CODE OF PRACTICE FOR CITY INFRASTRUCTURE and LAND DEVELOPMENT

ENGINEERING STANDARDS MANUAL

SECTION 8

INFORMATION COMMUNICATIONS TECHNOLOGY INFRASTRUCTURE

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8.1. SCOPE

This section covers the engineering standards and design specifications for the installation of above and below ground infrastructure associated with Information Communications Technology (ICT) in Council owned roads, parks and other public spaces.

8.2. INTRODUCTION

These standards have been initiated in recognition of rapid advancements in ICT and the need to establish uniform standards, the importance of the Council's land and assets as a resource and the need to establish a code of practice for the sustainable management of these limited resources. These standards apply to above and below ground infrastructure in Council owned/controlled roads, parks and public spaces.

Council's goals are as follows:

a) To secure the co-operation of all Network Utility Operators to coordinate the use of space required to install infrastructure associated with ICT;

b) To achieve maximum safety and minimum inconvenience to the public;

c) To reduce the frequency and cost of opening and reinstating roads by a co-ordinated effort in the field;

d) To ensure that the integrity of Council's assets are not compromised by other parties.

The following standards and specifications are referred to in these standards or in the Council procedures for implementing these standards:

a) The Code of Practice for City Infrastructure and Land Development, Section 3.0, Appendix A, Specification for the Excavation and Reinstatement of Trenches;

b) The Telecommunications Act 2001, which allows Council to impose "reasonable conditions" on the works of Network Utility Operators in order to protect Council's assets;

c) The Waitakere City Council District Plan, formed under the statutory requirements of the Resource Management Act 1991;

d) The Waitakere City Council Parks Strategy;

e) The Waitakere City Council Reserve Management Plans, formed under the statutory requirements of the Reserves Act 1977.

f) Resource Management (National Environmental Standards for Telecommunication Facilities) Regulations 2008.

8.3. DEFINITIONS AND INTERPRETATION

Antenna Transmitting / Receiving Dishes	Means antenna and dishes that are used or designed to transmit and receive telecommunications information.
Arterial Roads	Means those roads defined in the Waitakere City District Plan as Major Roads, Strategic Arterial Roads, Regional Arterial Roads, and District Arterial Roads.
Building Connection	Means the telecommunications connection (conduit and / or fibre and copper), which links the connections located under the Carriageway, berm or footpath with the adjacent private property boundary.
Carriageway	Means any portion of a road used by motor vehicles.
Carriageway Lateral Crossing	Means a telecommunications duct or cable which runs from the Communications Corridor (or alternately a single connection running parallel to the berm) and crosses a vehicle carriageway to the opposite kerb
Chamber	Means any entry pits, chambers, hand holes, vaults, turning or pulling or other chambers used by Network Utility Operators to access, install and maintain ICT Infrastructure.
Code of Practice (CoP)	Means the Waitakere City Council Code of Practice for City Infrastructure and Land Development.
Communications Corridor	Means the trench or that part of a Road, berm or footpath which has been set aside for the provision of telecommunications infrastructure as per SD 3.02 of the Code.
Contractor	Means any person, carrying out trenching or ancillary works, for or on behalf of a Network Utility Operator.
Contract Supervisors	Means any person detailed by the Engineer or Network Utility Operator to carry out the administration of the duties detailed in this document.
Council	Means Waitakere City Council.
Council Engineer	Means the Service Manager: ICT Infrastructure or Transport Assets or his nominated representative.
Entry Pit	A small chamber or terminating pit adjacent to a premise allowing access to the Building Connection

