

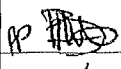
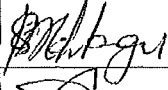
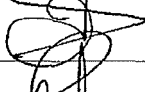
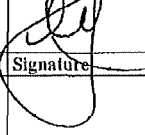
	WORKS INFORMATION APPOINTMENT OF A CONTACTOR FOR CIVIL MAINTENANCE CONTRACT AT KENDAL POWER STATION	Doc. no.																			
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Kendal Power Station	Document Type: Scope Of Work	Unit applicability <table border="1"> <tr> <td>0</td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td>5</td> <td>6</td> </tr> <tr> <td>x</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>						0	1	2	3	4	5	6	x						
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C3: Scope of Work

C3.1 Works Information

1. Description of the works

Civil and structures system is composed of the following:

- Structural buildings
- Roads
- Water supply system
- Sewer system
- Storm water system
- And dams

The scope shall cover the following areas when doing the maintenance:

- 1 Buildings
- 2 Cooling tower and chimneys
- 3 Roads
- 4 Drainage system
- 5 Sewer system
- 6 Water Connection
- 7 Water retaining structures

STRUCTURES

3.1 Buildings

Maintenance and construction of buildings should be done such that it meets SANS 10400 and 1200 specifications.

Buildings at Kendal power station consist of the following

- Turbine house and switchgear buildings
- Main administration buildings
- Medical/fire station buildings
- Access control buildings
- Simulator buildings
- Ablution blocks.
- Kitchen
- Hydrogen plant building
- Temporary prefab buildings.

Other structures at Kendal power stations are

- Boiler house structures
- Turbine house structures
- Coal staiths
- Conveyor structures
- Blow-down sumps
- Precipitators and bagfilter plant
- Auxiliary bays
- Coal silos
- Ash silos.
- Boiler bottom ash sumps
- Flue ducts
- Machine foundations

- Workshops and stores.
- Pump houses
- High voltage yards
- Sub-stations

3.1.1 Earthworks.

Excavations should be classified as soft, intermediate or hard and excavations permit must be acquired prior excavations to avoid damage on existing services. Should the depth of excavation be deeper than 1m, fall protect methods should be applied. Trenches and backfilling should be conducted according to SANS 1200 DB – 1989. Excavations for buildings should be in accordance with SANS 10400-G.

3.1.2 Concrete work:

Concrete preparation, formwork, application and curing should be done according to SANS 1200G. Concrete reinforcement should be as per SANS 10162 – 1, 2011 standards.

3.1.3 Walls:

They should be built using multi tan rustic face bricks which incorporate Eskom standards and should be in accordance with SANS 227. Bricks should have a minimum strength of 25Mpa. Mortar to be applied between bricks should be cohesive and should have a thickness of 10mm (horizontal and vertical). Bricks reinforcement wire should be laid on every third layer. Lintels should be used for support where a window or a door is to be installed.

3.1.4 Plaster:

It must be 10mm thick and must have a smooth finish.

3.1.5 Roof:

Roof must be done according to SANS 10400 –L. They must have a 0.6mm IBR sheet metal roof covering, supported by timber truss and assembled according to manufactures instructions. Roof trusses should be in accordance with SANS 2001- CT2. Tiles roof trusses should be 760mm while the corrugated iron is 1m centre to centre. The application should be as per SANS 10400-J standard.

3.1.6 Carpentry:

Furniture finishes must be maple and surface for reception desk must be maple or formica – sierra granite. They must be assembled according to manufactures instructions.

3.1.7 Ceiling:

It must be supported on a 38x38mm sawn timbers placed at 400mm centre to centre. It must have a 600x600mm trap door. Ceiling type must be 1200 x 600 mm acoustic tile suspended ceiling. They must be fixed on a 19mm timber cornice against the walls.

3.1.8 Tiles:

They must be laid on a dust free surface, floor tiles must be 400x400mm and wall tiles be 150x150mm and must be grey or beige in colour. Their selection criteria must be commercial tile, not slippery, should not show dirty easily, no varnish finish and must complement the rest of the colour palette for Eskom interior. It must have a mortar thickness of 8mm between tiles. Extra box of tiles must always be purchased for future replacement. They should be installed according to SANS 1186-1 2010 and be maintained according to SANS 10245 standard. Floors should be in accordance with 10400-L specifications.

3.1.9 Carpet:

They must be laid in a dust free surface, be glued using a recommended product by the supplier and must be a berber point – colour jute (carpet tiles) without bitumen backing. They should be laid according to SANS 1419 standard.

