Engineering System Integrity
Electrical Network Safety Rules

Engineering Specification
Electrical Distribution Unit

One Method of Safe Working

SP D 79042

Description and Labelling of the High Voltage Feeder System

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Transport Sydney Trains

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Document control

Version	Date	Author/ Prin. Eng.	Summary of change
1.0	1 February 2022	ENSR Project Team	First issue as Sydney Trains document. Rebranded from PR D 78200 V1.2. Reviewed as part of the ENSR Project.
1.1	9 February 2026	Nick Loveday	Periodic review October 2025, republished with no changes.

Document history (previously PR D 78200)

Version	Date	Author/ Prin. Eng.	Summary of change
1.0	28 April 2015	Chris Leung	First issue as a Sydney Trains document, rebranded from previous RailCorp SMS-06-EN-0559 V1.2
1.1	2 July 2018	Chris Leung	Section 4. Control of the High Voltage Feeder Identification System updated from "System Control Engineer" to "Principal Engineer Power Systems"
1.2	19 February 2019	Nick Loveday	Updated PR D 78200 "Approved by" to Associate Director Electrical Distribution Unit

Table of Contents

1 Purpose and scope

To describe the arrangement and labelling conventions applicable to Transport Asset Holding Entity of New South Wales (TAHE) High Voltage (HV) A.C. feeder system.

This specification does not apply to HV distribution equipment, the 1500 Volt D.C. traction system, the Low Voltage (LV) distribution system, LV installations, or signalling systems.

2 Definitions

Refer to the **Electrical Safety Definitions** page available on the **RailSafe** site.

3 High Voltage system description

TAHE is a state owned Corporation that holds rail property assets, rolling stock and rail infrastructure in NSW. Sydney Trains, NSW Trains and others operate and maintain the TAHE Assets.

Electric power for Sydney Trains' operations is supplied from other Network Operators' systems at a number of supply points at voltages of 11 kV to 132 kV.

Sydney Trains distributes this power via its own HV A.C. aerial lines and underground cables to a number of substations. TAHE HV feeders are located both on and off the rail corridor. In some cases TAHE power poles also support HV and LV aerial lines and other equipment belonging to other network operators. Such situations are usually noted on the reticulation diagrams. Similarly, in some cases TAHE underground cables are sometimes buried with cables belonging to other network operators.

The substations contain equipment for voltage transformation, switching, overload and fault protection, voltage regulation and rectification for supply to the 1500 Volt D.C. traction system.

In addition to power for electric traction, power is supplied for signalling and other TAHE installations and also for TAHE's retail electricity customers including railway stations, offices, workshops and depots.

4 High Voltage feeder labelling

4.1 General

A HV feeder is the collective name given to the entire HV aerial line or cable that generally commences and finishes at a substation. The HV feeder extends out of a substation, and runs to the next substation. The HV feeder run may pass through one or more substations along the way but the switches and busbars inside these substations are not part of the HV feeder. The HV feeder usually commences and finishes on the feeder side of the respective substation disconnector e.g. air break switch or ACCB.

The TAHE HV feeder labelling convention considers; voltage levels, sections and arrangement of cables, i.e. cables in parallel. The labelling conventions are described in the following sections.

4.2 Feeder labelling

HV aerial lines and cable feeders are numbered in accordance with the voltage of the feeder. The numbers used are:

11 kV feeders	500 to 699
33 kV feeders	700 to 799, and 7A1 to 7Z9
66 kV feeders	800 to 899
132 kV feeder	286 (only 1 from Ausgrid (Engadine) SS to TAHE's Heathcote SS)

NOTE

1. In order to prevent confusion:

The following identifiers are generally NOT assigned:

- **the letter "O" as it can be confused with the number the "0", and**
- **the letter "S" as it can be confused with the number "5".**

A check to ensure that the proposed identifier would not be confused with other identifiers of other TAHE or network distributor feeders at the same or adjacent locations is completed.

