Distribution Overhead to Underground Conversion Standard

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FOREWORD

Welcome to Western Power's Eighth Edition, as revised (November 2020), of the Distribution Overhead to Underground Conversion (OUC) Standard (previously known as the Distribution Pole to Pillar (P2P) Standard).

The document has been updated, to reflect the various aspects of Western Power's involvement in the delivery and installation processes for consumer underground connections and small subdivision developments.

Content includes independent stand-alone sections for policies, processes, design requirements, installation requirements and materials and is further supported by Western Power's web page.

The structure also allows the user easier access to other Western Power documents referenced within the Standard, including the Distribution Customer Connection Requirements (DCCR), Underground Distribution Schemes Manual (UDS) and the WA Distribution Connections Manual (WADCM).

The Standard is a 'living document', reviewed and updated on a regular basis to meet the evolving needs of consumers and industry.

The information in this Standard is intended to be beneficial to all stakeholders and we hope you find it easy to read and understand. It reflects Western Power's commitment to continuous improvement and our desire to work closely with the community and relevant industry participants.

In keeping with this philosophy, we value your feedback on any aspect of this document and ongoing support.

Ben Bristow

Head of Network Planning

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Contents

1. Purpose

This document specifies the conditions under which Western Power will provide a domestic underground service within an existing overhead electricity distribution network.

2. Application

This Standard applies to the Western Power's electricity distribution network within South West Interconnected System (SWIS). Application of this Standard and subsequent amendments applies to all new connection/supply arrangements. The requirements are not retrospective unless an existing arrangement, connection or electrical installation or part thereof is altered, modified, upgraded or constitutes a safety issue as determined by an authorised inspector designated under the Energy Coordination Act 1994.

2.1 Date of application

These requirements apply to all new connections as of the date of publication of this document.

2.2 References

This Standard is to be read in conjunction with the latest versions of the following reference documents:

- Australian Standard AS/NZS 3000 – 2018 Wiring Rules (Where nominated)
- Distribution Customer Connection s Requirements. (DCCR)
- Electricity Networks Access Code (ENAC) 2004, as at 23 December 2016.
- Network Integration Guideline (NIG) for Inverter Embedded Generation – Guideline.
- Switchboard Arrangement for Small Strata lot Developments – Guideline.
- Underground Distribution Schemes Manual. (UDS)
- Utility Providers Code of Practice. (UPCoP)
- Western Australian Distribution Connections Manual. (WADCM)
- Western Australian Electrical Requirements. (WAER)

3. Definitions

Terms and definitions used in this document

Term	Definition
Consumer mains	Those conductors between the point of connection/supply and the main switchboard. Refer to Clause 1.4.37 of AS/NZS 3000.
Hosting Capacity	Hosting capacity as defined by Western Power's Network Integrated Guideline (NIG)
MSB	Main Switchboard
Overhead area	A location where low voltage (415v three-phase or 240v single-phase) overhead mains exist.
Overhead mains	Network wires strung overhead between Western Power's poles to distribute electricity to consumers, but excluding overhead services.

Overhead service	Western Power's service cable strung overhead between a distribution pole and the consumer's point of attachment and point of connection/supply.
Standard dwelling	A dwelling used for domestic residential non-commercial purposes where the network connection does not exceed Standard Supply import and/or Standard Hosting capacity export limits; And The connection does not require the electrical contractor to notify the Network Operator of the new load details or connection of a Distribution Energy Source (DER) thereby initiating an investigation of network capacity.
Standard location	A site within the applicant's property at either junction of the front property and common property boundaries (exclusion zone) unless an acceptable, accessible underground service already exists on an adjacent property. (Refer to WADCM clause 12.5) Note: Exclusion zone is a 1m by 1m parcel of land clear of all utility services, except electrical, and of all obstacles inclusive of vegetation and associated root systems, retaining/boundary walls, fences, concrete, asphalt, paving or structure. Non-electrical utility services shall not pass through or be located within the exclusion zone. (Refer to the UPCoP).
Standard supply	Standard supply as defined by the WA Distribution Connections Manual (WADCM).
Strata or survey strata scheme	Strata scheme (commonly known as built strata) or survey strata scheme as defined by the Strata Titles Act. "built strata" will be considered as survey strata for the purposes of this Standard. Note: Strata, underground service located in a non-standard location will be charged at the quoted amount for the requested installation.
Switchboard	An assembly of circuit protective devices, with or without switchgear, instruments or connecting devices, suitably arranged and mounted for distribution to, and protection of, one or more submains or final sub-circuits, or a combination of both. (AS/NZS 3000 – 2018 –cl 1.4.121)
Switchboard, main	A switchboard from which the supply to the whole electrical installation can be controlled. (AS/NZS 3000 – 2018 –cl 1.4.122)
Underground service	A ground mounted pillar or similar network approved apparatus forming part of Western Power's electricity distribution system, to which the consumer mains cable for the site or dwelling is to be connected.

