DALTON CONSULTING ENGINEERS

Infrastructure Report
Hopkins Road Business Precinct
Hopkins Road, Truganina

October 2020
DCE Ref: 20102.2
For

Amended July 2021 to address the comments of the UDF consultation process only.

MT.ATKINSON

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Disclaimer

Dalton Consulting Engineers Pty Ltd

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Infrastructure Report
Prepared:
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Reviewed:
James Cappellari AN: 1241419
Approved:
Theo Liakopoulos AN: 888918

Executive Summary

This infrastructure report outlines the servicing requirements for a proposed circa 47.4 hectare Hopkins Rd Business Precinct development along Hopkins Rd, Truganina, by My Atkinsons Holdings. This Infrastructure Report focuses solely on the Hopkins Rd Business Precinct development and provides a high level servicing strategy for the proposed works. It takes into consideration both the existing and proposed services which will be required to service the site.

The Hopkins Road Business Precinct is strategically located to contribute to the achievement of a greater diversity of employment opportunities in the West Growth Corridor. As noted within the PSP, the Business Precinct will provide opportunities to integrate a mix of higher order services, research and development, and local service businesses in a well-connected network.

As part of the proposed Hopkins Road Business Precinct development, main access will be via Grand Boulevard, Kirkpatrick Boulevard and signalised intersections along Hopkins Rd which are being delivered as part of a staged construction. Grand Boulevard and Kirkpatrick Boulevard will be linked by local connector and access streets. These roads shall be constructed in accordance with the EDCM and Melton City Council design standards

The subject site, situated within the City of Melton, will be developed such that the City of Melton and Melbourne Water stormwater requirements are achieved. Melbourne Water has nominated a connection to the Truganina Development Services Scheme (DSS). Underground drainage at the subject site will be designed to convey minor event flows up to and including the 10% Annual Exceedance Probability (AEP) event. Major flows will be conveyed via the local road network and a proposed grassed swale.

The responsible authority for sewerage facilities is Western Water (WW). Please refer to the sewer concept plan in Figure 14 which highlights the proposed sewer network. The delivery of the Hopkins Rd Outfall Sewer is key to providing a sewer outfall for the proposed Hopkins Road Business Precinct. The proposed gravity sewer network will be extended from the Hopkins Rd Outfall sewer and existing 300mm dia branch sewer along McKinley Rd to service the site.

The responsible authority for water facilities is Western Water (WW). There is an existing 450mm dia. transfer water main on the southern side of Grand Boulevard. It is assumed that several connections will be made to the existing 450mm dia main in order to supply the site. Based on preliminary servicing advice received from Western Water, a proposed 375mm dia. and 300mm dia. water main are to be constructed within the proposed site.

Powercor is the responsible authority for electrical supply to the site. Preliminary information has revealed there are existing underground High Voltage (HV) and Low Voltage (LV) electrical assets within the vicinity of the site. It is assumed that this electrical network will be extended along the local street network in order to service the proposed site. It is assumed that a series of electrical substations will be required within the Hopkins Road Business Precinct to cater for the electrical demand. The number and location of each substation shall be determined during detailed design by a suitably qualified electrical consultant.

The responsible authority for Telecommunication facilities is NBN. Opticomm assets exist along Greigs Rd and Hopkins Rd. It is assumed that these assets will be extended within the site to service the proposed lots.

AusNet is the service provider of gas reticulation services to the site. There is an existing 180mm dia gas main located along Grand Boulevard. It is assumed that this asset will have adequate supply to service the Hopkins Road Business Precinct should it be deemed required.

Contents

1. *Introduction*

The proposed Hopkins Road Business Precinct is approximately 47.4 hectares in total. The development is bound to the north by Grand Boulevard, Hopkins Rd to the east, residential development to the west and undeveloped land to the south. Refer to Appendix A for a Site Masterplan.

This Infrastructure Report focuses solely on the Hopkins Road Business Precinct development, providing a high level servicing strategy. It should be noted that the timing of delivery of the key assets will be driven by the staging of construction works.

It should be noted that there is an existing quarry to the east of the Hopkins Rd and as a result a portion of the site is slightly encumbered by a quarry blast buffer and a quarry sensitive use buffer. These buffers will impact the types of allowable development works on the site.

Figure 1: Existing Site Context Plan

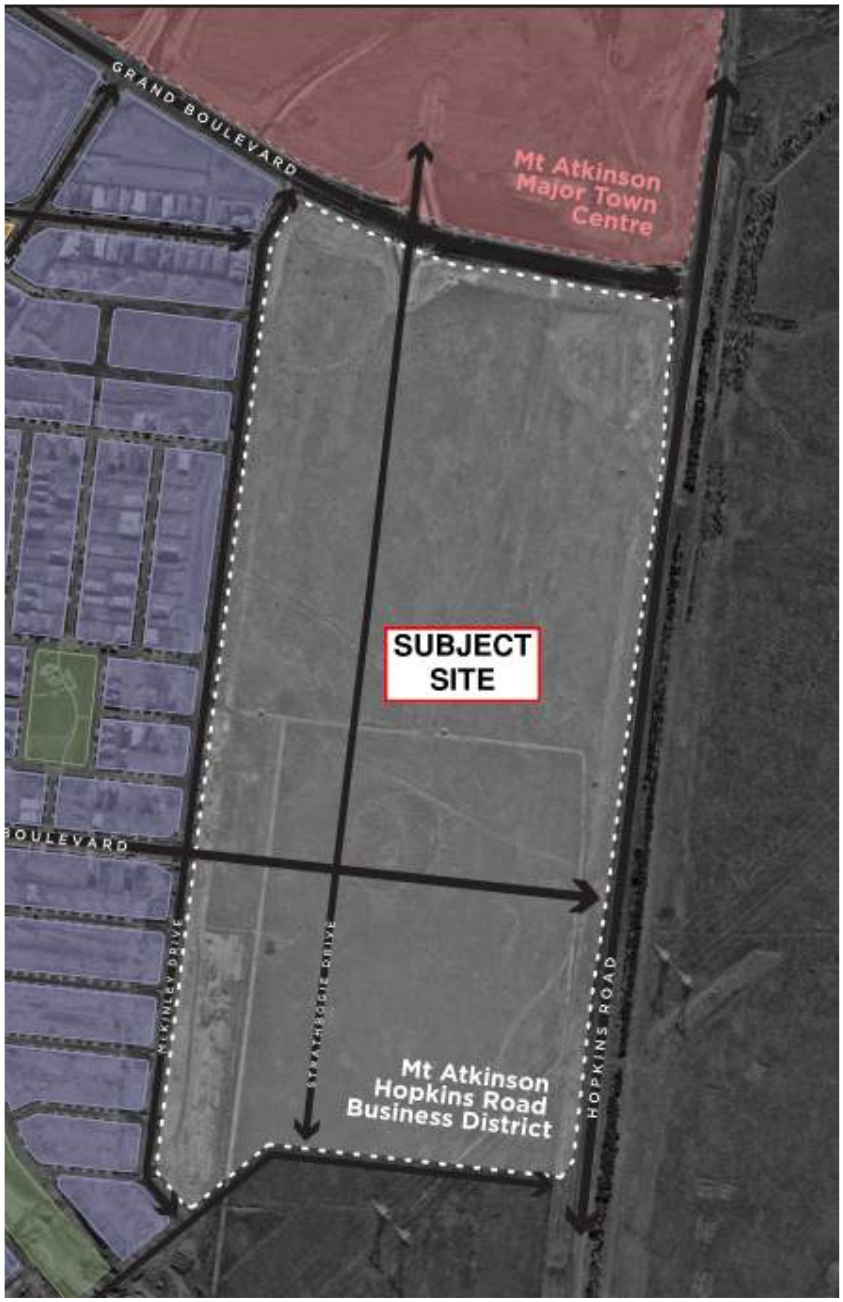

Figure 2: Concept Plan

2. *Precinct Structure Plan (PSP)*

The site falls under the Mount Atkinson & Tarneit Plains Precinct Structure Plan (PSP) which was amended in January 2020. The amended document has been approved and gazetted by the VPA and Melton City Council

The Hopkins Road Business Precinct is strategically located to contribute to the achievement of a greater diversity of employment opportunities in the West Growth Corridor. As noted within the PSP, the Business Precinct will provide opportunities to integrate a mix of higher order services, research and development, and local service businesses in a well-connected network.

As part of the proposed Hopkins Road Business Precinct, the following key infrastructure works are identified within the PSP. These shall be discussed further throughout this report.

- Delivery of boulevard connector streets, connector streets and local access street in accordance with Melton City Council requirements
- Delivery of Melbourne Water key infrastructure
- Delivery of signalised intersections

3. *Roads*

As part of the proposed Hopkins Road Business Precinct development, main access will be via Grand Boulevard, Kirkpatrick Boulevard and signalised intersections along Hopkins Rd which are being delivered as part of a staged construction. Grand Boulevard and Kirkpatrick Boulevard will be linked by a local connector and access streets. The first section of Grand Boulevard from Hopkins Rd to Clara Ave is complete with the remainder of the works to commence in the near future.

The construction of Kirkpatrick Boulevard to the west of the subject site is complete. It is assumed as part of the proposed works that the delivery of the remainder of Kirkpatrick Boulevard through the Hopkins Road Business Precinct will be required. This shall also include the delivery of the Kirkpatrick Boulevard/Hopkins Rd Signalised Intersection (IT-04). The signalised intersection IT-04 is a critical access point to the proposed site.

The Mount Atkinson & Tarneit Plains Precinct Structure Plan notes both key road and intersections which are to be delivered as part of the proposed development works. These key items are funded under the PSP. Details of the allocated budget for each item can be found within the Mount Atkinson & Tarneit Plains Infrastructure Contributions Plan (ICP)

Item	Status
IT-03	Works Commenced
RD-05	Construction Complete
IT-08	Construction Complete
RD-04	Construction Complete
IT-04	Works Yet to Commence

Figure 3: Key ICP Works

Please refer to Appendix C for details of Grand Boulevard (RD-05) and Hopkins Rd/Grand Boulevard Intersection (IT-03).

3.1. Grand Boulevard and Kirkpatrick Boulevard

The existing Grand Boulevard is a 4-lane carriageway within a 34m wide road reserve. It will be used as a Principal Public Transport Network (PPTN) road with a shared footpath on each side of the road and on-road bike lanes. Grand Boulevard shall extend from Hopkins Rd through to Troups Rd and beyond.

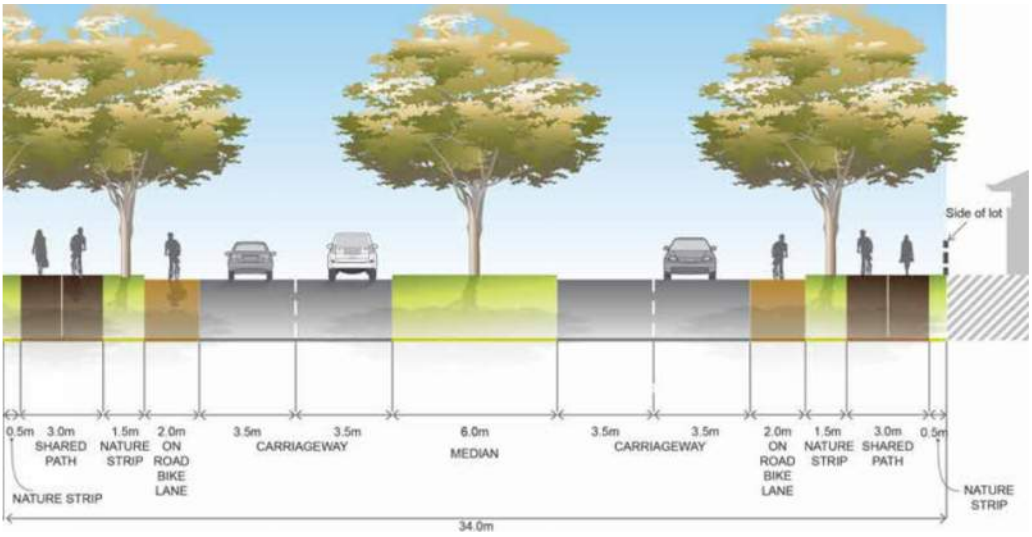

Figure 4: Grand Boulevard Cross Section

The extension of Kirkpatrick Boulevard through the proposed development site will consist of a 31m road reserve. Kirkpatrick Boulevard shall consist of a shared footpath, on road parking bays and off-road bike lanes.

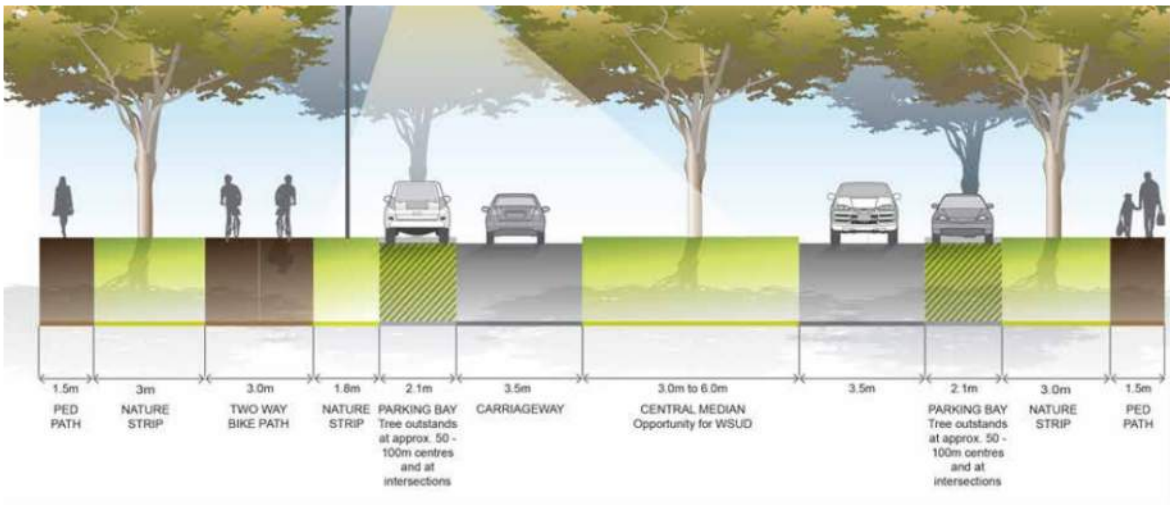

Figure 5: Kirkpatrick Boulevard Cross Section

These boulevards in combination with the completion of the local connector roads surrounding the Hopkins Rd Business Precinct will serve as a key access link. It is assumed that the completion of Kirkpatrick Boulevard and construction of the signalised intersection will require completion prior to compliance being issued on the Hopkins Rd Business Precinct. Further discussions are required with Council.

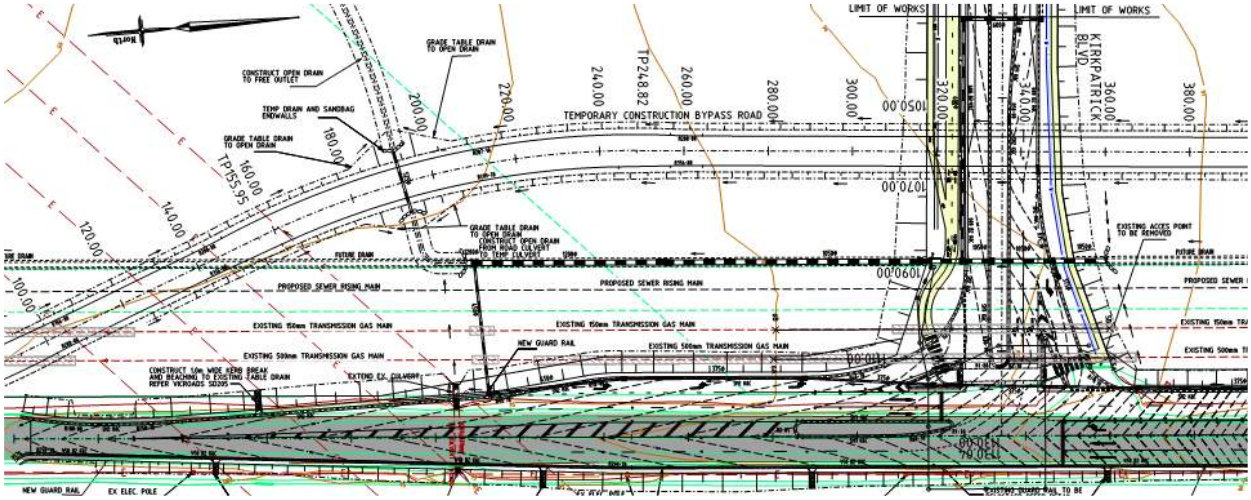

Figure 6: Proposed IT-04 (By Breese Pitt Dixon – Refer to Appendix C)

Providing direct access to properties fronting Grand Boulevard will need to be assessed by a suitably qualified Traffic Consultant.

3.2. Council Roads

The Council roads surrounding and within the Business Precinct site consist of Connector Roads and Access Streets of varying road reserve widths. The proposed McKinley Rd shall be utilised to delineate the proposed business precinct from the existing residential development to the west. Special consideration should be made regarding the proposed landscaping and how to provide an appropriate buffer between these two zones.

These roads shall be constructed in accordance with Melton City Council design standards. Examples of these typical cross sections can be seen below.

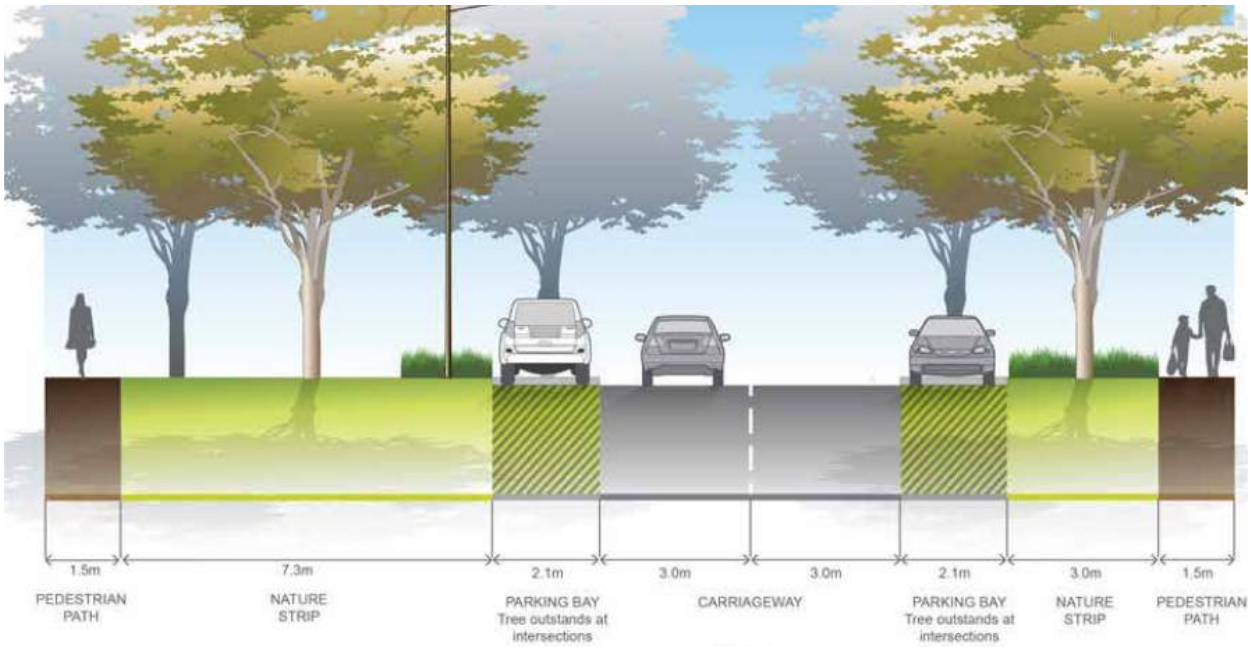

Figure 7: 23m Local Access Street Level 2

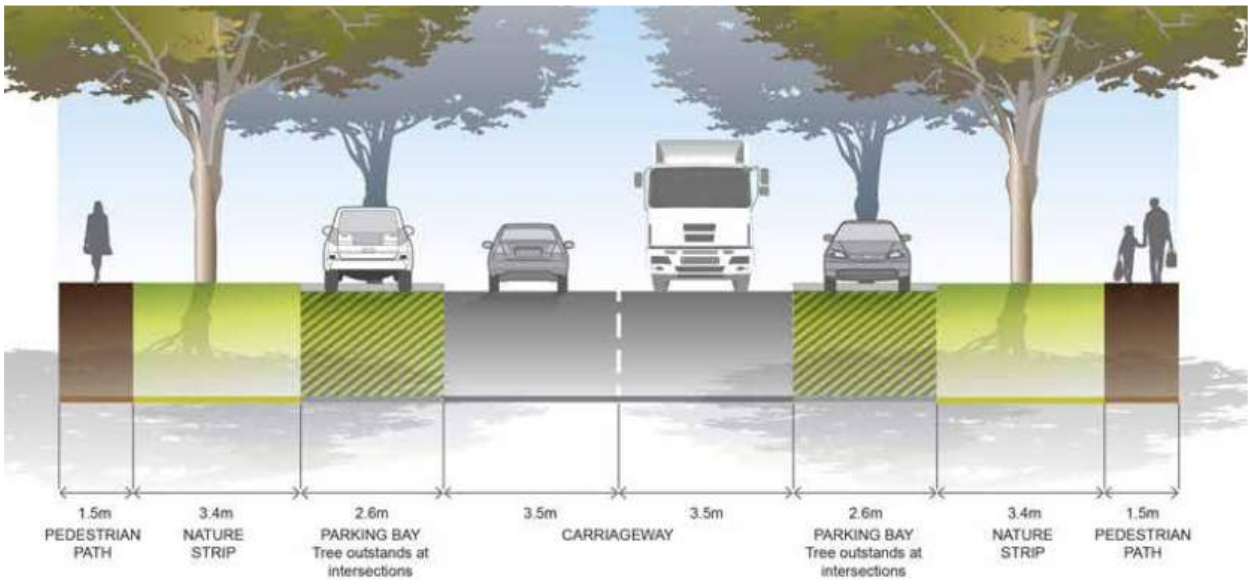

Figure 8: 22m Industrial Access Street

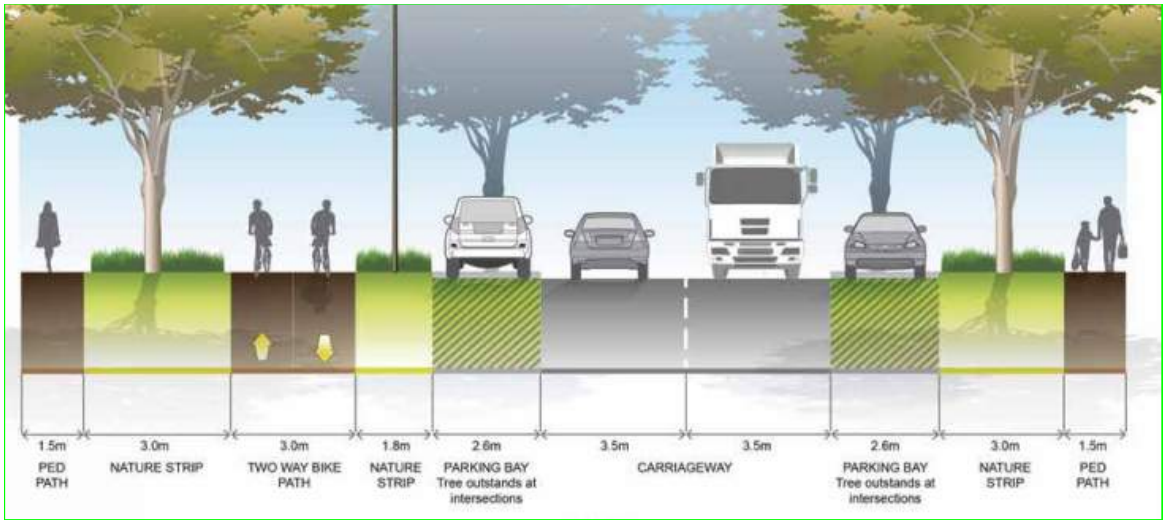

Figure 9: 26m Connector Street

4. *Storm Water Drainage*

The subject site, situated within the City of Melton, will be developed such that the City of Melton and Melbourne Water stormwater requirements are achieved. Melbourne Water has nominated a connection to the Truganina Development Services Scheme (DSS). Flows from the proposed development will be discharged to the respective DSS via provided scheme drainage outlets at the downstream property boundary.

Underground drainage at the subject site will be designed to convey minor event flows up to and including the 10% Annual Exceedance Probability (AEP) event. In line with the Melbourne Water Scheme, minor flows shall be conveyed towards Nodes A2, A3 and A4 before ultimately discharging into a proposed wetland (WL1ALA). It is expected stormwater quality treatment will be provided by the DSS, and contributions will be paid to the DSS respective of development density, in accordance with Melbourne Water requirements.

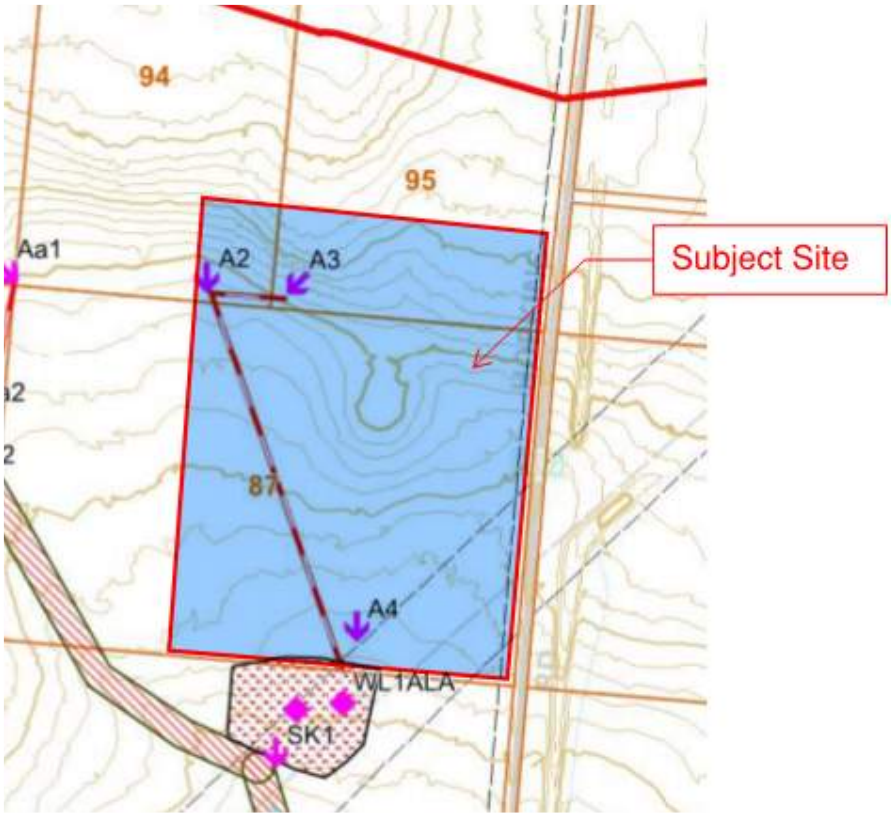

Figure 10: Melbourne Water Scheme Assets

For major events, defined as flows greater than the 10% AEP event and up to and including the 1% AEP event, safe overland flow paths will be provided through the development's internal roads. As noted below in Figure 11, overland flows from Catchment A and B fall towards Hopkins Rd. These overland flows however are required to be directed towards the constructed waterway to the west. In the absence of Council roads along the eastern boundary of the site, it is anticipated that a grassed drainage channel will be required to convey flows. Figure 12 shows preliminary sizing of the proposed channel, this is subject to further refinement during detailed design.

Figure 11: Overland Flow Paths & Catchments Plan

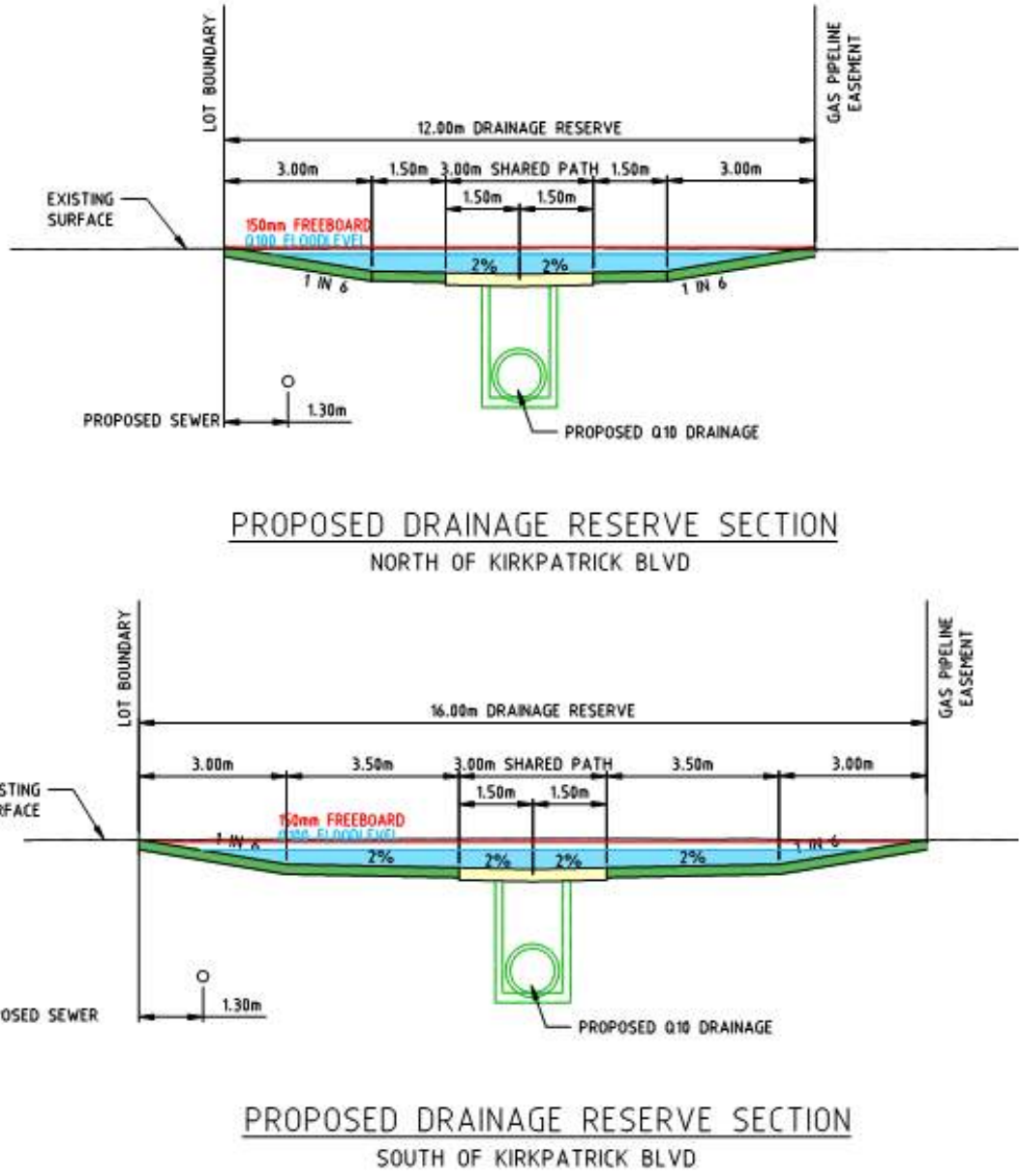

Figure 12 Proposed Swale Cross Section

It is expected that retention of major flows will be provided by the DSS as such no onsite retention is required. This ensures developed flow do not exceed the pre-developed 1% AEP event flow before discharging to downstream waterways.

In accordance with the Melbourne Water's scheme plans and preliminary advice the following scheme assets are assumed to be delivered as part of the development works.

Node Ref:	Approx. Size & Length	Ownership/Comments
A3-A2	1200mm dia, 110	Q10 Council Pipeline
A4-A3	1500mm dia, 610m	Q10 Council Pipeline
WL1ALA (WL-12)	NA	MW Asset

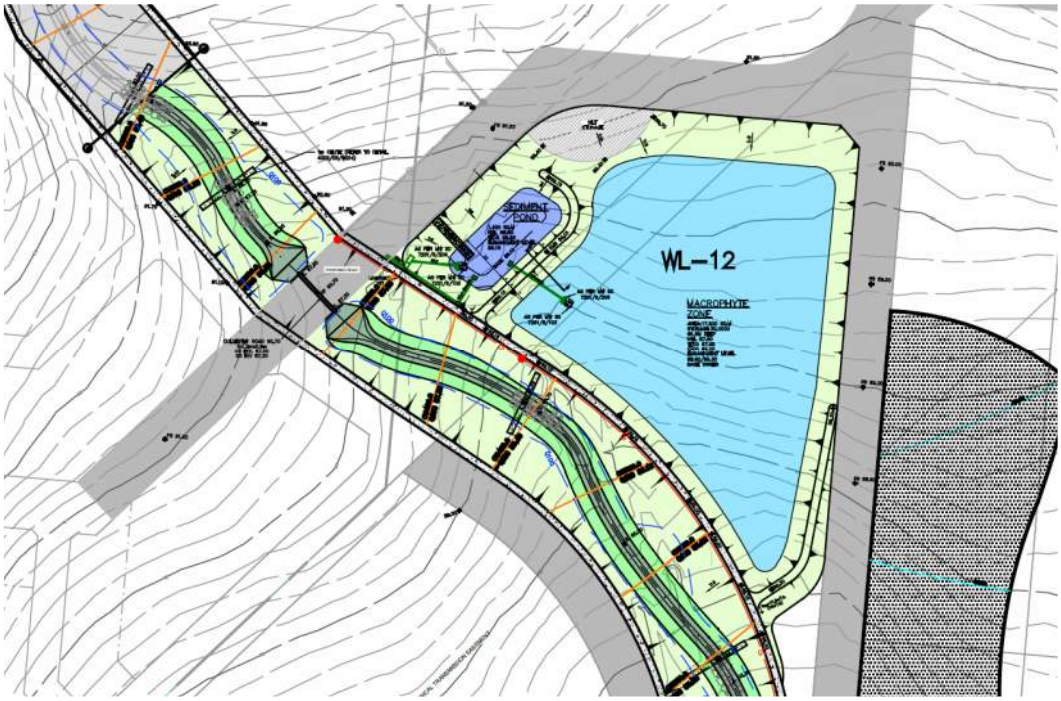

Figure 13: Proposed WL-12 Preliminary Layout (By DPM Consulting Group)

It should be noted that the design and delivery of WL-12 shall be triggered by the development of the residential precinct to the east or the Hopkins Road Business Precinct, which ever proceeds first. It is assumed that the waterway downstream of WL-12 will be delivered as a requirement of the residential development by others.

These assets form part of the ultimate drainage outfall and are considered reimbursable by Melbourne Water. As part of the Truganina DSS the developer will need to enter into an agreement with Melbourne Water to facilitate the payment of drainage contributions. The current rates for each Drainage Scheme based on commercial development are as follows:

- Truganina DSS $103,431/ha (Hydraulic) and $84,639/ha (Water Quality).

Melbourne Water have advised that no overarching stormwater management strategy (SWMS) for Mt. Atkinson Estate has been in-principally approved. An approved SWMS exists only for the Mt. Atkinson residential precincts 1 and 2 as well as for Melbourne Business Park. A site-specific storm water management strategy have been prepared by DCE, please refer to the “Hopkins Road Business Precinct Storm Water Management Strategy by DCE, August 2020”.

5. *Sewer Reticulation*

The responsible authority for sewerage facilities is Western Water (WW).

At the time of this report, there are existing 150mm dia. gravity sewer branches located to the west of the site within the existing local road network surrounding the residential development. In addition to the existing 150mm dia sewer mains, there is a 300mm dia branch sewer in the south west corner of the site along McKinley Drive.

As a requirement of the responsible authority, the minimum sized sewer branch for any commercial development is a 225mm dia branch, as such these existing 150mm dia branches are not deemed suitable for the proposed development works.

Based on preliminary advice from Western Water, the design of the Hopkins Rd Outfall Sewer is well advanced and these works are currently underway. It is assumed that this asset has been sized correctly to cater for the proposed development of the Business Precinct.

Please refer to the sewer concept plan in Figure 14 which highlights the proposed sewer network. As noted below, the delivery of the Hopkins Rd Outfall Sewer is key to providing a sewer outfall for the proposed Hopkins Road Business Precinct. The proposed gravity sewer network will be extended from the Hopkins Rd Outfall sewer and existing 300mm dia branch sewer Along McKinley Rd to service the site. It is not anticipated that any temporary sewer outfall works will be required should the Hopkins Rd Outfall Sewer project proceed.

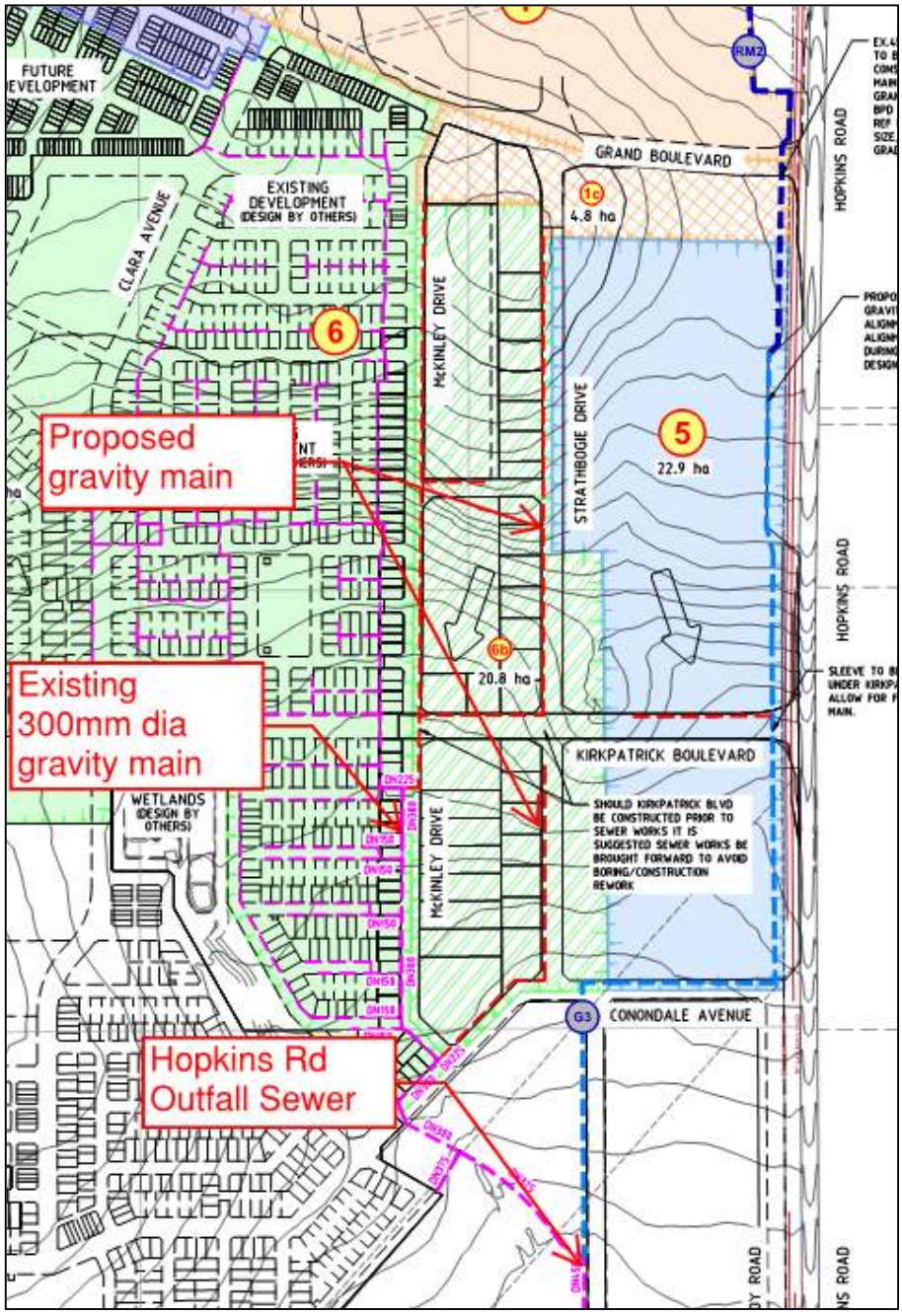

Figure 14: Proposed Sewer Layout

6. *Water Reticulation*

The responsible authority for water facilities is Western Water (WW).

