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11. TELECOMMUNICATIONS UTILITIES

11.1 INTRODUCTION

- a) The purpose of the telecommunications section of the Engineering Standards and Policies is to ensure that all telecommunications cabling is designed and installed to meet Council and network utility operator expectations.
- b) The standards ensure that community expectations for telephone, broadband or other communications are met in a safe and efficient way, and that access to all underground services is achieved with a minimum of disruption.

11.1.1 Objectives

- a) The objectives of the telecommunications utilities standards are as follows:
 - 1) All new telecommunications cabling meets the needs of people and communities for telecommunications;
 - 2) All new telecommunications cabling is located within public land, and/or is legally and physically protected where it is located on private property;
 - 3) Access to underground cabling is ensured for ease of repairs and maintenance, with a minimum of disturbance;
 - 4) The location of all telecommunication services is clearly marked;

11.1.2 Key References

All telecommunications infrastructure shall be consistent with the standards set out in Table 11-1. Where an Act or document is referenced this shall be the current version including any associated amendments.

Table 11-1 External Standards and References for Electrical Utilities

Standard/Reference	Description
NCC Land Development Manual (LDM)	Liability for maintenance in the road reserve lies with the Road Controlling Authority.
National Code of Practice for Utilities, Access to the Transport Corridors	Working on the Road - for Temporary Traffic Control and Safety at Roadwork Sites
New Zealand Telecommunications Act 2001	Allows Councils to impose "reasonable conditions" on the works of Network Utility Operators in order to protect Council's assets
Electrical Act 1992	Electrical safety regulations 2009

11.1.3 Interpretation

- a) "Network Operator" means any person (company) declared (by the minister) under section 102-105 of the Telecommunications Act 2001 to be a Network Operator. A list of current Network Operators is held by the Ministry of Economic Development and is available on their website.
- b) "Network Owner" means any person or Company that owns Works (telecommunication reticulation) that are used or intended to be used for the conveyance of telecommunication.
- c) "Reticulation" means all Cables/Lines that are owned by the Network Operator and form part of Network Operators Reticulation System or "Network".
- d) "Network" means information communications technology infrastructure associated with the delivery of telecommunications technology comprising one or a combination of the following:
 - Connections over fibre optic lines;
 - Connections over copper wire;
 - Structures providing wireless or satellite or antenna connections;
 - Conduits, masts and pre-cast pits to accommodate all of the above.
- e) "Connection Point" means the point where customer's equipment or cabling connects to a Network Operators reticulation. This point is the demarcation point between the Network Operators reticulation and customer owned cables (usually referred to as ETP, External Termination Point).
- f) Road reserve has the same meaning given to it by section 315 of the Local Government Act 1974

11.2 GENERAL CONDITIONS

- a) Council will only give approval for communication Cables to be installed in road reserve where they will be owned, maintained, and remain the responsibility of an organisation which has attained "network operator" status.
- b) Approval must be obtained from Council to install services in the road reserve prior to any work commencing on site. A fully detailed design plan must be submitted to Council for checking and approval purposes.
- c) Developer or customer instigated reinforcement or replacement of existing overhead telecommunication reticulation shall be by underground cabling apart from specific exemption from the Council. This shall not exclude the Network Operator carrying out any maintenance (replacement or upgrade) of existing works as long as the land will not be injuriously affected as a result of the maintenance (replacement or upgrade).

- d) Any dispensations given by either the network operator (for dispensation from its own design and construction standards) or council (for dispensation from its engineering standards and policies) should be in writing and should indicate which section and subsection of the relevant standards the dispensation applies to. Dispensations will only be given in very exceptional circumstances.
- e) All telecommunication reticulation assets to be vested with the Network Operator shall meet the Network Operators Design and Construction Standards
- f) Any telecommunication reticulation cable being vested with the Network Operator and installed on private property including Rights of Way shall be secured by way of a telecommunication easement in favour of the Network Operator
- g) All electrical service mains supplying communication sites shall be by underground cable and shall be no longer than 10 meters in length whilst in road reserve

