

NP020

Guidelines for Developers of Subdivisions and Electricity Infrastructure

This document should be read in conjunction with the following documents:

- NP001 Design and Construction of Network Assets
- NP009 Contractor Accreditation
- NP021 Easement Guidelines
- NP041 Electrical Design Consultants

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Authorised by	Prepared by:	Issue Date: 5 November 2008	Status: Approved
Bertram Birk General Manager Power Networks	Thanh Tang Manager Distribution Development	File No: F2008/104	Version: 3

Further Information: For additional information or advice regarding this document, please contact the Manager Network Engineering on 08-89245191

2. Introduction

2.1 Application

The following guidelines to the subdivision of land are applicable only to those areas of the Northern Territory which are:

- serviced by existing electricity distribution networks under the direct control of Power and Water; or
- new electricity extensions to the existing distribution networks to be taken over by Power and Water.

2.2 Purpose

These guidelines have been prepared to provide essential information for developers of land subdivisions where power services are to be provided to all newly created lots and handed over to Power and Water for operations and maintenance.

These guidelines represent minimum requirements acceptable to Power and Water for the planning and layout of the subdivision as well as the design and construction of power services and street lighting.

These guidelines are subject to regular review. It is necessary that developers obtain the up-to-date version located on Power and Water's Web site (www.powerwater.com.au, Doing Business, Building & Development, Power Networks Design & Construction Guidelines, NP020 - Guidelines for Developers of Subdivisions and Electricity Infrastructure) prior to submitting a proposal for a new subdivision development.

2.3 Rights and Obligations

Developer's Rights and Obligations

- (a) In order to subdivide land into two or more lots, a subdivision application must be lodged with the Development Consent Authority (hereafter referred to as DCA). The subdivision layout and appropriate zoning of each newly created lot shall be submitted. All newly created lots in a subdivision layout shall have public road frontage for electricity service connections. Electricity supply service to any lot through another lot is strictly prohibited.
- (b) The Developer shall be responsible for the actual costs (design and installation) of providing a single basic power supply or known maximum demand to each new zoned lots in urban areas, rural areas or industrial/commercial areas and bear the cost of connection to existing electrical distribution system. Reticulation systems shall be designed and constructed in accordance with Power and Water's publication,

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"NP001 Design and Construction of Network Assets". The Developer will provide all reticulation intended for handover to Power and Water, including extensions into battle axe lots.

- (c) It is a requirement that subdivisions and other developments be designed and constructed by accredited electrical consultants and contractors.
- (d) The Developer shall provide survey plans and register appropriate electricity easements for overhead power lines, underground cables, distribution fused pillars, underground residential distribution pillars and substations on newly created lots to Land Titles Office at no cost to Power and Water. Details of various electricity easement requirements and conditions of use are in accordance with Power and Water's publication, "NP021 Easement Guidelines".

- (e) Axe-handled and battle-axe-handled lots are not recommended in all new subdivision developments as they will incur much higher costs in installing customer's internal reticulation to meet an acceptable voltage drop for appliances to properly function.

Where the developers wish to proceed with axe-handle or battle-axe-handled lots, significant extra cost in providing power services by the developers to minimise the low voltage drop shall be complied as follows:

- Establishment of a suitable substation shall be installed at the front boundary of the axe-handled lot with access not more than 300m long;
- High voltage extension and establishment of a suitable substation shall be installed at the end of the battle axe lots or axe-handled lot with access more than 300m long. A 10m wide electricity easement covering the full length of reticulation shall also be required.

- (f) When subdividing an existing serviced lot with current multiple power services, any overhead or underground electricity supply crossing the new property boundaries must be satisfactorily removed/disconnected prior to a power clearance to be issued by Power and Water.
- (g) The Developer has a right to apply for new connection or upgrade of connection to Power and Water's infrastructure where it is assessed suitable.
- (h) The Developer shall notify Power and Water in writing of a proposal to undertake any subdivision development activity and shall obtain assessment and approvals from Power and Water prior to commencing development activity.

The Developer shall comply with Power and Water's technical, procedural and charging documents and also with any specific advice or requirements that Power and Water may issue.

- (i) Where there are existing low voltage mains from which supply can be made available with no immediate requirement for construction, a capacity charge will apply, based on the calculated demand of the new lots.
- (j) The responsibility for providing street lighting rests with the Road Owner. Where the Developer is required to provide street lighting as part of a subdivision, approval of a specific street lighting category requirement must be sought from the Road Owner. Approval by Power and Water of a street lighting drawing refers only to the electrical

design and compliance to standard fittings for suitable operations and maintenance purposes.

Refer the publication NP0027 Capture of Newly Installed Street Lighting policy on Power and Water's Internet site for more details.

