

PART 3: SCOPE OF WORK

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C3.1: EMPLOYER'S WORKS INFORMATION

Contents

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1 Description of the works

1.1 Executive overview

The Medupi Project is in the close-out phase and time is of the essence with the Employer aiming to finish the outside plant works on a fixed timeline. The Hydrogen and Nitrogen Plant, which share the same footprint, are two of the remaining systems to be constructed and handed over to the Eskom Generation fleet.

To this end, the Employer intends to appoint an experienced and competent Contractor, under this P20F Contract, to design review, design, supply, construct, test, commission and hand over a fully functional Nitrogen plant and distribution piping aligned with all Eskoms Standards, Specifications and firstly Zero Harm commitment.

The Contractor is also responsible for the design, construct, commission and a synchronised handover of the Civil work, Services, Utilities Fire Protection and CBMS for the Hydrogen Plant, aligned with all Eskoms Standards, Specifications and firstly Zero Harm commitment.

The execution requires the Contractor to collaborate and co-operate with others, specifically the P20D – Hydrogen Bulk Storage Tank and P20E – Hydrogen Generation Plant and distribution piping Contractors responsible for delivering the Hydrogen Plant in the spirit of mutual trust and corporation and firstly Zero Harm commitment.

1.2 Employer's objectives and purpose of the works

1.2.1 Hydrogen Plant (Supplied by Others)

Hydrogen gas is used as a cooling medium in the turbine generators. The gas is used because of its thermal conductivity and very low-density properties. To meet the hydrogen requirements at Medupi Power Station, there is an Eskom strategic decision that hydrogen shall be produced and stored on site. The gas produced shall be of high purity, required volumes and bulk storage to ensure safety and generator long term plant health. The Hydrogen plant performance and reliability is specified in the Technical Scope document: 348-10113183: Medupi Hydrogen Generating Plant Scope of Work (SOW) and 240-56227413: Eskom Hydrogen Systems Standard.

1.2.2 Nitrogen Plant

Medupi Power Station requires Nitrogen gas for the blanketing of the five tanks containing demineralised water (Demineralised Water Storage Tanks (DWST) and the Polished Demin Feed Tanks (PDFT) and the Condensate reserve tanks (CRT). Blanketing prevents the oxygen and carbon dioxide ingress into stored water due to exposure to the atmosphere. This is achieved when nitrogen gases displace the air volume in the tank and form a blanket on the surface of the water. The blanket is maintained above the water surface inside the tanks (condensate reserve tanks and demineralise storage tanks), and this fills the air space in the storage vessels.

The was previous Contracts where the Contractor was unable to complete the works.

From the terminated contracts there were free issue material and equipment that the Contractor is to incorporate into his design, construct and commission and handover a fully functional Nitrogen Plant.

1.2.3 Integrated Works

The Hydrogen plant and Nitrogen plant are located in a shared space (site) as indicated on 084/65535. These plants share common infrastructure in terms of road access, paving, fencing, drainage, piping servitudes and electrical servitudes. The arrangement design of the Hydrogen and Nitrogen plant is to be integrated to avoid clashes and duplications and optimise the use of available space to improve the maintainability of the plant.

There were previous Contracts that were terminated that resulted in some design progress on the Hydrogen and Nitrogen plants and construction progress on the Nitrogen Plant. To complete the Hydrogen and Nitrogen plants, and benefit from work done by the earlier Contract, the Employer strategy is to place 3 contracts as follows:

P20D - Hydrogen Bulk storage tanks- Certify and Supply, preserve and witness Installation and Commissioning.

P20E- Hydrogen Generating System and distribution – Design, Construct and commissioning entire Hydrogen generation and distribution network.

P20F - H₂/N₂ - Design, Construction, commission Nitrogen Plant and Civil works and services for Hydrogen Plant and distribution network.

Consequently, it is the full responsibility of this P20F Contractor to provide all design, engineering, construction, commissioning, handover, scheduling and Project Management requests and input to deliver the Civil works, Services and Utilities to the P20D and P20E Contractors as necessary and when required and eliminate any potential integration delays.

1.3 Interpretation and terminology

If required include here definitions additional to those used in the *conditions of contract* which are required only for the purpose of making the Works Information easier to draft and read. Also list abbreviations used and provide a full interpretation of each one, for example:

The following abbreviations are used in this Works Information:

| Abbreviation | Meaning given to the abbreviation |
|--------------|-----------------------------------|
| AFC | Approved for construction |
| OBL | Outside battery limits |

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: |
|--|-----------------------------|----------|---|
| Risk register and compensation events | Monthly on _____ at _____ | | PM, Employer, Contractor |
| Overall contract progress and feedback | Weekly on _____ at _____ | | PM, Employer, Contractor discipline Managers, Supervisor, |

| | | | |
|--|---------------------------|--|--|
| | | | Planner and Integration Engineer |
| Interface Schedule & Program review | Weekly on _____ at _____ | | PM, Employer, Contractor, Supervisor, Planner and Integration Engineer |
| Design development and technical review meeting. These meetings will be structured to gain final approval of the Employer for all design aspects of this work. | Monthly on _____ at _____ | | |
| Quality House Clearing Meeting | Monthly on _____ at _____ | | |
| Stand up Construction meeting | Daily _____ at _____ | | Contractor, Sub Contractors, Supervisor, HSE Reps |

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.

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.

2.1.1 Monthly Progress report

The Contractor issues a monthly report in accordance with the template – ‘ESK__ Monthly Report Template’

all the disciplines of Project Management on the Contract. The reporting information includes but not limited to :

- a. Project Governance
- b. Project Status
- c. Project Financials
- d. Project Schedule Metrics
- e. Milestone Report and Forecast
- f. Pending Request for Information
- g. Schedule of Interfaces
- h. Compensation Events
- i. Risks requiring Employers Action
- j. Health, Safety and Environmental Issues Requiring Employers Action
- k. Quality
- l. Skills Development, Localization an Industrialization
- m. Equipment, Plant and Materials
- n. List of relevant certification and expiry tracking
- o. Progress Photos

2.1.2 SD&L Specific Reporting

- The suppliers shall on a quarterly basis submit a report to Eskom in accordance with Data Collection Template on their compliance with the SDL&I obligations described above.
- Eskom shall review the SDL&I reports submitted by the suppliers within 30 (sixty) days of receipt of the reports and notify the suppliers in writing if their SDL&I obligations have not been met.
- Upon notification by Eskom that the suppliers have not met their SDL&I obligations, the suppliers shall be required to implement corrective measures to meet those SDL&I obligations before the commencement of the following report, failing which Retention clauses shall be invoked.
- The SDL&I Implementation Schedule, which must be completed by the suppliers and returned to SDL&I representative for acceptance 30 days after contract award, shall accompany every contract.

2.2 Documentation control

2.2.1 Medupi Documentation Management Governance

- To maintain a proper management of documentation on the Medupi Project, the contractor is required to adhere to the requirements as stipulated by Eskom.
- The contractor shall manage documentation in line with the Eskom Documentation Management governance (Including all reference documents below that form part of it) after the contract is awarded.
 - 348-883860: Medupi Format and Layout Specification
 - 348-883753 Medupi Project Data Capturing Guideline
 - 348-883808: Medupi Document and Records Management Work Instruction
 - 240-86973501_Engineering Drawing Standard
 - 348-885429: Engineering Change Management Work Instruction
 - 348-942820 Contractor's Document Transmittal Form
 - 348-684677 Request For Pre -Allocation of Numbers
 - 240-53114186: Eskom Project/Plant Specific Technical Document and Records Management Procedure
 - 240-83561037: Reporting and Data Requirements Specification for Contractors.
 - 240-54179170: Technical Documentation Classification and Designation Standard
 - 348-18962 Data Book Checklist

2.2.2 Documentation Transmission

1. All documentation must be submitted with a transmittal. MDL verification must be done ,before packaging of the transmittal . One may transmit the documentation using one of the channels listed below:
 - Email submission
 - Walk-in Hand delivery
2. Information captured on the transmittal note must correspond to the pack of documentation being submitted.
3. The recipient must sign and send back the transmittal to the sender within 2 working days

Note:

- Any discrepancy found on the transmittal will be rejected by the recipient
- All information required and intended for use by the Employer, may not be part of the body of the email, one must document it.

- Email must not be used as a transmittal, one must use a transmittal template
 - All supporting documents must be listed on the transmittal IF they were not submitted to Eskom for Review (New Revisions)
 - All documents that are submitted for signature must be signed whether are accepted or rejected.
4. All project correspondences must copy the project proxy account(s), to deem the submission official. The use of proxy email account ensures business continuation, and it eliminates the dependency on individual's availability.
5. The subject of the email shall as minimum contain:
- Package number _ Contract Number
 - Transmittal number

Example: P16_4500000054_ASE-ESK-4537

6. In case the electronic file exceeds 10 Mb size, one may use the following to submit:

- large file transfer portal: <https://zendto.eskom.co.za/>
- Hand delivery of CD/DVD/Hard drive

In parallel to sending the documentation via the portal, please also send an email to the proxy address, to notify the recipient of the intended submission. Ensure that you attach a copy of a transmittal and QA /CD Data Book Record.

An appointment for delivery shall be arranged. Every hardcopy submission shall be accompanied by a labelled CD/DVD/Hard drive. The content in the CD/DVD/Hard drive must be an exact copy of the content on hard copy.

The cover of the CD/DVD/Hard drive must as minimum have the transmittal number, Contract number and package number

- o Avoid scanning the soft copy into one large PDF, if it is multiple documentation, scan it as stand alone, and ensure that file name corresponds with what is listed on the transmittal.

Note: Avoid overloading lever arch files, we recommend that one split the files into multiple volumes when necessary.

2.2.3 Reporting:

1. Contractor Documentation Submittal Schedule (CDSS):

- Contractor to provide a preliminary Vendor Documentation Submittal Schedule (CDSS) within 30 calendar days of contract award. Contractor to compile the CDSS and submit to the employer for review and approval.
- This may be done as per Employers Technical Documentation Classification and Designation Standard (240-54179170)
- The contractor must ensure that the updated CDSS is communicated to Eskom at least once a month for review

2. Master Documentation List (MDL):

- The Contractor must compile and submit an updated MDL once a month for review, in order to reflect all submitted documentation at that point in time.
- The MDL must contain an audit trail of all submitted documentation, all historic documentation revisions and current revision.

- Contractor to compile the MDL and provide it to employer for review and approval.
- MDL template is part of the document list.

2.2.4 Documentation Format and Layout

The contractor must ensure that the documentation has as minimum the following attributes:

- Company Logo
- Contractor Documentation Unique Number
- Documentation Revision
- Documentation Title or Description
- KKS code
- Page numbers
- Documentation Type

Documentation should be renamed with the Doc ID and Rev Number (If SPO Number is available ,must be included)- Example : 348-4352 KCJV-YTRH-001 Rev 1

2.2.5 Documentation Unique Number Pre-allocation

Pre-allocation of numbers is done only for the following Documentation, using 348-684677 template:

- Drawings
- AFI
- Data Books
 - Documentation in the data book must have the contractor's documentation number
 - But the above pre-allocated documentation must have the Eskom documentation number.

