

Template Identifier	240-43921898	Rev	6
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Effective Date	04 September 2019		
Review Date	September 2023		

PLANT AREA: Matia Co	ooling Towers					
TITLE: Turbine Cooling	Towers Maintenance	and Cleaning Contract Scope				
REF: MET-053717		Reference Rev No: 0		MULTIDISCIPLINARY No		Plant Level: 1
COMPILED BY	Name: Th Systems	andeka Mkhonza Engineer	Signature	Sherda	Date	2023106107
APPROVED		ın Karodıa İngineering Manager	Signature	Woods	Date	57/06/2023
APPROVED		ndo Ngobese ing Manager	Signature	(A)	Date	5/06/2023
REVIEWED		rah Mkhonto John Lourens epartment	Signature		Date	20/06/2023
REVIEWED	NameW Environm	ental Department Mobiles Shi	Signatu <u>re</u>	(Merchal)	Date 4	23/06/2023
ACCEPTED	Name: Tw Outage M		Signature <	E pp	Date	16.08.2023
ACCEPTED	Name: AIA		Signature		Date	

NB: Do not tamper with the template.

Reference No. MET-053717	Reference Rev No. 0	Date 12/02/2023	Page 1 of 36

#### Public



Template Identifier	240-43921898	Rev	6	
Document Identifier	14593	Rev	4	
Effective Date	04 September 2019			
Review Date	September 2023			

#### **GENERAL**

- Data books, reviews, reports and diagrams/drawings shall be submitted to Engineering after the completion of the work Engineering to forward the data books to Quality Department (Document Control)
- All QCP's to be submitted to Engineering and Quality for approval prior to outage/project or maintenance work commencement.

	SCOPE OF WORK DESCRIPTION / ACTIVITY	PROCEDURE, SPECIFICATION, ENG. REQUIREMENTS / DOCUMENTATION	HOLD POINTS, WITNESS, REPORTS	RESPONSIBLE PARTY
1 1	Safety	<ul> <li>All work is to be done in accordance with Matla plant procedures and safety regulations (GGR 0992)</li> <li>Matla power station induction must be done before any work commences</li> <li>Permit to work must be in place before any work commences</li> <li>Worker's register must be completed and daily risk assessment conducted before any work commences</li> </ul>	Eskom to witness	Contractor
12	Environmental Management	<ul> <li>All activities listed in the National Environmental Act 107 of 1998, EIA Regulation 982,983,984 &amp; 985(2014), must have AUTHORISATION before commencement of work</li> <li>The contractor shall comply with all applicable legal and other requirements</li> <li>The polluter pays principle will be applied</li> <li>The contractor manager shall ensure compliance with Eskom Matla Environmental</li> </ul>	Eskom to witness	Contractor

Reference No: MET-053717	Reference Rev No 0	Date 12/02/2023	Page 2 of 36

#### Public



Template Identifier	240-43921898	Rev	6
Document Identifier	14593	Rev	4
Effective Date	04 September 2019		
Review Date	September 2023		

1 5	Commissioning reference					
14	Inputs from other departments					
13	Quality Management	sheet (Annexure G be required  The contractor/exe- documentation and Department before c Contractors/execution Number of NCR issue The QCP shall be si Inspector, Contractor No procuring of outa All outage scopes or No contractor should approved by quality	cutioner of work will be this must be approved by ecommencing with the work oner to adhere to QM 58 and used can affect your next tengned progressively by the Ear QC Inspector and/or AIA age items without the approveep and scopes addition shall be in the possession of so	ingineer/Supervisor, Eskom QC	int	Contractor

#### Public



Template Identifier	240-43921898	Rev	6
Document Identifier	14593 R		4
Effective Date	e 04 September 2019		
Review Date	September 2023	3	

#### DETAILED SCOPE

- This scope will cover 3 sections, cooling towers 1-6 as well as the six diesel generators cooling towers
- Each natural draft cooling tower will be made available for 16 days for a full scope execution.
- The diesel generators cooling towers will be attended to separately, during unit outages

### 1.0 SOUTH COOLING TOWER (TOWER 1-3)

- Each cooling tower will be made available for 10 days for a full scope execution. The contractor must make provision to service all 3 towers annually.
- Provision to be made for an annual 3 day inspection and minor repairs and flushing for each tower.

