# Appendix A

## A1 Schedule A Section 1 – Requirements and General Particulars

1. [Schedule A](#_A1__) lists Electricity North West' requirements for multi-circuit 6.6kV and 11kV switchboards at primary and distribution substations.
2. [Schedules B](#_A3__), [C](#_A4__) and [D](#_A5__) will be completed for each substation required.
3. The equipment listed includes provision for supervisory control.
4. The Electricity North West system is normally earthed at the supply point through two neutral earthing resistors, each rated at 1000A, but provision is made for the installation of a third incoming transformer and its associated neutral resistor.
5. For the purpose of this specification, the availability of a nominal 110 Volt battery and a 240 Volt single-phase ac supply may be assumed as standard. The supplies to the switchgear will be at the bus-section unit and provided under a separate contract.
6. Where channel foundations are supplied, these shall cater for the ultimate capacity of the switchhouse, which will be stated on the general particulars of the enquiry.
7. Where the secondary connections are broken when the circuit breaker is isolated, jumper connections shall be provided for completing these connections to permit testing.
8. The address to which the equipment shall be delivered will be given on the purchase order.
9. In addition to or in place of any other indications:

* Phase colour indication (L1, L2 and L3) shall be provided.
* Manual trip and close buttons shall be labelled “trip” and “close”.
* All gas pressure gauges shall be labelled for the section of busbar or circuit breaker to which they relate.

1. Non-isolatable switchgear shall be supplied with a means for phasing out approved by the Electricity North West Plant Policy Manager.
2. Test shutters/covers shall be fully interlocked. Fully interlocked means that:

* The shutters/covers cannot be opened/removed unless the circuit is earthed, and
* When the shutters/covers are opened/removed the circuit cannot be re-energised

It shall be possible to remove the earth for circuit testing.

When the test access is NOT at the front of the switchgear a physical indication adjacent to the shutters/covers shall be provided to show that the circuit is earthed and a mechanical/ electromechanical interlock or linkage shall be provided which enables an operator to be sure that the correct access has been opened. A physical indication shall also be provided on the front of the switchgear to show that the test access is open. If either of these indicating devices are lamps, a lamp test facility shall also be provided.

When using lamps consideration shall be given to the drain on power supplies and the proposed scheme shall be submitted for approval by the Policy and Standards Manager.

## A2 Schedule A Section 2 – Choice of Equipment

## A2.1 General

Equipment required for a substation will be selected from the following list and detailed in [Schedule D](#_A5__).

## A2.2 Incoming Transformer Equipments

Incoming transformer equipments shall be provided with electrical protective equipment in accordance with Electricity North West diagrams and Electricity North West ES396.

Type T10 - as specified.

## A2.3 Bus-section Equipments

Type B11 – Where specified a fibre optic communications hub for centralised communication with all feeder and transformer relays.

## A2.4 Feeder Equipment

**NOTE:** When auto-reclosing facilities are required on feeder equipments they will be specified.

Type F12 -overcurrent and earth-fault protection by non-directional relay.

A definite time sensitive earth-fault relay shall also be fitted if specified by the Purchaser. If the main overcurrent and earth fault relay incorporates SEF functionality as well as the other required functions it is acceptable to use this.

Type F12M - as F12 but with provision for metering.

Type F16 - unit protection with back-up non-directional protection.

Type F16M - as F16 but with provision for metering.

## A2.5 Busbar Trunking, Plinths and Dummy Panels

The Equipment required will be specified in [Schedules B](#_A3__). The location of the Equipment shall be detailed in [Schedule C](#_A4__).

