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C3.1: EMPLOYER'S WORKS INFORMATION

Contents

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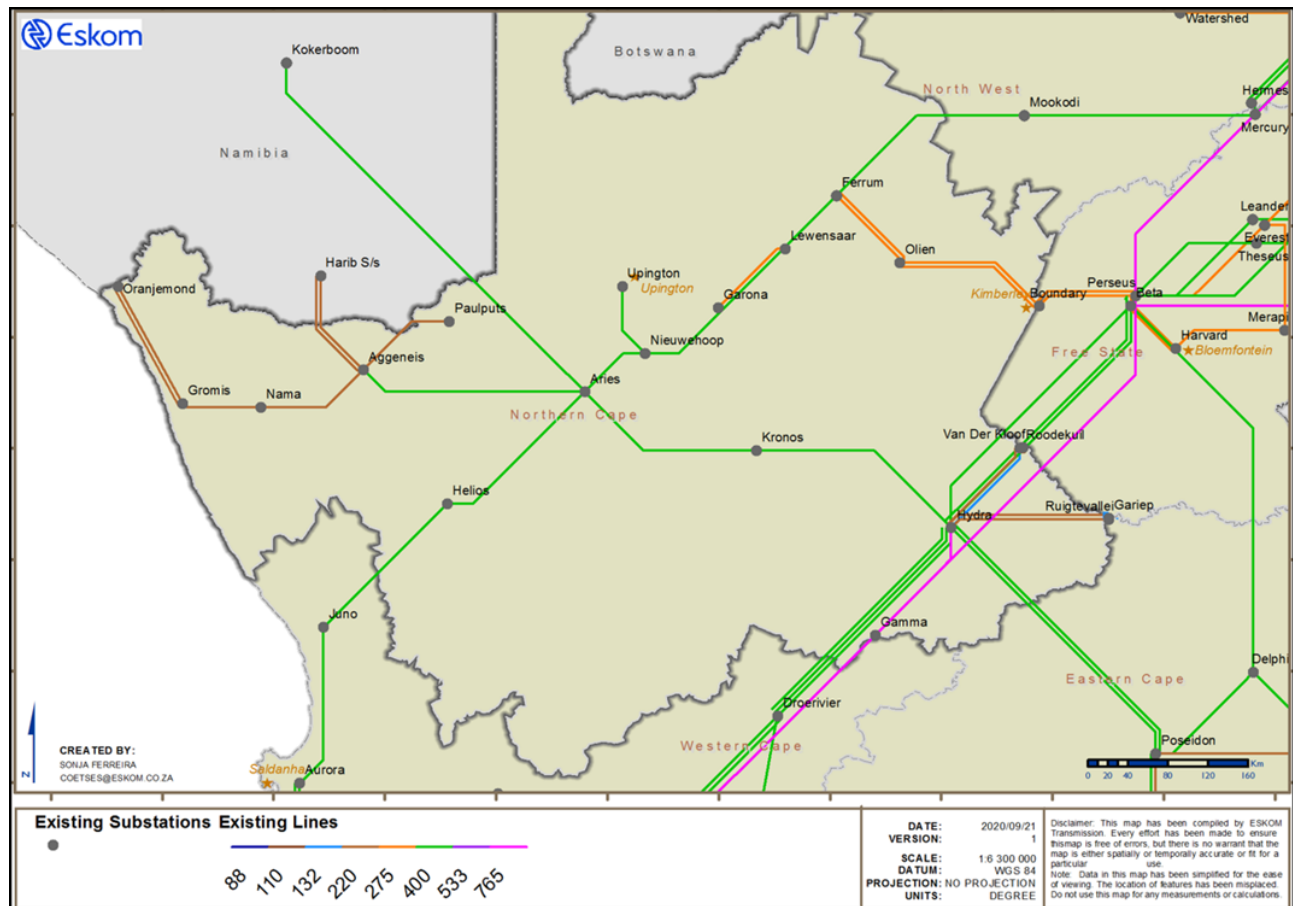
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1 Description of the works

1.1 Executive overview

The works are the construction of 93km from Aggeneis Substation near Aggeneys town to Paulputs substation near Pofadder town in the Northern Cape province.



1.2 Employer's objectives and purpose of the works

Successfully Construction of the 93km's 400kv Transmission Power line, forms part of the Paulputs 400Kv Strengthening Phase 1 Scheme, within specified cost, time and quality.

The construction will be done in accordance to Eskom's design and specifications.

The works extend from Aggeneys Substation near Aggeneys and Paulputs Substation near Poffadder.

The proposed construction included the following:

- Where no access is available, create new access roads for construction purposes, installation of gates and rehabilitation of such roads in completion where required.
- All roads that will be utilised(Regional, municipal and new) to be maintained throughout the construction period and rehabilitated to original condition once construction has been completed.
- Repairing existing access roads, installation of gates, creating and maintaining access roads for construction purposes and rehabilitation of such roads on completion where required to do so. Note; no Construction will happen without installation of gates where needed to access the servitude and the gates must be closed and locked at all times.
- Bush clearing for road access, line servitude and tower positions for construction 8 purposes.

- Survey and pegging of towers.
- Design and installation of concrete tower foundations in various soil/rock conditions/type
- The Contractor should make provision for excavation or casting of appropriate foundations on rocky areas.
- Installation and testing of tower earthing.
- Supply, assemble and erection of galvanised steel type 529A, 515B, C, D, E & H and 518C, D, H & E tower series lattice transmission masts complete with anti-climbing devices.
- Stringing and regulating of ungreased Tripple Tern (IEC315 315-A1/S1A-45/2.99-7/1.99) phase conductor and the jumpers at appropriate towers.
- Stringing and regulating of ungreased Horse ACSR (73.36-A1/S1A-12/7/2.79) Ground wire conductor.
- Stringing and regulating of ungreased 1 x 12 kA 0.399 Ω /km OPGW 48 Core Ground wire conductor.
- The Contractor should be aware that there are railway, river, Telkom, National and Provincial Roads, Transmission and Distribution crossings. Contractor shall ensure that the railway crossings are done during this period.
- Supply and installation of rugby poles where necessary, for example LV, MV and HV line crossings, road crossing, railway crossings, etc.
- Supply and Installation of line labels, bird-guards, bird diverters and aircraft warning devices, animal guards and stay wire markings as per EMP.
- Rehabilitation of groundwork damage and implementation of environmental requirements as per EMP and ROD/EA
- The Contractor shall ensure the use of Fall Protection System and associated materials for galvanised steel type 529A, 515B, C, D, E & H and 518C, D, H & E series lattice transmission line towers and masts for working at heights and the removal thereof after use.

OPGW SCOPE

NB The installation of the OPGW must be carried out by a prequalified/Certified Contractor. A letter indicating that the Contractor is prequalified/Certified by the Supplier must be issued to Eskom prior installing any OPGW.

The Contractor installing OPGW shall be responsible for end-to-end testing from Aggeneys Substation Gantry to Paulputs Substation gantry, and from Patch Panel to Patch Panel of the two substations- subject to confirmation. The section will require the following:

- Access roads and infrastructure.
- Bush Clearing.
- Tower foundations and stay wire foundations.
- Fabrication and erection of structural steel transmission towers.
- Installation of hardware, conductor, and insulators.
- Tower assembly, stringing and labelling.
- Transmission line regulating.
- OPGW cable and matched hardware.
- A fall arrest system.

For installation instruction please refer to the detailed specification attached. All work to be carried out in accordance with the specifications as listed in Section 2.2 (Document Control "of this works information.

