following should be in place:

- The Contractor shall provide standby duties. A standby roster shall be signed by both the Employer and the Contractor and then distributed to relevant departments.
- The Contractor shall be paid per hour on work done when on standby. Thus a minimum of one hour will be applicable.
- A standby allowance shall be paid to the Contractors labourers when on standby, except for the site manager.
- If the Contractor is called out to come to work, he/she will fill in a callout form in detail he/she will take the form to the relevant stakeholders for signature. The Contractor then hands over the form to the Employer on the next working day.

CONTROLLED DISCLOSURE

- The response time for all call - outs shall not be more than 60 minutes

C. Reporting

The contractor shall provide reports that comply with the following standard:

- Eskom GVL 36 - 53 Rev 0, for oil and lubricating fluids (IN-SERVICE MONITORING OF LUBRICATING OILS AND HYDRAULIC FLUIDS)
- If it happens that one of the personnel is off site on leave or for any other reason, the Contractor shall ensure that there is a replacement or someone who will cover those employees' duties at no additional cost to the Employer.
- The Employer shall be informed of any dispute, hiring, and firing of onsite employees.
- The Contractor shall support Grootvlei Power Station drive to employ local labour, by employing a minimum of 50% of local labour (Dipaleseng municipality) for lube assistants.
- The Contractor shall under no circumstances be allowed to recruit labourer(s) at Eskom Grootvlei Power Station's main security gate.
- The Contractor will be responsible for implementing a performance management system consistent with Eskom's supplier management requirements.
- The KPA's, KPI's and Metrics required will be jointly agreed by Eskom Grootvlei and the typical KPI's Include:
 - o Compliance to the planned maintenance program.
 - o Compliance to oil sampling
 - o Value of savings identified.
 - o Safety related KPI's (e.g. DIIR).
 - o Number of lubricant and lubrication related failures.
 - o Incoming product quality KPI's.

The type of reports, level of detail and frequency of reporting will be mutually agreed by Eskom Grootvlei and the supplier during the contract negotiation phase of this agreement. These can be changed from time to time to suit the nature of the contract.

An asset register will be compiled by both the Employer and the Contractor stating all the assets that are on site purchased by the Contractor. The asset register will be approved by the Employer and will be used as a register to allow the Contractor to remove the assets when the Contractor's services are no longer required by the Employer.

The contractor shall conduct an in-depth analysis to all failures of plant that is included in the works information, and a detailed report shall be compiled and submitted to the employer.

The contractor shall ensure that the findings in the analysed data shall be supported by relevant plots in the report.

D. Tribology (Oil Analysis)

- The contractor shall conduct oil analysis in compliance with standard Eskom 36-53 Rev 0, for oil and lubricating fluids (IN-SERVICE MONITORING OF LUBRICATING OILS AND HYDRAULIC FLUIDS).
- The contractor shall be responsible for taking oil samples full analysis at an accredited lab, which will be based on the 150 samples Quota taken monthly.

CONTROLLED DISCLOSURE

- The contractor shall monitor and conduct oil analysis in all machines detailed on annexure A and as per special request by the Employer as and when required, Note this special service, in terms of equipment and machines to be used to do analysis that shall be provided by the employer, contractors involvement will be collecting, analysing and release report.
- The Contractor shall be responsible for the development and implementation of an oil analysis program that is consistent with Eskom standards and compliant with good practices. Eskom will approve the final oil analysis program before implementation. The supplier will consult with Eskom engineers to establish which equipment is included and the frequency of oil analysis.
- The Contractor will be responsible for identifying correct sampling points and providing Eskom with a list of requirements for additional sample point installations.
- The Contractor shall provide a suitable software system that can maintain the oil analysis program including trend analysis and reporting. Reports must be made available to responsible site engineers in a suitable format on time and in time for remedial action if required.
- The Contractor shall be responsible for taking oil samples on a regular basis as required by the oil analysis program and the contractor shall be responsible for taking oil sample to the lab for full analysis month to month and the quota limited to 150 samples per month

E: Total Fluid management

- The Contractor shall be responsible for total fluid management (oils and grease) at Grootvlei Power Station and Vaal Dam; also lubricants shall meet both the Employer and the original equipment manufacturer (OEM) requirements where applicable. Plant will only form part of the works once it has been handed over to Generation.
- The Employer will review the contract after twelve (12) months and reserve the rights to reduce or add the number of people, based on actual scope requirements or to terminate the contract if the service is no longer required.
- Boiler Plant: Milling Plant, Draught Plant, Soot blowers, Air & Gas Dampers
- Turbine Plant: CEP's, Main Oil Tanks, EFP's,
- Common Plant: Conveyor Belts, Gearboxes, Buffalo Feeder, Motor Drive Gearings, Sluice Pumps, Ash Pumps, Seal Water Pumps, Ash Crushers, AWR Pumps,
- Vaal Dam: High Lift Pumps
- See Annexure A for detailed scope of work

NOTE: Oil sampling on turbine MOT doesn't require full analysis thus is not detailed on annexure A, therefore this will be done onsite for particle count and water content and doesn't comprise the 150 samples to be taken to the lab.

