

PART 3: SCOPE OF WORK

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C3.1: EMPLOYER'S WORKS INFORMATION

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1 Description of the works

1.1 Executive overview

The Fossil Fuel Firing Regulations (FFFIR) have requirements that always mandate the measurements of both CO and O₂ on the economiser outlet. The basis of FFFFIR is the safe operation of the boiler plant. Currently, Grootvlei power station does not comply with FFFFIR regulations 3.1.13 and 3.1.14. Regulation 3.1.13 requires the availability of O₂ measurement which should be reliable and accurate while regulation 3.1.14 requires the availability of CO measurement which should be reliable and accurate. To comply to FFFFIR regulations 3.1.13 and 3.1.14, instruments that measure both CO and O₂ must be supplied, installed, and commissioned at unit 1 to 3.

Prior to the need for stations to comply to regulation 3.1.14, there was an on-going project which was aimed at ensuring reliable economiser outlets O₂ measurements (regulation 3.1.13) are used for the airflow trim of the units. Due to the urgency of the project to comply to regulation 3.1.13, the project was originally planned to be completed in two phases. Phase 1 would entail moving the existing O₂ analyser from air heater outlet to the inlet while phase 2 would entail installing a new O₂ analyser at the outlet and a CO analyser at the inlet. The idea behind having two O₂ analysers on the same duct is to ensure reliability and accuracy through analyser self-verifications and manual verifications.

The project to comply to regulation 3.1.13 was delayed and during the delay, a new requirement to comply to regulation 3.1.14 came into effect. Due to the new requirement and the delay of the project to comply to regulation 3.1.13, it was decided that both projects will be implemented in one phase where the CO measuring instrument installation will form part of the O₂ measuring instrument installation project. This will result in cost savings as CO analysers are normally also equipped with O₂ measurement cells and thus only one new analyser will be needed for each draught group to comply to regulations 3.1.13 and 3.1.14.

The objective of this project is to install a combined CO and O₂ analyser on units one, two and three (four analysers per unit) on the air heater flue gas inlet to comply to regulations 3.1.13 and 3.1.14. Moreover, this will improve the accuracy and reliability of the CO and O₂ measurements. Accuracy and reliability are of paramount importance as it needs to be ensured that the boiler is not starved of air because this can result in boiler explosions. The airflow control system will be updated to include the CO and O₂ analyser on the control system (only O₂ reading will be used for control).

The installation of the monitors that can simultaneously measure both CO and O₂ will address the station's non-compliance to regulations 3.1.13 and 3.1.14. An open tender process will be initiated, with the intention of selecting a contractor based on expertise and cost-effectiveness.

1.2 Employer's objectives and purpose of the works

Currently Grootvlei Power Station does not have an installed system that has CO and O₂ analysers installed in a configuration that would ensure the station complies to regulations 3.1.13 and 3.1.14.

The design requirement needs to ensure the following:

- a) Installation of CO and O₂ analysers, four per unit, on the air heater flue gas inlet.
- b) That the boiler is not starved of air as this can result in boiler explosions.
- c) That the airflow control system is updated to include both the CO and O₂ readings on the control system.
- d) That optimum combustion is maintained through the analyser supplying feedback on combustion process.

1.3 Interpretation and terminology

The following abbreviations are used in this Works Information:

Abbreviation	Meaning given to the abbreviation
AC	Alternating Current
C&I	Control & Instrumentation
CD	Compact Disk

CO	Carbon Monoxide
DCS	Distributed Control System
FFFR	Fossil Fuel Firing Regulations
HMI	Human Machine Interface
JB	Junction Box
O2	Oxygen
UPS	Uninterruptible Power Supply
USB	Universal Serial Bus

1.4 Overview Of the Concept for The Works

The Employer's concept is shown in Figure 1 below which will be applicable to unit 1,2 and 3 only with four analysers per unit where two will be on each side (LHS and RHS).

