

**DESIGN INFORMATION PACKAGE FOR Project: 103617
Upgrade/New Installation - Tathra/Boundary Rds, Bega - South East
Regional Hospital, Bega**

Design Information Issue Date: 26/09/2012

Edward Caine (Arup)
Level 10, 201 Kent St
Sydney NSW 2000(0)

Introduction

Thank you for your application requesting electrical reticulation design information for the proposed supply to **Lot 1-3 DP 827161**,

**Project Name: Upgrade/New Installation - Tathra/Boundary Rds, Bega - South East
Regional Hospital, Bega**

Customer Name: South East Regional Hospital Bega

General

1. The project number **103617** has been established and shall be used for all future reference and payment transactions.
2. The content of this design information package has been compiled on the basis of certain conditions and restrictions. The designer shall incorporate these requirements within the electrical reticulation design prepared for presentation to Essential Energy.
3. The design package will be valid for a period of 3 months from the above date.

Connection Point & Specific Design Information

The nominated connection point on the network will be at Asset No: **Between pole CE235400 and pole CE235402.**

Connection Point Voltage: **11,000 Volts 3Ø**

Existing Asset Details

The existing High Voltage Conductor is: **Not Specified - see Design Information for details**
The existing Low Voltage Conductor is: **Not Applicable**

The existing Substation is: **N/A**

- Existing Substation HV Fuses are: **N/A**
- Existing Substation LV Fuses are: **N/A**

New Asset Details:

The Minimum size for the New HV conductor / cable required: **Not Specified - see Design Information for details**

The Minimum size for the New LV conductor / cable required: **Not Specified - see Design Information for details**

The New Substation / size required is: **1500 kVA 3Ø**

- New Substation HV Fuses are: **Custom - SEE NOTES**
- New Substation LV Fuses are: **Circuit Breaker - SEE NOTES**

Pre Allocated Asset Numbers are as follows:

Substation 1 asset numbers are the following.

Sub number= Sub75471

High Voltage Circuit Breaker= B11202

Low Voltage Circuit Breaker= LVB10344

HV Earth Switch Numbers= E16175, E16451, E16452.

HV Cable Switch Numbers= CS15143, CS15144, CS15145.

Substation 2 asset numbers are the following.

Sub number= Sub75472

High Voltage Circuit Breaker= B11203

Low Voltage Circuit Breaker= LVB10345

HV Earth Switch Numbers= E16453, E16454, E16455.

HV Cable Switch Numbers= CS15146, CS15147, CS15148.

New Gas Switch number= G13005.

Please use existing air break number 217 for the replacement of A217. So the new asset number will be G217.

Any additional asset numbers will be provided upon submission of design.

The Primary Tap setting

Primary Tap setting for this transformer is to be included on the drawing for certification.

The primary tap setting for this transformer is

11000/433/250V

General / Specific Project Comments:

New hospital development seeking connection for a maximum demand of approximately 3MVA.T

-Any future load required above 3MVA will require a new high voltage feeder and will be at the full cost to the developer.

-Existing overhead conductor is 7/4.50AAC Hydrogen. This conductor needs to be upgraded to 19/3.75AAC Neon strung at 75degC between pole CE223366 and the nominated

connection point between pole CE235400 and pole CE235402. As per the capital contribution scheme CEOP8019 Essential Energy will contribute \$102,000 to the upgrade.

-As part of the reconductoring works Air Break 15-A217 will need to be upgraded to a gas switch. As per the capital contribution scheme CEOP8019 Essential Energy will contribute \$10,000 to the upgrade of the air break switch to a gas switch.

-New underground HV conductor is to be 11kV 240mm 3 core Aluminium XLPE. Any new overhead high voltage cable is to be 19/3.75AAAC Neon strung at 75degC.

-An isolation gas switch will need to be installed between the nominated connection point and the new high voltage overhead to underground pole.

-New LV conductor to be appropriately sized for the load and voltage drop requirements as set out in the applicable Australian Standards. Standard Essential Energy low voltage conductors must be used.

