ENGINEERING SERVICES REPORT

62-84 & 86-108 TALINGA DRIVE, PARK RIDGE

RESIDENTIAL SUBDIVISION

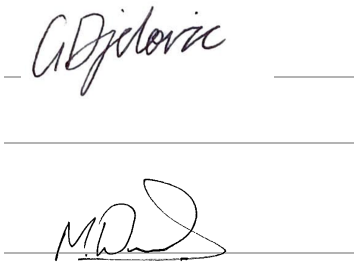
Quantum Investment Pty Ltd

62-84 & 86-108 TALINGA DRIVE, PARK RIDGE

RESIDENTIAL SUBDIVISION

ENGINEERING SERVICES REPORT

Author	Gabby Djelovic
Checker	Ashley Shepherd
Approver	Michael Wenzel RPEQ16855



Report No	GA0001-30156352-AAR
Date	16/08/2023
Revision Text	02

Revision	Date	Description	Prepared by	Approved by
01	2/08/2023	Draft Issue	GD	MW
02	16/08/2023	Issue for Approval	GD	MW

CONTENTS

APPENDICES

1 EXECUTIVE SUMMARY

Quantum Investment Pty Ltd has commissioned Arcadis to prepare an Engineering Services Report (ESR) for a development application for the site located over the following allotments:

- Lot 3 on RP131003 (62-84 Talinga Drive, Park Ridge, 4125).
- Lot 4 on RP131003 (86-108 Talinga Drive, Park Ridge, 4125).

The proposed development intended for the site involves a reconfiguration of 2 lots into 89 residential allotments, new internal roads, stormwater management areas and balance environmental areas.

This report addresses the municipal engineering services components of the development and the engineering planning issues associated with the development application. This report demonstrates that the proposed development has opportunity to connect to the local stormwater, potable water and sewerage reticulation systems as well as transport infrastructure.

Stormwater will be discharged to the existing lawful point of discharge being the existing waterway running from south to north through Lot 4 on RP131003 after receiving the appropriate stormwater treatment.

Potable water connection for the proposed development to Logan Water's (LW) supply network, will be via the DN100 water main within the southern verge of Talinga Drive. An internal water reticulation network along the urban access roads will supply potable and firefighting water to the development allotments.

Connection for the development to the LW's wastewater supply network is proposed to be an extension of Council's Bayliss Road Trunk gravity network from a Manhole in Lot 1 on SP210423. The extension will extend along the western boundary of Lot 1 on SP210423 to the development site.

Calculations based on Equivalent Persons (EP's) illustrate that there is a decrease in loading from the Council planned demand for potable water and wastewater services for the site.

The existing Vehicular Cross Overs (VXO) will be decommissioned, and a new road connection will be made to provide access to the internal roads of the development from Talinga Drive. A road resumption has been provided along the full length of the Talinga Drive Road frontage to allow for the future upgrade of the road to an Urban Collector Road. Allowance has been made in the development site for a land dedication to facilitate the future Urban Collector Road of Compal Road that bisects the site from north to south.

2 SITE CHARACTERISTICS

2.1 Location Details

The subject site is located within Park Ridge, South-East Queensland, Australia over the following allotments:

- Lot 3 on RP131003 (62-84 Talinga Drive, Park Ridge, 4125).
- Lot 4 on RP131003 (86-108 Talinga Drive, Park Ridge, 4125).

The site is bordered by Talinga Drive to the south, rural residential properties to the east and west and open space to the north.

The total area of the site is approximately 81,750m².

Logan City Council is the local government authority.

2.2 Land Usage

In its current state, the project site consists of rural residential land, featuring dwellings, driveways and other miscellaneous uses. Figure 2-1 below provides a current locality plan of the site.

Figure 2-1 Site Locality Plan (Aerial Imagery Courtesy of Nearmap)

2.3 Topography and Features

In terms of topography, the site mainly falls towards the east corner into the drainage corridor traversing Lot 4 on RP131003 with slopes ranging from 1% to 7%. A portion of the site also drains to the north-west corner of the site with slopes of approximately 3%.

3 PROPOSED DEVELOPMENT

The proposed development involves the construction of residential dwellings, including:

- 89 residential allotments;
- Residential road network;
- Stormwater management areas; and
- Environmental Offset Area.

A plan extract of the proposed development has been provided in Figure 3-1.

A full set of development layout plans are provided within the development application package and should be referred to for further information.

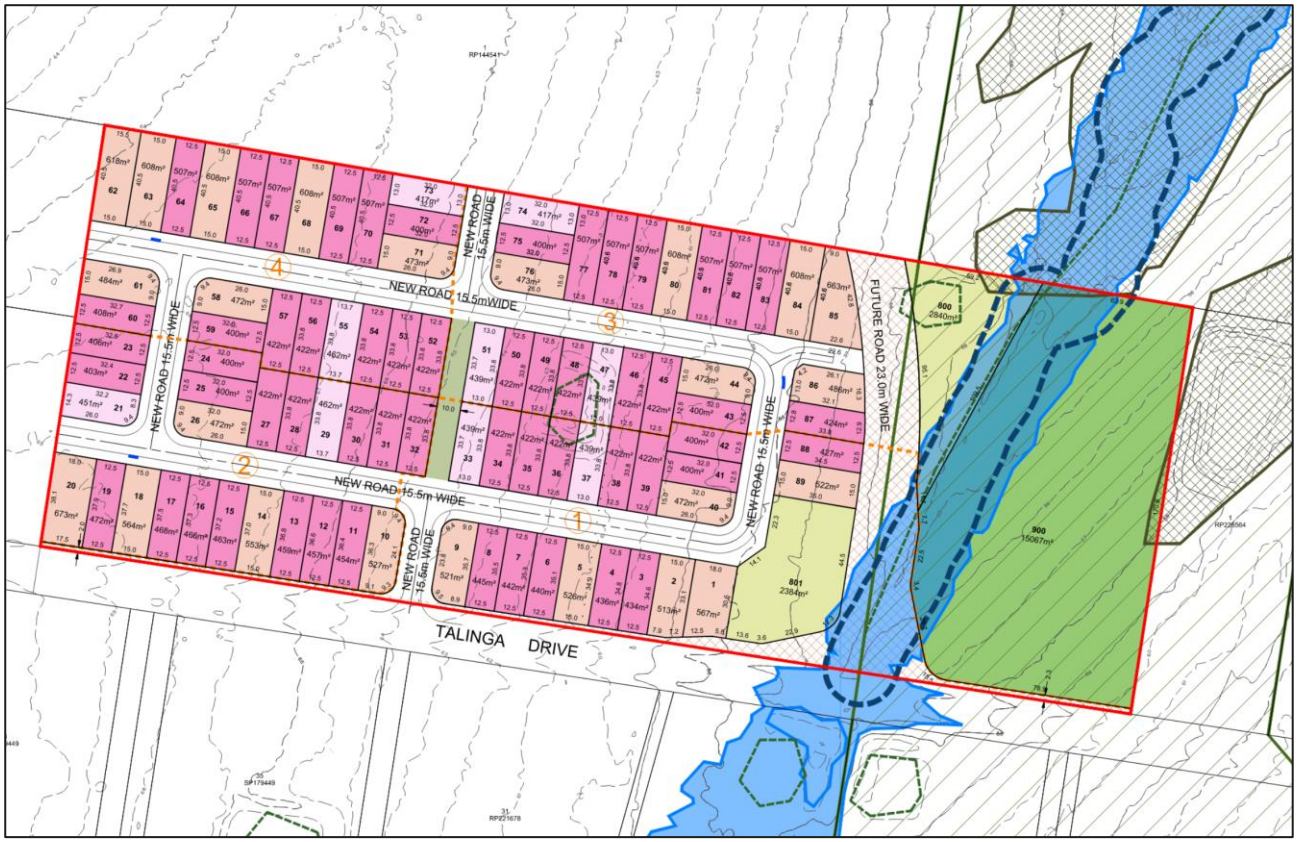


Figure 3-1 Proposed Development Layout (Courtesy of Saunders Havill Group)

4 INFRASTRUCTURE SERVICES

4.1 Stormwater Drainage

4.1.1 Existing Stormwater Drainage

The site has two local points of discharge, one being the waterway corridor along the northern boundary of Lot 4 on RP131003 (LPOD 1) and the other is the north-west corner of the site in Lot 1 on RP44541 (LPOD 2).

Stormwater runoff generated by the existing site generally discharges in an easterly direction via overland flow into the waterway corridor traversing the site from south to north within Lot 4 on RP131003. A small portion of the site drains to the north-west corner of the site.

It was determined that there are three external catchments draining through the subject site to LPOD 1.

This information is derived from LCC Infrastructure Mapping as well as field survey provided in Appendix A.

Refer to Figure 4-1 below as well as Engineering Drawings within Appendix B for further details.

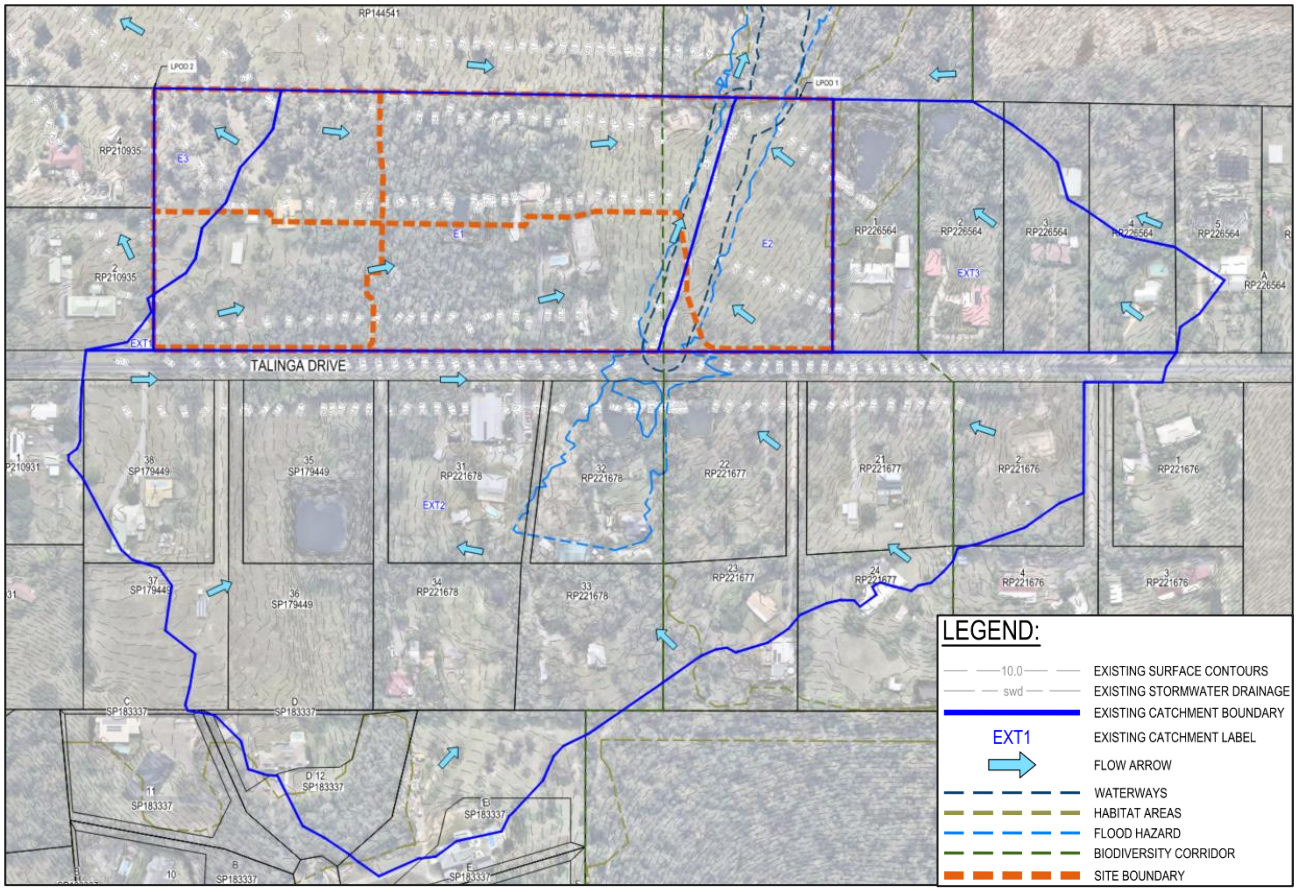


Figure 4-1 Existing Stormwater Catchments

4.1.2 Proposed Stormwater Drainage

The site will manage both stormwater quality and quantity through the use of a pit and pipe drainage network, and stormwater management basin areas. The sites discharge location will be the waterway corridor within Lot 4 on RP131003, both basins will discharge into this drainage corridor.

The Site Based Stormwater Management Plan (SBSMP) prepared by Arcadis should be referred to for further details on the exact methodology used to achieve Council objectives.

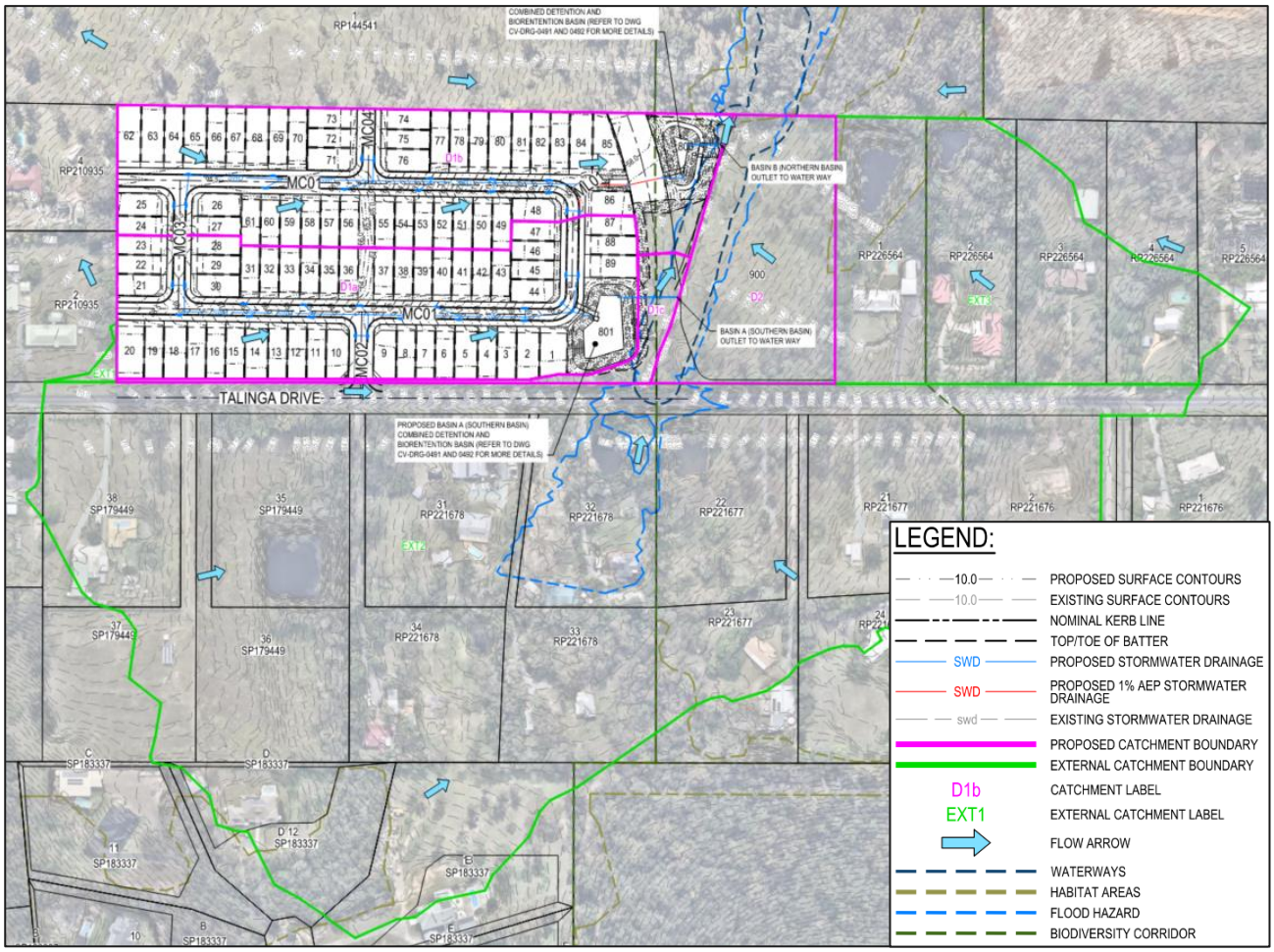


Figure 4-2 Developed Stormwater Catchments

4.2 Water Network

4.2.1 Existing Potable Water

The following existing water mains were identified:

- 1 x DN100 water main located south of the site, within Talinga Drive.
- 1 x DN150 water main located north west of the site, within Mount Lindsey Highway.

4.2.2 Planned Potable Water

A review of the LCC plans for trunk infrastructure for trunk water, infrastructure Map LGIP-03.00 has identified no planned upgrades for potable water in the immediate vicinity of the site.

Figure 4-3 Logan's Plan for trunk water supply infrastructure

4.2.3 Proposed Potable Water

It is expected that the site will connect into the existing DN100 water main in the southern verge of Talinga Drive. Connection to this main will require a new pipe via a road crossing. Therefore, potholing may be required in order to accurately determine the location of these services during operational works phase.

The developer shall, as part of the development works, construct an internal water reticulation network for the proposed development.

Refer to engineering drawings included in Appendix B for further details.

4.2.4 Projected Development Loadings

The development has been assessed under two loading cases in order to better determine the anticipated impacts it will have on the surrounding network. These cases are the:

- **Planned Demand** – The loading that has been assigned and planned for under council's LGIP. This was determined from SC3.1 of the Planning Scheme. Please refer to Table 4-1 below.
- **Project Development Loading** – The calculated demand for the property based on proposed development yield and conversion rates from SEQ WSS DC Code Design Criteria Appendix A2 – Logan City Council, Table A3 – Logan Planning Scheme Development Density. Please refer to Table 4-2 below.

Table 4-1 Planned Demand

Category	Area (ha)*	Conversion Rate	Planned Demand (EP)
R008 - Attached dwelling, Detached dwelling	5.264	54.5EP/ha	287

**Net Developable Area from Council's Planned Density Map*

Table 4-2 Projected Development Loading

Category	Dwellings	Conversion Rate	Planned Demand (EP)
Detached Dwelling	89	3.03P/dwelling	270

There is a decrease of approximately 17 EP between planned and proposed demands. No further assessment has been undertaken for the purposes of this application.

4.2.5 Fire System Water Supply

In accordance with the SEQ WS&S D&C Code, the site is permitted to draw the following fire flows.

- Residential only: 15L/s for 2 hours

As outlined above, internal water reticulation network and the water connection for the residential subdivision will be designed as part of future Operational Works applications for the site.

4.3 Sewer Network

4.3.1 Existing Sewer

There were no existing sewer lines within the immediate vicinity of the site but the following existing sewer mains were identified close by:

- 1 x DN150 gravity sewer main to the west of the development site, within Mount Lindsey Highway.

4.3.2 Planned Sewer

A review of the LCC PIP for trunk water infrastructure Map PIP-04.00 has identified no planned upgrades for sewer infrastructure in the immediate vicinity of the site. However, Logan's Planned Infrastructure, Wastewater, Park Ridge / Logan Reserve Plan illustrates a proposed main that will run through the site.

Figure 4-4 Logan's Plan for trunk sewer supply infrastructure

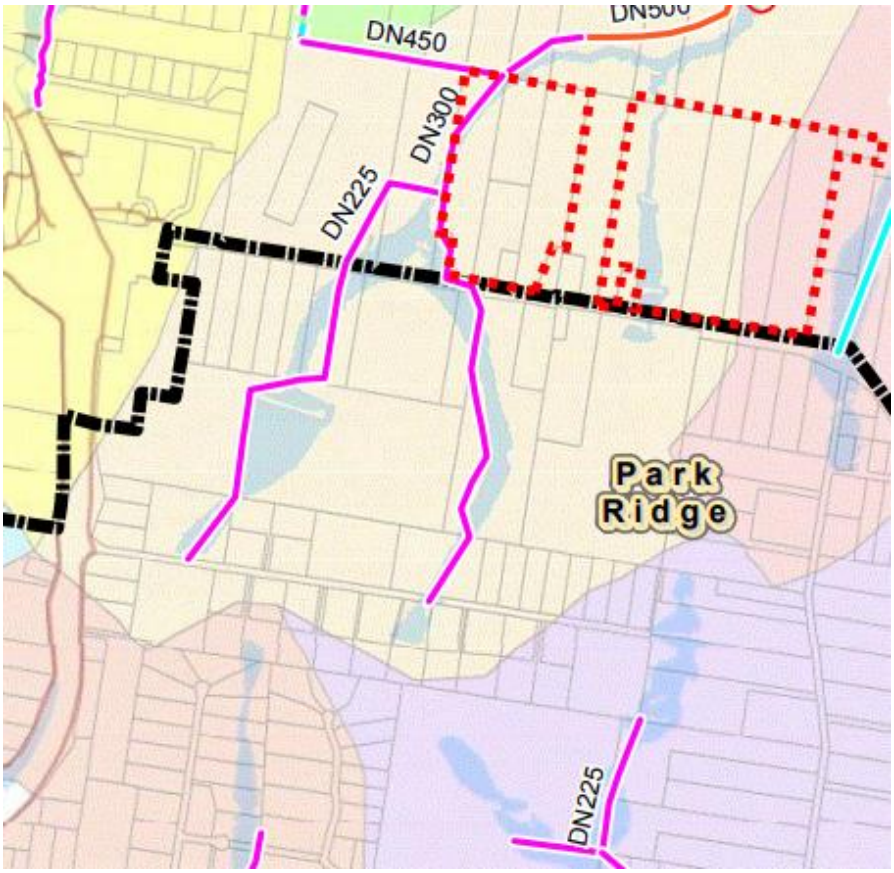


Figure 4-5 Logan's Planned Infrastructure, Wastewater, Park Ridge / Logan Reserve

4.3.3 Proposed Sewer

The sites preferred connection point to Logan's wastewater supply is via an extension of Council's Bayliss Road Trunk Sewer network. Concept design of the Bayliss Road Trunk Sewer network has a connection manhole with a future stub extension in the northwest corner of Lot 1 on SP210423. It is proposed to provide a gravity extension from this gravity manhole to the subject site along the western boundary of Lot 1 on SP210423 to the development site. The ultimate size of this gravity main extension is subject to detail design. It is noted that Council plan to deliver this trunk infrastructure by July 2024.