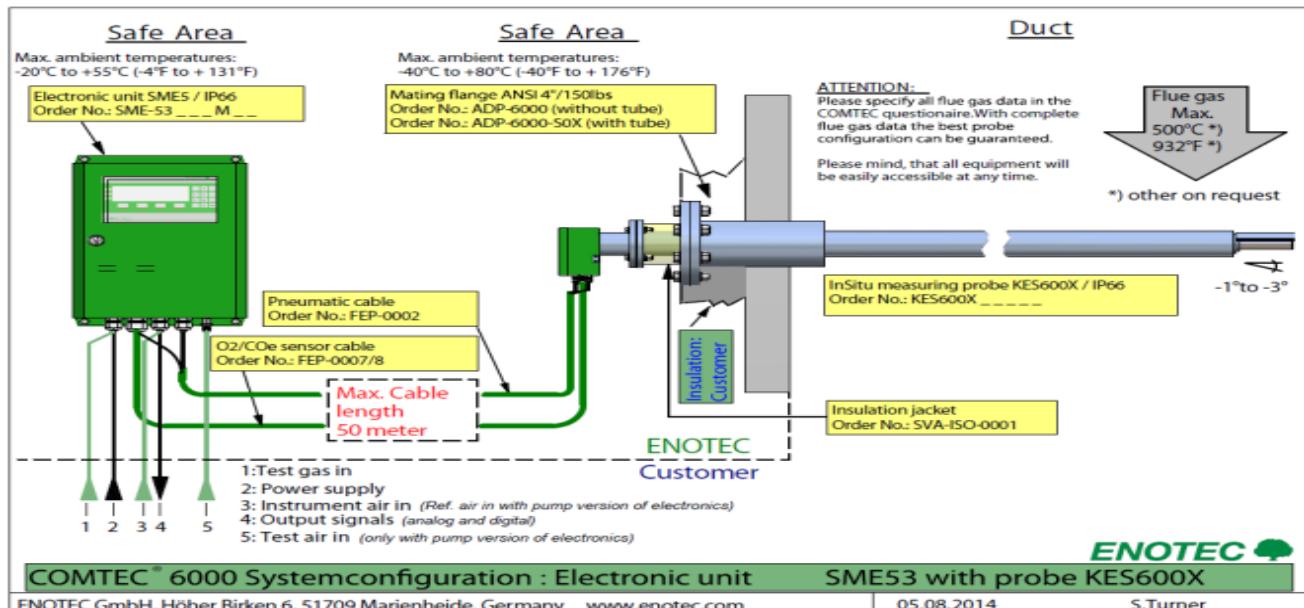


Figure 1: CO and O2 Analyser

2 Management and start up.

2.1 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:
Kick-off meeting	Within two weeks of contract start	Grootvlei Power Station, Hlanganani Boardroom or Virtual meeting	Employer's and Contractor's Project/Contract and Site Managers
Overall contract progress and feedback	Weekly	Grootvlei Power Station, Hlanganani Boardroom or Virtual meeting	Employer's and Contractor's Project/Contract and Site Managers
Risk register and compensation events	Monthly	Grootvlei Power Station, Hlanganani Boardroom or Virtual meeting	Employer's and Contractor's Project/Contract and Site Managers
Grootvlei Contractor's Safety meeting	Monthly (While on site)	Grootvlei Power Station, Station boardroom or Virtual meeting	Employer's and Contractor's Project/Contract and Site Managers and Contractor's Safety Officer
Quality and NCR/ Defect meeting	Monthly	Grootvlei Power Station, Hlanganani Boardroom or Virtual meeting	Employer's and Contractor's Project/Contract and Site Managers and/ or Contractor's Safety Officer and/or Quality Officer
Assessment meetings	On or before 25th of the month.	Grootvlei Power Station, Hlanganani Boardroom or Virtual meeting	Employer's and Contractor's Project/Contract and Site Managers

2.1.1. 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 five days of the meeting.

2.1.2. 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.

2.1.3. The *Contractor* arranges and holds all necessary meetings with his employees including daily toolbox talks, pre-job and post-job briefings, health and safety and risk assessment meetings etc.

2.2 Documentation control

The Contractor implements comprehensive document control of all documents, their revision status and of the document status in relation to the 'as built' and 'as designed' plant status. Procedures, document control, flow diagrams and indexes are included in this system. The drawing register contains the following information and should be submitted in a Microsoft Excel format, to the Project Manager:

- a) Revision
- b) Approval status Location of drawing at that stage
- c) Drawing description
- d) Sheet number

The *Contractor* shall provide the following documentation:

- a) Quality control plan
- b) Environmental plan
- c) Safety plan
- d) Training matrix

And all other related documents that may be required by the *Employer*.

2.3 Health and safety risk management

2.3.1. The *Contractor* shall adhere to all OHS Legal requirements, OHS corporate policies, standards and procedures to which Eskom subscribes and as indicated on the issued SHE specification.

2.3.2. The *Contractor* shall, when coming on site (Grootvlei Power Station), abide by the Cardinal Rules. These will be provided by the *Employer* on the start of the contract.

2.3.3. The *Contractor* shall also abide by the Grootvlei's Safety, Health and Environmental Specifications for Contractors Procedure, which will also be provided by the *Employer*.

2.3.4. The *Contractor* shall, when coming on site (Grootvlei Power Station), make use of approved personal protective clothing such as overalls, safety shoes, safety hat, safety goggles, dust mask and gloves when necessary.

2.3.5. The *Employer* follows an accident prevention policy that includes the investigation of all accidents involving personnel and property. This is done with the intention of introducing control measures to prevent a recurrence of the same incidents. The *Contractor* is expected to fully co-operate to achieve this objective. The *Contractor* will report any incident and accidents to Grootvlei Power Station within 24 hours. This report does not relieve the *Consultant* of his legal obligation to report certain incidents to the Department of Labour, or to keep records in terms of the Occupational Health and Safety Act, and Compensation for Occupational Injuries and Diseases Act.

2.3.6. The *Contractor* implements a safety plan and maintains the safety system until the completion of the whole of the works. The plan, will as a minimum, contain PPE information, written safe work procedures, job specific risk assessments, safety meetings, etc. The plan will be to the *Employer*'s satisfaction and will be accepted prior to the commencement of any work.

2.3.7. The *Contractor* will be subject to periodic audits by the *Employer* to ensure compliance with the plan. Any deviations will be corrected to the *Employer*'s satisfaction.

2.3.8. The Service Manager has the right to stop the *Contractor*'s work activities which, in the opinion of Service Manager, is un-safe. The *Contractor* may only continue with work activities when all safety deficiencies have been corrected to the Service Manager's satisfaction. The *Contractor* shall have no claim against the *Employer* in respect of delay due to the above.

