Parkside Yeronga

Conceptual Engineering Services Report

Prepared for: Economic Development Queensland (EDQ)

Date: 14/02/2022

Prepared by: Anthony Raadschelders

Ref: 301048272

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Revision

Revision	Date	Comment	Prepared By	Approved By
A	08/09/2021	Draft – Issued for Comment	AR	AR
B	15/9/2021	Issued for Approval	AR	AR
C	11/11/2021	Draft Further Issues Response	AR	AR
D	14/02/2022	Further Issues Response	AR	AR

Site Address: 70 Park Road, Yeronga Q 4104
Real Property Description: Lot 3 on SP 300888
Proposed Development: PDA Preliminary Approval for a material change of use and a PDA Development Permit for a reconfiguring a lot (1 into 11 lots, easements and road).

Client: Economic Development Queensland
Authority: Minister for Economic Development Queensland
Stantec Reference: 301048272

Anthony Raadschelders RPEQ 19881
For and on behalf of
Stantec Australia

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1. Introduction

Stantec Australia (Stantec) have been commissioned by the Economic Development Queensland (EDQ) to prepare this Engineering Services Report in conjunction with an application for a PDA Preliminary Approval for a material change of use and a PDA Development Permit for a reconfiguring a lot (1 into 11 lots, easements and road) on the site located at 70 Park Rd, Yeronga.

This report provides a framework for addressing site engineering constraints, and conceptual servicing strategies to support the Parkside Yeronga proposal. The framework will demonstrate strategies to achieve compliance with the relevant State and EDQ standards and requirements as appropriate, to ensure that the development can be adequately serviced and result in no discernible amenity or environmental impact.

1.1 Further Issues Response

The Applicant received a Further Issues Letter from Economic Development Queensland Development Assessment dated 26 October 2021. This report has been revised to reflect the items raised. Specifically:

Item 4a - *Resubmit all Civil Engineering Plan contained in Appendix D of the Conceptual ESR, prepared by Stantec, dated 15 Sept 2021 to be certified by a RPEQ.*

Item 4b - *The proposal seeks to re-align the existing private sewerage of the Yeronga Secondary State School site. Provide the adjoining property owner written consent to carry out the proposed private sanitary realignment works within their land. Alternatively, the application shall provide an amended plan shown the proposed extent of the sewer within the site, up to where the existing private sanitary drainage crosses the property boundary.*

Item 4c - *Provide preliminary sewer long sections demonstrating that the proposed network can achieve minimum standard grades, covers and clearances with other existing and proposed infrastructure.*

Item 4d - *The Combined Service Plan – Conceptual Masterplan, drawing number CI-700-P02, rev A, prepared by Stantec, dated 15 September 2021, shows a sewer connection to Lot 7. Demonstrate how Lots 7, 8 and 9 will be independently connected to the water and sewerage networks, either by separate direct connections to the public networks within the road or through private services on private land under services easement.*

Item 4e - *The proposal does not provide water connections to Lots 12 & 13 (green spine). Given this is a green spine, a water connection to these Lots should be considered for irrigation purposes.*

Item 4f - *The ESR should confirm the purpose of lots 12 and 13 and that connection to the sewerage network is not required. That is, amenities such as drink fountains that require sewerage connection is not proposed.*

Item 4g - *The Combined Service Plan – Conceptual Master plan, drawing number CI-700-P02, rev A, prepared by Stantec, dated 15 September 2021, shows a water reticulation section through Lot 1 to service Lot 11 which is not acceptable. Amend the services plan to remove the section of the water main shown within Lot 1.*

2. Purpose and Constraints

2.1 Purpose

The purpose of this Concept Engineering Report is to outline a framework for the provision of services to the proposed development and demonstrate the principles which will be adopted regarding Earthworks, Roads, Water, Sewer, Underground Power and Communications and Stormwater Management on the site.

This Report specifically addresses the following in a preliminary format:

- Earthworks & Erosion Control
- Road and Footpath Network
- Sewer Reticulation
- Water Reticulation
- Stormwater Drainage
- Underground Power and Communications

2.2 Constraints

Key constraints for the proposed development include the following:

- The proposed development is to be serviced with reticulated water, sewer, power and telecommunications,
- The proposed development is to establish safe vehicular, cyclist and pedestrian access to and from the site;
- The proposed development is not to produce adverse hydraulic impacts on adjacent properties during the construction, maintenance and operational phases of the development,
- Stormwater discharging from the site is to be at acceptable discharge levels and quality; and
- All reasonable and practical measures must be taken to minimise or prevent environmental harm.

3. Existing Site Characteristics

3.1 Property Detail

Address:	70 Park Road, Yeronga 4104
Real Property Description:	Lot 3 on SP 300888
Total Site Area:	31,229m² (3.123ha)

For the purpose of the development application, the Parkside Yeronga site relates to all land within the Yeronga Priority Development Area. In broad terms, the site can be described as the land bounded by Villa Street, Park Street, the railway line and Yeronga State School. This is pictured in Figure 3-1 and Figure 3-2 below.

Figure 3-1: PDA Boundary (Source: DSDMIP, 2018)

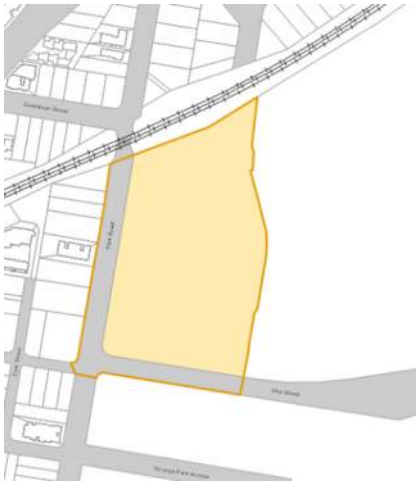


Figure 3-2: Site Location Plan (Source: Nearmap Australia 2018)

3.2 Existing Site Conditions

The site was formerly occupied by the Yeronga TAFE until it closed in 2010. All buildings on the site have been demolished and the site cleared. However, for the purposes of assessing development impacts, the site's former use should be considered as the baseline position.

3.3 Proposed Development

The proposal seeks a PDA Preliminary Approval for a material change of use and a PDA Development Permit for a reconfiguring a lot (1 into 11 lots, easements and road). The proposed Plan of Subdivision is included in Appendix A.

The proposal seeks a PDA preliminary approval for a material change of use in accordance with a masterplan for the development of 4 precincts as follows:

1. Residential Precinct
2. Community Precinct
3. Commercial Precinct
4. Open Space Precinct

The land uses sought in each precinct are outlined within Table 3-1 below.

Residential Precinct	Community Precinct	Commercial Precinct	Open Space Precinct
Care co-located uses (where not a Place of worship) Dwelling house Dual occupancy Multiple dwelling Park Residential care facility Retirement facility	Childcare centre Community care centre Community use Food and drink outlet Shop	Childcare centre Community care centre Food and drink outlet Health care service Office Shop	Park

Table 3-1: Precinct land uses

The PDA Development Permit for reconfiguring a lot (1 into 11 lots, easements and road) will be undertaken in the following stages:

- **Stage 1**: 3 lot subdivision to establish lots 1, 11 easements and balance lot (lot 500)
- **Stage 2a**: 8 lot subdivision of balance lot (lot 500) to establish lots 3, 4, 5, 6, 7, 8 and easements
- **Stage 2b**: volumetric easements (Public Plaza)

There will be subsequent stages for separate applications associated with Material Change of Use applications for each of the newly created lots (not part of this application).

The proposed Masterplan in Appendix B has been used to develop a potential composition. This will demonstrate the proposed servicing has adequate capacity to support the proposed development.

For the purposes of assessing capacity of the infrastructure to support the development, the following demand units have been utilised:

- 38 attached residential dwellings
- 78 residential units
- 178 Retirement Living units
- 6000m² GFA commercial use
- 730m² GFA Community Use
- Recreational areas including community gardens

It is noted that the Masterplan layout is illustrative of the intended development but is subject to design development and associated approvals. Therefore, depicted civil works, should be interpreted as pictorial only, and not necessarily an engineering requirement.

3.4 Topography

The sites ground level prior to the demolition of the existing improvements ranged from a minimum of 5.5m AHD adjacent to the rail line embankment, to a maximum ground level of 22.3m AHD on Villa St. The site generally grades from the southern boundary to the northern boundary. The topography is characterised as steep or retained towards Villa St, with general grade on average of 8% towards the railway line. Batters are located adjacent to the railway line adjacent to the stormwater inlet pit. The Pre-demolition Detailed Feature Survey drawing prepared by RPS has been included in Appendix C. This survey was of the existing campus. It is noted that the site has now been demolished.

4. Civil Engineering

4.1 Road Access

The proposed development lot layout by Wolters Consulting (in Appendix A) illustrates that the internal road is proposed to be dedicated to the local Council (Brisbane City Council). It will provide access to all the proposed sites contained within the Yeronga Parkside development. The internal road network is accessible from Park Rd with the provision of two new unsignalised intersections. The intersections shall be designed generally in accordance with the relevant standards as described in the relevant site Traffic Report under separate cover. The southern intersection is proposed to be left in/ left out only, with the northern intersection providing both ingress and egress access to the site in both directions to Park Rd (all movements).

Shared driveways have been proposed to Lots 10 and 11, and Lots 6 and 7 to allow access within the development off the proposed internal road. Crossovers shall generally be provided in accordance with the Brisbane City Council standards, with the shared driveways to be constructed as part of the future works associated the relevant future application for the subsequent development of the respective lots.

Minimum 1.5m wide footpaths are proposed on at least one side of all internal roads, and a 1.8m wide upgraded footpaths are proposed along the existing Park Rd and Villa St road frontages. Street tree planting is proposed as a minimum streetscape treatment. It is noted that the Green Spine proposed on Lot 8 is proposed to incorporate landscaping and pathways. The adjacent verge is a minimum 2.5m wide and will incorporate similar treatments at the adjacent Green Spine to provide a consistent experience and appearance.

New pavements will be designed and constructed in accordance with BCC City Plan 2014.

4.2 Filling and Excavation

Earthworks associated with the Masterplan are expected to consist of bulk earthworks for construction of building pads, roads, and services as required. During the Stage 2, the roads, Park, Drainage Reserve and overland flow paths will be established. Retaining walls are expected to be limited to preservation/ replacement of existing walls were located and are identified as not suitable for retention (condition, support conditions changes, etc). While some earthworks may be undertaken over the proposed lot areas to minimise export/ import of fill from/ to the subject site – majority of the earthworks on these sites will be undertaken as part of their subsequent future applications.

A conceptual earthworks model has been undertaken to inform the approximate finished earthworks levels of the master lots and road grading. They indicate the potential volumes and extents of the bulk earthworks that may be required as part of the Yeronga Parkside development proposal. The Conceptual Masterplan Earthworks Plan in Appendix D shows the likely depths of fill and cut associated with these bulk earthworks, and their respective areas within the site. Note, this does not illustrate detailed finish surface levels, purely bulk earthworks, as such, temporary batters are shown in some areas to allow for future built forms and/or retaining.

The proposed earthworks will need to ensure the overland flow external to the site is managed appropriately to ensure it does not impact areas external to the site or the rail infrastructure. Section 4.4 outlines the respective measures proposed to address this.

It is noted that the flood storage available on the subject site for the 1% AEP flooded extent associated with the Brisbane River flooding is considered to have a negligible impact/ influence of the downstream properties. However, irrespective, the development is seeking to maintain the existing flood storage volume in the base line case up to the Defined Flood Level. Filling above existing surface levels is proposed to be minimised where below the Defined Flood Level.

Temporary batters may be required as part of the subdivision of the site, prior to the subsequent development of the created lots. These batters will be at safe long-term slopes, and stabilised in accordance with International Erosion Control Association Australiasia (IECA) guidelines and EDQ PDA Guideline 13.

There is an existing approval over the subject site (EDQ Ref: DEV2019/1051/4) for Operational Works (clearing and excavation and filling over part of the site) and a 1 into 2 Reconfiguring a Lot. Under this approval the site has been

cleared of existing buildings and improvements, and vegetation within the proposed footprint of the masterplan has been substantially cleared. Further, within this footprint, existing soils which were contaminated with asbestos containing materials (ACM) have been removed and replaced as structural filling. It is noted that there is potential for unknown structures, pits, services and other contaminated objects to exist within the site that will only be discovered as the bulk earthworks and underground infrastructure works are undertaken. It is further noted that earthworks are anticipated to occur in Lot 4, adjacent to the railway corridor. The works may include removal, remediation and replacement under appropriate supervision by a geotechnical engineer, capping of contaminated soils, preparation of landscaping areas, including improvement or replacement with imported topsoils. These works would be undertaken strictly under approved management plans and strict supervision by a suitably qualified geotechnical engineer to ensure that potential for impacts to the railway corridor and their associated embankment and utilities are managed. It is noted that proposed lots and road (with the exception of Lot 4) have been cleared of known ACM.

As a part of the further issues response, a Flood Impact Assessment has been completed by Water Technology Pty Ltd, dated 10 October 2022. This assessment has established a number of minimum site levels for flood immunity as shown in drawing CI-520-P01 (in Appendix D).

4.3 Environmental Considerations

4.3.1 Erosion and Sediment Control

Stantec have undertaken an Erosion Hazard Assessment utilised the Brisbane City Council form. The proposed works for Stage 2 has been identified as a High Erosion Hazard Risk.

Therefore, an Erosion and Sediment Control programme will be developed in accordance with International Erosion Control Association Australiasia (IECA) guidelines and EDQ PDA Guideline 13. The design shall be prepared by a suitably qualified consultant, and shall address in particular:

- Upstream catchment conveyance from the existing Regional Park, Villa St and Yeronga State School
- Large areas of disturbance
- Protection of the rail corridor

4.3.2 Acid Sulfate Soils

The subject site is located within the Potential and Actual Acid Sulfate Soils (ASS) Overlay within the Brisbane City Plan 2014. Refer to Figure 4-1 for the respective overlay extents.

Figure 4-1: Potential and Actual Acid Sulfate Soils shown Brown (Source: Brisbane City Plan 2014)

Butler Partners have undertaken an Acid Sulfate Soils Assessment for the site. They concluded that soils encountered in their 26 test locations include zones that are acidic,but are considered to mainly comprise residual soils that be been derived from deep in place weathered rock. Based on their visual assessment, site geology, and the surface elevation, the soils are not considering to be ASS. Further, there was no potential for generation of additional acidity due to oxidsation of pyrite. As such, an Acid Sulfate Soils Management Plan is not required.

It was noted that due to the presence of some acidic soils, it is recommended that any stormwater discharge leaving the site should be checked prior to discharge to ensure the pH is within the range of 6.5pH to 8.5pH units, or treated to achieve this range prior to discharge.

4.4 Stormwater Management

As a part of the further issues response, an updated Site Based Stormwater Management Plan (SBSMP) has been prepared by Stantec dated 10 February 2022 and is submitted as a separate report to illustrate that all appropriate measures have been taken to ensure site pre-development discharge levels are not exceeded in the post-development scenario and flooding is mitigated up to and during a 100-year storm event. As a part of the further issues response, a Flood Impact Assessment has been completed by Water Technology Pty Ltd, dated 10 October 2022. The SBSMP has been updated to reflect the findings of this assessment.

By examining contours of the surrounding area, it has been established there is an external catchment that affects the site. The impact of this catchment and how it will be accommodated is examined further in the aforementioned SBSMP. Flooding issues within or relating to the site, and all stormwater quantity and quality issues are addressed in accordance with relevant EDQ Guidelines, or their referred standards, ie Brisbane City Council relevant Planning Scheme Policies.

It is proposed to construct new stormwater pit and pipe infrastructure within the site to convey the stormwater runoff to the Lawful Point of Discharge in accordance with the requirements of the Queensland Urban Drainage Manual (2017). Major storm overland flow paths are expected to generally be the internal roadways and proposed overland flow paths/ drains. An indicative conceptual stormwater management strategy is included in Appendix D.

It is further proposed to reduce the frequency of overland flow entering the site, by upgrading and realigning the existing BCC stormwater pipe that traverses the site to a nominally 1200mm stormwater pipe (it is currently an existing 525 /

600mm pipe). The inlet pits in Villa St would require associated upgrading to accommodate additional inlet capacity. This relief drainage line will allow the existing trapped sag in Villa St to drain and improve the existing overland flow conditions, to achieve the Level of Serviceability for Villa St as defined in QUDM.

5. Utilities

5.1 Water Supply

5.1.1 Demand

The development site demands have been determined in accordance with the water design standards as detailed in the Southeast Queensland Water Supply and Sewerage Design & Construction Code (SEQ WS&S D&C Code) dated 1 February 2020 based on the indicative Masterplan as described in Section 3.3.

The existing water demands were determined in accordance with Table 4.1 – Water Network Design Criteria and Appendix A4 – Queensland Urban Utilities within the SEQCode. The existing uses were utilised in reference to their category as per the SEQCode. The assessed flows have been included in Appendix G, and summarised in the below tables.

