

PART 3: SCOPE OF WORK

PART C3: SCOPE OF WORK	1	C3 ECC3 COVER PAGE
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PROJECT & CONTRACT TITLE: THE DEVELOPMENT PHASE: THE DESIGN (FUNCTIONAL DESIGN, SYSTEM DESIGN AND DETAIL DESIGN), DEVELOPMENT, MANUFACTURING, TRAINING, TESTING, DELIVERY, OFF-LOADING AND ERECTION OF A PROTOTYPE SCHEME, AS WELL AS DESIGN BASE DOCUMENTATION, FOR SHUNT CAPACITOR AND FILTER BANK PROTECTION SCHEMES FOR ESKOM TRANSMISSION SUBSTATIONS OVER A PERIOD OF UP TO EIGHTEEN (18) MONTHS.

C3.1: EMPLOYER'S WORKS INFORMATION

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1 Description of the works

1.1 Executive overview

This contract (Development Phase) is for the design (functional design, system design and detail design), development, manufacturing, training, testing, delivery, off-loading and erection of a prototype scheme, as well as design base documentation, for shunt capacitor and filter bank protection schemes for Eskom Transmission substations & the integration of a free-issue point on wave (POW) relay into the prototype scheme.

Successful completion of the development (over a period of up to eighteen (18) months) will make a fully designed, documented and tested “standard” solution available for possible contracting via a subsequent supply contract(s) (Production Phase) for a period of four (4) years with an option to extend for a further four (4) year period.

A detailed scope of work for this contract and the subsequent supply contract is provided in section 2 (Specification and description of the works) below.

Work associated with this contract, except for the manufacturing and supply of IEDs/devices and auxiliary components, shall be undertaken at the *Contractor's* South African offices/factory.

1.2 Employer's objectives and purpose of the works

This contract is for the:

- design (functional design, system design and detail design), development, training and design base documentation, for shunt capacitor and filter bank protection schemes for new build or refurbishment projects at Eskom Transmission substations
- manufacturing, testing, delivery, off-loading and erection of a prototype scheme
- integration of a free-issue point on wave (POW) relay into the prototype scheme

Successful completion of this contract will make available a fully designed, documented and tested standard solution(s) for possible contracting via a subsequent supply contract(s).

The purpose of the shunt capacitor and filter bank protection schemes is to protect and control shunt capacitor and filter bank primary plant equipment with reactive power outputs ranging from 15Mvar to 150Mvar at, and connected to, Transmission substations in the voltage range from 66kV to 400kV, to promote reliable and safe supply of electricity to Eskom's customers, and to limit damage to the primary plant equipment and danger to life due to faults on the power system. The equipment shall have a design life of 20 years when operated and maintained according to the *Contractor's* design base documentation.

1.3 Abbreviations, interpretation and terminology

1.3.1 Abbreviations

The following abbreviations are used in this Works Information:

Abbreviation	Meaning given to the abbreviation
FAT	Factory Acceptance Testing
IED	Intelligent Electronic Device
Tx	Transmission Division

1.3.2 Interpretation and Terminology

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1. **Functional Design Specification** – details the *Employer's* functional requirements in the context of the product which was tendered, i.e. functionality that is provided and also how it is intended for the *Employer* to utilize / operate the commodity. It is anticipated that the *Contractor* will also include all non-tendered functionality, which may be negotiated during contract establishment.
2. **System Design Specification** – details, inter-alia, the system in terms of:

Physical Design Base

- Scheme / panel devices, components and layout thereof
- Scheme / panel inter-device and component interfaces as well as the purpose of the interfaces
- Inter-scheme / panel interfaces as well as the purpose of the interfaces
- Networking interfaces as well as the purpose of the interfaces
- Primary plant interfaces as well as the purpose of the interfaces
- Human-machine interfaces as well as the purpose of the interfaces
- Device Model Information where applicable
- IEC61850 GOOSE and MMS datasets
- IEC61850 report control blocks and GOOSE control blocks