The *Contractor* shall comply with the health and safety requirements contained in Annexure _____ to this Works Information.

2.4 Environmental constraints and management

2.4.1 Policy, Leadership and Commitment

- a) The *contractor* shall comply with all Eskom Grootvlei Power Station environmental requirements such as policies, standards and procedures (work instructions).
- b) The *contractor* shall appoint personnel in writing with basic Environmental knowledge who will have the responsibilities of implementing all environmental/SHE requirements on a specific contract.
- c) Station Waste Management Procedure and colour coding shall be always adhered to.
- d) Ensure that all Environmental Requirements are communicated to relevant employees.

2.4.2 Legal and Other Requirements

- a) Adherence to the 'Duty of Care' as stipulated in section 28 of the National Environmental Management Act 107 of 2008.

- a) Adherence to applicable Environmental legislations, licences and permits and other requirements.

2.4.2.1. Aspects, Impacts, Objectives and Targets

- b) The *contractor* shall ensure that all aspects and impacts that can result in negative impacts on the environmental through their operations are identified and documented.
- c) Objectives and targets shall be established for aspects and impacts that are deemed to be significant. These objectives and targets will need to be documented and conveyed to all *contractor* personnel.

2.4.2.2. Incident Reporting and Investigation

- a) All incidents shall be managed according to Eskom Environmental incident management procedure- **240-133087117**.
- b) Polluter pays principles shall apply to all Contractors. It is the responsibility of the polluter to clean all spillages and for the rehabilitation of the polluted land and the cost associated with that.

2.4.2.3. Monitoring and Review

- a) Client personnel will conduct regular environmental audits. Contractors are expected to participate and ensure that corrective actions are executed.
- b) Eskom Grootvlei Power Station shall issue non-conformances where there are deviations from Grootvlei Power Station Procedures and any other environmental requirements.
- c) All environmental system documentation, records, reports etc. shall be made available for review when requested.

The *Contractor* shall comply with the environmental criteria and constraints stated in Annexure _____

2.5 Quality assurance requirements

The *Contractor* shall adhere to all quality requirements as noted in the quality evaluation criteria document issued as part of the tender package.

- a) The *Contractor* implements a quality system and maintains the quality system until the completion of the whole of the Works. The system, will as a minimum, comply with the provisions of the ISO9001 and the Eskom Supplier Contract Quality Requirements Specification (240-105658000). The system will be to the Employer's satisfaction and will be accepted prior to the commencement of any work on site.
- b) The *Contractor* will be subject to periodic audits by the Employer to ensure compliance with the system. Any deviations will be corrected to the Employer's satisfaction.
- c) The Service Manager has the right to stop the *Contractor's* work activities which, in the opinion of Service Manager, does not meet the requirements of the system and will have a detrimental effect on plant performance.
- d) The *Contractor* ensures that all plant and materials for the Works are to the standard and quality accepted by the Employer and ensures that they are suitable for the purpose intended by the manufacturer.
- e) The *contractor* will ensure that they facilitate effective and efficient management of incident from the moment it occurs, until it can be audited and mitigated.

2.6 Programming constraints

- a) The *Contractor* shall submit a program within in the first week of the start date which the Employer will need to approve of.
- b) The *Contractor* will submit a new programme as when the modifications are made or when the need arises
- c) Thereafter an updated program will be submitted weekly in accordance with the progress of the works.

2.7 Contractor's management, supervision and key people

- a) Contractors Management shall be available for all meetings related to this contract or whenever a need arises, and they shall be available to the Employer.
- b) The contractor's management shall ensure that progress report is provided to the Employer daily.
- c) The Contractor's management shall ensure that all their employees adhere to the mandatory as well as safety, health, environmental and quality requirements.
- d) The Contractor's management shall ensure that the work is executed as per the programme and that Quality control plans are adhered to.

2.8 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)

Add procedures for invoice submission and payment (e. g. electronic payment instructions)

2.9 Insurance provided by the Employer

As stated for "Format A" available on

http://www.eskom.co.za/Tenders/InsurancePoliciesProcedures/Pages/EIMS_Policies_From_1_April_2014_To_31_March_2015.aspx

2.10 Contract change management

- a) Any item that affects the prices or has the potential to do so, is immediately communicated to the Project Manager via an early warning and/or followed by a quotation and will be categorised as compensation event.
- b) After consideration, approval may be given by the Project Manager and the Contractor may implement the compensation event accordingly. All claims will not necessarily be approved as a compensation event nor do quotes have to be accepted unchanged since the Project Manager performs an evaluation and approves justifiable costs only.
- c) All invoices or documentary proof, calculations, invoices etc. are submitted to the Project Manager for assessment purposes.

2.11 Training workshops and technology transfer

- a) The *Contractor* provides guidance and training to the Employer's personnel on the system.
- b) The *Contractor* shall ensure that the maintenance and or operating philosophy is handed over to the Employer and all the necessary training for the Employer's employees is completed.
- c) Proof of training provided to the *Employer*'s staff to be submitted to the Project Manager, for bond retention release.

