1. SCOPE

This document details EnergyNetworks technical requirements for the interface with Independent Distribution Network Operators (IDNO's) up to and including 11kV.

2. ISSUE RECORD

This is a controlled maintained document.

All copies printed via the Intranet or photocopied will be deemed uncontrolled.

Issue Date	Issue No	Author	Amendment Details
Oct 2007	3	A.Graham	Revised in line with ENA guidance document.
Jan 2007	2	A.Graham	Protection requirements added section 13.6
Sept 2006	1	A.Graham	Initial Issue

3. ISSUE AUTHORITY

Author	Owner	Issue Authority
Alastair Graham Policy and Standards Manager	Alastair Graham Policy and Standards Manager	Carl Woodman Engineering Services Manager ……

4. REVIEW

This document shall be reviewed on a periodic basis as and when required.

5. CONTENTS

7. DEFINITIONS

Company:	Refers to SP Distribution Limited, SP Transmission Limited and SP Manweb plc.
EnergyNetworks:	SP PowerSystems Ltd, operator of network assets on behalf of the Company.
SP Distribution Limited	The Distribution Licence Holder for the distribution service area formerly known as ScottishPower.
SP Transmission Limited	The Transmission Licence Holder for the transmission service area formerly known as ScottishPower.
SP Manweb plc	The Distribution Licence Holder for the distribution service are formerly known as Manweb.
High Voltage:	An a.c voltage exceeding 1000 volts measured between the phase conductors.
Low Voltage:	An a.c. voltage not exceeding 1000 volts measured between the phase conductors.
DNOs:	Distribution Network Operators
IDNOs:	Independent Distribution Network Operators
Controlled:	Demarcated area with controlled access
Uncontrolled:	An area with no controlled access

8. RELATED DOCUMENTS

It is important that users of listed documents ensure that they are in possession of the latest issue together with any amendments.

Statutory Legislation

The Electricity, Safety, Quality and Continuity Regulations 2002.

The Electricity Act 1989.

The Utilities Act 2000.

The Fire Precaution (Workplace) Regulations 1997.

The Distribution Code of Great Britain

Electricity Networks Association Engineering Recommendation

Principles for the Planning, Connection and Operation of Electricity Distribution Networks at the Interface between Distribution Network Operators (DNOs) and Independent Distribution Network Operators (IDNOs).
http://www.energynetworks.org.uk/spring/engineering/cms02/pdfs/IDNO/InterfaceDocument_070828_v1.pdf

G12/3	Requirements for the Application of Protective Multiple Earthing to Low Voltage Networks.
P2/6	Security of Supply
EATS 12-24	Plastic Ducts for buried Electric Cables
EATS 43-94	Earth Rods and their Connectors

EnergyNetworks Documents

Scottish Power Safety Rules	Scottish Power Safety Rules – Electrical & Mechanical.
SUB-01-008	Policy for the Inspection of Substations and LV Switch points.
SUB-02-006	Secondary Substation Installation and Commissioning Specification

SUB-03-017	General Specification for the Civil Engineering and Building Design and Construction of Secondary Substations.
OPSAF-02-003	Independent Distribution Network Operator Warning Label
EPS-01-007	Standard Low Voltage Connection Arrangements
EPS-01-004	Policy for Signing and Guarding of Electrical Network Apparatus.
BUPR-10-015	Site Responsibility Agreement Process
BUPR-22-015	Recording of Electrical assets by Contractors
CAB-04-009	Policy and Application Guide for Polymeric Cables
SWG-06-001	Approved Equipment Register - Switchgear

SP Distribution, Long Term Development Statement

SP Manweb, Long Term Development Statement

Dataserve Documents

Dataserve UK, Work Place reference Manual

9. INTRODUCTION

The Utilities Act in 2000, introduced regulatory changes allowing the Gas and Electricity Markets Authority to grant distribution licensees to suitable organisations to distribute electricity for the purpose of giving a supply. This has enabled the established Distribution Network Operators (DNOs) to build, own and operate distribution networks out of area within the UK. It has also facilitated other network operators to enter the market, creating private networks – typically embedded within the regional DNOs network. Licensed companies operating in the described manner are classed as Independent Distribution Network Operators (IDNOs).

This document details EnergyNetworks technical requirements when the Company network interfaces with an IDNO network and should be read in conjunction with "*Principles for the Planning, Connection and Operation of Electricity Distribution Networks at the Interface between Distribution Network Operators (DNOs) and Independent Distribution Network Operators (IDNOs)"* issued by the ENA.

This document should also be read in conjunction with all referenced EnergyNetworks documents including SUB-02-006.

10. SAFETY

Where the Company Network interfaces with an IDNO, the IDNO shall ensure that their network is designed, built, operated and maintained in a safe manner, in compliance with the ESQC regulations.

Only suitably EnergyNetworks authorised persons shall undertake work on Company Equipment. ScottishPower Safety Rules – Electrical and Mechanical shall apply at the point of interface when working on Company Equipment.

11. NETWORK DESIGN

EnergyNetworks and the IDNO shall in accordance with section 4(b) of the ESQC regulations cooperate to ensure that section 9(2)a of The Electricity Act is complied with.

It is the responsibility of IDNOs to ensure that they comply with their license obligations. When designing networks, it is the responsibility of IDNOs to ensure compliance with the Distribution Code and all referenced Standards, in particular compliance with ENA Engineering Recommendation P2/6.

The design fault level on the Company 11kV network is 250MVA. The 11kV network is directly earthed resulting in a maximum earth fault current of 13.1kA. Further information detailing Fault Levels can be found in the SP Distribution and SP Manweb Long Term Development Statements.

11.1 LV Connections

There shall only be one point of connection to an IDNOs network unless otherwise agreed in writing by EnergyNetworks. The point of connection is defined as the outgoing terminals of the Company switchgear (cutout) as detailed in EnergyNetworks Drawing SP4008852.

11.2 11kV HV Connection <1MW

The standard configuration for a single point of connection to the Company network is as detailed in Figure 1 below:

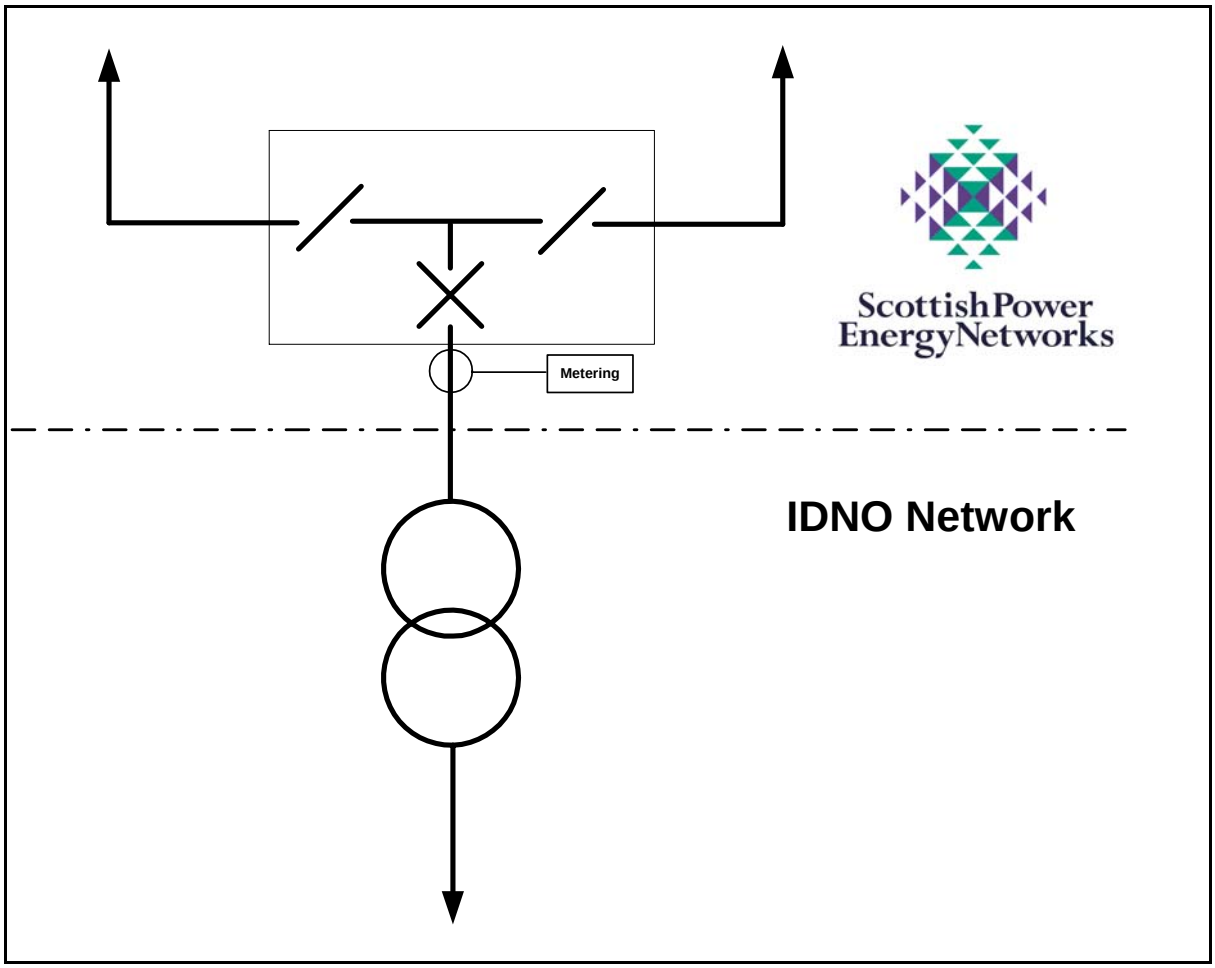


Figure 1

Notes:

- Specific requirements are detailed in EnergyNetworks Drawings SP4008847 & SP4030839.
- HV Equipment interfacing between the IDNO & the Company network shall be installed by the IDNO to the satisfaction of EnergyNetworks.
- The company RMU shall be of an Approved type as detailed in SWG-06-001

11.3 HV Connections >1MW

Where two points of supply are required, located at one geographic location, EnergyNetwoks connection arrangements shall be as detailed in 11.3.1 and 11.3.2. The IDNO shall be connected to a common Company primary substation.

11.3.1 SP Distribution up to 7.2MW and SP manweb 'Y' type up to 3.5MW

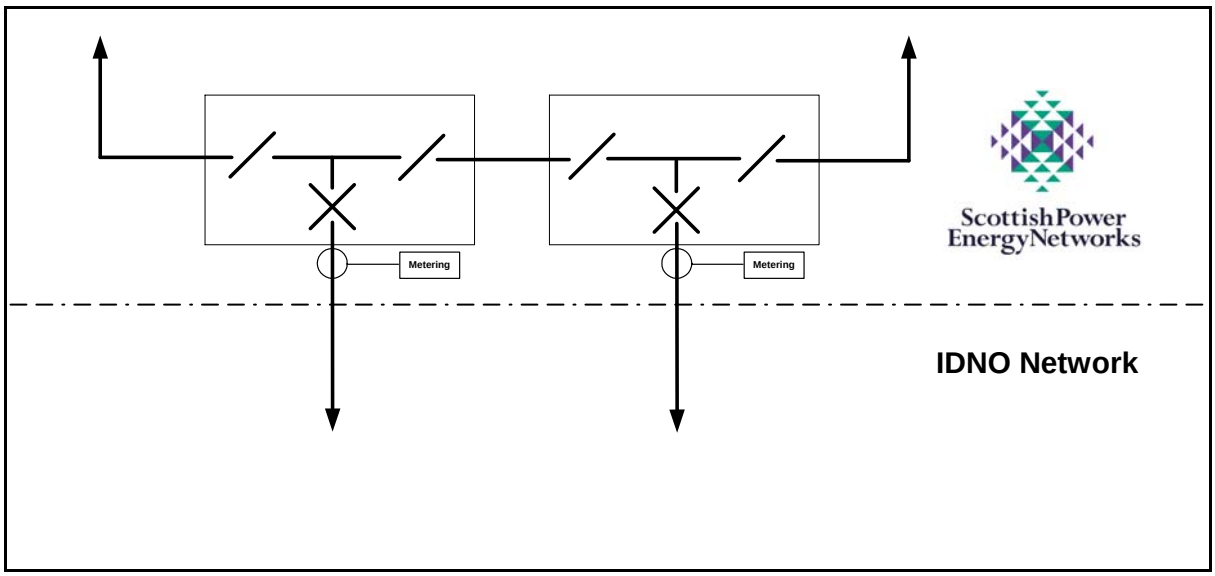


Figure 2

Notes:

- Specific requirements are detailed in EnergyNetworks Drawing SP4008846
- HV cables interfacing between the IDNO & the Company network shall be installed by the IDNO to the satisfaction of EnergyNetworks. The cables shall remain the property of the IDNO.
- HV joints for terminating IDNO HV cables into the Company RMU shall be of an EnergyNetworks Approved type supplied by the IDNO and installed by EnergyNetworks.
- The company RMU shall be of an Approved type as detailed in SWG-06-001 and shall have a fully rated circuit breaker earth switch capable of 13.1 kA.

11.3.2 SP Distribution up to 11.2MW & SP Manweb up to 3.5MW

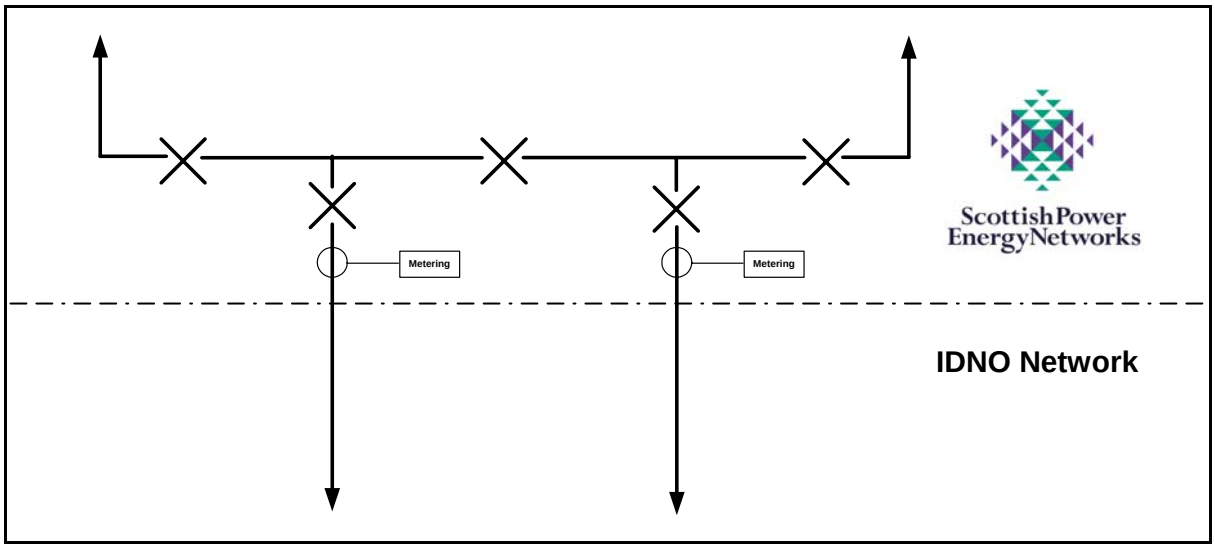


Figure 3

Notes:

- Specific requirements are detailed in EnergyNetworks Drawing SP4008844.
- HV cables interfacing between the IDNO & the Company network shall be installed by the IDNO to the satisfaction of EnergyNetworks. The cables shall remain the property of the IDNO.
- HV joints for terminating IDNO HV cables into the Company switchgear shall be of an EnergyNetworks Approved type supplied by the IDNO and installed by EnergyNetworks.

12. LOW VOLTAGE INSTALLATIONS

12.1 Enclosures

All Low Voltage IDNO networks, shall interface with the Company network via a common enclosure owned, operated and maintained by the IDNO, as agreed with EnergyNetworks. The enclosure shall be of a robust construction housing Company Equipment and IDNO equipment as detailed in EnergyNetworks Drawing SP4008852.

It is the responsibility of the IDNO, to ensure that the materials and components used in the construction of the enclosure are suitable for their purpose, correctly used or applied and sufficiently durable, taking account of normal maintenance practises, to ensure the health and safety of people. The enclosure shall be designed to prevent, so far as is reasonably practicable, third parties gaining access to the enclosed Company equipment. It shall provide protection of the enclosed Company equipment against ingress of solid foreign objects and water to a minimum of IP54, in accordance with IEC 60529. Evidence of type testing for ingress protection shall be provided, where requested.

Where the enclosure is of metallic construction, the IDNO shall ensure the appropriate bonding in accordance with ENA Engineering recommendation G12/3, to an independent IDNO earth.

Enclosures shall be appropriate to the area in which they are to be located, taking cognisance of the Vandalism risk classification, as detailed within section 8.2 of SUB-02-006.

The minimum internal dimensions required by EnergyNetworks for Company equipment are detailed in EnergyNetworks Drawing SP4008852. Where the IDNO proposes dimensions less than those specified, formal written approval shall be obtained from the Engineering Services Manager or his nominated representative on a site by site basis prior to acceptance by EnergyNetworks.

12.2 Access and Egress

Dual access shall be provided using an approved EnergyNetworks padlock or by a pillar key. EnergyNetworks will not accept bespoke access provided by a non standard key issued by the IDNO.

The enclosure shall have 24 hour unrestricted access/egress and shall be sited on a level drained site with the doors opening on to a footpath or common ground. Where this is not possible, each site shall be agreed with all parties on a site by site basis.

Enclosures shall be located within 15m of the highway to facilitate generator connections.

It is the responsibility of the IDNO to have ground ownership documentation and wayleaves.

12.3 External Labelling

The IDNO shall ensure that the enclosure is fitted with a suitable property notice - detailing operator name, emergency contact telephone number and plant identifier – and Danger of Death signs as detailed and required by The Electricity, Safety, Quality and Continuity Regulations.

An EnergyNetworks IDNO warning label, as detailed in Appendix 1 detailed in OPSAF-02-003, shall be attached to the external enclosure.

12.4 Internal Labelling

An EnergyNetworks Incoming Supply label, and an SP EnergyNetworks IDNO warning label, as detailed in Appendix 1, shall be attached to the fixed portion of the Company owned cut out.

IDNO Equipment shall be suitably identified.

12.5 Cables and Tails

The IDNO shall provide suitable cables (meter tails) to connect their Network to the Company cutout. Due consideration shall be given to the minimum bending radi of the meter tails. Meter tails shall not exceed 3 metres in length and shall normally be single core, stranded copper conductor, pvc insulated and sheathed. Meter tales shall be rated appropriately and terminated by a cable lug with an M12 fixing hole.

12.6 Protection

The Company owned cutout shall be installed with fuses as shown in Table 1, which shall subsequently be replaced by links as and when the IDNO's fused cut out has been installed.

Cutout rating (A)	Fuse rating (A)
200	160
200	200
400	315
400	400

Table 1 – Fuse Rating

12.7 Earthing

EnergyNetworks shall install an independent Company LV earth, as shown on EnergyNetworks drawing SP4008852, with an ohmic reistance less than 20 ohms, in accordance with G12/3. The PVC insulated bonding conductor shall be of a cross sectional area of 70mm^2.

The IDNO should install an LV Earth, independent of the Company earth in compliance with G12/3. The IDNO LV earth should be used as a means of bonding the cabinet to earth, where appropriate.

13. HIGH VOLTAGE INSTALLATIONS

13.1 Enclosures <1 MW

Company Equipment shall be installed in an enclosure installed owned, operated, designed, risk assessed and maintained by the IDNO, which shall facilitate independent controlled access to Company Equipment. Access/Egress to Company Equipment shall be provided by an approved EnergyNetworks padlock, utilising a standard EnergyNetworks key and shall be as detailed in section 8.3 of SUB-02-006. The enclosure/civil structure protecting Company equipment should be installed in an appropriate manner, in particular, due regard shall be taken of section 8 of SUB-02-006. The failure mode of company equipment and consequential risks associated with the failure mode shall be considered by the IDNO as part of the design and shall be mitigated against as appropriate and to the satisfaction of EnergyNetworks.

The materials and components used in the construction of the enclosure shall be suitable for their purpose, taking due consideration of the type of Equipment installed within, correctly used or applied and sufficiently durable, taking account of normal maintenance practises, to ensure the health and safety of people. The enclosure shall be deigned to prevent, so far as is reasonably practicable, third parties gaining access to the enclosed Company equipment. It shall provide protection of the enclosed Company equipment against ingress of solid foreign objects and water to a minimum of IP23 for outdoor equipment and IP54 for indoor equipment, in accordance with IEC 60529. Evidence of type testing for ingress protection shall be provided.

Where emergency exit doors are present on site, they shall open in the direction of escape as per The Fire Precaution (Workplace) Regulations 1997.

A minimum distance of 600mm shall be maintained between switchgear and other equipment or boundaries where a person could reasonably be expected to stand. Where equipment is fitted with doors which are to be opened, a minimum clearance of 450mm shall exist between the end of the door and any other equipment or boundaries when the door is in the open position. Switchgear shall be located in a position such that internal arc protection equipment shall operate correctly.

13.2 Cables

Cables and cable terminations connecting to Company Equipment shall be EnergyNetworks Approved and shall comply with the requirements detailed in CAB-04-009. Cables shall be appropriately sized for the stipulated fault levels. Cables shall be segregated and marker tiles detailing ownership placed over all cables.