ICT Infrastructure: Information Communications Technology Infrastructure	Means 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.
ICT Cabinet	Means an above ground structure designed to accommodate equipment associated with ICT Infrastructure.
Mast	Means an above ground infrastructure that is used to support telecommunication equipment such as antennae and dishes
Network Extension Programme	Means the twelve month programme, submitted at six monthly intervals, detailing the planned extension of the network of any Network Utility Operator.
Network Utility Operator	Means definition set out in s166 of the Resource Management Act 1991.
Redundant/Obsolete ICT Infrastructure	Means ICT Infrastructure owned by the Network Utility Operator that is either: • No longer being used, or • Has no intention to be used in the future
Road or Street	Means as defined as in Section 315 of the Local Government Act 1974 and includes the area from boundary to boundary, customarily referred to as Road Reserve.
Road Opening Notice	Means a notice in the form of Appendix A-1 of Section 3.0 - Appendix A of the Code.
Street Block	Means the length of Road Reserve between two street intersections.
Telecommunications	Means the conveyance from one device to another of any sign, signal, impulse, writing, image, sound, instruction, information, or intelligence of any nature, whether for the information of any person using the device or not.
Town Centres	Means the areas identified as existing or proposed in the Waitakere City Council District Plan as Major Town Centres and Town Centres.
Transmission Station	Means the building that houses telecommunication equipment
Trench	Means any excavation on Council owned land for the purpose of maintaining, locating or installing services.
Tower	Infrastructure that is used to support antennas and transmitting / receiving dishes
WCC ICT Duct	Telecommunications duct that is owned by Waitakere City Council

8.4. DESIGN REQUIREMENTS

8.4.1. ROAD OPENING NOTICE PRINCIPLES AND PROCEDURES

General Principles:

a) A significant proportion of ICT Infrastructure will be installed underground and within Roads.

b) The Council requires the opportunity to carry out its own capital or maintenance works, which may include the provision of ICT Infrastructure, at the time when other road opening works are being undertaken to minimise disturbance. In general where planned works are to be carried out on an arterial road, Council will install ICT ducting and chambers.

c) Where open trenching is used, the Council requires that a single Trench be used to minimise surface and services reinstatement.

d) Council requires best available practices to be undertaken when installing infrastructure.

General Procedures:

a) Any open trenching or thrusting on Council land must comply with Council's Road Opening Notice Procedures, contained within the Transportation section of the Code.

b) Works shall be in accordance with any 'reasonable' conditions imposed on approval of the notice, as specified in the Road Opening Notice Procedures.

ICT Network Extension Procedures:

a) Each Network Utility Operator must submit to Council at six monthly intervals (or less) a proposed twelve month works programme for specific planned network extensions within Waitakere City. The forum for this shall be based on the New Zealand Utilities Advisory Group (NZUAG) Model Partnering Agreement between Utility Service Providers and Road Controlling Authorities.

b) The Network Utility Operator acknowledges Councils statutory right to impose reasonable conditions on any works within the road on the Network Utility Operator:

   i) Council require the co-ordination of planned network extensions to enable the alignment of work programmes to support Councils dig once policy and protect the integrity of assets.

   ii) In areas where Council determines there to be a high demand route for the provision of ICT Infrastructure; the Network Utility Operator may be required to demonstrate that infrastructure that is proposed to be installed is necessary to meet present and future network requirements. Should the operator be unable to provide evidence of a genuine need, Council may require that an amended design be provided, particularly where this would conflict with other proposed infrastructure.

8.4.2. LAY OF SERVICES AND REINSTATEMENT

Provisions for Infrastructure in Existing Roads:

a) Where open trenching methods of installation are used by the Network Utility Operator on a planned Network Extension to install ICT Infrastructure, the Network Utility Operator will be required to communicate with the Council Engineer so Council has the opportunity to install a Council owned ICT Duct. .

b) Where works are being undertaken in existing roads, the Council will require that new Telecommunications ducting and cabling being installed are located in the defined Communications Corridor as per WCC CoP S.D. 3.02 that is shared with other Telecommunications Network Utility Operators. However, an alternative location may be agreed to in writing by the Council Engineer prior to or at the time of installation.

c) In the case of areas that are to be retrofitted, the corridor shall, as a first preference, be located in the berm and, as a second preference, in a line that follows the car parking bays on the side of the Carriageway. However, an alternative location may be agreed to in writing by the Council Engineer prior to or at the time of installation.

d) Copper and/or fibre optic cabling and associated ducting must be laid at a minimum depth as follows:

   i) 900mm below ground level in respect of Carriageways.

   ii) 600mm below ground level in respect of berms along Arterial Roads as defined in the Waitakere City District Plan.

   iii) 600mm below ground level in respect of berms of all other roads.

   iv) In all other cases 600mm below ground level.

e) No continuous length of open trenching shall exceed 150m unless dictated by the specific Road Opening Notice. This includes the excavation and backfilling operation lengths as well as the working section of the open trench.