Communication channels for requesting pre-allocation of numbers and data books submission:

- Pre-allocation of numbers (Drawings, Data Books, AFI):- Medupisitedoc@eskom.co.za
- Submission requests and appointments for Data Books:- Medupisitedoc@eskom.co.za

2.2.6 Drawings Requirements

1. Revision control - Drawings – multiple sheet, revision control is shared across all sheets.
 - If one revises sheet 1 of 10, revision changes on all 10 sheets.
 - One continuously submit 10 sheets, not only the one sheet where changes were made.
 - We maintain revision control on a batch of sheets which makes up a design.
 - Otherwise make it sheet 1 of 1 and maintain it as such throughout the life cycle.
 - The contractor must submit all revisions to Eskom. Version control must used for internal reviews.
2. The following types File types are required, whenever one submits drawings:
 - PDF
 - Native format
3. Drawings File Renaming:

The drawing must be renamed as follows : SPF Number Sheet Numbers Doc ID and Rev (Example: 0.84/1223 Sheet 1 KCJV-DCY4-3124 Rev 0)

4. The contractor is expected to submit drawings throughout their lifecycle. Last phase of the lifecycle to be submitted to Eskom, is the black-line as-built, signed off by the professional registered designer, with As-Built Stamp and Professional Registered Engineer's Number.

N.B All documentation should be submitted with numeric revision sequentially. No skipping of revisions

2.2.7 Retention of Documentation

1. The contractor must retain all documentation which are specified on the VDSS, this includes data books, for a minimum of 10 years post contract close out in line Rules of Conduct for Registered Persons, Engineering Professional Act, paragraph 4(a): "Registered Persons may not without satisfactory reasons destroy or dispose of, or knowingly allow any other person to destroy or dispose of any information within a period of 10 years after completion of the work concerned."
2. The retained documentation must be kept electronically in the contractor's documentation management system. The contractor must also keep the original ink signed hard copies for the minimum of 10 years post contract close out.
3. When the 10 years comes to an end, the contractor must inform the employer in writing prior to disposal, to confirm if the employer is not in need of any documentation. The correspondence must include the master documentation register which outlines all retained documentation. It is the contractor's responsibility to ensure that the correspondence has reached the employer, by requesting acknowledgement of receipt.
4. The employer has the maximum of 6 months to respond in writing to the contractor, failure to do so the contractor may proceed and dispose the documentation after the six months has passed.

2.3 Health and safety risk management

Eskom has a Zero Harm commitment, and the *Contractor* shall comply with all the procedures, processes and requirements in 348-10127790 SHE Specification Integrated Nitrogen Generating Rev 1 - Final.

2.4 Environmental constraints and management

The Contractor shall comply with the Projects' Environmental Approvals this amongst others include Construction Environmental Management Plan Rev 2, 2010 (SPO No. 348-681011), Record of Decision (SPO No. 348-631731), Water Use Licence (SPO No. 348-31313), Atmospheric Emission Licence (SPO No. 348-629765) and the HSE Specification document provided for this scope. Refer to the Register of EA RoD License Permits Certificates and Servitudes for Medupi PS (348-687483) for full list Environmental Approvals for Medupi Power Station Project.

Medupi Power Station Project is ISO 14001:2015 certified, and Contractor is expected to conform to requirements applicable to their scope of works. The Medupi Power Station Project's Environmental Management System is governed by several procedures/protocols (for full details refer to Register of EMS Procedures Records Master List (SPO No. 348-646829) which shall be made available to the Contractor for implementation.

Minimum requirements for compliance by contractors:

- Ensure that the Method Statements are submitted to the TM/ECO for approval before any work is undertaken. Any lack of adherence to this shall be considered as non-compliance to the specifications.
- Ensure that any instructions issued by the Engineer, on the advice of the ECO, are adhered to.
- Contractor is prepared and will be able to respond to emergency situations/incidents in a appropriate manner. When planning emergency preparedness and response processes contractor should consider response methods that will be used/undertaken for different emergency situations, internal and external communications, actions required to mitigate environmental impacts, need for post emergency evaluation to determine and implement corrective actions, training of emergency response personnel and periodic testing of the drills and compilation of reports that include actual evidence that shows that drill was conducted this amongst others should include photographic evidence.
- Contractor is required to determine risk and opportunities related to its environmental aspects, compliance obligations and other issues e.g. external and internal issues this include needs and expectations.
- Contractor is required determine training needs associated with its environmental aspects, environmental compliance obligations and environmental performance. Types of training referred to must amongst others include ISO 14001:2015, Environmental Legal Liability etc.
- Contractor shall maintain the environmental legal register.
- Ensure that there shall be communication tabled in the form of a report at each site meeting, which shall document all incidents that have occurred during the period before the site meeting.
- Ensure that a register is kept at the site office, which lists all the environmental transgressions recorded/issued internally and by external parties e.g. ECO.
- Ensure that a register of all public complaints is maintained.
- Ensure that all employees, including those of sub-contractors receive training before the commencement of construction in order that they can constructively contribute towards the successful implementation of the environmental requirements of the Contract.
- Ensure compliance with the environmental requirements, relating to the provision of adequate resources for the implementation and monitoring of the requisite environmental controls.
- Compile an Environmental monitoring plan outlining all the construction activities, associated environmental impacts and how they shall be mitigated.
- Ensure that the project pricing makes provision for environmental management, maintenance and control costs.
- Contractor shall attach a company waste management plan including the typical waste inventory and templates used for keeping waste records.
- Include environmental considerations as an item on the agenda of the site meetings.
- Compile and implement the necessary Method Statements; and undertake environmental awareness training of all site staff during the commencement of each Contract, with regular refreshers for the duration of the Contract.
- Appropriate measures shall be undertaken to minimise the generation of dust from work activities
- The work area is kept clean, tidy, and free of waste/rubbish. Waste shall be placed inside clearly labelled designated bins with locking mechanism that are animal (monkeys and baboons) proof.
- Adherence to current and amended Water Use License and Regulation 704 of the National Water Act (Act 36 of 1998).

- Plant and machinery shall be equipped with drip trays. Oil refills for plant and machinery shall take place in designated areas.

Ensure that the environmental authorizations required in terms of applicable legislations are sought prior to storage of flammable substances/dangerous goods, including petrol, diesel, liquid petroleum gas or paraffin onsite.

The contractor must appointment the fulltime qualified Environmental Officer with at least two (2) years related environmental management experience with Qualification of minimum to National Diploma/Degree/Bachelor of Tech in Environmental Management/sciences/nature conservation. A detailed signed Site Environmental Officer Appointment Letter must form part of tender submission.

2.5 Quality assurance requirements

The Supplier shall demonstrate, provide, and maintain a Quality Management System (QMS) that is ISO 9001:2015 certified or compliant thereto as well as the Supplier Quality Management Specification (240-105658000) and Medupi Contractor Quality Specification (348-389557). Compliance with the provisions of this clause in no way relieves the Supplier of the final responsibility to furnish acceptable services. Contractors QMS that includes:

- a) Ensuring that processes, plans and procedures needed for the QMS are established and maintained and the integrity of the QMS is maintained when changes are implemented.
- b) Ensuring that Quality Assurance and Quality Control Depts. are sufficiently manned with competent resources to effectively implement quality requirements.
- c) Reporting to top management on the performance of the quality management system and any need for improvement.
- d) Ensuring the awareness of customer requirements throughout Contractors organization.

The Contractor shall ensure that the Employer's requirements as specified in the Contract are met in full and proven as such to Employer satisfaction. Quality management shall be in accordance with ISO 9001:2015 and related ISO 9000 series of Standards, and is to provide full documentary and objective evidence that the Works have been designed, manufactured, executed, completed, and preserved in accordance with the Contract.

The quality management system shall apply to the Contractor and all persons real or juristic working for or on behalf of the Contractor on or in connection with the Works and regardless of the form of employment contract.

Quality management shall ensure that the Quality Control Plans, Inspection and Test Plans and procedures/instructions/method statements/ECNs/FCNs developed or adopted provide stages at which the Employer may witness what is being done or require what is being done to be subject to inspection before the execution continues.

Contractor shall list all documentation needed for the effective implementation of the project quality management system (QMS) and shall, as a minimum, prepare, maintain, and implement throughout the life cycle of the project, as part of the project quality management system. The project specific documentation are as follows:

- a) Project Quality Policy
- b) Project Quality Strategy
- c) Project Quality Objectives
- d) Project Quality Management Plan
- e) Project Organisation Chart.
- f) Project RACI Matrix – may be split by Dept. /Phase/Discipline as required.
- g) Job Descriptions including performance requirements and measurements.
- h) Equipment and Process Criticality Ratings,

- i) Project Quality Assurance Plans – per project phase:
 - (i) Design
 - (ii) Manufacturing, Inspection and Testing
 - (iii) Construction, Inspection and Testing
 - (iv) Commissioning and Taking-Over
- (j) Project Quality Control Procedures - per discipline:
 - (i) Civil and Structural works.
 - (ii) Mechanical, Piping, Painting and Insulation works.
 - (iii) Electrical works.
 - (iv) Control and Instrumentation works.

Project Quality Control Procedures per individual activity identifying specific inspection and test methods and acceptance criteria.

Project Inspection and Test Plans (ITP's) per individual activity that plan, assure quality, and define inspection intervention levels.

Project Quality Verification Records per individual activity - as referenced in ITP's.

Manufacturing, Construction and Commissioning Record Books

Except where otherwise stated, all documents that constitute the Quality Management System, including proforma Quality Verification Records, shall be complete, in accordance with the Contract, and ready for use and submitted to Project Manager / Employer not less than 30 days before the work governed by the documents are planned to start.

Throughout the lifecycle of the project, on a monthly basis, the contractor shall maintain and submit a MDL (Master Documentation List), to the Project Manager for review and approval. Each document on the Master Document List shall have the following marked against it:

- a) The planned and actual date of submittal to the Project Manager
- b) The classification of documentation (for approval, for review, or for reference) based upon the classification guidelines of Quality specification document.
 - (i) Class 1 - for the Project Manager / Employer approval - where the Contractor may not proceed with the Works
 - that are the subject of the document until it has been approved by the Project Manager / Employer.
 - (ii) Class 2 - for the Project Manager / Employer Review - where the Contractor may proceed with the works
 - that are the subject of the documentation if the Project Manager's has made no comment after seven (7) days from the receipt by the Project Manager
 - (iii) Class 3 - for the Project Manager / Employer Reference - where the Project Manager / Employer reserves the right to comment,
 - but the Contractor may proceed with the works that are the subject of the documentation.

Where there is an ambiguity or where a document is produced that is not referenced therein clarification as to classification shall be sought from the Project Manager.

The Master Document List shall be submitted to the Project Manager / Employer electronically via email in native file.

format on a monthly basis.

The Contractor submits as a minimum the following documents, as required by the Employer, which requirement does not constitute a compensation event, during the execution of the Works: -

- a) Updated QCP register.
- b) Inspection notifications accompanied by their inspection report.

