EXISTING AUTHROITY SERVICES AND ESTABLISHMENT OF SERVICES TO THE DEVELOPMENT

FOR

MAJOR'S BAY REDVELOPMENT

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TABLE OF CONTENTS**1 ..... Introduction1**

2 Existing Authority Services 1

2.1 EnergyAustralia 1
2.2 Telstra 5
2.3 FoxTel/ Optus PayTV Services 6
2.4 Roadway Lighting 6

3 Site Requirements 7

3.1 Electrical 7
3.2 Communication 8
3.3 Roadway and Pedestrian Lighting 9
3.4 Cycleway Lighting 9
3.5 Energy Conservation 10

4 Costs 10

5 Outstanding Items 13

5.1 Substation Establishment 13
5.2 Underground of Aerial Services 14
5.3 Roadway and Pedestrian Lighting 14

Appendix A - Energy Australia Underground Services 16

Appendix B – Telstra Main and Local Cabling 18

Appendix C – Maximum Demand Calculations 21

Appendix D – Substation Easement Size Options 25

Appendix E – Roadway and Pedestrian Lighting 27

Appendix F – Shared Trench Arrangement 30

Issue	Revision Descriptions	Date
P1	Issued For Review	14 March 2007
P2	Pedestrian lighting within sites/ EA comments added	27 March 2007
P3	Cost Plan revised for excavation in rock and public domain benefits. Kingston/ Rickhard Foreshore upgrade	2 April 2007

1 Introduction

ACOR Consulting has been commissioned to review and advise on the extent of existing authority services within and around the proposed Majors Bay redevelopment.

An authority services search has indicated the following authorities are within or adjacent to the development area:

a. Agility

b. Canada Bay Council

c. EnergyAustralia

d. Sydney Water

e. Telstra

ACOR Consulting commission is for the review of EnergyAustralia and Telstra services only; other electrical and communication authorities would be reviewed if they had a presence within the development.

The services search indicates that EnergyAustralia has high voltage (HV) cable runs and a number of established substations in and adjacent to the development sites, together with low voltage (LV) aerial cables. Telstra has copper and fibre optic cable to and adjacent to the development sites.

2 Existing Authority Services

2.1 EnergyAustralia

Appendix A indicates the existing underground services in the vicinity of the development sites.

HV Cable Reticulation:

a. Site 1 has underground HV cables along its northern and western property boundaries with Northcote and Bennett Streets respectively.

b. Site 2 has no underground services along its street boundary with Bennett Street.

c. Site 3 has underground HV cables along the eastern and southern street boundaries with Hilly and Northcote Streets respectively. HV cables also extend into the south-western property and serve two (2) substations within this site, the cables run along the right-of-way.

Substations:

a. Site 1 has no existing substation directly adjacent to the site.

A substation exists north east across Hilly/ Northcote Streets, No 3401. The site adjacent to this substation has been bought and is to be redeveloped and EnergyAustralia has advised that the substation has been ear-marked for that development. Its current location is also to be changed

Substation No 3401 at LHS Behind Tree

b. Site 2 has no existing substation directly adjacent to the site

c. Site 3 has an existing substation (designated as No 6589) about midway along Hilly Street within Site 3 property on its boundary. It is a pad mounted substation and appears to be a 750kVA, a size generally installed by EnergyAustralia.

   Two (2) other existing substations are located within Site 3 in the south-western area of the overall site with access from the right-of-way laneway. The substations are designated as No 4773 and 4774. The sequential numbering of the substations would indicate that they were installed at the same time during a redevelopment of the area. A site review indicates that the substation is designated as 3883 and only one substation was found on site. The substation is a surface chamber incorporated into the building.

Substation No 6589 (Hilly Street)

Substation 3883 (Off Northcote Street)

LV Aerial Cable Reticulation:

a. Site 1 has LV aerial cables along the entire site's side of Bennett Street with a number of aerial service crossings to properties on the other side

   LV aerial cables exist partially along the site's side of Hilly street and terminate approximately 2/3 rds of the way towards Edwin Street. A number of aerial service crossings to properties on the other side of the road exist

   Edwin Street has LV aerial services on the opposite side of the street from site and aerial cables feed these properties

   The Aqua development is feed via an aerial service from the corner of Bennett and Northcote Streets.

Hilly Street Looking North

Aerial Feed to Aqua Apartments

b. Site 2 has no aerial cables along its side of the street. The properties are serviced by aerial cables across the street

Bennett Street Looking North Near Site 2

Cnr Bennett & Edwin Streets Looking North

c. Site 3 has LV aerial cables along the entire site's side of Hilly Street with a number of aerial service crossings to properties on the other side

Cnr Hilly & Northcote Streets
Looking North

Aerial cables exist along the property boundaries.

Generally it appears that the LV street reticulation has 200A aerial feeds. A significant aerial feed believed to originate from substation No 3401 and connect to the LV aerial network at the corner or Northcote and Bennett Streets. This feed may have been installed to serve the Aqua development.

2.2 Telstra

Appendix B indicates the existing underground services in the vicinity of the development sites.

Telstra's distribution feeds consist of copper and fibre cables.

Copper cables extend throughout the Majors Bay/ Breakfast Point region with the main trunk line along Tennyson/ Bennett and Hilly Streets.

Fibre cables also follow the copper cable. Telstra plans indicate that the fibre cable extends past the Telstra Mobile Base Station; however it is believed that this would not be the case as there are no significant uses that would warrant the use of multi-core fibre cable to their premises.

Site 1 is served by a separate distribution feed to that of sites 2 and 3.

Site 1 distribution feed is along Hilly Street property boundary.

Site 2 and 3 have distribution feeds on each sites' property boundary with Bennett Street.

2.3 FoxTel/ Optus PayTV Services

Both FoxTel and Optus have installed broadband cabling within the development area during their role out during the early 1990's. The capacity of the aerial services would be limited and suitable for single dwellings only.

a. Site 1 appears to have only FoxTel along its Hilly Street boundary with a number of street crossings to serve properties on the opposite side

   FoxTel and Optus exist along the sites side of Bennett Street, with a number of crossings to properties on the opposite side

b. Site 2 is served from feeds on Site 1's side of Bennett Street

c. Site 3 has FoxTel and Optus aerial services along its side of Hilly Street. There are a number of street crossing to serve properties on the opposite side

Aerial Cables with FoxTel/ Optus Below

2.4 Roadway Lighting

The roadways are currently lit by pole mounted luminaires on outreach arms. The lamps appear to be 80W Mercury Vapour.

Spacing is dictated by the LV street network pole locations. The roadway appears to be lit to Category P3 of AS 1158.3.1.

It is not believed that the Category P3 lighting levels are being achieved along Hilly and Edwin Streets due to the trees.

3 Site Requirements

3.1 Electrical

The calculated maximum demand for each site based on AS 3000 Table C1 and are given in Appendix C are:

	Site 1	Site 2	Site 3
No. of Dwellings	200	20	150
AS 3000 Demand	1354 Amps	180 Amps	1027 Amps
Diversified Demand	720 Amps	140 Amps	490 Amps

The diversified maximum demands are based on forced ventilated car parks. Should the car parks be naturally ventilated, the diversified maximum demands will decrease in the order of 20 to 50Amps for Sites 1 and 3, and 10Amps for Site 2.

EnergyAustralia generally requires any development with a demand greater than 200Amps to derive its supply from a substation. The substation is required to be located solely within the properties boundaries.

Sites 1 and 3 will require a substation to serve each development. The capacity of the existing substation within site 3 may be able to service the site without an additional substation being provided.

Site 2 may have its supply originating from the LV street network. An application for supply will need to be made to determine if the existing LV network has spare capacity to feed this development. If not, a substation would be required for this site also.

Establishment of a substation will generally require the following:

a. Dedicated easement, generally on the property boundary with dimension of 5,300 (L) x 3,300 (W), where the length is along the property boundary. If located wholly within the property or oriented along its short length, the easement size requirements will be greater. The various options are shown in Appendix D

b. No services are to encroach above or below the easement

c. Any retaining walls to create the easement site are to be outside the easement including all footings

d. No buildings are to be within 3,000mm of the kiosk housing unless of blastproof construction

e. No windows are to be within 3,000mm of the kiosk housing

f. No ventilation openings (supply or exhaust) are to be within 6,000 of the kiosk housing

Additional requirements and final configuration of the substations will need to be determined in conjunction with an Accredited Services Provider Level 3 (ASP L3).

To appoint an ASP L3 to carry out the design of the substation for each site requiring a substation will require an initial monopoly fee payment to EnergyAustralia to obtain the "Design Information". This Design Information is used by the ASP L3 to determine EnergyAustralia's requirements for the establishment of the substations. The Design Information is valid generally for 3 – 6 months and an approved design submitted by the ASP L3 is valid for 6 months, after which time a new application/ design may be required. As such it is not recommended that further application to EnergyAustralia be made until after DA.

3.2 Communication

Telephone Lines:

For medium to large scale developments an allowance of 2.5 telephone lines would be considered sufficient per dwelling. This will allow for a telephone line to each dwelling, an ADSL line and additional lines to a proportion of dwellings requiring additional lines such as may be required for Small Home Office arrangements. With the high uptake of mobile phones within Australia, the requirement for additional landlines is diminishing.

	Site 1	Site 2	Site 3
No. of Dwellings	200	20	150
Lines per Dwelling	480	50	357
House lines	10	3	10
Total lines per site	**490**	**53**	**367**

Broadband Services:

A check of Telstra's broadband Internet availability service indicates that there are limited cable broadband services to the area as noted in Clause 2.3 "FoxTel/ Optus PayTV Services" above. As the area is predominately industrial at the time when Telstra/ Optus were carrying out their cable rollout plan, the capacity for any broadband services via cable would be limited. Generally, large developments will require the installation of satellite PayTV with internet access via a landline.

A single satellite dish would be required for each site and should be located on a roof providing clear view of the northern skyline. The dish may be concealed within roof void provided the roof structure is not metallic.

Alternatively, FoxTel may see a commercial opportunity to provide fibre optic broadband services to each of the developments. The fibre solution would be run within existing Telstra underground conduit system and be extended where required.

Without a site telephone number, the availability of ADSL to the sites cannot be checked. With the developments currently being undertaken in the area it is most likely that access to ADSL via the standard copper cable reticulation will be available to the development.

3.3 Roadway and Pedestrian Lighting

The development proposal is for selected roadways to become narrower and landscaping/ tree planting occurring.

To enhance the space and achieve an inviting place for pedestrian to be present the lighting of the roadways is recommended to be two fold.

The first is the requirement to achieve the required roadway category lighting to Council requirements based on the designation of the roadways; collector, non arterial, local roadways. The second requirement is aesthetic to enhance the appearance of the environment.

Roadway lighting is to be achieved with pole mounted luminaires on outreach arms. The length of the outreach arms will be determined by the selection of the tree planting so that the roadway is effectively lit along the roadway while minimising any shadows cast by the trees' foliage. The poles will be in the order of 9m and outreach arms between 900mm and 3.5m. The spacing for roadway luminaires will be in the order of 40m.

Pedestrian lighting is to be achieved with pole top mounted luminaries that are of a human scale and are below the tree foliage so as to minimise shadows. The spacing for pedestrian luminaires is in the order of 10m to 15m.

Appendix E provides an indicative lighting scheme for roadway and pedestrian lighting along with luminaire selections.

3.4 Cycleway Lighting

The proposed cycleway path between Kingston Avenue and Rickard Street will be illuminated using pedestrian scale low brightness luminaires with spacing in the order of 15m between fittings.

The

3.5 Energy Conservation

Currently, energy conservation requirements are not mandatory to infrastructure works, however it is proposed to utilise energy efficient luminaires and lamps to minimise the number of fittings and lamp wattages required while still maintaining the illumination levels required by Council.

The residential buildings and all lighting within each development will be required to meet the requirements of BCA Section J.

4 Costs

The establishment of authority services and relighting of the roadways will be at the cost of the developer.

Order of costs are given below for each service required to or at the site and is itemised per site.

Site 1:

Item	**Quantity** (Project/ Public Benefit)	**Units**	**Cost**	**Sub-total Project Cost**	**Sub-total Public Benefit**
Substation	1	each	$60,000	$60,000	N/A
Underground of LV network	450	m	$440	N/A	$198,000
Underground of broadband services	350	m	$340	N/A	$119,000
Road crossing/ interconnection to properties	10	each	$12,000	N/A	$120,000
Roadway lighting	12	each	$5,200	N/A	$62,400
Pedestrian lighting	10/ 30	each	$6,200	$62,000	$186,000
Telstra Services	450	m	$70	$31,500	N/A
Total				**$153,500**	**$685,400**

Site 2:

Item	Quantity (Project/ Public Benefit)	Units	Cost	Sub-total Project Cost	Sub-total Public Benefit
Substation	0	each	$0	$0	N/A
Underground of LV network	0	m	$440	N/A	$0
Underground of broadband services	0	m	$340	N/A	$0
Road crossing/ interconnection to properties	1	each	$12,000	N/A	$12,000
Roadway lighting	0	each	$5,200	N/A	$0
Pedestrian lighting	0/ 0	each	$6,200	$0	$0
Telstra Services	0	m	$70	$0	N/A
Total				**$12,000**	**$0**

Site 3:

Item	Quantity (Project/ Public Benefit)	Units	Cost	Sub-total Project Cost	Sub-total Public Benefit
Substation	1	each	$60,000	$60,000	N/A
Underground of LV network	270	m	$440	N/A	$118,800
Underground of broadband services	270	m	$340	N/A	$91,800
Road crossing/ interconnection to properties	8	each	$12,000	N/A	$96,000
Roadway lighting	10	each	$5,200	N/A	$52,000
Pedestrian lighting	10/ 25	each	$6,200	$62,000	$155,000

Item	Quantity (Project/ Public Benefit)	Units	Cost	Sub-total Project Cost	Sub-total Public Benefit
Telstra Services	320	m	$70	$22,400	N/A
Total				**$144,400**	**$513,300**

Kingston/ Rickard Foreshore Upgrade:

Item	Quantity (Project/ Public Benefit)	Units	Cost	Sub-total Project Cost	Sub-total Public Benefit
Substation	1	each	$60,000	N/A	N/A
Underground of LV network	270	m	$440	N/A	N/A
Underground of broadband services	270	m	$340	N/A	N/A
Road crossing/ interconnection to properties	8	each	$12,000	N/A	N/A
Roadway lighting	10	each	$5,200	N/A	N/A
Pedestrian lighting	0/ 15	each	$6,200	N/A	$93,000
Telstra Services	320	m	$70	N/A	N/A
Total				**$0**	**$93,000**

Assumptions:

a. Excludes GST

b. Allowance for trenching within rock has been made (50% excavation within rock)

c. Site 1 not requiring establishment of a substation

d. Site 3 to have new substation, assuming existing substation not in favourable location in relation to buildings

e. Minimal HV cable augmentation for establishment of each substation

f. No augmentation of EnergyAustralia HV network for the establishment of substation

g. Raodway lighting upgrade to Hilly, Northcote, Bennett and Edwin Streets in vicinity of development only

h. Pedestrian lighting to Hilly, Northcote, Bennett and Edwin Streets in vicinity of development only and on development side of street only except for Edwin

i. Pedestrian lighting also included along public pathways within Sites 1 and 3

j. Telstra services are generally upgraded free of charge. Conduit and trenching provisions by developer only. Conduit provided free of charge by Telstra

5 Outstanding Items

The following items are to be resolved during the course of the projects development, either at final DA submission or at CC determination.

5.1 Substation Establishment

Based on EnergyAustralia's general practice it has been assumed that a substation will be required for Sites 1 and 3 only. EnergyAustralia has verbally confirmed that:

a. The existing substation No 6589 in Hilly Street can service Lot 3

b. The existing substation No 3883 within Lot 3 will be decommissioned and equipment salvaged by EA

c. Site No 1 will be provided with a new kiosk substation along the street frontage of Bennett Street and connected to HV feeder cables located within Bennett Street. The connection arrangement to the feeder cables will be subject to analysis by EA's Network division once monopoly design fees have been paid

d. Site No 2 will be serviced via the LV street reticulation

The design team will be required to locate the substation within the Site's property boundaries and preferably at a street boundary.

EnergyAustralia are currently reviewing the proposed development and the implications to their network system. They may be in a position to provide indicative requirements by the end of March 2007.

Detailed requirements for substation establishment cannot proceed without payment of monopoly fees to EnergyAustralia and the engagement of an Accredited Services Provider Level 3.

Generally the time frame from payment of monopoly fees to the issuing of "Design Information" so that an ASP Level 3 (ASP L3) can be engaged to one (1) month. The ASP L3 generally will required one (1) month for design of each substation and submission to EnergyAustralia for certification. EnergyAustralia will then take two (2) weeks to provide a certification for the works. After certification, an Accredited Services Provide Level 1 (ASP L1) can be engaged to carry out the construction works.

5.2 Underground of Aerial Services

Undergrounding of the existing aerial services will require a formal application to EnergyAustralia, FoxTel and Optus. Upon application, each authority will provide a construction cost to carry out the works. Generally each authority will carry out the works as they do not allow third parties to perform the works.

Upon application, each authority will take one (1) to two (2) months to formulate a cost to carry out the works. After part payment they will commence works. FoxTel and Optus will require that EnergyAustralia to have completed their works prior to FoxTel and Optus commencing their works.

Appendix F provides details of preferred arrangement for underground services including the preferred shared trench arrangement with Telstra. Generally, the minimum depth of trench is 750mm and is 300 – 1200 from property line. Currently there are no Optus underground services, either within Optus' own conduits or within Telstra's, as per the information provided by the dial-before-you-dig enquiry.

The relocation of the aerial services will require surveying and investigation for allocation of services especially in Hill Street along Site 3 boundary should the existing trees remain. Should the aerial be relocated underground then an underground shared trench agreement will need to be approved between EnergyAustralia, Optus, AGL and SydneyWater.

5.3 Roadway and Pedestrian Lighting

Roadway and pedestrian lighting will need to be integrated into the landscape/ streetscape design with carefully co-ordination of tree planting/ types with the lighting to ensure that the lighting requirements are meet.

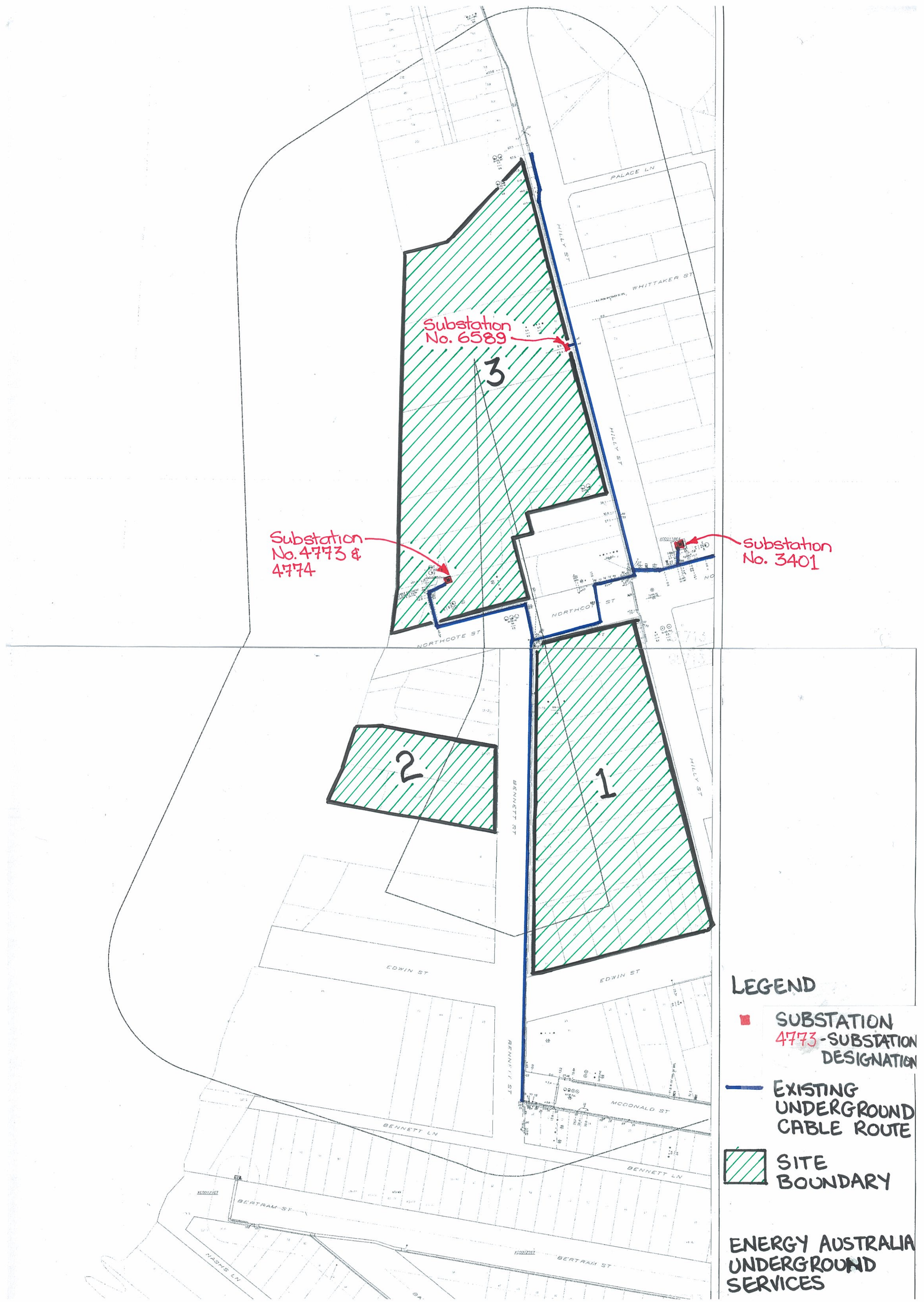
Currently the roadways along each site are public and if this is to remain then selection of roadway luminaires are limited to that approved by EnergyAustralia.