F. Lubricant Storage and Handling

- The Employer will purchase the consignment stock, the stock will be kept at the oil stores
- The Employer will make available suitable secured premises on site that can be used for lubricants.
- The lubricant store design, layout and equipment installation will be the responsibility of the Contractor, subject to the Employer's approval in terms of SHE compliance and suitability for use.

CONTROLLED DISCLOSURE

When downloaded from the EDMS, this document is uncontrolled and the responsibility rests with the user to ensure it is in line with the authorised version on the system.

- The Contractor shall provide containers, dispensing equipment, transfer pumps, safety equipment, funnels, hoses, etc. necessary to equip, operate and manage the lubricant storage and dispensing facility.
- The Contractor shall be responsible to fill up all the bulk tanks.
- Any permanent installation of any tanks will be subject to the Employer's approval.
- The Contractor shall be responsible for housekeeping in the lubricant storage and dispensing area.

G. Lubricant Selection

- The Contractor will carry out a detailed lubricant survey of the power station including the common plant. The lubricant survey will include a list of all lubrication items, plant and equipment and the recommended lubrication for each item. The lubricants recommended must meet Eskom and OEM requirements. Eskom will approve the lubricant survey for implementation.
- An electronic copy of the previous lubricant survey is available on request. Note that the survey does not include equipment replaced or upgraded during the refurbishment program to return the power station to service.
- The lubricant survey must be updated to reflect product changes and specification changes.
- The Contractor will assist Eskom in identifying suitable lubricants for applications for which the supplier has no suitable lubricant available.
- The Contractor must ensure that all the lubricants are compatible with the equipment to be lubricated.
- The Contractor must implement a lubricant rationalisation and consolidation strategy consistent with the equipment requirements. The strategy should rationalise lubricant types and package sizes.

H. Eskom Lubricant Standards

- A list of Eskom lubricant performance specifications and guidelines that will form an integral part of the lubricant supply and oil condition monitoring contract is listed in the tables attached. Copies of relevant Eskom performance standards can be made available.

The following additional documents are attached and forms part of this contract:

- GGSS 1181 – Specification for chemical product and material used in a power plant
- GGA 1182 – Control of chemical products in a power station
- GGPP 1065 – Power plant chemistry policy
- Chemical restriction and control document illustrating banned products
- GVLIR 0007 – Safety Health and Environmental Specifications for Contractor.

I. Lubricant Related Maintenance

- The Contractor shall be responsible for assisting Eskom in the development of the lubrication preventative maintenance program. Such assistance will include the development of work instructions, lubrication frequencies and monitoring and inspection requirements.
- The Contractor will be responsible for the implementation of a fluid contamination control maintenance program including the setting of suitable contamination.
- The Contractor should be able to provide a suitable software-based maintenance management system with the capability to plan and manage maintenance tasks. The software must have the capability to produce management reports and information with respect to lubricant and lubrication costs and usage, inventory management, condition monitoring scheduling and failure tracking. The Employer reserves the right to manage the program within the SAP R3 maintenance management software on site with suppliers being granted limited access to the system.

CONTROLLED DISCLOSURE

When downloaded from the EDMS, this document is uncontrolled and the responsibility rests with the user to ensure it is in line with the authorised version on the system.

- The Contractor shall be responsible for carrying out maintenance tasks such as oil system top ups, greasing, lubricant system flushing and fluid maintenance tasks such as external filtration and oil analysis when required.
- Lubricant procedures consistent with the best practice must be available in an accessible format on-site for all lubrication tasks to be performed.
- To ensure that the correct lubricant is used for the correct plant equipment the Contractor will be required to update the existing lubricant survey, the lube survey will contain all lubricated plant equipment with full description and plant code and the relevant lubricant to be used.
- The survey should include but not limited to the following:
 - o Verification of the original survey.
 - o Critical equipment
 - o Lubrication requirements that will be based on a schedule

J. Continuous Improvement

- The Contractor shall implement a program of continuous improvement to optimise lubricant performance and reduce lubricated system and equipment failure rates.
- The Contractor will be responsible for participating in root cause failure investigations as required by Eskom.
- The Contractor will participate in improvement programs pertaining to lubricated equipment any lubricant performance testing for product changes and upgrades must be approved via Eskom's change management processes as implemented at Grootvlei.