There is an existing 450mm dia. transfer water main on the southern side of Grand Boulevard.

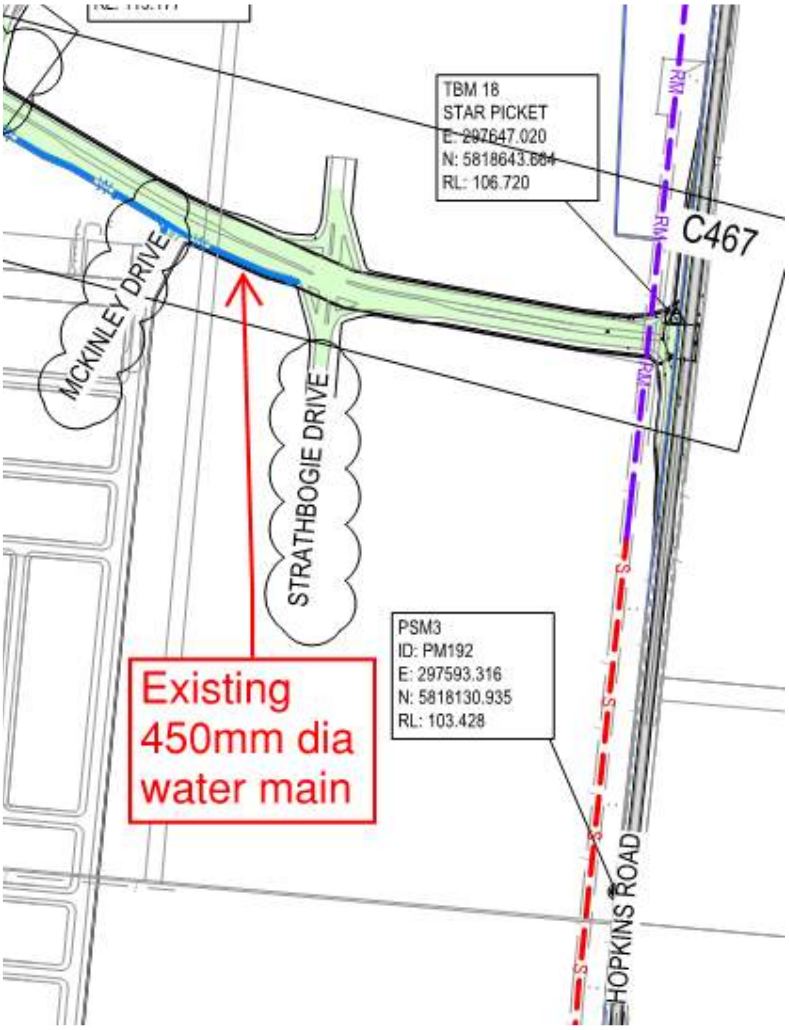

Figure 15: Existing 450mm dia. Water Main

Please refer to Appendix E for construction issue plan of the existing 450mm dia. main.

Based on preliminary servicing advice received from Western Water, a proposed 375mm dia. and 300mm dia. water main are to be constructed within the proposed site. Further discussions with Western Water regarding the final alignment and sizing of these assets are required prior to commencing detailed design works. These trunk assets are considered reimbursable by Western Water.

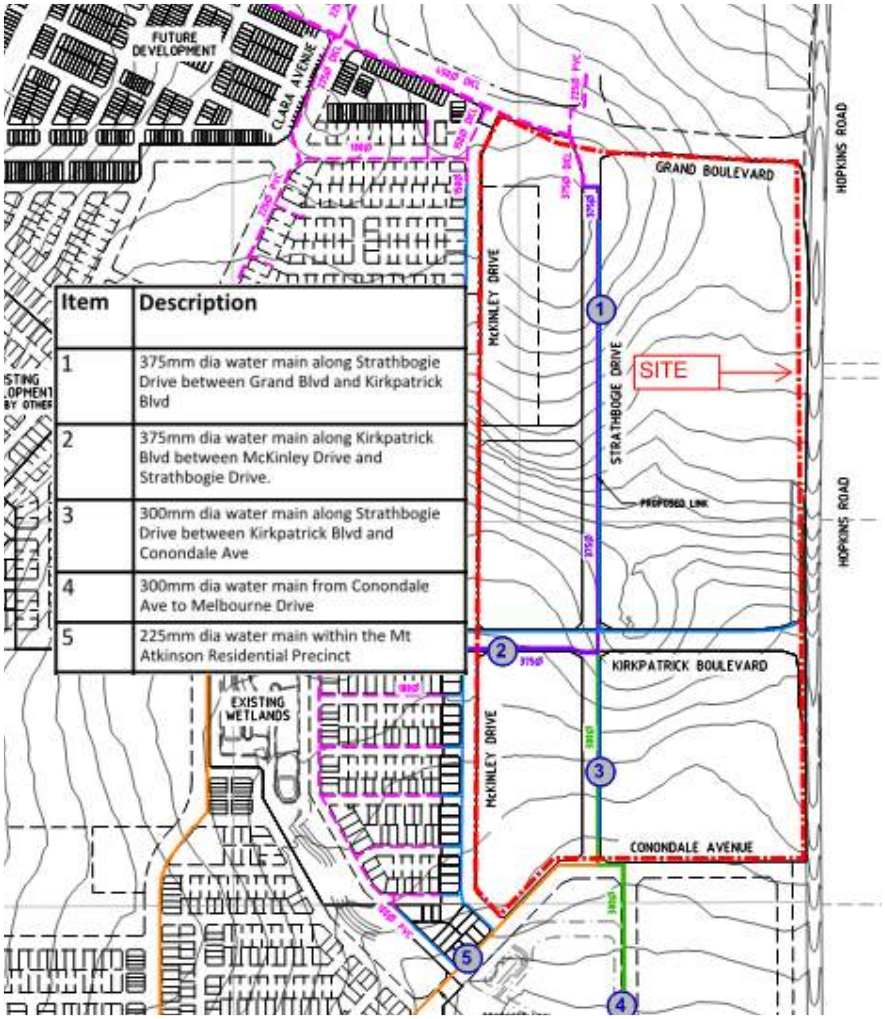

Figure 16: Proposed Water Network

DCE assume that the local road network within the business precinct shall consist of a series of 150mm dia. water mains which will supply the future lots. These mains shall ultimately connect into the existing 450mm dia main as well as the proposed 375mm dia and 300mm dia. mains.

7. *Electricity*

The responsible authority for Electrical supply facilities is Powercor. A Dial Before You Dig revealed there are existing underground High Voltage (HV) and Low Voltage (LV) electrical assets within the vicinity of the site. It is assumed that this electrical network will be extended along the local street network in order to service the proposed Hopkins Rd Business Precinct.

Based on servicing advice from the electrical consultant Plan B, there is an existing High Voltage 22kV cable in Grand Blvd and also planned along Kirkpatrick Ave. In addition, there is an existing 22kV overhead conductor along Hopkins Rd, to the north of Grand Blvd. This feeder is known as MLN-21 and it is the only feeder currently supplying Mt Atkinson Residential.

There are spare conduits with the developed portions of Mt Atkinson that will form part of the overall supply and network strategy for the site. Please refer to Appendix G for details. A future zone substation is planned to the south of the subject site within the Melbourne Business Park. Timing on the delivery of this asset is currently unknown. Its delivery will be triggered by confirmation of future planned electrical demand load calculations. Based on preliminary discussions with Powercor, overhead power lines are planned along Hopkins Rd. The exact alignment of these assets is yet to be confirmed

Figure 17a: Proposed Electrical Assets (Refer to Appendix G)

LV power can be found within all the local residential streets which abut the Business Precinct to the west. In addition to the electrical assets along Grand Blvd, Powercor assets exist along Kirkpatrick Blvd and it is assumed that these assets can also be extended within the proposed development site to service the lots.

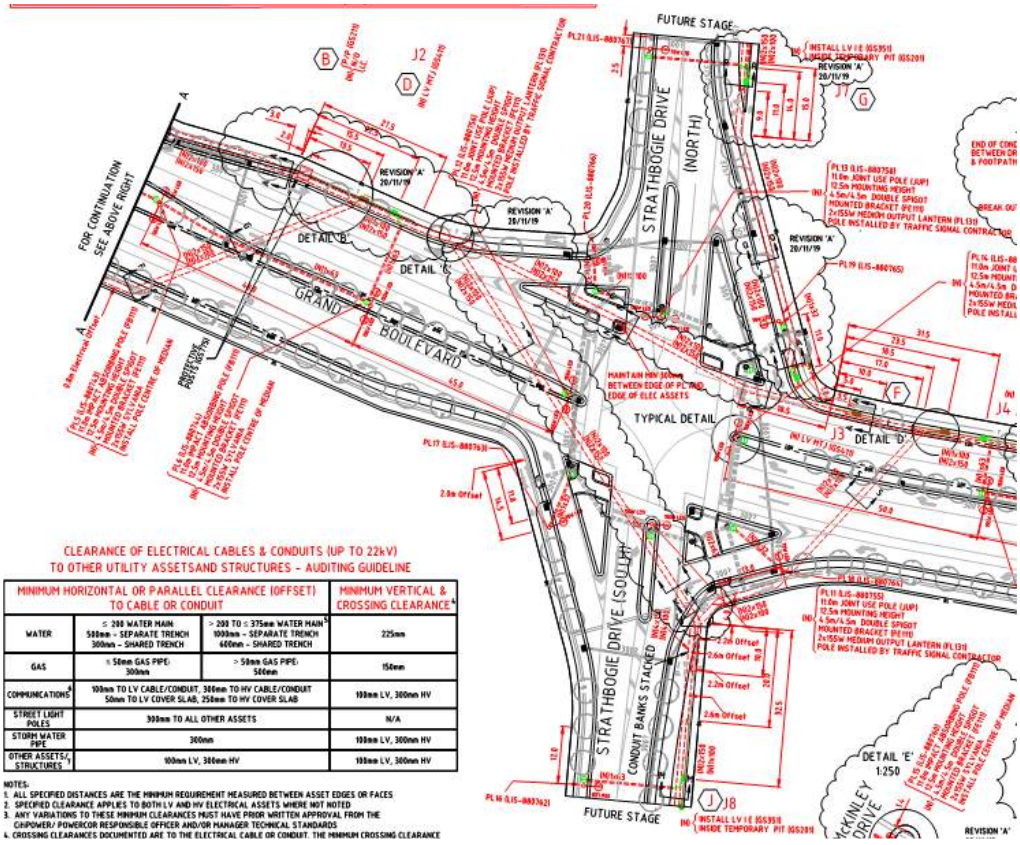

Figure 17b: Strathbogie Dr/Grand Blvd Intersection Electrical Assets (Refer to Appendix G)

In addition to the underground high voltage and low voltage cables, there are existing overhead transmission lines which are owned and managed by AusNet. AusNet have strict design and construction guidelines regarding works in the vicinity of their assets. These guidelines can be found within Appendix J.

All proposed works should be submitted to the AusNet Transmission Group prior to the commencement of works.

8. *Telecommunication Facilities*

The responsible authority for Telecommunication facilities is NBN

NBN assets exist along the Greigs Rd to the north of development and within Hopkins Rd to the east.

It is assumed that these assets will be extended within the Hopkins Road Business Precinct to service the proposed lots.

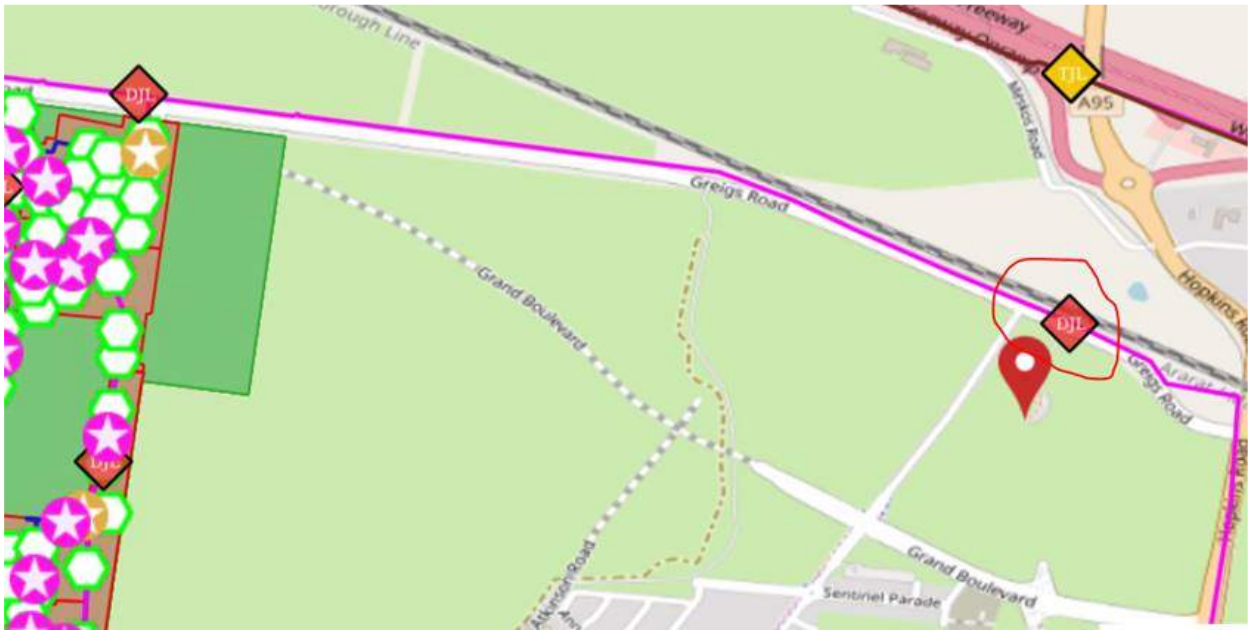

Figure 18: Existing NBN Assets
(refer to Appendix H for further details)

9. *Gas Facilities*

The responsible authority for gas supply facilities is AusNet.

The provision for gas is not generally considered an essential service for non-residential developments and therefore may not be a mandatory requirement for this development. The provision of services is usually determined by an end user.

There is an existing 180mm dia gas main located along Grand Boulevard and a 120mm dia gas main along Kirkpatrick Blvd. It is assumed that these asset will have adequate supply to service the development should it be deemed required.
Supply can be provided for the development through an application being made directly to AusNet.

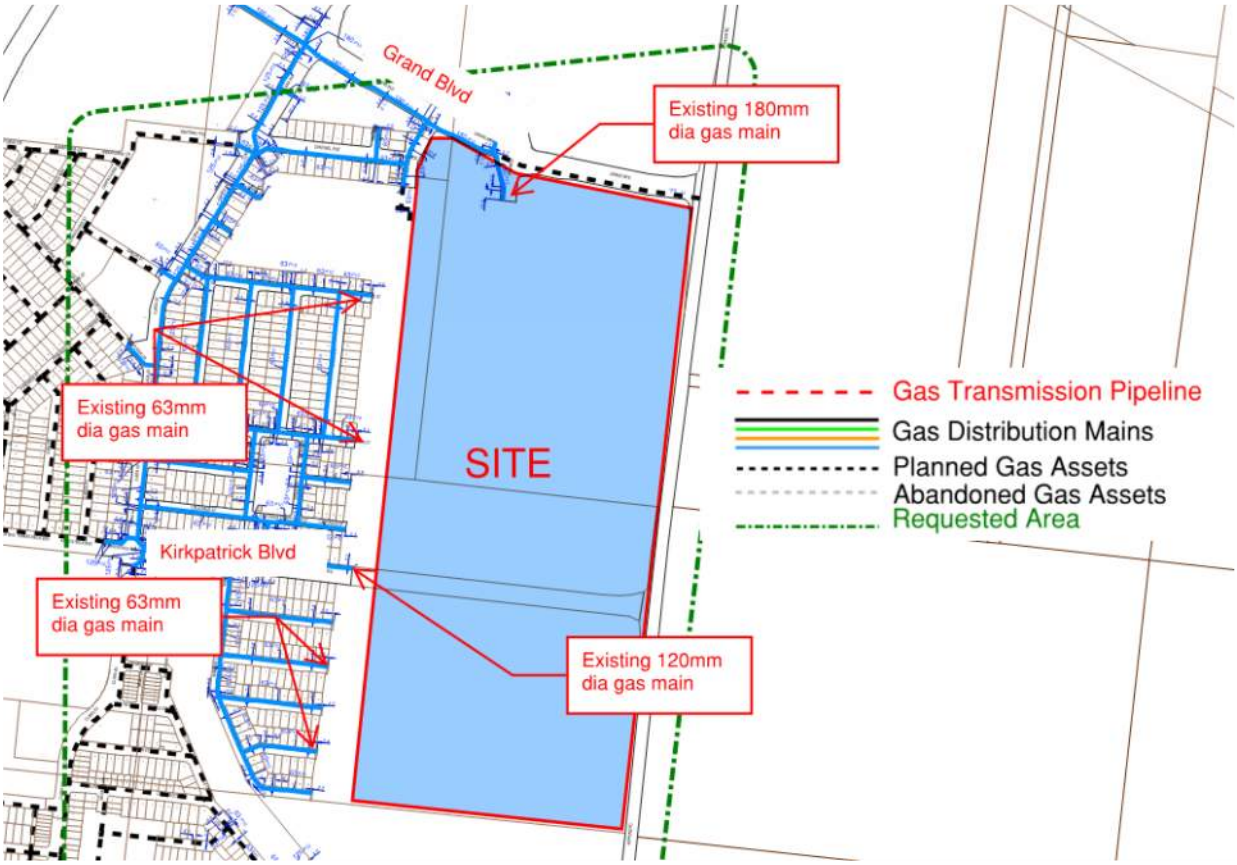

Figure 20: Existing Gas Assets

In addition to the distribution gas main owned and maintained by AusNet Services, APA Group also has assets within the vicinity of the site. There is an existing High-Pressure Gas Transmission line which runs parallel to Hopkins Rd. This asset is contained within a 20m easements.

APA Group must be consulted in the early design phases prior to any works proceeding

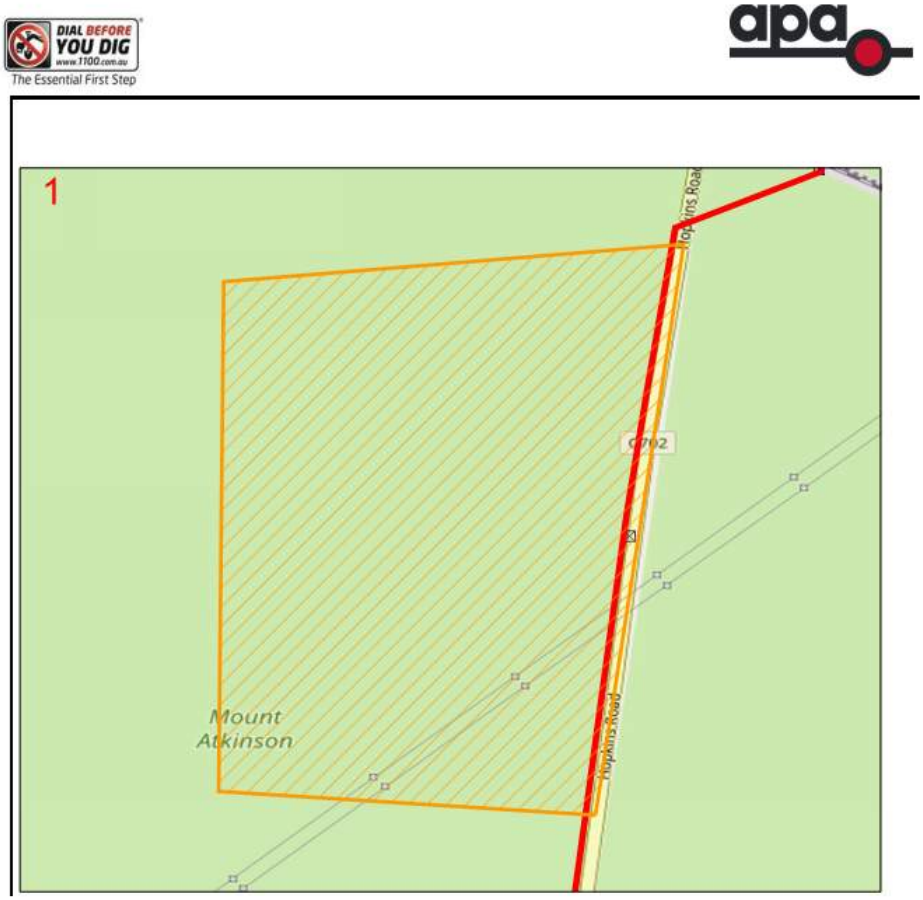

Figure 21: Transmission Gas Main

Appendix A – Site Masterplan

Legend

- UDF Study Zone
- Other UDF Zone
- Residential
- Local Pocket Park
- School

Legend

- UDF Study Zone
- Other UDF Zone
- Residential
- Local Pocket Park
- School
- Quarry Sensitive Use Buffer
- Quarry Blast buffer
- Electrical Easement

Appendix B – Gran Boulevard & Kirkpatrick Blvd Design Plans

NEATLY MATCH WITH
EXISTING CONSTRUCTION.

5m LONG BUS STOP HARD STAND AREA
REFER PAVEMENT NOTE SHEET 1.

TBM TDS 68
RL110.06
E297194.15
N5818847.55

PROP TEMPORARY POWER POLE

PROP TEMPORARY OVERHEAD POWER LINE

PROP TEMPORARY POWER POLE

EXISTING OUTFALL DRAIN

CLARA AVENUE

GRAND BOULEVARD

FUTURE STAGE

PROP TEMPORARY OVERHEAD POWER LINE

PROP TEMPORARY POWER POLE

BREAK OUT BAYS
REFER SHEET 5 FOR DETAILS

TBM TDS 153
RL112.56
E297212.43
N5818698.78

UNDER WATER CONDUIT
UNDER GAS CONDUIT

NEATLY MATCH WITH
EXISTING CONSTRUCTION.

McKINLEY DRIVE

1012H

PIPE CURVE DETAILS

No	Dia	Radius	Angle	Arc	Hand
1	900	8·00	90	12·566	R

Note: Hand is nominated looking upstream.

North

PLAN
SCALE 1:500

AS CONSTRUCTED

SCALE 1 : 500
10 5 0 10 20 40
LENGTHS ARE IN METRES

VER.	DATE	REMARKS
C	25-11-19	BREAK OUT BAYS ADDED
B	17-10-19	NORTHERN PATH OFFSET CHANGED TO 0.05m
A	18-04-19	ISSUED FOR CONSTRUCTION

AMENDMENTS

breese pitt dixon pty. ltd.
land surveyors civil engineers
1/19 cato street
hawthorn east, 3123
telephone 8823 2300
fax no. 8823 2310

MELWAY REF. 357-G-4
SURVEY BPD
DESIGN GJE
DRAWN GJE
CHECKED

MT ATKINSON ESTATE
GRAND BOULEVARD
HOPKINS RD TO CLARA AVE

MUNICIPALITY: MELTON
REFERENCE: 8244 E/Grand
SCALE AS SHOWN | DATUM AHD | DATE APR'19
SHEET 2 OF 23 C

I:\H8244\ENGS\Tgrand\Ex_r02.dgn Plotted:25/11/2019

TEMPORARY SAND BAG END WALL.

PROVIDE CONCRETE EDGE PROTECTION STRIP, ROW OF AG'S AND "NO ROAD" SIGN.

EXCAVATE OPEN DRAIN TO FREE OUTLET AT 1in 500. PROVIDE SAFETY FENCE REFER NOTE 45 SHEET 1.

STRATHBOGIE DRIVE (NORTH)

5m LONG BUS STOP HARD STAND AREA REFER PAVEMENT NOTE SHEET 1.

5m LONG BUS STOP HARD STAND AREA REFER PAVEMENT NOTE SHEET 1.

GRAND BOULEVARD

STRATHBOGIE DRIVE (SOUTH)

PROVIDE CONCRETE EDGE PROTECTION STRIP, ROW OF AG'S AND "NO ROAD" SIGN.

North

EXISTING OPEN DRAIN OUTFALL

TEMPORARY TRAFFIC DIVERSION

TEMPORARY TRAFFIC DIVERSION PAVEMENT TO BE DECOMMISSIONED AND REMOVED PRIOR TO COMMENCEMENT OF WORKS.

NEATLY MATCH WITH EXISTING CONSTRUCTION.

TEMPORARY TRAFFIC DIVERSION PAVEMENT TO BE DECOMMISSIONED AND REMOVED PRIOR TO COMMENCEMENT OF WORKS.

HOPKINS ROAD

TBM R4
RL106.72
E297667.03
N5818643.66

PLAN
SCALE 1:500

AS CONSTRUCTED

SCALE 1 : 500
10 5 0 10 20 40
LENGTHS ARE IN METRES

VER.	DATE	REMARKS
B	17-10-19	GRAND NORTHERN PATH OFFSET CHANGED TO 0.05m
A	18-04-19	ISSUED FOR CONSTRUCTION

breese pitt dixon pty. ltd.
land surveyors civil engineers
1/19 cato street
hawthorn east, 3123
telephone 8823 2300
fax no. 8823 2310

MELWAY REF.	357-G-4
SURVEY	BPD
DESIGN	GJE
DRAWN	GJE
CHECKED	

MT ATKINSON ESTATE
GRAND BOULEVARD
HOPKINS RD TO CLARA AVE

MUNICIPALITY	MELTON
REFERENCE	8244 E/Grand
SCALE	AS SHOWN
DATUM	AHD
DATE	APR'19
SHEET	3 OF 23 B

Plotted: 8/10/2019
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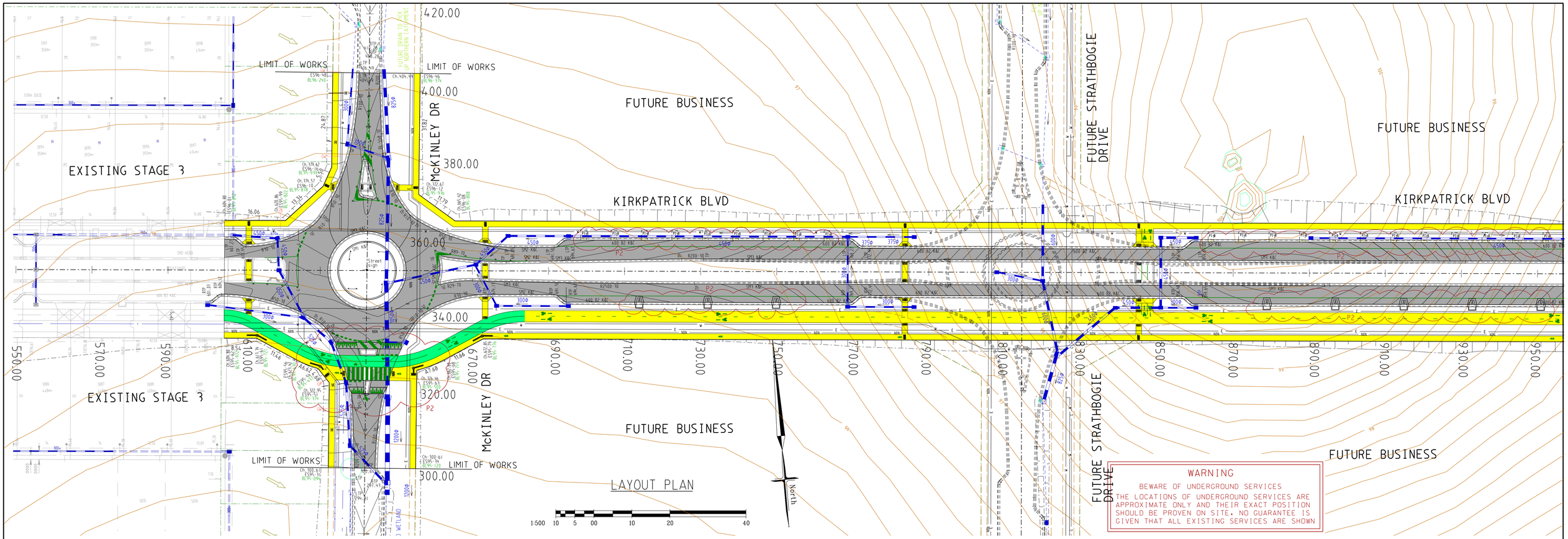
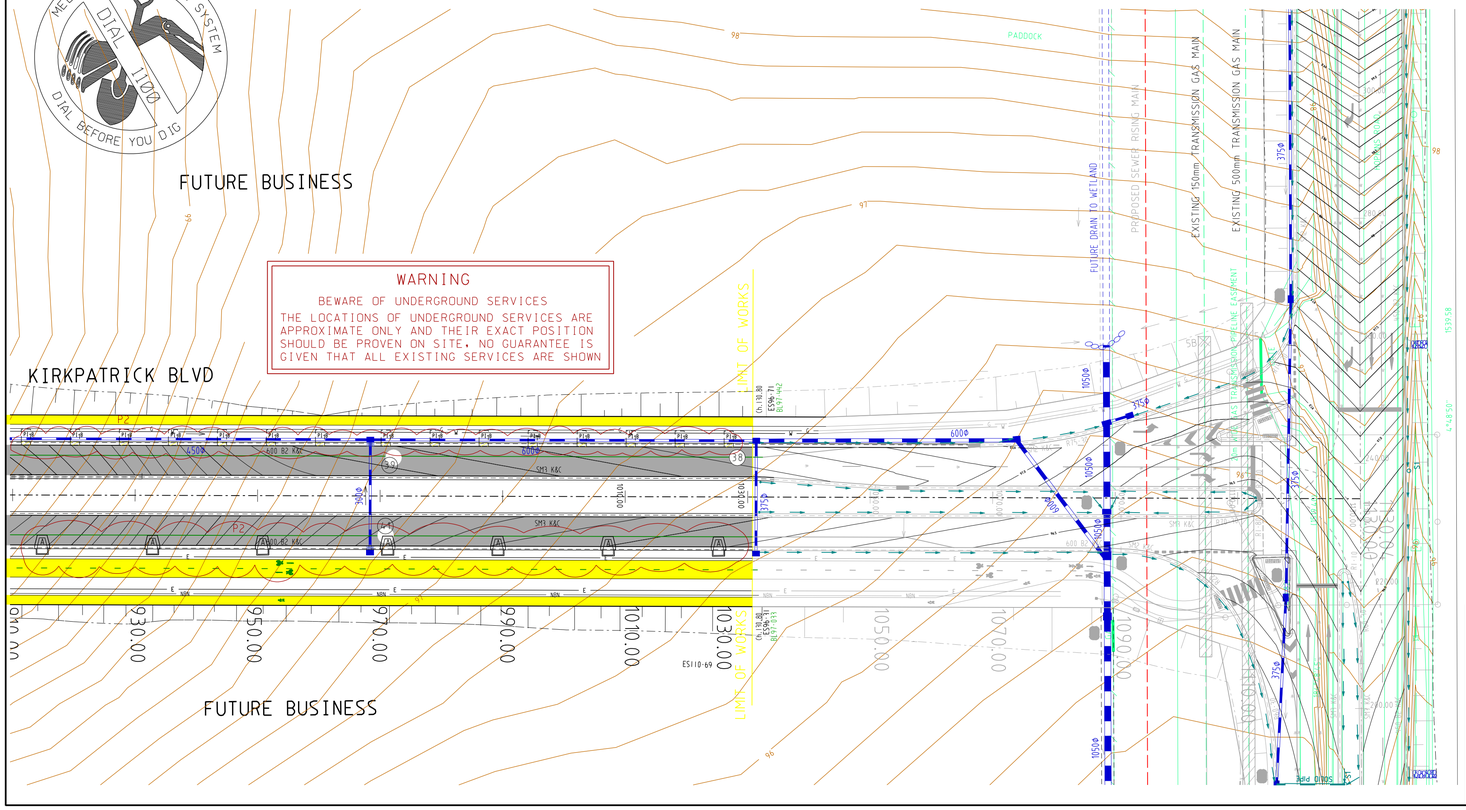




SERVICES OFFSETS AND LOCATIONS

STREET NAME	Rd.RESERVE	WATER	GAS	ELECTRICITY CABLES	ELECTRICITY POLES	FIBRE TO THE HOME CABLES	FIBRE TO THE HOME PITS	Bk. of KERB	JOINT TRENCHING
KIRKPATRICK BLVD	31·00	2·60 N/3·70S	2·25 N	2·60 S/7·90S	0·90 BOK	1·85 S	1·85 N 1·85 S	4·35 N 9·15 S	E,T/G,W
McKINLEY DRIVE	23·00	2·60 W	2·25 W	2·60 E	0·90 BOK	1·85 N	1·85 W 1·85 E	9·10 N 4·40 S	E,T/G,W
STRATHBOGIE DR	23·00	2·60 E	2·25 E	2·60 W	0·90 BOK	1·85 W	1·85 E 1·85 W	4·40 E 9·10 W	E,T/G,W

PASSIVE IRRIGATION TYPE A REFER SHEET 2

PASSIVE IRRIGATION TYPE PI-B REFER SHEET 2

ATTENTION TO CONTRACTOR

1. IT IS THE CONTRACTORS RESPONSIBILITY TO ENSURE THAT THE DIGITAL PLAN, PROVIDED FOR SETOUT PURPOSES, MATCHES THE T.B.M. COORDINATES SHOWN.
2. WHERE CONCRETE WORKS ABUT A SEWER ACCESS CHAMBER SURROUND OR SIMILAR STRUCTURE, AN EXPANSION JOINT OF APPROVED MATERIAL SHALL BE PROVIDED BETWEEN THE TWO FACES.

ATTENTION TO CONTRACTOR

ALL DISTURBED ROAD VERGES AS A RESULT OF CONSTRUCTION SHALL BE REINSTATED TO THE SATISFACTION OF THE RESPONSIBLE AUTHORITY

North

LAYOUT PLAN

1:500 10 5 00 10 20 40

SYMBOL LEGEND

	Prop	Prev stage
Drains		
Sewer <300	S	S
Sewer >300	S	S
Water (DW)	W	W
Water (NDW)	W	W
House Drain	H	H
Property Inlet		
Street Sign		
PSM		
Rock Ret Wall		
Rock Ret Wall		
Conduits 50mm	GW	GW
Conduits 100mm	W100	W100
Ex Drains		
Ex Water DW/NDW	ExW	ExW
Ex Sewer/Gas	ExS	ExG
Ex Elect/Tel	ExE	ExT
Tree To Be Removed		

Ex/Natural/FS Level EX28·57 NX28·57 FS28·570
FS @ Building Line BL28·570
Top/Toe of Batter TOP28·570 TOE28·570
Top Ret. Wall Level TW28·57
100yr Flood Level FL28·57
Fill >200mm Prop
Cut >200mm Prop
Asphalt Surf Prop
Tree To Be Retained With Tree Protection Zone (TPZ) — Drip Line, TPZ

AMENDMENTS			
VER.	DATE	REMARKS	

breese pitt dixon pty. ltd.
land surveyors civil engineers
1/19 cato street
hawthorn east, 3123
telephone 8823 2300
fax no. 8823 2310

MELWAY REF.	357-J-6
SURVEY	B.P.D.
DESIGN	RK
DRAWN	RK
CHECKED	

MT ATKINSON ESTATE
KIRKPATRICK BLVD

FUNCTIONAL LAYOUT PLAN

SCALE	AS SHOWN
DATUM	AHD
DATE	APR. 20

MUNICIPALITY: MELTON

REFERENCE: 8244 E/KIRK

SHEET 1 OF 4 P2

PLOTTED:DATE
SFILES

Appendix C – Intersection Plans

WARNING
BEWARE OF UNDERGROUND SERVICES
THE LOCATIONS OF UNDERGROUND SERVICES ARE APPROXIMATE ONLY AND THEIR EXACT POSITION SHOULD BE PROVEN ON SITE. NO GUARANTEE IS GIVEN THAT ALL EXISTING SERVICES ARE SHOWN.

WARNING
BEWARE OF UNDERGROUND SERVICES
THE LOCATIONS OF UNDERGROUND SERVICES ARE APPROXIMATE ONLY AND THEIR EXACT POSITION SHOULD BE PROVEN ON SITE. NO GUARANTEE IS GIVEN THAT ALL EXISTING SERVICES ARE SHOWN.

North

TEMPORARY CONSTRUCTION BYPASS ROAD

PROVIDE CONCRETE EDGE PROTECTION STRIP, ROW OF AG'S AND "NO ROAD" SIGN.

NB. REFER SHEET 13 FOR TEMPORARY PAVEMENT INTERFACE DETAILS.

FOR CONTINUATION SEE BELOW

GRAND BOULEVARD

PROPOSED SEWER RISING MAIN

150mm TRANSMISSION GAS MAIN

500mm TRANSMISSION GAS MAIN

EDGE OF SHOULDER
EDGE OF ASHPHALT
EDGE OF ASHPHALT
EDGE OF SHOULDER

TBM RS
RL107.56
E297620.61
N5818395.37

TBM PM 193
RL107.23
E297629.31
N5818452.98

50·32
71·58
26·07
47·57
17·96
10·40
8·06
8·72
20·13
15·46

NEATLY MATCH WITH EXISTING CONSTRUCTION

EDGE EX PAV.
EX CENTRE LINE
B2 K&K
SM2 K&K
SM3 K&K
SM3K&C
EX. STEEL GUARDRAIL
EX OH/E

CONSTRUCT 1m WIDE KERB BREAK AND BEACHING TO FREE OUTLET IN ACCORDANCE WITH VICROADS SD2051.

EX ELEC POLE

HOPKINS ROAD

PLAN
SCALE 1:500

NOTE
REFER DETAILS SHEET 2 AND NOTE 47 SHEET 1 FOR TREATMENT OF EXISTING GUARD FENCES.

EXCAVATE OPEN DRAIN TO EX FARM DAM AT 1in 400. PROVIDE SAFETY FENCE REFER NOTE 45 SHEET 1.

OUTFALL DRAIN TYPICAL SECTION
NTS

1 in 2
1.0
1 in 2

TEMP SAND BAG ENDWALL
IL 104.83

TEMPORARY 450mm RCP (21.96m) 1 in 356

IL 104.89

TEMPORARY 375mm RCP (17.08m) 1 in 171

FOR CONTINUATION SEE ABOVE

EXCAVATE SHALLOW TABLE DRAIN TO EXISTING CULVERT 92m TO THE NORTH.

EXCAVATE SHALLOW TABLE DRAIN TO EXISTING DRAIN 40m TO THE NORTH.

EX STAY ANCHOR

79·64

100·55

TBM R3
RL103.46
E297667.18
N5818872.47

PROP ELEC POLE

PROP STAY ANCHOR

PROP NEW OVERHEAD LINE

EX LIGHT POLE

20.5m

25m

PROPOSED NEW GUARD FENCE REFER DETAIL SHEET 2.

CONTRACTOR TO LIAISE WITH VICROADS TO REMOVE EXISTING PUBLIC LIGHT #292-017 PRIOR TO THE CONSTRUCTION OF NEW OVERHEAD LINES.

PLAN
SCALE 1:500

NOTE
REFER DETAILS SHEET 2 AND NOTE 47 SHEET 1 FOR TREATMENT OF EXISTING GUARD FENCES.

