

## 10 ELECTRICAL UTILITIES

### 10.1 Introduction

The purpose of the Electrical Utilities section of the Engineering Standards and Policies is to ensure that all electrical cabling is designed and installed to meet Council and network line operator expectations.

The standards ensure that community expectations for electricity and streetlighting are met in a safe and efficient way, and that access to all underground services is achieved with a minimum of disruption.

#### 10.1.1 Objectives

The objectives of the electrical utilities standards are as follows:

- a) All new electrical infrastructure meets the needs of people and communities for electricity and streetlighting;
- b) All new electrical infrastructure is located within public land, and/or is legally and physically protected where it is located on private property;
- c) Access to underground cabling is ensured for ease of repairs and maintenance, with a minimum of disturbance;
- d) The location of all electrical services is clearly marked;
- e) Streetlighting has been provided to ensure personal and traffic safety; and
- f) Streetlighting shall be in keeping with the amenity and character of the environment.

#### 10.1.2 Key References

All electricity and streetlighting infrastructure shall be consistent with the standards set out in Table 10-1: External Standards and References for Electrical Utilities.

**Table 10-1: External Standards and References for Electrical Utilities**

Standard/Reference	Description
NZ Electricity Code of Practice	Prescriptive requirements
New Zealand Electricity Act	National New Zealand Standards
AS/NZS3000	Electrical installations (Australian/New Zealand wiring rules)
Line Operator	Design and Construct and Distribution Codes
Electricity (Safety) Regulations	National method to comply with Act
Registered Utility Operators Codes and Standards	Line operation requirements

## **10.2 Electrical Reticulation**

### **10.2.1 General**

The following general standards and conditions apply to the provision of electrical utilities:

- a) All new electrical reticulation and service main will be by underground cabling in urban areas.
- b) All new service mains will be by underground cabling in “rural areas” or as amended by clause 10.2.5(f).
- c) Reinforcement or replacement of existing overhead electrical reticulation will be by underground cabling apart from specific exemption from Council. This will not exclude the line owner 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 (exceptional circumstances) given by either the line owner (for dispensation from its own electrical design and construction standards) or Council (for dispensation from its Engineering Standards and Policies) shall be in writing and shall indicate which section and subsection of the relevant standards the dispensation applies to.
- e) Existing allotments with no “power to the boundary” and requiring an electrical supply will be by underground cabling.
- f) All electrical reticulation assets to be vested with the line owner or network utility operator will meet the line owner’s design and construction standards and the line owner’s distribution code.
- g) Any underground or overhead electrical reticulation cable being vested with the line owner and installed on private property including rights-of-way will be secured by way of an easement in favour of the line owner.
- h) Service main exclusive fittings owned by a third party will also have private easements registered outside the point of supply if the route crosses titled land not owned by the third party. See section 10.2.8.
- i) Where a boundary is adjusted enabling a lot to contain an installation Council will require confirmation from the line owner that the existing electrical reticulation is sufficient to supply another installation.
- 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 electrical reticulation system and other services in the road reserve area.

### **10.2.2 Design**

The following standards apply to the design of all electrical infrastructure:

- a) The design of the electrical reticulation shall, as a minimum requirement, comply with the current Electricity Regulations and the requirements and standards of the line owner.

- b) The design of the electrical reticulation shall give consideration to the likely electrical demand requirements per lot and allow for this in the initial design.
- c) Residential subdivisions should allow a minimum of 15kVA with diversity per lot and industrial subdivisions should allow a minimum of 40kVA without diversity per lot.
- d) The minimum electrical demand design criteria per lot and allowable after diversity maximum demand factor shall be to the requirements of the line owner.
- e) All new residential, commercial and industrial subdivisions shall be reticulated with underground cabling running along each side of the road reserve. Council may allow dispensation for a single sided reticulation in exceptional circumstances (eg, where allotment frontages are greater than 30.0m in length).
- f) Provision shall be made by land developers for the continuation of appropriate cabling along road frontages to facilitate the electrical reticulation of adjoining future development. This may be achieved by the installation of cable ducting systems. Council may waive this requirement where it is demonstrated with approval from the line owner that adjacent sub-dividable land may be reticulated from another suitable route.
- g) Consideration shall be given to the future extension or reinforcement of the electrical 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 electrical reticulation.
- h) Road crossings for power cables shall be kept to a minimum and where necessary, shall be at right angles to the carriage way and have a minimum cover of 900mm. See TDC Drawings 608 and 609 road cross sections for lay position of cables.