- c) Non-conformance and Defects registers and reports
- d) Updated Site and off-site inspection schedules.
- e) Inspection and/or FAT dates.
- f) Inspections completed/outstanding.
- g) Inspection and test reports
- h) Monthly contract quality progress report
 - Data books for the completed Works, before commissioning can commence (refer to the Record books section 2.5.2 and data books hand over timelines)
 - The Contractor agrees to control and professionally preserve and store appropriate documents, records, and recordings for a period of 5 years after termination of the agreement to guarantee the traceability of the services rendered and inspection thereof.
 - The Contractor agrees to regularly update and implement all the latest technology available as well as the necessary improvements for the installation, production and organisation deemed necessary to meet the requirements of the agreement and in order to enhance capabilities and effectiveness to deliver high quality, cost-effective security services.
 - The delivered or services shall be uniform in Quality and condition, consistent with good industry practices and adhere to requested Eskom requirements, without deviation.
 - The Employer shall have the right to regularly conduct inspections, assessments, audits, and surveys and perform surveillance of the Supplier's and/or Sub-Supplier facilities, sites, premises, records and documentation (including but not limited to data books) to evaluate their capability to comply with the requirements necessary to conform to contractual and QMS requirements.
 - The Employer reserves the right to inspect, at reasonable times, any or all of the services performed at the Supplier's or Sub-Supplier's premises or elsewhere. Verification by Eskom shall not absolve the Contractor of the responsibility to provide acceptable product and / or services, nor shall it preclude subsequent rejection by Eskom.
 - The services must comply with the agreed specifications and requirements and the applicable directives and standards set out in the Contract. Defects notified by the Employer shall be remedied by the Contractor upon demand by the Employer without undue delay and at no extra cost. The Contractor shall continuously monitor and identify non-conformances, both internal and external, as signals of opportunities for improvement making process and other relevant changes to prevent recurrence.
 - The Contractor shall further identify potential problems before they occur by identifying deviations in patterns or trends in product, service, or process performance.
 - Nothing contained in the Contract and/or purchase order and/or scope of work and /or works information shall relieve in any way the S Contractor from the obligation of Quality control thereof.
 - The Contractor guarantees that the Quality of the delivered services will comply with the requirements of the contract and/or relevant specifications.
 - The Contractor shall, on request, prove its ability to relate to the proposed scope of work which establishes the manner in which it intends to perform the Contract.
 - The Contractor shall, on request, prove its organisational, logistics and support resources to ensure the requirements of the contract can and will be achieved.
 - The Employer reserves the right to assess and measure, during the existence of the agreement the qualifications, capability, and competence of the key staff (assigned personnel) in relation to the scope of work and to interview any / all of them to confirm the Quality evaluation.
 - The identified professional personnel who will be managing the service will be available and accessible on a continuous basis until the conclusion of the Contract.
 - The Contractor shall demonstrate experience in comparable projects or specific aspects of the project and / or performance in similar projects, on request.
 - The Quality of the services and the contents thereof will always be in accordance with professional standards.
 - For the duration of the Contract, the professional staff managing the service, must be and remain a member of his/her Professional Society

- The Supplier must, at all relevant times, scrutinise and be aware of Eskom's requirements with specific focus on, inter alia, its philosophy, principles, strategies, practises, mission, vision, models, policies, and practises.
- The Contractor shall exercise reasonable professional skill, care, and diligence in the performance of his obligations in terms of this agreement.
- On awarding of the Contract to the successful Contractor, such Contractor shall present to the Employer an acceptable Quality Control Plan (QCP). The QCP shall comply with the requirements of ISO 10005. The Contractor shall employ sufficient qualified and knowledgeable quality assurance and quality control and inspection staff. These staff members shall be independent from those responsible for construction and commissioning activities and report directly to the Site Quality Department Manager and not the production team as referenced on Medupi Quality Specification (348-389557 sub-clause 3.4.1).

Quality Payment Schedule

- 1) The Contractor shall ensure that Quality Assurance is performed at all levels and phases of work carried out for the Employer.
- 2) The Contractor shall use processes to ensure that quality is built into their products/services i.e., its business processes are organized such that quality is built into the process of producing goods and rendering services. The Contractor shall work according to processes.
- 3) The Contractor shall ensure that it can be relied on to deliver quality goods and services without the need for the Employer to have to inspect..

The Contractor shall keep the Quality Table of Payments (Quality Payment Schedule) updated with progressive Employer sign-off (as the work is done and payments applications are submitted). This means that as the Contractor completes an activity and has the related ITP/QCP signed by the Employer, the Contractor shall bring the Quality Table of Payments to the Employer's Engineering and Quality representative to sign off for that activity.

The updated Quality Table of Payments shall accompany all payment applications (proforma invoices). The Contractor shall attach the signed (or partially signed if applicable) ITPs/QCPs to the payment application. Payment will only be made if the ITPs/QCPs are signed by the Employer's Quality personnel and Engineers.

2.6 Programming constraints

As part of the tender returnable and with the anticipation that the submission will be the precursor of the first program to be reviewed and approved by the Employer.

The following detail as per the NEC 31.2 of the Contract as minimum in knowing that the access date is the Contract date and the date of the mandatory requirements of police clearance vetting and access for the Contract personnel:

The Contractor shows on each weekly programme update which he submits for acceptance

- the starting date, access dates, Key Dates and Completion Date,
- planned Completion,
- the order and timing of the operations which the Contractor plans to do in order to Provide the Works,
- the order and timing of the work of the Employer and Others as last agreed with them by the Contractor or, if not so agreed, as stated in the Works Information,
- the dates when the Contractor plans to meet each Condition stated for the Key Dates and to complete other work needed to allow the Employer and Others to do their work,
- provisions for:
 - o float,
 - o time risk allowances,
 - o health and safety requirements and

- o the procedures set out in this contract,
- the dates when, to Provide the Works in accordance with his programme, the Contractor will need
- o access to a part of the Site if later than its access date,
- o acceptances,
- o Plant and Materials and other things to be provided by the Employer and
- o information from Others,
- o for each operation, a statement of how the Contractor plans to do the work identifying the principal Equipment and other resources which he plans to use and
- o other information which the Works Information requires the Contractor to show on a programme submitted for acceptance.

The other mandatory information specified to be submitted in the tender returnable is Resource loaded Program are the following:

- a. The Activity Schedule (Option A NEC3) and works information deliverables to linked payment schedule of Contractor as designated milestones in the program the Forecast rate of invoicing (FRI) of the Contract.
 - The Contractor is advised when developing the Activity schedule that it is the Employers strict policy, that does not pay for items, materials, equipment upon order / procurement but upon installation completion of a constructed system.
- b. Risk assessment informing Schedule of interfaces (including terminal point list) both demands and deliverables as milestones directed to the Packages 20 D – Hydrogen Bulk Storage and Package 20 E – Hydrogen Generation and distribution Network Contractor.
- c. The Engagement of key – OEM related personnel detailed below in 2.7, in support of design, construction and commissioning in the activities.
- d. The incorporation of the Vendor / Contractor Documentation Submittal Schedule (V/CDSS) as schedule of the Master Documentation List (MDL - The MDL is a list of all documentation submitted under the Contract and V/CDSS is the documents listed as program milestones.
- e. Preliminary and General and at minimum the following Key Milestones:
 - Kick-off Meeting
 - Police Clearance and Induction of Contract Personnel for Medupi Access
 - Bonds Submission to Eskom Treasury
 - Appointment of SACPCMP Certified Safety Officer
 - Appointment of SACPCMP Certified Construction Manager
 - Appointment of integration Engineer
 - Health and Safety File Accepted
 - Environmental File Accepted
 - Quality Control Plan Accepted
 - Notification of Construction Work
 - Integration Risk Assessment and Schedule of interface Management Strategy / report
 - Mobilisation and Site Establishment
 - Appointment of AIA Subcontractor
 - Appointment of NDT Subcontractor
 - Appointment of OEM Subcontractors
 - Design Review report of existing Nitrogen Works
 - Free Issue items and structure Status report
 - Approval of Free Issue item Corrective work and Preservation Procedure
 - Mix Design and Aggregate Acceptance
 - Failure Mode Effects and Criticality Analysis (FMECA).
 - HAZLOC Study
 - Design Freeze of Civil works for P20D Contractor - Bulk Storage Tank Concrete works and support infrastructure
 - Design Freeze of Civil works for P20D Contractor - Explosion / Blast proof Bund walls
 - Design Freeze of Civil works for P20E Contractor – Hydrogen Container Reinforced concrete foundation Slab Concrete works and support infrastructure
 - Design Freeze of Civil works for P20E Contractor – Hydrogen Container Steel Structure Canopy

- Design Freeze of Civil works for P20E Contractor – Hydrogen Bulk Tank Loading Steel Structure Canopy
- Design Freeze of Civil works for P20E Contractor – Hydrogen Bulk Tank loading Concrete works and support Infrastructure
- Design Freeze of Civil works for P20E Contractor - General concrete and steel supporting infrastructure for Hydrogen piping and cable racking from the Hydrogen Plant to the Unit 1-6 Turbine generating units
- Design Freeze of Integrated Civil works - Road access, loading bay and internal roads
- Design Freeze of Integrated Civil works - Road crossings, supportive structures, plinths, trenches for pipes, sleeves and cable servitudes
- Design Freeze of Integrated Civil works - Surface drainage and interface to Medupi station drains (clean and dirty)
- Design Freeze of Integrated works - Safety Fencing
- Design Freeze of Integrated works - Access control
- Design Freeze of Integrated works – Landscaping
- Design Freeze of Integrated works – Power supply and Mini-substation
- Design Freeze of Integrated works – H₂/N₂ Plant substation building
- Design Freeze of Integrated works – Sheltered/Canopy structures
- Design Freeze of Services works for P20E Contractor - Safety Shower
- Design Freeze of Services works for P20D Contractor – Cable trenches from existing points to Hydrogen Bulk storage tanks
- Design Freeze of Services works for P20D Contractor – Effluent and stormwater washed off into drains to connect to existing Medupi site drainage
- Design Freeze of Services works for P20E Contractor – Cable trenches from existing points to Hydrogen Plant
- Design Freeze of Services works for P20E Contractor – Effluent and stormwater washed off into drains to connect to existing Medupi site drainage
- Design Freeze of Services works for P20E Contractor – CBMS System to integrate to plant CBMS.
- Design Freeze of Utilities works for P20D Contractor – Earth mat connection points
- Design Freeze of Utilities works for P20E Contractor – Earth mat connection points
- Design Freeze of Utilities works for P20E Contractor – 400V supply and tie in point
- Design Freeze of Utilities works for P20E Contractor – Small power and lights supply from DB to Container
- Design Freeze of Utilities works for P20E Contractor – Potable water supply and tie in point from TP to Container
- Design Freeze of Utilities works for P20E Contractor – Demin water supply and tie in point from TP to Container
- Design Freeze of Utilities works for P20E Contractor – Instrument air supply and tie in point from TP to Container
- Design Freeze of Fire detection and Protection for P20D Contractor
- Design Freeze of Fire detection and Protection for P20E Contractor
- Design Freeze of Nitrogen System Mechanical
- Design Freeze of Nitrogen System Electrical
- Design Freeze of Nitrogen System Civil
- Design Freeze of Nitrogen System Control and Instrumentation
- Design Freeze of Nitrogen System Fire Detection and Protection
- Design Freeze of Nitrogen System CBMS
- Constructability Analysis report
- Appointment of an RP
- Appointment of Mechanical Construction Subcontractor
- Appointment of Electrical Construction Subcontractor
- Appointment of Control and instrumentation Construction Subcontractor
- Free Issue items Corrective work complete per Listed item
- Free Issue Items Service and Preservation per Listed item
- Handover of Civil works for P20D Contractor - Bulk Storage Tank Concrete works and support infrastructure
- Handover of Civil works for P20D Contractor - Explosion / Blast proof Bund walls
- Handover of Civil works for P20E Contractor – Hydrogen Container Reinforced concrete foundation Slab Concrete works and support infrastructure
- Handover of Civil works for P20E Contractor – Hydrogen Container Steel Structure Canopy
- Handover of Civil works for P20E Contractor – Hydrogen Bulk Tank Loading Steel Structure Canopy
- Handover of Civil works for P20E Contractor – Hydrogen Bulk Tank loading Concrete works and