VER.	DATE	REMARKS
C	11-10-19	GRAND NORTHERN PATH MOVED TO AN 0.05m OFFSET
B	23-08-19	BYPASS ROAD REGRADED & CULVERT ADDED
A	18-04-19	ISSUED FOR CONSTRUCTION

breese pitt dixon pty. ltd.
land surveyors civil engineers
1/19 cato street
hawthorn east, 3123
telephone 8823 2300
fax no. 8823 2310

MELWAY REF. 357-G-4
SURVEY BPD
DESIGN GJE
DRAWN GJE
CHECKED

MT ATKINSON ESTATE GRAND BLVD - HOPKINS RD INTERSECTION

SCALE AS SHOWN | DATUM AHD | DATE APRIL '19

MUNICIPALITY: MELTON
REFERENCE: 8244 E/Int1
SHEET 3 OF 17 C

I:\8244\ENG\Sint\SE1_r03_det2.dgn
Plotted:11/10/2019

WARNING

BEWARE OF UNDERGROUND SERVICES

THE LOCATIONS OF UNDERGROUND SERVICES ARE APPROXIMATE ONLY AND THEIR EXACT POSITION SHOULD BE PROVEN ON SITE. NO GUARANTEE IS GIVEN THAT ALL EXISTING SERVICES ARE SHOWN

North

GRADE TABLE DRAIN TO OPEN DRAIN

CONSTRUCT OPEN DRAIN TO FREE OUTLET

TEMP DRAIN AND SANDBAG ENDWALLS

GRADE TABLE DRAIN TO OPEN DRAIN

TEMPORARY CONSTRUCTION BYPASS ROAD

LIMIT OF WORKS

LIMIT OF WORKS

KIRKPATRICK BLVD

EXISTING ACCES POINT TO BE REMOVED

GRADE TABLE DRAIN TO OPEN DRAIN
CONSTRUCT OPEN DRAIN FROM ROAD CULVERT TO TEMP CULVERT

FUTURE DRAIN

PROPOSED SEWER RISING MAIN

EXISTING 150mm TRANSMISSION GAS MAIN

EXISTING 500mm TRANSMISSION GAS MAIN

NEW GUARD RAIL

CONSTRUCT 1.0m WIDE KERB BREAK AND BEACHING TO EXISTING TABLE DRAIN REFER VICROADS SD205

EXTEND EX. CULVERT

EX ELEC. POLE

EXISTING GUARD RAIL TO BE RELOCTAED REFER DETAIL

HOPKINS ROAD

WARNING EXISTING OVERHEAD CABLES REFER AUSNET DRAWING NUMBER VE5/75030056/1 FOR DETAILS OF CLEARANCE OF NEW ROAD

TEMPORARY CONSTRUCTION BYPASS ROAD

FUTURE DRAIN TO WETLAND

WARNING

BEWARE OF UNDERGROUND SERVICES

THE LOCATIONS OF UNDERGROUND SERVICES ARE APPROXIMATE ONLY AND THEIR EXACT POSITION SHOULD BE PROVEN ON SITE. NO GUARANTEE IS GIVEN THAT ALL EXISTING SERVICES ARE SHOWN

ATTENTION TO CONTRACTOR

1. IT IS THE CONTRACTORS RESPONSIBILITY TO ENSURE THAT THE DIGITAL PLAN, PROVIDED FOR SETOUT PURPOSES, MATCHES THE T.B.M. COORDINATES SHOWN.
2. WHERE CONCRETE WORKS ABUT A SEWER ACCESS CHAMBER SURROUND OR SIMILAR STRUCTURE, AN EXPANSION JOINT OF APPROVED MATERIAL SHALL BE PROVIDED BETWEEN THE TWO FACES.

ATTENTION TO CONTRACTOR

ALL DISTURBED ROAD VERGES AS A RESULT OF CONSTRUCTION SHALL BE REINSTATED TO THE SATISFACTION OF THE RESPONSIBLE AUTHORITY

MELBOURNE ONE CALL SYSTEM DIAL 1100 DIAL BEFORE YOU DIG

LAYOUT PLAN

1:500 10 5 00 10 20 40

CONDITIONS FOR WORKS NEAR GAS TRANSMISSION PIPELINES

AMENDMENTS

VER.	DATE	REMARKS

breese pitt dixon pty. ltd.
land surveyors civil engineers
1/19 cato street
hawthorn east, 3123
telephone 8823 2300
fax no. 8823 2310

MELWAY REF.	357-J-6
SURVEY	B.P.D.
DESIGN	RK
DRAWN	RK
CHECKED	

MT ATKINSON ESTATE
KIRKPATRICK BLVD-HOPKINS RD
ROADWORKS DRAWINGS
LAYOUT PLAN

SCALE	AS SHOWN
DATUM	AHD
DATE	MAR. 20

MUNICIPALITY: MELTON

REFERENCE: 8244 / INT2

SHEET 2 OF 31 P2

D:\bpd - e8244-hop2\design\design int2\2020-05-06\8244-int2-des.dgn

Appendix D – Stormwater Infrastructure

LEGEND

- EX. DRAIN
- PROPOSED SCHEME DRAIN - DEANSIDE DRIVE DS 4169
- PROPOSED SCHEME DRAIN - NEALE ROAD DS 4144
- PROPOSED SCHEME DRAIN - TRUGANINA DS 4060

FUTURE WETLANDS
WL-04
A11
M6
M5
A13
A12
M3
K2
K1
M4
M2
M1
FUTURE DEVELOPMENT
3
87.8 ha
BALLARAT-MELBOURNE RAILWAY
GREIGS ROAD
A6
1
26.9 ha
A7
2
47.4 ha
K1
K2
FUTURE WETLANDS
WL-07
FUTURE DEVELOPMENT
FUTURE DEVELOPMENT
CLARA AVENUE
GRAND BOULEVARD
HOPKINS ROAD
McKINLEY DRIVE
STRATHBOGIE DRIVE
3
81.4 ha
EXISTING DEVELOPMENT (DESIGN BY OTHERS)
EXISTING DEVELOPMENT (DESIGN BY OTHERS)
A3
A2
FUTURE DEVELOPMENT
3
59.3 ha
KIRKPATRICK BOULEVARD
EXISTING WETLANDS (DESIGN BY OTHERS)
McKINLEY DRIVE
CONONDALE AVENUE
EXISTING WATERWAY
A4
FUTURE WETLANDS
WL-12
FUTURE WATERWAY
COOROY ROAD
HOPKINS ROAD
FUTURE DEVELOPMENT
MELBOURNE DRIVE

MT ATKINSON

DRAINAGE MASTER PLAN

DCE REF	20102MP04 (DRAINAGE)
DRAWN BY	R.SABER
REVISION	A
REV DATE	12/05/2020

0m 40m 80m 160m 240m

Scale @ A1/A3 1:4000 / 1:8000

DIAL BEFORE YOU DIG www.1100.com.au

DALTON CONSULTING ENGINEERS
ABN 78 429 221 049

VICTORIA
T 61 3 9813 7400
W dceng.com.au

QUEENSLAND
T 61 7 3374 9000
E info@dceng.com.au

FOR DISCUSSION

Drawing File: C:\12d Synergy\data\SYNERGY-MEL\20102-Mt Atkinson_1942\1_DESIGN\01_ACAD\03_GENERAL\MASTER PLANS\20102MP04 (Drainage).dwg - 20102MP04 (DRAINAGE)
Date/Time: Fri May 15, 2020 - 11:41am --rebecca.saber--

Melbourne Water

4060 - Truganina DSS
Infrastructure 1/1

N

Melway Ref: 360 B1

Author: Rebekah Campbell

Scale @ A1 1:12000

DSCM Legend

- DSS Boundary
- DS Strategy Boundary
- DSCM Property
- Stage (Allocated)
- Stage (Works in Progress)
- Stage (Finalised)
- Nodes
- Bio-Retention Swale
- Channel
- Cleanout works
- Culvert
- Grassed Swale
- Low flow pipe with Channel
- Overland flow path
- Pipeline
- Soft Engineering
- Bio-Retention Basin
- Buffer Strip
- Inlet/Outlet Structure
- Junction Pit
- Litter trap
- Retarding Basin
- Sediment trap
- Wetland

As Constructed Legend

- Channel
- Natural Waterway
- Sewer Main
- Underground Drain
- Water Main
- Flood Extents
- Lake
- Retarding Basin
- Sediment Trap
- Wetland

Plan Date: April 2017

Melbourne Water is providing our indicative asset information and is not to be used as the basis of future design and expects that the appointed engineering consultant will perform their own calculations as part of requirements for their development.
Please note that as schemes develop and Melbourne Water receives additional information, the conceptual/indicative advice you have been provided as part of the feasibility request may become out-dated. Under the QA process it is the responsibility of the consultant to ensure that Melbourne Water's feasibility advice is correct and to certify that all information ultimately provided to Melbourne Water for acceptance is correct having completed their own detailed catchment analysis.

4050

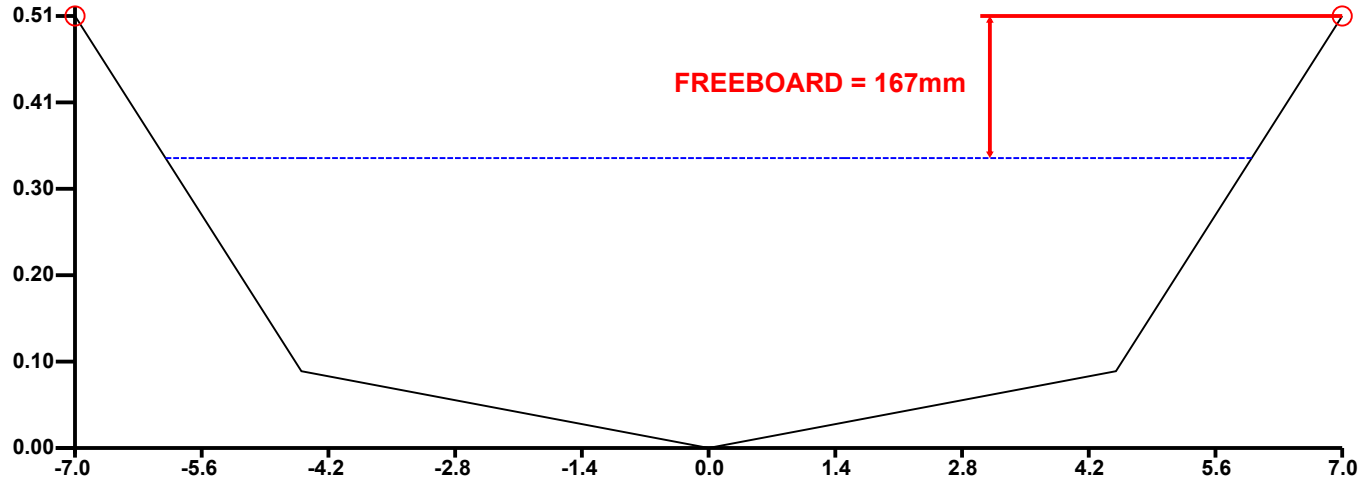
4060

4069

4088

PROJECT: 20102.1 LFR Drainage Reserve
South of Kirkpatrick
Print-out date: 28/05/2020 - Time: 14:09
Data File: C:\Users\rebecca.saber\...\20102.1 LFR drainage reserve (South of Kirkpatrick).dat

1. CROSS-SECTION:



2. DISCHARGE INFORMATION:

100 year (1%) storm event

Total discharge = 3.69 cumecs

There is no pipe discharge
Overland/channel/watercourse discharge = 3.69 cumecs

3. RESULTS: Water surface elevation = 0.340m

Grade = 1 in 100

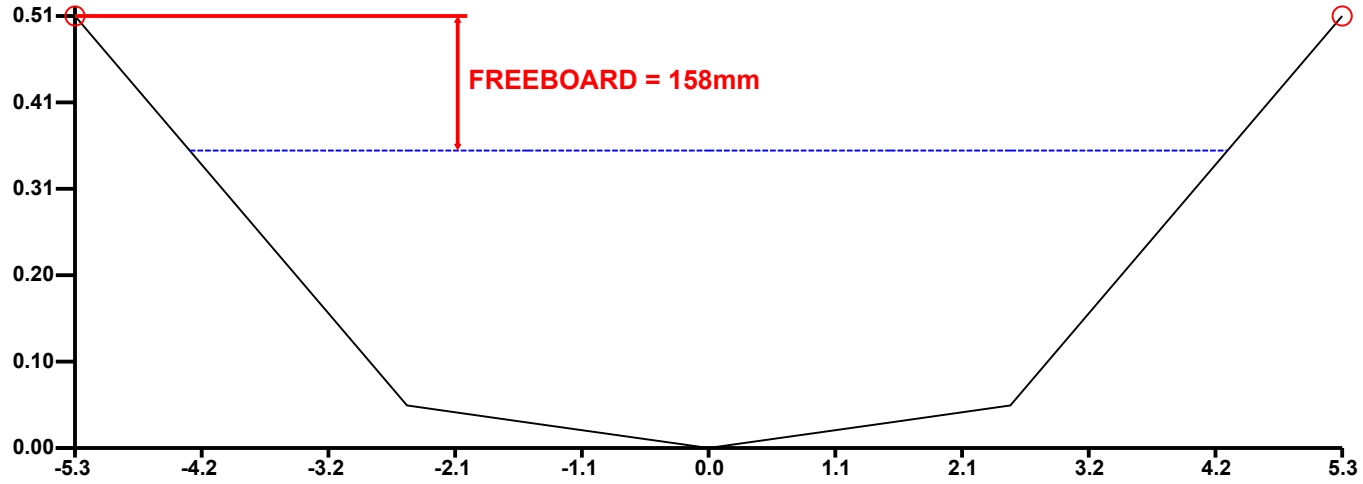
	LEFT OVERBANK	MAIN CHANNEL	RIGHT OVERBANK	TOTAL CROSS-SECTION
Discharge (cumecs):	0.00	3.89	0.00	3.89
D(Max) = Max. Depth (m):	0.00	0.34	0.00	0.34
D(Ave) = Ave. Depth (m):	0.00	0.25	0.00	0.25
V = Ave. Velocity (m/s):	0.00	1.29	0.00	1.29
D(Max) x V (cumecs/m):	0.00	0.44	0.00	0.44
D(Ave) x V (cumecs/m):	0.00	0.32	0.00	0.32
Froude Number:	0.00	0.82	0.00	0.82
Area (m^2):	0.00	3.03	0.00	3.03
Wetted Perimeter (m):	0.00	12.04	0.00	12.04
Flow Width (m):	0.00	12.00	0.00	12.00
Hydraulic Radius (m):	0.00	0.25	0.00	0.25
Composite Manning's n:	0.000	0.031	0.000	0.031
Split Flow?	-	-	-	No

4. CROSS-SECTION DATA:

	LEFT HAND POINT		RIGHT HAND POINT		
SEGMENT NO.	CHAINAGE (m)	R.L. (m)	CHAINAGE (m)	R.L. (m)	MANNING'S N
1	-7.000	0.507	-4.500	0.090	0.035
2	-4.500	0.090	-1.500	0.030	0.035
3	-1.500	0.030	0.000	0.000	0.013
4	0.000	0.000	1.500	0.030	0.013
5	1.500	0.030	4.500	0.090	0.035
6	4.500	0.090	7.000	0.507	0.035

PROJECT: 20102.1 LFR Drainage Reserve
North of Kirkpatrick
Print-out date: 28/05/2020 - Time: 14:15
Data File: C:\Users\rebecca.saber\...\20102.1 LFR drainage reserve (North of Kirkpatrick).dat

1. CROSS-SECTION:



2. DISCHARGE INFORMATION:

100 year (1%) storm event

Total discharge = 2.84 cumecs

There is no pipe discharge
Overland/channel/watercourse discharge = 2.84 cumecs

3. RESULTS: Water surface elevation = 0.350m

Grade = 1 in 100

	LEFT OVERBANK	MAIN CHANNEL	RIGHT OVERBANK	TOTAL CROSS-SECTION
Discharge (cumecs):	0.00	2.93	0.00	2.93
D(Max) = Max. Depth (m):	0.00	0.35	0.00	0.35
D(Ave) = Ave. Depth (m):	0.00	0.25	0.00	0.25
V = Ave. Velocity (m/s):	0.00	1.36	0.00	1.36
D(Max) x V (cumecs/m):	0.00	0.47	0.00	0.47
D(Ave) x V (cumecs/m):	0.00	0.34	0.00	0.34
Froude Number:	0.00	0.86	0.00	0.86
Area (m^2):	0.00	2.17	0.00	2.17
Wetted Perimeter (m):	0.00	8.65	0.00	8.65
Flow Width (m):	0.00	8.60	0.00	8.60
Hydraulic Radius (m):	0.00	0.25	0.00	0.25
Composite Manning's n:	0.000	0.029	0.000	0.029
Split Flow?	-	-	-	No

4. CROSS-SECTION DATA:

	LEFT HAND POINT		RIGHT HAND POINT		
SEGMENT NO.	CHAINAGE (m)	R.L. (m)	CHAINAGE (m)	R.L. (m)	MANNING'S N
1	-5.250	0.508	-2.500	0.050	0.035
2	-2.500	0.050	-1.500	0.030	0.035
3	-1.500	0.030	0.000	0.000	0.013
4	0.000	0.000	1.500	0.030	0.013
5	1.500	0.030	2.500	0.050	0.035
6	2.500	0.050	5.250	0.508	0.035

Appendix E – Western Water Servicing Plans

WESTERN WATER

N

GRANGEFIELDS

BONNIE BROOK

FRASER RISE

AINTREE

ROCKBANK

DEANSIDE

TRUGANINA

MT. ATKINSON

HOPKINS ROAD

MELBOURNE - BALLARAT RAILWAY

SPS 2023
SPS 2024
SPS 2026
SPS 2027
SPS 2028
SPS 2029
SPS 2030
SPS 2031
SPS 2033
SPS 2036
SPS 2037
SPS 2038
ROCKBANK NEW SPS

EXISTING SEWER GRAVITY MAIN
EXISTING SEWER RISING MAIN
300 DENOTES PIPE SIZE
PROPOSED SEWER GRAVITY MAIN
2025 YEAR OF CONSTRUCTION
PROPOSED SEWER RISING MAIN
EXISTING SEWER PUMP STATION
PROPOSED SEWER PUMP STATION
URBAN GROWTH BOUNDARY
CWW BOUNDARY
RECYCLED WATER PLANT

0 1
kilometres

ROCKBANK
DEVELOPMENT SERVICING PLAN
SEWER - Oct 2019
Informing PS2020

WESTERN WATER

N

WPS 2045
WPS 2027
WPS 2046
WPS 2023
WPS 2029

GRANGEFIELDS
BONNIE BROOK
FRASER RISE
HILLSIDE
AINTREE
CAROLINE SPRINGS
ROCKBANK
DEANSIDE
TRUGANINA
MT. ATKINSON

MELTON HIGHWAY
PROPOSED OUTER METROPOLITAN RING ROAD
HOPKINS ROAD
MELBOURNE - BALLARAT RAILWAY

EXISTING WATER MAIN
300 DENOTES PIPE SIZE
PROPOSED WATER MAIN
2025 YEAR OF CONSTRUCTION
EXISTING WATER TANK
PROPOSED WATER TANK
EXISTING WATER PUMP STATION
PROPOSED WATER PUMP STATION
URBAN GROWTH BOUNDARY
CWW BOUNDARY
RECYCLED WATER PLANT

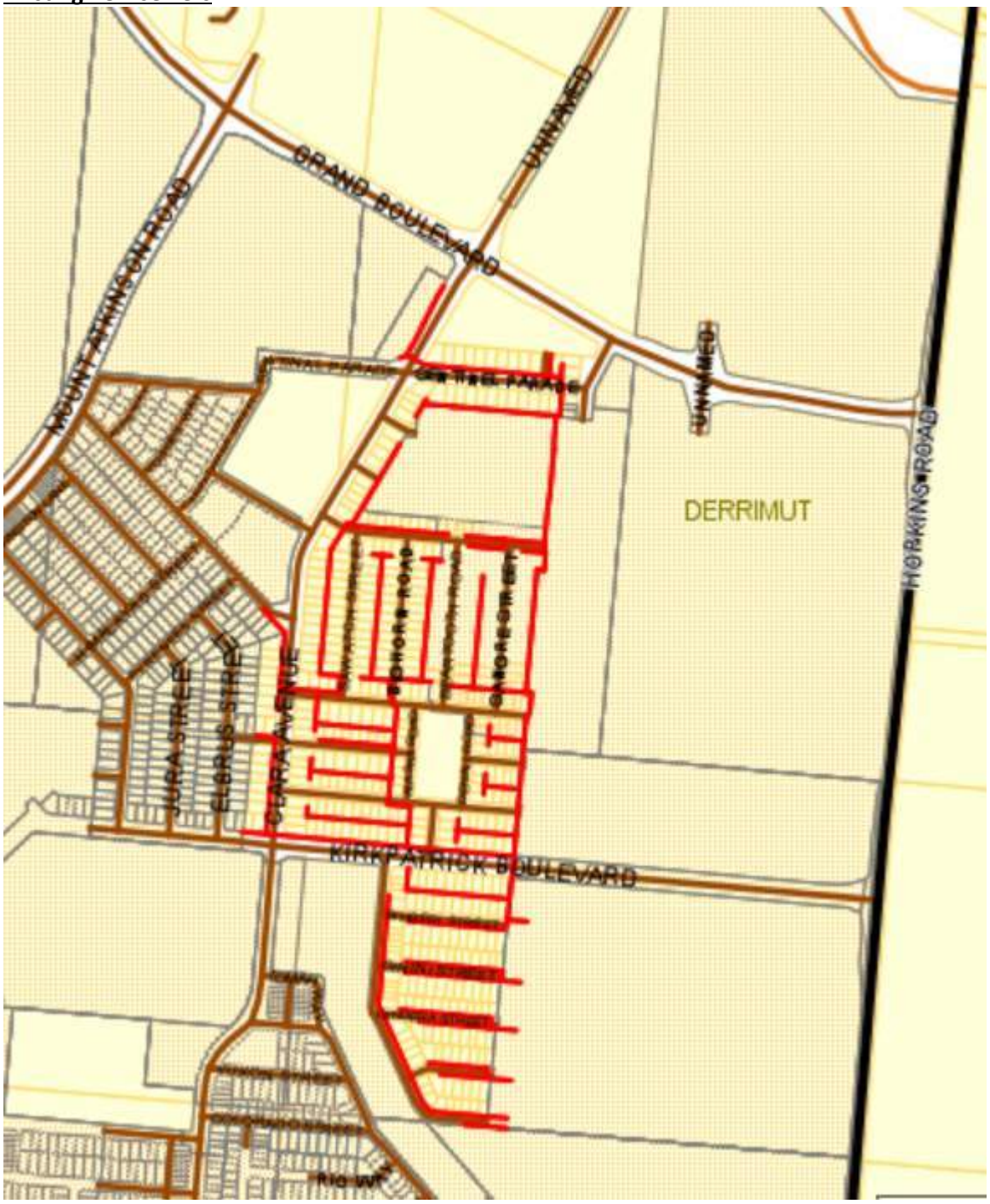
0 1
kilometres

ROCKBANK
DEVELOPMENT SERVICING PLAN
WATER - Oct 2019
Informing PS2020

James Cappellari

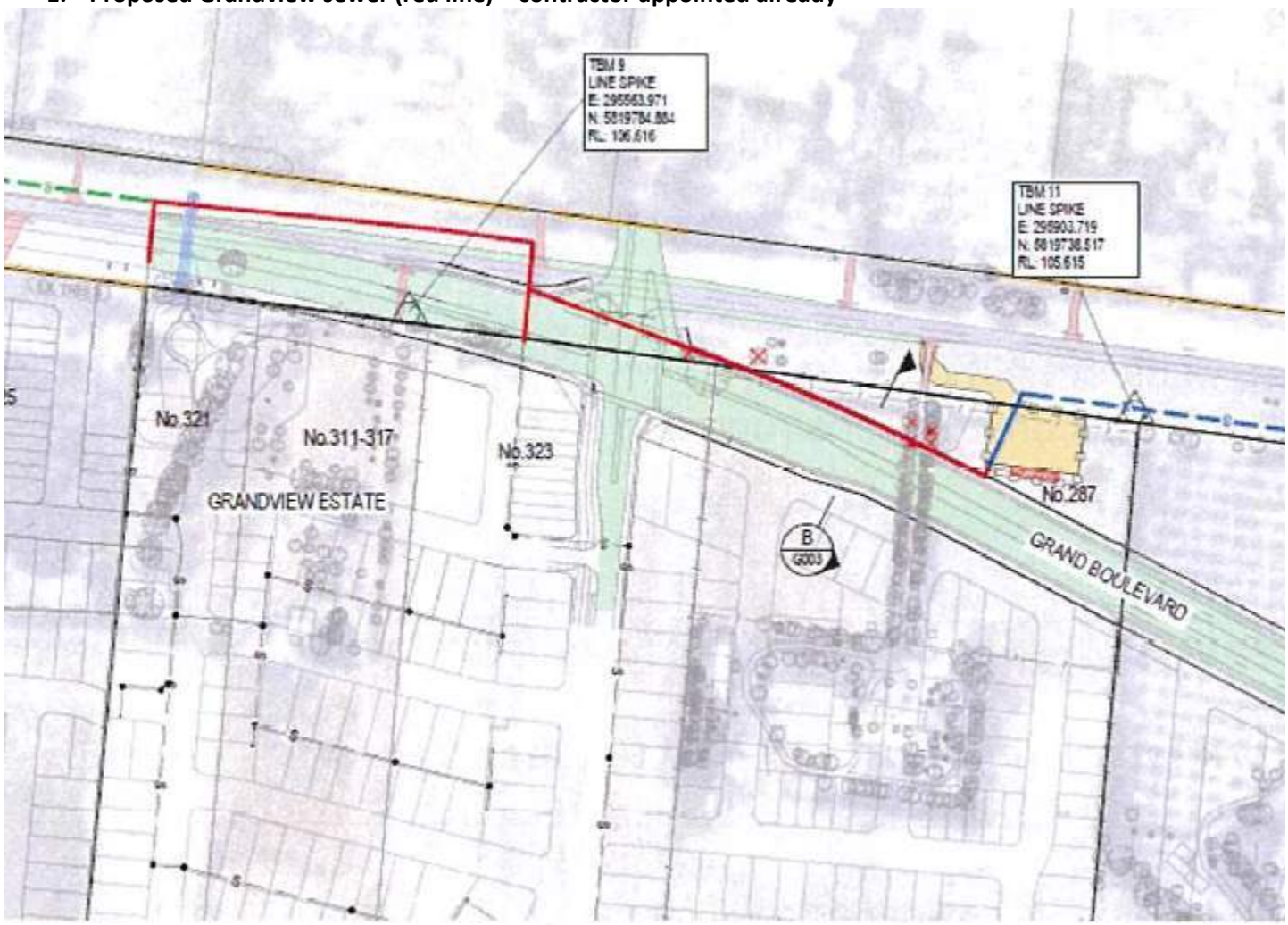
From: Mary Tissaaratchi <Mary.Tissaaratchi@westernwater.com.au>
Sent: Monday, 6 April 2020 4:27 PM
To: James Cappellari
Cc: Rebecca Saber
Subject: [#20102-Mt Atkinson Town Centre] Email 2 of 2 Mt Atkinson Sewer Servicing

Existing new sewers



PROPOSED SEWERS

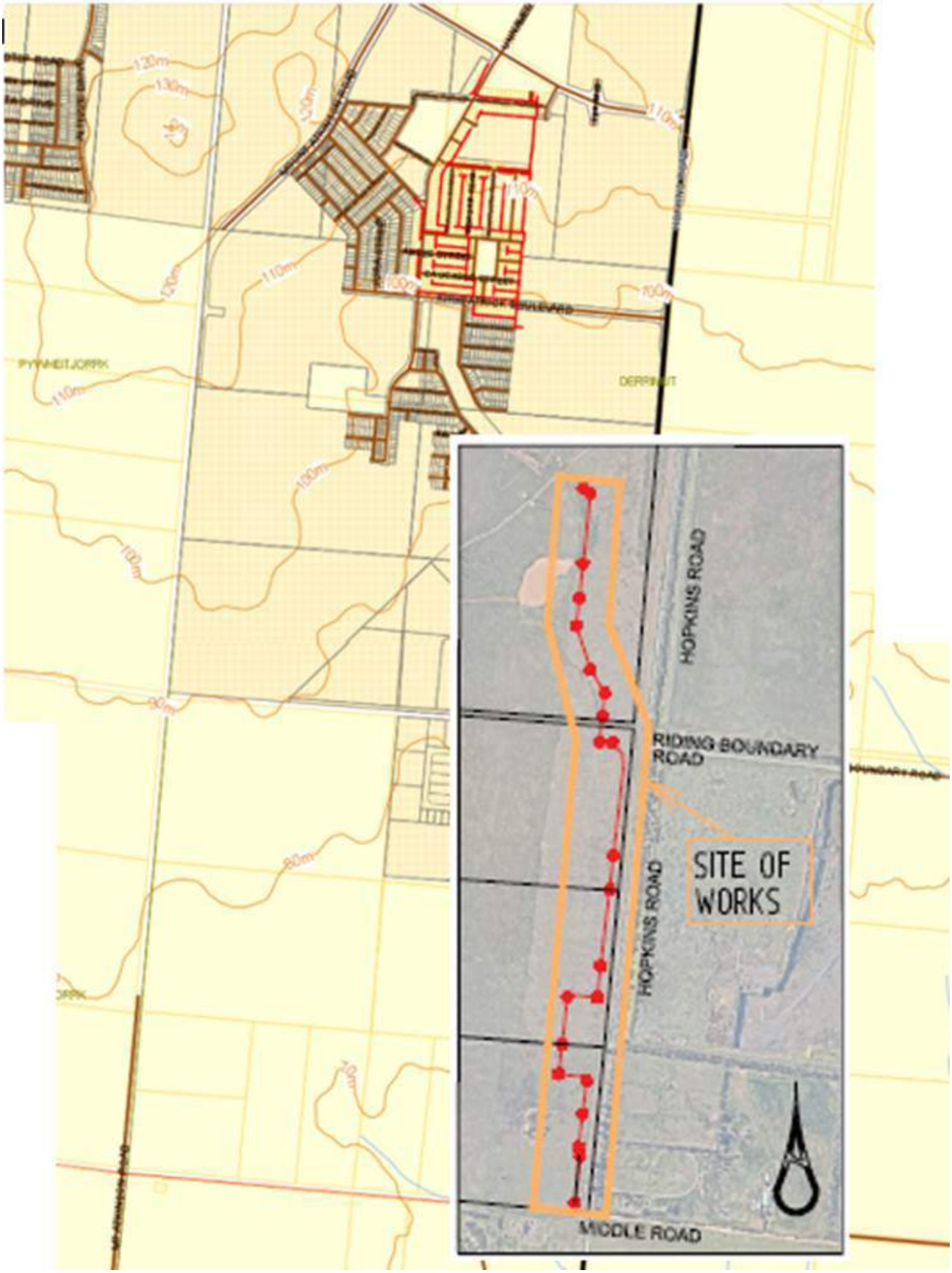
1. **Proposed Grandview sewer (red line) – contractor appointed already**



2. **Proposed Sewer Future Extension (blue above) – Still being designed (early stage)**

This blue sewer will connect to Hopkins Road sewer.

3. **Proposed Hopkins Road sewer (solid red line with red circles below) – Design still being checked, tender to follow.**



Hope this helps.

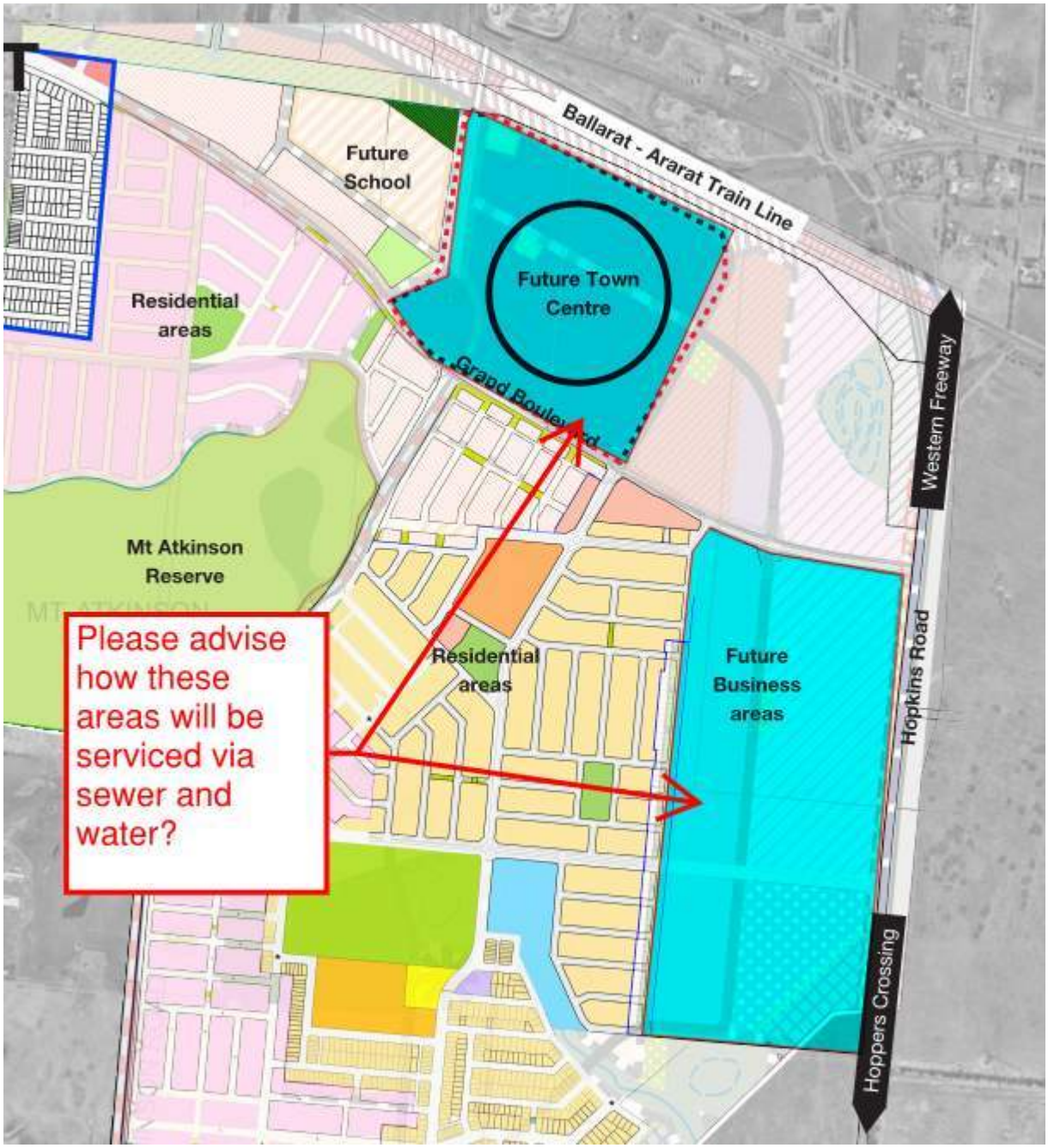
Kind regards

Mary Tissaaratchi | Senior Project Manager
P: (03) 9218 5469 | **M:** 0418 347 086
36 Macedon St, Sunbury 3429
P O Box 2371,Sunbury DC3429

From: James Cappellari <JamesC@dceng.com.au>
Sent: Monday, 6 April 2020 2:33 PM
To: Mary Tissaaratchi <Mary.Tissaaratchi@westernwater.com.au>
Cc: Rebecca Saber <RebeccaS@dceng.com.au>
Subject: [#20102-Mt Atkinson Town Centre] Mt Atkinson Servicing

Hi Mary,

Thanks for the chat, as discussed DCE have been engaged to work on the sites highlighted in blue below (town center and business area). Can you please provide preliminary servicing advice for these areas?