### **10.2.3 Cabling, Ducting and Service Boxes**

These standards relate to the installation and design of cabling, ducting and services:

- a) Access to a three phase power supply shall be provided at the boundary of the road frontage of each lot of an industrial, commercial or residential subdivision.
- b) Subdivisions containing rights-of-way not longer than 60.0m may have individual service duct systems (orange 50mm minimum diameter PVC) or appropriately sized service mains cable installed from a service box on the road frontage down the right-of-way to each rear allotment.
- c) Subdivisions containing rights-of-way exceeding 60.0m shall have electrical reticulation to the main body of the rear allotments.
- d) Fusing and “network connection points” shall be to the satisfaction of the line owner. No service duct system extending from a service box, within a right-of-way shall be longer than 60.0m. No service duct system in road reserve shall be longer than 10.0m.

- e) Where either the service mains or the line owner's electrical reticulation is installed within the sealed area of a right of way the cable is to be installed within a duct or a spare duct is to be laid beside the cable.
- f) Appropriate registration of Easements-in-Gross to the line owner's requirements shall be provided by the landowners prior to livening for all electrical reticulation cables, service boxes and ducting on private property including right-of-ways. Where service cables cross others properties or right-of-ways private easements between lots will be required prior to livening.
- g) Where multiple driveways make it impractical to position a service box at a common boundary between lots or where a narrow road frontage width of a lot makes the location of a service box vulnerable to damage, it is permissible to install a service duct (orange 50mm minimum diameter PVC) in the road reserve from a service box offset no more than 10.0m from the affected lot.
- h) Any ducting systems installed in the road reserve area shall be considered as part of the electrical reticulation system for the purpose of as-built records.
- i) Any excavation within the existing road reserve is subject to Council's approval and Including the National Code of Practice for Utilities Access to the road and rail corridors and a corridor access approved by Council.

#### **10.2.4 Location and Capacity**

The following standards and conditions relate to the location of cabling and capacity of the reticulations:

- a) Voltage drop shall be no greater than permitted under the Electricity Regulations and the requirements and standards of the line owner.
- b) Current ratings shall be in accordance with line owners design and construction standards and relevant legislation.
- c) The design shall take into account the requirements of Section 10.2.2 with specific attention given to the following details relating to likely electrical loads:
  - i. Lot size in relation to permissible coverage and anticipated usage of the lot (eg, multiple dwellings, cross-lease and potential subdivision permitted within the zoning).
  - ii. An appropriate after diversity maximum demand factor.
  - iii. The design of the electrical reticulation shall give consideration to the likely electrical demand requirements per lot and allow for this in the initial design. Residential subdivisions should allow a minimum of 15kVA with diversity per lot and industrial subdivisions should allow a minimum of 40kVA without diversity per lot.
  - iv. Future load growth and electrical reticulation expansion or reinforcement.
- d) Existing overhead electrical cabling shall be dealt with in accordance with Section 10.2.6.

### 10.2.5 Subdivision Requirements

The following standards apply to the reticulation of electricity within the subdivisions process:

- a) Any variations (change to resource consent conditions) issued by Council from resource consent conditions shall be in writing and shall specifically state which condition the dispensation applies to, including how the condition is to be met.
- b) New allotments shall be serviced with live 400/230v electrical reticulation to the boundary of each lot.
- c) Rear lots down right-of-ways or through front lots may have ducts provided from the road reserve frontage to the rear lots ready for future service mains installation at the owner's cost. Exceptions are catered for where it is impractical to position a supply at a boundary.
- d) Where practical, existing overhead 400/230v electrical reticulation or "service mains" crossing new subdivisions shall be placed underground. No overhead lines shall be permitted to cross over newly created lots.
- e) High voltage power lines (greater than 1000 volts) across new subdivisions shall be relocated clear of the subdivisions or placed underground with the agreement of the line owner. Dispensation may be granted by Council where it is demonstrated to be impractical to achieve this requirement.
- f) In remote rural subdivisions where the allotments have a large land area and it is demonstrated that the lots are not intended for habitable dwellings or buildings ancillary, Council may waive the requirement for the supply of electrical reticulation works to the boundary. A consent notice will be required noting that the site will not have an electrical supply.
- g) Where electrical reticulation works referred to in the above paragraphs is not practically accessible or economically viable, local generation eg, Hydro, solar, wind, may be considered as an alternative. It shall be demonstrated that local electrical generation of 3kWhr minimum sustainable storage capacity over a 24-hour period per household is feasible for supplying lighting and small electrical appliances with alternative fuel for heating and cooking.
- h) All new subdivisions reticulated with service boxes or poles shall have service ducting (50mm orange PVC electrical duct) from the pole or box to 1.0m within the property it is intended to supply. Wide sweeping bends shall be used. Service ducting shall be no deeper than 1.0m, nominally 600mm. Duct ends shall be clearly marked within properties and fixed by measurement to survey points or other permanent fixtures on as built records. The service box or pole shall be located not more than 10 m from the boundary of the lot it serves. The service cable from the service box or pole shall be owned and maintained by the line owner where located in the road reserve area.