Source	Equivalent Persons (EP)	Average Day Demand AD (l/s)	Peak Hour Demand PH (l/s)
Subject Site (Former TAFE)	56	0.15	0.42

Table 5-1: Existing Water Demand Assessment

The required demand associated with the proposed development has been assessed in accordance with the SEQCode. The assessment is included in Appendix G, and summarised in Table 5-2.

Source	Equivalent Persons (EP)	Average Day Demand AD (l/s)	Peak Hour Demand PH (l/s)
Subject Site (Parkside Yeronga)	555	1.67	5.29

Table 5-2: Proposed Water Demand Assessment

A Service Advice Notice was requested from Urban Utilities (UU) in conjunction with the proposed development. Their responsive Service Advice Notice is included in Appendix H. It is noted that UU assessed higher flows than those estimated using SEQCode methods. They clarified that they used area specific data based on their data.

5.1.2 Water Capacity

The proposed development is increasing the demand for water on the surrounding network. UU were engaged to undertake a water network assessment of the proposed development and impacts on the existing network. UU confirmed that there is inadequate capacity in the existing water network, and augmentation works would be required to the existing network to achieve the required fire-fighting flows.

5.1.3 Reticulation System Requirements

A new water reticulation network is proposed within the proposed development to supply each of the proposed parcels as illustrated in drawing CI-700-P01 in Appendix D. It will be designed and constructed in accordance the SEQCode and dedicated to UU. It is proposed to be a DN180 PE water main, with associated hydrants, scours and isolation valves as necessary. Two connections to the external network in Park Rd are proposed to provide the required redundancy.

Each parcel will be serviced and metered individually from this UU main to the requirements of UU as conditioned as part of their future separation applications for their subsequent development. It is noted that in addition to the municipal main, the proposed uses and buildings on the proposed parcels may require private firefighting requirements in accordance with the Building Regulations and Queensland Fire and Emergency Services (QFES) as appropriate. These shall be determined based on in-situ testing following construction of the proposed municipal assets. It is noted that:

- Lot 7 is proposed to be supplied by a water service within the road reserve, terminating at the boundary Lot 8. A private water main will extend through Lot 8, to supply Lot 7. The main within Lot 8 will be contained in an easement for the purposes of services in favour of Lot 7.
- Lot 8 (green spine) is intended to be a landscaped setting featuring hard and soft finishes. While amenities such as garden hose taps and water drinking fountains are likely outcomes. A single standard DN20/25 service is proposed for the Green Spine lot.

As noted in Section 5.1.2, it has been demonstrated that augmentation works are required to support the proposed development. UU investigated 3 options for augmentation works. It is proposed to upgrade the existing network in Ovendean St to a DN180PE water main and provide a cross connection to the Park Rd water reticulation network South of the railway line via Park Rd under the existing rail bridge. The Concept Augmentation is included in Appendix D. This proposal in generally in accordance with UU's preferred Option 1 augmentation strategy.

5.2 Sewerage Connection

5.2.1 Existing Sewerage Flows

The development site demands have been determined in accordance with the Design Criteria as detailed in the South East Queensland Water Supply and Sewerage Design & Construction Code (SEQCode) dated 1 February 2020.

The existing sewerage flows were determined in accordance with Table 10 – Sewerage Network Design Criteria and Appendix A4 – Queensland Urban Utilities within the SEQCode. The existing uses were utilised in reference to their category as per the SEQCode. The assessed flows have been included in Appendix G, and summarised below.

Similarly, an assessment was undertaken of the sewerage catchment external to the site that is contributing to the manhole receiving the subject site's sewage (QUU MH Ref: 122778), and further downstream where it connects to the 225mm diameter trunk sewerage network near the Ovendean St intersection with Park Rd (QUU MH:186913). The calculated EP at each of the following locations in the existing condition, as calculated in Appendix G, are summarised in Table 5-3.

Source	Equivalent Persons (EP)
Subject Site (Former TAFE)	56
External Catchments	
Upstream - (Yeronga State High School)	178
External Catchment discharging towards the rail line crossing on Park Rd	78

Table 5-3: Existing Catchment Assessment

The respective Peak Wet Weather Flows (PWWF) were calculated based on Table 10 of the SEQCode Design Criteria and summarised in Table 5-4. In accordance with the SEQCode, the pipe capacity of the existing connection to the sewerage network at each of the respective locations were assessed as if operating at a 75% flow depth. To allow for some uncertainty, assessed grades for capacity were the minimum allowable grades. Pipe capacities were assessed against the PWWF flows calculated based on the above catchment assessment. The baseline flows (210 L/EP/d) were utilised for this calculation as the network is existing and not a Nusewer network. It is noted that where QUU mapping is silent, minimum allowable pipe grades have been assumed, and marked with a †.

Location	Description	EP	PWWF (l/s)	Pipe Capacity (l/s)	Adequate Capacity
1	Site sewerage property connection (150dia.)	56	0.68	14.1 @ 1%†	Yes
2	150mm diameter existing sewerage network (MH122778)	312	3.80	28.56 @ 4.1%	Yes
3	225mm diameter trunk sewerage line (MH186913)	312	3.80	22.78 @ 0.3%	Yes

Table 5-4: Existing Sewerage Flows and capacity assessment

5.2.2 Proposed Sewerage Flows

The flows for the proposed development were calculated based on the development scheme in Section 3.3. The demand for the proposed development was assessed as 555 EP, which is calculated in Appendix G.

A Service Advice Notice was requested from Urban Utilities (UU) in conjunction with the proposed development. Their responsive Service Advice Notice is included in Appendix H. It is noted that UU assessed higher flows than those estimated using SEQCode methods. They clarified that they used area specific data based on their data.

5.2.3 Sewerage Network Capacity

Similar to the existing demand, the resultant flows at each of the locations proximate to the site were assessed against the estimated pipe capacity. The assessment is summarised below.

Location	Description	EP	PWWF (l/s)	Pipe Capacity (l/s)	Adequate Capacity
1	Subject site sewerage flows	555	6.07	N/A	N/A
2	150mm diameter existing sewerage network (MH122778)	811	9.18	28.56 @ 4.1%	Yes
3	225mm diameter trunk sewerage line (MH186913)	811	9.18	22.78 @ 0.3%	Yes

Table 5-5: Proposed Flows and capacity assessment

It is noted that it is proposed to extend the existing sewerage reticulation network into the proposed development to provide connection to service each internal parcel, and the existing 150mm dia. property connection (Location 1) will be abandoned.

The proposed development is increasing the estimated sewerage flows on the surrounding network. UU were engaged to undertake a sewer network assessment of the proposed development, and it impacts on the existing network. UU confirmed that there is adequate capacity in the existing sewerage network, and augmentation works are not required to the existing network.

5.2.4 Reticulation System Requirements

The Parkside Yeronga development sewerage reticulation will be a gravity network which will connect into the existing UU sewer network via the existing sewer manhole along Park Road (MH122778). The natural topography of the site and levelled distances across the site is sufficient to allow an internal gravity sewer network, and as such, no municipal sewer pump stations are proposed. The proposed sewerage reticulation network shall be designed in accordance with the SEQCode and dedicated to UU. This proposed reticulation network can be seen in drawings CI-700-P01 and CI-702-L02 in Appendix D.

The existing property connection to the subject site will be abandoned, as the new internal network will provide service to each respective parcel.

The Yeronga State School currently drains via an existing combined sanitary drain that traverses the subject site. This sewer is required to be abandoned and removed. The proposed QUU sewerage reticulation network will be extended to the property boundary. It is proposed to undertake the appropriate works to direct the existing private sanitary drainage within the Yeronga State High School (YSHS) to the new sewerage property connection for their sanitary drainage. This will be subject to the relevant plumbing approvals and owners' consent for the works in the adjacent land.

5.3 Electrical

5.3.1 Maximum Demand

An approximate maximum demand has been calculated for the site using typical W/m2 values and kVA per apartment methodologies based on the assumed indicative masterplan described in Section 3.3. It is expected the site will be supplied with dedicated transformers per lot (for lots with higher electrical load demands) and transformers on common land/easements to supply multiple lots (for lots with lower electrical load demands). The anticipated groupings of these lots are shown in Table 5-6 below.

Padmount Transformer	Lots	Anticipated Transformer size
1	Lots 2, 3 & 6	500kVA
2	Lots 12, 13 & 789	750kVA
3	Lots 1, 10 & 11	1000kVA

Table 5-6 - Preliminary Maximum Demand

5.3.2 Electrical Supply

The subject site has existing overhead power infrastructure along its Villa St frontage, and the southern portion of its Park Rd frontage. The existing overhead lines running adjacent to Park Road are on the opposite side of the road to the development site. The former site's high voltage feed was from overhead power in Villa St and has since been disconnected and recovered as part of the demolition activities. Appendix I contains the relevant existing surrounding power infrastructure from the utility provider's (Energex) asset mapping via the Dial Before You Dig enquiry.

The Energex 11kV Feeder established around the site is MRK6, which, per the 2019 Energex Distribution Annual Planning Report 11kV Feeder forecasts, there is spare capacity available for this feeder in excess of the above maximum demand for the subject site. That said, it is not known what other developments in progress will impact the loading on this feeder, hence until applications for connection are made to Energex, it remains uncertain if the electrical load demands of the development will trigger any HV network upgrades.

As part of the development proposal, a new Energex underground conduit and pit system will be required for the development consisting of 6 x 125mm power and 1 x 100mm communications conduits. These will be provided along the proposed internal road and are also likely required within the road reserve of the entire property boundary along both Park Rd and Villa St as a future provision as per typical Energex requirements. Any requirements for undergrounding existing networks shall be as determined as part of the relevant applications to Energex. Transformers shall be provided as required and incorporated either into the respective development (for example retirement living, Commercial and the affordable housing apartments) or integrated into the public space for the smaller developments (Community Centre, townhouse complexes, etc) as agreed with the Energex as part of their offer to supply.

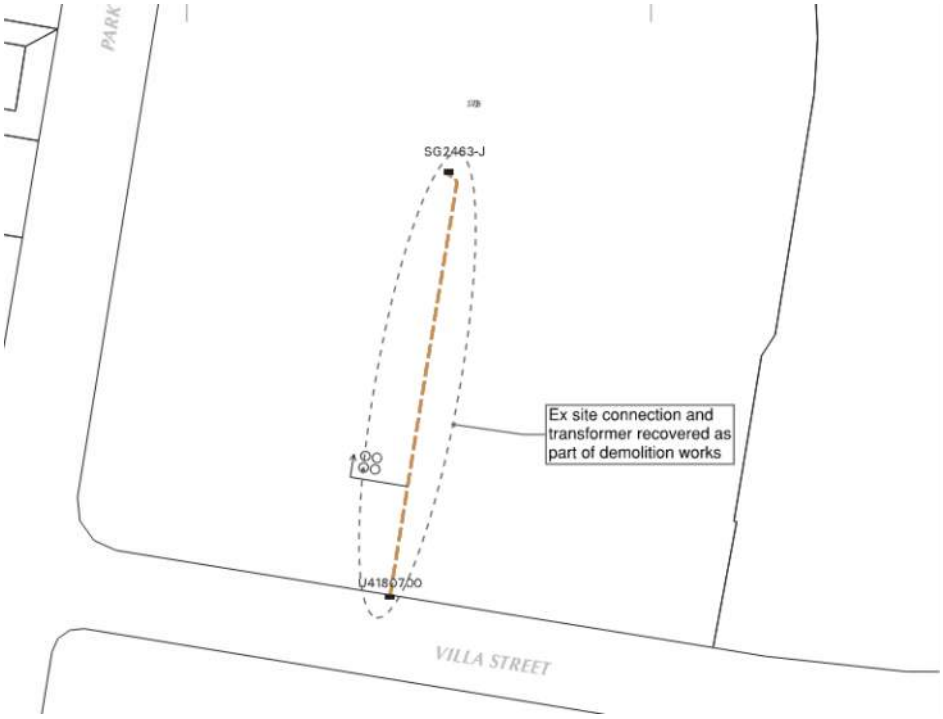


Figure 5-1: Existing Electrical Infrastructure (Source: DBYD)

5.3.3 Street Lighting

New street lighting (pole top luminaires) will be required for the new internal road. An upgrade to the street lighting near the new intersections into the development is also expected due to the change in use.

5.4 Telecommunications

The subject site's communications supply appears to be serviced by an existing Telstra network running adjacent to the subject site's western and southern boundary along Park Rd and Villa St. Refer to Figure 5-2 below. Appendix I contains the relevant existing surrounding communications infrastructure from the utility providers' asset mapping via the Dial Before You Dig enquiry. It is unknown if the telecommunications demand of the development will trigger any upgrades to the Telstra/NBN network to service the development.

A supply agreement will be entered into with the selected communications service provider to supply each dwelling, tenancy, and buildings with appropriate telecommunications connection.

It is anticipated that the telecommunication authority will bring fibre services to the development boundary with a new conduit and pit system to be provided by the developer to the internal road for final reticulation to each lot. The developer will also likely be required to provide new conduits and pits within the road reserve of the entire property boundary along both Park Rd and Villa St. NBN's conduit system typically consists of multiple 50mm or 100mm conduits.

It is anticipated that some existing communications assets located in Park Rd will require relocation/ lowering to accommodate the proposed new vehicle access to the site. Further, the existing Telstra phone box will need removal or relocation as agreed specifically with Telstra and the relevant cable owners.

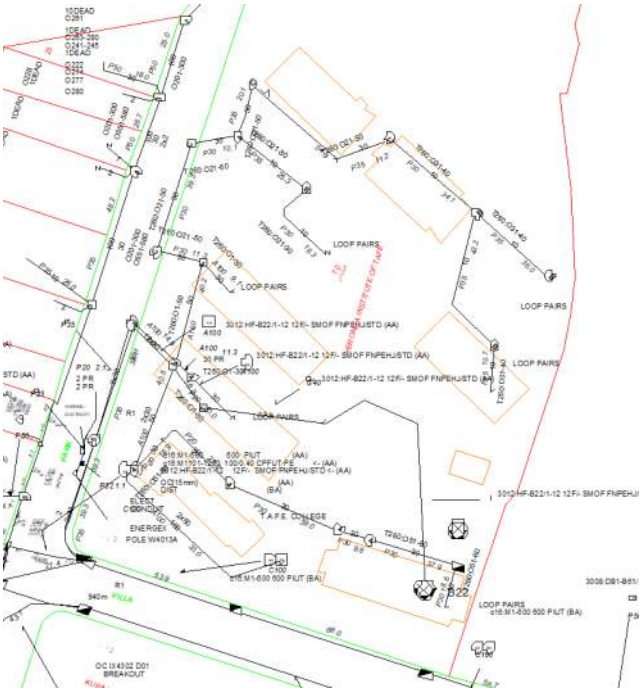


Figure 5-2: Existing Communications infrastructure (Source: DBYD)

5.5 Gas

The subject site appears to be serviced by an existing APA low pressure property connection, taking off from an existing DN63 PE APA gas main running adjacent to Park Rd. Refer to Figure 5-3 below and Appendix I detailing the existing APA main and property connection servicing the subject site.

The developer will engage with the gas provider to confirm the ability and commercial viability of providing connection of, and reticulation within, the proposed development. The existing capacity and potential network augmentation works are unable to be confirmed without consultation with the relevant provider. The developer may elect, at their discretion, to enter a supply agreement and provide reticulation mains within the development for connection as part the development of the individual lots.

Figure 5-3: Existing Gas Infrastructure (Source: DBYD)

6. Conclusion

This Engineering Services Report has been prepared for the proposed Preliminary Approval for Material Change of Use and the Development Permit for Reconfiguring a lot (1 into 11, easement and road) at 70 Park Rd, Yeronga.

This report has demonstrated that all services will be available to the development upon completion of the works and construction of the proposed development will not adversely impact on any surrounding properties or services.

Stormwater management has been addressed in a separate report prepared by Stantec entitled “Site Based Stormwater Management Plan” dated 10 February 2022. This report has been updated to reflect the response to the Further Issues Letter from Economic Development Queensland Development Assessment dated 26 October 2021.

It is clear from the above that there are no serviceability restrictions which would prevent development of the subject site. We therefore request that MEDQ support the Development Application for this site

Appendix A – Proposed Plan of Subdivision

PRELIMINARY

Final intended use of new Lots & Easements:

Lot 500 - is for Stage 2.
Lots 1 & 11 - are for future development
Easement 6 - is for Right of Way for Access & Services - burdening Lot 500, benefiting Lot 11
Easement 11 - is for Right of Way for Access & Services - burdening Lot 500, benefiting Lots 1 & 11

450
SP117130

55·5
48·0
76·5
7·4
6·9
2·2
26·1
1·9
24·1
12·1
12·2
52·4
5·4
15·8
20·1
0·6
27·4
61·0
20·8
48·4
5·2 each
23·9
17·5
2·9 each
52·4
20·8
39·9
(44·5)
44·5
(166·3)

500
2·8 ha
STAGE 1

2
SP300888

ROAD
PARK

Easement 11
Easement 6

1
2302m²

11
930m²

VILLA STREET

N

Legend

Right of Way for Access & Services Easements

Notes

1. Any licence, express or implied, to use this document for any purpose whatsoever is restricted to the terms of the agreement or implied agreement between Wolter Consulting Group and the instructing party.
2. Design subject to local authority approval & detailed engineering requirements , areas and dimensions are approximate only and are subject to survey. Therefore this drawing is not to be used for engineering design.
3. Easements locations from others and are approximate only.
4. This note is an integral part of this plan. This plan may not be reproduced without this notation being included.