Thanks

James Cappellari
Project Manager

CELEBRATING 25 YEARS

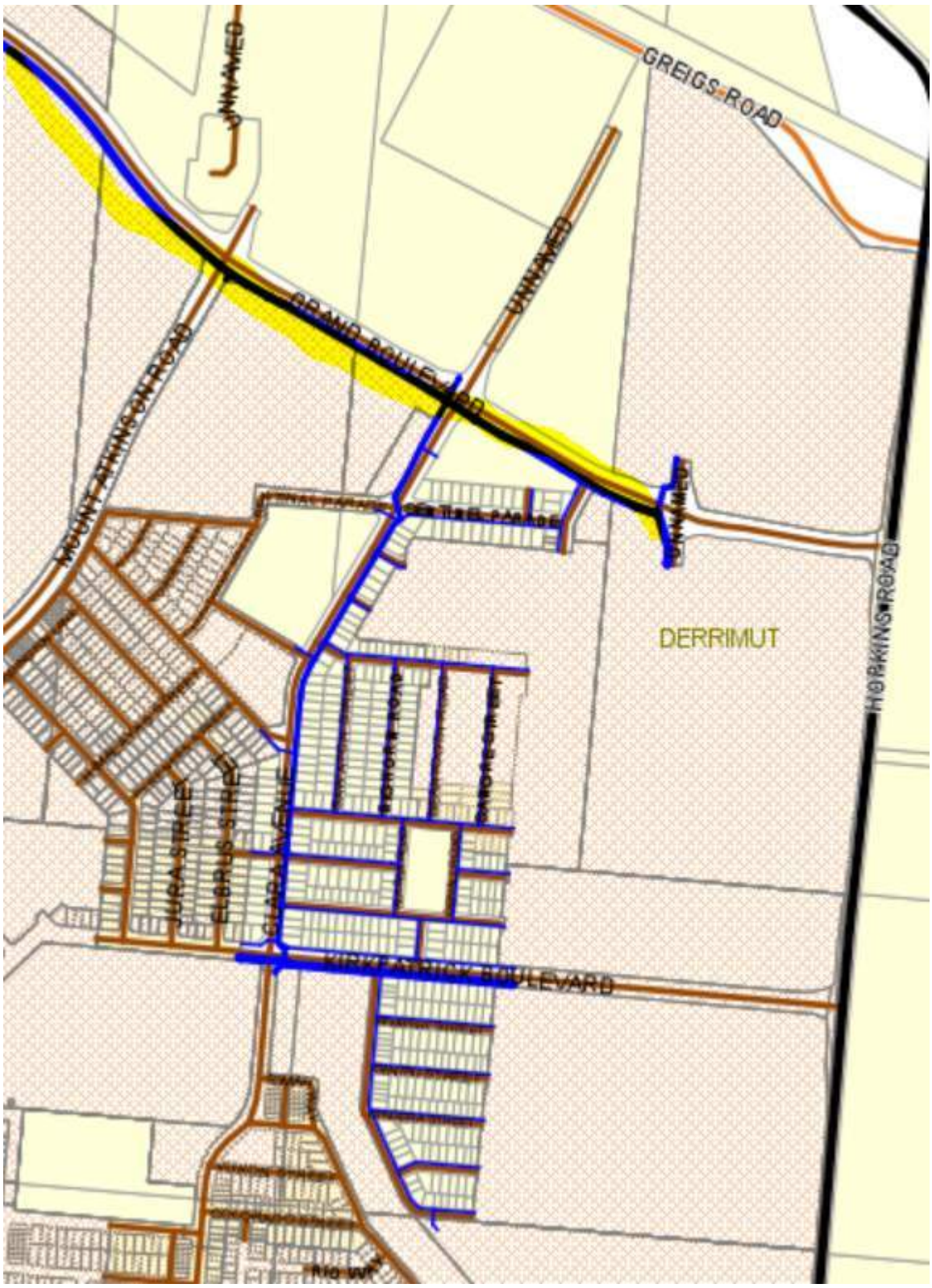
DALTON CONSULTING ENGINEERS PTY LTD

James Cappellari

From: Mary Tissaaratchi <Mary.Tissaaratchi@westernwater.com.au>
Sent: Monday, 6 April 2020 4:12 PM
To: James Cappellari
Cc: Rebecca Saber
Subject: [#20102-Mt Atkinson Town Centre] Email 1 of 2 : Mt Atkinson Water Servicing

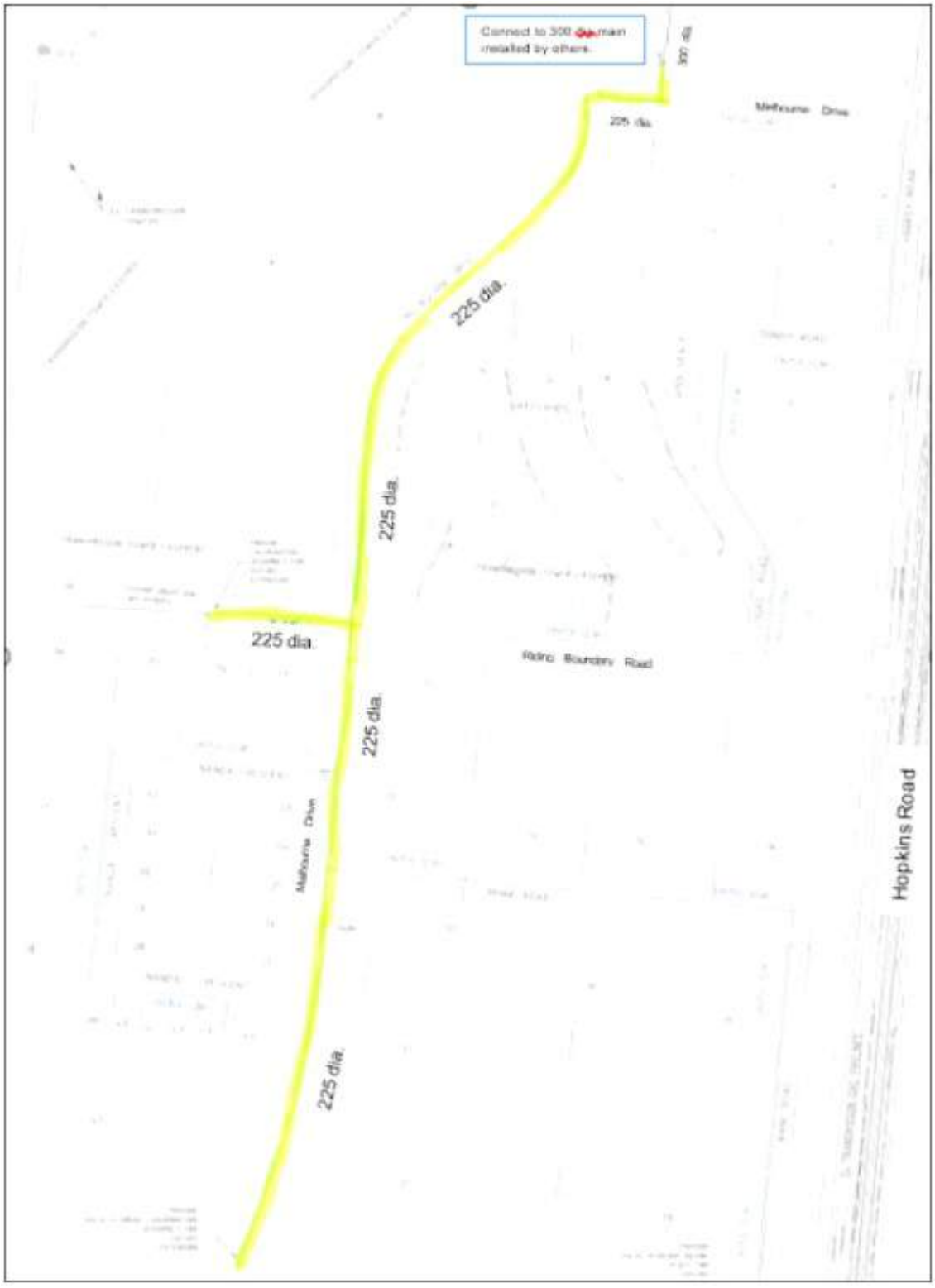
Hi Janes,
I will send you second email showing sewer servicing.

Plan showing exiting new water mains – highlighted main 450 in size.



Proposed watermains to the south of Kirkpatrick Blvd

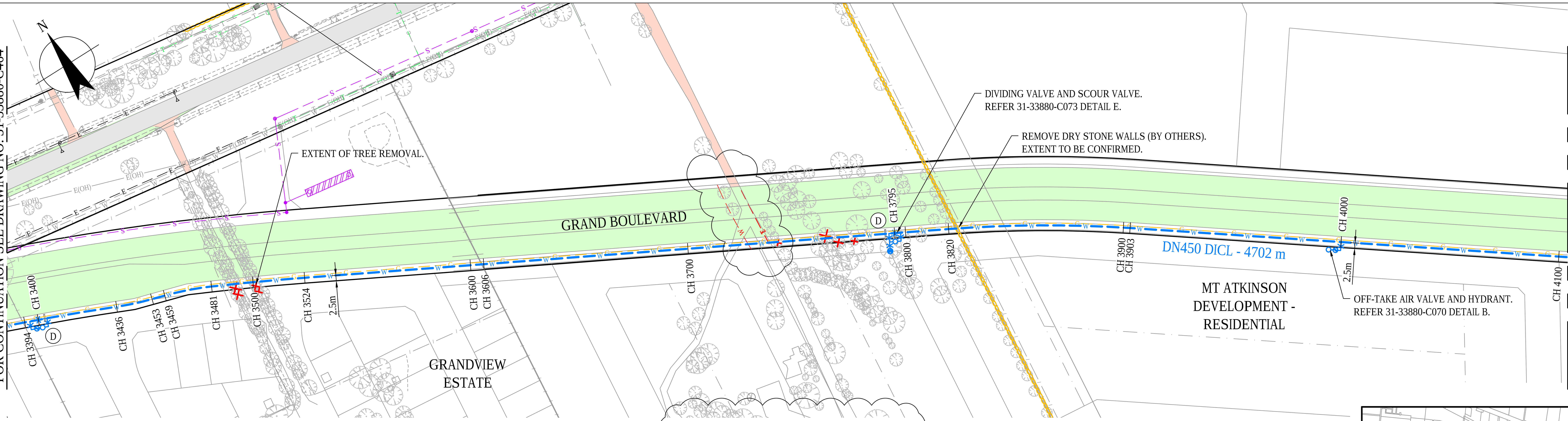

3
Kilpatrick Blvd
375 dia.
6A
300 dia.
20
5
300 dia.
13
Hopkins Road
19
28A
17
225 dia.
14
15A
18
21
15B
24
23
22
25
26
300 dia.



Kind regards

Mary Tissaaratchi | Senior Project Manager
P: (03) 9218 5469 | **M:** 0418 347 086
36 Macedon St, Sunbury 3429
P O Box 2371,Sunbury DC3429

Appendix F – Existing Water Main



TRANSFER WATER PIPELINE - PLAN

SCALE 1:1000

WARNING

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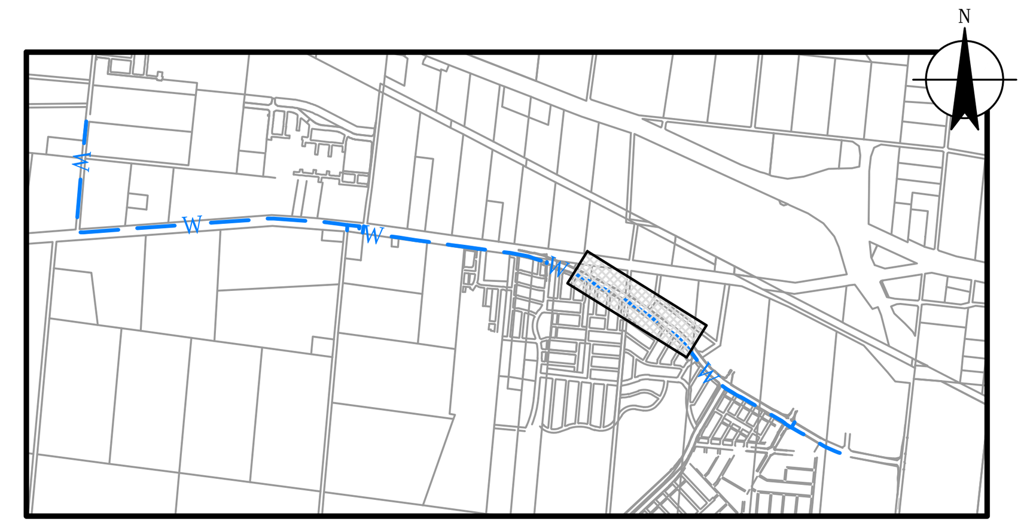
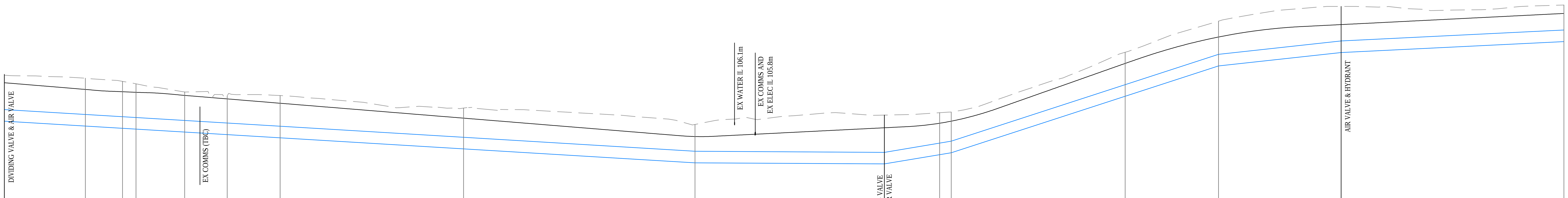


KEY PLAN

NTS



HORIZONTAL RADIUS: RADIUS = 1165m, LENGTH = 56.3m; RADIUS = -137m, LENGTH = 16.6m; RADIUS = 137m, LENGTH = 21.9m; RADIUS = 1169m, LENGTH = 42.8m; RADIUS = 598m, LENGTH = 83.3m

PIPE DISTANCE: 310m; 85m; 30m; 120m; 55m; 305m

PIPE GRADE (%): -0.60%; -0.06%; 1.67%; 3.25%; 1.09%; 0.49%

PIPE MATERIAL & LOCATION: GRAND BOULEVARD - DN450 DICL PN35 (RRJ) - OPEN CUT
EMBEDMENT TYPE A & BACKFILL TYPE R

DATUM RL 99.00

PIPE INVERT LEVEL	106.42	106.20	106.10	106.06	105.93	105.82	105.67	105.18	104.55	104.50	104.91	105.00	107.54	108.90	109.50	109.99
EXISTING SURFACE	108.48	108.35	108.21	108.10	107.73	107.56	107.57	107.01	106.27	106.69	106.80	106.83	109.51	110.91	111.57	111.63
DEPTH TO INVERT FROM EXISTING SURFACE	2.06	2.15	2.11	2.03	1.80	1.74	1.90	1.83	1.72	2.19	1.89	1.83	1.98	2.01	2.07	1.64
DESIGN SURFACE	108.14	107.84	107.74	107.72	107.58	107.42	107.22	106.56	105.73	106.12	106.33	106.42	109.01	110.20	110.76	111.26
DEPTH TO INVERT FROM DESIGN SURFACE	1.72	1.64	1.64	1.65	1.65	1.60	1.55	1.38	1.18	1.62	1.41	1.42	1.47	1.30	1.26	1.26
CHAINAGE	3400	3436.37	3453.01	3459.07	3480.93	3500	3523.77	3606.11	3710	3795	3819.81	3825	3903.07	3945	4000	4100

TRANSFER WATER PIPELINE - LONGITUDINAL SECTION

SCALE H1:1000, V1:100

CONSTRUCTION

No	Revision	Drawn	Job Manager	Project Director	Date
1	UPDATED VERTICAL ALIGNMENT	AG	ES*	MW*	06.12.18
0	ISSUED FOR CONSTRUCTION	TC	ES*	MW*	20.11.18

Note: * indicates signatures on original issue of drawing or last revision of drawing

Stockland

VERTICAL 1:100 AT ORIGINAL SIZE (0 1 2 3 4 5m)
HORIZONTAL 1:1000 AT ORIGINAL SIZE (0 10 20 30 40 50m)

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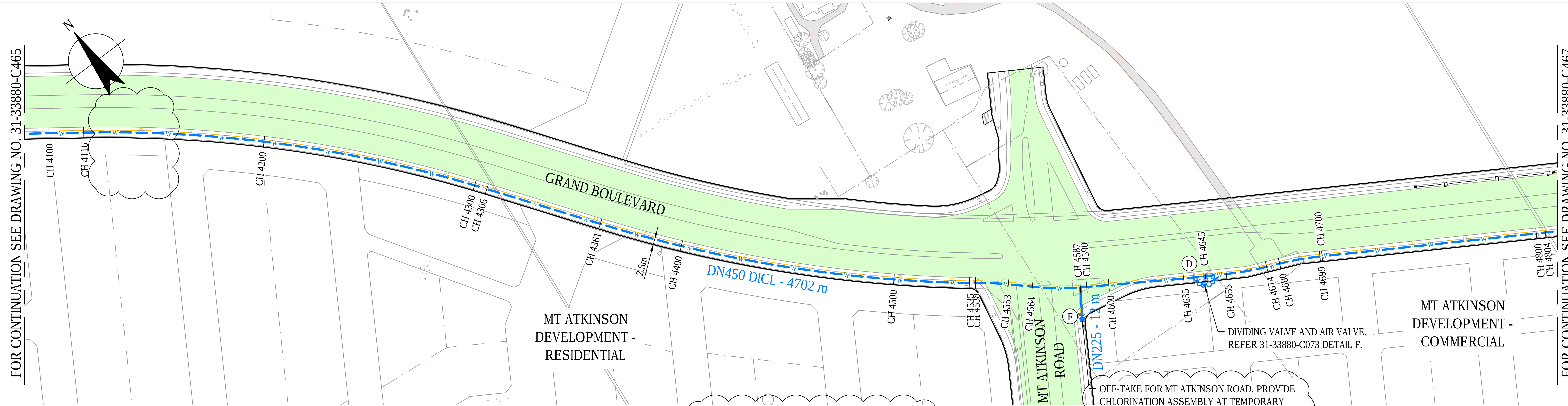
Drawn R. DELA CRUZ | Designed A. GUNAWARDENA
Drafting Check E.SAAD* | Design Check E.SAAD*
Approved (Project Director) M.WHALEN*
Date 20.11.18
Scale AS SHOWN
This Drawing must not be used for Construction unless signed as Approved

Client **STOCKLAND**
Project **MT ATKINSON HEADWORKS**
Title **TRANSFER WATER PIPELINE PLAN AND LONGITUDINAL SECTION - SHEET 6 OF 8**
Original Size A1
Drawing No: **31-33880-C465**
Rev: 1

Plot Date: 6 December 2018 - 5:39 PM Plotted by: Arosh Gunawardena Cad File No: C:\pwwork\pwv8iss4ocxx\agunawardena\dms61852\31-33880-C460_C467.dwg



TRANSFER WATER PIPELINE - PLAN

SCALE 1:1000

WARNING

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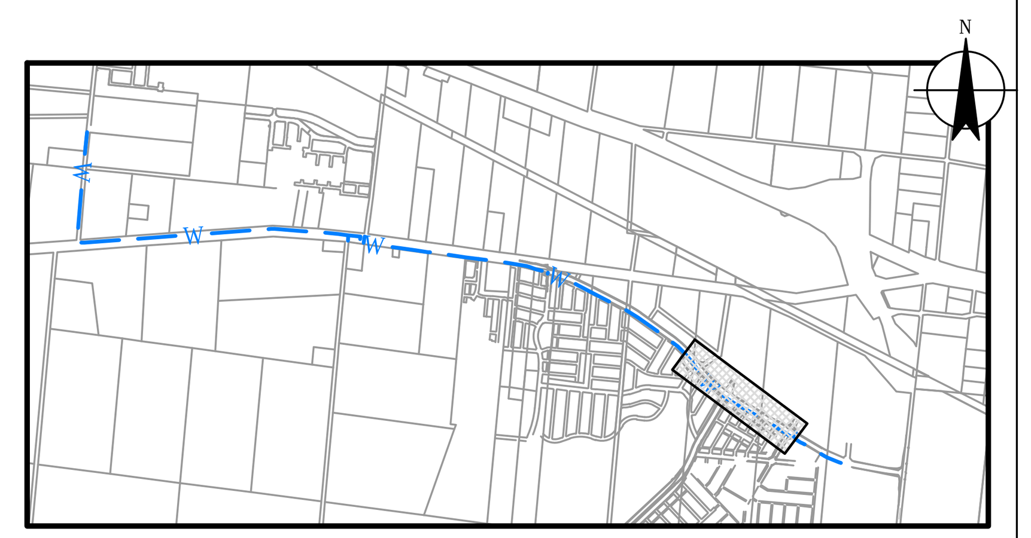
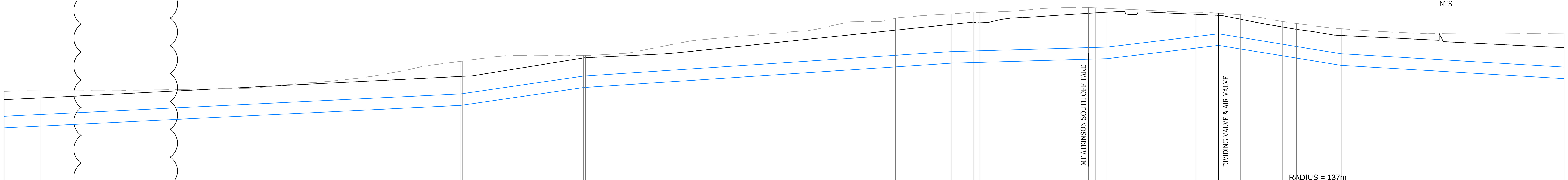


KEY PLAN

NTS



HORIZONTAL RADIUS: RADIUS = 597m, LENGTH = 189.7m; RADIUS = -626m, LENGTH = 174.2m; RADIUS = 137m, LENGTH = 15.3m; RADIUS = -137m, LENGTH = 25.3m; RADIUS = -137m, LENGTH = 19.0m; RADIUS = 137m, LENGTH = 19.0m

PIPE DISTANCE / PIPE GRADE (%): 305m 0.49%; 55m 1.45%; 165m 0.67%; 70m 0.29%; 50m 1.20%; 55m -1.64%; 235m -0.60%

PIPE MATERIAL & LOCATION: GRAND BOULEVARD - DN450 DICL PN35 (RRJ) - OPEN CUT, EMBEDMENT TYPE A & BACKFILL TYPE R

DATUM RL 104.00

CHAINAGE	PIPE INVERT LEVEL	EXISTING SURFACE	DEPTH TO INVERT FROM EXISTING SURFACE	DESIGN SURFACE	DEPTH TO INVERT FROM DESIGN SURFACE
4100	109.99	111.63	1.64	111.26	1.26
4116.14	110.07	111.65	1.58	111.34	1.26
4305	111.00	112.99	1.99	112.30	1.30
4305.89	111.01	113.00	1.98	112.31	1.29
4360	111.80	113.25	1.45	113.13	1.33
4361.02	111.81	113.25	1.44	113.14	1.34
4500	112.73	114.91	2.18	114.38	1.65
4525	112.90	115.12	2.22	114.64	1.74
4535.21	112.93	115.18	2.25	114.75	1.82
4537.93	112.94	115.18	2.24	114.71	1.78
4553.19	112.98	115.25	2.27	114.93	1.95
4564.39	113.01	115.35	2.33	114.99	1.98
4586.68	113.08	115.40	2.33	115.14	2.06
4589.68	113.08	115.39	2.30	115.16	2.07
4595	113.10	115.36	2.26	115.19	2.09
4634.81	113.58	115.19	1.61	115.10	1.52
4645	113.70	115.14	1.44	115.05	1.35
4654.76	113.54	115.08	1.54	114.88	1.34
4673.79	113.23	114.77	1.54	114.52	1.29
4680.01	113.13	114.68	1.56	114.42	1.29
4699.03	112.82	114.45	1.64	114.15	1.33
4700	112.80	114.45	1.65	114.14	1.34
4800	112.20	114.25	2.05	113.59	1.39

TRANSFER WATER PIPELINE - LONGITUDINAL SECTION

SCALE H1:1000, V1:100

CONSTRUCTION

No	Revision	Drawn	Job Manager	Project Director	Date
1	UPDATED VERTICAL ALIGNMENT	AG	ES*	MW*	06.12.18
0	ISSUED FOR CONSTRUCTION	TC	ES*	MW*	20.11.18

Note: * indicates signatures on original issue of drawing or last revision of drawing

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HORIZONTAL 1:1000 AT ORIGINAL SIZE 0 10 20 30 40 50m

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Drawn R. DELA CRUZ | Designed A.GUNAWARDENA
Drafting Check E.SAAD* | Design Check E.SAAD*
Approved (Project Director) M.WHALEN*
Date 20.11.18
Scale AS SHOWN
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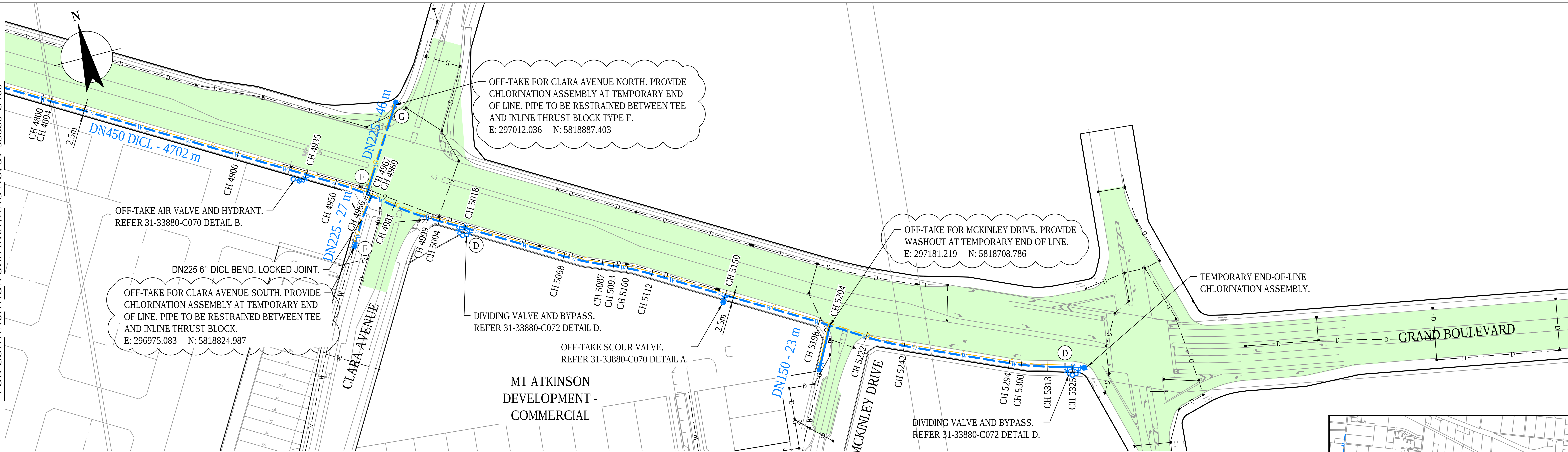
Client **STOCKLAND**
Project **MT ATKINSON HEADWORKS**
Title **TRANSFER WATER PIPELINE**
PLAN AND LONGITUDINAL SECTION - SHEET 7 OF 8

Original Size **A1** Drawing No: **31-33880-C466** Rev: **1**

Plot Date: 6 December 2018 - 5:45 PM Plotted by: Arosh Gunawardena Cad File No: C:\pwwork\pwv8iss4ocxx\agunawardena\dms61852\31-33880-C460_C467.dwg



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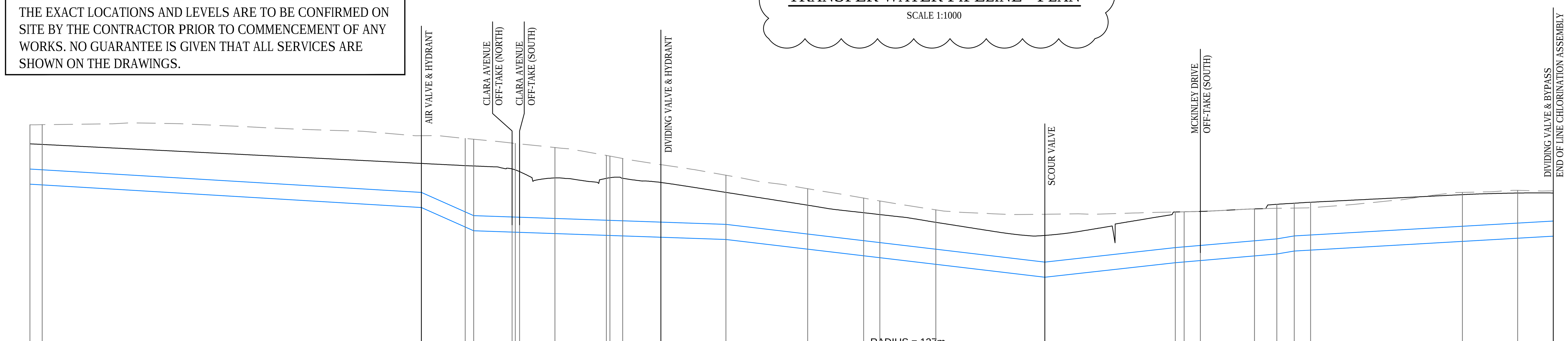
TRANSFER WATER PIPELINE - PLAN

SCALE 1:1000

KEY PLAN

NTS



HORIZONTAL RADIUS: RADIUS = 137m, LENGTH = 17.3m; RADIUS = -137m, LENGTH = 17.7m; RADIUS = -137m, LENGTH = 19.3m; RADIUS = 137m, LENGTH = 19.3m; RADIUS = -137m, LENGTH = 19.3m; RADIUS = -137m, LENGTH = 19.1m

PIPE DISTANCE	235m	18m	87m	110m	45m	35m	6m	89.34m
PIPE GRADE (%)	-0.60%	-4.44%	-0.34%	-1.18%	1.11%	0.86%	1.67%	0.57%

PIPE MATERIAL & LOCATION: GRAND BOULEVARD - DN450 DICL PN35 (RRJ) - OPEN CUT, EMBEDMENT TYPE A & BACKFILL TYPE R

DATUM RL 103.00

CHAINAGE	PIPE INVERT LEVEL	EXISTING SURFACE	DEPTH TO INVERT FROM EXISTING SURFACE	DESIGN SURFACE	DEPTH TO INVERT FROM DESIGN SURFACE
4800	112.20	114.25	2.05	113.59	1.39
4804.24	112.18	114.26	2.08	113.57	1.39
4935	111.40	113.87	2.47	112.92	1.52
4950.12	110.73	113.78	3.05	112.84	2.12
4953	110.60	113.75	3.15	112.83	2.23
4966.27	110.55	113.62	3.07	112.73	2.18
4967.37	110.55	113.61	3.06	112.70	2.15
4968.85	110.55	113.59	3.05	112.64	2.09
4981.06	110.50	113.47	2.97	112.42	1.92
4998.77	110.44	113.19	2.75	112.41	1.96
5000	110.44	113.17	2.73	112.43	1.99
5004.41	110.42	113.09	2.67	112.41	1.99
5017.55	110.38	112.88	2.50	112.26	1.89
5040	110.30	112.51	2.21	111.92	1.62
5068.19	109.97	112.05	2.08	111.48	1.51
5087.5	109.74	111.72	1.99	111.22	1.48
5093.1	109.67	111.63	1.95	111.16	1.48
5112.4	109.44	111.32	1.88	110.89	1.45
5150	109.00	111.17	2.17	110.44	1.44
5195	109.50	111.25	1.75	111.25	1.75
5198.04	109.53	111.25	1.73	111.25	1.73
5203.63	109.57	111.27	1.69	111.27	1.69
5222.29	109.73	111.35	1.62	111.35	1.62
5230	109.80	111.37	1.57	111.51	1.71
5236	109.90	111.38	1.48	111.55	1.65
5241.62	109.93	111.40	1.46	111.58	1.65
5293.98	110.23	111.92	1.69	111.84	1.61
5313.04	110.34	111.99	1.65	111.90	1.56
5325.34	110.41	111.97	1.56	111.90	1.49

TRANSFER WATER PIPELINE - LONGITUDINAL SECTION

SCALE H1:1000, V1:100

CONSTRUCTION

No	Revision	Drawn	Job Manager	Project Director	Date
1	UPDATED CLARA CROSSING AND CHAINAGES	AG	ES*	MW*	06.12.18
0	ISSUED FOR CONSTRUCTION	TC	ES*	MW*	20.11.18

Note: * indicates signatures on original issue of drawing or last revision of drawing

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HORIZONTAL 1:1000 AT ORIGINAL SIZE (0 10 20 30 40 50m)

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Drawn R. DELA CRUZ | Designed A.GUNAWARDENA
Drafting Check E.SAAD* | Design Check E.SAAD*
Approved (Project Director) M.WHALEN*
Date 20.11.18
Scale AS SHOWN
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Client **STOCKLAND**
Project **MT ATKINSON HEADWORKS**
Title **TRANSFER WATER PIPELINE PLAN AND LONGITUDINAL SECTION - SHEET 8 OF 8**

Original Size A1 | Drawing No: **31-33880-C467** | Rev: 1

Plot Date: 6 December 2018 - 5:57 PM Plotted by: Arosh Gunawardena Cad File No: C:\pwwork\pwv8iss4ocxx\agunawardena\dms61852\31-33880-C460_C467.dwg

Sequence No: 97171772
Job No: 19447307
Location: Greigs Road, Truganina, VIC 3029

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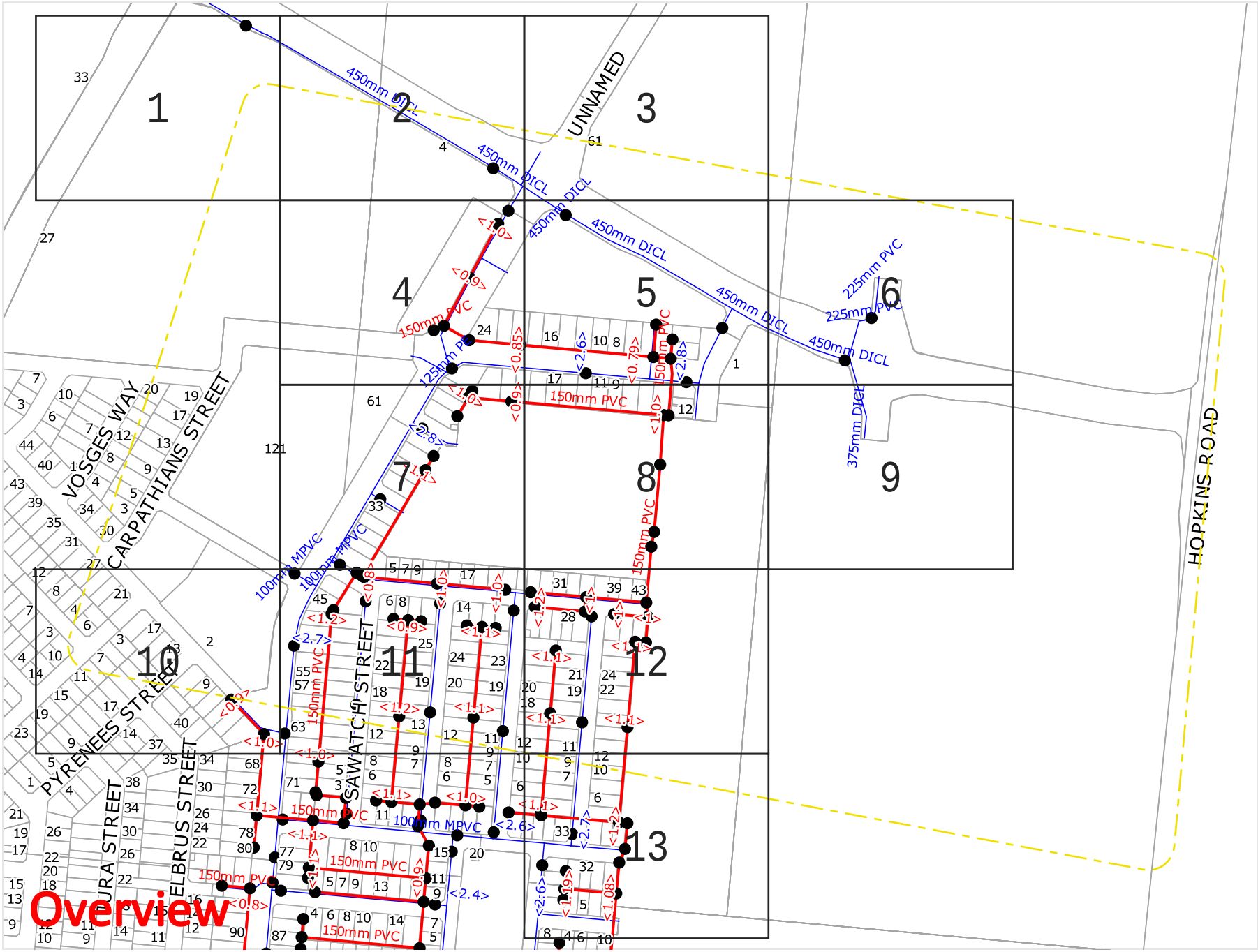
The Essential First Step.



Legend:

- Gravity Sewer
- Pressure Sewer
- Vacuum Pipe
- Water Potable
- Water Recycled
- Water Raw
- Abandoned Pipes
- Surface Fitting/Manhole
- <1.2> Estimated Offset

NOTE: Assets labelled "AC" may contain asbestos material and therefore any works near these assets must be undertaken in accordance with OHS (Asbestos) Regulations 2007.

Due to the placement of Potable and Recycled pipes in the same trench, it may be difficult to distinguish the two asset types where they have been superimposed on the plans.

PLANS MUST BE PRINTED IN COLOUR

N

Scale: 1:5125
Expires: 27 May 2020

Appendix G – Existing Electrical Assets

James Cappellari

From: Siobhan Anne Rehill <siobhan@ega.com.au>
Sent: Friday, 2 July 2021 2:05 PM
To: James Cappellari
Cc: Victoria Cook
Subject: FW: Servicing Advice for Mt A HRBP
Attachments: 2020-11-30 PCA40_6046710_2.pdf

From: Paktin Fazal <paktinf@planbservices.com.au>
Sent: Friday, 2 July 2021 1:58 PM
To: Siobhan Anne Rehill <siobhan@ega.com.au>
Cc: Jim Bozikis - PBC <jimb@planbcomms.com.au>
Subject: RE: Servicing Advice for Mt A HRBP

Hi Siobhan,

Just clarifying something for comms.

Powercor

With regards to electrical, there is existing HV 22Kv cable in Grand Bvd and planned in Kirkpatrick. Hopkins Rd currently has 22kV overhead conductor north of Grand Bvd.
This is the only feeder currently supplying Mt Atkinson Residential and is fairly substantially utilised. This feeder is MLN-21
There ae spare conduits with the developed portions of Mt Atkinson that will form part of the overall supply and network strategy for the site. conduits and HV route shown on attached plan.
Griegs Rd doesn't have suitable conductor however will likely need interconnection. It would seem likely substantial works involved.

Recommend preparing and lodging a Powercor masterplan to have input from Powercor network planners for overall requirements.
As the precinct has substantial projects in progress and upcoming Powercor will need significant network upgrades. This is normally at their cost.

There is also a future zone substation allocated south of this subject site in Melbourne business park. Timing on the deliver if this is currently unknown and will be initiated once planned load justifies it. It was not anticipated for the next 3-5 years however may come forward.

I hope this assists.

Regards,

PAKTIN FAZAL

DESIGN MANAGER

We have moved

Level 3, 545 Blackburn Road, MOUNT WAVERLEY, VIC, 3149

(03) 9501 2055 • 0439 000 114 • paktinf@planbservices.com.au

From: Siobhan Anne Rehill <siobhan@ega.com.au>
Sent: Thursday, 1 July 2021 10:27 AM
To: Paktin Fazal <paktinf@planbservices.com.au>
Subject: Servicing Advice for Mt A HRBP

Hi Paktin,

Any progress on this advice. We would like to wrap up the servicing technical report for the UDF with the electrical and communications report. For clarity the HRBP UDF covers that land area bounded by:

- West Boundary Strathbogie Road
- East Boundary Hopkins Road
- North Greigs Road
- South Conondale Ave.

Let me know of any problems, high level, as I understand it form our conversation Plan B would need to make application to Powercor, this investigation should occur/commenced. However in the interim high level is satisfactory.