4.3 Section numbers

The HV feeder may be divided into numbered electrical sections.

Where a HV feeder is sectioned by disconnectors, typically at substations, the sections are identified by adding a stroke and a number to the feeder number, for example, 11 kV Feeder 644/1, 644/2, etc. up to 644/n where n is the number of sections. Figure 1 shows a typical feeder broken into sections.

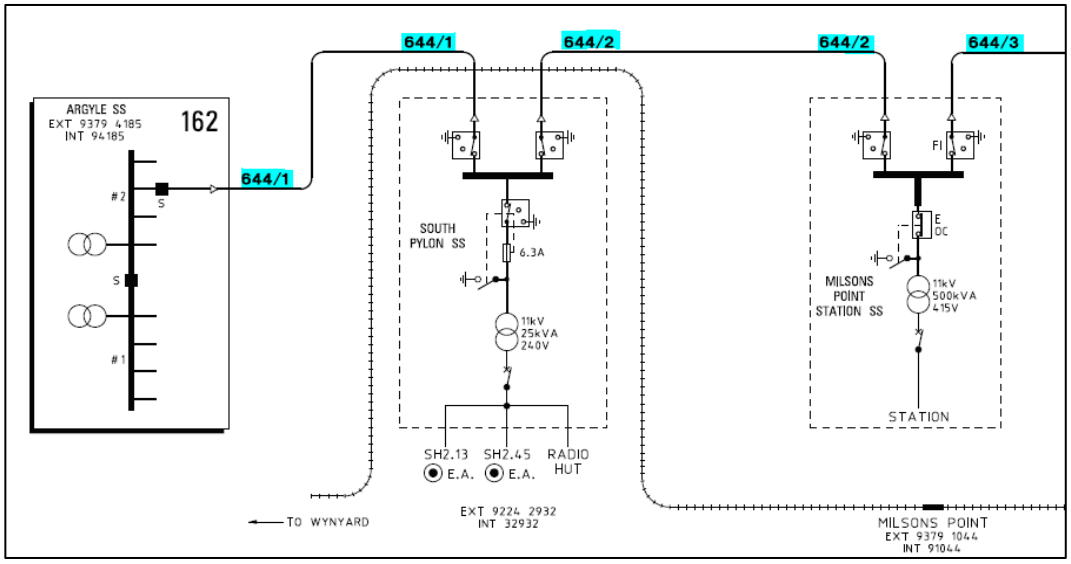

Figure 1 - A feeder run between substations is divided into sections

4.4 Cables in parallel

Where HV cable feeders comprise two cables in parallel, the cables are identified by adding a letter to the feeder number, e.g. the cables of 11 kV feeder 533 are 533A and 533B and for 33 kV feeder 766 are 766L and 766R. Refer to Figure 2 and Figure 3 below.

