1.9 Certification

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FO-NET-SST-005	Declaration of Test Results and Checks for Secondary Distribution Substation Equipment		Applies to	
			Distribution ✓	Transmission
Revision: 1.01	**Classification:** Public	**Issue Date:** October 2021	**Review Date:** January 2026	

	Name	Title
Author	Elina Bezusko	Asset Policy Engineer
Checked by	Elizabeth Davis-Furness	Asset Policy Technician
Approved by	John Baker	Senior Technical Authority

This form shall be used in conjunction with TG-NET-SST-011, TG-NET-CAB-012

SECTION A	**General Details:**	
Builder Name and Site Address: WINVIC - PANWATONI PARK HORTON ROAD SL3 OBB		
SSEN Ref No. FBN 900/2 FBN 492/1	Contact Name	Contact Telephone No.

SECTION B	**Work Details:**
Details of network installed with associated drawings shall comply with the requirements of PR-NET-ENG-046	

Important Information	The following shall be observed: • One form shall be submitted per substation tested/made live. • Insulation resistance tests shall be carried out prior to connection to the system. The minimum acceptable insulation resistance level shall be 50MW • Oil filled equipment must have its oil tested during commissioning or have test results from equipment manufacturer stating 'as filled' oil condition. Acceptable values are breakdown greater than 40kV; moisture less than 20ppm; acidity less than 0.03mgKOH/gm. PCB content shall be less than 10ppm. • All earth resistances shall have been measured and recorded. Overall HV earth resistance must be no greater than 50W. Where surge arresters are fitted the HV earth resistance must be no greater than 10W • Overall LV earth resistance must be no greater than 20W for PME network. • **Completed documents must be passed over to the SSEN Connections Team Manager prior to adopting a network.**

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Section C	**Civil Acceptance of Substation**	
SSEN Civil Engineering Section have inspected the substation civil build	Date	Name of SSEN Civil Representative:

Section D	**HV and LV Earthing Test Results**		
HV Earth Value (W)	LV Earth Value (W)	Segregation Test Value	
1·32 Ω			
Prior to combining HV / LV earths where appropriate			
Comments			
Instrument Type	DET2/2	Calibration Expiry Date	NOV 24
Combined Resistance Value (W)		**Target Resistance Value (W) (from earthing study if applicable)**	
1·32 Ω		<30 Ω	
LV Neutral / HV steelwork earth link			
Ground Mounted		Pole Mounted Transformer	
Open	Closed	Segregated HV and LV earth	

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SECTION E — Switchgear Test Results

1kV DC Insulation Test

U or **V** or **W** to **E** (MW)			
1KV DC	>999MΩ		
Instrument Type	MITSIS	Calibration Expiry Date	NOV 24

With circuit breaker closed or fuses inserted, switchfuse closed and transformer connected (unit transformer configuration)

Pressure Test		**Interlocks Checked and working (comments)**		
Test Voltage (kV)	Duration (mins)			
18KV	5MINS			(Yes/No)
Instrument Type		TR TEST	Calibration Expiry Date	NOV 24.

HV Equipment Pre-energisation Commissioning Checks

Circuit Breaker Protection settings agreed with SSEN and tested	Yes	No	N/A
Dummy HV Fuse used to test correct operation of switchfuse in each HV Fuse Position	Yes	No	N/A
SF6 pressure indicator showing correct pressure or in green zone	Yes	No	N/A
HV Fuses installed	Yes	No	(Size) 10A TLF.A

SECTION F — LV Pillar or Cabinet Test Results

500V DC Insulation Test

L1 to N (MW)	L2 to N (MW)	L3 to N (MW)	L1 to L2 (MW)	L2 to L3 (MW)	L1 to L3 (MW)
N/A					

Instrument Type		Calibration Expiry Date	

With transformer links open/out with testing carried out on busbar side. LV Neutral/Earth – HV Steelwork Earth Link in. All fuses inserted and cables not connected.