13.3 External Labelling

The IDNO shall ensure that the enclosure is fitted with a property notice - detailing operator name, emergency contact telephone number and plant identifier – and Danger of Death signs as detailed in The Electricity, Safety, Quality and Continuity Regulations.

An EnergyNetworks IDNO warning label, as detailed in OPSAF-02-003 & Appendix 1, shall be attached to the external enclosure.

13.4 Internal Labelling

The standard labelling requirements for a secondary sub-station shall apply with the addition of an EnergyNetworks IDNO warning label, Appendix 1, mounted beside the circuit breaker which feeds the IDNO.

13.5 Protection & Metering

It shall be the responsibility of the IDNO to approach EnergyNetworks to agree the protection & metering system requirements prior to energisation. EnergyNetworks reserves the right to witness the protection & metering commissioning where appropriate.

The IDNO shall undertake appropriate metering commissioning as detailed in the Dataserve UK, Work Place reference Manual, to the satisfaction of EnergyNetworks.

Protection Commissioning shall be undertaken as detailed below, with reference to SUB-02-006, section 14.3.

11kV HV Connection <1MW as per Figure 1

EnergyNetworks shall typically provide TLF protection on the RMU circuit breaker. Protection Commissioning shall be undertaken in accordance with the ‘Standard’ Protection Commissioning protocol as detailed in section 14.3, SUB-02-006.

11kV HV Connections >1MW as per Figure 2

EnergyNetworks shall typically provide ‘VIP relay’ protection on the RMU circuit breaker. Protection Commissioning shall be undertaken in accordance with the ‘Standard’ Protection Commissioning protocol as detailed in section 14.3, SUB-02-006.

11kV SP Distribution up to 11.2MW & SP Manweb up to 3.5MW as per Figure 3

EnergyNetworks shall provide bespoke protection for the 11kV primary switchgear. Protection Commissioning shall be undertaken in accordance with the 'Enhanced' Protection Commissioning protocol as detailed in section 14.3, SUB-02-006.

13.6 Earthing <1MW

The IDNO shall be responsible for ensuring compliance with the ESQC regulations in particular section 8.2(b). The IDNO shall install an independent HV earth, with an ohmic resistance less than 20 ohms, in accordance with EATS 41-24 and G12/3. The risk assessment and subsequent segregation and/or bonding of HV and LV earths shall be the responsibility of the IDNO.

14. SITE RESPONSIBILITY AGREEMENTS & CERTIFICATION

A Site Responsibility Agreement shall be agreed with the IDNO prior to the IDNO network being energised in accordance with BUPR-10-015. A copy of the Site Responsibility Agreement shall be located on site and be available for inspection at all times.

Prior to energisation, an Electrical Installation Certificate as detailed in Appendix 2 shall be submitted to EnergyNetworks by the IDNO, certifying that the IDNO network has been designed and built in compliance with the ESQC regulations and is safe to be energised.

Where certification has not been provided EnergyNetworks shall consider the IDNO network to be non compliant with the ESQC regulations and shall not energise the network.

15. DATA MANAGEMENT

The IDNO shall submit a drawing of their network when returning the Connection and Use of Supply Agreement in accordance with BUPR-22-015.

APPENDIX 1: IDNO WARNING LABEL

APPENDIX 2: ELECTRICAL INSTALLATION CERTIFICATE

S Certificate No: .....…… **PPS/CRAM Ref:** .....……

I hereby confirm that the following installation/work has been carried out for: -

IDNO Name: .....

Site Address : .....

.....

Details of Installation/Work:

.....

.....

Point of Connection Location inc. 12 figure grid reference:

.....

The installation complies in every respect with the requirements of The Electricity Safety Quality & Continuity Regulations 2002 and is suitable to be connected to the SP Distribution Ltd network and energised by SP Power Systems personnel.

Date required to energise connection:.....……..
(NOTE: SP Power Systems personnel will not energise the connection unless the IDNO network has been confirmed as isolated on site)

Signed: .....

Print Name: ..... **Designation**:.....
(IDNO/Contractor's Authorised Representative)

IDNO/Contractor: .....

Address: .....

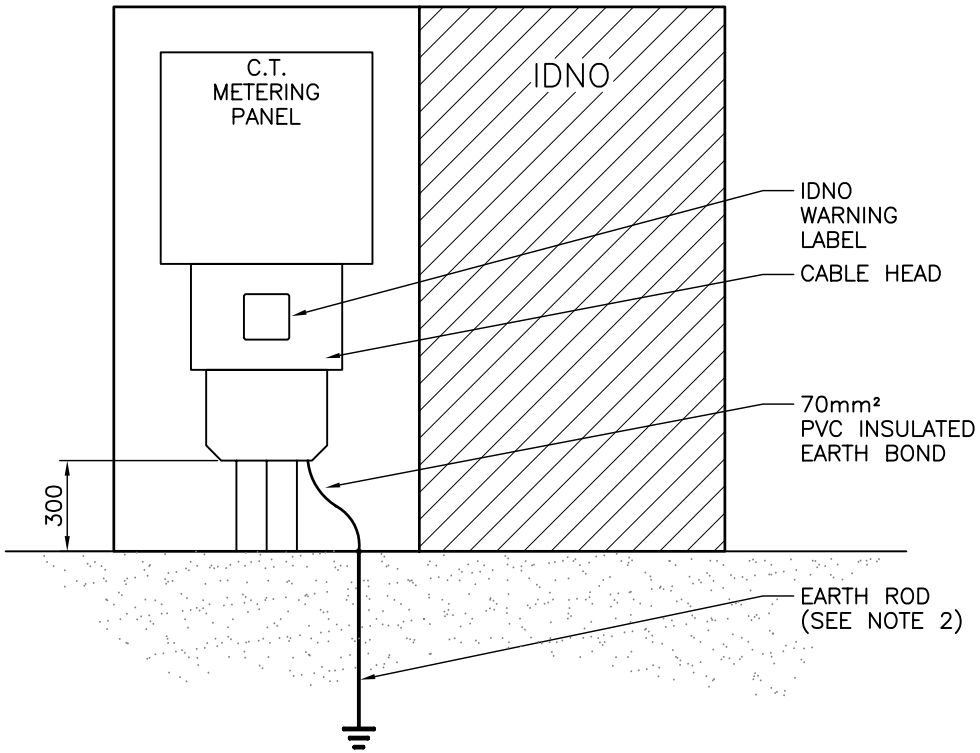
.....

Energised by SP Power Systems on Date: ..... **Time:**.....

APPENDIX 3: DRAWING REGISTER

IDNO - LV Metering Panel	
Drawing Number	***Date of Issue***
SP4008852	October 07
IDNO - 11kV Segregated GRP Enclosure	
Drawing Number	***Date of Issue***
SP4008847	September 06
IDNO – 11kV Unit Type GRP Enclosure	
Drawing Number	***Date of Issue***
SP4030839	October 07
IDNO – Double RMU	
Drawing Number	***Date of Issue***
SP4008846	September 06
IDNO – Freestanding substation	
Drawing Number	***Date of Issue***
SP4008844	September 06

C.T. METERING PANEL



NOTES

1. ALL DIMENSIONS ARE IN MILLIMETRES, UNLESS OTHERWISE SHOWN.

2. EARTH ROD TO EATS 43–94. IMPEDANCE TO EARTH < 20Ω.

3. DUCTS TO EATS 12–24.

4. THE METERING PANEL SHALL BE DESIGNED TO ENSURE THE SAFE AND RELIABLE OPERATION OF THE COMPANY EQUIPMENT.

5. THE METERING PANEL SHALL BE DESIGNED TO ENSURE THE OPERATOR ERGONOMICS ARE APPROPRIATE.

6. CT METERING PANEL MAY BE PLACED OTHER THAN SHOWN BUT REQUIRES TO TAKE COGNISCENCE OF THE MINIMUM BENDING RADII OF THE LV CABLES.