support Infrastructure

- Handover of Civil works for P20E Contractor - General concrete and steel supporting infrastructure for Hydrogen piping and cable racking from the Hydrogen Plant to the Unit 1-6 Turbine generating units
- Handover of Integrated Civil works - Road access, loading bay and internal roads
- Handover of Integrated Civil works - Road crossings, supportive structures, plinths, trenches for pipes, sleeves and cable servitudes
- Handover of Integrated Civil works - Surface drainage and interface to Medupi station drains (clean and dirty)
- Handover of Integrated works - Safety Fencing
- Handover of Integrated works - Access control
- Handover of Integrated works – Landscaping
- Handover of Integrated works – Power supply and Mini-substation
- Handover of Integrated works – H2/N2 Plant substation building
- Handover of Integrated works – Sheltered/Canopy structures
- Handover of Services works for P20E Contractor - Safety Shower
- Handover of Services works for P20D Contractor – Cable trenches from existing points to Hydrogen Bulk storage tanks
- Handover e of Services works for P20D Contractor – Effluent and stormwater washed off into drains to connect to existing Medupi site drainage
- Handover of Services works for P20E Contractor – Cable trenches from existing points to Hydrogen Plant
- Handover of Services works for P20E Contractor – Effluent and stormwater washed off into drains to connect to existing Medupi site drainage
- Handover of Services works for P20E Contractor – CBMS System to integrate to plant CBMS.
- Handover of Utilities works for P20D Contractor – Earth mat connection points
- Handover of Utilities works for P20E Contractor – Earth mat connection points
- Handover of Utilities works for P20E Contractor – 400V supply and tie in point
- Handover of Utilities works for P20E Contractor – Small power and lights supply from DB to Container
- Handover of Utilities works for P20E Contractor – Potable water supply and tie in point from TP to Container
- Handover of Utilities works for P20E Contractor – Demin water supply and tie in point from TP to Container
- Handover of Utilities works for P20E Contractor – Instrument air supply and tie in point from TP to Container
- Handover of Fire detection and Protection for P20D Contractor
- Handover of Fire detection and Protection for P20E Contractor
- Handover of Nitrogen System Mechanical
- Handover of Nitrogen System Electrical
- Handover of Nitrogen System Civil
- Handover of Nitrogen System Control and Instrumentation
- Handover of Nitrogen System Fire Detection and Protection
- Handover of Nitrogen System CBMS
- Handover of P20F Contractor Fire detection and Protection
- Defect walkdown punch list with Supervisor Sign-off on all systems
- Training of Nitrogen System Completed
- Hand over of Data books and documentation 100% all systems
- Handover of the Complete Nitrogen System
- Demobilisation and Contract close out completed

2.7 Contractor's management, supervision and key people

The Contractor issues an organogram within two weeks of Contract award and is part of the Contractors first program submission.

The Contract comprises free issue items. It is also elaborated in Section 5.1.7, cooperating with and obtaining acceptance of others' where collaboration is required. It is therefore important that the Contractor engage the OEMs of the free issue items and list as part of the Contractors key people as tender returnable

the OEM personnel identified for the design incorporation, testing and commissioning, training and handover of the free issue items.

The Contractor is to appoint an integration Engineer to manage the interfaces between the 3 Contracts to deliver the Hydrogen and Nitrogen plants. The Integration Engineer is to report on the progress of each of the interfaces and the progress by others in the Accepted Program weekly update in providing the sections of the works to allow the overall project objectives of the Hydrogen and Nitrogen Plants.

It is the Function of the Integration Engineer to perform an Integration Risk Assessment at Contract award and Constructability Analysis at design sectional completion, with the Employer, OEM's, the P20D – Hydrogen Bulk Storage Tanks and P20E – Hydrogen Generating plant Contractors and produce reports with an **Interface Management Plan** and defined actions to allow the timely synchronised delivery of the Hydrogen and Nitrogen Plants.

2.8 Invoicing and payment

The Z clauses make reference to invoicing procedures stated here in this Service Information. Also include a list of information which is to be shown on an invoice.

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)

The Employer uses a 3-point verification system to approve payments. The inspection and test plan – ITP's – are upon activity / task completion are signed off by Eskom Quality and Engineering Personnel. The Pro forma invoice submitted by the Contractor is supported by evidence of Approved work documentation with Engineering and Quality sign-off to be assessed by the Eskom Quantity Surveyor.

2.9 Insurance provided by the *Employer*

First read ECC3 Core Clause 87.1 and then add anything necessary for the management of insurance related issues such as a cross reference to where procedures for making claims can be found. Also provide contact details for persons capable of being able to answer any insurance related queries the *Contractor* may have, as well as to whom the information required by Marine Insurance may be addressed.

2.10 Contract change management

This section is intended to deal with any additional requirements to the compensation event clauses in section 6 of the core clauses; such as the use of standard forms. Not the same thing as documentation control.

2.11 Provision of bonds and guarantees

The form in which a bond or guarantee required by the *conditions of contract* (if any) is to be provided by the *Contractor* is given in Part 1 Agreements and Contract Data, document C1.3, Sureties.

The *Employer* may withhold payment of amounts due to the *Contractor* until the bond or guarantee required in terms of this contract has been received and accepted by the person notified to the *Contractor* by the *Project Manager* to receive and accept such bond or guarantee. Such withholding of payment due to the *Contractor* does not affect the *Employer's* right to termination stated in this contract.

As part of the Contractors program at tender stage, the Contractor is to include the milestones of the provision of bonds and guarantees in the Employers wording as stated in the Works Information.

2.12 Records of Defined Cost, payments & assessments of compensation events to be kept by the Contractor

The Contractor to keep specific detailed records of all personnel, material, Equipment resources such as time sheets, invoices paid (SARS compliant) to own Employees assigned to the Contract and Subcontractors (Accepted by the Employer).

The Schedule of cost components and Shorter schedule of cost components to be issued as part of the Contractors data for acceptance by the Employer and must be fully comprehensive to price compensation events.

2.13 Training workshops and technology transfer

Refer to Technical Specification Scope of Work document.

3 Engineering and the *Contractor's* design

Refer to full detailed requirements provided in Medupi Nitrogen Generating Plant, Integration of Hydrogen and Nitrogen Plants Scope of Work - 348-10123337 (SOW).

3.1 *Employer's* design

There are existing incomplete designs from previous contracts for the Contractors information. Refer to full detailed requirements provided in Medupi Nitrogen Generating Plant, Integration of Hydrogen and Nitrogen Plants Scope of Work – Technical Scope document 348-10123337 (SOW).

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

The Contractor must submit documents listed in item 4.11.1 Technical Scope document 348-10123337 , as part of the design. Additional supporting documents may be submitted where necessary.

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

Refer to items 3.5, 3.6 and 3.8 of 1 Technical Scope document 348-10123337 (SOW).

Design milestones and delay damages applicable.

The Contractors design deliverables includes the request and provision of Engineering, design detail information to meet design milestones which are subject to delay damages.

3.4 Other requirements of the *Contractor's* design

All design must be integrated with all other systems on the shared common site and consideration of the item 4.10 LIMITS OF SCOPE AND SUPPLY(LOSS)

Refer to Engineering Technical Scope of work document : 348-10123337 -Medupi N2 Generating Plants and N2 Plus H2 integration SOW

3.5 Use of *Contractor's* design

The Employer has full rights to the Contractors design.

3.6 Design of Equipment

All designs shall be the Contractor's full responsibility and accountability, irrespective of been accepted or noted by the Employer.

3.7 Equipment required to be included in the *works*

In addition to what is stated elsewhere in the works information and technical specification document, the Contractor shall supply a portable programming unit for engineering and configuration purposes installed with all the necessary software and tools for the PLC control system and HMI engineering.

Refer to 348-10123337 -Medupi N2 Generating Plants and N2 Plus H2 integration SOW, Section 4.1 EXISTING DESIGN AND CONSTRUCTION DONE BY OTHERS, refers to Nitrogen free issue items and constructed items to be included in the works.

3.8 As-built drawings, operating manuals and maintenance schedules

Refer to Items 3.3, 3.5 and 3.6 of the Technical Scope document 348-10123337-Medupi N2 Generating Plants and N2 Plus H2 integration SOW.

4 Procurement

4.1 People

4.1.1 Minimum requirements of people employed on the Site

NKP requirement of police clearance for all Contractor personnel requiring site access.

Eskom, as a State-Owned Entity is aligned with the Government's Development and Growth initiatives. It has committed itself to local development initiatives with the aim of increasing the competitiveness, capacity, and capability of its local supply base as well as supporting government's goals of shared growth, employment creation, poverty reduction and skills development.

Within Eskom, Supplier Development, Localisation, and Industrialisation (SDL&I)'s mandate is to achieve maximum and sustainable local development impact through leveraging Eskom's procurement spend in a manner that allows flexibility within the business to accommodate government local development initiatives and policies.

All this should be achieved within the context of Eskom's Procurement and Supply Chain Management Procedure which is based on the Preferential Procurement Policy Framework Act (PPPFA), 2000 and Eskom's Preferential Procurement Policy:240-128811268

Supplier Development, Localisation and Industrialisation (SDL&I)'s objective is to leverage this Procurement to achieve the following Specific Goals in line with Section 2 (1) (d) of Preferential Procurement Policy Framework Act (PPPFA):

i. contracting with persons, or categories of persons, historically disadvantaged by unfair discrimination on the basis of race, gender or disability; and

ii. implementing the programmes of the Reconstruction and Development Programme as published in Government Gazette No. 16085 dated 23 November 1994

The Specific Goals determined to be applicable for this Procurement are listed herewith below as follows:

- Development and increasing of RSA Skills' pool through compliance with the CIDB's Contractor's Skills Development Goals (CSDG), which may entail Workplace Integrated Learning (WIL) for TVET College, Universities of Technology and University Graduates,
- Empowerment of communities in the vicinity of the Projects through job creation, local procurement, skills development, enterprise and supplier development, subcontracting and corporate social investment initiatives.

The Contractor is required to train and certify the following personnel :

| Eskom's Skills Development Target | | | |
|-----------------------------------|--------|----------------------------|-------------|
| Category | Number | Entry Level | Output |
| Project Managers (Civil) | 2 | NDiploma/BTech/Degree | SACPCMP |
| Safety Officers | 2 | Safety Officer Certificate | SACPCMP |
| Quality Auditors | 2 | Relevant Degree/Diploma | IRCA/SAATCA |

4.1.2 BBBEE and preferencing scheme

The Contractor to maintain its Broad Based Black Economic Empowerment (B-BBEE) status at Contract award for the duration of the Contract and provide monthly status reports to the Employer.

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

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

The Contractor is to provide at Contract award stage proposed AIA and NDT subcontractors for Employers approval and is to be reflected as an activity in the Contractors program submission at tender returnable.

The Contractor to submit all potential subcontractors to the Employer's SDL&I team for compliance review to the SDL&I targets and penalties.

4.2.2 Subcontract documentation, and assessment of subcontract tenders

Specify any constraints on how the *Contractor* is to prepare subcontract documentation, whether use of the NEC system is compulsory or not (compulsory is recommended) and how subcontract tenders are to be issued, received, assessed (using a joint report?) and awarded.

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

QCP, ITP, INTN System, AIA, NDT, IPC Quality Sign-off

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

Section, 4.1 EXISTING DESIGN AND CONSTRUCTION DONE BY OTHERS, of the 348-10123337 Medupi Nitrogen Generating Plant, Integration of Hydrogen and Nitrogen Plants Scope of Work, covers the free issue items available to the Contractor to be incorporated into the works if fit for purpose. These items are to be thoroughly inspected at inquiry stage. Below lists these items.