K. Waste Management

- Contractor will collect oil from equipment and move to Eskom hazardous yard the Employer will then discard the hazardous waste.
- All lubricant related waste management must comply with legislation applicable to the Grootvlei Power Station and may be audited from time to time by Eskom.

L. Lubrication Equipment in the plant area

- The Contractor will be responsible for the selection, procurement and maintenance of lubricant dispensing equipment required for executing the program.
- The Contractor will be responsible for the provision of all sampling equipment required for the oil analysis program.
- The Contractor will be responsible to provide a site vehicle; the site vehicle shall be used for transporting lubricants, standby purposes and other logistics items/activities as required around the power station and at Vaal dam.
- The Employer will provide a forklift if the need arises.

M. Findings

The contractor shall load defects and prioritise accordingly on all findings on flip system and the notification number shall be included on the report for tracking purposes

CONTROLLED DISCLOSURE

When downloaded from the EDMS, this document is uncontrolled and the responsibility rests with the user to ensure it is in line with the authorised version on the system.

Table 2: ANNEXURE A

PLANT DESCRIPTION	Greasing Frequency	Lube checks	Tribology frequency
Turbine plant			
AC Booster Oil Pump (K.S.B)	Weekly/Monthly	Daily	Monthly/3Monthly
Pump Bearings			
Motor Bearings			
Seal Oil Motor (A.C.) (Brown Boveri)(A)	Weekly/Monthly	Daily	Monthly/3Monthly
Motor Bearings			
Seal Oil Motor (A.C.) (Brown Boveri)	Weekly/Monthly	Daily	Monthly/3Monthly
Motor Bearings			
Seal Oil Motor (D.C.) (Brown Boveri)	Weekly/Monthly	Daily	Monthly/3Monthly
Motor Bearings			
Vacuum Pump Seal Oil (Brown Boveri)(A)	Weekly/Monthly	Daily	Monthly/3Monthly
Bolzers Pump			
Motor Bearings (2 OFF)			
Vacuum Pump Seal Oil (Brown Boveri)(B)	Weekly/Monthly	Daily	Monthly/3Monthly
Bolzers Pump			
Motor Bearings (2 OFF)			
Stator Coolant Pump A	Weekly/Monthly	Daily	Monthly/3Monthly
K. Riitschi Pump			
Brown B. Motor			
Stator Coolant Pump B	Weekly/Monthly	Daily	Monthly/3Monthly
K. Riitschi Pump			
Brown B. Motor			
Main Turbine Extraction Pumps	Weekly/Monthly	Daily	Monthly/3Monthly
Journal Bearings			
Thrust Bearings			
Motor Bearings			
Main Turbine Extraction Pumps	Weekly/Monthly	Daily	Monthly/3Monthly
Journal Bearings			
Thrust Bearings			
Motor Bearings			
Suction Feed Pump (A)	Weekly/Monthly	Daily	Monthly/3Monthly
Journal Bearings			
Thrust Bearings			
Motor Bearings			
Suction Feed Pump (B)	Weekly/Monthly	Daily	Monthly/3Monthly
Journal Bearings			

CONTROLLED DISCLOSURE

When downloaded from the EDMS, this document is uncontrolled and the responsibility rests with the user to ensure it is in line with the authorised version on the system.

Thrust Bearings			
Motor Bearings			
Turbine Barring Gear	Weekly/Monthly	Daily	Monthly/3Monthly
Motor Bearings			
Barring Gear			
Aux. Oil Pump			
Aux. Oil Pump Motor			
AC Bearing Oil Pump	Weekly/Monthly	Daily	Monthly/3Monthly
Pump Bearings			
Motor Bearings			
AC Control Oil Pump	Weekly/Monthly	Daily	Monthly/3Monthly
Pump Bearings			
Motor Bearings			
Main Oil Tank			
Circulating System			
Main Oil Tank Extraction Vent Fans	Weekly/Monthly	Daily	Monthly/3Monthly
Electric Motors			
Gland Steam Extraction Vent Fans	Weekly/Monthly	Daily	Monthly/3Monthly
Electric Motors (Siemens)			
Lube Oil Pump (K.S.B.) D.C.			
Pump Bearings			
Motor Bearings			
LP Turbine Jacking Oil Pump	Weekly/Monthly	Daily	Monthly/3Monthly
Pump Bearings			
Motor Bearings			
HP Turbine Jacking Oil Pump	Weekly/Monthly	Daily	Monthly/3Monthly
Pump Bearings			
Motor Bearings			
Generator Jacking Oil Pump	Weekly/Monthly	Daily	Monthly/3Monthly
Pump Bearings			
Motor Bearings			
Sealing Oil Pumps	Weekly/Monthly	Daily	Monthly/3Monthly
Motor Bearings			
Pump Bearings			
Centrifuges (Hopkinson)	Weekly/Monthly	Daily	Monthly/3Monthly
Motor Bearings			
Oil Sump			
Couplings Bearings (Powder)			