ScottishPower EnergyNetworks

Drawn T.A.	Date 14/09/06	
Checked A.J.B.	Date 18/09/06	
Approved A.G.	Date 18/09/06	
TRS No.		

Title: INDICATIVE IDNO LV CT METERING PANEL REQUIREMENTS

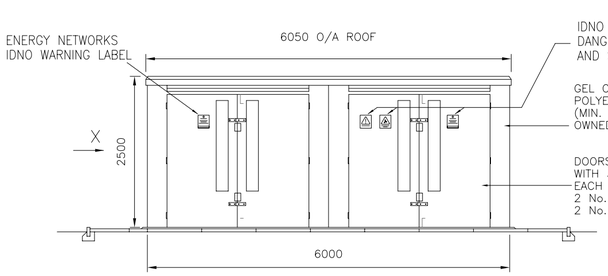
Location: STANDARDS | Voltage: N/A

Project

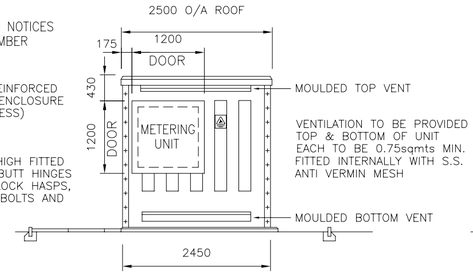
Rev	Date			
2.0	03/10/07	Drawn	A.J.P.	NOTES ADDED. DUPLICATE VIEW REMOVED. DIMENSIONS REMOVED.
		Checked	PMR	
		Approved	A.G.	

Status: FOR ISSUE | Drg. No.: SP4008852 | Rev.: 2.0

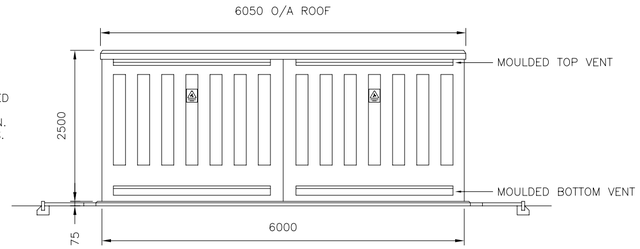
Scale: 1:25 | Size: A4



FRONT ELEVATION



ELEVATION 'X'

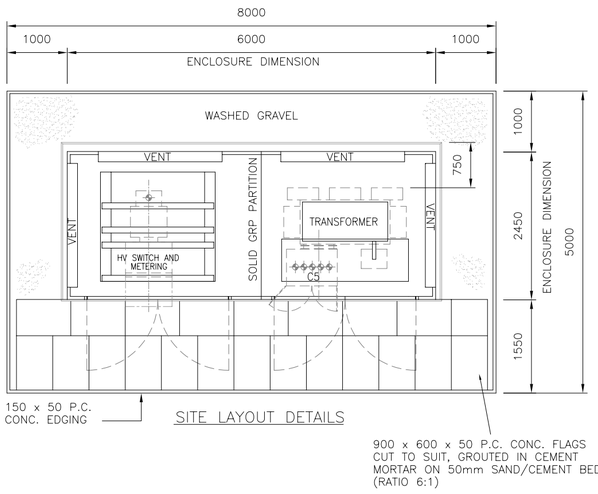


REAR ELEVATION

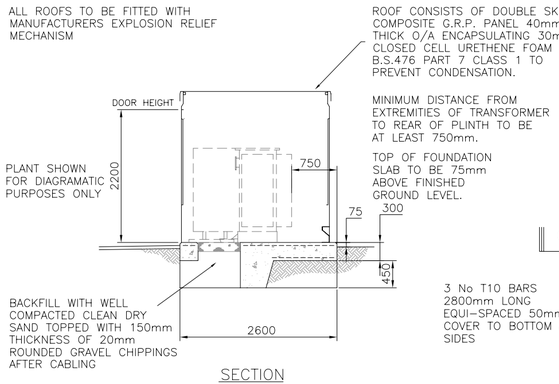
LOCATION PLAN SCALE GRID REFERENCE :

AREA OF SITE = OR THEREBY

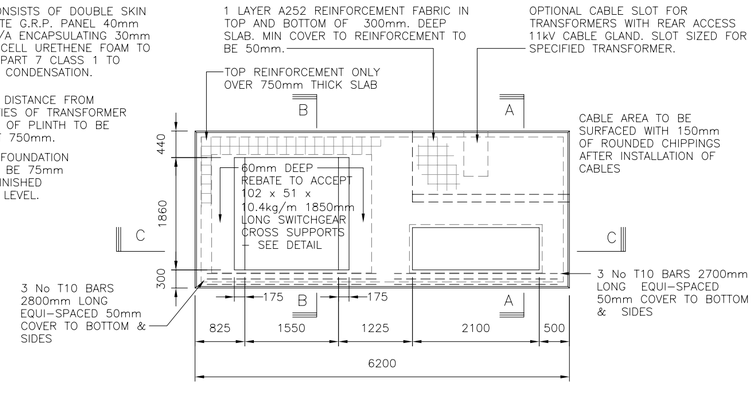
SITE PLAN



SITE LAYOUT DETAILS

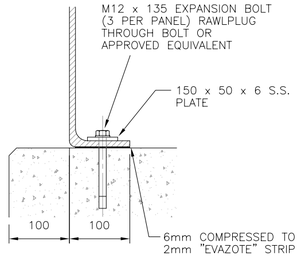


SECTION

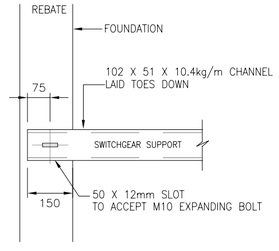


PLAN

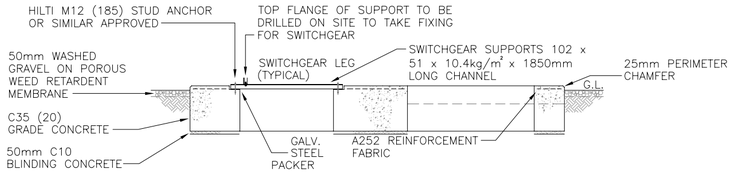
ENCLOSURE TO BE ERECTED
MINIMUM 1.0m FROM BOUNDARIES