Table of Development

Gross area of subject land.....3.123 ha
Number of proposed lots..... 3
Number of existing lots..... 1

WOLTER consulting group
Planning Urban Design Landscape Environment Surveying
Brisbane: Level 2, 1 Breakfast Ck Road, Newstead, QLD 4006 Phone: (07) 3666 5200

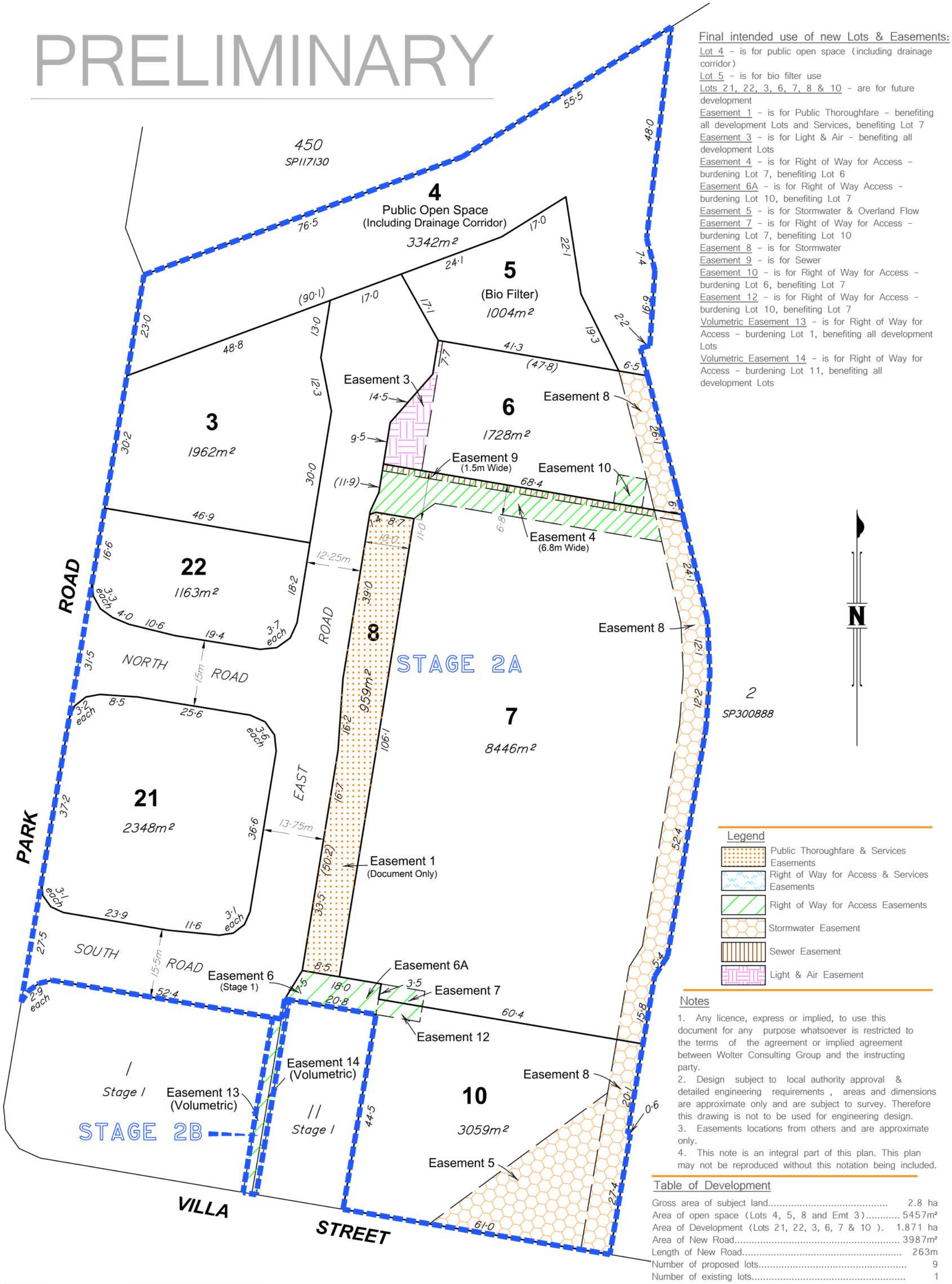
Scale 1:750 @ A3
Lengths are in Metres.
10 0 10 20 30

Plan of Reconfiguration - Stage 1
70 Park Road, Yeronga Tafe Site

Description Lot 3 on SP300888
Local Authority Brisbane City

DRAWING NO.	VERSION
18-0765P-02	O
DATE DRAWN	SHEET NO.
22-12-2021	1 of 2

PRELIMINARY



Final intended use of new Lots & Easements:

Lot 4 - is for public open space (including drainage corridor)
Lot 5 - is for bio filter use
Lots 21, 22, 3, 6, 7, 8 & 10 - are for future development
Easement 1 - is for Public Thoroughfare - benefiting all development Lots and Services, benefiting Lot 7
Easement 3 - is for Light & Air - benefiting all development Lots
Easement 4 - is for Right of Way for Access - burdening Lot 7, benefiting Lot 6
Easement 6A - is for Right of Way Access - burdening Lot 10, benefiting Lot 7
Easement 5 - is for Stormwater & Overland Flow
Easement 7 - is for Right of Way for Access - burdening Lot 7, benefiting Lot 10
Easement 8 - is for Stormwater
Easement 9 - is for Sewer
Easement 10 - is for Right of Way for Access - burdening Lot 6, benefiting Lot 7
Easement 12 - is for Right of Way for Access - burdening Lot 10, benefiting Lot 7
Volumetric Easement 13 - is for Right of Way for Access - burdening Lot 1, benefiting all development Lots
Volumetric Easement 14 - is for Right of Way for Access - burdening Lot 11, benefiting all development Lots

Legend

- Public Thoroughfare & Services Easements
- Right of Way for Access & Services Easements
- Right of Way for Access Easements
- Stormwater Easement
- Sewer Easement
- Light & Air Easement

Notes

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3. Easements locations from others and are approximate only.
4. This note is an integral part of this plan. This plan may not be reproduced without this notation being included.

Table of Development

Gross area of subject land	2.8 ha
Area of open space (Lots 4, 5, 8 and Emt 3)	5457m²
Area of Development (Lots 21, 22, 3, 6, 7 & 10).	1.871 ha
Area of New Road	3987m²
Length of New Road	263m
Number of proposed lots	9
Number of existing lots	1

WOLTER consulting group
Planning Urban Design Landscape Environment Surveying
Brisbane: Level 2, 1 Breakfast Ck Road, Newstead, QLD 4006 Phone: (07) 3666 5200

Scale 1:750 @ A3
Lengths are in Metres.
10 0 10 20 30

Plan of Reconfiguration - Stages 2A & 2B

70 Park Road, Yeronga Tafe Site

Description
Local Authority

Part of Lot 3 on SP300888
Brisbane City

DRAWING NO. 18-0765P-02
VERSION O
DATE DRAWN 22-12-2021
SHEET NO. 2 of 2

Appendix B – Proposed Indicative Masterplan

2.3

ILLUSTRATIVE MASTER PLAN

The master plan framework will be realised as an integrated precinct with a variety of housing choice, diverse demographics and supporting community infrastructure

*This master plan and the underlying building forms are used for reference and for illustration purposes only.

Legend

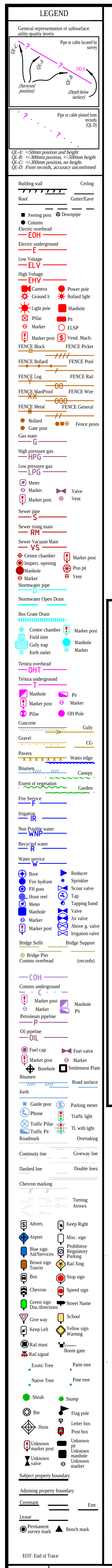
1 Informal pedestrian crossing
2 Green spine community garden
3 Community plaza
4 Neighbourhood park
5 Bio-retention basin
6 Access paths
7 Existing trees to remain
8 Shade trees
9 Street trees
10 Swale

0 5 10m 20m 50m

Scale 1 : 1000 @ A3

N

Appendix C – Site survey



SUBSURFACE UTILITIES

This plan follows elements of the Australian Standard for Classification of Subsurface Utility Information (SUI). The location of utilities on this plan adhere to the following classification:

- Quality Level A (QL-A) represents the highest quality level. The exposed utility was directly measured for absolute position and height to a horizontal and vertical tolerance of +/-50mm.No QL-A underground utilities were located in this survey. Visible surface features of subsurface utilities such as valves and manholes shown on this plan are also QL-A.
- Quality Level B (QL-B): The subsurface utility was detected without being exposed and then surveyed to give relative positions to a horizontal tolerance of +/-300mm and relative heights to a vertical tolerance of +/-500mm. Utilities indicated as QL-B were electronically detected/ detected by EMR by RPS and surveyed by RPS on 8/3/2018.
- Quality Level C (QL-C): The subsurface utility was plotted by correlating the surveyed positions of visible features and existing utility records. The subsurface utility itself was not surveyed. Relative positions are to a horizontal tolerance of +/-300mm.
- Quality Level D (QL-D): The lowest quality level. The subsurface utility was compiled from existing records only and was not surveyed. Tolerance does not apply to these indicative locations.

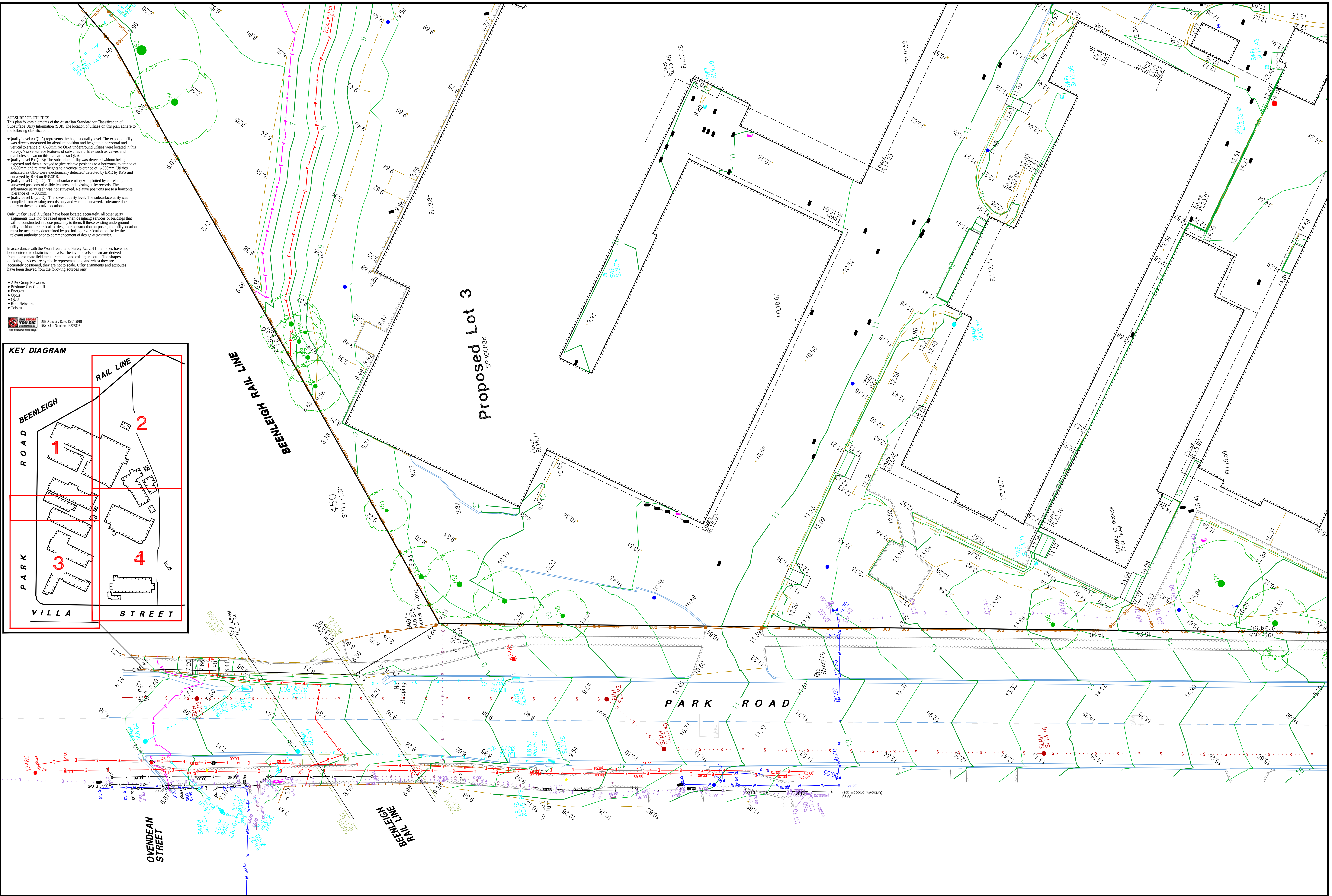
Only Quality Level A utilities have been located accurately. All other utility alignments must not be relied upon when designing services or buildings that will be constructed in close proximity to them. If these existing underground utility positions are critical for design or construction purposes, the utility location must be accurately determined by pot-holing or verification on site by the relevant authority prior to commencement of design or construction.

In accordance with the Work Health and Safety Act 2011 manholes have not been entered to obtain invert levels. The invert levels shown are derived from approximate field measurements and existing records. The shapes depicting services are symbolic representations, and whilst they are accurately positioned, they are not to scale. Utility alignments and attributes have been derived from the following sources only:

- APA Group Networks
- Brisbane City Council
- Energex
- Optus
- QUU
- Reef Networks
- Telstra

DIAL BEFORE YOU DIG www.1100.com.au The Essential First Step.

DBYD Enquiry Date: 15/01/2018
DBYD Job Number: 13525805



Amendment	Description	Date	Surveyor	Drafted
A	First Issue	26/03/2018	SD&JL	BJS

PURPOSE OF PLAN

This plan represents a ground survey of the site to enable architectural and engineering design.

As the area inside lot 2 on RP142343 is to be demolished, only minimal detail has been located, however the contours and Triangulated Irregular Network are accurate. Items such as footpaths, stairs, seats and so forth have not been located. Outside the property,on the surrounding streets and verges, comprehensive detail has been located.

Only the connections of subsurface utilities entering the site have been located. Minor subsurface utilities inside the site have not been traced.

For reason of clarity, certain information is not shown on this plan. Please refer to the accompanying digital data for all survey information and attributes.

CONTOURS

The contours shown represent the site as it was at the time of survey. This is not necessarily the "natural surface" or "ground level" as defined by some councils and thus cannot be used to calculate compliance with some council's building height limits.
Minor Contour Interval: 0.5m

VEGETATION

Only trees greater than or equal to 150mm breast height diameter have been located. Tree heights are approximate only. The species of trees shown are layman's estimates and were not determined by experts.

PROPERTY BOUNDARIES

The property boundaries and dimensions shown on this plan are plotted from original title records (SP300888. Not registered at the date of survey). Accurate boundary locations can only be determined by completing a cadastral survey as defined by the Survey and Mapping Infrastructure Act 2003 and Surveyors Act 2003.

The property boundaries and dimensions shown on this plan must not be relied upon when designing services, buildings or other structures that will be constructed in close proximity to them. Designs of services, buildings or structures that require critical boundary offsets will require accurate boundary locations determined by completing a cadastral survey as defined by the Survey and Mapping Infrastructure Act 2003 and Surveyors Act 2003.

Boundary corners were not marked at the time of survey.

COORDINATE SYSTEM

The coordinate system of this digital data is a plane system with a scale factor of 1.0.

To transform to MGA94 Zone 56, scale by 1.00040183140362 about PM20976 (501976.917,6956280.184).