Selection of pedestrian luminaires will need to be approved by Canada Bay Council and EnergyAustralia and who will be responsible for maintenance and running costs.

Should Canada Bay Council be in agreement that they take ownership of the roadway, pedestrian and cycleway lighting, then the selection of luminaires available increases.

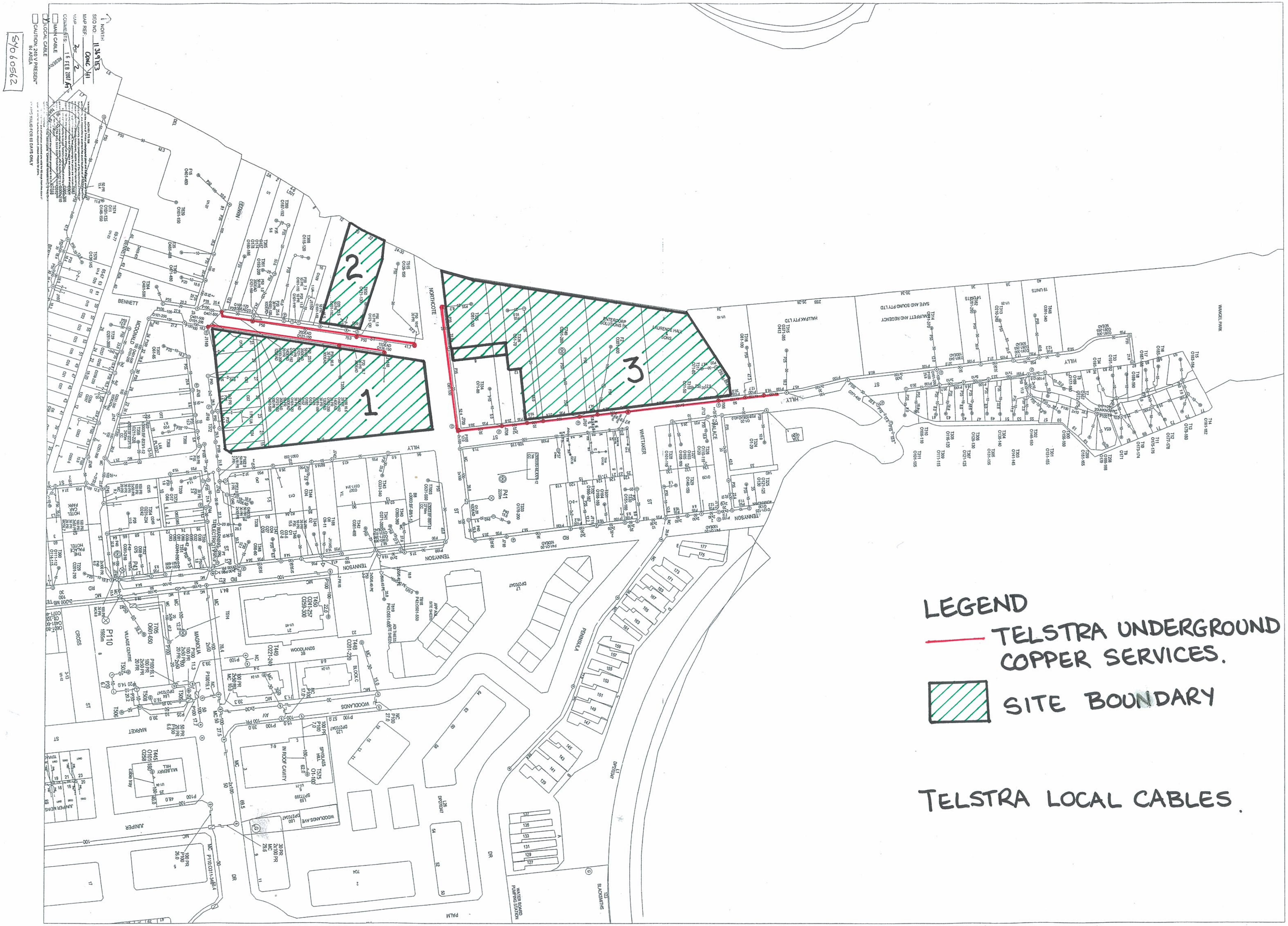
A request to Canada Bay Council will be required once the streetscape/ lighting arrangement has been finalised for approval of the lighting scheme and luminaire/ pole selection.

Appendix A - Energy Australia Underground Services


Substation No. 6589
Substation No. 4773 & 4774
Substation No. 3401
3
2
1
PALACE LN
HILLY ST
WHITTAKER ST
NORTHCOTE ST
BENNETT ST
EDWIN ST
McDONALD ST
BENNETT LN
BERTRAM ST
NASHS LN
LEGEND
SUBSTATION
4773 - SUBSTATION DESIGNATION
EXISTING UNDERGROUND CABLE ROUTE
SITE BOUNDARY
ENERGY AUSTRALIA UNDERGROUND SERVICES

Appendix B – Telstra Main and Local Cabling


1
2
3
LEGEND
COPPER TRUNK
FIBRE
SITE BOUNDARY.
TELSTRA TRUNK CABLING.


LEGEND
TELSTRA UNDERGROUND COPPER SERVICES.
SITE BOUNDARY
TELSTRA LOCAL CABLES.
1
2
3

Appendix C – Maximum Demand Calculations

Major's Bay Redevelopment - Lot 1
Maximum Demand

Job No.: SY060562

Calc. Basis:

200 Units. In accordance with AS 3000, Table C1 Column 5
67 Units per phase (maxiumum)

Group		Description		Load: Base (/Unit or sq m)	Load: A/ unit, sq m or W	Total	Details	Comments
A	(i)	Lighting	Units	0	0.5	33.5	0.5 per living unit	
				0			2A for each additional 20 points	
	(ii)		External				No assessment for purpose of maximum demand	
B	(i)	Outlets	<10A	50	1.9	177.3	50A + 1.9 per living unit	
				1			5A for each additional 20 points	
	(ii)		15A		10		10A, other than load groups C - L	
	(iii)		20A		15		15A, other than load groups C - L	
C		Ranges, cooking appliance, laundry equip.		67	15	187.6	2.8 per living unit	Gas cooktop/ elec oven
D		A/C or Heating greater than 10A		67	15	942.2	75% of connected load	
E		Inst HWU			0.8		100A + 0.8 per living unit	Gas central HW
F		Storage HWU	Controlled		0.8		100A + 0.8 per living unit	
G		Spa/pool heating					75% of largest spa	
							75% of largest pool	
							Plus 25% of remainder	
							Loading not associated with indivdual units	
H		Communal lights		50	37	2.7	Full connected load	32W fluor bollard
				20	35	1.0		50W LV
I		Outlets not in Group J & M, permanent equip. < 10A			2	0.0	1 Amp per point to 15A maximum	
J		Appliances > 10A and socket outlets				0.0	50% connected load	
	(I)		Clothes drier, water heaters			0.0	50% of connected load	
	(ii)		Fixed space heating, A/C, Sauna			0.0	75% of connected load	
	(iii)		Spa & , pool heaters			0.0	75% of largest spa	
K		Lifts					No assessment for Maximum Demand, In accordance with Cl4.3 of Table C2 Col. 2 for sub-main size	
			Largest	1		0.0	125% of largest (80% efficiency)	Not included in MD
			Next largest	1		0.0	75% of next largest (80% efficiency)	Not included in MD
			Remainder				50% of remainder (80% efficiency)	Not included in MD
L		Motors					In accordance with C4.3 of Table C2 Col. 2	
			Largest	1	5.0	9.0	100% of largest (80% efficiency)	Car park ventilation
			Remainder	1	1.2	0.8	50% of remainder (80% efficiency)	1.2kW sewer pump
M		Other Appliances					Connected load <= 10A, no assessment for purpose of Maximum Demand, otherwise by assessment	
					Total (A/ph)	1354		
			Spare capacity:		10%	135		
					Total (A/ph)	**1489**		
					Total (A/ph)	**1655**	**0.9 PF**	

Notes:

1. External lighting included in Group H
2. Car park requires forced ventillation
3. Gas cooktop and central HWU
4. Electric oven
5. Load group L, motors in accordance with Table C2 Col 2

Date:	Revision	Description
6-Mar-07	00	Original issue

Major's Bay Redevelopment - Lot 2
Maximum Demand

Job No.: SY060562

Calc. Basis:

20 Units. In accordance with AS 3000, Table C1 Column 4
7 Units per phase (maxiumum)

Group		Description		Load: Base (/Unit or sq m)	Load: A/ unit, sq m or W	Total	Details	Comments
A	(i)	Lighting	Units	5	0.25	6.8	5A + 0.25 per living unit	
				0			2A for each additional 20 points	
	(ii)		External				No assessment for purpose of maximum demand	
B	(i)	Outlets	<10A	15	3.75	41.3	15A + 3.75 per living unit	
				1			5A for each additional 20 points	
	(ii)		15A		10		10A, other than load groups C - L	
	(iii)		20A		15		15A, other than load groups C - L	
C		Ranges, cooking appliance, laundry equip.		7	15	19.6	2.8 per living unit	Gas cooktop/ elec oven
D		A/C or Heating greater than 10A		7	15	98.4	75% of connected load	
E		Inst HWU			6		6A per living unit	Gas central HW
F		Storage HWU	Controlled		6		6A per living unit	
G		Spa/pool heating					75% of largest spa	
							75% of largest pool	
							Plus 25% of remainder	
							Loading not associated with indivdual units	
H		Communal lights		50	37	2.7	Full connected load	32W fluor bollard
				20	35	1.0		50W LV
I		Outlets not in Group J & M, permanent equip. < 10A			2	0.0	2 Amp per point to 15A maximum	
J		Appliances > 10A and socket outlets				0.0	50% connected load	
	(I)		Clothes drier, water heaters			0.0	50% of connected load	
	(ii)		Fixed space heating, A/C, Sauna			0.0	75% of connected load	
	(iii)		Spa & , pool heaters			0.0	75% of largest spa	
K		Lifts					No assessment for Maximum Demand, In accordance with Cl4.3 of Table C2 Col. 2 for sub-main size	
			Largest	1		0.0	125% of largest (80% efficiency)	Not included in MD
			Next largest	1		0.0	75% of next largest (80% efficiency)	Not included in MD
			Remainder				50% of remainder (80% efficiency)	Not included in MD
L		Motors					In accordance with C4.3 of Table C2 Col. 2	
			Largest	1	5.0	9.0	100% of largest (80% efficiency)	Car park ventilation
			Remainder	1	1.2	0.8	50% of remainder (80% efficiency)	1.2kW sewer pump
M		Other Appliances					Connected load <= 10A, no assessment for purpose of Maximum Demand, otherwise by assessment	

	Total (A/ph)	180	
Spare capacity:	10%	18	
	Total (A/ph)	**197**	
	Total (A/ph)	**219**	**0.9 PF**

Notes:

1. External lighting included in Group H
2. Car park requires forced ventillation
3. Gas cooktop and central HWU
4. Electric oven
5. Load group L, motors in accordance with Table C2 Col 2

Date:	Revision	Description
6-Mar-07	00	Original issue

Major's Bay Redevelopment - Lot 3
Maximum Demand

Job No.: SY060562

Calc. Basis:

150 Units. In accordance with AS 3000, Table C1 Column 5
50 Units per phase (maxiumum)

Group		Description		Load: Base (/Unit or sq m)	Load: A/ unit, sq m or W	Total	Details	Comments
A	(i)	Lighting	Units	0	0.5	25.0	0.5 per living unit	
				0			2A for each additional 20 points	
	(ii)		External				No assessment for purpose of maximum demand	
B	(i)	Outlets	<10A	50	1.9	145.0	50A + 1.9 per living unit	
				1			5A for each additional 20 points	
	(ii)		15A		10		10A, other than load groups C - L	
	(iii)		20A		15		15A, other than load groups C - L	
C		Ranges, cooking appliance, laundry equip.		50	15	140.0	2.8 per living unit	Gas cooktop/ elec oven
D		A/C or Heating greater than 10A		50	15	703.1	75% of connected load	
E		Inst HWU			0.8		100A + 0.8 per living unit	Gas central HW
F		Storage HWU	Controlled		0.8		100A + 0.8 per living unit	
G		Spa/pool heating					75% of largest spa	
							75% of largest pool	
							Plus 25% of remainder	
							Loading not associated with indivdual units	
H		Communal lights		50	37	2.7	Full connected load	32W fluor bollard
				20	35	1.0		50W LV
I		Outlets not in Group J & M, permanent equip. < 10A			2	0.0	1 Amp per point to 15A maximum	
J		Appliances > 10A and socket outlets				0.0	50% connected load	
	(I)		Clothes drier, water heaters			0.0	50% of connected load	
	(ii)		Fixed space heating, A/C, Sauna			0.0	75% of connected load	
	(iii)		Spa & , pool heaters			0.0	75% of largest spa	
K		Lifts					No assessment for Maximum Demand, In accordance with Cl4.3 of Table C2 Col. 2 for sub-main size	
			Largest	1		0.0	125% of largest (80% efficiency)	Not included in MD
			Next largest	1		0.0	75% of next largest (80% efficiency)	Not included in MD
			Remainder				50% of remainder (80% efficiency)	Not included in MD
L		Motors					In accordance with C4.3 of Table C2 Col. 2	
			Largest	1	5.0	9.0	100% of largest (80% efficiency)	Car park ventilation
			Remainder	1	1.2	0.8	50% of remainder (80% efficiency)	1.2kW sewer pump
M		Other Appliances					Connected load <= 10A, no assessment for purpose of Maximum Demand, otherwise by assessment	
					Total (A/ph)	1027		
			Spare capacity:		10%	103		
					Total (A/ph)	**1129**		
					Total (A/ph)	**1255**	**0.9 PF**	

