

PART 9: UTILITIES**CONTENTS**

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9.1 REFERENCED DOCUMENTS

Planning and Policy

- The Selwyn District Plan (*District Plan*)
www.selwyn.govt.nz/services/planning
- Electricity Act (1992)
- Resource Management (*National Environmental Standards for Telecommunication Facilities*) Regulations (2008)
www.mfe.govt.nz/laws/standards/telecommunication-standards.html

Design

- NZUAG National Code of Practice for Utilities' *Access to the Transport Corridors* draft April 2011
www.nzuag.org.nz/national-code

Construction

- Christchurch City Council *Civil Engineering Construction Standard Specifications Parts 1-7 (CSS)*
<https://ccc.govt.nz/consents-and-licences/construction-requirements/construction-standard-specifications>
- SNZ HB 2002:2003 *Code of Practice for Working in the Road*

Where a conflict exists between any Standard and the specific requirements outlined in the Engineering Code of Practice (COP), the COP takes preference (at the discretion of the Council).

9.1.1 Source documents

This Part of the Engineering Code of Practice is based on Part 9 of the CCC Infrastructure Design Standard (IDS), by agreement, and with the consent of Christchurch City Council.

9.2 INTRODUCTION

This Part discusses issues that must be considered for any developer installing utilities that will not be maintained or owned by the Council. The design requirements of the utilities themselves are not covered here but can be obtained from the individual operators. To achieve good outcomes, view *The National Code of Practice for Utilities' Access to the Transport Corridors* on the working road-share and the objectives agreed by the industries.

9.2.1 Council requirements

The planning requirements for the provision and installation of utilities are set out in the *District Plan*.

Ensure that the appropriate resource consents are obtained for work in the vicinity of protected trees and that the work is carried out in accordance with CSS: *Part 1* clause 16.0 – Protection of Natural Assets and Habitats.

9.3 QUALITY ASSURANCE REQUIREMENTS AND RECORDS

Provide the information detailed in Part 3: Quality Assurance and the *Construction Standard Specifications (CSS)*, during design and throughout construction.

9.4 NETWORK UTILITY OPERATOR REQUIREMENTS

Ensure that the design and construction of any network to be adopted by a utility operator complies with their standards.

Electrical design standards are written by individual electrical utility operators to comply with the requirements of the Electricity Act and its associated Regulations. There is a degree of consistency due to the continuous nature of the network.

Telecommunications design standards are also written by telecommunication utility operators. The telecommunications network is a series of separate networks with some interconnection. The design and construction standards can vary between the different operators.

Details of network utility operators can be found at

<http://www.ccc.govt.nz/business/constructiondevelopment/networkutilityoperators.aspx>

9.5 UTILITY DESIGN

9.5.1 Service plans

Use the latest service plans when preparing engineering drawings. Be aware that electricity plans may not show all cables for private connections, wastewater plans may not show all laterals to individual properties and gas service plans may not show all service connections.

9.5.2 Location of utilities

Consider the following when planning the layout of a development:

- utility services are generally installed parallel to road or legal boundaries;
- laterals are perpendicular to the main supply and configured to service two lots, wherever possible;
- boundary boxes and distribution pillars are installed together on a boundary junction and clear of likely vehicle access;
- allow for maintenance access.

Minimise the cross-sectional area occupied by utility services to allow for possible future utility reticulation. Also consider the possible location of future cabinets in service strips or footpaths.

Discuss major reticulation and its potential for significant traffic disruption at an early stage with Council.

Consider the following when planning the location and design of structures and their corresponding utility lots:

- place and design them to minimise adverse visual impact by integrating them with the design of hard and soft landscaping;

- design to minimise the potential for damage to the structure from vandalism;
- reduce their impact on traffic movement;
- structures must not reduce vehicle sight distances and should not interrupt pedestrian movement;
- ensure that they do not compromise property rights or access;
- provide access to the structure.

Refer to the *National Environmental Standards for Telecommunication Facilities* for further information regarding telecommunications cabinets.

Some structures may contribute to the environment if designed to enhance the neighbourhood character.

Consult comprehensively with the relevant network utility operators regarding the location of utilities and the spacing and final location of the structures. Refer to clause 10.5.3 – Utilities (Reserves, Streetscape and Open Spaces) before considering locating utilities in reserves.

9.5.3 Typical services layout and clearances

There are specific working clearances required between different utility services. Confirm these clearances with the network utility operators before deciding on any utility layout or trench detail. Refer to *The National Code of Practice for Utilities' Access to the Transport Corridors* and *CSS: Part 1* where working around trees.