Power and Water's Rights and Obligations

Power and Water shall, upon receipt of an application of the Developer's development activity,

- provide written advice to the Developer;
- check and approve the electrical design submission for construction;
- undertake reasonable quality assurance auditing of the works at its own cost. Where excessive re-checking is required, Power and Water may require the Developer to bear the cost of this;
- provide final connection charge for the works carried out by Power and Water at the Developer's cost;
- Issue power clearance letter to the Development Consent Authority when the Developer satisfactorily meets all requirements.

3. Further Information

The following pages provide details of the policy. If further information is required, please contact:

Manager Network Engineering

Power and Water Corporation
GPO Box 37471
Winnellie NT 0821
Fax (08) 8924 5121
Phone (08) 8924 5191

Or

Manager Distribution Development

Power and Water Corporation
GPO Box 37471
Winnellie NT 0821
Fax (08) 8924 5121
Phone (08) 8924 5729

4. Definitions

Axe Handle Lot is a lot connected to a public road by a single narrow access way.

Basic Supply is 10kVA single phase for individual urban and rural residential and 25kVA three phase for rural living customers. In a high density urban residential, basic supply is based on the lot zoning (R2, R3 or R4) and the area of the lot. In an industrial subdivision, the basic supply shall be 25kVA minimum three phase supply or 25kVA maximum unless specific loading is known.

Battle Axe Lots are groups of at least two lots connected to public roads by narrow access ways, with the access ways located adjacent to each other.

Electrical Consultant refers to the certified designer who carries out the subdivision design on behalf of the Developer.

Design Certification

The electrical consultant shall certify all designs as complying with this Policy in the forms set out in Appendices A and B. The certifications shall be attached to the design drawings submitted to Power and Water for approval.

Handover

All works carried out by contractors/developers shall be formally handed over to Power and Water in the forms set out in Appendices F or G as appropriate.

Low Voltage (LV) refers to supply at a nominal voltage of 240 volts or 240/480 volts single phase or 240/415 volts two or three phase \pm 5%. In accordance with changes to the voltage standard brought about by alignment with the international standard, the Authority is moving towards a standard voltage of 230/460 volts single phase or 230/400 volts two or three phase.

Reticulation is any component of an electricity distribution system including the provision of adequate transformer capacity. An electricity distribution system comprises overhead or underground reticulation (underground cables, aerial conductors, switches, and transformers) up to 22,000 volts, owned by Power and Water, and generally located on a gazetted public road.

Road Owner means the appropriate Authority (Department of Planning and Infrastructure or local Council) that has legal rights to control all activities on that road.

Rural Area refers to an area that is not an urban area (see below) and generally refers to lots predominantly larger than 0.4 hectares or outside major town centres (Darwin, Palmerston, Katherine, Tennant Creek, Alice Springs).

Service refers to the low voltage overhead or underground line running from a pole or pillar owned by the Authority, which crosses the property boundary of the lot, and runs to the *Point of Supply* located on the lot.

Serviced means that a low voltage supply is available at some point within servicing distance of the property boundary of a lot.

Servicing Distance means:

- (a) for an overhead service, a distance, not exceeding 40 metres, that permits a service to be run without exceeding the design tension, and while maintaining the required ground clearance as defined in the Standards Manual. Refer also to 5.25 of the *Installation Rules*.
- (b) for an underground service in an underground area, a distance not exceeding 60 metres from the nearest pillar to the point of entry (POE).
- (c) For an underground service in an overhead area, a distance not exceeding 60 metres from the nearest pole carrying low voltage mains to the POE. Refer also to 5.26 of the *Installation Rules*.

Service refers to the low voltage overhead or underground line running from a pole or pillar owned by Power and Water, which crosses the property boundary of the lot, and runs to the Point of Supply located on the lot.

Service and Installation Rules and General Conditions of Supply (the "Service Rules") should be read in conjunction with this Policy. They set out many of the conditions applicable to services and metering.

Unserviced means that there is no low voltage supply available within servicing distance of the property boundary of the lot.

Urban Area generally refers to lots predominantly of up to 0.4 hectares or in major town centres (Darwin, Palmerston, Katherine, Tennant Creek, and Alice Springs) with power services and street lighting may be developed for residential, industrial or commercial purposes.

5. Rural Subdivisions

5.1 General Requirements

In rural areas, electricity reticulation extension using overhead power lines (11kV or 22kV) is accepted by Power and Water as per Standards Manual Volume 1. In specific cases where required by the Development Consent Authority and/or local Council, Power and Water does not object the use of underground power reticulation to new subdivision.

Electrical reticulation shall be required in:

- (a) any subdivision in Litchfield Shire;
- (b) subdivisions less than eight hectares unless they are several km from the existing distribution network to be economically connected;
- (c) subdivisions larger than eight hectares where the surrounding area is reticulated.

Axe-handled and battle-axe-handled lots are not recommended in all new subdivision developments as they will incur much higher costs in installing customer's internal reticulation to meet an acceptable voltage drop for appliances to properly function.

Where the Developer wishes to proceed with axe-handle or battle-axe-handled lots, significant extra cost in providing power services by the Developer to minimise the low voltage drop shall be complied as follows:

- (a) establishment of a suitable substation shall be installed at the front boundary of the axe-handled lot; or
- (b) high voltage extension and establishment of a suitable substation shall be installed at the end of the battle-axe-handled lots. A 10 wide electricity easement covering the full length of reticulation shall also be required.

5.2 Basic Supply

The Developer shall be responsible to provide the basic power supply or known maximum demand to each of the newly created lots in the subdivision:

- (a) 10kVA single phase for rural residential lot or
- (b) 25kVA three phase for other rural zoned lots.

5.3 Charges

(a) Where the basic supply to a subdivision requires minor augmentation work on the existing reticulation, Power and Water will provide the actual charge to carry out the design and installation to the Developer.

(b) Where the basic supply to a small or medium subdivision requires high voltage and/or low voltage extension from the existing reticulation, the Developer shall be responsible for the design and installation of the electrical reticulation by engaging accredited electrical consultant and contractor. Power and Water will carry out auditing, final connection work, testing and commissioning at the Developer's cost.

(c) Where the basic supply to a large subdivision exceeds the existing reticulation's spare capacity, the Developer shall:

- be responsible for the cost of design and installation of high voltage and / or low voltage reticulation; and
- be advised by Power and Water of the cost of providing adequate network capacity to the subdivision's maximum demand requirement.

Power and Water's final connection charge will be provided directly to:

- the Developer; or
- the authorised Project Manager representing the Developer; or
- the successful Contractor advised by the Developer in writing.

Power and Water's final connection charge shall not be provided before the electrical design drawings are approved for construction.

(d) Where the basic supply does not require immediate augmentation work on the existing reticulation, the Developer shall pay a nominal capacity charge (\$50 per kVA) toward the future cost of upgrading the distribution network.

6. Urban Subdivisions

6.1 General Requirements

Electricity reticulation extension in new urban residential areas shall be underground in major town centres (Darwin, Palmerston, Katherine, Tennant Creek, and Alice Springs) as per Power and Water's Standards Manual Volume 2.

Axe handled and battle axe lots are not permitted in urban subdivisions.

6.2 Basic Supply

The Developer shall be responsible to provide the basic supply or known maximum demand to each of the newly created lots in the subdivision based on their specific zonings:

- (a) 10kVA single phase for single dwelling lot (zoned R1 or equivalent) with service cables installed.
- (b) 22VA per m² three phase for duplex or unit lot (zoned R2 or equivalent) with service cables installed for up to three duplex/units. A fused distribution pillar without service cables, will be required for lot intended for more than three duplex/units.
- (c) 55VA per m² three phase for medium density flats (zoned R3 or 4 floors) with a fused distribution pillar.
- (d) 88VA per m² three phase with a fused distribution pillar and provision for a future substation location for high density flats (zoned R4 or 8 floors).

Where the power requirements of the subdivided lots are unknown at the time of the development (eg. zoned CBD or the like), then Power and Water shall require the Developer to provide basic infrastructure, such as conduits, easements, etc... for the future individual developers of each lot to provide specific infrastructure.

6.3 Charges

The same charges that apply for rural subdivisions.

7 Commercial and Industrial Subdivisions

7.1 General Requirements

Power and Water prefers overhead reticulation be provided in new commercial or industrial subdivisions as it is the most economical installation practice and easy to carry out augmentation works when required in future.

Where the Developer wishes to provide underground reticulation or where the existing reticulation is underground, adequate provision for future upgrade of the electrical system, without the need for excavation will be discussed and agreed by Power and Water. This means the provision of adequate conduits, high voltage cable loops, electricity easements for future substations and/or high voltage switchgear. Power and Water may require a covenant on the land title to the effect that the future customer must bear the cost of any augmentation required to supply them.

7.2 Basic Supply

The Developer shall be responsible to provide the basic three phase supply to each of the newly created lots with the minimum capacity as follows:

- (a) Minimum 25kVA per lot (area of 1667 sqm or less);
- (b) 15kVA per 1000sqm, subject to maximum;
- (c) Maximum 50kVA per lot (area of 3333sqm or more), unless specific loading is known.

7.3 Charges

The same charges that apply for rural subdivisions.

8 Design Stage

8.1 Developer's Representative (Project Manager)

The Developer may act for themselves in directly dealing with Power and Water or employ a Project Manager to act as their representative for the subdivision development.

The Developer shall advise Power and Water in writing of the name and contact details of the representative and of any subsequent changes.

Any correspondence, discussion, direction or matter made with or within the knowledge of the Project Manager shall be deemed to be within the knowledge of the Developer.