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SECTION G Transformer Test Results

1kV DC Insulation Test		LV Continuity Test				
n to E (MW)	U to E (MW)	U to u (MW)	n to u (mW)	u to w (mW)	u to v (mW)	w to v (mW)
N/A						
Instrument type		Instrument type				
Calibration Expiry Date		Calibration Expiry Date				

With transformer links open/out and neutral/ earth link removed	With transformer links open/out with testing carried out on transformer side

LV Voltage (V)

L1-L2	L2-L3	L3-L1	L1-N	L2-N	L3-N

Instrument Type		Calibration Expiry Date	
Acceptable range (3-Phase): 384V to 440V Acceptable range (Split Phase): 432V to 506V		Acceptable range 216V to 253V	
Transformer Tapping No			

Phase Rotation

Anticlockwise	Clockwise
Instrument type	
Calibration Expiry Date	

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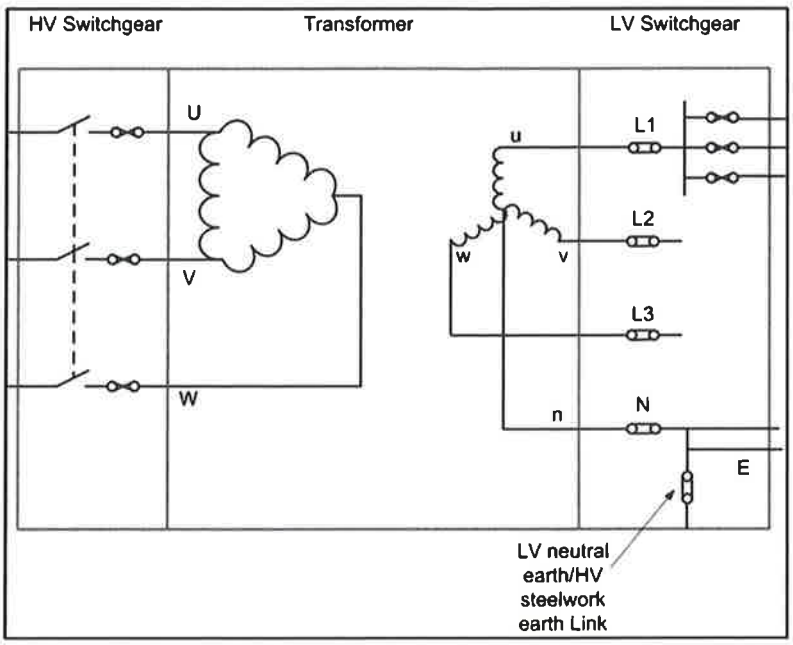

Substation Check List

	Yes	No	N/A
Site is legally owned by SSEN and wayleave database updated	✓		
Civils works complete with all excavations backfilled and surface finished as detailed in the Design Standards	✓		
ESQCR risk assessment completed in accordance with TEM-NET-SST-001	✓		
Fire Risk Assessment in accordance with TEM-NET-SST-001	✓		
Site Risk Assessment in accordance with TEM-NET-SST-001	✓		
Substation is within an identified flood zone in accordance with TEM-NET-SST-001	✓		
Environmental Risk Assessment in accordance with TEM-NET-SST-001	✓		
Substation signage installed including substation name	✓		
Additional safety signs fitted (high risk sites only)	✓		
HV switch labels fitted			
Phase rotation label fitted			
LV feeder names and numbers fitted			
Breather tube caps on the transformer and switchgear removed and any residual spilt oil wiped up			
Damaged paintwork touched up			
Spare fuse-handles from un-cabled ways left in bottom of LV cabinet			

Fuses fitted	Size (A)
HV	
LV feeder 1	
LV feeder 2	
LV feeder 3	
LV feeder 4	

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Substation Check List			
	Yes	No	N/A
LV feeder 5			
Oil level of transformer is in sight glass			✓
Confirm protection settings on LV circuit breakers			✓
SSEN locks fitted to switchgear			
SSEN locks fitted to substation gate or doors			
Switchgear automation working			
Weathershield fitted (outdoor switchgear only)			