Table 1: Definition of Terms

4. Standard

Western Power offers, subject to consumer acceptance of the application Terms and Conditions and the requirements as specified in clause 6, a connection via an underground service to a domestic/residential dwelling within an existing overhead distribution network at a predetermined overhead to underground fixed price.

Connections shall be in accordance with the applicable Australian Standards, Western Australian Electrical Requirements (WAER), Underground Distribution Schemes Manual (UDS) and the Western Australian Distribution Connections Manual (WADCM). Examples of acceptable connection/supply arrangements are given in Appendix 1.

4.1 Overhead to underground fixed price

The overhead to underground fixed price will be applied in accordance with the requirements of clause 7 and based on the principle that the installed underground service is wherever possible a shared connection resource to supply adjoining freehold lots.

Western Power, at its discretion, reserves the right to withhold the application of the overhead to underground fixed price where either full cost recovery or revenue offset may apply to the underground service and connection arrangement.

This may occur in (but is not limited to) instances where a suitable existing connection/supply arrangement exists but the consumer requests an arrangement that requires additional network assets to be installed, network reinforcement or a second point of connection/supply in the case of a multiple lot development.

4.2 Lots larger than 2500 square metres.

Where a lot is larger than 2500m^2, satisfies all of the conditions specified in clause 6 excluding 6(IX), and the underground service is positioned within Western Power's standard location then the overhead to underground fixed price may be applied. In all other circumstances the installation of the underground service will be charged at the quoted amount for the requested installation.

4.3 Existing overhead service connections

Any existing overhead service connection(s) must be converted to underground. Redundant overhead consumer's equipment, infrastructure and poles shall be removed, or provision made and validated by Western Power, for the removal of same, on completion of the conversion at the consumer's cost.

4.4 Strata developments

Under this Standard, three and four lot strata schemes or freehold developments, are not eligible for the overhead to underground fixed price.

Where lots are created as a part of a built strata or survey strata scheme the consumer shall:

I. supply and install, a site main switchboard (MSB) connected to the Western Power nominated point of connection/supply via the consumer mains cable to the underground service within the scheme or lot, or to a underground service on an adjacent scheme or lot; or

II. where deemed appropriate by Western Power, to an underground service in a non-standard location to service the strata development.

Note: Consideration shall be given to the maximum permissible consumer mains cable route length from the point of connection/supply to the MSB position within the strata subdivision. (Refer to Sections 11 and 12 of the WADCM).

For a complete description of the network requirements for these types of developments, refer to the:

- Switchboard Arrangement for Small Strata lot Developments – Guideline.
- Underground Distribution Scheme (UDS) Manual for Subdivision arrangements.
- WA Distribution Connections Manual (WADCM) for connection requirements.

4.5 Connection and Supply arrangements

When selecting a connection and supply arrangement due consideration shall be given to:

I. The development and lot minimum requirements, (UDS Section 2);

II. The created of common property and easements to facilitate consumer connections of:
   a. consumer mains cable to the underground service; and
   b. sub-main cables to the site main switchboard, (WAER Section 5);

III. The location of the underground service and switchboard in a position that ensures:
   a. all lots within the subdivision have access to the point of connection/supply; (UDS and WADCM)
   b. that multiple points of supply are not created (WAER Section 3);
   c. the connection arrangement complies with the (WADCM Sections 11 & 12);
   d. the isolation point (MSB) is relevant to the dwelling or dwellings;

IV. The maximum permissible consumers mains cable route length from the point of connection/supply to the MSB or meter position is not exceeded, (WADCM Section 11);

V. Ensuring 24/7 access to the point of connection/supply, metering and protection equipment is available (WADCM Sections 11, 12 and WAER Section 6);

VI. Metering and service equipment is located in accordance with (WADCM Section 11);

VII. Where required, internal private subdivision electricity infrastructure is:
   a. installed and completed (UDS Section 2);
   b. contained within the related property, (WAER Section 9);
   c. capable of accommodating both Standard Supply and Hosting Capacity requirements to each lot within the development without exceeding the capacity of the network connection.

4.6 Application Process

Application for an overhead to underground conversion shall be made via an online Work Request available from Western Power's public website.

5. Service easement requirements

Where a strata lot(s) is created, access to the underground service must be available either through the use of common property or a 136C service easement to facilitate the installation of the associated consumer mains and sub-main cables. Service easements or common property must be a minimum of one metre wide.

If the establishment of common property prevents the subdivision from proceeding then, at Western Power's sole discretion, an easement may be created in lieu. The consumer is responsible for establishing and all costs associated with the creation of easements.

