



Non-Registered Embedded Generation Register

22.12.17



1. Introduction

In accordance with clause 5A.D.1A of the NER, a register of completed non-registered embedded generator projects between 30kW and 5MW in capacity is required to be published by the DNSP. The register update is aligned with the DAPR review period in accordance with NER clause 5A.D.1A (d).

2. NER Information Requirements

As per the NER requirement in clause 5A.D.1A (c), the following information must be published:

- Technology of generating unit (e.g. synchronous generating unit, induction generator, photovoltaic array, etc) and its make and model;
- Maximum power generation capacity of all embedded generating units comprised in the relevant generating system;
- Contribution to fault levels;
- The size and rating of the relevant transformer;
- Protection systems and communication systems;
- A single line diagram of the connection arrangement;
- Voltage control, power factor control and/or reactive power capability (where relevant);
- Details specific to the location of a facility connected to the network that are relevant to any of the details above.



3. Register

Project Number	Suburb	Voltage at Connection Point	Technology of Generating Unit	Generating Unit (make and model)	Maximum power generation capacity of all embedded generating units comprised in the relevant generating system (kW)	Contribution to fault level (kA) (Note 1)	Size and rating of relevant transformer (kVA)	Protection Systems and Communication Systems (Section 4)	SLD of connection arrangement (Section 5)	Voltage control, power factor control and/or reactive power capability (where relevant)	Details specific to the location of a facility connected to the network that are relevant to any of the details in the register
1	Braeside	LV	Solar Photovoltaic Array	Jiangsu Zevelution Pro 33K SMA STP20000	50	0.11	315	Level 1	Type 1	Must be within Distribution Code limits	Export to grid
2	Carnegie	LV	Solar Photovoltaic Array	SMA Sunny Tripower 25000TL x 3	75	0.16	1000	Level 2	Type 1	Must be within Distribution Code limits	Export to grid
3	Dandenong	LV	Solar Photovoltaic Array	enPhase M250 x 200	50	0.11	1000	Level 3	Type 2	Must be within Distribution Code limits	Export to grid
5	Dandenong South	LV	Solar Photovoltaic Array	Fronius Eco 27.0-3-S x 4 Fronius Eco 15.0-3-M x 1	123	0.27	500	Level 4	Type 2	Must be within Distribution Code limits	Export to grid
6	Braeside	LV	Solar Photovoltaic Array	Fronius Eco 25.0-3-S x 3	75	0.16	500	Level 1	Type 1	Must be within Distribution Code limits	Export to grid
7	Dandenong North	LV	Solar Photovoltaic Array	SMA Sunny Tripower 20000TL x 2	40	0.09	300	Level 1	Type 1	Must be within Distribution Code limits	Export to grid
8	Scoresby	LV	Solar Photovoltaic Array	ABB Trio 27.6-OUTD x 1 ABB Trio 20.0-OUTD x 1	47.6	0.10	750	Level 1	Type 1	Must be within Distribution Code limits	Export to grid
9	Clayton	LV	Solar Photovoltaic Array	Fronius Symo 20.0-3-M x 1 Fronius Eco 25.0-3-S x 2	70	0.15	750	Level 1	Type 1	Must be within Distribution Code limits	Export to grid
10	Springvale	LV	Solar Photovoltaic Array	Fronius Symo 10.0-3-M x 1 Fronius Eco 27.0-3-S x 3	91	0.20	500	Level 2	Type 1	Must be within Distribution Code limits	Export to grid
11	Dandenong South	LV	Solar Photovoltaic Array	ABB Trio 27.6-OUTD x 2	55.2	0.12	500	Level 2	Type 1	Must be within Distribution Code limits	Export to grid
12	Bangholme	LV	Solar Photovoltaic Array	Fronius Eco 25.0-3-S x 4	100	0.22	315	Level 2	Type 1	Must be within Distribution Code limits	Export to grid
13	Glen Waverley	LV	Solar Photovoltaic Array	Fronius Symo 10.0-3-M x 1 Fronius Eco 27.0-3-S x 3	91	0.20	300	Level 2	Type 1	Must be within Distribution Code limits	Export to grid
14	Brighton East	LV	Solar Photovoltaic Array	Fronius Eco 25.0-3-S x 4	100	0.22	1500	Level 2	Type 1	Must be within Distribution Code limits	Export to grid