Table 1 Utility clearances

Utility pairing	Clearance (mm)	
	Parallel	Crossing
Water – pressure sewer	1500	100
Water – gravity sewer	1000	100
Water - high voltage power	1000	150
Water – s/w, phone, gas	450	100
Water - low voltage power	300	100
Water submains – sewer, s/w, gas, phone, low voltage power	300	100
Water submains – high voltage power	300	150
Power - sewer, s/w	1000	500
Sewer – s/w, phone, gas	1000	50
Stormwater – phone, gas	500	50
Phone – high voltage power	450	
Phone – low voltage power	300	

- Note:
- 1) Where the clearances in Table 1 cannot be achieved, provide a non-conformance Report, in accordance with clause 3.7.1 – Control of non-conforming work (Quality Assurance)
 - 2) Ducts may be suitable where clearances are unavailable.
 - 3) Where the crossing clearance is under 200mm, consider the use of alternative fillers to metalcourse, due to difficulties in compaction.

Typically, the utilities are installed as indicated:

- sewer located centrally in the road or right of way formation.

- stormwater located between the sewer and 1.5m inside the kerb or directly under the kerb and channel or under the median swale or the side berm swale where these exist.
- watermains generally are located in the centre of the side berm not under the footpath or with the agreement of Council between 2.0m and 2.5m off the kerb in the carriageway.
- submains located 150mm off the property boundary.
- electricity located 0.6m to 2.1m from the road boundary, and 0.6m away from the legal boundary in a right of way.
- telecommunications located at a convenient offset. Locate as the final option in the carriageway.
- gas located at a convenient offset, preferably within the berm. If this is not practicable, locate it under the path or, as the final option, in the carriageway.

Where possible, locate service covers outside of potential cycle lanes and preferably outside of wheel tracks.

New parallel reticulation services must cross as close as practicable to 45°.

9.5.4 Network reticulation

The telecommunications layout is not usually designed until the electricity layout is substantially complete - this is an economic decision as the layouts are inter-related and, in land developments, service trenches are shared wherever possible. Ensure that power is provided to telecommunication cabinets, cable television cabinets and amplifiers.

Ensure that drawings sent to the utility designer and the network utility operator show all the existing services. Ideally, these drawings should be the approved subdivision consent or engineering drawings. This reduces the likelihood of conflicts between existing and new services and increases the cost-efficiency of service provision.

9.5.5 Above-ground utilities

Locate above-ground utilities within legal road to provide the clear zone required by clause 8.15.10 – Clear zones (Roding). Locate street light poles in accordance with clauses 11.4.8 - Pole locations and 11.9.11 – Pole setback from road or path (Lighting). In addition to clear zone distances within the 50km/hr speed environment, locate new utilities clear of the footpath, at least 1.0m away from kerb cutdowns and at least 0.7m behind the kerb

9.5.6 Cover to utilities

Provide unprotected pipes less than 100 mm in diameter with a minimum cover of 750 mm below the road surface in carriageways and with a minimum cover of 600 mm in berms. For pipes 100 mm diameter or greater provide a minimum cover of 750 mm in carriageways and 600 mm in berms.

9.6 CONSTRUCTION

9.6.1 Proposed installation method

There are various methods of installing underground services. These include open trenching, directional drilling, pipe bursting, sliplining, pipe ramming and thrusting. Refer to Part 6: Wastewater Drainage for further information.

Factors that may affect the choice include the ground conditions, disruption to traffic, presence of trees, site safety, the availability of Council blue ducts and redundant services, e.g. old gas mains or their offsets.

When the intention is to lay a number of utilities in a common trench, ensure the minimum covers and separation distances for each utility in the trench cross-section are obtained.

Council generally requires undergrounding not trenching on busier arterial roads unless agreed specifically.

9.6.2 Installing new reticulation within legal roads

Wherever utility services are installed along existing legal roads, the network service operator shall advise Council of its intentions after the utility reticulation layouts are confirmed and obtain approval for new work. This approval will not be unreasonably withheld.

The Council's requirements for the restoration of the construction within the legal road should comply with *Construction Standard Specifications (CSS)*. Any constraints on the permitted hours of work within that road will be provided by Council. To avoid possible conflicts, ensure that the requirements of the Council approvals are included in any contract documentation.

9.6.3 Backfill

Bedding materials should comply with the network utility operator's requirements.

- Specify backfill materials individually. The material used must be capable of achieving the backfill compaction requirements set out in *CSS: Part 1* clause 23.0 - Backfilling. The Council approval specifies the final surfacing to the excavation or refer to the *NZUAG National Code of Practice for Utilities' Access to the Transport Corridors draft April 2011* for further information.

9.6.4 Marking Location

Pipe or cable location details shall be provided to Council for inclusion in Council's records.

The location of the pipe or cable should be clearly marked near the fence line.