#### **Cooling Tower Specifications:**

Fill type Poly grid
Drift eliminator Asbestos and
material PVC

 Reference No:
 MET-053717
 Reference Rev No 0
 Date 12/02/2023
 Page 4 of 36

#### **Public**



Template Identifier	240-43921898	Rev	6	
Document Identifier	14593	Rev	4	
Effective Date	04 September 2019			
Review Date	September 2023			

Number of End Caps Internal Pond

140 107.1m

diameter

14 400m³ Nozzle sprayer type Up sprayer

Number of Nozzles

1600

#### DETAILED SCOPE

Pond capacity

#	SCOPE OF WORK DESCRIPTION /	ACTIVITY	1	PECIFICATION, S / DOCUMENTATION	H	OLD POINTS, WITNESS, REPORTS	RESPONSIBLE PARTY
	Th	is scope m	ust be executed o	n each tower			
1	Inspect the cooling tower internals visual defects if necessary	ally and report	Engineering to be present.		Н		Contractor/Eng
2	The contractor will be responsible for drawing up all cleaning method statements or procedures and this must be approved by engineering before commencing with the work		Submit cleaning method st tender returnable to techni- contractor to indicate of ow equipment	cal evaluations The	Н		Contractor
			From this method statement procedure must be defined	•			
ferenc	e No <b>MET-053717</b>	Reference Rev	No 0	Date 12/02/2023	Page	5 of 36	

#### Public



Template Identifier	240-43921898	Rev	6	
Document Identifier	14593	Rev	4	
Effective Date	e 04 September 2019			
Review Date	September 2023			

		be checked and verified during the outage		
3	Clean falling algae on top of drift eliminators and provision for high pressure cleaning of drift eliminators	All debris to be removed from site to ash dams	W	Contractor
	This must be a maximum Pressure - 350 kPa.			
4	Drain the pond with an estimated capacity of 14 400 m³ Clean the pond and the inlet launder of all mud and debris	<ul> <li>The pond is to be drained within 24 hours of tower isolation</li> <li>Water will be pumped to adjacent tower pond</li> </ul>	H	Ops/Outages/ MMD/Contract or
	Note <sup>-</sup> All sludge, mud and scale must be removed from the pond and disposed at an approved dumping site by using the necessary equipment	<ul> <li>Supply pump and hoses to drain the pond</li> <li>No water should be present in the pond to allow the contractor to start cleaning</li> <li>Make provision to drain ponds continuously from the inlet sump, using an electrical submersible pump. A 400V power supply is available</li> </ul>		
5.	Clean the diametric ducts	A 20l/s submersible pump must be provided for to keep the duct drained in event of the isolating	W	Contractor

Reference No:         MET-053717         Reference Rev No 0         Date:         12/02/2023         Page 6 of 36
-------------------------------------------------------------------------------------------------------------------

#### Public



Template Identifier	240-43921898	Rev	6	
Document Identifier	14593	Rev	4	
Effective Date	e 04 September 2019			
Review Date	September 2023			

		<ul> <li>valve is passing.</li> <li>High pressure clean the duct at 400-450 bar</li> <li>Submit cleaning method statement and procedure as tender returnable to technical evaluations.</li> <li>Submit technical details of pump and nozzles as proof of cleaning capability</li> </ul>		
6	Clean, replace missing or damaged nozzles and unblock the blocked nozzles.	<ul> <li>An estimated amount of 300 nozzles per tower to be replaced. Free issue from Eskom</li> <li>Estimate 1300 nozzles to be <u>cleaned</u> per tower</li> <li>Submit cleaning method statement or procedure as tender returnable for technical evaluations.</li> <li>Nozzles to be free of scaling on completion</li> </ul>	W	Contractor/ Outages
7.	Any pipe nozzle fitting that is damaged to the point where a nozzle can no longer be screwed into the pipe must be replaced with a saddle type nozzle which must be secured to the distribution pipe	<ul> <li>Submit saddle nozzle data sheet and design for approval</li> <li>If the nozzle cannot be fitted into the existing pipe a rubber/plastic insert must be strapped</li> </ul>	H	Contractor

### Public



Template Identifier	240-43921898	Rev	6	
Document Identifier	14593	Rev	4	
Effective Date	te 04 September 2019			
Review Date	e September 2023			

		ınto t	he hole		
8	Provision to replace 40 end caps per tower	Туре	butterfly with rubber on the blade	Н	Contractor
		Handle	Stainless steel		
		Blade diameter	150 mm		
		End cap	200/12 mm		
		Length of end cap valve	200 mm		
LA A A A A A A A A A A A A A A A A A A		• This NB p	nit all material data end cap valve will fit at the end of a 150 ipe by slipping over a 200 mm long 200 ollar Any other end cap design must be nitted as a tender returnable and must be		