Under Section 136C of the *Transfer of Land Act 1893,* an easement may be created for survey strata lots, to provide for consumer owned services such as electrical and plumbing connections to the requisite utility network. The easement should contain the following notation:

> *"This easement is to allow connection of power to adjoining survey strata lots that forms part of the survey strata scheme. Other services are permitted in this easement provided they do not interfere with the provision of electricity.'*

If a consumer mains cable exists at the time of subdivision then an implied easement over the cable may be deemed to be in place. For further information on implied easements for existing services refer to the Strata Titles Act or Landgate.

In infrequent cases, the location of an existing underground service and consumer mains cable may mean that access is not an issue and hence no common property or easement need be established. Appendix 3 gives examples of this.

Note: Western Power recommends common property or an easement are created in order to minimise the risk of future consumer access disputes.

Refer to Landgate's Strata Titles Practice Manual for further information.

6. Conditions

The following conditions must be met in order to qualify for the overhead to underground fixed price.

I. No more than two dwellings require connection as a result of the subdivision including existing connections;

II. No more than two lots are being created as a result of the subdivision;

III. The electricity supply to each dwelling does not exceed standard supply or hosting capacity limits;

IV. The lot(s) or subdivision are located in an existing overhead area;

V. The proposed underground service position is within Western Power's standard location;

VI. There must be no requirement as prescribed by the Underground Distribution Schemes Manual to remove or relocate an existing distribution or transmission overhead line as a result of the subdivision;

VII. A suitable low voltage overhead distribution network with adequate capacity exists within 60 metres of the lot boundary and the standard underground service location;

VIII. The route from the existing low voltage overhead network to the standard underground service location must be suitable for the installation of low voltage underground cable;

IX. The lots must be residential and less than 2500m^2; except as specified by clause 4.2;

X. The same developer/owner must not have submitted an overhead to underground application for an adjacent or the same lot within the previous 3 (three) years;

XI. A company, organisation, person or group of persons must not progressively seek overhead to underground conversions for an area that should be developed as a underground residential subdivision;

XII. Supply Extension Scheme (SES) charging is not applicable;

XIII. Where applicable, common property or a 136C easement is created to allow consumer mains cable to be connected to the underground service or sub-mains to be connected to the site main switchboard. At Western Power's sole discretion, a service easement may be substituted for common property (Refer clause 5);

XIV. The site (Exclusion Zone and cable route) must be level, free of vegetation, clear of obstructions and ready for the installation of the underground service. Note: Existing structures must be of sufficient distance from the site to permit excavation in accordance with both the OSH Act 1984 and Network Excavation Procedures (Reference EDM 43740956);

XV. The consumer is required to establish and confirm their property boundaries (boundary pegs) in accordance with Western Powers application Terms and Conditions and the requirements of the Western Australian Distribution Connections Manual;

XVI. In addition to these requirements, the installation and connection arrangement shall comply with the regulatory and network requirements as prescribed by the documents listed at clause 2. For examples of these requirements. (Refer to the Appendices)

7. Charges

7.1 General requirements

Provided the conditions of this Standard are met, the overhead to underground fixed price will be applied as prescribed by clause 7.2. Additional charges may apply for connections and the extension or upgrade of Western Power's network.

If the Standard conditions cannot be met, Western Power will on request, provide a quotation for the cost of supplying a connection in accordance with the applicable policies and procedures including any costs associated with the connection, extension or upgrade of the network.

Where an underground service has been installed in an overhead area, consumers who subsequently seek access to the shared underground service will be required to pay the applicable connection fees and charges for each subsequent connection.

7.2 Fixed price charging policy

The overhead to underground fixed price charging criteria as described in this clause, is based on a single dwelling per lot unless otherwise stated. Three and four lot strata schemes are not eligible for the overhead to underground fixed price. Refer to clause 4.4 for further information.

Western Power's public website provides full financial details of the overhead to underground fixed price.

Overhead to underground **Price structure**		
Lot description	**WP standard position**	
	Yes	**No**
Existing dwelling converted from overhead to underground	Fixed price	Quoted price
2 lot strata scheme via a site MSB	Fixed price	Quoted price
3 & 4 lot strata scheme connected via a site MSB (Subject to load constraints)	Quoted price	
A single freehold title lot	Fixed price	Quoted price
2 freehold title lots	Fixed price	Quoted price
3 & 4 freehold title lot development	Quoted price	
Separate freehold title lots connected via a site main switchboard (MSB)	Not Permitted	

Table 2: Pricing Policy

7.3 Examples

The following limited examples have been provided to illustrate the application of the overhead to underground fixed price schedule.

Note [1]: **"**Connections - one" means only one connection to the existing dwelling. Adjacent properties may connect to the network subject to payment of the applicable fees.

Note [2]: "Network connection costs" means that where the final connection to the network is completed by Western Power additions costs may apply.