1.3 Interpretation and terminology

Not applicable

The following abbreviations are used in this Works Information:

Abbreviation	Meaning given to the abbreviation
AFC	Approved for construction

OBL	Outside battery limits
OPGW	OPGW Optical fibre ground wire
E/W	E/W Earth wire
SHERQ	SHERQ Safety, Health, Environmental, Risk and Quality
AFC	AFC Approved for construction
B-BBEE	B-BBEE Broad Based Black Economic Empowerment
DCP	DCP Dynamic Cone Penetrometer
DOL	Department of Labour
EMP	Environmental Management Plan
HV	High Voltage
NCR	Non-Conformance Report
OBL	Outside battery limits
ROD	Record of Decision
SD&L	Skills Development & Localisation
SHE	Safety Health and Environment
SHEQ	Safety, Health, Environmental & Quality
TMH	Technical Methods for Highways
TOC	Top of Concrete
ARC	Auto re-closing (i.e., and O-CO operation under command of a relay)
BZ	Bus Zone
CB	Circuit breaker
CT	Current transformer
GIS	Gas Insulated Switchgear
I	Amps
KIPTS	Natural ageing and pollution performance test procedure for outdoor insulator products
EMC	Electro Magnetic Compatibility
M	Metering
MCB	Miniature circuit breaker
MR	Multi ratio
MVA	Mega Volt Amps
N/C	Normally Closed
N/O	Normally open
OEM	Original Equipment Manufacturer
OHS Act	OHS Act Occupational Health and Safety (OHS) Act No 85 Of 1993, as amended, of the

	Republic of South Africa
P	Protection
FMECA	Failure Modes, Effects and Criticality Analysis
SF6	Sulphur Hexafluoride
T	Turns
TRFR	Transformer
V	Volts

2 Management and start up.

2.1 Management meetings

General.

Formal routine meetings shall be held twice a month throughout the duration of the Contract. Should a requirement arise for any other additional meetings such will be scheduled accordingly. These meetings provide a forum for review of the Contractor's operations, assessment of progress and schedule, discussion and resolution of problems faced by the Contractor and /or the Project Manager, and coordination of the activities of all parties concerned.

All safety meetings shall be held as per the SHE Specification.

Pre-Construction Kick-Off Meeting

The pre-construction kick-off meeting will take place prior to the Contractor mobilising to site between the Employer and the Contractor. The meeting will be held at a location to be determined by the Employer.

The Minutes of the Meeting will contain all significant aspects of the meeting recorded together with any actions placed on the agenda, and will be presented to the Contractor for acceptance and signature within 14 working days after the actual meeting date. The Contractor is required to sign off the minutes and confirm acceptance within 3 working days.

After the Contractor has signed the minutes of the meeting, the minutes becomes official.

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 Reduction	As per NEC 3 procedure.	Site or wherever as instructed by the Project Manager.	Employer: Project Manager (Supervisor & SHE officer) optional Contractor: Project Director, Site Manager, Contract Manager, Site Supervisor/s, Scheduler and SHE Manager.

Progress meetings	Monthly or as instructed. by the Project Manager.	Site or as instructed. by the Project Manager	Employer: Project Manager (Supervisor & SHE officer) optional Contractor: Project Director, Site Manager, Contract Manager, Site Supervisor/s, Scheduler and SHE Manager.
Integration Meeting	Monthly or as instructed by the Project Manager.	Site or as instructed. by the Project Manager.	Employer: Project Manager Supervisor SHE officer Contractor: Project Director, Site Manager, Contract Manager, Site Supervisor/s, Scheduler and SHE Manager
Health, Safety and Environmental meetings	As stipulated in Form 74 (SHE specification)	Site or as instructed. by the Project Manager.	As stipulated in Form 74 (SHE specification)

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.

The Project Manager prepares minutes of meetings for all meetings held between Employer and Contractor. The minutes of a meeting contain all significant aspects of the meeting recorded together with any actions placed and is presented to the Contractor for signature at the next project meeting. After the Contractor has signed the minutes of meeting, the minutes are to be officially published.

The Contractor shall attend regular site meetings with the Project Manager and Supervisor where the progress of construction will be reviewed. Such meetings shall be held monthly and may be attended by representatives of the Employer.

The Contractor shall also attend weekly meetings with the Supervisor and provide, prior to each meeting as required by the Project Manager, detailed programmes showing separately the various activities of the Contractor anticipated over the forthcoming two-week period as well as the progress achieved over the preceding week relative to the programme applicable to that period.

As a result of travel restrictions and other measures to curb the COVID 19 pandemic some meetings will be convened via MS Teams.

2.2 Documentation control

The Contractor shall submit all required documents to the *Project Manager*. All relevant documentation and drawings, including revisions required by the Contractor will be issued, but control, maintenance and handling of these documents will be the Contractor's sole responsibility and at the Contractor's expense.

2.2.1) Contractual correspondence.

- Properly compiled letters on official Company letter head or forms attached to an e-mail and not as a message in an e-mail itself.
- Alpha numeric identification – Reference: Date / Aggeneys-Paulputs 400kV Line Communication number e.g., 20240615/AgPpLine/01.
- All correspondence to be addressed to the Project Manager.

Contractual forms to be used.

ECC – instructions by the SS (Supervisor)
ECC _ Instruction by the PM (Project Manager)
ECC _ Notification of Defects
ECC _ Risk Register
ECC _ Early warning by PM
ECC _ Early warning by Contractor
ECC _ Notification of CE (Compensation Event) by the Contractor
ECC _ Submission by Contractor for acceptance by the PM
ECC _ Completion Certificate
ECC _ Quotation for the proposed instruction of changed decisions.

2.2.2) Site communication.

Site instructions issued by the Supervisor.
Site Memorandums addressed to the Supervisor.
Contractor Daily Site Diary (Minimum Employer requirements on Contractor Daily Site Diary are);
Contract No.
Date
Work Hours – Start, Finish and Overtime
Rainfall (mm)
Temperature
Visitors to site
Contractor employees on site and description (Site Agent, Foreman, Skilled, etc.)
List of Plant and Equipment
Brief description of the day's activities
Toolbox talk topic
Diary signed daily by Employer Site Manager/Supervisor and Contractor Contract Manager/Site Agent
Daily Contractor attendance register to be attached to the Daily Site Diary.

Summary of the documentation required from the Contractor before and during construction includes the following:

DOCUMENT Before During	DOCUMENT Before During	DOCUMENT Before During
Programme	X	X
Resource Schedule	X	X
Health and Safety Plan	X	
Quality Assurance Plan	X	
Method Statements	X	
Materials Inventory		X
Drawing Register		X
Progress Schedule		X
Application for Payment		X

Geotechnical and Foundation design reports	X	
Soil Test Results	X	
Concrete Batching note		X
Cube Test Reports		X
Weather Data		X
Monthly Safety Report		X
Inventory list of all materials		X
Foundation photographs		X

Communication

- All correspondence from the Contractor is signed by the Contractor's authorised representative.
- Correspondence from the Project Manager is issued and signed in the name of the Project Manager or his authorised representative.
- All formal correspondence from the Contractor is addressed to the Project Manager or his authorised representative and delivered to the Project Manager or his authorised representative.
- Emails and other forms of electronic communication (collectively referred to herein as emails) between the Contractor and the Project Manager are for the expedient transfer of preliminary technical data and non-contractual information only.
- The Contractor provides all contractually required submittals, notifications, and the like by means of official correspondence or formal document transmittal.
- Emails or documentation included therein, sent from the Project Manager to the Contractor do not, in themselves, constitute either acceptance of a proposal from the Contractor or an instruction under the terms of the contract either of which may be or may result in a compensation event to the contract.
- The Contractor does not act on any email that the Contractor believes results in a compensation event to the contract whether the email by the Project Manager stated that it constituted a compensation event. The Contractor requests formal written confirmation of any instruction that may be or may result in a compensation event and receives this confirmation through formal correspondence, document transmittal, and Project Manager's instruction or compensation event, before acting on such an instruction.
- Signature authorities
- The Contractor provides, a "Signature Authorization Form", the names and specimen signatures of those individuals within the Contractor's organization authorized to sign documents on behalf of the Contractor. The Contractor also specifies the financial or other limits of authority for everyone.
- The Contractor delegate's authority within its organization to home office and field office personnel as required for effective performance of the work.
- The Contractor's Contract Signatory signs the "Signature Authorization Form".

Drawings and Document Transmittals Documentation Requirements

The Contractor submits all documentation conforming to the requirements of the Employer and / or the Project Manager applicable standards and specifications with the following specific requirements:

- When required, the Contractor transmits to the Employer / Project Manager, technical submissions, sketches or drawings, calculations and other pertinent data, in sufficient detail to enable the Employer / Project Manager to review the information and determine that the Contractor clearly understands the requirements of the contract.
- Documents and data provided by the Contractor under the contract are subject to the Employer / Project Manager review and accept prior to Contractor's start of procurement.
- Review and acceptance of drawings, documents and / or data, etc. by the Employer / Project Manager, does not absolve the Contractor from any responsibilities under this contract.
- The review by the Employer / Project Manager with or without comments does not relieve the Contractor of any obligations or requirements under the contract nor be construed as an authorization of, or consent to, any deviation from the contract. If the Contractor considers that the Employer / Project Manager comments constitute a compensation event to the contract, the Contractor requests a formal instruction.