-HV circuit breaker (ABB PR512/P) is to be used as protection on the high voltage side of the 1500kVA padmount substations. Protection settings can be obtained from CEOP2411 table 3.6.

-LV circuit breaker (ABB Sace Isomax S8 2500) is to be used as protection on the low voltage side of the 1500kVA padmount substations. Protection settings can be obtained from CEOP2411 table 3.6.

Does this Project involve multiple stages?: **No**

This project involves a joint venture or materials to be supplied by Essential Energy: **Yes**

The nearest Essential Energy Depot is: **Bega**

Design Proposal

All design proposals or drawings must comply with the requirements of;

- CEM7001 – Network Services – Design Construction Drawings,
- CEM7097 – Overhead Design Manual,
- CEM7098 – Underground Design Manual, and
- Relevant standards.

Please ensure the following are shown or noted on drawings;

- Trees of heritage or environmental significance,
- Locations of near by airstrips,
- Location of Telstra infrastructure,
- The local government land zoning, and
- Whether the construction is located within a SEPP area.

Designer to ensure that design does not impact on other services, e.g. Telstra, gas, water etc.

Essential Energy may require access to your property for the installation and future maintenance of Essential Energy's assets. You should keep this in mind when planning building works, earth works or tree planting to ensure clear access to our poles, substations, switches, etc – especially for cases of emergency such as storm or fire.

Network Connection Access

Design should endeavour to eliminate Customers outage where possible.

- Unless approved, interruption to the existing customers must be avoided. This may require the ASP to:
 1. Provide a mobile generator, and it's connection
 2. Use of "Live Line Techniques".
 3. Arrange for LV interconnection by Essential Energy staff, where possible.
 4. The ASP is to carry out the connection work using Live LV work methods, that comply with the Electrical Safety Rules, (CEOP 8030)

The cost of any required construction Live Line work shall be borne by the customer and suitable arrangements are to be made by the Level 1 Accredited service Provider (This work can be undertaken by Essential Energy at cost - contact Local Area Manager at an early stage for costs and scheduling of works).

Attached is Customer to Premise to Substation Relationships form. A copy of the completed form must be submitted to contestablework.south@essentialenergy.com.au as soon as practical after customers have been changed to another substation.

The Quality Compliance Coordinator for this project is.

Greg Evans..... Phone.....02 6214 9753

Project Funding & Reimbursement

All costs associated with the installation of the new electrical reticulation assets and the special requirements outlined in this package, including any live line work, shall be the customer's responsibility unless otherwise specified.

Attached is a Re-imbursement Form - customer is required to sign this form regardless of a re-imbursement scheme being implemented or not. Submit this form when plans are submitted for certification.

*Essential Energy's records indicate that there **is not** a pre-existing reimbursement scheme attached to the infrastructure where you request a connection.*

Compulsory Network Fees

Compulsory network fees for this project are calculated in accordance with the Independent Pricing and Regulatory Tribunal of New South Wales, Rule 2000/1, Charges for Monopoly Services.

Your client is to be advised of any compulsory network fees that are applicable to this project.

Design Information Fees applicable for this project are \$ 240.00

Some of the other typical compulsory network fees that may be applicable to this project are:

Design Certification (minimum fee)	\$ 80.00
Inspection (minimum 2 hours)	\$ 120.00
Access Permit (Per Permit)	\$ 1181.00
Substation commissioning (Per Substation)	\$ 886.00
URD Connection/Commissioning fee per lot (in lieu of Access permit and Substation Commissioning fees)	\$ 27.00
Notice of Arrangement	\$ 193.00
Administration Overheads (minimum fee)	\$ 192.00
Design re-checking	\$ 80.00 per hour + GST
Re- inspection	\$ 80.00 per hour + GST

Note – some of the above fees may be subject to change due to design and outage requirements for the project.