Project Number	Suburb	Voltage at Connection Point	Technology of Generating Unit	Generating Unit (make and model)	Maximum power generation capacity of all embedded generating units comprised in the relevant generating system (kW)	Contribution to fault level (kA) (Note 1)	Size and rating of relevant transformer (kVA)	Protection Systems and Communication Systems (Section 4)	SLD of connection arrangement (Section 5)	Voltage control, power factor control and/or reactive power capability (where relevant)	Details specific to the location of a facility connected to the network that are relevant to any of the details in the register
15	Doncaster	LV	Solar Photovoltaic Array	SMA Sunny Tripower 25000TL x 3 SMA SunnyBoy 1700TL x 3 SMA SunnyBoy 1200TL x 1	81.3	0.18	500	Level 1	Type 1	Must be within Distribution Code limits	Export to grid
16	Moorabbin	LV	Solar Photovoltaic Array	Fronius Symo 20.0-3-M x 2	40	0.09	500	Level 2	Type 1	Must be within Distribution Code limits	Export to grid
17	Dandenong South	LV	Natural Gas	Capstone C65	65	0.14	1000	Level 5	Type 2	Must be within Distribution Code limits	Zero export
18	Clayton	LV	Solar Photovoltaic Array	SMA STP 20000TL-30 x 1 SMA STP 25000TL-30 x 3	95	0.21	500	Level 2	Type 1	Must be within Distribution Code limits	Export to grid
19	Braeside	LV	Solar Photovoltaic Array	SMA Sunny Tripower 25000TL-30 x 2	50	0.11	300	Level 2	Type 1	Must be within Distribution Code limits	Export to grid
20	Scoresby	LV	Solar Photovoltaic Array	Fronius Symo 20.0-3-M x 4	80	0.17	200	Level 1	Type 1	Must be within Distribution Code limits	Zero export
21	Vermont	LV	Solar Photovoltaic Array	Fronius Symo 10.0-3-M x 1 Fronius Eco 27.0-3-S x 3	91	0.20	300	Level 1	Type 1	Must be within Distribution Code limits	Export to grid
22	Dandenong South	LV	Solar Photovoltaic Array	Fronius Eco 25.0-3-S x 4	100	0.22	315	Level 2	Type 1	Must be within Distribution Code limits	Export to grid
23	Doncaster	LV	Solar Photovoltaic Array	Fronius Eco 27.0-3-S x 10	270	0.58	500	Level 4	Type 2	Must be within Distribution Code limits	200kW export
24	Keysborough	LV	Solar Photovoltaic Array	SMA STP 25000TL-30 x 2	50	0.11	1500	Level 2	Type 1	Must be within Distribution Code limits	Export to grid
25	Moorabbin	LV	Solar Photovoltaic Array	SMA STP 25000TL-30 x 2	50	0.11	500	Level 1	Type 1	Must be within Distribution Code limits	Export to grid
26	Dandenong South	LV	Solar Photovoltaic Array	Fronius Symo 8.2-3-M Fronius Eco 27.0-3-S x 7	197.2	0.43	500	Level 4	Type 2	Must be within Distribution Code limits	Export to grid
27	Mordialloc	LV	Solar Photovoltaic Array	Fronius Symo 20.0-3-M x 3	60	0.13	750	Level 2	Type 1	Must be within Distribution Code limits	Export to grid
28	Clayton	HV	Solar Photovoltaic Array	SMA STP 25000TL x 5 SMA STP 10000TL x 1	135	0.29	HV Customer	Level 4	Type 2	Must be within Distribution Code limits	Export to grid



