



Register of Completed Embedded Generation Projects

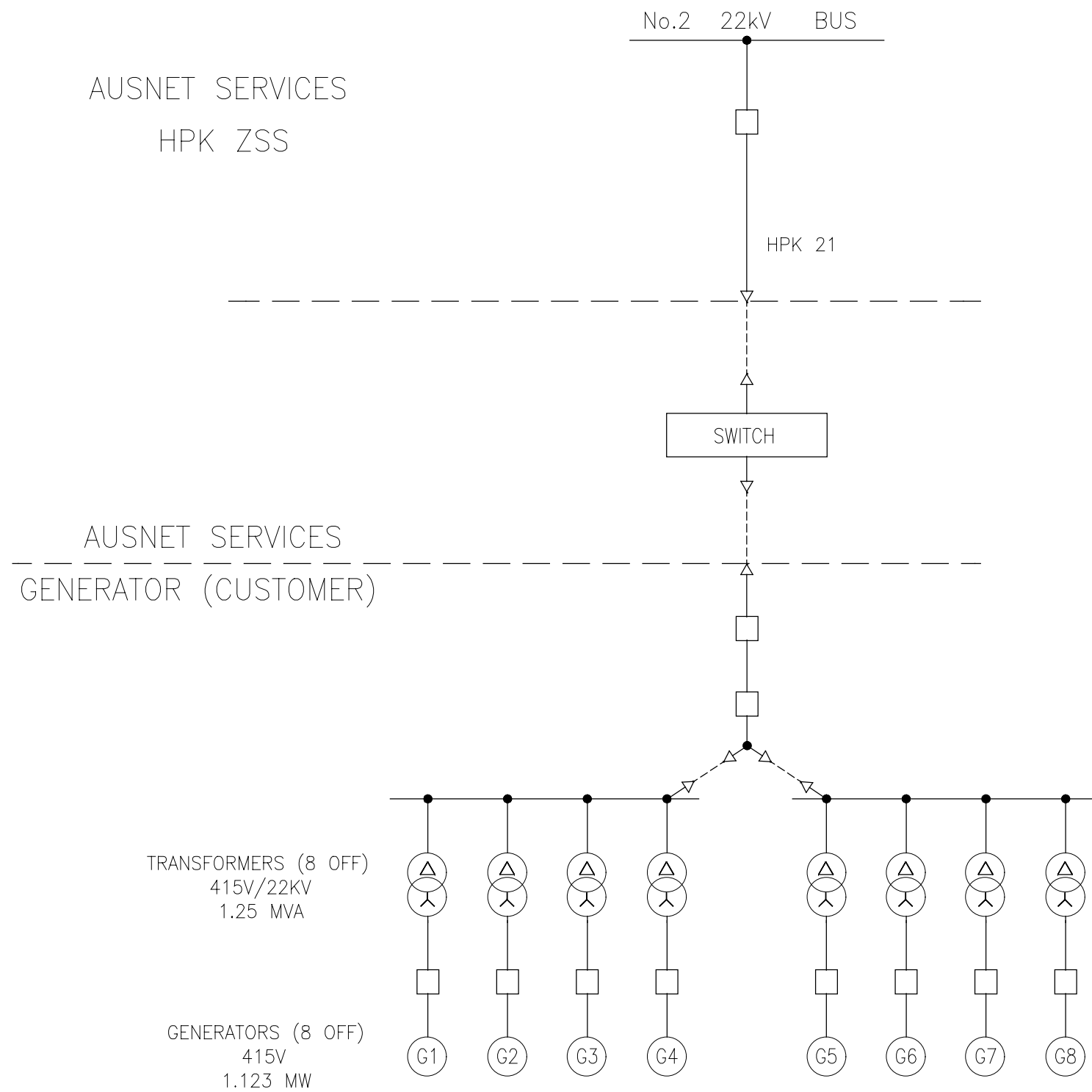
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This register includes the details, as specified under clause 5.4.5 of the National Electricity Rules, for all completed embedded generation projects that have connected to AusNet Services distribution network since 1 October 2009. Permission has been sought from the respective Embedded Generators to publish this information. Any confidential information has been omitted from this register. AusNet Services will update this register by the DAPR date each year.