3 Engineering and the Contractor's design

- a) Any Designs and modifications to the plant and or system shall first be submitted to the Employer for approval, only after approval shall the design then be implemented
- b) For any changes and or modifications made to the plant: the Contractor will update the as build drawings to include all the necessary changes and submit it to the Employer
- c) All required documentation and supporting documentation including equipment specifications and data sheets and as built drawings shall be submitted to the Employer for approval.

3.1 Employer's design

All new design and or modifications shall be pre-approved by the Employer before implementation and execution of works

3.2 Parts of the works which the Contractor is to design

In accordance with the mandatory requirements of Core Clause 21.1, the Contractor is obliged to develop detailed designs from the Employer's overall drawings, even under a traditional 'construction only' contract. This includes the preparation of workshop drawings and the design of all necessary temporary works, ensuring the Contractor's responsibilities are fully addressed and integrated into the execution of the Works. All new design and or modifications shall be pre-approved by the Employer before implementation and execution of works

3.3 Procedure for submission and acceptance of Contractor's design

In accordance with Core Clause 21.2, the Contractor is required to submit defined particulars of its design to the *Project Manager* for acceptance. These particulars shall include relevant calculations, drawings, specifications, and any design-stage activity matrices necessary to demonstrate coordination with Others in a multi-party environment. The *Contractor* must also prepare and submit all drawings required for construction, statutory approvals, and integration with other works. This process ensures clarity of design intent while maintaining the *Contractor's* full responsibility for the adequacy and execution of its design.

3.4 Other requirements of the Contractor's design

All other requirements of the Contractor's design shall be pre-approved by the Employer before implementation and execution of works

3.5 Use of Contractor's design

All new design and or modifications shall be pre-approved by the Employer before implementation and execution of works

3.6 Design of Equipment

In projects involving temporary works, the *Contractor* may provide the *Project Manager* with details of the design or proposed design of Equipment. This is not for acceptance, but to demonstrate that the Equipment will enable efficient execution of the Works without delay. Notwithstanding this provision, all responsibility and liability for the design and use of such Equipment remains solely with the *Contractor*. Clause 23.1 remains available to the *Project Manager* should this provision not be used.

3.7 Equipment required to be included in the works

- a) The Contractor shall ensure that all equipment required to execute the works is available before the commencement of each activity.
- b) 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.
- c) The Project Manager has the right to stop the Contractor use of any equipment which, in the opinion of Project Manager, does not conform to the foregoing.

3.8 As-built drawings, operating manuals and maintenance schedules

- a) As-built drawings, operating manuals and maintenance schedules shall be provided to the Employer on completion.

- b) As-built drawings shall be provided in MicroStation (CAD DWG/DGN) format as well as Tiff and PDF format on an ESKOM name block. The Contractor provides three (3) A1 & A3 size hardcopies and three (3) electronic copies of each drawing.
- c) The General Arrangement and/or detailed plant drawings and the relevant datasheets, maintenance manuals, conformance certificate, final inspection reports and safety clearance certificates for all equipment installed shall be included in the project Data Pack.
- d) The Contractor provides three files (hardcopies) and three electronic copies (CD & memory stick).
- e) The approved design package with designs, drawings, operating manuals and maintenance schedules, material and equipment datasheets etc. must be available prior to final inspections & safety clearance and are necessary to conduct commissioning activities.
- f) Available and existing drawings/designs will be issued to the Contractor and the Contractor shall fully update the drawings/designs on completion of the project as part of the project completion package.
- g) All designs shall be signed off by a Professionally Registered Engineer and in PDF format.

4 Procurement

4.1 People

4.1.1 Minimum requirements of people employed on the Site

- a) The *Contractor* shall provide suitable and qualified resources and shall prioritize candidates around Dipaleseng Community through the local forum where they meet the requirements for the job.
- a) Verifications of skills and qualifications will be conducted on all *Contractor employees* where a need arises.
- b) The *Contractor* provides competent personnel with the relevant post qualification experience for the implementation of the works. All CVs with relevant qualifications and detailed experience are submitted to the Project Manager within four weeks of the start date. All foreign qualifications to be certified by SAQA and proof of certification to be supplied. Foreign ID or passport holders also require a valid work permit to perform work.
- c) The *Contractor* appoints either a Contract Manager or a Project Manager who possesses documented competencies to manage the duties related to the NEC contract and project management. This person serves as the direct liaison for the Employer's Project Manager and also has the authority to make decisions and instruct all other Contractor's personnel, as and when required.
- d) The *Contractor's* Site Manager must as a minimum have a technical National Diploma in electrical or C&I). Qualifications and training in contracts management and NEC3 will be advantageous. Five years related on-job project management or management experience is required in a technical discipline. The Site Manager is defined as the *Contractor's* key person.
- b) Technician are required to have a National diploma/ N6 diploma with trade test and three years of experience.
- c) Semi-skilled personal are required to have a matric certificate and a minimum of ten years of experience.

4.1.2 BBBEE and preferencing scheme

BBBEE requirements are specified in the Supplier Development Localisation and Industrialisation Target setting document provided with the tender package for this project.