Project Number	Suburb	Voltage at Connection Point	Technology of Generating Unit	Generating Unit (make and model)	Maximum power generation capacity of all embedded generating units comprised in the relevant generating system (kW)	Contribution to fault level (kA) (Note 1)	Size and rating of relevant transformer (kVA)	Protection Systems and Communication Systems (Section 4)	SLD of connection arrangement (Section 5)	Voltage control, power factor control and/or reactive power capability (where relevant)	Details specific to the location of a facility connected to the network that are relevant to any of the details in the register
29	Vermont	LV	Solar Photovoltaic Array	ABB Trio 27.6-TL x 2 ABB Trio 20.0-TL x 2	95.2	0.21	500	Level 2	Type 1	Must be within Distribution Code limits	Export to grid
30	Hallam	LV	Solar Photovoltaic Array	Fronius Eco 25.0-3-S x 6	150	0.32	500	Level 4	Type 2	Must be within Distribution Code limits	Export to grid
31	Springvale Sout	LV	Solar Photovoltaic Array	Fronius Eco 25.0-3-S x 2	50	0.11	200	Level 1	Type 1	Must be within Distribution Code limits	Export to grid
32	Dandenong South	LV	Solar Photovoltaic Array	ABB Trio 27.6-TL x 2 ABB Trio 20.0-TL x 2	95.2	0.21	500	Level 1	Type 1	Must be within Distribution Code limits	Export to grid
33	Dandenong South	LV	Solar Photovoltaic Array	SMA STP 25000TL x 2	50	0.11	500	Level 2	Type 1	Must be within Distribution Code limits	Export to grid
34	Red Hill South	LV	Solar Photovoltaic Array	SolarEdge SE27.6 x 2	55.2	0.12	315	Level 2	Type 1	Must be within Distribution Code limits	Export to grid
35	Somerville	LV	Solar Photovoltaic Array	Fronius Eco 25.0-3-S x 3 Fronius Symo 17.5-3-M x 1	95	0.21	1000	Level 2	Type 1	Must be within Distribution Code limits	Export to grid
36	Blackburn	LV	Solar Photovoltaic Array	Fronius Eco 25.0-3-S Fronius Symo 17.5-3-M	42.5	0.09	500	Level 2	Type 1	Must be within Distribution Code limits	Export to grid
37	Mulgrave	LV	Solar Photovoltaic Array	Fronius Eco 27.0-3-S Fronius Symo 8.2-3-M	35.2	0.08	500	Level 2	Type 1	Must be within Distribution Code limits	Export to grid
38	Mulgrave	LV	Solar Photovoltaic Array	Fronius Symo 20.0-3-S x 3	60	0.13	300	Level 2	Type 1	Must be within Distribution Code limits	Export to grid
39	Moorabbin	LV	Solar Photovoltaic Array	Fronius Symo 20.0-3-M x 4	80	0.17	2000	Level 4	Type 2	Must be within Distribution Code limits	Export to grid
40	Mornington	LV	Solar Photovoltaic Array	Fronius Eco 25.0-3-S x 2	50	0.11	315	Level 4	Type 2	Must be within Distribution Code limits	Export to grid
41	Dandenong	LV	Solar Photovoltaic Array	ABB Trio 27.6-TL x 3	82.8	0.18	500	Level 4	Type 2	Must be within Distribution Code limits	Export to grid
42	Hallam	LV	Solar Photovoltaic Array	Fronius Eco 25.0-3-S x 4	100	0.22	1000	Level 4	Type 2	Must be within Distribution Code limits	Export to grid