CONTROLLED DISCLOSURE

When downloaded from the EDMS, this document is uncontrolled and the responsibility rests with the user to ensure it is in line with the authorised version on the system.

Oil Purifying Plant Pump	Weekly/Monthly	Daily	Monthly/3Monthly
Pump			
Oil Sump			
Couplings Bearings			
Sulzer 100% Feed Pumps	Weekly/Monthly	Daily	Monthly/3Monthly
S.F.P. Turbine			
S.F. Pump			
David Brown Red. Gearbox			
Sulzer Primary Pump			
K.S.B. 50% Feed Pumps (A)	Weekly/Monthly	Daily	Monthly/3Monthly
Pump Bearings			
Brush Electric Motors			
K.S.B. 50% Feed Pumps (B)	Weekly/Monthly	Daily	Monthly/3Monthly
Pump Bearings			
Brush Electric Motors			
K.S.B. Oil Transfer Pumps (A)	Weekly/Monthly	Daily	Monthly/3Monthly
Pump Bearings			
K.S.B. Oil Transfer Pumps (B)	Weekly/Monthly	Daily	Monthly/3Monthly
Pump Bearings			
Steam Feed Turbine	Weekly/Monthly	Daily	Monthly/3Monthly
Barring Gear Pump (M & P)			
Pump Motor Bearings (B.B.C)			
Aux. Oil Pump (M & P)			
Pump Motor Bearings (B.B.C)			
D.C. Lube Oil Pump (M & P)			
Pump Motor Bearings (B.B.C)			
Extraction Pump Bearings (M & P)			
Pump Motor Bearings (B.B.C)			
Oil Tank (8000lt)			
Gwynnes C.W. Pumps	Weekly/Monthly	Daily	Monthly/3Monthly
Gearboxes (B.E.W.)			
Brush Electric Motors			
Michel Vert Thrust & Journal Bearing			
Michel Vertical Guide Bearing			
Hydraulic Packs			
AC Control DC Bearing Oil Pump	Weekly/Monthly	Daily	Monthly/3Monthly
Auxiliary Pumps x2	Weekly/Monthly	Daily	Monthly/3Monthly
H2 Booster Pump x2	Weekly/Monthly	Daily	Monthly/3Monthly
SFP Seal Water Pumps x2	Weekly/Monthly	Daily	Monthly/3Monthly
CEP A Motor & Pump x2	Weekly/Monthly	Daily	Monthly/3Monthly

CONTROLLED DISCLOSURE

When downloaded from the EDMS, this document is uncontrolled and the responsibility rests with the user to ensure it is in line with the authorised version on the system.

CEP's Pump Oil bearings x2			
CEP B Motor & Pump x2			
CEP's Pump Oil bearings x2			
SFPT AC Pump	Weekly/Monthly	Daily	Monthly/3Monthly
SFPT DC Pump			
Stator Coolant DC Pump	Weekly/Monthly	Daily	Monthly/3Monthly
SFPT CEP A de & nde	Weekly/Monthly	Daily	Monthly/3Monthly
SFPT CEP B de & nde	Weekly/Monthly	Daily	Monthly/3Monthly

PLANT DESCRIPTION	Greasing Frequency	Lube checks	Tribology frequency
Boiler Plant			
Mill Coal Feed	Weekly/Monthly	Daily	Monthly/3Monthly
Motor			
P.I.V Vari-Speed (BLR 1)			
Worm Gear			
Spur Gear			
Babcock 8.5E Mills	Weekly/Monthly	Daily	Monthly/3Monthly
Motor Bearings			
Flexible Couplings			
Pulverizer Ball			
Main Drive Gearbox			
Circulating Oil Pump			
Labyrinth seals			
Ram Cylinders			
Mills	Weekly/Monthly	Daily	Monthly/3Monthly
Ram Cylinders			
Trunnion Oil Tanks			
Mill Roller Arm			
Mill Drive Gearbox			
Unit 1,5 & 6	Weekly/Monthly	Daily	Monthly/3Monthly
I.D. Fans Left Hand ID Fan			
Fan Bearings			
Motor Bearings L.S.			
Unit 2,3 & 4	Weekly/Monthly	Daily	Monthly/3Monthly
I.D. Fans Right Hand ID Fan			
Fan Bearings			
Motor Bearings L.S.			
Fluid Drive Coupling			
Attemperator Spray Water Valves			