Operating Design Base

- Interlocking design overview if applicable
- Operating sequencing when operating, testing and maintaining the scheme
- High level Configuration procedures and tools and software
- Operating constraints

Maintenance Design Base (per Eskom template)

- Maintenance philosophy
- Required interventions
- *Employer's* tasks
- *Contractor's* tasks

Design Intent

- Scope of functionality provided (reference may be made to the Functional Design Specification if this will suffice)
 - Intended application and any constraints thereto
 - Design life, life expectancy
 - Performance, reliability / availability / maintainability
3. **Detailed Design** – for the purpose of this contract, this includes, inter-alia, scheme drawings, construction/mechanical cut-out drawings, label drawings, I/O lists, device configurations, default settings, settings sheet, device software. Note: The final design report will include the remaining design base deliverables and outputs.
 4. **Erection of protection scheme:** To position and securely fasten the protection scheme to the floor.

2 Specification and description of the *works*

2.1 Scope

The scope is:

- the development of protection schemes to protect and control shunt capacitor and filter banks for Eskom Transmission applications as detailed in and according to the requirements specified in the following Eskom standards and drawings:

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1. 240-150182735 Specification for Phase 6 Transmission and Distribution Protection Schemes: Shunt Capacitor and Filter Banks (Rev 2)
 2. 240-64685228 Generic specification for protective intelligent electronic devices (IEDs) (Rev 1)
 3. 240-42066934 IEC 61850 Protocol implementation document for the purposes of substation automation (Rev 1)
 4. 240-68107841 Eskom IEC61850 standard requirements for PICS, PIXIT and TICS (Rev 2)
 5. 240-68235024 Eskom IEC61850 station bus interoperability test standard (Rev 2)
 6. 240-59089329 DNP3 implementation standard (Rev 2)
 7. 240-61268959 Substation automation – Network architecture and application design standard for Transmission substations (Rev 3)
 8. 240-46264031 Fibre optic design standard Part 2: Substations (Rev 2)
 9. 240-70733995 Optical distribution frame / Patch panel / Patch box (Rev 2)
 10. 240-60725641 Specification for standard (19 inch) equipment cabinets (Rev 5)
 - Drawing 0.52-30615 Protection fixed frame equipment cabinet
 - Drawing 0.52-10195 AC supply module - standard equipment cabinet
 11. 240-62773019 Specification for low voltage auxiliary electrical components (Rev 1)
 12. 240-62629353 Specification for panel labelling standard (Rev 1)
 13. 240-64100247 Standard for earthing of secondary plant equipment in substations (Rev 2)
 14. 240-64636794 Standard for wiring and cable marking in substations (Rev 0)
 15. 240-70413291 Specification for electrical terminal blocks (Rev 1)
 16. 240-51999977 Standard for digital transducer-based measurement system for electrical quantities (Rev 2)
 17. 240-75655504 Corrosion protection standard for new indoor and outdoor Eskom equipment, components, materials and structures manufactured from steel standard (Rev 1)
 18. 240-83126800 Maintenance standard template
 19. 240-55410927 Cyber security standard for operational technology (Rev 2)
 20. 240-64038621 Remote device communication standard for data retrieval and remote access (Rev 2)
- the supply of a prototype scheme as detailed in C2.2 Activity Schedule
 - the integration of a free-issue Point on Wave (POW) relay into the prototype scheme.
 - the supply of design outputs as indicated in the milestone deliverables below.