Register of Completed Embedded Generation Projects

Name	Location	Technology of generating unit including make and model	Maximum power generation capacity of all embedded generating units comprised in the relevant generating system	Contribution to fault levels	Size and rating of the relevant transformer	A single line diagram of the connection arrangement	Protection systems and Communications Systems	Voltage control and reactive power capability arrangement
Project #1	Hampton Park, Victoria	Synchronous (bioenergy) Make: Caterpillar Model: 3516LE	8.9MW	1.45 kA (3ph, @ 22kV sub-transient)	8x 1.25 MVA	Refer to the connection diagram within this document	Remote Trip and SCADA	Voltage control: Yes (22kV Voltage Set Point) Reactive power capability per engine: 1.1 MVAR absolute maximum export capability. However, the connection agreement regulates power factor to range: 0.95 lag (supplying 0.37MVAR) to 0.95 lead (absorbing 0.37MVAR).
Project #2	Wollert, Victoria	Synchronous (bioenergy) Make: Caterpillar Model: 3516LE	8.9MW	1.14 kA (3ph, @ 22kV sub-transient)	7x 1.25MVA + 1x 2.50MVA	Refer to the connection diagram within this document	Remote Trip and SCADA	Voltage control: Yes (22.66kV Voltage Set Point) Reactive power capability per engine: 1.1 MVAR absolute maximum export capability. However, the connection agreement regulates power factor to range: 0.95 lag (supplying 0.37MVAR) to 0.95 lead (absorbing 0.37MVAR).
Project #3	Traralgon, Victoria	Synchronous (gas engine) Make: Caterpillar	10MW	1.37(3ph-g) kA	12.5MVA	Refer to the connection diagram within this document	Remote controlled switch - TN198 & SCADA to in-comer CB	Voltage control: No Reactive power capability: 0 MVAR
Project #4	Seymour, Victoria	Asynchronous Make: Vestas Model: V136-3.6MW	55MW	Three phase fault current, approx. 0.55 kA	70MVA	Refer to the connection diagram within this document	Remote Trip and SCADA	Voltage control: 5% voltage droop with a 1.02pu control target Reactive power capability: AAS
Project #5	Benalla, Victoria	Asynchronous Generator Make: Huawei Model: SUN2000-90KTL	85MW	Three phase fault current, 1.5kA; Single phase to ground fault current, 1.5kA; Phase to phase to ground fault current, 1.5kA	100MVA (33/66)	Refer to the connection diagram within this document	Remote Trip and SCADA	Voltage control: Voltage droop control (4%), target voltage of 1.03 pu @ GNTS Reactive power capability: 33.6MVAR (Q injection and absorption) at 40°C. 30.26 MVAR (Q injection and absorption) at 50°C. Q injection: when the connection point voltage is in the range of 83.97%-88.99% of nominal voltage. Q absorption: when the connection point voltage is in the range of 114%-117% of nominal voltage
Project #6	South Gippsland, Victoria	Asynchronous Generator Make: Servion SE Model: Servion SE MM92	106.6MW	At 66kV Connection Point LSSS1: 3 phase = 1.32 kA, 1 phase = 0.32kA At 66kV Connection Point LSSS2: 3 phase = 1.43 kA, 1 phase = 0.29kA	2 x 33/66kV 70MVA Dyn 11 ONAF Transformers	Refer to the connection diagram within this document	Protection: Current differential protection with Distance backup (line), CB Fail, Auto reclose (at LGA and WGI only, no reclose at wind farm), Anti-Islanding Scheme, Runback Scheme Communication Systems: Current differential protection, Remote Trip, SCADA, Anti-Islanding Scheme, Runback Scheme	Voltage control: 0.99 lagging Power Factor (absorbing reactive power). Seek to maintain voltage between 0.95 and 1.05pu at the connection point. Reactive power capability: Wind Farm can operate to a power factor of 0.93 both leading and lagging.
Project #7	Glenrowan West, North Victoria	Asynchronous Generator Make: SMA Sunny Central Model: SC 2750EV	110MW	Three phase fault current, 2.0kA; Single phase to ground fault current, 2.0 kA; Phase to phase to ground fault current, 2.0 kA	142MVA, (33/66)	Refer to the connection diagram within this document	Remote Trip and SCADA	Voltage control: Voltage droop control (4%), target voltage of 1.03 pu @ GNTS Reactive power capability: 43.45MVAR (Q injection and absorption) at 35°C. 39.5 MVAR (Q injection and absorption) at 50°C.