Refer to engineering drawings included in Appendix B for further details of the alignment. A schematic grading has been provided which shows a DN225 extension grading at 1in200 has sufficient depth for site connection.

4.3.4 Projected Development Loadings

Due to the nature of the development and its location, the wastewater demand is calculated in the same manner as the water supply. Refer to section 4.2.3 for further details.

The proposed development presents a decrease in EP loading when compared to the current planned demand. No further assessment has been undertaken for the purposes of this application.

4.4 Other Services

The following services have been identified within the vicinity of the site from BYD mapping (Appendix C):

- Communications within the northern and southern verges of Talinga Drive.
- Overhead Power within the northern verge of Talinga Drive.

It is recommended that coordination and procurement of relevant approvals is undertaken with the asset owners, for any necessary connection and modification works.

5 ROADS AND ACCESS

Vehicular access to the proposed development shall be provided via Talinga Drive. All internal roads will be designed in accordance with Logan City Council Guidelines as Urban Access Road classification, based on the proposed lots within the service catchment.

Talinga Drive has been identified for a future road upgrade to an Urban Collector Road. Allowance has been made with a provision of a 2.0m wide resumption along the Talinga Drive frontage to facilitate the future upgrade. In addition to the Talinga Drive upgrade, another future road upgrade intersects the site north to south. This has been identified as the Compal Road Urban Collector upgrade. The development has made provision for this road with a land resumption. The development will not make road connection to this future road, only pedestrian access. Further to the above land resumptions, additional provision has been made in the layout to facilitate the intersection of Talinga Drive and Compal Road.

Three temporary vehicle turn around areas will be provided at the end of the proposed internal roads that adjoin private property. These will be removed if/when the neighbouring properties are developed.

Pedestrian access will be provided via footpaths designed in accordance with LCC guidelines.

Refer to the Traffic Impact Assessment prepared by TTM for further details.

6 EARTHWORKS

6.1 Earthworks Operation

The proposed development will involve the undertaking of cut and fill earthworks operations to facilitate the construction of the allotment pads, roads and surface drainage.

Concept earthworks design for the site has been undertaken with consideration of proposed ultimate road upgrade levels for both Talinga Drive and Compal Road upgrades. Earthworks currently tie into existing levels at the site boundaries.

Retaining walls will likely be constructed throughout the site to create a terraced profile between the internal lots.

Concept bulk earthworks drawings are provided in Appendix B for reference.

6.2 Acid Sulfate Soil Assessment

According to the LCC acid sulfate map the site does not contain acid sulfate soils therefore no further assessment is proposed to be undertaken.

7 CONCLUSION

This report has concluded that the site can readily connect to the existing infrastructure. Future Operational Works and Building Works applications will be sought to permit the works to be undertaken.

Stormwater

- Stormwater will be discharged to the existing lawful point of discharge being the existing waterway running from south to north through Lot 4 on RP131003 after receiving the appropriate stormwater treatment.

Potable Water

- Potable water connection for the proposed development to Logan Water's (LW) supply network, will be via the DN100 water main within Talinga Drive.

Sewer

- Connection for the development to the LW's wastewater supply network is proposed to be an extension of Council's Bayliss Road Trunk gravity network from a Manhole in Lot 1 on SP210423.

Roads and Footpaths

- Vehicular access to proposed development shall be provided via the proposed Talinga Drive.
- Three temporary vehicle turn around areas will be provided the at the end of the proposed roads which will be removed if/when neighbouring properties are developed.
- Construction of new roads internal to the development site will service the proposed residential allotments.
- Resumption allowance has been made for the two future road upgrades that front and bisect the site.

Earthworks

- Cut and fill earthworks operations are required to facilitate the construction of the development. Concept earthworks plans have been included in Appendix B.

APPENDIX A

Survey

LEGEND

Quality levels are shown on linetypes along with service type eg. — E(A) — First Letter is the Service (Elec) and the second is Quality Level (A)

	by Survey	by Records
U/G ELECTRICITY	E(A) E(B)	E(C) E(D)
O/H ELECTRICITY	E E	E E
O/H TELECOMMUNICATIONS	T T	T T
U/G TELECOMMUNICATIONS	T(A) T(B)	T(C) T(D)
U/G DRAINAGE	D(A) D(B)	D(C) D(D)
SEWERAGE	S(A) S(B)	S(C) S(D)
WATER	W(A) W(B)	W(C) W(D)
GAS	G(A) G(B)	G(C) G(D)
FENCE	// //	

SYMBOLS

Sewer Manhole	SMH
Gully Trap	GT
Stormwater Manhole	SWMH
Fire Hydrant	FH
Valve	V
Water Meter	WM
Electricity Box / Pillar	Elect Box
Electric Light Pole	ELP
Power Pole	PP
Electricity Manhole	Elect MH
Electricity Pit	Elect Pit
Traffic Signal Pit	Traffic Pit
Traffic Light	Traffic Light
Telecommunications Manhole	Tel MH
Telecommunications Pit	Tel Pit
Tree / Shrub	

ABBREVIATIONS

MH	Manhole
SL	Surface Level
IL	Invert Level
BM	Bench Mark
Ø	Diameter
RCP	Reinforced Concrete Pipe
GI	Galvanised Iron
Ø, H, S	Trunk diameter, Height, Spread (canopy diameter)

NOTES

This Plan has been prepared from a combination of field survey and existing records for the purpose of showing the physical features of the land to assist in designing future development, and should not be used for any other purpose.

The title boundaries shown hereon were not verified or marked at the time of survey, but were determined by existing title dimensions and occupation (where available), not by field measurement. As such, these dimensions could be out of date and incorrect by modern standards. This plan should not be used for building to boundary, or to prescribed set-backs, without further boundary survey.

Services shown hereon were located where possible by field survey. If not able to be so located, known services have been shown from the records of the relevant authorities or service providers where available and have been noted accordingly on this plan. All services shown from records only will need verification prior to, or during work on site.

Prior to any demolition, excavation or construction on site, the relevant authority should be contacted for:

* Verification of all services plotted from records only, and
* Possible location of any services altered since this survey was completed or any new services installed either on or adjacent to the site.

Before starting any demolition, excavation or construction on the site, the relevant person should make an independent and updated enquiry of "dial before you dig" and any relevant service providers to ascertain the existence of further services (if any) and the accurate location of those not able to have been surveyed at the time of preparing this plan.

* No responsibility can be accepted by Saunders Havill Group Pty Ltd, for any damage caused to any underground service or any loss or injury so suffered if enquiry and verification have not been completed in accordance with this note.

** This note is an integral part of this plan/data. Reproduction of this plan or any part of it without this note being included in full will render the information shown on such reproduction invalid and not suitable for use.

QUALITY LEVELS

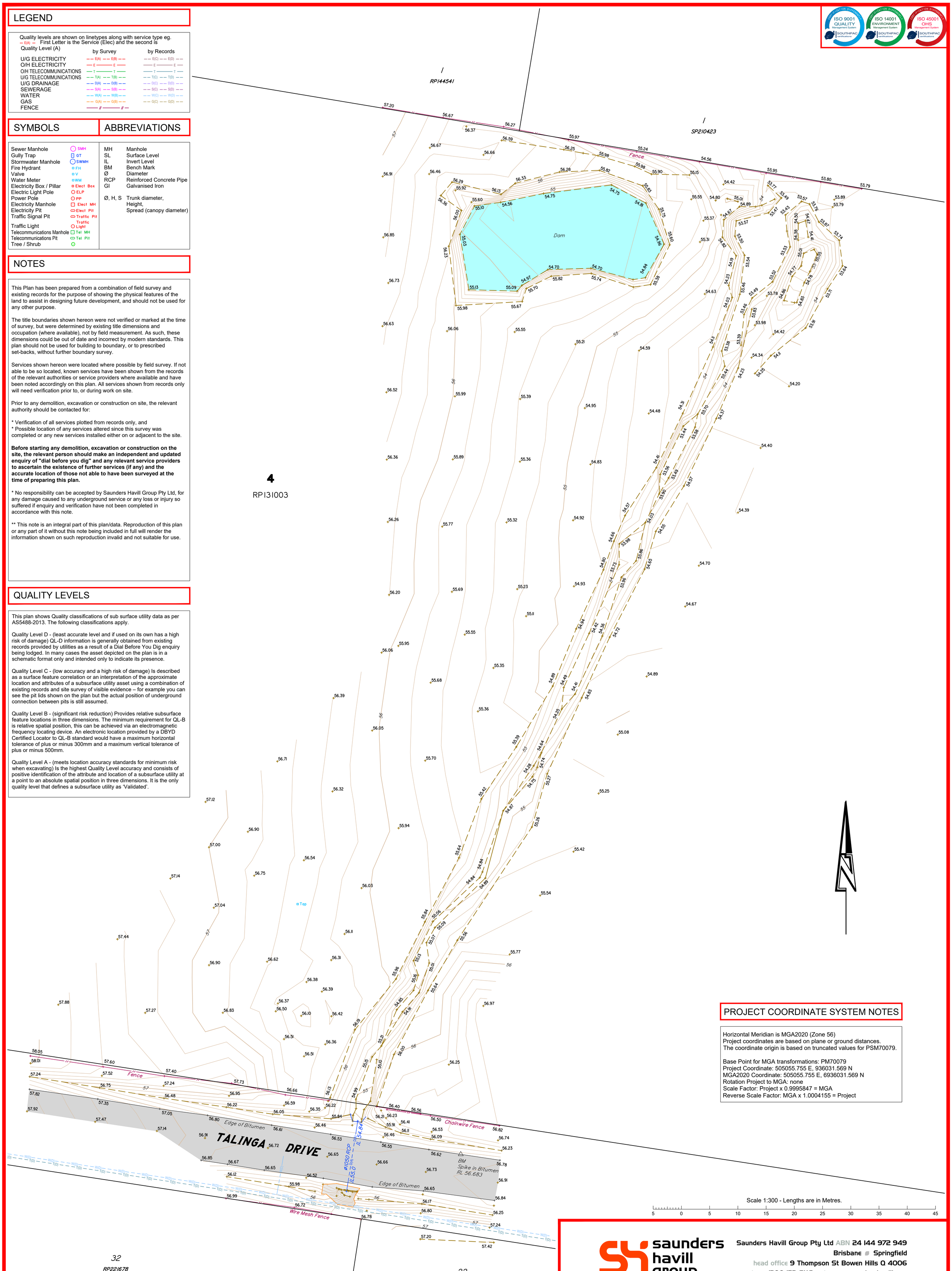
This plan shows Quality classifications of sub surface utility data as per AS5488-2013. The following classifications apply.

Quality Level D - (least accurate level and if used on its own has a high risk of damage) QL-D information is generally obtained from existing records provided by utilities as a result of a Dial Before You Dig enquiry being lodged. In many cases the asset depicted on the plan is in a schematic format only and intended only to indicate its presence.

Quality Level C - (low accuracy and a high risk of damage) Is described as a surface feature correlation or an interpretation of the approximate location and attributes of a subsurface utility asset using a combination of existing records and site survey of visible evidence – for example you can see the pit lids shown on the plan but the actual position of underground connection between pits is still assumed.

Quality Level B - (significant risk reduction) Provides relative subsurface feature locations in three dimensions. The minimum requirement for QL-B is relative spatial position, this can be achieved via an electromagnetic frequency locating device. An electronic location provided by a DBYD Certified Locator to QL-B standard would have a maximum horizontal tolerance of plus or minus 300mm and a maximum vertical tolerance of plus or minus 500mm.

Quality Level A - (meets location accuracy standards for minimum risk when excavating) Is the highest Quality Level accuracy and consists of positive identification of the attribute and location of a subsurface utility at a point to an absolute spatial position in three dimensions. It is the only quality level that defines a subsurface utility as 'Validated'.



PROJECT COORDINATE SYSTEM NOTES

Horizontal Meridian is MGA2020 (Zone 56)
Project coordinates are based on plane or ground distances.
The coordinate origin is based on truncated values for PSM70079.

Base Point for MGA transformations: PM70079
Project Coordinate: 505055.755 E, 936031.569 N
MGA2020 Coordinate: 505055.755 E, 6936031.569 N
Rotation Project to MGA: none
Scale Factor: Project x 0.9995847 = MGA
Reverse Scale Factor: MGA x 1.0004155 = Project

Scale 1:300 - Lengths are in Metres.

5 0 5 10 15 20 25 30 35 40 45

saunders havill group
Saunders Havill Group Pty Ltd ABN 24 144 972 949
Brisbane Springfield
head office 9 Thompson St Bowen Hills Q 4006
phone 1300 123 SHG web www.saundershavill.com
surveying town planning urban design environmental management landscape architecture

Issues	No.	Drawn	Date	Description	Checked
	A	MD	06/06/2023	Original Issue	-

Plan of

DETAIL PLAN

Project: 62-84 Talinga Drive, Park Ridge

Client: GFYTS Pty Ltd

Surveyed	Date
LF	26/05/2023

Level Datum: AHD der.

Origin of Levels: PM103481
RL of Origin: 69.868

Contour Interval: 0.2m

Lot Description

Lot 4 on RP131003

Locality: Park Ridge
Local Government: Logan City

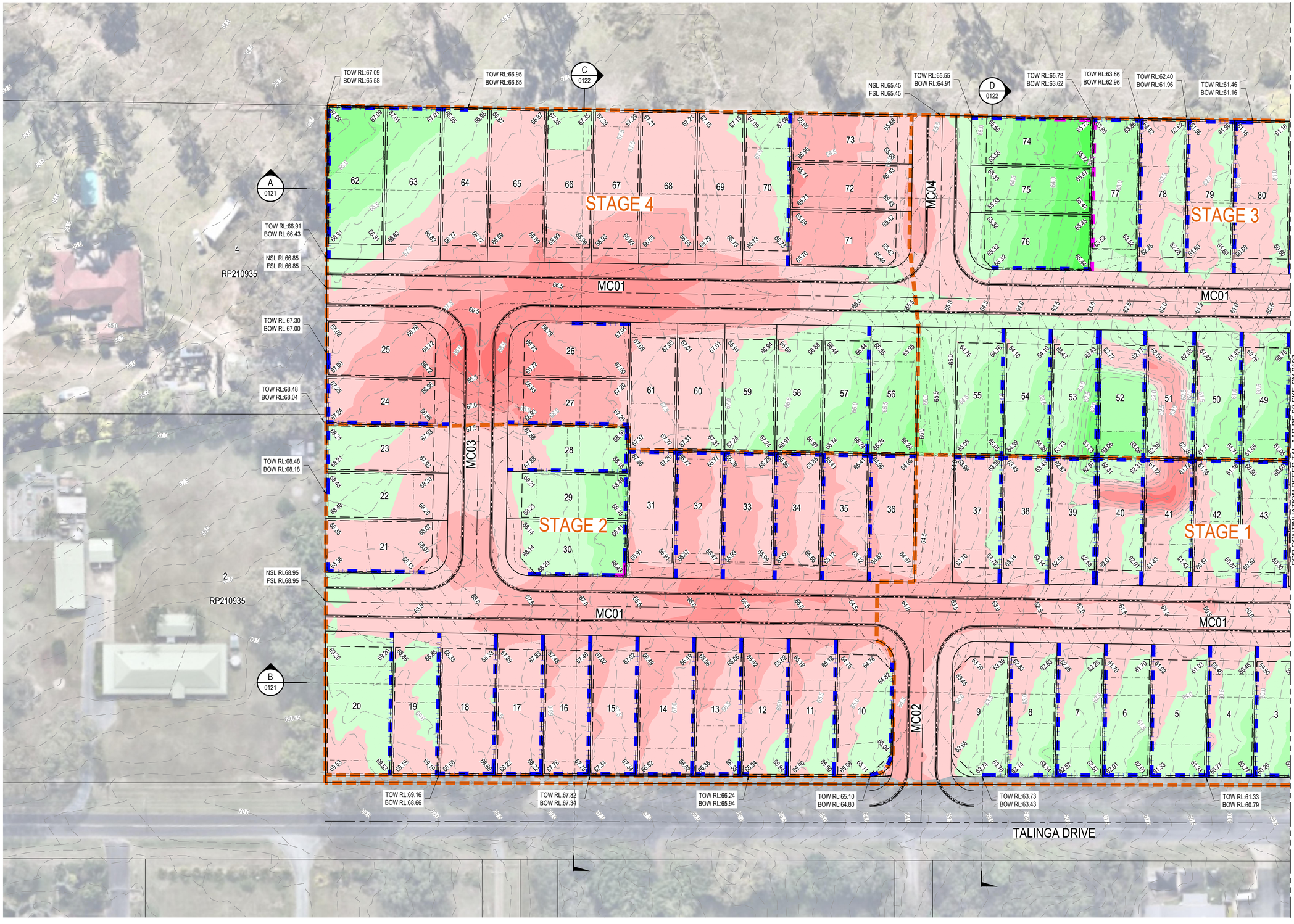
surveying

Scale @A1 1: 300
@A3 1: 600

Dwg No. 11382 S 02 DT A

APPENDIX B

Engineering Drawings



LEGEND:

- PROPOSED SURFACE CONTOURS
- EXISTING SURFACE CONTOURS
- NOMINAL KERB LINE
- TOP/TOE OF BATTER
- BUILDING PAD AND LEVEL
- EXISTING STORMWATER DRAINAGE
- EXISTING WATER RETICULATION
- EXISTING SEWERAGE RETICULATION
- SITE BOUNDARY
- PROPOSED RETAINING WALL 1.5m HEIGHT
- PROPOSED RETAINING WALL 2.0m HEIGHT
- WATERWAYS
- HABITAT AREAS
- FLOOD HAZARD
- BIODIVERSITY CORRIDOR
- EXISTING TOP OF BANK

CUT FILL DEPTH RANGE

Lower_value		Upper_value		Colour
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-1.5	to	-1	m	
-1	to	-0.5	m	
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0.000	to	.5	m	
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1.0	to	1.5	m	
1.5	to	2	m	
2	to	2.5	m	
2.5	to	3	m	
3	to	3.5	m	

CONCEPT CUT / FILL VOLUMES

CUT	-15,049m³
FILL	18,426m³
BALANCE (IMPORT)	3,375m³

NOTE: NO TOPSOIL STRIP OF EXISTING AND TOPSOIL RE-SPREAD HAS BEEN APPLIED TO VOLUMES. NO COMPACTION OR BULKING FACTORS HAVE BEEN APPLIED. SUBJECT TO DETAILED DESIGN.