## A3 Schedule B – General Requirements

|  |  |  |  |
| --- | --- | --- | --- |
| 1. | Substation name |  |  |
| 2. | System Voltage | kV |  |
| 3. | Short circuit rating (minimum) | kA |  |
| 4. | Number of units |  |  |
| 5. | Operating mechanism |  | Refer to Clause 8.6 |
| 6. | Shunt trip coil |  | 110V dc |
| 7. | Spring release coil |  | 110V dc |
| 8. | Busbar rating | A |  |
| 9. | (a) Number of feeder units |  |  |
|  | (b) Current rating | A |  |
| 10. | (a) Number of incoming transformer or incoming feeder/transformer units |  |  |
|  | (b) Current rating | A |  |
| 11. | (a) Number of bus-section units |  |  |
|  | (b) Current rating | A |  |
| 12. | (a) Number of skeleton units |  |  |
|  | (b) Current rating | A |  |
| 13. | (a) Number of Dummy Panels |  |  |
|  | (b) Current rating |  |  |
|  | (c) Width of Dummy Panel |  | 200mm\* / 300mm\* / 500mm\* / Bespoke\* |
| 14. | (a) Number of Plinths Required |  |  |
|  | (b) Height of Plinth Required |  | 200mm\* / 500mm\* |
| 15. | (a) Number of Busbar Trunking Required |  |  |
|  | (b) Current rating |  |  |
| 16. | Foundations to accommodate expected number of units |  |  |
| 17. | Date for delivery to site |  |  |
| 18. | Date for completion of erection |  |  |
| 19. | Date for commissioning |  |  |

\*Delete as required. Bespoke length to be specified. Subject to Approval.

## A4 Schedule C – Switchboard Arrangement

|  |  |
| --- | --- |
| Substation Name |  |

Front Left

|  |  |  |
| --- | --- | --- |
| **Panel No** | **Circuit Title** | **Cable Box Type** |
| 1 |  |  |
| 2 |  |  |
| 3 |  |  |
| 4 |  |  |
| 5 |  |  |
| 6 |  |  |
| 7 |  |  |
| 8 |  |  |
| 9 |  |  |
| 10 |  |  |
| 11 |  |  |
| 12 |  |  |
| 13 |  |  |
| 14 |  |  |

Front Right

**NOTE:** All Dummy Panels and Busbar Trunking shall be added as rows in the required location without Panel Numbers.

|  |  |
| --- | --- |
| Plinths Required on all Panels | Yes\* / No\* |
| Plinths Required on Specific Panel Numbers | Panel Number…………….. |

## A5 Schedule D – Unit Specification

**6.6kV Transformer Type T10 E66T10**

**6.6kV Switchboard**

|  |  |
| --- | --- |
| Substation |  |
| Panel No |  |
| Circuit Title |  |

|  |  |
| --- | --- |
| **Switchgear** | |
| To Specification | Electricity North West ES313 |
| Type | T10 |
| Busbar Rated Normal Current | 2000A, 3150A\* |
| Circuit Rated Normal Current | 2000A, 3150A\* |
| Mechanism | Refer to Clause 8.6 |
| Spring Charging Motor | 110 volt DC |
| Multicore Terminations | In multicore box at rear of switch unit |

|  |  |  |  |
| --- | --- | --- | --- |
| **Protection** | | | |
| Current Transformers | | | |
| Purpose | Ratio | | Class |
| REF | 3-2000/5 | | X (1/400 Turns Ratio) see section 8.8 |
| OC/EF | 3-2000/5, 3000/5\* | | 15VA 10P20 /0.5 |
| AVC | 1-2000/5, 3000/5\* | | 15VA 0.5 (Centre phase CT) |
| Neutral CTs | | | |
| REF | 1-2000/5 | X (1/400 Turns Ratio) see section 8.8 | |
| SBEF | 1-1000/5 | 7.5VA 10P20 | |
| Voltage Transformer | 6600/110 | 3 single phase or 3 phase 5 limb | |

\* 3150A busbar & 3000/5 CTs for transformers > 23MVA

|  |  |
| --- | --- |
| Trip circuit supervision | H7 scheme |
| Relays All relays to be approved by Electricity North West | |
| Protection functions for transformer incomers are specified in section B2 of ES396 | |

Control Wiring

Wiring on switch unit to be to following Electricity North West standard schematic diagrams:

|  |  |  |
| --- | --- | --- |
| AC Circuits |  | 900430/011 |
| DC Circuits | Vacuum | 900430/012 to 15 |

Auxiliary switches as Clause 8.10.2 in ES313.