2.2 Programme and Milestone Deliverables

The *works* are to be carried out according to the following proposed programme with associated milestone deliverables:

Stage	Milestone Deliverables
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1	Functional Design Specification	Report
2	System Design Specification	Report
3	Draft FAT procedure	Report
4	Detail Design & Specialised training	<ul style="list-style-type: none"> • Prototype scheme drawings • Master scheme drawings (all permutations) for Production Phase • Construction (mechanical cut-out) drawings for all scheme/product sub-assemblies (e.g. metalwork) • Panel and IED label drawings • Input/Output (I/O) lists (data and communications definitions) • Training course(s) attended by Eskom • Device configurations (including IEC61850 configurations) in the native file format of the applicable software tools & IED Programmable logic with comments • Settings sheets including associated custom macros for Microsoft Excel (if applicable) • Default settings in the native file format of the applicable software tools • Configuration, setting, testing and analysis software
5	Prototype scheme build (and integration of POW relay) & Final FAT procedure	Prototype scheme & report
6	Type-testing	Reports/Certificates
7	Pre-FAT	Report
8	FAT	Report
9	Completion of all remaining outputs	<ul style="list-style-type: none"> • Automated test templates • All other documentation (training material; scheme manual; settings guide; scheme selection, application, installation and commissioning guides; maintenance standard) • QITP (Quality Inspection and Test Plans) for supply contracting phase (Production Phase)
10	Delivery, off-loading and site erection of prototype scheme	Prototype scheme delivered, off-loaded and erected at Eskom site.

Acceptance of each stage, by the *Employer*, is required prior to commencement of the following stage.

It is preferred that the specialised training is provided prior to the *Employer's* review of IED/device configurations and settings.

The prototype design freeze follows the acceptance, by the responsible *Employer's* representative, of the prototype drawings as per the development program. The acceptance of the drawings shall take place before the scheduled design freeze date. Each device in the prototype scheme shall be equipped with the hardware and firmware version that will be supplied during the Production Phase. The operating and analysis software version shall be the version that will be required to communicate with the Production Phase devices.

Once the product Development Phase is completed, a design freeze shall come into effect. No further changes shall be permitted to the schemes, the scheme components or the scheme drawings. Any changes subsequent to the design freeze, during the Production Phase, shall be formally submitted to the *Employer's* representative for acceptance (sign off). All changes shall be formally tracked.

All milestone deliverables shall be provided in the native file format and signed PDF copies, where applicable. Native-format files shall be editable by the *Employer*. Where files are password protected, and this protection cannot be removed, such files will be accompanied by text files detailing the procedure to edit the file contents. Paper copies are not required.

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All scheme/product drawings shall be drawn to Eskom standard 240-96632721 (Drawing Practice Standard) and using Eskom's provided cell libraries.

3 Management and start up.

3.1 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	As and when required	To be advised	<i>Employer, Contractor, Supervisor</i> and any parties deemed necessary.
Overall contract progress and feedback	As and when required	To be advised	<i>Employer, Contractor, Supervisor</i> and any parties deemed necessary.

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.

3.2 Documentation control

Documentation shall be identified using the code: [Contract Number] [Sender] [Receiver] [where E = Eskom, X = Contractor] [Sequence number] yyyy-mm-dd. Contractual communications will be in the form of properly compiled letters or forms attached to e-mails and not as a message in the e-mail itself.

Documentation that is exchanged between the relevant parties shall be copied to the *Project Manager*.

3.3 Health and safety risk management

The *Contractor*, by virtue of this contract, is the designated designer and shall ensure compliance with all applicable legal and statutory requirements.

The deliverables shall include:

- an application guide to ensure that the *Employer* is directed on how to apply the product safely,
- a settings guide to ensure that the *Employer* is directed on how to operate the product safely and
- a maintenance engineering standard to ensure that the *Employer* is directed on how to maintain the product properly so that it remains safe to use.
- installation and commissioning guides to ensure that the *Employer* is directed on how to install and commission the product properly so that it is safe to use.
- acknowledgement of Eskom's SHE rules and requirements form (Annexure B) signed and submitted by the tenderer
- OHS plan (Applicable to high risk work only)
- OHS organization within the Company-Responsibility & Accountability

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- SHE Incident management
- Planning of conduct of work activities including planning for changes and emergency work
- PPE- Personal Protective Equipment
- Emergency planning and fire risk management
- Vehicle and driver behavior safety
- Contractor or supplier selection and management
- Design and specifications
- Permits
- Competency, training, appointments
- Communication and awareness

Management commitment and visible felt leadership

Costing for Safety Health and Environmental management

Has the tenderer submitted detailed (The cost should be broken down not provided as a lump sum) costing for SHE, i.e. –

- based on the overall scope of work/service to be performed;
- the generic scope of work/service risk assessment – will may serve as a guideline.

Baseline Risk Assessment (BRA)

Identification, assessment and management of SHE risks related to the scope of work. The methodology used for the risk assessment must be provided together with the BRA

- Valid Letter of Good Standing (COIDA or equivalent)
- SHE policy signed by CEO/ MD- Comply to OHS Act Section 7 or ISO45001:2018
- SHE Competency (Consider scope of work, risks, SHE plan and applicability) CV,s and qualifications / certificates e.g First aiders, Safety officer (SACPCMP), SHE Representative, HCS Controller, Incident investigator, SAMTRAC /SHEMTRAC, NADSAM or Equivalent

In addition, the *Contractor* shall comply with the health and safety requirements contained in the following rules and procedures:

1. Eskom contractor Health and Safety requirements standards 32-136
2. 32-727 Eskom Safety, Health, Environmental and Quality Policy (SHEQ)
3. SHE specification provided
4. Occupational Health and Safety Act 85 of 1993
5. National Road Traffic Act 93 of 1996.
6. Compensation for Occupational Diseases and Illnesses Act 130 of 1993
7. Eskom Procedure on Vehicle and Driver Safety Management
8. 240-62946386 32-345 Eskom Specification on Vehicle Safety
9. 32-95 Environmental, Occupational Health and Safety Incident Management Procedure
10. 240-6219622732-37 Eskom Substance Abuse Procedure.
11. 240-62196227 Life- saving Rules
12. Tobacco Products Control Act 83 of 1993 (updated 2011.05.19)
13. Consolidated COVID-19_Directive_ Workplace Health & Safety_ Government Gazzette 43751_ GNR 1031_ 01 October 2020
14. SANS 1186 Symbolic Safety Signs

and as applicable to the *Contractor's* premises or when working on the *Employer's* premises.

3.4 Environmental constraints and management

The *Contractor* shall comply with the environmental criteria and constraints stated in the following rules and procedures: 41-120 Environmental Requirements for the Procurement of Assets, Goods and Services.

In addition, the *Contractor* is required to ensure that all goods, services or works supplied in terms of this contract also conform to all applicable environment legislation(s), 32-727: Eskom SHEQ Policy and National Environmental Management Act 107 of 1998.

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ISPM 15 is the 'International Standards for Phytosanitary measures publication No: 15 Guidelines for Regulating Wood Packaging Material in International Trade. ISPM 15 regulates the global spread of timber pests by regulating the movement of timber packaging and dunnage in international trade.

Deviations from these requirements will be regarded as a non-conformance. Should there be concerns regarding environmental performance and non-conformance to environmental requirements, management engagements and interventions will be introduced to determine a means to addressing the shortfalls.

Once these interventions have been explored and exhausted, then the Eskom supplier disciplinary process must be followed.

3.5 Quality assurance requirements

The *Contractor's* Quality Management System shall, as a minimum be documented in accordance with ISO 9001: 2015. It is preferred that the Quality Management System shall have been certified by an ISO accredited body.

The *Contractor's* Quality Management System shall be in accordance with Eskom standard QM58.

The end of each stage of development shall be taken as a quality holding point. Subsequent stages shall not be concluded prior to acceptance of earlier phases. All Factory Acceptance Tests shall be carried out/witnessed, at the *Employer's* discretion, by the *Employer's* representatives.

During the course of this contract, the *Contractor* shall develop detailed Quality Control plans for the manufacturing, testing and supply of the product as will be applicable to a Production Phase contract for these items.

3.6 Programming constraints

Microsoft Project 2010 (or later) shall be used as the programming system (application). The program shall provide planned completion dates of milestones for each stage.

