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C3.1: EMPLOYER'S WORKS INFORMATION

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1 Description of the works

1.1 Executive overview

Matimba power station is equipped with once through boilers a very boiler feed water quality, resp. demin water make up and condensate quality. CPP-unit comprises of three CPP-trains and each train consists of one deep bed cation exchanger and one deep bed anion exchanger. Resins are used to facilitate the removal of ions that accumulate in the demin water during the process of electricity generation.

Resins deteriorate during operations, lose total exchange capacity and therefore same type is required for top up.

Currently, the resin levels in the vessel are half-full due to the resin loss incurred during the operation of the plant, the throughout put of the resin cannot reach the required running hours. Inadequate polishing results in multiple excursions and high chemical consumption as the resins need to be frequently regenerated to make up for the low resin levels. For the resins to be effective, they need to be operated and maintained at 80% of the total vessel volume with operating capacity of above 60% and lower resins levels leads to multiple chemical excursions, high regeneration backlog, high water consumptions and poor water quality.

For demin plant both cation and anion use strata beds(different types of resins in layers in one vessel) for top up purpose it is important to use the same type of resin that is already at the plant in order to not compromise the resin qualities due to different densities(physical parameters of the resin) and compositions. Purchasing the different resin type will compromise the quality of the water produced through the ion exchange as well as life of the resin

1.2 Employer's objectives and purpose of the works

The objective of this contract is to top up the Cation and Anion resin that used for ion exchange on the plant. This is to ensure that chemistry parameters at the units are operating with the range as stipulated by Power Plant Chemistry Policy, Standards and Guidelines.

2 Management meetings

Regular meetings of a general nature may be convened and chaired by the *Project Manager* as follows:

Title and purpose	Approximate time & interval	Location	Attendance by:
Overall contract progress and feedback review	Weekly on Thursday at 08:00	As per meeting notification to be sent	<i>Employer, Contractor, Supervisor, and System Engineer</i>

Meetings of a specialist nature may be convened as specified elsewhere in this Works Information or if not so specified by persons and at times and locations to suit the Parties, the nature and the progress of the works. Records of these meetings shall be submitted to the Project Manager by the person convening the meeting within two days of the meeting.

All meetings shall be recorded using minutes or a register prepared and circulated by the person who convened the meeting. Such minutes or register shall not be used for the purpose of confirming actions or

instructions under the contract as these shall be done separately by the person identified in the conditions of contract to carry out such actions or instructions.

2.1 Documentation control

All contractual communications will be in the form of properly compiled letters or forms attached to emails and not as a message in the email body.

2.2 Health and safety risk management

2.2.1 General

The *Contractor* complies with the following:

- Matimba Power Station Health and Safety Standards as per Matimba Power Station Health & Safety Specifications for Contractors (PA/270/003) attached to the Invitation to Tender. This procedure will be handed over during tender enquiry and will enable the successful Tenderers to compile a Health & Safety plan that has to be approved by the Employer prior to commencement of work.
- Compliance with Eskom & Matimba No Smoking Policy
- Adhere to the OHS Act 85 of 1993
- All staff will undergo Safety Induction, presented by Matimba Risk Management Department

Employer's site regulations as stipulated in Form PA/270/003, covering the following:

- Clean lines
- Storage of material
- Safety precautions and fire prevention
- Permits to work
- Other *Contractor's* work
- Representation of sub-*Contractors*
- Maintenance staff to witness erection
- Supervision
- Handing over of *works*
- *Contractor's* Site

2.2.2 Matimba Permit to Work System

The *Contractor* will ensure that he/she is informed of all the requirements of Eskom's Plant Safety Regulations and ORHVS and that he/she at all times comply to the requirements of these Regulations. The *Contractor* will ensure that all his supervisors who are directly involved with Eskom's Permit to Work System, are trained and on successful completion of Matimba's authorization / evaluation process will be authorized as "Responsible Persons".

The Responsible Person shall ensure that:

- The conditions of permits and cautionary notices are strictly adhered to.
- The lockout procedures, mechanical as well as electrical, are strictly adhered to and any deviations shall be corrected immediately.
- The safe work procedures as laid down by Matimba Power Station and as determined by the Risk Assessment, shall be followed.
- The workers register and cautionary notices are discussed daily with workers.

2.3 Environmental constraints and management

2.3.1 Hazardous Waste

All waste introduced to and/or produced on Employer's Premises by the Contractor for this order, must be handled in accordance with the minimum requirements for the Handling and Disposal of hazardous waste in terms of Government Legislation as proclaimed by the Department of Water Affairs and Forestry 1994 Ref.: BN0621-16296-5. (A copy of this document is available at the Power Station for reference purposes).

2.3.2 Environmental Management

Matimba has an Environmental Policy, PP/240/001, to which the Contractor and his employees must adhere. It is the responsibility of the Contractor to ensure that he obtains copies of the Matimba Environmental Policy, the legal register applicable to his area of responsibility, the aspect register and the Matimba procedures (applicable to the Contractor's area of responsibility) and to familiarize themselves on such procedures, within 30 days from the date of commencement of work at Matimba, to assist the Contractor and his/her employees to prevent pollution and to comply with legislative requirements. Copies of the above-mentioned documents shall be obtained from the Project Manager or Environmental Officer on the first day prior to commencement of work at Matimba. The Contractor shall submit proof to the Environmental Officer of Matimba that he and his employees has done all the necessary training on procedures and Policies supplied to them and that they do understand the contents of the procedures, registers and policies and will adhere to them at all times.