	Reference No. MET-053717	Reference Rev No 0	Date 12/02/2023	Page	8 of 36	
- 1						

#### Public



Template Identifier	240-43921898	Rev	6	
Document Identifier	14593	Rev	4	
Effective Date	te 04 September 2019			
Review Date	September 2023	3		

		approved by Eskom Engineering		
9	High pressure cleaning the distribution pipes	<ul> <li>Pressure to be between 400 -450 bar</li> <li>140 pipes in total, refer to attached drawing 047-14602 for distribution layout</li> <li>The contractor will be responsible for drawing up all cleaning method statement or procedure and this must be approved by engineering before commencing with the work.</li> <li>Submit cleaning method statement and procedure as tender returnable to technical evaluations</li> <li>Submit technical details of pump and nozzles that will be used as proof of cleaning capability</li> </ul>	H	Contractor
10.	Provision to repair/replace 150m² of horizontal virgin polypropylene grid splash pack per tower	<ul> <li>Grid Dimension:915 x 915 x 32mm</li> <li>Material Virgin Polypropylene</li> <li>Frontal surface area to be 20% of total grid</li> <li>Submit grid material data</li> <li>Supply corner supports to fix grids, refer to</li> </ul>	H	Contractor

Reference No MET-053717	Reference Rev No 0	Date 12/02/2023	Page 9 of 36
			1

#### Public



Template Identifier	240-43921898	Rev	6	
Document Identifier	14593	Rev	4	
Effective Date	04 September 2019			
Review Date	September 2023			

11	Splash packing must be cleaned from the top and/or the bottom	•	Only 304 sta approved for	wing 047-57431 inless steel wiring will be hanging replacement to be left of grids	W	Contractor
12.	Make provision for supply and install the following sizes of stainless steel clamps for any leaks on piping	•	6 x 203.2mm 6 x 254 4 mm 6 x 304 8mm Submit techn	304 stainless steel ical data sheets for steel used od statement of repair	W	Contractor
13	Make provision for suppling and installing the following piping replacing the replacement PVC piping and couple to installed piping		Length 250 150 150 150 150 150 150	NB(mm) 150 200 250 300 350 400  Dennings to be cut in replaceme	W	Contractor

#### Public



Template Identifier	240-43921898	Rev	6	
Document Identifier	14593	Rev	4	
Effective Date	04 September 2019			
Review Date	September 2023	3		

erence	e No. <b>MET-053717</b>	Reference Rev N	lo: 0	Date: 12/02/2023	Page	11 of 36	
15	Provision to replace 250 m <sup>2</sup> drift elimin	ators	eliminator specifica available.	m 0 002 % cates to be provided,	by		Contractor
14.	Provide PVC sheets for covering the geliminator support structure and diame	etral walkway	5mm thick 304 stail  Total length per tov				Contractor
			for piping and nozz  All piping to be acc Class 4  Clamping/coupling	ording to SANS 966,	2		

### Public



Template Identifier	240-43921898	Rev	6	
Document Identifier	14593	Rev	4	
Effective Date	04 September 2019			
Review Date	September 2023			

16	Provision to disposable area ±200 m³ asbestos at an approved asbestos dump site	<ul> <li>Submit a disposal certificate to Matla Environmental Department</li> <li>Asbestos to be kept in marked bins in a demarcated area</li> <li>Adhere to Eskom procedures 32-303 and 32- 245, and OHSAct 85, Asbestos Regulations, GNR 155</li> </ul>	H	Contractor
17	Provision to Replace handrails and gratings	<ul> <li>Grating and rails to be of stainless steel or GRP/ FRP</li> <li>Grating to have a minimum load rating of 300kg/m²</li> <li>Submit material certificates</li> <li>See attached drawings 0 47-04317-2-1 and 0 47-04313-0-2 for reference</li> <li>Final measurements to be taken at the tower</li> <li>All welds to be dye pen tested as per 240-83540088 Requirements for Non-Destructive Testing (NDT) on Eskom Plant Standard</li> </ul>	H	Contractor
18	Clean the pond of all debris	Debris to be removed from site to disposal area at the ash dam	Н	Contractor

Reference No MET-053717	Reference Rev No 0	Date 12/02/2023	Page 12 of 36
	ı	1	1

#### Public



Template Identifier	240-43921898	Rev	6	
Document Identifier	14593	Rev	4	
Effective Date	04 September 2019			
Review Date	September 2023	1		

19	Ensure all distribution valves are in the fully open position and secured prior to re-commissioning	<ul> <li>Replace any missing locking pins with Stainless steel M10 x 55mm long stainless steel studs</li> </ul>	Н	Contractor
20	Place shade netting under the endcaps and flush the tower prior to placing it back in service	<ul> <li>Close end caps after flushing</li> <li>Engineering or QC to witness all end caps are closed prior clearing the PTW</li> </ul>	Н	Ops/Contracto r
21	Final inspection	Engineering to be present	Н	Contractor
22	All material certificates/data sheets requested in this scope to be submitted in a single data pack to Engineering		R	Contractor