Issue	Description	DR	DE	VE	Date
01	ORIGINAL ISSUE	O.P.	G.G.	A.S.	08.08.23

100mm on Original

Scales

N

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1 : 500

Surveyor

saunders havill group

Client

QUANTUM GROUP

Status

CONCEPTUAL DESIGN ONLY
NOT TO BE USED FOR CONSTRUCTION

Original Issue Signatures			
Drawn	O.PERILLA	Original Size	A1
Designed	G.GESMUNDO	Height Datum	AHD
Project Manager	A.SHEPHERD	Grid	LOCAL
Verified	A.SHEPHERD		

Project

TALINGA DRIVE

Title

CONCEPT EARTHWORKS PLAN
SHEET 1

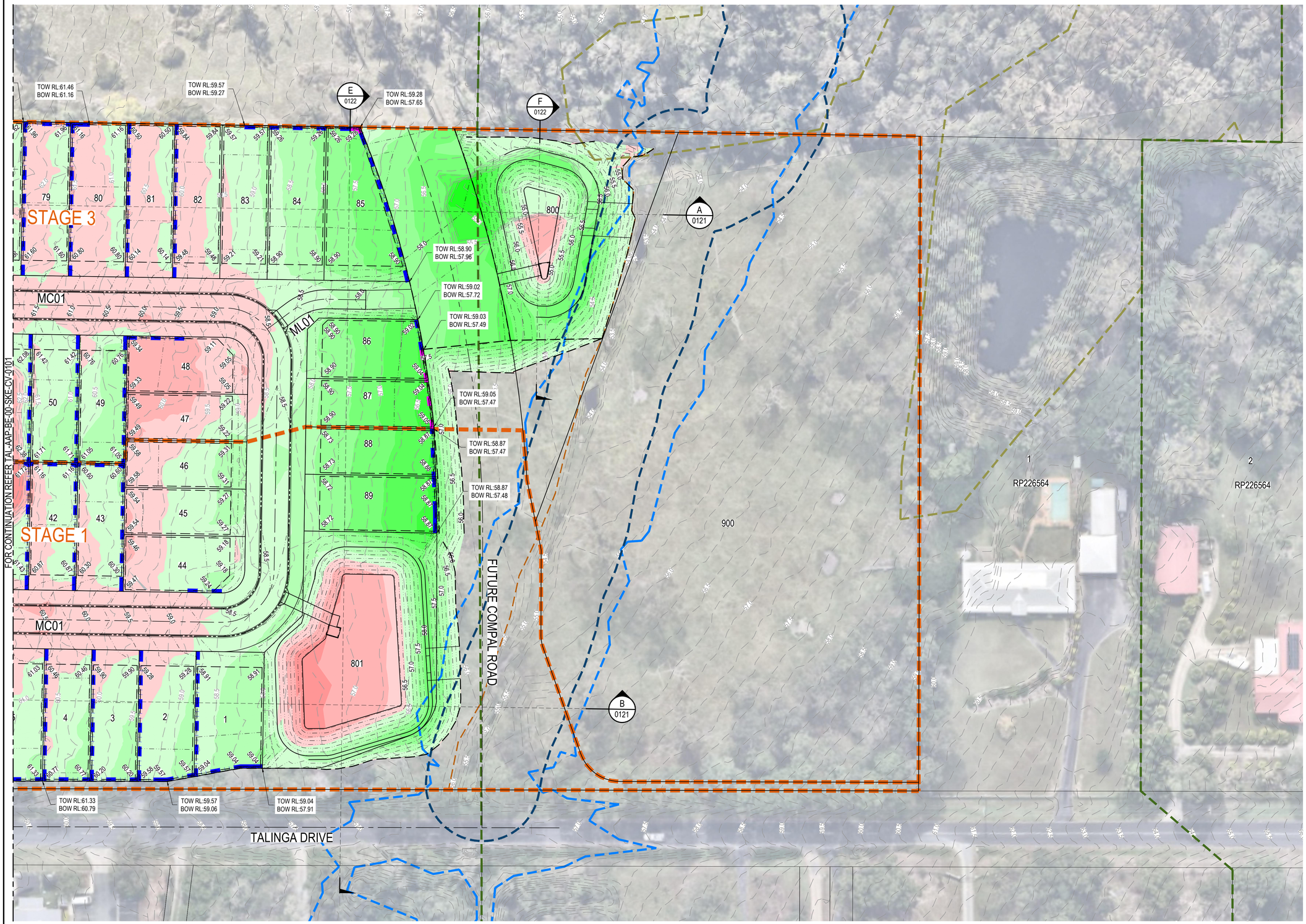
ARCADIS
Arcadis Australia Pacific Pty Limited
Level 7, Seabank Building, 12-14 Marine Parade
SOUTHPORT QLD 4215
ABN 76 104 485 289
Tel No: +61 7 5503 4800
www.arcadis.com/au

Project Number: 30156352

Drawing No.: TAL-AAP-BE-00-SKE-CV-0101

Issue: 01

Date Plotted: 15 Aug 2023 - 01:19PM File Name: C:\Users\opmn06511DC\ACCDocs\Arcadis ACC US\AAU-30156352-62 Talinga Drive\Project Files\10_WIP\10_CV\Stage_BE\Drawings\TAL-AAP-BE-00-SKE-CV-0101-EarthworksPlan.dwg



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- EXISTING TOP OF BANK

CUT FILL DEPTH RANGE

Lower_value		Upper_value		Colour
-2	to	-1.5	m	
-1.5	to	-1	m	
-1	to	-0.5	m	
-.5	to	0.00	m	
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1.5	to	2	m	
2	to	2.5	m	
2.5	to	3	m	
3	to	3.5	m	

CONCEPT CUT / FILL VOLUMES

CUT	-15,049m³
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Issue	Description	DR	DE	VE	Date
01	ORIGINAL ISSUE	O.P.	G.G.	A.S.	08.08.23

100mm on Original

Scales

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1 : 500

Surveyor: saunders havill group

Client: QUANTUM GROUP

Status: CONCEPTUAL DESIGN ONLY
NOT TO BE USED FOR CONSTRUCTION

Original Issue Signatures

Drawn	O.PERILLA	Original Size	A1
Designed	G.GESMUNDO	Height Datum	AHD
Project Manager	A.SHEPHERD	Grid	LOCAL
Verified	A.SHEPHERD		

Project: TALINGA DRIVE

Title: CONCEPT EARTHWORKS PLAN
SHEET 2

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SOUTHPORT QLD 4215
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Tel No: +61 7 5503 4800
www.arcadis.com/au

Project Number: 30156352

Drawing No.: TAL-AAP-BE-00-SKE-CV-0102

Issue: 01

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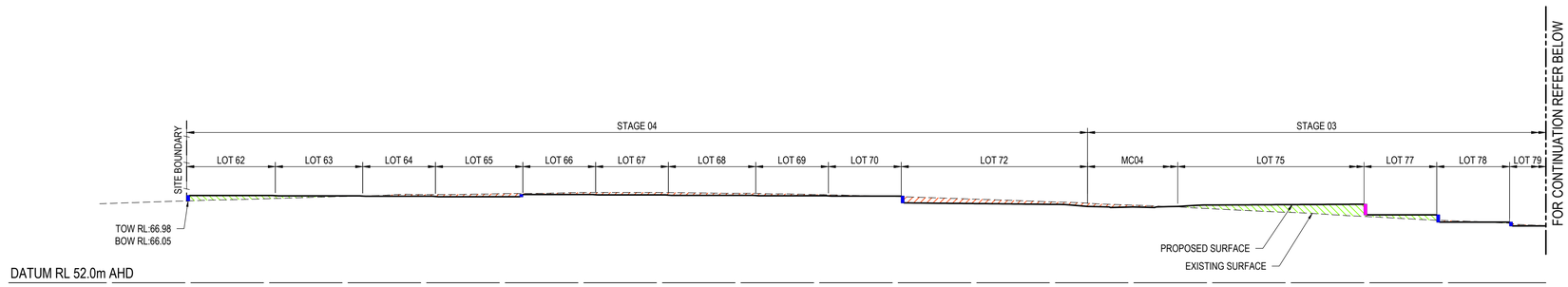
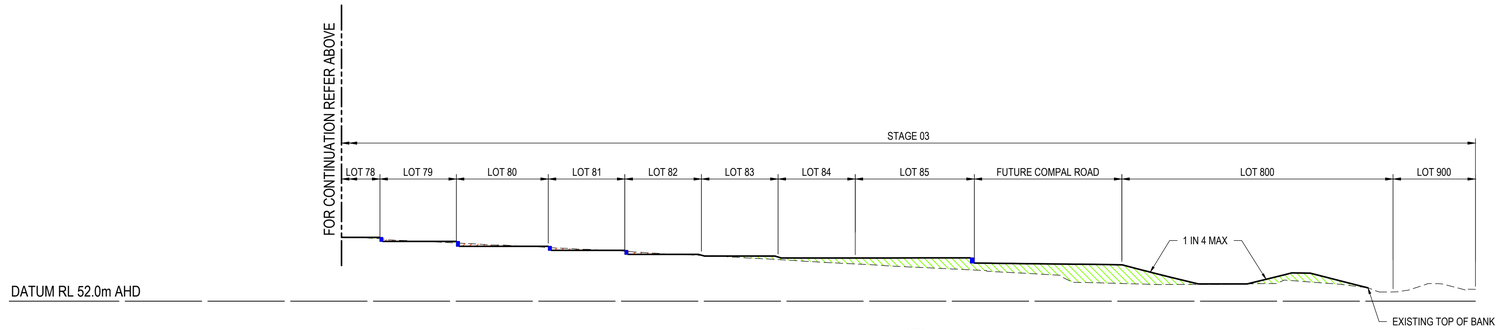
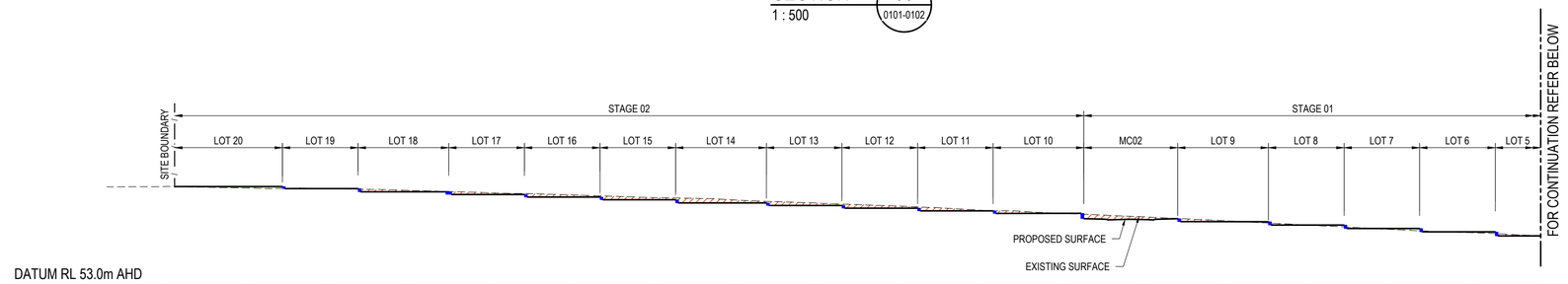
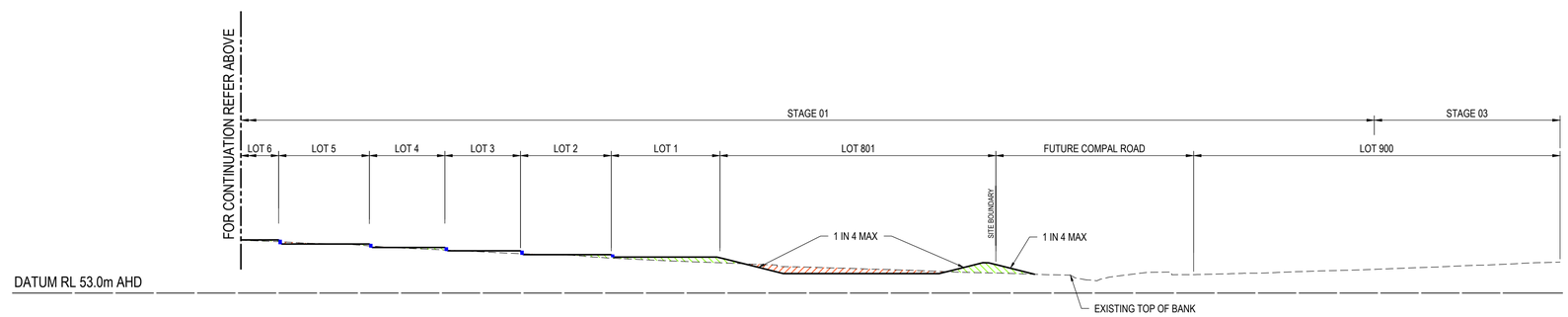
- FILL AREA
- CUT AREA
- PROPOSED RETAINING WALL 1.5m HEIGHT
- PROPOSED RETAINING WALL 2.0m HEIGHT





SECTION A
1 : 500
0101-0102





SECTION B
1 : 500
0101-0102

Issue	Description	DR	DE	VE	Date
01	ORIGINAL ISSUE	O.P.	G.G.	A.S.	08.08.23

100mm on Original

Scales
0 5 10 20 30 40 50m
1 : 500

Surveyor
saunders havill group

Client
QUANTUM GROUP

Status
CONCEPTUAL DESIGN ONLY
NOT TO BE USED FOR CONSTRUCTION

Original Issue Signatures			
Drawn	O.PERILLA	Original Size	A1
Designed	G.GESMUNDO	Height Datum	AHD
Project Manager	A.SHEPHERD	Grid	LOCAL
Verified	A.SHEPHERD		

Project
TALINGA DRIVE

Title
CONCEPT
EARTHWORKS SECTIONS
SHEET 1

ARCADIS
Arcadis Australia Pacific Pty Limited
Level 7, Seabank Building, 12-14 Marine Parade
SOUTHPORT QLD 4215
ABN 76 104 485 289
Tel No: +61 7 5503 4800
www.arcadis.com/au

Project Number: 30156352

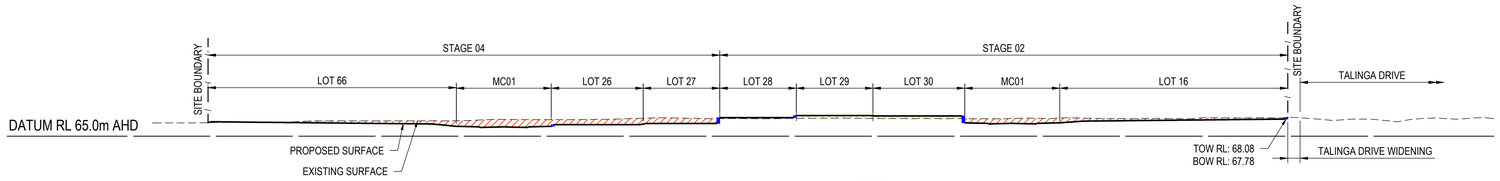
Drawing No.: TAL-AAP-BE-00-SKE-CV-0121

Issue: 01

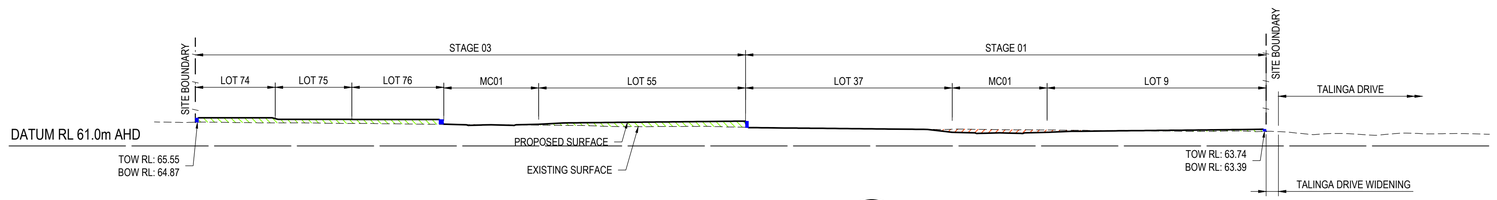
Date Plotted: 15 Aug 2023 - 01:23PM File Name: C:\Users\opmn0651\DC\ACCDocs\Arcadis ACC US\AAU-30156352-62 Talinga Drive\Project Files\10_WIP\10_CV\Stage_BE\Drawings\TAL-AAP-BE-00-SKE-CV-0121-EarthworksSiteSections.dwg

LEGEND:

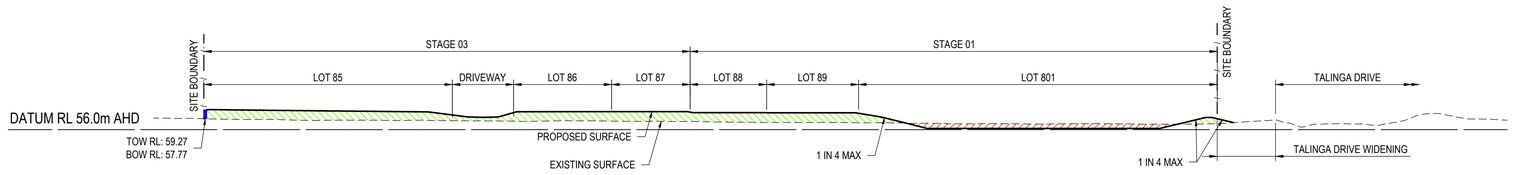
- FILL AREA
- CUT AREA
- PROPOSED RETAINING WALL 1.5m HEIGHT
- PROPOSED RETAINING WALL 2.0m HEIGHT



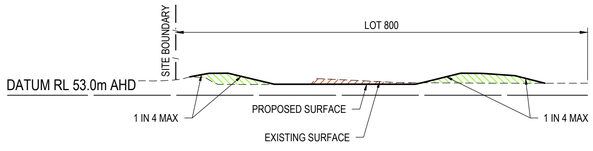
SECTION C
1 : 500
0101



SECTION D
1 : 500
0101



SECTION E
1 : 500
0102



SECTION F
1 : 500
0102

Issue	Description	DR	DE	VE	Date
01	ORIGINAL ISSUE	O.P.	G.G.	A.S.	08.08.23

100mm on Original

Scales
0 5 10 20 30 40 50m
1 : 500

Surveyor
saunders havill group

Client
QUANTUM GROUP

Status
CONCEPTUAL DESIGN ONLY
NOT TO BE USED FOR CONSTRUCTION

Original Issue Signatures			
Drawn	O.PERILLA	Original Size	A1
Designed	G.GESMUNDO	Height Datum	AHD
Project Manager	A.SHEPHERD	Grid	LOCAL
Verified	A.SHEPHERD		

Project
TALINGA DRIVE

Title
CONCEPT
BULK EARTHWORKS SECTIONS
SHEET 2

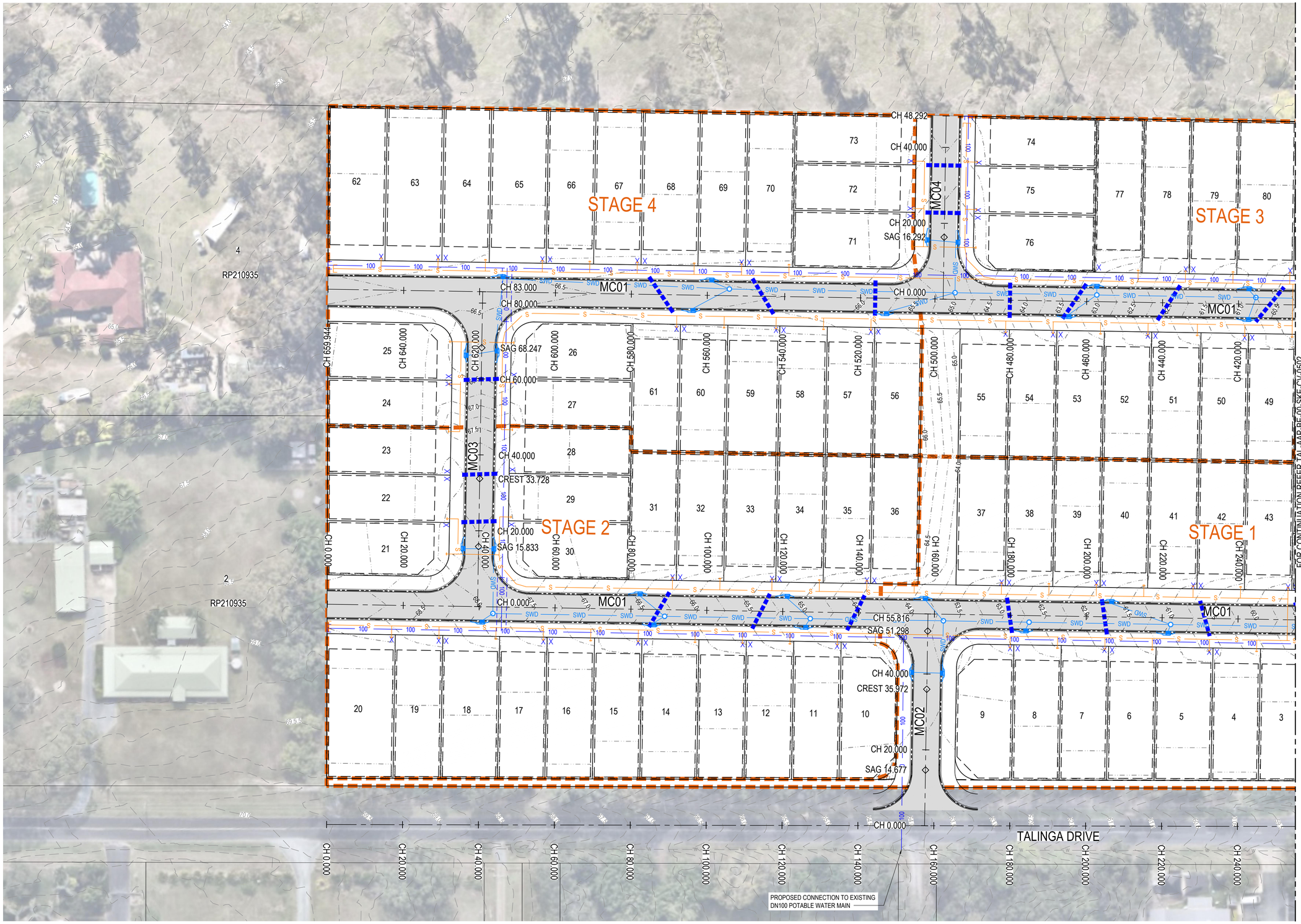
ARCADIS
Arcadis Australia Pacific Pty Limited
Level 7, Seabank Building, 12-14 Marine Parade
SOUTHPORT QLD 4215
ABN 76 104 485 289
Tel No: +61 7 5503 4800
www.arcadis.com/au

Project Number: 30156352

Drawing No.: TAL-AAP-BE-00-SKE-CV-0122

Issue: 01

Date Plotted: 8 Aug 2023 - 10:57AM File Name: C:\Users\opmn0651\DC\ACCDocs\Arcadis ACC US\AAU-30156352-62 Talinga Drive\Project Files\10_WIP\10_CV\Stage_BE\Drawings\TAL-AAP-BE-00-SKE-CV-0121-EarthworksSiteSections.dwg



LEGEND:

- PROPOSED SURFACE CONTOURS
- EXISTING SURFACE CONTOURS
- NOMINAL KERB LINE
- TOP/TOE OF BATTER
- PROPOSED STORMWATER DRAINAGE
- PROPOSED 1% AEP STORMWATER DRAINAGE
- PROPOSED SEWERAGE RETICULATION
- PROPOSED WATER RETICULATION
- Ø100 PVC-M SERIES 1 CONDUIT
- PROPOSED ASPHALT PAVEMENT
- DETENTION SCOUR PROTECTION
- CONCRETE MAINTENANCE ACCESS
- EXISTING STORMWATER DRAINAGE
- EXISTING WATER RETICULATION
- EXISTING SEWERAGE TRUNK RETICULATION
- EXISTING SEWERAGE TRUNK EASEMENT
- PROPOSED EASEMENT
- SITE BOUNDARY
- WATERWAYS
- HABITAT AREAS
- FLOOD HAZARD
- BIODIVERSITY CORRIDOR
- EXISTING TOP OF BANK

NOTES:

1. SERVICE LAYOUTS ARE CONCEPT ONLY.
2. SERVICES LAYOUT AND LEVELS SUBJECT TO FUTURE DETAILED DESIGN, AUTHORITY ADVICE AND APPROVALS.
3. SEWER GRADING IS INDICATIVE TO SHOW THAT THERE IS SUFFICIENT FALL BETWEEN THE SITE CONNECTION AND THE BAYLESS TRUNK SEWER CONNECTION. FINAL DESIGN TO BE COORDINATED WITH LOGAN WATER.