The *Contractor* shall include time for the *Employer's* acceptance of the outputs of each development stage, indicating such times on the programme. Training interventions outlined in section 3.13 (Training workshops and technology transfer) shall be indicated on the programme.

3.7 *Contractor's* management, supervision and key people

No additional requirements.

3.8 Invoicing and payment

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

Local Invoices

The *Contractor* shall address the tax invoice to the *Employer* and include on each invoice the following information:

- Name and address of the *Contractor* and the *Project Manager*;
- The SAP Purchase order number and title of order;
- *Contractor's* VAT registration number;

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- The *Employer's* VAT registration number;
- Description of goods and services provided for each item invoiced based on the Price Schedule;
- Total amount invoiced excluding VAT, the VAT and the invoiced amount including VAT;
- Invoices with foreign content must be submitted in hard copy originals.
- Goods Receipt Number (GRN)

The tax invoice should be submitted via e-invoice to: Invoiceseskomlocal@eskom.co.za

- A PDF file that was created directly from a system meets the definition of an original document and is allowed (including saving documents from excel to PDF, word to PDF etc.).
- An Invoice that was printed and then scanned to PDF by the Vendor is not acceptable as this is not an original tax invoice by SARS definition but a copy.
- 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."

Invoices submitted in any other manner will not be considered for payment e.g invoices sent directly to the *Project Manager* specified on the Task Order.

Foreign invoices

For **Foreign invoices**, contractors shall physically deliver hard copies of original documents to the respective head offices. Thereafter copies of invoice documentation shall be sent to Invoiceseskomforeign@eskom.co.za.

The foreign invoice should be sent together with relevant shipping documents as follows:

- Delivery note specifying equipment (model number, serial number etc) with cross reference to the Task Order number and the line number on the Task Order;
- Tax invoice;
- Commercial invoice;
- SARS Release notification;
- SAD 500;
- Custom worksheet; and
- Bill of lading.

3.9 Insurance provided by the *Employer*

No additional requirements.

3.10 Contract change management

3.11 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.

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

Original documentation must be kept by the *Contractor*, where applicable.

3.13 Training workshops and technology transfer

The *Contractor* shall provide product-related skills development of the *Employer's* appointed product custodians and other designated personnel as reasonably required in order for the *Employer* to accept/sign-off of each development stage. Training shall include:

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1. Different hardware and software options of the tendered products;
2. Operation of the products including details of their algorithms and setting options;
3. Operation of the configuration and setting software, including IEC 61850 configuration;
4. Testing aids and the use of the automated testing templates; and
5. Commissioning of the products and requirements for maintenance.

Training shall be undertaken at the *Contractor's* local offices. At least one of the interventions, specifically for point 2, shall be undertaken by at least one person who is closely involved in the development of the product.

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4 Engineering and the *Contractor's* design

4.1 *Employer's* design

As per section 2 (Specification and description of the *works*).

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

The *Contractor* shall design all parts of the *works* as envisaged in the detailed product specifications and supporting documents.

The *Contractor* shall apply a consistent design philosophy amongst different components of the scheme. Wherever possible, the design shall reflect its heritage with Eskom's existing fleet, sample drawings provided.

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

The particulars of the *Contractor's* design which is to be submitted to the *Project Manager* for acceptance are specified in section 2.2 (Programme and Milestone deliverables) and section 1.3.2 (Interpretation and Terminology).

All design and supporting documents and drawings, that are to be developed as part of the *works*, shall be subject to acceptance by the *Employer*. These shall be submitted to the *Project Manager* for acceptance and shall be subject to the *period of reply*, unless agreed otherwise between the parties. Periods for acceptance of documents and drawings shall be included within the programme of work.

4.4 Other requirements of the *Contractor's* design

No additional requirements.

4.5 Use of *Contractor's* design

The *Employer* may use and copy all or part of the *Contractor's* design for Eskom's commercial purposes or otherwise and/or for use in other contracts/designs, possibly with other contractors.