Floors should be in accordance with 10400-L specifications

3.1.10: Ironmongery:

Locks must be solid blesbok 460/313 4 lever lockset

Nameplates must be 150x150mm² aluminium plate

Handles must be set of 300mm pull handles fixed back to back.

3.1.11 Metal work:

Steel door frames for 1 2mm standard double rebated frames suitable for half brick walls must be as follows. 813x2032mm for a door frame and 1800x 2032mm or 1715x2032mm for double door
Steel door frame for 1 2mm standard double rebated frames suitable for one brick walls must be as follows: 813x2032mm for a door frame and 1800x 2032mm² or 1715x2032mm² or 2000x2032mm² for double door

Steel door frame for 1 6mm standard double rebated frames suitable for one brick walls must be 813x2032mm² for a door

Windows must be standard mild steel windows and others must be aluminium.

3.1.12 Plumbing and drainage:

Plumbing and drainage must be conducted according to SANS 10400-P. White vaal hibiscus wash hand basin and pedestal complete with plug and chain, waste outlet of 40mm in diameter, chrome – plated bottle trap

3.1.13 Paintwork

Painting must have one under coat and one final coat. Final coat on walls must have one of the following colours to complement Eskom colours: Hudson, papyrus, mayan stone, sombero and emerald blue. Painting should be done according to SANS 1091, 2004 and visual colour matching to be done according to SANS 3668

Metals must also have two coats and plascon velvagro can be used as final paint

Wood must be painted using one universal undercoat, two coats polyurethane enamel paint on existing door and two coats of wood varnish on new doors

3.1.14 Stairways and handrails

Stairways should be conducted such that they meet SANS 10400-M specifications. Handrails should comply with SANS 10400-S and painting be done according to 3.1.13

3.1.15 Drainage

Drains should be unblocked using rods, jetting machines or high pressure systems. Solid objects should be removed manually and overgrowing vegetation should be removed to avoid blockage and flow resistance. Drainage should be done according to SANS 10400-P

3.1.16 Partition walls

They should be done according to SANS 10400 to meet the intended need. Fire resistant walls should be done according to SANS 10177 standards. Its application should be in accordance with SANS 10400-T.

3.1.17 Windows and doors

Rolled mild steel windows and door frames should comply with SANS 727 specification. Fire doors should be in line with SANS 1253 and wooden doors should be according to SANS 545. Outside wooden doors should be maranti type while inside doors are sapele. Installation of glazing should comply with SANS 10137 and the glazing material should comply with SANS 50572.

3.1.18 Cladding and roof sheeting

Cladding and sheeting should be done according to SANS 1200 HB. Fasteners for sheet roof and wall coverings should be according to SANS 1273 while painting is done according to SANS 1091.

3.2 COOLING TOWER AND CHIMNEYS

Maintenance on cooling towers and chimneys should be done according to assessor's recommendations. Concrete cracks should be sealed using a rubberized bituminous material. Concrete preparation, formwork, application and curing should be done according to SANS 1200G. Concrete reinforcement should be as per SANS 10162 – 1: 2011 standards. Brickwork should comply with SANS 227.

3.3 ROADS

3.3.1 Pothole, ruts, shoulders and edge breaks repairs

Repairs should be conducted according to COLTO standards. They should be in accordance with the depth and extent of failure and should be categorised as follows: 0-130mm, 0-230mm and 0-330mm. Edge breaks should be done such that they restore the original road dimensions.

0-130mm repairs should be as follows:

- Neatly cut the damaged area using a cutter
- Remove failed material to a depth of 130mm
- Rip and re-compact insitu material to a depth of 100mm thickness and compact it to 95% Mod AASHTO.
- Process a base with a G2 material, filled to a depth of 100mm thickness and compact it to 97% Mod AASHTO
- Base must be allowed to dry up to 50% of optimum moisture content (OMC) before being primed with SS60 at a rate of 0.7l/m²
- Seal the base using 30mm thick continuously graded asphalt compacted to 87% marshal density
- Seal the edge of the patch with SS60 to prevent water ingress
- Clean up and dispose waste according to Eskom waste management procedure

0-230mm repairs should be as follows:

- Neatly cut the damaged area using a cutter
- Remove failed material to a depth of 230mm
- Rip and re-compact insitu material to a depth of 100mm thickness and compact it to 95% Mod AASHTO
- Process a base with a G2 material, filled to a depth of 200mm thickness and compact it to 97% Mod AASHTO
- Base must be allowed to dry up to 50% of optimum moisture content (OMC) before being primed with SS60 at a rate of 0.7l/m²
- Seal the base using 30mm thick continuously graded asphalt compacted to 87% marshal density
- Seal the edge of the patch with SS60 to prevent water ingress
- Clean up and dispose waste according to Eskom waste management procedure

0-330mm repairs should be as follows:

- Neatly cut the damaged area using a cutter
- Remove failed material to a depth of 330mm
- Rip and re-compact insitu material to a depth of 100mm thickness and compact it to 93% Mod AASHTO
- Prepare subbase using G6 material stabilised to C4 using 3% cement. The layer must have 150mm thick and compacted to Mod AASHTO.