FLOOD DATA

Flood information from BCC Floodwise Report 22/3/2018.
Residential Flood Level: RL7.8. —F—
January 2011 Flood: RL 7.8.
Defined Flood Level: RL 6.7. —F—

Hz Datum:	Plane (See note)
Hz Origin:	PM132397
Vrt Datum:	AHD
Vrt Origin:	PM20976
Origin RL:	21.413m

Locality:	YERONGA
Local Authority:	Brisbane City Council
Lat Long:	S27°30'58.25" E157°01'17.29"
DWG:	139204DET
12D:	139204MASTER

4 2 0 2 4 6 8 10
SCALE IN METERS AT ORIGINAL REDUCTION RATIO

NORTH

PAGE SIZE A1
SCALE 1:200

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t (07) 3237 8899
www.rpsgroup.com.au

RPS

PROJECT
YERONGA TAFE

Contour and Utility Investigation Survey. Yeeronga TAFE
70 Park Road, Yeronga
(Part of lot 2 on SP142343)

SHEET 1 OF 4

PR139204 1 A

LEGEND

General representation of subsurface utility depths levels

Pipe or cable located by survey

Pipe or cable plotted from records (Q1-5)

Q1-A: +/-300mm pressure and large dia. Q1-B: +/-300mm position, +/-300mm height
Q1-C: +/-300mm position, no height
Q1-D: From records, accuracy unconfirmed

Building wall
Ceiling
Roof
Gutter/Eave
Awning post
Downpipe
Column
Electric overhead EOH
Electric underground E
Low Voltage ELV
High Voltage EHV
Camera
Power pole
Ground S
Bollard light
Light pole
Manhole
Pillar
Pit
Marker
H.H.P.
Marker post
Vernt. Mach.
FENCE Block
FENCE Picket
FENCE Bollard
FENCE Pool
FENCE Log
FENCE Rail
FENCE MeshProof
FENCE Wire
FENCE Metal
FENCE General
Bollard
Fence posts
Gate post
Gas main G
High pressure gas HPG
Low pressure gas LPG
Meter
Valve
Marker
Vent
Marker post
Sewer pipe S
Sewer rising main RM
Sewer Vacuum Main VS
Centre chamber
Marker post
Inspect. opening
Pmp pit
Manhole
Vent
Marker
Stormwater pipe D
Stormwater Open Drain
Box Grate Drain
Centre chamber
Marker post
Field inlet
Gully trap
Manhole
Kerb outlet
Marker
Telstra overhead DHT
Telstra underground T
Manhole
Pit
Marker post
Marker
Pillar
OH Prior
Concrete
Gully
Gravel
CG
Pavers
Water edge
Bitumen
Canopy
Extent of vegetation
Garden
Fire System F
Irrigation IR
Non Potable water NWP
Recycled water R
Water service W
Bore
Reducer
Fire hydrant
Sprinkler
Fill post
Scour valve
Hose reel
Tap
Meter
Tapping band
Manhole
Valve
Marker
Air valve
Above g. valve
Irrigation valve
Bridge Soffit
Bridge Support
Bridge Pier
Contain overhead
(recorded)
Comms underground C
Marker post
Manhole
Marker
Pit
Petroleum pipeline P
Oil pipeline OIL
Fuel cap
Fuel valve
Marker post
Marker
Borehole
Settlement Plate
Bitumen
Road surface
Kerb
Guide post
Parking meter
Phone
Traffic light
Traffic Pillar
TL with light
Traffic Pit
Roadmark
Overtaking
Continuity line
Groweay line
Dashed line
Double lines
Chevron marking
Turning Arrows
Advert.
Keep Right
Airport
Misc. sign
Blue sign Aid/Services
Prohibitive Regulatory Parking
Brown sign Tourist
Rail Xing
Bus
Stop sign
Chevron
Speed sign
Green sign Dirs./directions
Street Name
Give way
School
Keep Left
Yellow sign Warning
Rail mast
Room gate
Rail signal
Exotic Tree
Palm tree
Native Tree
Pine tree
Shrub
Stump
Bin
Flag pole
Hoist
Letter box
Post box
Unknown marker post
Unknown
Unknown manhole
Unknown marker
Unknown valve
Subject property boundary
Adjoining property boundary
Covenant
Emt
Lease
Permanent Survey mark
Bench mark

EOT: End of Trace

TREE TABLE

ID	Species	Dia	Spread	Height
100	Native	0.25	6	6
101	Native	0.30	8	9
102	Native	0.25	6	8
103	Native	0.30	7	8
104	Native	0.35	3	4
105	Native	1.00	12	14
106	Native	0.20	8	10
108	Native	0.30	8	9
109	Native	0.30	3	4
110	Native	0.35	5	4
111	Gum	0.60	6	13
112	Native	0.30	8	9
113	Native	0.60	12	16
114	Native	0.20	5	12
115	Native	0.50	11	12
116	Native	0.30	12	14
117	Native	0.35	12	14
118	Native	0.20	7	8
119	Native	0.20	4	8
120	Native	0.30	5	8
121	Native	0.50	12	10
122	Native	0.60	14	10
123	Native	0.20	7	8
124	Native	0.40	11	10
125	Native	0.25	10	10
126	Native	0.30	8	10
127	Native	0.50	12	9
128	Native	0.45	8	12
129	Native	0.20	9	11
130	Native	0.80	12	10
131	Native	0.30	7	8
132	Native	0.40	8	10
133	Native	0.25	6	8
134	Native	1.00	10	14
135	Native	0.40	12	12
136	Native	0.50	20	18
137	Native	0.40	20	18
138	Native	0.40	20	18
139	Native	0.50	20	18

ID	Species	Dia	Spread	Height
140	Native	0.50	20	18
141	Native	0.20	3	4
142	Native	0.30	3	4
143	Native	0.25	3	4
144	Native	0.20	2	4
145	Native	0.20	3	4
146	Native	1.00	24	18
147	Native	0.40	10	12
148	Native	0.50	12	15
149	Gum	0.50	9	15
150	Pine	0.40	8	16
151	Gum	0.50	7	16
152	Gum	0.60	8	16
153	Gum	0.50	7	14
154	Gum	0.40	5	13
155	Gum	0.50	6	15
156	Native	0.45	6	12
157	Native	0.40	6	12
158	Native	0.40	6	12
159	Native	0.25	5	10
160	Native	0.30	6	10
161	Native	0.40	7	11
162	Palm	0.50	10	16
163	Native	0.50	14	14
164	Native	0.28	10	12
165	Native	0.40	6	8
166	Native	0.80	8	12
167	Native	0.30	10	12
168	Native	0.45	18	14
169	Native	0.50	14	12
170	Native	0.60	10	6
171	Gum	0.40	8	13
172	Native	0.50	10	7
173	Pine	0.40	6	16
174	Pine	0.40	6	16
175	Gum	0.60	7	14

Proposed Lot 2
SP300888

YERONGA STATE HIGH SCHOOL

BEENLEIGH RAIL LINE

Proposed Lot 3
SP300888

Area under water in March 2018 rains

Defined Flood Level

Residential Flood Level

Bitumen Carpark

RM907 923 Main in Bitumen

SWMT ST11.07

SWMT ST11.06

GATE

450 SP117130

183°48'40" 16.997

165°33'20" 7.487

30.274 165°4'5"

17°1'4" 12.179

Amendment	Description	Date	Surveyor	Drafted
A	First Issue	26/03/2018	SD&JL	BJS

PURPOSE OF PLAN
This plan represents a ground survey of the site to enable architectural and engineering design.

As the area inside lot 2 on RP142343 is to be demolished, only minimal detail has been located, however the contours and Triangulated Irregular Network are accurate. Items such as footpaths, stairs, seats and so forth have not been located. Outside the property,on the surrounding streets and verges, comprehensive detail has been located.

Only the connections of subsurface utilities entering the site have been located. Minor subsurface utilities inside the site have not been traced.

For reason of clarity, certain information is not shown on this plan. Please refer to the accompanying digital data for all survey information and attributes.

CONTOURS
The contours shown represent the site as it was at the time of survey. This is not necessarily the "natural surface" or "ground level" as defined by some councils and thus cannot be used to calculate compliance with some council's building height limits.
Minor Contour Interval: 0.5m

VEGETATION
Only trees greater than or equal to 150mm breast height diameter have been located. Tree heights are approximate only. The species of trees shown are layman's estimates and were not determined by experts.

PROPERTY BOUNDARIES
The property boundaries and dimensions shown on this plan are plotted from original title records (SP300888. Not registered at the date of survey). Accurate boundary locations can only be determined by completing a cadastral survey as defined by the Survey and Mapping Infrastructure Act 2003 and Surveyors Act 2003.

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Boundary corners were not marked at the time of survey.

COORDINATE SYSTEM
The coordinate system of this digital data is a plane system with a scale factor of 1.0.

To transform to MGA94 Zone 56, scale by 1.000401831403362 about PM20976 (501976.917,8956280.184).

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Hz Datum:	Plane (See note)	Locality:	YERONGA
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Vrt Datum:	AHD	Lat Long:	S27°30'58.25" E157°01'17.29"
Vrt Origin:	PM20976	DWG:	139204DET
Origin RL:	21.413m	12D:	139204MASTER

4 2 0 2 4 6 8 10
SCALE IN METERS AT ORIGINAL REDUCTION RATIO

NORTH

PAGE SIZE A1

SCALE 1:200

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t (07) 3237 8899
www.rpsgroup.com.au

RPS

PROJECT
YERONGA TAFE

Contour and Utility Investigation Survey. Yeeronga TAFE
70 Park Road, Yeronga
(Part of lot 2 on SP142343)

SHEET 2 of 4 | PR139204 | 1 | A

LEGEND

General representation of subsurface utility detailed levels

Pipe or cable located by survey

Pipe or cable plotted from records (QL-D)

QL-A: +/-50mm precision and height
QL-B: +/-50mm precision, +/-300mm height
QL-C: +/-300mm position, no height
QL-D: From records, accuracy unconfirmed

Building wall
Ceiling
Roof
Gutter/Eave
Awning post
Downpipe
Column
Electric overhead
Electric underground
Low Voltage
High Voltage
Camera
Ground h
Light pole
Pillar
Marker
Marker post
Power pole
Bollard light
Manhole
Pit
ELSD
Vend. Mach.
FENCE Block
FENCE Picket
FENCE Bollard
FENCE Pool
FENCE Log
FENCE Rail
FENCE MastProof
FENCE Wire
FENCE Metal
FENCE General
Bollard
Gate post
Fence posts
Gas main
High pressure gas
Low pressure gas
Meter
Marker
Marker post
Valve
Vent
Sewer pipe
Sewer rising main
Sewer Vacuum Main
Centre chamber
Inspect. opening
Manhole
Marker
Marker post
Pmp str
Vent
Stormwater pipe
Stormwater Open Drain
Box Grate Drain
Centre chamber
Field inlet
Gully trap
Kerb outlet
Marker post
Manhole
Marker
Telstra overhead
Telstra underground
Manhole
Marker post
Pillar
Pit
Marker
Tel Pmnt
Concrete
Gully
Gravel
CG
Pavers
Water edge
Bitumen
Canopy
Extent of vegetation
Garden
Fire Service
Irrigation
Non Potable water
Recycled water
Water service
Bore
Fire hydrant
FH post
Hose reel
Meter
Manhole
Marker
Marker post
Reducer
Sprinkler
Scour valve
Tap
Tapping band
Valve
Air valve
Above g. valve
Irrigation valve
Bridge Soffit
Bridge Support
Bridge Pier
Comms overhead
(records)
Comms underground
Marker post
Marker
Manhole
Pit
Petroleum pipeline
Gf pipeline
Fuel cap
Marker post
Manhole
Fuel valve
Marker
Settlement Plate
Bitumen
Road surface
Kerb
Guide post
Phone
Traffic Pillar
Traffic Pit
Parking meter
Traffic light
Tr. veh light
Roadmark
Overtaking
Continuity line
Giveway line
Dashed line
Double lines
Chevron marking
Turning Arrows
Advert.
Airport
Blue sign Aid/Services
Brown sign Tourist
Bus
Chevron
Green sign Dist./direction
Give way
Keep Left
Rail mast
Rail signal
Exotic Tree
Native Tree
Keep Right
Misc. sign
Prohibitive Regulatory Parking
Rail Xing
Stop sign
Speed sign
Street Name
School
Yellow sign Warning
Boom gate
Palm tree
Pine tree
Shrub
Bin
Hoist
Stump
Flag pole
Letter box
Post box
Unknown marker post
Unknown valve
Unknown pit
Unknown manhole
Unknown marker
Subject property boundary
Adjoining property boundary
Covenant
Easement
Lease
Permanent Survey mark
Bench mark

EOT: End of Trace

Proposed Lot 3
SP300888

PARK ROAD

VILLA STREET

DUBLIN STREET

Possenger Zone

Unable to access floor level

Phone Booth

Sensor

Screw in Kerb

Amendment	Description	Date	Surveyor	Drafted
A	First Issue	26/03/2018	SD&JL	BJS

PURPOSE OF PLAN
This plan represents a ground survey of the site to enable architectural and engineering design.

As the area inside lot 2 on RP142343 is to be demolished, only minimal detail has been located, however the contours and Triangulated Irregular Network are accurate. Items such as footpaths, stairs, seats and so forth have not been located. Outside the property,on the surrounding streets and verges, comprehensive detail has been located.

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Minor Contour Interval: 0.5m

VEGETATION
Only trees greater than or equal to 150mm breast height diameter have been located.
Tree heights are approximate only. The species of trees shown are layman's estimates and were not determined by experts.

PROPERTY BOUNDARIES
The property boundaries and dimensions shown on this plan are plotted from original title records (SP300888. Not registered at the date of survey). Accurate boundary locations can only be determined by completing a cadastral survey as defined by the Survey and Mapping Infrastructure Act 2003 and Surveyors Act 2003.

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Boundary corners were not marked at the time of survey.

COORDINATE SYSTEM
The coordinate system of this digital data is a plane system with a scale factor of 1.0.

To transform to MGA94 Zone 56, scale by 1.000401831403362 about PM20976 (501976.917,6956280.184).

FLOOD DATA
Flood information from BCC Floodwise Report 22/3/2018.
Residential Flood Level: RL7.8.
January 2011 Flood: RL 7.8.
Defined Flood Level: RL 6.7.

Hz Datum:	Plane (See note)	Locality:	YERONGA
Hz Origin:	PM132397	Local Authority:	Brisbane City Council
Vrt Datum:	AHD	Lat Long:	S27°30'58.25" E157°01'17.29"
Vrt Origin:	PM20976	DWG:	139204DET
Origin RL:	21.413m	12D:	139204MASTER

SCALE IN METERS AT ORIGINAL REDUCTION RATIO

NORTH

PAGE SIZE: A1
SCALE: 1:200

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PROJECT
YERONGA TAFE

Contour and Utility Investigation Survey. Yeeronga TAFE
70 Park Road, Yeronga
(Part of lot 2 on SP142343)

SHEET 3 of 4 | PR139204 1 A

LEGEND

General representation of subsurface utility depths levels

Pipe or cable located by survey

(Surveyed position) (Depth below surface)

Pipe or cable plotted from records (QL-D)

QL-A: +/-300mm pressure and larger
QL-B: +/-300mm position, +/-300mm height
QL-C: +/-300mm position, no height
QL-D: From records, accuracy unconfirmed

Building wall — Ceiling
Roof — Gutter/Eave
Awning post — Downpipe
Column
Electric overhead EOH
Electric underground E
Low Voltage ELV
High Voltage EHV
Mervin — Power pole
Ground h — Bollard light
Light pole — Manhole
Pillar — Pit
Marker — H.H.P.
Marker post — Vernd. Mach.
FENCE Block — FENCE Picket
FENCE Bollard — FENCE Pool
FENCE Log — FENCE Rail
FENCE MetalPowel — FENCE Wire
FENCE Metal — FENCE General
Bollard — Fence posts
Gate post
Gate mesh G
High pressure gas HPG
Low pressure gas LPG
Meter — Valve
Marker — Vent
Marker post
Sewer pipe S
Sewer crossing main RM
Sewer Vacuum Main VS
Centre chamber — Marker post
Inspect. opening — Pres pit
Manhole — Vent
Marker
Stormwater pipe D
Stormwater Open Drain
Box Grate Drain
Centre chamber — Marker post
Field inlet
Gully trap — Manhole
Kerb outlet — Marker
Telstra overhead DHT
Telstra underground T
Manhole — Pit
Marker post — Marker
Pillar — OH Prior
Concrete — Gully
Gravel — CG
Pavers — Water edge
Bitumen — Canopy
Extent of vegetation — Garden
Fire Service F
Irrigation IR
Non Potable water NWS
Recycled water R
Water service W
Bore — Reducer
Fire hydrant — Sprinkler
Fill point — Scour valve
Hose reel — Tap
Meter — Tapping band
Manhole — Valve
Marker — Air valve
Marker post — Above g. valve
Irrigation valve
Bridge Soffit — Bridge Support
Bridge Pier
Contain overhead (records)
Comms underground COH
Marker post — Manhole
Marker — Pit
Petroleum pipeline OIL
Oil pipeline OIL
Fuel cap — Fuel valve
Marker post — Marker
Borehole — Settlement Plate
Bitumen — Road surface
Kerb
Guide post — Parking meter
Phone — Traffic light
Traffic Pillar — TL with light
Traffic Pit — Overtaking
Roadmark
Continuity line — Giveway line
Dashed line — Double lines
Chevron marking
Turning Arrows
Advert. — Keep Right
Airport — Misc. sign
Blue sign AdServices — Prohibitive Regulatory
Brown sign Tourist — Rail Xing
Bus — Stop sign
Chevron — Speed sign
Green sign Dirc./direction — Street Name
Give way — School
Keep Left — Yellow sign Warning
Rail mast — Storm gate
Rail signal
Exotic Tree — Palm tree
Native Tree — Pine tree
Shrub — Stump
Bin — Flag pole
Letter box
Hoist — Post box
Unknown pit — Unknown Marker post
Unknown valve — Unknown marker
Subject property boundary
Adjoining property boundary
Easement — Eves
Lease
Permanent survey mark — Bench mark

EOT: End of Trace

Proposed Lot 2
SP300888

YERONGA STATE HIGH SCHOOL

Proposed Lot 3
SP300888

VILLA STREET

BRIDGE CLEARANCE RL16.78

RAMP

Eaves RL24.23

Eaves RL24.769

Eaves RL23.38

Eaves RL23.41

Eaves RL26.70

Eaves RL17.32

Eaves RL27.70

Parapet RL28.49

Parapet RL28.4

Parapet RL28.421

Hydrant

Sprinkler

Pump

Pump

SEE DIAGRAM A

DIAGRAM A

Amendment	Description	Date	Surveyor	Drafted
A	First Issue	26/03/2018	SD&JL	BJS

PURPOSE OF PLAN
This plan represents a ground survey of the site to enable architectural and engineering design.