Notes:

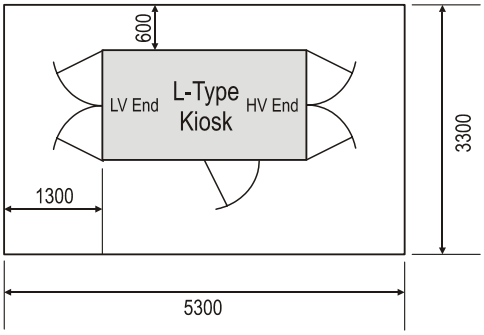
1 External lighting included in Group H
2 Car park requires forced ventillation
3 Gas cooktop and central HWU
4 Electric oven
5 Load group L, motors in accordance with Table C2 Col 2

Date:	Revision	Description
6-Mar-07	00	Original issue

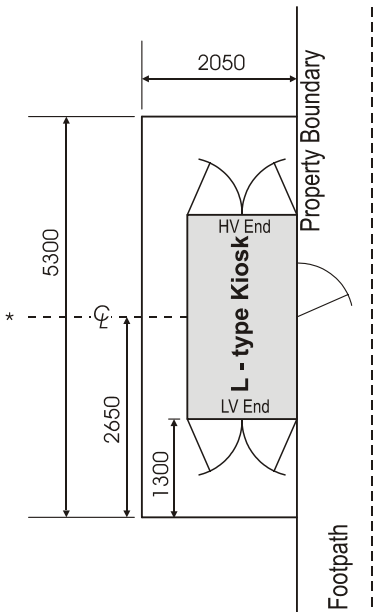
Appendix D – Substation Easement Size Options

L Type Kiosk

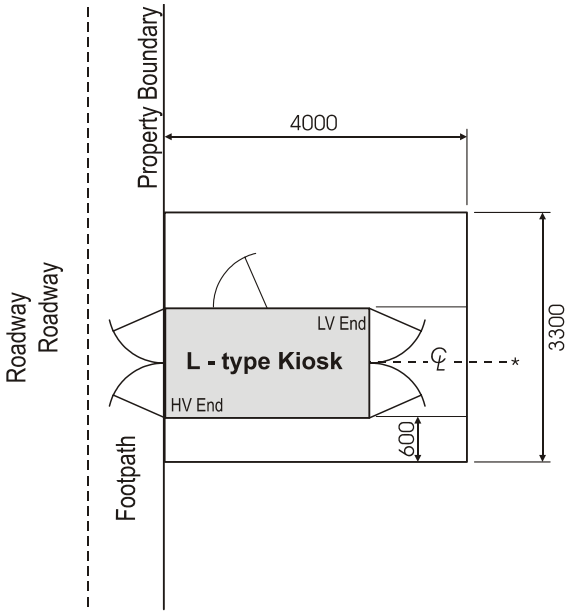
L type kiosk minimum site requirements are indicated in the following site plans and notes:



Site Plan A



Site Plan B



Site Plan C

(* Property boundary between lots, if kiosk site is located across adjacent residential lots.)

L Type Kiosk - Notes.

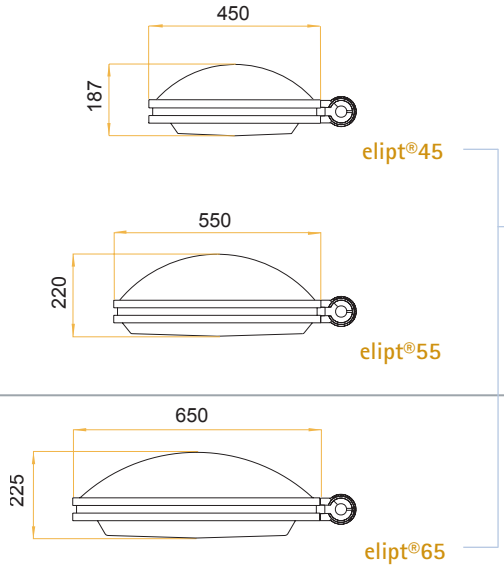
Note 1. The L kiosk site plans shown with one edge of the kiosk structure on the street frontage property boundary (Site Plans B and C) are restricted options generally only available for underground residential distribution (URD) sites. Approval for these options in areas other than URD will be at the discretion of EnergyAustralia, after consideration of all relevant factors.

Note 2. Where the 5300 mm x 3300 mm L kiosk site is set back from the street frontage property boundary (ie Site Plan A with additional set back), it will be necessary for an associated cable easement and a right-of-way for access to be established. (Refer to Section 3.8 in this Network Standard.)

Appendix E – Roadway and Pedestrian Lighting

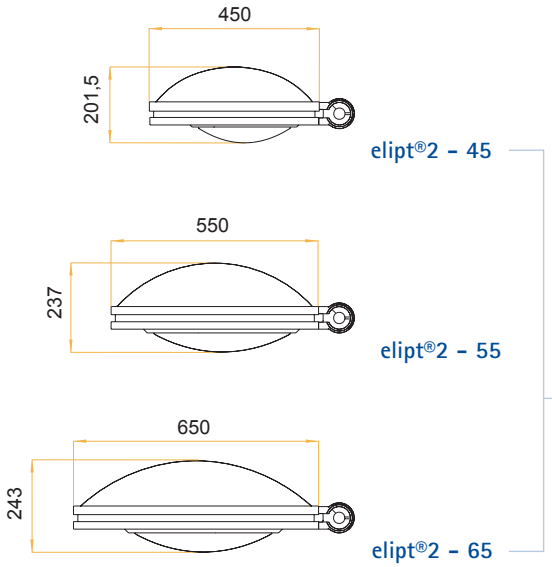
elipt® range

With its innovative design and variety of configurations,
the elipt range provides an enhancement to any city environment.



elipt® range

- Available in three sizes : 45, 55, 65.
- Die cast aluminium frame, hemispherical dome in formed aluminium sheet.
- Luminaire height from 4 to 12 m.
- All sources from 50 W to 400 W.
- The new high tech OPTITEC reflectors deliver high optical performance and the ability to use a wide selection of lamp sizes and types.
- easy installation and maintenance in total safety.



elipt® Range :	elipt® 45	elipt® 55	elipt® 65
Weight : with control gear	8,5 Kg (SHP 70 watts)	10,5 Kg (SHP 150 watts)	15 Kg (SHP 250 watts)
Sail Area :	0,07 m^2	0,09 m^2	0,13 m^2