The Schedule of rates is available on Essential Energy's website:

www.essentialenergy.com.au/content/Electricity-Network-Pricing-And-Information

GENERAL DESIGN INFORMATION

The design, construction, future maintenance and operation must comply with all relevant acts, regulations and policies including;

- Workcover NSW standards, guides and directives.
- Environmental Protection Authority of NSW standards, guides and directives.
- Relevant Essential Energy Policies and Guides.
- Department of Conservation and Land Management "Urban Erosion & Sediment Control - Field Guide"

All assets installed in the installation are to be in accordance with Essential Energy's manuals, General Terms and Conditions and Non-electrical Work Requirements as well as other documents referred to in these documents.

All materials used in construction must comply with Essential Energy Construction Standards. (Material used outside this standard will need to be approved prior to certification of design).

- Pole Locations as shown on the reticulation plan may not be accurate and should be checked in the field
- All Electronic information should be submitted to:

contestablework.south@essentialenergy.com.au

Easements

It is the applicant's responsibility to obtain easements in favour of Essential Energy over the power line routes through any properties that are affected as outlined in Essential Energy's document CEP 8046, Easement Requirements.

The applicant is responsible for all expense resulting from the establishment of easements including compensation to landholders, solicitors' fees and surveyors' fees.

Before design certification, Essential Energy must have a written undertaking from your Solicitor confirming that all Easement issues, including those associated with compensation to property owners, have been arranged. Your solicitor must provide us with written evidence that all affected property owners consent to the creation of the Easements required, advise us that the Easements are in the process of being created and provide us with a copy of the Deposited Plan showing the Easement when Easement creation has been finalised.

Property owners' names and addresses can be obtained from the Rates Department of the Local Council or the Land & Property Information (LPI).

Your Solicitor and Surveyor should be made aware that Essential Energy's standard recitals have been registered with the Land & Property Information (LPI) (Memorandum AA26009). In your case they should refer to Part A (overhead powerlines), Part B (underground powerlines) and Part C (multipurpose electrical installations) of this Memorandum. Wordings other than the standard recitals as registered with the Land & Property Information (LPI) will not be accepted by Essential Energy.

All negotiation and/or compensation which may be necessary by the creation of an easement for electricity purposes shall be the customer's responsibility.

Essential Energy's brief assessment indicates that Easements are required: **Yes**

Approvals

The customer shall be required to seek the necessary approvals from other relevant authorities that may be affected by the provision of electricity supply to the development site.

The Electricity Supply Act 1995 (NSW) has specific requirements regarding works on public roads and public reserves.

Section 45 of this Act requires that notice of proposed work must be given to the Local Councils and they must be given up to 40 days to comment. Power line construction works must **not** commence in public roads or reserves until 40 days after notice has been given. This requirement can only be waived if the Local Council has provided comment within 40 days and Essential Energy Networks has given due consideration to the comments made.

A copy of the Local Councils comments is to be provided to Essential Energy for consideration before any designs will be approved or released.

If 40 days has lapsed and no comment has been received from the Local Council then the level 3 service provider is to provide to Essential Energy a copy of the notice submitted to the Council in concern.

Design Certification

1. In addition to the specific design parameters outlined in aforementioned clauses, the electrical design shall be prepared in accordance with the technical design requirements as specified in Essential Energy's Standards Manual.
2. The construction plan presented to Essential Energy's Officer for certification shall be prepared in accordance with the standards and specifications outlined in Essential Energy's Drawing Manual.
3. Failure to comply with either, Essential Energy's technical or drawing standards and specifications may result in the rejection of the design or drawing.
4. Plans must be submitted electronically.
5. Certification will remain valid for a period of 6months from date certified.
6. All signed agreement documents shall be submitted in accompaniment with the plans presented for certification.
7. Further details of procedures and fees will be provided upon certification of the design.
8. Return designs for Certification to:

contestablework.south@essentialenergy.com.au

Advice on Capital Contributions & Repayments for Connections to our Network

IPART requires that Essential Energy administer a Reimbursement Scheme for rural and large load customers from 1 July 2002. (IPART Determination No. 1 2002, Capital Contributions and Repayments for Connection to Electricity Distribution Networks in NSW)

As an accredited service provider, you will be required to ascertain if a customer is eligible to participate in a reimbursement scheme prior to advising customers of any costs and connecting to the network system.