4.6 Design of Equipment

No additional requirements.

4.7 Equipment required to be included in the *works*

In addition to the equipment detailed in the pricing schedules, the *Contractor* shall provide the following items free of charge:

1. All engineering software that is required for configuration, setting, testing and analysis of the products. Software licences shall be provided to the *Employer* and shall be limited to ten (10) for each software type.
2. Test equipment required for the successful completion of this contract, including secondary current and voltage injection equipment with advanced reporting capabilities, and protocol analyzers and simulators including IEC 61850.
3. Fibre optic and/or copper Ethernet patch leads required to assemble all prototype products into an integrated solution for Factory Acceptance Testing. All such leads shall be supplied to the *Employer* together with the prototype products when delivered by the *Contractor* at the end of the contract.

4.8 As-built drawings, operating manuals and maintenance schedules

As per section 2.2 (Programme and Milestone Deliverables).

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5 Procurement

5.1 People

5.1.1 Minimum requirements of people employed on the Site

No additional requirements.

5.1.2 BBBEE and preferencing scheme

The *Supplier* shall retain the BBBEE Status Level of Contributor of Level 4 (or better) for the duration of this contract.

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

No additional requirements.

5.2 Subcontracting

5.2.1 Preferred subcontractors

No additional requirements.

5.2.2 Subcontract documentation, and assessment of subcontract tenders

No additional requirements.

5.2.3 Limitations on subcontracting

All subcontractors shall be subject to approval by the *Employer*.

Engineering services associated with this contract shall be undertaken in South Africa, possibly with assistance from foreign OEMs. Panel/module manufacturing and wiring associated with this contract shall be undertaken in South Africa. IEDs and auxiliary electrical components may be imported, but strong local technical expertise on the products shall be available.

5.2.4 Attendance on subcontractors

No additional requirements.

5.3 Plant and Materials

5.3.1 Quality

Quality requirements are detailed in section 3.5 (Quality assurance requirements) and within the technical specifications relating to this contract.

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

The *Employer* shall “free issue” the following item to the *Contractor*:

1. Point On Wave (POW) relay

The above item shall be delivered to the *Contractor's* works and offloaded by others on behalf of the *Employer*.

The *Contractor* shall provide signed confirmation of receipt of all free-issued items to the *Employer's* representative. The free-issued items shall remain the property of the *Employer*. The *Contractor* shall

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All other Plant and Materials are to be provided by the *Contractor*.

5.3.3 *Contractor's* procurement of Plant and Materials

The *Employer* requires that guarantees/warranties from other contractors to be in favour of the *Employer* and not just to the *Contractor*.

5.3.4 Spares and consumables

No additional requirements.

5.4 Tests and inspections before delivery

Testing shall be carried out as described in the technical specifications. The *Contractor* shall "ring-out" each product/panel prior to first energisation and after modifications to confirm that it is safe to energise. Testing shall be conducted at the *Contractor's* local factory.

Aside from the tests which are documented in the technical specifications, all products shall be subject to free form testing by *Employer's* representatives to verify and improve the robustness of the solution. Free form testing shall be applicable per product and to all prototype products operating as a system. Reasonable care shall be taken not to damage prototype equipment as a result of the free form testing.

5.5 Marking Plant and Materials outside the Working Areas

No additional requirements.

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

No additional requirements.

5.7 Cataloguing requirements by the *Contractor*

No additional requirements.

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6 Construction

6.1 Temporary works, Site services & construction constraints

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

No additional requirements.

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

No additional requirements.

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

No additional requirements.

6.1.4 Health and safety facilities on Site

No additional requirements.

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

No additional requirements.

6.1.6 Title to materials from demolition and excavation

No additional requirements.

6.1.7 Cooperating with and obtaining acceptance of Others

No additional requirements.

6.1.8 Publicity and progress photographs

The *Employer* retains the right to take photographs and video (including audio) of prototype equipment that is in any state including being under construction or under testing. Such recorded media shall be used internally by the *Employer*, and shall not be shared with other parties.