### 10.2.6 Rural

- a) Recognising the extent of 11kV electrical reticulation in the rural sector, together with the difficulty and high cost of providing underground 11kV cabling, Council may in accordance with Section 35 of the Electricity Act and at its discretion and in agreement with the line owner, allow overhead 11kV electrical reticulation and associated substations in the rural sector.
- b) Easements-in-Gross are to be provided by the landowner, in favour of the line owner, for all new or altered electrical reticulation over private property. All proposed electricity easements over private property, whether the land is owned by the developer or not, must be listed under a memorandum of Easements-in-Gross on the subdivision plans.
- c) Substations may be located on lot boundaries or within the subdivided lots to enable an adequate electrical supply to specified or potential building sites on the allotments.
- d) 400/230v electrical reticulation and service mains to individual premises shall be by underground cable unless precluded by ground profiles or other impediments in which case Council may grant dispensation for overhead cables to traverse the area concerned.
- e) "Network connection points" to individual lot boundaries shall be located to provide practical and legal access for service mains to specified or potential building sites.
- f) Where the length of a service mains cable exceeds 200 m from a "network connection point" to a specified or potential building site, the electrical reticulation designer shall state on the application drawing, the proposed "service mains" cable size and design criteria applicable to the lot.
- g) Subject to existing load and future development the line owner may approve the use of an existing two phase 11kV overhead line for residential and general farming purposes where it is demonstrated that three phase power is not likely to be required for the management of the land (eg, irrigation). The design of any two-phase 11kV line extension shall be to a standard whereby a third phase can be run or livened without changes to poles, cross-arms or guys.

### 10.2.7 Easements

- a) It is the responsibility of the Developer to ensure that all easements are obtainable. The Developer shall, where necessary and at their expense, provide any easements and obtain any formal consent required for overhead lines, underground cabling and equipment to be installed or altered in, on, under or over property other than road reserve.
- b) Easements-in-Gross with the line owner as the grantee/transferee shall be obtained and registered on all private land.

Easements are required in the following cases but shall not be limited to:

- i. Where new "works" (lines or cables) are located on private properties.
- ii. Where a padmount substation, switching station or transformer is to be located on other than road reserve.

- iii. Where an overhead line located in a legal road intrudes into a privately owned property. This applies especially to crossarms and conductors where air space is encroached.
  - iv. Where an existing service main is physically altered, shifted or its status is changed, for example, to supply a new separately subdivided property.
  - v. Where a network cable is used to supply lot(s) in right-of-ways or access lots.
- c) Conditions imposed in the consents granted by Council under section 220 of the RMA generally do not fully describe conditions required by the line owner particularly in relation to easements where neighbouring properties are affected by new or altered network systems. The line owner will have separate conditions that must be met to ensure, for instance, that perpetual right is gained for new or altered “works” and the status of those “works” cannot be compromised by aggrieved property owners wishing to contest the line owners interests. A risk of stranding customers is not an option.
  - d) Easements required on land being developed under subdivision consent must be described under a “memorandum of easements”. Land outside the subdivision and affected by new or altered network system changes must also be described in a memorandum of easements. Where lot servicing is able to be satisfied using service mains in right-of-ways or access lots, easements shall be prescribed on the deposited plan.
  - e) Where service mains are used to service lots on a shared right-of-way, access lot, or across private land then an easement in favour of the line owner is not required. However, an easement between the respective parcels of land is necessary with the wording “right to convey electricity, telecommunications and computer data” entered as the purpose description.
  - f) The line owner will not connect new “works” or allow alterations to its network system which constitutes new “work” by definition in the Electricity Act, until an Easement-in-Gross has been acknowledged and receipted by the district land registrar on the properties affected. This requirement may be waived for subdivisions approved by Council under section 220 of the RMA where property outside the subdivided property is unaffected and subdivision deposited plans with relevant transfers are lodged to the satisfaction of the line owner
  - g) Works are to be vested with the line owner prior to connection and livening, and registration of the easement. A separate agreement will be required to confirm vestment conditions and will be signed by approved signatories.
  - h) Overhead lines require 6.0m wide easement corridors symmetrical to the actual line route or as required by the line operator.
  - i) Underground cables require 3.0m wide easement corridors symmetrical to the actual cable route.