CONTROLLED DISCLOSURE

Feedwater Electrical Operating Valves			
Windbox Dampers			
<u>H.P. Heaters Valves</u>			
Unit 1-6 (A-F) P.A. Fans	Weekly/Monthly	Daily	Monthly/3Monthly
Fan Bearings			
Couplings (V.S.) 6 Off			
Motor Bearings L.S.			
Unit 1-6 (A-F) F.D. Fans x 2	Weekly/Monthly	Daily	Monthly/3Monthly
Fan Bearings			
Couplings			
Motor Bearings L.S.			
<u>Unit 1-6 (A-F) Seal Air Fans</u>	Weekly/Monthly	Daily	Monthly/3Monthly
Motor			
Bearing Block			
Fan Bearings			
<u>Air Preheaters</u>	Weekly/Monthly	Daily	Monthly/3Monthly
Main Drive Motors			
Pinion Shaft Bearings			
Slides Guides of Drive Base			
Pivot Pins			
Pinion and Rack and Shaft Seal			
Gearbox			
Support Bearings and guide			
Varley Lube Unit Tank			
Varley Lube Unit Motor			
Bearing Labyrinth Seals			
<u>Soot Blowers (Diamond)</u>			
<u>Hopkinsons</u>	Weekly/Monthly	Daily	Monthly/3Monthly
Gearbox (24)			
Lance Hubs			
Fittings			
Gearbox Rack			
<u>Soot Blowers (Diamond)</u>			
<u>Hopkinsons</u>	Weekly/Monthly	Daily	Monthly/3Monthly
Gearbox (24)			
Lance Hubs			
Fittings			
Gearbox Rack			

CONTROLLED DISCLOSURE

When downloaded from the EDMS, this document is uncontrolled and the responsibility rests with the user to ensure it is in line with the authorised version on the system.

Tully Actuators (24)			
Bailey Automatic Control Meters			
Drive Shaft Bearings			
Electric Motor			
Grease Points			
Open Gears			
Boiler Air Control Standby System			
Rotork-Bettis			
Compressors (Instrumentation)			
Broom and Wade Type B/W 40			
Ingersoll-Rand E.S.V.			
Crankcase Force Feed			
Motors			
H.P. Valves			
Main Turbine			
Rotork Actuators			
Hopkinson Actuators			
Spur Bevel Gears			
Mitre Gearboxes			
Safety Valves			
Hopkinson Hylif Torsion			
Superheater valves			
Hopkinsons			
Brandt Precipitators			
Geared Motor Unit (S.E.W) 6			
Outer Bearings and chain drive			
Trf. Rectifier			
Plummer Blocks			
<u>FFP Plant</u>			
Compressors			

CONTROLLED DISCLOSURE

When downloaded from the EDMS, this document is uncontrolled and the responsibility rests with the user to ensure it is in line with the authorised version on the system.

PLANT DESCRIPTION	Greasing Frequency	Lube checks	Tribology frequency
Auxiliary Plant			
C-P Electric Motors C215	Weekly/Monthly	Daily	Monthly/3Monthly
Dunham Bush Compressors 52U- DHF5			
Water Circulating Pump – KSB			
Motor Pump A.E.I.			
Fans, Donkin 27 and 24			
Screens			
IG Reavell Compressors	Weekly/Monthly	Daily	Monthly/3Monthly
Sump Filler and Dipstick			
Drip Feed Filler			
Station Switches			
South Wales Dashpots			
New Station Compressor	Weekly/Monthly	Daily	Monthly/3Monthly
Broom Wade VDM 1000			
Mulsifier Compressor	Weekly/Monthly	Daily	Monthly/3Monthly
Compressor (Delfos Atlas Copco)			
Motor Bearings (Eng. Electric)			
Fire Pumps	Weekly/Monthly	Daily	Monthly/3Monthly
Harland Pump			
Leyland Diesel Engine			
B.V.C Dust Extractor/ Vacuum	Weekly/Monthly	Daily	Monthly/3Monthly
Exhauster Bearings			
Motor Bearings			
Shutter Valves			
Lead Screws			
Phneumatic Control Units			
Holman Howden Compressor (P0602)			
Station Compressors 2	Weekly/Monthly	Daily	Monthly/3Monthly
Holman Howden Compressor (P0602)			
Electric Motor (Laurence Scott)			
Fan Electric Motor (A.E.I.)			
Boiler 1-6 Chemical Injection	Weekly/Monthly	Daily	Monthly/3Monthly
Sump			

CONTROLLED DISCLOSURE

When downloaded from the EDMS, this document is uncontrolled and the responsibility rests with the user to ensure it is in line with the authorised version on the system.