6.1.9 *Contractor's* Equipment

No additional requirements.

6.1.10 Equipment provided by the *Employer*

Representatives of the *Employer* shall use their own personal computers when working at the site.

The *Employer* shall provide (on loan) various SCADA station gateway devices for the purposes of interoperability/compatibility testing with the prototype solution.

No other equipment shall be provided by the *Employer* except as agreed in writing by the *Project Manager*.

6.1.11 Site services and facilities

The *Employer* will not provide site services or facilities in relation to this contract except that some progress meetings may be held at the *Employer's* offices. In the latter case, standard meeting facilities shall be provided.

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6.1.12 Facilities provided by the *Contractor*

The *Contractor* shall provide a suitable work area for consultation and collaboration between *Contractor* and *Employer* representatives as required during the contract term. A suitable indoor holding and testing area shall be provided to house the complete prototype solution. The holding area and associated facilities shall accommodate up to eight (8) *Employer* representatives at any one time in addition to *Contractor* representatives. The work areas shall cater for desks and chairs and power supply points as needed for personal computers and testing equipment. Secure parking facilities shall be available to the *Employer's* representatives at no charge.

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

No additional requirements.

6.1.14 Survey control and setting out of the *works*

No additional requirements.

6.1.15 Excavations and associated water control

No additional requirements.

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

No additional requirements.

6.1.17 Control of noise, dust, water and waste

No additional requirements.

6.1.18 Sequences of construction or installation

No additional requirements.

6.1.19 Giving notice of work to be covered up

No additional requirements.

6.1.20 Hook ups to existing works

No additional requirements.

6.2 Completion, testing, commissioning and correction of Defects

6.2.1 Work to be done by the Completion Date

All milestone deliverables identified in section 2.2 (Programme and Milestone Deliverables) are to be completed by the Completion Date.

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

No additional requirements.

6.2.3 Materials, facilities and samples for tests and inspections

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The *Contractor* shall supply facilities and equipment for completion of testing as per the specifications and programme. The main secondary injection testing equipment shall be from the Omicron CMC line, generally the CMC256 or higher, supporting Ethernet network interfacing, advanced protection testing tools and the IEC 61850 option.

6.2.4 Commissioning

No additional requirements.

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

No additional requirements.

6.2.6 Take over procedures

No additional requirements.

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

No additional requirements.

6.2.8 Performance tests after Completion

No additional requirements.

6.2.9 Training and technology transfer

This is addressed under section 3.13 (Training workshops and technology transfer).

6.2.10 Operational maintenance after Completion

No additional requirements.

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7 Plant and Materials standards and workmanship

7.1 Investigation, survey and Site clearance

No additional requirements.

7.2 Building works

No additional requirements.

7.3 Civil engineering and structural works

No additional requirements.

7.4 Electrical & mechanical engineering works

Full details on the electrical and mechanical engineering works are provided in section 2 (Specification and description of the *works*). In the event of inconsistencies or clashing requirements, those specified in the contract shall take precedence.

7.5 Process control and IT works

No additional requirements.

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8 List of drawings

8.1 Drawings issued by the *Employer*

The *Employer* shall provide the *Contractor* with the following sample drawing set, based on the Phase 5 Transmission Shunt Capacitor and Filter Bank Protection Scheme, at or before the Contract Date:

- Scheme Name: 6CB - #500
- Drawing Reference: 0.52/30404
- Number of Sheets: 41

The *Contractor* is to note that there are changes in terms of design philosophy as well as additional requirements that have been specified for the Phase 6 Shunt Capacitor and Filter Bank Protection Schemes (as per Eskom standard 240-150182735 (Specification for Phase 6 Transmission and Distribution Protection Schemes: Shunt Capacitor and Filter Banks (Rev 2)) and the related standards referenced therein). The Phase 5 drawings have only been provided as a typical example of protection scheme drawings.

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C3.2 *CONTRACTOR'S* WORKS INFORMATION

Not applicable.