The *Contractor* adheres to the following rules:

- Provide sufficient storage containers, labelled depicting general or hazardous waste and store in a designated storage area
- No hazardous waste may be stored for a period of more than 90 days on the Matimba premises
- Ensure that all hazardous waste is disposed off at a licensed Class H disposal site. A copy of the hazardous waste disposal certificate is submitted to the Project Manager.
- Ensure that all other general waste is disposed off at the local municipal waste dump.
- Ensure that the *Contractor's* site does comply with the general good housekeeping practices. Redundant materials are moved to allocated sites. No scrap shall be stored in the *Contractor's* yard. Scrap is to be cleared from Site daily.

The non-adherence to the Matimba Environmental policy and rules could result in the termination of this contract.

2.4 Quality assurance requirements

The Contractor submits a quality control plans prior to commencing work. The quality control plans should cover inspections and test proposals for items or activities to be supplied in the contract. The quality control plan indicates the following:

- a) The identification of the activity/operation.
- b) A list of sequence of operations including inspections and tests.
- c) The identification of the specification, drawing or procedure for each operation.
- d) The acceptance criteria with reference to the appropriate technical specification set out by the Contractor.
- e) The inspections and test the Contractor has nominated for hold and witness points.
- f) Provision for inspections and tests nominated by the Employer, and /or his representative.
- g) Inspection and test records which are generated by the Contractor.

The *Contractor* is also responsible for the following:

- h) The Contractor notifies the Employer of any changes to the quality system and obtains agreement prior to the implementation on the existing orders and contracts or sub orders and contracts.
- i) Identifies any additional documents which are to be submitted to the Employer
- j) Indicates the interface with the Contractor's quality system and applicable documents such as procedures and work instructions.
- k) In case a Sub-Contractor is employed, the Contractor indicates how they will be monitored.
- l) The Contractor and/or Sub-Contractors give access to the Employer or his representative where appropriate to their premises and facilities at reasonable times to conduct quality assessments, audits, surveillances, and inspections to establish compliance with the contractual requirements.

2.5 Programming constraints

A schedule for the execution of the works shall be compiled in detail and include all work activities.

Schedule to be compiled with MS Projects and presented to the project manager within one week of contract placement for review and approval.

2.6 Contractor's management, supervision and key people

The Contractor shall provide full time supervision while staff is working on the Contract. The person nominated by the Contractor to supervise the works shall have the authority to take instructions on behalf of the Contractor and shall be registered as a SACPCMP Professional Construction manager with a minimum of five years' experience.

2.7 Invoicing and payment

Within one week of receiving a payment certificate from the Project Manager in terms of core clause 51.1, the Contractor provides the Employer with a tax invoice showing the amount due for payment equal to that stated in the Project Manager's payment certificate.

The Contractor shall address the tax invoice to Eskom Holdings SOC Ltd and include on each invoice the following information:

- Name and address of the *Contractor* and the *Project Manager*;
- The contract number and title;
- *Contractor's* VAT registration number;
- The *Employer's* VAT registration number 4740101508;
- Description of service provided for each item invoiced based on the Price List;
- Total amount invoiced excluding VAT, the VAT and the invoiced amount including VAT;
- (add other as required)

2.8 Contract change management

Standard NEC forms to be used in the event of any possible compensation event claims.

3 Engineering and the *Contractor's* design

3.1 *Employer's* design

The water treatment plant produces demineralized water through ion exchange using resins. The cation resin specifications used are as follows:

Plant	Resin Technical spec name
Demin	Amberlite HPR 8300 H
Demin	Amberlite 650 H
Demin	Amberlite HPR 9600
Demin	Amberlite HPR 550 OH
Demin	Amberlite 9000 OH
CPP	Amberlite HPR 252 H

3.1.1 Condensate Polishing System

Ion exchange uses are not limited to process and demin water makeup. Ion exchange resin it is used to purify or polish condensate water and removing corrosion products that could cause harmful mass deposits in boiler tubes.

Alot contaminants in the condensate system are monitored as per chemistry standards, the likes of Cations such as Iron, copper, sodium leads to multiple boiler/condenser major failures. Low levels of other contaminants may enter the system through condenser and pump seal leaks or carry-over of boiler water into the steam. Condensate polishers filter out the impurities and remove soluble contaminants by ion exchange.

After exhaustion, the cation resin is regenerated using sulphuric acid and anion resin using caustic soda solutions.

3.1.2 Demineralisation system

A demineraliser system consists of two or three ion exchange columns, which include strong acid cation resin unit and in some stations, a combination of weak acid and strong acid cation resin in one unit (stratified bed). Strong base anion unit and in some station/s a combination of weak base and strong base anion resin in one unit (stratified bed) or separate units.

The cation unit exchanges hydrogen for the raw water cations and anion unit exchanges hydroxyl for raw water ions.

As cation exchange and anion exchange units exhaust (all exchange sites used), the cation resin is regenerated with a dilute sulphuric acid and anion resin with dilute caustic soda solutions.

Eskom plants also have mixed bed exchanger units, which have both cation, and anion resin mixed in a single vessel. As water flows through the resin bed, the ion exchange process is repeated many times, "polishing" the water to a very high purity. During regeneration, the resin is separated into distinct cation and anion fractions and regenerated using sulphuric acid (cation resin) and caustic soda (anion resin).