Issue	Description	DR	DE	VE	Date
01	ORIGINAL ISSUE	O.P.	G.G.	A.S.	08.08.23

100mm on Original

Scales

0 5 10 20 30 40 50m

1 : 500

Surveyor: saunders havill group

Client: QUANTUM GROUP

Status: CONCEPTUAL DESIGN ONLY
NOT TO BE USED FOR CONSTRUCTION

Original Issue Signatures			
Drawn	O.PERILLA	Original Size	A1
Designed	G.GESMUNDO	Height Datum	AHD
Project Manager	A.SHEPHERD	Grid	LOCAL
Verified	A.SHEPHERD		

Project: TALINGA DRIVE

Title: CONCEPT COMBINED SERVICES PLAN SHEET 1

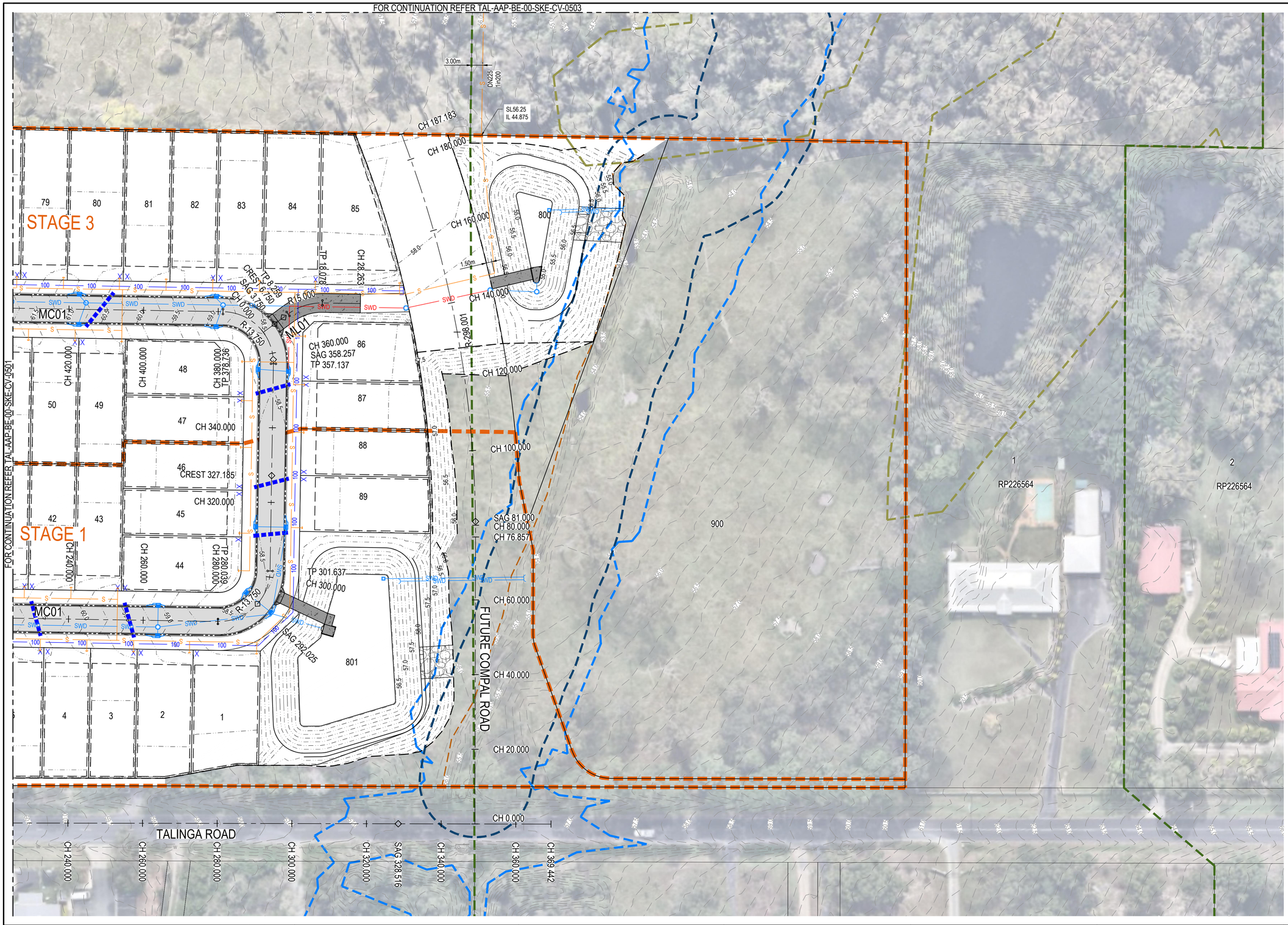
ARCADIS
Arcadis Australia Pacific Pty Limited
Level 7, Seabank Building, 12-14 Marine Parade
SOUTHPORT QLD 4215
ABN 76 104 485 289
Tel No: +61 7 5503 4800
www.arcadis.com/au

Project Number: 30156352

Drawing No.: TAL-AAP-BE-00-SKE-CV-0501

Issue: 01

Date Plotted: 15 Aug 2023 - 01:39PM File Name: C:\Users\opmn0651\DC\ACCDocs\Arcadis ACC US\AAU-30156352-62 Talinga Drive\Project Files\10_WIP\10_CV\Stage_BE\Drawings\TAL-AAP-BE-00-SKE-CV-0500-CombinedUtilities.dwg



LEGEND:

- PROPOSED SURFACE CONTOURS
- EXISTING SURFACE CONTOURS
- NOMINAL KERB LINE
- TOP/TOE OF BATTER
- PROPOSED STORMWATER DRAINAGE
- PROPOSED 1% AEP STORMWATER DRAINAGE
- PROPOSED SEWERAGE RETICULATION
- PROPOSED WATER RETICULATION
- Ø100 PVC-M SERIES 1 CONDUIT
- PROPOSED ASPHALT PAVEMENT
- DETENTION SCOUR PROTECTION
- CONCRETE MAINTENANCE ACCESS
- EXISTING STORMWATER DRAINAGE
- EXISTING WATER RETICULATION
- EXISTING SEWERAGE TRUNK RETICULATION
- EXISTING SEWERAGE TRUNK EASEMENT
- PROPOSED EASEMENT
- SITE BOUNDARY
- WATERWAYS
- HABITAT AREAS
- FLOOD HAZARD
- BIODIVERSITY CORRIDOR
- EXISTING TOP OF BANK

NOTES:

1. SERVICE LAYOUTS ARE CONCEPT ONLY.
2. SERVICES LAYOUT AND LEVELS SUBJECT TO FUTURE DETAILED DESIGN, AUTHORITY ADVICE AND APPROVALS.
3. SEWER GRADING IS INDICATIVE TO SHOW THAT THERE IS SUFFICIENT FALL BETWEEN THE SITE CONNECTION AND THE BAYLESS TRUNK SEWER CONNECTION. FINAL DESIGN TO BE COORDINATED WITH LOGAN WATER.

Issue	Description	DR	DE	VE	Date
01	ORIGINAL ISSUE	O.P.	G.G.	A.S.	08.08.23

100mm on Original

Scales

0 5 10 20 30 40 50m

1 : 500

Surveyor: saunders havill group

Client: QUANTUM GROUP

Status: CONCEPTUAL DESIGN ONLY
NOT TO BE USED FOR CONSTRUCTION

Original Issue Signatures			
Drawn	O.PERILLA	Original Size	A1
Designed	G.GESMUNDO	Height Datum	AHD
Project Manager	A.SHEPHERD	Grid	LOCAL
Verified	A.SHEPHERD		

Project: TALINGA DRIVE

Title: CONCEPT COMBINED SERVICES PLAN SHEET 2

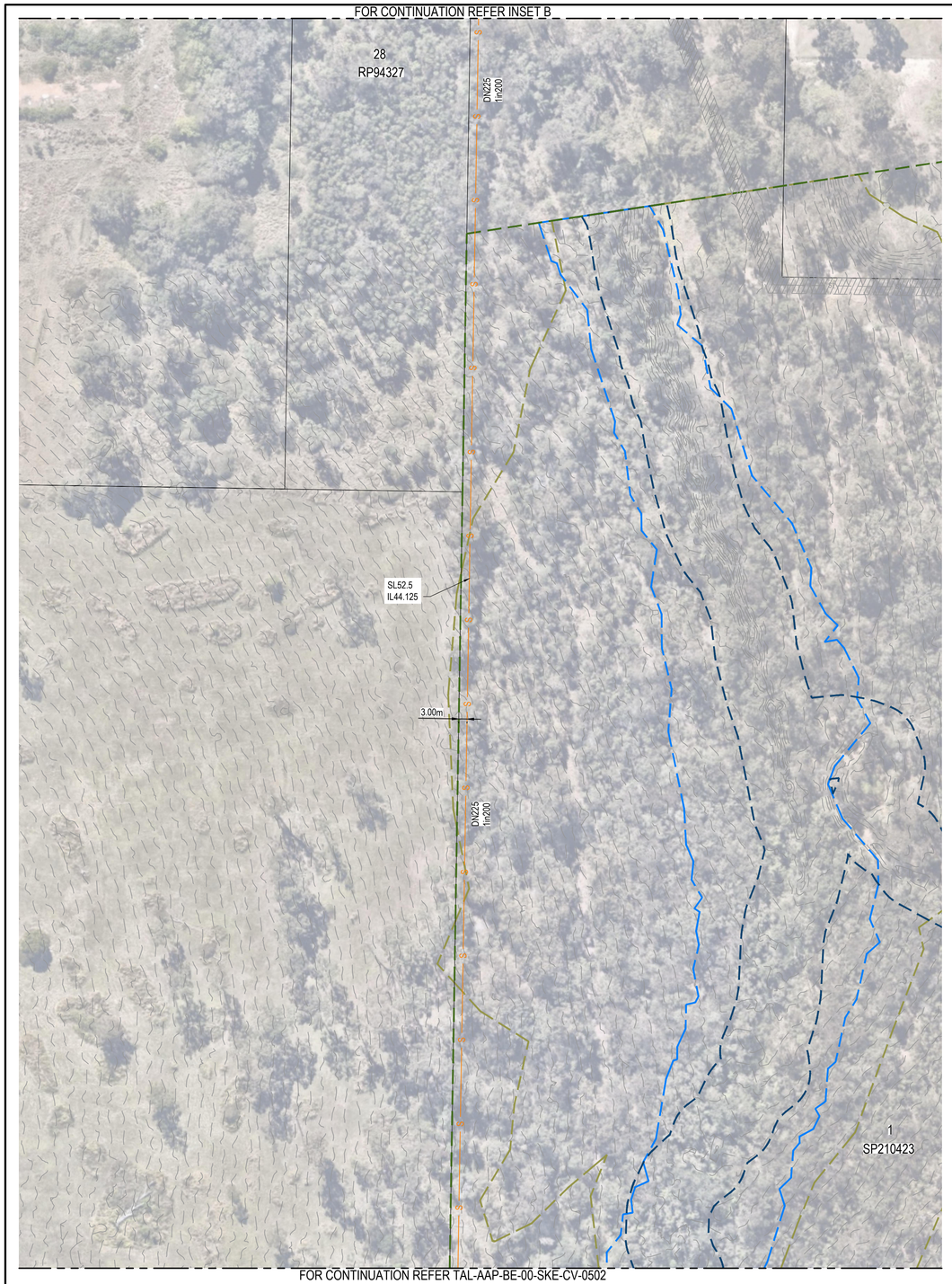
ARCADIS
Arcadis Australia Pacific Pty Limited
Level 7, Seabank Building, 12-14 Marine Parade
SOUTHPORT QLD 4215
ABN 76 104 485 289
Tel No: +61 7 5503 4800
www.arcadis.com/au

Project Number: 30156352

Drawing No.: TAL-AAP-BE-00-SKE-CV-0502

Issue: 01

Date Plotted: 15 Aug 2023 - 02:48PM File Name: C:\Users\opmn0651\DC\ACCDocs\Arcadis ACC US\AAU-30156352-62 Talinga Drive\Project Files\10_WIP\10_CV\Stage_BE\Drawings\TAL-AAP-BE-00-SKE-CV-0500-CombinedUtilities.dwg



INSET A
1 : 1000

INSET B
1 : 1000

LEGEND:

- PROPOSED SURFACE CONTOURS
- EXISTING SURFACE CONTOURS
- NOMINAL KERB LINE
- TOP/TOE OF BATTER
- PROPOSED STORMWATER DRAINAGE
- PROPOSED 1% AEP STORMWATER DRAINAGE
- PROPOSED SEWERAGE RETICULATION
- PROPOSED WATER RETICULATION
- Ø100 PVC-M SERIES 1 CONDUIT
- PROPOSED ASPHALT PAVEMENT
- DETENTION SCOUR PROTECTION
- CONCRETE MAINTENANCE ACCESS
- EXISTING STORMWATER DRAINAGE
- EXISTING WATER RETICULATION
- EXISTING SEWERAGE TRUNK RETICULATION
- EXISTING SEWERAGE TRUNK EASEMENT
- PROPOSED EASEMENT
- SITE BOUNDARY
- WATERWAYS
- HABITAT AREAS
- FLOOD HAZARD
- BIODIVERSITY CORRIDOR
- EXISTING TOP OF BANK

NOTES:

1. SERVICE LAYOUTS ARE CONCEPT ONLY.
2. SERVICES LAYOUT AND LEVELS SUBJECT TO FUTURE DETAILED DESIGN, AUTHORITY ADVICE AND APPROVALS.
3. SEWER GRADING IS INDICATIVE TO SHOW THAT THERE IS SUFFICIENT FALL BETWEEN THE SITE CONNECTION AND THE BAYLESS TRUNK SEWER CONNECTION. FINAL DESIGN TO BE COORDINATED WITH LOGAN WATER.

Issue	Description	DR	DE	VE	Date
01	ORIGINAL ISSUE	O.P.	G.G.	A.S.	08.08.23

100mm on Original

Scales
0 10 20 40 60 80 100m
1 : 1000

Surveyor: saunders havill group

Client: QUANTUM GROUP

Status: CONCEPTUAL DESIGN ONLY
NOT TO BE USED FOR CONSTRUCTION

Original Issue Signatures

Drawn	O.PERILLA	Original Size	A1
Designed	G.GESMUNDO	Height Datum	AHD
Project Manager	A.SHEPHERD	Grid	LOCAL
Verified	A.SHEPHERD		

Project: TALINGA DRIVE

Title: CONCEPT
COMBINED SERVICES PLAN
SHEET 3

ARCADIS
Arcadis Australia Pacific Pty Limited
Level 7, Seabank Building, 12-14 Marine Parade
SOUTHPORT QLD 4215
ABN 76 104 485 289
Tel No: +61 7 5503 4800
www.arcadis.com/au

Project Number: 30156352

Drawing No.: TAL-AAP-BE-00-SKE-CV-0503

Issue: 01

Date Plotted: 15 Aug 2023 - 01:31PM File Name: C:\Users\opmn0651\DC\ACCDocs\Arcadis ACC US\AAU-30156352-62 Talinga Drive\Project Files\10_WIP\10_CV\Stage_BE\Drawings\TAL-AAP-BE-00-SKE-CV-0500-CombinedUtilities.dwg

APPENDIX C

Before You Dig Maps

BYDA SYMBOLOGY LEGEND

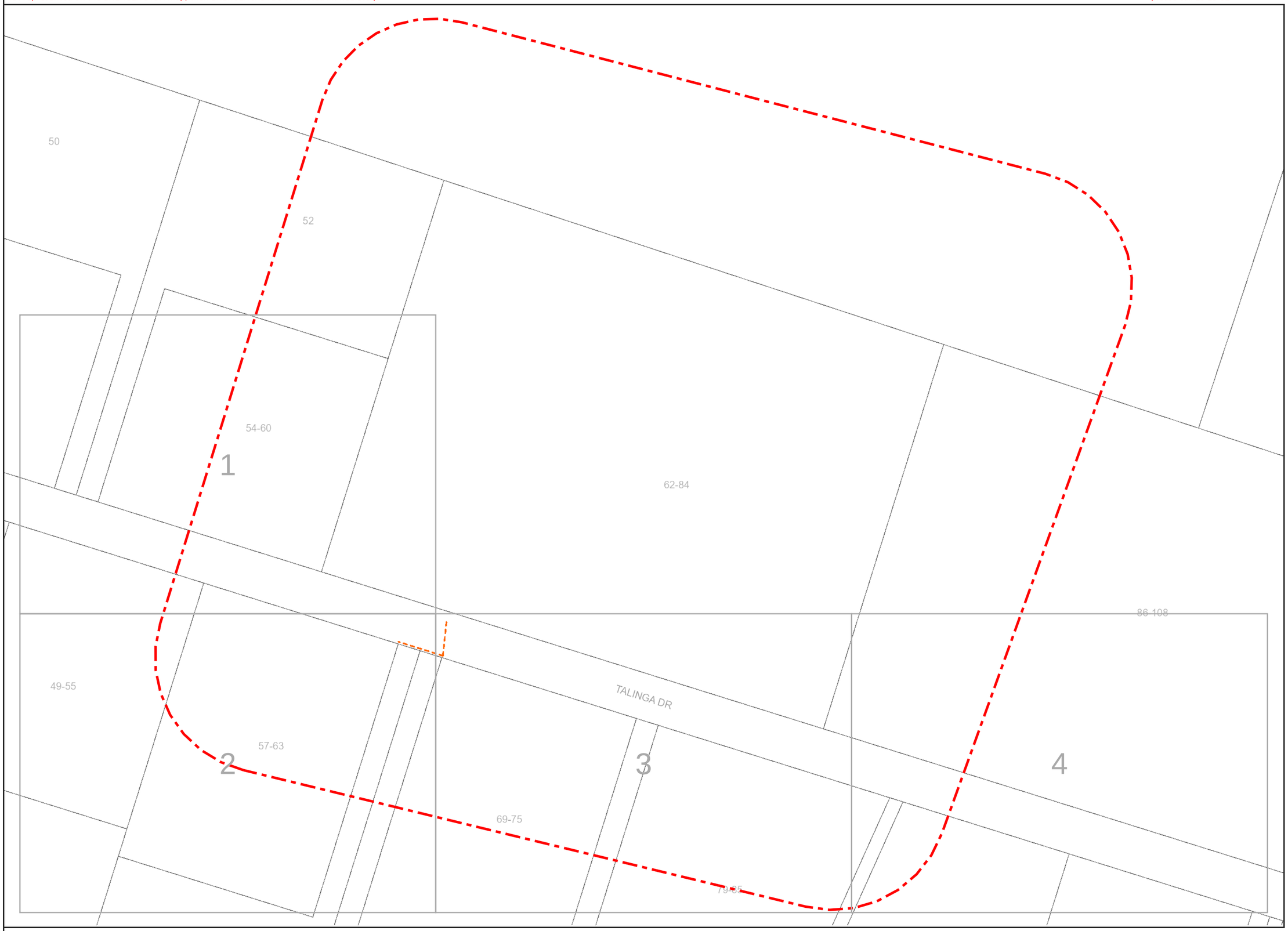
Energy Queensland

- Cross Bonding Link Box - **Critical**
- Disconnect Box - **Critical**
- Ring Main Unit
- Distribution Pad Substation
- Earth
- Remote Earth
- Cable Marker
- Handhole
- Manhole
- Commercial Industrial Pillar
- Distribution Cabinet
- Link Pillar
- Service Pillar
- Feeder Pillar
- Pole
- Streetlight Column
- Communication Junction Pillar
- Communication Pit
- Fibre Patch Panel
- Pilot Cubicle
- Underground Asset 33kV and above
- Underground Asset below 33kV
- Underground Conduit with or without cable
- Pit
- Communication Boundary
- Reserve (RE)
- Water Resource (WR)
- Cadastral Parcels

- Planned Jointing Pit – New/Updated
- Planned Jointing Pit - Remove
- Planned Communication Boundary – New/Updated
- Planned Communication Boundary - Remove
- Planned Tunnel/Trench/Bore - New/Updated
- Planned Tunnel/Trench/Bore - Remove
- Planned Cross Bonding Link Box - New/Updated
- Planned Cross Bonding Link Box - Remove
- Planned Disconnect Box - New/Updated
- Planned Disconnect Box - Remove
- Planned Distribution Pad Substation – New/Updated
- Planned Distribution Pad Substation - Remove
- Planned Distribution Ground Substation – New/Updated
- Planned Distribution Ground Substation - Remove
- Planned Ring Main Unit – New/Updated
- Planned Ring Main Unit - Remove
- Planned Earth – New/Updated
- Planned Earth - Remove
- Planned Cable Marker – New/Updated
- Planned Cable Marker - Remove
- Planned Remote Earth – New/Updated
- Planned Remote Earth - Remove
- Planned Underground Warning Post – New/Updated
- Planned Underground Warning Post - Remove
- Planned Pilot Cubicle – New/Updated
- Planned Pilot Cubicle – Remove
- Planned Fibre Patch Panel – New/Updated
- Planned Fibre Patch Panel – Remove
- Planned Commercial Industrial Pillar – New/Updated
- Planned Commercial Industrial Pillar – Remove
- Planned Distribution Cabinet – New/Updated
- Planned Distribution Cabinet – Remove
- Planned Link Pillar – New/Updated
- Planned Link Pillar – Remove
- Planned Service Pillar – New/Updated
- Planned Service Pillar – Remove
- Planned Pole – New/Updated
- Planned Pole – Remove
- Planned Manhole – New/Updated
- Planned Manhole – Remove
- Planned Streetlight Column – New/Updated
- Planned Streetlight Column – Remove
- Planned Handhole – New/Updated
- Planned Handhole – Remove
- Planned Communication Junction Pillar – New/Updated
- Planned Communication Junction Pillar – Remove

All underground cables shall be treated as being energised. Where a cable is located that is not represented on the ENERGEX BYDA map, then ENERGEX shall be contacted immediately.