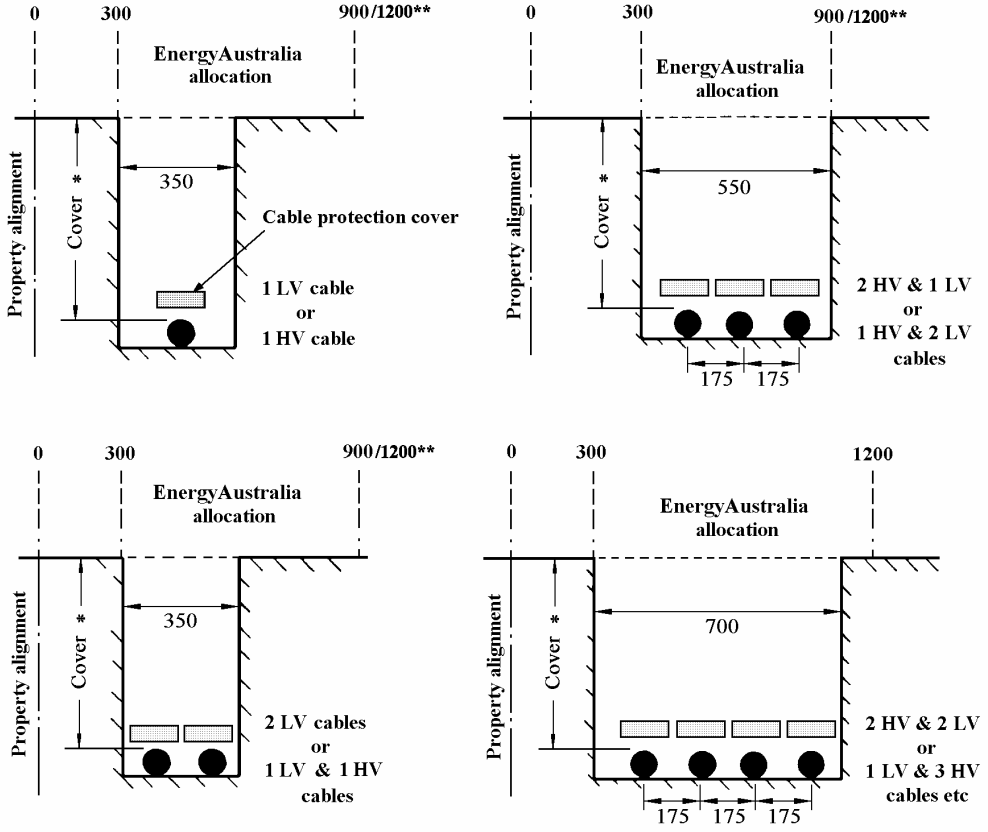
SL VT-H3

SL VTLDL

Appendix F – Shared Trench Arrangement

APPENDIX B - TYPICAL CABLE ARRANGEMENTS IN FOOTWAYS

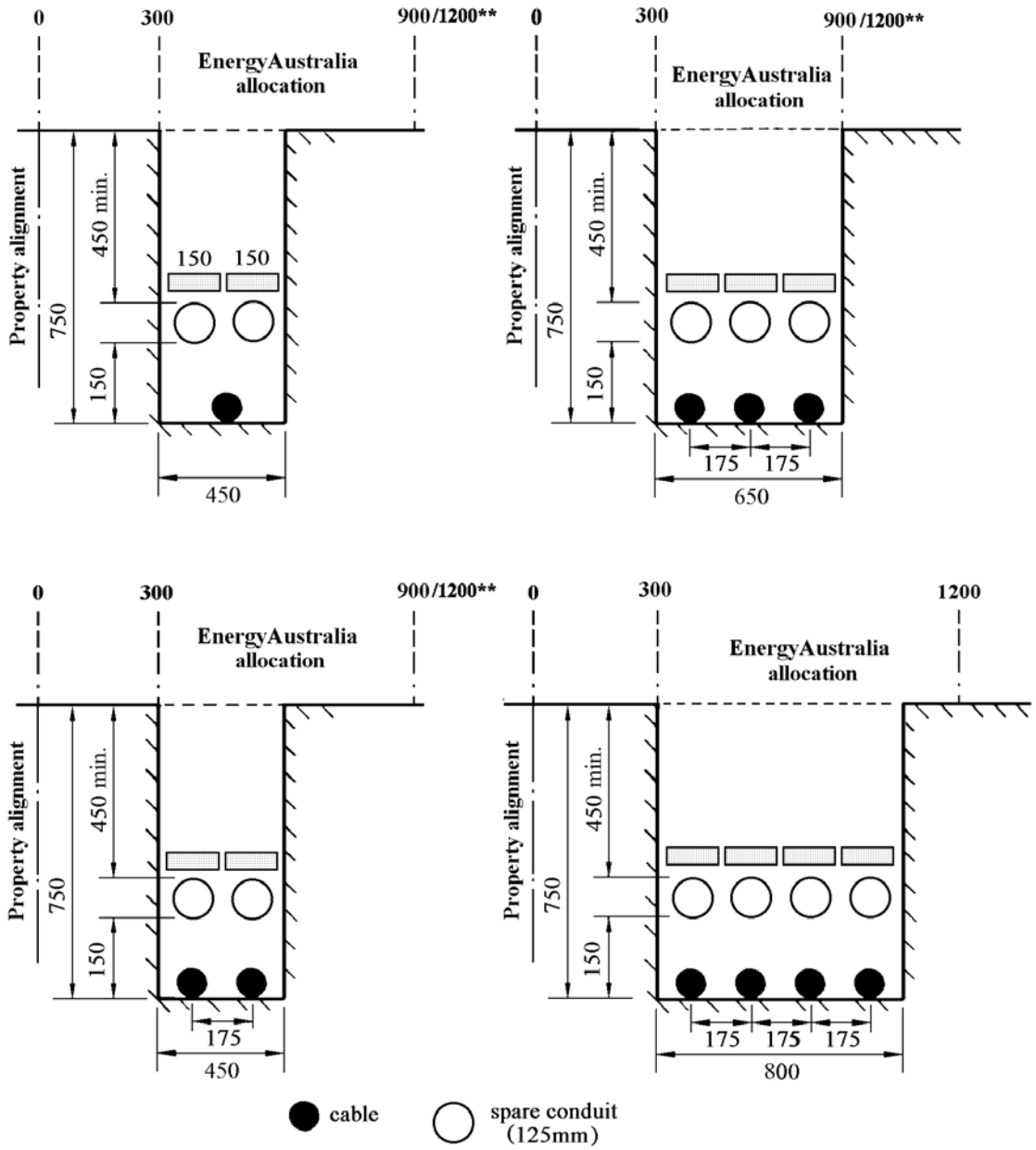
HV and LV Cables Laid Direct



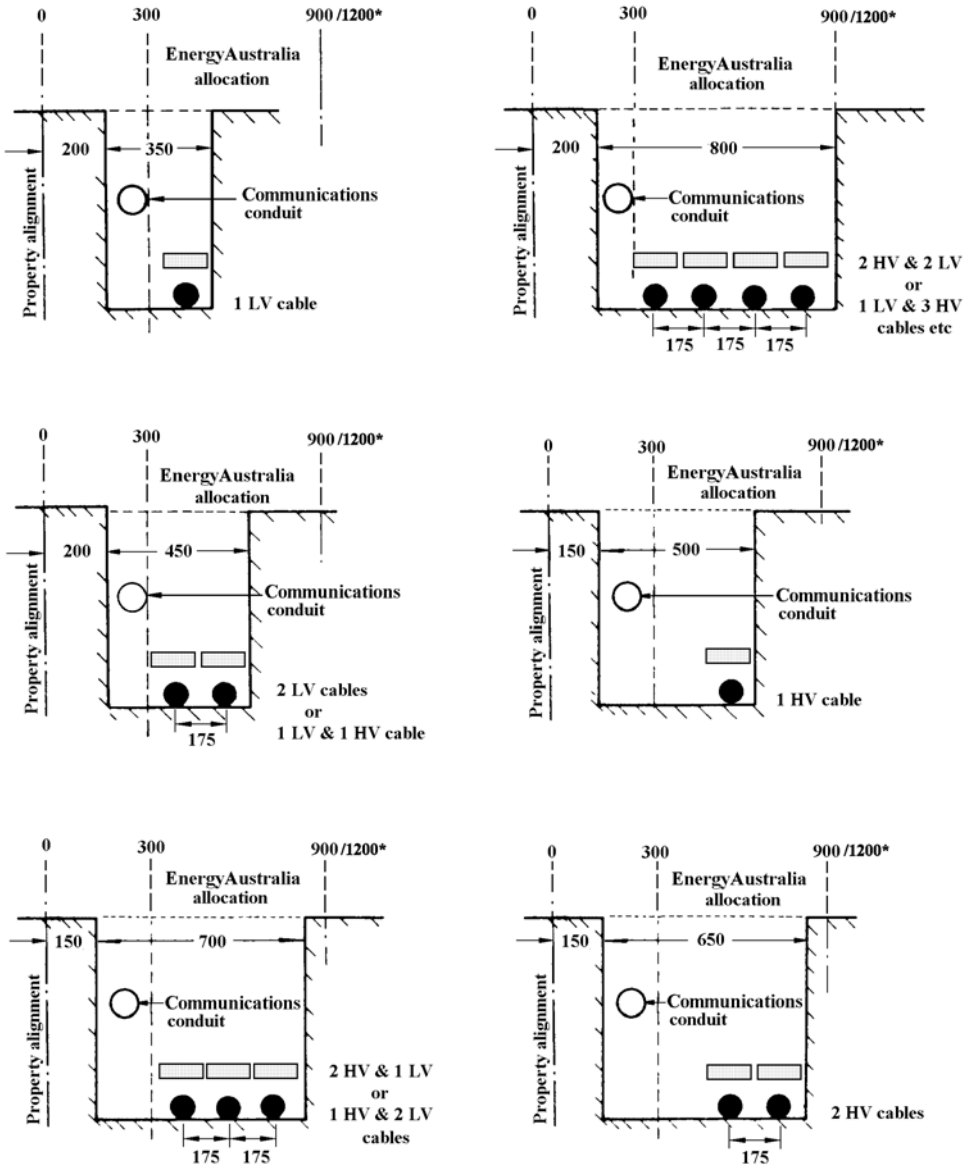
Cover * 450 mm (minimum) over LV cables
600 mm (minimum) over HV cables

** Width of EnergyAustralia allocation depends on the date of roadway dedication. Refer to Appendix C for further details.

HV and LV cables laid direct (with spare conduits)