3.2 Parts of the *works* which the *Contractor* is to design

3.2.1 Condensate Polishing Plant Resins Scope of Work

1. The *contractor shall* Supply and deliver ion exchange resin for the condensate polishing plant (CPP).
2. The *contractor shall* ensure that Resin required for topping-up the vessels must be the same product and type as the resin currently loaded in the plant. The contractor shall supply:

Plant	Resin Technical spec name	Volumes(L)
CPP	Amberlite HPR 252 H	160000

3. The *contractor shall* provide batch numbers for all resin products delivered to Eskom, for traceability during troubleshooting.
4. The *contractor shall* ensure that all ion exchange resin products must be supplied in pallets of 25 litres bags amounting to 1000 litres.
5. The *contractor shall* ensure that all ion exchange resin products must be delivered in an open loaded truck to allow accessibility by the forklift during offloading.
6. The *contractor shall* ensure that the condensate polishing plant resin must have the following polymer matrix type:
 - Cation resins: a styrene gellular strongly acid resin.
 - Anion resins: a styrene macroporous strongly basic type 1 resin.
7. The *contractor shall* ensure that the condensate polishing plant resin must have the following total exchange capacity and form:
 - Cation resins must be supplied in hydrogen form with capacity greater than 2.0 eq/l.
 - Anion resins must be supplied in the hydroxyl form with a capacity of greater than 1.0 eq/l. The chloride content must be less than 1% and the hydroxyl content must be greater than 95%.
8. The *contractor shall* ensure that the cation resins supplied must have perfect beads exceeding 99% and broken beads must be less than 1%.
9. The *contractor shall* ensure that the physical strength of CPP cation gellular resins must have less than 10% break down after exposure to 100 cycles of the osmotic shock attrition test and 500 cycles for macroporous resins. Osmotic test results must be provided.
10. The *contractor shall* ensure that the uniformity coefficient for the cation resin must be less 1.2. 90% of the resin beads must be in the range of 0.60 – 0.70 mm.
11. The *contractor shall* ensure that the safety data sheets (SDS) and technical data sheets (TDS) per product offered.
12. The *contractor shall* ensure that the following documents shall be submitted to power station personnel in the Water Treatment plant Control Room upon arrival at the power station:
 - Ion exchange resin certificate of analysis and batch numbers.
 - Delivery note, which must include the Eskom order number, the name of the power station and the power station address.

Chemistry and plant data
Condensate Polishing Plant Data

DATA			A
		Units	
Resin Type : Amberlite HPR 252 H			SAC
Mixed Bed or Separate Beds	SB		
Resin Volume per vessel	Cation (SAC)		
	Anion (SBA)		
Column Diameter	SAC	mm	
	SBA	mm	
Regeneration	H ₂ SO ₄ Concentration (used)	%	5
	NaOH Concentration (used)	%	
Number of CPP Vessels per unit	Cation (SAC)	Number	3
	Anion (SBA)	Number	

CPP Outlet Expected Quality	Silica as SiO ₂	ppb	< 5
	Sodium as Na	ppb	<1
	Chloride as Cl ⁻	ppb	<1
	Sulphate as SO ₄ ²⁻	ppb	<1
	Specific Conductivity	µS/cm	0.08

3.2.2 Demineralisation Cation and anion resins

1. The *contractor shall* ensure resin required for topping-up the vessels must be the same product and type as the resin currently installed in the plant. There shall be no need to do computer simulation for the top-up resin. The contractor shall supply :

Plant	Resin Technical spec name	Volumes(L)
Demin	Amberlite HPR 8300 H	26550
Demin	Amberlite 650 H	12000
Demin	Amberlite HPR 9600	5900
Demin	Amberlite HPR 550 OH	2950
Demin	Amberlite 9000 OH	2350

2. The *contractor shall* provide batch numbers for all resin products delivered to Eskom, for traceability during troubleshooting.
3. The *contractor shall* ensure that all ion exchange resin products must be supplied in pallets of 25 litres bags amounting to 1000 litres.
4. The *contractor shall* ensure that all ion exchange resin products must be delivered in an open loaded truck to allow accessibility by the forklift during offloading.
5. The *contractor shall* ensure that the cation and anion resin supplied must have perfect beads exceeding 99% and broken beads must be less than 1%.
6. The *contractor shall* ensure that the uniformity coefficient for the cation and anion resin must be less than 1.2. 90% of the resin beads must be in the range of 0.60 – 0.70 mm.
7. The *contractor shall* ensure that the safety data sheets (SDS) and technical data sheet (TDS) must be provided per product.
8. The *contractor shall* ensure that the following documents shall be submitted to power station personnel in the Water Treatment Plant Control Room upon arrival at the power station:
 - Ion exchange resin certificate of analysis and batch numbers.
9. The *contractor shall* ensure that Delivery note, which must include the order number, the name of the power station and the power station address.

3.3 Procedure for submission and acceptance of *Contractor's* design

- The *Contractor shall* provide all management, supervision, labour, vehicles, consumables, equipment and cleaning materials required to provide the *works*.

3.4 Equipment required to be included in the *works*

The Contractor shall provide Lifting equipment to be used for resins offloading.

4 Procurement

4.1 People

4.1.1 Minimum requirements of people employed on the Site

- All people employed to provide the works shall have South African Citizenship.
- If international employees will be employed to provide the works they shall have official work permits.
- All people employed to provide the works shall be trained on health and safety.
- All people employed to provide the works shall be trained on doing risk assessment.
- CV's of the key personnel involved in all phases of the project are to be provided with the Tender. Their related experience in water treatment plant.