- All drawings and other documents are in English and are sized in accordance with metric standard sizes and carry titles to indicate equipment numbers or any other identification number of the portion of work covered on the particular drawing and / or document.
- The revision number marks changes or additions to any document, at the point of a revision, and the revision is reflected in its title block or drawing number by an appropriate revision indication.
- An Aconex transmittal summarizing the content of the set accompanies multiple sheets with the same drawing number.
- The format of electronic documentation conforms to the following requirements:

Document	Native Format	Issued to Employer
Specifications	MS Word 2007	Native & PDF
Manuals	MS Word 2007	Native & PDF
Datasheets	Excel 2007	Native & PDF
Programs	Primavera P6 or MS Projects	Native & PDF
Spreadsheets	MS Excel 2007	Native & PDF
Drawings	AutoCAD Release 2004 or later	Native & PDF
Other	Microsoft Office 2007compliant	Native & PDF

- The Contractor is, in interpreting the drawings and specifications, bound by the figures marked thereon and not by scaled measurements.
- If the Contractor believes that new or revised IFC (issued for construction) documents constitute a change to the Contract, the Contractor notifies Employer / Project Manager of the change and does not proceed with the changes until officially instructed to do so by the Employer / Project Manager.
- The Employer / Project Manager reviews engineering information or queries raised and returns comments to the Contractor within the period of reply. This review by the Employer / Project Manager does not relieve the Contractor of his responsibility to ensure that the package is in accordance with the requirements. •
- The Contractor submits a written signed off as built as final issue of the “Handover” documentation.

2.3 Health and safety risk management

The Contractor shall comply with the health and safety requirements contained in:

- (Form TPD-SP-84 Aggeneis-Paulput 400Kv Line (Phase 1 B)

to this Works Information and all the other documents that the specification refers.

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

The Contractor shall also ensure and allow for in his pricing structure that all Personal Protective Equipment (PPE) issued to his employees are in accordance with the Employer's Personal Protective Equipment Specification (240-44175132).

In accordance with Eskom internal procedure and wherever Health and Safety Issues are concerned:

- The Executive projects manager, Mr Johan Bornman will induct the contractor MD before commencement of work, on site.
- This will assist in ensuring that the MD gets first-hand information of requirements etc.
- Site managers, Site supervisors, including site representatives shall be required to conduct 1 VFL per day.
- The contractor shall include 2 hours stoppage time every month in the schedule for any safety related issue, which will not constitute compensation.
- The MD is required to conduct 2 Visible Felt Leadership per month.
- Site supervisors shall conduct behaviour based safety observation. The client will provide training on request.
- The contractor shall presents all lost time incident and medical incidents to the Cape Grids team, the presentation of all incidents shall be done within 30days of the incident. All incidents shall be presented by the contractor's MD to the Transmission Western Portfolio Project Delivery team.

The *Contractor* shall comply with the health and safety requirements contained in the Project SHE specification.

In addition to the above, the following shall apply:

During construction, all workers on structures shall use the following:

- Full body harnesses
- Double Lanyards
- Double climbing hooks, alternatively fall arrest system approved by Eskom.
- The fall arrest system is to be installed and used prior to any dressing or stringing operations. On cross-rope structures where the system is to be installed before the tower is erected, it will be used during the entire construction period.
- When working on towers, only head protecting helmets with chin straps that conform to Standard Reference Number EN 12492:2000 - Mountaineering equipment - Helmets for mountaineers – or EN 397:2000 Industrial Safety Helmets are acceptable. In addition, the requirements of SABS 0333:1999 part 3 and SABS 1833:1999 shall apply.

The Contractor supplies his Health and Safety Plan in accordance with the Occupational Health and Safety Act no.85 of 1993 and the Construction Regulations prior to the commencement of work on site.

The Contractor supplies the Project Manager with a monthly safety report indicating the total number of employees on site, the number of hours worked, the number of hours lost due to injury and details of any incidents/accidents.

Minutes of Safety Meetings are forwarded to the Project Manager.

Reporting of incidents shall be in accordance with Eskom CED procedure (**Form 75 Contractor Monthly Statistical Report**).

Unsafe working condition

Where the instruction relates to health and safety matters or is in relation to a Contractor default, the instruction is not a “compensation event”.

Termination due to Non Compliance.

Eskom reserves the right to terminate the contract in the event that the contractor is found to be consistently non-compliant to any SHEQ related issue.

Penalty for Health and Safety statistics.

Should the LTIR at any stage during the contract exceed the ESKOM target of 0, 4 a penalty of R100, 000.00 shall be imposed by the client. This penalty shall be refunded in the event that the LTIR drops below 0, 4 at contract completion.

Penalties Health and Safety violations

The following penalties shall apply for Health and Safety violations and are non – refundable:

- Life Saving rule violation (1st Violation): Removal of offender from site and R5, 000.00 per event, payable by the Contractor.
- Life Saving rule violation (2nd Violation): Removal of offender from site and R10, 000.00 payable by the Contractor.
- Risk assessment and / or method statement not in place or available at activity: R10,000.00 per event.
- Non-compliance to Legislation: R10,000.00 per event Penalties for Sub – Contractor management • Sub-contractors are to be managed in accordance with the requirements of Form 74. Failure to comply shall result in a fine of R10, 000.00 per non-compliance.

All the above penalties shall be implemented at the discretion of the Project Manager.

The Divisional Safety Risk Managers who will be responsible for the allocation of resources to assist P&SCM with the above processes are as follows:

Generation: Marc Lebea
Transmission: Rochelle Chetty
Distribution: Amanda Qithi
GCD: Jace Naidoo
Corporate: Miranda Moahlod

The Contractor shall comply with the health and safety requirements contained in the SHE Specification annexed to this Works Information (provided as part of the enquiry documentation).

2.4 Environmental constraints and management

The Contractor shall comply with the environmental criteria and constraints stated in **SHE specification, EMP, EA and PDPMAN – ST 37** to this Works Information.

- • (Form TPD-SP-84 Aggeneis-Paulput 400Kv Line (Phase 1 B) to this Works Information and all the other documents that the specification refers.

The following penalties will apply for Environmental non-compliance and are non-refundable:

Penalties for Environmental related issues

1. Legal contravention and non-compliance: R20, 000.00 per event.

Campsite Layout

- Campsite establishment and de-establishment is to be managed in accordance with the SHE specification.
- The layout should be such that it facilitates a circular traffic route that eliminates the need to reverse when loading and offloading. There must be one point of entry and exit
- The Contractor shall comply with the environmental criteria and constraints stated in Annexures as per EMP.
- The contractor must also comply with the following environmental procedures: TPDMAN-ST-37 Environmental requirements for contractors working on transmission delivery projects.

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

2.5 Quality assurance requirements

The Contractor and all sub-contractors shall comply with the requirements listed in the Employer's. Quality requirement standard, 'Supplier Contract Quality Requirements Specification', document identifier 240-105658000-QM-58.

In addition to the above, the following shall apply:

- The Contractor shall have a fully documented, implemented, and maintained quality management system, which complies with the requirements of the ISO 9001:2015 or their quality management system shall carry valid certification from an acceptable QMS Certification body as indicated in the applicable PDP invitation. In addition, the Contractor is to meet the requirements of "Quality Requirements for the Procurement of Assets, Goods and Services". In this regard the Supervisor may instruct the Contractor to perform quality inspections prior to his own inspections, or to assist in inspections.
- The Contractor ensures that his staff and sub-contractors are conversant with the content of the scope of work, quality control plans and work instructions.
- The involvement of the Contractor's Appointed Inspection Authority (AIA) is a requirement to ensure that all the conditions of the code are met, but this does not absolve the Contractor from any of his responsibilities for quality.