### **10.2.8 Physical Location**

- a) Service boxes shall be set back 250mm from section boundaries and are to be clear of designated vehicular access and pedestrian ways by a minimum of 700mm.

- b) The minimum spacing of any service box from any boundary line or survey peg shall be 250mm so as to enable future fencing construction.
- c) Cable and duct locations in the road reserve area shall be in general accordance with TDC Drawing 1000, being 600mm from section boundaries at a nominal laying depth of 1.0m (900mm cover) with provision for shared trenching with communication services.
- d) Cable and duct locations down right-of-ways shall, where possible be located 600mm 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 1.0m (900mm cover) and may be in a common trench with water and communication services as shown in TDC Drawings 1000 and 1001. Individual consumer service mains cabling or ducting, within a right-of-way, shall be 600mm minimum depth as shown in TDC Drawing 1001. Any cable installed under seal within a right-of-way must be installed within a duct or with a spare duct beside it.
- e) Appropriate mechanical protection shall be provided for any underground electrical reticulation in accordance with NZECP and AS/NZ 3000.
- f) In addition, where electrical reticulation cables are on private property (excluding right-of-ways), visible above ground warning markers shall be placed where cables change direction and in between not more than 10.0m spacing in all but rural areas where the minimum spacing shall not be more than 20.0m. The warning markers shall be as stated in the line owner's design and construction standards.
- g) Road crossings for electrical reticulation cables shall be in 100mm minimum orange electrical PVC ducts to the line owner's requirement at a depth of 1.0m (900mm cover)
- h) At all sites where cable is installed cable marker warning strip shall be placed along the cable route at half the cable trench depth unless the cable is mole-tunnelled or drilled and ducted.

#### **10.2.9 Specific Installation Requirements**

- a) Substations shall be of adequate design capability to supply the anticipated after diversity maximum demand with due consideration to section 10.2.4.
- b) Ground mounted substations will be permitted within new residential, commercial and industrial subdivisions subject to location and design approval from the local authority.
- c) Pole mounted substations may be permitted in rural subdivisions.
- d) Pole mounted substations may be allowed in existing overhead electrical reticulation.
- e) Substations shall be located in the berm, clear of designated vehicular access ways by a minimum of 1.0m 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. The line owner is to determine the size of the recess.
- f) Adequate public protection shall be provided at all substation sites, giving consideration to:



- i. Earthing (NZECP 35);
- ii. Physical location to minimise the risk of damage by vehicles; and
- iii. Security to protect against public access to electrical contents.

### **10.2.10 Design Approvals**

Prior to any works commencing on site, the following requirements shall be submitted and approved:

- a) A design plan detailing the proposed electrical reticulation, works, street lighting and connection points.
- b) The plan shall bear a design statement covering the following:
  - i. Before diversity load per lot (ie, 15 kVA per residential lot).
  - ii. Compliance with the line owner's design and construction standards.
  - iii. Compliance with the Engineering Standards and Policies; and
  - iv. A list of easement requirements for any electrical reticulation works on private property to be vested with the line owner and a list of reciprocal rights for service main cables or ducts over shared right-of-ways or easements for service main cables crossing titled property.
  - v. Street lighting design plan design in accordance with ASNZ1158 including a lighting ISO graph.
- c) Line owner signed approval of the design plan.
- d) Council signed approval of the design plan (for subdivision or large area electrical reticulation).
- e) Prior to the 224 certification stage, the following details shall be forwarded via the Designer to Council:
  - i. A letter of acceptance by the line owner confirming that:
  - ii. As-built documentation has been filed; and
  - iii. The electrical reticulation works has been lived and fulfils the line owner's design and construction standards and any other line owner requirements.