8.2 Accredited Electrical Consultants

It is a requirement that subdivisions and other developments be designed by accredited electrical consultants. Power and Water will check and approve design drawings at no cost to the Developer.

Power and Water requires that electrical consultants are competent to design electrical assets that will be handed over to Power and Water. Electrical consultants must be accredited by Power and Water. A list of current accredited electrical consultants for subdivision development will be provided to all developers for consideration upon request.

New electrical consultant may apply for accreditation for subdivision development design with proven experience and qualification. New electrical consultant shall submit a Consultant Credential for assessment and be subjected to approval by Manager Network Engineering. Where the quality of workmanship of new electrical consultant is such as to require excessive checking, Power and Water will charge for the additional work at standard consultancy rates.

8.3 Electrical Design Compliance

The Developer shall provide the final subdivision layout and appropriate zoning of each newly created lot to the electrical consultant in order to design the required minimum basic supply.

Electrical consultant shall design the reticulation extension in accordance with the Network Policy NP001 – Design and Construction of Network Assets:

- NP001.1 General Requirements
- NP001.4 General Specification for Overhead Rural Residential Subdivisions
- NP001.5 General Specification for Overhead Commercial and Industrial Subdivisions
- NP001.6 General Specification for URD Subdivisions
- NP001.7 Reliability Criteria for Distribution Networks
- NP001.10 Documentation Requirements

For subdivisions requiring street lighting to meet local Council's road requirements, the electrical consultant shall also follow the Network Policy NP027 – Capture of Newly Installed Street Lighting Information.

Prior to submitting any new electrical design work to Power and Water for checking and approval, the electrical consultant must:

- check on site the accuracy of the existing reticulation network;
- identify all existing services where practicable;
- obtain approval in writing from Road Authority for non-standard power service allocation in road reserve;
- obtain approval in writing with respect to electricity easement requirements from land owners if power assets are on private land;
- obtain approval permit from Aboriginal Areas Protection Authority for sacred site, where applicable;
- obtain environmental assessment from Environmental Protection Authority, where applicable.

The electrical consultant shall certify all electrical and street lighting designs as complying with relevant Network Policies in the forms set out in Appendices A, B and C as appropriate. The certification shall be attached to the design drawings submitted to Power and Water for approval. Refer Network Policy NP001.10 Documentation Requirements for details of design submission by the electrical consultant for checking and construction approval.

All design drawings approved by Power and Water are valid for 12 months from the approved date for constructions. Should this period be exceeded prior to commencement of the construction work or any significant changes have been made, the Developer shall re-engage the electrical consultant to revise the design and re-submit drawings for approval in accordance with current standards.

Any changes in total number of lots or lot zoning, after the design drawings were approved for construction, are not permitted. Power and Water shall object to the Development Consent Authority on the proposed variation application unless the Developer provides a written statement confirming that the electrical consultant shall re-submit the design drawings with the changes for re-approval.

9. Construction Stage

The Developer or Project Manager shall advise Power and Water, in writing, of the successful electrical contractor to carry out the subdivision reticulation extension.

9.1 Accredited Electrical Contractors

Power and Water requires that electrical contractors are competent to construct electrical assets that will be handed over to Power and Water. Electrical contractors must be accredited by Power and Water. A list of current accredited electrical contractors for subdivision development will be provided to all developers for consideration upon request.

New electrical contractor may apply for accreditation for construction of subdivision work with proven experience and licensed staff. New electrical contractor shall submit a Contractor Credential for assessment and be subjected to approval by Manager Network Engineering. The procedure associated with an accredited electrical contractor is contained in Network Policy NP009 – Contractor Accreditation Level 3.

Where the quality of workmanship of new electrical contractor is such as to require excessive auditing, Power and Water will charge for the additional work at standard consultancy rates.

9.2 Construction Compliance

All works carried out by the electrical contractor shall be audited by Power and Water in accordance with the approved design drawings. Any significant changes in the design drawings during construction stage shall be referred to the Developer/Project Manager and the electrical consultant for direction and be approved by Power and Water.

Electrical contractor shall construct the power assets to meet the basic installation practice in accordance with the Network Policy NP001 – Design and Construction of Network Assets:

- NP001.2 General Specification for Underground Electrical Reticulation; or
- NP001.3 General Specification for Overhead Electrical Reticulation.

Electrical contractor shall conduct all activities in compliance with the requirements of Power and Water's Safe Working Procedures, the Green Book, and Work safe's statutory safety requirements. Safety breaches may result in the immediate withdrawal of authorisation for the individual involved, or, where Power and Water believes that the breach or breaches result from a systemic failure in the contractor's safety system, accreditation of the electrical contractor may be withdrawn.

Where the subdivision site is subject to sacred site or environmental requirements, the electrical contractor shall comply with specific conditions indicated by the Aboriginal Areas Protection Authority or Environmental Protection Authority.