Reference No MET-053717	Reference Rev No. 0	Date 12/02/2023	Page 13 of 36

#### Public



Template Identifier	240-43921898 Rev			
Document Identifier	14593 Rev		4	
Effective Date	04 September 2019			
Review Date	September 2023			

Bill of Materials Towers 1-3, for 5 years

	Full description Material/Spares/Equipment	Specifications of Material/Spares/Equipment	Stock No	Part Number	Required Quantity
1	Splash grids	Refer to scope	-		2295 m <sup>2</sup>
2	Hanging wire	304 stainless steel			1200 m
3	Locking wire corner supports	Refer to drawing 047-57431			2745 m
4	Drift eliminators	Refer to scope			4200 m <sup>2</sup>
5	Stainless steel sheets	304 stainless steel, refer to scope			960 m
6	End Caps	Refer to scope			600
7	150 NB PVC pipe	Refer to scope			250 m
8	200 NB PVC pipe	Refer to scope			150m
9	250 NB PVC pipe	Refer to scope			150m
10	300 NB PVC pipe	Refer to scope			150m

Reference No MET-053717	Reference Rev No 0	Date 12/02/2023	Page 14 of 36

#### Public

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Template Identifier	240-43921898	Rev	6
Document Identifier	14593	Rev	4
Effective Date	e 04 September 2019		·
Review Date	e September 2023		

11	350 NB PVC pipe	Refer to scope	150m
12	400 NB PVC pipe	Refer to scope	150m
13	154 2mm clamps	304 stainless steel	90
14	203 2mm clamps	304 stainless steel	90
15	254 4 mm clamps	304 stainless steel	90
16	304 8mm clamps	304 stainless steel	90
17	355 6 mm clamps	304 stainless steel	90
18	150NB to 200NB coupling	Refer to scope	30
19	200NB to 250 NB coupling	Refer to scope	30
20	250NB to 300NB coupling	Refer to scope	30
21	300NB to 350NB coupling	Refer to scope	30
22	350NB to 400NB coupling	Refer to scope	30
23	Saddle nozzles	Refer to scope	600
24	Steel works	Refer to attached drawings and scope	1 x Full replacement on all steel works

Reference No MET-053717	Reference Rev No: 0	Date 12/02/2023	Page 15 of 36	
		1		

#### Public

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



Template Identifier	240-43921898	Rev	6
Document Identifier	14593	Rev	4
Effective Date	04 September 2	019	
Review Date	e September 2023		

				per tower
25	Valve spindle locking studs	M10 x 55m long 304 stainless steel		30

Reference No MI	ET-053717	Reference Rev No 0	Date 12/02/2023	Page 16 of 36

#### Public

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



### MATLA POWER STATION

### SCOPE OF WORK

Template Identifier	240-43921898	Rev	6
Document Identifier	14593	Rev	4
Effective Date	04 September 20	19	
Review Date	September 2023		

### 2. NORTH (TOWERS 4,5,6) COOLING TOWER SPECIFICATIONS

Fill type Brentwood HTP 25 – Vertical Fluted

Drift eliminator material Asbestos and PVC

Number of End Caps172Internal Pond diameter94 7mPond capacity12 350m³Nozzle sprayer typeDown sprayer

Number of Nozzles 5800

#	SCOPE OF WORK DESCRIPTION	/ ACTIVITY	PROCEDURE, S ENG. REQUIREMENT	PECIFICATION, S / DOCUMENTATION	HOLD POINTS, WITNESS, REPORTS	RESPONSIBLE PARTY
	So	COPE TO BE EXE	CUTED ON EACH TOWER DU	RING THE OUTAGE		
	Isolate the relevant cooling tower and To-Work (PTW)	obtain a Permit-				OPS
23	Decommissioning of old equipment / p	lant items etc	Revoke PTW once work is  De-isolate Cooling water so	•	S	OPS/MMD
			De-Isolate Cooling water s	ystern and leave the pla	III	
Referenc	e No: <b>MET-053717</b>	Reference Rev	No 0	Date 12/02/2023	Page 17 of 36	

