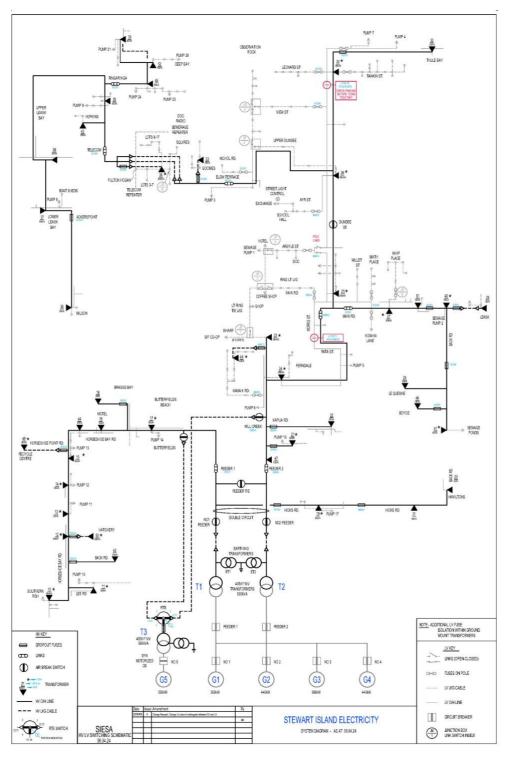
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# An investigation into low-inertia grid stability with high injection of variable renewable energy sources Supplementary Material

#### **Reference material**



Rakiura Stewart Island single line diagram

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## **Equipment**

**Station transformer specifications** 

station transformer specifications	
Power Rating	500 kVA
Phases	3
HV	11KVA
LV	0.415 – 0.24kVA
Vector Group	DYN11
Impedance (Z)	5.0%
Reactance (X)	4.9%
Resistance (R)	1%
No Load	690W
Losses	
Load Loss	5035W

**Pole-mounted transformer specifications** 

i ore mounted transformer specifications		
Power Rating	5, 10, 15, 20, 50, 100	
	kVA	
Phases	3	
HV	11KVA	
LV	0.415 – 0.24kVA	
Vector Group	DYN11	
No Load Losses	65.6W	
No Load Current	1.5%	

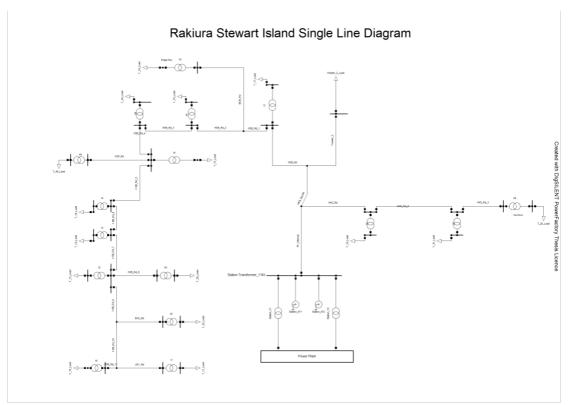
**Line specifications** 

zine specimentons	
Brand	Prysman
Type	Dog
AC Resistance (R)	0.391/km
DC Resistance (R)	0.273/km
Inductive Reactance (X <sub>a</sub> ) to 0.4m	0.276 Ω/km

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#### Base model



PowerFactory simplified single line diagram of Rakiura Stewart Island



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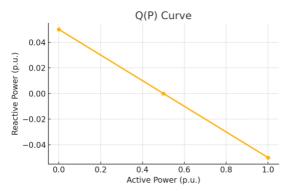
Geographic representation of the model



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(QP) characteristic setup for generators G1, G3 and G4