- Process a base with a G2 material, filled to a depth of 150mm thickness and compact it to 97% Mod AASHTO
- Base must be allowed to dry up to 50% of optimum moisture content (OMC) before being primed with SS60 at a rate of 0.7 l/m²
- Seal the base using 30mm thick continuously graded asphalt compacted to 87% marshal density.
- Seal the edge of the patch with SS60 to prevent water ingress
- Clean up and dispose waste according to Eskom waste management procedure

Tarred shoulder should be repaired as per the patching process. Gravel shoulders should be repaired by backfilling with a G7 material and compact it up to 93% Mod AASHTO

3.3.2 Maintenance of gravel roads

Gravel roads maintenance must be done according to COLTO specifications and be managed according to Technical Methods of Highways (TMH) 12. They must be done such that the road profile keep water out of the roads and have good riding quality.

Ruts and potholes must be fixed by ripping the *insitu* material to a depth of 150mm and re-compact it to 93% Mod AASHTO. Proper traffic accommodation and road user's safety must be considered during these operations.

Dust must be kept minimal at all times and shall be accomplished by performing dust suppression using a watercart.

3.3.3 Cracks sealing

Longitudinal, transverse and block cracks wider than 3mm (3-15mm) should be sealed. The surface must be free from dust and be properly dry before applying with SS60. The bituminous binder sealant must be applied on the crack ensuring that there won't be water ingress. The sealant must have a softening point of 65 °C or 80 °C and must comply with SANS 307, 309 or 548.

Where cracks are wider than 15mm, the following process must be followed:

- Neatly cut the damaged area using a cutter
- Remove the failed material
- Clean the area to be repaired
- Prime the area using SS60
- Lay a bidim material over the primed area (while still wet) such that it overlaps
- Prime over the bidim
- And surface the top using continuously graded asphalt and must be compacted to 87% marshal density

3.3.4 Fog spray

Fog spray should be applied if there is a loss of binder on the surface and needs to be rejuvenated. 40% emulsion and 60% water fog spray must be used. It should not be applied on situations where the air temperature is less than 10°C, wet and windy. The bitumen spreader should comply with COLTO specifications.

3.3.5 Road signs

Roads signs (permanent and temporal) should comply with SANS 1519-2, South African traffic signs manual and COLTO standards.

Road-marking paint shall comply with the requirements of SANS 731-1 for type 1, type 2 or type 4 paint. The paint shall be delivered at the site in sealed containers bearing the name of the manufacturer and the type of paint. Marking shall be in accordance with SANS 731-1.

Retro-reflective road-marking paint shall comply with the requirements of SABS 731. The colours to be used shall be bright white, yellow or red. The colour of the yellow and red paint shall be as specified in SABS 731-1. The retro-reflective beads shall be glass beads that comply with the requirements for glass beads specified in SABS 731-1.

The beads shall be delivered at the site in sealed bags, marked with the name of the manufacturer, the batch number and an inspection seal of the South African Bureau of Standards (SABS), confirming that the beads form part of a lot that had been tested by the SABS and comply with the requirements of CKS 192. If not, the Contractor shall at all times have an SABS certificate on the site, with details of the batches that make up a lot that had been tested by the SABS, comply with CKS 192 and to which the inspection seal applies.

3.3.6 Kerbing

The kerbing material and erection of mountable, semi-mountable and burial kerbs should be done according to SANS 1200MK.

3.4 DRAINAGE SYSTEM

The maintenance of storm water system should be done according to SANS 1200 LE standards. Pipe replacement should be as per the existing diameter and material not unless instructed by the Engineer. Material for bedding should be in accordance with SANS 1200 LB, concrete work be SANS 1200 G or GA, bricks for catch pits and manholes to comply with SANS 227, trenches and backfilling to be according to SANS 1200DB.

Cleaning of catch pits and manholes should be done manually and to be done proper drainage is restored.