For Emergency Situations please call 13 19 62



This output provides details of the ENERGEX electrical network. As variations map exist no responsibility is incurred by ENERGEX for the accuracy or completeness of the information provided. Exact positions of cables and electrical connectivity should be confirmed on site.

energex

BYDA

Sequence: 223472520
Date: 14/04/2023

Scale: 1:1538

OVERVIEW

For a full list of Map Symbols, please refer to the supplied BYDA Symbology Legend page

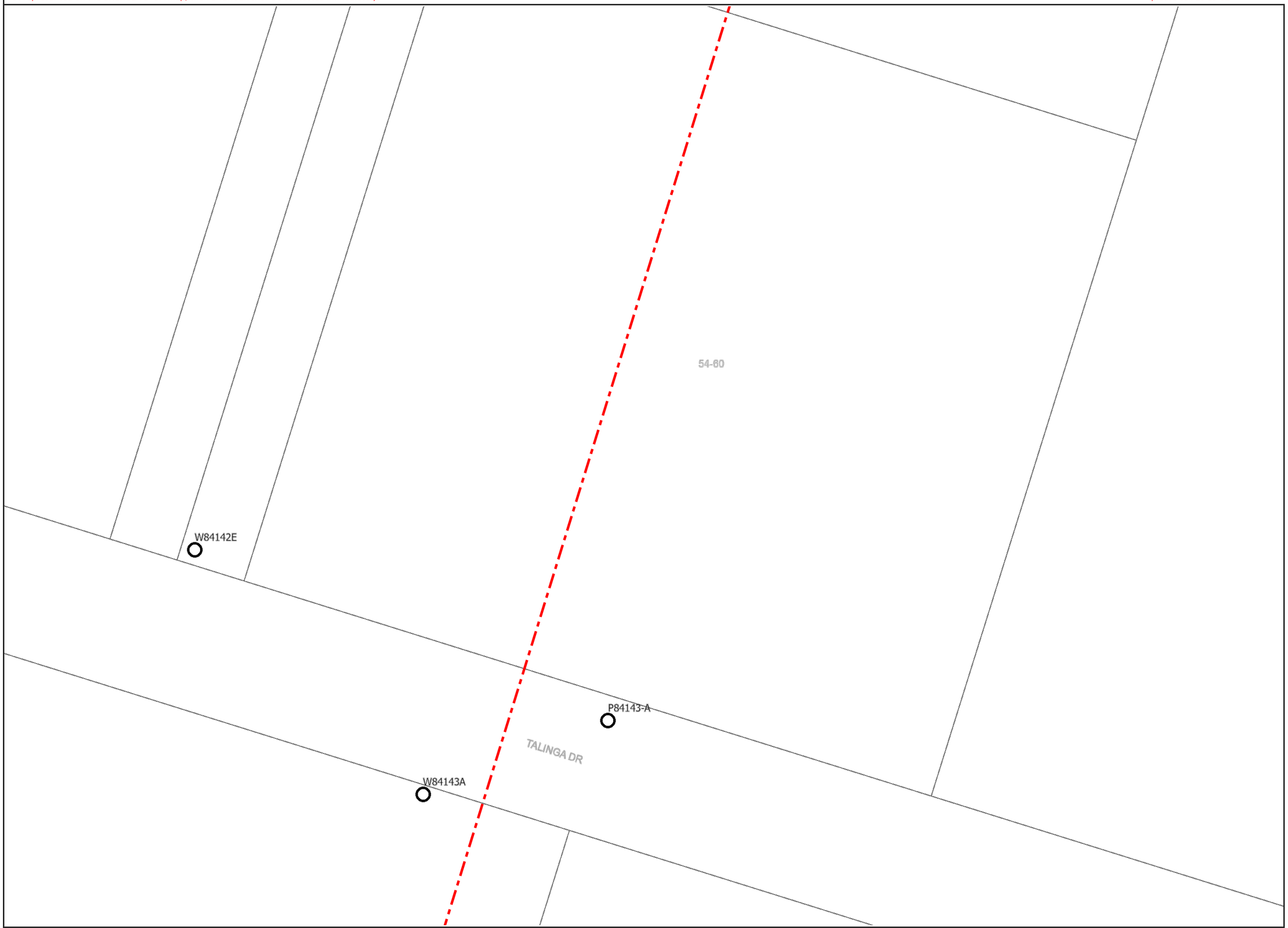
AS5488 Category "D" Plan

N
W
E
S

DISCLAIMER: While reasonable measures have been taken to ensure the accuracy of the information contained in this plan response, neither Energex nor PelicanCorp shall have any liability whatsoever in relation to any loss, damage, cost or expense arising from the use of this plan response or the information contained in it or the completeness or accuracy of such information. Use of such information is subject to and constitutes acceptance of these terms.

All underground cables shall be treated as being energised. Where a cable is located that is not represented on the ENERGEX BYDA map, then ENERGEX shall be contacted immediately.

For Emergency Situations please call 13 19 62



This output provides details of the ENERGEX electrical network. As variations map exist no responsibility is incurred by ENERGEX for the accuracy or completeness of the information provided. Exact positions of cables and electrical connectivity should be confirmed on site.

BYDA

Sequence: 223472520
Date: 14/04/2023

Scale: 1:500
Tile No: 1

For a full list of Map Symbols, please refer to the supplied BYDA Symbology Legend page

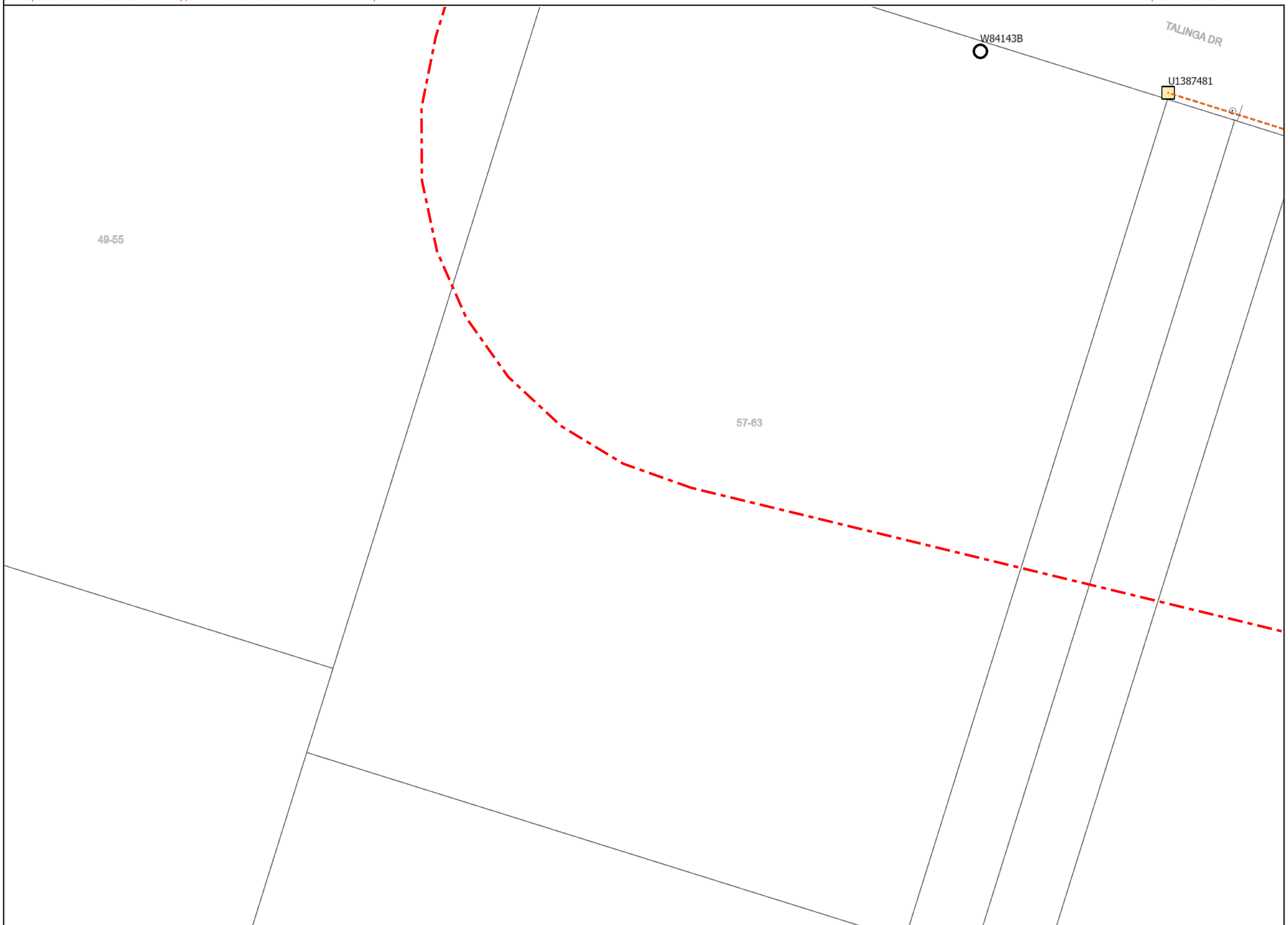
AS5488 Category "D" Plan

N
W E
S

DISCLAIMER: While reasonable measures have been taken to ensure the accuracy of the information contained in this plan response, neither Energex nor PelicanCorp shall have any liability whatsoever in relation to any loss, damage, cost or expense arising from the use of this plan response or the information contained in it or the completeness or accuracy of such information. Use of such information is subject to and constitutes acceptance of these terms.

All underground cables shall be treated as being energised. Where a cable is located that is not represented on the ENERGEX BYDA map, then ENERGEX shall be contacted immediately.

For Emergency Situations please call 13 19 62



energex

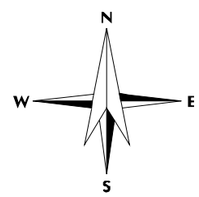
BYDA

Sequence: 223472520
Date: 14/04/2023

Scale: 1:500
Tile No: 2

For a full list of Map Symbols, please refer to the supplied BYDA Symbology Legend page

AS5488 Category "D" Plan

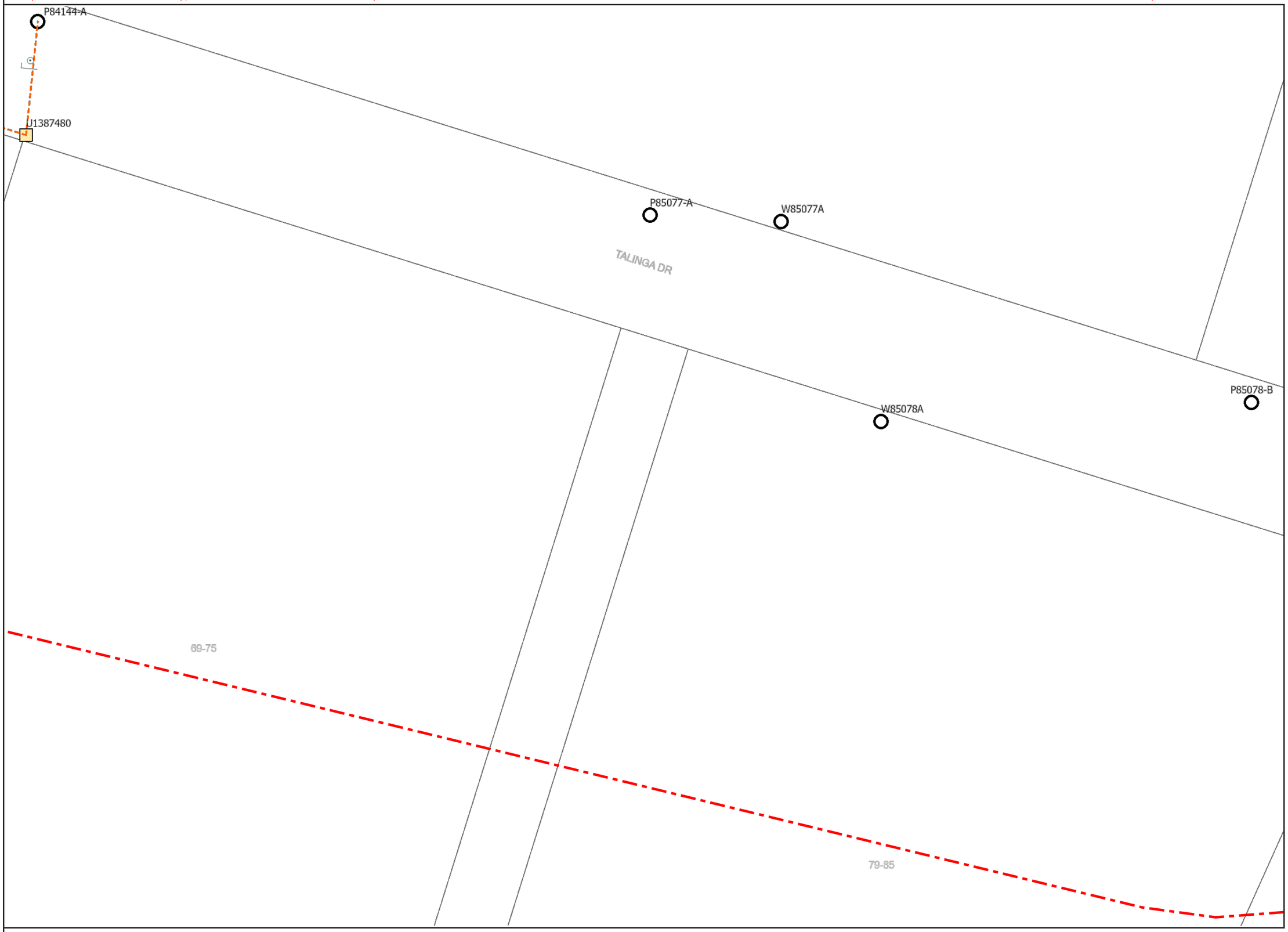


DISCLAIMER: While reasonable measures have been taken to ensure the accuracy of the information contained in this plan response, neither Energex nor PelicanCorp shall have any liability whatsoever in relation to any loss, damage, cost or expense arising from the use of this plan response or the information contained in it or the completeness or accuracy of such information. Use of such information is subject to and constitutes acceptance of these terms.

This output provides details of the ENERGEX electrical network. As variations map exist no responsibility is incurred by ENERGEX for the accuracy or completeness of the information provided. Exact positions of cables and electrical connectivity should be confirmed on site.

All underground cables shall be treated as being energised. Where a cable is located that is not represented on the ENERGEX BYDA map, then ENERGEX shall be contacted immediately.

For Emergency Situations please call 13 19 62



energex

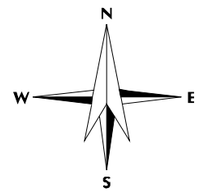
BYDA

Sequence: 223472520
Date: 14/04/2023

Scale: 1:500
Tile No: 3

For a full list of Map Symbols, please refer to the supplied BYDA Symbology Legend page

AS5488 Category "D" Plan

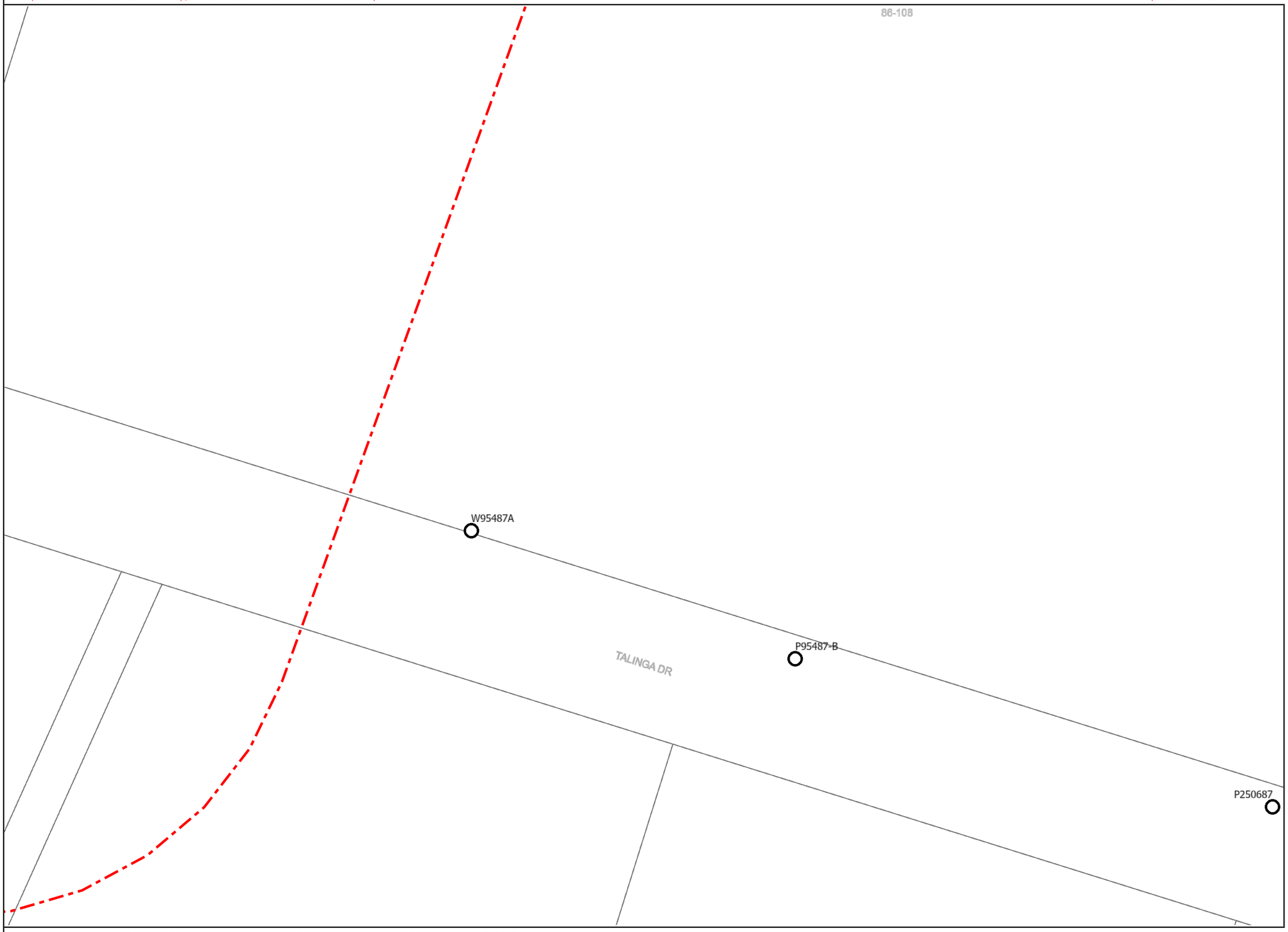


DISCLAIMER: While reasonable measures have been taken to ensure the accuracy of the information contained in this plan response, neither Energex nor PelicanCorp shall have any liability whatsoever in relation to any loss, damage, cost or expense arising from the use of this plan response or the information contained in it or the completeness or accuracy of such information. Use of such information is subject to and constitutes acceptance of these terms.