Note: Locations are generally selected to optimise the existing and future use of pillars or similar apparatus to ensure the most economical overall outcome in relation to existing Western Power infrastructure.

7.3.1 Single freehold lot connection

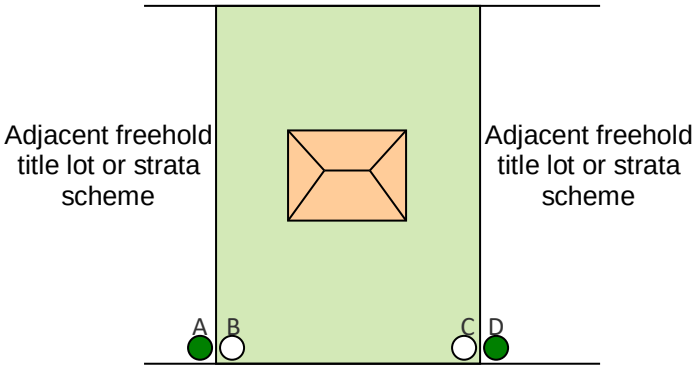


Figure 1

Case 1 - There is an existing pillar at A or D

- Connections: - One[1]
- Charge: - Connection costs[2]
- Common property or service easement: - Not required

Case 2 - There is no pillar at A or D, and a new pillar is required at B or C

- Connections: - One[1]
- Charge: - Fixed price plus connection costs[2]
- Common property or service easement: - Not required

Case 3 - A new pillar is requested at B or C and a suitable pillar exists at A or D

- Connections: - One[1]
- Charge: - Quoted price
- Common property or service easement: - Not required

7.3.2 Two strata lots created in a built/survey strata scheme

Note [2]: "Network connection costs" means that where the final connection to the network is completed by Western Power additions costs may apply.

Note: Western Power does not generally permit, a second or multiple points of connection/supply. Where a property has multiple access points and effective isolation is deemed by Western Power to be a safety concern a second point of supply may be considered subject to compliance with the WAER and WADCM requirements.

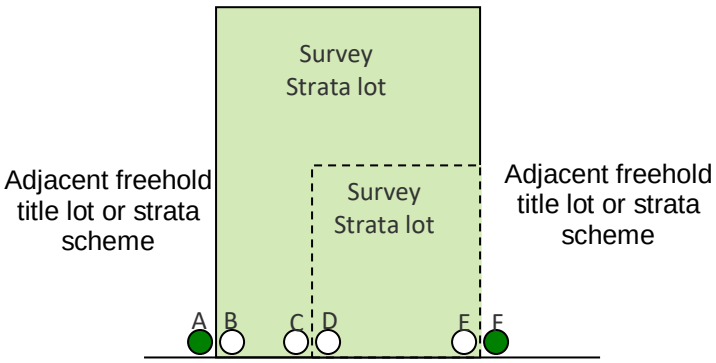


Figure 2

Case 1 - There is an existing pillar at A or F

- Connections: - One, MSB required with sub-mains to each survey strata
- Charge: - Connection costs[2]
- Common property or service easement: - Is required

Case 2 - A new pillar is required at A, B, C, D, E or F (no existing pillar)

- Connections: - One, MSB required with sub-mains to each survey strata
- Charge: - Fixed price plus connection costs[2]
- Common property or service easement: - Is required (except for C or D)

Case 3 - A new pillar is requested at C or D and an suitable pillar exists at A or F

- Connections: - One, MSB required with sub-mains to each survey strata
- Charge: - Quoted price
- Common property or service easement: - Not required

Case 4 - New pillar is requested at B or E with a suitable existing pillar at A or F

- Connections: - One, MSB required with sub-mains to each survey strata
- Charge: - Quoted price
- Common property or service easement: - Is required

Case 5 - A second point of supply (pillar) is requested in accordance with the WAER and WADCM

- Connections: - Two
- Charge: - Quoted price
- Common property or service easement: - May be required

7.3.3 Three strata lots created in a built/survey strata scheme

Note [2]: "Network connection costs" means that where the final connection to the network is completed by Western Power additions costs may apply.