As the area inside lot 2 on RP142343 is to be demolished, only minimal detail has been located, however the contours and Triangulated Irregular Network are accurate. Items such as footpaths, stairs, seats and so forth have not been located. Outside the property,on the surrounding streets and verges, comprehensive detail has been located.

Only the connections of subsurface utilities entering the site have been located. Minor subsurface utilities inside the site have not been traced.

For reason of clarity, certain information is not shown on this plan. Please refer to the accompanying digital data for all survey information and attributes.

CONTOURS
The contours shown represent the site as it was at the time of survey. This is not necessarily the "natural surface" or "ground level" as defined by some councils and thus cannot be used to calculate compliance with some council's building height limits.
Minor Contour Interval: 0.5m

VEGETATION
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Hz Origin:	PM132397	Local Authority:	Brisbane City Council
Vrt Datum:	AHD	Lat Long:	S27°30'58.25" E157°01'17.29"
Vrt Origin:	PM20976	DWG:	139204DET
Origin RL:	21.413m	12D:	139204MASTER

NORTH

4 2 0 2 4 6 8 10
SCALE IN METERS AT ORIGINAL REDUCTION RATIO

PAGE SIZE: A1
SCALE: 1:200

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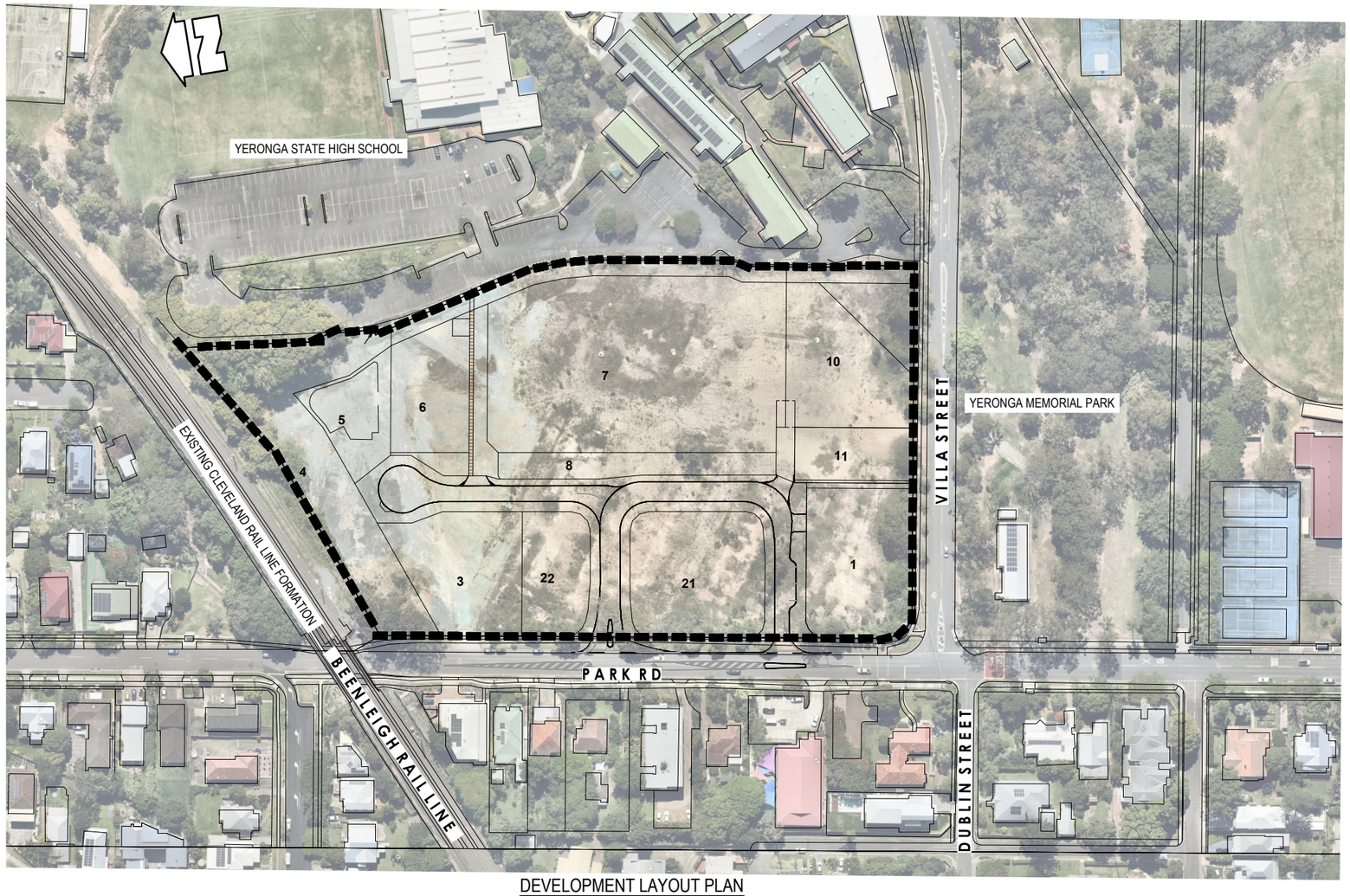
Contour and Utility Investigation Survey. Yeeronga TAFE
70 Park Road, Yeronga
(Part of lot 2 on SP142343)

SHEET 4 of 4 — PR139204 — 1 — A

Appendix D – Civil Engineering Plan Set

ECONOMIC DEVELOPMENT QUEENSLAND
PARKSIDE YERONGA - SUBDIVISION
70 PARK ROAD, YERONGA, BRISBANE



DEVELOPMENT LAYOUT PLAN

1:1000 10 0 10 20 30 40 50 A1
1:2000 A3

DRAWING REGISTRY	
DRAWING NUMBER	DRAWING DESCRIPTION
CI-001-P01	COVER SHEET, DRAWING REGISTRY AND LOCALITY PLAN
CI-100-P01	BULK EARTHWORKS PLANCONCEPTUAL MASTER PLAN
CI-101-C01	BULK EARTHWORKS SECTIONS SHEET 1
CI-101-C02	BULK EARTHWORKS SECTIONS SHEET 2
CI-500-P01	CONCEPTUAL STORMWATER EXTERNAL CATCHMENT PLAN
CI-500-P02	CONCEPTUAL STORMWATER QUALITY CATCHMENT PLAN
CI-520-P01	CONCEPTUAL STORMWATER DRAINAGE PLAN
CI-520-P02	CONCEPTUAL STORMWATERMANAGEMENT PLAN
CI-526-D01	STORMWATER DRAINAGE DETAILS
CI-650-P01	EXTERNAL WATER AUGMENTATIONCONCEPT PLAN
CI-700-P01	COMBINED SERVICES PLANCONCEPTUAL MASTER PLAN

Notes

C	FURTHER ISSUES RESPONSE	MK	AR	2022.02.10
B	FURTHER ISSUES LETTER	TJ	AR	2021.11.10
A	ISSUED FOR APPROVAL	BM/VI	AR	2021.09.15
Issued/Revision		By	Appd	YYYY.MM.DD

Issue Status

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A RAADSCHELDERS (RPEQ: 19881)

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Client/Project

ECONOMIC DEVELOPMENT QUEENSLAND

PARKSIDE YERONGA - SUBDIVISION

70 PARK ROAD, YERONGA, BRISBANE

File Name: CI-001-P01.DWG	DDJ	TJ	AR	2021.11.10
	Dwn.	Dsgn.	Chkd.	YYYY.MM.DD

Title

COVER SHEET AND DRAWING REGISTRY

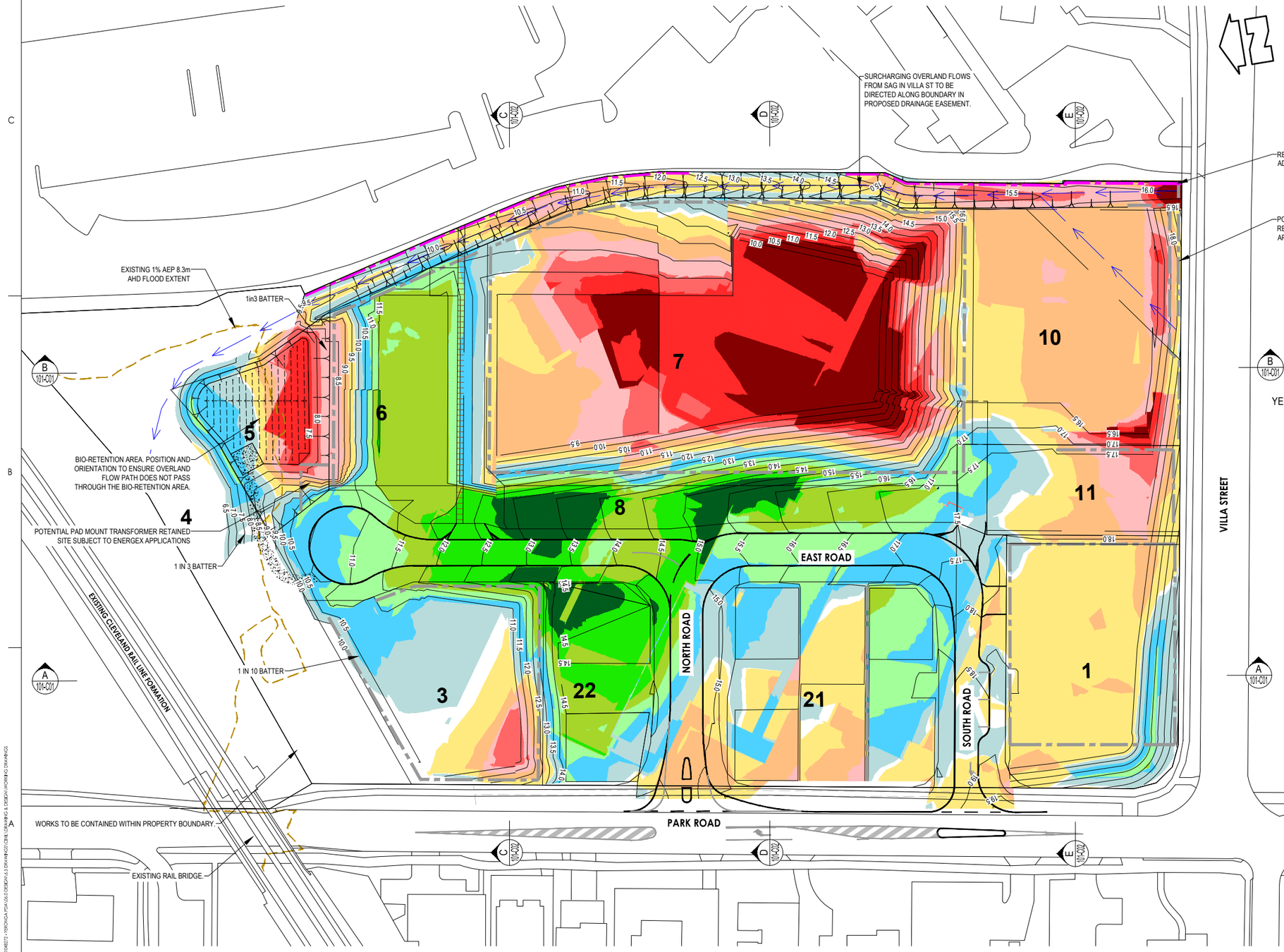
Project No. 301048272

Scale 1:1000 @A1

Revision C

Drawing No. **CI-001-P01**

ORIGINAL SHEET - E/O A1 COORD - MGA/YYYZone DATUM - mAHD



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5. ALL LOTS SHALL BE PROVIDED WITH CONNECTION TO SEWER, WATER, ELECTRICITY, TELECOMMUNICATIONS AND A LAWFUL POINT OF STORMWATER DISCHARGE.
6. IN GENERAL, ALL CONTOURS SHOWN ARE BULK EARTHWORKS CONTOURS ONLY AND DO NOT REPRESENT FINAL FINISHED SURFACE LEVELS. TEMPORARY BATTERS WILL BE CONSTRUCTED TO ALLOW BUILT FORM AND LOT DEVELOPMENTS TO BE ESTABLISHED.

LEGEND

- 10.5 — INDICATIVE PROPOSED BULK EW DESIGN CONTOURS 0.5m
- 20.00 — EXISTING CONTOURS
- PROPOSED RETAINING WALL
- POTENTIAL FUTURE RETAINING WALL

CUT/FILL LEGEND

- AREA OF CUT DEPTH >2.5m
- AREA OF CUT DEPTH 2.5m - 2.0m
- AREA OF CUT DEPTH 2.0m - 1.5m
- AREA OF CUT DEPTH 1.5m - 1.0m
- AREA OF CUT DEPTH 1.0m - 0.5m
- AREA OF CUT DEPTH 0.5m - 0.05m
- AREA OF FILL DEPTH 0.05m - 0.5m
- AREA OF FILL DEPTH 0.5m - 1.0m
- AREA OF FILL DEPTH 1.0m - 1.5m
- AREA OF FILL DEPTH 1.5m - 2.0m
- AREA OF FILL DEPTH 2.0m - 2.5m
- AREA OF FILL DEPTH >2.5m

FLOOD STORAGE COMPARASION (1% AEP SCENARIO:)

PRE-DEMO (RPS SURFACE) FLOOD STORAGE BELOW RL8.30m AHD: 2830m³

DESIGN SURFACE FLOOD STORAGE BELOW RL8.30m AHD: 2835m³

BUILDING PADS SHOWN ARE INDICATIVE IN FORM AND LEVEL. THEY ARE SUBJECT TO FUTURE DEVELOPMENT AS PART OF THE RESPECTIVE LOT'S FUTURE APPLICATIONS.