Failure to comply with the requirements of the Reimbursement Scheme may result in the withdrawal of authorisation.

Requirements of the Reimbursement Scheme are outlined in Essential Energy's document CEK8020, available on the Essential Energy website at www.essentialenergy.com.au.

Additional advice on the Reimbursement Scheme may be obtained from Essential Energy's Manager Planning in the region in which the work is to be carried out or by telephoning Essential Energy's Business Data Co-ordinator on 13 23 91.

Essential Energy may request the Authorised Accredited Service Provider to undertake associated related works on behalf of Essential Energy. Essential Energy will require a quote before the Notification of Commence Construction is received. Payment for the Essential Energy funded component will be undertaken upon completion and receipt of an invoice from the Authorised Accredited Service Provider.

Environmental

An environmental impact assessment will be required. The assessment is to be completed in accordance with Essential Energy's Environmental Impact Assessment Policy CECM1000.70.

A completed Environmental Assessment Checklist must be submitted with Design Construction Plans for certification by Essential Energy.

Tree Clearing

All trees clearing along the route of the power line shall be the responsibility of the applicant. This work must be done in accordance with the requirements of Essential Energy's standard specification. Clearing should not commence until the consent of all affected landowners and Government bodies has been obtained by the applicant.

Erosion and Sediment Control

Trenching and other civil works involved in electricity installations have the potential to cause site erosion and sediment deposits in waterways if not properly managed. The Clean Waters Act 1970 (NSW) makes it an offence for corporations, employees or contractors to pollute any waters, or cause or permit any waters to be polluted, unless the polluter holds a licence to do so. The Clean Waters Act defines polluting waters very broadly. The definition encompasses the introduction of almost any matter into waters which cause a change of condition of the water. Pollutants include soil, metal, earth and clay.

The applicant shall meet the cost of and carry out any works necessary to implement suitable erosion and sediment control associated with trenching or other civil works. This shall include the development of erosion and sediment control plans.

Erosion and sediment control shall be installed according to the Department of Land and Water Conservation's field guide for erosion and sediment control.

Underground Electrical Works

All underground electricity assets must be located in the correct footpath allocations to comply with Essential Energy and Local Council allocations.

Underground electrical work to be inspected by Essential Energy Quality Compliance Coordinators when trenches are open with conduits installed prior to backfilling and on completion of works.

The developer is responsible to ensure that trench depths comply with mandatory separations between electricity, gas and Telstra as per Essential Energy Underground Construction Standards and or Essential Energy Shared Trench Agreement.

Substation Sites

- Unimpeded access is to be provided for Essential Energy vehicles and staff to the substation sites at all times.
- All padmount substations that are to be installed in area's that may effected by flooding are to be positioned above the 1:100 year flood level, evidence is to be provided by the local council, and made available to Essential Energy.
- All substations shall be positioned in such a location that allows access at all times, by a crane borer/erector.
- If an existing substation structure is being altered for any reason, then the structure is to be brought up to the current Essential Energy standards, in the case of an upgrade of the transformer only, then from the bottom of the EDO's down is to be brought up to the current standard. If there are no Live Line clamps connecting the EDO's to the main, the ASP to fit these during the outage provided.
- It is Essential Energy's preference for DEEP earthing always to be used over shallow earthing.
- Where practical, the preferred earthing system for distribution substations, (excluding SWER substations), is the Common Multiple Earth Neutral (CMEN) system. To achieve this single earthing system common to both the high voltage and low voltage at the substation, it is necessary to achieve impedance values for the substation local earth with and without the LV system Neutral connection.
- The type of earthing to be used based on the field information obtained, is to be specified on the construction drawing for certification.
- Should the ASP be upgrading an existing substation, then the existing earthing should be inspected to see if it is suitable for the new transformer being installed, if not then the earthing is to be upgraded to the current standards by the ASP.
- MDI's should be installed on substations as per Overhead & Underground Construction Standards.
- Where High Fault Levels Exist, it maybe appropriate that Fault Tamer / SMD 20 fuses are used. Where Fault Tamer Fuse's are designated by the Design Information Issuer, consultation will be required with Network Planning regarding fuse sizes and types.