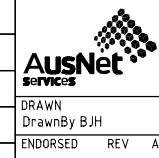
HALLAM RD POWER STN – INTERCONNECTION DIAGRAM



TRANSFORMERS (8 OFF)
415V/22KV
1.25 MVA

GENERATORS (8 OFF)
415V
1.123 MW

REFERENCE DRAWINGS		REVISION		DATE	REV	DESCRIPTION	BY	CONTRACTOR	AUSNET SERVICES	ENDORSED DATE	SPEC No.	ORDER No.	AusNet services No	SKETCH LMS - HALLAM
DRAWING TITLE	DRAWING No.													
				9.9.14	A	FIRST ISSUE	BJH	AUSNET SERVICES	ENDORSED DATE	11/09/2014				SKT/100/106



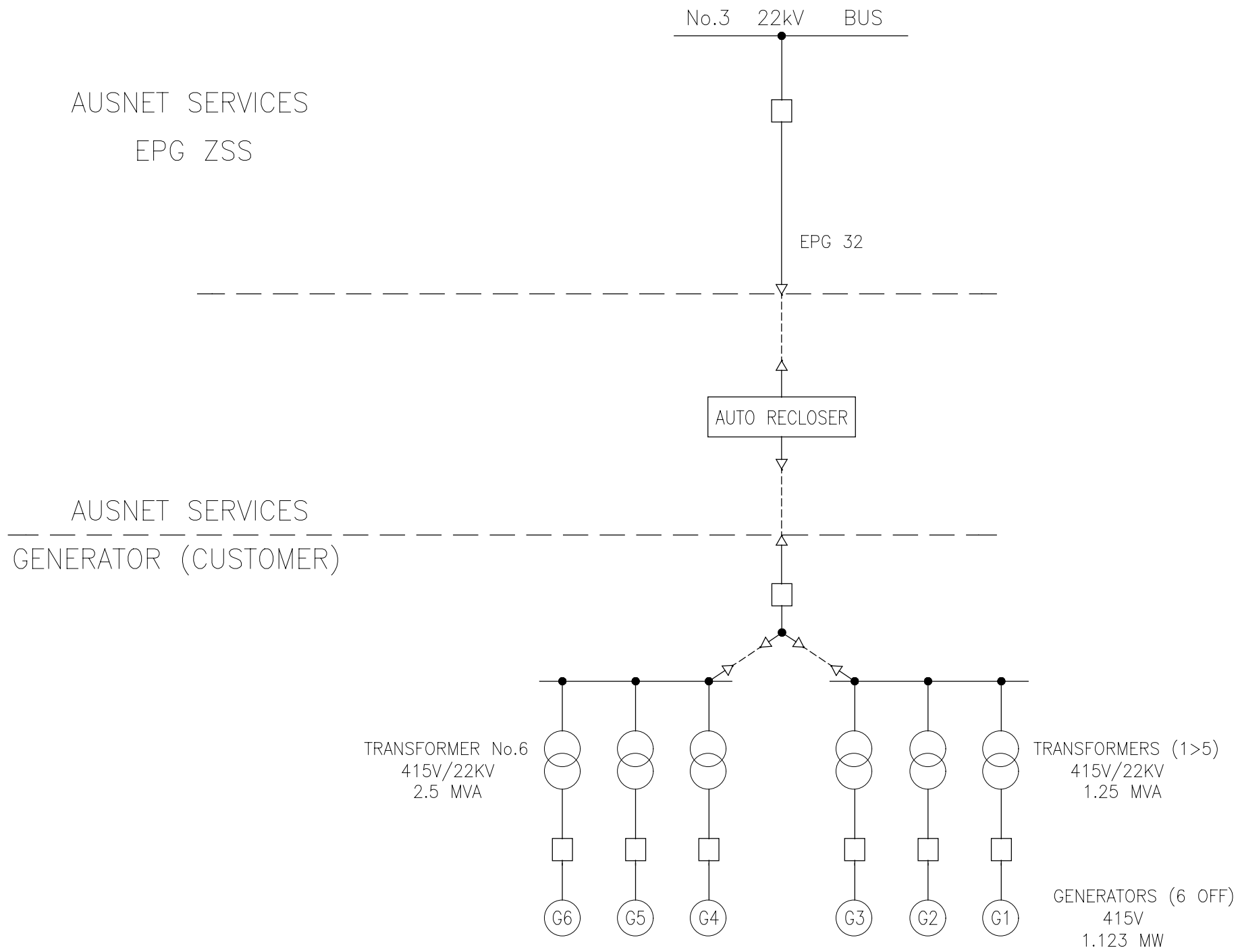
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SKT/100/106


WOLLERT POWER STN – INTERCONNECTION DIAGRAM



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REFERENCE DRAWINGS	
DRAWING TITLE	DRAWING No.

REVISION					
	16.9.14	C	ADDED THREE WAY CONNECTION TO GEN TRANSF BUSES	BJH	AUSNET SERVICES
	16.9.14	B	ADDED GENERATOR TRANSFORMER No.6	BJH	AUSNET SERVICES
	9.9.14	A	FIRST ISSUE	BJH	AUSNET SERVICES
	DATE	REV	DESCRIPTION	BY	CONTRACTOR



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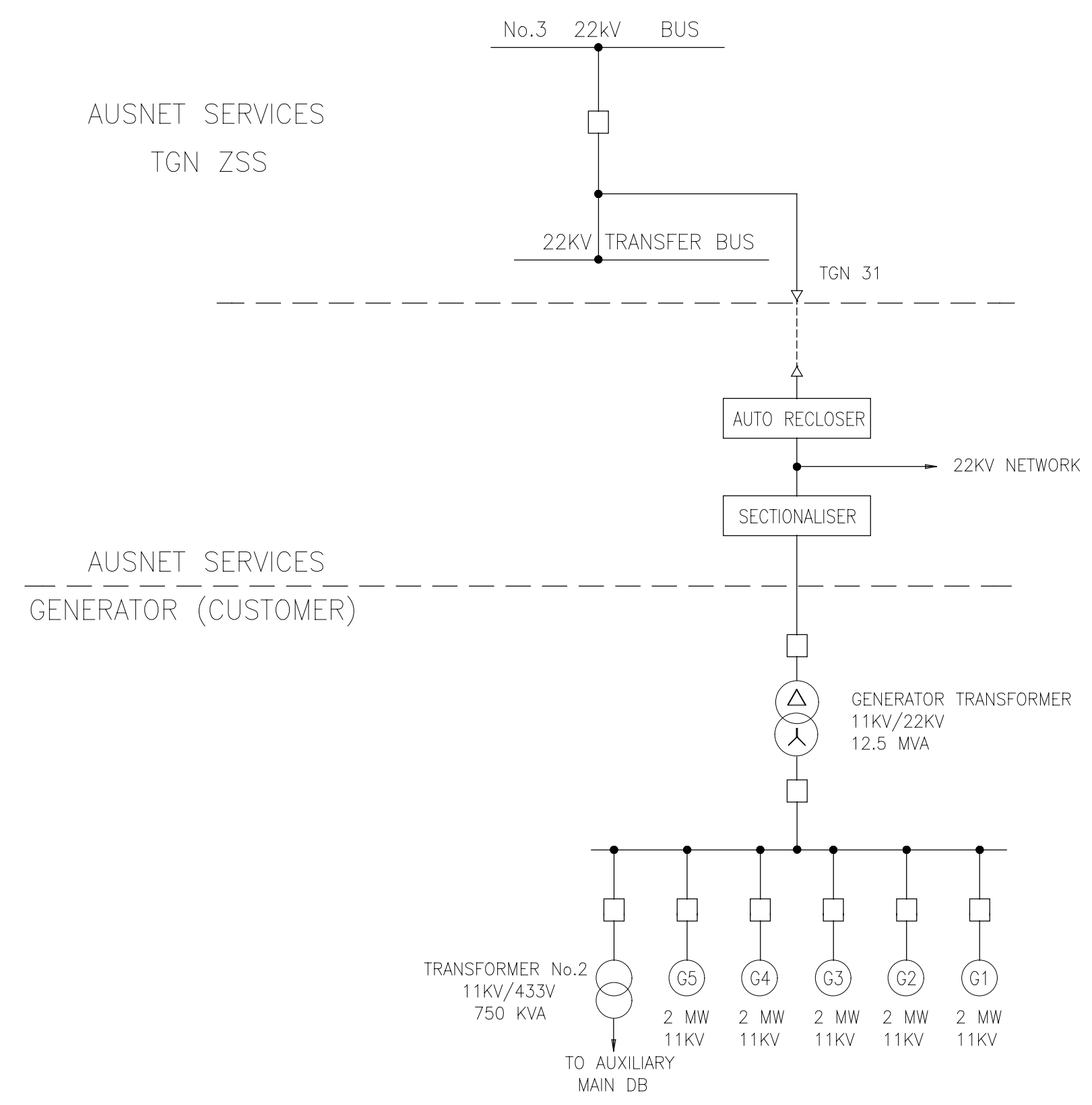
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LMS - WOLLERT