Substation and Plant Detailed Records				
New Site Forms	**Reference**	Yes	No	N/A
Data Collection Form-Low Voltage Circuit Breaker	FO-NET-ENG-024			
Data Collection Form-Decommissioned Plant	FO-NET-ENG-027			
Data Collection Form-High Voltage Metalclad Fuse Switch	FO-NET-ENG-028			
Data Collection Form-Ground Mounted HV Circuit Breaker	FO-NET-ENG-029			
Data Collection Form-Site Decommissioning	FO-NET-ENG-033			
Data Collection Form-Substation or Sealing End Compound Site	FO-NET-ENG-036			
Data Collection Form-Ring Main Unit	FO-NET-ENG-046			
Data Collection Form-LV Cabinets, Pillars and Wallboards	FO-NET-ENG-052			
Data Collection Form-Ground Mounted Transformer	FO-NET-ENG-053			

We hereby confirm this apparatus has been installed in accordance with Scottish and Southern Electricity Networks' requirements. We confirm that individuals with appropriate training, knowledge and experience have tested the apparatus and that the results of those tests and checks are accurately represented on this form.

Signed	(Print Name)	Date
.....	TOM RADFORD	13/08/24 .....
For and on behalf of (name of ICP/IDNO/SSEN)	(Print Designation)	
.....	.....	

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Schneider RN2, RN2D & RE2c Test Form

Substation Name	HORTON ROAD, POYLE				
Substation Number					
Voltage	11000				
Switchgear					
Installed Mode	Free-standing	✓ (✓)	Transformer-mounted		(✓)
Switchboard Number		Manufacturer	SCHNEIDER		
Serial Number	1052093T4	Type (RN2/RN2d/RE2c)	RN2D		
Protection CTs		**FPI CT Ratios in Use**			
Ratio in Use	50/5	RSW1	✓	RSW2	
TLF					
Rating	10A	Transformer Rating		kVA	

Preliminary Checks	(✓)
Disconnect the umbilical cable from the RTU (if fitted)	N/A
Visual inspection satisfactory (no visible signs of damage etc)	✓
Earthing satisfactory	✓
SF6 gas pressure satisfactory	✓

Functional/Interlock Checks	(✓)
Open and close switches	✓
Earth switches cannot be operated when service selected	✓
Switch/circuit-breaker cannot be operated when earth selected	✓
Open and close earth switches	✓
Test access cannot be opened when switch/circuit-breaker in On and Off position	✓
Test access can be opened when earth switch closed	✓
Switch/circuit-breaker cannot be operated when test access open	✓
Motorised actuator operation satisfactory using an RTU simulator (LPN only)	N/A

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Transformer Winding Insulation Resistance (EI 09-0001) (Transformer-mounted units only)		
HV windings to earth (LV windings connected together and to earth)	N/A	MΩ
LV windings to earth (HV windings connected together and to earth)	N/A	MΩ

Switchgear Continuity Test							
RSW1	RSW2	CB		Terminals Under Test		Continuity	
		TM*	FS*	TM*	FS*		
				RSW1 to RSW2	RSW1 to RSW2 to CB		
Closed	Closed	Open	Closed	L1 - L1	L1 - L1 - L1	0.9	Ω
Closed	Closed	Open	Closed	L2 - L2	L2 - L2 - L2	0.9	Ω
Closed	Closed	Open	Closed	L3 - L3	L3 - L3 - L3	0.9	Ω
Closed	Open	Closed		L1 - L2 (RSW1)		N/A	Ω
Closed	Open	Closed		L2 - L3 (RSW1)		N/A	Ω

* TM - transformer-mounted and FS - free-standing.

HV Insulation Tests (EI 09-0001)									
RSW1	RSW2	CB		Terminal			Voltage (kV)	Duration (min)	IR (MΩ)
				Under Test	Earthed				
		TM*	FS*	RSW1	RSW2	CB (FS* only)			LOAKAGE
Closed	Closed	Open	Closed	L1	L2, L3		18KV	5	0.8mA
Closed	Closed	Open	Closed	L2	L1, L3		18KV	5	0.8mA
Closed	Closed	Open	Closed	L3	L1, L2		18KV	5	0.8mA
Open	Closed	Open	Closed	L1, L2, L3	L1, L2, L3	L1, L2, L3			
Closed	Open	Open	Open	L1, L2, L3	L1, L2, L3				

* TM - transformer-mounted and FS - free-standing.