- The Contractor compiles, in conjunction with the Project Manager and his AIA, a product inspection and test plan. This document shows at which stages during the contract the AIA is required, and what types of inspection, testing, witnessing etc. are carried out to ensure that the requirements of the works information are met.
- The Contractor ensures that the works is carried out in accordance with the inspection and test plans, acceptance test procedures and other specifications in the works information.
- The Contractor ensures that all specifications and requirements are communicated to the relevant parties in his organisation. Copies of all relevant specifications and drawings must be available on site.
- All documentation has a clearly stated revision number and previously similar documentation is revoked.
- Any quality-related problems/issues are to be reported to the Supervisor immediately and resolved as soon as possible.
- All completed work is signed-off on inspection and test plans and control sheets daily and all the relevant signatures are on the documentation.

The Contractor must comply with the following quality procedure: 240-105658000-QM-58 Quality requirements for organisations.

2.6 Programming constraints

The programme is to be submitted for acceptance in accordance with Core Clause 31 in the Engineering and Construction Contract, in terms of which resources to complete each activity must be clearly identified. The Contractor will allow two weeks of the starting date for compiling a schedule to be reviewed by Eskom every two weeks to ensure accuracy. The Contractor will be expected to use the allowed time from start date to prepare a proper schedule by interfacing with all relevant stakeholders. It is suggested that Gantt or bar chart formats be used for project planning, while progress graphs/schedules be submitted at monthly project meetings to monitor project progress.

The programme is to include all the requirements of clause 31.2 of the Engineering and Construction Contract.

Progress

Eskom will monitor the process of compiling a schedule in the first three months of the contract on a weekly basis by means of a report from the Contractor. A weekly progress report is to be submitted to the Project Manager every Friday.

The Contractor monitors progress weekly in conjunction with the Supervisor. A weekly progress report is to be submitted to the Project Manager every Friday.

The Contractor submits his record of Work Done to Date (verified by the Supervisor) to the Project Manager on the 20th of each month. (The application is to have the same format as the relevant Activity Schedule, and show present, previous, and total quantities to date).

The Contractor must allow for 10 days of rain above the average rain fall per annum and the effects of rain on the critical path of the foundation activities. Allow a further 10 days for rain above the average rain fall and the effects of rain on the critical path of the tower assembly and erection activities. Lastly, allow a further 10 days for rain above the average rain fall and the effects of rain on the critical path of the stringing activities.

The Contractor must allow an additional 10 days for mist and fog per annum. No compensation event will be considered before this period has lapsed.

The contractor should obtain a weather data from SA weather services for the following areas: Aggeneys & Poffadder. The contractor should familiarise himself/herself with the minimum and maximum temperatures, monthly average rain fall, wind, fog and snow fall around the area using the 10 year weather data from SA Weather Services and price or make allowance in his tender quotation.

Only the difference between more adverse whether recorded and the equivalent measurement given above is taken into consideration when assessing the compensation event.

The above allowance must run sequentially and should be priced as part of tender submission in the applicable rates.

No compensation will be considered for rain, wind fog and snow fall outside the ten-year average (2013 to 2023). Should there be a claim the Contractor will need to prove conclusively that this is over and above the norm, should they not be able to do so, any claim will be declined.

In addition to clause 64.1 assessment

2.7 Outage Constraints

All line crossings (including rail) are to be considered as live and should be planned for and priced accordingly. The project team will however endeavour to secure outages where possible. In case of outage cancellation, the contractor must allow 20km radius for out of sequence work.

2.8 Contractor's management, supervision, and key people

The Contractor submits an organogram showing his human resources and their lines of authority / communication/ roles and responsibility.

The Contractor provides experienced and competent personnel with proven track record of previous projects in the following key positions and submits their CV's: (**refer to C1.2 Contract Data Part two**)

- Project Manager/s
- Site Manager/s
- Qualified Rigger/s
- Quality Assurance Manager
- Foundation Supervisor/s
- Tower Erection Supervisor/s
- Stringing Supervisor/s
- Environmental Control Officer/s
- Quality Control Officer/s
- Safety Officer/s
- Geotechnical specialist

Interviews will be carried out with key position personnel (by the Employer) prior to them taking up relevant positions.

The Contractor shall provide experienced and competent personnel in the following key positions:

Contracts/Projects Manager/s Competency level:

Civil Engineering/Construction Management/Quantity Surveying. The Contracts Manager shall be registered as a Professional Construction Project Manager (Pr.CPM) with the South African Council for Project and Construction Management Professions (SACPCMP) (or equivalent internationally recognised body) as the one point of responsibility for the management of the project from conception to completion, which includes the management of related professional services. This registration must remain valid for the duration of the contract. The Contractor must provide proof of registration to the Project Manager.

• Site Manager/Agent Competency level:

Civil Engineering/Construction management/Quantity Surveying or a minimum of 10 years relevant civil construction experience. The Site Manager shall be registered as a Professional Construction Manager

(Pr.CM) with the South African Council for Project and Construction Management Professions (SACPCMP). This registration must remain valid for the duration of the contract. The Contractor must provide proof of registration to the Project Manager.

- **Supervisors Competency level:** As specified in Form 74 (SHE Specification).
- **Required SHE personnel Competency level:** As specified in Form 74 (SHE Specification). Including but not limited to SACPCMP, registered as a Construction Health and Safety Manager (CHSM) & Construction Health and Safety Officer (CHSO). The Contractor shall discuss these appointments and the number of appointments with the Project Manager.

2.9 Invoicing and payment

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

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

- Name and address of the *Contractor* and the *Project Manager*;
- The contract number and title;
- *Contractor's* VAT registration number;
- The *Employer's* VAT registration number **4740101508**;
- Description of service provided for each item invoiced based on the Price List;
- Previous, present and to date values per payment certificate.
- Total amount invoiced excluding VAT, the VAT and the invoiced amount including VAT;
- Any other information as may be required.

- An original invoice must be sent to the Accounts Payable Department and a copy to the Project Manager.
- The Contractor must submit an FRI within 1 week of contract award.
- Details on how to submit invoices and additional information:
- The Contractor must ensure that the Eskom order number is clearly indicated on your invoice together with the line number on the order you are billing for.
- All Electronic invoices must be sent in PDF format only.
- Each PDF file should contain one invoice; or one debit note; or one credit note only as Eskom's SAP system does not support more than one PDF being linked into workflow at a time.
- The Contractors E-mail may contain more than one PDF file (e.g., 2 invoices on 2 separate PDF files in one e-mail)

Send all invoices in PDF to the following email addresses:

1. For local invoices: invoiceseskomlocal@eskom.co.za
2. For foreign invoices: Invoicesgrpcapital@eskom.co.za

The Contractor can request a parked invoice from the Finance Shared Services (FSS) contact centre which can then be followed up and corrected. The Contractor is welcome to forward the details of invoices to the FSS contact centre.

All queries and follow up on local invoice payments should be made by contacting the FSS contact centre
Tel: 011 800 5060
e-mail: fss@eskom.co.za

For Foreign invoices, the Contractor will still be required to physically deliver hard copies of original documents to the respective documentation management centres even though you have e-mailed those invoices (Eskom is still seeking clarity from the South African Reserve Bank regarding e invoicing for

Foreign Invoices or invoices in foreign currency. Current requirements are that these manual invoices should still be submitted.

The Contractor can send the invoice copy to the email addresses indicated below).

Tax Requirement

A PDF file that was created directly from a system meets the definition of original document and is allowed (including saving documents from excel to PDF, word to PDF etc.)

The following wording needs to appear on the invoice: "Your invoice is encrypted in order to comply with SARS requirements that invoices, and statements sent electronically are tamperproof."

If there is Cost Price Adjustment (CPA) on your invoice, we recommend that the Contractor issue a separate invoice for CPA so that if there are any issues on the CPA the rest of the invoice can be paid while resolving the CPA issues.

Introduction of electronic invoicing does not guarantee payment but will ensure visibility of all invoices and ensure that no invoices get lost. If the goods receipt is not done the invoice will be parked and the system will automatically send an e-mail to the end user to do the goods receipt. This is also tracked by Eskom through the park invoice report.

The Contractor can request a park invoice report from the Finance Shared Services (FSS) contact centre which can then be followed up and corrected. The Contractor is welcome to forward the details of invoices corrected to the FSS contact centre.

Email addresses for invoice submission:
Group Capital Power Delivery Projects (PDP): invoicesgrpcapitalPDP@eskom.co.za

Procedure for invoice payment:

Work done is assessed by Quantity Surveyor (QS), after which the Eskom QS and the Contractor agree on the assessment and the amount to be invoiced. The Eskom QS will then generate an assessment and payment certificate aligning to the Contractor's invoice that was agreed based on the assessment.