Regards,

Siobhan Rehill
Development Director

MT. ATKINSON

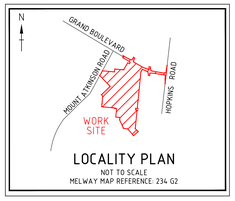
A NEW SUBURB FOR MELBOURNE

Mount Atkinson Holdings Pty Ltd
Level 12, 468 St Kilda Road
Melbourne VIC 3004

PO Box 7709
St Kilda Road
Melbourne VIC 3004

M + 0418 175 689
T + 61 3 9866 6200
F + 61 3 9866 1766
E siobhan@ega.com.au

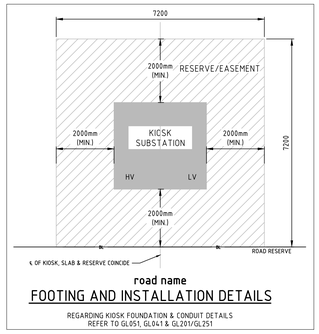
1133x801



LOCALITY PLAN

NOT TO SCALE

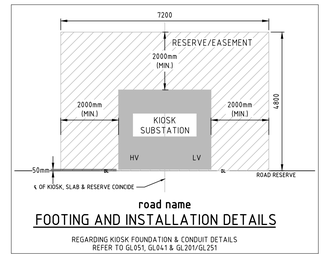
MELWAY MAP REFERENCE: 234 G2



road name

FOOTING AND INSTALLATION DETAILS

REGARDING KIOSK FOUNDATION & CONDUIT DETAILS
REFER TO GL051, GL041 & GL201/GL251



road name

FOOTING AND INSTALLATION DETAILS

REGARDING KIOSK FOUNDATION & CONDUIT DETAILS
REFER TO GL051, GL041 & GL201/GL251

DEVELOPMENT STAGED ORDER

STAGE NUMBER	ORDER OF DEVELOPMENT	ESTIMATED "TIE IN" DATE
STAGE 10	1	JUNE 2020
STAGE 8	2	xxxx 2021
STAGE 9	3	xxxx 2021
STAGE 12	4	xxxx 2021
	5	
	6	
	7	
	8	

LEGEND

- (N) 185/240 3c 22 a.x.hc.h.
- (N) 150 HV CONDUIT
- (E) 185/240 3c 22 a.x.hc.h.
- (E) 150 HV CONDUIT
- (N) KIOSK
- (N) SWITCHGEAR CABINET
- (E) KIOSK
- (E) SWITCHGEAR CABINET
- HV CHP

LEGEND

- PRECINCT 1
- PRECINCT 2

HV SCHEMATIC FOUND IN SHEET 3

CAUTIONS

FOR DETAILS OF CONDITIONS REFER TO DIAL BEFORE YOU DIG INFORMATION

MAP PROJECTION	MGA ZONE 55
FEEDER / SWITCHING ZONE	MLN 021
REFERENCE DRAWING	
REFERENCE DRAWING	
PROJECT MANAGER	ARTHUR KOUZOUMIS

20 0 20 40 60 80 100 120
LENGTHS ARE IN METRES
SCALE: 1:2000

CITIPOWER
Powercor AUSTRALIA

Electricity Networks
Locked Bag 14090
Melbourne 8001
www.citipower.com.au
www.powercor.com.au

DRAWING NUMBER	PCA40	6046710		2		SHEET 2 OF 3

URD MASTER PLAN (HV)
MT ATKINSON DEVELOPMENT (PRECINCT 1)
GRAND BOULEVARD
TRUGANINA

DRAWN	DRAFTING CHECK	DESIGNER	DESIGN APPROVAL
PLAN B (J.T) 08/10/20		PLAN B (P.F) 08/10/20	

A4

A4

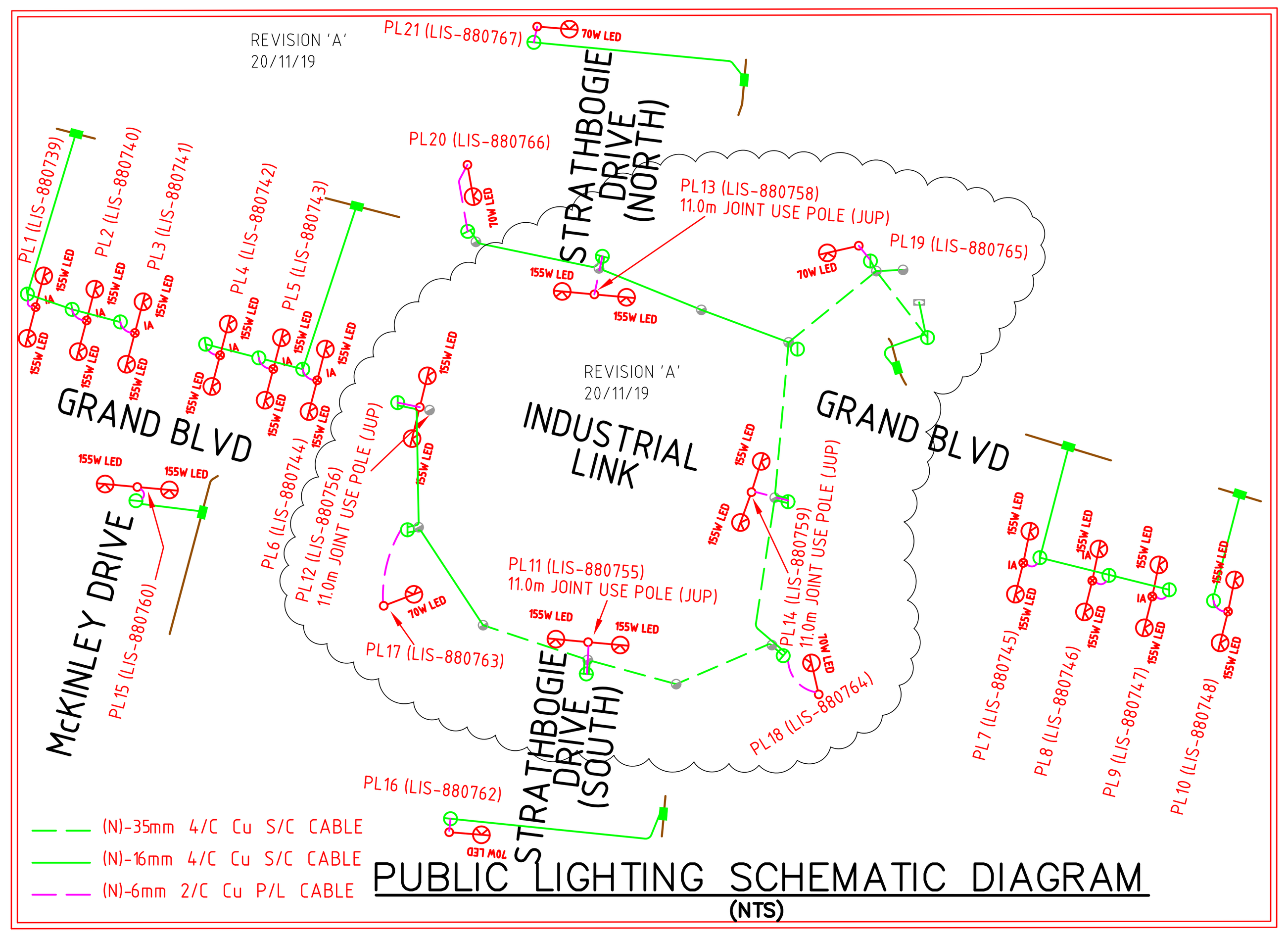
Electricity Networks - EN UG CONSTRUCTION PLAN A0 - V3.2

A0

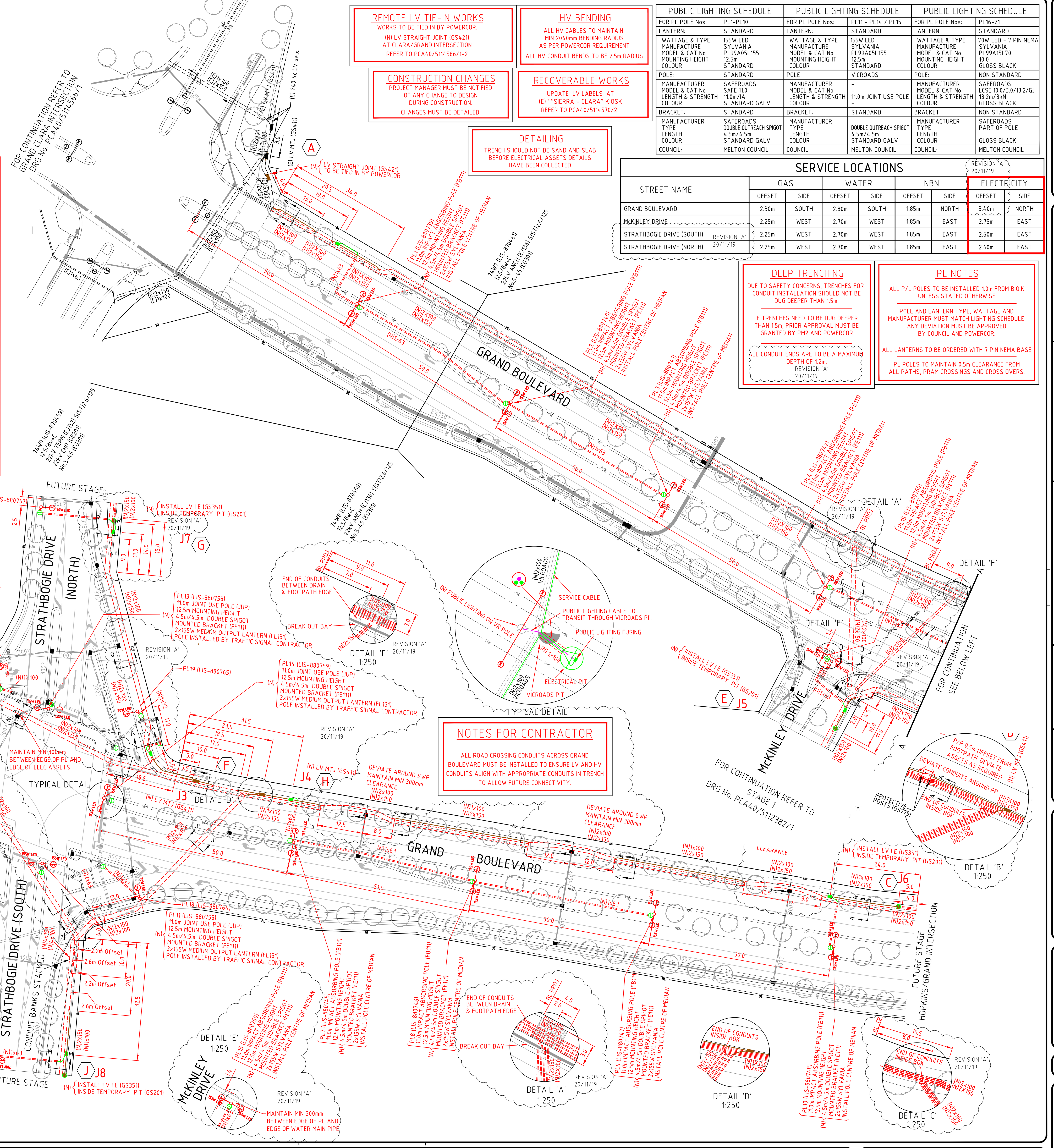
820x667

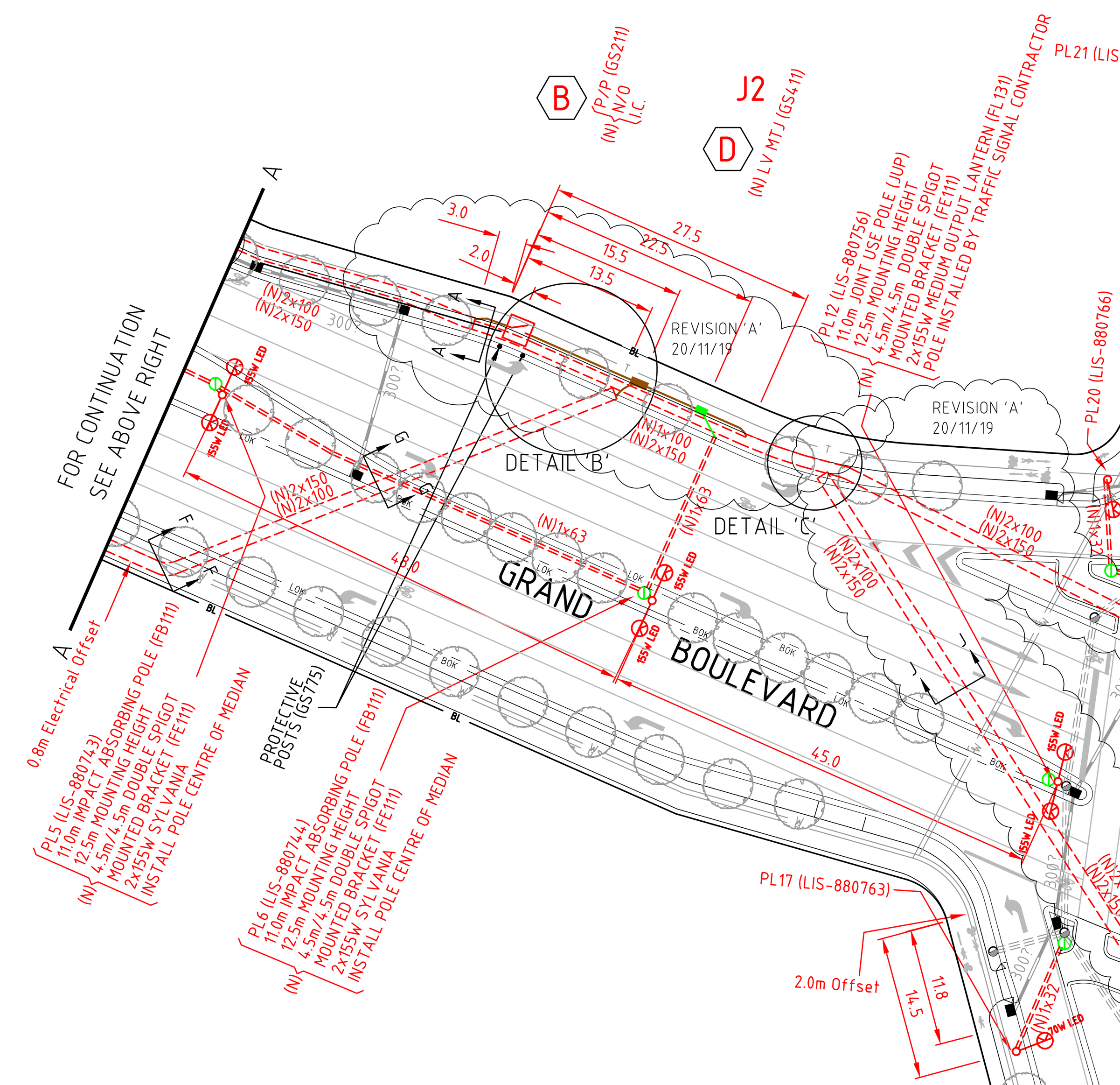
CABLE SCHEDULE

	CABLE ID / LOCATION	DETAILS	LENGTH
	LV MAINS CABLE:		
(N) LV1	FROM SJ (A) WESTERN END OF GRAND BLVD TO PP (B) WEST OF INDUSTRIAL LINK	240 4c LV sa.x.	275m
(N) LV2	FROM PP (B) WEST OF INDUSTRIAL LINK TO LV IE (C) EAST END OF GRAND BLVD	240 4c LV sa.x.	395m
(N) LV3	FROM MTJ (D) WEST OF INDUSTRIAL LINK TO LV ST/J (E) McKINLEY DRIVE	240 4c LV sa.x.	125m
(N) LV4	FROM MTJ (F) EAST OF INDUSTRIAL LINK TO LV IE (G) STRATHBOGIE DRIVE (NORTH)	240 4c LV sa.x.	90m
(N) LV5	FROM MTJ (H) EAST OF INDUSTRIAL LINK TO LV IE (J) STRATHBOGIE DRIVE (SOUTH)	240 4c LV sa.x.	100m
	REVISION 'A' 20/11/19		
	SERVICE CABLE	16 4c LV c.x.	550m
	PL CABLE	6 2c LV c.v.	220m



PUBLIC LIGHTING SCHEMATIC DIAGRAM
(NTS)





REMOTE LV TIE-IN WORKS
WORKS TO BE TIED IN BY POWERCOR.
(N) LV STRAIGHT JOINT (GS421) AT CLARA/GRAND INTERSECTION
REFER TO PCA40/5114566/1-2

HV BENDING
ALL HV CABLES TO MAINTAIN MIN 2040mm BENDING RADIUS AS PER POWERCOR REQUIREMENT
ALL HV CONDUIT BENDS TO BE 2.5m RADIUS

CONSTRUCTION CHANGES
PROJECT MANAGER MUST BE NOTIFIED OF ANY CHANGE TO DESIGN DURING CONSTRUCTION.
CHANGES MUST BE DETAILED.

RECOVERABLE WORKS
UPDATE LV LABELS AT (E) ""SIERRA - CLARA" KIOSK
REFER TO PCA40/5114570/2

DETAILING
TRENCH SHOULD NOT BE SAND AND SLAB BEFORE ELECTRICAL ASSETS DETAILS HAVE BEEN COLLECTED

PUBLIC LIGHTING SCHEDULE

FOR PL POLE Nos:	PL1-PL10
LANTERN:	STANDARD
WATTAGE & TYPE	155W LED
MANUFACTURE	SYLVANIA
MODEL & CAT No	PL99A05L155
MOUNTING HEIGHT	12.5m
COLOUR	STANDARD
POLE:	STANDARD
MANUFACTURER	SAFEROADS
MODEL & CAT No	SAFE 11.0
LENGTH & STRENGTH	11.0m/IA
COLOUR	STANDARD GALV
BRACKET:	STANDARD
MANUFACTURER	SAFEROADS
TYPE	DOUBLE OUTREACH SPIGOT
LENGTH	4.5m/4.5m
COLOUR	STANDARD GALV
COUNCIL:	MELTON COUNCIL

PUBLIC LIGHTING SCHEDULE

FOR PL POLE Nos:	PL11 - PL14 / PL15
LANTERN:	STANDARD
WATTAGE & TYPE	155W LED
MANUFACTURE	SYLVANIA
MODEL & CAT No	PL99A05L155
MOUNTING HEIGHT	12.5m
COLOUR	STANDARD
POLE:	VICROADS
MANUFACTURER	-
MODEL & CAT No	-
LENGTH & STRENGTH	11.0m JOINT USE POLE
COLOUR	-
BRACKET:	STANDARD
MANUFACTURER	-
TYPE	DOUBLE OUTREACH SPIGOT
LENGTH	4.5m/4.5m
COLOUR	STANDARD GALV
COUNCIL:	MELTON COUNCIL

PUBLIC LIGHTING SCHEDULE

FOR PL POLE Nos:	PL16-21
LANTERN:	STANDARD
WATTAGE & TYPE	70W LED - 7 PIN NEMA
MANUFACTURE	SYLVANIA
MODEL & CAT No	PL99A15L70
MOUNTING HEIGHT	10.0
COLOUR	GLOSS BLACK
POLE:	NON STANDARD
MANUFACTURER	SAFEROADS
MODEL & CAT No	LCSE 10.0/3.0/13.2/GJ
LENGTH & STRENGTH	13.2m/3kN
COLOUR	GLOSS BLACK
BRACKET:	NON STANDARD
MANUFACTURER	SAFEROADS
TYPE	PART OF POLE
LENGTH	
COLOUR	GLOSS BLACK
COUNCIL:	MELTON COUNCIL

SERVICE LOCATIONS
REVISION 'A' 20/11/19

STREET NAME	GAS		WATER		NBN		ELECTRICITY	
	OFFSET	SIDE	OFFSET	SIDE	OFFSET	SIDE	OFFSET	SIDE
GRAND BOULEVARD	2.30m	SOUTH	2.80m	SOUTH	1.85m	NORTH	3.40m	NORTH
McKINLEY DRIVE	2.25m	WEST	2.70m	WEST	1.85m	EAST	2.75m	EAST
STRATHBOGIE DRIVE (SOUTH)	2.25m	WEST	2.70m	WEST	1.85m	EAST	2.60m	EAST
STRATHBOGIE DRIVE (NORTH)	2.25m	WEST	2.70m	WEST	1.85m	EAST	2.60m	EAST

REVISION 'A' 20/11/19

DEEP TRENCHING
DUE TO SAFETY CONCERNS, TRENCHES FOR CONDUIT INSTALLATION SHOULD NOT BE DUG DEEPER THAN 1.5m.

IF TRENCHES NEED TO BE DUG DEEPER THAN 1.5m, PRIOR APPROVAL MUST BE GRANTED BY PM2 AND POWERCOR

ALL CONDUIT ENDS ARE TO BE A MAXIMUM DEPTH OF 1.2m.
REVISION 'A' 20/11/19

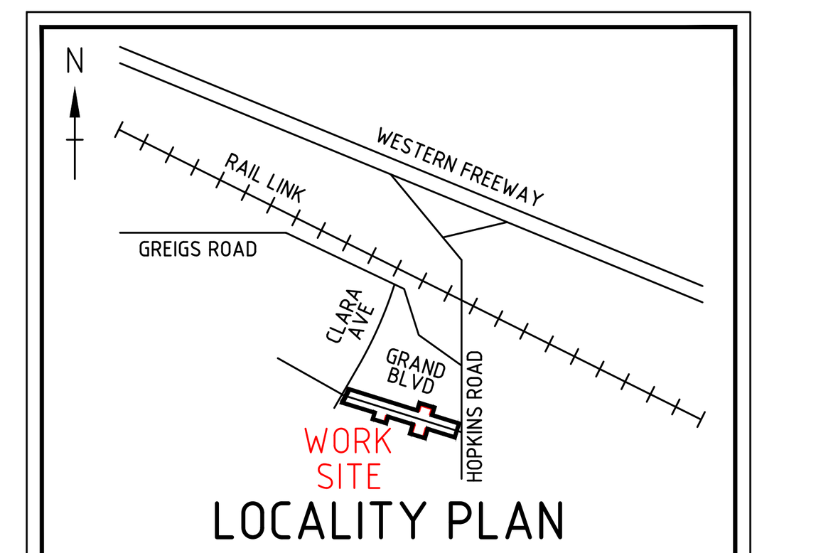
PL NOTES
ALL P/L POLES TO BE INSTALLED 1.0m FROM B.O.K UNLESS STATED OTHERWISE

POLE AND LANTERN TYPE, WATTAGE AND MANUFACTURER MUST MATCH LIGHTING SCHEDULE. ANY DEVIATION MUST BE APPROVED BY COUNCIL AND POWERCOR.

ALL LANTERNS TO BE ORDERED WITH 7 PIN NEMA BASE

PL POLES TO MAINTAIN 0.5m CLEARANCE FROM ALL PATHS, PRAM CROSSINGS AND CROSS OVERS.

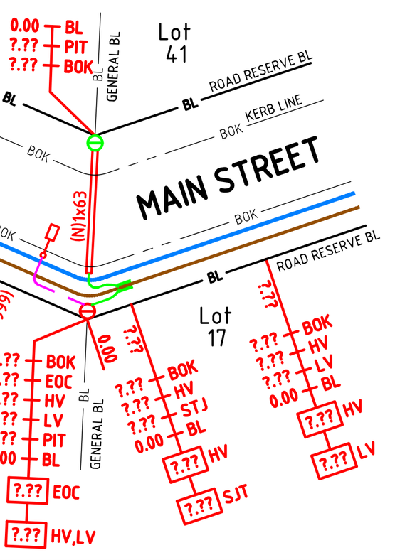
NOTES FOR CONTRACTOR
ALL ROAD CROSSING CONDUITS ACROSS GRAND BOULEVARD MUST BE INSTALLED TO ENSURE LV AND HV CONDUITS ALIGN WITH APPROPRIATE CONDUITS IN TRENCH TO ALLOW FUTURE CONNECTIVITY.

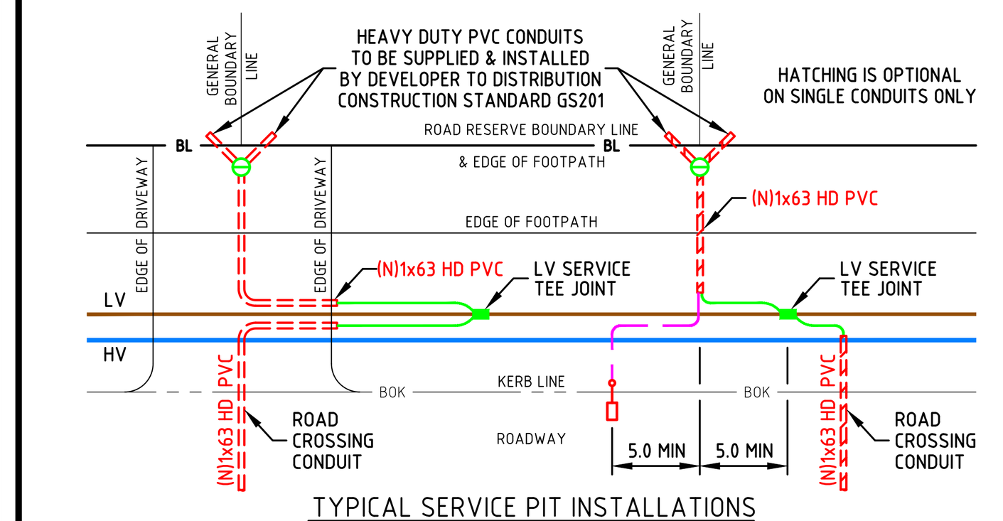


LOCALITY PLAN
NOT TO SCALE
MELWAY MAP REFERENCE: 357 H4

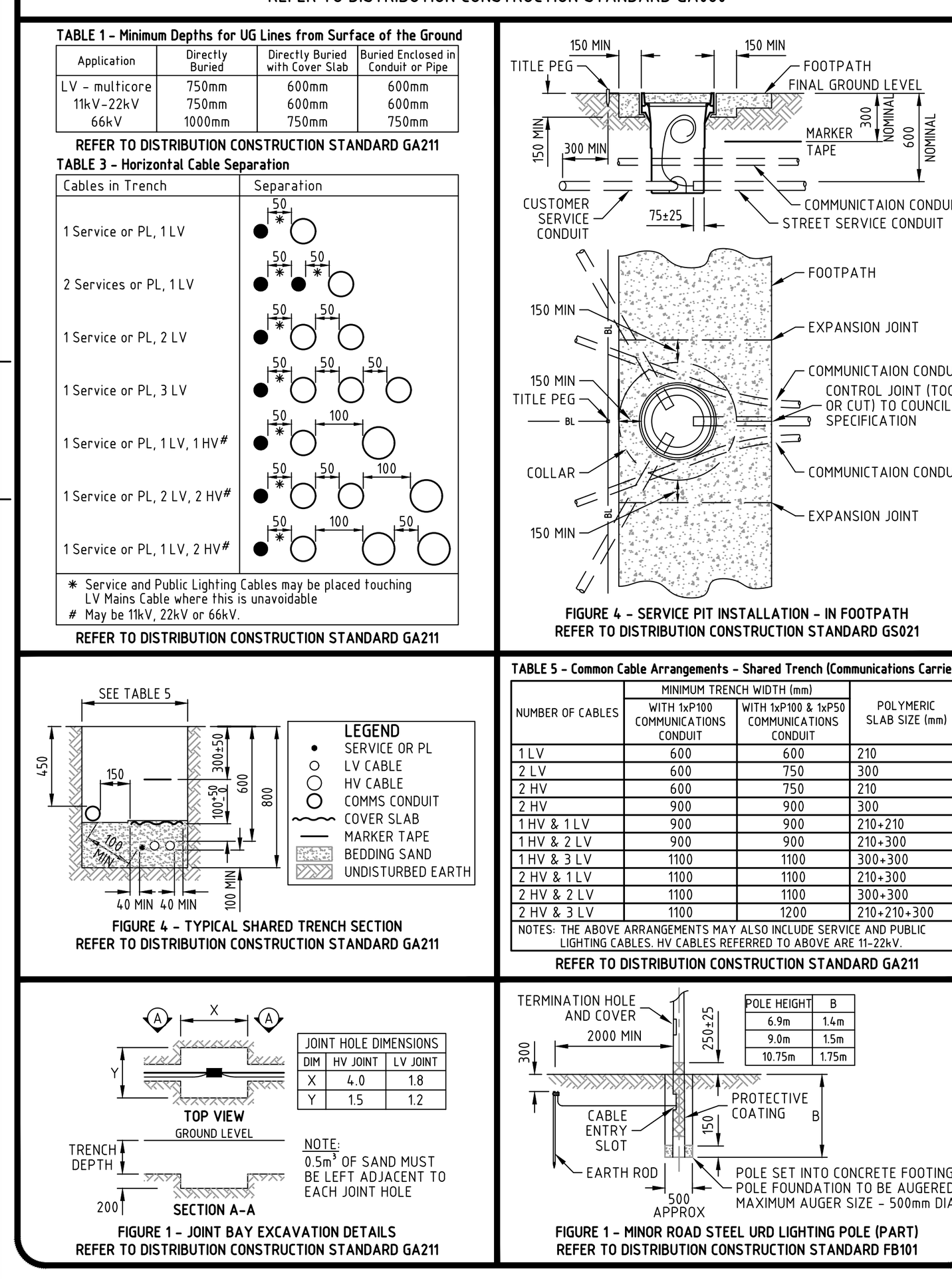
UG CABLE "AS-BUILT DETAIL" REQUIRED FOR THIS PROJECT
OFFSET DIMENSIONS
Offsets of the UG Assets from Road Reserve BL supplemented by the Back of Kerb (BOK).
RUNNING DIMENSIONS
Accurate distances are to be recorded from Lot Boundaries to the middle of Joints, End of Conduits, Parallel Pillars, Distribution Cabinets and Kiosk Substations.
DEPTH DIMENSIONS
Depth of UG Asset to be recorded at the following points:
- Lot Boundaries
- Bends in Cable
- Joints
- End of Conduits
- Kiosk Substations
- Parallel Pillars
- Distribution Cabinets

REFER TO EN DRAFTING STANDARD DD235





TYPICAL SERVICE PIT INSTALLATIONS
REFER TO DISTRIBUTION CONSTRUCTION STANDARD GA080



CLEARANCE OF ELECTRICAL CABLES & CONDUITS (UP TO 22kV) TO OTHER UTILITY ASSETSAND STRUCTURES - AUDITING GUIDELINE

	MINIMUM HORIZONTAL OR PARALLEL CLEARANCE (OFFSET) TO CABLE OR CONDUIT		MINIMUM VERTICAL & CROSSING CLEARANCE[4]
WATER	≤ 200 WATER MAIN: 500mm - SEPARATE TRENCH 300mm - SHARED TRENCH	> 200 TO ≤ 375mm WATER MAIN[5] 1000mm - SEPARATE TRENCH 600mm - SHARED TRENCH	225mm
GAS	≤ 50mm GAS PIPE: 300mm	> 50mm GAS PIPE: 500mm	150mm
COMMUNICATIONS[6]	100mm TO LV CABLE/CONDUIT, 300mm TO HV CABLE/CONDUIT 50mm TO LV COVER SLAB, 250mm TO HV COVER SLAB		100mm LV, 300mm HV
STREET LIGHT POLES	300mm TO ALL OTHER ASSETS		N/A
STORM WATER PIPE	300mm		100mm LV, 300mm HV
OTHER ASSETS/ STRUCTURES[7]	100mm LV, 300mm HV		100mm LV, 300mm HV

NOTES:
1. ALL SPECIFIED DISTANCES ARE THE MINIMUM REQUIREMENT MEASURED BETWEEN ASSET EDGES OR FACES
2. SPECIFIED CLEARANCE APPLIES TO BOTH LV AND HV ELECTRICAL ASSETS WHERE NOT NOTED
3. ANY VARIATIONS TO THESE MINIMUM CLEARANCES MUST HAVE PRIOR WRITTEN APPROVAL FROM THE CitiPOWER/ POWERCOR RESPONSIBLE OFFICER AND/OR MANAGER TECHNICAL STANDARDS
4. CROSSING CLEARANCES DOCUMENTED ARE TO THE ELECTRICAL CABLE OR CONDUIT. THE MINIMUM CROSSING CLEARANCE ABOVE CABLE COVER SLABS SHALL BE 50mm TO LV & 250mm TO HV COVER SLABS FOR COMMUNICATION CABLES; 175mm TO WATER; 100mm TO GAS ETC.
5. LARGER PIPE SIZES MAY REQUIRE ADDITIONAL CLEARANCES - CONSULT RELEVANT WATER AUTHORITY
6. INCLUDES PROPERTY LEAD-IN CONDUITS
7. INCLUDES STORM WATER PITS, SEWER INSPECTION POINT SHAFTS ETC. (ALL CABLE JOINTS MINIMUM 300mm CLEARANCE)

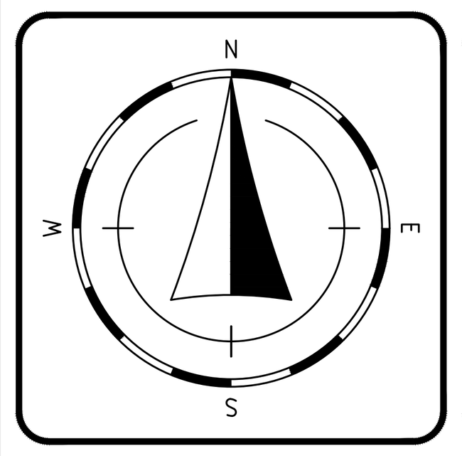
Electricity Networks - EN UG CONSTRUCTION PLAN B1 URD - V3.0

LEGEND

GENERAL	EXISTING	NEW	OTHER SERVICES
ROAD RESERVE BL; BOUNDARY LINE; BACK OF KERB; FACE OF KERB; LIP OF KERB; STORM WATER PIT; (56096) POLE NUMBER; 609 PROPERTY NUMBER; Lot 23 LOT NUMBER; CONDUIT - OCCUPIED; CONDUIT - SPARE	HV CABLE; LV MAINS CABLE; LV SERVICE CABLE; PUBLIC LIGHTING CABLE; HV STRAIGHT JOINT; HV TEE JOINT; HV SEALED END; HV CUT END; LV STRAIGHT JOINT; LV TEE JOINT; LV SERV TEE JOINT; LV INSULATED END; LV SEALED END; LV CUT END; CONDUIT; SERVICE PIT (TYPICAL); SERVICE PIT (ROADWAY); PILLAR (SERVICE); PILLAR (PARALLELING); 80W MV PL & COLUMN; 150W HPS PL & COLUMN; SUBTRANS POLE; HV POLE; LV POLE (GENERAL); SUBSTATION (POLE); HV CABLE HEAD POLE; LV CABLE HEAD POLE	HV CABLE; LV MAINS CABLE; LV SERVICE CABLE; PUBLIC LIGHTING CABLE; HV STRAIGHT JOINT; HV TEE JOINT; HV SEALED END; HV CUT END; LV STRAIGHT JOINT; LV TEE JOINT; LV SERV TEE JOINT; LV INSULATED END; LV SEALED END; LV CUT END; CONDUIT; LV SERVICE PIT (TYPICAL); SERVICE PIT (ROADWAY); PILLAR (SERVICE); PILLAR (PARALLELING); 80W MV PL & COLUMN; 150W HPS PL & COLUMN; SUBTRANS POLE; HV POLE; LV POLE (GENERAL); SUBSTATION (POLE); HV CABLE HEAD POLE; LV CABLE HEAD POLE	DRAIN; FENCE; GAS MAIN; SEWER; TELCO; WATER MAIN

REFERENCE

PROJECT NUMBER	5114570
ROAD DIRECTORY	MELWAY REF 357 H4
GIS SYSTEM PLAN	MAP 220:C4
PROJECTION	MGA Zone 55
FEEDER/SWITCHING ZONE	MLN021 - SWZ3092545
DEVELOPER/NUMBER OF LOTS	STOCKLAND / PUBLIC LIGHTING
MUNICIPAL COUNCIL	MELTON COUNCIL



CitiPOWER
Powercor AUSTRALIA
Electricity Networks
Locked Bag 14090
Melbourne 8001
www.citipower.com.au
www.powercor.com.au

SCALE 1:500
LENGTHS ARE IN METRES

REVISION	20/11/19	OFFSET IN GRAND BVD CHANGED. CONDUITS REVISED TO SUIT AND FUTURE ROAD RENAMED STRATHBOGIE DRIVE BY PLAN B	PLAN B MW

DRAWING NUMBER	PCA40	5114570	1	A	SHEET 1 OF 2

GRAND BOULEVARD, INDUSTRIAL LINK UG CONSTRUCTION PLAN - URD MOUNT ATKINSON ESTATE DETAIL DESIGN

DRAWN	DRAFTING CHECK	DESIGNER	DESIGN APPROVAL	PROJECT MANAGER
AT (BFD) 22/11/18	S.FLANAGAN 25/03/19	AT (BFD) 22/11/18	S.FLANAGAN 25/03/19	M.WILLIAMS 25/03/19

B1

820x667

DEVELOPER NOTE

HV CABLE PULL FROM (B) TO (C) NOT ALLOWED
HV CABLE PULL FROM (C) TO (B) IS ONLY ALLOWED WITH LUBRICANT
HV CABLE PULL FROM (B) TO (H) IS ONLY ALLOWED WITH LUBRICANT
HV CABLE PULL FROM (A) TO (H) IS ONLY ALLOWED WITH LUBRICANT
HV CABLE PULL FROM (H) TO (A) IS ONLY ALLOWED WITH LUBRICANT

HV TIE-IN WORKS

WORKS TO BE TIED IN BY POWERCOR.
(N) HV STRAIGHT JOINT (GS421) AT CLARA AVENUE SOUTH OF CLARA/GRAND INTERSECTION
REFER TO MT.ATKINSON STAGE 1
DWG NO: PCA40/5112382/1

PL NOTES

ALL P/L POLES TO BE INSTALLED 1.0m FROM B.O.K UNLESS STATED OTHERWISE

POLE AND LANTERN TYPE, WATTAGE AND MANUFACTURER MUST MATCH LIGHTING SCHEDULE. ANY DEVIATION MUST BE APPROVED BY COUNCIL AND POWERCOR.

ALL LANTERNS TO BE ORDERED WITH 7 PIN NEMA BASE

PL POLES TO MAINTAIN 0.5m CLEARANCE FROM ALL PATHS, PRAM CROSSINGS AND CROSS OVERS.

REMOTE LV TIE-IN WORKS

WORKS TO BE TIED IN BY POWERCOR.
(N) LV STRAIGHT JOINT (GS421) AT GRAND BLVD
REFER TO PCA40/5114570/1

HV BENDING

ALL HV CABLES TO MAINTAIN MIN 2040mm BENDING RADIUS AS PER POWERCOR REQUIREMENT

ALL HV CONDUIT BENDS TO BE 2.5m RADIUS

DEEP TRENCHING

DUE TO SAFETY CONCERNS, TRENCHES FOR CONDUIT INSTALLATION SHOULD NOT BE DUG DEEPER THAN 1.5m.

IF TRENCHES NEED TO BE DUG DEEPER THAN 1.5m, PRIOR APPROVAL MUST BE GRANTED BY PM2 AND POWERCOR

ALL CONDUITS AT A DEPTH OF 1.2m OR GREATER ARE TO BE EXTENDED AND ELEVATED UNTIL THE CONDUIT END IS AT 0.8m DEEP

CONSTRUCTION CHANGES

PROJECT MANAGER MUST BE NOTIFIED OF ANY CHANGE TO DESIGN DURING CONSTRUCTION.
CHANGES MUST BE DETAILED.

DETAILING

TRENCH SHOULD NOT BE SAND AND SLAB BEFORE ELECTRICAL ASSETS DETAILS HAVE BEEN COLLECTED

RECOVERABLE WORKS

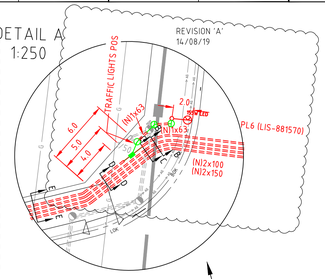
UPDATE LV LABELS AT (E) ""SIERRA - CLARA" KIOSK
REFER TO PCA40/5114570/2

PUBLIC LIGHTING SCHEDULE					
FOR PL POLE Nos:	PL1	FOR PL POLE Nos:	PL3 - PL4	FOR PL POLE Nos:	PL5	FOR PL POLE Nos:	PL6, PL12
LANTERN:	STANDARD	LANTERN:	STANDARD	LANTERN:	STANDARD	LANTERN:	STANDARD
WATTAGE & TYPE MANUFACTURE MODEL & CAT No MOUNTING HEIGHT COLOUR	155W LED SYLVANIA PL99A05L155 12.5m STANDARD	WATTAGE & TYPE MANUFACTURE MODEL & CAT No MOUNTING HEIGHT COLOUR	155W LED SYLVANIA PL99A05L155 12.5m STANDARD	WATTAGE & TYPE MANUFACTURE MODEL & CAT No MOUNTING HEIGHT COLOUR	155W LED SYLVANIA PL99A15L155 12.5 STANDARD	WATTAGE & TYPE MANUFACTURE MODEL & CAT No MOUNTING HEIGHT COLOUR	155W LED SYLVANIA PL99A15L155 12.5m STANDARD
POLE:	STANDARD	POLE:	VICROADS	POLE:	VICROADS	POLE:	STANDARD
MANUFACTURER MODEL & CAT No LENGTH & STRENGTH COLOUR	SAFEROADS SAFE 11.0 11.0m/1A STANDARD GALV	MANUFACTURER MODEL & CAT No LENGTH & STRENGTH COLOUR	- - 11.0m JOINT USE POLE -	MANUFACTURER MODEL & CAT No LENGTH & STRENGTH COLOUR	- - JOINT USE POLE (JUP) -	MANUFACTURER MODEL & CAT No LENGTH & STRENGTH COLOUR	SAFEROADS SAFE 11.0 11.0m/1A STANDARD GALV
BRACKET:	STANDARD	BRACKET:	STANDARD	BRACKET:	STANDARD	BRACKET:	STANDARD
MANUFACTURER TYPE LENGTH COLOUR	SAFEROADS DOUBLE OUTREACH SPIGOT 4.5m/4.5m STANDARD GALV	MANUFACTURER TYPE LENGTH COLOUR	- DOUBLE OUTREACH SPIGOT 4.5m/4.5m STANDARD GALV	MANUFACTURER TYPE LENGTH COLOUR	- SINGLE OUTREACH SPIGOT 3.0m STANDARD GALV	MANUFACTURER TYPE LENGTH COLOUR	SAFEROADS SINGLE OUTREACH 3.0m STANDARD GALV
COUNCIL:	MELTON COUNCIL	COUNCIL:	MELTON COUNCIL	COUNCIL:	MELTON COUNCIL	COUNCIL:	MELTON COUNCIL

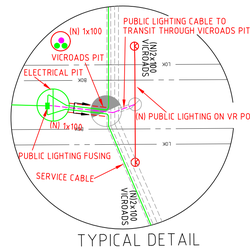
PUBLIC LIGHTING SCHEDULE	
FOR PL POLE Nos:	PL2
LANTERN:	STANDARD
WATTAGE & TYPE MANUFACTURE MODEL & CAT No MOUNTING HEIGHT COLOUR	155W LED SYLVANIA PL99A05L155 12.5m STANDARD
POLE:	STANDARD
MANUFACTURER MODEL & CAT No LENGTH & STRENGTH COLOUR	SAFEROADS SAFE 11.0 11.0m/1A STANDARD GALV
BRACKET:	STANDARD
MANUFACTURER TYPE LENGTH COLOUR	SAFEROADS DOUBLE OUTREACH SPIGOT 3.0m/3.0m STANDARD GALV
COUNCIL:	MELTON COUNCIL

REVISION 'A' 14/08/19

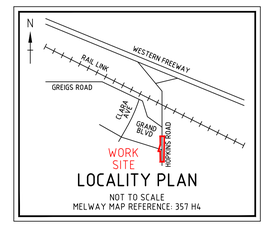
DETAIL A 1:250



TYPICAL DETAIL



TYPICAL DETAIL



LOCALITY PLAN
NOT TO SCALE
MELWAY MAP REFERENCE: 357 H4

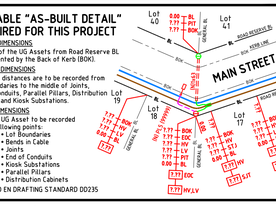
UG CABLE "AS-BUILT DETAIL" REQUIRED FOR THIS PROJECT

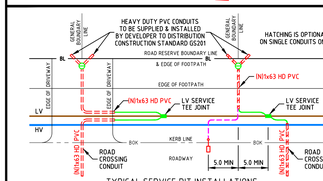
OFFSET DIMENSIONS
Offsets of the UG Assets from Road Reserve BL supplemented by the Back of Kerb (BOK).