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FPI CTs Insulation Resistance using 1kV Megger (from CT wiring terminal block)					
	RSW1			RSW2 (if fitted)	
Disconnect FPI (if fitted)					✓ (✓)
Remove CT wiring earth link	D190 - D170	✓	(✓)	D190 - D270	(✓)
L1, L2, L3	D111, D131, D151 - earth	>999	MΩ	D111/2, D131/2, D151/2 - earth	MΩ
Replace CT wiring earth link	D190 - D170	✓	(✓)	D190 - D270	(✓)

FPI CTs Loop Continuity (from CT wiring terminal block)					
	RSW1			RSW2 (if fitted)	
L1	D110 - D170	1.1	Ω	D110/2 - D170/2	Ω
L2	D130 - D170	1.1	Ω	D130/2 - D170/2	Ω
L3	D150 - D170	1.1	Ω	D150/2 - D170/2	Ω
Reconnect FPI (if fitted)					✓ (✓)

Protection CTs Insulation Resistance using 1kV Megger			
Remove CT wiring earth link	C70 - C90	✓	(✓)
OC & EF CTs, AC trip coils and TLFs	C70 - Earth	>999	MΩ
Replace CT wiring earth link	C70 - C90	✓	(✓)

Protection CTs Loop Continuity (CT and trip coil from TLF Ratio terminal block with link removed)			
L1	C110/C210* – C70	2.7	Ω
L2	C130/C230* – C70	1.7	Ω
L3	C150/C250* – C70	2.7	Ω

* See Figure 1 and delete ratio not used.

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Primary Injection Test (Free-standing units only)							
Earth Fault Release Test (remove TLFs and replace with shorting links)							
RSW1	RSW2	CB	Conductors Under Test	CT Ratios	RN2 Trip Range	RN2d Trip Range	Trip Current
Closed	Open	Closed	L1 - L1	50/5	20 - 26.5A	19 - 28A	22 A
				100/5	25 - 31A	24 - 36A	A
Closed	Open	Closed	L2 - L2	50/5	20 - 26.5A	19 - 28A	22 A
				100/5	25 - 31A	24 - 36A	A
Closed	Open	Closed	L3 - L3	50/5	20 - 26.5A	19 - 28A	22 A
				100/5	25 - 31A	24 - 36A	A
Overcurrent Release Test (remove TLF shorting-links, connect shorting-link to L1, L2, L3 on RSW1)							
RSW1	RSW2	CB	Conductors Under Test	CT Ratios	Trip Range		Trip Current
Closed	Open	Closed	L1 - L2	50/5	20 - 25A		23 A
				100/5	30 - 36A		A
Closed	Open	Closed	L2 - L3	50/5	20 - 25A		23 A
				100/5	30 - 36A		A

Secondary Injection Test (Transformer-mounted units only)							
Earth Fault Release Test (remove TLFs and replace with shorting links)							
RSW1	RSW2	CB	Test Connections	CT Ratios	RN2 Trip Range	RN2d Trip Range	Trip Current
Open	Open	Closed	C31 - C70	50/5	2 - 2.55A	1.7 - 2.8A	N/A A
				100/5	1.25 - 1.55A	1.1 - 1.65A	A
Overcurrent Release Test (remove shorting links)							
RSW1	RSW2	CB	Test Connections	CT Ratios	Trip Range		Trip Current
Open	Open	Closed	C11 - C31	50/5	1.6 - 2.2A		N/A A
				100/5	1.4 - 2.0A		A
Open	Open	Closed	C31 - C51	50/5	1.6 - 2.2A		N/A A
				100/5	1.4 - 2.0A		A

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Final Checks	(✓)
Check correct CT ratio selected	✓
Check correct TLF rating selected and fitted	✓
Check all links are replaced and secure	✓
Ensure FPI CT shorting-link(s) are replaced if CTs are not used or not connected to FPI or RTU	✓
Reconnect umbilical cable to RTU (if fitted)	N/A
Asset data form completed and submitted	N/A

Test Equipment		
Purpose	Make/Type	Serial Number
INJECTION	TR TEST	25T61230

Certification					
All tests have been completed satisfactorily				✓	(✓)
Comments					
Commissioning Engineer	TOM RADFORD	Signature		Date	13/08/24

This test form should be left on-site, in a plastic wallet, in a dry place (eg LV fuse-cabinet, RTU cabinet etc).

