Type Approval - Electrical

Approval Number	EL 00035
Manufacturer	Mitsubishi Electric Corporation
Manufacturing Plant	Japan, Australian office: 348 Victoria Road, Rydalmere NSW 2116.
Product Description	66kV GIS switchgear, 31.5kA for 1s, complete with • 2,500A busbar • Circuit breakers, model 70-SFMT-40CJ (630A feeder & rectifier transformers, 1250A bus-tie) • SCADA controlled combined disconnecting and earthing switches (each side of ACCB's) • SCADA controlled fault making earth switches (feeder, rectifier transformers and busbar) • 66kV surge arresters (located on feeders) • 66kV voltage transformers (busbar) • Separate local control panels (LCP) • Separate protection and control panels (PCP)
Approved for	Use on the RailCorp 66kV ac network.
Recommendation for Use	The decision to use this switchgear at a substation depends on numerous factors including financial, operational and safety. Where a new substation is proposed the factors that need to be considered and assessed to determine the use of indoor GIS switchgear vs an outdoor high voltage yard include: *Financial factors:* • Capital cost of equipment • Cost of land as there is a reduced overall substation footprint required compared to traditional outdoor yard with exposed busbar arrangement

- Cost of larger substation building vs outdoor yard
- Lifecycle maintenance costs

Safety factors:

- No exposed high voltage conductors
- Interlocked earthing and integrated earthing switches

Operational factors:

- Negligible vandalism risk & hence increased operational reliability
- Low risk of HV faults compared to exposed busbar.
- Interlocked earthing and integrated earthing switches
- Criticality of the location within the network
- Exposure to lightning

With an existing substation that requires partial replacement of existing infrastructure the use of 66kV GIS switchgear would not normally be financially justifiable. However in unique circumstances operational and safety factors could drive the requirement for installation of 66kV GIS.

Conditions

A TfNSW approved engineering option study (evaluating engineering configurations) with accompanying value management study (VMS) is to be completed and endorsed by TfNSW stakeholders. This will result in an approved proposed operating diagram with the signatories as required by ASA technical note TN003:2013

Approved: _____ Date: _____

Neal Hook

Lead Electrical Engineer