Assessment is scanned and sent to project officer and project manager. Originals to be filed in project file. Ensure that Project Manager signs off or approves the payment certificate before a Good Receipt (GR) is created. Goods receipt will be created on SAP and the goods receipt number emailed to the supplier. For work done GR number will be on payment certificate sent to supplier. Invoice is recorded and receipted as per the finance invoice receipting procedure.

2.10 Insurance provided by the *Employer*

As stipulated in the Contract Data.

2.11 Contract change management

As prescribed by the NEC.

2.12 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.

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

A risk register is to be kept by the Contractor in which all events are recorded. Records of events that could give rise to Compensation events are to be kept up to date, for inspection by the Supervisor and/or Project Manager always and this is to be kept in a risk register. This is not for inspection purposes but for management as per core clause 16.

In order to facilitate payment for work done, the Contractor is to submit his Schedule of Work Done (verified by the Supervisor) for payment to the Project Manager by the 20th day of each month, in a similar format to the bill of quantities. Payment for Preliminary and General Items will be proportional to the duration of the contract.

- Payment for foundations shall be due upon completion of backfilling and completion of compaction.
- Payment for tower steel shall be due after the successful release inspection from the manufacturer's plant, delivery to site and verification by both Eskom and the contractor Supervisor's.
- Payment for tower assembly and erection shall be due as per the Supervisor's verification.
- Payment for stringing shall be due upon regulation, clamping, installation of line hardware, accessories, jumpers, anti-climbing devices, latchways and line inspection complete and accepted by the Supervisor.
- Payment for minor works, access and environmental work items shall be due as per the verification.
- One half of retention money shall be paid on the satisfactory completion of groundwork rehabilitation (including bush clearing), to be completed no later than four weeks after the issue of the Take-Over Certificate.
- The balance of retention shall be paid on the defects date i.e. on the issue of the Completion Certificate.
- Weather Data is recorded in accordance with the Contract Data, and submitted to the Supervisor daily.

2.14 Training workshops and technology transfer

The supplier shall provide training of an international standard on the supplied equipment by OEM accredited instructors. The training shall be in accordance with the Eskom training standard 240- 56065202, and organised on the following levels:

- Orientation and basic functioning
- Operational and first line maintenance

3 Engineering and the *Contractor's* design

3.1 *Employer's* design

The Contractor shall verify the designs provided by the Employer and accept them as constructable.

The Contractor shall comply with the Employer's commissioning procedure/ operating philosophy/ user requirement specification (URS)/ performance specification.

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

The Contractor is required to appoint a geotechnical specialist to investigate soil / rock conditions and apply suitable foundations designs including earthing system, in various soil conditions, at each foundation position for all towers, in accordance with the loading conditions given in the Line Specification (in Works Information Appendices). The Contractor shall submit foundation designs for acceptance well in advance of construction (see TRMSCAAC1 Rev 5.2).

Standard conventional foundation designs for the 6 soil / rock types shall be supplied by Eskom. The Contractor is required to investigate soil / rock conditions and apply suitable modified foundation designs including earthing system, in various soil conditions, at each foundation position for all towers, in accordance with the loading conditions given in the Line Specification. The Contractor shall submit foundation designs for acceptance for all designs well in advance of construction (see TRMSCAAC1 Rev 5.2).

Upon acceptance of the Contractor's foundation designs, copyright shall pass to the Employer. The contractor shall provide geotechnical report or other foundation related information required by the Employer. This does not relieve the Contractor of the responsibility to investigate the soil / rock conditions, design, test and install suitable foundation systems.

The Contractor is responsible for the design of temporary works such as temporary access roads, formwork, excavation support, special scaffolding and any other safety requirements to ensure safe execution of works, and etc.

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

Where foundations or hardware are to be designed or supplied by the Contractor, a Drawing Register for all foundation designs and hardware assemblies is to be compiled and submitted for acceptance prior to installation.

A Soil Nominations Register is updated by the Contractor in conjunction with the Supervisor and submitted to the Project Manager. The Supervisor verifies the nomination of each foundation excavation.

Prior to the casting of concrete, a suitable mix design, according to procedure in the document Titled TX Tower and Line Construction (TRMSCAAC1 Rev 5.2), is to be submitted to the Project Manager for acceptance. Each concrete batch delivered to site is to be accompanied by a Concrete Batching Note containing dispatch date & time, batch volume, slump test result, total amount of cement and total amount of water in the mix. Four test cubes are to be made of each concrete batch at the batching plant and tested at 7 and 28 days

A minimum of one set of cubes should be cast per day at the work site. They are to be clearly marked as to the position in which they were placed. Where the Contractor uses his own testing equipment, or whether use is made of an independent facility, Cube Test Reports must be completed by the Contractor to ensure correct timing of tests and tracing of defective concrete. Results are made available weekly.

During stringing operations, the Contractor keeps a suitably detailed Stringing Record indicating the location of drums, joints, and duration of stringing. Clearances over railways, roads, power lines, telephone lines etc. are to be measured and submitted to the Project Manager, when sagging of that section is complete.

Where OPGW is installed, documentation indicating test results for joints is to be submitted by the Contractor performing OPGW jointing in accordance with NRS 061-2:2002. The records consist of

- a) Pre-Installation Drum Tests – performed upon delivery
- b) Post-Installation Joint Tests – performed during installation, and
- c) End-to-end power and light source tests – performed after installation

The Contractor compiles and submits a Tower Footing Resistance Schedule before commencement of stringing.

3.4 Other requirements of the *Contractor's* design

The Contractor is responsible for the design of temporary works such as temporary access roads, formwork, excavation support, special scaffolding, etc. These designs are to be submitted for acceptance by the Employer.

The Contractor submits a concrete mix design for acceptance before commencement of construction, in accordance with TRMSCAAC1 Rev 5.2.

3.5 Use of *Contractor's* design

Upon acceptance of the Contractor's foundation designs, copyright will pass to the Employer. The provision of geotechnical or other foundation related information by the Employer does not relieve the Contractor of the responsibility to investigate the soil/rock conditions, design, test and install suitable foundation systems.

3.6 Design of Equipment

The Contractor shall procure Eskom specified equipment and materials as specified in the specifications.

3.7 Equipment required to be included in the *works*

The Contractor shall submit a list of all vehicles, machinery and equipment

3.8 As-built drawings, operating manuals, and maintenance schedules

Upon Completion the Contractor is to provide final "as built" records in accordance with the requirements as laid out below.

Two copies of Construction Records are to be compiled by the Contractor at the end of the project in a hard copy and electronic format. In addition, the Contractor is to supply a Compact Disk of the records to the Project Manager.

The Construction Records consists of the following information which originates from various parties as indicated below:

ITEM	DATA	INFORMATION SUPPLIED BY
0	Cover and Index	Project Manager
1.	General line data	Project Manager
2.	Summary of Project	Project Manager
3.	Foundation and Tower Schedules	Contractor
4.	Stringing records	Contractor
5.	OPGW Installation	Contractor
5.1	Schematic Layout	Contractor
5.2	Cable Colouring and Fibre Coding	
5.3	Power Meter and Light Source Results	
5.4	Splice Performance Summary (detailed report submitted separately)	
6	Drawings	
6.1	Foundation Drawings	Contractor
6.2	Tower Outline Drawings	Project Manager
6.3	Hardware Drawings incl. OPGW hardware	Supplier/Contractor
6.4	Insulator Drawings	Supplier/Contractor
7	Line Profiles	Project Manager

The Project Manager submits relevant information as detailed above to the Contractor within two weeks of Take-over.

The Contractor compiles the document and submits copies to the Employer within four weeks after receipt of the relevant information.

4 Procurement

4.1.1 Minimum requirements of people employed on the Site

People employed on site shall have all relevant documents as required by law for employment within the country, i.e. relevant work permits and Identifications.

4.1.2 Supplier Development and Localisation (SD&L) applicable.

Eskom SOC Limited as an organ of State is required to implement South African Government Policy in a number of areas. SD&L is the South African Government's accelerated shared growth initiative. The initiative has identified Government spending on infrastructure – such as power station construction - as a key area for SD&L intervention and Eskom Holdings Limited is accordingly required to set skills development and local content targets and minimums as key evaluation criteria in tenders that it awards.