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Figures

Figure 1: Protection CT ratio selection & terminal identification.

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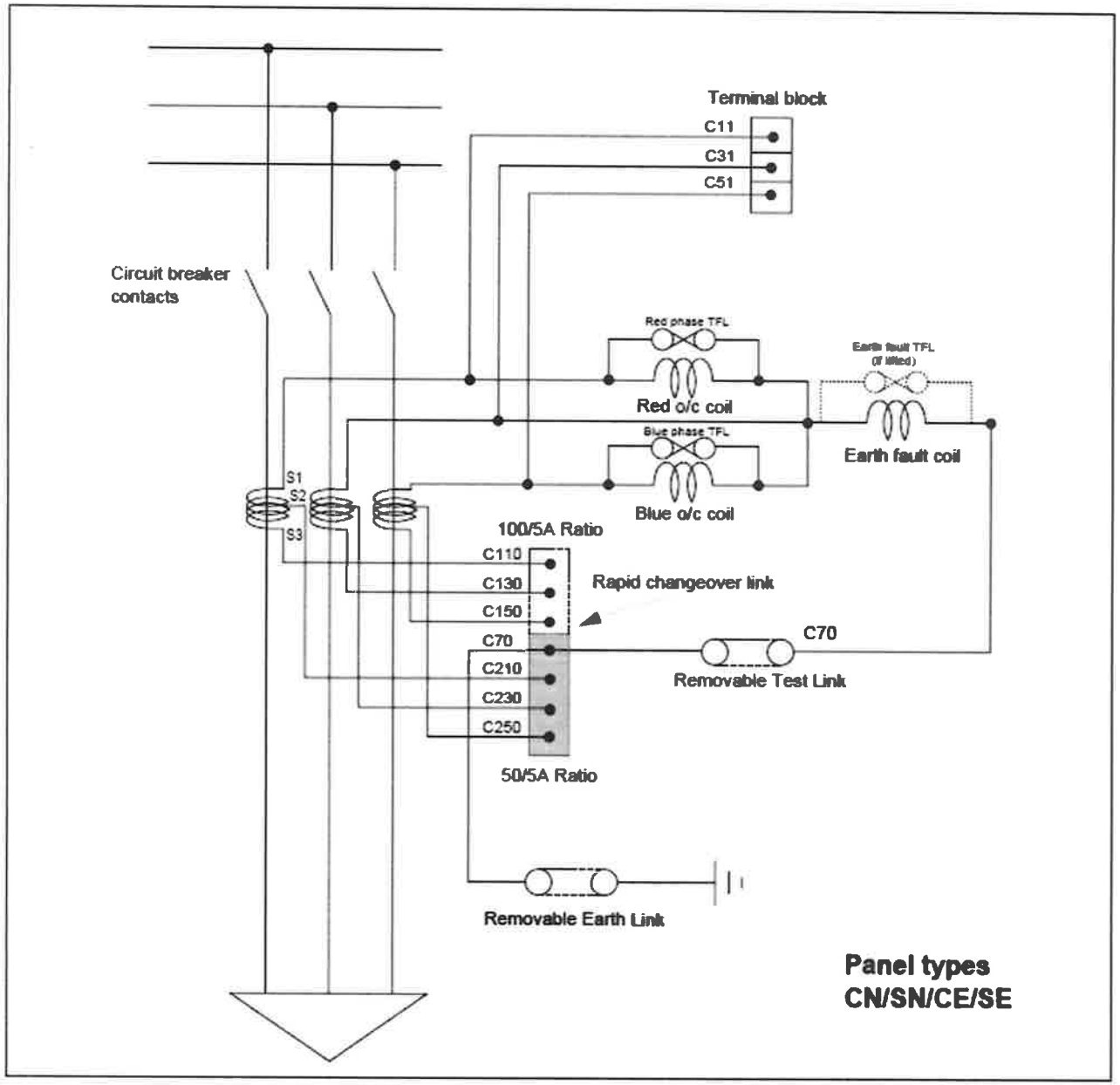
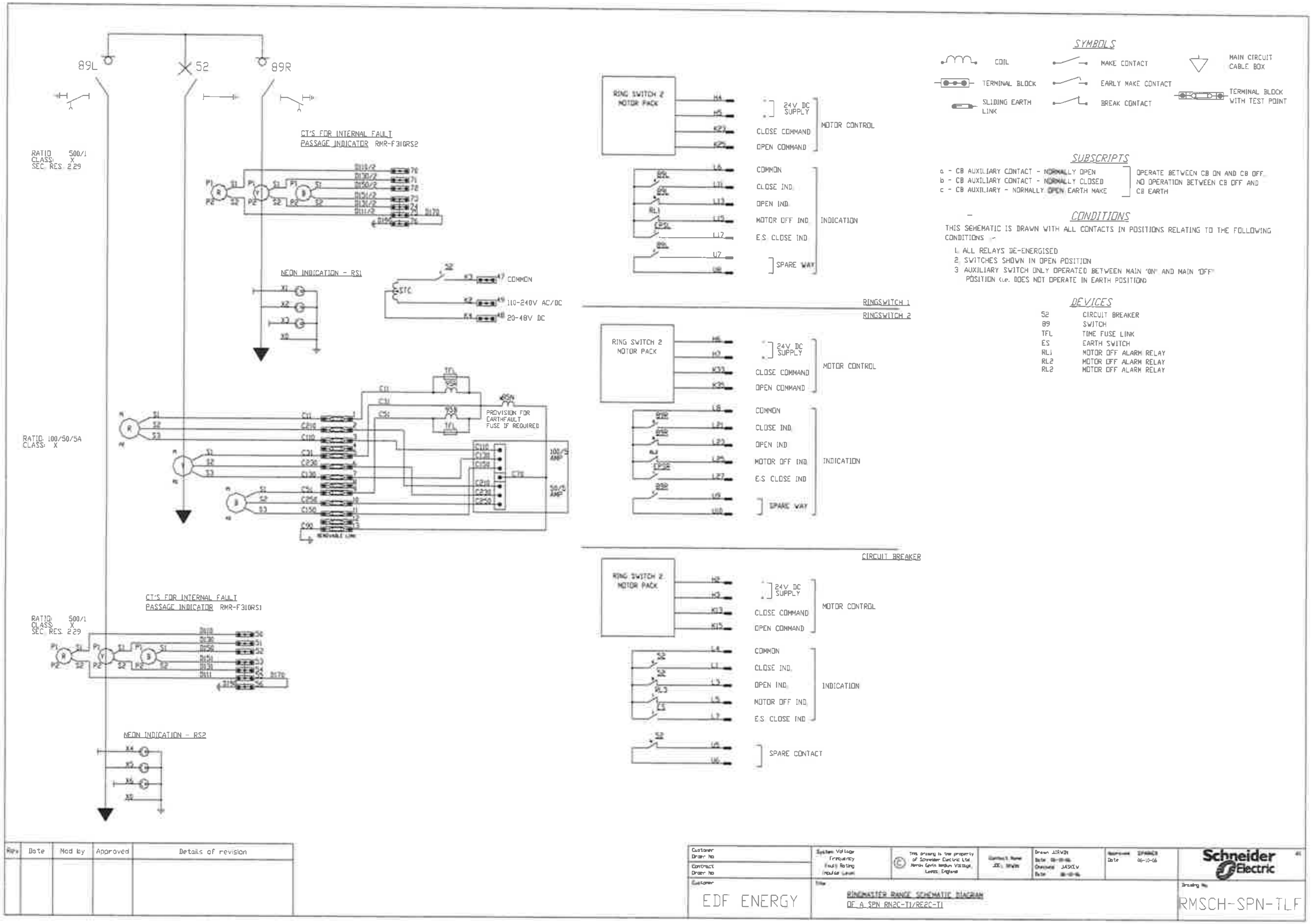