### **10.2.11 Cable Locations**

- (a) The location of electrical reticulation assets and works shall be shown on the design plan, with all variations authorised by the network line operator's representative.
- (b) 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.
- (c) shows the minimum clearances from power cables follows. TDC Drawings 1000 and 1001 show the general layout of services.

**Table 10-2 Minimum Separations between 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, 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

LV = Low voltage, any voltage exceeding 50 volts ac or 120 volts ripple free DC but not exceeding 1000 volts AC or 1500 volts ripple free DC  
 HV = High voltage, from any voltage exceeding 1000 volts AC or 1500 volts ripple free DC

- a) Protection shall take the form of either:
- i. 50mm thick non metallic reinforced concrete slabs (usually 150mm wide and 500mm long); or
  - ii. 100mm x 50mm ground retention treated timber with a minimum specification of the New Zealand Timber Preservation Authority classification h4 group b; or
  - iii. 5mm polymeric cable cover to AS4702.
- b) 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. The rubber “o” ring sealed pipe is the preferred type of duct and will replace solvent cement glued ducting in the long term.
- c) The base of the trench shall be level with large objects removed. The duct pipe shall be bedded in suitable fine soil or pea metal if required. The suitability of the bedding material will be assessed by the line operators.

### 10.2.12 Records

- a) The network utility operator shall keep and maintain as-built records of their reticulation within the road reserve and on private property where the reticulation will be owned by the network utility operator and electrical (safety) regulations.
- b) The line owner shall ensure that they receive and maintain as-built records of the electrical reticulation (works) and ensure that such records are made available upon request and as required, mark out cable routes on site for Council or contractors carrying out works.
- c) Provision of as-built drawings for planned works shall be free of charge to Council and made available with 24-hours prior notice during normal working hours and for emergency call outs with no prior notice at any time.

## 10.3 Street lighting

### 10.3.1 General

- a) Street lighting shall be installed in public roadways and pedestrian and cycle access ways in all urban residential, commercial and industrial subdivisions in accordance with AS/NZ51158.
- b) Street lighting of rural and rural residential shall be at Council's discretion.
- c) The lighting of private rights-of-way and/or gateway structures is not a requirement.
- d) Should a property owner wish to include private right-of-way lighting or lighting of a private sign or structure, all future connection, operating and maintenance costs of such lighting will be met by the property owners benefiting from the lighting. The lights shall be electrically supplied as a sub-circuit from an appropriate residential installation.
- e) Intersection street lighting in rural subdivisions shall be required as shown in the design table in section 6 and be vested with council.
- f) Street lighting installations shall comply with section 10.2.10 and 10.3.2 below
- g) The design shall give consideration to minimising future operating and maintenance costs and unnecessary light spill.
- h) The preferred location of street light columns shall be close to lot boundaries.
- i) Where abnormally wide berms or side slopes are encountered, the street light columns should be set back as far as practicable from the kerb edge.
- j) Street light columns shall be kept clear of:
  - any designated vehicular access or pedestrian way; and
  - vegetation that impedes light output or damages the luminaire, ie, trees knocking them in windy conditions.
- k) Street light cabling shall be a minimum size of 2-core 2.5mm<sup>2</sup> copper neutral screen cable with a sheath thickness of minimum 3.2mm suitable for direct burial and shall comply in all respects to the relevant requirements set down for electrical reticulation design, cabling and fusing. The cable size shall be appropriately sized for the number of light fittings and the distance of cable run.
- l) Road crossing ducts shall be not less than 50mm diameter PVC electrical duct (orange) and be installed at 1.0m deep (900mm cover).
- m) The on/off control of street lights in "one off" or rural situations may be controlled by a daylight switch. If any daylight switch is mounted in a lantern it must be done in such a way that the heat of the lamp will not damage the switch.
- n) Where multiple lights are installed they shall be controlled by ripple control using a suitably rated relay.