- a. 3 off Atlas Copco ZT160 Compressors
- b. 3 off Atlas Copco DDP850 air filters
- c. 3 off Atlas Copco FD870 air dryers
- d. 3 off Atlas Copco NGP 250 nitrogen generating plants
- e. 3 off Hycomp AN44F booster compressors
- f. 3 off ILVA 3 m3 air receivers
- g. 3 off ILVA 3 m3 nitrogen receivers
- h. 2 off ILVA 118 m3 bulk storage nitrogen receiver (Contractor to supply and install pressure equipment markings(tags) as per OHS 85 of 1993)
- i. Sheeting
- j. Piping
- k. 2 x office containers
- l. Male and Female Porta Toilets
- m. Water Tank on Concrete Platform

The use of free issue Plant and Material for the scope is subject to fit for purpose assessment by the Contractor and acceptance by the Employer as a milestone before the Nitrogen design freeze milestone.

The Contractor, as part of their scope of work is to also do corrective work on the free issue items listed above and existing structures on site from earlier Contracts. The reports ‘348-10074583 P20C-4600073556-N2-CNG-ESK-RPT-0020 Rev 01’, and ‘348-10074576 P20C-4600073556-N2-CNG-ESK-RPT-0017 Rev 01’, produced by the Contractor are the evident defects of the free issue items that require correction and are the Contractor's responsibility to be priced and planned at tender returnable stage. The Contractor, as part of the tender returnable is to include a milestone for the correction of the free issue items and preservation of the items after repair to commissioning and handover.

The Contractor is expected to construct and commission temporary systems, as part of their scope to test free issue item performance early in the program to mitigate the risk underperformance by corrective action. It is the full responsibility of the Contractor to design and commission these systems with the same requirements of permanent systems and to remove and appropriately dispose as per the relevant Eskom procedures.

4.3.3 *Contractor's* procurement of Plant and Materials

Specify any constraints on how the *Contractor* is to order, codify, expedite, freight, import, transport to Site and any other requirements for delivery and storage before installation. The *Employer* may require warranties from suppliers to be in favour of the *Employer* and not just to the *Contractor* during the life of the contract. Also include requirements for vendor data which the *Employer* may need after Completion of the whole of the *works*. THIS IS A VERY IMPORTANT SECTION IN PROCESS PLANT AND UTILITY PROCUREMENT CONTRACTS.

4.3.4 Spares and consumables

Some contracts may need to include provision for the supply of a minimum category of spares, fuel, oil or other feed stock and consumables which the *Employer* may need at or just after take over and that it is best the *Contractor* provide these initially as part of his Providing the Works.

4.4 Tests and inspections before delivery

C&I Factory Acceptance test to be detailed in the Program.

4.5 Marking Plant and Materials outside the Working Areas

Core clauses 70.1 and 71.1 require the Works Information to state how the *Contractor* is to “mark” Plant and Materials which is outside the Working Areas if they are to be paid for before delivery to the Working Areas. Specify here how the *Contractor* is to mark the Plant and Materials.

4.6 Contractor’s Equipment (including temporary works).

Specials tools to be handed over prior to completion.

For C&I - Any special tools used for testing, configurations, engineering and fault-finding shall be provided by the Contractor and handed over to the Employer after commissioning at handover phase.

The *Contractor* shall supply 1 portable programming unit for engineering and configuration purposes installed with all the necessary software and tools for the PLC control system and HMI engineering.

The Contractor is expected to construct and commission temporary systems, as part of their scope to test free issue item performance at Commissioning. It is the full responsibility of the Contractor to design and commission these systems with the same requirements of permanent systems and to remove and appropriately dispose as per the relevant Eskom procedures.

4.7 Cataloguing requirements by the Contractor

Contractor (consult Procurement Instruction Number 1 of 2018 – Incorporating Cataloguing into the Procurement Environment, Unique Identifier 240-1289988974).

The Contractor is to include in the program and provide all Cataloguing compliant to the Employers requirements as per the accepted program.

5 Construction

5.1 Temporary works, Site services & construction constraints

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

Access to Medupi Power Station as a National key point and controlled by Eskom Security. The Contractor shall submit Access Application forms accompanied by ID copies, valid Medical Fitness Certificate, valid Police Clearance Certificate issued not more than 3 months old, and proof of attendance to Eskom Induction Training before mobilization.

Access Application Forms must be submitted 24 hours prior the intended visit.

Work may not begin until valid access cards to site have been issued by Eskom.

The Contractor shall submit applications for vehicle permits to the Contract Supervisor.

All personnel and vehicles entering or leaving the site are subject to routine searches and alcohol testing.

The Contractor must ensure that all employees and sub-contractors carry their access cards at all times.

The Employer reserves the right to refuse access to the site for reasons such as security concerns, disorderly conduct, substance abuse, misconduct, or criminal records. The Contractor shall not be entitled to claim any compensation, change in Prices, Key Dates, or the Completion Date as a result of such delays or events.

Before any materials or equipment are removed from site, the Contractor must obtain a Gate Permit from the Employer. The Gate Permit must include an itemised list of all materials and equipment to be removed.

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

The Medupi site is operational and shared by several Contractors and GX operational staff. The P20D Contractor must adhere to all site signages, road rules including speed limits, restriction to cell phone use while driving or walking, walkways and barricades, etc.

Before work starts on Site, a kick-off meeting is held with the Contractor and the Project Manager, to explain in detail all requirements of the Site regulations.

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

Restrictions and hours of work may apply on some Sites. It is very important that 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 needed when assessing compensation events.

The working hours shall be in accordance with the approved project calendar. All restrictions and working hours requirements applicable at the Medupi Power Station shall be observed.

The Contractor shall maintain accurate records of all employees on site, including those of Sub-Contractors. These records shall be accessible to the Project Manager or Supervisor at any time and may be requested by the Employer for, but not limited to, the following purposes:

- a) Emergency situations (including evacuations or drills) and investigations
- b) Labour unrest incidents
- c) Absenteeism monitoring

d) Sick leave tracking

e) Labour hour and timesheet assessments

5.1.4 Health and safety facilities on Site

Refer to the Section 2.3 above and the 348-10127790 SHE Specification Intergrated Nitrogen Generating Rev 1 - Final

Medupi Emergency Procedures

The Contractor shall adhere to Eskom's Emergency Procedures and ensure that all site personnel are aware of emergency contacts, evacuation routes, and assembly points.

The Contractor must participate in scheduled emergency drills, display emergency contact numbers and maps in work areas, and report any incidents or near misses immediately to the Supervisor and Eskom Emergency Control Room.

A copy of the Contractor's Emergency Response Plan must be included in the Site safety file.

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

Refer to EMP above and as per the latest revision of the Medupi Power Station Environmental Policy.

Site Establishment and Disestablishment

Before any site establishment activities commence, the Method Statement, Risk Assessment, Safety File, and Environmental File must be approved by the Employer Representatives.

No mobilization, or delivery of materials may begin without the Employer Supervisor presence on Site during establishment.

Site establishment shall include but not be limited to: delivery and off-loading of equipment and materials, setting up offices, storage areas, laydown areas, and temporary facilities, connection of temporary services (power, lighting, water, sanitation), and implementation of site safety signage, fencing, and environmental controls.

The Employer Supervisor shall witness and record the condition of the designated work area prior to establishment. Any pre-existing damages or hazards must be logged in the Construction Site Access Form and acknowledged by both the Contractor and Supervisor.

The Employer will issue the Contractor with a Site Access and Acceptance Form before works commence and both parties are to sign.

During disestablishment, the Contractor must notify the Employer at least 3 working days before demobilization, removal of all temporary facilities, debris, and waste from the Site, restore the work area to its original condition or as otherwise instructed by the Employer, and obtain final clearance and sign-off from the Employer confirming that the Site is safe, clean, and ready for handover.

5.1.6 Title to materials from demolition and excavation

The Contractor has no title to materials from excavation, demolition, Construction by others, stripped and material removed from site or the plant (e. g. copper, steel etc). The Contractor notifies the Project Manager when such materials are found and the Project Manager instructs the Contractor how to deal with such materials.

5.1.7 Cooperating with and obtaining acceptance of Others

The delivery of a fully functional Nitrogen plant complying with the Medupi technical specification 348-10123337 -Medupi N2 Generating Plants and N2 Plus H2 integration SOW is the complete responsibility of the P20F Contractor - H2/N2 - Design, Construct, Commission Nitrogen Plant and Civil works utilities and services for Hydrogen Plant.

The P20F Contractor has the responsibility to provide Civil works, Services, Utilities, Fire detection and Protection and the Integrated Works, to a coordinated sequence with the works of others.

The Integrated works includes road access and internal roads, road crossings, trenches for pipes, sleeves and cable servitudes, surface drainage and integration with site drainage, CBMS, power supply and mini-substation, Hydrogen and Nitrogen substation building, security fencing, access control and landscaping.

It is therefore imperative that the P20F Contractor ensures co-operation, collaboration and program synchronisation with the P20D – Hydrogen Bulk storage Tank Contractor and the P20E- Hydrogen Generating System and distribution.,

To this end, the Contractor is to submit as part of the tender returnable, a detailed risk assessment with a schedule of interfaces, stating both requirements and deliverables, from / to, others together with a resource loaded program with the interface milestones and activities defined. The schedule of interfaces (including a terminal point list) to be complimented with an Interface Management plan also be included in the Tender returnable.

It is also the full responsibility of the Contractor in meeting the delivery milestones, subject to delay damages, while indemnifying the Employer of Compensation event claims related to the action or inaction of the Contractor in these interfaces.

The Contractor is expected to tie in to live plant at the Nitrogen distribution terminal points, 400V power, small power and lights, potable / demineralised water supply, Earth mat etc. For this reason, the Contractor is expected to train and have personnel competent in the Medupi Power Station Regulation (240-150642762 - GENERATION PLANT SAFETY REGULATIONS_REV4) as Responsible and Accredited personnel. The training and appointment of such personnel is to listed on the Contractors program at tender phase intended to be the first accepted program.

The Contractor shall make an independent assessment of the challenges that may be encountered in providing access to and interfacing with Others. This includes any access difficulties experienced during the construction or commissioning phases.

Where difficulties or unresolved interface or access issues arise, the Contractor shall engage with the relevant parties to identify and implement solutions, ensuring that such issues do not impact the execution of the Works. The Contractor shall not be entitled to any change in Prices, Key Dates, and/or the Completion Date arising from interface obligations or the Contractor's own assessment thereof.

If the Contractor and Others are unable to resolve the matter, they shall jointly meet with the Project Manager to find a solution or resolve the issue. In areas where property or workspaces are shared among different Contractors, all affected Contractors shall cooperate and coordinate their activities to effectively manage shared access and working arrangements.

5.1.8 Publicity and progress photographs

The Contractor is to request a Confidentiality agreement approved by the Medupi Power Station General Manager regarding pictures and videos that are to be used solely for the purposes Contract Progress reports and is strictly confidential.

5.1.9 *Contractor's Equipment*

The *Contractor* is responsible for all equipment brought onto site. Refer to Clause 4.1 in SANS 1200 A

- a) The *Contractor's* Equipment does not impair the operation or access to the plant.
- b) The *Contractor* provides all or any temporary and expendable materials required for the storage of material.
- c) The *Contractor* provides a list of all Equipment on Site whether it is owned or hired, for record purposes.
- d) The *Contractor* ensures that all his equipment on site including scaffolding has unique identification

All material and equipment entering or leaving the Medupi Power Station must comply with Eskom's security procedures.

The *Contractor* shall maintain an Equipment/Tool Movement Register, recording all incoming and outgoing items with serial numbers and quantities, of which Eskom Security will inspect and authorize the *Contractor's* Equipment/Tool Register.

For any Material Delivery to Site, a Delivery Inspection needs to be booked via Inspection and Test Notification (I&TN) for Eskom Quality and Construction to verify and accept material coming to site.