Note 1 – Fault level contribution factor of 1.5 used for Inverters



4. Protection Schemes and Requirements

	Primary Protection	Secondary Protection
Level 1	Overvoltage	No Relay
	Undervoltage	
	Overfrequency	
	Underfrequency	
Level 2	Fast Overvoltage	No Relay
	Overvoltage	
	Fast Undervoltage	
	Undervoltage	
	Average Overvoltage	
	Overfrequency	
	Underfrequency	
Level 3	Overvoltage	Overvoltage
	Undervoltage	Undervoltage
	Overfrequency	Overfrequency
	Underfrequency	Underfrequency
		ROCOF
		Vector Shift
		Current Unbalance
		Negative Sequence Voltage



	Primary Protection	Secondary Protection
Level 4	Fast Overvoltage	Overvoltage
	Overvoltage	Undervoltage
	Fast Undervoltage	Overfrequency
	Undervoltage	Underfrequency
	Average Overvoltage	ROCOF
	Overfrequency	Vector Shift
	Underfrequency	Current Unbalance
		Negative Sequence Voltage
Level 5	Fast Overvoltage	Reverse Power
	Overvoltage	
	Fast Undervoltage	
	Undervoltage	
	Average Overvoltage	
	Overfrequency	
	Underfrequency	
	Rate of Change of Frequency	