4.1.2 BBBEE and preferencing scheme

Specify constraints which *Contractor* must comply with after contract award in regard to any Broad Based Black Economic Empowerment (B-BBEE) or preferencing scheme measures.

4.1.3 Accelerated Shared Growth Initiative – South Africa (ASGI-SA)

If the ASGI-SA requirements are to be included in this contract specify constraints which *Contractor* must comply with after contract award in regard to any ASGI-SA requirements. The ASGI-SA Compliance Schedule completed in the returnable tender schedules is reproduced here. If ASGI-SA does not apply, delete this paragraph.

The *Contractor* complies with and fulfils the *Contractor's* obligations in respect of the Accelerated and Shared Growth Initiative - South Africa in accordance with and as provided for in the *Contractor's* ASGI-SA Compliance Schedule stated below

[Insert the agreed ASGI-SA Compliance Schedule here]

The *Contractor* shall keep accurate records and provide the *Project Manager* with reports on the *Contractor's* actual delivery against the above stated ASGI-SA criteria. [Elaborate on access to and format of records and frequency of submission etc.]

The *Contractor's* failure to comply with his ASGI-SA obligations constitutes substantial failure on the part of the *Contractor* to comply with his obligations under this contract.

4.2 Subcontracting

4.2.1 Preferred subcontractors

Not Applicable.

4.2.2 Subcontract documentation, and assessment of subcontract tenders

The *Contractor shall* provide the *Employer* with information of the Subcontractors it intends to subcontract under this contract for acceptance. The information includes but is not limited to the following:

- Name and address of the Subcontractor
- Business registration number
- VAT number (if applicable)
- CSD registration number
- Valid B-BBEE certificate
- ID copy of shareholders
- Financial Statements or Management Accounts
- Description of the *works* to be subcontracted

The *Contractor* does not appoint the Subcontractor without the *Project Manager's* acceptance. The *Contractor* takes full responsibility and accountability for acts and/or omissions of any Subcontractors, his employees or agents as if they were acts and/or omissions of the *Contractor*.

4.2.3 Limitations on subcontracting

The *Employer* may require that the *Contractor* must subcontract certain specialised work, or that the *Contractor shall* not subcontract more than a specified proportion of the whole of the contract.

4.2.4 Attendance on subcontractors

State requirements for attendance on Subcontractors, if any

4.3 Plant and Materials

4.3.1 Quality

It is the responsibility of the Contractor to ascertain the condition of any used equipment or materials, transport to site, corrosion protection, as well as any spares compatibility issues that may present itself in the future.

The Contractor does not use Plant and Materials which are generally recognised as being unsuitable or otherwise to be avoided for the purpose for which they are intended.

Only components of high reliability are utilised, with a proven operating history, to enable the Plant to achieve required reliability and availability. Plant and Material design, engineering and manufacture accord with the best modern practice applicable to high-grade products of the type to be furnished, so as to ensure the efficiency and reliability of the works and the strength and suitability of the various parts for the works.

Plant and Materials withstand ambient conditions and the variations of temperature arising under working conditions without distortion, deterioration or undue strains in any part.

All parts are made accurately, and where practicable, to standard gauges so as to facilitate replacement and repairs. Like parts are interchangeable.

No repair of defective Plant and/or Materials is permitted without the Project Manager's acceptance and any such repair, if accepted, is carried out in accordance with the Employer's requirements.

The Contractor ensures that co-ordinated and formally documented management system is in place for the assurance of quality as specified in ISO 9001, Quality management Systems – Requirements.

The Project Manager is free to specify hold and witness points during the installation and on site testing stages of the project. The Contractor issues preliminary notification of such hold and witness points by four days advance notice to the Project Manager, and confirms such hold and witness points at least four days prior to the activity.

Documentation regarding quality procedures is submitted within thirty days of Contract Award. The Project Manager Reviews and comments on the acceptability of these documents within the period for reply. If controlled copies of these documents have been submitted to the Employer, then the controlled copy numbers may be quoted in the submission.

4.3.2 Plant & Materials provided “free issue” by the *Employer*

All Plant and Material are provided by the *Contractor* to execute the works in accordance with the Works Information.

4.3.3 *Contractor's* procurement of Plant and Materials

- The Contractor supplies and uses suitable and sufficient construction plant, tools and equipment and materials as may be required to carry out the works efficiently.
- The Contractor at all times provides protection for all plant and materials from damage or loss due to weather, fire, theft, unexplained disappearance or similar.
- The Contractor at all times protects from damage, due to the Contractor's service to provide the Works, all plant and materials and equipment and all items on the site that are the property of the Employer or Others.
- The Contractor provides or manages, as part of works everything necessary for the receiving, inspection, safe keeping and storage, issuing, handling, management and administration of all plant and materials purchased by the Contractor.

- The Contractor provides through the Project Manager and relevant Construction Management personnel the documentation for the warranties from suppliers of all any relevant plant and material used in the execution of the works.
- The Contractor ensures to provide all guarantees and warranties of the plant & materials used in the works to the Project Manager and Employer when construction is completed.
- The Contractor supplies to the Project Manager, for verification and acceptance purposes, with a label list showing the text only. The Project Manager's acceptance should be sought for the positioning and designation of labels.
- The Contractor arranges all shipments of Plant and Materials and consigns all such shipments to himself as consignee at the project shipping address, freight fully prepaid. The Contractor makes demurrage agreements and settlements with carriers for his shipments.