Cabling

|  |  |
| --- | --- |
| Cable boxes | Air |
| No and size of cables/phase |  |
| Gland plates drilled 85mm/cable | Yes/No |

**11kV Transformer Type T10 E11T10**

**11kV Switchboard**

|  |  |
| --- | --- |
| Substation |  |
| Panel No |  |
| Circuit Title |  |

|  |  |
| --- | --- |
| **Switchgear** | |
| To Specification | Electricity North West ES313 |
| Type | T10 |
| Busbar Rated Normal Current | 1250A, 2000A\* |
| Circuit Rated Normal Current | 1250A, 2000A\* |
| Mechanism | Refer to Clause 8.6 |
| Spring Charging Motor | 110 volt DC |
| Multicore Terminations | In multicore box at rear of switch unit |

|  |  |  |
| --- | --- | --- |
| **Protection** | | |
| Current Transformers | | |
| Purpose | Ratio | Class |
| REF | 3-1200/3 | X (1/400 Turns Ratio) see section 8.8 |
| OC/EF | 3-1200/5, 2000/5\* | 15VA 10P20 /0.5 |
| AVC | 1-1200/5, 2000/5\* | 15VA 0.5 (Centre phase CT) |
| Neutral CTs | | |
| REF | 1-1200/3 | X (1/400 Turns Ratio) see section 8.8 |
| SBEF | 1-1000/5 | 7.5VA 10P20 |
| Voltage Transformer | 11000/110 | 3 single phase or 3 phase 5 limb |

\* 2000A busbar & 2000/5 CTs for transformers > 23MVA

|  |  |
| --- | --- |
| Trip circuit supervision | H7 scheme |
| Relays All relays to be approved by Electricity North West | |
| Protection functions for transformer incomers are specified in section B2 of ES396 | |

Control Wiring

Wiring on switch unit to be to following Electricity North West standard schematic diagrams:

|  |  |  |
| --- | --- | --- |
| AC Circuits |  | 900430/011 |
| DC Circuits | Vacuum | 900430/012 to 15 |

Auxiliary switches as Clause 8.10.2 in ES313.

Cabling

|  |  |
| --- | --- |
| Cable boxes | Air |
| No and size of cables/phase |  |
| Gland plates drilled 85mm/cable | Yes/No |

**6.6kV Bus Section Type B11 E66B11**

**6.6kV Switchboard**

|  |  |
| --- | --- |
| Substation |  |
| Panel No |  |
| Circuit Title |  |

|  |  |
| --- | --- |
| **Switchgear** | |
| To Specification | Electricity North West ES313 |
| Type | B11 |
| Busbar Rated Normal Current | 2000A, 3150A\* |
| Circuit Rated Normal Current | 2000A, 3150A\* |
| Mechanism | Refer to Clause 8.6 |
| Spring Charging Motor | 110 volt DC |
| Multicore Terminations | In multicore box at rear of switch unit |

|  |  |  |
| --- | --- | --- |
| **Protection** | | |
| Current Transformers | | |
| Purpose | Ratio | Class |
| OC/EF where  specified (on 3  section boards only) | 3-2000/5,  3000/5\* | 7.5VA 10P20 |

\* 3150A busbar & 3000/5 CTs for transformers > 23MVA

|  |  |
| --- | --- |
| Relays All relays to be approved by Electricity North West | |
| Trip circuit supervision | H7 scheme |

Control Wiring

Wiring on switch unit to be to following Electricity North West standard schematic diagrams:

|  |  |  |
| --- | --- | --- |
| AC Circuits |  | NA |
| DC Circuits | Vacuum | 900430/041 |

Auxiliary switches as Clause 8.10.2 in ES313.

