NP001.5
General Specification for Overhead Industrial and Commercial Subdivisions

This document is extracted from Network Policy NP 001, Design and Construction of Network Assets.

Other documents in this series include:
- NP001.1 Design and Construction of Network Assets – General Requirements
- NP001.2 General Specification for Underground Electrical Reticulation
- NP001.3 General Specification for Overhead Electrical Reticulation
- NP001.4 General Specification for Overhead Rural Residential Subdivisions
- NP001.6 General Specification for URD Subdivisions
- NP001.7 Reliability Criteria for Distribution Networks
- NP001.8 Handover Documentation
- NP001.9 Conditions of Supply to Large Customers
- NP001.10 Documentation Requirements

Further Information: For additional information or advice regarding this document, please contact the Manager Network Engineering on 08-89245191

Authorised by	Prepared by:	Issue Date: 14 Feb 2008	Status: Approved
Bertram Birk General Manager Power Networks	Chris Pemberton Manager Network Projects	File No: F2007/6260	Version: 2

General Specification for Overhead Industrial and Commercial Subdivisions

1. Contents

2 Scope

This document sets out specific Power and Water requirements for the design and construction of overhead industrial and commercial subdivisions. It should be read in conjunction with NP001.3 (General Specification for Overhead Electrical Reticulation) and Section 5.5 of NP001.1 (Design and Construction of Network Assets – General Requirements).

3 General

3.1 Pole Alignment

Poles shall generally be aligned at the standard alignments shown in the S2-4-1 series of drawings in Volume 2 of the Standards Manual.

When designing an industrial/commercial subdivision, poles shall be placed so that the minimum horizontal clearance of conductors to the property boundary under no-wind conditions is 1.5m. This is to minimise tree trimming problems and to avoid problems caused by buildings being constructed on the property boundary. This may require offset construction on curved road sections.

Poles shall be placed where practicable opposite adjoining lot boundaries. Poles on bends or close to intersections shall be placed so as to minimise danger to vehicle traffic[1]. Where poles are located in a potentially dangerous position, Power and Water may require the fitting of suitable vehicle guards. These must also be approved by the road authority.

In addition for commercial subdivisions, Power and Water may require the use of insulated cable systems to allow trees to grow into the line. This shall be discussed with Power and Water at an early stage to determine the method to be adopted.

3.2 High Voltage Construction

Regardless of the voltage, 500mm post-type HV insulators shall be used. In

[1] Refer "Collisions with Utility Poles", Melbourne University, 1979.

addition, in areas deemed by Power and Water to be bat-prone, approved bat guards shall be used.

The HV conductor size shall be as directed by Power and Water. In addition, Power and Water may require the installation of air or gas-break switches, high voltage links and/or live line clamps at strategic locations. These matters should be determined prior to commencing the design.

3.3 Stays

In general, stays shall be kept to a minimum. The availability of "D" strength class poles largely obviates their need. In particular, the practice of teeing off a pole at slack tension, and running a short span to a stayed strain pole, is only to be used as a last resort. Such constructions leave a legacy of unnecessary hardware needing maintenance.

Stays shall be fitted with pedestrian guards. Stays located on private property shall have a 3m easement registered on the property title (1.5m in all directions from any part of the stay, including parts below ground). Stays are not permitted on private property in commercial subdivisions.

3.4 Subdivision

Where a lot in an existing industrial/commercial subdivision is subdivided, the subdivider may:

- redesign the low voltage run to comply with the requirements of this Appendix, or
- pay a capacity charge for each additional lot (refer DSEP)

In addition, the developer shall install any internal reticulation required to service the new lots.

4 Substations

4.1 Size and Spacing

The designer has a certain amount of latitude when setting out distribution substations in an industrial or commercial subdivision. There is a choice between fewer and larger substations, or more numerous but smaller substations.

The main problem is the occasional very large load, which can swamp the LV system. Consequently, the system must be designed for maximum flexibility. This requires the use of the largest practicable low voltage conductor, and the ability to add substations easily.

Consequently, low voltage circuits shall be either 200 mm^2 minimum aluminium (bare) or 2 x 95mm^2 ABC.

Generally, low voltage circuits can be designed for 4% voltage drop based on the calculated MD of each lot, as calculated in Section 5.5 of document NP001.1.

However, low voltage systems shall be designed so that, when loads complying with Table 2 of Section 4.2.2.1 of the Service Rules are connected to the end of any low voltage run, voltage fluctuations shall not exceed the limits imposed by

Australian Standard AS/NZS 61000.3.5 *Limitation of voltage fluctuations and flicker in low-voltage power supply systems for equipment with a rated current greater than 16A*.

Refer to Section 4.2.2 of the Service Rules for more detailed information about the types of equipment that may be connected to distribution systems.

4.2 Type

Substations are normally of the single pole aerial type, up to 500kVA. All substations in industrial/commercial suburbs shall use "D" strength class poles.

In industrial areas the standard customer substation is a pole-type. A customer requiring a more expensive substation type shall bear the full difference in cost between the cheapest type and the type chosen.