This output provides details of the ENERGEX electrical network. As variations map exist no responsibility is incurred by ENERGEX for the accuracy or completeness of the information provided. Exact positions of cables and electrical connectivity should be confirmed on site.

All underground cables shall be treated as being energised. Where a cable is located that is not represented on the ENERGEX BYDA map, then ENERGEX shall be contacted immediately.

For Emergency Situations please call 13 19 62



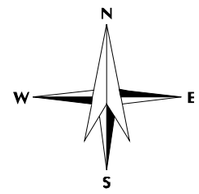
BYDA

Sequence: 223472520
Date: 14/04/2023

Scale: 1:500
Tile No: 4

For a full list of Map Symbols, please refer to the supplied BYDA Symbology Legend page

AS5488 Category "D" Plan



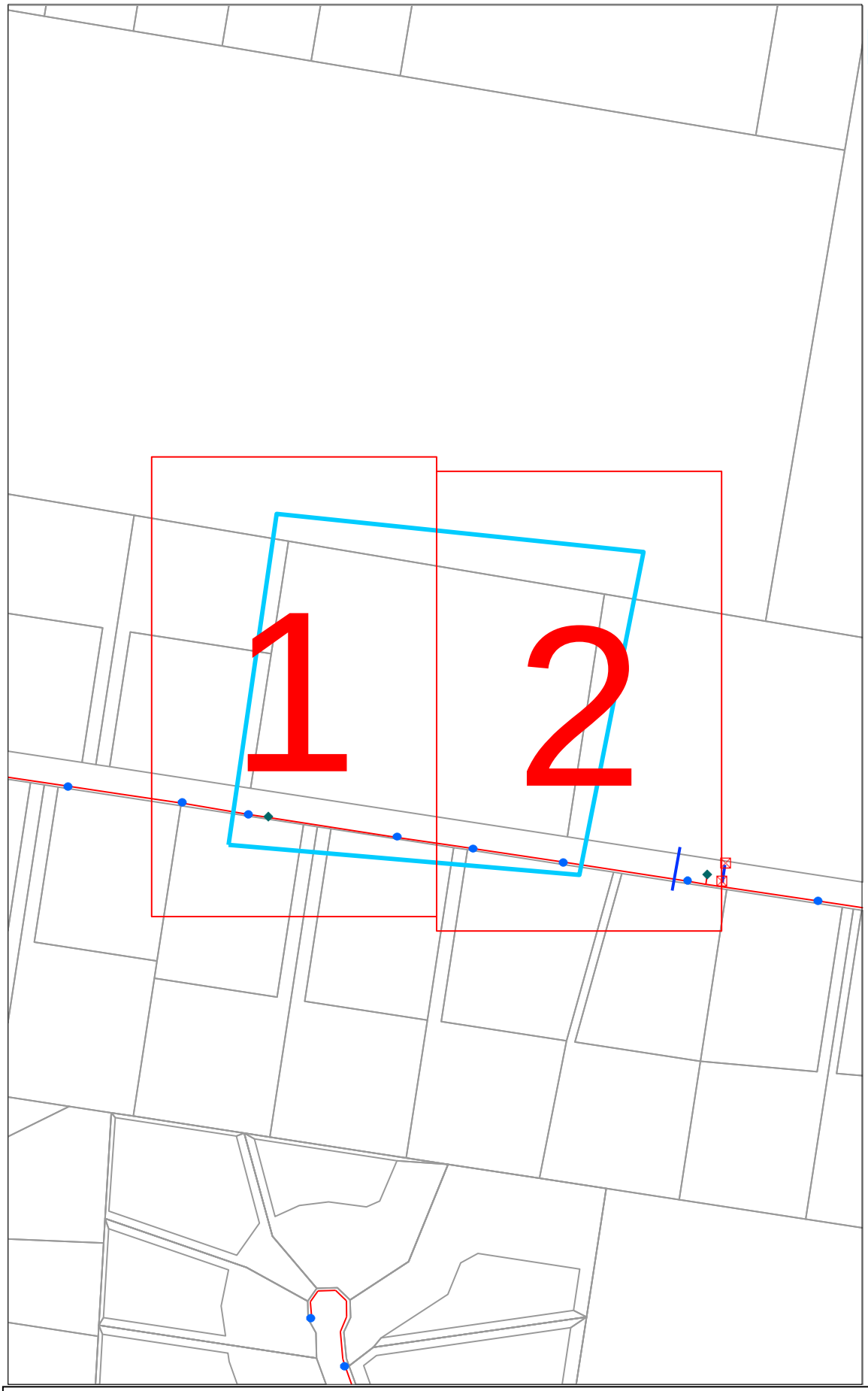
DISCLAIMER: While reasonable measures have been taken to ensure the accuracy of the information contained in this plan response, neither Energex nor PelicanCorp shall have any liability whatsoever in relation to any loss, damage, cost or expense arising from the use of this plan response or the information contained in it or the completeness or accuracy of such information. Use of such information is subject to and constitutes acceptance of these terms.

This output provides details of the ENERGEX electrical network. As variations map exist no responsibility is incurred by ENERGEX for the accuracy or completeness of the information provided. Exact positions of cables and electrical connectivity should be confirmed on site.

Overview Map

Sequence No: 223472522

62-84 Talinga Drive Park Ridge



LEGEND:

- Affected BYDA Work Area
- 1 Detail Map

Sewer Assets

- Sewerage Pump Station - Existing
- Sewerage Pump Station - Retired
- Sewerage Manhole - Existing
- Sewerage Manhole - Retired
- Sewerage Pipe - Existing
- Sewerage Pipe - Retired
- Sewerage Trunk Main - Existing
- Sewerage Trunk Main - Retired
- Sewerage Rising Main - Existing
- Sewerage Rising Main - Retired

Water Assets

- Hydrant - Existing
- Hydrant - Retired
- Valve - Existing
- Valve - Retired
- Water Supply Line - Existing
- Water Supply Line - Retired

Stormwater Assets

- Manholes, Gullies and Drainways
- Telemetry Gauge Station
- Stormwater Headwall
- Telemetry Air Line
- Stormwater Pipes and Culverts

Parcel Types

- Easement
- Base Lot (Type L)
- Water Body (Type W)

N

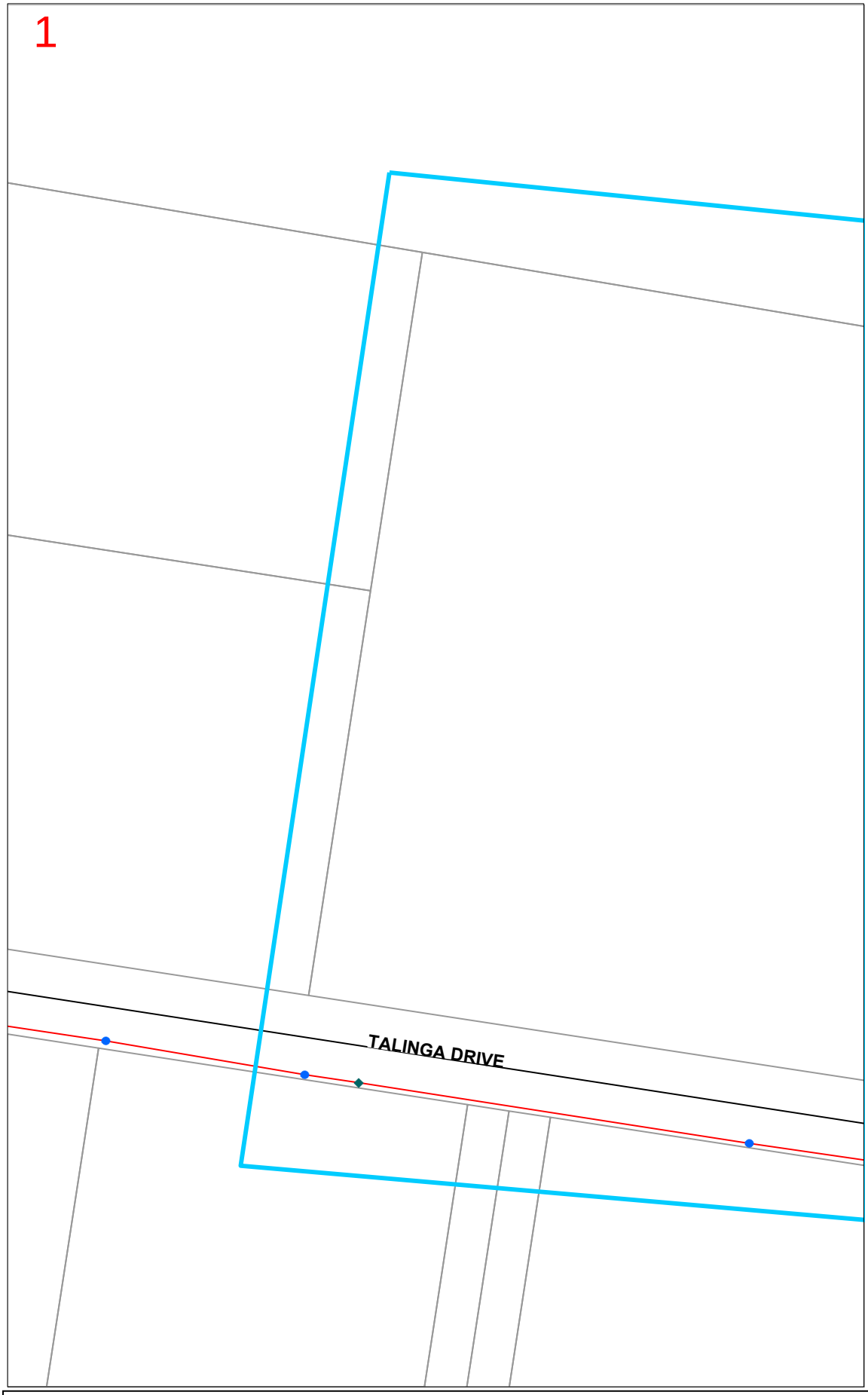
1:3000

0 0.03km

Map 1

Sequence No: 223472522

62-84 Talinga Drive Park Ridge



LEGEND:

- Affected BYDA Work Area
- 1 Detail Map

Sewer Assets

- Sewerage Pump Station - Existing
- Sewerage Pump Station - Retired
- Sewerage Manhole - Existing
- Sewerage Manhole - Retired
- Sewerage Pipe - Existing
- Sewerage Pipe - Retired
- Sewerage Trunk Main - Existing
- Sewerage Trunk Main - Retired
- Sewerage Rising Main - Existing
- Sewerage Rising Main - Retired

Water Assets

- Hydrant - Existing
- Hydrant - Retired
- Valve - Existing
- Valve - Retired
- Water Supply Line - Existing
- Water Supply Line - Retired

Stormwater Assets

- Manholes, Gullies and Drainways
- Telemetry Gauge Station
- Stormwater Headwall
- Telemetry Air Line
- Stormwater Pipes and Culverts

Parcel Types

- Easement
- Base Lot (Type L)
- Water Body (Type W)

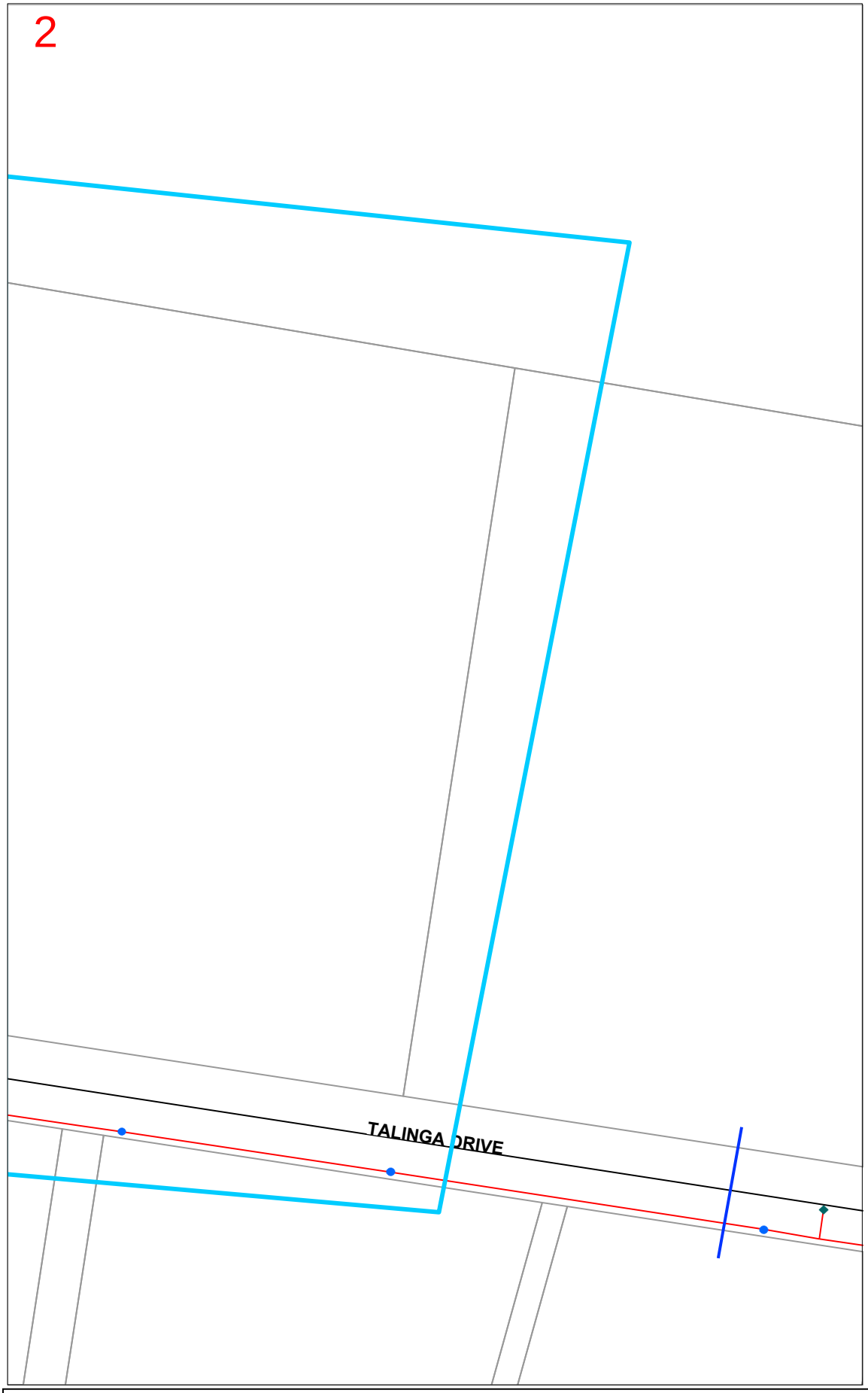
N

1:1000

Map 2

Sequence No: 223472522

62-84 Talinga Drive Park Ridge



LEGEND:

- Affected BYDA Work Area
- 1 Detail Map

Sewer Assets

- Sewerage Pump Station - Existing
- Sewerage Pump Station - Retired
- Sewerage Manhole - Existing
- Sewerage Manhole - Retired
- Sewerage Pipe - Existing
- Sewerage Pipe - Retired
- Sewerage Trunk Main - Existing
- Sewerage Trunk Main - Retired
- Sewerage Rising Main - Existing
- Sewerage Rising Main - Retired

Water Assets

- Hydrant - Existing
- Hydrant - Retired
- Valve - Existing
- Valve - Retired
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Stormwater Assets

- Manholes, Gullies and Drainways
- Telemetry Gauge Station
- Stormwater Headwall
- Telemetry Air Line
- Stormwater Pipes and Culverts

Parcel Types

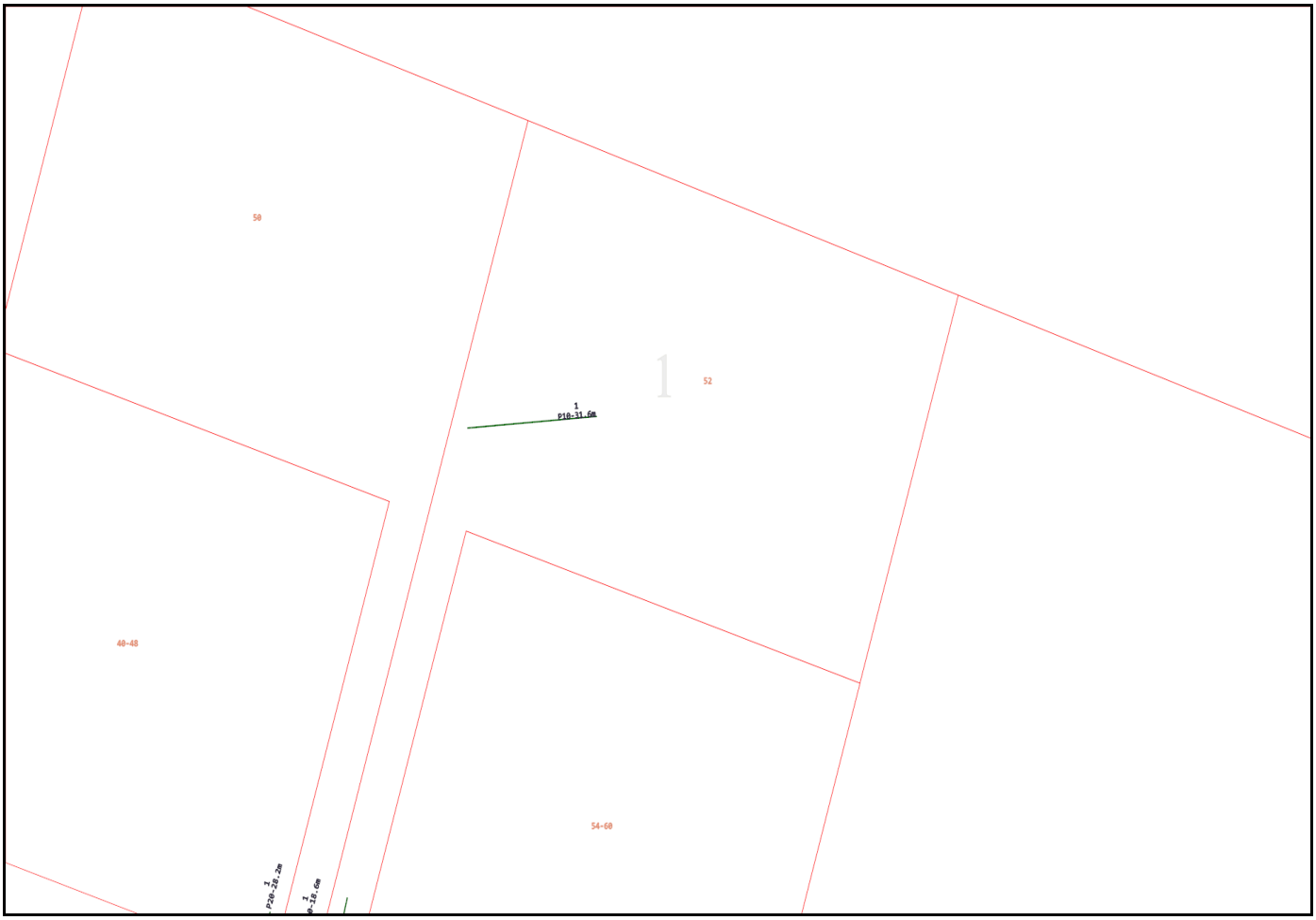
- Easement
- Base Lot (Type L)
- Water Body (Type W)