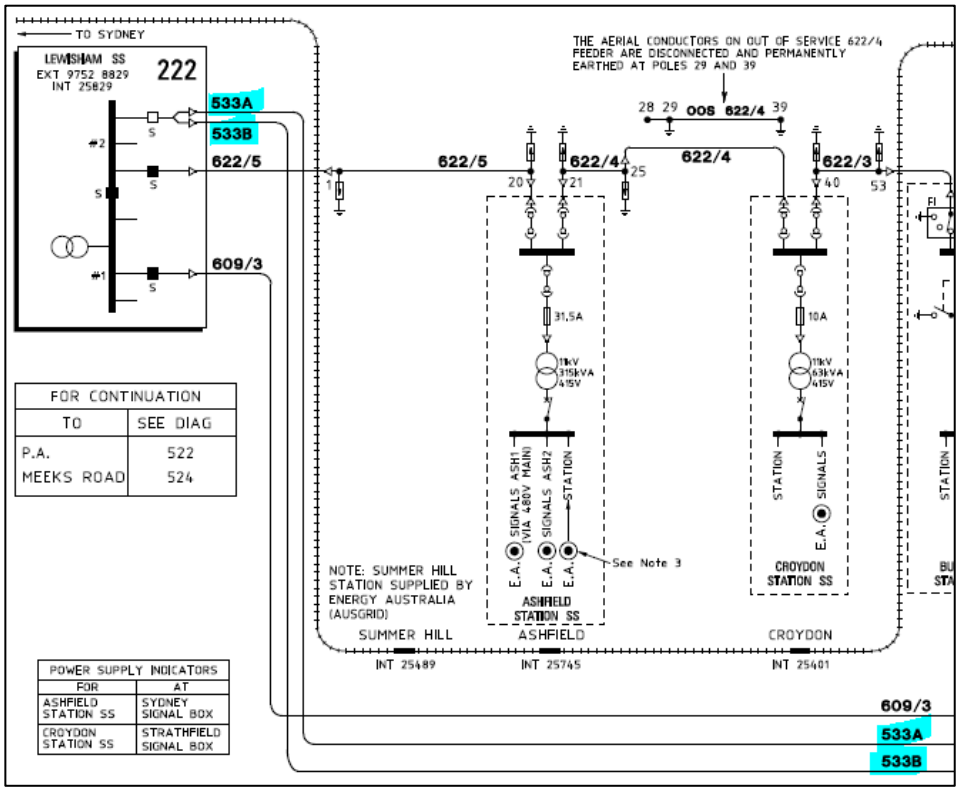

Figure 2 - An example of identification of cable feeders in parallel

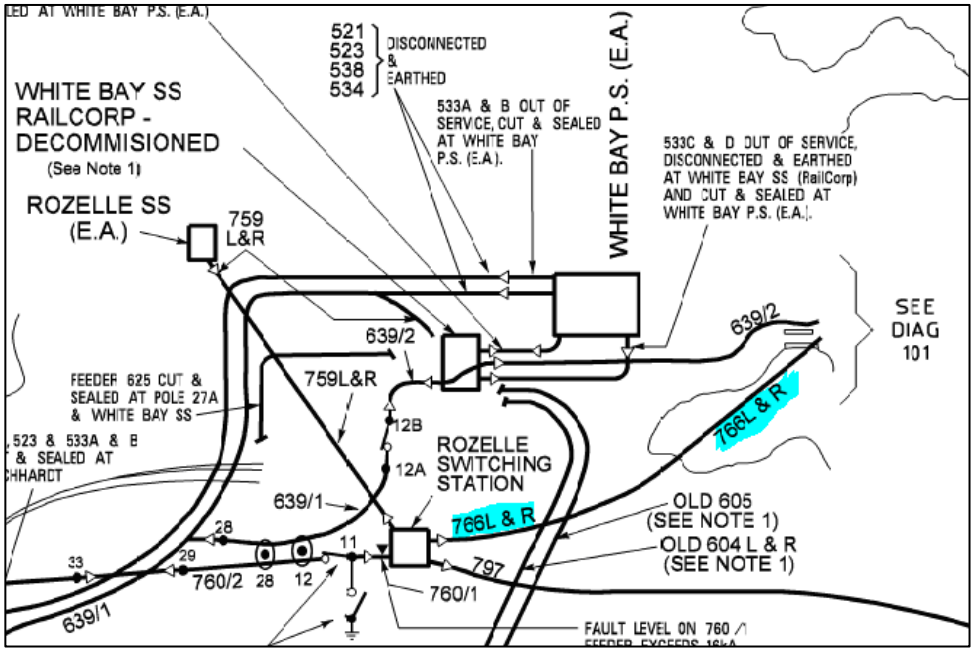

Figure 3 - An example of identification of cable feeders in parallel

5 Control of the High Voltage feeder identification system

It is the Principal Engineer Power Systems' responsibility for assigning the identification to a high voltage feeder and managing a controlled list of feeder numbers allocated.