4.2 Subcontracting

4.2.1 Preferred subcontractors

- a) If the *Contractor* subcontracts work, he is responsible for providing the Works as if he had not subcontracted. This contract applies as if a Subcontractor's employees and equipment was the *Contractor's*.
- b) The *Contractor* supports local Small, Micro and Medium Enterprises (SMME) by purchasing equipment, tools and materials locally where such equipment, tools and materials are available.
- c) All Subcontractors need to be approved by the *Project Manager* before the Subcontractor may be allocated work by the *Contractor* or be brought to the Site.
- d) Subcontract documentation and assessment of subcontract tenders shall be done by the *Contractor*
- e) The *Contractor* must inform the *Project Manager* when intending to subcontract some of the works from the contract Scope of Work.
- f) The *Contractor* may subcontract according to NEC contract or other types of contracts.
- g) The *Contractor* submits the proposed contract data for each Subcontractor for acceptance to the *Project Manager*.
- h) The Contractor only employs competent Subcontractors.
- i) The *Contractor* indicates on a list as shown below, the names of any Subcontractors (when known) whose services may be used to provide the works. The *Contractor* provides a short description of the work it is proposed to sub-contract to each, together with an approximate value of the work to be executed by each. Where the Subcontractor is required to do physical work on Site, the Contractor

provides details of the experiences of the mentioned Subcontractor as well as a list of references involving work of a similar nature.

j) Notwithstanding the inclusion of a Subcontractor name below, the *Contractor* obtains the written acceptance of the Project Manager prior to the employment of such Subcontractor.

4.2.2 Subcontract documentation, and assessment of subcontract tenders

Subcontractors shall comply with all Eskom & all legal requirements and Eskom standards, and they remain the responsibility of the main *Contractor*, and they shall be aligned to the Main *Contractor*. They shall adhere to Eskom ethics code.

4.2.3 Limitations on subcontracting

Where the *Contractor* encounters scenarios where specialised work is required, subcontracting of such services is to be obtained in agreement with the *Employer*. Refer to the Supplier Development Localisation and Industrialisation Target Setting document.

4.2.4 Attendance on subcontractors

- a) Subcontractors shall remain the responsibility of the main Contractor. They shall adhere to the *Employer*'s code of ethics and comply with all the *Employer*'s requirements.
- b) It is the *Contractor*'s responsibility to ensure that the Subcontractor(s) completes and supplies a daily Site diary, which includes details such as the labour resources available, starting time, ending time, equipment and materials used, weather conditions, interruptions etc.
- c) The *Contractor* ensures that the diary is submitted by the Subcontractor to the Project Manager daily for checking, commenting and signing-off and a copy is supplied. If the daily diary is not signed off by each worker, then a separate daily attendance register is supplied.

4.3 Plant and Materials

4.3.1 Quality

- a) The *Contractor* ensures that all equipment, tools and material that the *Contractor* / Subcontractor uses to execute the works, complies with the SABS and other stated standards.
- b) All plant and materials sourced and supplied for the installation are new and all are free from defects. Reconditioned/refurbished plant and/or materials are NOT regarded as new under any circumstances and may NOT be utilised.
- c) The *Contractor* does not use plant and materials, which are generally recognised as being unsuitable or otherwise unsuitable for the purpose for which they are intended.
- d) Only components of high reliability are utilised, with a proven operating history, to enable the plant to achieve the required reliability and availability. Plant and material design, engineering and manufacture is in accordance with the best practice applicable to high-grade products of the type to be furnished, to ensure the efficiency and reliability of the works and the strength and suitability of the various parts for the works.
- e) Plant and materials withstand ambient conditions and the variations of temperature arising under working conditions without distortion, deterioration or undue strains in any part.
- f) No repair of defective plant and materials may be permitted without the Project Manager's approval and any such repair, if approved, is carried out to the satisfaction of the *Employer*.

4.3.2 Plant & Materials provided "free issue" by the *Employer*

The *Employer* supplies and installs scaffolding; refer to section 5.1.9, Scaffolding, for requirements regarding the installation of scaffolding.

4.3.3 *Contractor*'s procurement of Plant and Materials

- a) Absolutely no changes to the current plant configuration will be allowed unless authorised by the *Employer*.
- b) It is mandatory that plant, equipment and materials be procured in accordance with the specifications listed in the Works Information.

- c) The *Contractor* shall only procure plant and materials as specified in the *Works* Information. Any change of specifications is notified in writing by the *Project Manager* as an instruction.
- d) The *Contractor* shall provide the procurement schedule and integrated into the *Contractor's* accepted project programme ensuring delivery of equipment to site in advance to the installation activity
- e) The *Contractor* shall ensure all items procured and stored at the *Contractor's* premises or the *Employer's* premises are stored in accordance with the manufacturers or material's specifications.
- f) The *Contractor* shall ensure that plant and materials procured carry a minimum of 52 weeks warranty or guarantee period due to defect or malfunction.
- g) Plant and materials used for the works shall bear no labelling other than the plant coding specified by the *Employer* (KKS Coding).