4.3.4 Spares and consumables

It is the contractor's responsibility to provide all required consumable to complete the work this includes fuel for transportation and this should be factored on the costing.

4.4 Tests and inspections before delivery

The *Contractor* ensures that the tests and inspections as listed in this section are carried out as minimum. The *Contractor* ensures that proof of inspections and the outcome of the inspections are documented and available to the *Project Manager* when requested.

The *Contractor's* ensures that his inspector has authority to stop fabrication and initiate corrective actions when non-compliance is discovered. No shipment is made until the inspector has certified that the components comply with this specification.

4.4.1 Site acceptance tests

The following are the minimum requirements for site acceptance tests:

- System performance at minimum and maximum system flow rate;
- System performance at minimum and maximum supply water level;

4.5 Marking Plant and Materials outside the Working Areas

All Plant and Material paid for by the Employer must be clearly labelled as being the Employer's property.

4.6 Contractor's Equipment (including temporary works).

The Contractor is liable for all plant & equipment in the designated area under his control. The Employer will not take any responsibility for any loss or damage to the equipment.

5 Construction

This part of the Works Information addresses constraints, facilities, services and rules applicable to the *Contractor* whilst he is doing work on the Site during the construction and maintenance phase.

5.1 Temporary works, Site services & construction constraints

5.1.1 *Employer's* Site entry and security control, permits, and Site regulations.

The *Contractor* complies with the following:

- Matimba Power Station Health and Safety Standards as per Matimba Power Station Health & Safety Specifications for Contractors (PA/270/003).
- Compliance with Eskom & Matimba No Smoking Policy.
- Adhere to the OHS Act 85 of 1993.
- All staff will undergo Safety Induction, presented by Matimba Risk Management Department
- Adhere to Eskom Cardinal Rules at all times.
- The *Contractor* must conform to the access control requirements as set out in the document called "Health and Safety Practices for Contractors at Matimba Power Station".
- The *Contractor* must conform to the requirements set out in the document called "Eskom Environmental Practices and Standards".
- Names and Identity numbers are required seven working days before the contract starts. Photo copies of Identity documents are also required. This must be arranged with the *Employer's Representative*.
- Lost permits will be paid for by the *Contractor* to Protective Services at a cost of R300-00 per lost permit.
- Only work vehicles with an approved permit will be allowed on site. No private vehicles will be allowed on Site.
- Arrangements must be made with the *Employer's Representative* well in advance to allow sub-Contractors on *site*.
- The transport of any equipment onto *site* must be declared and documented at Protective Services in Order to facilitate the future removal thereof.
- Eskom may at its discretion provide any spare parts, materials or equipment as may be required for the Execution of the contract *works*.

5.1.2 Restrictions to access on Site, roads, walkways and handrails.

The *Contractor* shall adhere to site procedures for roads, walkways and barricades

Access to the site is controlled and it is governed by the terms and conditions lay down by Matimba Power Station security officials. The proposed site will be shown to the Contractor during the site meeting or clarification meeting by the Employer.

The Contractor liaises with the Matimba SHE Practitioner/Officers for Safety Induction prior work to commence.

After induction the Contractor will be issued with a copy of the attendance register for the induction attended. This proof of induction will be used by the Employer to verify attendance prior to signing the Personal Site Access document.

The Contractor's employees take the signed site access documents to security reception official in order to finalize their site access.

The Contractor ensures that all its employees carry their site access forms with them all the time.
The Contractor is subjected to alcohol testing on a daily basis.

The Contractor submits his application for vehicle permit to the Project Manager. The personnel and vehicles entering and leaving the site are subjected to routine searches.

The Contractor obtains a "Gate Removal Permit" from the Project Manager before materials and equipment can be removed from site. The "Gate Removal permit" gives itemised list of materials and equipment to be removed from site.

The Contractor ensures that a tool list is available on the day of arrival and that all tools are captured on the tool list. The tool list is handed over to the Reception Security official that will stamp the tool list. The tool list is kept safe and used when tools needs to be remove from site.

This message is handed over to any Subcontractor working on Matimba Power Station.

5.1.3 People restrictions on Site; hours of work, conduct and records

Restrictions and hours of work may apply at Matimba Power Station. The Contractor keeps records of his people on Site, including those of his Subcontractors which the Project Manager or Supervisor have access to at any time. These records may be required in the event of a compensation event for assessment purpose or other cause.

5.1.4 Health and safety facilities on Site

- The Medical Station is available on site during normal working hours. The after-hours emergency telephone number is 014-763-8311 or from a Matimba phone the extension is 5000 that can be phoned for assistance.
- Fire protection and rescue services are available on site 24 hours per day.

5.1.5 Environmental controls, fauna & flora, dealing with objects of historical interest

The contractor identifies the environmental aspects and impacts associated with the works and keeps an updated register after approval by the Employer's safety department.

The contractor takes precautions not to disturb any fauna and/or flora (plant or site vegetation) for any purpose, injure or kill any animals, including snakes. The construction site is kept clean and free of litter that can attract pest animal species.

Use of herbicide on site is subject to approval by Employer's safety department. The application must be according to set specifications and under supervision.