PLANT DESCRIPTION	Greasing Frequency	Lube checks	Tribology frequency
Coal Plant			
<u>CONVEYOR BELT 30</u> <u>MOTOR GEARBOX</u>	Weekly/Monthly	Daily	Monthly/3Monthly
<u>CONVEYOR BELT 30</u> <u>FLUID DRIVE COUPLING</u>	Weekly/Monthly	Daily	Monthly/3Monthly
CONVEYOR BELT 31 MOTOR GEARBOX	Weekly/Monthly	Daily	Monthly/3Monthly
CONVEYOR BELT 31 FLUID DRIVE COUPLING	Weekly/Monthly	Daily	Monthly/3Monthly
CONV BLT 21A MTR GRBX Fluid coupling voith	Weekly/Monthly	Daily	Monthly/3Monthly
CONVEYOR BELT 21B MOTOR GEARBOX	Weekly/Monthly	Daily	Monthly/3Monthly
Fluid coupling voith			
CONVEYOR BELT 22B Fluid coupling voith			
CONVEYOR BELT 23A CONVEYOR BELT 23A FLUID DRIVE COUPLING			
CONVEYOR BELT 23B CONVEYOR BELT 23B FLUID DRIVE COUPLING	Weekly/Monthly	Daily	Monthly/3Monthly
CONVEYOR BELT 23C CONVEYOR BELT 23C FLUID DRIVE COUPLING	Weekly/Monthly	Daily	Monthly/3Monthly
CONVEYOR BELT 23D MOTOR GEARBOX			
CONVEYOR BELT 23D FLUID DRIVE COUPLING			
CONVEYOR BELT 24A MOTOR GEARBOX	Weekly/Monthly	Daily	Monthly/3Monthly
CONVEYOR BELT 24A FLUID DRIVE COUPLING	CONTROLLED DISCLOSURE		

CONVEYOR BELT 24B MOTOR GEARBOX	Weekly/Monthly	Daily	Monthly/3Monthly
CONVEYOR BELT 24B FLUID DRIVE COUPLING			
CONVEYOR BELT 24C MOTOR GEARBOX	Weekly/Monthly	Daily	Monthly/3Monthly

CONTROLLED DISCLOSURE

When downloaded from the EDMS, this document is uncontrolled and the responsibility rests with the user to ensure it is in line with the authorised version on the system.

CONVEYOR BELT 24C FLUID DRIVE COUPLING			
CONVEYOR BELT 25A	Weekly/Monthly	Daily	Monthly/3Monthly
CONVEYOR BELT 25A FLUID DRIVE COUPLING			
CONVEYOR BELT 25B	Weekly/Monthly	Daily	Monthly/3Monthly
CONVEYOR BELT 25B FLUID DRIVE COUPLING			
CONVEYOR BELT 26A	Weekly/Monthly	Daily	Monthly/3Monthly
CONVEYOR BELT 26A FLUID DRIVE COUPLING			
CONVEYOR BELT 26B	Weekly/Monthly	Daily	Monthly/3Monthly
CONVEYOR BELT 26B FLUID DRIVE COUPLING			
Gearbox	Weekly/Monthly	Daily	Monthly/3Monthly
Fluid coupling voith			
Gearbox	Weekly/Monthly	Daily	Monthly/3Monthly
Fluid coupling voith			
Gearbox	Weekly/Monthly	Daily	Monthly/3Monthly
Fluid coupling voith			
Gearbox	Weekly/Monthly	Daily	Monthly/3Monthly
Fluid coupling voith			
Buffalo feeder crusher gearbox			
Buffalo feeder Gearbox 1			
Buffalo feeder Gearbox 2			
Buffalo feeder grease bucket			
Gearbox	Weekly/Monthly	Daily	Monthly/3Monthly
CONVEYOR BELT 32 FLUID DRIVE COUPLING			
CONVEYOR BELT 32 GEARBOX	Weekly/Monthly	Daily	Monthly/3Monthly
CONVEYOR BELT 32 GEARBOX	Weekly/Monthly	Daily	Monthly/3Monthly

1

CONTROLLED DISCLOSURE

When downloaded from the EDMS, this document is uncontrolled and the responsibility rests with the user to ensure it is in line with the authorised version on the system.