4.4 Tests and inspections before delivery

- a) The *Project Manager* reserves the right to appoint a representative or representatives to inspect all parts during manufacturing and testing and to be present at any of the tests specified in this works.
- b) The *Employer's* representative/s and/or third-party/independent inspection authority must have unhindered access to witnessing all manufacturing and testing processes at the manufacturing facility.
- c) All off-site tests performed during and after manufacturing, and before delivery to Site, must conform to the requirements
- d) All off-site tests are conducted by the *Contractor* and witnessed by the *Employer's* representative/s and/or third-party/independent inspection authority.
- e) Where holding points exist on the manufacturing QCP's, no manufacturing activity shall proceed if the preceding activity on the manufacturing QCP was not approved by both the *Contractor* and *Employer's* representatives.
- f) The *Employer* carries out quality inspections at his discretion and as per the pre-approved Quality Control Plan (QCP).
- g) Such tests as may be required by the *Project Manager* are carried out by the *Contractor* during or after manufacturing to prove compliance with the specification independently of any test which may have been carried out at the manufacturer's facility.
- h) The *Contractor* is not relieved of his responsibilities if the *Project Manager* and other *Employer* representatives choose to waive the witnessing of any manufacturing and testing processes.
- i) The *Contractor* provides a test certificate for each test required by the code. Specimen tests used by the *Contractor* are also submitted.
- j) The *Contractor* provides current calibration certificates for all equipment used during manufacturing and testing when required to do so by the *Project Manager*.
- k) The *Contractor* is responsible for quality assurance and control during manufacturing and testing. Any approval, check, certificate, consent, examination, inspection, instruction, notice, proposal, request, test, or similar act by the *Employer* (including the absence of disapproval) shall not relieve the *Contractor* from any responsibility under the Contract, including responsibility for errors, omissions, discrepancies and non-compliances.
- l) The *Contractor* takes note of and responds to any comments made by the *Employer* on the *Contractor's* manufacturing documents. However, the *Employer* is not bound to check the *Contractor's* manufacturing documents for any errors, omissions, ambiguities or discrepancies or compliance with the requirements of the *Works* Information. The *Employer's* receipt of, or review of, or comment on, the *Contractor's* manufacturing documents does not relieve the *Contractor* from responsibility for the *Contractor's* errors or omissions or departure from the requirements of the standard.
- m) The *Contractor* shall test, inspect and certify that the system is reliable and safe to use before takeover.
- n) The *Contractor* shall provide all test/inspection certificates.

4.5 Marking Plant and Materials outside the Working Areas

All plant and material shall be properly marked for identification.

4.6 Contractor's Equipment (including temporary works).

- a) The *Contractor* shall use inspected and tested equipment, equipment compliance documents shall be made available on request by the Employer.
- b) All temporary works shall be removed after completion.

4.7 Cataloguing requirements by the Contractor

The *Contractor* shall provide all the information (Specifications) required by the Employer to catalogue the spares for this system.

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. It does not specify the work itself as that is included in Section 6 of the Works Information.

5.1 Temporary works, Site services & construction constraints

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

- a) The Contractor makes his/her own assessment of and allows in his/her rates for those access problems that may be encountered. No extra payment or claim of any kind is allowed on account of difficulties of access to the works, or for the requirement of working adjacent to or in the same area as others.
- b) Access to site shall be in line with the Grootvlei Power Station's access procedure. The Contractor shall be required to make an application to enter site for the duration of the contract, including the warranty and defect period where applicable. A permit shall only be issued once the Contractor and his or her employees have attended the safety induction and has undergone medical checks.
- c) All the assets must be declared and registered with security upon entering site. This includes portable assets such as laptops. The record must be kept on the OV18 form. No asset shall be removed from site if the OV18 form is not attached.
- d) The Contractor shall have no claim against the Employer in respect of delay at the security main gate.
- e) All Contractor permits shall be returned to Protective Services on completion of the works.
- f) The Contractor shall adhere to site access control requirements; all Contractor employees including sub-Contractors shall undergo medical screening and be declared fit to work.
- g) The Employer will provide induction to all Contractor employees and sub-contractors before the Contractor can start working, the Contractor shall have a safety file approved by the Employer before all employees can be issued with site access permits.

5.1.2 **Restrictions to access on Site, roads, walkways and barricades**

- a) Note that the speed limit on the site is 40 km/h and 10 km/h in the plant. The vehicle permits of any persons contravening any traffic act on site shall be cancelled.
- b) The Contractor complies with the Grootvlei Site Regulations, a copy of which is available for perusal at the Employers offices.
- c) Any subject within the authority of the Employer may be addressed by a Site Regulation. Before work starts on site, an inaugural meeting is held with the Contractor and the Employer to explain all requirements of the Site Regulations.

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

- a) The Contractor records information of all those that enter the Employers site. This information is to be presented to the Employer on the day of the site visit.
- b) Working hours at Grootvlei Power Station are as follows:

Monday – Thursday	: 07:15 to 16:30
Friday	: 07:15 to 12:15
Saturday, Sunday and Public Holidays	: Off

5.1.4 **Health and safety facilities on Site**

- a) The Contractor shall comply with Health and Safety requirements, refer to the SHE specs provided.
- b) The Employer and the Contractor shall provide services and other things as stated in the works Information. Any cost incurred by the Employer because of the Contractor not providing the services and other things which he is to provide is assessed by the Project Manager and paid by the Contractor.

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

- a) The *Contractor* co-operates with others in obtaining and providing information and access which they need in connection with works. Refer to clause 25 (25.1) in NEC3 ECC.
- b) The *Contractor* shall share the program to allow other *contractor* to plan, should there be work that needs to be executed in the same area and for program integration by the *Employer*.