Street Lighting

All lighting designs to comply with Australian Standard 1158.

42 watt compact fluorescent luminaires are to be used as the standard for all minor road lighting.

All street lighting in an underground supplied subdivision is to comply with the underground construction manual CEM-7199 (Document CEM-7206)

All street lighting in an overhead supplied situation is to comply with the same lamp sizes as indicated in the underground manual. Refer to CEM- 7199 (Document CEM- 7206.05)

Restoration of Site

The applicant shall be required to reinstate, restore and clean up trench routes, road crossings and the site generally to the appropriate standards acceptable to the local Council or adjacent property owners which may be affected by such work.

It shall remain the applicant's responsibility to contact the local Council for further details regarding the Local Council's Standard Footpaths and Roadways Restoration Policy and make necessary inspection arrangements as required. Essential Energy will not accept any responsibility for footpaths or roadways requiring attention upon completion of the work performed by the applicant, and subsequent inspection and approval by the local Council.

All removed materials from this project are to be returned to the closest Essential Energy Field Service Centre.

Preventing Interference to Other Network Customers

All motor starting must comply with the NSW Service and Installation Rules. Motors will require an approved form of reduced current starting, and motor re-starting to be delayed or non-automatic (manual) following a power outage.

Large motors, arc furnaces, rectifiers (eg welders), large inverters, single phase to three phase converters, x-ray machines etc. can degrade the power quality at the customer's own installation and cause adverse effects to the supply of other customers and also to Essential Energy's equipment e.g. interference with the frequency injection signal.

The effects from such equipment on power quality may include:

- Voltage sags and swells;
- Harmonics & Inter-harmonics;
- Voltage fluctuations;
- Voltage unbalance;
- Impulsive and oscillatory transients;
- Notching.

Any new load must comply with the relevant Australian Standards, NSW Service and Installation Rules and the Electricity Supply Act 1995 to prevent interference to other customers and electrical equipment.

A power quality logger should be installed before and after the connection where it is suspected that the new load may cause interference to other customers.

Inverter Equipment

Inverter equipment can cause harmonic distortion problems to the distribution network - particularly high impedance rural networks. Single phase to three phase inverters or any motor supply inverter equipment is not to be connected to distribution network unless written approval is granted from Essential Energy. This approval is subject to a report being submitted to Essential Energy proving that harmonic emission levels meet the requirements of AS 61000 series. This should be done on a site by site basis based on impedance levels at the point of connection in the distribution network.

To ensure compliance inverter equipment may need to be fitted with suitable harmonic filtering devices.

Acceptability of Loads and Emission Allocations

Low Voltage Installations

At this stage there is no Australian or IEC standard for the allocation of emissions for low voltage installations/loads. Low voltage equipment must however meet equipment standards such as: AS/NZS61000.3.3, AS/NZS61000.3.5 and AS/NZS61000.3.11 for voltage fluctuations/flicker emissions; AS/NZS61000.3.2, AS/NZS61000.3.4, AS/NZS61000.3.12 for harmonic current emissions.

Customers should be advised that the connection of new equipment must meet these standards.

Compliance with these standards does not assure that the installation will not cause interference to others customers

Medium Voltage Installations

Medium voltage installations/loads are to be considered and allocated emission limits using the guidance of:

- Harmonics HB264 Clause 1.4 to 1.6;
- Voltage Fluctuations/Flicker HB264 Clause 3.5;
- Voltage Unbalance IEC/TR 61000-3-13;
- Voltage Swells Figure S5.1a.1 of the National Electricity Rules should not be exceeded.

Schedule of Forms submitted to Essential Energy:

CEFD9096 - Solicitors' Undertaking that Easement will be Created.

CEFD9090 - Solicitors' Undertaking that Easement has been Created.

CEFD9082 - Consent Form - Customer Funded Project.

CEFD9093 - Consent Form - Schedule of Works Required.

CEFD9097 - Terms of Easement for Overhead Powerlines

CEFD9098 - Terms of Easement for Underground Powerlines.