Storm water pipes and concrete drains should be cleaned manually or mechanical depending on the extent of blockage. The system must be flashed with a high pressure system once a year before the rainy season to remove all the potential sediments. Concrete drain should be repaired according to SANS 1200 GA and expansion joint to be in accordance with SANS 1202.

Earth lined drains should be maintained using earth moving equipment and must be done as per the existing slope and depth. After levelling the drain must be compacted to 90% Mod AASHTO to prevent erosion.

Retaining walls, gabions and stone pitching should be done according to SANS 1200 DK.

Gabions wire mesh should be type 80 and must comply with SANS 1580. Gabions stones should be between 100 – 250mm in diameter.

3.5 SEWER SYSTEM

Sewer system must be maintained according to SANS 1200 LD standards. Reinforced concrete pipes should be according to SANS 677, uPCV be SANS 791, joint rings to be SANS 974, Bedding to be according to SANS 1200 LB, bricks to comply with SANS 227, precast concrete to be SANS 1294, manholes and frames to comply with SANS 558, trenches and backfilling to be according to SANS 1200DB.

Unblocking of should be done using poking rod or mechanical equipment depending on the extent of damage.

3.6 WATER CONNECTION

Water connections must be maintained according to SANS 1200 LF standards. Copper pipes should be according to SANS 460, galvanised pipes according to SANS 62, uPCV be SANS 966, Bedding shall be a light sandy material, bricks to comply with SANS 227, trenches and backfilling to be according to SANS 1200DB.

3.7 WATER RETAINING STRUCTURES

3.7.1 Small dams

Small dams (depth less than 15m) must be done in accordance with SANS 1200 AD and those dams are dirty, emergence and clean dam.

Maintenance on concrete dam walls shall be maintained according to the recommendations of the assessor. Concrete cracks should be sealed using a rubberized bituminous material. Concrete preparation, formwork, application and curing should be done according to SANS 1200G.

Concrete reinforcement should be as per SANS 10162 – 1 2011 standards Access road repairs should be done according to 2 0 Stone pitching should be done according to SANS 1200 DK Silt deposits should be cleaned using a dredging machine and should be done on every 3 year interval Silt deposits should be pumped to the temporal drying beds which are lined with filter bags to allow water reclamation and waste should be disposed as per Kendal waste management procedure Weed and aquatic vegetation must be cut from the ground level to restore dam capacity. This should be done as and when need arises

3.7.2 Settling ponds

Settling ponds lined with concrete should be cleaned using earth moving machines Coal yard settling pond, settling ponds next to the dirty dam and pollution control dam at the ash dump should be cleaned twice a year before rainy season with earth moving machine Concrete preparation, formwork, application and curing should be done according to SANS 1200G Concrete reinforcement should be as per SANS 10162 – 1 2011 standards

3.7.3 Earth dams

Attenuation dam at coal yard and evaporation dams at ash dump should be cleaned using earth moving machines, but there must be no damage to the dam lining during operation. Deep dams should be cleaned using dredging machine Stone pitching should be done according to SANS 1200 DK

2. Quality Requirements

The *Contractor* shall comply with the Employer's Quality Requirements as specified in Eskom QM58 document

- *Contractor* shall provide proof of payment and quality compliance specifications to the Engineer on every material purchased for approval
- Comprehensive project methodology shall be issued to *Project Manager* prior commencement and be approved by the *Engineer*
- Project QCP shall be developed and approved prior project commencement and shall be used as a quality management tool for the project till completion

3. Health, Safety and Environment (SHE)

The *contractor* shall comply with the following standards and SHE

- Eskom SHEQ policy
- SHE requirements for Eskom commercial process
- Adhere to the OHS Act 85 of 1993
- Adhere to Eskom lifesaving rules
- All staff shall undergo Safety Induction, presented by *Employer's* Risk Management Department
- *Contractor* shall obtain a permit and adhere to the permit to work system used at Kendal Power Station before carrying out any work.
- Environmental Management System (ISO 14001, 2004)
- Kendal Waste Management Procedure *(1024012)
- Kendal Environmental Non-conformances, corrective and preventive measures* (1015684)
- The *contractor* shall report any Environmental incidents that can occur, to the environmental department with 24hrs
- Waste shall be kept in skip bins the correct skips as per Kendal waste management procedure.
- Ensure compliance must identify all environmental aspects and related to the scope of project.
- Quality –comply to quality management system and QMS8

3. Specifications

Title	Date revision	or Tick if available	publicly
<u>General Specifications:</u>			
Health and Safety requirements			
Environmental requirements			
Site regulations and access control			
Employer Quality requirements			