RUNNING DIMENSIONS
Accurate distances are to be recorded from Lot Boundaries to the middle of Joints, End of Conduits, Parallel Pillars, Distribution Lot Cabinets and Kiosk Substations.

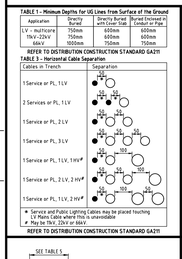
DEPTH DIMENSIONS
Depth of UG Asset to be recorded at the following points:
- Lot Boundaries
- Bends in Cable
- Joints
- End of Conduits
- Kiosk Substations
- Parallel Pillars
- Distribution Cabinets

REFER TO EN DRAFTING STANDARD DD235





TYPICAL SERVICE PIT INSTALLATIONS
REFER TO DISTRIBUTION CONSTRUCTION STANDARD GA080



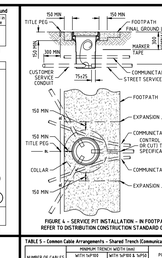


FIGURE 4 – SERVICE PIT INSTALLATION – IN FOOTPATH
REFER TO DISTRIBUTION CONSTRUCTION STANDARD GS521

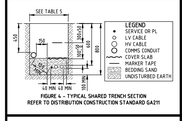


FIGURE 5 – TYPICAL SHARED TRENCH SECTION
REFER TO DISTRIBUTION CONSTRUCTION STANDARD GA211

TABLE 5 - Common Cable Arrangements - Shared Trench (Communications Carrier)

NUMBER OF CABLES	MINIMUM TRENCH WIDTH (mm) WITH NoPSAS COMPLIANCE CONDUIT	WITH NoPSAS & NoPSD COMPLIANCE CONDUIT	POLYMERIC SLAB SIZE (mm)
1 LV	600	600	530
2 LV	600	750	530
2 HV	600	750	530
3 HV	900	900	530
1 HV & 1 LV	900	900	750x530
1 HV & 2 LV	900	900	750x530
1 HV & 3 LV	1100	1100	950x530
2 HV & 1 LV	1100	1100	950x530
2 HV & 2 LV	1100	1100	950x530
2 HV & 3 LV	1100	1100	1150x750x350

NOTES: THE ABOVE ARRANGEMENTS MAY ALSO INCLUDE SERVICE AND PUBLIC LIGHTING CABLES. HV CABLES REFERRED TO ABOVE ARE 11-22kV.
REFER TO DISTRIBUTION CONSTRUCTION STANDARD GA211

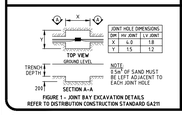


FIGURE 1 – JOINT BAY EXCAVATION DETAILS
REFER TO DISTRIBUTION CONSTRUCTION STANDARD GA211

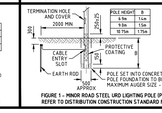
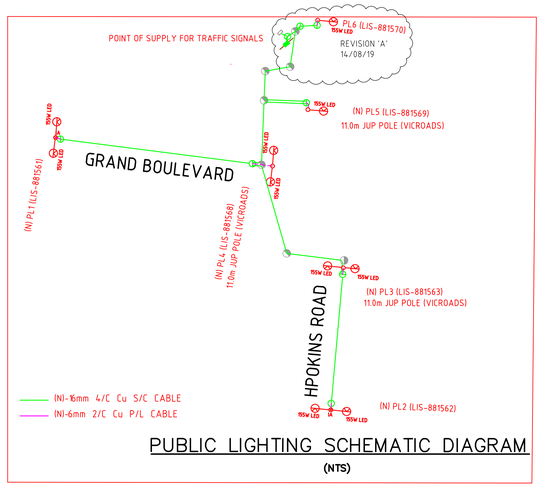


FIGURE 1 – MINOR ROAD STEEL LIGHTING POLE (PART)
REFER TO DISTRIBUTION CONSTRUCTION STANDARD FB101



PUBLIC LIGHTING SCHEMATIC DIAGRAM
(NTS)

CLEARANCE OF ELECTRICAL CABLES & CONDUITS (UP TO 22kV) TO OTHER UTILITY ASSETSAND STRUCTURES - AUDITING GUIDELINE

	MINIMUM HORIZONTAL OR PARALLEL CLEARANCE (OFFSET) TO CABLE OR CONDUIT		MINIMUM VERTICAL & CROSSING CLEARANCE [4]
WATER	≤ 200 WATER MAIN: 500mm - SEPARATE TRENCH 300mm - SHARED TRENCH	> 200 TO ≤ 375mm WATER MAIN [5] 1000mm - SEPARATE TRENCH 600mm - SHARED TRENCH	225mm
GAS	≤ 50mm GAS PIPE: 300mm	> 50mm GAS PIPE: 500mm	150mm
COMMUNICATIONS [6]	100mm TO LV CABLE/CONDUIT, 300mm TO HV CABLE/CONDUIT 50mm TO LV COVER SLAB, 250mm TO HV COVER SLAB		100mm LV, 300mm HV
STREET LIGHT POLES	300mm TO ALL OTHER ASSETS		N/A
STORM WATER PIPE	300mm		100mm LV, 300mm HV
OTHER ASSETS/ STRUCTURES [7]	100mm LV, 300mm HV		100mm LV, 300mm HV

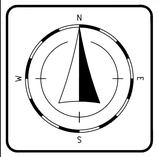
NOTES:
1. ALL SPECIFIED DISTANCES ARE THE MINIMUM REQUIREMENT MEASURED BETWEEN ASSET EDGES OR FACES
2. SPECIFIED CLEARANCE APPLIES TO BOTH LV AND HV ELECTRICAL ASSETS WHERE NOT NOTED
3. ANY VARIATIONS TO THESE MINIMUM CLEARANCES MUST HAVE PRIOR WRITTEN APPROVAL FROM THE CitiPOWER/ POWERCOR RESPONSIBLE OFFICER AND/OR MANAGER TECHNICAL STANDARDS
4. CROSSING CLEARANCES DOCUMENTED ARE TO THE ELECTRICAL CABLE OR CONDUIT. THE MINIMUM CROSSING CLEARANCE ABOVE CABLE COVER SLABS SHALL BE 50mm TO LV & 250mm TO HV COVER SLABS FOR COMMUNICATION CABLES; 175mm TO WATER; 100mm TO GAS ETC.
5. LARGER PIPE SIZES MAY REQUIRE ADDITIONAL CLEARANCES - CONSULT RELEVANT WATER AUTHORITY
6. INCLUDES PROPERTY LEAD-IN CONDUITS
7. INCLUDES STORM WATER PITS, SEWER INSPECTION POINT SHAFTS ETC. (ALL CABLE JOINTS MINIMUM 300mm CLEARANCE)

SERVICE LOCATIONS

STREET NAME	GAS		WATER		NBN		ELECTRICITY	
	OFFSET	SIDE	OFFSET	SIDE	OFFSET	SIDE	OFFSET	SIDE
GRAND BOULEVARD	2.30m	SOUTH	2.80m	SOUTH	1.85m	NORTH	3.90m	NORTH
HOPKINS ROAD	EXISTING	WEST	-	-	-	-	1.30m	EAST

CABLE SCHEDULE

	CABLE ID	LOCATION	DETAILS	LENGTH
	HV MAINS CABLE:			
(N) HV1	FROM CHP (LIS861632) (A) HOPKINS ROAD TO HV SJ (G) EAST OF INDUSTRIAL LINK GRAND BLVD		240 3/C 22 a.x.hc.h	210m
(N) HV2	FROM HV SJ (H) EAST OF INDUSTRIAL LINK, GRAND BLVD TO HV SJ (B) WEST OF INDUSTRIAL LINK, GRAND BLVD		240 3/C 22 a.x.hc.h	275m
(N) HV3	FROM HV SJ (B) WEST OF INDUSTRIAL LINK, GRAND BLVD TO HV SJ (C) SOUTH OF CLARA/GRAND INT, CLARA AV.		240 3/C 22 a.x.hc.h	350m
	LV MAINS CABLE:			
(N) LV1	FROM SJ (D) EAST END OF GRAND BLVD TO ST/J (F) ADJ POLE 69 (LIS850296) HOPKINS ROAD		240 4c LV s.a.x.	275m
(N) LV2	FROM MT/J (E) ADJ POLE 70A (LIS-861632) HOPKINS ROAD TO ST/J (D) ADJ POLE 73 (LIS875187)) HOPKINS ROAD		240 4c LV s.a.x.	250m
	SERVICE CABLE		16 4c LV c.x.	400m
	PL CABLE		6 2c LV c.v.	160m



CitiPOWER
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5 0 5 10 15 20 25 30
LENGTHS ARE IN METRES
SCALE 1:500

REFERENCE	
PROJECT NUMBER	5114572
ROAD DIRECTORY	MELWAY REF 357 J4
GIS SYSTEM PLAN	MAP 220:C4
PROJECTION	MGA Zone 55
FEEDER/SWITCHING ZONE	MLN021 - SWZ-3092545
DEVELOPER/NUMBER OF LOTS	STOCKLAND / PUBLIC LIGHTING
MUNICIPAL COUNCIL	MELTON COUNCIL

REVISION	14/08/19	PL6 (LIS-881570) AND TRAFFIC SIGNALS POINT OF SUPPLY RELOCATED BY PLAN B UPDATED PL	SK PD

DRAWING NUMBER	PCA40	5114572	01	B	SHEET 1 OF 4

GRAND/HOPKINS INTERSECTION - TRUGANINA UG CONSTRUCTION PLAN - URD
MT. ATKINSON ESTATE
DETAIL DESIGN

DRAWN	DRAFTING CHECK	DESIGNER	DESIGN APPROVAL	PROJECT MANAGER
BFD (AT) 26/10/18	S.FLANAGAN 11/04/19	BFD (AT) 29/10/18	S.FLANAGAN 11/04/19	M.WILLIAMS 11/04/19

LEGEND

GENERAL			EXISTING				NEW				OTHER SERVICES	
BL ROAD RESERVE BL	(56096) POLE NUMBER	HV CABLE	HV CUT END	CONDUIT	SUBTRANS POLE	HV CABLE	HV CUT END	CONDUIT	SUBTRANS POLE	D DRAIN
BL BOUNDARY LINE	609 PROPERTY NUMBER	LV MAINS CABLE	LV STRAIGHT JOINT	SERVICE PIT (TYPICAL)	HV POLE	LV MAINS CABLE	LV STRAIGHT JOINT	LV SERVICE PIT (TYPICAL)	HV POLE	F FENCE
BOK BACK OF KERB	Lot 23 LOT NUMBER	LV SERVICE CABLE	LV TEE JOINT	SERVICE PIT (ROADWAY)	LV POLE (GENERAL)	LV SERVICE CABLE	LV TEE JOINT	SERVICE PIT (ROADWAY)	LV POLE (GENERAL)	G GAS MAIN
FOK FACE OF KERB	CONDUIT - OCCUPIED	PUBLIC LIGHTING CABLE	LV SERV TEE JOINT	PILLAR (SERVICE)	SUBSTATION (POLE)	PUBLIC LIGHTING CABLE	LV SERV TEE JOINT	PILLAR (SERVICE)	SUBSTATION (POLE)	S SEWER
LOK LIP OF KERB	CONDUIT - SPARE	HV STRAIGHT JOINT	LV INSULATED END	PILLAR (PARALLELING)	HV CABLE HEAD POLE	HV STRAIGHT JOINT	LV INSULATED END	PILLAR (PARALLELING)	HV CABLE HEAD POLE	T TELCO
STORM WATER PIT		HV TEE JOINT	LV SEALED END	80W MV PL & COLUMN	LV CABLE HEAD POLE	HV TEE JOINT	LV SEALED END	80W MV PL & COLUMN	LV CABLE HEAD POLE	W WATER MAIN
		HV SEALED END	LV CUT END	150W HPS PL & COLUMN		HV SEALED END	LV CUT END	150W HPS PL & COLUMN		

Electricity Networks - EN UG CONSTRUCTION PLAN B1 URD - V3.0

B1

820x667

CABLE SCHEDULE

CABLE ID	LOCATION	DETAILS	LENGTH
	22kV CABLE:		
(N) HV1	FROM (N) "ELBRUS – PYRENEES" K/S (A) TO (E) "CAUCASUS – ALASKA" K/S (B)	240 3/C 22 a.x.hc.h	385m
	LV MAINS CABLE:		
(N) LV1	FROM (N) "ELBRUS – PYRENEES" K/S (A) TO PP (C) OS LOT 6125 ELBRUS STREET	240 4/C lv.sa.x	155m
(N) LV2	FROM PP (C) OS 6125 ELBRUS STREETTO LV PP (D) OP LOT 6006 PYRENEES STREET	240 4/C lv.sa.x	75m
(N) LV3	FROM LV MTJ (J) OS LOT 6004 PYRENEES STREET TO LV IE (H) OS LOT 6001 PYRENEES STREET	240 4/C lv.sa.x	50m
(N) LV4	FROM (N) "ELBRUS – PYRENEES" K/S (A) TO LV MTJ (K) OS LOT 6008 PYRENEES STREET	240 4/C lv.sa.x	245m
(N) LV5	FROM PP (D) OS LOT 6006 PYRENEES STREET TO LV STJ (L) OS LOT 6012 PYRENEES STREET	240 4/C lv.sa.x	85m
(N) LV6	FROM (N) "ELBRUS – PYRENEES" K/S (A) TO LV MTJ (H) OS LOT 6013 PYRENEES STREET	240 4/C lv.sa.x	305m
(N) LV7	FROM LV MTJ (M) OS LOT 6013 PYRENEES STREET TO LV IE (N) OS LOT 6014 DOLOMITES DRIVE	240 4/C lv.sa.x	50m
(N) LV8	FROM LV MTJ (M) OS LOT 6013 PYRENEES STREET TO LV STJ (E) OS LOT 6026 DOLOMITES DRIVE	240 4/C lv.sa.x	215m
(N) LV9	FROM LV MTJ (P) OS LOT 6018 DOLOMITES DRIVE TO LV IE (Q) OS LOT 6018 MAKALU STREET	240 4/C lv.sa.x	35m
(N) LV10	FROM LV MTJ (R) OS LOT 6022 DOLOMITES DRIVE TO LV IE (S) OS LOT 6022 BATURA STREET	240 4/C lv.sa.x	35m
(N) LV11	FROM (N) "ELBRUS – PYRENEES" K/S (A) TO LV IE (F) OP LOT 6026 KIRKPATRICK BOULEVARD	240 4/C lv.sa.x	375m
(N) LV12	FROM (N) "ELBRUS – PYRENEES" K/S (A) TO LV MSJ (V) OS LOT 3016 CLARA CLOSE	240 4/C lv.sa.x	80m
(N) LV13	FROM LV MTJ (U) OS LOT 6112 ELBRUS STREET TO LV MSJ (G) OP LOT 3024 KIRKPATRICK BOULEVARD	240 4/C lv.sa.x	205m
(N) LV14	FROM LV MTJ (W) OP LOT 6105 KIRKPATRICK BOULEVARD TO LV STJ (T) OP LOT 6103 KIRKPATRICK BOULEVARD	240 4/C lv.sa.x	65m
	OTHER		
	SERVICE CABLE	16 4/C lv.c.x.v	1000m
	PL CABLE	6 2/C LV c.v.	315m

SERVICE LOCATIONS

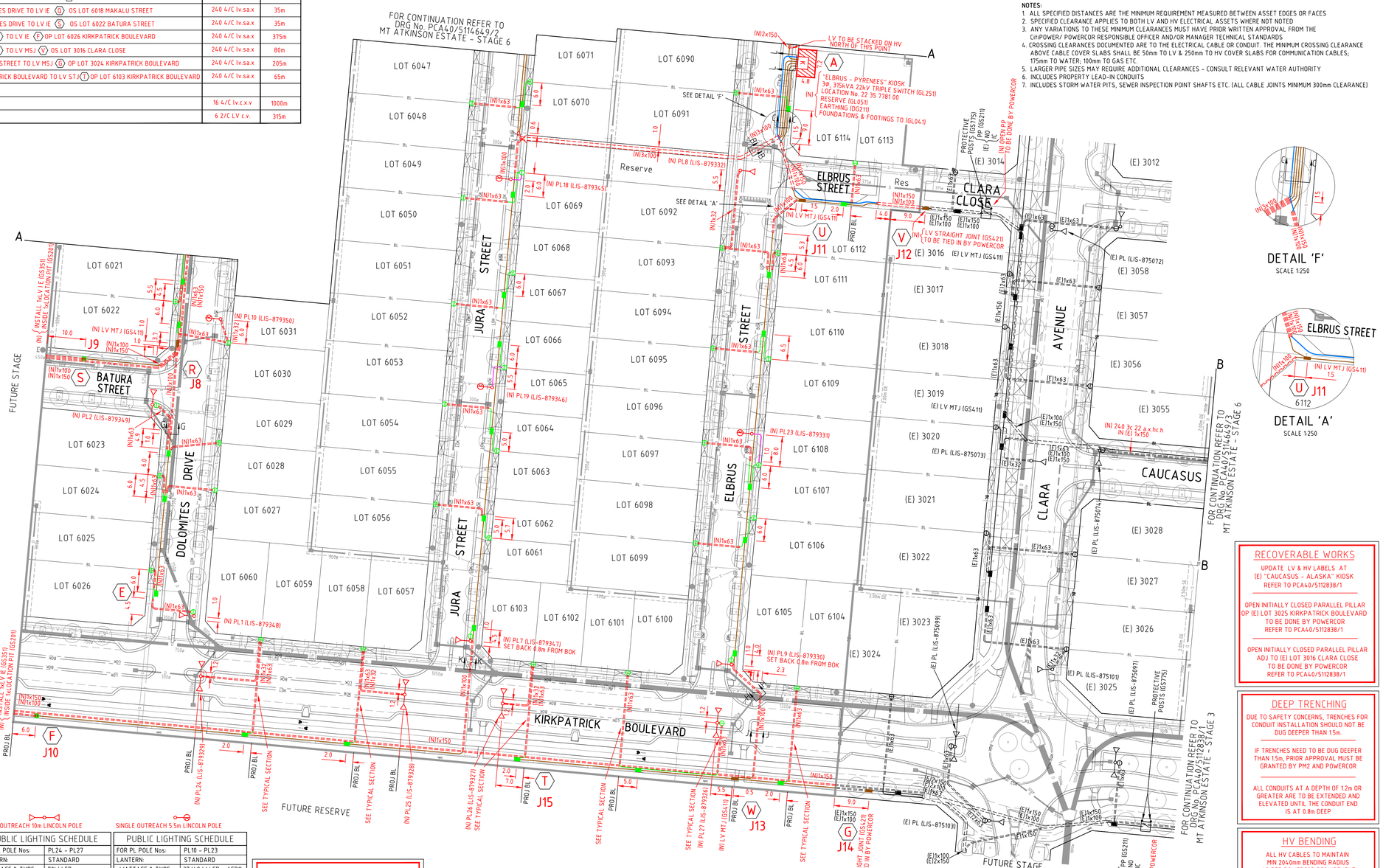
STREET NAME	GAS		WATER		NBN		ELECTRICITY	
	OFFSET	SIDE	OFFSET	SIDE	OFFSET	SIDE	OFFSET	SIDE
KIRKPATRICK BOULEVARD	2.25m	NORTH	2.70m 3.70m	NORTH SOUTH	1.85m	SOUTH	2.45m	SOUTH
DOLOMITES DRIVE	2.25m	EAST	2.70m	EAST	1.85m	WEST	2.45m	WEST
JURA STREET	2.25m	WEST	2.70m	EAST	1.85m	EAST	2.45m	EAST
ELBRUS STREET (NORTH-SOUTH)	2.25m	WEST	2.70m	WEST	1.85m	EAST	2.45m	EAST
PYRENEES STREET	2.25m	SOUTH	2.70m	SOUTH	1.85m	NORTH	2.45m	NORTH
MAKALU STREET	2.25m	SOUTH	2.70m	SOUTH	1.85m	NORTH	2.45m	NORTH
BATURA STREET	2.25m	SOUTH	2.70m	SOUTH	1.85m	NORTH	2.45m	NORTH
ELBRUS STREET (LOT 6114 & 6113)	2.25m	NORTH	2.50m	NORTH	0.75m	SOUTH	1.35m	SOUTH

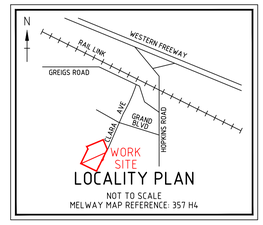
× LIGHT POLES TO BE LOCATED 1.00 m OFFSET FROM BACK OF KERB

CLEARANCE OF ELECTRICAL CABLES & CONDUITS (UP TO 22kV) TO OTHER UTILITY ASSETSAND STRUCTURES – AUDITING GUIDELINE

	MINIMUM HORIZONTAL OR PARALLEL CLEARANCE (OFFSET) TO CABLE OR CONDUIT		MINIMUM VERTICAL & CROSSING CLEARANCE [4]
WATER	≤ 200 WATER MAIN: 500mm – SEPARATE TRENCH 300mm – SHARED TRENCH	> 200 TO ≤ 375mm WATER MAIN [5]: 1000mm – SEPARATE TRENCH 600mm – SHARED TRENCH	225mm
GAS	≤ 50mm GAS PIPE: 300mm	> 50mm GAS PIPE: 500mm	150mm
COMMUNICATIONS [6]	100mm TO LV CABLE/CONDUIT, 300mm TO HV CABLE/CONDUIT 50mm TO LV COVER SLAB, 250mm TO HV COVER SLAB		100mm LV, 300mm HV
STREET LIGHT POLES	300mm TO ALL OTHER ASSETS		N/A
STORM WATER PIPE	300mm		100mm LV, 300mm HV
OTHER ASSETS/ STRUCTURES [7]	100mm LV, 300mm HV		100mm LV, 300mm HV

NOTES:
1. ALL SPECIFIED DISTANCES ARE THE MINIMUM REQUIREMENT MEASURED BETWEEN ASSET EDGES OR FACES
2. SPECIFIED CLEARANCE APPLIES TO BOTH LV AND HV ELECTRICAL ASSETS WHERE NOT NOTED
3. ANY VARIATIONS TO THESE MINIMUM CLEARANCES MUST HAVE PRIOR WRITTEN APPROVAL FROM THE CitiPOWER/ POWERCOR RESPONSIBLE OFFICER AND/OR MANAGER TECHNICAL STANDARDS
4. CROSSING CLEARANCES DOCUMENTED ARE TO THE ELECTRICAL CABLE OR CONDUIT. THE MINIMUM CROSSING CLEARANCE ABOVE CABLE COVER SLABS SHALL BE 50mm TO LV & 250mm TO HV COVER SLABS FOR COMMUNICATION CABLES; 175mm TO WATER; 100mm TO GAS ETC.
5. LARGER PIPE SIZES MAY REQUIRE ADDITIONAL CLEARANCES – CONSULT RELEVANT WATER AUTHORITY
6. INCLUDES PROPERTY LEAD-IN CONDUITS
7. INCLUDES STORM WATER PITS, SEWER INSPECTION POINT SHAFTS ETC. (ALL CABLE JOINTS MINIMUM 300mm CLEARANCE)





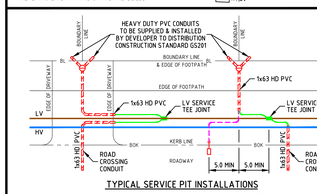
UG CABLE "AS–BUILT DETAIL" REQUIRED FOR THIS PROJECT

OFFSET DIMENSIONS
Offsets of the UG Assets from Boundary Line (BL) or the back of Kerb (BOK).

RUNNING DIMENSIONS
Accurate distances are to be recorded from Lot Boundaries to the middle of Joints, End of Conduits, Parallel Pillars, Distribution Cabinets and Kiosk Substations.

DEPTH DIMENSIONS
Depth of UG Asset to be recorded at the following points –
- Lot Boundaries
- Bends in Cable
- Joints
- End of Conduits
- Kiosk Substations
- Parallel Pillars
- Distribution Cabinets

REFER TO EN DRAFTING STANDARD DD235



TYPICAL SERVICE PIT INSTALLATIONS
REFER TO DISTRIBUTION CONSTRUCTION STANDARD GA080

TABLE 1 – Minimum Depths for UG Lines from Surface of the Ground

Application	Directly Buried	Directly Buried with Cover Slab	Buried Enclosed in Conduit or Pipe
LV – multicore 1kV–22kV	750mm	600mm	600mm
66kV	750mm	600mm	600mm
110kV	1000mm	750mm	750mm

REFER TO DISTRIBUTION CONSTRUCTION STANDARD GA231

TABLE 3 – Horizontal Cable Separation

Cables in Trench	Separation
1 Service or PL, 1 LV	
2 Services or PL, 1 LV	
1 Service or PL, 2 LV	
1 Service or PL, 3 LV	
1 Service or PL, 1 LV, 1 HV *	
1 Service or PL, 2 LV, 2 HV *	
1 Service or PL, 1 LV, 2 HV *	

* Service and Public Lighting Cables may be placed touching
LV Mains Cable where this is unavoidable
May be 1kV, 22kV or 66kV

REFER TO DISTRIBUTION CONSTRUCTION STANDARD GA231

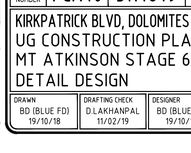


FIGURE 4 – TYPICAL SHARED TRENCH SECTION
REFER TO DISTRIBUTION CONSTRUCTION STANDARD GA231

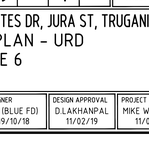


FIGURE 6 – SERVICE PIT INSTALLATION – IN FOOTPATH
REFER TO DISTRIBUTION CONSTRUCTION STANDARD GS021

TABLE 5 – Common Cable Arrangements – Shared Trench (Communications Carrier)

NUMBER OF CABLES	MINIMUM TRENCH WIDTH (mm) WITHOUT COMMUNICATIONS CONDUIT	WITH COMMUNICATIONS CONDUIT	POLYMERIC SLAB SIZE (mm)
1 LV	600	600	290
2 LV	600	750	300
3 LV	600	900	310
2 HV	900	900	300
1 HV & 1 LV	900	900	270–310
1 HV & 2 LV	900	900	270–300
1 HV & 3 LV	900	900	270–300
2 HV & 2 LV	1000	1000	300–300
2 HV & 3 LV	1000	1200	270–270–300

NOTES: THE ABOVE ARRANGEMENTS MAY ALSO INCLUDE SERVICE AND PUBLIC LIGHTING CABLES. HV CABLES REFERRED TO ABOVE ARE 11–22kV.

REFER TO DISTRIBUTION CONSTRUCTION STANDARD GA231

FIGURE 1 – JOINT BAY EXCAVATION DETAILS
REFER TO DISTRIBUTION CONSTRUCTION STANDARD FB101

FIGURE 1 – MINOR ROAD STEEL URD LIGHTING POLE (PART)
REFER TO DISTRIBUTION CONSTRUCTION STANDARD FB101

SINGLE OUTREACH 10m LINCOLN POLE

PUBLIC LIGHTING SCHEDULE	
FOR PL POLE Nos:	PL1 – PL9
LANTERN:	STANDARD
WATTAGE & TYPE MANUFACTURE MODEL & CAT No MOUNTING HEIGHT COLOUR	70W LED SYLVANIA PL99A15L70 10.0 GLOSS BLACK
POLE:	NON STANDARD
MANUFACTURER MODEL & CAT No LENGTH & STRENGTH COLOUR	SAFEROADS LCSE 10.0/3.0/13.2/GJ 13.2m/3kN GLOSS BLACK
BRACKET:	NON STANDARD
MANUFACTURER TYPE LENGTH COLOUR	SAFEROADS SINGLE OUTREACH 3.0m GLOSS BLACK
COUNCIL:	MELTON COUNCIL

DOUBLE OUTREACH 10m LINCOLN POLE

PUBLIC LIGHTING SCHEDULE	
FOR PL POLE Nos:	PL24 – PL27
LANTERN:	STANDARD
WATTAGE & TYPE MANUFACTURE MODEL & CAT No MOUNTING HEIGHT COLOUR	70W LED SYLVANIA PL99A15L70 10.0 GLOSS BLACK
POLE:	NON STANDARD
MANUFACTURER MODEL & CAT No LENGTH & STRENGTH COLOUR	SAFEROADS LCSE 10.0/3.0/13.2/GJD 13.2m/3kN GLOSS BLACK
BRACKET:	NON STANDARD
MANUFACTURER TYPE LENGTH COLOUR	SAFEROADS DOUBLE OUTREACH 3.0m/3.0m GLOSS BLACK
COUNCIL:	MELTON COUNCIL

SINGLE OUTREACH 5.5m LINCOLN POLE

PUBLIC LIGHTING SCHEDULE	
FOR PL POLE Nos:	PL10 – PL23
LANTERN:	STANDARD
WATTAGE & TYPE MANUFACTURE MODEL & CAT No MOUNTING HEIGHT COLOUR	37/42 W LED – AERO SYLVANIA JLB99A15L42 5.5 GLOSS BLACK
POLE:	NON STANDARD
MANUFACTURER MODEL & CAT No LENGTH & STRENGTH COLOUR	SAFEROADS LCSE 5.5/15/8.4/GF 8.4m/9kN GLOSS BLACK
BRACKET:	NON STANDARD
MANUFACTURER TYPE LENGTH COLOUR	SAFEROADS PART OF POLE 1.5 GLOSS BLACK
COUNCIL:	MELTON COUNCIL

PL NOTES

ALL P/L POLES TO BE INSTALLED 1.0m FROM B.O.K UNLESS STATED OTHERWISE

POLE AND LANTERN TYPE, WATTAGE AND MANUFACTURER MUST MATCH LIGHTING SCHEDULE. ANY DEVIATION MUST BE APPROVED BY COUNCIL AND POWERCOR.

ALL LANTERNS TO BE ORDERED WITH 7 PIN NEMA BASE

PL POLES TO MAINTAIN 0.5m CLEARANCE FROM ALL PATHS, PRAM CROSSINGS AND CROSS OVERS.

REMOTE HV TIE–IN WORKS

WORKS TO BE TIED IN BY POWERCOR.
(N) HV CABLE TERMINATION (GB251)
(E) "CAUCASUS – ALASKA" KIOSK
REFER TO PCA40/5112838/1

NO GO ZONE

NO GO ZONES TO BE OBSERVED.
NO OPTION 2 CONTRACTORS TO BREACH NO GO ZONES UNDER ANY CIRCUMSTANCE.
POWERCOR TO PERFORM LIVE WORKS.

DETAILING

TRENCH SHOULD NOT BE SAND AND SLAB BEFORE ELECTRICAL ASSETS DETAILS HAVE BEEN COLLECTED

CONSTRUCTION CHANGES

PROJECT MANAGER MUST BE NOTIFIED OF ANY CHANGE TO DESIGN DURING CONSTRUCTION.
CHANGES MUST BE DETAILED.

RECOVERABLE WORKS

UPDATE LV & HV LABELS AT (E) "CAUCASUS – ALASKA" KIOSK
REFER TO PCA40/5112838/1

OPEN INITIALLY CLOSED PARALLEL PILLAR OP (E) LOT 3025 KIRKPATRICK BOULEVARD TO BE DONE BY POWERCOR
REFER TO PCA40/5112838/1

OPEN INITIALLY CLOSED PARALLEL PILLAR ADJ TO (E) LOT 3016 CLARA CLOSE TO BE DONE BY POWERCOR
REFER TO PCA40/5112838/1

DEEP TRENCHING

DUE TO SAFETY CONCERNS, TRENCHES FOR CONDUIT INSTALLATION SHOULD NOT BE DUG DEEPER THAN 1.5m.

IF TRENCHES NEED TO BE DUG DEEPER THAN 1.5m, PRIOR APPROVAL MUST BE GRANTED BY PM2 AND POWERCOR

ALL CONDUITS AT A DEPTH OF 1.2m OR GREATER ARE TO BE EXTENDED AND ELEVATED UNTIL THE CONDUIT END IS AT 0.8m DEEP.

HV BENDING

ALL HV CABLES TO MAINTAIN MIN 2040mm BENDING RADIUS AS PER POWERCOR REQUIREMENT

ALL HV CONDUIT BENDS TO BE 2.5m RADIUS.

REMOTE LV TIE–IN WORKS

WORKS TO BE TIED IN BY POWERCOR.
(N) LV STRAIGHT JOINT (GS421)
OP (E) LOT 3024 KIRKPATRICK BOULEVARD
REFER TO PCA40/5112838/1

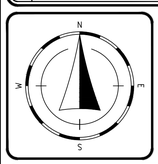
(N) LV STRAIGHT JOINT (GS421)
ADJ TO (E) LOT 3016 CLARA CLOSE
REFER TO PCA40/5112838/1

CAUTIONS

NO CAUTIONS

FOR DETAILS OF CONDITIONS REFER TO DIAL BEFORE YOU DIG INFORMATION

REFERENCE	
PROJECT NUMBER	5114649
ROAD DIRECTORY	MELWAY REF 357 H4
GIS SYSTEM PLAN	MAP 220-C4
PROJECTION	MGA ZONE 55
FEEDER/SWITCHING ZONE	MLN021 / 30042907
DEVELOPER/NUMBER OF LOTS	STOCKLAND / 126 LOTS
MUNICIPAL COUNCIL	MELTON COUNCIL



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5 0 5 10 15 20 25 30
LENGTHS ARE IN METRES
SCALE 1:500

REVISION						
DRAWING NUMBER	PCA40	5114649		1		SHEET 1 OF 3

KIRKPATRICK BLVD, DOLOMITES DR, JURA ST, TRUGANINA
UG CONSTRUCTION PLAN – URD
MT ATKINSON STAGE 6
DETAIL DESIGN

DRAWN	DRAFTING CHECK	DESIGNER	DESIGN APPROVAL	PROJECT MANAGER
BD (BLUE FD) 19/10/18	D.LAKHANPAL 11/02/19	BD (BLUE FD) 19/10/18	D.LAKHANPAL 11/02/19	MIKE WILLIAMS 11/02/19

LEGEND

GENERAL: BOUNDARY LINE; BACK OF KERB; FACE OF KERB; LIP OF KERB; STORM WATER PIT; (56096) POLE NUMBER; 609 PROPERTY NUMBER; Lot 23 LOT NUMBER; CONDUIT – OCCUPIED; CONDUIT – SPARE

EXISTING: HV CABLE; LV MAINS CABLE; LV SERVICE CABLE; PUBLIC LIGHTING CABLE; HV STRAIGHT JOINT; HV TEE JOINT; HV SEALED END; HV CUT END; LV STRAIGHT JOINT; LV TEE JOINT; LV SERV TEE JOINT; LV INSULATED END; LV SEALED END; LV CUT END; CONDUIT; SERVICE PIT (TYPICAL); SERVICE PIT (ROADWAY); PILLAR (SERVICE); PILLAR (PARALLELING); 80W MV PL & COLUMN; 150W HPS PL & COLUMN; SUBSTRNAS POLE; HV POLE; LV POLE (GENERAL); SUBSTATION (POLE); HV CABLE HEAD POLE; LV CABLE HEAD POLE

NEW: HV CABLE; LV MAINS CABLE; LV SERVICE CABLE; PUBLIC LIGHTING CABLE; HV STRAIGHT JOINT; HV TEE JOINT; HV SEALED END; HV CUT END; LV STRAIGHT JOINT; LV TEE JOINT; LV SERV TEE JOINT; LV INSULATED END; LV SEALED END; LV CUT END; CONDUIT; SERVICE PIT (TYPICAL); SERVICE PIT (ROADWAY); PILLAR (SERVICE); PILLAR (PARALLELING); 80W MV PL & COLUMN; 150W HPS PL & COLUMN; SUBSTRNAS POLE; HV POLE; LV POLE (GENERAL); SUBSTATION (POLE); HV CABLE HEAD POLE; LV CABLE HEAD POLE

OTHER SERVICES: DRAIN; FENCE; GAS MAIN; SEWER; TELCO; WATER MAIN

Electricity Networks – EN UG CONSTRUCTION PLAN B1 URD – V3.0

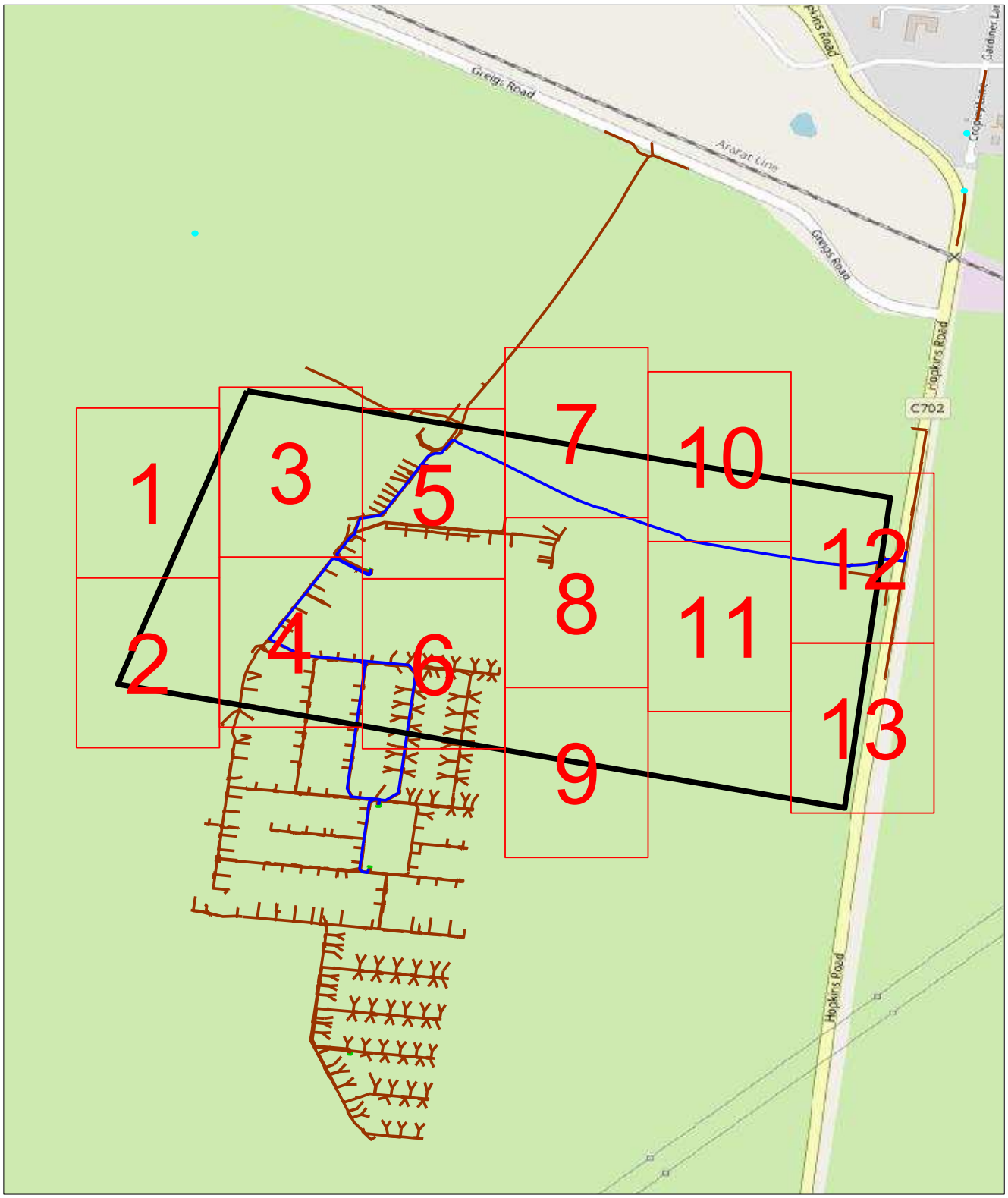
B1

Locality Map

Sequence No: 97171767

Greigs Road Truganina

MAP IS A GUIDE ONLY- REFER TO CABLE PLANS FOR ACCURATE ASSET LOCATIONS



LEGEND:

DBYD Work Area | SWER Substation | High Voltage Cable | Communication Cable

Zone Substation | Distribution Substation | Low Voltage Cable | Earth Cable

This map represents the location of the submitted DBYD Work Area and all CitiPower/Powercor responses are based on this location. It is the responsibility of the enquirer to ensure the accuracy of the DBYD Work Area.