5.1.6 Title to materials from demolition and excavation

- a) The *Contractor* co-operates with others in obtaining and providing information and access which they need in connection with works. Refer to clause 25 (25.1) in NEC3 ECC.
- b) The *Contractor* shall share the program to allow other *contractor* to plan, should there be work that needs to be executed in the same area and for program integration by the *Employer*.

5.1.7 Cooperating with and obtaining acceptance of Others

- a) The *Contractor* co-operates with others in obtaining and providing information and access which they need in connection with works. Refer to clause 25 (25.1) in NEC3 ECC.
- b) The *Contractor* shall share the program to allow other *contractor* to plan, should there be work that needs to be executed in the same area and for program integration by the *Employer*.

5.1.8 Publicity and progress photographs

- a) The *Contractor* shall not share the *Employers* plant photographs or any other information without prior approval by the *Employer*.
- b) Such conduct is regarded as a deviation and there will be legal actions taken against the *Contractor*. The *Contractor* shall seek approval before taking any photographs on the *Employers* site or of any other information concerning this project.

5.1.9 Contractor's Equipment

- a) 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 use of any equipment which, in the opinion of Project Manager, does not conform to the foregoing.
- b) Off-loading and material handling equipment is not available on site and if required, is to be provided by the Contractor.
- c) The contractor shall declare all equipment/tools on arrival to security and always keep a record.

5.1.10 Equipment provided by the *Employer*

Scaffolding will be provided by the *Employer*; the *Contractor* shall notify the *Employer* of a need for scaffolding at least 12 hours prior.

5.1.11 Site services and facilities

The *Employer* shall provide services such as water, electricity and the *Contractor* shall provide everything else necessary for providing the works. Refer to clause 25 (25.2) in NEC3 ECC.

5.1.12 Facilities provided by the *Contractor*

- a) At his own cost, the *Contractor* provides his/her own accommodation and transport for all his/her employees engaged in the execution of the works. This includes the needs of his/her sub-*Contractors*.
- b) No accommodation is available at Grootvlei Power Station. The *Contractor* shall provide his/her own office equipment, storage, vehicles and all these shall be declared on site entry. Any un-roadworthy vehicles will not be allowed in the *Employers* premises

5.1.13 Existing premises, inspection of adjoining properties and checking work of Others

The *Contractor* shall do thorough risk assessments to ensure the work is executed within the safety requirements

5.1.14 Survey control and setting out of the works

The *Contractor* shall adhere to all site-specific excavation requirements and regulations

5.1.15 Excavations and associated water control

- a) The *Contractor* maintains a high standard of cleanliness during the conduct of his activities at the Power Station to the satisfaction of the *Project Manager*. This includes areas allocated for storage of materials, Site offices etc. The *Contractor* keeps these areas clean and free from accumulation of waste materials and refuse regardless of the source.
- b) The *Contractor* ensures during sweeping and dusting, that a minimum amount of dust is liberated into the atmosphere. Cleaning by vacuum cleaners is preferred and the use of compressed air for cleaning plant and personnel is prohibited.
- c) The *Contractor* is responsible for the prompt removal of all waste to the correct waste disposal facility.
- d) For the purpose hereof, "waste" any matter, whether liquid or solid or any combination thereof, which is a by-product, emission, residue or remainder of any process or activity carried out in connection with the *works* and which is not reused on the Site in the ordinary course of carrying out the *works* within seven days of production.
- e) Bins and containers are emptied and the waste removed to the designated area at least once a week. The entire temporary and waste removed to the designated area at least once a week. All the temporary storage areas for bins and containers are kept tidy and do not constitute a nuisance to others. The *Contractor* takes all required steps to avoid spillage of waste alongside the bins and containers during removal and disposal thereof.
- f) No burning of waste is allowed at the Power Station.
- g) Hazardous waste is dealt with in accordance with the safety, health and/or environmental requirements of the *works* and the *Contractor* is solely responsible for the proper disposal thereof.
- h) The *Contractor* removes all scrap metal components from the plant and takes them to the skips or laydown area allocated on site. All hazardous waste e.g. contaminated metals and plastic, sludge, rubble, electronic waste etc. is removed by the *Contractor* off site to a registered, hazardous waste site and the relevant disposal certificates supplied. General waste is disposed of by the *Contractor* of in skips and bins located on site.
- i) Items containing copper is stripped by the *Contractor* and the copper is taken to the laydown area next to the main security gate entrance.

5.1.16 Control of noise, dust, water and waste

- a) The *Contractor* maintains a high standard of cleanliness during the conduct of his activities at the Power Station to the satisfaction of the *Project Manager*. This includes areas allocated for storage of materials, Site offices etc. The *Contractor* keeps these areas clean and free from accumulation of waste materials and refuse regardless of the source.
- b) The Contractor ensures during sweeping and dusting, that a minimum amount of dust is liberated into the atmosphere. Cleaning by vacuum cleaners is preferred and the use of compressed air for cleaning plant and personnel is prohibited.
- c) The Contractor is responsible for the prompt removal of all waste to the correct waste disposal facility.
- d) For the purpose hereof, "waste" any matter, whether liquid or solid or any combination thereof, which is a by-product, emission, residue or remainder of any process or activity carried out in connection with the *works* and which is not reused on the Site in the ordinary course of carrying out the *works* within seven days of production.
- e) Bins and containers are emptied, and the waste removed to the designated area at least once a week. The entire temporary and waste removed to the designated area at least once a week. All the temporary storage areas for bins and containers are kept tidy and do not constitute a nuisance to others. The Contractor takes all required steps to avoid spillage of waste alongside the bins and containers during removal and disposal thereof.
- f) No burning of waste is allowed at the Power Station.
- g) Hazardous waste is dealt with in accordance with the safety, health and/or environmental requirements of the *works* and the Contractor is solely responsible for the proper disposal thereof.
- h) The Contractor removes all scrap metal components from the plant and takes them to the skips or laydown area allocated on site. All hazardous waste e.g. contaminated metals and plastic, sludge,