Trenches shared with Communication Utilities



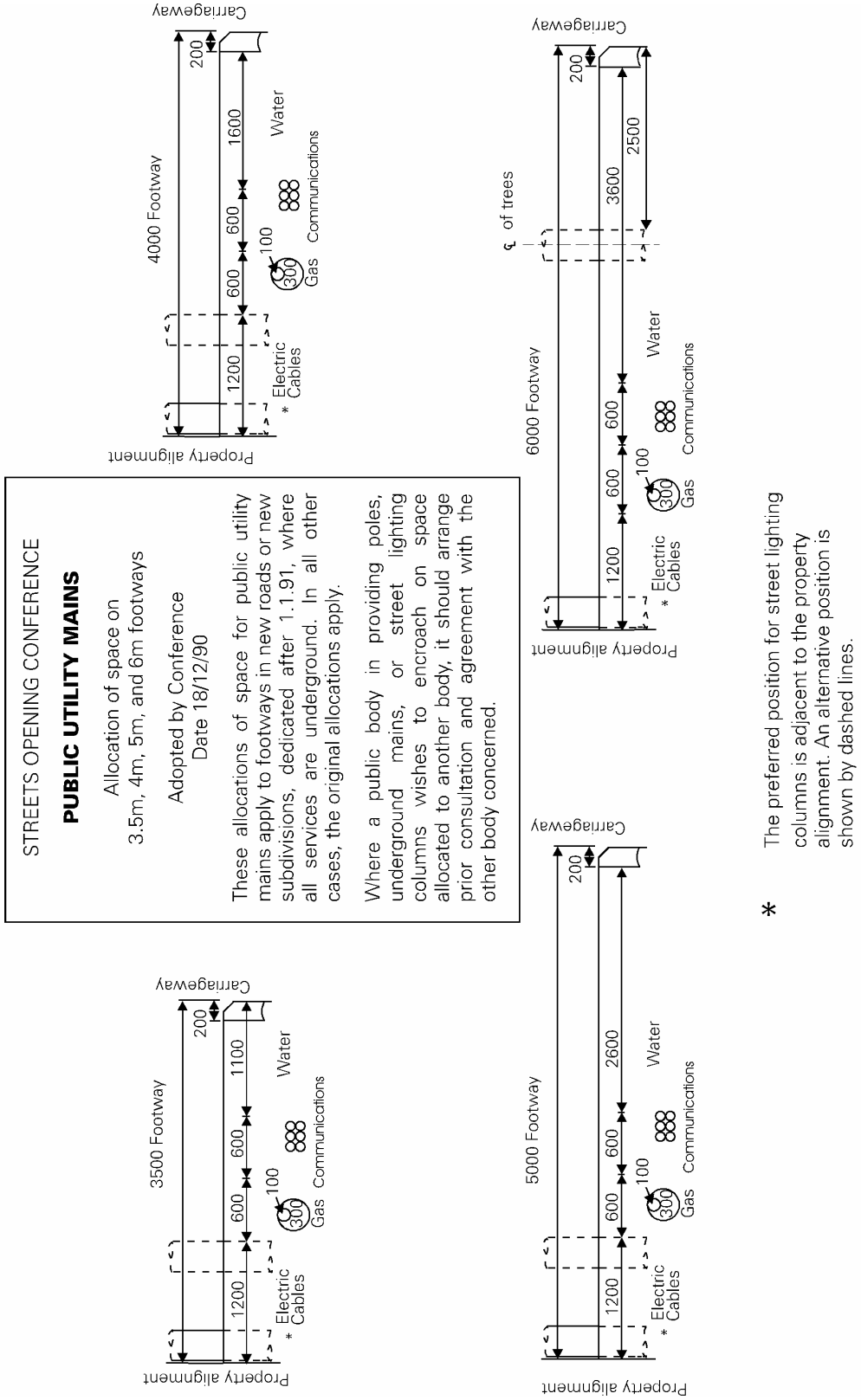
* Width of EnergyAustralia allocation depends on the date of roadway dedication. Refer to Appendix C for further details.

All trenches 750 mm deep.

150 mm minimum vertical separation between communications conduits and cable protection covers.

APPENDIX C - FOOTWAY ALLOCATIONS

New Footway Areas From 1.1.91 - Sydney Region



Existing Footway Areas before 1.1.91 - Sydney Region