11.3 DESIGN

- a) All new residential, commercial and industrial subdivisions shall be reticulated with underground cabling running along each side of the road reserve. The Council may allow dispensation for a single sided reticulation in exceptional circumstances (eg where allotment frontages are greater than 30m in length).
- b) All allotments capable of accommodating residential dwellings or other human occupation shall be provided with a connection to a reticulated telecommunications network.
- c) All new residential, commercial and industrial subdivisions shall be reticulated to deliver a minimum uncontested performance level of 100Mbps downlink and 50Mbps uplink where the existing reticulation, at the point of connection, has this capacity. Otherwise the new reticulation must have the capacity to deliver a minimum performance level of 100Mbps downlink and 50Mbps uplink without necessitating major road reserve disturbance or further trenching works at the subdivision site in the future.
- d) The design of the telecommunication reticulation shall give consideration to the likely and future demand requirements per lot and allow for this in the initial design.
- e) Consideration shall be given to the future extension or reinforcement of the telecommunications reticulation system without necessitating major road reserve disturbance to achieve such expansion or reinforcement. Where appropriate, spare ducting shall be installed along routes likely to be used for an extension or reinforcement of the telecommunication system.

- f) Provision shall be made by land developers for the continuation of appropriate cabling along road frontages to facilitate the telecommunications reticulation of adjoining future development. This may be achieved by the installation of cable ducting systems.
- g) The Council may waive the requirement of section 11.3 f) where it is demonstrated with approval from the Network Operator that adjacent subdivisible land may be reticulated from another suitable route.
- h) A tentative layout of any future stages in the subdivision shall be provided to the Network Operator. This will allow the Network Operator to provide for additional stages and minimise the possibility of having to re-excavate the subdivision at a later stage to install additional services.
- i) Road crossings for telecommunications cables shall be kept to a minimum and where necessary, shall be at right angles to the carriageway.
- j) Designers are to liaise with other Service Authorities to achieve economical use of road reserve area with due consideration given to ease of maintenance to the telecommunications reticulation system and other services in the road reserve area.
- k) A shared services trench is likely to be the most economic option. Separation between the services in subdivisions is required. These will be detailed in the laying specification. However, safe working distances are required for all services within minimum separations for power cables. See Table 11-2
- l) Cabinets shall be located in the berm, clear of designated vehicular access ways by a minimum of 1 meter and close to section frontages (but no closer than 300mm) or, in a recess into a lot or a public reserve, secured either by easement or preferably designated as 'Road Reserve'.

11.4 DESIGN PLAN AND AS BUILT APPROVAL

- a) Prior to any works commencing on site, a design plan detailing the proposed telecommunications reticulation shall be submitted to council and approved. The plan shall bear a design statement covering the following:
 - 1) Compliance with the Network Operators design and construction standards.
 - 2) Compliance with the NCC LDM.
 - 3) A list of easement requirements for any telecommunications reticulation on private property to be vested with the Network Operator and a list of reciprocal rights for service lead cables or ducts over shared rights of way, or easements for service main lead crossing private property.
 - 4) Network Operator signed approval of the design plan.

b) Prior to the 224 Certification stage, certification details shall be forwarded to the Council including a letter of acceptance by the Network Operator confirming that:

- 1) As Built documentation has been received and filed
- 2) The telecommunication reticulation has been lived and fulfils the Network Operators design and construction standards and any other Network Operators requirements

11.5 CABLE INSTALLATION/LOCATION

a) Table 11-2 shows the minimum clearances from power cables. SD 1001 - 1003 and 1101 show the general layout of services.

Table 11-2 Minimum Separations for Power and Telecommunication Cables

Voltage and cable type	At Crossings		On Parallel Runs	
	With protection	Without protection	With protection	Without protection
LV, neutral screened, or armoured	50mm	150mm	50mm No limit to length	300mm No limit to length
LV, neutral unscreened, or unarmoured	50mm	450mm	450mm No limit to length	450mm No limit to length
HV, single and multicore	150mm	450mm	450mm 2.4km limit to length	450mm 2.4km limit to length
<p>LV power cable is defined in the current electricity regulations as "any voltage exceeding 50 volts a.c. or 120 volts ripple free d.c. but not exceeding 1000 volts a.c. or 1500volts d.c.</p> <p>HV power cable is defined in the current electricity regulations as "any voltage exceeding 1000 volts a.c. or 1500 volts d.c.</p>				

b) Protection shall take the form of either:

- 1) 50mm thick non metallic reinforced concrete slabs (usually 150mm wide and 500mm long); or
- 2) 100mm x 50mm ground retention treated timber with a minimum specification of the New Zealand Timber Preservation Authority classification h4 group b; or
- 3) 5mm polymeric cable cover.

c) The depth and offset of trenches will be specified on the laying plan provided by the network line operator. It is essential that these be maintained. Minimum cover shall generally be 450mm in footways and 600mm in roadways.

- d) All services crossing the proposed duct pipe route shall be exposed and the necessary clearances maintained to enable the network line operator's ducts to be installed either above or below these other services. The network line operator's ducts shall be laid above power cables.
- e) All joints in duct pipe shall be water tight and may be glue jointed with solvent cement or rubber ring seal, depending on the ducting supplied.
- f) The base of the trench shall be level with large objects removed. The duct pipe shall be bedded in accordance with section 7.9.2 of the LDM
- g) Adequate provision shall be made for draining cable/ducting trenches as per section 7.9.2.5 of the water section of the LDM.
- h) Cable and duct locations in the road reserve area shall be in general accordance with SD 1001 - 1003 and 414 and 415.
- i) Cable and duct locations down rights of way shall, where possible be located 750mm from a boundary in a berm area where provided. Otherwise, the centre of the right of way is the preferred location. The standard cable depth shall be 450-600mm and may be in a common trench with water and power services as shown in SD 1002.
- j) Appropriate mechanical protection shall be provided for any underground telecommunication reticulation in accordance with the Network Operators requirements.
- k) In addition, where telecommunication reticulation cables are on private property (excluding rights of way), visible 'above ground' warning markers shall be placed where cables change direction and in between not more than 10m spacing in all but rural areas where the minimum spacing shall be not more than 20m. The warning markers shall be as stated in the network owners design and construction standards.
- l) Road crossings for telecommunication reticulation cables shall be in PVC ducts to the Network Operators requirement at a minimum depth of 450-600mm
- m) Any excavation within the existing road reserve is subject to Council approval and a Work Approval Notice issued by Council.

11.6 INSTALLATION OF DISTRIBUTION PITS/PILLARS

- a) The pits and lids are designed to withstand light vehicular loading only. Therefore installation shall take place only in the footpath or in grassed areas within the defined kerb network. On mountable kerbs they shall be located in grass areas and behind the footpath.
- b) The grass berm or footpath shall be excavated to a sufficient depth to ensure that the pit lid will be level with the finished level of the surface.

- c) Service pillars shall be set back close to section boundaries and are to be clear of designated vehicular access and pedestrian ways by a minimum of 1 meter.
- d) The minimum spacing of any service pillars from any boundary line or survey peg shall be 200mm so as to enable future fencing construction.
- e) Where multiple driveways on lot boundaries make it impractical to position a service pillar at a common boundary between lots or, where a narrow road frontage width of a lot makes the location of a service pillar vulnerable to damage, it is permissible to install a duct in the road reserve from a lot boundary to a service pillar with an offset of no more than 10m from the affected lot. This is the only occasion service leads are to be run along road reserve.
- f) Any ducting systems installed in the road reserve area shall be considered as part of the telecommunication reticulation system for the purpose of 'As Built' records.
- g) Any excavation within the existing road reserve is subject to Council approval and a Work Approval Notice issued by Council.

11.7 RECORDS

- a) The Network Operator shall keep and maintain as-built records of their reticulation within the road reserve and on private property where that reticulation will be owned by the network utility operator.
- b) The Network Operator shall ensure that they receive and maintain as-built records of the telecommunications reticulation (works) and ensure that such records are made available upon request.
- c) Provision of as-built drawings for planned works shall be free of charge to NCC and made available with 24-hours prior notice during normal working hours and for emergency call outs with no prior notice at any time.
- d) The Network Operator will ensure a cable location service is available either by providing the service in-house or making available approved contractors for the Council or its contractors or any party carrying out civil works.