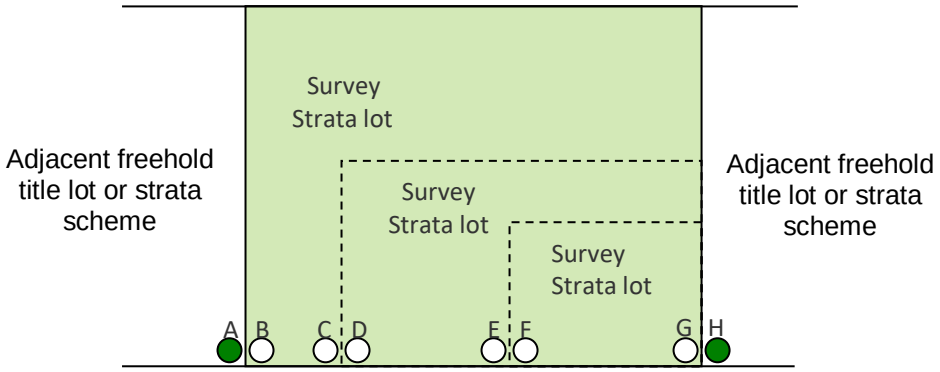


Figure 3

Case 1 - There is a suitable existing pillar at A or H

- Connections: - One, MSB required with sub-mains to each survey strata lot. (Subject to load/Generation constraints)
- Charge: - Connection costs[2]
- Common property or service easement: - Is required

Case 2 - A new pillar is required at B or G and no pillar exists at A or H

- Connections: - One, MSB required with sub-mains to each strata lot
- Charge: - Quoted price
- Common property or service easement: - Is required

Case 3 - A new pillar is requested at B, C, D, E, F or G and a suitable pillar exists at A or H.

- Connections: - One, MSB required with sub-mains to each strata lot;
- Charge: - Quoted price
- Common property or service easement: - Is required

7.3.4 Two freehold title lots created

Note [2]: "Network connection costs" means that where the final connection to the network is completed by Western Power additions costs may apply.

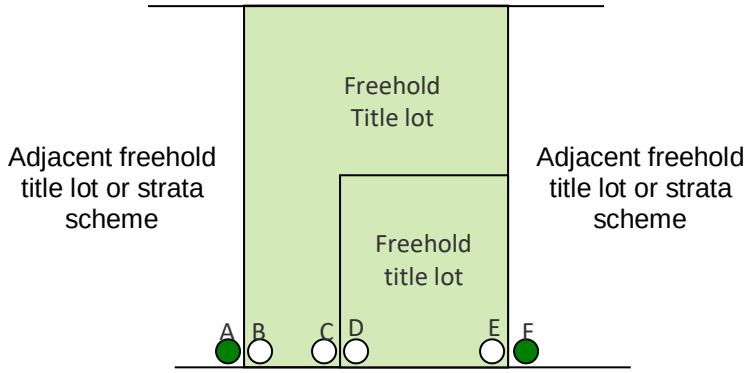


Figure 4

Case 1 - There is an existing pillar at A and F and no new pillar is required.

- Connections: - Two, one for each lot
- Charge: - Connection costs[2]
- Common property or service easement: - Not required

Case 2 - A new pillar is required at A, B, C, D, E and F (no pillar exists at A, B, C, D, E or F).

- Connections: - Two, one for each lot
- Charge: - Fixed price plus connection costs[2]
- Common property or service easement: - Not required

Case 3 - There is an existing pillar at A and F and new pillar is required at B or E.

- Connections: - Two, one for each lot
- Charge: - Quoted price,
- Common property or service easement: - Not required

Case 4 - There is an existing pillar at A but not at F and new pillar is required at C, D or E.

- Connections: - Two, one for each lot
- Charge: - Fixed price plus connection costs[2]
- Common property or service easement: - Not required

8. Existing overhead service

An existing freehold title lot is subdivided into a strata or survey strata scheme with two strata lots. There is one dwelling with existing overhead supply.

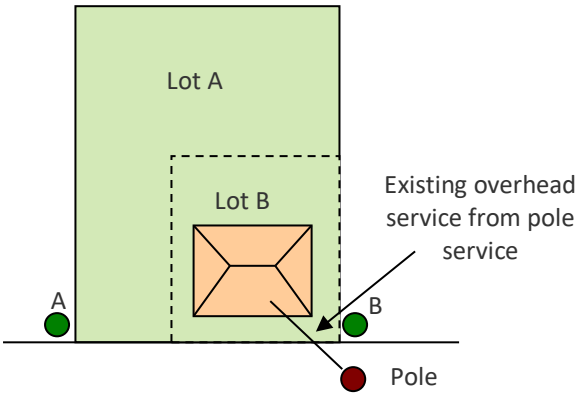


Figure 5

The connection of strata Lot A to pillar A or pillar B requires the existing overhead service to Lot B to be removed and the dwelling on Lot B to be connected via a MSB to same pillar as Lot A.

9. Appendix 1: Western Australian Electrical Requirement (WAER) examples

9.1 Example 1

An existing freehold title lot is subdivided into a strata or survey strata scheme with two strata lots. There is one dwelling with an existing underground supply. These examples show situations where an additional pillar **cannot** be installed on the new strata development unless the existing underground supply is diverted to the new pillar via a site main switchboard.