5. Single Line Diagrams

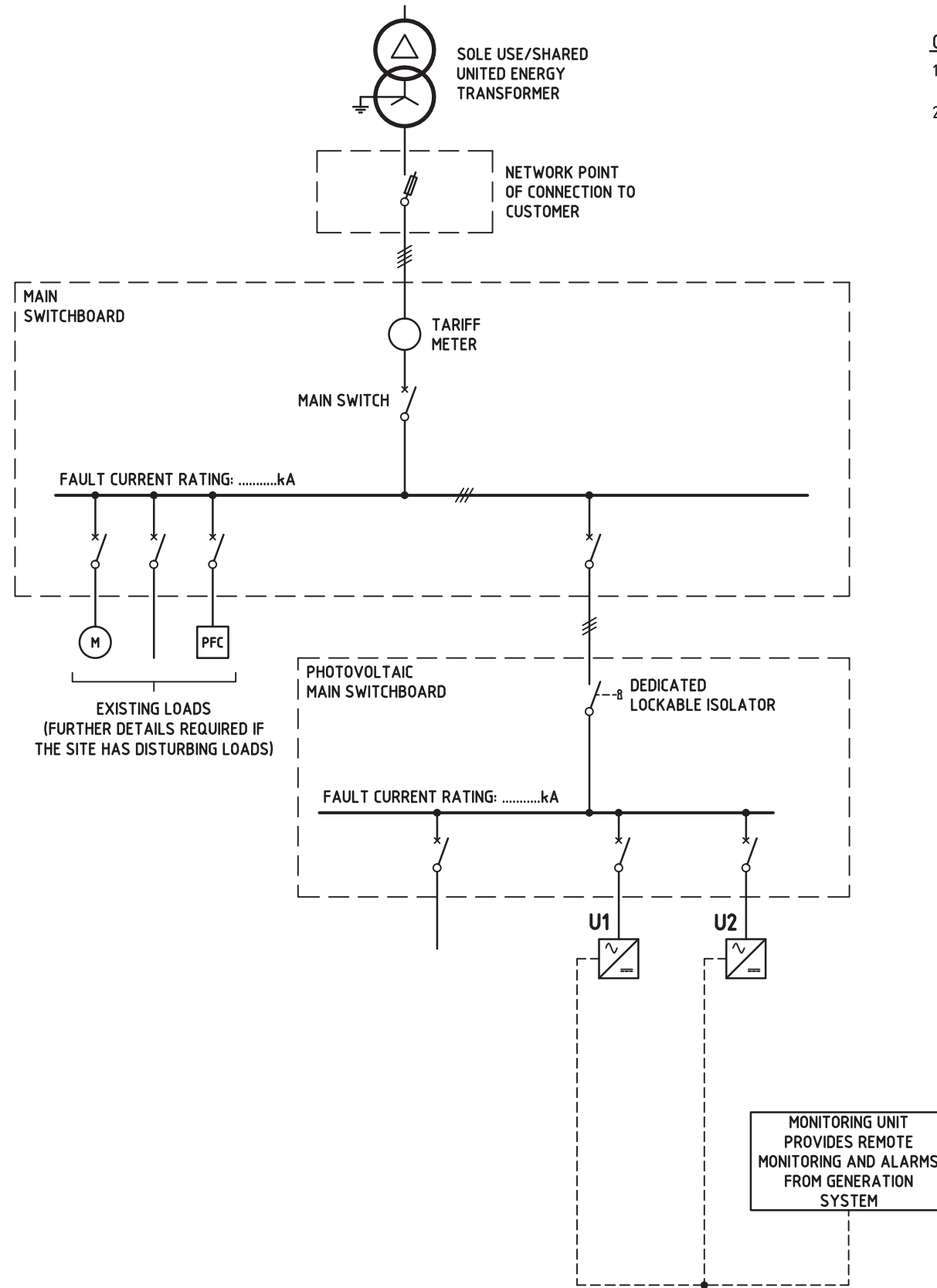
NOTES

1. INSTALLATION IS TO BE COMPLIANT WITH AS3000, AS5033, THE VICTORIAN SERVICE AND INSTALLATION RULES (SIR) AND ALL OTHER APPLICABLE STANDARDS.

EQUIPMENT SCHEDULE	
U1	GENERATION TYPE:
	INVERTER MODEL:
	INVERTER CAPACITY: kW
U2	GENERATION TYPE:
	INVERTER MODEL:
	INVERTER CAPACITY: kW

GENERAL DESIGN CONSIDERATIONS

1. THE GENERATOR SYSTEM AND PROTECTION SHALL BE DESIGNED TO BE FAILSAFE.
2. EARTHING MUST COMPLY WITH AS3000, AS5033, AS4777 AND THE VICTORIAN SERVICE AND INSTALLATION RULES (SIR).