0 0.09km

N

Imagery sourced from Open StreetMaps

Powered by dbyd

Appendix H – Existing Telecomm Assets

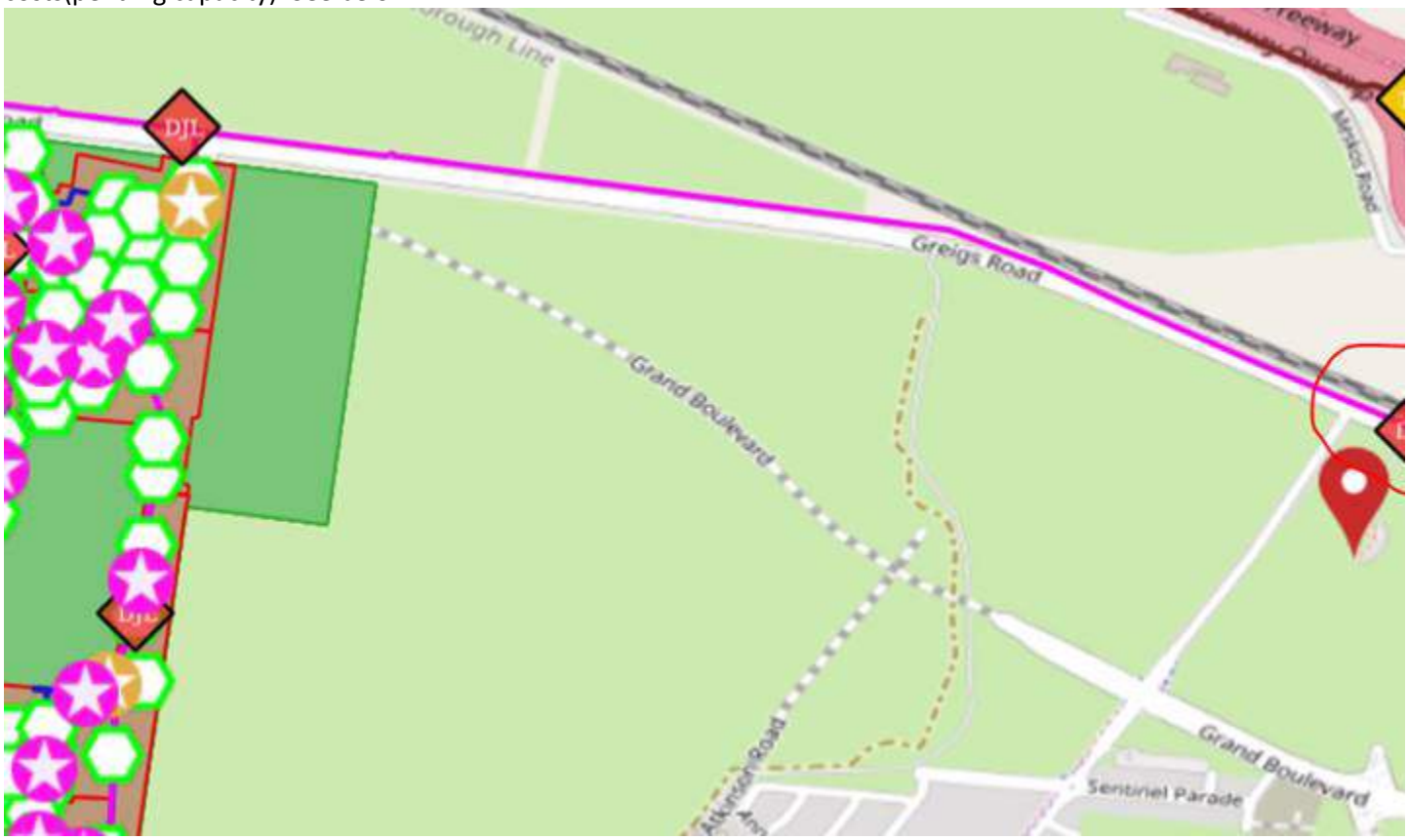
James Cappellari

From: Joseph Teoh <josephteoh@nbnco.com.au>
Sent: Tuesday, 29 June 2021 8:58 AM
To: Jessica Henry
Cc: Joe Cannatelli; Jim Bozikis - PBC
Subject: RE: Feasibility Request - Hopkins Road Business Precinct, Truganina

NBN Classification - Commercial

Hi Jess,

Apologies for the delay.
Luckily there appears to be a fibre joint out the front of the site so it's unlikely there would be additional backhaul costs(pending capacity). See below:



Due to the small lot count, we would still need to assess it manually.
I'd recommend registering it with the lot count of 35, providing us with the reference number, and we will make the adjustments to push it through the system.

Hope this helps.

Thank you

Kind Regards,
Joseph Teoh
Senior Account Manager (VIC/TAS) – New Developments
M +61 437 757 480 | **E** josephteoh@nbnco.com.au

Appendix I – Existing Gas Assets

AusNet services

0m 100m 200m 300m 400m 500m 600m 700m 800m 900m 1000m 1100m 1200m 1300m 1400m 1500m 1600m 1700m 1800m 1900m 2000m

N
W E
S

NOTE: AusNet Services has taken care to ensure that the locations of Gas Mains shown on this plan are accurate however some variations from records do exist and complete accuracy is not guaranteed. It is essential that the position of pipes be proved on site by hand excavation. AusNet Services shall not be liable for any loss damage claim or demand incurred either directly or indirectly resulting from any act or omission which was made in reliance in whole or in part upon this plan.

Warning - Take Precautions if Printing this Plot in Black & White.
All planned mains shall be treated as live mains, as mains under pressure may be in existence.

Gas Transmission Pipeline
Gas Distribution Mains
Planned Gas Assets
Abandoned Gas Assets
Requested Area

Appendix J – AusNet Transmission Guidelines

AusNet Services
Asset Management

GUIDELINES FOR SUBDIVISION AND DEVELOPMENT OF LAND AFFECTED BY TRANSMISSION LINE EASEMENTS

AusNet Transmission Group is the electricity transmission company operating under the AusNet Services brand name. AusNet Services also has an electricity distribution business (AusNet Electricity Services) and a gas distribution business (AusNet Gas Services).

Information for use by land owners, planners and developers in the planning and implementing of subdivisions, consistent with AusNet Transmission Group requirements for high voltage, overhead power line easements.

27/7/2015

GUIDELINES FOR SUBDIVISION AND DEVELOPMENT OF LAND AFFECTED BY EASEMENTS

CONTENTS

GUIDELINES FOR SUBDIVISION AND DEVELOPMENT OF LAND AFFECTED BY EASEMENTS

1. INTRODUCTION

1.1 Purpose of Guidelines

AusNet Transmission Group Pty Ltd has a statewide network of overhead high voltage power lines, operating at voltages of 220,000 volts (220kV) up to 500,000 volts (500kV). These are generally steel lattice tower lines constructed within easements, which are recorded on the Certificate of Title of each affected property. The width of the easement is largely dependent on the number of existing and provision for future lines and their voltages. Some lines within AusNet Transmission Group's easements operate at lower voltages up to 66kV and are supported on smaller steel towers or wood or concrete poles. Whilst these lower voltage lines are located on AusNet Transmission Group's easements, they are operated and maintained by the local electricity distribution company.

AusNet Transmission Group does not own the land affected by the easement, but has the right to enter and use the easement for line construction, operation, patrol and maintenance purposes and to restrict activities carried out on the easement by others so that the initial high public safety, line reliability and bushfire prevention standards are maintained.

These guidelines provide information concerning AusNet Transmission Group requirements where subdivision and development of land subject to high voltage power line easements is proposed. It has been produced to assist with the planning and implementing of subdivisions, consistent with the AusNet Transmission Group's easement rights and the responsibility to protect people living, working and playing near the high voltage lines against electrical or other hazards that could cause serious injury or death.

Subdivision Planning Permit and Certification applications and Engineering design drawings that clearly comply with the requirements stated by these guidelines can be readily approved by AusNet Transmission Group. Proposals that do not clearly comply will require early consultation to determine whether approval can be given.

Landowners and developers are welcome to discuss the requirements with AusNet Transmission Group's Assets Department, on:

Telephone **1300 360 795**

Early and confidential consultation, prior to a Planning Permit application or drafting of detailed design drawings, would enable a subdivision layout to be optimised in the shortest practicable time.

1.2 Preliminary Planning for Subdivision

Preliminary planning for subdivision of property with an overhead power line easement should take into consideration the general information given in Appendix A concerning permitted and prohibited uses of high voltage line easements.

Planners should also be aware that the way in which land affected by high voltage power line easements is subdivided can have a significant effect on factors such as:

- Visual amenity of the area;

- Costs for fencing and servicing allotments (particularly electricity, street lighting, telephone, gas and water), consistent with prudent public safety requirements;

- Inconvenience and costs to AusNet Transmission Group and allotment owners caused by requirements for vehicle access for line construction, patrol and maintenance; and

- Public perception of possible adverse health effects from the electric and magnetic fields (EMFs) coming from the power lines.

Subdivision planners have an obligation to consider community values and attitudes to the visibility and safety of high voltage power lines when laying out allotments and roads. Since it is appropriate that the visibility aspects of planning be controlled by the developer and by the planning authority, it is not considered further by these guidelines.

The question of whether or not exposure to EMFs causes adverse health effects is unresolved. There is worldwide scientific consensus that such effects have not been established, but that more research should be undertaken. AusNet Transmission Group keeps the issue under close scrutiny, takes advice from health authorities and participates in EMF research.

1.3 Process for Approval of Subdivision Planning Applications

As a Referral Authority under the current legislation (Planning and Environment Act 1987), AusNet Transmission Group is consulted by the Responsible Authority (usually the appropriate Municipal Council) concerning its requirements for each subdivision planning permit application, whenever a high voltage power line easement is affected.

The steps involved in gaining approval of proposed subdivisions are:

- Issue of a Planning Permit by the Municipality. Permit conditions requested by AusNet Transmission Group and other Referral Authorities could normally be expected for any permit issued.

- Certification of the final, fully dimensioned Plan of Subdivision by the Municipality, following approval by the Referral Authorities.

- Issue of a Statement of Compliance by the Municipality, following advice from the Referral Authorities that the permit conditions have been satisfied, to enable registration of the Plan of Subdivision by the Land Titles Office.

For subdivisions affecting high voltage power line easements, the following AusNet Transmission Group requirements would normally be included as Planning Permit conditions:

- Written agreement to the final plan of subdivision must be obtained from AusNet Transmission Group prior to certification;

and; if roads or installation of services are proposed on the easement:

- Written approval of detailed construction plans (Engineering design drawings) for the proposed works must be obtained from AusNet Transmission Group prior to issue of the Statement of Compliance.

The AusNet Transmission Group response to a Planning Permit application may include comments concerning issues identified that must be considered in finalising the subdivision layout for Certification. Objection to an application would generally be made only if the amendments required would significantly affect the nature of the proposed subdivision.

AusNet Transmission Group consent to Certification of the final Plan of Subdivision is dependent on supply of full and satisfactory dimensional information showing the easement satisfactorily located in relation to the power line(s).

AusNet Transmission Group consent to issue of the Certificate of Compliance is dependent on prior approval of the Engineering design drawings, including satisfactory provision for the requirements outlined by these guidelines.

AusNet Transmission Group requirements for approval of Subdivision Planning Permit applications are stated in Section 2 of these guidelines.

1.4 Process for Approval of Construction Works

AusNet Transmission Group requires to approve all proposals for construction works affecting power line easements, including those for which Planning Permits are required, to ensure that public safety and AusNet Transmission Group's easement rights are preserved.

Approval is generally a two-stage process, as follows:

(i) Engineering design drawings of proposed construction works, or any proposed alterations to previously approved designs, must be submitted to and be approved by AusNet Transmission Group prior to commencement of the works.

Applications for approval of design drawings are required to be submitted to:

Survey and Easements Team
Asset Management Division
AusNet Services
Locked Bag 14051
MELBOURNE MAIL CENTRE VIC 8001

mailto:lmg@ausnetservices.com.au

Information concerning AusNet Transmission Group requirements for approval of Engineering design drawings is given in Section 3 of these guidelines.

(ii) The contractor performing the work on site must also contact AusNet Transmission Group at least five working days prior to any work commencing, so that the proposed construction works methods can be reviewed and any safety precautions deemed necessary can be taken.

However, the prior notice period becomes at least ten working days should there be a requirement for use of vehicles, machinery or other equipment exceeding 3 metres maximum operating height, or any equipment with an elevating component. The use of such equipment in the vicinity of power lines must be in accordance with the requirements of the Electricity Safety (Network Assets) Regulations 1999.

The factors considered by AusNet Transmission Group for approval of construction works are outlined in Section 4 of these guidelines.

1.5 Costs for Evaluations, Asset Relocations and Line Outages

There are no fees payable to AusNet Transmission Group for evaluation of Planning Applications or for supply of asset location information, such as record plans required for preparation of detailed construction design drawings.

However, AusNet Transmission Group will recover all of its costs in cases where AusNet Transmission Group assets require relocation, protection or modification in some way or where a significant design input is required for assessment of Engineering design drawings for a construction project. In such cases, AusNet Transmission Group will advise the party initiating the work of the intention to recover costs, the extent of costs involved and timing of the work, so that a funding agreement can be established prior to the commencement of the AusNet Transmission Group design work.

Costs for assessment of required equipment operating constraints and for any line outages required to carry out the work, including temporary earthing of the conductors, will also be recovered from the constructor.

2. PLANNING APPROVAL OF SUBDIVISIONS

2.1 Summary of AusNet Transmission Group Requirements

AusNet Transmission Group requirements for approval of subdivision planning applications that include land affected by high voltage power line easements are summarised as follows. Further information, including the basis of each requirement, is provided in the following Sub-sections 2.2 to 2.7:

- **Easement Verification and Adjustment**

  Plans of subdivision submitted for certification and referred to AusNet Transmission Group will not be approved unless the easement as shown on the plan accords with the actual position of the power line(s) as verified by survey connections and computation.

- **Allotment Size**

  AusNet Transmission Group advises that the unencumbered portion of lots affected by a high voltage power line easement should have a similar area to the area of nearby lots not affected by the easement.

- **Allotment Boundary Locations**

  Plans of Subdivision submitted for Certification and referred to AusNet Transmission Group will not be approved if proposed lot boundaries are located within 4 metres of existing or planned future tower leg steel or poles.

  However, the following larger separation distances and other dimensional requirements should be provided where practicable:

  - For urban residential subdivisions with wood fences, lot boundaries should be located 15 metres from any face of a steel tower base where practicable. Not less than 4 metres clearance is permitted between any tower face and the boundary.

  - Lot boundaries for industrial, rural and rural residential subdivisions that generally have metallic fences (including post and wire fences) should not exceed 100 metres in length on the easement or 250 metres in length on and within 20 metres of the easement. They should also be located at least 30 metres from the centre of existing and proposed towers, unless a reduced distance is advised by AusNet Transmission Group (Refer Appendix B).

- **Roads Crossing Easements**

  Plans of Subdivision submitted for Certification and referred to AusNet Transmission Group will not be approved if proposed road reserve boundaries are located within 30 metres of the nearest tower centre, unless prior consultation satisfactory to AusNet Transmission Group has occurred.

  Engineering design drawings for proposed works on the easement, including surface level changes, heights of lighting poles and locations of services need to be approved by AusNet Transmission Group before agreement can be given to the issue of the Statement of Compliance for the subdivision.

  Height restrictions on the operation of vehicles and construction equipment must be carefully considered in planning the subdivision, since significant cost implications for installation of roadside services may be involved.

Roads Within and Alongside Easements

Planning permit applications and/or plans of subdivision referred to us that include proposed roads will not be approved by AusNet Transmission Group where the total length of the road reserve clearly exceeds the 100/250 metre length limits stated in Appendix B, unless prior agreement by AusNet Transmission Group has been obtained concerning the arrangements made for installation of services and road lighting and for protection of towers.

As for roads crossing easements, height restrictions on operation of vehicles and construction equipment on the easement must be carefully considered and AusNet Transmission Group approval of Engineering design drawings for works on the easement is required prior to issue of the Statement of Compliance.

- **Provision of Services to Allotments**

  AusNet Transmission Group approval of Engineering design drawings for all works on the easement is required prior to issue of the Statement of Compliance.

2.2 Easement Verification and Adjustment

There is a need for accurate definition of power line easements, given the land use restrictions required for safe and reliable operation of the power lines.

The area shown on the Certificate of Title as “easement to the SECV (i.e. AusNet Transmission Group) for transmission of electricity" is intended to cover a specific corridor of land overlaying the route of the transmission line. This corridor is dimensioned by computation of electrical safety clearance distances appropriate to the design of the line and it’s operating parameters and is positioned by survey connection to title of the proposed power line centreline. Modern title re-establishment surveys sometimes reveal that the recorded easement location does not coincide precisely with the actual position of the existing power lines in the way originally intended.

There are a number of reasons why this may be the case. These relate to the nature of land title boundary definition, the age of the line and the nature of easement creation surveys:

- Differences over time in the position of adopted title boundaries due to the nature of title re-establishment. This is most likely to happen in areas that have not been re-surveyed since the early days of land subdivision;

- Early power line easements were surveyed using methods and equipment less sophisticated than they are now. As the land affected was predominantly rural, accepted tolerances were greater than what is now required for residential and commercial/industrial subdivisions; and

- Easement creation surveys are generally not as comprehensive as surveys for subdivision of land and so are subject to amendment when a difference is revealed.

It is important that the consulting surveyor contacts AusNet Transmission Group as early as possible in the development process so that any need for easement variation can be identified before detailed design of the subdivision is started. This is especially relevant when lot or reserve boundaries are proposed to be based on the easement boundary.

The location of the easement boundaries will be re-computed using the consulting surveyor's re-establishment of the title. Connections from the re-establishment survey to the power line centreline as defined by the towers or poles are necessary for this computation. This process should be discussed with AusNet Transmission Group. The new easement dimensions and

connections to title will be provided to the developer's surveyor for inclusion in the plan of subdivision.

An appropriate adjustment to the easement location is generally achieved on the plan of subdivision without the need for new easement creation or surrender procedures under the Transfer of Land Act. AusNet Transmission Group can provide details covering the notations required for the plan and on receipt of the plan showing the amended easement, will provide a letter authorising the variation addressed to the Registrar of Titles.

2.3 Allotment Size

Since buildings and structures, including swimming pools, are not permitted on high voltage power line easements, except for limited concessions regarding domestic outbuildings on 220 kV line easements, residential lots that are not large enough to accommodate a house, garage, swimming pool, etc. on land clear of the easement will be less useable than allotments of the same size that are not affected by the easement.

The expectations of a purchaser to be able to develop their land to a level comparable with that of neighboring allotments that are unaffected by the easement is considered by AusNet Transmission Group to be an important consideration in planning a subdivision.

Similarly, planning of industrial lots should take into account the requirements that generally prohibit the storage of materials and the parking, loading and unloading of large trucks on the easement.

Therefore, as a general principle, AusNet Transmission Group considers that the unencumbered portion of lots affected by a high voltage power line easement should be similar in area to the whole area of nearby lots planned for comparable use that are not affected by the easement.

However, since lot size is primarily a matter for control by the developer and by the Responsible Authority, AusNet Transmission Group does not normally object to a subdivision based on a comparative land use disadvantage for lots affected by easement.

2.4 Allotment Boundary Locations

Lot boundaries on transmission line easements should be located in consideration of prudent public safety measures, AusNet Transmission Group requirements for vehicle access to and between towers and the associated inconvenience caused to AusNet Transmission Group and to lot owners.

Installation of gates in fences on the easement is required where direct access to tower sites from public roads is not available. The number of gates, safety requirements (including special design of metallic fences) and the level of inconvenience is influenced by the number of lot boundaries intersecting the access route provided by the subdivision and on the separation distances provided between lot boundary fences and towers. Established AusNet Transmission Group access tracks should be preserved, unless a satisfactory alternative is agreed.

The minimum and preferred separation distances between allotment boundaries and towers stated in Section 2.1 are based on the following fencing issues:

(i) Minimum of 4 metres between fences and the nearest face of the steel tower base - to provide for reasonable access around the tower base and permit use of standard electrical safety procedures by AusNet Transmission Group line maintenance personnel;

(ii) Requirements for access gates to enter adjacent allotments for normal line maintenance activities are minimised where fences are located at least 15 metres from the nearest face of 500 kV and 330 kV towers, or 10 metres from 275 kV, 220 kV and 66 kV towers;

(iii) The increased separation distances to towers and length limits for industrial, rural and rural residential subdivision lot boundaries stated in Appendix B, Tables 1 and 2, are based on avoiding the need for earthing and sectionalising of metallic fences, in accordance with Section 3.2 of these guidelines.

AusNet Transmission Group's requirements for working space around towers is explained further in Section 3.7 of these guidelines.

2.5 Roads in the Vicinity of Easements

Roads in the vicinity of transmission lines can potentially have an adverse effect on maintaining existing high standards of safety and security of the lines.

Roads within transmission line easements that run parallel or cut at an angle of less than 45 degrees to the power line/s are generally not permitted.

Proposed roads that are adjacent to an existing or future transmission line, but outside the easement, and are shorter than the maximum lengths as stated in Appendix B, Table 1, are generally acceptable, subject to AusNet Transmission Group approval of Engineering design drawings for works prior to issue of the Statement of Compliance for the subdivision.

Controls on road lengths in close proximity to high voltage power lines are required to limit the voltages that can be induced in roadside metallic objects and services to safe values.

The visibility of the line, exposure of towers to damage, hazards to AusNet Transmission Group maintenance personnel from road vehicles and the need to control service extensions for further subdivision development and later service upgradings or replacement works are additional factors requiring consideration.

Therefore, AusNet Transmission Group agreement to roads in the vicinity of high voltage transmission line easements is dependent on the total length of road proposed near the easement and satisfactory advice from the developer concerning the design provisions made that will limit induced voltages in metallic objects and services to safe values.

While it may prove possible, in some locations, to vary the maximum road and metallic service lengths stated in Appendix B, Table 1, this would be dependent on satisfactory results of detailed site investigations and calculations by AusNet Transmission Group based on the electrical design parameters of the affected line. Pre-payment by the developer of a fixed price for the study would normally be required and the response time would be dependent on other AusNet Transmission Group works commitments at the time.

- **Construction Equipment Height Restrictions**

The cost implications of height restrictions for vehicles and construction equipment required to be used on the easement are potentially more significant for roads along easements than for roads crossing easements and must also be carefully considered in planning the subdivision.

2.6 Roads Crossing Easements

- **Proximity to Towers and Poles**

  Planned roads that directly cross an easement further from existing and future towers than the minimum separation distances stated in Appendix B, Table 1 (measured to the nearer road reserve boundary) are generally acceptable, subject to AusNet Transmission Group approval of Engineering design drawings for works on the easement prior to issue of the Statement of Compliance for the subdivision.

  AusNet Transmission Group agreement to closer roads is dependent on satisfactory advice from the developer concerning the following:

  - Surface level changes proposed on the easement;
  - Provision for installation of roadside services;
  - Provision for road lighting; and
  - Road design near towers and measures planned to protect AusNet Transmission Group line maintenance personnel and prevent damage to towers.

  Details of specific AusNet Transmission Group requirements for these factors are given in Section 3 of these guidelines.

- **Construction Equipment Height Restrictions**

  Height restrictions on the use of vehicles, machinery and other equipment plant, must be carefully considered in planning the subdivision, since significant cost implications for installation of roadside services may be involved.

2.7 Provision of Services to Allotments

The restrictions on positioning of metallic pipes and cables near towers and maximum length requirements within and alongside high voltage power line easements stated in Sections 2.5 and 2.6 above also apply to the servicing of individual allotments, particularly rural and rural residential allotments where service line lengths are potentially large.

AusNet Transmission Group approval of Engineering design drawings for works on the easement prior to issue of the Statement of Compliance is also a requirement for subdivision applications for which the design of services to allotments is identified as a significant issue.

3. APPROVAL OF ENGINEERING DESIGN DRAWINGS

The requirement for AusNet Transmission Group to approve all proposals for construction works affecting high voltage power line easements results from the responsibility to maintain and protect the following:

- Safety of the general public, contractors and AusNet Transmission Group personnel;
- Security of AusNet Transmission Group assets and continuity of electricity supply;
- Vehicle access to AusNet Transmission Group assets at all times and in all weather conditions;
- Provision reserved within existing easements for planned future lines; and
- Potential for redevelopment of the easement for future power supply purposes.

Because of the variety of ways in which construction works can affect AusNet Transmission Group assets there is a need for close review by AusNet Transmission Group of both the design and construction method aspects of proposed developments.

The following additional information to that stated in Appendix A, concerns requirements selected as more relevant to subdivision proposals and is provided to assist with detailed planning and design.

3.1 Buildings and Structures

Buildings and structures, including swimming pools, are not permitted on high voltage power line easements, except for limited concessions regarding domestic outbuildings on 220 kV line easements, as outlined in Appendix A.

3.2 Fences

- **Earthing Requirements**

  Long metallic fences close to high voltage power lines, for example farm type (post and wire) and chainwire mesh types, can have a voltage induced in the metallic (that is, electrically conductive) components. To limit the induced voltages to safe values, either the length must restricted to the maximum values stated in Appendix B, Table 1, or the fence must be earthed to AusNet Transmission Group requirements.

  Typical earthing requirements for post and wire fences would involve connection of the horizontal strain wires to earth spikes driven into the ground at intervals not exceeding 30 metres. For a fence using bare metal mesh or wire supported on bare metal posts, no additional earthing would generally be required.

- **Sectionalising Requirements**

  An additional consideration relates to fences in the vicinity of steel towers and concrete poles. Under extraordinary operating conditions, typically during line faults, the ground voltage in the vicinity of the tower or pole can rise relative to the surrounding area.

To prevent any electrical hazard, the voltage occurring must not be transferred via fences (or other conductive objects) to areas remote from the tower or pole.

Accordingly, fences must be **either** kept clear of towers and poles by the minimum distances stated in Appendix B, Table 2, **or** sectionalised by insertion of an insulating section at each location where the fence enters the zone around each tower or pole extending to the appropriate Table 2 distance.

On request, AusNet Transmission Group can provide further advice and clarification of earthing and sectionalising requirements for particular fence designs and arrangements.

3.3 Roadside and Allotment Services

Similar requirements to those stated above for metallic fences apply to the total lengths and proximity to towers of buried metallic services, including water, drainage, sewerage and gas pipes, telephone cables and low voltage electricity supply cables, except that earthing and sectionalising may either not be practicable or involve a significant cost penalty.

In many situations, the most practical solution will be to locate the services well clear of the power line easement, as stated in Appendix B.

Roadway lighting poles proposed on the easement are also subject to height restrictions depending on the available clearances to the high voltage power line conductors and they must lower to the ground for servicing, including lamp replacement.

The length of non-metallic pipes (such as PVC and earthenware) is not restricted on the easement and reinforced concrete pipes are permitted provided that they are not located closer to towers and poles than the minimum distances stated in Appendix B, Table 2.

3.4 Ground Surface Level Changes

- **Clearances to Line Conductors**

  No variation to existing ground surface levels under high voltage power lines is permitted without prior AusNet Transmission Group approval. Approval is subject to confirmation that the clearances to the line conductors will not be reduced below the required minimum design clearances under the conditions of maximum conductor sag (corresponding to the maximum line operating temperature) and the maximum design wind.

  Because of the variety of line voltages, configurations, maximum operating temperatures and the effects of wind on the horizontal displacement of the conductors, AusNet Transmission Group must be contacted to provide advice on all aspects of conductor clearances.

  A brick or timber sound wall or other roadside feature that can be climbed, providing a closer approach to the overhead lines, is generally not permitted in locations where only the minimum design clearance is provided.

- **Requirements Near Towers and Poles**

  From consideration of AusNet Transmission Group requirements for the movement of personnel and vehicles and the handling of materials in the vicinity of towers and poles, the creation of uneven or poorly drained sites is unacceptable.

  Lowering of surface levels in the vicinity of towers and poles is generally unacceptable to AusNet Transmission Group because of the detrimental effects on the stability of the structures.

  A further consideration is that tower foundations, above ground members and pole stay wires have been installed with corrosion protection appropriate to the existing surface levels.

  Where surface levels are proposed to be raised in the vicinity of towers or pole stay wires, the corrosion protection systems are required to be extended to cover the new height. The fill placement method and type of fill material must be controlled to ensure that no damage to members or protective coatings occurs and that no potential for long term damage is created from either fill settlement or chemical action.

  For constructions that involve significant ground surface level changes over a wide area of easement, AusNet Transmission Group generally requires accurate survey measurements of the final surface levels to be undertaken by the Constructor for amendment of the power line design records. Alternatively, AusNet Transmission Group could undertake the survey work at cost to the Constructor.

3.5 Tree Plantings

Trees and shrubs with a mature growth height not exceeding 3 metres are permitted on high voltage power line easements. Taller species (generally limited to 6 metres maximum mature height) may be acceptable, subject to AusNet Transmission Group approval of the planting layout to verify that sufficient clearances to the conductors will be provided and that this can be readily assessed by AusNet Transmission Group line patrols. Other specific requirements are that the vegetation will not endanger the line in the event of vegetation fires and will permit satisfactory AusNet Transmission Group vehicle access to and around towers for line patrol and maintenance purposes.

Initial planting of approved species and locations, with regular vegetation maintenance, including removal of inappropriate regrowth, will eliminate the need for corrective action by AusNet Transmission Group and minimise the possibility of unavoidable damage during line maintenance works.

Vegetation density is generally restricted to scattered trees or limited area clumps and shelterbelts to control the total quantity of burnable materials on the easement.

Trees that grow to exceed the approved heights may be removed and costs charged to the property owner. Tall growing species will be removed at the earliest opportunity.

A tree clear area of 20 metres minimum radius is generally required at tower sites for line maintenance purposes. Closer trees may be permitted in some locations, where the interference caused to access and essential line maintenance is acceptable. A larger tree clear area is required at future tower sites to provide for construction of the new transmission line. Section 3.7 includes further comment on the requirement, to provide reasonable working space around towers.

To assist in the selection of appropriate tree/vegetation species, AusNet Transmission Group has an information booklet available on request.

3.6 Protection of Line Support Towers and Poles

- **Protective Barriers**

Constructions that include roads or involve the use of vehicles in the vicinity of high voltage power line towers or poles increase the risk of damage to the structures and hazards to AusNet Transmission Group employees. AusNet Transmission Group requires Constructors to address this risk by the provision of suitable barriers.

Installation of "New Jersey", "Armco" or an alternative design of barrier approved by AusNet Transmission Group as appropriate to the situation is required where a hazard may arise due to errant vehicles or loads. Particular hazards could result from road design factors, such as positioning the outside of a curve near a tower, or surface level differences that would not assist errant vehicles to return to the carriageway (for example, a roadway embankment higher than the natural surface level at the tower base).

The barrier must be located as close as practicable to the kerb, be designed to contain out-of-control vehicles and their loads within the carriageway and preferably not be within 15 metres of steelwork for 500/330 kV towers or 10 metres for 275/220/66 kV towers, to provide for normal line maintenance activities without the need for lane or road closure. The barrier design must also provide for site access by AusNet Transmission Group vehicles.

Metal and concrete barriers must also be at least 4 metres from the nearest tower leg steel/pole, to permit use of standard electrical safety procedures by AusNet Transmission Group maintenance personnel.

- **Structure Stability Requirements**

Construction works are not to affect the structural performance of AusNet Transmission Group assets. Where earthworks are proposed in the vicinity of poles or towers AusNet Transmission Group must be convinced that the performance of existing structure footings (particularly for uplift or overturning forces) is not compromised.

Also, the introduction of higher groundwater levels to footings not designed for the changed conditions would be unacceptable.

3.7 Access for Line Maintenance and Construction

Vehicle access by AusNet Transmission Group is required to existing and future tower and pole sites at all times for line patrol, maintenance and construction purposes. For many easements, gates 4.6 metres in width will be required in boundary fences to permit vehicle access along the easement. For property security purposes, provision is required for fitting of AusNet Transmission Group padlocks to gates.

In an emergency situation, work could be undertaken at night or day over extended periods and in extreme weather conditions.

Regular line patrol and maintenance activities can typically include monthly inspections using a 4.5 tonne vehicle, a 20 tonne bucket truck and support vehicle for insulator washing yearly and a 40 tonne crane once in ten years (heavy maintenance contingency).

- **Protection of AusNet Transmission Group Employees**

  Since AusNet Transmission Group employees work on the easement on a regular basis, AusNet Transmission Group has an obligation to provide a safe work place within the definition of the Occupational Health and Safety Authority regulations. AusNet Transmission Group requires provision of safe access and safe worksites.

  For constructions that include roads or involve the use of vehicles in the vicinity of high voltage power line towers or poles, approved barriers or other measures that satisfactorily reduce the risk of injury from errant vehicles or loads must be provided.

  AusNet Transmission Group requires to approve the measures adopted but looks to the Constructor to present appropriate solutions having regard to the factors involved, such as the vehicle speeds, proximity of the road, differences in surface levels and the location of road curves relative to towers and poles.

- **Standard of Access**

  The majority of high voltage power lines have been in use for many years. During this period, AusNet Transmission Group line patrol and maintenance personnel have established access tracks suitable for their purposes and an environment that is generally readily and inexpensively restored should surface or vegetation damage be unavoidable.

  Associated with any proposed development, AusNet Transmission Group seeks to ensure that freedom of access at all times and under all weather conditions is not restricted, that the potential for damage (and therefore restoration costs) due to AusNet Transmission Group activities are not increased and that the pattern of existing patrol activities is disrupted to the least extent practicable.

  Therefore, consideration needs to be given to the compatibility of proposed constructions (including multi-use pathways, tree planting, landscape mounding and fencing) with AusNet Transmission Group access requirements. For example, the provision of reinforced access through grassed areas and replacement access tracks having grades and turning radii suitable for movement of long chassis vehicles such as cranes and bucket trucks would be required for developments that significantly alter the access arrangements.

- **Access around Towers**

  Towers require a reasonably large working space because of their size and consequently the type of equipment required to be used. The preferred minimum size clear worksite would be a level, compacted area free of obstructions within 20 metre of the tower steel in all directions including a surfaced hard standing rectangular area extending 20 metres from each side of the tower underneath the conductors and 5 metres from each side of the tower beside the conductors. The surfaced hardstand area provides a site for operation of winches, cranes or "bucket trucks" and parking of passenger vehicles and patrol trucks.

  It is acknowledged that some towers may already have smaller available worksites than the preferred minimum size, due to existing landforms or obstructions and that the design of construction works may impose further restrictions. There is a requirement for discussion at the design development stage to ensure that the needs of both AusNet Transmission Group and the Constructor are accommodated.

4. APPROVAL OF CONSTRUCTION WORKS

4.1 Conditions on Design Approval

AusNet Transmission Group approval of Engineering design drawings for construction works affecting high voltage power line easements is normally subject to a number of conditions.

When no information is submitted by the Constructor concerning the equipment and construction methods proposed to be used, the following AusNet Transmission Group requirements are normally advised:

- A 3 metres maximum operating height limit for vehicles, machinery and other equipment used on the easement, with possible additional restrictions for items of plant equipped with an elevating component.

- The Constructor must contact AusNet Transmission Group at least five working days prior to any work commencing on the easement.

However, should a requirement be identified for use of vehicles, machinery and equipment that either exceed the 3 metres maximum height limit, or are defined as Cranes, the work commencement notice period is increased to at least ten working days to provide for detailed assessment of the safety clearances available to the high voltage conductors and the need for equipment operating limits and/or line outages. In practice, the longer the notice given by the Constructor, the less likelihood of delays to the site works.

Use of Cranes and vehicles, machinery and equipment higher than 3 metres may be acceptable at some work locations where greater than normal clearances to the line conductors are available. However, the required clearances must be determined by AusNet Transmission Group, since they are line voltage dependent and the line conductor positions can change significantly and without warning with variations in the electrical load, ambient temperature, wind strength and direction. It must also be appreciated that high voltage electricity can arc across distances of several metres, so that even a close approach can be dangerous.

4.2 Control of Construction Works

AusNet Transmission Group is required to check that the works are in accordance with the approved drawings, review the works procedures and construction equipment proposed to be used against the available clearances and required minimum safety clearances to the high voltage conductors and towers and arrange for any safety precautions deemed necessary to be taken.

An "Application for a Permit to Work Adjacent to AusNet Transmission Group's Exposed High/Low Voltage Electrical Apparatus" may be required to be signed by the Constructor prior to commencement of the work. AusNet Transmission Group’s local Lines Team Leader would then arrange for written authorisation entitled "Permit to Work Adjacent to AusNet Transmission Group's Exposed High/Low Voltage Electrical Apparatus" for the time to be nominated and no work would be permitted without this permit.

Line outages, where required, are subject to operational availability. AusNet Transmission Group does not accept liability for any delays or costs to the constructor for the safety precautions and line outages required.

Any construction works in the vicinity of AusNet Transmission Group transmission lines are required to comply with the following statutory regulations designed to protect people and property and prevent interference to AusNet Transmission Group lines and other assets:

- Electricity Safety (Network Assets) Regulations 1999.

- Occupational Health and Safety (Plant) Regulations.

