

NEED/OPPORTUNITY STATEMENT (NOS)



Yanco Sub Low 33kV Busbar Clearance

NOS- 000000001606 revision 2.0

Ellipse project no.: P0009537

TRIM file: [TRIM No]

Project reason: Compliance - Regulatory obligation

Project category: Prescribed - Security/Compliance

Approvals

Authors	Tony Gray	Substation Asset Manager
	Alasdair Cameron	Substation Asset Support Officer (Contractor)
Endorsed	Robert Li	Substation Asset Strategist
	Azil Khan	Investment Analysis Manager
Approved	Lance Wee	M/Asset Strategy
Date submitted for approval	26 October 2016	

Change history

Revision	Date	Amendment
0	30 August 2016	Initial issue
1	26 October 2016	Minor changes
2	10 November 2016	Update to format

1. Background

Yanco Substation is located at Yanco in the Riverina. The substation is connected to the 132kV network through lines to Wagga, Darlington Point, Griffith and Uranquinty and supplies the surrounding area through five 33kV connections.

2. Need/opportunity

The 33 kV bus at Yanco Substation does not meet TransGrid Design Safety Clearances and does not meet clearances required under AS2067 at 33kV busbar earthing stirrups.

Details are included in the supporting document “FW Yanco SS – Additional Survey Data” that shows clearances of 2.82 m to 2.84 m. Earth stirrups are located on the busbar and these reduce clearances by a further 70 mm to approximately 2.77 m (refer to Figure 1). TransGrid’s safety clearance requirement is 2.9 m.

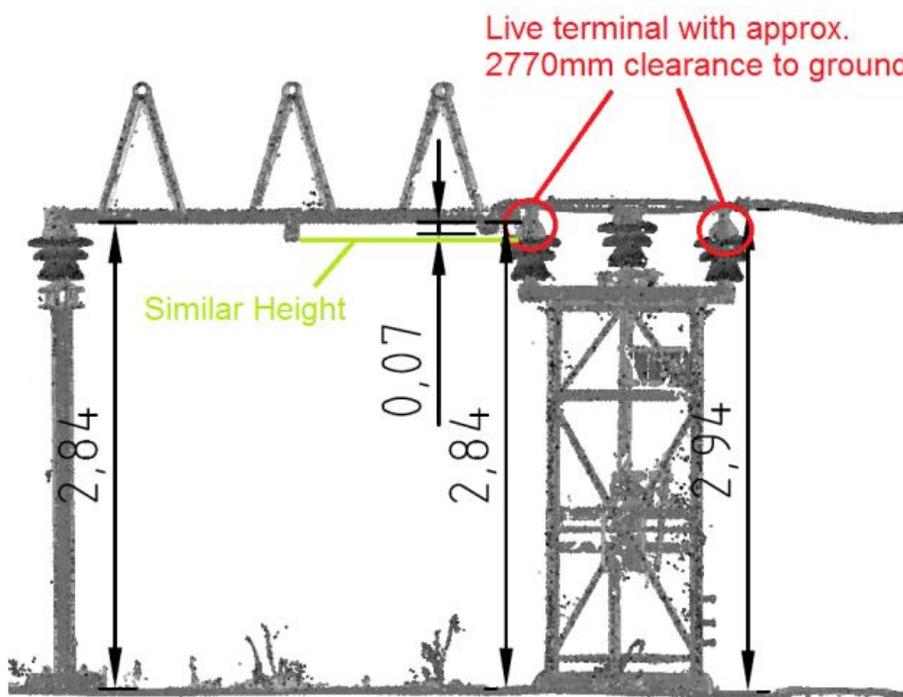


Figure 1 - Yanco 33kV Busbar Clearance Survey

The required clearance for a Lightning Impulse Withstand Voltage of 170kV under AS 2067 is 2.79m. At the earthing stirrups, this clearance is also infringed on the 33kV busbar at Yanco. AS 2067 is an industry-accepted standard and is referenced by a NSW code of practice.

The low busbar clearance at Yanco increases the risk that an error in judgement will be made resulting in a flashover that could cause serious injury or death. In the present situation, the clearances do not meet industry-accepted standards at the earth stirrups (AS 2067). TransGrid is required under Work Health and Safety (WHS) regulations to consider safety in design, and therefore must meet these minimum design requirements. This would result in TransGrid being held liable under WHS regulations if such an event were to occur.

There is a history of bird strike on the 33kV busbar at Yanco and there may be opportunity to reduce this with some options available to address the low clearance.

The 33kV bus has an associated risk cost of \$15k per annum. This need should be addressed by 2020.

3. Related needs/opportunities

NIL.

4. Recommendation

It is recommended that options be considered to address the identified need/opportunity.

Attachment 1 - Risk costs summary

Summary of results is attached below. Refer to supporting document in PDGS for full risk assessment.



Current Option Assessment - Risk Summary

Project Name: Yanco Sub Low 33kV Busbar Clearance

Option Name: 1606 - Base Case

Option Assessment Name: 1606 - Base Case - Assessment 1

Rev Reset Period: Next (2018-23)

Major Component	No.	Minor Component	Sel. Hazardous Event	LoC x CoF (\$M)	Failure Mechanism	NoxLoC xCoF (\$M)	PoF (Yr ⁻¹)	Total Risk (\$M)	Risk (\$M) (Rel)	Risk (\$M) (Op)	Risk (\$M) (Fin)	Risk (\$M) (Peo)	Risk (\$M) (Env)	Risk (\$M) (Rep)
33kV Busbar	1	Busbar	Uncontrolled Electrical Contact / Discharge (33kV Busbar)	\$20.70	Structural Failure	\$20.70	0.07%	\$0.01	\$0.00	\$0.00	\$0.00	\$0.01	\$0.00	\$0.00
								\$0.01	\$0.00	\$0.00	\$0.00	\$0.01	\$0.00	\$0.00
								\$0.01	\$0.00	\$0.00	\$0.00	\$0.01	\$0.00	\$0.00

Total VCR Risk: \$0.00 Total ENS Risk: \$0.00