The contractor shall submit an EMP indicating plans for managing environmental aspects. The Contractor includes in his method statements and risk assessments, mitigation measures for environmental impacts and aspects.

The Contractor shall comply with the Employer's site SHE specification, the site Environmental Procedure and any other procedures from the Employer and site pertaining to environmental management.

5.1.6 Title to materials from demolition and excavation

The *Contractor* has no title to any material or equipment delivered under this Contract. He will remove all redundant material and equipment to an area that will be identified by the Contract Supervisor.

5.1.7 Cooperating with and obtaining acceptance of others

The Contractor shares a working space with others when required and co-operate with others in obtaining and providing information required in connection with the works.

5.1.8 Publicity and progress photographs

Cameras and taking or publishing photographs is prohibited.

5.1.9 Contractor's Equipment

- a) The Contractor provides all Equipment that is required to complete the Works.
- b) The Contractor's Equipment does not impair the operation or access to the plant.
- c) The Contractor provides all or any temporary or expendable materials required for the storage of material.

Any Equipment, or appliances, used by the Contractor conforms to the applicable OHS Act safety standards and is maintained in a safe and proper working condition. The Project Manager has the right to stop the Contractor's use of any Equipment which, in the opinion of Project Manager, does not conform to the foregoing.

5.1.10 Equipment provided by the Employer

Eskom will provide scaffolding where required. it is the responsibility of the contractor to inform the project manager atleast three days prior to the work that requires scaffolding.

5.1.11 Site services and facilities

➤ Medical Facility and Emergency Services

Medical Station available on site during normal working hours; the emergency telephone number internal to Matimba is 5000 or 014-763-8311 from an external land line or cell phone and can be used to obtain emergency assistance. The Contractor should provide a COID number (Compensation for Occupational Injury and Disease) and associated documentation when the medical station is visited.

➤ Contractor's Yard

Should the Contractor qualify for a site, the Employer will provide a site within the premises of the Power Station for the Contractor to establish himself for the execution of the works. The Project Manager together with the Site Manager will allocate a site to the Contractor. A site close to the connection points of water, electricity and toilet facilities cannot be guaranteed.

A Contractor qualifies for a site if the answer to at least one of the following questions is affirmative:

- Is the contractor needed on site on a daily basis to carry out his/her contractual duties?
- Does the nature of contract activities demand that the contractor be involved continuously, with his/her contractual duties for the whole day for four (4) or more days in a week?
- In a case of a break down, is the contractor required to respond to the call out within 15 minutes?

- Is there any statutory regulation/s that warrants that the contractor must operate within the premises of Matimba Power Station for the delivery of contractual obligations?
- The *Contractor* is responsible for keeping the site in good state of maintenance and is responsible to ensure that at the end of the Contract period, he informs the Site Manager to inspect the site at least thirty days (30) before the Contract end date. The *Contractor* shall vacate the site allocated to him at the end of the Contract or on termination of the Contract.

A written request, indicating the Contractor's requirements in locality and area of storage, office and workshop sites is submitted to the Supervisor as soon as possible after the Contract Date.

➤ **Roads**

The Employer makes every effort to maintain the roads on the Site in a fair condition and all construction traffic is limited to using these roads. Matimba traffic regulations are adhered to at all times. The speed limit is 40km/h shall be adhered too at all times.

➤ **Security**

The Contractor is informed of the access procedures through Matimba Procedure PS/270/008, Rev 1, "Access Control and Protection of Eskom Assets" and should expect that such procedures may change depending on the prevailing security situation.

Temporary entrance permits are issued to contractors who are on site for less than 3 months. Names and Identity Numbers are required before the contract starts. Photocopies of Identity documents are also required. This must be arranged with the Project Manager. The Contractor will pay Protective Services for lost permits at a cost of R30-00 per lost permit. All permits need to be returned to Security or the Project Manager upon completion of the contract. If it is necessary to bring tools and equipment onto site a list of tools is submitted which is verified by security staff prior to tools entering the security area.

Should any Contractor staff be transferred from Matimba or leave site, the Contractor ensures that personnel leaving site are transported out of the security area and that the permit is returned.

Only work vehicles with an approved permit will be allowed on site. These vehicles are to be in a serviceable condition and road worthy. Temporary vehicle permits are issued to contractors who are on site for less than 3 months. This must be arranged with the Project Manager. Speed limit is 40km/h.

No private vehicles will be allowed on site without a temporary permit.

Arrangements must be made with the Project Manager well in advance to allow sub-contractors and visitors onto site.

To bring cameras and cell phones with cameras on site, permission has to be obtained from the Power Station Manager, using the standard application forms for cameras. This must be arranged with the Project Manager. No firearms, weapons, alcohol, and illegal substances are permitted on site.

No "Private Work" is carried out for or on behalf of any Employer Employee. Any person suspected of being under the influence of alcohol is tested and if proved positive, is refused entry to the security area. Only authorised persons are permitted to enter Red Zone areas.

The transport of any equipment onto the site must be declared and documented at Protective Services in order to facilitate the future removal thereof. Pro-active comprehensive listing of all tools and equipment brought to Matimba will considerably speed up entrance to the power station.

No firearms, weapons, alcohol, illegal substances, and cameras are permitted on site. No "Private Work" is carried out for or on behalf of any Eskom Employee. Any person suspected of being under the influence of alcohol is tested and if proved positive, is refused entry to the security area.

Only authorised persons are permitted to enter Red Zone areas.