PLANT DESCRIPTION	Greasing Frequency	Lube checks	Tribology frequency
Vaal dam			
Duct Priming Pump A-G Pump and Motor	Weekly/Monthly	Daily	Monthly/3Monthly
Gwynnes Intake Pumps Pump Bearings	Weekly/Monthly	Daily	Monthly/3Monthly
Sump Pump	Weekly/Monthly	Daily	Monthly/3Monthly
Emergency Flight Pump	Weekly/Monthly	Daily	Monthly/3Monthly
Floculent Dosing Pumps	Weekly/Monthly	Daily	Monthly/3Monthly
Floculent Dilution Tank Mixer	Weekly/Monthly	Daily	Monthly/3Monthly
Bulk Floculent Transfer Pump	Weekly/Monthly	Daily	Monthly/3Monthly
Booster Pump (Guard House)	Weekly/Monthly	Daily	Monthly/3Monthly
Dilution Water Transfer Pump	Weekly/Monthly	Daily	Monthly/3Monthly
Borehole Submissible pump	Weekly/Monthly	Daily	Monthly/3Monthly
Clarifier Desludge Drive	Weekly/Monthly	Daily	Monthly/3Monthly
Gwynnes High Lift Pumps Pump Bearings			
Actuator Type 14A/16A Electric	Weekly/Monthly	Daily	Monthly/3Monthly
Flight Pump			
Sludge Pumps			
Q. Box Type 6Q (Grease Packed) Type 8Q (Grease Packed) Type 4Q (Grease Packed) Type 2Q (Grease Packed)	Weekly/Monthly		
W. Box Type OWT Type ZWT			
I.E.S. C.W. Butterfly Valves 120" Rotork Actuator (90A) Valves Spindles (8Q)			

CONTROLLED DISCLOSURE

When downloaded from the EDMS, this document is uncontrolled and the responsibility rests with the user to ensure it is in line with the authorised version on the system.

PLANT DESCRIPTION	Greasing Frequency	Lube check s	Tribology frequency
Water Plant			
Demin, Water Booster Pump	Weekly/Monthly	Daily	Monthly/3Monthly
Harland Pump Bearings (DRA 5/6)			
A.E.I. Electric Motor Bearings			
Degasser Air Fans (A)	Weekly/Monthly	Daily	Monthly/3Monthly
Degasser Air Fans (B)	Weekly/Monthly	Daily	Monthly/3Monthly
Holmes Blower H. Gears	Weekly/Monthly	Daily	Monthly/3Monthly
Bearings			
Eng. Elect. Motors			
High Speed Mixer Soda Tank			
Dilution Tank Drainage Pumps	Weekly/Monthly	Daily	Monthly/3Monthly
Worthington - Simpson Pumps			
English Electric Motors 10 H.P.			
Control Panel Operation	Weekly/Monthly	Daily	Monthly/3Monthly
Mist Lubricators			
Raw Water Pumps	Weekly/Monthly	Daily	Monthly/3Monthly
Pump Bearings (M & P)			
Electric Motors (A.E.I.)			
Potable Water Pumps	Weekly/Monthly	Daily	Monthly/3Monthly
Pump Bearings (M & P)			
Electric Motor (Brush)			
Filter Backwash Pumps	Weekly/Monthly	Daily	Monthly/3Monthly
Pump Bearings (M & P)			
Electric Motor (A.E.I.)			
Floculator mixer (3 off)			
Clarifier (2 off)	Weekly/Monthly	Daily	Monthly/3Monthly
Sample Extraction Pump	Weekly/Monthly	Daily	Monthly/3Monthly
Cation Pumps	Weekly/Monthly	Daily	Monthly/3Monthly
Anion Pumps	Weekly/Monthly	Daily	Monthly/3Monthly
Mixed Pump	Weekly/Monthly	Daily	Monthly/3Monthly
Demin Supply Pumps	Weekly/Monthly	Daily	Monthly/3Monthly
Soda Ash Mixer	Weekly/Monthly	Daily	Monthly/3Monthly
Soda Ash Pumps (2 off)	Weekly/Monthly	Daily	Monthly/3Monthly
Neutralization Tank Mixer	Weekly/Monthly	Daily	Monthly/3Monthly
Submissible sump pump	Weekly/Monthly	Daily	Monthly/3Monthly
Effluent Transfer Pump (2 off)	Weekly/Monthly	Daily	Monthly/3Monthly
Bulk Amonia Supply Pump	Weekly/Monthly	Daily	Monthly/3Monthly
Diluted Amonia Pumps (2 off)	Weekly/Monthly	Daily	Monthly/3Monthly
Amonia Dosing Pumps (6 off)	Weekly/Monthly	Daily	Monthly/3Monthly
Proportioner Adjust-O-Feed	Weekly/Monthly	Daily	Monthly/3Monthly
Chemical Pumps and Vane Guide	Weekly/Monthly	Daily	Monthly/3Monthly
Models 1106/1140 check Valves	Weekly/Monthly	Daily	Monthly/3Monthly
Winsmith Speed Reducers	Weekly/Monthly	Daily	Monthly/3Monthly
Bearings			
Gears Models 4 CB & 5 B To 850	Weekly/Monthly	Daily	Monthly/3Monthly
Gears Models 3 1/2" B			
Crank and Wrist Pins	Weekly/Monthly	Daily	Monthly/3Monthly
All Grease Lubricated Parts			
Industrial Mixers (Thomas and Taylor)	CONTROLLED DISCLOSURE		Monthly/3Monthly