Prior to commence the work, the electrical contractor must submit to Power and Water, where appropriate, for auditing purposes:

- Electrical Installation Program – Overhead Reticulation (Appendix C);
- Electrical Installation Program – Underground Reticulation (Appendix D);
- Streetlighting Installation Program (Appendix E).

Failure to submit the appropriate installation program, where critical inspections are missed, may result in refusal to accept the installed power assets; unless specific actions directed by Power and Water are to be satisfactorily carried out by the electrical contractor to verify the required installation. If such work is found non-compliant, Power and Water will require the electrical contractor to remove, remediate or reconstruct the required work at the electrical contractor's cost and advise the Developer/Project Manager in writing.

Power and Water shall carry out random audits during construction stage and a final inspection when the installation is ready for handover. Non-conforming Contractor Report will be issued to the electrical contractor and a copy to the Developer/Project Manager for rectifying action.

9.3 Final Connection Charge

In a typical subdivision installation, final connection works carried out by Power and Water include:

- augmenting present reticulation network suitable for connecting new electrical extension;
- arranging suitable power interruption schedule and informing affected customers;
- conducting tests (local and system earthings, high voltage cables, high voltage switchgear, low voltage insulation and phasing) to comply with required safety standards;
- commissioning new power assets in service.

Power and Water's final connection charge will be provided directly to:

- the Developer; or
- the authorised Project Manager representing the Developer; or
- the successful Contractor advised by the Developer/Project Manager in writing.

In order to raise an invoice for final connection charge, the payee shall provide Power and Water with:

- Company Name;
- Company's Australian Business Number (ABN);
- Contact Person Name, Phone and Fax numbers;
- Postal Address.

After making the payment as soon as practicable, the payee shall provide a copy of the receipt to Power and Water's contract supervisor to organise the final connection works (securing required materials, preparing internal handover of works, requesting suitable shutdown arrangement, etc.). Failure to make prompt payment will cause possible delay in achieving the estimated completion date.

10. Handover Stage

The handover stage is the point where Power and Water has agreed to take control and ownership of new gifted power assets. The following arrangements shall be clearly understood by all parties as to the change of ownership and responsibilities.

10.1 Electrical Contractor

At completion of the subdivision installation, Power and Water shall conduct a final inspection with the electrical contractor. Any defect found shall be rectified as soon as practicable to avoid delays in final connection work by Power and Water.

When defects are satisfactorily rectified and confirmed in writing by Power and Water's contract supervisor, the electrical contractor shall submit to Power and Water:

- Contractor's Certificate of Completion and Handover (Appendix F) certifying that the electrical works have been completed in accordance with the design specification and Power and Water's standards, and all employees, plants, materials and equipment are clear of the work site;
- Any relevant test results (insulation and phasing) as indicated in the design drawings;
- Certificate of Compliance (CoC) for street lighting installation. Power and Water is required to send copies of all CoCs to the Electrical Safety Regulator for inclusion in an audit program.

10.2 The Developer/Project Manager

Prior to issuing a power clearance to the subdivision, the Developer/Project Manager shall submit to Power and Water all of the following:

- (a) Copy of the payment receipt;
- (b) A signed Certificate of Handover of Work by Developer (Appendix G). Only the Developer himself or director of the company has the authorisation to sign off the form. The defects Liability Period will be two years starting from the date Power and Water accepts the Contractor's Certificate of Completion and Handover;
- (c) Copy of survey plans showing correct new lot numbers, road names and appropriate electricity easement where applicable;
- (d) "As Constructed" drawings in A1, A3 hard copies and dgn electronic copy. "As Constructed" drawings must have correct new lot numbers and road names. "As Constructed" drawings which in the opinion of Power and Water are of an inadequate standard shall be rejected. In particular, any information in "As Constructed" drawings that are not clear and legible at A3 sized hard copies will be rejected;
- (e) Copy of the Development Consent Authority's Development Permit and associated variation permits or Department of Planning & Infrastructure's official subdivision documents (Conditional Certificate of Acceptance and Handover of Works, Certificate of Acceptance and Handover of Works, Authority to Release Titles);

10.3 Power and Water

After receiving all relevant documents from the Developer/Project Manager at the handover stage, Power and Water shall:

- (a) check the accuracy and quality of "As Constructed" drawings against original design drawings;
- (b) check proposed electricity easements being at correct locations and in compliance with standard requirements;
- (c) issue power clearance letter for the Developer's Development Permit or sign off the Department of Planning & Infrastructure's official subdivision documents. An anticipated date when power services are expected to be available to the subdivision will be given;
- (d) sign off the submitted Certificate of Handover of Work by Developer with 2 year defects Liability Period and send a copy to the Developer;
- (e) arrange for final connection works to place newly installed power assets safely into service;
- (f) take over the ownership of the gifted assets for operations.

