Appendix B Utility adjustments and consultation

DESIGN INFORMATION PACKAGE
FOR Project: 113154 New Installation - 643 Eurobodalla Rd Eurobodalla - Eurobodalla Southern Storage Environmental Assessment and Detailed Design

Design Information Issue Date: 22/02/2017.

SMEC Australia Pty Ltd
PO Box 356
COOMA NSW 2630

Introduction

Thank you for your application requesting electrical reticulation design information for the proposed supply to **Lot 1, DP 1168581**

Project Address: 643 Eurobodalla Rd Eurobodalla NSW 2537

Customer Name: Eurobodalla Shire Council

General

1. The project number **113154** 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 120 days from the above date. To update the design package, please send an email request to contestableworks@essentialenergy.com.au and quote the project number.

4. Essential Energy is providing this information in good faith, to assist you to complete designs for certification. Essential Energy cannot and does not warrant the accuracy or completeness of the information and does not accept any liability for inaccuracies or lack of information. It is the responsibility of the applicant or Accredited Service Provider to independently confirm the accuracy or otherwise, of any information.

Connection Point & Specific Design Information

The regulatory category for the project is: **Commercial and Industrial Developments**
The nominated connection point on the network will be at Asset No: **TBA.**

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

Existing Asset Details

The existing High Voltage Conductor is: **6/1/3.00 ACSR - Obsolete**
The existing Low Voltage Conductor is: **Not Applicable**

The existing Substation is: **Not Applicable**

- Existing Substation HV Fuses are: **Not Applicable**
- Existing Substation LV Fuses are: **Not Applicable**

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 Applicable**

The New Substation / size required is: **Custom - SEE NOTES**

- New Substation HV Fuses are: **Custom - SEE NOTES**

- New Substation LV Fuses are**: Custom - SEE NOTES**

Pre Allocated Asset Numbers are as follows:
To be issued on request based on the preliminary 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, 11,275/433/250 V

Earth Fault Protection Settings – Refer to Details attached for each site.

Site Asset Number:
Earth fault level at site (Amps):
Zero Sequence X/R at site:
Number of interconnected Substations:
Estimated number of connections per substation:
SEF: (delete one) Y or N
Upstream protective device: Details in table below

Device No	**Device Type**	**EF - I Set Amps**	**EF - Time Multiplier**	**EF - Min Time** (Secs)	**EF - I Inst Amps**	**Error %**	**Add Time** (Secs)	**Min Op A** (Amps)	**Grad Time** (Secs)	**EF Device Type** Curve

General / Specific Project Comments:

New water supply infrastructure Stage 1.

The design information is for stage 1 only. It is assumed that stage 2 will be completed in the future and will require a separate contestable works project.

The existing high voltage line from Bodalla Zone Substation to the existing WTP site will need to re-conducted to cater for the additional load. Re-conductor 5.4km of the existing 6/1/3.00 ACSR/GZ from pole 31/10/167 to substation 31-341with 19/3.75 AAAC.

Upgrade substation 31-341 to a 1MVA padmount substation to cater for the existing and add load at the existing WTP site. The substation is to have 80A HV fuses. 400A is the maximum fuse size for LV distribution circuits. For dedicated customers where the supply is greater than 400A is required, a low voltage circuit breaker shall be used in lieu of fuses.

Any new overhead HV conductor is to be 19/3.75 AAAC. Any new underground HV conductor is to be 3 core 240mm Al XLPE.

All HV and LV underground distribution mains are to be installed in 125mm HD conduit with a spare conduit.

The new dam substation for stage 1 is a 315kVA unit. The HV fuse size for an overhead 315kVA unit is 50A and the LV fuse size is 400A.

There is capacity at the Bodalla Zone Substation to connect the initial 1MW at 11kV. It is to be noted on the design that Planning are to be contacted via planning.sth@essentialenergy.com.au on completion of the project as revised protection settings for the feeder circuit breaker will need to be installed.

Capacity can not be reserved for the future 1.3MW of load, The available capacity and augmentation cost to connect this load would have to be assessed at the time the load is needed. If the future load for stage 2 needs to be discussed further, an enquiry should be sent to our Major Connections Group, networkconnections@essentialenergy.com.au.

Easements are to be obtained for new or any deviated powerlines over neighbouring lands as per CEOP8046.

Zone Substation: Bodalla
Feeder: BODA2 Nerrigundah

SEF: is available and On.

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

Project Funding Arrangements

Essential Energy funded:

- NIL

Customer funded:

- All works

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

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

- CEOM7001 – Network Services – Design Construction Drawings,
- CEOM7097 – Overhead Design Manual,
- CEOM7098 – Underground Design Manual, and
- Relevant standards.

Please ensure the following are shown or noted on drawings;

- Trees of heritage or environmental significance,
- Locations of nearby airstrips,
- Location of other infrastructure (communication, sewer, water)
- The local government land zoning, and
- SEPP area information.

The designer must carry out a Dial Before You Dig search and ensure that design does not impact on other services, e.g. Telecommunication, 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.

Project Reimbursement

Included within this document is a Pioneer Scheme Application form - customer is required to sign this form regardless of a pioneer 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 pioneer scheme attached to the infrastructure where you request a connection.*

The amount payable to Essential Energy by your customer is **$ .00**

Please provide all details of the new customer's name, and address, so as Essential Energy can invoice your customer for the amount noted above.

Essential Energy will make this amount payable to the Original customer before connection of the new customer will be permitted.

Ancillary Network Service (ANS) Charges

Compulsory network fees for this project are calculated in accordance with the Australian Energy Regulator (AER), Charges for Monopoly Services.

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

Total fees for the Design Information stage of this project are $ 1,470.50
Note that invoicing sent to you (separately) will detail the breakup of this amount.

Other fees that may be applied to this project are listed in the document titled 'Price Schedule for Ancillary Network Services - 1 July 2016' that can be found at Essential Energy's website:
(http://www.essentialenergy.com.au/content/electricity-network-pricing-and-information).
Alternatively, further information on the Schedule of rates can be located on the AERs website:
http://www.aer.gov.au/node/11485

*** Note - ANS fees exclude GST and are subject to annual price increases in accordance with the National Regulatory Framework. Care should be taken to select the fee appropriate to this project type. Design certification fees will be based on the date of receipt of a complete and correct submission for certification. All other fees will be based on the work completion date. (eg. date of outage, commissioning, inspection).**

GENERAL DESIGN INFORMATION

The design package submitted must comply with all relevant acts, regulations. standards and policies including;

- WorkCover NSW standards, guides and directives.
- NSW Work Health and Safety Act 2011, and NSW Work Health and Safety Regulation 2011
- Environmental Protection Authority of NSW standards, guides and directives.
- Relevant Essential Energy Policies and Guides.

All materials used in construction must comply with Essential Energy Construction Standards and CEOM7004 – Materials Inventory: Contestability (Approved). Please contact the design information issuer if approval to use non-standard materials is required.
All correspondence and submissions should be sent to:

contestableworks@essentialenergy.com.au

Work Health and Safety

The Work Health and Safety Act 2011 (NSW) and the Work Health and Safety Regulation 2011 (NSW) assign significant responsibilities to designers, constructors and the person who commissions the works.

Regulation 295 of the Work Health and Safety Regulation 2011 requires a designer to provide a design safety report to the person who commissioned the design. For the purpose of this legislation the connection applicant is the person who commissions the design and Essential Energy is the entity who will take ownership of the assets upon connection to the network.

A copy of the designer safety report must be included with every design or design amendment submitted to Essential Energy for certification.

At a minimum, the Designer Safety Report **must** include:

- a description of the purpose for which the plant or structure was designed;
- the results of any calculations, testing, analysis or examination;
- any conditions necessary to ensure that the plant, or structure is without risks to health and safety when used for a purpose for which it was designed, or when carrying out any activity related to the plant or structure such as construction, maintenance and demolition.

The Designer Safety Report should be written with an appropriate level of detail to match the size and complexity of the project.

The level 3 ASP should link or attach the Designer Safety Report to the design construction plans (and other relevant documents) to ensure the safety information contained within the report is considered by future parties who may work on the designed assets (e.g. during construction, maintenance, decommissioning, demolition etc. phases of the asset lifecycle).

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 CEOP8046 Network Planning: 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 AG189384). 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 Level 3 Accredited Service Provider shall be required to seek the necessary approvals from all local councils, road controlling authorities and land occupiers that may be affected by the provision of electricity supply to the development site. The Electricity Supply Act 1995 (NSW), State Environmental Planning Policy (Infrastructure) 2007 (NSW) and the Roads Act 1993 (NSW) have specific requirements in this regard.

Section 45 of the Electricity Supply Act requires that notice of proposed work be given to the Local Council and that they are given up to 40 days to comment. The Level 3 ASP must give due consideration to all responses received.

Regulation 42 of the State Environmental Planning Policy (Infrastructure) 2007 requires that notice of proposed substations or works on an existing substation must be given to the local council and to occupiers of all adjacent land and that they are given up to 21 days to comment. The level 3 ASP must give due consideration to all responses received.

For works in, on or over a classified road, Section 138 of the Roads Act requires the proponent to obtain consent from the appropriate road controlling authority and either consent or concurrence from the RMS.

Copies of all notices to local councils and occupiers of adjacent land as well as any comments received or a letter stating that no response was received within the specified timeframe and any required consent letters are to be provided to Essential Energy with the certification package. A copy of the notice to RMS and other road controlling authority where applicable, as well as written consent must be provided to Essential Energy with the certification package for any works on classified roads.

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 6 months 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: contestableworks@essentialenergy.com.au

Advice on Capital Contributions & Repayments for Connections to our Network

AER requires that Essential Energy administer a Pioneer Scheme from 1 July 2014 in accordance with the requirements of the AER Connection Charge Guidelines for Electricity Retail Customers – Under Chapter 5A of the National Electricity Rules, and Essential Energy's Connection Policy as approved by the AER.

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

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

Requirements of the Pioneer Scheme are outlined in Essential Energy's document CEOP8020, available on the Essential Energy website at www.essentialenergy.com.au.

Additional advice on the Pioneer 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.
- All earthing designs shall be based on Essential Energy's distribution earthing design software package (Neutron) or an alternative software package approved by Essential Energy. Neutron software package is available on request through neutron@essentialenergy.com.au.
- All underground earthing is to comply with the Essential Energy's policy CEOM5113.02 High Voltage A.C. Distribution Earthing Procedure.
- The type of earthing to be used 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 may be appropriate that Fault Tamer / SMD 20 fuses are used. Where Fault Tamer Fuses 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 CEOM7199 (Document CEOM7206)

All street lighting in an overhead supplied situation is to comply with the same lamp sizes as indicated in the underground manual. Refer to CEOM7199 (Document CEOM7206.05)

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 Documents to be submitted with the Certification Package: (but not limited to)

- ☐ Electrical plan for certification (in pdf and dwg format)
- ☐ Voltage drop calculations
- ☐ Pole and conductor loading calculations
- ☐ Neutron earthing report
- ☐ Designer safety report
- ☐ Vegetation clearing management plan (where applicable)
- ☐ Evidence of easement creation or Deed of Agreement
- ☐ All Local Council, Land Occupier, RMS and other authority correspondence and consent
- ☐ Enhancement Letters
- ☐ CEOF9082 – Consent Form – Customer Funded Project.
- ☐ CEOF9093 – Consent Form – Schedule of Works Required.
- ☐ CEOF6011 – Design Submission Form
- ☐ CEOF6283 – Contestable Works: Pioneer Scheme Application (Land Owner Only) or
  CEOF6283.01 – Contestable Works: Pioneer Scheme Application (Land Owner and Leaseholder)
- ☐ CEOF1070.01 – Environmental Impact Assessment: Screening Worksheet
- ☐ CEOF1070.02 – Review of Environmental Factors Worksheet and related searches and approval documents

Essential Energy forms are available at: www.essentialenergy.com.au/content/contestable-works

Incomplete or incorrect certification packages will be rejected (Design rechecking charges will apply to subsequent submissions).

Design information issued by: **Name**: Greg Evans

Contact Number: 02 6455 4145

List of attachments:

- ☐ Smallworld
- ☐ Enmac