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ISSUED 16/09/2014	CONTRACTORS No	SKT/100/107 C	

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A3

TRARALGON NETWORK SUPPORT STATION (TGNSS) NOVA POWER – INTERCONNECTION DIAGRAM



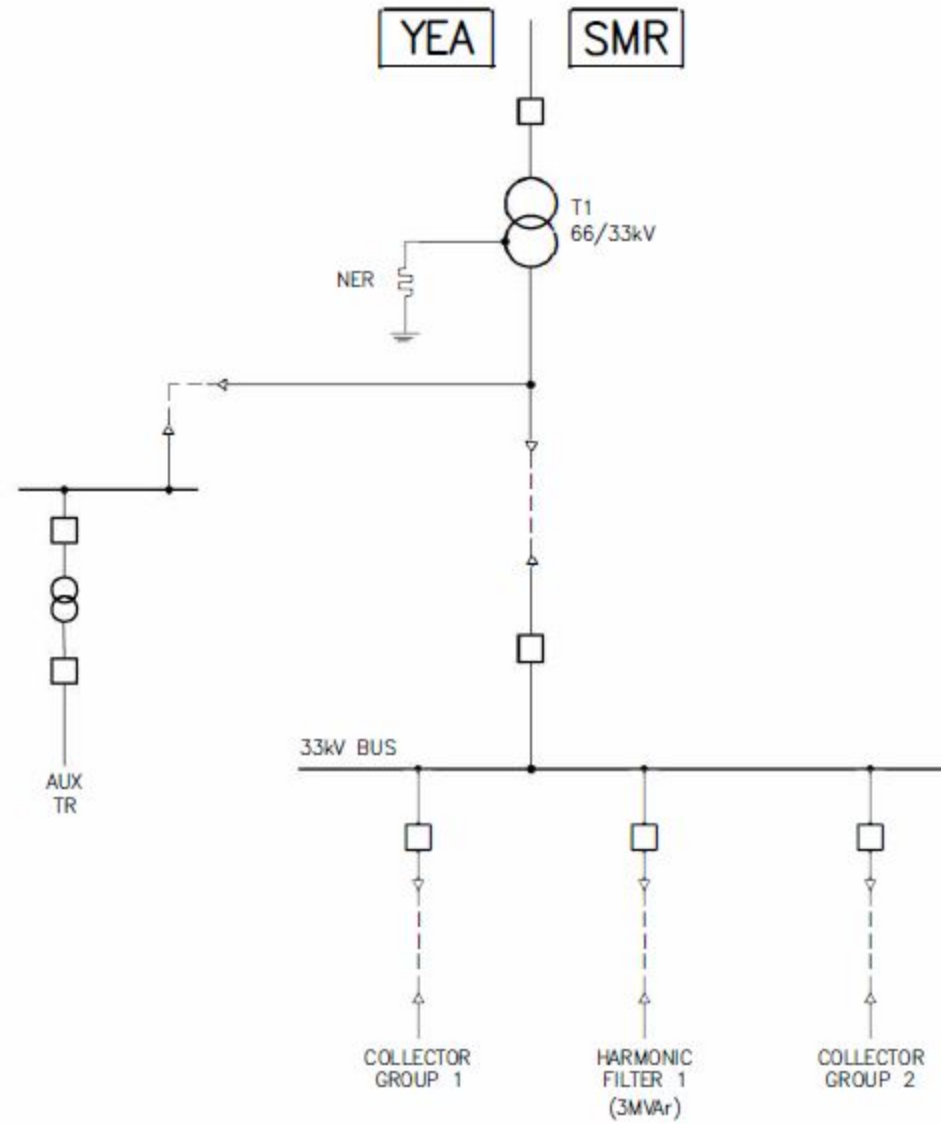
AUSNET SERVICES
TGN ZSS

AUSNET SERVICES
GENERATOR (CUSTOMER)