Eskom SOC Limited has long had a policy in place regarding procurement from black individuals and companies owned and controlled by black individuals. This policy is number 32-416 "Implementation of Eskom's Black Economic Empowerment Strategy" which is in line with The Codes of Good Practice gazetted by the Minister of Trade and Industry on the 9 February 2007. For the purposes of this tender the targets for black procurement have been set both as part of the SD&L evaluation and as part of commercial evaluation of whether the Contractor meets the Required BEE score. The SD&L requirements only are discussed in this document.

For this tender all tenderers must demonstrate at least a sixty percent (60%) overall SD&L score for their tender to be evaluated. SD&L compliance is given twenty three percent (23%) of the total tender points and as such this is a key evaluation criterion for the tender. A scorecard approach to measuring the SD&L compliance of tenderers is followed and a weighting is given to each aspect of SD&L.

For the purposes of tendering, the tenderer must demonstrate the manner in which the SD&L requirements will be met in due course in an implementation program. If the tender is awarded all SD&L undertakings (the Contractor's SD&L Obligations) must be made by the Contractor at the time of contracting.

SD&L SCORECARD

The SD&L scorecard generally identifies five areas for SD&L evaluation. These are procurement from LBSs, BWOs, EME or QSE s; local content of the tender as a whole; and Skills Development commitments of the tenderer. Targets and weighting are set for each

Skills Development

Skills development and job creation will be a negotiation items, the outcome of the negotiations will be incorporated into the Contract. This will form part of the contractual obligation with the successful Contractor upon contract award. Tenderers are required to propose Skills Development initiatives in terms of the Skills required for this project as indicated below. Tenderers may propose over and above the Employers set targets.

The Contractor will identify and select the individuals who will partake in the skills development initiative two weeks after the Contract Date. The Contractor will only choose those training programmes that will issue the trainees with accredited NQF level certificates. The Contractor will forward the following trainee information to the Project Manager.

- Name & Surname of the trainees.
- Certified copy of the trainees Identity Document (ID).
- Trainees gender & ethnic group.

- Title of the Skills development programme.
- Skills programme dates.
- Institution offering the training programme and their accreditation number.
- Cost of Training programme.
- NQF Level of the skills programme.

Job Creation

Job creation is an important consideration; the expectation will be that the Contractor will have a core team which will be made of specialised skills that cannot be sourced in the areas surrounding the Site. It will be encouraged that all semi-skilled and unskilled labour that will be utilised in executing the works, to the extent which is possible be sourced from local to site. Local to Site will be defined as follows: Any town situated within the Namakwa District Municipality and Khai-Ma Local Municipality will be regarded as local to Site.

The Contractor is responsible for familiarizing himself with the Site, surrounding areas and the municipalities in which the Site resides. The Contractor shall thus conduct a thorough investigation in an effort to determine what the Contractor will be able to procure/buy in terms of equipment, materials, services, etc. for the works in and around the municipalities.

Definitions and Interpretation

The definitions below shall be referred to in the interpretation of this Annexure T1.2. The targets for BWO, LBS and EME or QSE are a percentage of the local content portion of the tender only.

LBS

This refers to procurement from "Large Black Suppliers" as defined in Directive 32-416. 32-416 defines Large Black Suppliers as follows: An LME that is a minimum of a "Level Four Contributor" to BEE. Large Black Supplier has an annual turnover of more than R50 million.

BWO

This refers to procurement from "Black Woman Owned Enterprises" as defined in Directive 32-416. 32-416 defines BWO as follows: An EME or QSE that is 51% or more owned and effectively managed by Black women.

EME or QSE

This refers to procurement from "Small Black Enterprise" as defined in Directive 32-416. 32-416 defines an EME or QSE as follows: An EME or QSE that is 51% or more owned and effectively managed by Black persons.

The turnover limit for Enterprises to qualify as EME or QSE is R50 Million or less.

SD&L Progress Report

Means the Contractor's SD&L progress report contemplated in clause 7 of this annexure.

Local Content

"Local Content" refers to value added in South Africa by South African resources. Where a single contract involves a combination of local and imported goods and or services, the tender response must be separated into its components (where applicable) and included with tender documents.

Local content is total spent minus the imported component. This is calculated by subtracting the cost of imported goods and services in respect of the works from the total contract amount.

Imported Goods and Services

"Imported goods and services" means, but is not limited to:

Goods and services directly imported into South Africa;

Goods which although stored in South Africa are produced and/or wholly manufactured outside the borders of South Africa and/or have a minimum of 50% (fifty percent) of production costs (including labour) incurred outside of South Africa and payable to foreign residents and/or foreign registered entities;

Goods that have been "substantially transformed" outside of South Africa. Substantially transformed refers to the irreversible incorporation of imported components in the goods, with the labour costs and profit content earned by foreign residents and/or foreign registered entities exceeding 50% (fifty percent) of the Contract Amount and/or the significant assembly and manufacture of the goods occurring outside of South Africa's borders; and/or

Services with at least 50% (fifty percent) of the labour cost incurred outside of South Africa's borders and/or with at least 50% (fifty percent) of the service fee payable to foreign residents and/or foreign registered entities, regardless of whether the service involves domestic capital goods or other domestic costs.

Final Review

Final Review means the review (to be conducted at the completion date of the whole of works by the Project Manager) of the Contractor's performance in respect of the Contractor SD&L Obligations.

Skills Development

This is the requirement that tenderers commit to train certain individuals in specified trades.

The requirement is that the targeted numbers of individuals are trained and complete practical tasks to achieve the outcome of passing a trade test and qualifying as an artisan, or the equivalent for any other required skill. Contractor's SD&L Commitments Means those commitments regarding local content, skills development, and procurement from EME or QSE (owned at least 51% by black women, blacks, black youth or cooperatives by blacks) made by the Contractor in his tender submission and used by the Employer for the purposes of calculating the Contractor's SD&L score in the tender evaluation process.

Contractor's SD&L Obligations

Means those obligations of the Contractor regarding local content, skills development and procurement from EME or QSE (owned at least 51% by black women, blacks, black youth or cooperatives by blacks) derived from Contractor's SD&L Commitments and agreed between the Contractor and the Employer.

Certificate of Fulfilment

Means the certificate issued by the Employer after the Final Review as evidence of the Contractor's successful fulfilment of the Contractor SD&L Obligations.

SD&L PROGRESS REPORTS

The Contractor shall submit monthly SD&L progress reports to the Project Manager. SD&L progress reports shall be submitted by the 7th (seventh) day of the month following the months to which the report relates. Each report shall include:

An executive summary:

Charts and detailed descriptions of the progress in narrative format, including each stage of progress of the Contractor SD&L Obligations, the meeting (or delay in the meeting) of anticipated dates and targets (as set out in the program) and any documents, statistics or other form of verification of the dates and targets to be provided in respect thereof;

Percentage progress and the actual or expected dates of commencement of any of the major stages making up the Contractor SD&L Obligations;

Schedule of forecast and actual, together with a 3 (three) month look-ahead of major activities and events;

Comparisons of actual and planned progress in terms of the Implementation Program;

Details of actual and planned resources;

An Affidavit from the sub-Contractors stating the work that has been subcontracted to meet the Contractor's SD&L obligations;

A schedule identifying all details of persons in the process of undergoing or who have successfully completed the Skills Transfer for the relevant period (including details of their personal information and certified copies of their test results and certificates received);

A risk register and assessment dealing with all areas of concern which may cause delays to the fulfilment of the SD&L obligations and details of the corrective or other measures being adopted, or to be adopted to mitigate or overcome such delay; and such other matters and information (including schedules and charts) as the Project Manager may require to be included in the SD&L progress report from time to time.

An electronic copy and two hard copies of each SD&L progress report shall be submitted to the Project Manager.

Additional Reports

The Project Manager shall be entitled to request the Contractor to provide additional reports when in his opinion they are warranted to monitor the progress of the fulfilment of the Contractor SD&L obligations.

The Final Review

The parties' record that the purpose of the final review is for the Project Manager to determine whether the Contractor has fulfilled the Contractor's SD&L obligations as at completion date.