   This length of open trench generally consists of 50m of excavated trench, 50m of cable/ ducting laying and 50m of trench backfilling.

f) All backfill and reinstatement of works that involve open trenching or cuts must comply with Section 3.0, Appendix A of the Code.

g) Where ducting / cabling crosses the Council's waste or stormwater pipelines at a distance of closer than 0.25m vertically or 0.25m horizontally from the outside wall of the pipeline Council may require the applicant to carry out a post construction CCTV inspection of pipes, at the cost of the applicant, to ensure that no damage has occurred to these pipelines during the installation and construction of the ICT Infrastructure:

   i) If the proposed works are within 0.25m of any Council service, then an alternative location for the proposed works may be agreed to in writing by the Council Engineer prior to or at the time of installation.

   ii) Councils Call Centre shall be notified of any damage to Council's infrastructure as soon as practical.

   iii) A performance bond may be taken at the discretion of the Council Engineer where there is concern about the possibility of significant financial or environmental risk to the Council as a result of the work.

h) Complete and accurate As-Built plans are to be provided to the Council Engineer within six weeks of completion of the installation of the ICT Infrastructure and prior to sign-off of the Road Opening Notice.

   As-Built data shall be provided in accordance with the standards specified in the Quality and Release Manual of the code.

Provisions for Infrastructure in New Roads:

a) The Council requires that new ducting being installed is located in a single Communications Corridor, on both sides of the road (where appropriate), shared with other Network Utility Operators, having due regard to the technical requirements and physical constraints.

b) The Communications Corridor will, in the case of Greenfield Development, be located as per SD 3.02. However, physical constraints and congestion may dictate an alternative location and this may be agreed to in writing by the Council Engineer prior to or at the time of installation.

c) Council or Network utility operator's ICT ducts and cabling (where provided) shall be laid underground along the full length of each side of each new road, in an appropriate position that does not compromise or obstruct other infrastructure in the road, unless the consent holder provides a detailed plan demonstrating that all new residential and commercial lots are to be able to be serviced by this infrastructure.

d) Copper and / or fibre optic cabling and associated ducting must be laid at a minimum depth as follows:

i) 900mm below ground level in respect of Carriageways.

ii) 600mm below ground level in respect of berms along Arterial Roads as defined in the Waitakere City District Plan.

iii) 600mm below ground level in respect of berms of all other roads.

iv) In all other cases 600mm below ground level.

8.4.3. MATERIAL SPECIFICATION - OPEN TRENCHING

Material Specifications for ICT Infrastructure when using open trenching methods are as follows:

a) Shall be uPVC plain wall pipe with a minimum SN 4 rating to AS/NZS 1260 (2002) with rubber ring or solvent welded joints that shall be approved by the Council at the stage of Engineering Approval.

b) Be laid to AS/NZS 2032 and AS/NZS 2566 part II standard, in accordance with the lay of services specified in Standard Detail 3.02 in the Code of Practice for City Infrastructure and Land Development.

c) All pipes laid by open trench methods shall be bedded and haunched in accordance with WCC CoP drawing SD 4.01; the bedding material shall be SAP 7.

d) Where the road is classified as a Local Road as per Fig 3.01 the minimum diameter duct to be installed is 50mm (I.D.), or 32mm (I.D.) where a blown fibre solution is to be utilised.

e) Be laid a minimum of 600mm below ground level and shall not obstruct the function of other infrastructure already underground.

f) All ducts installed for the purposes of ICT Infrastructure and operated by Utility Operators shall be of a consistent colour nominated by the relevant Utility Operator. (i.e., Green for all Telecom duct).

g) When open cut methods are employed a detectable warning tape shall be installed a minimum of 300mm immediately above the ducting. The tape must be accessible to facilitate the use of electronic locating equipment.

h) A chamber shall be provided at intersections of multiple ducts and directional changes where future access maybe required. Chamber distances on straight runs shall be as per ANZS 3084. The chamber shall be of a size that is within the maximum internal dimensions provided for in SD8.01 of the Code (1250mm x 1250mm x 1200mm deep) and:

i) All ICT chambers are to be pre-cast units suitable for use as ICT chambers.

ii) All ICT chambers that are constructed for Council or are to be vested in Council shall have a standard aluminium pre-cast lid with the WCC Logo cast into the lid. These lids are available from Sika Technology Limited.

i) The Council reserves the right to approve the specific location and/or size of any chamber on a case-by-case basis prior to installation.