**11kV Bus Section Type B11 E11B11**

**11kV Switchboard**

|  |  |
| --- | --- |
| Substation |  |
| Panel No |  |
| Circuit Title |  |

|  |  |
| --- | --- |
| **Switchgear** | |
| To Specification | Electricity North West ES313 |
| Type | B11 |
| Busbar Rated Normal Current | 1250A, 2000A\* |
| Circuit Rated Normal Current | 1250A, 2000A\* |
| Mechanism | Refer to Clause 8.6 |
| Spring Charging Motor | 110 volt DC |
| Multicore Terminations | In multicore box at rear of switch unit |

|  |  |  |
| --- | --- | --- |
| **Protection** | | |
| Current Transformers | | |
| Purpose | Ratio | Class |
| OC/EF where  specified. | 3-1200/5,  2000/5\* | 7.5VA 10P20 |

\* 2000A busbar & 2000/5 CTs for transformers > 23MVA

|  |  |
| --- | --- |
| Relays All relays to be approved by Electricity North West | |
| Trip circuit supervision | H7 scheme |

Control Wiring

Wiring on switch unit to be to following Electricity North West standard schematic diagrams:

|  |  |  |
| --- | --- | --- |
| AC Circuits |  | NA |
| DC Circuits | Vacuum | 900430/041 |

Auxiliary switches as Clause 8.10.2 in ES313.

**6.6kV Feeder Type F12 E66F12**

**6.6kV Switchboard**

|  |  |
| --- | --- |
| Substation |  |
| Panel No |  |
| Circuit Title |  |

|  |  |
| --- | --- |
| **Switchgear** | |
| To Specification | Electricity North West ES313 |
| Type | F12 |
| Busbar Rated Normal Current | 2000A, 3150A |
| Circuit Rated Normal Current | 630A |
| Mechanism | Refer to Clause 8.6 |
| Spring Charging Motor | 110 volt DC |
| Multicore Terminations | In multicore box at rear of switch unit |

|  |  |  |
| --- | --- | --- |
| **Protection** | | |
| Current Transformers | | |
| Purpose | Ratio | Class |
| OC/EF | 3-600/5 | 7.5VA 10P20 |

|  |  |
| --- | --- |
| Relays All relays to be approved by Electricity North West | |
| 1 - OC/EF | |
| 1 - Earth Fault Alarm (unless integral with OC/EF relay) | |
| Trip circuit supervision | H7 scheme |

Control Wiring

Wiring on switch unit to be to following Electricity North West standard schematic diagrams:

|  |  |  |
| --- | --- | --- |
| AC Circuits |  | 900430/021 |
| DC Circuits | Vacuum | 900430/025 |

Auxiliary switches as Clause 8.10.2 in ES313.

Cabling

|  |  |
| --- | --- |
| Cable boxes | Air |
| No and size of cables |  |
| Cable glands to be provided | Yes/No |

**11kV Feeder Type F12 E11F12**

**11kV Switchboard**

|  |  |
| --- | --- |
| Substation |  |
| Panel No |  |
| Circuit Title |  |

|  |  |
| --- | --- |
| **Switchgear** | |
| To Specification | Electricity North West ES313 |
| Type | F12 |
| Busbar Rated Normal Current | 1250A, 2000A |
| Circuit Rated Normal Current | 630A |
| Mechanism | Refer to Clause 8.6 |
| Spring Charging Motor | 110 volt DC |
| Multicore Terminations | In multicore box at rear of switch unit |

|  |  |  |
| --- | --- | --- |
| **Protection** | | |
| Current Transformers | | |
| Purpose | Ratio | Class |
| OC/EF | 3-600/5 | 7.5 VA 10P20 |

|  |  |
| --- | --- |
| Relays All relays to be approved by Electricity North West | |
| 1 - OC/EF | |
| 1 - Earth Fault Alarm (unless integral with OC/EF relay) | |
| Trip circuit supervision | H7 scheme |

Control Wiring

Wiring on switch unit to be to following Electricity North West standard schematic diagrams:

|  |  |  |
| --- | --- | --- |
| AC Circuits |  | 900430/021 |
| DC Circuits | Vacuum | 900430/025 |

Auxiliary switches as Clause 8.10.2 in ES313 except alarm passing contact not required.