11. Defects Liability

11.1 Defects Liability Period

Defects Liability Period of two years shall commence from the date Power and Water's formal advice of acceptance. During this period, Power and Water will carry out operational maintenance in accordance with its normal practice and the Developer shall be held responsible for all maintenance costs resulting from defective workmanship and materials. Defective items becoming apparent during the defects Liability Period will be referred to the Developer for remedial action.

If the remedial action is not completed within the time required by Power and Water, or if it is of an emergency nature, repairs will be made by Power and Water at the Developer's expense. The letter of Release of Defects Liability will not be issued until payment for such repair has been received and appropriate legal action against the Developer may also be considered.

11.2 Release of Defects Liability

Shortly before the end of the Defects Liability Period, the Developer or Project Manager shall arrange for a joint inspection to be made, together with Power and Water's Contract Supervisor, to determine if there are any defective items requiring rectification by the Developer.

Following the joint inspection and after rectification of defective items, if any, Power and Water will issue a letter acknowledging that the Developer is released from any further defects liability for that subdivision.

12. Power Compliance for Electricity Infrastructure Upgrade

The Developer shall be responsible for the full cost of electricity infrastructure upgrade (design and installation) on the property that requires a rezoning or consolidation application to be lodged with Development Assessment Services (DAS) for Specific Development or Specific Use. Power and Water shall be responsible for upgrading the capacity of the distribution networks to meet the revised overall maximum power demand of the development. The Developer shall follow the same procedure as previously stated for a subdivision process (Refer Section 8. Design Stage, Section 9. Construction Stage and Section 10. Handover Stage) to obtain a power authorisation.

For a proposed development/building extension without a DAS rezoning application on a serviced lot with limited capacity available, the Developer shall comply with the following procedure in order to secure the electricity infrastructure upgrade work and obtain a power clearance authorisation at completion stage of the development:

12.1 Revised Overall Maximum Demand (Power)

The Developer shall engage an electrical consultant or licensed electrician to prepare a revised overall maximum demand calculation and submit to Power and Water for assessment advice. Power and Water shall verify existing connected loads and make assessment on proposed connected loads impacting on distribution network capability. As a result, Power and Water shall ascertain specific Point of Entry (POE) and method of supply (substation or low voltage distribution pillar establishment) to the electrical consultant or licensed electrician that would meet the power requirement of the development. In specific cases where an indoor substation building is required or a preferred location is decided by the Developer, the electrical consultant shall prepare and submit design drawings to Power and Water for checking and approval.

The electrical consultant or licensed electrician must not assume that existing power service would be suitable for any electricity upgrade requirement. Failure to obtain a written advice for a suitable POE and an approved Customer's Main Switch Board location of the development from Power and Water could result in rejection of final connection to the electricity distribution network.

12.2 Charges

Prior to commencement of any electrical installation/extension work on the property, the licensed electrician shall submit a "Notice of Intention to Wire" (NIW) form with details of a revised overall maximum demand figure and the payee's contact to a Customer Connections Officer at the nearest Power and Water office.

In order to raise an invoice for payment, the payee's details must include:

- Company Name;
- Company's Australian Business Number (ABN);
- Contact Person Name, Phone and Fax numbers and email address (if applicable);

- Postal Address.

Upon receiving the NIW form with a confirmed overall maximum demand figure and required details of the payee, Power and Water shall prepare the invoice and a written acknowledgment letter stating the latest anticipated completion time for the design and installation of electricity infrastructure upgrade work. Power and Water will use our best endeavours to better the committed target dates for all developments.

After making the payment as soon as practicable, the payee shall provide a copy of the receipt to the Customer Connections Officer to organise the required electricity upgrade works (securing materials, seeking Road Authority's approval, environmental or sacred site permit, route surveying, design drawings, tender specification, tendering process, installation program, shutdown arrangement, testing and commissioning). Failure to make prompt payment and/or sending the payment receipt back to Power and Water would cause significant delay in achieving the estimated completion date.

12.3 Suitable Location for Required Substation/Low Voltage Distribution Pillar

When establishment of a substation or low voltage distribution pillar is required for the development, the Developer shall provide a plan layout diagram showing a suitable location with appropriate electricity easement (Refer NP021 Easement Guidelines) that must not be in conflict with any other services. Power and Water shall check and stamp approval of the proposed electricity easement. Failure to provide an approved location for substation/low voltage distribution pillar by the Developer; would prevent the design of electricity infrastructure upgrade work to commence and may cause delay in issuing a Development Permit by DAS.

12.4 Customer's Installation by Developer's licensed electrician

The Developer's electrical consultant or licensed electrician shall submit to a Customer Connections Officer appropriate drawings (A1 and A3 sized) showing all relevant details of customer's Mains Switchboard, Sub-Mains switchboards, their locations (typically not exceeding 20m or to be approved by Customer Connections Officer in special cases), distances from Point of Entry (POE), metering arrangements and cable sizes in compliance with Power and Water's:

- NP003 Power Networks Installation Rules;
- NP007 Power Networks Service Rules;
- NP010 Meter Manual.