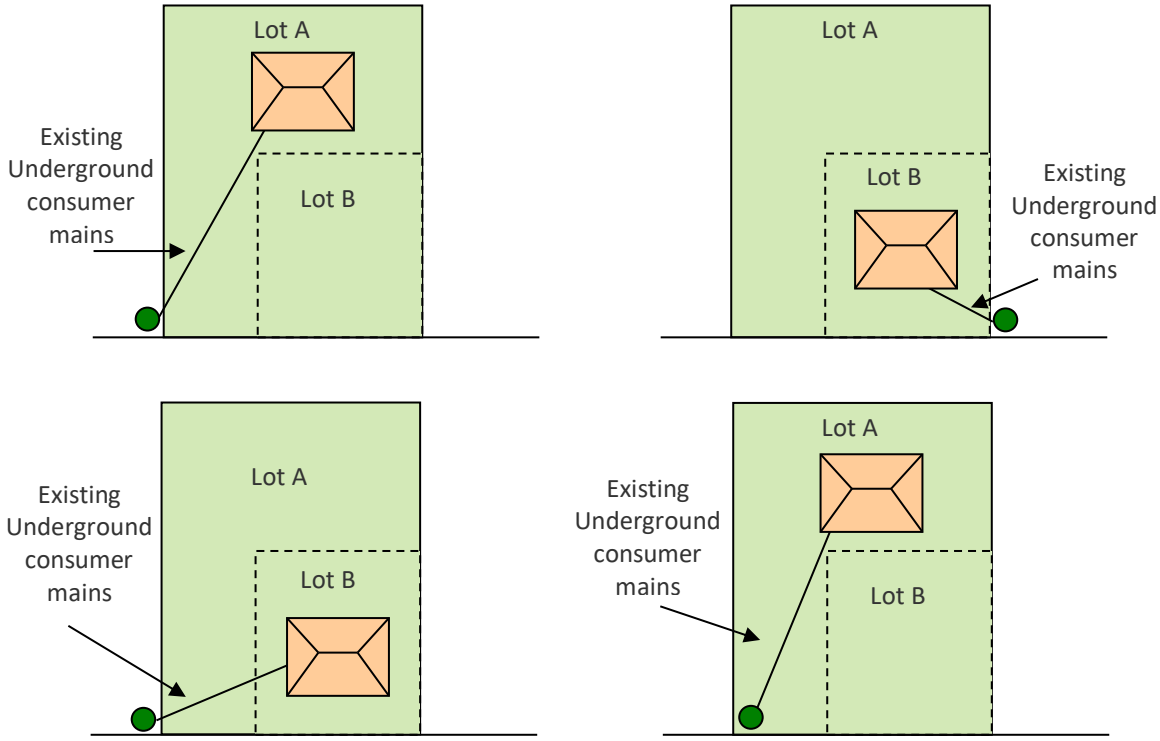


Figure 6

9.2 Example 2

An existing freehold title lot is subdivided into a strata or survey strata scheme with two strata lots. There is one dwelling with an existing underground supply. These examples show where new connections **cannot** be made to an adjacent freehold title lot or adjacent strata scheme.

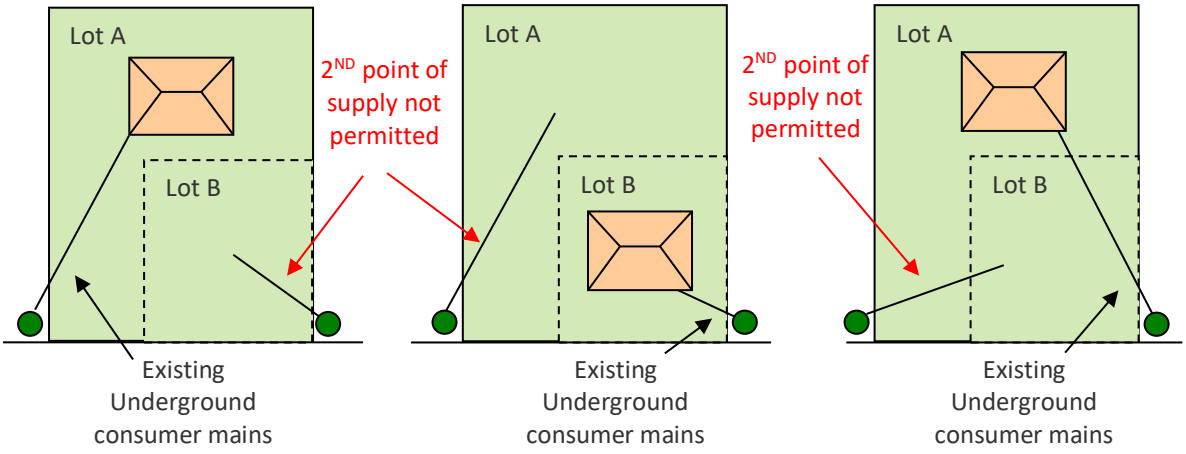


Figure 7

Note: For each case shown in Examples 1 and 2, a MSB must be installed with any retained existing connections redirected underground and connected to the MSB installed for the development.