REFERENCE DRAWINGS		REVISION		DATE	REV	DESCRIPTION	BY	CONTRACTOR	AUSNET SERVICES	ENDORSED DATE	SPEC No.	ORDER No.	AusNet services No	SKETCH TRARALGON NETWORK SUPPORT SUBSTATION (TGNSS) - NOVA POWER STATION
DRAWING TITLE	DRAWING No.			9.9.14	A	FIRST ISSUE	BJH	AUSNET SERVICES	ENDORSED	11/09/2014				SKT/100/105

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CHERRY TREE WIND FARM (CCWF) – INTERCONNECTION DIAGRAM

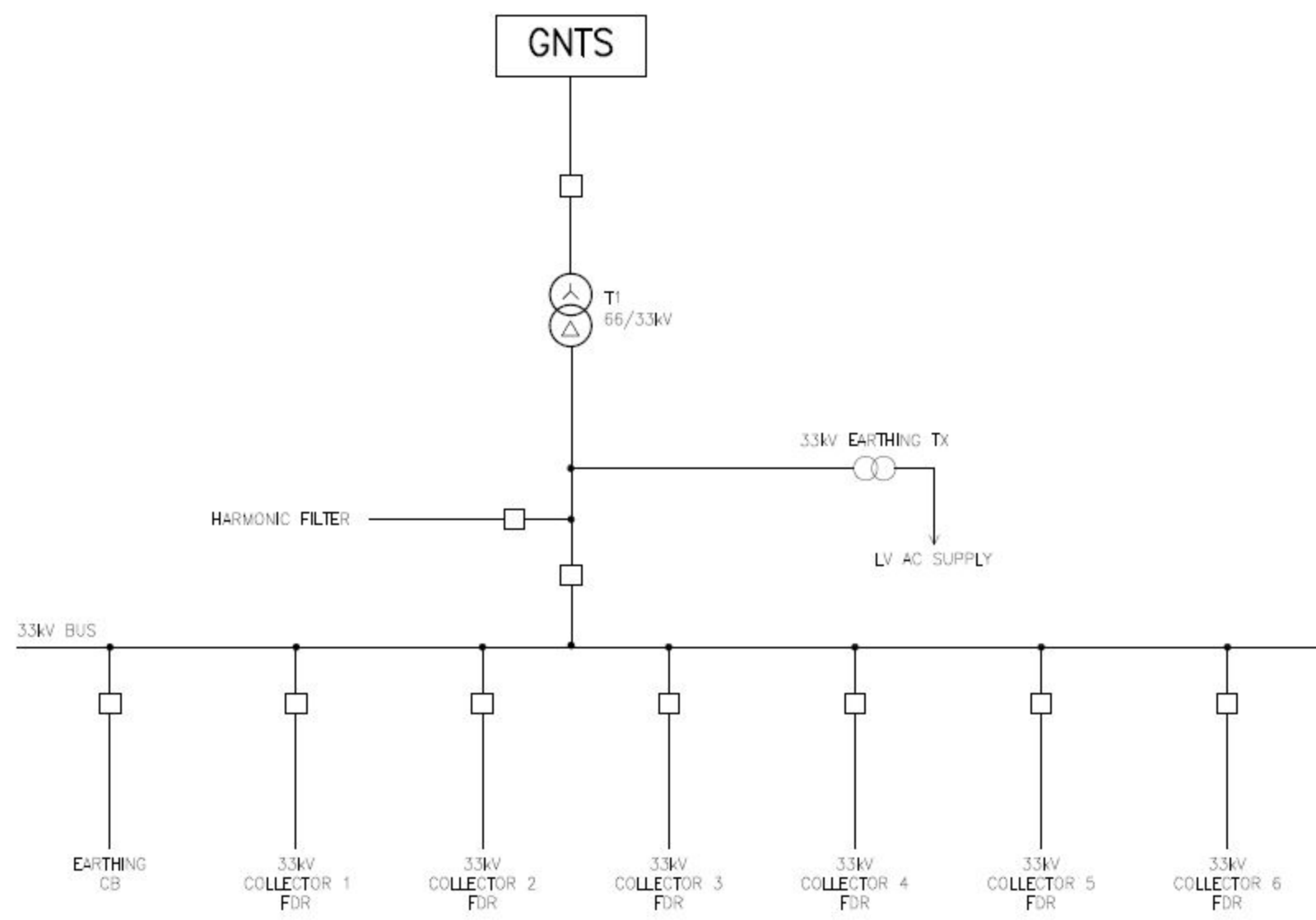


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283 X 400mm →

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WINTON SOLAR FARM SUBSTATION – INTERCONNECTION DIAGRAM



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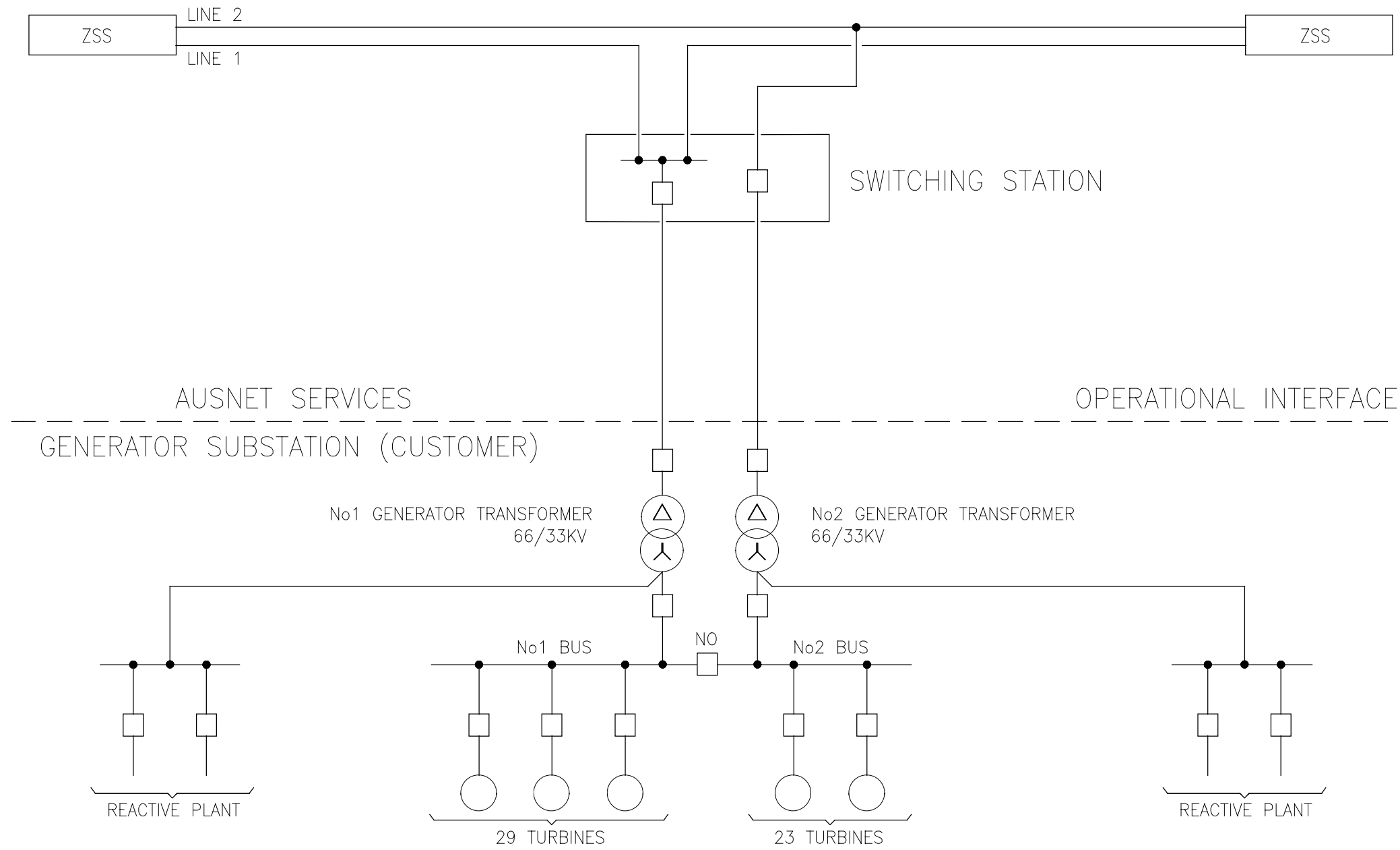
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BALD HILLS WIND FARM – INTERCONNECTION DIAGRAM