LEGEND

- MOTOR
- POWER FACTOR CORRECTION
- INVERTER

REFERENCE DRAWINGS	DRAWING NUMBER
-	-
-	-
-	-
-	-
-	-
-	-
DESCRIPTION	DRAWING NUMBER

REVISIONS	NO.	DESCRIPTION	DATE	BY	CHECKED

DRAWN	-
DESIGN CHECKED	-
APPROVED	-

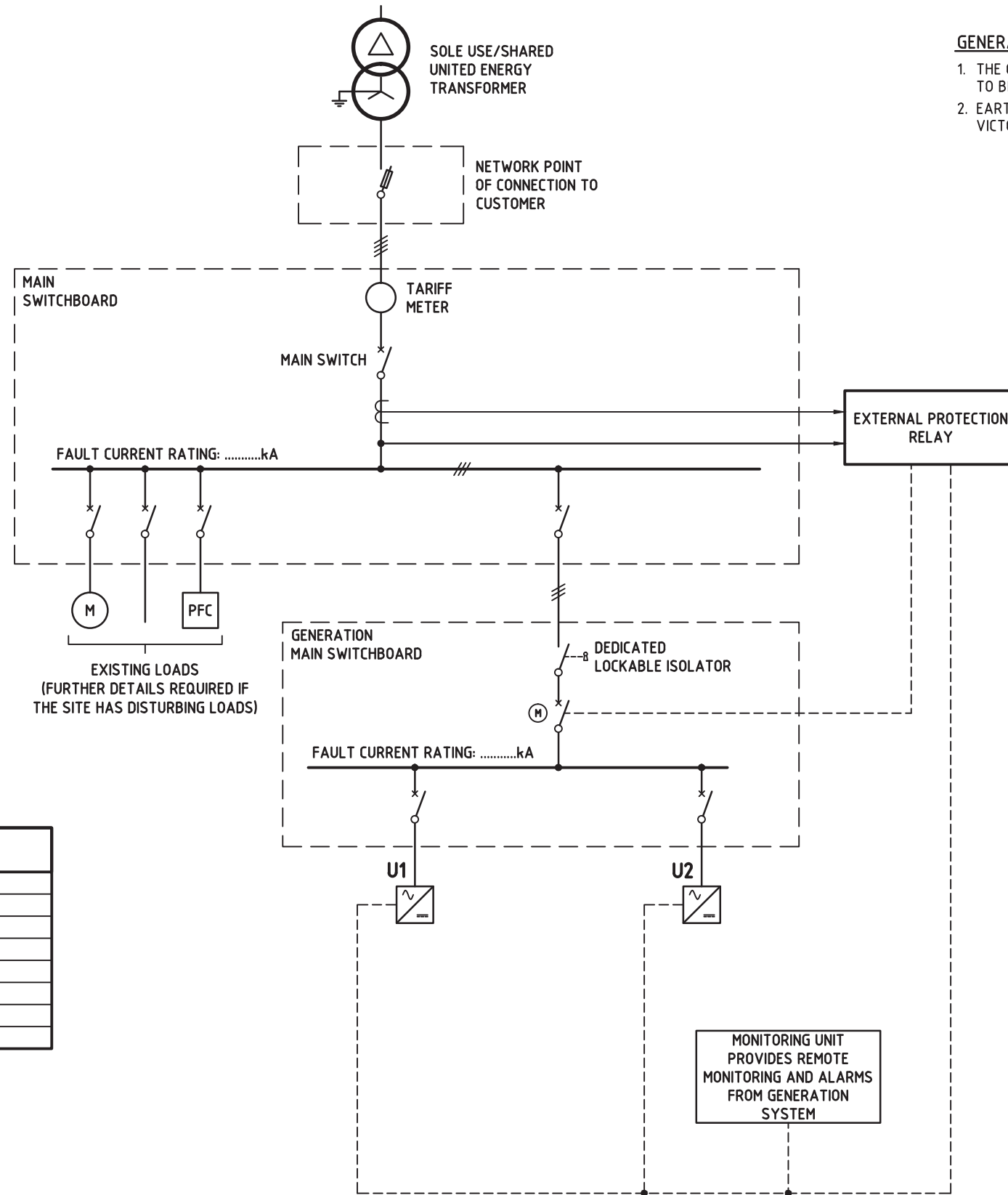
DRG No.	TYPE 1 SLD	-
NEW GENERATION		
		A2

NOTES

1. INSTALLATION IS TO BE COMPLIANT WITH AS3000, AS5033, THE VICTORIAN SERVICE AND INSTALLATION RULES (SIR) AND ALL OTHER APPLICABLE STANDARDS.

GENERAL DESIGN CONSIDERATIONS

1. THE GENERATOR SYSTEM AND PROTECTION SHALL BE DESIGNED TO BE FAILSAFE.
2. EARTHING MUST COMPLY WITH AS3000, AS5033, AS4777 AND THE VICTORIAN SERVICE AND INSTALLATION RULES (SIR).



LEGEND

- MOTOR
- POWER FACTOR CORRECTION
- INVERTER

EQUIPMENT SCHEDULE	
U1	GENERATION TYPE:
	INVERTER MODEL:
	INVERTER CAPACITY: kW
U2	GENERATION TYPE:
	INVERTER MODEL:
	INVERTER CAPACITY: kW

REFERENCE DRAWINGS	DRAWING NUMBER
-	-
-	-
-	-
-	-
-	-
DESCRIPTION	DRAWING NUMBER

REVISIONS	NO.	DESCRIPTION	DATE
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-
-	-	-	-

DRAWN	-
DESIGN CHECKED	-
APPROVED	-

DRG No.	TYPE 2 SLD
NEW GENERATION	
A2	