#### Public

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



Template Identifier	240-43921898	Rev	6
Document Identifier	14593	Rev	4
Effective Date	04 September 2019		_
Review Date	September 2023		

		standby -OMOP 4360		
24.	FIRST AND FINAL INSPECTION SHOULD BE DONE WITH ENGINEERING - Inspect the cooling tower internals visually and repair if necessary	Engineering to be present	Н	Contractor/Eng
25	The contractor will be responsible for drawing up all cleaning method statements or procedures and this must be approved by engineering before commencing with the work	<ul> <li>Submit cleaning method statement or procedure so that cleaning work can be checked and verified during the outage</li> <li>Progress must be tracked in the form of a one pager report with the latest progress on the cleaning activities</li> <li>Report number of defective drift eliminators, distribution pipes, nozzles, end-caps, distribution pipe isolating valves (if applicable), concrete supports and fill sections in a tabular format by referring to the area map attached (drawing 0.47/22227 rev1)</li> <li>The contractor to indicate ownership of cleaning equipment</li> </ul>	Н	Contractor
26	All asbestos and other debris removed from the tower must be temporarily stored in a demarcated area Dispose the asbestos from site at the end of the maintenance activities at an approved asbestos dump	<ul> <li>Submit a disposal certificate to Matla         Environmental Department     </li> <li>Asbestos to be kept in marked bins in a demarcated area</li> </ul>	Н	Contractor

#### Public



Template Identifier	240-43921898	Rev	6
Document Identifier	14593	Rev	4
Effective Date	e 04 September 2019		
Review Date	e September 2023		

	site Other debris to be disposed as agreed		skom procedures 32-303 and 32- HSAct 85, Asbestos Regulations,		
	The following maintenand	e items are applicable to all th	e cooling towers unless specific	ed otherwise.	
		These activities must be comp	leted sequentially.		
	Ponds			<u> </u>	
5.1	Drain the pond with an estimated an estimated of 12 350 m <sup>3</sup>		to be drained within 24 hrs e pumped to adjacent tower pond	H	Contractor
		pond sump, pump(due to water inlet v • A 400V sup	sion to continuously drain the using a smaller 1m³/min passing cooling tower cooling alves ply can be used at each tower e pumped to adjacent tower pond		
		Supply pum	Supply pump and hoses to drain the pond		
			hould be present in the pond to ntractor to start cleaning.		

### **Public**



Template Identifier	240-43921898	Rev	6
Document Identifier	14593	Rev	4
Effective Date	e 04 September 2019		
Review Date	September 2023		

5.2	Make provision to create an opening in the bund wall( 250mm high concrete curb pieces) around the cooling tower screens to allow quicker draining	<ul> <li>The contractor will attach a semi rigid 300mm pipe to the CW duct drain pipe to the respective cooling tower inlet valve drain to allow access to the duct.</li> <li>Make provision to replace bund with pavement curb curb if required</li> </ul>		Contractor
5 3	Clean the cooling tower pond once the fill, distribution duct/pipes and drift eliminators have been cleaned, including the inlet launder channel	All sludge, mud and scale must be removed from the pond and disposed at an approved dumping site by using the necessary equipment.	H	Contractor
	Diametric ducts			
6.1	HP clean the diametral duct	<ul> <li>400 bar and above at a flow rate of 45l/min the internals of the diametral ducts.</li> <li>The internal diameter of the high flexible hose shall be a minimum of 10 mm</li> <li>A 25 l/sec submersible pump must be provided for in event the duct remains under</li> </ul>	W	Contractor

Reference No MET-053717	Reference Rev No 0	Date 12/02/2023	Page 20 of 36

#### Public



Template Identifier	240-43921898	Rev	6
Document Identifier	14593	Rev	4
Effective Date	te 04 September 2019		
Review Date	te September 2023		

		water if the isolating valve is passing	
6.2	Remove all sludge/debris build-up in the diametric duct  Distribution Pipe and Sprayers	<ul> <li>All debris and sludge to be cleaned manually and removed in the ducts by means of buckets or vacuum Debris and sludge MUST not be dumped down the risers/ cooling tower inlet (Hot duct).</li> <li>Debris/sludge to be dispose of at the ash dam</li> </ul>	Contractor
71	Distribution pipe cleaning shall be done in a systematic way and the Contractor will not be allowed to work in the entire cooling tower simultaneously in a hap-hazard manner	<ul> <li>Contractor to demarcate each quarter of the tower to be worked on the QCP</li> <li>All cleaning activities will be inspected before moving on to the next section to be cleaned</li> <li>It is a mandatory requirement that the Contractor clearly indicates which sections are completed on a daily basis to allow Eskom's inspectors the opportunity to perform inspections on a daily basis</li> <li>Eskom Inspectors will only inspect sections completed by the Contractor—If any defect in a</li> </ul>	H Contractor