Cabling

|  |  |
| --- | --- |
| Cable boxes | Air |
| No and size of cables |  |
| Cable glands to be provided | Yes/No |

**6.6kV Feeder Type F12 with sensitive earth fault E66F12SEF**

**6.6kV Switchboard**

|  |  |
| --- | --- |
| Substation |  |
| Panel No |  |
| Circuit Title |  |

|  |  |
| --- | --- |
| **Switchgear** | |
| To Specification | Electricity North West ES313 |
| Type | F12 |
| Busbar Rated Normal Current | 2000A, 3150A |
| Circuit Rated Normal Current | 630A |
| Mechanism | Refer to Clause 8.6 |
| Spring Charging Motor | 110 volt DC |
| Multicore Terminations | In multicore box at rear of switch unit |

|  |  |  |
| --- | --- | --- |
| **Protection** | | |
| Current Transformers | | |
| Purpose | Ratio | Class |
| OC/EF + SEF | 3-600/5 | 7.5VA 10P20 |

|  |  |
| --- | --- |
| Relays All relays to be approved by Electricity North West | |
| 1 - OC/EF | |
| 1 - Sensitive Earth Fault with additional telecontrol facilities  (Unless integral with OC/EF relay) | |
| 1 - Earth Fault Alarm (unless integral with OC/EF relay) | |
| Trip circuit supervision | H7 scheme |

Control Wiring

Wiring on switch unit to be to following Electricity North West standard schematic diagrams:

|  |  |  |
| --- | --- | --- |
| AC Circuits |  | 900430/022 |
| DC Circuits | Vacuum | 900430/026 |

Auxiliary switches as Clause 8.10.2 in ES313

Cabling

|  |  |
| --- | --- |
| Cable boxes | Air |
| No and size of cables |  |
| Cable glands to be provided | Yes/No |

**11kV Feeder Type F12 with sensitive earth fault E11F12SEF**

**11kV Switchboard**

|  |  |
| --- | --- |
| Substation |  |
| Panel No |  |
| Circuit Title |  |

|  |  |
| --- | --- |
| **Switchgear** | |
| To Specification | Electricity North West ES313 |
| Type | F12 |
| Busbar Rated Normal Current | 1250A, 2000A |
| Circuit Rated Normal Current | 630A |
| Mechanism | Refer to Clause 8.6 |
| Spring Charging Motor | 110 volt DC |
| Multicore Terminations | In multicore box at rear of switch unit |

|  |  |  |
| --- | --- | --- |
| **Protection** | | |
| Current Transformers | | |
| Purpose | Ratio | Class |
| OC/EF + SEF | 3-600/5 | 7.5VA 10P20 |

|  |  |
| --- | --- |
| Relays All relays to be approved by Electricity North West | |
| 1 - OC/EF | |
| 1 - Sensitive Earth Fault with additional telecontrol facilities  (Unless integral with OC/EF relay) | |
| 1 - Earth Fault Alarm (unless integral with OC/EF relay) | |
| Trip circuit supervision | H7 scheme |

Control Wiring

Wiring on switch unit to be to following Electricity North West standard schematic diagrams:

|  |  |  |
| --- | --- | --- |
| AC Circuits |  | 900430/022 |
| DC Circuits | Vacuum | 900430/026 |

Auxiliary switches as Clause 8.10.2 in ES313.

Cabling

|  |  |
| --- | --- |
| Cable boxes | Air |
| No and size of cables |  |
| Cable glands to be provided | Yes/No |

**6.6kV Feeder Type F16 with Unit Protection and OCEIT E66F16T**

**6.6kV Switchboard**

|  |  |
| --- | --- |
| Substation |  |
| Panel No |  |
| Circuit Title |  |

|  |  |
| --- | --- |
| **Switchgear** | |
| To Specification | Electricity North West ES313 |
| Type | F16 |
| Busbar Rated Normal Current | 2000A, 3150A |
| Circuit Rated Normal Current | 630A |
| Mechanism | Refer to Clause 8.6 |
| Spring Charging Motor | 110 volt DC |
| Multicore Terminations | In multicore box at rear of switch unit |

|  |  |  |
| --- | --- | --- |
| **Protection** | | |
| Current Transformers | | |
| Purpose | Ratio | Class |
| Translay |  | Requirements to be determined for each order |
| OC/EF | 3 - 600/5 | 7.5VA 10P20 |

|  |  |
| --- | --- |
| Relays All relays to be approved by Electricity North West | |
| 1 - Unit protection relay | |
| 1 - OC/EF | |
| 1 - Earth Fault Alarm (unless integral with OC/EF relay) | |
| Trip circuit supervision | H7 scheme |

Control Wiring

Wiring on switch unit to be to following Electricity North West standard schematic diagrams:

|  |  |  |
| --- | --- | --- |
| AC Circuits |  | 900430/023 |
| DC Circuits | Vacuum | 900430/027 |

Auxiliary switches as Clause 8.10.2 in ES313

Cabling

|  |  |
| --- | --- |
| Cable boxes | Air |
| No and size of cables |  |
| Cable glands to be provided | Yes/No |

**11kV Feeder Type F16 with Unit Protection and OCEIT E11F16T**

**11kV Switchboard**

|  |  |
| --- | --- |
| Substation |  |
| Panel No |  |
| Circuit Title |  |

|  |  |
| --- | --- |
| **Switchgear** | |
| To Specification | Electricity North West ES313 |
| Type | F16 |
| Busbar Rated Normal Current | 1250A, 2000A |
| Circuit Rated Normal Current | 630A |
| Mechanism | Refer to Clause 8.6 |
| Spring Charging Motor | 110 volt DC |
| Multicore Terminations | In multicore box at rear of switch unit |

|  |  |  |
| --- | --- | --- |
| **Protection** | | |
| Current Transformers | | |
| Purpose | Ratio | Class |
| Translay |  | Requirements to be determined for  each order |
| OC/EF | 3 - 600/5 | 7.5VA 10P20 |

|  |  |
| --- | --- |
| Relays All relays to be approved by Electricity North West | |
| 1 - Unit Protection Relay | |
| 1 - OC/EF | |
| 1 - Earth Fault Alarm (unless integral with OC/EF relay) | |
| Trip circuit supervision | H7 scheme |

Control Wiring

Wiring on switch unit to be to following Electricity North West standard schematic diagrams:

|  |  |  |
| --- | --- | --- |
| AC Circuits |  | 900430/023 |
| DC Circuits | Vacuum | 900430/027 |

Auxiliary switches as Clause 8.10.2 in ES313

Cabling

|  |  |
| --- | --- |
| Cable boxes | Air |
| No and size of cables |  |
| Cable glands to be provided | Yes/No |

## A6 Schedule E – Time for Completion

(to be completed by Tenderer)

|  |  |
| --- | --- |
| **Type of Unit** | **Complete delivery from date of order (Weeks)** |
|  |  |
|  |  |
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|  |  |
| \* Unistrut  \* Sole Plate | Notification date to ready for screeding  ........... Weeks |

\* Delete as necessary

## A7 Schedule F – List of Sub-Contractors

(to be completed by Tenderer)

|  |  |
| --- | --- |
| **Sub-contractor** | **Item to be supplied** |
|  |  |
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## A8 Schedule G – Document Schedule

**6.6kV and 11kV Switchgear Document Schedule**

|  |  |  |  |
| --- | --- | --- | --- |
| **Drawings** | **With Tender** | **Preliminary.**  Number of Weeks after Order. | **Final.**  Number of Weeks after Order. |
| Switchboard General Arrangement – Project Specific  Dimensioned board layout including details of the operating mechanisms and front mimic diagrams. | Typical. | - | 4 |
| Civil Interface Drawing – Project Specific  Fully dimensioned plan and side elevation of switchgear showing –  *Alignment profiles and floor openings*  *Fixing points and details*  *Weights and loads*  *Floor tolerances*  *Minimum clearances* | Typical | - | 4 |
| Panel Internal and External General Arrangement / Layout.  *Showing –*  *Relay types, sizes and locations*  *Door cut outs*  *Terminal blocks*  *Resistors and Metrosils*  *Switches*  *Indicating lamps* | Transformer Incomer to be provided with Tender. | - | 12 |
| AC and DC Schematics / Circuit Diagrams. | Transformer Incomer to be provided with Tender. | 12 | 16 |
| Wiring Diagrams  *With enough information to allow point to point wiring checks to be carried out.* | Typical | 12 | 16 |
| Buswiring Diagram. | Typical | - | 16 |
| CT Mag Curves | - | - | 20 |
| Erection & Commissioning and Operation & Maintenance Manuals | Typical | - | 20 |

**GENERAL NOTE:**

(a) The above list is not exhaustive; the contractor (switchgear manufacturer) shall provide all drawings and information that is required to fully understand the switchboard design.

(b) The above dates include 2 weeks for Electricity North West to comment on and approve drawings.

(c) Common cubicle numbering system to be used on all drawings. Refer to Electricity North West’ key line diagram for cubicle numbers.

**NOTES ON DRAWINGS AND DRAWING FORMAT:**

(a) Orthographic drawings shall use metric units and be reproduced to a scale that is declared on each print. The scale for general arrangement drawings shall not be less than 1 to 50 and that for detail drawings shall not be less than 1 to 20, although in exceptional circumstances 1 to 33 may be acceptable, subject to prior agreement.

(b) Drawings shall be monochrome black line on white paper, at least ISO A3 and not exceeding ISO A0 in size, with a clear margin on each edge of at least 25 mm. Multi-page drawing booklets are not acceptable.

(c) Drawings shall be submitted for Approval by the Purchaser on paper in duplicate (2 sets of A3 or full size as required.). They shall also be accompanied by equivalent AutoCad .dwg format (rev 14) files.

(d) The name of the site, the drawing number and the date and number of revision shall be marked on all drawings. All drawings shall be numbered according to a logical scheme.

(e) The drawings shall contain the Electricity North West’ title block which will be provided at the contract stage.

# Appendix B – Conformance Declaration

**SECTION-BY-SECTION CONFORMANCE WITH SPECIFICATION**

The Tenderer shall declare conformance or otherwise for each product/service or range of products/services, section-by-section, using the following Conformance Declaration Codes.

**Conformance Declaration Codes:**

|  |  |
| --- | --- |
| N/A = | Clause is not applicable/appropriate to the product/service. |
| C1 = | The product/service conforms fully with the requirements of this clause. |
| C2 = | The product/service conforms partially with the requirements of this clause. |
| C3 = | The product/service does not conform to the requirements of this clause. |
| C4 = | The product/service does not currently conform to the requirements of this clause, but the manufacturer proposes to modify and test the product in order to conform. |

**Manufacturer:**

**Product/Service Description:**

**Product/Service Reference:**

**Name:**

**Company:**

**Signature:**

|  |  |  |  |
| --- | --- | --- | --- |
| SECTION-BY-SECTION CONFORMANCE | | | |
| Section | Section Topic | Conformance Declaration Code | Remarks \* (must be completed if code is not C1) |
| 3 | Standards |  |  |
| 4.1 | Product not to be Changed |  |  |
| 4.2 | Electricity North West Technical Approval |  |  |
| 4.3 | Quality Assurance |  |  |
| 4.4 | Formulation |  |  |
| 4.5 | Identification Markings |  |  |
| 4.6 | Minimum Life Expectancy |  |  |
| 4.7 | Product Conformity |  |  |
| 5.1 | Requirements for Type Tests at the Supplier’s Premises |  |  |
| 5.2 | Requirement for Routine Tests at the Supplier’s Premises |  |  |
| 5.3 | Requirement for On Site Tests |  |  |
| 6 | General Design Features |  |  |
| 6.1 | Handling of SF6 and Decontamination Procedures |  |  |
| 6.2 | Internal Arc Tested Equipment |  |  |
| 7.1 | Extent of Contract |  |  |
| 7.2 | Site and Delivery |  |  |
| 7.3 | Time for Completion |  |  |
| 7.4 | Work to be Executed at Site |  |  |
| 7.5 | Manufacturer |  |  |
| 7.6 | Drawings and Maintenance Instructions |  |  |
| 7.7 | Spare Parts and Tools |  |  |
| 7.8.1 | Works Inspections |  |  |
| 7.8.2 | Relay Testing |  |  |
| 7.9 | Disposal of Switchgear and/or its components |  |  |
| 7.10 | Manual Handling |  |  |
| 7.11 | Failure, Modes, Effect and Cause Analysis |  |  |
| 8.1 | General Requirements |  |  |
| 8.2 | System Earthing |  |  |
| 8.3 | Common Ratings |  |  |
| 8.4 | Electrical Endurance |  |  |
| 8.5 | Rules for Interchangeability |  |  |
| 8.6.1 | Dependent Power |  |  |
| 8.6.2 | Stored Energy |  |  |
| 8.7 | Cable Terminations |  |  |
| 8.8.1 | Current Transformers – General |  |  |
| 8.8.2 | Accommodation and Earthing |  |  |
| 8.9 | Voltage Transformers |  |  |
| 8.10.1 | Auxiliary Switches |  |  |
| 8.10.2 | Standard Provision of Auxiliary Switches in Primary Substations |  |  |
| 8.10.3 | Small Wiring |  |  |
| 8.11 | Auxiliary Supplies |  |  |
| 8.12 | Diagrams |  |  |
| 8.13 | Gas |  |  |
| 9.1.1 | Relays – General |  |  |
| 9.1.2 | Sensitive Earth Fault Relays |  |  |
| 9.1.3 | Relays for Directional Protection |  |  |
| 9.1.4 | Unit Protection Relays |  |  |
| 9.1.5 | Feeder Earth Fault Relays |  |  |
| 9.2 | Isolating Features of Secondary Circuits |  |  |
| 9.3 | Secondary Wiring Disconnection |  |  |
| 9.4 | Auto-reclosing |  |  |
| 9.5.1 | Trip Circuit Supervision – Scheme Required |  |  |
| 9.5.2 | Trip Circuit Supervision – Label |  |  |
| 9.6 | Control Scheme |  |  |
| 9.7 | Selector Switches |  |  |
| 9.8 | Circuit Breaker Interlocks |  |  |
| 9.9 | Multicore Cables |  |  |
| 9.10 | Foundation Arrangements |  |  |
| 9.11 | Platforms and Ladders |  |  |
| 9.12.1 | Lifting and Handling Facilities – General |  |  |
| 9.12.2 | Additional Equipment – Withdrawable Circuit Breakers |  |  |
| 9.12.3 | Voltage Transformers |  |  |
| 9.12.4 | Transport |  |  |
| 9.13 | Telecontrol |  |  |
| 9.14.1 | Busbar Trunking |  |  |
| 9.14.2 | Dummy Panels |  |  |
| 9.14.3 | Switchgear Plinths |  |  |
| 9.14.4 | ADVC Control and Active Network Power Flow Monitoring |  |  |
| 10 | Requirements for On-Site Testing |  |  |
| Schedule A – Section 1 | Requirements and General Particulars |  |  |
| Schedule A – Section 2 | Choice of Equipment |  |  |
| Schedule B | General Requirements |  |  |
| Schedule C | Switchboard Arrangement |  |  |
| Schedule D | Unit Specifications |  |  |
| Schedule E | Time for Completion |  |  |
| Schedule F | List of Sub - Contactors |  |  |

**Additional Notes:**