Terminal block
C11
C31
C51
Circuit breaker contacts
Red phase TFL
Earth fault TFL (if fitted)
Red o/c coil
Earth fault coil
Blue phase TFL
Blue o/c coil
S1
S2
S3
100/5A Ratio
C110
C130
C150
C70
C210
C230
C250
Rapid changeover link
C70
Removable Test Link
50/5A Ratio
Removable Earth Link
Panel types
CN/SN/CE/SE



89L
52
89R
RATIO 500/1
CLASS X
SEC. RES. 2.29
CT'S FOR INTERNAL FAULT PASSAGE INDICATOR RMR-F310RS2
NEON INDICATION - RS1
COMMON
110-240V AC/DC
20-48V DC
STC
PROVISION FOR EARTHFAULT FUSE IF REQUIRED
RATIO 100/50/5A
CLASS X
100/5 AMP
50/5 AMP
REMOVABLE LINK
RATIO 500/1
CLASS X
SEC. RES. 2.29
CT'S FOR INTERNAL FAULT PASSAGE INDICATOR RMR-F310RS1
NEON INDICATION - RS2
RING SWITCH 2 MOTOR PACK
24V DC SUPPLY
CLOSE COMMAND
OPEN COMMAND
MOTOR CONTROL
COMMON
CLOSE IND.
OPEN IND.
MOTOR OFF IND.
E.S. CLOSE IND.
INDICATION
SPARE WAY
RINGSWITCH 1
RINGSWITCH 2
RING SWITCH 2 MOTOR PACK
24V DC SUPPLY
CLOSE COMMAND
OPEN COMMAND
MOTOR CONTROL
COMMON
CLOSE IND.
OPEN IND.
MOTOR OFF IND.
E.S. CLOSE IND.
INDICATION
SPARE WAY
CIRCUIT BREAKER
RING SWITCH 2 MOTOR PACK
24V DC SUPPLY
CLOSE COMMAND
OPEN COMMAND
MOTOR CONTROL
COMMON
CLOSE IND.
OPEN IND.
MOTOR OFF IND.
E.S. CLOSE IND.
INDICATION
SPARE CONTACT
SYMBOLS
COIL
TERMINAL BLOCK
SLIDING EARTH LINK
MAKE CONTACT
EARLY MAKE CONTACT
BREAK CONTACT
MAIN CIRCUIT CABLE BOX
TERMINAL BLOCK WITH TEST POINT
SUBSCRIPTS
a - CB AUXILIARY CONTACT - NORMALLY OPEN
b - CB AUXILIARY CONTACT - NORMALLY CLOSED
c - CB AUXILIARY - NORMALLY OPEN EARTH MAKE
OPERATE BETWEEN CB ON AND CB OFF. NO OPERATION BETWEEN CB OFF AND CB EARTH
CONDITIONS
THIS SCHEMATIC IS DRAWN WITH ALL CONTACTS IN POSITIONS RELATING TO THE FOLLOWING CONDITIONS :-
1. ALL RELAYS DE-ENERGISED
2. SWITCHES SHOWN IN OPEN POSITION
3. AUXILIARY SWITCH ONLY OPERATED BETWEEN MAIN 'ON' AND MAIN 'OFF' POSITION i.e. DOES NOT OPERATE IN EARTH POSITION
DEVICES
52 CIRCUIT BREAKER
89 SWITCH
TFL TIME FUSE LINK
ES EARTH SWITCH
RL1 MOTOR OFF ALARM RELAY
RL2 MOTOR OFF ALARM RELAY
RL2 MOTOR OFF ALARM RELAY
Rev
Date
Mod by
Approved
Details of revision
Customer
EDF ENERGY
RINGMASTER RANGE SCHEMATIC DIAGRAM OF A SPN RN2C-TI/RE2C-TI
Schneider Electric
RMSCH-SPN-TLF

Engineering Job Card: Service Installation

Network Ref	HGN0001116	MPRN	7764742501	Pressure	LP

Plot Address	1	Customer Name	Winvic
House Name	Juniper House	No.	Tel. No.	
Street	Horton Road	Work Instruction	
Town	Colnbrook		
County		Special Notes	
Post Code	SL3 0BB	Service Completion Date	18/06/2024

Service Pipe Details

		Of	Of	Of	Of
Length (m)	4m				
Diameter (mm)	63mm				

SDR Rating 17.6 ☐ SDR Rating 11 ✠

Working Pressure ✠ Low ☐ Med ☐ Int.