Bearings			
Water Pumps (Mather and Platt)	Weekly/Monthly	Daily	Monthly/3Monthly
Bearings			
Godfrey Universal Blower			
Oil Sump			
Bearings			
Crofts Reducers	Weekly/Monthly	Daily	Monthly/3Monthly
Gearbox			
Clarifloculators	Weekly/Monthly	Daily	Monthly/3Monthly
Reduction Gearbox (Crofts)			
Speed Control Gearbox (Crofts)			
Electric Motor (Eng. Elect.)			
Cooling Water			
Clarification Plant	Weekly/Monthly	Daily	Monthly/3Monthly
Mixers Philadelphia			
Grease			
Dosing Pump			
Mono			
Sludge Pump	Weekly/Monthly	Daily	Monthly/3Monthly
Flygt			
Grease Points			
Dilution Sump	Weekly/Monthly	Daily	Monthly/3Monthly
Vanton Effluent Pump (2 OFF)			
Pillow Block & Flanged Bearings			
Airblower	Weekly/Monthly	Daily	Monthly/3Monthly
Airblower Gearbox			

	Greasing	Lube	Tribology
RO Plant			
Booster Filter & UF Supply Pumps	Weekly/Monthly	Daily	Monthly/3Monthly
UF Backwash Pumps	Weekly/Monthly	Daily	Monthly/3Monthly
RO Feed Water Pumps	Weekly/Monthly	Daily	Monthly/3Monthly
CIP Pump	Weekly/Monthly	Daily	Monthly/3Monthly

CONTROLLED DISCLOSURE

When downloaded from the EDMS, this document is uncontrolled and the responsibility rests with the user to ensure it is in line with the authorised version on the system.

PLANT DESCRIPTION	Greasing Frequency	Lube checks	Tribology frequency
Fuel Plant			
Fuel Oil HP Pump 1	Weekly/Monthly	Daily	Monthly/3Monthly
Groove ball bearings		Daily	Monthly/3Monthly
Fuel Oil HP Pump 2	Weekly/Monthly		
Groove ball bearings		Daily	Monthly/3Monthly
Fuel Oil HP Pump 3	Weekly/Monthly		
Groove ball bearings		Daily	Monthly/3Monthly
Fuel Oil HP Pump 4	Weekly/Monthly		
Groove ball bearings		Daily	Monthly/3Monthly
Fuel Oil HP Pump 5	Weekly/Monthly		
Groove ball bearings		Daily	Monthly/3Monthly
Fuel Oil HP Pump 6	Weekly/Monthly		
Groove ball bearings		Daily	Monthly/3Monthly
Fuel Oil HP Pump 7	Weekly/Monthly		
Groove ball bearings			
Diesel Compressor Tank			
Diesel Tank			

4. AUTHORISATION

This document has been seen and accepted by:

Name & Surname	Designation
Sibusiso Nkosi	P&T Engineering Manager (Acting)
Thabo Montja	Engineering Manager

5. REVISIONS

Date	Rev.	Compiler	Remarks
17/04/2023	0	Penuell Fakude	First Issue

6. DEVELOPMENT TEAM

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

- Penuell Fakude
- Sibusiso Nkosi

CONTROLLED DISCLOSURE

When downloaded from the EDMS, this document is uncontrolled and the responsibility rests with the user to ensure it is in line with the authorised version on the system.