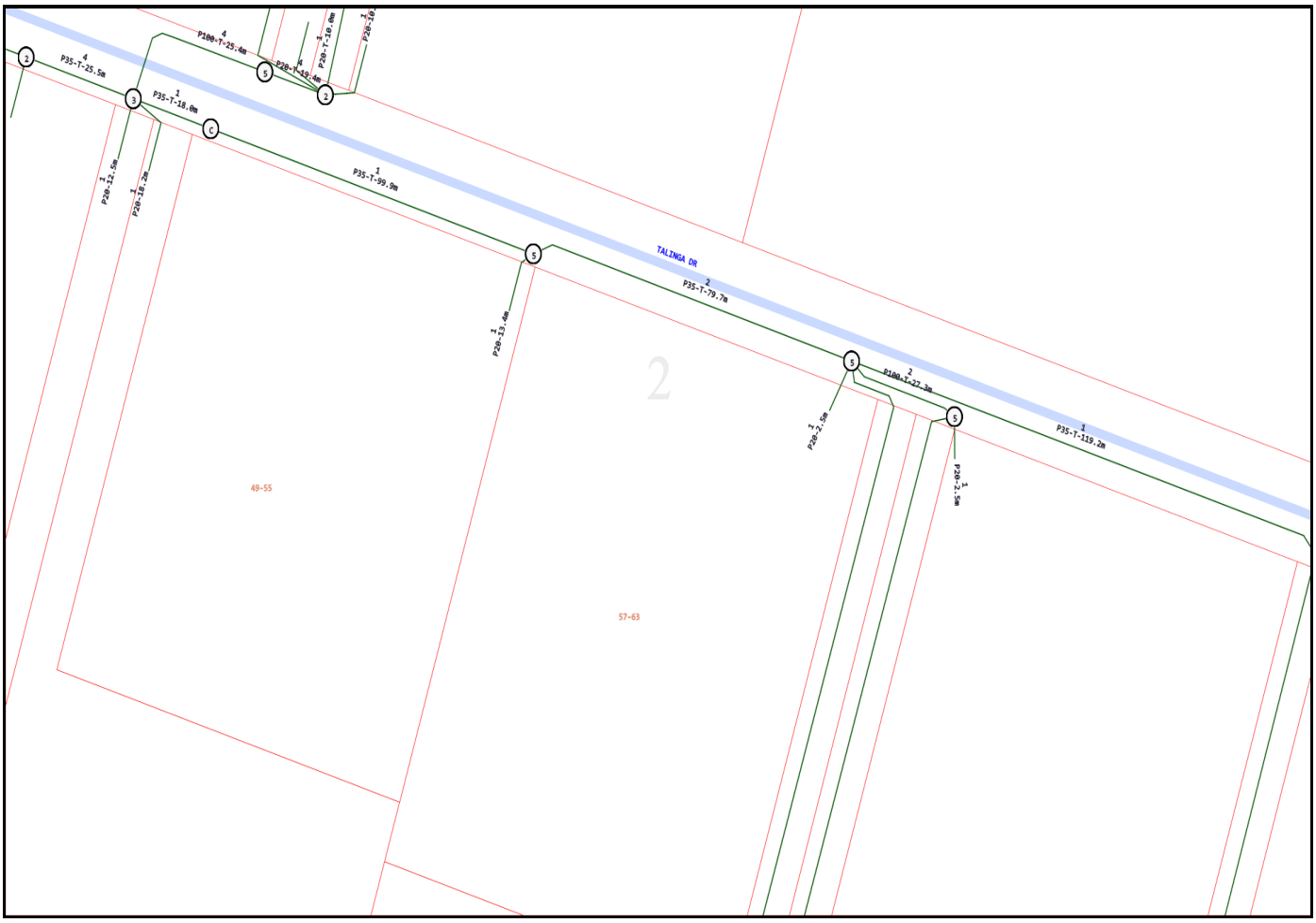
N

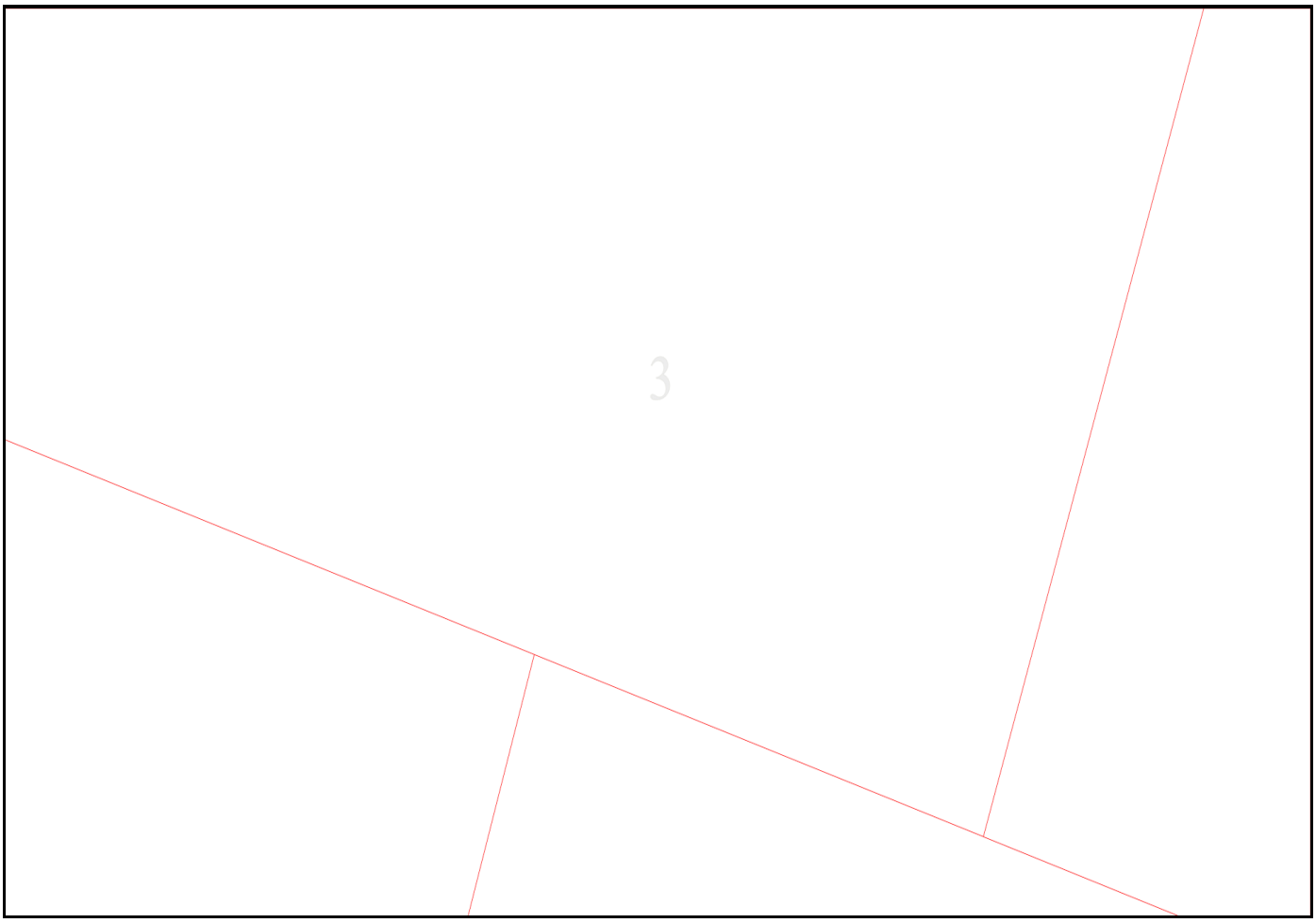
1:1000

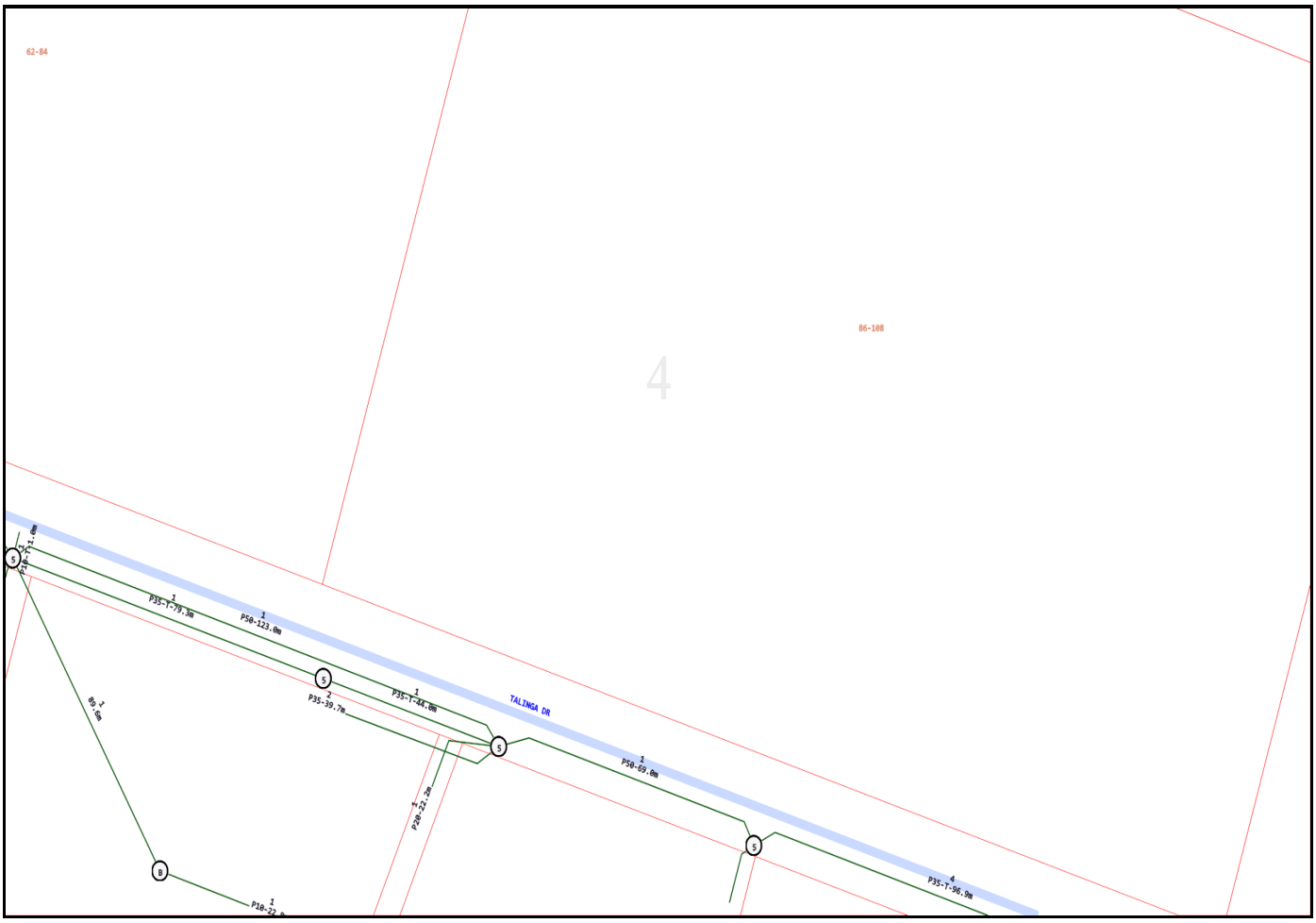
LEGEND

34	Parcel and the location
5	Pit with size "5"
2E	Power Pit with size "2E". Valid PIT Size: e.g. 2E, 5E, 6E, 8E, 9E, E, null.
	Manhole
	Pillar
2 PO – T- 25.0m P40 – 20.0m 5 9	Cable count of trench is 2. One "Other size" PVC conduit (PO) owned by Telstra (-T-), between pits of sizes, "5" and "9" are 25.0m apart. One 40mm PVC conduit (P40) owned by NBN, between pits of sizes, "5" and "9" are 20.0m apart.
2 10.0m 5 9	2 Direct buried cables between pits of sizes ,"5" and "9" are 10.0m apart.
5 9	Trench containing any INSERVICE/CONSTRUCTED (Copper/RF/Fibre) cables.
5 9	Trench containing only DESIGNED/PLANNED (Copper/RF/Fibre/Power) cables.
5 9	Trench containing any INSERVICE/CONSTRUCTED (Power) cables.
BROADWAY ST	Road and the street name "Broadway ST"
Scale	0 20 40 60 Meters 1:2000 1 cm equals 20 m


50
1
52
1
P10-11.6m
40-48
54-60
1
P20-24.2m
1
P9-18.6m


TALINGA DR
49-55
57-63
2
4 P35-T-25.5m
1 P35-T-18.0m
1 P20-12.5m
1 P20-16.2m
4 P100-T-25.4m
4 P20-T-49.4m
1 P20-T-16.0m
1 P20-16.
1 P35-T-99.9m
1 P20-13.4m
2 P35-T-79.7m
1 P20-2.5m
2 P100-T-22.3m
1 P35-T-119.2m
1 P20-2.5m


3



Emergency Contacts

You must immediately report any damage to the **nbn™** network that you are/become aware of. Notification may be by telephone - 1800 626 329.

LEGEND

IT'S HOW WE CONNECT

For more info contact a Certified Locating Organisation or Telstra Plan Services 1800 653 935

Exchange
(Major Cable Present)

Footway Access Chamber
(can vary from 1-lid to 12-lid)

or — Pillar / Cabinet
(above ground / free standing)

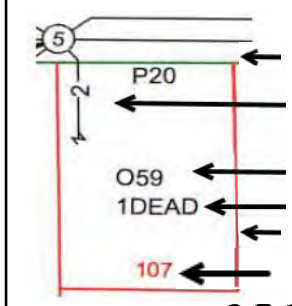
Above ground complex equipment housing (eg RIM)
Please Note: This equipment is powered by 240V Electricity

OC — Other Carrier Telecommunications Cable/Asset

Dist — Distribution cables in Main Cable ducts

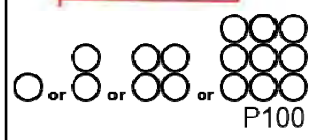
MC — Main Cable ducts on a Distribution plan

▲ — Blocked or damaged duct.

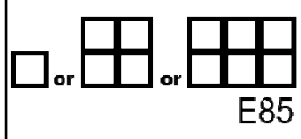


Roadside / Front Boundary
2 pair lead-in to property from pit in street 1

pair working (pair ID 059)
1 pair dead (i.e. spare, not connected)
Side / Rear Property Boundary
Property Number



Single to multiple round conduit
Configurations 1.2.4.9 respectively
(attached text denotes conduit type and size)



Multiple square conduit
Configurations 2, 4, 6 respectively
(attached text denotes conduit type and size)

Cable Jointing Pit
(number / Letter indicating Pit Type)

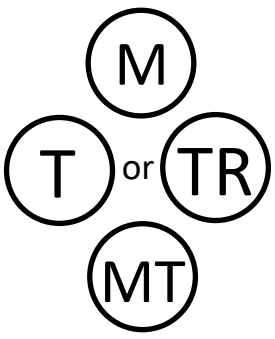
Elevated Joint
(above ground joint on buried cable)

Telstra Plant in shared Utility trench

Aerial Cable

Aerial Cable
(attached to joint Use Pole eg. Power)

Direct Buried Cable



Marker Post Installed

Buried Transponder

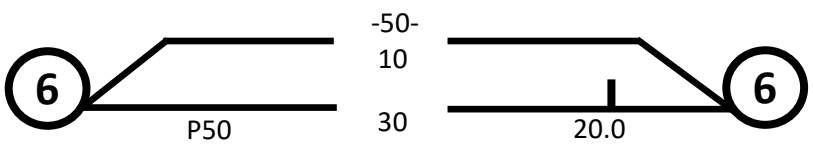
Marker Post, Transponder

Optical Fibre cable direct buried

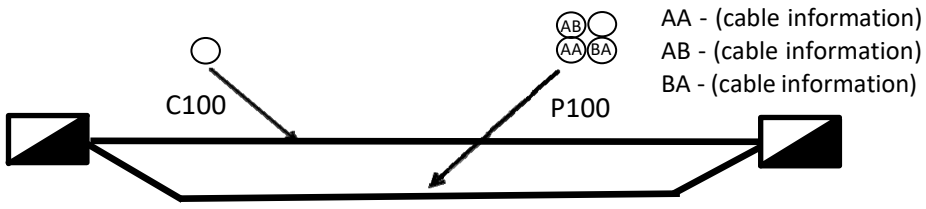
Some examples of conduit type and size:

A - Asbestos cement, P - PVC / Plastic, C - Concrete,
GI - Galanised iron, E - Earthenware
Conduit sizes *nominally* range from 20mm to 100mm
P50 50mm PVC conduit
P100 100mm PVC conduit
A100 100mm asbestos cement conduit

Some Examples of how to read Telstra Plans



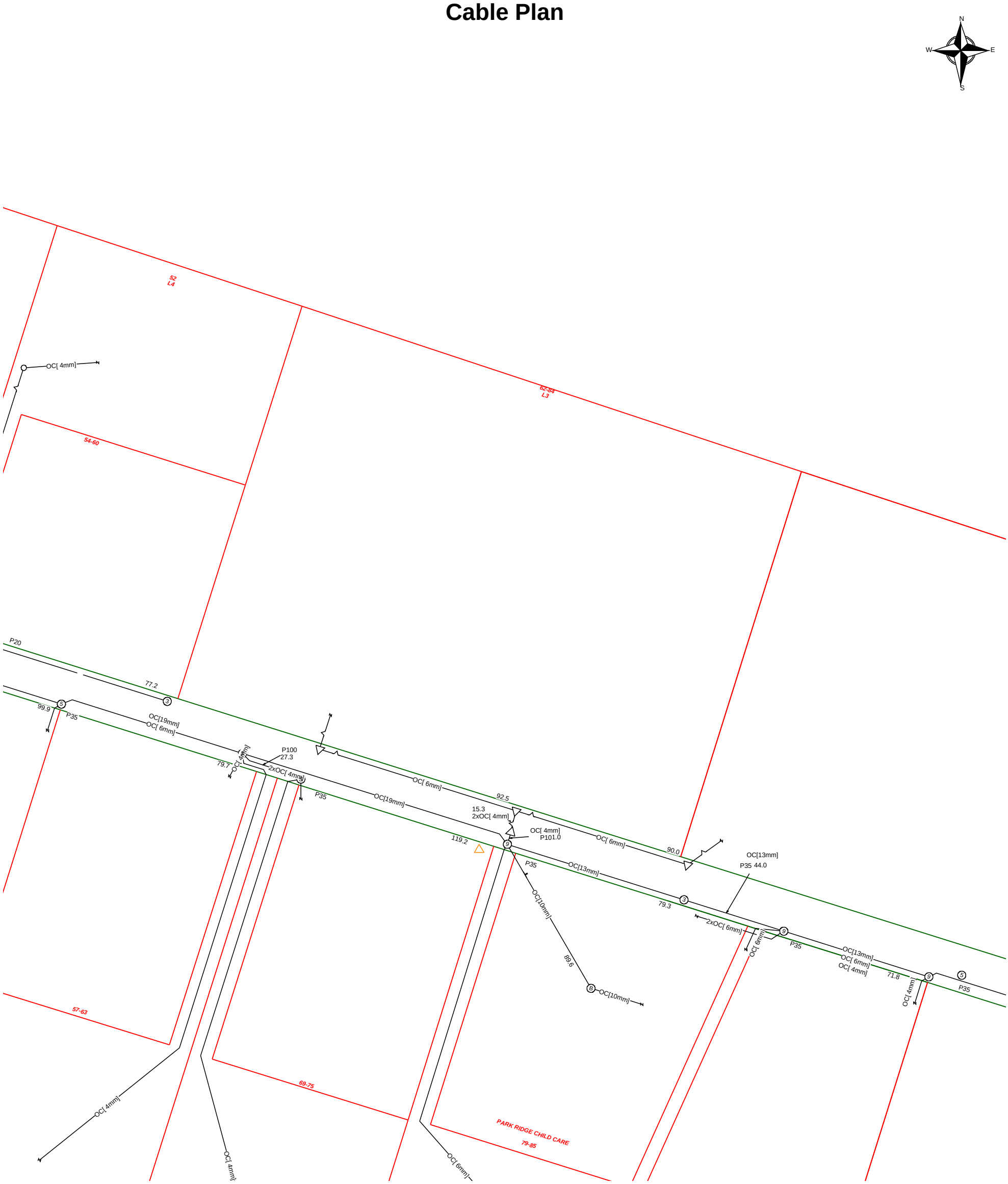
One 50mm PVC conduit (P50) containing a 50-pair and a 10-pair cable between two 6-pits. approximately 20.0m apart, with a direct buried 30-pair cable along the same route



Two separate conduit runs between two footway access chambers (manholes) approximately 245m apart A nest of four 100mm PVC conduits (P100) containing assorted cables in three ducts (one being empty) and one empty 100mm concrete duct (C100) along

WARNING: Telstra plans and location information conform to Quality Level 'D' of the Australian Standard AS 5488 - Classification of Subsurface Utility Information. As such, Telstra supplied location information is indicative only. Spatial accuracy is not applicable to Quality Level D. Refer to AS 5488 for further details. Telstra does not warrant or hold out that its plans are accurate and accepts no responsibility for any inaccuracy shown on the plans. FURTHER ON SITE INVESTIGATION IS REQUIRED TO VALIDATE THE EXACT LOCATION OF TELSTRA PLANT PRIOR TO COMMENCING CONSTRUCTION WORK. A plant location service is an essential part of the process to validate the exact location of Telstra assets and to ensure the assets are protected during construction works. The exact position of Telstra assets can only be validated by physically exposing them. Telstra will seek compensation for damages caused to its property and losses caused to Telstra and its customers.

Cable Plan



Report Damage: https://service.telstra.com.au/customer/general/forms/report-damage-to-telstra-equipment Ph - 13 22 03 Email - Telstra.Plans@team.telstra.com Planned Services - ph 1800 653 935 (AEST bus hrs only) General Enquiries	Sequence Number: 223472519
TELSTRA LIMITED A.C.N. 086 174 781	Please read Duty of Care prior to any excavating
Generated On 14/04/2023 14:39:12	

WARNING
Telstra plans and location information conform to Quality Level "D" of the Australian Standard AS 5488-Classification of Subsurface Utility Information.
As such,Telstra supplied location information is indicative only.Spatial accuracy is not applicable to Quality Level D.
Refer to AS 5488 for further details. The exact position of Telstra assets can only be validated by physically exposing it.
Telstra does not warrant or hold out that its plans are accurate and accepts no responsibility for any inaccuracy.
Further on site investigation is required to validate the exact location of Telstra plant prior to commencing construction work.
A Certified Locating Organisation is an essential part of the process to validate the exact location of Telstra assets and to ensure the asset is protected during construction works.

See the Steps- Telstra Duty of Care that was provided in the email response.