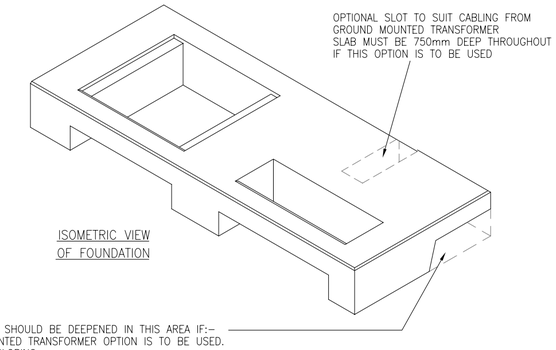
HOLDING DOWN DETAIL
SCALE 1/5



SECTIONAL PLAN ON SWITCHGEAR
SUPPORT FIXING POINT
SCALE 1/10

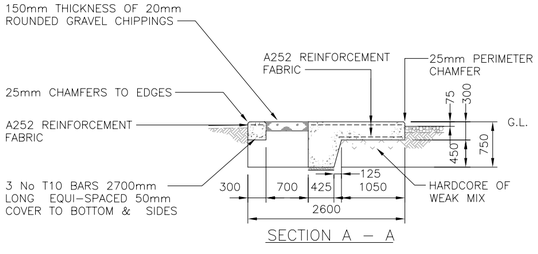


SECTION C–C

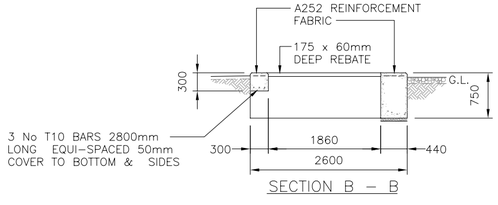


ISOMETRIC VIEW
OF FOUNDATION

THE FOUNDATION SHOULD BE DEEPENED IN THIS AREA IF:-
1. GROUND MOUNTED TRANSFORMER OPTION IS TO BE USED.
2. THE SITE IS SLOPING.
3. UNSUITABLE GROUND BEARING STRATA.



SECTION A – A

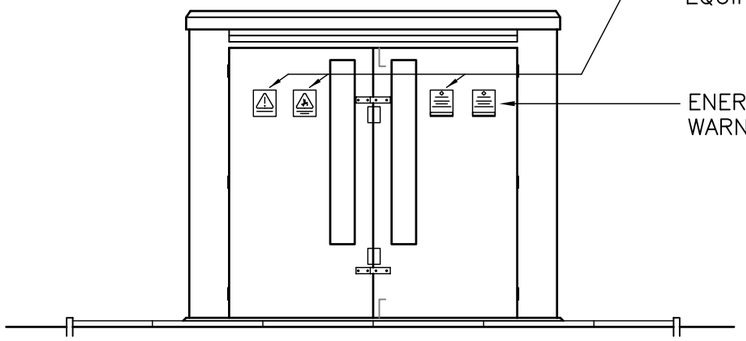


SECTION B – B

THIS FOUNDATION TYPE IS SUITABLE FOR THE FOLLOWING PLANT :
ABB OR PAULWELS 1000KVA PACKAGE TRANSFORMER
WITH RN2 OR RN2c RMU AND C6 LV CABINET

ScottishPower EnergyNetworks

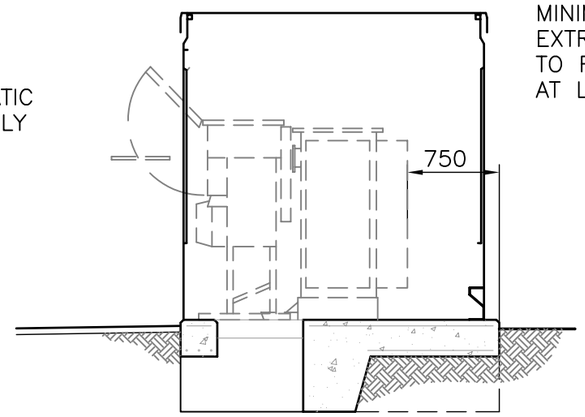
Project					TRS No.
Title: IDNO 11KV STANDARD GRP ENCLOSURE WITH SCHNEIDER RN2C, RMU AND MU2 METERING UNIT					
Location: STANDARDS				Voltage: 11kV	
Drawn: T.A.	Date: 13/09/06	Checked: A.J.B.	Date: 18/09/06	Approved: A.G.	Date: 18/09/06
Status: FOR ISSUE			Drg. No.: SP4008847		Rev.: 1.0
				Scale: 1:50 U.N.O.	Size: A1



FRONT ELEVATION

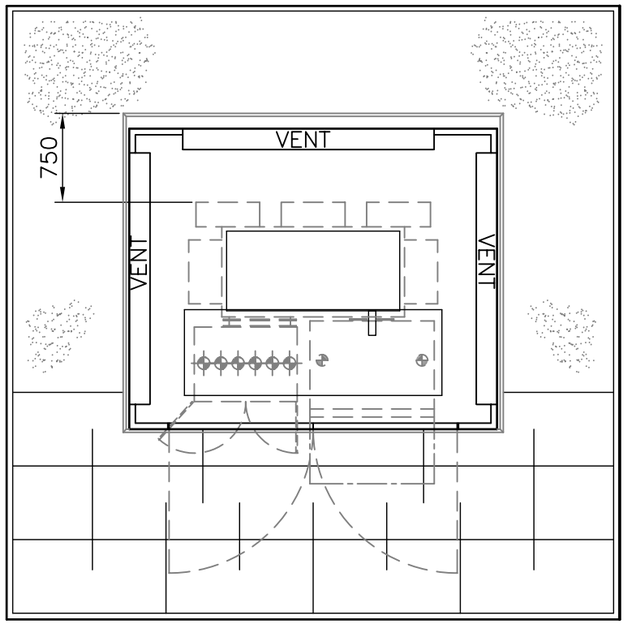
ROOF TO BE FITTED WITH MANUFACTURERS EXPLOSION RELIEF MECHANISM AS APPROPRIATE

PLANT SHOWN FOR DIAGRAMATIC PURPOSES ONLY



MINIMUM DISTANCE FROM EXTREMITIES OF TRANSFORMER TO REAR OF PLINTH TO BE AT LEAST 750mm.

SECTION



SITE LAYOUT DETAILS

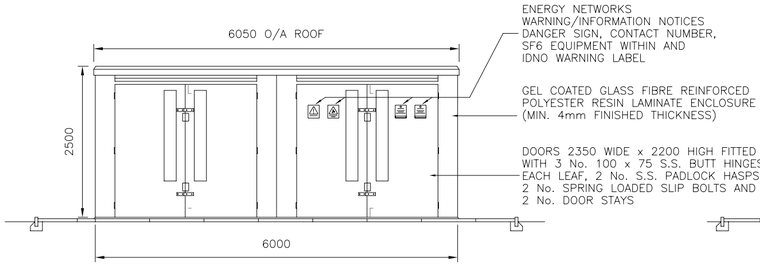
NOTES

CABLE SLOT

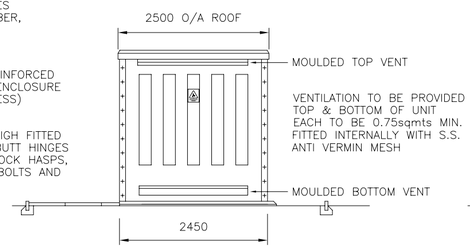
ON COMPLETION OF CABLING, CABLE AREA TO BE FILLED WITH DRY SAND AND TOPPED WITH 150mm DEPTH OF 20mm ROUNDED GRAVEL CHIPPINGS