BULK EARTHWORKS VOLUMES (DESIGN SURFACE TO PRE-DEMO SURFACE):
CUT = -17048m³
FILL = +12942m³
BALANCE = -4106m³

SCALE 1:500 (A1) 0 10 20

SCALE 1:1000 (A3) 0 10 20

Notes

C FURTHER ISSUES RESPONSE	MK	AR	2022.02.10
B FURTHER ISSUES LETTER	TJ	AR	2021.11.10
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Issued/Revision	By	Appd	YYYY.MM.DD

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Tel: +61 7 3811 4500

Client/Project Logo

Client/Project
ECONOMIC DEVELOPMENT QUEENSLAND

PARKSIDE YERONGA - SUBDIVISION

70 PARK ROAD, YERONGA, BRISBANE

File Name: CI-100-P01.DWG	DDJ	TJ	AR	2021.11.10
	Dwn.	Dsgn.	Chkd.	YYYY.MM.DD

Title
BULK EARTHWORKS PLAN
CONCEPTUAL MASTER PLAN

Project No.	Scale
301048272	1:500 @A1
Revision	Drawing No.
C	CI-100-P01

Plotted: 2/9/2022 11:51:13 PM By: EUGUENE MANAB
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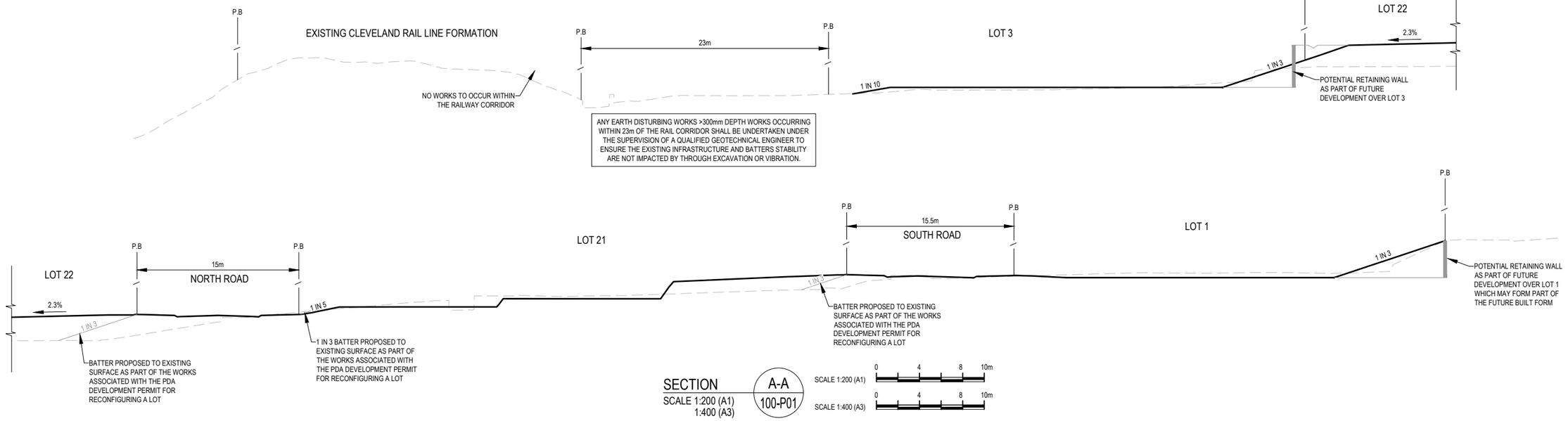

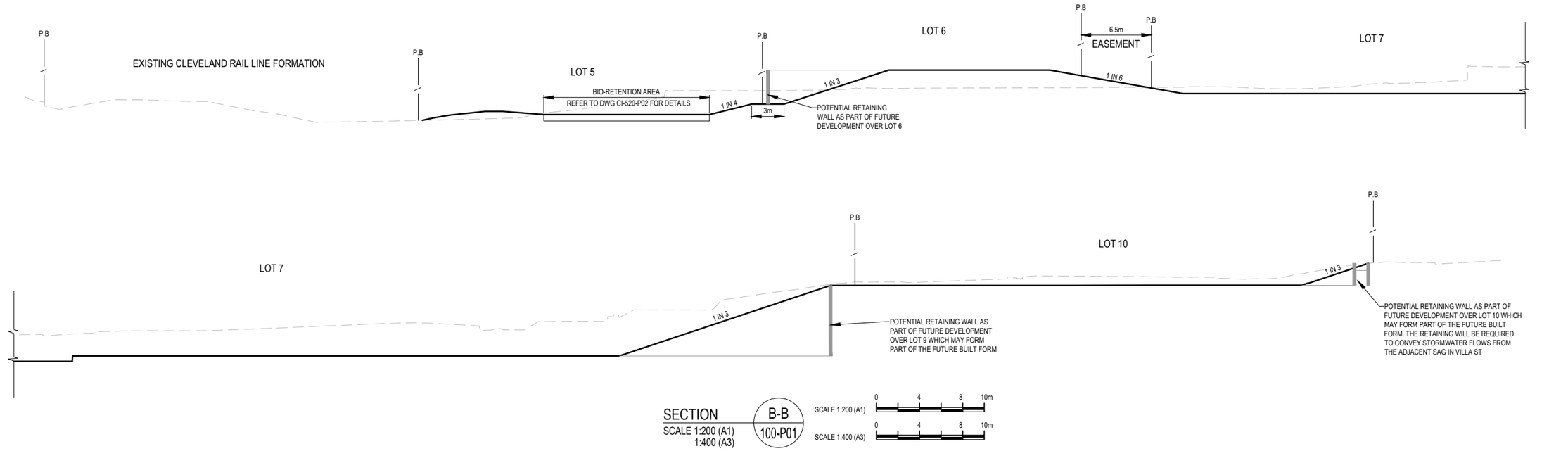

Notes

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File Name: CI-101-C01-C02.DWG	DDJ	TJ	AR	2021.11.10
	Dwn.	Dsgn.	Chkd.	YYYY.MM.DD

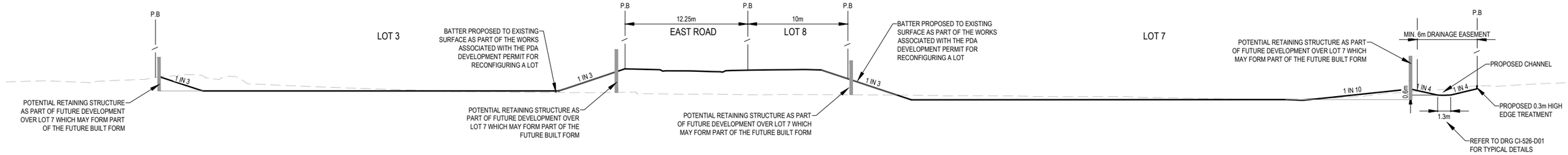
Title
BULK EARTHWORKS SECTIONS
SHEET 1

Project No.
301048272

Scale
AS SHOWN

Revision
C

Drawing No.
CI-101-C01



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1:400 (A3)

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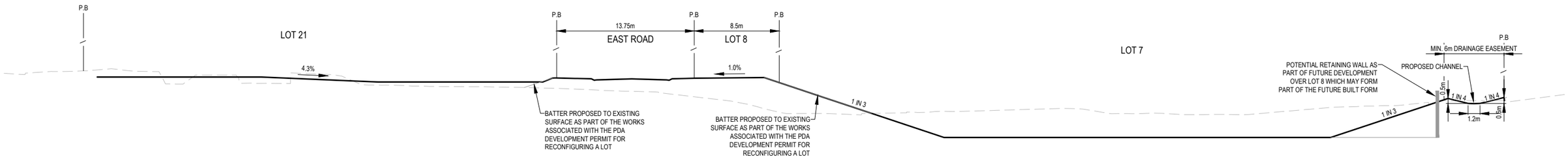

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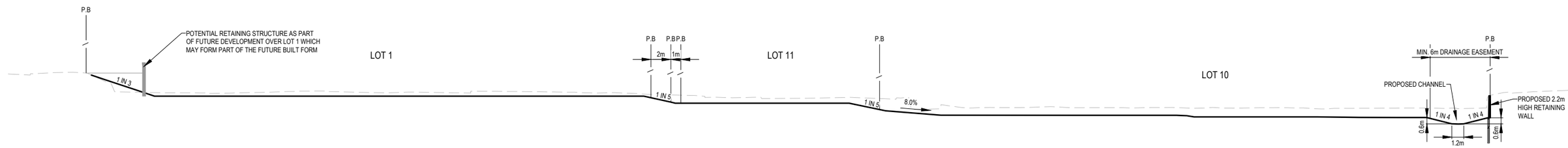

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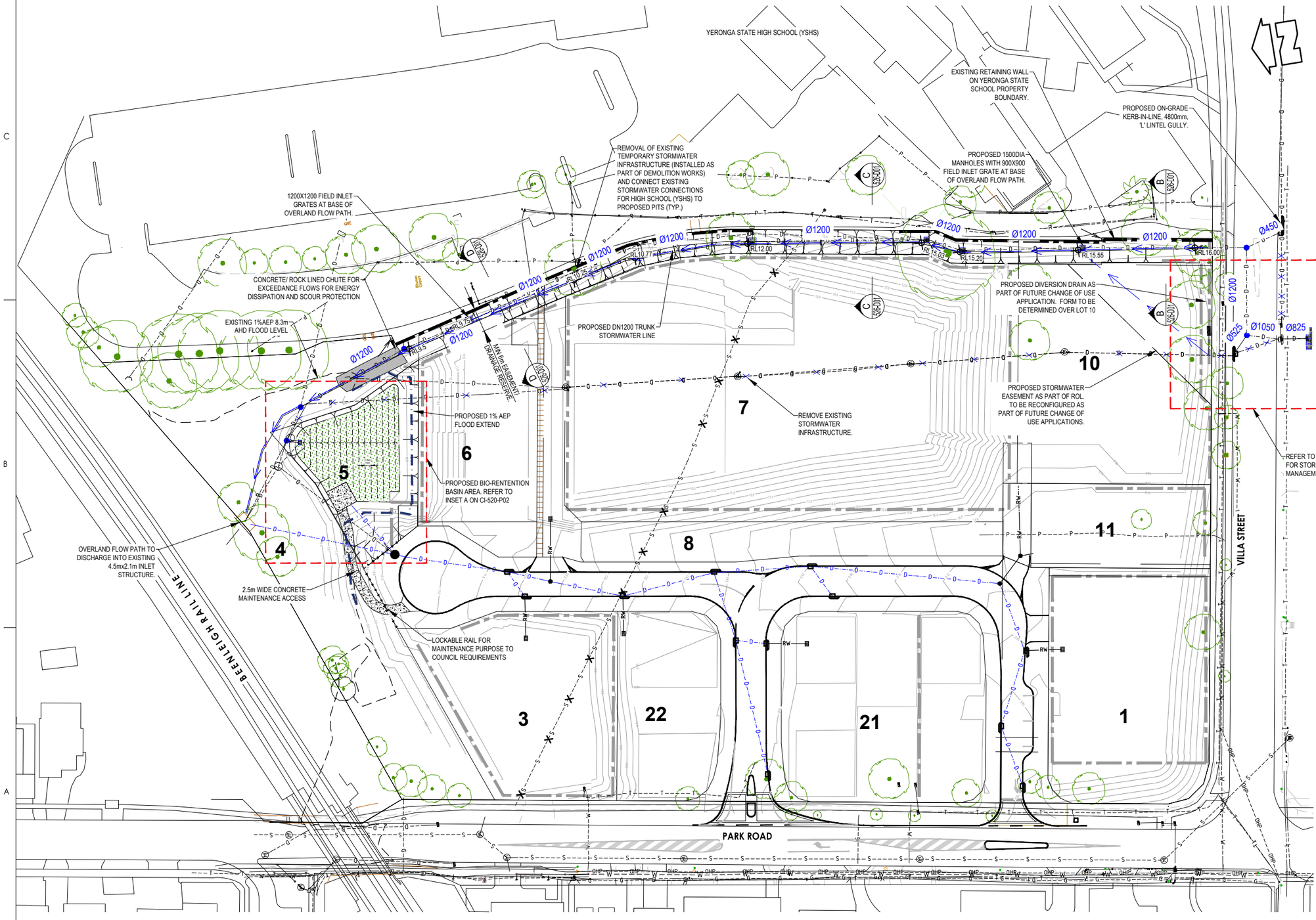
File Name: CI-101-C01-C02.DWG	DDJ	TJ	AR	2021.11.10
	Dwn.	Dsgn.	Chkd.	YYYY.MM.DD

Title
BULK EARTHWORKS SECTIONS
SHEET 2

Project No. 301048272
Scale AS SHOWN
Revision C
Drawing No. **CI-101-C02**

ORIGINAL SHEET - BID A1 COORD - MGA/YY-Zone DATUM - mAHD



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6. ACTUAL SIZING AND LAND DEDICATION IS SUBJECT TO DESIGN DEVELOPMENT OF EARTHWORKS AND STORMWATER DESIGNS.

LEGEND

- INDICATIVE STORMWATER LINE & MANHOLE
- INDICATIVE STORMWATER LINE & PIT
- INDICATIVE STORMWATER OVERLAND FLOW PATH
- EXISTING STORMWATER LINE & MANHOLE
- EXISTING STORMWATER LINE & GULLY
- EXISTING WATER LINE
- EXISTING SEWER LINE
- EXISTING GAS PIPE LINE
- EXISTING OVERHEAD LINE
- EXISTING TELECOM
- EXISTING UNDERGROUND POWER
- EXISTING STORMWATER LINE TO BE REMOVED
- INDICATIVE OVERLAND FLOW PATH TOP OF BATTER
- INDICATIVE RETAINING WALL
- POTENTIAL RETAINING WALL AS PART OF RELEVANT LOTS FUTURE DEVELOPMENT
- RL12.00 PROPOSED OVERFLOW PATH INVERT LEVEL

MINIMUM LEVELS FOR FLOOD IMMUNITY

1% AEP FLOOD LEVEL (LOCAL CATCHMENT*): RL8.56m

1% AEP FLOOD LEVEL (BRISBANE RIVER): RL8.30m

*BASED ON FLOOD ASSESSMENT REPORT PREPARED BY WATERTECH DATED 10/2/22 1% AEP FLOOD LEVEL: RL8.56m (LOCAL CATCHMENT)

LOT	USE	MIN LEVEL (mAHD) (FREEBOARD)
1	ALL USES	N/A
3	NCC CLASS 1-4 BUILDING - HABITABLE ROOM	9.06m (500mm)
	NCC CLASS 1-4 BUILDING - BASEMENT ENTRY	8.56m (0mm)
	OTHER CLASSES	NOT COMPATIBLE
6	NCC CLASS 1-4 BUILDING - HABITABLE ROOM	9.06m (500mm)
	NCC CLASS 1-4 BUILDING - HABITABLE ROOM	9.06m (500mm)
	NCC CLASS 1-4 BUILDING - BASEMENT ENTRY	8.56m (0mm)
	NCC CLASS 9a/c BUILDING - BUILDING FLOOR LEVEL	11.8 (0mm)
	NCC CLASS 9 BUILDING - BASEMENT ENTRY	8.56m (0mm)
8	OPEN SPACE	8.56m (0mm)
10	ALL USES (MIN RL ALONG VILLA ST FRONTAGE)	19.0m (500mm)
11	ALL USES	N/A
21	ALL USES	N/A
22	ALL USES	N/A

NOTE:
THE FUTURE DEVELOPMENTS ON THE RESPECTIVE LOTS AS PART OF SEPARATE APPLICATIONS WILL NEED TO ENSURE THEIR BUILT FORM PROVIDES ADEQUATE HEIGHT OF AN IMPERMEABLE BARRIER ABOVE THE OVERLAND FLOW PATH ALONG THE WESTERN BOUNDARY. THE MINIMUM HEIGHT ABOVE THE TOP OF DRAIN AT ANY POINT IS RECOMMENDED TO 0.3m OR 0.7m ABOVE THE INVERT UNO (2% AEP 500mm FREEDOM, AND CONTAINS THE SEVERE STORM ASSESSMENT WHICH ASSUMES BLOCKAGE OF THE PIPE SYSTEM IN VILLA ST.)

1:500 2 0 2 4 6 8 10 A1
1:1000 A3

Notes

C	FURTHER ISSUES RESPONSE	MK	AR	2022.02.10
B	FURTHER ISSUES LETTER	TJ	AR	2021.11.10
A	ISSUED FOR APPROVAL	BM/VI	AR	2021.09.15
Issued/Revision		By	Appd	YYYY.MM.DD

Issue Status

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Client/Project
ECONOMIC DEVELOPMENT QUEENSLAND

PARKSIDE YERONGA - SUBDIVISION

70 PARK ROAD, YERONGA, BRISBANE

File Name: CI-520-P01-P02.DWG	DDJ	TJ	AR	2021.11.10
	Dwn.	Dsgn.	Chkd.	YYYY.MM.DD

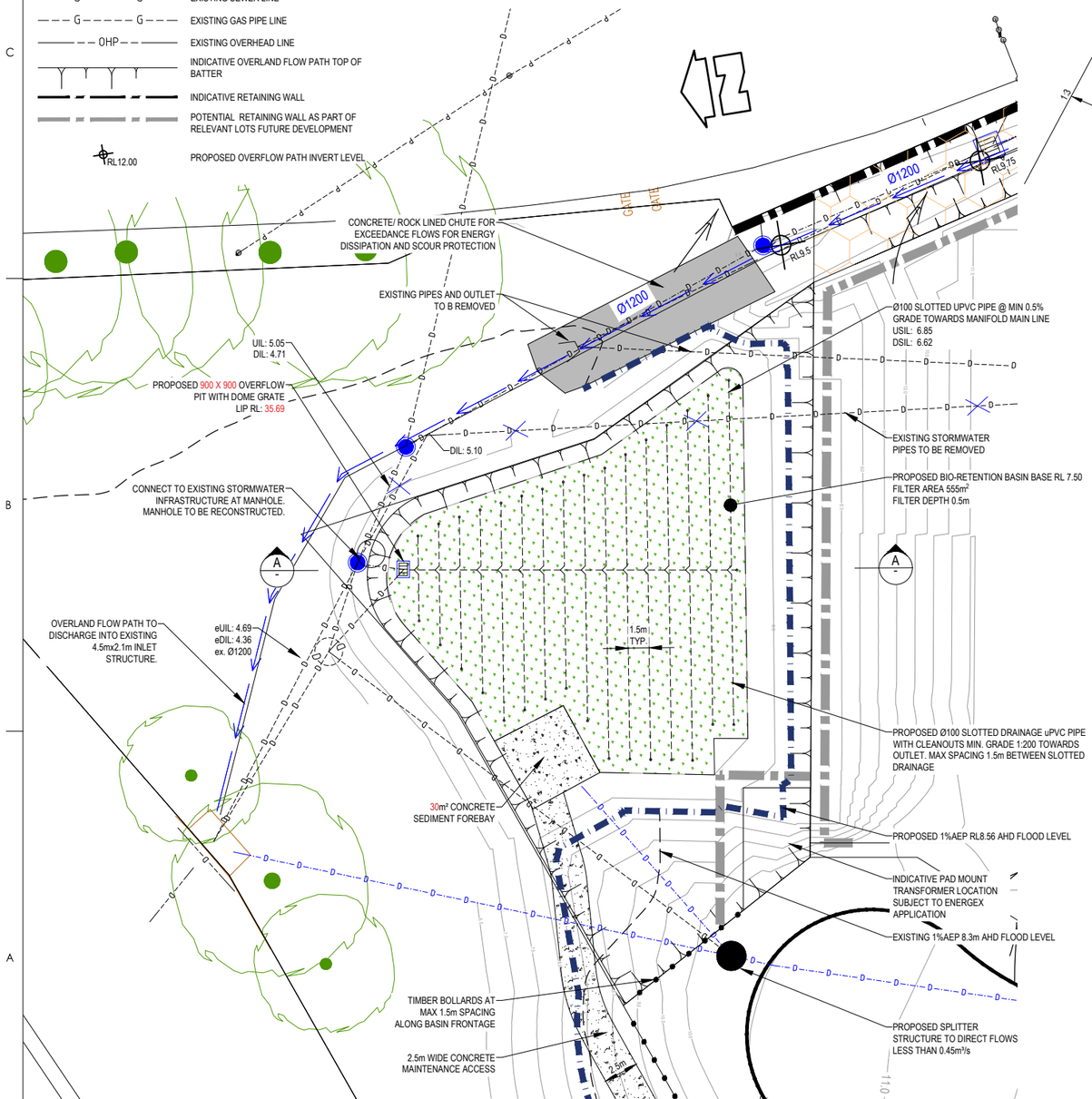
Title
CONCEPTUAL STORMWATER DRAINAGE PLAN