The Contractor shall provide the Project Manager with the following documentation to be used by the Project Manager as a basis for the final review:

A consolidated SD&L progress report recording all steps taken to meet the Contractor's SD&L obligations from the starting date to the completion date including all information and documentation referred to in clause 8.1 above;

All of the SD&L progress reports provided by the Contractor during the course of the contract and any other additional report, documentation or information that the Project Manager deems to be reasonably relevant to the conduct of the final review (to be provided by the Contractor at least 21 (twenty one) business days prior to the final review). The Project Manager shall notify the Contractor of such request by way of written notice at least 30 (thirty) business days prior to the final review.

The Employer shall, in its reasonable discretion, conduct the final review by comparing those Contractor's SD&L obligations actually fulfilled by the Contractor as at the time of the final review against with the Contractor's SD&L obligations as a whole.

The Project Manager shall notify the Contractor of its findings on the final review by way of written notice within 30 (thirty) business days of the final review. The notice shall contain the Project Manager's reasons for its findings.

Should the final review reveal that the Contractor has not fulfilled and/or complied with any of the Contractor's SD&L obligations as at the completion date:

The Contractor shall be in breach of a material obligation under the contract and the employer shall be entitled to have immediate recourse to and make a claim against the whole of the retention bond as the penalty for the Contractor's breach of the Contractor SD&L obligations.

Should the final review reveal that the Contractor has fulfilled and/or complied with all the Contractor's SD&L obligations as at the completion date, the employer shall issue a certificate of fulfilment.

Supplier Development & Localisation and Corporate Social Investment

A 2% SD&L and 1% CSI retention monies will be expected above the normal contract retention of 7%. The retention will be released if the promised SD&L and CSI commitments were achieved. However, in the event that the Contractor failed to fulfil its SD&L and CSI obligations, the portion not made would be quantified and withheld from the final payment. The penalty is deducted from the assessment made at completion of the whole of works.

Donations and grants (CSI) in the Power Delivery Projects surrounding areas to be considered include, however, not limited to the following:

- Infrastructure development (Health, education and community centres)
- Integrated early childhood and general human resources development initiatives
- HIV/AIDS awareness and prevention campaigns
- General infrastructure development
- Protection of the wildlife and environment initiatives
- Project start-ups /enterprise development
- General Corporate Social Investment/socio economic development initiatives

4.2 Subcontracting

4.2.1 Preferred subcontractors

The Contractor shall complete and attach a list of preferred subcontractor. The list does not authorize the Contractor to go ahead and appoint the subcontractor without Project Manager's approval.

4.2.2 Subcontract documentation, and assessment of subcontract tenders

The Contractor shall complete and attached a list of subcontractors.

4.2.3 Limitations on subcontracting

The Contractor shall not subcontract more than 30% of the whole of the contract.

4.2.4 Attendance on subcontractors

N/A

4.3 Plant and Materials

4.3.1 Quality

Refer to attached quality documents

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

Not Applicable

4.3.3 *Contractor's* procurement of Plant and Materials

The Contractor shall comply to document “Quality Assurance for Procurement of Assets, Goods and Services” in works information during fabrication, supply and delivery of all substation equipment, line hardware, groundwire, OPGW, foundation steelwork, reinforcing, earthing devices and all other foundation related material

4.3.4 Spares and consumables

In accordance with the specifications

4.4 Tests and inspections before delivery

The Contractor is to provide prototype towers in accordance with TRMSCAAC1 Rev 6.2 upon request by the Project Manager. All guy, spacer and cross ropes are to be tested before erection.

4.5 Marking Plant and Materials outside the Working Areas

The Contractor shall mark all Equipment, Plant and Material which is outside of the working area destined for the works.

4.6 *Contractor's* Equipment (including temporary works).

Not Applicable

5 Construction

5.1 Temporary works, Site services & construction constraints

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

The Employer and Contractor representatives shall negotiate access with respective landowners. Written records shall be kept. The Contractor is reminded that access shall not necessarily be continuous along the line, both from a physical and negotiated point of view. In addition vehicular access may be restricted, prohibited or impossible in certain areas.

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

Refer to attached EMP, SHE, RoD (EA) and TRMSCAAC1 Rev 6.2.

The Contractor undertakes demarcation, construction and rehabilitation of all access roads, construction areas, tower sites etc., in accordance with TRMSCAAC1 Rev 6.2 and the Environmental Management Plan. Wherever possible the Contractor is to make use of existing access roads tracks to and in existing adjacent servitudes.

The Contractor allows for the implementation of procedures contained in the Environmental Management Plan. Deviation from these procedures resulting in damage to the environment or property shall be regarded as a defect.

Access shall not necessarily be continuous along the servitude. All access routes are to be marked and constructed as agreed by the Contractor and the Supervisor.

Vehicular access to some tower sites and parts of the servitude may be restricted, prohibited or impossible and might not necessarily be linear. The Contractor is to make provision for alternative methods of construction at these positions.

Installation of servitude and game gates shall be in accordance with TRMSCAAC1 Rev 6.2 as required by the Supervisor. Where gates are required within the servitude, these are to be installed on the centre line to facilitate stringing, or as directed by the Supervisor. Wherever possible, existing servitude gates on adjacent servitudes are to be used. If requested by the Employer the Contractor shall supply and erect "concertina gates". Concertina gates are to be made with five steel poles and five strands of barbed wire.

The Contractor performs bush clearing along the servitude and at tower sites as required for access and construction purposes and/or as instructed by the Supervisor. Bush clearing is to be in accordance with ESKASABG3 - "Standard for Bush Clearance and Maintenance within Overhead Power line Servitudes", TRMSCAAC1 Rev 6.2 "Transmission Line Towers and Line Construction" and the Environmental Management Plan.

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

Refer to SHE specification and EMP.

5.1.4 Health and safety facilities on Site

Refer to the SHE specification and EMP.

The Contractor shall appoint the security for the site camp and plant and material

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

Refer to EMP and SHE specification.

The Contractor allows for the implementation of procedures contained in the Environmental Management Plan. Deviation from these procedures resulting in damage to the environment or property will be regarded as a legal contravention and penalised with an amount of **R 15 000.00 per each contravention**.

5.1.6 Title to materials from demolition and excavation

Refer to EMP and SHE specification Preliminary Construction Environmental Management Plan.

5.1.7 Cooperating with and obtaining acceptance of Others

The Contractor shall make his own arrangements, to the approval of the Supervisor and the Local Authorities, for the disposal of all surplus material and construction waste resulting from the works.

5.1.8 Publicity and progress photographs

As agreed with the Eskom Project Manager.

5.1.9 Contractor's Equipment

Records are to be kept of Equipment on Site including whether it is owned or hired. This includes any scaffolding, rigs, heavy lifts, and cranes.

The Contractor shall inform the Project Manager prior to the removal of any equipment during the contract period from the Working Areas.

5.1.10 Equipment provided by the *Employer*

Not Applicable.

5.1.11 Site services and facilities

The Contractor is to provide the following items to facilitate the Employer's site Supervisors project administration team within four weeks of contract award:

- a) Minimum one lockable site office (To accommodate 12 working stations, 3mX2m for 2 working stations), supplied with power, air conditioning, refrigeration, kitchen facilities and office furniture. Upon Completion, the office will remain the property of the Contractor.
- b) Minimum of 12 x working stations including office chairs, printing (A3 and A4 colour), copying & computer facilities, IT infrastructure, document-binding, storing & laminating facilities, disposables, etc.
- c) Uncapped Wi-Fi functional for exclusive Eskom site personnel and to be managed by Eskom Site Manager.
- d) One fully functional (refer to point b) office (capacity x2) for sole use of Project Manager and Engineer.
- e) Security, maintenance (including supplies and disposables) and cleaning services for the duration of the contract.
- f) Portable water kitchen facilities and toilet facilities for sole use of Clients Representatives.
- g) These are to be provided at each site camp / office.
- h) Details of a – d & f to be provided by Project Manager.

The Contractor shall negotiate with landowners for the erection of any construction camp(s) and accommodation for his personnel and ensuring compliance with all by-laws and requirements of the relevant authorities **after contract award**. All necessary services - water, electricity, sewerage, toilet facilities, telephones, etc. are to be provided by the Contractor to suit his needs.

All evidence of construction camp(s), batching plants, etc. are to be removed upon completion, and such areas rehabilitated to the satisfaction of the landowner and the Supervisor.