- o) Council will maintain a schedule of approved street light columns and lanterns that will be made available upon request.
- p) Being electrical “works” and as the vested owner of streetlight cable, Council will keep such records and plans of those works as will enable Council if required, to readily locate any fittings of those works. (Current Electrical Regulations).

### **10.3.2 Design Specifications**

- a) Columns – NZS3404 steel structures standard AS/NZ/1170.2 Structural Design Actions – Wind Actions
- b) Luminaries - AS/NZS1158.6 General Requirements for Design Construction Performance luminaries for roads and street lighting installation.
- c) AS/NZS1158.1.1 and 1.2: Road lighting part 1: vehicular traffic (category V) lighting performance and installation design requirements.
  - i. AS/NZS1158.1.3 Road lighting part 1.3: vehicular traffic (category V) lighting guide to design, installation, operation and maintenance.
  - ii. AS/NZS1158.3.1 Road lighting part 3.1: pedestrian area (category P) performance and installation design requirements.
- d) Street lighting designs should be carried out in accordance with AS/NZ31158.2 and supported by a street lighting 130 graph plan.

#### **Note:**

Category V lighting is applicable to roads on which the visual requirements of motorists are dominant, eg, main traffic routes.

Category P lighting is applicable to roads on which the visual requirements of pedestrians are dominant, eg, local roads.

In new subdivisions, car parks etc power supply for street lighting shall be vested with Council by means of a pilot wire from a TDC control box looped to individual lighting columns keeping all cables and fuses clear of the network line operator’s boxes. These control boxes will be ripple controlled and shall be managed by TDC.

### **10.3.3 Rural Residential Lighting – “P” Standard (Pedestrian)**

- a) The lighting standard used for rural residential reflects the lower standard of lighting envisaged for these cluster styles and the mitigation potential for “glare” to surrounding areas and the unnecessary lighting of the night sky. The lighting standards may not meet the New Zealand standards but give pedestrians some guidance for walking at night and may give some benefit to road users.
- b) A P4 type 6 light is generally required as per NZS1158. This may be in the form of a bollard light no lower than 800mm in height or a standard light, no higher than 5.0m.

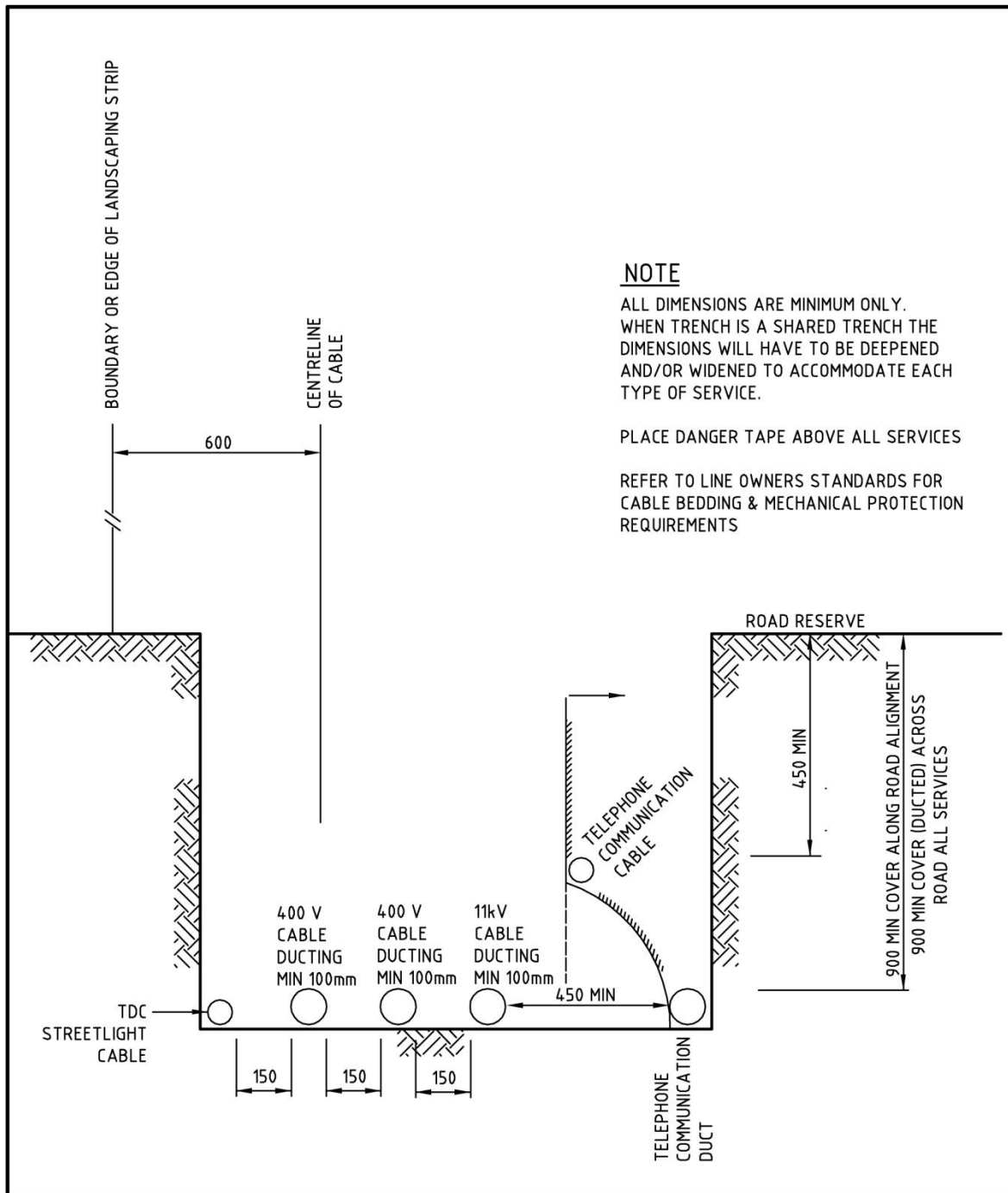
- c) The lights shall be vandal proof with no horizontal light spill. Bollards/lights shall be placed strategically at no more than 100m centres and these locations can be at changes of direction and grade of the footpath.