In cases where an alternative source of electrical supply such as a stand-by diesel generator or photovoltaic generator would be installed, such facilities shall be arranged through suitable interlocking procedures and proposed arrangements must be approved by a Customer Connections Officer.

The licensed electrician only proceeds with the customer' wiring installation after receiving approval stamped on the above mentioned drawings for construction. Failure to obtain the approved Customer's installation drawings of the development

from Power and Water could result in rejection of final connection to the electricity distribution network.

When the customer's installation is completed and ready for connecting to electricity distribution network, the licensed electrician shall submit all relevant "Certificate of Completion" (CoC) to a Customer Connections Officer for final inspection. Power supply connection to the development shall not be carried out by Power and Water until all defects or safety issues identified by Customer Connection Officer are satisfactorily resolved. Submitting the CoC by the licensed electrician prior to actual work completed would not be accepted and may cause further delay in connecting the power service due to re-scheduling a later final inspection arrangement.

12.5 Electricity Connection Service to a Development

Electricity connection service to a development could only be arranged by Power and Water provided that the following documents are received in advance from the Developer:

- All required CoC submitted and final inspection on customer's electrical installations satisfactorily passed;
- Application for Electricity Connection form applied to Power and Water's Retail business with actual customer details for electricity billing.
- Receipt of payment for Service Establishment fee to Power and Water's Retail business.

Failure to arrange any of the above mentioned requirements would result in further delay of connecting the power supply to the electricity distribution network.

12.6 Documents for Requesting a Power Clearance Authorisation

The Developer shall submit to Power and Water the following documents when requesting a power clearance authorisation for the development at completion stage:

- Copy of survey plan(s) showing appropriate electricity easement and correct new lot number (where applicable) for registration to Land Titles Office;
- Copy of DAS Development Permit and associated variation permits;
- "As Constructed" design drawings in A1, A3 hard copies and dgn format electronic copy where applicable. "As Constructed" design drawings must have correct new lot number. "As Constructed" design drawings which in the opinion of Power and Water are of an inadequate standard shall be rejected. In particular, any information in "As Constructed" design drawings that are not clear and legible at A3 sized hard copies will be rejected;
- Signed copy of Electricity Supply Large Customer Agreement letter (applicable in case of indoor substation building);
- Copy of a Building Certificate by a Licensed Building Certifier or accredited Civil Engineering firm confirming that the indoor substation building was built in compliance with Power and Water's fire resistant requirement (4hr fire rating) and

safe building structure for specified heavy load (transformer, high voltage switchgear) transportation.

Failure to arrange any of the above mentioned documents in advance would result in further delay of issuing a power clearance authorisation.

12.7 Power Clearance Authorisation

After receiving all relevant documents from the Developer requesting a power clearance authorisation, Power and Water shall:

- Check the accuracy and quality of "As Constructed" drawings against original design drawings;
- Check proposed electricity easement(s) being at correct locations and in compliance with standard requirements (NP021 Easement Guidelines). Incorrect electricity easement(s) survey plan shall be sent back for amendment;
- Issue a power clearance authorisation letter for the project's Development Permit stating relevant Schedule Conditions are satisfied. The original power clearance authorisation shall be sent to Development Assessment Services or the Developer by request.



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Appendix A **CERTIFICATE OF STREET LIGHTING COMPLIANCE**

PROJECT NAME:STAGE:

SUBURB: CITY / HUNDRED:

STREETLIGHT DRAWING NUMBER (S):

AUTHORITY RESPONSIBLE:

I / We hereby certify that street lighting levels of all public roads in the above project comply with the Council / Department of Planning & Infrastructure requirements with details as follows:

ROAD NAME

LIGHTING CATEROGY

.....
.....
.....
.....

SIGNATURE: **DATE:**

DESIGNER NAME:

CONSULTING FIRM:

CONTACT PHONE: **FAX:**



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Appendix B **CERTIFICATE OF ELECTRICAL DESIGN COMPLIANCE**

PROJECT TITLE:

.....
.....

SUBURB: CITY/TOWN/HUNDRED:

DRAWING TITLE

DRAWING NUMBER

.....
.....
.....
.....
.....

I / We certify that:

- The design complies with Power and Water’s standard design requirements;
- Voltage drop and pole strength complies – (where applicable - calculations attached);
- The accuracy of the existing network has been checked on site and the design verified;
- All existing services have been identified where practicable.

Signature:Date: / /

Name of Designer:

Consulting Firm:

Contact Phone:Fax:

Note that, if incorrect information is provided with a design, and this results in Network Engineering having to make site visits or carry out excessive checking, the design consultant will be required to bear the cost. If there are any queries, please contact the Manager Distribution Development on (08) 8924 5729.