APPENDIX D

LCC Codes

9.4.2 Filling and excavation code

9.4.2.1 Application

1. This code applies to:
   a. material change of use:
      i. that is accepted development (subject to requirements) or code assessable and for which the Filling and excavation code is identified in the 'assessment benchmarks for assessable development and requirements for accepted development' column in a table of assessment in section 5.5 - Categories of development and assessment - Material change of use in Part 5 - Tables of assessment;
      ii. that is made impact assessment in a table of assessment in section 5.5 - Categories of development and assessment - Material change of use or section 5.9 - Categories of development and assessment - local plans in Part 5 - Tables of assessment;
   b. reconfiguring a lot:
      i. that is code assessable and for which the Filling and excavation code is identified in the 'assessment benchmarks for assessable development and requirements for accepted development' column in Table 5.6.1 - Reconfiguring a lot in Part 5 - Tables of assessment;
      ii. that is impact assessable in Table 5.6.1 - Reconfiguring a lot in Part 5 - Tables of assessment;
   c. operational work that is accepted development (subject to requirements) and code assessable operational work - filling or excavation for which the Filling and excavation code is identified in the 'assessment benchmarks for assessable development and requirements for accepted development' column in Table 5.8.1 - Operational work.
2. When using this code, reference should be made to section 5.3.2 - Determining the category of development and category of assessment and, where applicable, section 5.3.3 - Determining the 'assessment benchmarks for assessable development and requirements for accepted development' located in Part 5 - Tables of assessment.

9.4.2.2 Purpose

1. The purpose of the code is to protect premises, people and natural processes from adverse impacts associated with filling or excavation.
2. The purpose of the code will be achieved through the following overall outcomes:
   a. development protects:
      i. natural physical processes and ecosystems;
      ii. existing and planned infrastructure;
      iii. personal health and safety and premises;
      iv. visual amenity.

9.4.2.3 Assessment benchmarks for assessable development and requirements for accepted development

Part A - Requirements for accepted development (subject to requirements) and assessment benchmarks for assessable development

Table 9.4.2.3.1 - Filling and excavation code: accepted development (subject to requirements) and assessable development

Performance outcomes	Acceptable outcomes	Comments
For accepted development (subject to requirements) and assessable development		
Protection of natural processes and ecosystems		
PO1 The discharge of sediments and pollutants from filling or excavation does not adversely affect a waterway or the stormwater network.	**AO1** The discharge of sediments and pollutants to a waterway or stormwater network complies with part 3.3 - Filling and excavation standards in Planning scheme policy 5 - Infrastructure.	**AO1 – COMPLIES** The development site shall incorporate drainage, sediment, erosion and dust control measures to ensure works undertaken on site do not adversely affect the downstream waterway and stormwater network. Sediment & Erosion controls will be provided during operational works earthworks design. Further sediment and erosion control measures and details are provided in the Stormwater Management Plan, reference GA0002-30156352-AAR by Arcadis.
PO2 Topsoil and spoil stockpiled on the premises do not adversely affect natural processes and ecosystems.	**AO2** Topsoil and spoil is stockpiled to comply with part 3.3 - Filling and excavation standards in Planning scheme policy 5 - Infrastructure.	**AO2 – COMPLIES** Topsoil and spoil shall be stockpiled in select locations around the site during construction. Appropriate measures, including sediment and erosion control shall be implemented to ensure the stockpiling of such materials does not adversely affect natural processes and ecosystems.

PO3 Filling is carried out using stable, solid and clean earth, free of organic and putrescible waste, rubbish and refuse material.	**AO3** Filling complies with part 3.3 - Filling and excavation standards in Planning scheme policy 5 - Infrastructure.	**AO3 – COMPLIES** Filling on site shall be carried out using stable, solid and clean materials. It is expected that Level 1 geotechnical supervision shall be undertaken during the earthworks phase.
Protection of existing and planned infrastructure		
PO4 Filling or excavation works do not adversely affect infrastructure, including any services.	**AO4** Filling or excavation works comply with part 3.3 - Filling and excavation standards in Planning scheme policy 5 - Infrastructure.	**AO4 – COMPLIES** All earthworks conducted on site shall be undertaken in a manner which protects any existing or proposed infrastructure and services in accordance with the standards in planning scheme policy 5-Infrastructure
Protection and enhancement of personal health and safety and premises		
PO5 Filling or excavation works do not adversely affect personal health and safety.	**AO5** Filling or excavation works comply with part 3.3 - Filling and excavation standards in Planning scheme policy 5 - Infrastructure.	**AO5 – COMPLIES** All earthworks conducted on site shall be undertaken in a safe manner, with appropriate workplace health and safety measures being implemented.
Surface water flow		
PO6 Surface water drainage does not cause any of the following: a. ponding on any premises; or b. a hazard or adversely affect personal health and safety and premises; or c. diversion or concentration of flow from or onto adjoining premises or infrastructure.	**AO6** Surface water drainage complies with part 3.3 - Filling or excavation standards in Planning scheme policy 5 - Infrastructure.	**AO6 – COMPLIES** The development proposes to maintain a similar drainage regime as the existing scenario. The site shall be free draining and is to incorporate a combined bio retention/detention basin to treat and detain stormwater prior to discharging from the site in accordance with Council's planning scheme requirements. Stormwater Management Plan reference GA0002-30156352-AAR by Arcadis, should be referred to for further details.

Batters		
PO7 A batter: a. does not adversely affect the natural physical processes and ecosystems; b. protects existing and planned infrastructure; c. is safe, stable and easily maintained; d. is landscaped to enhance visual amenity.	**AO7** A batter is designed and constructed to comply with the standards specified in 3.3.6 - Batters and retaining walls in Planning scheme policy 5 - Infrastructure.	**AO6 – COMPLIES** The development proposes to maintain a similar drainage regime as the existing scenario. The site shall be free draining and is to incorporate a combined bio retention/detention basin to treat and detain stormwater prior to discharging from the site in accordance with Council's planning scheme requirements. Stormwater Management Plan reference GA0002-30156352-AAR by Arcadis, should be referred to for further details.
Retaining walls		
PO8 A retaining wall: a. is not constructed of timber and is not located on existing or proposed lot boundaries, or movement networks; b. does not adversely affect the natural physical processes and ecosystems; c. is located to avoid conflict with adjoining premises; d. is located such that existing and planned infrastructure is not adversely affected; e. protects the visual amenity of adjoining premises or a public open space; f. is located within the premises that is being filled; g. is located within the premises that is cut and is designed to take any surcharge loading allowable on the uphill lot;	**AO8** A retaining wall is designed and constructed to comply with the standards specified in section 3.3.6.2 - Retaining walls in Planning scheme policy 5 - Infrastructure.	**AO8 – COMPLIES** Retaining Wall shall be generally designed and constructed to comply with the standards specified in section 3.3.6–Batters and retaining walls in planning scheme policy 5–Infrastructure. A performance solution is proposed for the Lot 30, 86, 87 & 77 with a boundary interface with a single tier wall larger than 1.5m. In both cases it determined to increase the wall height to avoid back grading the adjacent higher lots. The final design shall be submitted to Council for approval as part of a future development application.

h. is safe and stable; i. enables easy access for maintenance.		
Filling of a dam		
PO9 The filling of a dam: a. does not adversely affect the natural physical processes and ecosystems; b. creates a safe and stable surface; c. is integrated into the landscape.	**AO9** The filling of a dam complies with part 3.3 - Filling and excavation standards in Planning scheme policy 5 - Infrastructure.	**AO9 – COMPLIES** The proposed dams that will be filled will be subject to geotechnical testing to provide a safe stable surface. The catchment of the dams are not part a formal waterway and are feed from catchments that are part of the existing lot it is situated. Therefore they are not expected to affect any natural processes.

9.4.3 Infrastructure code

9.4.3.1 Application

1. This code applies to:
    a. material change of use:
        i. that is accepted development (subject to requirements) or code assessable and for which the Infrastructure code is identified in the 'assessment benchmarks for assessable development and requirements for accepted development' column in a table of assessment in section 5.5 - Categories of development and assessment - Material change of use in Part 5 - Tables of assessment;
        ii. that is made impact assessment in a table of assessment in section 5.5 - Categories of development and assessment - Material change of use or section 5.9 - Categories of development and assessment - Local plans in Part 5 - Tables of assessment;
    b. reconfiguring a lot:
        i. that is code assessable and for which the Infrastructure code is identified in the 'assessment benchmarks for assessable development and requirements for accepted development' column in Table 5.6.1 - Reconfiguring a lot in Part 5 - Tables of assessment;
        ii. made impact assessment in Table 5.6.1 - Reconfiguring a lot in Part 5 - Tables of assessment;
    c. operational work that is infrastructure work:
        i. that is accepted development (subject to requirements) or code assessable and for which the Infrastructure code is identified in the 'assessment benchmarks for assessable development and requirements for accepted development' column Table 5.8.1 - Operational work in Part 5 - Tables of assessment.
2. When using this code, reference should be made to section 5.3.2 - Determining the category of development and category of assessment and, where applicable, section 5.3.3 - Determining the 'assessment benchmarks for assessable development and requirements for accepted development' located in Part 5 - Tables of assessment.

9.4.3.2 Purpose

1. The purpose of the code is to ensure that infrastructure is provided to service development.
2. The purpose of the code will be achieved through the following overall outcomes:
    a. development protects the existing infrastructure and planned infrastructure networks being the:
        i. movement network;
        ii. park network;
        iii. water network;

iv. sewerage network;
v. stormwater network;
vi. other networks including electricity, gas and telecommunications;
vii. land for community facilities network;

b. development other than operational work provides infrastructure that is necessary to service the development, including elements of:
i. a safe, efficient and legible road network;
ii. a safe, efficient and legible public transport network;
iii. a safe, efficient and legible cycle network;
iv. a safe, efficient and legible pedestrian network;
v. a safe, efficient and legible parks network;
vi. a safe and efficient water network;
vii. a safe and efficient sewerage network;
viii. a safe and efficient stormwater network;
ix. safe and efficient other networks including electricity, gas and telecommunications;
x. a safe and efficient road lighting network;
xi. land for a community facilities network;

c. development integrates with existing and planned infrastructure networks;
d. infrastructure is designed and constructed to deliver a standard of service that is efficient and equitable;
e. the cost to the community for the life of the infrastructure is minimised by providing for a suitable design life, ease of maintenance and ease of replacement;
f. development appropriately manages refuse and recycling storage and collection;
g. infrastructure protects personal health and safety and premises;
h. infrastructure protects environmental values.

9.4.3.3 Assessment benchmarks for assessable development and requirements for accepted development

Part A - Requirements for accepted development (subject to requirements) and assessment benchmarks for assessable development

Table 9.4.3.3.1 - Infrastructure code: accepted development (subject to requirements) and assessable development

Performance outcomes	Acceptable outcomes	Comments

For accepted development (subject to requirements) and assessable development		
Provision, design, construction and location of infrastructure		
PO1 Development is demonstrated to be capable of being serviced by necessary infrastructure.	**AO1** Reports, plans and drawings are provided in accordance with part 2 of Planning scheme policy 5 - Infrastructure.	**AO1 – COMPLIES** The development can be adequately serviced with all necessary engineering services, including sewer, water, stormwater drainage, electrical and telecommunication infrastructure. Engineering Services Report, reference GA0001-30156352-AAR by Arcadis should be referred to for further details
PO2 Development: a. provides necessary infrastructure to service the development; b. provides that the design, construction and location of necessary infrastructure: i. protects existing and planned infrastructure networks; ii. services proposed development; iii. integrates with existing and planned infrastructure networks; iv. delivers a standard of service that is efficient and equitable; v. minimises the cost to the community for the life of the infrastructure by providing a suitable design life, ease of maintenance and ease of replacement; vi. protects personal health, safety and premises; vii. protects environmental values.	**AO2** Development: a. in a water supply service area connects to the water network in accordance with the SEQ Water Supply and Sewerage Design and Construction Code; b. not in a water supply service area provides a tank with a minimum storage capacity of 45,000 litres; c. in a sewerage supply service area connects to the waste water network in accordance with the SEQ Water Supply and Sewerage Design and Construction Code; d. not in a sewerage supply service area complies with part 1 of the Queensland Plumbing and Wastewater Code; e. provides stormwater infrastructure in accordance with part 3.6 of Planning scheme policy 5 - Infrastructure; f. provides a movement network infrastructure in accordance with part 3.4 of Planning	**AO2 – COMPLIES** The development can be adequately serviced with all necessary engineering services, including sewer, water, stormwater drainage, electrical and telecommunication infrastructure. The infrastructure will be design in accordance with the relevant infrastructure design codes/standards and relevant authority Standards/requirements. Engineering Services Report, reference GA0001-30156352-AAR by Arcadis should be referred to for further details.

	scheme policy 5 - Infrastructure; g. provides parks in accordance with part 3.12 of Planning scheme policy 5 - Infrastructure; h. provides road lighting in accordance with part 3.5 of Planning scheme policy 5 - Infrastructure; i. provides electricity reticulation in accordance with part 3.8 of Planning scheme policy 5 - Infrastructure; j. provides gas and telecommunications reticulation in accordance with part 3.9 of Planning scheme policy 5 - Infrastructure. k. is consistent with the general planning layouts in part 7.2 of Planning scheme policy 5 - Infrastructure. Editor's note - The delivery of any part of a network identified in the plans for trunk infrastructure is governed by Part 4 - Local government infrastructure plan.	
Location of development		
PO3 Development is located to protect trunk infrastructure networks.	**AO3** Development is located outside a network identified in Local government infrastructure plan map LGIP-03.00 to 08.00 Plans for trunk infrastructure in Schedule 3 - Local government infrastructure plan mapping and tables.	**AO3 – COMPLIES** Trunk road infrastructure upgrades are within the immediate vicinity of the site in accordance with Council Priority Infrastructure Planning maps. Engineering Services Report, reference GA0001-30156352-AAR by Arcadis should be referred to for further details on the provisions made for the trunk roads. .

Fire fighting		
PO4 Development in a water service area accessed by common private title provides: a. fire hydrant infrastructure; b. unimpeded access for emergency services vehicles. Editor's note - The term common private title refers to areas such as access roads in community title developments or strata title unit access, which are private and under group or body corporate control.	**AO4** Development in a water service area involving a material change of use or reconfiguring a lot where, or to be, accessed by common private title ensures that fire hydrant placement and technical requirements for streets and access ways are in accordance with: a. Australian Standard (AS) 2419.1 - 2005 *Fire hydrant installations*; b. QFES: *Fire Hydrant and vehicle access guidelines for residential, commercial and industrial lots*.	**PO4 – COMPLIES** The development has potable water fronting all allotments. During detailed design, correct hydrant placement will be determined and designed accordingly.
PO5 Development not in a water service area provides sufficient water storage with adequate pressure, volume and flow to service development for fire fighting purposes.	**AO5** Development: a. is connected to a reticulated water supply scheme that has sufficient flow and pressure characteristics for fire fighting purposes at all times with a minimum pressure and flow of 10 litres per second at 200kPa; or b. has on-site water storage in accordance with Table 9.4.3.3.2 - Water storage for fire fighting, dedicated or retained for fire fighting purposes that is made of fire resistant materials and is: i. a separate tank; or ii. a reserve section in the bottom part of the main water supply tankwater tank. Editor's note - The requirement in AO5 is: - in addition to the requirement for potable water supply/storage in AO2 in Table 9.4.3.3.1 - Infrastructure code: accepted development (subject to requirements) and	**AO5 – COMPLIES** The development will be connected to a reticulated water supply network which shall be designed to provide adequate levels of service for firefighting and property service demands. Engineering Services Report, reference GA0001-30156352-AAR by Arcadis should be referred to for further details

	assessable development; - reflected in AO5 in Table 8.2.3.3.1 - Bushfire hazard overlay code: accepted development (subject to requirements) and assessable development.	
Waste management		
PO6 Development provides refuse and recycling collection and storage facilities that are located and managed so that adverse impacts on building occupants, neighbouring properties and the public realm are minimised.	**AO6.1** Development provides refuse and recycling collection and storage facilities in accordance with Planning scheme policy 9 - Waste management. **AO6.2** Development ensures that the location and design of refuse and recycling collection and storage facilities does not have any adverse impact including odour, noise or visual impacts on the amenity of land uses within or adjoining the development. Note - Planning scheme policy 9 - Waste management provides guidance on how to achieve this outcome.	**AO6 – NOT APPLICABLE** Development is for residential allotments. Bin pads have been provided for pick up, however, the storage of the bins will be determined at building phase.
Disposal of trade waste		
PO7 The disposal of trade waste in a sewerage supply service area does not adversely affect the sewerage network.	**AO7** The disposal of trade waste in a sewerage supply service area complies with the sewer admission standards in section 3.2.6 - Sewer admission standards in Planning scheme policy 3 - Environmental management.	**AO7 – NOT APPLICABLE** The development does not propose any sites which are to generate or dispose of trade waste.
Roof water drainage and surface water drainage		
PO8 Development provides stormwater infrastructure for the drainage of the premises so as not to	**AO8** Development complies with the standards for stormwater infrastructure specified in part 3.6 of	**AO8 – COMPLIES** The development proposes to maintain a similar drainage regime as the existing scenario. The site shall be free draining and is to incorporate

cause any of the following: a. ponding of stormwater on the premises; b. a hazard to personal health and safety; c. damage to premises; d. an increased risk of flooding to premises within the catchment.	Planning scheme policy 5 - Infrastructure.	road and piped drainage in combination with a combined bio-retention/detention basin to treat and detain stormwater prior to discharging from the site in accordance with Council's planning scheme requirements. Stormwater Management Plan, reference GA0002-30156352-AAR by Arcadis, should be referred to for further details.
Natural flow of surface water		
PO9 Development provides that the natural flow of surface water is: a. not altered so as to cause a risk to personal health and safety or damage to property; b. not increased in intensity, velocity or frequency; c. not concentrated onto adjoining premises.	**AO9** Development complies with the standards for stormwater infrastructure specified in part 3.6 of Planning scheme policy 5 - Infrastructure.	**AO9 – COMPLIES** The development proposes mimicking the existing natural flow of surface water from its discharge. Earthworks have been set back from top of bank within the waterway to facilitate unhindered frequent flow. Internal drainage will be managed via a mixture of pit and pipe and overland flow to the relevant treatment devices. Stormwater Management Plan, reference GA0002-30156352-AAR by Arcadis, should be referred to for further details.
Water sensitive urban design		
PO10 Development which provides stormwater infrastructure incorporates water sensitive urban design principles having regard to: a. protecting existing natural features and ecological processes; b. protecting the natural hydrologic behaviour of catchments;	**AO10** Development complies with the standards for stormwater infrastructure specified in part 3.6 of Planning scheme policy 5 - Infrastructure.	**AO10 – COMPLIES** The development proposes to manage stormwater quantity and quality via a combined bioretention basin and detention basin. This has been designed in accordance with QUDM, WUSD and Council guidelines. Stormwater Management Plan, reference GA0002-30156352-AAR by Arcadis, should be referred to for further details.

c. protecting the existing natural flow and water quality regimes of waterways; d. protecting water quality of surface and ground waters; e. minimising demand on the water network; f. minimising sewage discharges to the natural environment; g. integrating water into the landscape to enhance visual and ecological values.		
Movement network		
PO11 The projected traffic levels for a use do not adversely affect the planned standards of service for a road or intersection.	**AO11** Development does not cause or contribute to projected traffic levels: a. exceeding the maximum vehicle trips per day in Table 3.4.1.4.2 in Planning scheme policy 5 - Infrastructure; or b. exceeding the maximum control delays through intersections in peak periods in Table 3.4.1.4.3 in Planning scheme policy 5 - Infrastructure.	**P011 – COMPLIES** Refer to the Traffic Impact Assessment by others for further details.
Integrated movement concept report		
PO12 Development which generates more than 3,000 vehicle trips per average weekday is designed to integrate the movement network to minimise the transportation costs required to service the use.	**AO12** Development which generates more than 3,000 vehicle trips per average weekday provides an integrated movement concept report which integrates the planning of the movement network in accordance with part 2 and 3 of Planning scheme policy 5 - Infrastructure.	**PO12 – COMPLIES** The proposed internal road network shall be subject to detailed design. Appropriate measures shall be incorporated to manage any impacts on surrounding traffic levels.
For assessable development only		

Land use and transport integration		
PO13 Development within 400 metres of existing or future public passenger transport facilities where the total site area is 5,000m^2 or more: a. supports a road hierarchy which facilitates efficient, safe and accessible bus services connecting to existing and future public passenger transport facilities; b. enhances connectivity between existing and future public passenger transport facilities and other transport modes; c. optimises the walkable catchment to existing and future public passenger transport facilities; d. provides for direct and safe access to and use of existing or future public passenger transport facilities. Note - SPP code: Land use and transport integration in Appendix 4 of the state planning policy provides guidance to achieve this outcome.	**AO13** No acceptable outcome provided.	**PO13– COMPLIES** The proposed development will incorporate a road network which is designed and constructed in accordance with Council's guidelines. The road network will be designed to facilitate efficient, safe and accessible travel routes to support pedestrian and vehicle movements.

Table 9.4.3.3.2 - Water storage for fire fighting

Column 1 Lot size / use type	Column 2 Water requirement
For each residential lot:	
a. less than 1,000m^2	5,000 litres
b. between 1,000m^2 and less than 1 hectare	10,000 litres

c. greater than 1 hectare	20,000 litres
Multiple dwelling	5,000 litres per dwelling up to a maximum of 20,000 litres
A use other than Multiple dwelling	5,000 litres or the prevailing rural fire brigade standard