➤ **Supply of Electricity**

Electric power for construction, both 220V AC and 380V 3-phase supply, is supplied at Site free of charge, but connection fees are for the Contractor's account. All installations comply with the details set out in Matimba Maintenance Procedure PAM/233/002 - Contractor's Temporary Electrical Equipment Supply, and Construction Power Supplies (Occupational Health and Safety Act - Act 85 of 1993) and the Matimba Safety, Health and Environmental Specification for Contractors, PS/270/003 Rev10.

The Employer does not guarantee continuity of supply and no claims for standing time as a result of power failures will be considered.

A written request, indicating the Contractor's requirements is submitted to the Project Manager as soon as possible after the Contract Date.

➤ **Water**

Potable and raw water for construction purposes is also available free of charge.

A written request, indicating the Contractor's requirements is submitted to the Project Manager as soon as possible after the Contract Date.

➤ **Sanitary Facilities**

Permanent toilets to serve the Power Station and urinals at the boundary area have been constructed by the Employer and all the Contractor's personnel may make use of these facilities. The Contractor should as courtesy to Eskom employees and other Contractors on site announce intention to use such facilities with personnel already using the mentioned facility.

Where there is no facility within 100 meters of the site, the Contractor will be responsible for provision of temporary facilities that is serviced at least every two days.

5.1.12 Facilities provided by the *Contractor*

Describe what the *Contractor* is to provide in the way of Site accommodation, laboratories, storage, vehicles and office equipment etc for the *Project Manager* and the *Supervisor*, and any restrictions or minimum requirements concerning the *Contractor's* own facilities. State requirements for facilities to be provided by the *Contractor* such as construction camps. Also state what happens to these facilities upon completion of the contract. Set out constraints, if any, as to the location by the *Contractor* of such facilities on the Site and requirements for drawings of Site facilities, as necessary.

5.1.13 Existing premises, inspection of adjoining properties and checking work of others.

The Contractor, in conjunction with the Project Manager inspects the site prior to possession. Any defects established during this inspection are listed on the possession certificate. The Contractor is responsible for any defect or damage to plant not listed on the possession certificate, which occurred during installation.

5.1.14 Control of noise, dust, water and waste

Water

The *Contractor* shall ensure that no pollution enters surface water or has the potential to pollute groundwater by ensuring that there is containment of spillage (e.g. diesel, oil, etc.) and that there is an emergency plan in place to deal with accidental spillage. Contamination of water sources is strictly prohibited.

Noise

Prior to construction, consideration must be given to the noise mitigating measures such as use of suitable and effective silencing devices for pneumatic tools and other plant that would otherwise cause a noise level exceeding 85 decibels. The Contractor submits a plan to the *Project Manager* for acceptance prior to commencement of activities for noise mitigating measures identified.

Waste

Waste generation should be avoided, reduced, reused and or recycled. Where this is not feasible, all waste generated during the construction may only be disposed of in terms of Matimba Power station waste management procedure.

5.1.15 Sequences of construction or installation

The sequence of sand replacement will be determined by the contractor taking into consideration the requirements of the system availability by the end-user. The replacement shall not interfere with the functionality of the sand filters after it has been commissioned.

The Contractor complies with the Employer's Work Co-ordination Process. Without derogating from the provisions of the Conditions of Contract, the Work Co-ordination Process is used by the Project Manager to monitor and manage activities on the Power Station and to facilitate the integration and co-ordination of the various works by others.

If not included in the contract, the Project Manager will notify the Contractor of the requirements of the Work Co-ordination Process prior to the date of site establishment by the Contractor.

5.1.16 Hook ups to existing works

The adjacent plant and equipment may not be modified without written permission from the Project Manager. The Contractor complies with Eskom Life Saving Rules and will report any non-conformance.

5.2 Completion, testing, commissioning and correction of Defects

5.2.1 Work to be done by the Completion Date

On or before the Completion Date the *Contractor* shall have done everything required to Provide the Works except for the work listed below which may be done after the Completion Date but in any case before the dates stated. The *Project Manager* cannot certify Completion until all the work except that listed below has been done and is also free of Defects which would have, in his opinion, prevented the *Employer* from using the *works* and others from doing their work.

	Item of work	To be completed by
	As built drawings of	Within 30 days after Completion
	Performance testing of the <i>works</i> in use	See performance testing requirements.

5.2.2 Use of the *works* before Completion has been certified

5.2.3 Materials facilities and samples for tests and inspections

State what materials facilities and samples for tests and inspections the *Contractor* and the *Employer* are to provide, per core clause 40.2.

5.2.4 Commissioning

The Contractor shall issue a Completion Certificate in accordance with the NEC clause 35.

The Contractor commissions the works and ensures conformance to the Employer's performance requirements for the works. The Employer takes over sections of the system as required once the system performance requirements have been verified by the Contractor.

The Contractor, at the time of commissioning, has the agreement, or alternatively, the attendance of the Project Manager involved in a particular phase, before proceeding with commissioning. Consequently, the Contractor must assure himself as to the safety of his own Plant and Equipment in respect of any particular commissioning test and in the event of damage accept responsibility for such Plant and Equipment. In the event of incorrect functioning, the Contractor determines the cause and he corrects the defect.

The Contractor shall provide a commissioning plan highlighting the requirements for commissioning (i.e. potable, demineralised water, air requirements, etc.) and the duration of commissioning. The plan shall also indicate how commissioning wastewater (if any) will be dealt with.