Appendix C - ELECTRICAL INSTALLATION PROGRAM

OVERHEAD DISTRIBUTION

SUBDIVISION:

DEVELOPER:

STAGE:

CONSULTANT:

TOWN:

Electrical Contractor:

Civil Contractor:

	Activity Description	Duration (Days)	Start Date	End Date	Inspection Point
1	Site Clearing				Witnessed
2	Pole Pegging				Witnessed
3	Pole Foundations				Witnessed
4	Pole Erection				Witnessed
5	Pole Dressing				Witnessed
6	Conductor Stringing				Witnessed
7	Earthing Installation				Witnessed
8	Substation Installation				Witnessed
9	Street Light Installation				Witnessed
10	Service Installation				Witnessed
11	Site Cleanup				Witnessed

Anticipated Handover Date: / /

Signature:

Submitted Date: / /

Name:

Company Name:



Appendix D - ELECTRICAL INSTALLATION PROGRAM

UNDERGROUND DISTRIBUTION

SUBDIVISION:

DEVELOPER:

STAGE:

CONSULTANT:

TOWN:

Electrical Contractor:

Civil Contractor:

	Activity Description	Duration (Days)	Start Date	End Date	Inspection Point
1	Trench Excavation				Witnessed
2	HV Cable Laying				Witnessed
3	LV Cable Laying				Witnessed
4	Trench Backfilling				Witnessed
5	Street Light Foundation				Witnessed
6	LV Pillar Installation				Witnessed
7	Street Light Installation				Witnessed
8	Substation Foundation				Witnessed
9	Substation earthing				Witnessed
10	Substation Installation				Witnessed
11	HV Cable Termination				Witnessed
12	LV cable Installation				Witnessed
13	Testing				Witnessed

Anticipated Handover Date: / /

Signature:

Submitted Date: / /

Name:

Company Name:



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Appendix E - **STREET LIGHTING INSTALLATION PROGRAM**

PROJECT:

ROAD OWNER / DEVELOPER:

STREET NAME: TOWN / HUNDRED OF:

ELECTRICAL CONTRACTOR:.....

No. of STREETLIGHTS:.....

APPROVED DRAWING NUMBER(S):.....

	Activity Description	Duration (Days)	Start Date	End Date	Inspection Point
1	Trench Excavation				Witnessed
2	Rag Bolt Installation				Witnessed
3	LV Cable Laying				Witnessed
4	Column Installation				Witnessed
5	LV Pillar Installation				Witnessed
6	Control Box Installation				Witnessed
7	Earthing Installation				Witnessed
8	LV Cable Termination				Witnessed
9	LV Cable Testing				Witnessed

Anticipated Handover Date: / /

Signature:

Submitted Date: / /

Name:

Company Name:

Note that, if the installation is carried without submission of the installation program for auditing, Power and Water will report the unacceptable incident to Contract Accreditation Limited and may refuse to connect the installation.



APPENDIX F

**CONTRACTOR'S CERTIFICATE OF COMPLETION AND HANDOVER -
POWER NETWORK ASSETS**

PROJECT TITLE:

.....

STREET / ROAD:

TOWN / HUNDRED OF :

DESCRIPTION OF COMPLETED ASSETS BEING HANDED OVER:

.....

.....

REFERENCE DRG. Nos:

CONTRACT No:

NAME OF CONTRACTOR:

POSTAL ADDRESS:

CONTRACTOR'S CERTIFICATION:

I certify that the above works have been completed in accordance with the project specification and Power and Water standards, that they are ready for commissioning, and are hereby handed over to Power and Water.

I further certify that all employees and agents of myself and/or my company, and all plant, materials and equipment, are clear of the works, and that all employees and agents have been instructed by myself to keep clear of the works.

DATE OF PRACTICAL COMPLETION:/...../.....

SIGNED BY:

NAME (PLEASE PRINT):

DATED:/...../.....



HANDOVER OF WORKS BY DEVELOPER

Town / Hundred of..... Street / Road

Project Title:

Details of completed assets being handed over:.....

.....

Developer/Constructor:

Postal Address:

Subject to the Developer/Constructor carrying out remedial works by the date specified in the attached list of defects, the power supply to the above lots (or the above work, as the case may be) has been practically completed and is now ready to be taken over by Power and Water for operation and maintenance.

The defects Liability Period will commence on...../...../.....

And expire on...../...../.....

As Constructed Drawing/s No.....

Handed over on Date:/...../.....

Survey/Easement Drawing/s No.....

Handed over on Date:/...../.....

.....

Signed by DEVELOPER

.....

(Print Name)

Date:/...../.....

.....

Power and Water Contracts
Supervisor or Project Officer

.....

(Print Name)

Date:/...../.....

APPROVED

.....

MANAGER NETWORK ENGINEERING

DATE:/...../.....