CEFD9099 - Term of Easement for Multi-purpose Electrical Installation.

CEFD6127 - Public Lighting: Installation and Connection Consent.

CEFD6010 - Design Information

CEFD6011 - Design Submission

CEFD6012 - Notification to Commence Construction

CEFD6013 - Notice of Required Outage / Connection

CEFD6302 - Completion Notice

CEFD6024 - Environmental Impact Assessment Checklist

All these forms and more are available from Essential Energy's website:

www.essentialenergy.com.au/content/contestable-works

Customer - Premise to Substation Relationship Change Record

Description of changes:

Town or Locality:

Field initiated change? Tick Appropriate Yes <input type="checkbox"/> No <input type="checkbox"/>	If 'Yes' Changes authorised by: <div style="border-bottom: 1px solid black; width: 100%;"></div> <div style="text-align: right; font-size: small;">Employee Name</div>
If Yes complete Field Data Collection Section below and forward this sheet to the Planning Manager for the appropriate region	

Or

Project raised by: Tick Appropriate	Planner		Design	✓	Power Quality	
Responsible officer				Number of Premises to be impacted		
WASP No.		Section or Department Reference (optional)				

Changed network data collected by		Field Changes made to the network by	
Employee Name		Employee Name	

Premise address detail Street No/Name	Substation No. before change	Substation No. after change	Meter No.	Date of change

When the field data capture has been completed this form is to be forwarded to the **Planning Manager** for the region in which the change took place. The Planning Manager will then forward the form to the **Network Support Systems Section** at 8 Buller St. Port Macquarie.

Planning Manager Review and Sign Off	Authorising Officer	Date Reviewed	Forward completed form to NSS Section 8 Buller St. Port Macquarie
	<div style="border-bottom: 1px solid black; width: 100%;"></div>	<div style="border-bottom: 1px solid black; width: 100%;"></div>	

Data entry completed by the Network Support Systems Section.	Entered by	Date Entered
<i>ENERGY records updated</i>	<div style="border-bottom: 1px solid black; width: 100%;"></div>	<div style="border-bottom: 1px solid black; width: 100%;"></div>

Shared Asset Reimbursement Scheme Original Customer Agreement

*This Form **MUST** be completed and returned with the submitted design even if not participating in an available reimbursement scheme, provided the customer is eligible to participate*

I/We.....own the land described as:

Lot No: DP No:

I have submitted an Application for Connection; Reference No:

- ☐ **I/We wish to participate** in the Shared Asset Reimbursement Scheme. **Yes** I wish to participate
(If you do wish to participate, please complete the section titled "My Selected Number of Prospective New Customers".)
- ☐ **I/We do not wish to participate** in the Shared Asset Reimbursement Scheme. **I do not** wish to participate
(If you do not wish to participate, please complete your contact details at the bottom of the page, sign and return.)

My Authorised Service Provider has:

- Provided me with information regarding the Shared Asset Reimbursement Scheme.
- Consulted with me to determine the Number of Prospective New Customers.
(If you have not been consulted and need more information regarding the Number of Prospective New Customer please contact your Authorised Service Provider.)

I agree that the box below indicates My Selected Number of Prospective New Customers, connecting to the shared network funded by me: (Please complete)

Description of Contributed Assets	Suggested Number of Prospective New Customers (Service Provider use only)	My Selected Number of Prospective New Customers (Not including myself)
High Voltage line		
Distribution Substation		
Low Voltage line		

The effective commencement date will be the date of the acceptance of offer.

I accept that any reimbursement will be paid only after each New Customer pays a reimbursement to Essential Energy.

I also agree that should I sell the property within the 7 year period I will advise Essential Energy of the date of sale and the name and address of the purchaser, any reimbursement will be paid to the then owner of the property described above.

Expenses for easements and clearing may be added if copies of applicable tax invoices are supplied to the Essential Energy Reimbursement Coordinator before any quotations are prepared for new customers.

My postal address is:

Telephone No./s:

.....
Signature of Owner

.....
Name of Owner (PRINTED)

...../...../.....
Date

Please Return to Authorised Service Provider at: