WORKS PLAN STANDARD - ELECTRICITY

Contents

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1. General

1.1. Scope

This document provides the standards that apply to all Energex staff and external designers who submit designs that require construction, modification or decommissioning of Energex's electrical distribution network.

It is the intention of this standard to provide a basis for the uniform preparation of all electronic and paper copy records presented for the construction and alterations to Energex assets and for data entry purposes.

This standard does not apply for work carried out on non-Energex assets or on the Energex sub-transmission and transmission networks, although it may be used as a guide.

This standard does not review design or construction practices.

1.2. Application

This document details the standard works plan requirements to be complied with by Energex staff and external designers for the completion of hard copy or electronic works plans for Energex assets.

This standard has been compiled to ensure that the information required by construction and data entry personnel is accurate and consistent and allows the work to be completed, and the data to be processed, without ambiguity.

Adherence to this standard ensures that the requirements of the Regulated Line of Business Information strategy are met. Compliance with this standard is mandatory and subject to audit inspection.

This standard will be reviewed on an annual basis.

1.3. Safety and Work Practices

Designs must allow for optimal utilisation of readily available plant/equipment as well as standard work practices routinely employed in construction and maintenance activities including the application of live-line working procedures where appropriate. Policies surrounding working live must be considered in the finalisation of all designs.

All design works shall be prepared in accordance with:

- Energex Safety Management System – RED 00337
- Energex Safety Manual – RED 00338

2. Changes From Previous Version

Version	Change
7	- Overhead Works Schedule (Appendices A & B) updated in association with introduction of Limit State Design (AS7000). - HV Schematic symbol for Recloser added in Section 11 Table 4.

3. Works Plan Presentation – Electronic Designs (AutoCAD)

The works plan is intended to provide direction for the construction personnel and facilitate the updating of Energex's corporate database encompassing the electrical transmission and distribution network. The maximum size of a hard copy works plan will be A1 (841mm x 594mm). Hard copies shall be printed in black and white. Any works plan submitted electronically must be able to be printed in black and white or be copied without compromising the quality or legibility of the works plan.

3.1. Schedules

Schedules provide a structured layout of information relative to the job and can act as a design aid. Schedules accompany works plans and contain details relating to the works plan. The purpose of each schedule is to reduce the amount of detail and congestion on the works plan, thereby making them clearer and easier to read.

Works plan schedules are not intended to be comprehensive material schedules for estimating or stores issue purposes. It is preferred that the plan and its associated schedules be presented on the same sheet. If this is not practical, then schedules may be grouped on a separate sheet. The order of columns is to be in accordance with templates in this standard however column widths may be varied to suit required information.

The following schedules are to be utilised as applicable for all works plans:

- Overhead Works Schedule
- Overhead Conductor Schedule
- Overhead LV Service Conductor Schedule
- Streetlight Schedule
- Underground Civil Works Schedule
- Underground Cable Schedule
- URD Civil Works Schedule
- Equipment Schedule
- Overhead Sundry Summary Schedule
- Underground Sundry Summary Schedule
- Overhead Sundry Details Schedule
- Underground Sundry Details Schedule
- Copper Cable Recovery Schedule

Appendices A to K detail examples of the relevant schedules to be used for each type of works plan subject.

3.2. Title Block

The title block of a works plan provides information for identification of the location of the work, construction and other service information, including filing and recording data.

The title block is to be in the format depicted in Appendix L, and placed at the bottom of the works plan. The project number shown on the works plan is to be the Energex Construction Phase sub-project number

and is to be accompanied by the project name and brief description of the works. In the case of subdivision or street lighting projects administered by the Subdivision Department, the master project number shall be used. The names and signatures (or typed names) of persons associated with the design are also to be included in this area.

Designers are encouraged to add free text to the address field if required to clarify the work site location or detail access to worksite.

3.3. Page/Sheet Numbering

The pages of the works plan are to be consecutively numbered starting at page 1. Works plans are not to be broken down to smaller sub sections e.g. – Project Number/Stg 1 without the use of consecutive numbering for all of sheets in all of the series.

Where the project is to be staged, the works plan numbering will be:

- Pxxxxx/Stg 1 – Sheets 1 – 5
- Pxxxxx/Stg 2 – Sheets 6 – 8
- Pxxxxx/Stg 3 – Sheets 9 –10

The name 'Stg' can reflect the section of work to be performed like street locations, feeder names etc, e.g. Jones St or CNK-MBK etc

Unless specifically requested, there is no requirement to have separate sheets (drawings) for civil and electrical installations.

3.4. System Diagrams

System diagrams take the form of either geographical schematics or schematic line diagrams. Some works plans require system diagrams for operational purposes. **Geographical schematics are the preferred system diagram requirement** however schematic line diagrams may be used where the extent of the new works is such that it is impractical to draw a clear geographical schematic. Geographical schematics should be drawn to identify how new works fit into the existing network, i.e. as a minimum, for HV - up to the first approved switching point up and down stream; for LV – up to and including all the open points.

Work plans that involve HV and/or LV and/or SL must include a relevant schematic.

Conventions for use of these diagrams are –

- Geographic schematics or schematic line diagrams are both acceptable as system diagrams
- System diagrams are used for operational work associated with the works plan
- System diagrams are to be shown for all system voltage levels affected by the works
- Existing and proposed LV system diagrams must designate all open points of the affected circuit
- Existing and proposed system diagrams are to be shown separately. Where system diagram changes / alterations are sufficiently simple and do not adversely affect clarity of the system diagram, a single system diagram highlighting the alterations proposed may be utilised.

- Network Coupling Point/s associated with Large Customer Connection (LCC) connection assets must be labelled as "Network Coupling Point" and identified on HV system diagrams when required
- HV phasing and transpositions shall be identified on geographic system diagrams
- Complex street lighting circuits and communication routes should have separate system diagrams
- System diagrams are to be grouped together and located near the plan drawing where practical
- System diagrams are to use symbols from the tables of this document
- Proposed new works are shown in dark print, including the first and last site of new circuits

In cases where no transformer is within the bounds of the works plan, the LV system diagram must have an arrow pointing in the general direction of supply with text stating where the LV is supplied from, e.g. "Supplied from SP12345".

3.5. Scaling

Each drawing must have the appropriate scale selected to ensure it is clear and not cluttered to the point of risking ambiguity. The following scales are to be used in the first instance, and deviations from these are to be negotiated and agreed upon on an as-required basis with Design Management:

Plan	HV Schematic	LV Schematic	Detail 'Balloons'
1:500 – UG High Density	1:5000	1:2500	1:100 – Underground
1:1000 – UG standard or OH High Density			1:500 – Overhead or as req'd
1:2500 – OH standard			

Ideally, only one (1) works plan sheet should be produced per natural construction work area. However, this should not be undertaken at the expense of clarity or legibility of the works plan.

3.6. Warning/Caution Boxes

Warning and caution boxes are necessary to highlight risks associated with specific work sites detailed on the works plan, and are to be used wherever necessary to highlight non-routine, specific aspects evident at the site that require care to be identified during construction to avoid damage or injury. These must be clearly visible and large enough to easily attract the attention of construction staff. The boxes are to be located near the affected site, and should include an arrow pointing to the affected site/area.

Examples of some appropriate warning and caution notices appear in Appendix N. These examples are indicative only and by no means limit the choice or wording needed to ensure the safety of staff and the general public.

3.7. Imagery

Imagery screen shots are **not** to be included on the works plans as printing in 'black & white' may distort the image clarity.

3.8. General Notes

General Notes on Works Plans are to be used to highlight worksite specific issues that need to be brought to the attention of construction staff. As such it is important to keep notes to a minimum to ensure the issues raised in notes are matters that would not normally be undertaken generically by constructors and therefore not necessarily read fully.

For example, notes should be used to indicate specific actions required for individual sites, such as landowners requirement to be contacted prior to vehicles entering the property, or to highlight significant risks, such as close proximity to a high pressure water main and the need to contact Link Water - a note such as this may supplement a caution box also used to draw attention to the risk.

Generic notes such as: "*Work to be performed in accordance with Work Place Health and Safety Act*" or "*Work to be carried out in accordance with Energex Construction Manuals*" are not to be placed on Works Plans. Compliance to Energex's Manuals and Work Place Health & Safety requirements is covered in this document under Section 1.3 Safety and Work Practices.

3.9. Electronic Layers

Electronic layers are available with the capability of being active (turned on) or inactive (turned off), depending on what information needs to be displayed at the time.

At the time of the publishing of this standard, Energex's primary drafting and design tool for use by staff is a customisation of AutoCAD and is named Worksplans. Appendix M is a tabular representation of the layers outlining the uses of each individual layer available in Worksplans.

3.10. Overhead Reticulation

Information required on works plans and work schedules that involve overhead are as follows:

3.10.1. Works Plan

DCDB Plan (Digital Cadastre Data Base)

- streets and roads (named)
- allotment boundaries and numbers
- easements, wayleaves
- north indicator

Electrical Installation

- poles (numbered)
- substations e.g., pole transformers (numbered)
- air-break switches (numbered)
- conductors (single line representation only)
- Large Customer Connection (LCC) connect assets (when required)
- transpositions
- shackle points
- LV disconnect links, tie bridging
- phasing of services (See section 4.10)

- stays
- HV phasing
- earthing electrodes
- streetlights
- existing mains, etc, at points of connection
- service connections (particularly around LV open points indicating which side of the open point the service is connected)
- obstructions (e.g., sewers, water mains)
- Premise numbers (house or rural numbers). If not available, lot numbers will be acceptable

HV Schematic
(Geographic or Line Diagram, not necessarily with street outline)
- new HV mains (single line representation only)
- substations e.g., pole transformers (numbered)
- existing HV mains to first switch in each direction
- Network Coupling Point/s associated with Large Customer Connection (LCC) connect assets (when required)

LV Schematic
(Geographic or Line Diagram, not necessarily with street outline)
- new LV mains (single line representation only)
- street names
- substations e.g., pole transformers (numbered)
- disconnect links
- new open points
- existing open points that are to be closed

Street Light Circuit Schematic (as required)
(Geographic, not necessarily with street outline)
- new street light circuit (single line representation only)
- street names
- Energex Point of Supply (start of the street light circuit)
- substations (e.g., pole transformers with site ID's shown)
- phase of supply point for single phase or two phase installations

Labels
- remote connection point
- transformer connections

3.10.2. Schedules

Overhead Work Schedule
- location (address)
- station numbers
- pole numbers (existing, new)

- deviation angles and tensions
- pole sizes (existing, recovered, new)
- sinking depths, pole foundation details
- constructions (existing, recovered, new) (see Appendix B)
- Large Customer Connection (LCC) connect assets (when required)
- Network Coupling Point/s associated with Large Customer Connection (LCC) connect assets (noted in the Remarks column)

Overhead Conductor Schedule
- location (address)
- to & from station numbers
- voltages
- conductors (existing, recovered, new, transferred)
- number of spans
- total lengths (span & cable)
- stringing table (or sag)
- Large Customer Connection (LCC) connect assets (when required)
- Network Coupling Point/s associated with Large Customer Connection (LCC) connect assets (noted in the Remarks column)

LV Service Conductor Schedule
- location (address)
- station numbers
- service existing, recovered, installed, transferred
- number of spans
- conductor length
- fittings

Equipment Schedule
- location (address)
- station numbers
- site id (not mandatory if another schedule can associate the station number with the site id on the same drawing)
- equipment installed, recovered, existing
- description of equipment
- other details of equipment
- Large Customer Connection (LCC) connect assets (when required)
- Network Coupling Point/s associated with Large Customer Connection (LCC) connect assets (noted in the Remarks column)

Streetlight Schedule
- location (address)
- station numbers
- site id

- pole details
- luminaries (existing, recovered, new)
- rate and customer
- bracket/outreach details
- mounting height of street light

Sundry Schedules (if applicable)

- Large Customer Connection (LCC) connect assets (when required)

3.11. Underground Reticulation

Information required on works plans and work schedules that involve underground are as follows:

3.11.1. Works Plan

DCDB Plan (Digital Cadastre Data Base)

- streets and roads (named)
- allotment boundaries and numbers
- easements, wayleaves
- north indicator
- any allocated building pads on large lots associated with subdivision developments

Electrical Installation

- substations e.g., kiosk (Padmount) transformers (numbered)
- service pillars (numbered)
- link pillars (numbered)
- cables (single line representation only)
- cable joints (numbered)
- Large Customer Connection (LCC) connect assets (when required)
- trench cross sections & pipe occupations (see section)
- phasing of services
- earthing electrodes
- jointing to existing mains
- external overhead works
- streetlights
- obstructions or conflicts (e.g., sewers, water mains)
- premise numbers (house or rural numbers). If not available, lot numbers will be acceptable
- non-standard alignments or shallow conduits are to be clearly identified with relevant standards and specifications applied

Substation Site Details

- transformer and switchgear location
- cables (pipe occupations)
- foundation details

Concrete Cable Pits (as required)

- fully dimensioned pit detail showing plan, side and end elevations / cross-sections
- a detailed pit card must be prepared and submitted with the “as-constructed” drawing

Substation LV Panel Arrangement
- LV schematic
- fuse sizes
- nameplate and label details

11kV Ring Main Unit Nameplates & Labels
- at existing and new substations e.g., kiosk (PADMOUNT) transformers

HV Schematic
(Geographic or Line Diagram, not necessarily with street outline)
- new HV mains (single line representation only)
- substations e.g., kiosk (PADMOUNT) transformers (numbered)
- isolators (numbered)
- switch fuses (numbered)
- existing HV mains to first switch in each direction
- Network Coupling Point/s associated with Large Customer Connection (LCC) connect assets (when required)

LV Schematic
(Geographic or Line Diagram, not necessarily with street outline)
- new LV mains (single line representation only)
- street names
- substations e.g., kiosk (PADMOUNT) transformers (numbered)
- link pillars (numbered)
- new open points
- existing open points that are to be closed
- LV switchboards (for new transformers)

Street Light Circuit Schematic (as required)
(Geographic, not necessarily with street outline)
- new street light circuits (single line representation only)
- street names
- Energex Point of Supply (start of the street light circuit)
- substations (e.g., padmounted transformers with site ID’s shown)
- phase of supply point for single phase or two phase installations

3.11.2. Schedules

Underground Civil Works Schedule
- location (address)
- to & from station numbers
- trench dimensions
- conduits and bends (size, number, lengths)

- backfill, protection and reinstatement
- Large Customer Connection (LCC) connect assets (when required)

Underground Cable Schedule
- location (address)
- to & from station numbers
- voltages
- cable size (cross section)
- model number
- lengths
- Large Customer Connection (LCC) connect assets (when required)
- Network Coupling Point/s associated with Large Customer Connection (LCC) connect assets (noted in the Remarks column)

Equipment Schedule
- location (address)
- station numbers
- site id (not mandatory if another schedule can associate the station number with the site id on the same drawing)
- equipment installed, recovered, existing
- description of equipment
- other details of equipment
- Large Customer Connection (LCC) connect assets (when required)
- Network Coupling Point/s associated with Large Customer Connection (LCC) connect assets (noted in the Remarks column)

Streetlight Schedule
- location (address)
- station numbers
- site id
- pole details
- luminaries (existing, recovered, new)
- rate and customer
- bracket/outreach details
- mounting height of street light

3.12. Installation Specifications

All installations shall conform to Energex specifications. These include, but are not limited to:
- Overhead Design Manual – RED 00302
- Overhead Construction Manual - 4920-A4
- Underground Distribution Construction Manual – RED 00305
- Underground Design Manual – 5318-A4
- Resource Estimation Guide – RED 00367

- Public Lighting Design Manual – RED 00767
- Queensland Public Lighting Construction Manual – RED 00796
- Large Customer Connections Manual – RED 00768
- Supply and Planning Manual – RED 00295
- Commercial and Industrial Substations Manual – RED 00293
- Network Labelling and Signage Manual – RED 00297
- Distribution Earthing Manual – RED 00758

3.13. Folding of Works Plans

3.13.1. Concertina

- All works plans are to be folded into **A4** size with the title block shown in the bottom right hand corner.
- All sheets are to be stapled in the top left-hand corner.
- Ensure staple does not prevent sheet from being opened up.

3.13.2. Plan Library Copied Plans

Automatically folded plans from plan library are also acceptable. Ensure staple does not prevent sheet from being opened up.

4. Drafting Standards

Drafting is to be in accordance with Australian Standard AS1100-401. The following are not necessarily covered by the above standard.

4.1. Precision

The precision shall be such that any difference between the actual position of the compiled detail and its position on the source material (hard copy or electronic) shall be not more than 0.5mm at the nominated scale of the source material. For example, a site on a 1:1000 scaled drawing must be located within 0.5 mm of its actual exact location, effectively a tolerance of ±0.5 metres.

4.2. Information Recording

All information depicted on the relevant drawing will be in accordance with symbology as set down under heading 4.3. Details concerning changes to the electrical network are recorded in Energex's corporate database. All installations shall conform to Energex specifications.

Electronic submitted drawings will contain all the standard requirements of Energex with the added feature of supplying this information in a layered structure. Appendix M illustrates the purpose of each layer along with the colour and line weighting associated with that layer.

Information not required to be recorded by Energex, e.g. consumer mains, must be in a separate layer and turned off when submitted.

Submission of electronic drawings will be in accordance with Energex's requirements and processes.

4.3. Symbology

Standard symbols for use on works plans are documented in tables 1 to 7 and are based on Australian Standard AS1100.401 – Engineering Survey and Engineering Survey Design Drawing – where applicable. All symbology relevant to the production of a works plan must conform to that stipulated in these tables. Symbols are to be appropriately proportional to the scale of the drawing.

It is possible that not every combination of equipment may be covered in the symbology shown in the tables. These exceptions may be overcome by combining two or more of the existing standard symbols. If a combination of the standard symbols is required, the symbol will be depicted in descending order using the following principles:

- when individual items of equipment are mounted at different levels, the symbol will be depicted consecutively from the top in descending order.
- when individual items are mounted at the same level, they are to be depicted starting with the equipment immediately above or to the left when observing the site number, proceeding from left to right around the site.

If no appropriate symbol can be formulated then consultation with Network Data Services is recommended.

Note: An optional symbol has been supplied for some equipment. In this case the first symbol shown is the Australian Standard symbol, and the second is an accepted and preferred symbol for Energex drawings and will be used by the Worksplans application.

4.4. Arrangement of Dimensions

Dimensions shall be arranged so as to be readable from the bottom or right hand side of the drawing sheet. Contour values shall be expressed to be read in the direction of ascending height.

All underground joint positions are to be dimensioned on the works plan.

4.5. Site Numbering

A site is a geographic location where equipment may be installed. All sites of Energex's transmission and distribution electrical network are numbered for operational and maintenance purposes.

For internal staff, site ID numbers can be obtained from the SiteID Register which is located on an Energex network drive \\Ntgcca1\SiteIDReg. External designers are provided with a block of unique numbers.

The predominant type of equipment installed at a site will determine the site grade code prefix such as X – switch site, SP pole transformer site, SR- regulator site, P – pole site. Energex Network Information Standards (RED 00631) details the site ID hierarchy convention. When a site has equipment installed or removed the prefix code may change, e.g.:

- An existing pole numbered P12345 is to have a pole transformer installed. The site number is altered to SP12345.
- A pole with an ABS unit installed has a site number of X24680. With the switch to be removed the site number is to revert back to the pole alias P52486, leaving only the pole on site.

- An existing switch site, X13579 is altered to SP13579 when a pole transformer is installed at the site, even though the switch is still present.

Renumbering of sites may lead to inaccuracies and ambiguity and is only necessary when the need arises. The practical implications of renumbering pole sites need to be considered on a case by case basis.

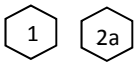
An exception to this is on sites where switches (LBS/PMR/Regulators etc) will be automated. These sites need to be a unique number. Therefore if installing an automated switching device on a pole that does not have a unique number (i.e. has a qualifier such as P12345-B), then this site must be renumbered with a new unique number.

For HV sites, where a plant item is added to the existing site, and the plant is to be controlled remotely, a new unique site number must be allocated where a site exists that has the same number. This is to ensure that Energex does not have any duplicate sites thus allowing the SCADA database to correctly operate. If in doubt contact the Network Automation Group for assistance.

It is not necessary to renumber a site for a pole that has been relocated within the span length. If a pole is relocated across the road or if spans are to be relocated due to a road widening for example, and the relocated spans are to be energised before the original spans are removed, then renumbering will be necessary.

Numerous cable joints can be located at the one site, e.g. in a concrete pit. Joints not sharing the same pit must be given their own site number, e.g. Greenfield earth pits where more than one excavation is necessary to install or relocate individual joints. Where joints overlap, only one site number is necessary.

4.6. Drawing Annotations

1. Station numbers - 

Hexagonal, positioned adjacent to each site of interest, sized to suit works plan. These numbers are unique within each works plan and are necessary for reference to corresponding details in the schedules. Station numbers are to be sequentially used per project and not per sheet. That is, station numbers are to be identified as 1 to Y where Y is the total number of stations across all sheets of the works plan. The station number may have a suffix, for example, an "a" or "b", to associate a site with the main site, such as service poles. The suffix “l” may be used for a street light associated with the site.

2. Conductors – Existing mains (not shown in schedule) shown at commencement and end of mains and along the mains if long run, using the following conductor codes format:

   E.g. 1-7/3.75 (OHEW)
   3-19/3.75 (33)
   3-7/4.75 (11)
   4-7/4.75 (LV)

   The number preceding the dash indicates the number of conductors. The numbers after the dash represent the conductor type. Parenthesis following the conductor type indicates the voltage level the particular overhead line is designed at.

- Large Customer Connection (LCC) connection assets - Where a site, conductor, cable, or plant item etc. is deemed to be a Large Customer Connection (LCC) connection asset, it shall be labelled with its corresponding Energex Ellipse system "C35" phase sub-project number as well as its site ID, conductor or cable code. Examples are:
    - Site ID's
        - SG987654 LCC-C0123456 or P6843-D LCC-C0234567
    - Overhead Conductors
        - 3-19/3.75 (33) LCC-C0123456
        - 3-7/4.75 (11) LCC-C0234567
        - 1-95ABC (LV) LCC-C0345678
    - Underground Cables
        - 240 Al 4C LV LCC-C0123456
        - 400 Al TRIPLEX 11kV LCC-C0234567

3. Span distance – between stations to the nearest metre (if > 0.4m, round up).
4. Street names – as required. Size to be legible and proportional to drawing.
5. House numbering (including rural numbering), lot numbers and RP description is to be included on the works plan. Size of the numbering to be legible and proportional to drawing.
6. North point and scale – must include the north symbol and the size must to be legible and proportional to drawing. North point should be placed adjacent to section of drawing to which it refers.
7. The side of a pole to which a transformer is mounted is shown by the position of the transformer symbol relative to the pole symbol.
8. Phasing of 11kV overhead conductors is to be shown adjacent to mains to clearly indicate changes in phasing arrangements that may occur typically at bridging points, isolation points and terminations.
9. Services and LV schematics – should indicate which side of the open point the service is connected to.
10. The layout of the drawing should face north wherever possible (without having to turn the drawing). Refer to **Table 7: Symbols for Miscellaneous Uses**

4.7. Line Types

4.7.1. Overhead

New overhead mains (including pilot cable, streetlight mains and optic fibre).
Thick black continuous line – 0.7mm.

Existing overhead mains (including pilot cable, streetlight mains and optic fibre).
Black continuous line – 0.35mm.

New overhead services – only those affected by works are shown.
Thick black continuous line – 0.7mm.

Existing overhead service – only those affected by works are shown.
Black continuous line – 0.35mm.

4.7.2. Underground

New underground mains (including pilot cable, streetlight mains, optic fibre and conduits).
Broken thick black continuous line – 0.7mm.

Existing underground mains (including pilot cable, streetlight mains, optic fibre and conduits).
Broken black continuous line – 0.35mm.

4.7.3. Miscellaneous

Property line –
Continuous black line – 0.25mm.

Kerb line (when needed)
Broken/dotted – 0.25mm.

Underground services –

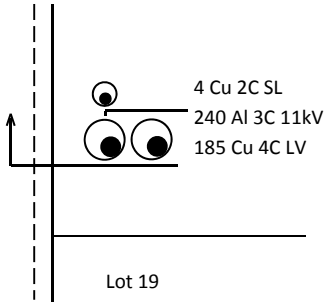
Sewerage
Gas
Stormwater
Water
Communications (Telstra etc)

} As per symbols for other utilities } 0.25mm

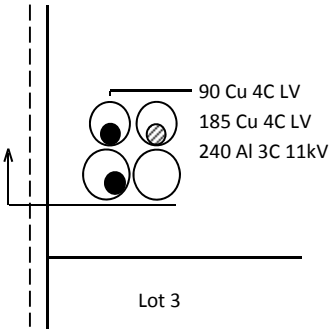
4.8. Underground Cross-Sections

Cross sections of underground cables must be designated in accordance with the underground reticulation specification, e.g.:

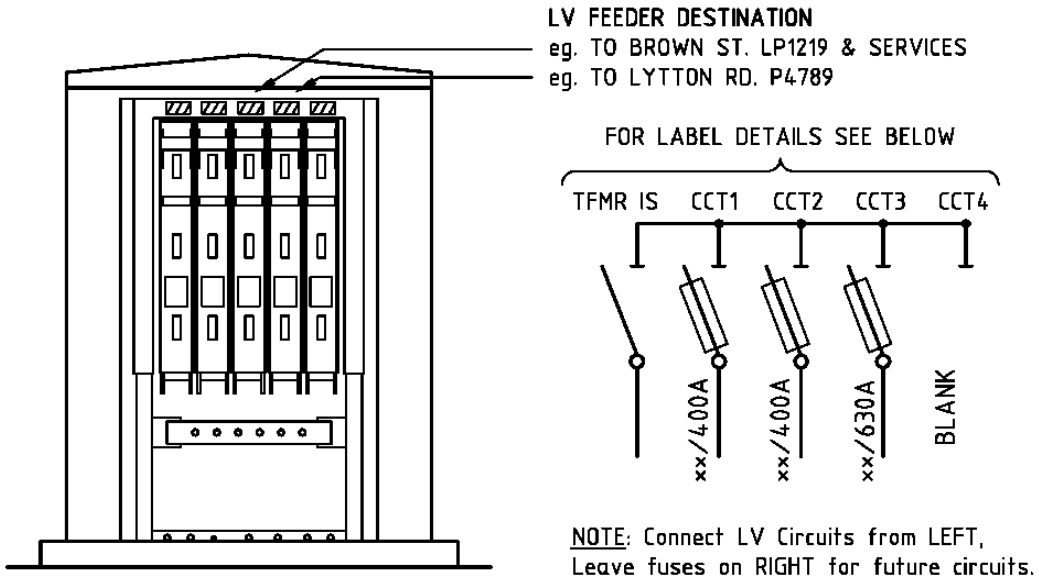
This indicates three conduits with cable installed in two and a streetlight main in another. The arrow indicates direction of view.



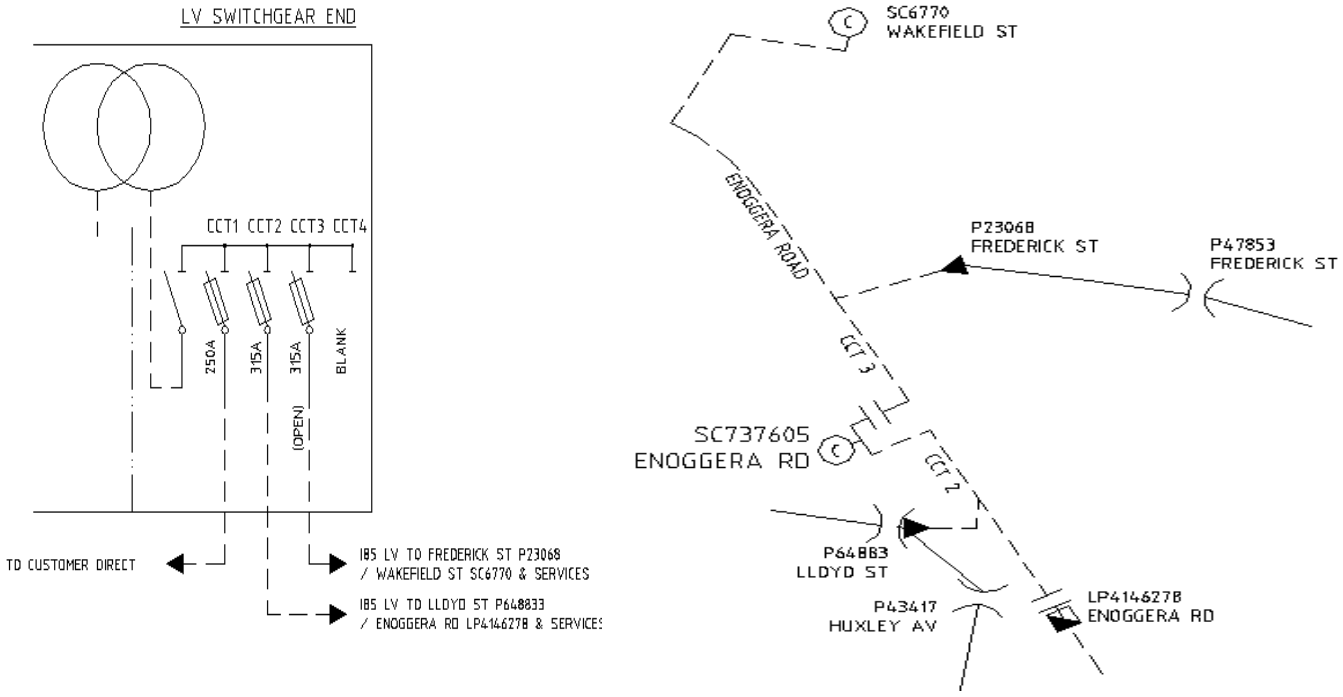
**This indicates four conduits with existing cable installed in two and proposed LV cable for another.
The arrow indicates direction of view.**



4.9. LV Switchboards

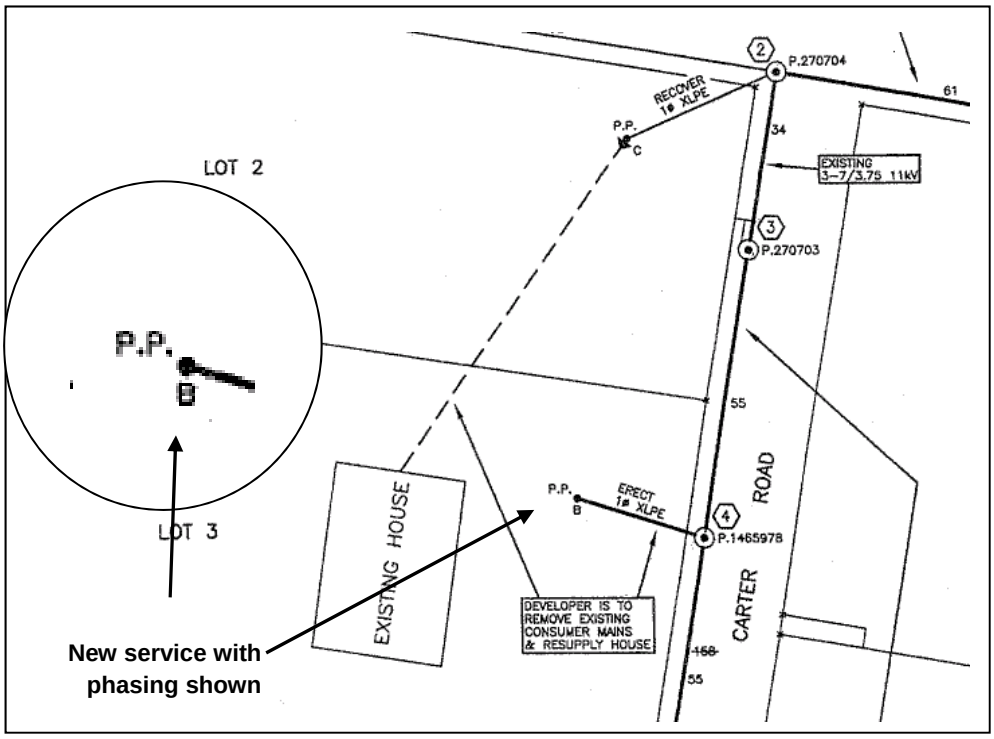


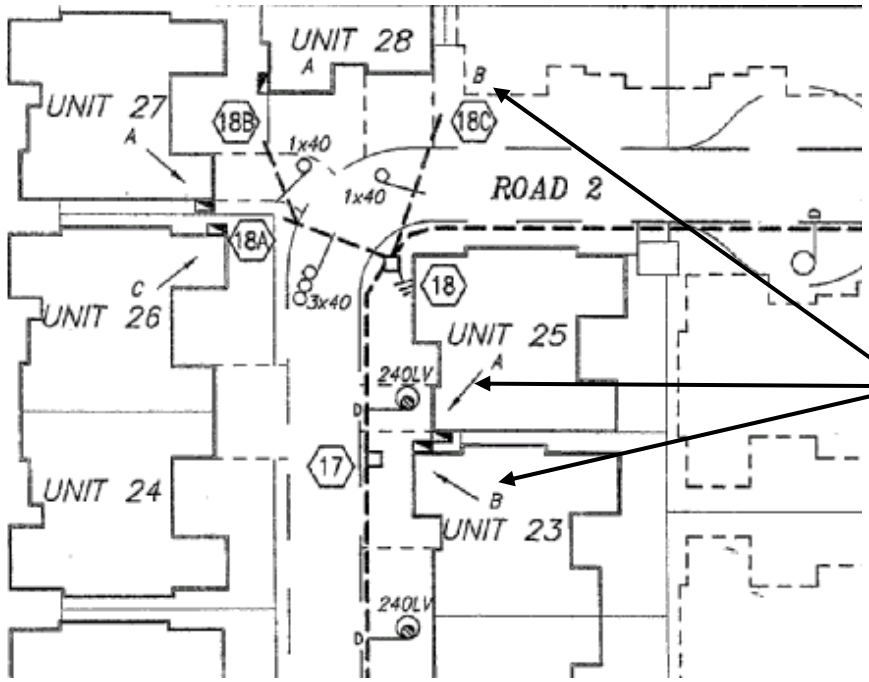
LV switchboards need to show the same information on the schematic as the LV switchboard labels. As shown above the fuses are to be labelled with the appropriate circuit number, fuse size and provision has been made for the other information, e.g. cable size and label information. Where there is space, all of this information should be shown on the schematic. At a minimum each circuit should be numbered on the schematic for clarity as shown below.



4.10. Phasing for subdivisions and allotments

Phasing is required to be shown for any new or modified connection to a property. These are extremely important when designing new subdivisions for use in PEACE, MARS and NAP (Network Attachment Points). For new group title or town house developments a connection needs to be shown from the pillar to the relevant building or unit.





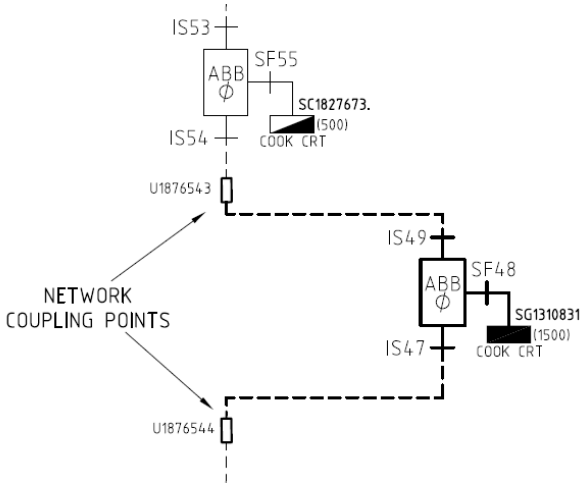
Phasing shown for each building connection

4.11. Network Coupling Points for Large Customer Connection (LCC) Projects

Large Customer Connections require the customer to pay full cost for the design and installation of the dedicated electricity assets as determined by Energex called Connection Assets.

The node or identifier that delineates the boundary between, or intersection of, the Connections Assets and the Shared Network is called the Network Coupling Point/s and may be an 11kV joint, pole termination or switchgear termination. Network Coupling Point/s will be nominated by Energex as part of the Connections Planning work associated with the project.

As outlined in the Large Customer Connections Manual, Energex needs to ensure that the correct data relating to assets associated with Large Customer Connections is captured. Therefore, it is a requirement that the Network Coupling Point/s are clearly labelled on the 11kV geographic and/or schematic line diagram as well as in the appropriate schedule in the works plan as shown below.



UG EQUIPMENT SCHEDULE

LOCATION	STN No.	SITE I.D.	EX	REC	IN	SIZE & DESCRIPTION	IIN	COMP I.D.	PLANT NO.	MODEL I.D.	QTY.	LCC	
COOK STREET	1	U1876543			X	11kV 400 Al 3X1C TO 240 3C CU STR JOINT				2JTA40TCAV7D	1	X	NETWORK COUPLING POINT
	2	U1876544			X	11kV 400 Al 3X1C TO 240 3C CU STR JOINT				2JTA40TCAV7D	1	X	NETWORK COUPLING POINT

5. Street Lighting

Street lighting is varied with different luminaries used for many different situations. Representation of streetlights on works plans are to be in accordance with Energex's 'Public Lighting Construction Manual'. If the works involve streetlight alterations, a station number only, will be placed next to the streetlight symbol. Information concerning the streetlight will be available in the streetlight schedule. Variations to the alignment information on the streetlight schedule, such as northing and easting references, are acceptable subject to Energex approval. Existing streetlights not involved in the works may be drawn in for completeness, but will not be referenced in the streetlight schedule. Streetlight symbology shall be as represented in **Table 8: Symbols for Street lighting**. **The Worksplans application will symbolise the relevant light as part of the application.**

Streetlights that are to be installed or altered are drawn bold (0.7mm thickness), streetlights that exist requiring no action are drawn as standard (0.35mm thickness) and streetlights that are to be removed are drawn in light grey (ghosted) – 0.35mm thickness.

6. Signs & Labelling

Any labelling or signs referred to on a standard works plan are to be in accordance with Energex's Network Labelling and Signage Manual – RED 00297

Copies may be obtained on line by using the following link: http://apps.energex.com.au/service_providers/technical_docs/asp/technical_documents.asp and under 'Complete Manuals' heading select – "Network Labelling & Signage Manual – Manual 00297".

Where HV and LV underground cables connect to overhead mains, ring main units, circuit breakers, transformers and other associated equipment, all new or altered labelling data must be shown on the same page as the HV, LV and SL schematics. Ring main unit, isolator and switch-fuse numbering must also be shown on the HV schematic.

7. Non Works Plan Designs

Site Schedules are typically quick, simple templates that include single site projects where the work can be completed as per relevant procedures and guidelines. **These works plans should meet all of the requirements of a conventional works plan. Minimum requirements are listed below.**

7.1. Site Schedules

Site Schedules are a template that includes schedules with details of work to be installed and/or recovered, including site numbers.

A number of Site Schedule forms are available:

- Form 0522 – Crossarm Installation / Recovery
- Form 0527 – RMU Upgrade / Recover
- Form 1564 – Service Installation / Recovery / Replacement
- Form 1565 – Pillar Uprate
- Form 1580 – Replace Unserviceable pole
- Form 1581 – Pole Transformer Install / Upgrade / Recover
- Form 1583 – Overhead component Install / Upgrade / Recover
- Form 1584 – Underground Pole to Pillar
- Form 1587 – Cross Street Pole Installation
- Form 1588 – Padmount Transformer Upgrade / Recover
- Form 1589 – Ground Transformer Upgrade / Recover
- Form 1592 – Streetlight Pole Replacement

In addition to the above forms, Site Schedules are to include:

- A printout from enerGISe showing the site layout of the work being undertaken.
- A printout of HV system diagram, WebView schematic or enerGISe geographical schematic for projects involving HV changes/additions
- A printout of enerGISe for LV open point changes – including NAP's for services from open points
- Label information (if required).

7.2. Projects completed without detailed design (Design & Construct / Materials by FCO/WGO)

For jobs that don't require detailed design input to prepare construction documentation, Network Program Management will issue the work to Short Cycle for preparation of the appropriate Site Schedule documentation or directly to the relevant construction workgroup where no pre-construction assessment is required to be completed.

As Constructed works plans or field returns for this type of work are to include sufficient details including the appropriate Site Schedule forms being completed.

7.3. As Issued Standards Required

Projects that are submitted under this category still need to supply Network Data with certain information including a print out of the HV system diagram, WebView schematic or enerGISe geographical schematic with the changes written on it e.g. – For example a Pole Transformer upgrade from 50kVA to 100kVA would require the TX size crossed out and the new size written beside it.

RMU replacements need to have a HV system diagram, WebView schematic or enerGISe geographical schematic that shows the Isolator & SF numbers so that all details are correct for the switching sheet.

It is also acceptable to hold off on the As Issued plan from the time of issue until such time as the Scoping function of the job has been completed. This is provided that a detailed plan is produced as per this standard and is forwarded to Network Data within the required 5 business days. Refer to the As Constructed Drawing Standard RED 01037 for further detail.

8. Works Plan Revisions

All works plans are initially created as issue A. This is illustrated in the title block both beneath the Project/Sub Project number on the lower right hand side as well as at the opposite end of the title block (refer Appendix L for detail). The issue version is to be revised to a later issue version (such as from issue A to issue B, issue B to issue C and so on) in conjunction with any alterations to the works plan that are required following practical design completion (i.e. following completion of checking and approval) or attainment of third party requirements/approvals.

Should an amendment or revision be required to one or a select few sheets of a multi-sheet works plan, all sheets of that works plan must be marked as the latest issue version and issued for construction as a complete package. Single or a select few sheets of a multi-sheet works plan must not be issued as revisions on their own.

When the issue version is revised, the works plan title block is to be updated such that the issue version is updated at both locations described above. Additionally, a brief description providing detail on what has changed on the works plan to initiate the revised issue version is required to be provided in section A (refer Appendix L) of the title block.

9. As Constructed Drawings

There are limitations to what can be determined within the design office. Certain elements of the installation may be best left to the construction crew to determine on site. It is sometimes necessary to deviate from the original design during the construction phase of a project.

Where the constructor identifies a requirement to deviate from the works as detailed on the works plan, the constructor shall obtain agreement to the change through consultation with either the designer or the design supervisor, prior to construction of the changed element proceeding.

All changes and additional information must be 'marked up' in red on a copy of the issued construction plan to create an 'As Constructed' drawing.

The Work Group Leader in charge of the work group making any changes to the issued works plan is responsible for ensuring that the information regarding to the change is communicated to other work groups performing work in that project including the switching functions and the Low Voltage Outage Officer for LV changes. This communication should be prior to the changes being physically carried out and agreement from all work groups that the change is acceptable.

Where the changes are significant or may create confusion on site an amended revision of the issued works plan is required to be prepared and issued by Design. The Work Group Leader is responsible for communicating this requirement to the design office.

Based on current processes, for design to modify these drawings it will require a work order to be created and approved by Network Program Management as this would be a variance to the project. It would mean a variation request needs to be raised and approved appropriately.

At the completion of all work, all 'As Constructed' drawings must be submitted to Energex as per Energex's As Constructed Drawing Standard RED 01037, along with a certificate of completion. All relevant documentation must be returned regardless if any changes were made or not. Refer to the As Constructed Drawing Standard RED 01037 for further detail.

10. Referenced Documents

- Australian Standard AS1100.401 – Engineering Survey and Engineering Survey Design Drawing
- Network Labelling and Signage Manual – RED 00297
- Overhead Design Manual – RED 00302
- Overhead Construction Manual - 4920-A4
- Underground Design Manual – 5318-A4
- Underground Distribution Construction Manual – RED 00305
- Public Lighting Design Manual – RED 00767
- Queensland Public Lighting Construction Manual – RED 00796
- Energex Safety Management System – RED 00337
- Energex Safety Manual – RED 00338
- Network Information Standards – RED 00631
- As Constructed Drawing Standard - RED 01037
- Large Customer Connections Manual – RED 00768

11. Definitions for this Document

Table 1: Representation of Electricity Transmission and Distribution Conductors and Cables

SYMBOL	DEFINITION
———————————	Power cable (HV or LV) Overhead
– – – – – – – – – – – – – – – – – – – –	Power cable (HV or LV) Underground

When multiple cables of different functions are on the same route alignment, the route is represented only by the predominant function of the route. Table 1 represents the hierarchy order with the highest voltage being the predominant function.

Table 2: Symbols for Overhead Electricity Works Plans

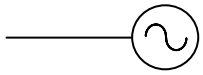
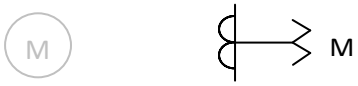
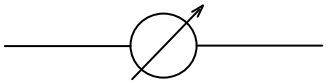
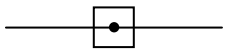
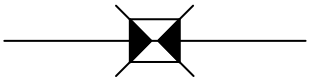
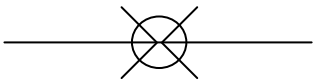
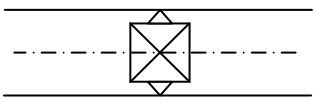
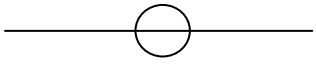
SYMBOL Australian Standard / Energex Preferred	DEFINITION
	Generator
	Ground transformer
	Cubicle transformer (kiosk, PADMOUNT)
	Pole transformer
	Metering unit
	Voltage regulating station
	Overhead line support – tower
	Suspension tower
	Heavy strain tower
	Light strain tower
	Transposition tower
	HV transposition tower
	Tower showing conductor spacing (Variations can occur)
	HV pole

Table 2: Symbols for Overhead Electricity Works Plans

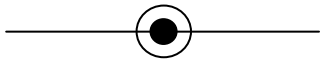
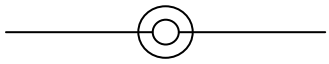
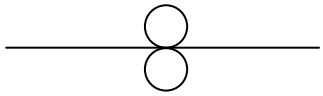
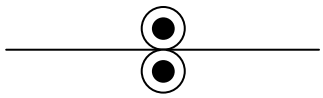
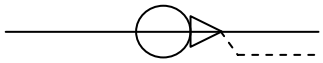
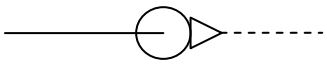
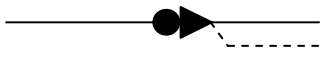
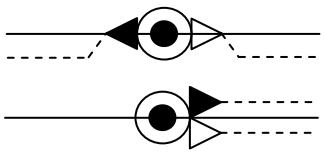
SYMBOL Australian Standard / Energex Preferred	DEFINITION
	Closed HV switch pole **(Closed air break switch)**
	Open HV switch pole **(Open air break switch)**
	HV and LV pole
	HV pole with provision for LV
	LV pole with provision for HV
	LV pole
	HV 'H' structure
	HV and LV 'H' structure
	HV pole with HV cable terminal box
	HV overhead termination pole with HV cable termination box
	HV and LV pole with LV cable terminal box
	LV pole with LV cable terminal box
	HV and LV pole with HV and LV cable terminal boxes

Table 2: Symbols for Overhead Electricity Works Plans

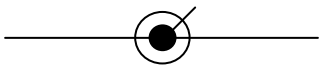
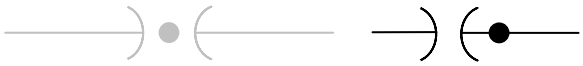
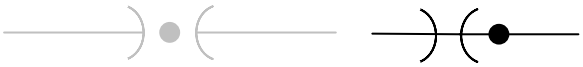
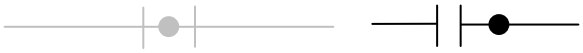
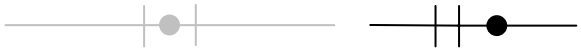
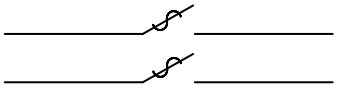
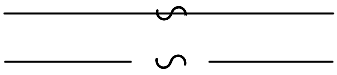
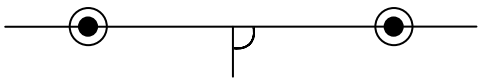
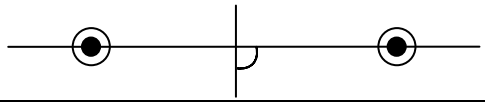
SYMBOL Australian Standard / Energex Preferred	DEFINITION
	HV and LV pole carrying provision for switchgear
	LV pole with open break in conductors **(Open disc link)**
	LV pole with closed break in conductors **(Closed disc link)**
	LV pole with open break in conductors **(Open cut-outs)**
	LV pole with closed break in conductors **(Closed cut-outs)**
	Ganged Drop Out fuse Drop Out fuse
	Closed tie bridging Open tie bridging (cut-outs not included)
	Three way flying bridge
	Four way flying bridge
	HV pole mounted circuit breaker (or recloser) Open point is to be shown on that side of pole, where electrically the conductor break occurs
	LV pole mounted circuit breaker Open point is to be shown on that side of pole where electrically the conductor break occurs
	HV and LV pole with only HV mounted CB Open point is to be shown on that side of pole where electrically the conductor break occurs
	HV and LV pole with only LV mounted CB Open point is to be shown on that side of pole where electrically the conductor break occurs

Table 2: Symbols for Overhead Electricity Works Plans

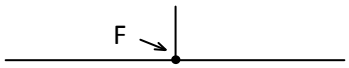
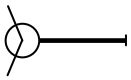
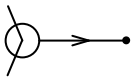
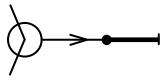
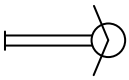
SYMBOL Australian Standard / Energex Preferred	DEFINITION
	HV and LV pole with HV and LV mounted CB Open point is to be shown on that side of pole where electrically the conductor break occurs
	LV pole showing fused branch line
	HV pole with ground stay
	HV pole with aerial stay to stay pole
	HV pole with aerial stay pole and ground (or back) stay
	HV and LV pole with aerial stay to next line pole
	HV pole strutted

Table 3: Symbols for Underground Electricity Works Plans

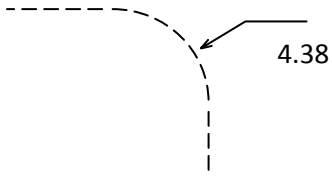
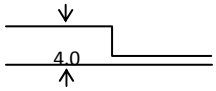
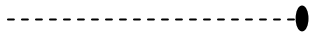
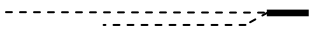
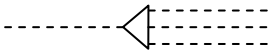
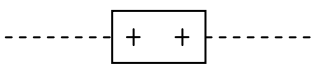
SYMBOL Australian Standard / Energex Preferred	DEFINITION
	Radius of cable bend (shown in metres)
	Depth to top of cable (in metres) **(Shown only where not typical)**
	Cable offsets **(shown where in excess of one metre)**
	Insulated end
	Sealed end
	Straight through joint
	Tee joint
	Vee joint or trouser joint / branch joint
	Trifurcating joint **(3-core cable to 3 single-core cables)**
	Earth
	Earthing electrode plate
	Earthing test link
	Major underground pit – to be numbered if known and if applicable (Crosses represent number of lids)

Table 3: Symbols for Underground Electricity Works Plans

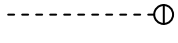
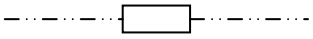
SYMBOL Australian Standard / Energex Preferred	DEFINITION
	Service pit
	Underground traffic or streetlight pit
	Distribution cabinet without fuses **(e.g. Pilot cable jointing cubicle)**
	Distribution cabinet with fuses **(e.g. LV switchboards)**
	Ring Main Unit
	Existing service pillar (or turret)
	Proposed service pillar (or turret)
	Link pillar
	C&I pillar **(CFS – Combination Fuse Switch)**
	Proposed cable to be laid in conduit (To be used on works plan only)
	Proposed cable to be direct laid (To be used on works plan only)
	Cable laid in conduit **(If more than one cable in the same conduit, major cable to be described first)**
	Direct laid cable
	Spare pipe or conduit

Table 3: Symbols for Underground Electricity Works Plans

SYMBOL		DEFINITION
Australian Standard	**Energex Preferred**	
		Spare existing HV conduit
		Proposed conduit
		Spare proposed HV conduit
		Directional drill conduit
		Concrete encased conduit
		Conduit with concrete protection slab

Table 4: Symbols for Electricity System Schematics

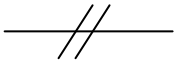
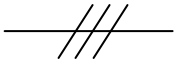
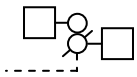
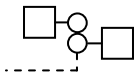
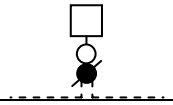
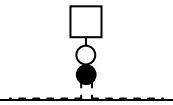
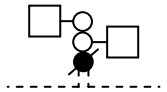
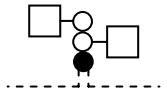
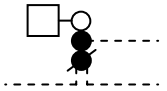
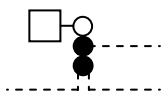
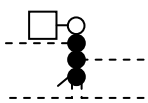
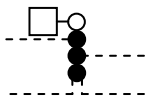
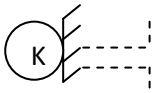
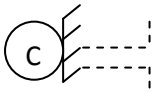
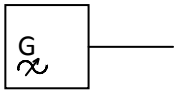
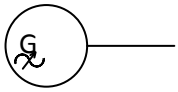
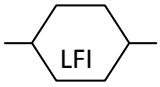
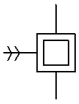
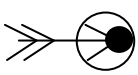
SYMBOL		DEFINITION
Australian Standard	**Energex Preferred**	
		Underslung links
		110kV crossing
		Double tee-off fuse unit Single phase isolation
		Double tee-off fuse unit Three phase isolation
		Single tee-off fuse unit Single phase isolation
		Single tee-off fuse unit Three phase isolation
		Single tee-off ring main unit Single phase isolation
		Single tee-off ring main unit Three phase isolation
		Double tee-off ring main unit Single phase isolation
		Double tee-off ring main unit Three phase isolation
		Single tee-off fuse unit Three way isolator Single phase isolation
		Single tee-off fuse unit Three way isolator Three phase isolation
		Single tee-off fuse unit Four way isolator Single phase isolation

Table 4: Symbols for Electricity System Schematics

SYMBOL Australian Standard	SYMBOL Energex Preferred	DEFINITION
		Single tee-off fuse unit Four way isolator Three phase isolation
		Three way isolator Single phase isolation
		Three way isolator Three phase isolation
		Four way cross mains connected
		Three way cross mains connected
 EXAMPLE 		LV circuit facility i.e. cubicle (kiosk, PADMOUNT) transformer with 2 LV circuits and 2 spare (For use on LV schematics)
 EXAMPLE ONLY		Audio frequency injection unit (static)
		Audio frequency injection unit (rotating)
		Line fault indicator
		Cable fault indicator
		Load transfer switch
		Load Break Switch
		Recloser (shown with antenna for remote control)
		Open load transfer switch

WORKS PLAN STANDARD - ELECTRICITY

Table 5: Symbols for Other Utilities

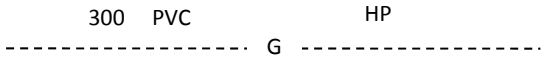
SYMBOL		DEFINITION
Above Ground	**Below Ground**	
———	- - - - - - - - - - - - - - - -	Line or pipe
⊢——— SD ———⊣	⊢- - - - - SD - - - - -⊣	Service duct (ends as indicated)
——— A ———	- - - - - - - A - - - - - - -	Compressed air
——— D ———	- - - - - - - D - - - - - - -	Drain
——— E ———	- - - - - - - E - - - - - - -	Power (electricity) line
——— F ———	- - - - - - - F - - - - - -	Fuel line
——— G ———	- - - - - - - - G - - - - - - -	Gas line
——— S ———	- - - - - - - - S - - - - - - -	Sewer
——— T ———	- - - - - - - - T - - - - - - -	Telephone line
——— W ———	- - - - - - - - W - - - - - - - -	Water
——— O ———	- - - - - - - - O - - - - - - - -	Basic symbol indicating appliance or feature on line of pipe
——⋈——	- - - - - -⋈- - - - - - - - - - - - - -⧓- - - - - - - -	Valve – large scale Valve – small scale

WORKS PLAN STANDARD - ELECTRICITY

NOTES:

1. Appropriate notation of utility details should be shown when available. These details may include the following:
   (i) Conduit/cable size (diameter/dimensions in millimetres)
   (ii) Conduit/cable material (appropriate abbreviation)
   (iii) Other significant details, e.g., service

   For example – a 300-mm diameter high-pressure underground gas service in polyvinylchloride pipe should be drawn as -



2. The utilities shown in the above table have been selected as those that particularly require identification for use on general-purpose drawings.
3. Further details on particular utilities may be obtained by reference to section 3 of AS1100-401.
4. The symbols depicted above should not be used for location plans and diagrams for electrical and communication services and systems.

Table 6: Symbols for Topographic Features – Artificial and Natural

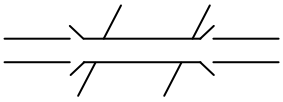
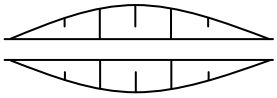
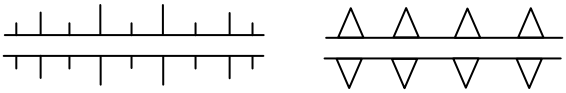
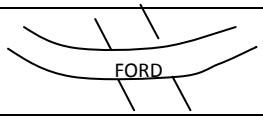
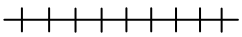
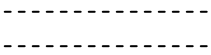
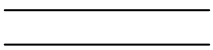
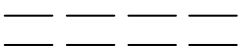
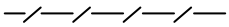
SYMBOL	DEFINITION
	Bridge
	Cutting
	Embankment or bund
	Ford
	Railway or tramway
	Road (unsealed)
	Road (sealed)
	Track or footpath
	Easement (Type of easement may be identified by annotation. Width of easement to be indicated)
	Existing or approved road or property boundary
	Proposed road boundary or property boundary
	Fence on boundary
	Fence not on boundary or location relative to boundary not known (Type of fence to be identified by suitable annotation on drawing).
	Edge of prepared areas, e.g. kerb line

Table 6: Symbols for Topographic Features – Artificial and Natural

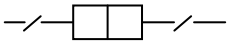
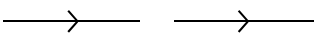
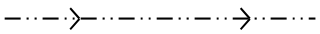
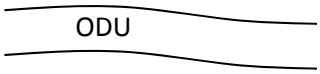
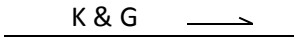
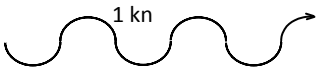
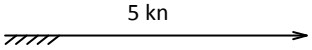
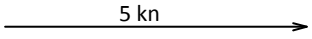
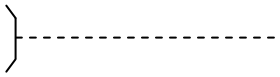
SYMBOL	DEFINITION
	Gate
	Cattle grid
	Drains – Catch drain or cut-off drain
	Subsoil drain
	Dish drain
	Open drain, unlined
	Open drain, lined (width indicated)
	Kerb and gutter, median kerb
	Direction of flow (alongside feature)
	Current (with rate) e.g. 1kn (knot)
	Flood tide stream (with rate) e.g. 5 kn (knots)
	Ebb tide stream (with rate) e.g. 5kn (knots) NOTE: Symbols and abbreviations used on special purpose engineering survey and engineering design drawing for hydrographic work shall be in accordance with Chart 5011.
	Culvert headwall

Table 6: Symbols for Topographic Features – Artificial and Natural

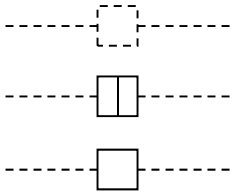
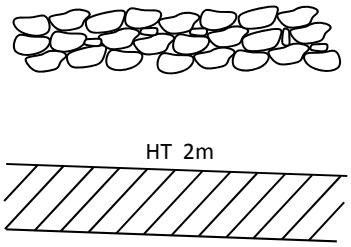
SYMBOL	DEFINITION
	Sump, gully pit, junction box or silt trap – Underground On surface, with grid or grating On surface
	Pitching/rip rap Retaining wall (height to be given) e.g. 2m

Table 7: Symbols for Miscellaneous Uses

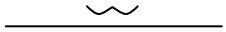
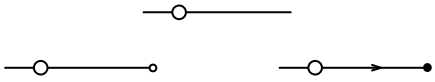
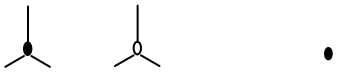
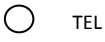
SYMBOL Australian Standard / Energex Preferred	DEFINITION
	Special tower (details to be written alongside)
	Submarine cable
	Pole stayed or guyed to ground Pole stayed or guyed to bollard or pole
 (Draw to Scale) (Masts) (Tower)	Masts and towers (state type of mast or tower and height)
See Table 8 for energex symbols	Streetlight standard
	Traffic light standard
	Windpump (point of location at base of symbol)
	Chimney – large scale (state height of top) Chimney – small scale (state height of top)
	Street sign
	Dipstick
	Earthing point
	Fire alarm
	Hydrant
	Telephone box

Table 7: Symbols for Miscellaneous Uses

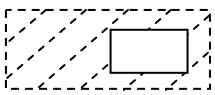
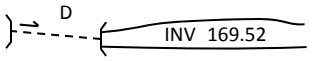
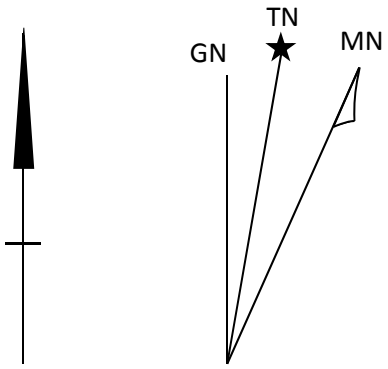
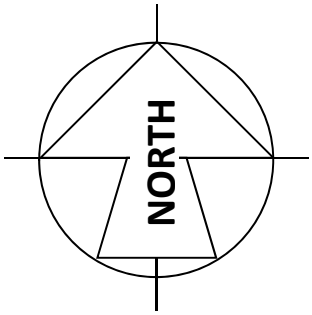
SYMBOL Australian Standard / Energex Preferred	DEFINITION
◯ TFR	Transformer
⊙ VENT	Vent
-------- F -------- ———— F ————	Fuel main with size and material Below ground Above ground
-------- F -------- FP	Filling point (fuel)
------- F ------⋈--	Stop valve (fuel)
------- F -------• HP	Fuel hydrant point
-------- F -------• VENT	Fuel vent line (underground)
FT 50 kL	Underground fuel tank (show capacity in kilolitres e.g. 50 kL)
WTK 50 kL	Static water (show capacity in kilolitres eg. 50 kL)
	Building – Open covered area
	Covered area over substantial building – wall position uncertain
	Covered area over building – wall position known NOTE: Buildings to be constructed or demolished to be identified by suitable annotation on drawing. On small-scale plans, solid shading may be used to indicate roofed area.

Table 7: Symbols for Miscellaneous Uses

SYMBOL Australian Standard / Energex Preferred	DEFINITION
 159.52  20.36 HIGH  HT (T) 169.52 HT (T) 169.52 	Heights – Base/top height of a feature (in this example, a windpump) above height datum Height of the top of the feature above the ground line (in this example, a windpump) Top height of a feature (in this example, a windpump) above height datum Floor height above height datum
 	North indicator **(Any combination may be used as required as per example)**

WORKS PLAN STANDARD - ELECTRICITY

Table 7: Symbols for Miscellaneous Uses

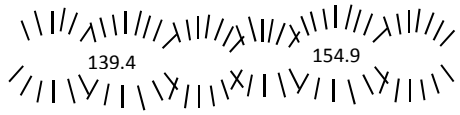
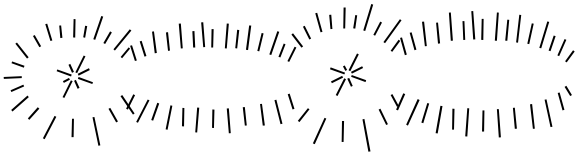
SYMBOL Australian Standard / Energex Preferred	DEFINITION
	Ridge of hills with spot heights
	Hills with peaks located, with spot heights
	Isolated peak, with spot height
	Vegetation (with applicable description)
	Tree

Table 8: Symbols for Street Lighting

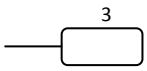
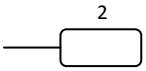
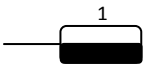
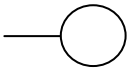
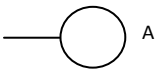
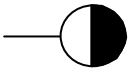
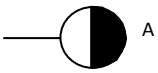
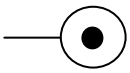
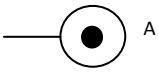
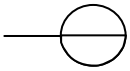
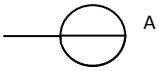
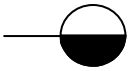
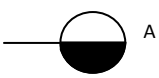
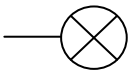
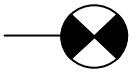
SYMBOL	DESCRIPTION	CODE
	Fluorescent 18W	F3 x 18
	Fluorescent 18W	F2 x 18
	Fluorescent 36W	F1 x 36
	Mercury Vapour 50W	M50
	Mercury Vapour 50W (Aero)	M50A
	Mercury Vapour 80W	M80
	Mercury Vapour 80W (Aero)	M80A
	Mercury Vapour 125W	M125
	Mercury Vapour 125W (Aero)	M125A
	Mercury Vapour 250W	M250
	Mercury Vapour 250W (Aero)	M250A
	Mercury Vapour 400W	M400
	Mercury Vapour 400W (Aero)	M400A
	Mercury Vapour 700W	M700
	Mercury Vapour 1000W	M1000

Table 8: Symbols for Street Lighting

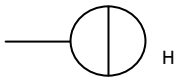
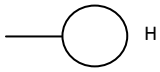
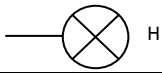
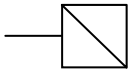
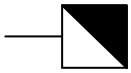
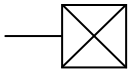
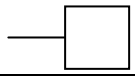
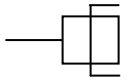
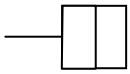
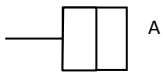
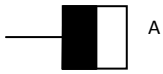
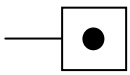
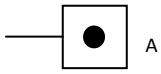
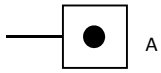
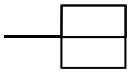
SYMBOL	DESCRIPTION	CODE
	Metal Halide 400W	H400
	Metal Halide 1000W	H1000
	Metal Halide 1500W	H1500
	Low Pressure Sodium 55W	L55
	Low Pressure Sodium 90W	L90
	Low Pressure Sodium 135W	L135
	High Pressure Sodium 35W	S35
	High Pressure Sodium 50W	S50
	High Pressure Sodium 70W	S70
	High Pressure Sodium 70W (Aero)	S70A
	High Pressure Sodium 100W	S100
	High Pressure Sodium 100W (Aero)	S100A
	High Pressure Sodium 150W	S150
	High Pressure Sodium 150W (Aero)	S150A
	High Pressure Sodium 250W	S250

Table 8: Symbols for Street Lighting

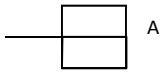
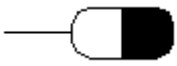
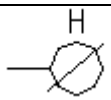
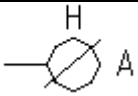
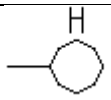
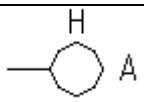
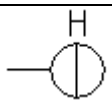
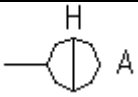
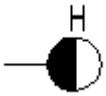
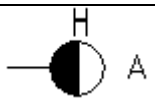
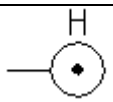
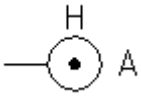
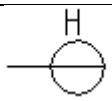
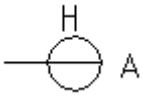
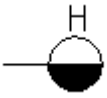
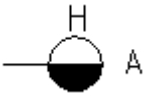
SYMBOL	DESCRIPTION	CODE
	High Pressure Sodium 250W (Aero)	S250A
	High Pressure Sodium 400W	S400
	High Pressure Sodium 400W (Aero)	S400A
	2 x 14W T5 Electronic Fluorescent Luminaire	2x14T5
	2 x 24W T5 Electronic Fluorescent Luminaire	2x24T5
	26W Compact Fluorescent Luminaire	26CFL
	26W Compact Fluorescent Luminaire (Aero)	26CFLA
	32W Compact Fluorescent Luminaire	32CFL
	32W Compact Fluorescent Luminaire (Aero)	32CFLA
	42W Compact Fluorescent Luminaire	42CFL
	42W Compact Fluorescent Luminaire (Aero)	42CFLA
	35W Metal Halide Luminaire	H35
	35W Metal Halide Luminaire (Aero)	H35A
	50W Metal Halide Luminaire	H50
	50W Metal Halide Luminaire (Aero)	H50A

Table 8: Symbols for Street Lighting

SYMBOL	DESCRIPTION	CODE
	70W Metal Halide Luminaire	H70
	70W Metal Halide Luminaire (Aero)	H70A
	100W Metal Halide Luminaire	H100
	100W Metal Halide Luminaire (Aero)	H100A
	150W Metal Halide Luminaire	H150
	150W Metal Halide Luminaire (Aero)	H150A
	250W Metal Halide Luminaire	H250
	250W Metal Halide Luminaire (Aero)	H250A
	400W Metal Halide Luminaire	H400
	400W Metal Halide Luminaire (Aero)	H400A

12. Appendices

WORKS PLAN STANDARD - ELECTRICITY

Appendix A – Overhead Work Schedule

This schedule contains all information relevant to the design construction and recording of the overhead structures associated with the works plan. This schedule must be used where overhead works are to be affected.

OVERHEAD WORK SCHEDULE																					
LOCATION	STN No.	SITE ID (POLE No)	POLES												CONSTRUCTIONS (Note: KBS is top KB to top KB)							REMARKS
			EDT ANG	EDT kN	SST kN	LST kN	EXISTING	RECOVER	ERECT	SINK	FOOT	COMP ID	ALIGN	LCC	EXISTING	RECOVER	ERECT	No	KBS	ANG	LCC	
Smith St cnr Jones Rd	1	P56789	28	2.7	4.3	6.1	P12.5/12	P12.5/12	P14/12-22	2.3	NAEF	PO1		X	11A	11A	11SUAH	1	150	45		
															LVA	LVA	LVSUA	1	2500	45		

LOCATION - Physical address of the site.
STN No - Station number that is the reference number for the plan site ID.
SITE ID (POLE No) - Energex's site identification number.

POLES

EDT ANG - Everyday Tension Angle: direction of net force of all conductors on pole (360° measure clockwise - 0° Nth, 90° East, etc)
EDT kN - Everyday Tension: Sustained loading on pole under no wind conditions in kN.
SST kN - Serviceability State Tension: serviceability state loading on the pole under wind conditions in kN equivalent to C(b)1:1991 design methodology (formerly MWT kN, or Maximum Working Tension).
LST kN - Limit State Tension: limit state loading on the pole under wind conditions in kN as per AS7000 design methodology.
EXISTING - Description of existing pole at this station.
RECOVER - Description of existing pole to be recovered from this station.
ERECT - Description of new pole to be erected at this station.
SINK - Required depth of pole hole in metres.
FOOT - Pole foundation type.
COMP ID - Individual number of component at the site
ALIGN - Distance from the centre of pole to a reference point (m) nominated by the local authority or other Statutory Authority.
LCC - Mark if pole has been deemed as a Large Customer Connection (LCC) connection asset.

CONSTRUCTIONS

EXISTING - Description of existing pole top configurations. Description as per O/H Construction Manual.
RECOVER - Description of existing pole top configurations to be recovered. Description as per O/H Construction Manual.
ERECT - Description of the new pole top configuration, including construction type, insulator type, etc
KBS - Distance (mm) from top of pole to the first attachment point and thereafter the distance between attachment points.

No - The total number of new constructions of one particular type (e.g. Page7-53-3), erected at this KBS
ANG - Deviation angle of conductors for each construction.
LCC - Mark if construction has been deemed as a Large Customer Connection (LCC) connection asset.

NOTE: All constructions at the site (i.e. earths) are to be shown in the constructions columns and not in the remarks column.

REMARKS - Any other details/descriptions not covered by the schedule.

Appendix B – Overhead Works Schedule - Constructions

Only one construction is required to be shown in the constructions column, even if this construction contains multiple components e.g. PAGE7-53-3. These are now to be shown in the **No** column. Examples of the old and new styles are shown below.

OVERHEAD WORK SCHEDULE																					
LOCATION	STN No.	SITE ID (POLE No)	POLES											CONSTRUCTIONS (Note: KBS is top KB to top KB)							REMARKS
			EDT ANG	EDT kN	SST kN	LST kN	EXISTING	RECOVER	ERECT	SINK	FOOT	COMP ID	ALIGN	LCC	EXISTING	RECOVER	ERECT	No	KBS	ANG	LCC	
Smith St cnr Jones Rd	1	SP9224					14m H 52 CCA	14m H 52 CCA	P14/12-24CPT	2.4	MDCF	PO1	3.2	X	11S/NMOS	11S/NMOS	PCPF 11TDSL/NMOS 5984 7327	1 1 3 9	150	0		NEW POLE TO BE RELOCATED 1m SOUTH
															PAGE7-53-3 11EDO3 LVPTU/NMOS SET57-1/3	PAGE7-53-3 11EDO3 LVPTU/NMOS SET57-1/3	PAGE7-53-3 11EDO3C 11PT/500C LVPTU/NMOS SET57-2/3 LVBR240/AOH LVT4C240/HV	3 1 1 1 1 1 1	EX 1000 2150 1400 EX	0		
															PTCOM	PTCOM	MDIC PTCOMC	1 1	EX			NOT TO RES – INCLUDED IN 11PT500C

Correct construction display

WORKS PLAN STANDARD - ELECTRICITY

Appendix C – Overhead Conductor Schedule

This schedule contains all information relevant to the design, construction and recording of work on overhead conductors associated with the works plan. This schedule must be used when overhead conductors are to be affected.

OVERHEAD CONDUCTOR SCHEDULE																	
LOCATION	STATIONS FROM-TO	VOLTS	EXISTING	TRANSFER	RECOVER	ERECT	No OF SPANS	DIST (m)	STRING TABLE	M.E.S.	SAG SPAN FROM-TO	SAG (m)		CONDUCTOR LENGTH (m)		LCC	REMARKS
												15°	30°	NEW	REC		
Jones Rd, Teviotville	1 – 2	11kV	3MA		3MA	3MO	1	51	440	50.4	1-2	1.12	1.25	159	159	X	
	2 – 4	LV		4MO			2	58	440	39.4	2-3	0.71	0.84				(VIA 3)

LOCATION - Physical address of the sites
STATIONS FROM-TO - Plan station numbers of each site between which the works are to take place.
VOLTS - Nominal voltage the conductors will be energised at, e.g. 11kV, LV.
EXISTING - Description of existing conductors between the stations numbers. Number of conductors and code listed, e.g. 3MA
TRANSFER - Description of the conductors to be moved from one site to another. Number of conductors and code listed, e.g. 3MA
RECOVER - Description of the conductors to be recovered. Number of conductors and code listed, e.g. 3PL
ERECT - Description of the conductors to be erected. Number of conductors and code listed, e.g. 3MO
No OF SPANS - Number of spans between station numbers.
DIST (m) - Sum of the span lengths between station numbers in meters.
STRING TABLE - Conductor stringing tension table number as per Overhead Design Manual.
M.E.S. - Mean equivalent span as calculated in accordance with the Overhead Design Manual.
SAG SPAN (FROM-TO) - Nominated station numbers where sagging is to occur.
SAG (m)
15°C and 30°C - The calculated sag for the selected span at the various temperatures – 15°C and 30°C.

COND LENGTH (m)

NEW - Sum of the total conductor length in meters required to be erected giving consideration to number of phases. **NOTE:** Allow 5°C for inelastic stretch where applicable
REC - Sum of the total conductor length in meters required to be recovered giving consideration to number of phases.
LCC - Mark if overhead conductor has been deemed as a Large Customer Connection (LCC) connection asset.
REMARKS - Any other details/descriptions not covered by the schedule.

Appendix D – Overhead LV Service Conductor Schedule

This schedule is used primarily for the design of and alterations to existing services, and contains all relevant information for the services associated with the works plan.

LV OVERHEAD SERVICE CONDUCTOR SCHEDULE																		
LOCATION	STN No.	HOUSE No.	EXISTING	TRANSFER	RECOVER	ERECT	No OF SPANS	DIST (m)	SAG SPAN	SAG (m)		TOTAL CONDUCTOR LENGTH (m)	FITTINGS					REMARKS
										15°	25°		MAINS BOX	CHANGE P.O.A.	FUSE SIZE	Ø	SERVICE FITTING CODE or IIN	
Main St, Beenleigh	2-2a	51	1ph Open		1ph Open	PW/16	1	29	2-2a	0.6	0.65	30	N		50	AN	N2B25WCN50	

LOCATION - Physical address of the site e.g. street name
STN No - Station number that is the reference number for the plan site ID.
HOUSE No - Number identifying the premise to which the service is attached.
EXISTING - Description of the existing service conductors.
TRANSFER - Description of the service conductors to be moved from one site to another. The number and type of service is listed e.g.
RECOVER - Description of the service conductors to be recovered. The number and type of service is listed e.g.
ERECT - Description of the service conductors to be erected. The number and type of service is listed e.g.
No OF SPANS - Number of spans from pole to attachment point.
DIST (m) - Distance of pole to the point of attachment.
SAG SPAN - Nominated station numbers where sagging is to occur.
SAG (m) - The calculated sag for the selected span at the various temperatures – 15°C and 25°C.
TOTAL CONDUCTOR LENGTH (m) - Length of the service from the pole to the point of attachment.

FITTINGS

MAINS BOX - Yes as required. To be used if a new mains box is needed.
CHANGE P.O.A. - Yes as required; details in Remarks column. To be used when point of attachment is to be altered.
FUSE SIZE - Current rating of service fuse required.
Ø - Number of phases required and/or which phase the service is to be connected to.
SERVICE FITTING CODE or IIN - Code for service fittings
REMARKS - Any other details/descriptions not covered by the schedule.

WORKS PLAN STANDARD - ELECTRICITY

Appendix E – Streetlight Schedule

This schedule contains all information relevant to the design, construction and recording of streetlight works associated with the works plan. This schedule must be used when any streetlights are to be affected. Street light schedules are to be listed directly below one another.

RATE 2 STREETLIGHT SCHEDULE																							
LOCATION	STN No	SITE ID (POLE No)	POLE or COMPONENTS						LUMINAIRE									OUTREACH BRACKET				MOUNT HEIGHT (m)	REMARKS
			COMP ID	EXIST (m)	REC (m)	ERECT (m)	SLM or IIN	ALIGN (m)	COMP ID	EXIST	RECOVER		DATE DE-ENERG	ERECT		DATE ENERG	SLM or IIN	EXIST (m)	REC (m)	ERECT (m)	SLM or IIN		
											LUMIN	CUST		LUMIN	CUST								
Jones Rd, Coorparoo	2	24680	PO1			5.5	SLM5635	3.27	SL 1		S70DI-1	BCC		S70DI-2	BCC		SLM21540			1.5	SLM5733	7.5	

RATE - Rate to be displayed in the table title as well as Luminaire section of the table. When replacing the luminaire and changing the rate, (e.g. from rate 1 to rate 2), these are to be shown in the schedule for the erected rate, not the recovered rate as shown above. **Note: A different schedule should be used to identify the different rates being erected.**

LOCATION - Physical address of the site e.g. street name

STN No - Station number that is the reference number for the plan site ID.

SITE ID (POLE No) - Energex's site identification number.

POLE or COMPONENTS

COMP ID - Individual number of component at the site

EXIST (m) - Description of existing pole at this station.

REC (m) - Description of existing pole to be recovered from this station.

ERECT (m) - Description of new pole to be erected at this station.

SLM or IIN - Streetlight model or Stock code

ALIGN (m) - Distance from the centre of pole to a reference point (m) nominated by the local authority, Department of Transport & Main Roads, or other Statutory Authority. This may be a northing and easting reference if the area is Greenfield and provides for detailed surveying measurements to be made thus allowing new constructions to be located accurately (Distance from a property boundary to the centre of the pole is preferable (as kerbing is not shown on energise.)

Appendix E – Streetlight Schedule (cont.)

LUMINAIRE

COMP ID	- Individual number of component at the site
EXIST	- Description of existing luminaire, type, size and rate (In accordance with Public Lighting Design & Construction Manuals)
RECOVER	LUMIN - Description of luminaire, type, size and rate to be recovered (In accordance with Public Lighting Design & Construction Manuals) CUST - The customer who is to be billed for this light
DATE DE_ENERG	- Date that supply to light removed (typically the "as constructed" date)
ERECT	LUMIN - Description of luminaire, type, size and rate to be erected (In accordance with Public Lighting Design & Construction Manuals) CUST - The customer who is to be billed for this light
DATE ENERG	- Date that supply to light connected (typically the "as constructed" date)
SLM or IIN	- Streetlight model or Stock code

OUTREACH BRACKET

EXIST (m)	- Description of existing outreach or bracket type (In accordance with Public Lighting Design & Construction Manuals)
REC (m)	- Description of existing outreach or bracket type to be recovered from this station (In accordance with Public Lighting Design & Construction Manuals)
ERECT (m)	- Description of new outreach or bracket type to be erected at this station (In accordance with Public Lighting Design & Construction Manuals)
SLM or IIN	- Streetlight model or Stock code
MOUNT HEIGHT (m)	- Nominal-mounting height of the streetlight ((In accordance with Public Lighting Design & Construction Manuals)
REMARKS	- Any other details/descriptions not covered by the schedule.

WORKS PLAN STANDARD - ELECTRICITY

Appendix F – Underground Civil Works Schedule

This schedule contains all information relevant to the design, construction and recording of excavation, backfill and laying of conduits in trenches for underground works (other than URD estates), associated with the works plan.

UNDERGROUND CIVIL WORKS SCHEDULE																	
LOCATION	STATION FROM-TO	LCC	TRENCH (m)			CONDUITS			BENDS		BACKFILL			PROTECTION		REINSTATEMENT		REMARKS
			L	W	D	SIZE/ TYPE	No	TOTAL LENGTH	SIZExANGxRAD	No	TYPE	(m^3)	D	TYPE	No	TYPE	(m^2)	
Welsby St, Geebung	2 - 3		22	0.3	0.75	125PVC	2	44 m	125x30x2000	6	EXSPOIL	5				GRASS	33	

LOCATION - Physical address of the sites
STATIONS FROM-TO - Plan station numbers of each site between which the works are to take place.
LCC - Mark if civil works have been deemed as a Large Customer Connection (LCC) connection asset.

TRENCH (m)

L - Length of the trench in metres
W - Width of the trench in metres
D - Depth of the trench in metres

CONDUITS

SIZE/TYPE - A description of the diameter and type of conduit
No - The number of conduits in the trench
TOTAL LENGTH - The total length of the conduits being installed

BENDS

SIZExANGxRAD - A description of the conduit bend diameter, angle of the bend and radius of the bend
No - The number of bends required

BACKFILL

TYPE - A description of the backfill type
(m^3) - Volume of backfill required in cubic metres (m^3)
D - Depth of backfill

Appendix F – Underground Civil Works Schedule (cont.)

PROTECTION

TYPE	- A description of the protection required
No	- The number of these protection types required

REINSTATEMENT

TYPE	- A description of the type of reinstatement required, e.g. concrete, bitumen or grass
(m^2)	- The area of the surface to be reinstated in square metres (m^2)
REMARKS	- Any other details/descriptions not covered by the schedule.

Appendix G – Underground Cable Schedule

This schedule contains all information relevant to the design, construction and recording of work on underground cables associated with the works plan. This schedule must be used when underground cables are to be affected.

UNDERGROUND CABLE SCHEDULE													
LOCATION	STATIONS FROM-TO	VOLTS	EXIST	TRF	REC	INSTALL	CABLE SIZE/TYPE	MODEL ID	ROUTE LENGTH (m)	CABLE LENGTH (m)		LCC	REMARKS
										NEW	REC		
Welsby St., Geebung	1 - 4	11kV				X	400mm^{2}Al 3X1C TRIP XLPE/SCR/MDPE	11AT400XSH	78	89		X	
	4 - 6	LV	X				240mm^2 Al 4C XLPE/PVC STRANDED		40				
	6 - 7	SL			X		16mm^2 Cu 2C XLPE/PVC		12		14		

LOCATION - Physical address of the sites
STATIONS (FROM-TO) - Plan station numbers of each site between which the works are to take place.
VOLTS - Nominal voltage the cables will be energised at, e.g. 11kV, LV.
EXIST - Mark if existing cables between the station numbers.
TRF - Mark if cable is to be transferred
REC - Mark if cable is to be recovered.
INSTALL - Mark if cable is to be installed.
CABLE SIZE/TYPE - A description of the cable size and type.
MODEL ID - Compatible unit as per Energex standards for size and type of cable
ROUTE LENGTH (m) - The length of the cable route between station numbers (in metres)

CABLE LENGTH (m)

NEW - The total length of cable to be installed between station numbers including allowance for pole terminations, joints, loops, etc (in metres)
REC - The total length of cable to be recovered between station numbers including allowance for pole terminations, joints, loops, etc (in metres)
LCC - Mark if cable has been deemed as a Large Customer Connection (LCC) connection asset.
REMARKS - Any other details/descriptions not covered by the schedule.

WORKS PLAN STANDARD - ELECTRICITY

Appendix H – URD Civil Works Schedule

This schedule contains all information relevant to the design, construction and recording of civil works for URD subdivisions associated with the works plan. This schedule must be used on all URD subdivision works plans.

URD CIVIL WORKS SCHEDULE																		
LOCATION	STATIONS FROM-TO	CONDUIT LENGTH (m)						BENDS (∠º/No)						X-SECTION (m)		DRAW WIRE	KERB MARK	REMARKS
		40mm	No	80mm	No	125mm	No	40mm		80mm		125mm		EXCAV/ TAPE	TRENCH DETAIL			
Smith St, Springfield	3 - 8			64	1	64	1			30	1	30	1	64	A	128		
	8 - 11			58	2					60	2			58	B		1	Along footpath
	11 - 12			41	2									41	E	81	1	X - Street
	12 - 13	12	1												C	12		
TOTALS		12		262		64			0		3		1	163		221	2	

LOCATION - Physical address of the sites
STATIONS (FROM-TO) - Plan station numbers of each site between which the works are to take place.
CONDUIT LENGTH (m) - Required length and number of the relevant size conduit
BENDS (∠º/No) - Required number and angle of relevant size bends

X-SECTION (m)

EXCAV/TAPE - Length of trench excavation and marker tape required
TRENCH DETAIL - Description of trench cross section as per specification URD
DRAW WIRE - Length of draw wire required
KERB MARK - Number of kerb markers required
TOTALS - Total length/ number of components required (optional).
REMARKS - Any other details/descriptions not covered by the schedule.

Appendix I – Equipment Schedule

This schedule contains all information relevant to the design, construction and recording of equipment to be installed (not included in other schedules, e.g. ground transformers, RMUs, etc) as associated with the works plan. This schedule must be used when equipment is to be affected.

EQUIPMENT SCHEDULE													
LOCATION	STN No	SITE ID	EXIST	REC	INSTALL	SIZE & DESCRIPTION	IIN	COMP ID	PLANT No	MODEL ID	QTY	LCC	REMARKS
Forbes Crt, Sunnybank	1	SG1234			X	750kV.A Ground Transformer		TR1		S21665	1	X	
Forbes Crt, Sunnybank	2	U2468024			X	Service Pillar 2 Way		PI1		LVSP4-6SL	1		
Forbes Crt, Sunnybank	3	U2345678			X	11kV 400/400 Al TRIP STRAIGHT JOINT		CJ1		2JTA40TCAV7D	1	X	NETWORK COUPLING POINT

LOCATION - Physical address of the site e.g. street name
STN No - Station number that is the reference number for the plan site ID
SITE ID - Energex's site identification number. This is not mandatory if another schedule can associate the station number with the site ID on the same drawing.
EXIST - Mark if existing equipment item
REC - Mark if existing equipment item is to be recovered
INSTALL - Mark if existing equipment item is to be installed
SIZE & DESCRIPTION - A description of the equipment item, including number required
IIN - Energex stores item identification number for the equipment item
COMP ID - Individual number of component at the site
PLANT No - Allocated Energex number for items of plant
MODEL No - Compatible unit as per Energex standards
QTY - The number of equipment items being installed
LCC - Mark if the plant item or piece of equipment has been deemed as a Large Customer Connection (LCC) connection asset.
REMARKS - Any other details/descriptions not covered by the schedule

WORKS PLAN STANDARD - ELECTRICITY

Appendix J – Sundry Schedules

This schedule contains all information relevant to the design, construction and recording of work not included in any other schedules associated with the works plan. This schedule must be used when sundry items are to be affected.

OVERHEAD SUNDRY SUMMARY SCHEDULE				
SUNDRY SPEC	DESCRIPTION	QUANTITY	LCC	REMARKS

UDNERGROUND SUNDRY SUMMARY SCHEDULE				
SUNDRY SPEC	DESCRIPTION	QUANTITY	LCC	REMARKS

SUNDRY SPEC - Compatible unit or Stock code of sundry item
DESCRIPTION - Brief description of sundry item
QUANTITY - Number of this sundry item required
LCC - Mark if the sundry item has been deemed as a Large Customer Connection (LCC) connection asset.
REMARKS - Any other details/descriptions not covered by the schedule.

OVERHEAD SUNDRY DETAILS SCHEDULE						
LOCATION	STATIONS FROM-TO	SUNDRY SPEC	DESCRIPTION	QUANTITY	LCC	REMARKS

UNDERGROUND SUNDRY DETAILS SCHEDULE						
LOCATION	STATIONS FROM-TO	SUNDRY SPEC	DESCRIPTION	QUANTITY	LCC	REMARKS

LOCATION - Physical address of the site e.g. street name
STATIONS FROM-TO - Plan station numbers of each site between which the works are to take place
SUNDRY SPEC - Compatible unit or Stock code of sundry item
DESCRIPTION - Brief description of sundry item
QUANTITY - Number of this sundry item required
LCC - Mark if the sundry item has been deemed as a Large Customer Connection (LCC) connection asset.
REMARKS - Any other details/descriptions not covered by the schedule

Appendix K – Recovered Copper Cable Schedule

This schedule contains all information relevant to copper overhead conductor (including LV services) and underground cables that are to be recovered as detailed on the works plan. This schedule must be used when copper overhead conductor (including LV services) and/or underground cables are to be recovered.

COPPER CONDUCTOR & CABLE RECOVERY		
TYPE		TOTAL LENGTH (m) (FOR OH SERVICES – ONLY NUMBER REQUIRED, NOT LENGTH)
OH	7/.064 OR 7/16 CONDUCTOR	
	7/.080 OR 7/14 CONDUCTOR	
	7/.104 OR 7/12 CONDUCTOR	
	19/.083 OR 19/14 CONDUCTOR	
	19/.101 OR 19/12 CONDUCTOR	
	OH SERVICE (ANY TYPE)	
UG	16mm^2 2 OR 4 CORE CABLE	
	185mm^2 3.5 CORE (LV) CABLE	
	185mm^2 3 CORE (HV) CABLE	
	240mm^2 3 CORE CABLE	
	300mm^2 3 CORE CABLE	
	300mm^2 1 CORE CABLE	
	0.25in^2 3 CORE (HV) CABLE	
	0.25in^2 3.5 CORE (LV) CABLE	
	OTHER CABLE TYPE - SPECIFY	
RETURN CONFIRMED BY:…… DATE:__/__/__		

TYPE - Type of copper overhead conductor (including LV Services) and/or underground cable to be recovered.
TOTAL LENGTH (m) - Total length in metres of copper overhead conductor and/or underground to be recovered. For overhead LV services, only the number of LV services is to be recorded, not the length of the LV services.

WORKS PLAN STANDARD - ELECTRICITY

Appendix L – Title Block

The title block provides information on the identification of the works, the designers, services information and recording data, all associated with the works plan. Segments are completed only when they are applicable to the works. This style of title block is recommended. The project number (as detailed in section 3.2) itself must be located in a position where its identification may be ascertained without unfolding the paper works plan, preferably on the bottom right hand corner. This project number is to be the same for single and/or multiple page works plans. A title block is to be used on all works plans.

Section A

DATE	7/5/03		SITE CONTACT DETAILS		ALIGNMENTS		WORKS COORDINATOR	Joseph Bloggs
			NAME Richard Green		Energex OH	3.2m	PARENT PROJECT NO.	
					Energex UG	0 – 0.9m	WORK REQUEST NO.	
DESCRIPTION	ORIGINAL		COMPANY Electrical Enterprises		TELSTRA	Joint Use		
					GAS	0.6m	LOTS	1 to 40 on SP168248
			PHONE	3311 1234	HP GAS	Nil	CANCELLING LOTS	23 & 24 on RP52478
			MOBILE	0430 444 123	WATER	1.4m		
			FAX	3311 2468	STORMWATER	Clear	LOCAL AUTHORITY	BCC
A					SEWERAGE	Clear	UBD REF	139 F-15
					OTHER	Nil	PEGGED?	Yes

A - Issue number of this works plan (A – Z is used)
DESCRIPTION - What was changed to initiate this issue (Issue A will be original)
DATE - Date of this issue

SITE CONTACT DETAILS (these details must appear in the title block only)
NAME - Name of the person to contact on site, e.g. project manager, coordinator
COMPANY - Company this person represents
PHONE - Landline phone number of the contact person on site
MOBILE - Mobile phone number of the contact person on site
FAX - Facsimile phone number of the contact person on site
ALIGNMENTS - Expected alignments of utility assets are to be detailed. Where no utility assets exist or are not in conflict with proposed works, “Nil” or “Clear” respectively are to be stated.
WORKS COORDINATOR - Name of person responsible for works
PARENT PROJECT NO. - Project number generated from Energex Ellipse system (expected to be the same as the Master Project Number)

Appendix L – Title Block (cont.)

WORK REQUEST NO.	- Project's Work Request number
LOTS	- The new lot numbers and plan number for URD subdivisions
CANCELLING LOTS	- The cancelled lot(s) and plan number(s) for URD subdivisions
LOCAL AUTHORITY	- Council or Shire where the works will occur
UBD REF	- Location of works using the UBD map reference number and grid coordinates
PEGGED?	- A comment depending upon whether the sites have been pegged

Section B

APPROVED: *Name*	**Energex**	WORKSPLANS VERSION X.X SCALE: 1:1000
CHECKED: Name	11KV & LV EXTENSION REMOVAL OF EXISTING 100KVA SP TO NEW SITE	PROJECT / SUB PROJECT NO. **C0011738**
DESIGNER: John Smith PHONE: 3404 1234	**11KV & LV EXTENSION** **BARWOOD STREET** **NEWMARKET**	
PLANNER: David Brown PHONE: 3407 2468		Sheet 1 of 1
ISSUE DATE: 07 May 2003		ISSUE NO: A1

NOTE - Approved for Issue Stamp is applied to the drawing at the Design Approval stage and is signed by the approving person.

APPROVED	- Name of the authorised person approving the technical accuracy of the design
CHECKED	- Name of the person checking the technical accuracy of the design
DESIGNER PHONE	- Name and phone number of the person who designed the works on the works plan

Appendix L – Title Block (cont.)

PLANNER PHONE	- Name and phone number of the person who planned the works on the works plan
ISSUE DATE	- Issue date of the works plan
TITLE BOX	
UPPER SECTION	- Name of company designing the works on the works plan
MIDDLE SECTION	- Description of the works. If the works plan is for a Large Customer Connection (LCC) project, ensure “LCC” is added as part of the title.
LOWER SECTION	- Name and address of the works plan worksite
WORKSPLANS VERSION	- Valid only for Energex’s AutoCAD based drawing package
SCALE	- Drawing scale of the works plan
PROJECT/SUB PROJECT NUMBER	- Allocated Energex number of the works plan (to be the same as the Construction Phase sub-project number generated from Energex Ellipse system
SHEET	- Sheet number of the total number of sheets associated with the works plan
ISSUE NO.	- Issue of this works plan (A-Z is used)
A1	- Size of the sheet (maximum of A1 to be used)

Appendix M – AutoCAD Map Layer Properties

Layer Name	Description	Colour	Line Type	A/CAD Colour Number
0	Standard AutoCAD	White	Continuous	Color_7
25	Standard AutoCAD	White	Continuous	Color_7
35	Standard AutoCAD	50	Continuous	Color_50
5	Standard AutoCAD	11	Continuous	Color_11
7	Standard AutoCAD	140	Continuous	Color_140
ASBUILT	Current network U/G &	Yellow	Continuous	Color_2
ASBUILTREMOVED	Proposed network	Red	Continuous	Color_1
ASBUILTUPDATED	Proposed network	Green	Continuous	Color_3
BASEVIEWS		Red	Continuous	Color_1
BOUNDING		Magenta	Continuous	Color_6
CROSSSECTIONS		131	Continuous	Color_131
DCNetwork	Related to QuickView	White	Continuous	Color_7
DCNetwork_110kV	Related to QuickView	Red	Continuous	Color_1
DCNetwork_110kV_txt	Related to QuickView	Red	Continuous	Color_1
DCNetwork_11kV	Related to QuickView	Yellow	Continuous	Color_2
DCNetwork_11kV_txt	Related to QuickView	Yellow	Continuous	Color_2
DCNetwork_132kV	Related to QuickView	14	Continuous	Color_14
DCNetwork_132kV_txt	Related to QuickView	14	Continuous	Color_14
DCNetwork_19kV	Related to QuickView	Yellow	Continuous	Color_2
DCNetwork_19kV_txt	Related to QuickView	Yellow	Continuous	Color_2
DCNetwork_275kV	Related to QuickView	14	Continuous	Color_14
DCNetwork_275kV_txt	Related to QuickView	14	Continuous	Color_14
DCNetwork_33kV	Related to QuickView	112	Continuous	Color_112
DCNetwork_33kV_txt	Related to QuickView	112	Continuous	Color_112
DCNetwork_415V	Related to QuickView	14	Continuous	Color_14
DCNetwork_415V_txt	Related to QuickView	14	Continuous	Color_14
DCNetwork_DE-ENG	Related to QuickView	White	Continuous	Color_7
DCNetwork_DE-ENG_txt	Related to QuickView	White	Continuous	Color_7

Appendix M – AutoCAD Map Layer Properties (cont.)

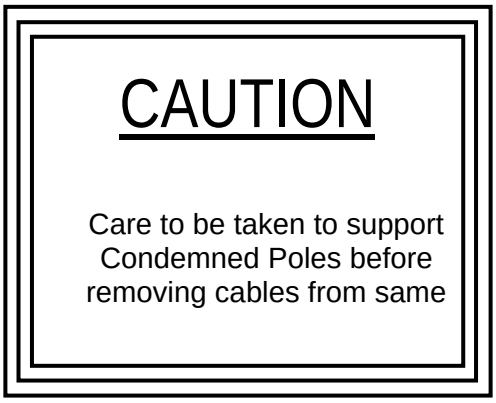
Layer Name	Description	Colour	Line Weight	A/CAD Colour Number
DCNetwork_EARTH	Related to QuickView only	Green	Continuous	Color_3
DCNetwork_EARTH_txt	Related to QuickView only	Green	Continuous	Color_3
DCNetwork_LV	Related to QuickView only	Blue	Continuous	Color_5
DCNetwork_LV_txt	Related to QuickView only	Blue	Continuous	Color_5
DCNetwork_OHEW	Related to QuickView only	Green	Continuous	Color_3
DCNetwork_OHEW_txt	Related to QuickView only	Green	Continuous	Color_3
DCNetwork_OHEW+P	Related to QuickView only	Green	Continuous	Color_3
DCNetwork_OHEW_P_txt	Related to QuickView only	Green	Continuous	Color_3
DCNetwork_P	Related to QuickView only	Green	Continuous	Color_3
DCNetwork_P_txt	Related to QuickView only	Green	Continuous	Color_3
DCNetwork_SL	Related to QuickView only	192	Continuous	Color_192
DCNetwork_SL_txt	Related to QuickView only	192	Continuous	Color_192
DCNetwork_Stay	Related to QuickView only	39	Continuous	Color_39
DCNetwork_Stay_txt	Related to QuickView only	39	Continuous	Color_39
DCNetwork_txt	Related to QuickView only	White	Continuous	Color_7
Defpoints		White	Continuous	Color_7
GHOST		8	Continuous	Color_8
HISTORY		White	Continuous	Color_7
NEW		140	Continuous	Color_140
NOTETEXT	Defining network e.g.,conduit config	White	Continuous	Color_7
REMOVED		Yellow	Continuous	Color_2
STATIONS		50	Continuous	Color_50
ROAD_CL		White	Continuous	Color_7
ROADNAME		White	Continuous	Color_7
ROUTES		41	Continuous	Color_41
TX_18_BOLD		141	Continuous	Color_141
UPDATED		Yellow	Continuous	Color_2
viewport		White	Continuous	Color_7
WOPOLYGON		Cyan	DASHED2	Color_4
CONSUMER MAINS		Purple	DASHED	Colour_?

Appendix N – Examples of Warning/Caution Boxes

Live cables are in the vicinity

Gas pipelines are in the vicinity. Location confirmation with the appropriate gas organisation is to be organised before any excavation is commenced.

RFR units are installed at this site and appropriate safety procedures must be adhered to.



State of pole is of concern and precautions are to be taken before certain works are commenced.

Underground assets are in the immediate vicinity. Hand excavation is required.

Feedback

Please send feedback with any suggestions you may have to improve the contents of this document to: bradthomas@energex.com.au or telephone (07) 3664 4000 or post your suggestions to:

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Please provide details of your suggestions and outline the reasons for this.