No material or equipment shall be removed from site without a valid Gate Pass approved by Eskom Construction and Security. A Removal Permit must be obtained through Eskom Construction, and the *Contractor* is required to notify Eskom Construction at least 24hours in advance, unless it is an emergency removal.

5.1.10 *Equipment provided by the Employer*

Refer to Technical Scope of Work document for free issue items. The *Employer* does not provide any other equipment to the *Contractor*.

5.1.11 *Site services and facilities*

The *Employer* shall provide power, water, waste disposal, and sewer connection points where applicable. The *Contractor* shall be responsible for all materials and connections from the designated points to their facilities or to the mains. The *Employer* shall fill specified water tanks with water.

For proper coordination and execution of the Works, the *Contractor* is required to establish and maintain an office on site for the duration of the Contract.

A yard within the Medupi Power Station security area shall be made available to the *Contractor*. The proposed yard location will be shown to the *Contractor* during the Site or clarification meeting. The yard is a raw area and shall be used by the *Contractor* for the establishment of offices, workshops, and stores. The *Contractor's* yard is subject to periodic inspection and audit by the Project Manager or a delegated representative.

The *Employer* shall indicate the locations of the nearest sewer manhole, power distribution point, potable water connection, stormwater channel, and road access point. The *Contractor* shall make all necessary connections to the closest point of supply.

Before performing any excavation, the *Contractor* shall conduct underground service surveys in accordance with the *Employer's* SHE Specification and the Occupational Health and Safety Act and Regulations.

All Contractor-provided installations and equipment shall comply with the relevant Eskom Medupi Site Standards.

The Employer reserves the right to inspect and reject any temporary installation found unsafe, non-compliant, or substandard.

5.1.11.1 Supply of Electricity

Electricity shall be made available for construction purposes free of charge from the power points provided. The Contractor shall supply, install, and maintain all temporary reticulation systems from the point of supply to the required locations. Both 220V (AC) and 380V (AC) supplies are available upon request, subject to the Employer's discretion regarding quantity and location.

No guarantees are provided regarding the quality or continuity of supply. Interruptions or planned outages may occur without notice. The Contractor shall, at their own expense, provide any backup or quality improvement measures deemed necessary and shall not be entitled to any claims arising from interruptions or power failures.

No connection shall be made to the permanent electrical installation at Medupi Power Station without the prior written acceptance of the Employer.

The power supply shall be managed in accordance with the latest revision of the Employer's safety regulations, including:

Operating Regulations for High-Voltage Systems

Generation Plant Safety Regulations

The Contractor shall connect to the Employer's DB using certified electrical cabling and switchgear that meets Eskom safety standards.

A valid Certificate of Compliance (CoC) for the site installation shall be required before any power is switched on and must be submitted to the Employer via the Inspection and Test Notification (I&TN). All electrical works must be performed by a Master Installation Electrician (MIE). A copy of the CoC shall be included in the Contractor's data book for review.

At disestablishment, the Contractor shall remove all services and restore the area to its original condition.

5.1.11.2 Lighting

The Contractor shall, at their own cost, provide adequate temporary lighting in all work areas in compliance with the Occupational Health and Safety Act and its amendments.

5.1.11.3 Water

Potable water will be made available on site free of charge from designated points. The Contractor shall supply all necessary fittings, piping, pumps, and plumbing to distribute water from the Employer's points of supply to the points of use. The Contractor shall provide and install their own storage tank for water use, sized adequately for construction demand. Any leaks must be repaired immediately at the Contractor's expense.

The Employer does not guarantee uninterrupted water supply. The Contractor shall make suitable provision for standby or backup supplies as necessary. No claims for additional cost, delay, or extension of time will be entertained due to water supply interruptions.

The Contractor shall maintain this temporary water network and remove it upon completion of the works.

5.1.11.4 Roads

The main access roads are surfaced and may be used by the Contractor with due care. The Employer shall maintain these roads in fair condition. Any damage to underground services or structures caused by the Contractor's use of unauthorized routes shall be repaired at the Contractor's cost.

The Contractor shall construct any temporary access roads or connections from the prescribed routes to their work areas only after obtaining written permission from the Project Manager.

5.1.11.5 Setting-Out Beacons

The Employer shall provide permanent beacons marking the main setting-out grid lines and level benchmarks for the Works. The Contractor shall take all reasonable measures to protect and preserve these beacons and benchmarks. The Employer shall not be held liable for the removal of existing beacons where alternatives remain in place.

5.1.12 Facilities provided by the *Contractor*

The Contractor shall provide all necessary site services such as, office, units, office equipment, lighting, and ventilation for their facilities. The Contractor shall also provide ablution facilities in accordance with occupational health regulations; and welfare facilities, including covered storage, workshop, and eating areas, as required. The Contractor shall also provide accommodation, laboratory facilities, storage, vehicles, and office equipment as necessary for the execution of the Works.

Where no main water or sewer connections exist within the allocated yard, the Contractor shall provide and maintain their own water tanks and septic tanks at their own cost.

The Contractor's establishment rates shall include all costs for:

Preparation and maintenance of yard areas suitable for operation under all weather conditions.

Provision of security fencing, access control, and lighting; and

Routine cleaning, housekeeping, and maintenance of all areas under their control.

If the Contractor fails to maintain the yard to acceptable standards, the Employer may instruct the Contractor to remedy the situation. Such instruction shall not constitute a compensation event.

The Contractor shall construct all drainage necessary to control surface runoff and prevent erosion or contamination. The Contractor's yard layout plan, including provisions for topsoil removal, storage, erosion control, and environmental protection, must be submitted to the Employer for acceptance prior to occupation.

The Contractor shall comply with all Site Environmental and Safety Regulations. Adequate parking and turning areas shall be provided near all facilities. All temporary structures, including foundations and services, shall be dismantled and removed upon Completion, subject to the Employer's acceptance.

The Contractor is responsible for its housekeeping, landscaping, cleaning, and waste removal for their facilities throughout the contract period.

5.1.12.1 Telecommunications

No network or telephone services are available on Site. Should the Contractor require such facilities, they shall make their own arrangements with the relevant authorities.

If the Contractor wishes to use radio communication equipment, they must coordinate with the Head of Security at Medupi Power Station to prevent interference with existing communication channels or equipment.

5.1.12.2 Sanitary Facilities and Refuse

The Contractor shall provide and maintain their own sanitary facilities at their yard, including chemical toilets or ablution structures as required by law.

A refuse and waste management system shall be established by the Contractor. All waste shall be collected, segregated, and disposed of in accordance with the latest revision of the Medupi Power Station Waste Management Policy, which will be made available by the Employer.

5.1.12.3 Equipment and Appliances

All electrical equipment and appliances used by the Contractor shall comply with the Occupational Health and Safety Act (Act 85 of 1993) and related standards. Equipment must be properly maintained and in safe working condition. The Employer reserves the right to prohibit the use of any unsafe or non-compliant equipment. Periodic inspections shall be carried out as required by the OHS Act.

5.1.12.4 Utility Connections and Compliance

The Employer shall provide the Contractor with access to:

A potable water supply connection point; and

A designated electrical distribution board (DB) within the Site boundary.

The Contractor shall:

Provide and install an adequately sized storage tank (e.g., JoJo tank) to meet construction water demand;

Connect to the Employer's DB using certified electrical cabling and switchgear meeting Eskom safety standards.

Obtain and maintain a valid Certificate of Electrical Compliance (CoC) for all temporary installations; and

Submit the CoC to the Supervisor for review and acceptance prior to energisation.

The Contractor shall also provide air-conditioning, lighting, and ventilation for their facilities, as well as temporary ablution facilities and continuous housekeeping throughout the contract period.

All Contractor-provided installations and services shall comply with:

Occupational Health and Safety Act (Act 85 of 1993)

Construction Regulations, 2014

Eskom Medupi Site Standards

The Supervisor reserves the right to inspect and reject any installation found unsafe, non-compliant, or substandard.

At disestablishment, the Contractor shall remove all temporary services and restore the affected areas to their original condition.

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

The Work by the Contractor is in a common footprint with existing Nitrogen free issue equipment and structures and is the Contractors responsibility for providing civil work, utilities and services, for the P20D and P20E Hydrogen Plant Contractors.

As part of the Contractors tender assessment and returnable, the Contractor is required to perform a detailed site assessment and interface assessment in the form of a risk assessment with the others listed below.

There was a previous Contract that was terminated that resulted in some design progress on the Hydrogen and Nitrogen plants and construction progress on the Nitrogen Plant. To complete the Hydrogen and Nitrogen plants, and benefit from work done by the earlier Contract, the Employer strategy is to place 3 contracts as follows:

P20D - Hydrogen Bulk storage tanks- Certify and Supply, preserve and witness Commissioning.

P20E- Hydrogen Generating System and distribution – Design, Construct and commissioning entire Hydrogen generation and distribution System.

P20F - H₂/N₂ - Design, Construction, commission Nitrogen Plant and distribution piping and Civil works and services for Hydrogen Plant.

Consequently, it is the full responsibility of the P20F Contractor to provide design review, fit for purpose assessment, design, Construction, Commissioning and handover, scheduling and Project Management, requests and inputs of the Nitrogen System and Integrated Works, Civil, Services of the Hydrogen System to allow the P20D and P20E Contractors to deliver the Hydrogen Plant.

The P20F Contractor's objective to eliminate integration delays requires the Contractor to proactively review designs and inspect existing works and construction work by others – Specifically P20 D and P20F Contractors to ensure all the interface requirements and deliverables are met.

The Contractor is expected to tie in to live plant at the Nitrogen distribution terminal points, 400V power, small power and lights, potable / demineralised water supply, Earth mat etc. For this reason, the Contractor is expected to train and have personnel competent in the Medupi Power Station Regulation (240-150642762 - GENERATION PLANT SAFETY REGULATIONS_REV4) as Responsible and Accredited personnel. The training and appointment of such personnel is to be listed on the Contractors program at tender phase intended to be the first accepted program.

Where the Contractor requires to work in the same area as Others either at the same time or consequentially or there is interface with Others either at the same time or consequentially ("the Overlap"), the Contractor manages the interface. The Contractor includes the Overlap in his programme and ensures others also include it in their programmes. The Contractor's programme will be rejected in accordance with clause 31.3 of the NEC if he fails to do so.

The Contractor notifies the Employer and Others a minimum of [two] calendar weeks before the Overlap starts. The Contractor inspects the Overlap area on the day he is to start work, liaises with Others and completes a report on the Overlap area and the works in the Overlap area. He submits to the Employer within [48] hours of the date of starting work. The Contractor who requires access is responsible for

compiling the report. His report includes the adequacy of the Overlap area, the works in the Overlap area; damage to the Works, a record of Others working in the Overlap area and any Other constraints in the area. The Others working in the Overlap area also sign the report. The Contractor does the same when he completes the work in the Overlap area. The Contractor caters for the time for this activity in his revised programme for acceptance to ensure that there is no delay on his part.

The Contractor identifies all interfaces with Others in his Contractor's Works Information and as required by paragraph 2.6 of this Works Information and does so for the execution of the Works. The Contractor inspects the works of Others whom he has identified as an interface point and where alignment and compatibility between the Works and Others' works is required. Similarly, the Contractor also allows Others to inspect his works as required by them.

5.1.14 Survey control and setting out of the works

The Employer designates the working area boundary limits and assigns for the Contractor's use access roads, parking areas, storage areas, existing facilities areas and construction areas. The Contractor does not trespass in or on areas not designated for his work.

The Contractor is responsible for keeping Contractor's personnel out of areas not designated for Contractor's use, except, in the case of isolated work located within such areas for which the Contractor is authorised to do so.

5.1.15 Excavations and associated water control

Any excavation on Site shall be performed only under an approved Excavation Permit.

Before commencing any excavation or trenching, the Contractor must:

- Conduct a ground scanning and service-location survey to identify buried utilities or structures.
- Notify the Employer's Construction Representatives at least 24 hours in advance of any scanning or excavation; and
- Ensure the Employer's Construction Representatives is physically present during scanning and the initial excavation works.

The Excavation Permit must be:

- Applied for and approved by the Employer prior to any excavation.
- Reviewed, signed, and dated by the Employer Construction Representative confirming that all safety and service-location requirements are met.
- Valid for seven (7) days only and renewed if work extends beyond that period; and
- Filed as part of the Construction Record File.

5.1.16 Underground services, other existing services, cable and pipe trenches and covers

The Contractor's method statement must include how he will deal with known services and any unknown services which become known to the Contractor during the execution of the Works. The Contractor accepts responsibility for the protection of all pipes, gauges and the plant area.

The Contractor remedies any damage caused or procures the services of a third party to remedy such damage. The Contractor is liable for all damages, including damages suffered by Others and third parties, arising from or in connection with all services including the protection of all pipes, gauges and the plant area.

The Contractor shall take all necessary steps to identify, protect, and record all underground and existing services before carrying out any excavation, drilling, or construction work.

Scanning and Service Location

Before commencing any excavation or ground penetration, the Contractor must:

- Conduct a scanning survey using approved detection equipment to confirm the location of all underground services (e.g. electrical cables, water pipelines, gas lines, etc.)
- Prepare and submit a Scanning Report showing the surveyed area, results, and identified service routes; and
- Ensure that the Employer Supervisor is notified of the scanning activity or present during the scanning activity and reviews the report prior to issuing the excavation permit.

5.1.17 Control of noise, dust, water and waste

The Contractor keeps the Working Areas clean and free from accumulation of waste materials and refuses regardless of the source.

The Contractor ensures that during sweeping and dusting, a minimum amount of dust is liberated into the atmosphere. Cleaning by vacuum cleaners is preferred and the use of compressed air for cleaning is prohibited.

The Contractor is responsible for the prompt removal of all waste to a designated disposal area. The designated disposal area will be on or in the vicinity of the Medupi Power Station and be indicated by the Employer.

“Waste” means 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 promptly and, in any event, no later than three calendar days after production, in the carrying out the Works.

The Contractor provides a sufficient number of marked bins and/or containers as and where required for the temporary storage of waste. The types of bins and/or containers comply with the latest revision of the procedure Management of Waste at Medupi. The Contractor segregates waste in accordance with the Medupi Power Station requirements.

Bins and containers are emptied and waste removed to the designated area at least once a week. The temporary storage areas for bins and containers are maintained and not constitute a nuisance to others. The Contractor ensures there is no spillage of waste alongside the bins and containers at any time

All waste that cannot be contained in either a bin or container is placed on a temporary waste site which the Employer identifies. The waste is removed as soon as possible but, in any event, at least once a week. No burning of waste is allowed at the Medupi Power Station.

Hazardous waste is dealt with in accordance with the Laws, Employer standards, Medupi Power Station requirements and the Contract. The Contractor is solely responsible for the proper disposal of hazardous waste.

5.1.18 Sequences of construction or installation

The Contractor is responsible for constructing and installing the Plant and Materials in accordance with the approved Method Statements. Method statements must be prepared for new or changed tasks, introduction of new equipment or substances, problem reviews following incidents, and simultaneous task execution.

Each method statement and safe work procedure must specify:

- Required supervision, worker training, and qualifications and assigned personnel.
- Risk register and mitigation measures and related equipment, tools and material.
- Built-in control measures and required PPE.

All method statements must be submitted to the Employer for review and acceptance before work begins generally one month before commencement, or at least three days prior to new activities during construction. Each submission must include a relevant risk assessment.

The Contractor must also coordinate and ensure compatibility between their work sequence and that of Others, allowing proper access, interface, and alignment of construction or installation activities.

In addition to the requirements of paragraph 2.6 of this Works Information, the Contractor provides for access to Others and allows for interface, alignment and compatibility between his sequence of construction or installation activities and Others' sequence of construction or installation activities. Similarly, the Contractor accommodates Other's requirements in relation to interface, alignment and compatibility of their sequence of construction or installation activities.

5.1.19 Giving notice of work to be covered up

The Contractor shall notify the Employer in writing of all planned activities for the week. A 2 week look ahead schedule is required for all planned works. The Contractor must give the Employer Supervisor at least 48 hours' notice before covering up any work that requires inspection or witnessing by Eskom. If the Supervisor has not witnessed the work, the Contractor may be instructed to uncover it at their own cost. Pre-inspection between the Employer Supervisor and the Contractor is required before formally booking on the I&TN.

5.1.19.1 Daily Diaries and Construction Records

The Contractor shall keep a Daily Site Diary capturing all construction activities.

Entries shall include date, weather, and hours worked; number of personnel and special plant on site; work activities undertaken; site instructions and inspections; photographic records and any delays or incidents affecting progress.

The Daily Diary must be signed by the Contractor's Site Manager and submitted daily to the Employer's Supervisor for review and acceptance.

The Contractor shall maintain the file and be made available on request of all historic Daily Diary Records.

5.1.20 Hook ups to existing works

Existing Plant and Materials may not be modified without express written permission from the Project Manager and compliance to the Medupi quality management procedures.

The Contractors may not hook up for lifting, supporting or for any other reason to any position or exiting works in the plant without a written position of the Employer. If the Contractor requires the use of existing infrastructure, it needs to be authorized by the Employer.

5.1.20.1 Plant Safety Regulations and Permit to Work System

All site work must comply with Eskom's Permit to Work (PTW) system 240-150642762. Where applicable, no activity shall begin without a valid permit authorized by the Responsible Person (RP)

The Contractor shall apply for PSR Training provided by the Employer for individuals. An Application Form is available on request through the Employer's Supervisor.

The Contractor shall ensure all workers are trained in the PTW process and PSR compliance and display valid PTW where applicable.

The Contractor shall maintain a PSR Training Matrix, ensure that only authorized and trained personnel operate or access live plant systems, and include PSR refresher training in the mobilization plan.

No person may carry out electrical or mechanical work on live plant without PSR certification.
The Employer has the authority to stop any work without a valid permit.

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.

The Contractor must prepare a Commissioning Readiness Checklist (CRC) for acceptance by the Employer before any commissioning.

At this stage as a minimum the following must have been achieved:

- a) Installation and pre-commissioning completed.
- b) Testing report and the associated certificates received.
- c) Signed erection and safety clearance certificates.
- d) Final Draft of the Technical, Operating, Maintenance manuals delivered
- e) All Quality Control Plan (QCP) documentation received.
- f) Commissioning and performance tests complete
- g) Commissioning and performance test reports issued
- h) Training of Engineering, Maintenance and Operational personnel
- i) Cataloguing, Plant codification and signage
- j) All Data Books submitted and accepted by the Employer

Sectional completion of the work will be when the entire system/ equipment is commissioned.

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.

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 the constructed Works | Within 14 days after Construction |
| | Performance testing of the <i>works</i> in use as specified in the Works Information. | See performance testing requirements. |
| | All Works to be inspected and a detailed Commissioning report submitted to the Employer for acceptance. | As per the Accepted Programme |

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

Clause 35.2 in ECC3 provides that the *Employer* may use any part of the *works* before Completion has been certified but if he does so he takes over the part of the *works* except if the use is for a reason stated in the Works Information. State the reason here if this applies.

As per clause 35.2 of the Contract, the Employer uses the works, without taking over the works, before Completion for reasons relating to the operation of the Medupi Power Station, commissioning, and/or capability testing of the works and associated plant area.

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.

Refer core clause 40.2. The Employer does not provide any Materials, facilities and/or samples for tests and inspections. The Contractor provides all Materials, facilities and/or samples required for tests and inspections.

The Contractor provides a schedule of all the required tests and connections as well as areas where these will be performed to the Employer for acceptance.

- a) Testing for all the electrical work
- b) Equipment to use for doing the testing may need to be inspected.
- c) Providing facility for testing to assure Employer of the quality of the works.
- d) Earthing test equipment etc.

5.2.4 Commissioning

Required mainly for contracts including mechanical and electrical work. Would typically refer to detailed commissioning procedure attached as an Annexure. Confirm whether commissioning is to be done before or after Completion. If after Completion, include this item of work in the list in sub-paragraph 5.2.1 above.

The Contractor shall be responsible for witnessing of the Commissioning and development, submission and acceptance of the commissioning procedures of the Hydrogen bulk Storage Tanks (including flushing and pressure testing), acceptance testing and compilation of the following documentation as per Commissioning and Completion of Medupi Power Station Procedure 348-860840:

- Commissioning plan
- Commissioning procedure
- Acceptance testing procedure
- Commissioning data book

These requirements and procedures shall be developed to demonstrate that the works meet the Works Information. As a minimum, Pressure Equipment regulations as well as 240-56356376 – Site commissioning for low pressure services must be adhered to.

Operating (Physically on the plant and from the Operating desk) of plant will be carried out by Generation Operating personnel under supervision and instruction of the Contractor Commissioning representatives.

The Contractor shall ensure that the Contractor commissioning personnel are authorised in terms of the Generation Plant Safety Regulations (240-150642762) as an Authorised Supervisor, Appointed and or Responsible Person. This is to ensure that the Contractor can do work on the plant that has been safety cleared.

Safety Clearance of systems whether temporary or permanent prior to testing / commissioning.

The Contractor shall perform Safety clearance and commissioning of the works the tanks as per Employer Commissioning procedure, 348-860840

Commissioning will not start until the following documents that are required for the commissioning of the plant is accepted by the Employer:

- a) All relevant drawings (as built)
- b) All type and routine test certificates

The Contractor provides the Employer with the following documents minimum of [four] calendar weeks before the date of commissioning:

- a) erection completion certificate handed to the Employer,
- b) the dates of the tests listed in paragraph a-k below:

The Employer elects as his sole discretion to attend the tests listed in paragraphs a-k below. The Contractor conducts, amongst others, the following tests and checks in order for the Employer to allow commissioning to occur:

- a) Adjustment setting, operational checking and electrical injection testing of each relay, functional unit, circuit and accessory prior to installation of cables.
- b) Check for any visual damage to the circuit breakers, current transformers, bushings/insulators, instruments, switches, auxiliary relays, and all other equipment.
- c) Check tightness (torque where applicable) on all connections.
- d) Power frequency voltage test where applicable.
- e) Check the continuity of all current transformer and voltage transformer loops where applicable.
- f) Check the fixing and locking devices on doors and covers.
- g) Repetition of all functional tests (i.e. mechanical, electrical and automation functions) on some parts of the plant.
- h) Check the operation of all mechanical/manual devices for racking, earthing and spring rewind.
- i) Verify the operation of the interlocking system'
- j) Any other tests and checks required in terms of the Contractor's interface, alignment and compatibility obligations and requirements;
- k) Any other tests and checks specified in the Contractor's Works Information;

The Employer conducts his own erection and commissioning checks to ensure conformance with the Contract. These checks do not release the Contractor of his obligation to ensure compliance with the Contract.

The Contractor shall include the following tests and checks in order for the Employer to certify SAT once the erection of the Plant has been completed:

- Any tests required in terms of the Contractor's interface, alignment and compatibility obligations and requirements;
- Any tests specified in the Contractor's Works Information;
- Any tests and required by Best Industry Practice

Once the Contractor has satisfactorily completed all his tests at completion of commissioning, the Contractor provides drawings incorporating the changes arising from or in relation to commissioning within 14 calendar days.

The Contractor provides all necessary resources during the erection, installation, testing and commissioning of the Works.

Records are to be kept of each SAT in a log book defining the tests to be undertaken, time and date of the commencement of the test, duration of the test, criteria that need to be met and results entered of the tests. These records are submitted to the Employer.

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

In order to put the *works* into operation the *Employer* may require the *Contractor* to either do this for him or be in attendance whilst he does it, depending on who is the responsible person. State requirements of the *Contractor* here together with any special arrangements associated with operating plant and machinery.

The Contractor gives the Project Manager written notice that the Works are ready for energization. The Contractor commences with energisation no more than 48 hours after the planned energisation date. The Contractor provides the Employer with no less than 5 working days' of the date on which energisation occurs.

No alterations or adjustments will be made to the Works after final checks are done without the Project Manager's written permission.

At this stage the following must have been achieved:

- a) Installation and pre-commissioning completed.
- b) Testing report and the associated certificates received.
- c) Signed erection and safety clearance certificates.
- d) Final Draft of the Technical, Operating, Maintenance manuals delivered.
- e) All Quality Control Plan (QCP) documentation received.

5.2.6 Take over procedures

Take over is after or at the same time as Completion. The *Employer* may require the *Contractor* to provide assistance, security personnel on a temporary basis etc.

The Employer takes over the Works when the Contractor has prepared all the necessary Handover documentation and scheduled a handover walkdown via the I&TN.

5.2.6.1 Pre-Takeover Requirements

Before Takeover, the Contractor shall:

- Complete all commissioning activities as per the accepted programme.
- Submit all relevant documentation including as-built drawings, inspection and test records, and the handover dossier including defect punchlist signed by the Supervisor.
- 100% Data Book acceptance and archiving at Medupi Document Management
- Clear the Site of surplus materials, temporary works, and debris.

A Joint Takeover Inspection shall be conducted by the Contractor and Employer's Representatives to confirm readiness for Takeover. The Employer will issue a Takeover Certificate once all conditions have been satisfied.

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

Clause 43.4 requires that the *Project Manager* arranges for the *Employer* to allow the *Contractor* access to and use of a part of the *works* which has been taken over if needed to correct a Defect. After the *works* have been put into operation, the *Employer* may require the *Contractor* to undertake certain procedures before such access can be granted (for example barricading a motorway or in a nuclear power station). Include these here.

Clause 43.4 requires that the Project Manager arranges for the Employer to allow the Contractor access to and use of a part of the works which has been taken over if needed to correct a Defect. After the works have been put into operation, the Employer may require the Contractor to undertake certain procedures before such access can be granted.

The Contractor to issue to the Employer for acceptance a Defect Correction Procedure and Schedule, together with a Risk assessment for work on the plant that has been taken over.

5.2.8 Performance tests after Completion

Many design and build or turnkey projects require the *Contractor* to demonstrate that the *works* can operate as guaranteed by the *Contractor* (in *Contractor's* Works Information) or specified by the *Employer* either here or elsewhere in this Works Information. State here the procedures for carrying out such proving tests. These details should link up with any performance levels stated in Contract Data if secondary Option X17 in ECC3 applies.

Testing as stipulated by Eskom Engineering - Refer to Technical Specification Scope document : 348-9975758 TES Medupi N2 Generating Plant Integration of N2H2 Rev 01

Tests to be conducted as required by the Employer.

5.2.9 Training and technology transfer

Include if the *Employer* requires the *Contractor* to provide training in the use and maintenance of the *works* or any associated transfer of technology from him to the *Employer*.

Refer to Technical Specification Scope document : 348-9975758 TES Medupi N2 Generating Plant Integration of N2H2 Rev 01

The Contractor provides training as detailed in document Technical Scope of work document, for each unit on the equipment and systems included as part of the works to the various categories of the Employer's technical staff (operators, maintenance and engineering personnel) for the duration of the works. Training will comprise both theoretical and practical training.

Training provided by the Contractor is directly applicable to the actual equipment supplied for the works. Generalised training based on similar equipment is not acceptable.

The number of personnel to be trained to be determined and agreed with the Employer.

The Contractor submits to the Project Manager for approval a detailed training programme as well as a prospectus for each course. The Contractor provides electronic and hard copies of the training material to the attendees and the Employer.

The training schedule is incorporated in the Accepted Programme. The training schedule is separate.

The Employer to inform the Contractor where it is required.

Practical hands-on training for each individual employee forms an integral part of each of the following courses:

There are no restrictions on the Employer copying, developing and using the training material provided by the Contractor.

5.2.9.1 Training of Maintenance Personnel

Maintenance personnel will be trained in all components and functions of the Nitrogen and Hydrogen systems i.e. Method of maintenance, fault finding, correction, routine maintenance. Training will include familiarisation with documentation (maintenance plan, procedures etc.), hardware familiarisation, and hardware maintenance, control and instrumentation.

5.2.9.2 Training of Maintainers and Operators

Maintainers and Operators will be trained on the systems and declared competent in accordance with the manufacturer's requirements on the new systems prior to the respective unit and commissioning. This will include familiarisation with documentation including drawing configuration logic, as well as operator interface familiarisation e.g. operational functions, alarms etc. The Contractor makes provision for training of all operators across every shift.

5.2.9.3 Engineering Training

Theoretical and practical engineering training will be provided on the proposed design, capabilities and procedures.

Training will be held throughout the design process as stated in Annexure [referred to in paragraph 5.2.8 above].

The design and control/interface functions will be covered by this training. The engineering team should be trained sufficiently to enable them to work as part of the implementation team on and off site. Engineering training includes training on all protection offered for installed Systems.

5.2.9.4 Trainee Participant

The number of participants to be trained will be agreed upon and as per Employer requirement before Contract Date.

The attendees will be certified and declared competent by the Contractor on the new systems after completion of the training where necessary.

5.2.9.5 Training Documentation

The Contractor provides all course material including manuals. The course material is in English and includes all third-party documentation.

A copy of the training documentation is supplied for each attendee with an additional 3 master sets to the Employer.

The training dates are included and shown in the Accepted Programme. The supply of drafts, pre-print proofs and printed copies of training documentation is planned by the Contractor in such a way that the required training is complete before the end of commissioning.

The Contractor ensures that all changes and corrections are incorporated in the training manuals. The Contractor promptly updates the training manuals and issues the updated training manuals in the manner and number stipulated above with an electronic copy to the Employer.

5.2.9.6 Training, Maintenance and Operating (TMO) Manual

Instruction manuals comply with the requirements laid down in Employer standard OPS 0002. The Contractor provides electronic and hard copies of the manuals prior to commissioning.

The Contractor to price for the maximum number of people it requires per trainer. The pricing must be shown in such a way that the Employer is able to determine the cost of increasing the number of attendees and/or the number of training sessions.

5.2.10 Operational maintenance after Completion

The *Employer* may require the *Contractor* before the *defects date* to perform certain duties after Completion and take over which relate to maintenance of the *works*. (Not to be confused with Defect correction) For example oil and filter changes

Maintenance of the plant equipment shall be performed by the Contractor until Employer takes over the works. There is no operational maintenance after completion by the Contractor. The defects period is the period stipulated on the Data by Employer.

6 Plant and Materials standards and workmanship

This section of the Works Information contains all the specifications for the work which is left behind; the permanent works. It is likely to be the largest section by far and may even be compiled in volumes, e. g. Section 6 Volume 1: Civil Engineering Works. In design and construct contracts, it may be compiled in accordance with systems within the *works*; e. g. Section 6 Volume 4: Crushers.

Because practice varies widely between employers it is not practical in a general template such as this to deal with all arrangements. Only the discipline based section subheadings are provided below in the order the *works* are likely to be constructed together with some notes of a general nature.

6.1 Investigation, survey and Site clearance

Some contracts may require the *Contractor* to carry out further investigation of existing facilities or of the Site before commencing final design. There could be constraints on Site clearance especially in pipeline or transmission grid servitudes.

6.2 Building works

Reference could be made to the latest Model Trade Preambles published by the Association of South African Quantity Surveyors. However these have been developed for use with the JBCC series of contracts and an approach where description of the work is made part of the bill of quantities, which is not the case in other forms of contract. Only parts of the Model Trade Preambles could be referenced by an ECC contract, with a covering note dealing with the changes in terminology. Further changes are required depending on which parts are to be selected.

This subsection would typically comprise

- a) Particular specifications provided by the *Employer*
- b) List of standardised specifications applicable to the *works* and
- c) Variations to the standardised specifications

6.3 Civil engineering and structural works

Reference could be made to the SANS1200 series of specifications developed and published by South African National Standards. However these are now very out of date and originally developed for use with SAICE general conditions of contract for works of civil engineering which have themselves been superseded twice.

All SANS 1200 specifications are in the process of being updated to make them more compatible with a wider range of contracts, including NEC, and users should check availability of the new SANS 2000 series of specifications.

Sections 3, 4 and 5 of SANS1200A are probably already covered in section 5 of this Works Information.

This subsection would typically comprise

- a) Particular specifications provided by the *Employer*
- b) List of standardised specifications applicable to the *works* and
- c) Variations to the standardised specifications

If use is made of the 1200 series, users should include a covering note dealing with the changes in terminology, such as the one provided below. Further changes are required depending on which specifications in the 1200 series are selected.

6.4 Electrical & mechanical engineering works

These specifications are usually project specific and developed by the *Employer* to suit his operations. Either include these specifications here, or refer to them in attached Annexure.

Check the specifications for inconsistencies in terminology and that they do not contain any provisions already dealt with in the chosen NEC *conditions of contract* or clash with them in any way.

6.5 Process control and IT works

These specifications are usually project specific and developed by the *Employer* to suit his operations. Either include these specifications here, or refer to them in attached Annexure.

Check the specifications for inconsistencies in terminology and that they do not contain any provisions already dealt with in the chosen NEC *conditions of contract* or clash with them in any way.

6.6 Other

6.6.1 Employers SDL&I Penalty

- The suppliers shall on a quarterly basis submit a report to Eskom in accordance with Data Collection Template on their compliance with the SDL&I obligations described above.
- Eskom shall review the SDL&I reports submitted by the suppliers within 30 (sixty) days of receipt of the reports and notify the suppliers in writing if their SDL&I obligations have not been met.

SDL&I or the Eskom Representative will monitor the meeting of the SDL&I targets in the contract. SDL&I collates SDL&I commitments by contractors and suppliers as stated in their contracts with Eskom. A minimum of 1.5% penalty shall be invoked should a contractor/supplier fail to meet its contractual obligations in terms of the SDL&I targets.

| Eskom's Skills Development Target | | | |
|-----------------------------------|--------|----------------------------|-------------|
| Category | Number | Entry Level | Output |
| Project Managers (Civil) | 2 | NDiploma/BTech/Degree | SACPCMP |
| Safety Officers | 2 | Safety Officer Certificate | SACPCMP |
| Quality Auditors | 2 | Relevant Degree/Diploma | IRCA/SAATCA |

7 List of drawings

7.1 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 |
|----------------|----------|-------|
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C3.2 *CONTRACTOR'S* WORKS INFORMATION

This section of the Works Information will always be contract specific depending on the nature of the *works*. It is most likely to be required for design and construct contracts where the tendering contractor will have proposed specifications and schedules for items of Plant and Materials and workmanship, which once accepted by the *Employer* prior to award of contract now become obligations of the *Contractor* per core clause 20.1.

Typical sub headings could be

- a) *Contractor's* design
- b) Plant and Materials specifications and schedules
- c) Other

This section could also be compiled as a separate file.