ScottishPower EnergyNetworks

Project					TRS No.
Title: TYPICAL IDNO 11kV UNIT SUBSTATION WITH 3.0 X 2.45m GRP ENCLOSURE					
Location: STANDARD				Voltage: 11kV	
Drawn: A.J.P.	Date: 03/10/07	Checked: PMR	Date: 08/10/07	Approved: A.G.	Date: 15/10/07
Status: FOR ISSUE			Drg. No.: **SP4030839**		Rev.: **1.0**
				Scale: 1:50	Size: **A3**

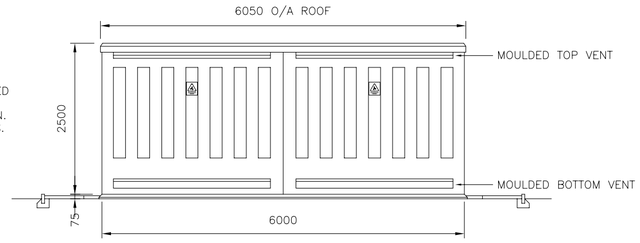


FRONT ELEVATION

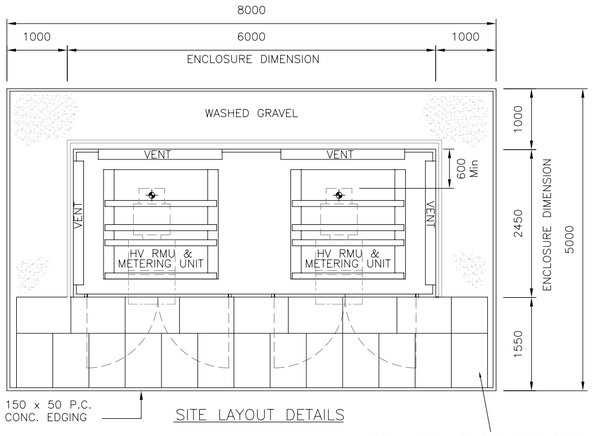


SIDE ELEVATION

OPPOSITE SIDE IDENTICAL

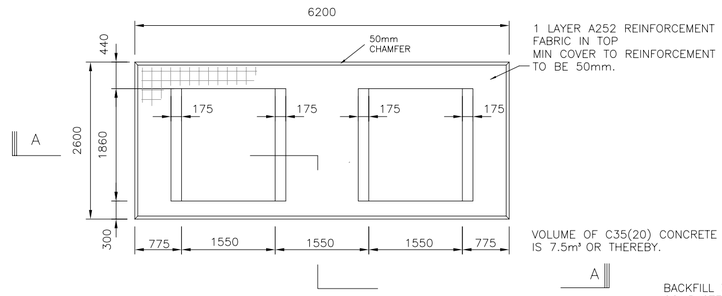


REAR ELEVATION



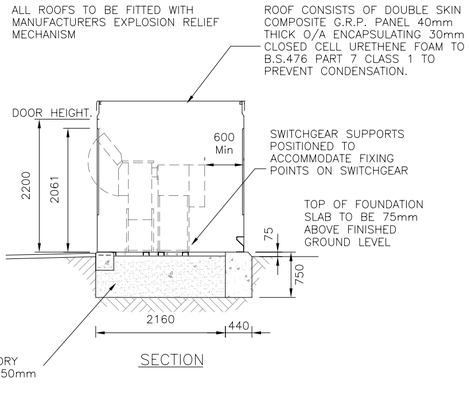
SITE LAYOUT DETAILS

900 x 600 x 50 P.C. CONC. FLAGS CUT TO SUIT, GROUTED IN CEMENT MORTAR ON 50mm SAND/CEMENT BED. (RATIO 6:1)



FOUNDATION PLAN

ENCLOSURE TO BE ERECTED
MINIMUM 1.0m FROM BOUNDARIES

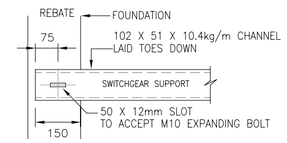


SECTION

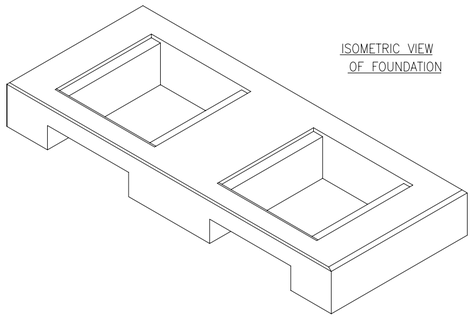
LOCATION PLAN SCALE GRID REFERENCE :

AREA OF SITE = OR THEREBY

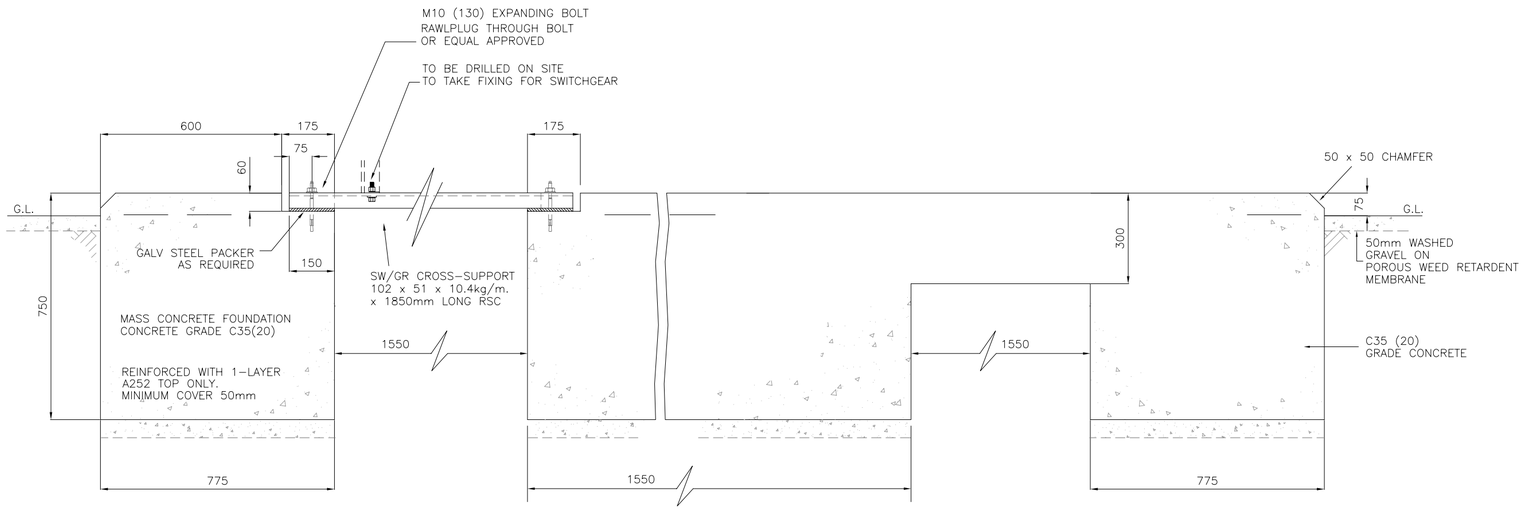
SITE PLAN SCALE



SECTIONAL PLAN ON SWITCHGEAR SUPPORT FIXING POINT



ISOMETRIC VIEW OF FOUNDATION



SECTION A–A
SCALE 1:10

ScottishPower EnergyNetworks

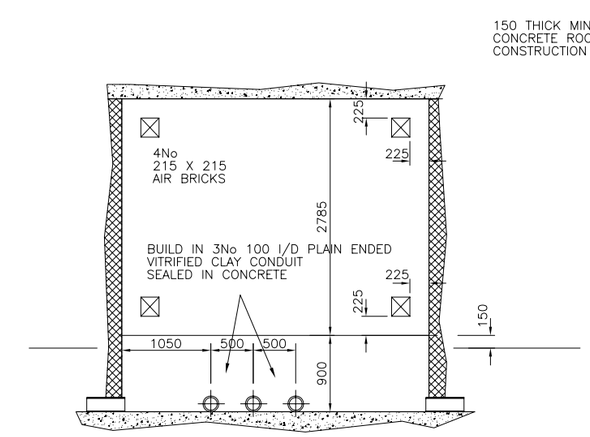
Project | TRS No.