Project No. 301048272
Scale 1:500 @A1
Revision C
Drawing No. **CI-520-P01**

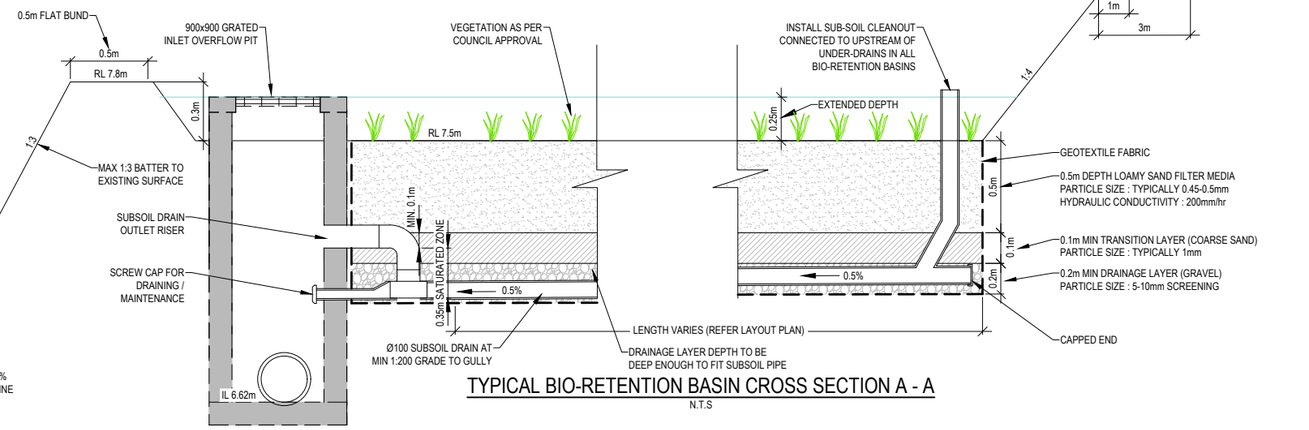
ORIGINAL SHEET - ISO A1 COORD - MGA/YYZone DATUM - mAHD

LEGEND

- INDICATIVE STORMWATER LINE & MANHOLE
- INDICATIVE STORMWATER LINE & PIT
- INDICATIVE STORMWATER OVERLAND FLOW PATH
- EXISTING STORMWATER LINE & MANHOLE
- EXISTING STORMWATER LINE & GULLY
- EXISTING WATER LINE
- EXISTING SEWER LINE
- EXISTING GAS PIPE LINE
- EXISTING OVERHEAD LINE
- INDICATIVE OVERLAND FLOW PATH TOP OF BATTER
- INDICATIVE RETAINING WALL
- POTENTIAL RETAINING WALL AS PART OF RELEVANT LOTS FUTURE DEVELOPMENT
- RL12.00 PROPOSED OVERFLOW PATH INVERT LEVEL

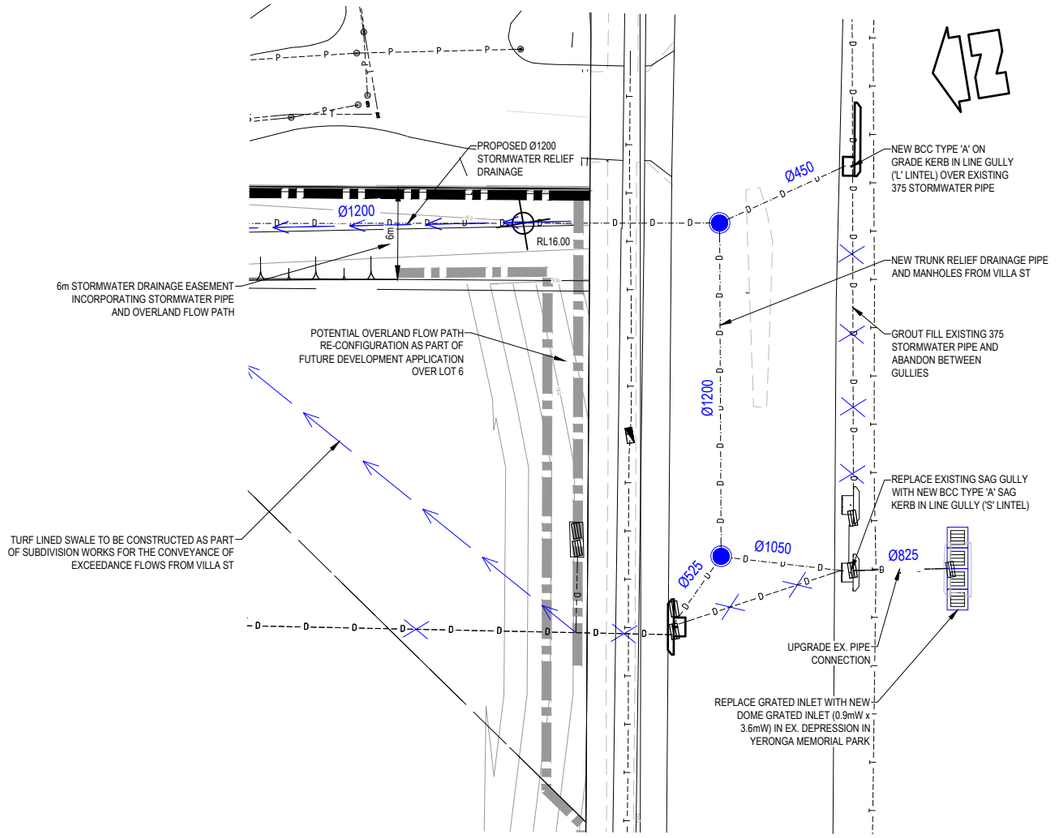


INSET A - BIO-RETENTION BASIN DETAILS PLAN



TYPICAL BIO-RETENTION BASIN CROSS SECTION A - A

N.T.S



INSET B - VILLA ST RELIEF DRAINAGE UPGRADE

1:200 5 0 5 10 15 20 25 A1
1:400 A3

Notes

C	FURTHER ISSUES RESPONS	MK	AR	2022.02.10
B	FURTHER ISSUES LETTER	TJ	AR	2021.11.10
A	ISSUED FOR APPROVAL	BM/VI	AR	2021.09.15
Issued/Revision		By	Appd	YYYY.MM.DD

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ECONOMIC DEVELOPMENT QUEENSLAND

PARKSIDE YERONGA - SUBDIVISION

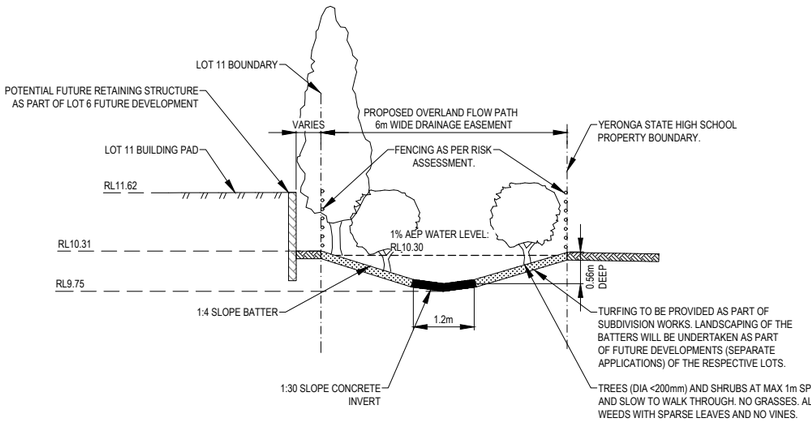
70 PARK ROAD, YERONGA, BRISBANE

File Name: CI-520-P01-P02.DWG	DDJ	TJ	AR	2021.11.10
	Dwn.	Dsgn.	Chkd.	YYYY.MM.DD

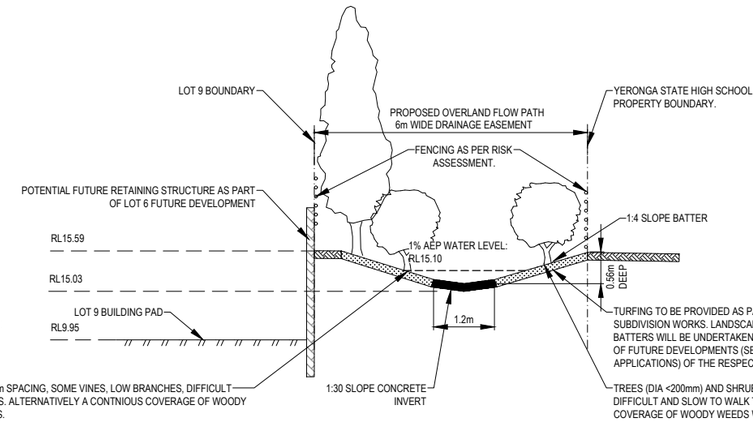
Title
CONCEPTUAL STORMWATER MANAGEMENT PLAN

Project No. 301048272
Scale 1:200 @A1
Revision C
Drawing No. **CI-520-P02**

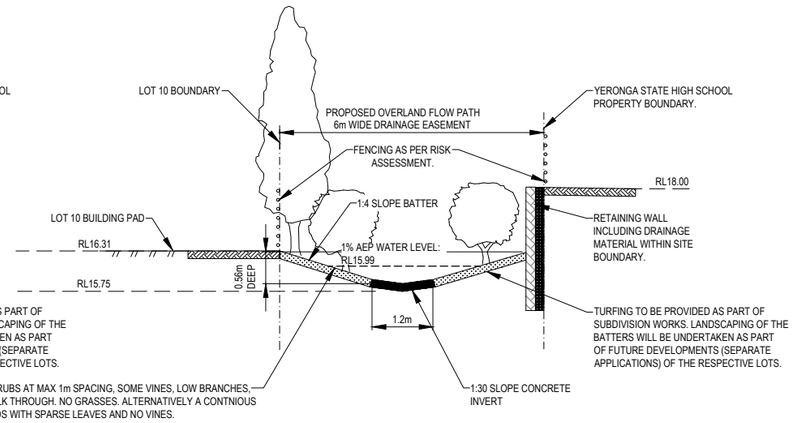
ORIGINAL SHEET - B/O A1 COORD - MGA/YY-Zone DATUM - mAHD



TYPICAL OVERLAND FLOW PATH
SECTION D-D
N.T.S.



TYPICAL OVERLAND FLOW PATH
SECTION C-C
N.T.S.



TYPICAL OVERLAND FLOW PATH
SECTION B-B
N.T.S.

Notes

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B	FURTHER ISSUES LETTER	TJ	AR	2021.11.10
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ECONOMIC DEVELOPMENT QUEENSLAND

PARKSIDE YERONGA - SUBDIVISION

70 PARK ROAD, YERONGA, BRISBANE

File Name: CI-526-D01.DWG	DDJ	TJ	AR	2021.11.10
	Dwn.	Dsgn.	Chkd.	YYYY.MM.DD

Title
STORMWATER DRAINAGE DETAILS

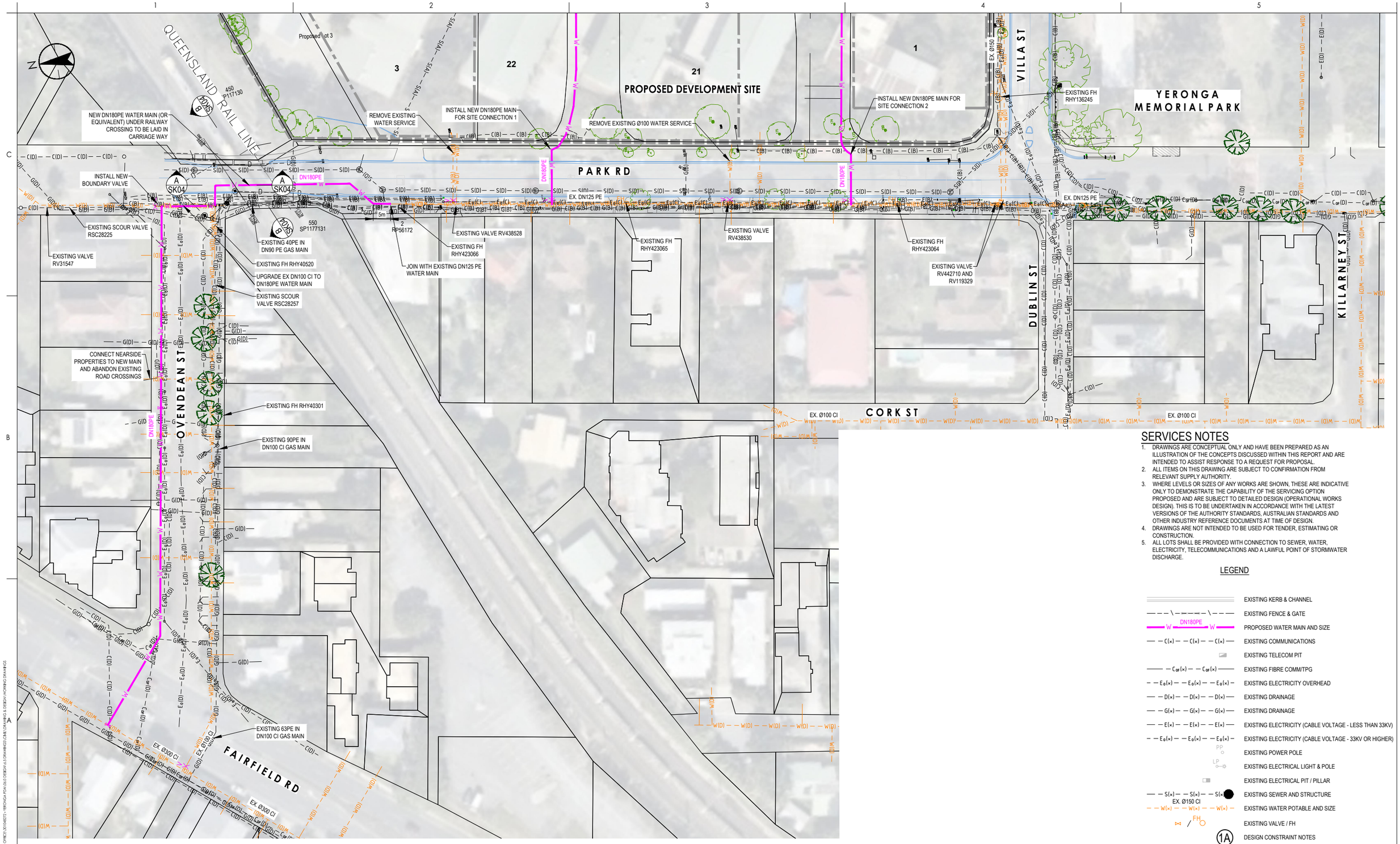
Project No.
301048272

Scale

Revision
C

Drawing No.
CI-526-D01

ORIGINAL SHEET - ISO A1 COORD - MGA/YY-Zone DATUM - mAHD



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3. WHERE LEVELS OR SIZES OF ANY WORKS ARE SHOWN, THESE ARE INDICATIVE ONLY TO DEMONSTRATE THE CAPABILITY OF THE SERVICING OPTION PROPOSED AND ARE SUBJECT TO DETAILED DESIGN (OPERATIONAL WORKS DESIGN). THIS IS TO BE UNDERTAKEN IN ACCORDANCE WITH THE LATEST VERSIONS OF THE AUTHORITY STANDARDS, AUSTRALIAN STANDARDS AND OTHER INDUSTRY REFERENCE DOCUMENTS AT TIME OF DESIGN.
4. DRAWINGS ARE NOT INTENDED TO BE USED FOR TENDER, ESTIMATING OR CONSTRUCTION.
5. ALL LOTS SHALL BE PROVIDED WITH CONNECTION TO SEWER, WATER, ELECTRICITY, TELECOMMUNICATIONS AND A LAWFUL POINT OF STORMWATER DISCHARGE.