Reference No: MET-053717	Reference Rev No: 0	Date. 12/02/2023	Page 21 of 36
			}

#### Public



Template Identifier	240-43921898	Rev	6
Document Identifier	14593	Rev	4
Effective Date	te 04 September 2019		
Review Date	e September 2023		

		completed section is found which does not meet the acceptance criteria.		
7.2	Place a collecting net underneath the end-caps and open all end-caps on the distribution pipes to prevent debris from clogging the fill		W	Contractor
73	HP-clean the distribution pipes	<ul> <li>172 pipes</li> <li>Refer to attached drawing 047-22227-layout of pipes and sprayers</li> <li>Each distribution pipe must be cleaned with a high pressure lance travelling the full length of the pipe.</li> <li>Water Pressure to be between 400 and 450 bar at the sprayer discharge with a flow rate of 45 l/minute shall be maintained during cleaning</li> <li>It may be necessary to use a rod with a scraper to remove material too hard for the HP sprayer to loosen</li> <li>The debris collected on the net must be removed from the cooling tower and not dropped on top of</li> </ul>	W	Contractor

Reference No MET-053717	Reference Rev No. 0	Date 12/02/2023	Page 22 of 36

### Public



Template Identifier	240-43921898	Rev	6			
Document Identifier	14593	Rev	4			
Effective Date	04 September 2019					
Review Date	September 2023					

			the fil/pond.  • All debris to be remove contractor	ed and disposed by			
74	Remove and clean all sprayers.		<ul> <li>5800 nozzles p</li> <li>New nozzles will be iss</li> <li>Provision for recooling tower</li> </ul>	sued by Eskom eplacing 700 nozzles pe ply the female threaded	r	W	Contractor
75	where a nozzle can no longer be scre-	by pipe nozzle fitting that is damaged to the point overe a nozzle can no longer be screwed into the poet must be replaced with a saddle type nozzle which just be secured to the distribution pipe		zle and data sheet and il ot be fitted into the exist iic insert (grommet)mus iole	-	Н	Contractor
7.6	Make provision for suppling and instal piping replacing the replacement PVC couple to installed piping	1	250 1	<b>IB(mm)</b> 50 00		Н	Contractor
erence	e No <b>MET-053717</b>	Reference Rev	No 0	Date <sup>-</sup> 12/02/2023	Page	23 of 36	1

#### Public



Template Identifier	240-43921898	Rev	6	
Document Identifier	14593	Rev	4	
Effective Date	04 September 2	019		
Review Date	September 2023	3	,,,,,,	

7.8	Provision for 40 end caps per tower during	•		statement of repair	Н	Contractor
7.7	Make provision for supply and install the following sizes of stainless steel clamps for any leaks on piping	•	6 x 203 2mm 3 6 x 254 4 mm 3 6 x 304 8mm 3	04 stainless steel 04 stainless steel 04 stainless steel 04 stainless steel al data sheets for steel used	W	Contractor
- Carlotte and the carl		•	piping Refer to for piping and r All piping to be Class 4 Clamping/coup accordance with	nings to be cut in replacement attached drawing 047/4602 ozzle layout according to SANS 966, ling of the pipe to be in SANS 721 and have pproval prior to installation		

Reference No: MET-053717	Reference Rev No <sup>-</sup> 0	Date: 12/02/2023	Page 24 of 36

#### Public



Template Identifier	240-43921898	Rev	6		
Document Identifier	14593	Rev	4		
Effective Date	04 September 2019				
Review Date	September 2023				

		Туре	butterfly with	rubber on the blade			
		Handle Blade diameter	Stainless ste	eel			
		End cap	200/12 mm				
		Length of end cap valve	200 mm				
		<ul><li>This</li><li>NB p</li><li>NB c</li><li>NB!</li><li>subr</li></ul>	orpe by slipping collar. Any other end o	will fit at the end of a 1 over a 200 mm long 2 cap design must be er returnable and mus	00		
Referer	nce No MET-053717	Reference Rev No 0		Date 12/02/2023	Page :	25 of 36	

#### Public



Template Identifier	240-43921898	Rev	6	
Document Identifier	14593	Rev	4	
Effective Date	04 September 2	019		
Review Date	September 2023			

	Drift Eliminators			····				
8.1	Clean falling algae on top of drift eliminate	ors.				V	/	Contractor
82	Pressure clean the DEs with fire hydrant (typically 6 bar). All fallen algae must be ravoid it falling through on top of the fill on basis. In addition, when cleaning is done excessive sludge will be removed	removed to a regular	The Contractor must do the cleaning from below When the cleaning from above, a length of walkway with a minimum width of 800 mm must be in place Each walkway plank length will be long enough that it will be supported on two DE support beams. Only one person will be allowed on one section of walkway. When more than one walkway is erected, they must not rest on the same DE support beams.			must be DE owed n one	Contr	
83	Provision to replace 250 m² drift eliminate cooling tower	ors per	<ul><li>Effe</li><li>Hig</li><li>Streeling</li><li>ava</li><li>Incl</li></ul>	unator specifica Ilable ude all rods and	m	set		Contractor
ferenc	e No <b>MET-053717</b>	Reference Rev N	0 0		Date 12/02/2023	Page	26 of 36	

#### Public



Template Identifier	240-43921898	Rev	6	
Document Identifier	14593	Rev	4	
Effective Date	04 September 2	019		
Review Date	September 2023	3	-	

			Sample to be approved pridengineering	or to installation by		
8.4	Demarcate the asbestos waste area of dispose the asbestos from site at the electron outage at an approved asbestos dump	end of the	Submit a disposal certificat OMOP 4090 must be adhe Asbestos removal bags mu	red	Н	Contractor
	FILL					
9 1	Remove the accessible pieces of scale, debris and algae on top of the grid fill material		Rinse the fill section pressure	ns with 3 bar water		Contractor
9.2	Repair/ adjust or replace the fill where it became dislodged		Replacement fill to ensure uniformity of	be Brentwood HTP 25 f installed fill	to	Contractor
9.3	Repair/Adjust/ replace the FRP supports if they are found to be displaced			x 9 5mm x 5 459kg/m '6 mm (height) x 50 8 n	nm H	Contractor
9.4	Remove all pieces of scale, debris and all fill surfaces.	l algae on top of	of The area should be free of any algae flakes and debris.		W	Contractor
erence	e No. <b>MET-053717</b>	Reference Rev	No 0	Date: 12/02/2023	Page 27 of 3	6

#### Public



Template Identifier	240-43921898	Rev	6		
Document Identifier	14593	Rev	4		
Effective Date	04 September 2019				
Review Date	<del></del>				

10.1	Replace handrails and gratings with similar steel 306.	<ul> <li>Grating and rails to be of stainless steel of GRP/ FRP</li> <li>Grating to have a minimum load rating of 300kg/m²</li> <li>Gratings to be installed with stainless steel piece tiedown for the</li> <li>Submit material certificates</li> <li>Final measurements to be taken at the to</li> <li>See drawing 0 47/26238 rev2 (attached)</li> <li>All welds to be dye pen tested as per 240 83540088 Requirements for Non-Destruction (NDT) on Eskom Plant Standard to be done on site by Matla's appointed to contractor</li> </ul>	el T wer )- ctive	Contractor
10 2	Steel grating that is used to cover the entra diametric duct should be replaced with stair grating or GRP/ FRP.		W	Contractor
103	Replace all rectangular sheets along the dia	Dimension: 1200mm long x 70 mm high > ct and	₹ W	Contractor

#### Public



Template Identifier	240-43921898	Rev	6
Document Identifier	14593	Rev	4
Effective Date	e 04 September 2019		
Review Date	September 2023		

_	Drift eliminator concrete columns	5mm thick PVC		
		Make provision for 2 full replacements over the 5 years		
1	Final inspection	Engineering to be present	Н	Contractor
12	Flush the distribution pipes with shade netting placed under all distribution end caps, prior to each tower being placed back in service	<ul> <li>All End caps to be open prior to flushing</li> <li>System to be flushed for 30 mins</li> <li>On completion shade netting and debris to be removed</li> <li>Contractor to ensure that ALL end caps are fully closed prior to QCP sign off.</li> <li>Eng / or QC to witness all end caps are closed prior to permit clearance</li> </ul>	Н	Contractor
	Unit 1-6 D	esel Generator Cooling Towers		
]	Replace bearings on the fan- split bearings (6 per unit)	<ul> <li>Roller bearing, 1 inch, rated for 4000rpm</li> <li>C rating 0 133KN C₀ 0 034KN</li> </ul>		

	Reference No MET-053717	Reference Rev No. 0	Date 12/02/2023	Page 29 of 36
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Template Identifier	240-43921898	Rev	6
Document Identifier	14593	Rev	4
Effective Date	04 September 2	019	
Review Date	e September 2023		

2	Drift eliminators need to be cleaned	•	
3.	Distribution to be flushed cleaned and repaired where needed	•	
4.	Nozzles , flushed and cleaned	•	
5	Coils need to be cleaned externally	•	
6.	Internal coil to be flushed –	•	
7	Dark room louvers to be cleaned	•	
8	Test motors on site	•	
9.	Replace fan belt on the motor drive	Poly- V belt 6 rib,22mm top width, 645mm length	
10	Clean out the sump	•	
11	Repair any defective piping	Provide 4m of 25NB galvanised piping	
12	Repair any cracks on the tower body	•	

Reference No. MET-053717	Reference Rev No: 0	Date 12/02/2023	Page 30 of 36

### Public

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



Template Identifier	240-43921898	Rev	6
Document Identifier	14593	Rev	4
Effective Date	04 September 2	019	
Review Date	te September 2023		