Title
6.0M X 2.5M KINPARS ENCLOSURE FOR IDNO DOUBLE RMU CONNECTIONS

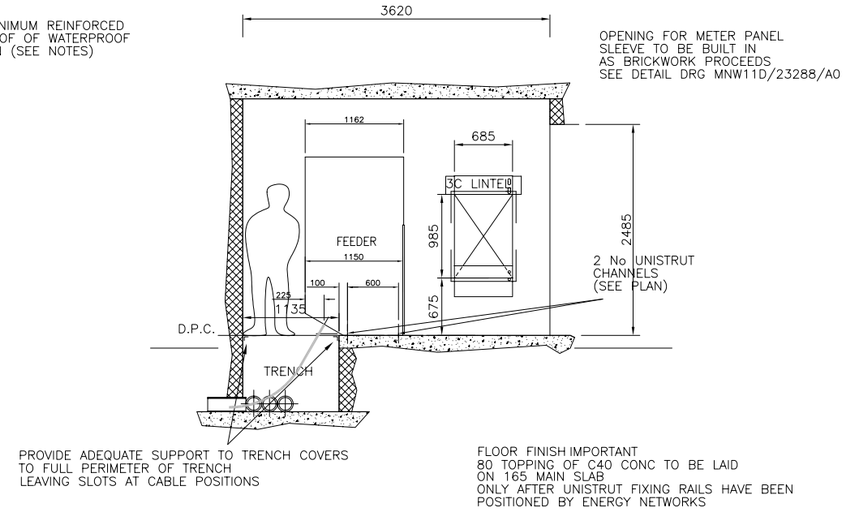
Location				Voltage	
STANDARDS				N/A	
Drawn	Date	Checked	Date	Approved	Date
T.A.	13/09/06	A.J.B.	18/09/06	A.G.	18/09/06
Status			Drg. No.		Rev.
FOR ISSUE			SP4008846		1.0
			Scale 1:50		Size A1

NOTES

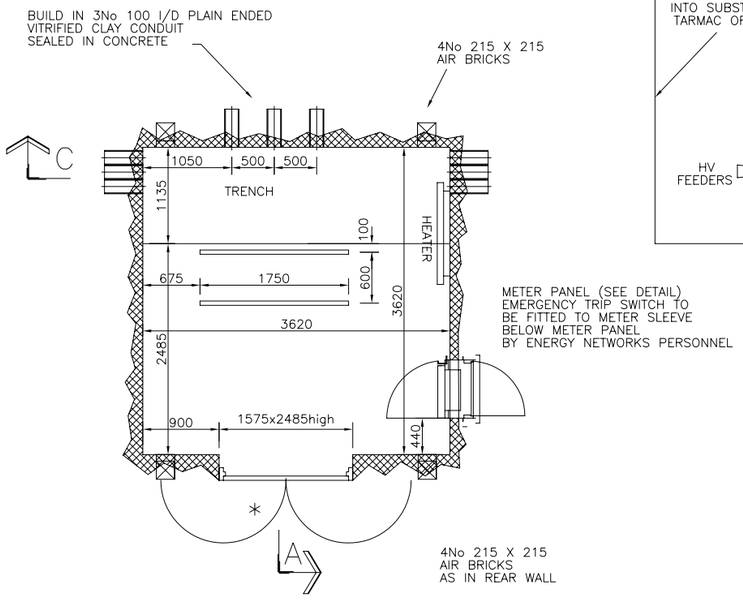
1. IDNO CIVIL REQUIREMENTS ARE DEFINED IN ENERGY NETWORKS DOCUMENT: SUB–02–006 & SUB–03–017.



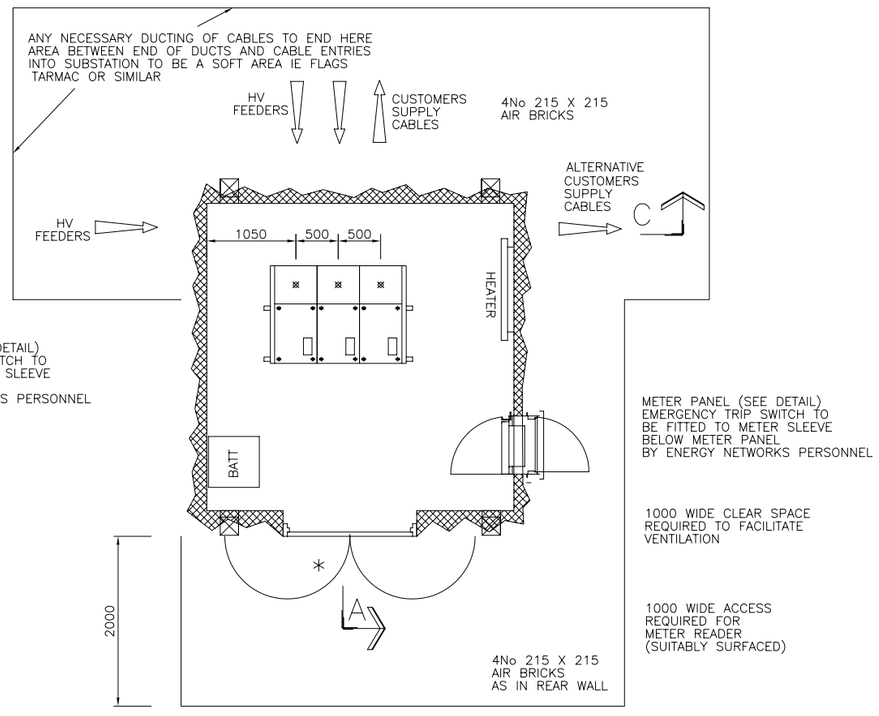
SECTION C–C



SECTION A–A



PLAN



PLAN OF PLANT

ScottishPower EnergyNetworks

Project				TRS No.	
Title: FREE-STANDING TYPE E031 CUSTOMER SUBSTATION GUIDANCE DETAILS					
Location: STANDARD				Voltage: N/A	
Drawn: T.A.	Date: 13/09/06	Checked: A.J.B.	Date: 18/09/06	Approved: A.G.	Date: 18/09/06
Status: FOR ISSUE			Drg. No.: **SP4008844**		Rev.: **1.0**
			Scale: 1:50		Size: **A2**