The Contractor shall provide sanitary amenities, first aid and firefighting facilities as required by the Occupational Health and Safety Act.

The Contractor keeps records of the following and submits copies of these records to the Supervisor weekly:

- Number of personnel by category and/or trade on site on a daily basis.
- Detailed list of equipment by category on site on a daily basis with an indication of its working condition i.e. working order, under repair, working but standing idle etc.
- Weather conditions as agreed with the Supervisor on a daily basis.

A site diary is to be kept by the Contractor in which all events are recorded. Records of events that could give rise to Compensation Events are to be always kept up to date for inspection by the Supervisor and/or Project Manager.

5.1.12 Facilities provided by the *Contractor*

Refer to Construction Environmental Management Plan

5.1.13 Survey control and setting out of the *works*

Foundations

The Contractor is solely responsible for pegging of bend points and tower positions in accordance with the co-ordinates and line profiles, determining foundation positions, leg extensions and guy rope lengths.

The Contractor shall comply with attached document titled "The standard for the construction of overhead powerlines" (TRMSCAAC1 Rev 5.2)

The Contractor undertakes to appoint a geotechnical specialist and to conduct geotechnical investigation on all tower foundations, nominate foundation types, design foundations, carry out concrete test and install concrete foundations and earthing system, including setting out, excavation, foundation steelwork, reinforcement, concrete and reinstatement in various soil conditions, in accordance with TRMSCAAC1 rev 5.2 and TRMASAAJ7.

The Contractor informs the Project Manager of the nominated soil/rock condition at each foundation position and the design solution for the foundation at least two weeks before installation of the foundation.

Concrete batching and mixing plant(s) established by the Contractor shall be solely dedicated to the works. The Supervisor shall approve the design, operation, and location of the plant(s). The Contractor provides his own equipment for the testing of concrete cubes on site, or should he make use of an independent testing facility, ensures that test results after 7 days, 14days and 28 days are made available to the Supervisor within 5 days of each test.

Where the excavated material of foundations is unsuitable for backfill, the Supervisor may instruct the Contractor to import suitable material. All excavated foundation shall be fenced off to prevent animals from falling in.

Towers

The Contractor undertakes pegging, assembly and erection of towers, leg and body extensions and installation of anti-climb devices, latchways, bird-guards and line labels.

The Contractor manufactures and tests all guy, spacer and cross ropes and supplies all fittings, U bolts, dead-ends, shackles, etc. necessary for the installation thereof and erection of the masts.

Measurement of earth footing resistances is to be undertaken before the commencement of stringing, in accordance with TRMASAAJ7 and additional earthing installed as required by the Project Manager.

Earthwire insulators are to be installed on selected towers as per the staking table and the line design.

Stringing

The Contractor undertakes stringing and regulating of phase and earth conductors together with the installation of line fittings and hardware in accordance with TRMSCAAC1 Rev 5.2.

Upon delivery, the Contractor assembles one test sample for each hardware assembly to ensure compatibility with the tower.

Adequate provisions are to be made for the protection and safe transport of composite insulators and all other material to the work site and during erection. Strict adherence to the "guide to the storing, transporting and installation of composite insulators" is mandatory. Climbing down or over composite insulators is strictly forbidden – ladders and cradles must be used.

The Contractor provides for the making up of samples and testing of compression joints in accordance with TRMSCAAC1 Rev 6.2 before stringing commences.

The Contractor determines the location and type of crossings, and compiles a detailed stringing programme, which is to be submitted to the Supervisor at least four weeks before stringing commences. The Supervisor shall liaise with local representatives of various bodies regarding outages.

When stringing over existing powerlines, telecommunication lines, railway lines and roads the Contractor is to provide and erect suitable crossing solutions and nets as required by the safety regulations (Scaffolding will not be allowed as a possible crossing solution).

Aircraft warning devices, bird-guards and bird-diverters are to be installed where instructed as per EMP and the line design.

5.1.14 Excavations and associated water control

Refer to SHE specification, EMP. Contractor to barricade and use suitable system for all foundation to prevent animals and kids/by passers from falling in open excavations. Foundations should be marked with material that can be visible at night. The contractor must select material that cannot be consumed by animals. Refer to the SHE specifications for more information.

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

Refer to 1:50 0000 maps

5.1.16 Control of noise, dust, water and waste

Refer to the SHE specification and EMP

5.1.17 Sequences of construction or installation

As per agreed; Progress Schedule and Method Statements. The contractor shall compile an access plan for all tower position for approval prior to start construction i.e. pegging, bush clearing.

5.1.18 Giving notice of work to be covered up

The Contractor must take cognisance of the Environmental Management Plan and TRMSCAAC1 Rev 6.2 in the rehabilitation of damage caused during construction.

After construction the Contractor is to rehabilitate any damage caused to the environment to the satisfaction of the Supervisor and landowner. The remedial works are to be "signed-off" by both parties before acceptance.

Existing farm roads and tracks are to be maintained throughout the contract and left in at least as good condition as was found before construction commenced. The Contractor and Supervisor are to agree, using photographic evidence if necessary, as to the state of such roads and tracks before construction commences. Existing berms are to be repaired during and after construction in accordance with TRMSCAAC1 Rev 5.2.

New access roads are to be closed on completion unless otherwise instructed. The Supervisor may instruct the Contractor to install water erosion control berms and other methods upon closure. Tower sites are to be rehabilitated to the satisfaction of the landowner and Supervisor. In certain circumstances re-vegetation, mulching and erosion control measures etc. may be called for.

5.1.19 Hook ups to existing works

Contractor to confirm, prior to starting of construction.

5.2 Completion, testing, commissioning and correction of Defects

5.2.1 Work to be done by the Completion Date

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

	Item of work	To be completed by
	As built drawings of Aggeneys-Paulputs 400Kv Line	Within 30 days after Completion
	Rehabilitation, installation of retaining walls, ground-works, removal of temporary works, removal of construction camps, batching plants	Within 30 days after Completion

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

Not applicable

5.2.3 Materials facilities and samples for tests and inspections

The Contractor shall comply with attached document titled "The standard for the construction of overhead powerlines" (TRMSCAAC1 Rev 5.2)

5.2.4 Commissioning

The Contractor shall comply with attached document titled "The standard for the construction of overhead powerlines" (TRMSCAAC1 Rev 5.2).

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

Not applicable

5.2.6 Take over procedures

Take-over of The Works shall be in accordance NEC ECC3 hand over Certification and Projects Execution Hand over Document.

The Contractor advises the Supervisor when the line is available for final inspection, and provides assistance if required.

By the completion date in the contract data, the Contractor shall complete all work required above the anti-climbing devices. All other work (rehabilitation, installation of retaining walls, ground-works, removal of temporary works, removal of construction camps, batching plants etc.) shall be completed within four (4) weeks of Take-Over. The Supervisor and / or landowner prior to the release of any retention moneys held against this contract shall approve such work.

The Contractor maintains the works until the defects date with regard to making good erosion caused by his operations, shrinkages, imperfections, settlements, etc

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

Clause 43.4 of the NEC will apply.

5.2.8 Performance tests after Completion

Not applicable

5.2.9 Training and technology transfer

The supplier shall provide training of an international standard on the supplied equipment by OEM accredited instructors. The training shall be in accordance with the Eskom training standard 240- 56065202, and organised on the following levels:

- Orientation and basic functioning
- Operational and first line maintenance

5.2.10 Operational maintenance after Completion

The supplier shall provide training of an international standard on the supplied equipment by OEM accredited instructors. The training shall be in accordance with the Eskom training standard 240- 56065202, and organised on the following levels:

- Orientation and basic functioning
- Operational and first line maintenance

6 Plant and Materials standards and workmanship

6.1 Investigation, survey and Site clearance

Refer to the EMP and attached document titled "The standard for the construction of overhead powerlines" (TRMSCAAC1 Rev 5.2)

6.2 Building works

Not applicable

6.3 Civil engineering and structural works

As per specifications provided.

6.4 Electrical & mechanical engineering works

As per specifications provided and listed above in section 2,2 of this document.

6.5 Process control and IT works

Not applicable for this contract.

6.6 Report issued by the Employer

This is the final design report issued by the Employer at or before the Contract Date and which apply to this contract.

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

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.