9.3 Example 3

An existing freehold title lot is subdivided into strata or survey strata scheme with three or more strata lots. A main switchboard (MSB) is required in order to prevent more than one consumer mains being connected to the network from any one strata or any one freehold title lot.

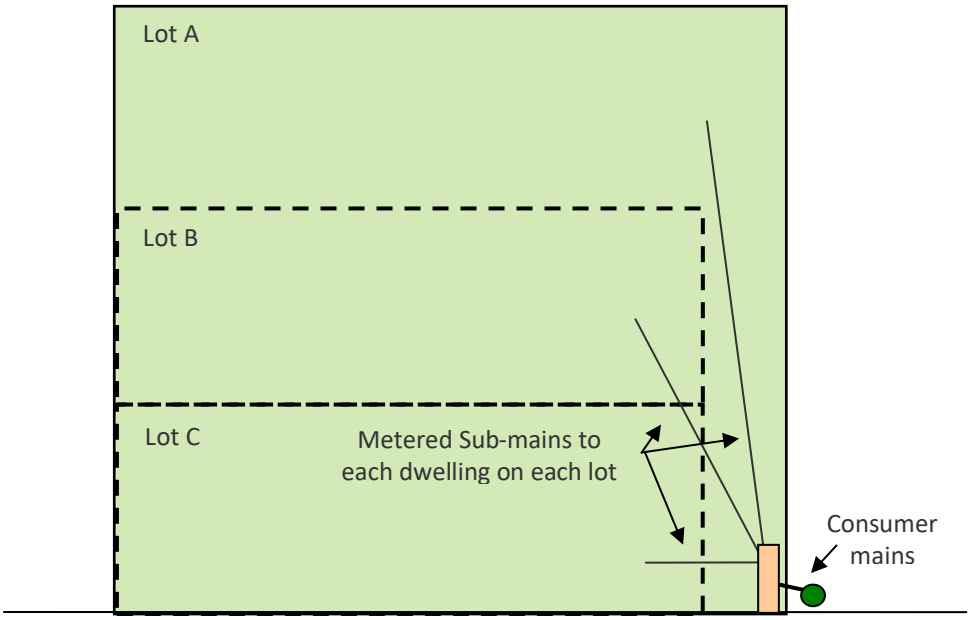
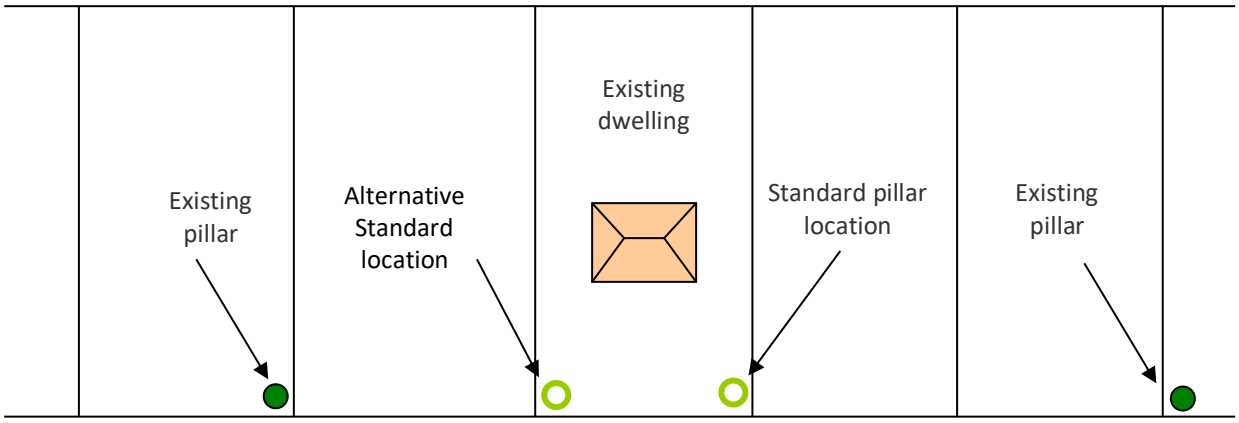