Test Details

Pass ✠ Fail ☐

Test Pressure 100 mbar

Service Termination

☐ External Position: or ☐ Internal Position ☐ Surface mounted ☐ Semi-concealed ☐ Inset Box

Details: GC4 Kiosk

Method Laid

✠ Pre-Exc Trench ☐ Open Cut ☐ Facework

☐ In Duct ☐ Above Ground ☐ Mole

☐ By Others

Mains Connection Details

Mains Info		*Distance To*		*Main Location*	
Material	PE	Building		Footpath	☐
Size	250mm	Prop. Line		Road	✠
Depth (m)	750mm	Kerb		Verge	☐

Measurement Address

Jointing

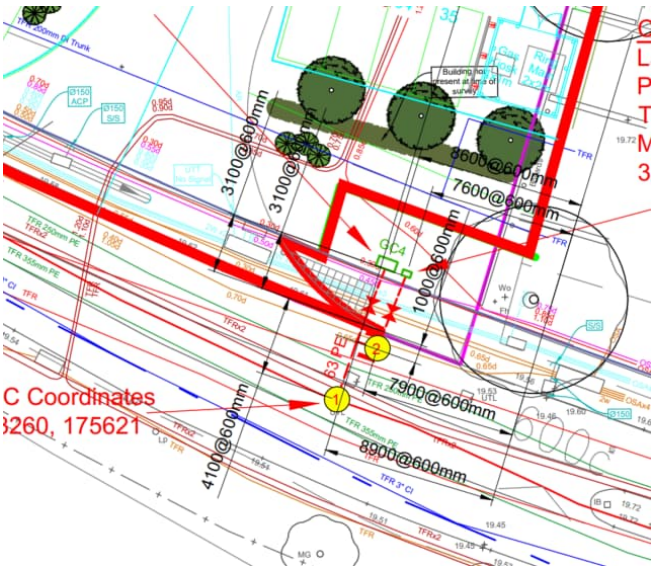
Fusion joint numbers (as entered on fusion control box)

Service Type

✠ Single ☐ Dual ☐ Multiple

List addresses supplied if Dual or Multiple

Please draw sketch to record service route/meter position including dimensions



Contractor	Harlaxton Engineering Services					
Service Laid By	Print Name	Oren Briggs	Signature		Date	18/06/2024
Authorised	Print Name		Signature		Date	

GIRS Test Certificate

Harlaxton Engineering Services Limited

Section 1: Site Details

Project Number	9748	**Project Name**	Panattoni Poyle
Drawing Number	B96420153	**Certificate Number**	9748 - 001
IGT Reference	Cadent Ref - 100037480 HGN Ref - HGN0001116		

Section 2: Mains Details

			Coordinates	Description	Material	Size in mm	Grade	SDR	Length in metres
Section 1	**Start**	Node 1	503260 175621	Node 1	Pe	**63**	PE 80	17.6	12
	End	Gc4	503263 175628						
Section 2	**Start**					0			0
	End								
Section 3	**Start**					0			0
	End								
Section 4	**Start**					0			0
	End								
					Total length in metres				12m

Section 3: Gauge/standpipe information

Gauge make	Comark	**Gauge model**	C9505IS
Gauge (range) accuracy		**Gauge serial number**	41439/1-21
Gauge calibration expiry date	03/10/2024		

Section 4: Test Details

Design pressure/MOP	Low	**Initial pressurization time and stabilization duration**	11:00	**Initial pressurization pipe temperature**	14
Initial pressurization date	18/06/2024 00:0	**Test start pipe temperature**	14	**Test end pipe temperature**	17
Test start day and time	18/06/2024 11:00:05	**Test end date and time**	18/06/2024 11:45:19		
Starting pressure	354	**End pressure**	354	**Required duration of test**	0
Actual Duration of test	0.5	**Allowable pressure drop**	0	**Actual pressure drop**	0
Test results	Pass				

Section 5: Verification

Name of operative who undertook the test	F.Lanza
Role of person who undertook the test	Main layer
EUSR number of the person who undertook the test	229
Date	18/06/2024 00:00:00
Certificate approved by	F.Lanza
Signature of person who undertook the test