13.	Re- seal the tower panels	Apply silicone rated for 80°C	
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Reference No MET-053717	Reference Rev No 0	Date 12/02/2023	Page 31 of 36

#### Public



Template Identifier	240-43921898	Rev	6
Document Identifier	14593	Rev	4
Effective Date	e 04 September 2019		
Review Date	September 2023		

#### BILL OF MATERIAL(for 5 years)

	Full description Material/Spares/Equipment	Specifications of Material/Spares/Equipment	Stock No	Part Number	Required Quantity
26	Drıft eliminators	Refer to scope			4200 m <sup>2</sup>
27	PVC sheets for duct walkway	Refer to scope		_	730
28	Nozzles	Down sprayers	61069		7500
29	Fill- replacement	Brentwood HTP 25			1500m³
30	C- Channel	Refer to scope			80 lengths
31	Rectangular tubes	Refer to scope			230 length
32	End Caps	Refer to scope			450
33	150 NB PVC pipe	Refer to scope			250 m
34	200 NB PVC pipe	Refer to scope			150m
35	250 NB PVC pipe	Refer to scope			150m

Reference No MET-053717	Reference Rev No 0	Date 12/02/2023	Page 32 of 36
-------------------------	--------------------	-----------------	---------------

#### Public

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



Template Identifier	240-43921898	Rev	6
Document Identifier	14593	Rev	4
Effective Date 04 September 2019		019	
Review Date	te September 2023		

36	300 NB PVC pipe	Refer to scope	150m
37	350 NB PVC pipe	Refer to scope	150m
38	400 NB PVC pipe	Refer to scope	150m
39	154.2mm clamps	304 stainless steel	90
40	203 2mm clamps	304 stainless steel	90
41	254 4 mm clamps	304 stainless steel	90
42	304 8mm clamps	304 stainless steel	90
43	355 6 mm clamps	304 stainless steel	90
44	150NB to 200NB coupling	Refer to scope	30
45	200NB to 250 NB coupling	Refer to scope	30
46	250NB to 300NB coupling	Refer to scope	30
47	Saddle nozzles	Refer to scope	600
48	Steel works	Refer to attached drawings and scope	1 x Full replacemen

#### **Public**



Template Identifier	240-43921898	Rev	6
Document Identifier	14593	Rev	4
Effective Date	ite 04 September 2019		
Review Date	te September 2023		

			on all steel works per tower
49	bearings	Roller bearing, 1 inch, rated for 4000rpm	36
		C rating. 0 133KN C₀ 0 034KN	
50	Poly- V belt 6 rib,22mm top width, 645mm length		6
51	25NB galvanised steel pipe, schedule 40		20m
52	Silicon		6 kg

Reference No MET-053717	Reference Rev No 0	Date 12/02/2023	Page 34 of 36

### Public



Template Identifier	240-43921898	Rev	6
Document Identifier	14593	Rev	4
Effective Date	ate 04 September 2019		***************************************
Review Date	September 2023	3	

SCOPE COMPILATION REFERENCES				
SOURCE & Ref No.	Yes	No	N/A	Comments
Previous outage service reports	Х			
Return to service data packages	X			
Maintenance Strategy with Rev number		Х		
SAP defects (attach list as appendix)		Х		
SHRMS (STEP) reports	x			
(Generation Heat Rate Management System)				
Online Condition Monitoring		X		
Pre-outage performance test results	Х			
Post outage performance test results	X			1-010-0100-0100-010-010-010-010-010-010
SPSS/ Plant Performance data on UCLF incurred	Х			
OMS / IIRMS recommendations (Audits Reports)		Х		
Risk controls (IRM system)		X		
Previous audits and reviews (e.g. ERAP)		X		
Engineering Change Requests (Projects)		Х		
OPP strategy reports		X		
URS	X			
Philosophy (Outage)	X			
Condition Monitoring Report		×		

Reference No MET-053717 Reference Rev No: 0	12/02/2023 Page 35 of 36	
---------------------------------------------	--------------------------	--

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



Template Identifier	240-43921898	Rev	6
Document Identifier	14593	Rev	4
Effective Date	ve Date 04 September 2019		
Review Date	te September 2023		

VA/PHD Viewer trends			Х	
Corrective Actions			X	
CARAB reports			x	
Statutory Requirements			X	
Grid code requirements			X	
Waivers and Exemptions			Х	
Calibration requirements			X	
Previous Outage SOW variations	X			
Post Mortems Actions from previous outages		X		
Pre-Outage plant walks	×	<u> </u>		
Risk based inspection (RBI) report			X	
Simulation, TOIs, OON, SI			X	

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Reference No: MET-053717   Reference Rev No 0   Date 12/02/2023   Page 36 of 36
---------------------------------------------------------------------------------

#### Public