**Note:** Road intersections still require the mandatory flag lights to be installed.

#### **10.3.4 Streetlight Data Collection**

- a) The Designer or the installing contractor shall submit a completed electronic street light data collection form (available via the Tasman District Council website) to Council for each separate job or section of a continuing job which involves street light construction. Paper forms will not be accepted.
- b) The installing contractor shall provide an as-built drawing to the line owner showing the “network connection point” and the cable route (with dimensions) and a copy of the streetlight connection form to enable the line owner to update their records for line charging purposes.
- c) Being electrical works and as the vested owner of the streetlight, Council will keep such records and plans of those works as will enable Council, if required, to readily locate any fittings of those works. (Current Electrical Regulations sec 59).
- d) For subdivisions, the land owner will be required to meet all power supply charges for lived street lights along with a “Certificate of Compliance” until the final 224 certificate is issued for the subdivision.

# Drawing 1000 Electrical reticulation road reserve




**NOTE**

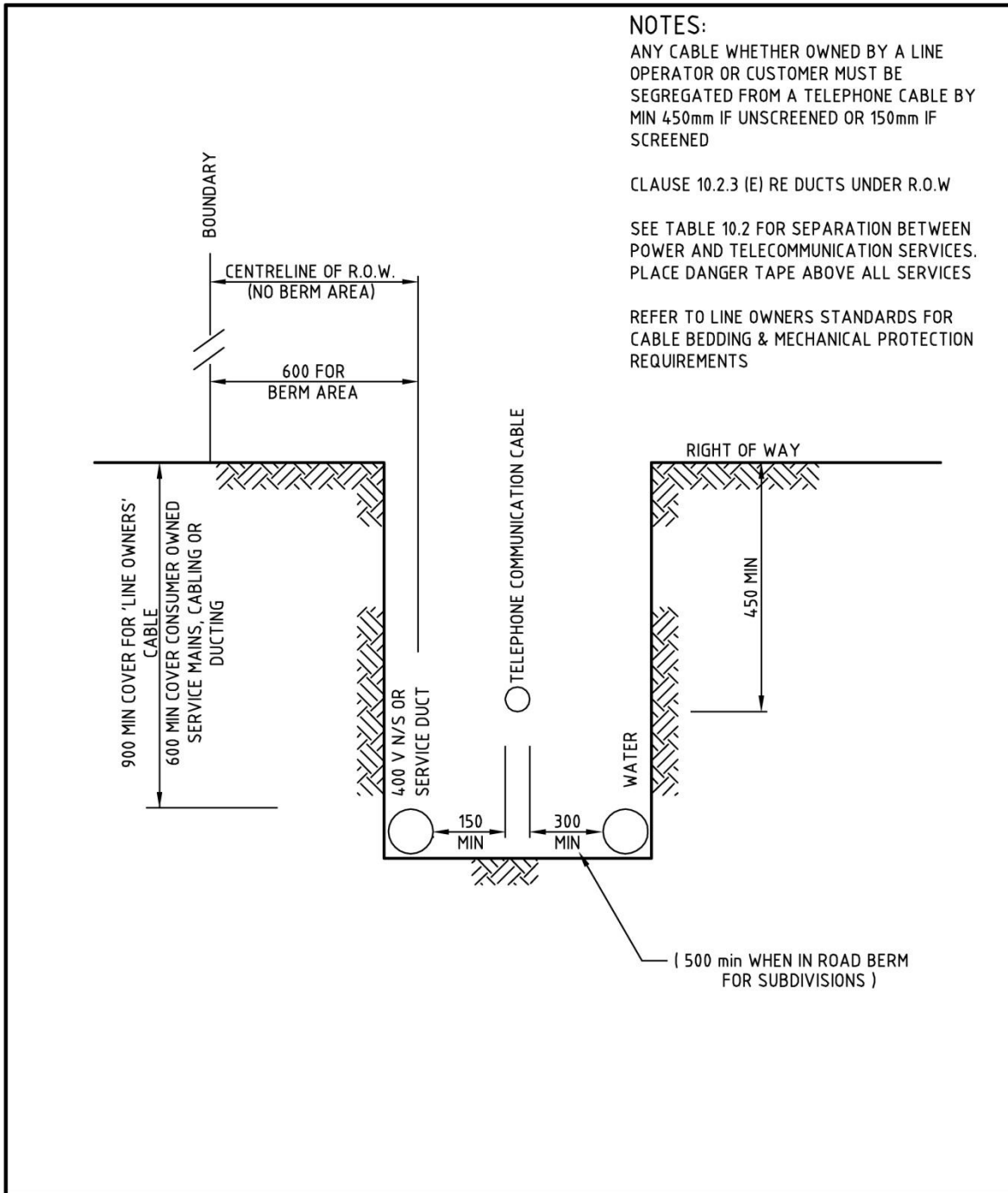
ALL DIMENSIONS ARE MINIMUM ONLY.  
WHEN TRENCH IS A SHARED TRENCH THE DIMENSIONS WILL HAVE TO BE DEEPEMED AND/OR WIDENED TO ACCOMMODATE EACH TYPE OF SERVICE.

PLACE DANGER TAPE ABOVE ALL SERVICES

REFER TO LINE OWNERS STANDARDS FOR CABLE BEDDING & MECHANICAL PROTECTION REQUIREMENTS

	<h2>ELECTRICAL RETICULATION ROAD RESERVE (DEPTH, LOCATION &amp; CLEARANCES)</h2>	
	<p style="text-align: center;"><b>ASSET MANAGEMENT ENGINEERING</b></p> <p>APPROVED: <i>[Signature]</i> ENGINEERING MANAGER</p>	<p style="text-align: center;">NOVEMBER 2013 DATE</p>

# Drawing 1001 Electrical reticulation right of way





**NOTES:**

ANY CABLE WHETHER OWNED BY A LINE OPERATOR OR CUSTOMER MUST BE SEGREGATED FROM A TELEPHONE CABLE BY MIN 450mm IF UNSCREENED OR 150mm IF SCREENED

CLAUSE 10.2.3 (E) RE DUCTS UNDER R.O.W

SEE TABLE 10.2 FOR SEPARATION BETWEEN POWER AND TELECOMMUNICATION SERVICES. PLACE DANGER TAPE ABOVE ALL SERVICES

REFER TO LINE OWNERS STANDARDS FOR CABLE BEDDING & MECHANICAL PROTECTION REQUIREMENTS

	<b>ELECTRICAL RETICULATION RIGHT OF WAY (DEPTH, LOCATION &amp; CLEARANCES)</b>	
	<b>ASSET MANAGEMENT ENGINEERING</b> APPROVED  ENGINEERING MANAGER	NOVEMBER 2013 DATE