rubble, electronic waste etc. is removed by the Contractor off site to a registered, hazardous waste site and the relevant disposal certificates supplied. General waste is disposed of by the Contractor in skips and bins located on site.

- i) Items containing copper are stripped by the Contractor and the copper is taken to the laydown area next to the main security gate entrance.

5.1.17 Sequences of construction or installation

The *Contractor* shall follow the construction and or installation program sequence, if there are changes (where access should be given to others or for any other valid reason), this should be communicated to the Project Manager and the Project Manager shall approve before the sequence can be changed.

5.1.18 Giving notice of work to be covered up

- a) The *Contractor* shall notify the *Supervisor* of any activities that requires covered up, before any structure can be used for covered up the *Employer* shall take note for such and make sure of the safe area for cover up.

5.1.19 Hook ups to existing works

- a) The *Contractor* shall notify the *Employer* of any activities that requires hooking up, before any structure can be used for hooking up the *Employer* shall declare such structure safe for hooking up.
- b) The *Contractor* shall hook up at heights; this is one of the lifesaving rules.

5.2 Completion, testing, commissioning and correction of Defects

5.2.1 Work to be done by the Completion Date

- a) The *Contractor* ensures that all work is completed on or before the completion date.
- b) The Project Manager cannot certify Completion until all the work has been done and is free of Defects, which would have, in his opinion, prevented the *Employer* from using the works and others from doing their work.
- c) Acceptance of the "As-built" documentation is a pre-requisite for commissioning to be done and to certify completion of the works.

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 complete system	Within 7 days after Completion
	Performance testing of the works in use as specified.	On completion

5.2.2 Materials facilities and samples for tests and inspections

The *Contractor* shall use reliable and certified facilities for tests and inspections and shall ensure that they are safe to be used.

5.2.3 Commissioning

- a) The *Contractor* is responsible for the drawing up of commissioning plans and procedures for all systems, in conjunction with the input of the *Employer*'s engineering, maintenance and operating personnel prior to the completion of that section of the work and submits it to the Project Manager for approval.

- b) The Contractor conducts commissioning and testing with support from the Employer's engineering, maintenance, projects and operating personnel.
- c) Upon completion of the work done on each system and before de-isolation and commissioning of the plant, the Contractor confirms that the plant is fit for use and verifies that all re-assembled and newly installed components are correctly installed and that they match the existing plant configurations with the necessary plant labels installed.
- d) The Contractor ensures that all the plant and equipment removed for the purpose of access or inspection are put back into position.
- e) The plant is also cleaned of waste, scrap and debris and equipment removed.
- f) Thereafter, the Contractor submits all completed QCP's, data sheets, material certificates, operating and maintenance manuals, drawings etc. to the Employer to first verify that commissioning may be planned.
- g) The Contractor verifies the signals from all electrical and Control & Instrumentation (C&I) components to the control desk with the Employer's C&I Engineering and Maintenance departments.
- h) The Contractor conducts both cold and hot commissioning together with the Employer's personnel.
- i) The Contractor ensures that proper housekeeping is done again before re-instating the plant.

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

- a) The defect(s) is/are reported to the *Contractor* as soon as the Employer becomes aware thereof.
- b) An opportunity is arranged by the Employer for the repair and the Contractor is notified at least 48 hours in advance of the opportunity to repair the defect(s).
- c) It is the Contractor's responsibility to get the Safety Plan checked and approved again, if necessary and to apply for Site access permits before any work can commence on Site.

5.2.5 Performance tests after Completion

- a) After installation and prior to commissioning, the Contractor and relevant Employer's representatives shall carry out final quality inspections and acceptance tests to ensure the correct function of the equipment, safety of works and personnel, and to determine compliance with contractual specifications.
- b) The Contractor supplies a schedule and program of all tests that are to be carried out in preparation for commissioning and indicates the details of tests he/ she proposes to perform and the manner in which the results of tests will be documented.
- c) The Contractor provides final inspection reports for all components installed and test certificates for all tests performed i.e. inspection reports, etc.
- d) Where the results of the performance tests performed don't correlate with expected results and/or the control functions as per the operating philosophy do not meet the specifications guaranteed, the Contractor, at his own expense, shall carry out all necessary adjustments and configurations to the works required as per the Scope of Work.

5.2.6 Training and technology transfer

- a) The *Contractor* shall provide training to the Eskom employees on completion.
- b) The *Contractor* shall provide the Maintenance / Operating philosophy and the drawings.

5.2.7 Operational maintenance after Completion

The *Contractor* shall provide operational and maintenance plan to ensure longevity and reliability of the equipment

6 C3.2 *Contractor's Works Information*