The Price includes all allowances for testing and commissioning whereby all sections of the works are made ready for full duty operation. Testing and commissioning shall include as a minimum:

- a) The services of skilled Engineers to supervise the testing and commissioning and making ready for the full duty operation of the complete Works.
- b) All management, supervision, labour, tools, instruments, chemicals, test apparatus, calibration equipment and any other equipment and facilities as may be necessary.

The Contractor's preliminary trials and commissioning of the plants shall be carried out by the Contractor's representatives, who shall remain in attendance until such time as the plants are working to the Employer's satisfaction. A requirement of these trials is a 3 x 72 hour performance test to determine that all activities as laid down in the operating manuals are correct and are carried out in the correct sequence and to determine that all the plants have been provided as required in the scope of work.

Where the results of the performance tests performed don't correlate with expected results (concentration values, flow rates, pressures etc.) and/or the control functions as per the operating philosophy do not meet the specifications guaranteed, the Contractor, at his own expense, carries out all necessary adjustments and modifications to the works required to obtain the stated tolerances. Fully detailed proposals are submitted in writing to the Project Manager for approval before any adjustments and modifications are made and work in this respect is carried out when convenient to the Project Manager.

5.2.5 Start-up procedures required to put the *works* into operation

The *Contractor* will be required to do plant checks to ensure that the material used and workmanship complies with the specified requirements. The *Engineer* will be attending whilst doing this. The results of those checks shall, if so ordered, be made available to the *Engineer*.

The plant will only be put in operation after relevant safety clearances for all plant and material has been issued by the Contractor and Signed by the Employer.

5.2.6 Take over procedures

The maintenance and guarantee period will commence on the date of hand-over, which is the date of certification of completion of the works.

Hand-over will not occur until:

- a) Testing and commissioning report has been submitted and approved.
- b) Operating and maintenance manuals have been submitted and approved.
- c) The certificate of compliance (electrical) has been received.

5.2.6.1 Proving Period

After completion of the Contractor's preliminary trials and commissioning of the plant to the Employer's satisfaction, the plants will be taken over by the Employer and continue in normal service for a minimum period of 12 months.

During this proving period the Contractor shall optimise all aspects of the operation of the plant and shall be responsible for any defect resulting from faulty design, material and workmanship. The Contractor shall remedy such defects at his own expense and as soon as possible when called upon to do so by the Employer.

Any outage of sections of the plant required by the Contractor during this period shall, as far as practicable, be arranged to suit the convenience of the Employer. The duration of the outage must be supplied to the Employer in advance (at least 1 week) so that necessary arrangements can be made.

Acceptance tests to determine the efficiency, performance and other guarantees specified will be carried out at any time during the twelve months proving period by mutual agreement between the Employer and the Contractor.

5.2.6.2 Acceptance Tests

Acceptance tests shall be carried out to prove all the plant guarantee figures provided by the Contractor in the technical schedules.

For the acceptance tests the Contractor shall include:

- Four copies of the test programme and test sheets
- The services of a skilled testing Engineer that is fully experienced in the type of plant installed to assist the Employer in carrying-out of the acceptance tests throughout their duration.
- The provision of suitable testing equipment designed to impose simulated varying operating conditions on the plant. The design and use of such testing equipment shall be subject to the approval of the Employer.

When adjustments and modifications are completed, the Contractor advises the Project Manager in writing to this effect and applies for a further acceptance test. From the results obtained, and provided that the Employer is satisfied that it will be lasting, the works will be finally accepted by the Employer

5.2.7 Access given by the *Employer* for correction of Defects

The equipment and installation included in this Contract shall be guaranteed and maintained in all respects for the duration of the Defects Notification Period.

The Contractor shall, for the full duration of the Defects Notification Period, be responsible for all work and equipment replacements required, including labour, travelling costs, the replacement of lamps and fuses, etc. Renewals or repairs resulting from misuse however, will not be made at the expense of the Contractor. The Contractor shall repair/replace faulty equipment within 48 hours of notification.

The Contractor shall submit full details of his maintenance and repair service facilities, including statutory holidays, weekends, after hours and normal hours.

The Contractor shall stock the accepted list of spares during the Defects Notification Period. All repairs to be made to the installation due to causes not covered by the guarantees shall be done utilising the above material.

5.2.8 Performance tests after Completion

On completion of the installation of all plant and equipment the Contractor will required to make appropriate arrangements and supply any instruments or apparatus etc. necessary for the testing of all plant and equipment supplied by the Contractor. Testing shall be in the presence of the Engineer's representative in order to demonstrate compliance with the requirements or the specification.

All tests as detailed in the SANS and Eskom Specifications are to be performed by the Manufacturer for the Contractor and shall be witnessed by the Engineer.

Site testing and Tests on Completion shall be in accordance with the Specifications.

5.3 Tender returnable

The tenderer submits the following as a minimum in the tender submission:

1. The contractor shall provide evidence that resins supplied are the same product and type as the resins currently installed in the plant.
2. The contractor shall submit List of services included in the price.
3. The contractor shall submit References (where the products are used in similar application to Eskom)
4. The contractor shall submit product data sheets for all resins recommended.

6 List of drawings

6.1 Drawings issued by the Employer

This is the list of drawings issued by the Employer at or before the Contract Date and which apply to this contract.

Note: Some drawings may contain both Works Information and Site Information.

Drawing number	Revision	Title