The Victorian "Code of Practice for Plant No. 19, 1 July 1995" provides guidance to plant users on how to meet the requirements of the OH&S (Plant) Regulations, including identification and control of workplace hazards. For safe operation of Cranes, Australian Standard AS2550.1-1993 Cranes - Safe Use is specified as the appropriate technical standard to be followed.

4.3 Construction Equipment Authorisation

No work is permitted on the easement involving any change in surface levels, use of any vehicle, machinery or equipment exceeding 3 metres in maximum operating height, or defined as a Crane by the OH&S (Plant) Regulations 1995, regardless of the operating height, without the prior approval of AusNet Transmission Group.

Proposals submitted for construction approval should include reference to the design approval by AusNet Transmission Group, and a description of the task including the maximum equipment and load reach in both the vertical and horizontal planes, the operating location with respect to the lines and proposed controls on the operation of each item of equipment to maintain statutory clearances.

Full and detailed proposals should be submitted at least ten working days prior to the programmed commencement date. The proposed date and time should be confirmed five working days prior to commencement. A charge may be made for evaluation of proposals.

Australian Standard AS2550.1-1993 Cranes - Safe Use, Clause 7.17, specifies the precautions required to be observed when operating a crane in close proximity to overhead power lines. For transmission lines on towers, a minimum safety clearance of 6 metres is required to be maintained, unless designated otherwise by AusNet Transmission Group, based on the line voltage. An additional distance must generally be added to allow for possible line conductor movements resulting from changes in the electrical current flow and the weather conditions (ambient temperature, wind strength and direction).

AusNet Transmission Group will assess submitted equipment operation proposals with consideration to the clearances available and contingent controls and precautions that may be required. Line outages, where required, will be subject to operational availability. Costs for outages will be advised at this time.

Since transmission system security requirements, in conjunction with programmed maintenance works, frequently result in restrictions on the availability and duration of high voltage line outages, any significant cost implications for construction works on easements should be carefully assessed by the Constructor.

Commencement of design approved works that can be achieved within the 3 metres maximum operating height limit must be advised to AusNet Transmission Group with at least five working days notice.

4.4 Use of Explosives

- **No electrical detonation**

  Electrical detonation of explosives must not be used on the easement as there is a danger that pre-detonation could occur due to the operation of adjacent overhead or underground lines. There is also the added danger that detonation wire may fly and contact overhead conductors.

Electrical detonation of explosives away from the easement may also be affected by power line fields and accordingly the advice of suppliers of explosives must be sought and acted on before electrical detonation is used in the vicinity of high voltage power lines.

- **Proximity limits**

Explosives could affect AusNet Transmission Group assets in either of three ways:

- Structural damage due to ground movement;

- Damage due to fly rock; or

- Maloperation of sensitive equipment due to ground acceleration.

Because of the range of circumstances in which explosives could be used, AusNet Transmission Group does not set specific guidelines except that no explosive shall be used within 10 metres of a tower, pole or underground cable without specific AusNet Transmission Group approval.

The charge size, placement and detonation rates must be determined with regard to the proximity of AusNet Transmission Group assets. When given sufficient notice, AusNet Transmission Group will provide advice on the age and likely condition of assets, so that the Constructor can ensure that proposed blasting is carried out without risk of damage.

However, where damage occurs to AusNet Transmission Group assets, the Constructor responsible for the blasting will be held liable for the cost of restoration.

Where large scale use of explosives is planned, AusNet Transmission Group requires to be given 6 weeks notice to assess the likelihood of any effect on any sensitive equipment at terminal or substations in the vicinity.

If explosives are used, movement of blast mats must be controlled and care must be taken to prevent damage to AusNet Transmission Group assets caused by fly rock.

4.5 Protection of Underground Cables

- **Identification of Cable Locations**

In locations where AusNet Transmission Group may have underground cables in the vicinity of proposed works, attention is drawn to the following:

- Location information for AusNet Transmission Group cables can be obtained by contacting **Dial Before You Dig**, telephone 1100 (24 hours). At least 48 hours notice prior to commencement of site works is required to provide for identification and on-site marking of affected cable locations;

- Cables are buried at depth to provide protection and safety. No change in depth of cover is permitted without AusNet Transmission Group approval. An increase in the depth of cover may adversely affect the performance of the cable and also the ability of AusNet Transmission Group to access and repair it.

The location of any AusNet Transmission Group underground cables must be determined before proceeding with excavation works, boring or driving of stakes, piles or the like.

- **Work Requirements Near Cables**

  Mechanical excavation, boring or pile driving is not permitted within 1.5 metres of the indicated position of cables.

  Where excavations are required closer than 1.5 metres to a cable, to a greater depth than the cable (such that support of the cable may be compromised) or where the location of the cable may be in doubt, subject to implementation of any special precautions deemed necessary by AusNet Transmission Group, the location of the cable may be proven using hand tools only.

  With the cable alignment thus proven, mechanical plant may be used within 0.5 metres.

  For the purposes of pavement construction over cables, with prior AusNet Transmission Group approval, tracked heavy crawler type equipment may be used with 450 mm of cover over cables.

- **Working Space Required for Cables**

  An accessible area of at least 1.5 metres width either side of the cable is required to enable it to be repaired as necessary. In cases where cables are installed through ducts under road surfaces a spare duct should be provided. The spare duct covers the situation where the cable fails within the first duct and the duct is damaged beyond reuse.

APPENDIX A - Permitted and Prohibited Uses of Power Line Easements

The following restrictions and conditions concerning activities in the vicinity of high voltage power lines are required to ensure that public safety is not compromised by incursions within AusNet Transmission Group's easements and that the reliability of the lines is maintained. Prior approval is also required for any proposed alterations to approved developments on the easement to ensure that the initial high safety standards are maintained.

AusNet Transmission Group does not accept liability for any damage to the development caused by the operation and maintenance of the line.

Permitted Uses of Power Line Easements Include:

- Grazing and agriculture.
- Market gardens, orchards and horticultural nurseries, excluding buildings.
- Water storage dams, subject to sufficient clearances from the conductors and towers, including effects on water tables at tower sites.
- Trees and shrubs with a mature growth height not exceeding 3 metres. Taller species (generally limited to 6 metres maximum mature height) may be acceptable, subject to AusNet Transmission Group approval of the planting layout to verify that sufficient clearances to the conductors will be provided. Vegetation density restrictions and tree clear area requirements near towers to permit line maintenance works also apply.
- Landscaping and paving, subject to sufficient clearances to the conductors and towers if alterations to the natural surface levels are proposed.
- Fences up to 3 metres in height, suitably earthed and sectionalised if metallic/incorporating metallic materials.
- Sewerage, drainage and water pipes constructed of earthenware or plastic materials.
- Parking of sedan and utility types of vehicles. Barriers of an approved design may be required to protect towers from damage by vehicles.
- Tennis courts on 500 kV and 330 kV easements, provided that the net and umpire's chair are off the easement and the surrounding fence is a minimum of 30 metres from any tower steelwork.
- Tennis courts on 220 kV line easements, provided that metal net posts are used. An umpire's chair is also permitted, provided that it is of all metal construction, with a metal screen above the seating position. The minimum distance from the surrounding fence to the nearest tower steelwork reduces to 20 metres for 220 kV line easements.
- Ground level sporting activities, such as football, cricket, golf, basketball and netball, subject to special requirements regarding the design of metallic fences, goals and lighting.
- Lighting poles, subject to sufficient clearance from the conductors and towers. The power supply must be underground and the lighting poles must lower to the ground for servicing, including lamp replacement.
- Walking and bicycle paths, subject to suitable provision for access by AusNet Transmission Group vehicles.

- Playground equipment, subject to a 1 metre maximum height limit.

- For 220kV line easements only - car, boat and small trailer sales yards, excluding buildings.

- For 220kV line easements only, domestic garages, carports and garden sheds may be permitted a limited distance onto the easement, subject to a number of requirements including sufficient safety clearance to towers and overhead conductors, 3 metres maximum height, constructed largely of non-flammable materials and not attached to a dwelling.

Prohibited Uses of Power Line Easements Include:

- Houses, other buildings and structures, including eaves, awnings, canopies, shelters, water tanks, boreholes and windmills.

- Scaffolding.

- Swimming pools, both above ground and below ground types, including filtration equipment.

- Storage of flammable fuels.

- Storage of materials, including waste bins and stockpiling of excavated materials.

- Fueling of and repairs to vehicles.

- Use of vehicles and equipment exceeding 3 metres in operating height. A higher operating height limit is subject to sufficient clearances to the conductors. Possible additional restrictions apply to items of plant defined as a Crane by the Occupational Health and Safety (Plant) Regulations 1995.

- Parking of caravans and trucks.

- Loading, unloading and load adjustment of large trucks.

- Operation of large water spray irrigators of the gun type.

- Metal pipes (including reinforced concrete), electric power cables and other electrically conductive services within 30 metres of any tower steelwork, or exceeding 100 metres in length on the easement or 250 metres in length on and within 20 metres of the easement. For 220 kV easements, this minimum distance from towers reduces to 20 metres.

- Electrical detonation of explosives.

- Excavations to a depth exceeding 0.9 metres within 15 metres of any tower or 0.3 metres within 1.5 metres, without prior written approval.

- Flying of kites and model aircraft controlled by wires within 45 metres of any line.

APPENDIX B - Layout of Subdivisions to Avoid Electric Hazards

Metal objects located close to high voltage power lines are subject to induced voltages caused by electrostatic, electromagnetic and conductive couplings. If required, AusNet Transmission Group can provide further information concerning the fundamental mechanisms of electric induction.

Subdivision developments typically include installation of the following types of metal objects and allotment services, for which special design measures could be required (depending on their size/length and proximity to the power lines) to limit the induced voltages and any resulting electrical currents to safe values:

- chainwire mesh, or post and wire fences;
- low voltage power cables, including street lighting;
- telephone cables; and
- high pressure gas and water pipelines;

Generally, the best and least cost method of avoiding possible hazards caused by proximity to high voltage power lines is to stay far enough away, so that there is no significant interaction between the metal objects and the power line.

Therefore, the following tables provide guidance concerning the maximum lengths of metal fences and services and the minimum separation distances from towers to avoid any requirement for special design measures:

Table 1 - Maximum Parallel Lengths of Metal Fences and Services (Applicable to 66 kV - 500 kV Power Lines)

Location of Metal Object	Maximum Length (metres)
On the easement	100
Within 20 metres of the easement	250

Table 2 - Minimum Separation Distance (Measured to the Tower or Pole Centre)

Line Voltage (kV)		Minimum distance (metres)
500, 330	tower	30
275	tower	25
220	tower	20
66	tower	16
66	pole	3

A guide to living with transmission line easements

AusNet services

Introducing AusNet Services

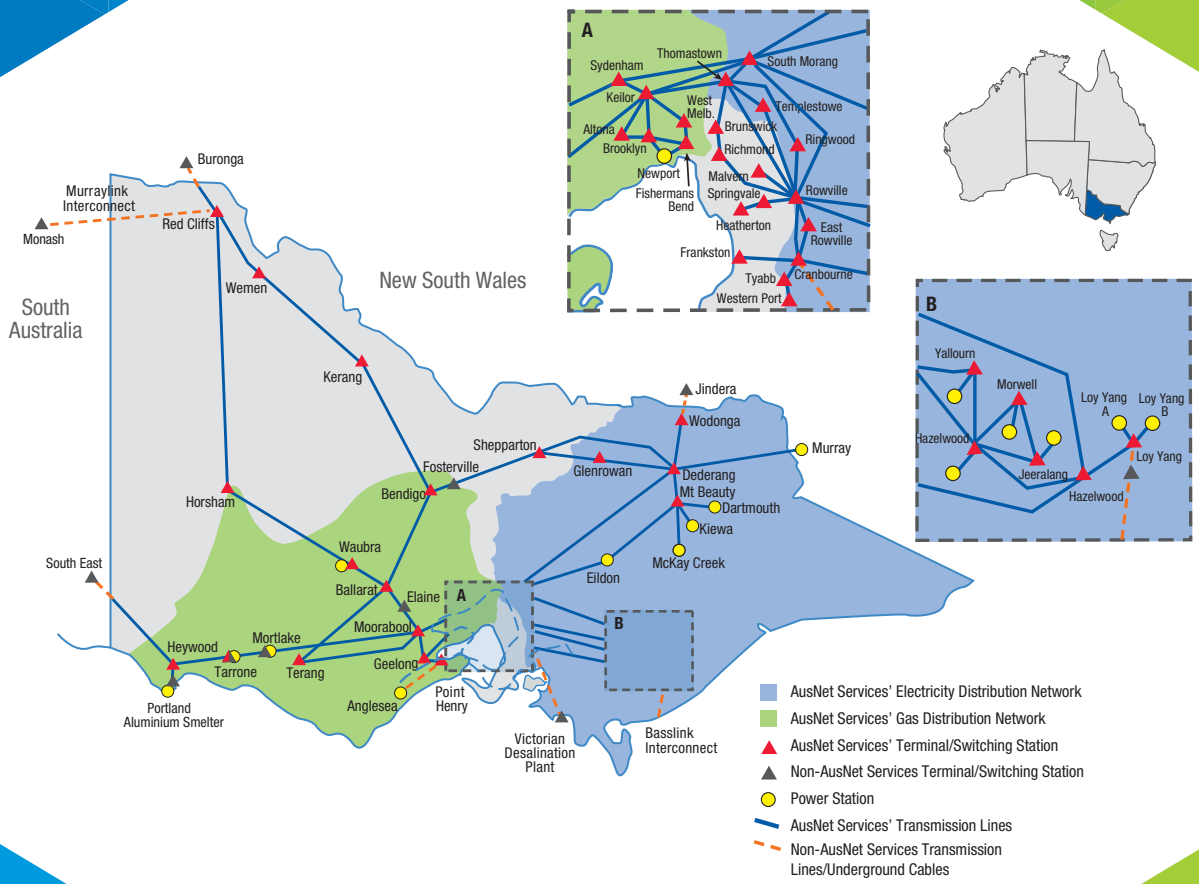
AusNet Services owns and operates the electricity transmission system in Victoria.

Our network of transmission towers and terminal stations support some 6,500 kilometres of conductors (the wires) and it links with neighbouring states, including Tasmania, as part of the national electricity grid. The corridors of land on which this network is built are referred to as transmission line easements.

AusNet Services is committed to working with Victorian landowners to ensure that our easements are maintained and used in a manner that will provide for the safe and reliable flow of electricity through the network. We have written this booklet to provide landowners and managers with helpful information about your rights and responsibilities in relation to the use of these easements.

We appreciate you taking the time to read through this material, and are more than happy to provide you with any additional information you require or to assist with your planning. Another booklet in this series, *Your Guide to Planting Near Electricity Lines*, may also be a helpful source of information.

AusNet Services' electricity and gas regions



Easements within the transmission network

Most of us take our electricity for granted. Every time we switch on a light, iron a shirt or watch TV, we just expect the power to be there so our appliances will work. We don't even think about where the electricity comes from or how it gets to us.

A vast network of transmission lines has been built to ensure electricity reaches you, your neighbours, and millions of Victorian homes and businesses. These lines – owned by AusNet Services – carry electricity through their conductors (the wires) at extra high voltages of 220,000 volts (220 kV) to 500,000 volts (500 kV) from the power stations to the major load centres where the voltage is stepped-down (transformed) and the local distribution companies supply it to homes and businesses.

The vast majority of AusNet Services' conductors are supported on steel towers. The grounds on which the towers stand and conductors cross are known as transmission line easements. There are 6,500 kilometres of transmission lines crossing a total area of some 17,500 hectares of easements across Victoria.

For the purposes of this document, 'easement' refers to the land surrounding transmission lines, including government and privately-owned land.

It is AusNet Services' job to maintain the transmission system, and the easements provide ready access to the lines for maintenance, repairs and construction work to be carried out safely, 24 hours a day. The easements are also important for community safety.

We communicate with bodies such as Energy Safe Victoria to reasonably limit the activities, vegetation and buildings permitted on easements. Our priority is to eliminate potential electrical or fire hazards – both for the safety of the public and landowners, and the electricity system in general. Another major priority is to protect and nurture native ecosystems, flora and fauna that also inhabit the easements.

This guide provides you with some important information about the electricity transmission system and the easements on which it is situated. It also contains some vital information about what activities you can and can't carry out on easements.

Underground transmission cables

While the majority of AusNet Services' transmission lines are constructed on steel towers, there are also a significant number of 220kV transmission cables installed underground that are managed by AusNet Services.

In this regard, prior to commencement of any works involving digging, excavation, change of ground surface cover or driving of stakes or posts into the ground, a Dial Before You Dig enquiry must be made.

DIAL BEFORE YOU DIG®
www.1100.com.au

Making an enquiry about an easement

If you wish to enquire about a transmission easement on your property, or on a property you may be considering buying, complete the application form at the rear of this publication and forward it to:

AusNet Services
Asset Management
Survey and Easements
Locked Bag 14051
Melbourne City Mail Centre VIC 8001

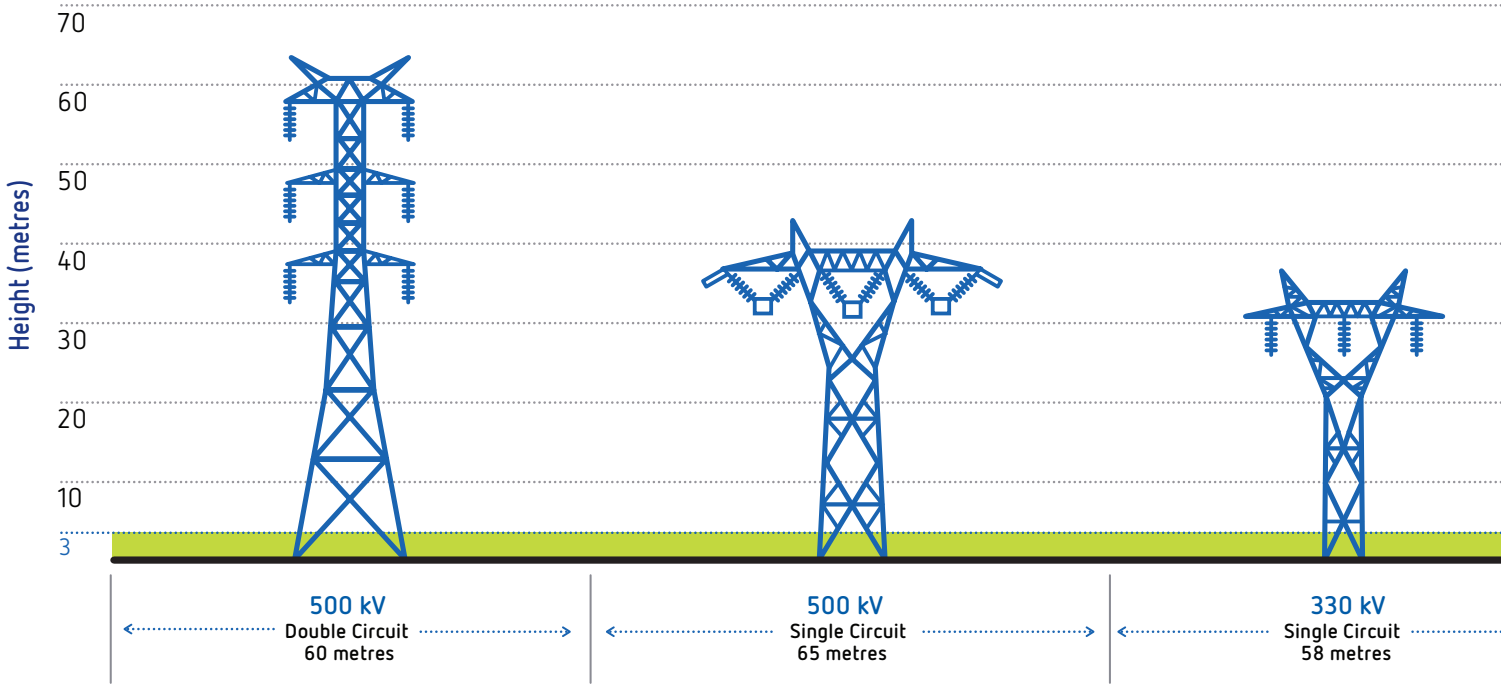
The application form is also available on AusNet Services' website (**www.ausnetservices.com.au**) and can be lodged electronically **lmg@ausnetservices.com.au**

Easement policy

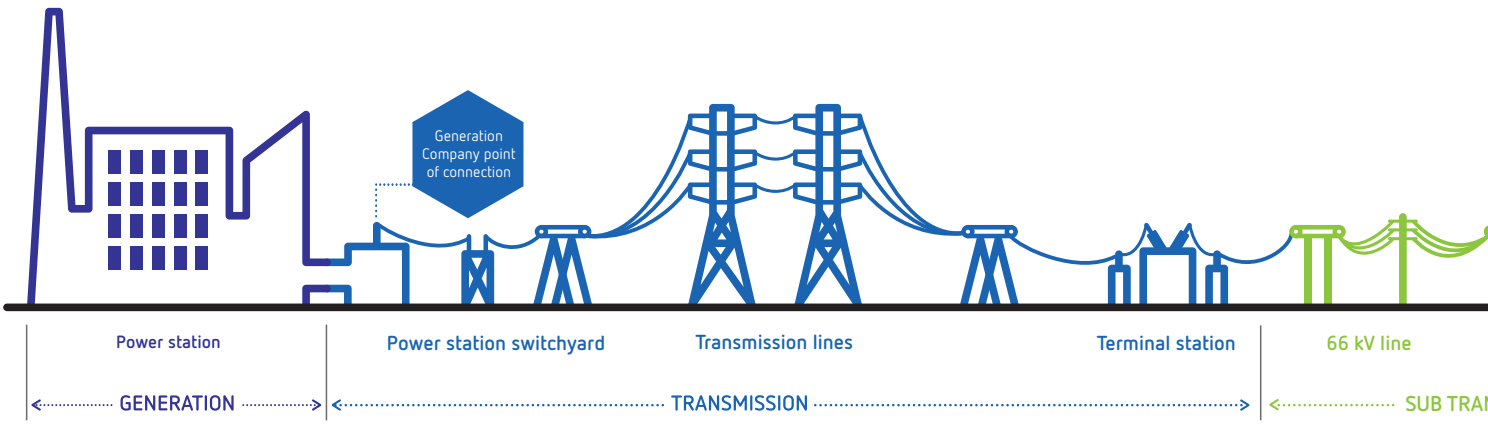
In fulfilling our role, AusNet Services takes into account our legislative responsibilities and the interests of the community through:

- creating awareness of the AusNet Services Easement Policy through promotion to landowners, land managers and the community in general;
- recognising and observing planning and environmental constraints;
- consulting with local authorities and interest groups, such as Landcare Australia, the Department of Environment, Land, Water and Planning and local Councils and groups with regard to AusNet Services' vegetation management activities and methods;
- providing advance notice of our activities wherever practical and consulting with land users, local authorities and others having an interest in AusNet Services' activity;
- fostering long-term compatibility of the immediate environment with transmission lines to minimise fire, safety and security risks and to minimise disturbance to landowners and occupiers by limiting the frequency of visits required to sites;
- retaining the services of an arborist to provide expert advice where specific vegetation issues such as tree habit and regrowth rates arise;
- encouraging property owners, land managers and community groups to plant compatible local native species in the vicinity of powerlines;
- replacing incompatible tall-growth species of vegetation with lower-growing local native varieties;
- removing tall trees adjacent to the easement that have the potential to cause line damage or fire risk; and
- taking action against infringements to line clearance and inappropriate developments on easements to restore safe and compatible conditions.

Easement widths



Main system components



What are electricity transmission line easements?

AusNet Services' easements secure a corridor of land or 'right of way' for existing or future lines, and allow us access for maintenance and repair purposes as well as for safety control measures.

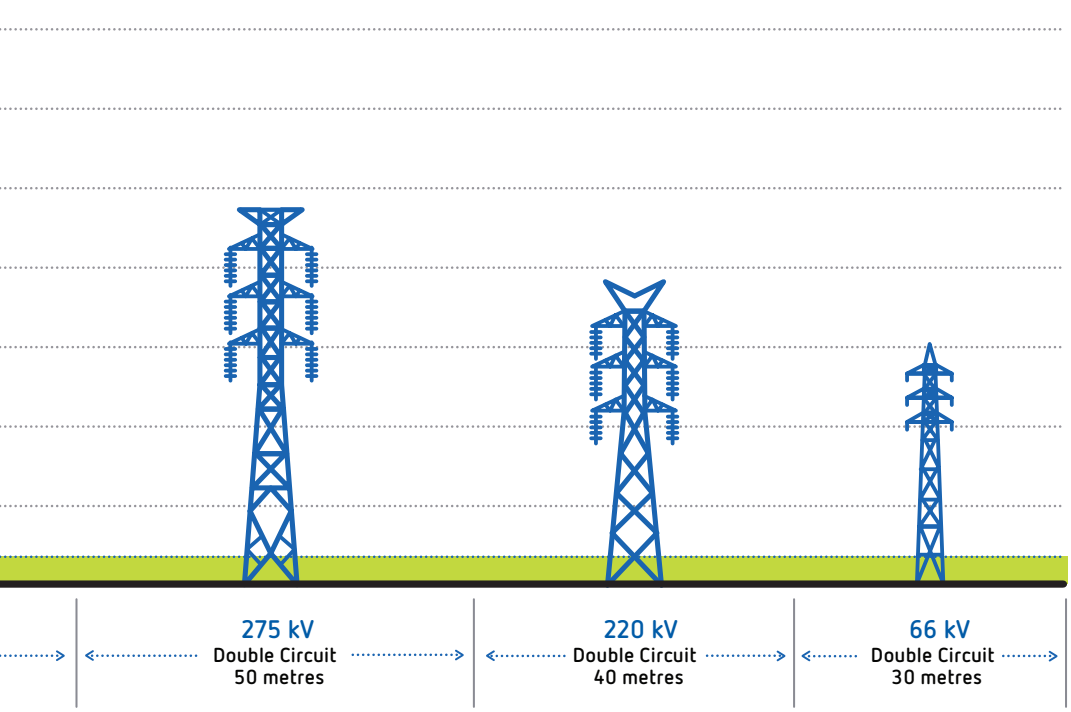
Other authorities have easements as well. They include drainage and sewerage easements, pipeline easements, and easements for overhead and underground powerlines for your local electricity distributor.

Transmission line 'conductors' are the actual wires that are suspended from the towers along which electricity travels.

These conductors may move many metres both horizontally and vertically under the effects of wind, temperature and electrical load. This movement is the basis on which easement widths and use conditions are determined.

Who owns the land the easement is on?

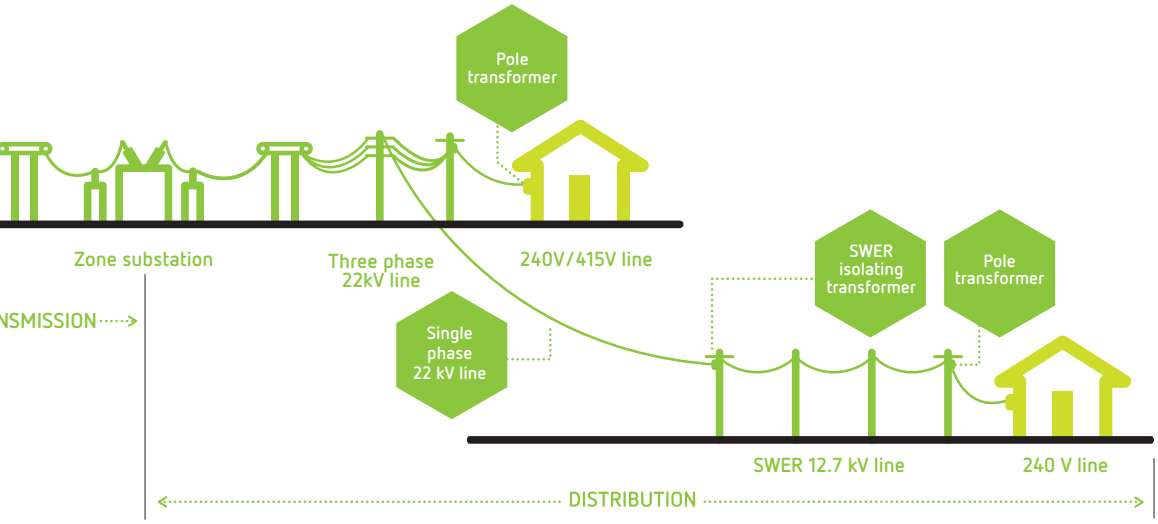
Usually AusNet Services does not own the land contained within the easement, but has acquired rights for its use by agreement with, and compensation of, the original landowner. Ownership of that land remains with the landowner, who has restricted use of the easement; however, to ensure the safety of landowners and the community, AusNet Services has statutory authority to restrict the activities that can be carried out on easements.



Note that the actual easement details may vary from typical widths, but are recorded on the Certificate of Title, which should be your first point of reference.

3m is the maximum mature height of vegetation on easements

kV = kilovolts or thousand volts



Who is responsible for the easement?

In general, maintenance of the area covered by the easement is the responsibility of the landowner or tenant (depending on terms of use). Easements must be maintained subject to the safety restrictions mentioned in this booklet.

AusNet Services reserves the right to carry out additional land management functions within the easement where unsuitable vegetation, ground surface level conditions, or other activities compromise the safe and reliable operation of the transmission lines.

On some properties, access roads and tracks were constructed specifically to build and maintain the transmission lines. AusNet Services retains the right to use these tracks for building and maintenance. We therefore maintain the tracks to four-wheel-drive standard in order to preserve vital access to the transmission lines.

If, for your own purposes, you require the tracks to be maintained to a higher standard, these costs are your responsibility.

How do you know if there are easements on your property?

Please check your Certificate of Title. If you want to obtain a copy, contact the Land Registry Office at:

Land Victoria
Land Registry
570 Bourke Street
Melbourne VIC 3000

Telephone (03) 8636 2010

A Title search can also be conducted via the Land Victoria website: **www.land.vic.gov.au**

For prospective property buyers, please check the Vendor's Statement attached to the Contract of Sale to see if there are easements on the title.

Restrictions on easement use

AusNet Services' primary concern is for everyone's safety, and you can help; all it really takes is common sense. If you want to carry out any development, whether or not it requires council approval, please check with AusNet Services to see if the easement will be a constraint. You will need written approval from AusNet Services before commencing work on an easement, as a local council building permit is not sufficient authority. Failure to obtain AusNet Services approval may result in having to remove or modify the new work at your expense. So please check with us first, and avoid disappointment and needless expense.

In general, restrictions limit the use of easements to mainly ground level activities. Our concern for your safety is paramount. Together we must work to prevent hazards from powerlines that may result from reduced clearances, fire, impact or an explosion from any activity on the easement.

Always check with us first

Just to be on the safe side, you must always submit your plans for proposed development on an easement to AusNet Services before you start work on the site. This includes plans for installation of additional lighting, underground services, and to operate construction equipment, or to detonate explosives in the vicinity of an easement (contact details are on page 3).

Help us help you

To help us respond to your questions or proposals, the following details must be supplied:

- the completed application form included as an appendix to this publication;
- clearly dimensioned plans, preferably to scale, showing your proposal in relation to the property boundaries and, if possible, to the AusNet Services easement boundary. The plans should clearly indicate the dimensions (length, width and height) of any proposed structures;
- location plans of the property, showing main roads and the position of any towers on the property; and
- a copy of the Certificate of Title.

AusNet Services receives many applications for proposed works on easements, so the processing of your application may take some time. Generally we are able to respond to your application within 30 days. Please ensure that you send your request well in advance of the start of your planned works (the address is on the back of this booklet).

What if you have already built something on the easement without AusNet Services' authorisation?

If you have built something on an easement and you are not sure if it conforms to our guidelines, please give us a call and we would be happy to look into your enquiry.

What other kinds of activities can be carried out on easements?

AusNet Services requires the following restrictions and conditions be adhered to, thereby ensuring that public safety is not compromised by inappropriate activities within easements and to ensure that the reliability of the line is maintained. Prior AusNet Services approval is also required for any proposed alterations to approved developments on the easement to maintain the initial high safety standards.

Please take some time to read over the following guidelines carefully.

Permitted uses of transmission line easements

- Grazing and agriculture.
- Market gardens, orchards and horticultural nurseries, excluding buildings.
- Water storage dams, subject to sufficient clearances from conductors and towers. Please consider the effects on water tables.
- Trees and shrubs with a mature growth height not exceeding three metres.
- Vegetation density is generally restricted to scattered trees or limited area clumps and shelter belts to control the total quantity of burnable materials on the easement.
- A tree clear area of 20 metres radius is generally required at tower sites for line maintenance purposes. Closer trees may be permitted in some locations where the interference caused to access and essential line maintenance is acceptable. However, a greater clearance area is required at future tower sites to provide for construction of new transmission lines.
- Landscaping and paving, subject to sufficient clearances to the conductors and towers if changes to the natural surface levels are proposed.
- Non-metallic fences up to three metres in height. Metallic fences, or fences incorporating metallic materials, must be suitably earthed and sectionalised and are subject to AusNet Services' approval.
- Sewerage, drainage and water pipes constructed of earthenware or plastic materials, but no closer than 20 metres to towers.
- Parking of sedan and utility types of vehicles. Barriers of an approved design may be required to protect towers from damage by vehicles.
- Tennis courts on 500 kV and 330 kV easements subject to certain specific requirements. Please contact AusNet Services for fencing requirements and further information.
- Tennis courts on 220 kV line easements, provided that earthed metal net posts are used. An elevated earthed umpire's chair is also permitted, provided that it is earthed, of all-metal construction, with a metal screen above the seating position. Perimeter fences should also be earthed. Please contact AusNet Services for earthing requirements and further information.
- Ground level sporting activities, such as football, cricket, golf, basketball and netball, subject to special requirements regarding the design of fences, goals and lights.
- Lighting poles, subject to sufficient clearance to the conductors and towers. The power supply must be underground and the lighting poles must lower to the ground for servicing.
- Playground equipment, subject to a 1 metre maximum height limit.
- For 220 kV line easements only – car, boat and trailer sales yards, excluding buildings.

Prohibited uses of transmission line easements

- Houses, other buildings and structures, including eaves, awnings, canopies, shelters and the like. For 220 kV line easements only, domestic garages (non-habitable), carports and garden sheds **MAY** be permitted a limited distance onto the easement subject to a number of requirements being met. These include sufficient safety clearance to towers and overhead conductors; three metre maximum height; construction made largely of non-flammable materials and not attached to a dwelling.
- Erection of scaffolding.
- Swimming pools, both above and below the ground, including filtration equipment.
- Storage of materials in industrial type waste bins and skips.
- Stockpiling of excavated materials.
- Storage or handling of flammable liquids or gases. For 500 kV easements only, the storage or handling of such liquids or gases from bulk delivery vehicles is not permitted within 60 metres of the centreline of the transmission line.
- Fuelling of and repairs to vehicles, plant and equipment.
- Use of vehicles and equipment such as cranes, excavators, elevated working platforms and the like exceeding three metres in operating height. A higher operating height limit is subject to sufficient clearances to the conductors and requires the issue of a 'Permit to Work Adjacent to Exposed High Voltage Electrical Apparatus'. To arrange a Permit contact AusNet Services by email on **lmg@ausnetservices.com.au**.
- Parking of large trucks and caravans (traversing or crossing easements is permitted).
- Loading, unloading and load adjustment of large trucks.
- Operation of large water spray irrigators of the gun type.
- Metal pipes (including reinforced concrete), power cables and other electrically conductive materials within 30 metres of any tower steelwork.
- For 220 kV easements only, this minimum distance reduces to 20 metres.
- Electrical detonation or storage of explosives including fireworks.

Application for approval

of (or general enquiry regarding) structures, buildings, or other use or activity on an electricity transmission easement

Property details

Street No. ..... Street .....

Suburb / Locality .....

Applicant details

Name .....

Address (if different to above)

Street No. ..... Street .....

Suburb / Locality .....

Telephone .....

Email .....

What do you want to do on the easement?

(Provide a detailed description of the building, use or activity that you wish to carry out on or near the easement).

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IMPORTANT: A plan (or plans) MUST be submitted with this application detailing the location on site of the proposed use or activity. The plan(s) must include distance from the property boundaries to the proposed use, and if possible should indicate the easement boundary. The dimensions of the proposed use, including length, width and height of any structures must also be shown. Provision of a copy of your title plan will assist us to process your application promptly.

Send completed application and plan(s) to:
AusNet Services
Asset Management
Survey and Easements
Locked Bag 14051
Melbourne City Mail Centre VIC 8001

Or email to **lmg@ausnetservices.com.au**

AusNet services

Other important considerations

Explosives

You must not use explosives on AusNet Services' easements. If you need to detonate explosives in the vicinity of the easement you must exercise care and not use an electrical detonation device. Please inform AusNet Services before you carry out any explosions in the vicinity of an easement.

Damage

AusNet Services shall not be responsible for any damage to any development you are carrying out on the easement caused by the operation and maintenance of the lines.

Electric and Magnetic Fields (EMF)

These fields are present whenever electricity is transmitted, distributed and used, and are therefore found in most places in modern society. Their effects can sometimes become evident through interference to electrical appliances or metallic objects. The health effects of EMF have also been the subject of public debate.

Health authorities appropriately determine the assessment of possible health effects and the Victorian Human Services Department and the National Health and Medical Research Council guide AusNet Services in these matters. Assessment of research results by the health authorities establishes interim guidelines on limits of public and occupational exposure to EMF and AusNet Services presently operates the transmission network within these guidelines.

Discharges, micro-shocks or a tingling sensation under or near transmission lines

Sometimes an electric field can be present under a high voltage transmission line. When you touch nearby metal objects such as long wire fences or metallic roofing or work with large metal objects, you may feel an acute shock or the hairs on your skin vibrate. Proper earthing methods or working procedures will eliminate these discharges.

Please contact AusNet Services for further information on discharges from wire fences, clotheslines or large metallic objects. EMF may cause some interference to electrical equipment and appliances in your home or workplace.

The type of interference you might experience includes television and radio interference and computer monitor or video display unit (VDU) interference.

Television and radio interference

Clear television and radio reception depends on many factors, including the receiving equipment, antenna, broadcast signal quality and atmospheric conditions.

Therefore, for good television and radio reception, you should install the receiver and antenna properly in an area with an adequate broadcasting signal.

However, the reception quality may also depend on whether there are interfering signals from other local sources such as electrical appliances, communication equipment or nearby faulty powerline hardware. You can report the interference to, and receive help from:

The Australian Communications and Media Authority (ACMA)
PO Box 13112
Law Courts Melbourne VIC 8010

Telephone: (03) 9963 6800 or 1300 850 115

Facsimile: (03) 9963 6899

Computer monitor or VDU interference

The screen display on common computer monitors or VDUs is driven by the unit's internal magnetic circuitry. Under certain conditions, external magnetic fields from a nearby source may interfere with the monitor and affect the quality of the display with a jitter or a slight screen distortion. Magnetic field sources in commercial and industrial buildings (and occasionally homes) often come from equipment such as internal substations, main electrical switchboards, heavy-current cables, and external power distribution and transmission lines. If this happens, check that the computer equipment and local magnetic field sources are properly installed. If you think that the magnetic field sources come from outside electrical installations, you can obtain further assistance from your local electricity distribution company. Refer to your electricity account for contact details. Please contact AusNet Services if you suspect the interference relates to high voltage transmission lines.

Vehicle access

AusNet Services and our contractors need vehicle access to existing and future tower sites at all times for line maintenance and construction purposes. In many cases, gates 4.6 metres in width are required in boundary fences to permit access along the easement. AusNet Services personnel and contractors entering properties will leave gates in the same open or closed position that they were found in.

Contact us

Customer enquiries
1300 360 795 8am – 5pm Monday to Friday

Electricity transmission towers faults and emergencies
1800 111 164 24 hours a day, 7 days a week

Email: **csc@ausnetservices.com.au**

www.ausnetservices.com.au

Connect with us

@AusNetServices

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Interpreter **13 14 50**

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