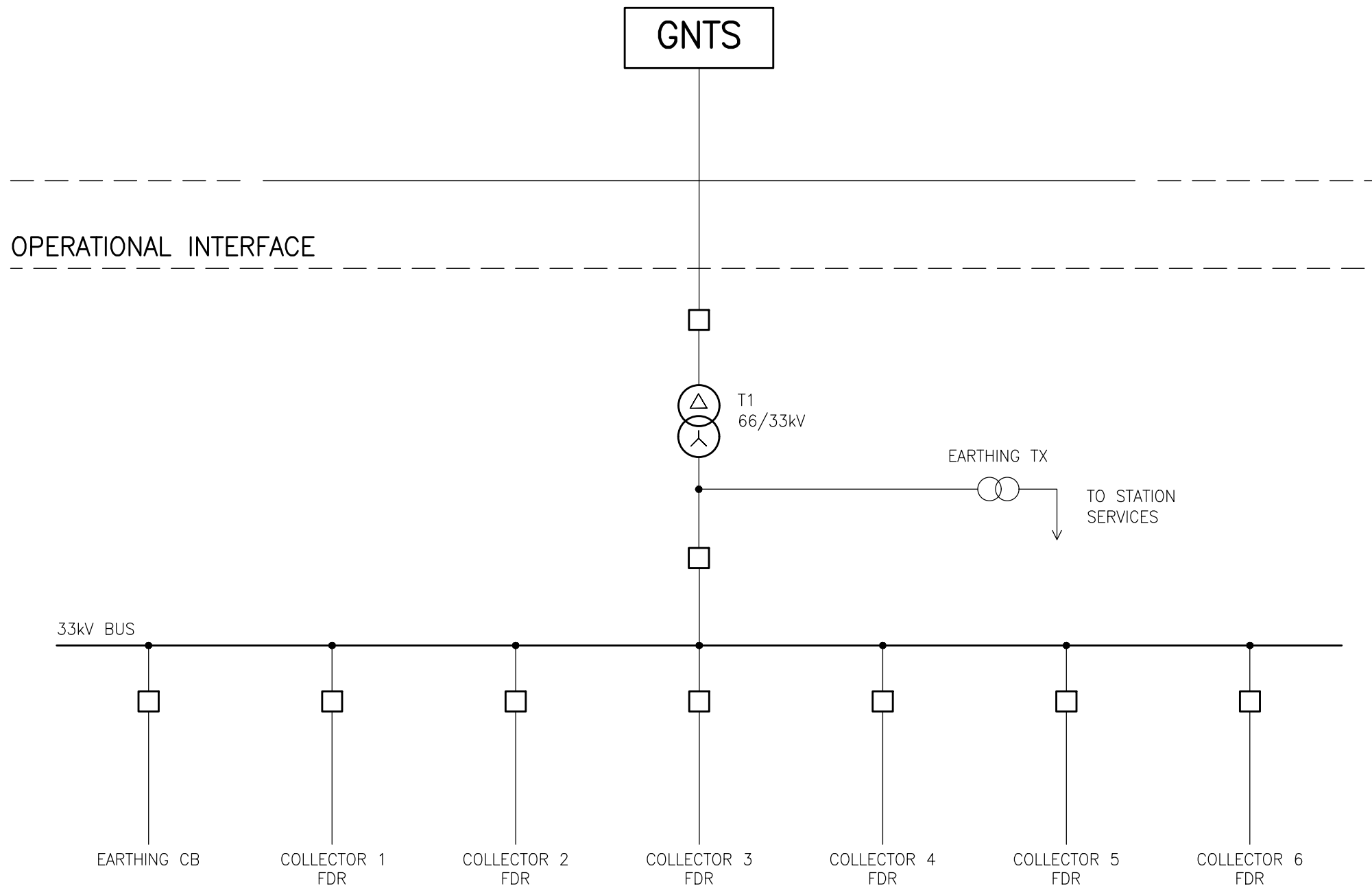


LOCATION TARWIN LOWER

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						DATE	REV	DESCRIPTION	ISSUED	Approved Date		
						15.6.16	A	FIRST ISSUE	BJH			

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GLENROWAN WEST SOLAR FARM – INTERCONNECTION DIAGRAM



REFERENCE DRAWINGS	DRAWING No.	DATE	REV	DESCRIPTION	BY	CONTRACTOR	ISSUED	CONTRACTORS No
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DRAWING TITLE SKETCH GLENROWAN WEST SOLAR FARM INTERCONNECTION DIAGRAM	ORDER No. SKETCH-0341730-001	REV 1.0 1.0	AusNet services No SKETCH-0341730-001
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