8.4.4. MATERIAL SPECIFICATION - TRENCHLESS OR DIRECTIONAL DRILLED METHODS

Material Specifications for ICT Infrastructure when using trench-less or directional drilled methods are as follows:

a) Shall be PE 80 polyethylene with a minimum SDR 17 rating complying with AS 4130 and AS/NZS 5065.2005.

b) All joints shall be made using a butt-welding process carried out by a certified welder or prefabricated electro-fusion couplings.

The internal bead formed by the butt-welding process shall be removed prior to final installation.

c) Be laid a minimum of 600mm below ground level and shall not obstruct the function of other infrastructure already underground.

d) All ducts installed for the purposes of ICT and operated by Utility Operators shall be of a consistent colour nominated by the relevant Utility Operator. (i.e. Green for all Telecom ducts).

e) A chamber shall be provided at intersections of multiple ducts, directional changes, where future access maybe required and at intervals of 200m on straight runs. The chamber shall be of a size that is within the maximum internal dimensions provided for in SD8.01 of the Code (1250mm x 1250mm x 1200mm deep).

   i) All ICT chambers are to be pre-cast units suitable for use as ICT chambers.

   ii) All ICT chambers that are constructed for Council or are to be vested in Council shall have a standard aluminium pre-cast lockable lid with the WCC Logo cast into the lid. These lids are available from Sika Technology Limited.

f) The Council reserves the right to approve the specific location and/or size of any chamber on a case-by-case basis prior to installation.

8.4.5. ALTERNATIVE MATERIAL SPECIFICATIONS

With the rapid advancement in ICT ducting materials and specifications, consideration will be given to alternative materials or specifications by the Council Engineer on a case by case basis.

The acceptance of an alternative ducting material or specification does not by right allow for this to be used elsewhere within the City without the expressed written consent of Councils Engineer for that particular project.

8.4.6. CARRIAGEWAY LATERAL CROSSING PROVISIONS

The following Provisions apply:

a) Where open trenching is used to install a Carriageway Lateral Crossing, the Council will require the opportunity to install its own Carriageway Lateral Crossing.

b) When installing ICT Infrastructure by open trenching methods in Town Centres, all new Carriageway Lateral Crossings shall be spaced so that there is no more than two Carriageway Lateral Crossings for every Street Block. Any additional crossings shall only be permitted with the express approval of the Council, and in most cases, shall be installed using trench-less methods.

c) Outside of Town Centres, crossings should be spaced at a minimum distance of 75m unless otherwise permitted by the Council.

d) Carriageway Lateral Crossings are to be aligned within fifteen degrees of right angles to the road centreline, unless Transport Assets specifically approve an angle exceeding this limit. Refer to the following diagram:

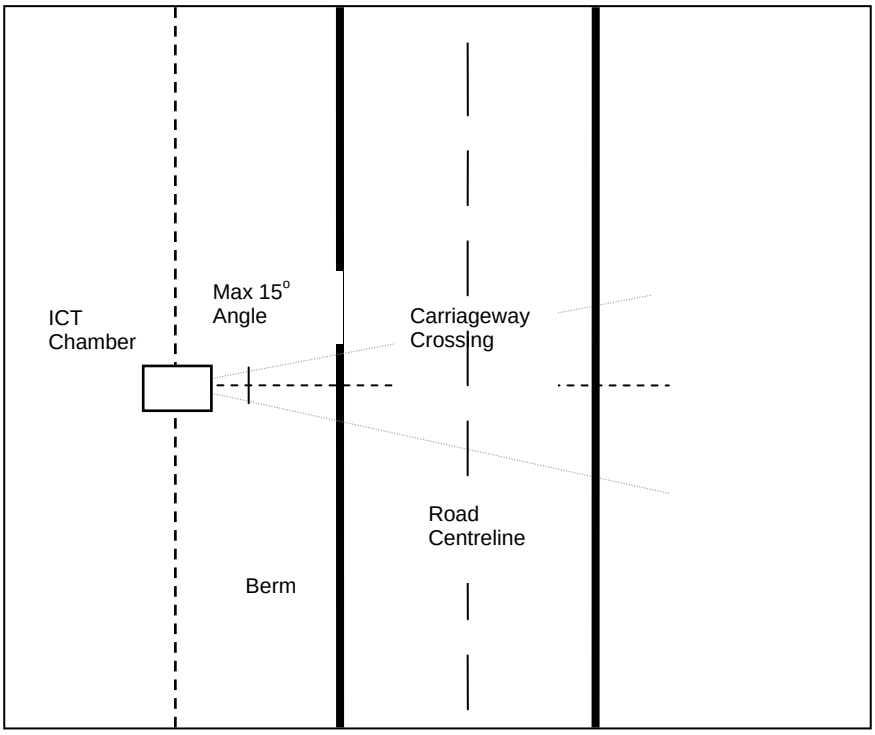

Diagram 8.4.1: Plan of Carriageway Lateral Crossings and Loop Connections

8.4.7. BUILDING CONNECTION PROVISIONS

The following Provisions apply:

a) Building Connections for commercial and residential applications shall be laid inside an appropriate size duct

b) Council shall require that all Building Connections work be completed within the specified dates of the applicable Road Opening Notice (RON).

8.4.8. CHAMBER PROVISIONS

The following Provisions apply:

a) The dimension of the top of any Chamber must not exceed 1250mm wide by 1250mm long, as shown on SD 8.01. Any infrastructure exceeding these dimensions shall not be allowed unless agreed by the Council.

b) All ICT chambers that are constructed for Council or are to be vested in Council shall have a standard aluminium pre-cast lockable lid with the WCC Logo cast into the lid. These lids are available from Sika Technology Limited.

c) Chamber lid covers must be constructed of standard materials and be finished flush with the surrounding ground.

d) Where a chamber or Entry Pit is located in an area where Council has upgraded the streetscape and provided special paving or surface finishing, the entry pit chamber shall be recessed and the finished surface shall match the original finish, with the same quality, texture, type, colour and material of the surrounding surface.

e) Council would prefer (where appropriate) chambers to be constructed in the berm as opposed to in the footpath.

8.4.9. ABOVE GROUND SERVICES

All above ground services of ICT structures/facilities within the Road must comply with the Resource Management (National Environmental Standards for Telecommunications Facilities) Regulations 2008 and the Waitakere City District Plan as appropriate.

ICT Cabinet Provisions:

a) In accordance with the provisions of the Road Opening Notice, the Network Utility Operator must give the Council at least twenty working days notice of its intention to install ICT Cabinets and any other above ground structures and equipment on Council owned land.

b) An asset identifier reference number more than 200mm wide by 200mm high shall be securely fixed to every ICT Cabinet. This asset identifier shall be advised to Council at the completion of the works to enable Council to update its database to allow for the identification of Assets.

c) ICT Cabinets and other above ground structures and equipment will, in order of preference, be sited off the Carriageway, underground or on the edge of the Road. ICT Cabinets may not be located any closer than 2m from the front of the kerb of a carriageway, nor shall be placed under the drip line of any trees located in the Road Reserve unless otherwise directed by the Council.

d) All telecommunication ICT Cabinets are to comply with the requirements of Councils District Plan, that applies to the appropriate underlying or adjacent Human Environment

Antenna / Transmitting / Receiving Dishes:

a) All dishes must comply with the New Zealand Standard for Radio Frequency Emissions (NZS 2772.1:1999) including subsequent amendments, and

b) All telecommunication antenna and dishes and masts are to comply with the requirements of Councils District Plan, that applies to the appropriate underlying or adjacent Human Environment

Telecommunication Transmission Stations / Towers:

a) All cellphone transmission stations / towers must comply with the New Zealand Standard for Radio Frequency Emissions (NZS 2772.1:1999) including subsequent amendments, and

b) All telecommunication transmission stations and towers are to comply with the requirements of Councils District Plan, that applies to the appropriate underlying or adjacent Human Environment

8.5. REDUNDANT / OBSOLETE ICT INFRASTRUCTURE

Unless otherwise agreed to by the Council Engineer, a Network Utility Operator must remove Redundant/Obsolete ICT Infrastructure at the following times:

a) At the time of installing new ICT Infrastructure, or

b) When maintenance is undertaken in the area around the Redundant ICT Infrastructure, or

c) When the Council undertakes road upgrades, or

d) When undertaking upgrading works in association with the ICT Infrastructure.

The Network Utility Operator may be required to demonstrate that infrastructure that has been installed is necessary to meet present network requirements. Should the operator be unable to provide evidence of a genuine need, Council may require the removal of this infrastructure, particularly where this would conflict with other proposed infrastructure.