Figure 8

10. Appendix 2 - Examples of Western Power standard equipment locations

10.1 Example 1

A single existing dwelling is converting to underground

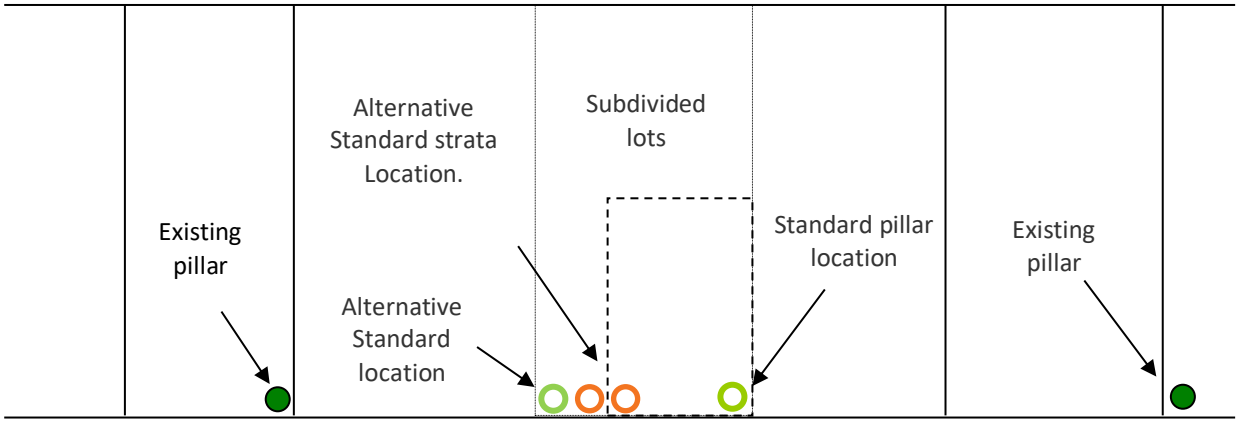


Pillars are generally located at every second lot boundary to ensure effective utilisation of network assets.

Figure 9

10.2 Example 2

Two new strata lots are created on an existing freehold title lot.



The standard location maximises the level of unit utilisation while minimising installation costs therefore ensuring the overhead to underground fixed price is maintained as low as possible. Non-standard locations limit the level of network utilisation.

Figure 10

11. Appendix 3 –Where common property or 136c easement is not required

As stated in clause 5 "Service easement requirements", common property or an easement must be established across survey strata lots to ensure all lots have access to the network with their consumer mains. In some instances the location of the existing network and the existence of consumer mains may mean that access is not required for the new lot and hence no common property need be established. The Strata Title Act provides implied easements for the existing consumer mains in these situations. The following drawings provide examples of such instances.

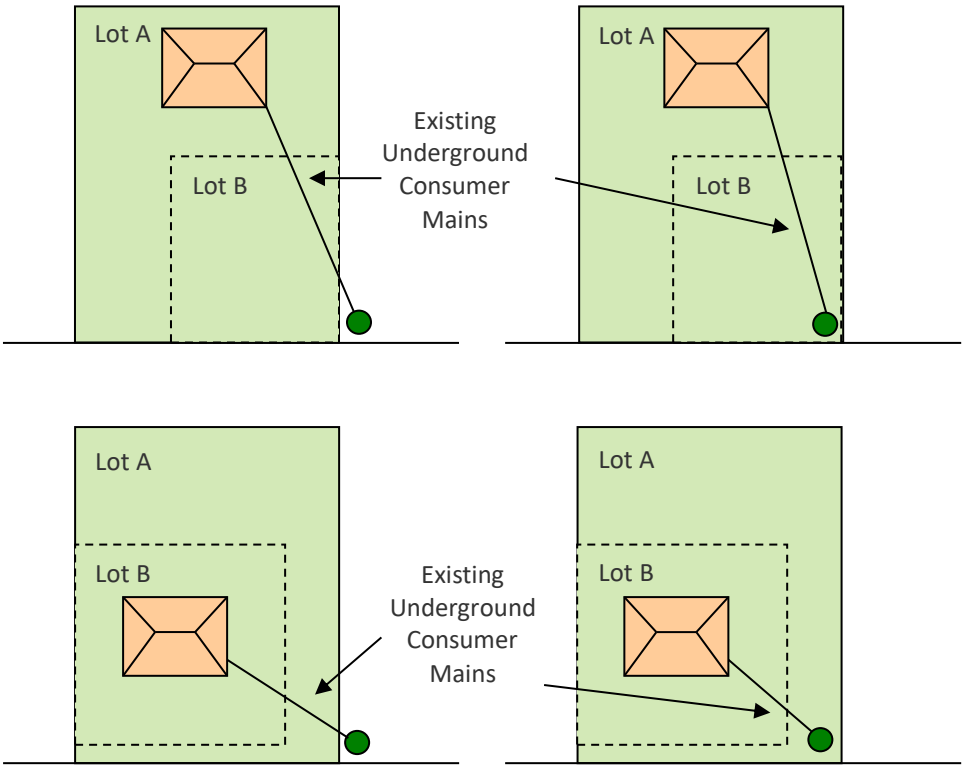


Figure 11

Document End