LEGEND

- EXISTING KERB & CHANNEL
- EXISTING FENCE & GATE
- PROPOSED WATER MAIN AND SIZE (DN180PE)
- EXISTING COMMUNICATIONS
- EXISTING TELECOM PIT
- EXISTING FIBRE COMM/TPG
- EXISTING ELECTRICITY OVERHEAD
- EXISTING DRAINAGE
- EXISTING DRAINAGE
- EXISTING ELECTRICITY (CABLE VOLTAGE - LESS THAN 33KV)
- EXISTING ELECTRICITY (CABLE VOLTAGE - 33KV OR HIGHER)
- EXISTING POWER POLE
- EXISTING ELECTRICAL LIGHT & POLE
- EXISTING ELECTRICAL PIT / PILLAR
- EXISTING SEWER AND STRUCTURE
- EXISTING WATER POTABLE AND SIZE
- EXISTING VALVE / FH
- DESIGN CONSTRAINT NOTES

(x) DENOTES QUALITY LEVEL OF THE UNDERGROUND UTILITY IN REFERENCE TO AS5488-2019

Notes

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ECONOMIC DEVELOPMENT QUEENSLAND

PARKSIDE YERONGA - SUBDIVISION

70 PARK ROAD, YERONGA, BRISBANE

File Name: CI-650-P01.DWG	DDJ	TJ	AR	2021.11.10
	Dwn.	Dsgn.	Chkd.	YYYY.MM.DD

Title

EXTERNAL WATER AUGMENTATION CONCEPT PLAN

Project No.	Scale
301048272	1:500 @A1
Revision	Drawing No.
C	CI-650-P01

Plotted: 2/10/2022 2:23:58 AM By: KUKARA, MANASI
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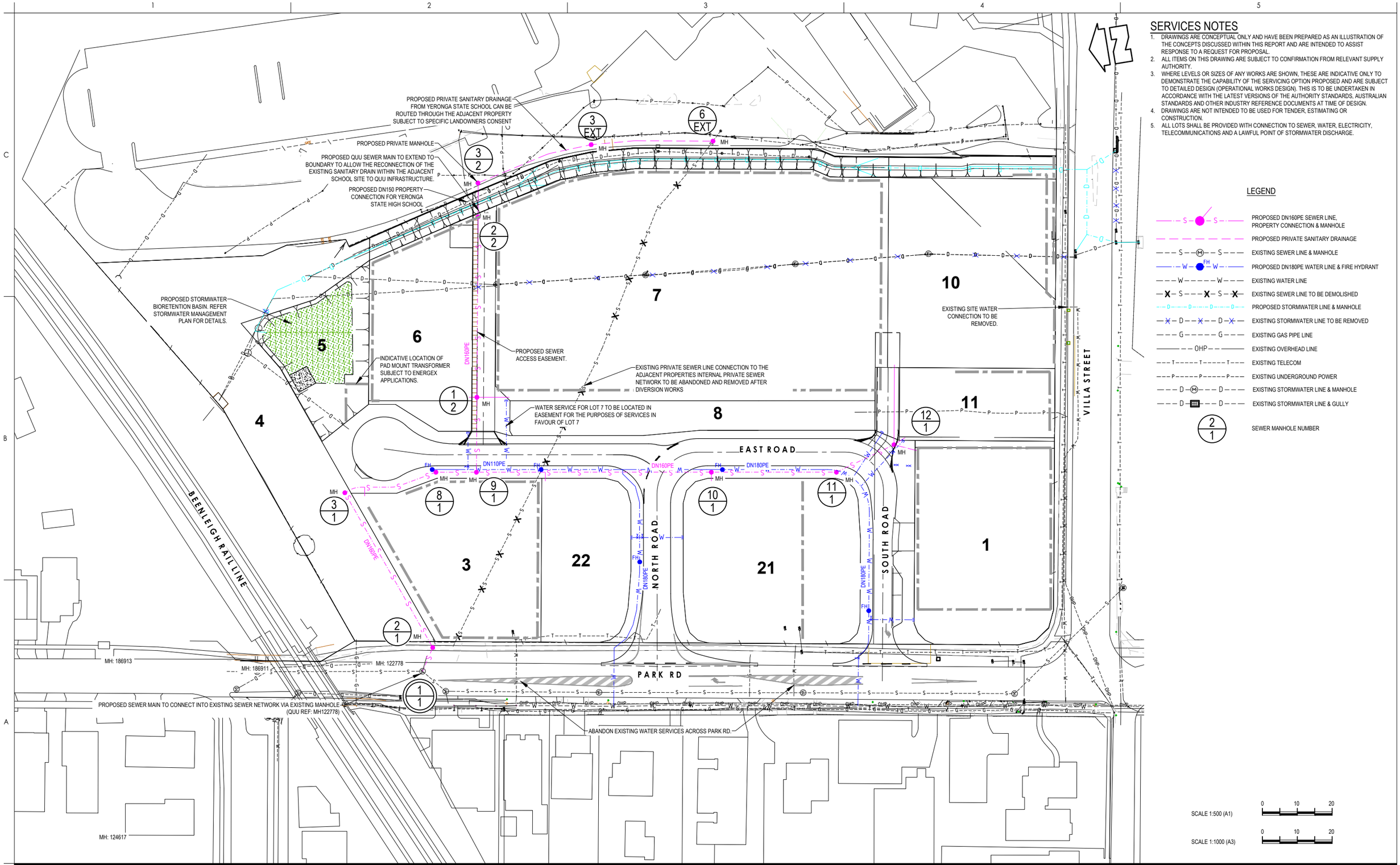
ORIGINAL SHEET - ISO A1 COORD = MGA/YY-Zone DATUM = mAHD



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5. ALL LOTS SHALL BE PROVIDED WITH CONNECTION TO SEWER, WATER, ELECTRICITY, TELECOMMUNICATIONS AND A LAWFUL POINT OF STORMWATER DISCHARGE.

LEGEND

- PROPOSED DN160PE SEWER LINE, PROPERTY CONNECTION & MANHOLE
- PROPOSED PRIVATE SANITARY DRAINAGE
- EXISTING SEWER LINE & MANHOLE
- PROPOSED DN180PE WATER LINE & FIRE HYDRANT
- EXISTING WATER LINE
- EXISTING SEWER LINE TO BE DEMOLISHED
- PROPOSED STORMWATER LINE & MANHOLE
- EXISTING STORMWATER LINE TO BE REMOVED
- EXISTING GAS PIPE LINE
- EXISTING OVERHEAD LINE
- EXISTING TELECOM
- EXISTING UNDERGROUND POWER
- EXISTING STORMWATER LINE & MANHOLE
- EXISTING STORMWATER LINE & GULLY
- SEWER MANHOLE NUMBER

SCALE 1:500 (A1) 0 10 20

SCALE 1:1000 (A3) 0 10 20

Notes

C	FURTHER ISSUES RESPONSE	MK	AR	2022.02.10
B	FURTHER ISSUES LETTER	TJ	AR	2021.11.10
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ECONOMIC DEVELOPMENT QUEENSLAND

PARKSIDE YERONGA - SUBDIVISION

70 PARK ROAD, YERONGA, BRISBANE

File Name: CI-700-P01.DWG	DDJ	TJ	AR	2021.11.10
	Dwn.	Dsgn.	Chkd.	YYYY.MM.DD

Title

COMBINED SERVICES PLAN
CONCEPTUAL MASTER PLAN

Project No.	Scale
301048272	1:500 @A1
Revision	Drawing No.
C	CI-700-P01

ORIGINAL SHEET - ISO A1 COORD - MGA/YY-Zone DATUM - mAHD

LINE NUMBER 1

MAINTENANCE HOLE/SHAFT No.	MH/MS TYPE	MH/MS COVER TYPE	JUNCTION LINE	DOWNSTREAM STRUCTURE DROP TYPE	DEPTH TO HOUSE CONNECTION	HOUSE CONNECTION INVERT LEVEL	HOUSE CONNECTION TYPE	HOUSE CONNECTION LOT No.	DISTANCE FROM D/S STRUCTURE
1/1	G 900mm DIA								
2/1	G 900mm DIA								
3/1	G 900mm DIA				0.650	10.091	OB	Lot 3	1
4/1	LRB HORIZ. TP 7.0m RADIUS								
5/1	LRB HORIZ. TP 7.0m RADIUS				1.080	12.249	OB	Lot 22	19.76
6/1	LRB HORIZ. TP 7.0m RADIUS								
7/1	LRB HORIZ. TP 7.0m RADIUS				0.650	14.890	OB	Lot 21	67.374
8/1	G 900mm DIA								
9/1	G 900mm DIA		2						
10/1	G 900mm DIA								
11/1	G 900mm DIA								
12/1	G 900mm DIA		3 LOT 1 LOT 11						

MAINTENANCE HOLE/SHAFT No.	JUNCTION INVERT LEVEL	DEPTH TO INVERT BELOW FSL	INVERT LEVEL (IL)	FINISHED SURFACE LEVEL (FSL)	EXISTING SURFACE LEVEL (ESL)	SETOUT COORDINATES	CHAINAGE (CH)
1/1		2.320 2.320	7.560 7.560	9.880	9.880	E: 501997.474 N: 6956449.930	0.000
2/1		2.694 2.634	7.634 7.694	10.328	10.328	E: 502003.729 N: 6956445.944	7.417
3/1		2.527 2.477	8.205 8.255	10.732	8.719	E: 502051.603 N: 6956463.693	58.474
4/1		2.498 2.498	8.269 8.269	10.767	8.826	E: 502052.090 N: 6956462.378	59.876
5/1		2.428 2.428	8.305 8.305	10.733	9.000	E: 502052.436 N: 6956458.822	63.490
6/1		2.588 2.588	8.391 8.391	10.979	8.444	E: 502051.056 N: 6956450.330	72.093
7/1		2.671 2.671	8.416 8.416	11.086	8.472	E: 502051.095 N: 6956447.861	74.575
8/1		3.229 3.189	8.527 8.567	11.756	8.717	E: 502053.228 N: 6956436.972	85.671
9/1	8.773	3.658 1.269	8.683 11.072	12.341	9.431	E: 502051.363 N: 6956425.495	97.298
10/1		2.230 2.190	13.310 13.350	15.540	14.305	E: 502040.552 N: 6956358.994	164.672
11/1		3.620 3.580	13.708 13.748	17.329	16.610	E: 502034.796 N: 6956323.590	200.541
12/1	14.021	3.825	13.931	17.756	17.063	E: 502039.913 N: 6956306.050	218.813

MAINTENANCE HOLE/SHAFT No.	EMBEDMENT TYPE	BULKHEADS (B) / TRENCHSTOPS (T)	PIPE NOMINAL DIAMETER (DN)	PIPE TYPE & CLASS	PIPE GRADE (1 IN X)	PIPE LENGTH (m)	DATUM RL
1/1 – 2/1			DN160	SDR21 PE100	100.00	7.417	-2.0
2/1 – 3/1			DN160	SDR21 PE100	100.00	51.058	
3/1 – 4/1			DN160	SDR21 PE100	100.00	1.402	
4/1 – 5/1			DN160	SDR21 PE100	100.00	3.613	
5/1 – 6/1			DN160	SDR21 PE100	100.00	8.603	
6/1 – 7/1			DN160	SDR21 PE100	100.00	2.482	
7/1 – 8/1			DN160	SDR21 PE100	100.00	11.096	
8/1 – 9/1			DN160	SDR21 PE100	100.00	11.628	
9/1 – 10/1			DN160	SDR21 PE100	30.10	67.374	0.0
10/1 – 11/1			DN160	SDR21 PE100	100.00	35.869	3.0
11/1 – 12/1			DN160	SDR21 PE100	100.00	18.271	

LINE NUMBER 2

MAINTENANCE HOLE/SHAFT No.	MH/MS TYPE	MH/MS COVER TYPE	JUNCTION LINE	DOWNSTREAM STRUCTURE DROP TYPE	DEPTH TO HOUSE CONNECTION	HOUSE CONNECTION INVERT LEVEL	HOUSE CONNECTION TYPE	HOUSE CONNECTION LOT No.	DISTANCE FROM D/S STRUCTURE
9/1	G 900mm DIA		1						
1/2	G 900mm DIA		LOT 7		2.660	9.966	OB	Lot 6	01.5
2/2	G 900mm DIA								
3/2	G 900mm DIA		EXT						

MAINTENANCE HOLE/SHAFT No.	JUNCTION INVERT LEVEL	DEPTH TO INVERT BELOW FSL	INVERT LEVEL (IL)	FINISHED SURFACE LEVEL (FSL)	EXISTING SURFACE LEVEL (ESL)	SETOUT COORDINATES	CHAINAGE (CH)
9/1		3.658 3.568	8.683 8.773	12.341	9.431	E: 502051.363 N: 6956425.495	0.000
1/2	10.261	3.638 3.598	8.988 9.028	12.626	9.225	E: 502072.562 N: 6956421.910	21.500
2/2		3.339 3.299	9.545 9.585	12.885	10.107	E: 502123.574 N: 6956413.281	73.237
3/2	10.036	1.311	9.683	10.994	10.994	E: 502133.206 N: 6956411.652	83.006

MAINTENANCE HOLE/SHAFT No.	EMBEDMENT TYPE	BULKHEADS (B) / TRENCHSTOPS (T)	PIPE NOMINAL DIAMETER (DN)	PIPE TYPE & CLASS	PIPE GRADE (1 IN X)	PIPE LENGTH (m)	DATUM RL
9/1 – 1/2			DN160	SDR21 PE100	100.00	21.500	-1.0
1/2 – 2/2			DN160	SDR21 PE100	100.00	51.736	
2/2 – 3/2			DN160	SDR21 PE100	100.00	9.769	

LINE NUMBER 3

MAINTENANCE HOLE/SHAFT No.	MH/MS TYPE	MH/MS COVER TYPE	JUNCTION LINE	DOWNSTREAM STRUCTURE DROP TYPE	DEPTH TO HOUSE CONNECTION	HOUSE CONNECTION INVERT LEVEL	HOUSE CONNECTION TYPE	HOUSE CONNECTION LOT No.	DISTANCE FROM D/S STRUCTURE
12/1	G 900mm DIA		1						
1/3	END				2.861	14.432	OB	Lot 10	22.892

MAINTENANCE HOLE/SHAFT No.	JUNCTION INVERT LEVEL	DEPTH TO INVERT BELOW FSL	INVERT LEVEL (IL)	FINISHED SURFACE LEVEL (FSL)	EXISTING SURFACE LEVEL (ESL)	SETOUT COORDINATES	CHAINAGE (CH)
12/1		3.825 3.735	13.931 14.021	17.756	17.063	E: 502039.913 N: 6956306.050	0.000
1/3		3.043	14.250	17.293	16.604	E: 502062.485 N: 6956302.232	22.892

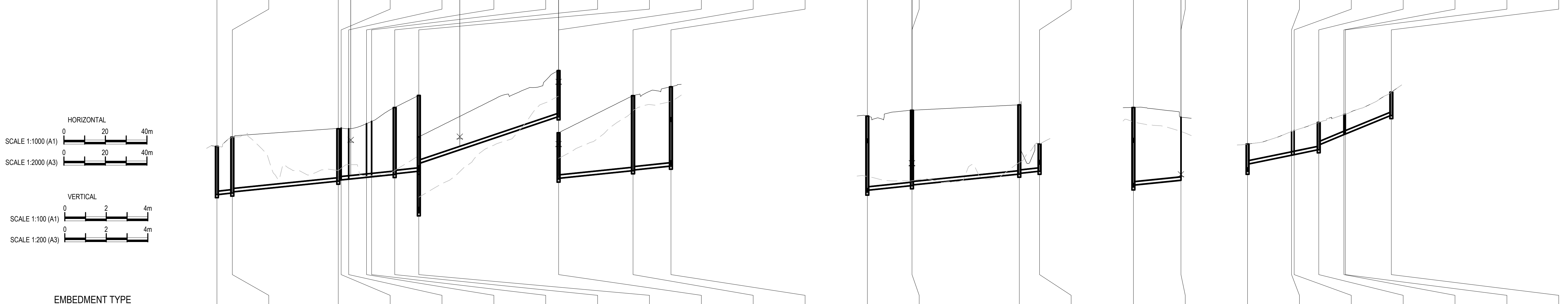
MAINTENANCE HOLE/SHAFT No.	EMBEDMENT TYPE	BULKHEADS (B) / TRENCHSTOPS (T)	PIPE NOMINAL DIAMETER (DN)	PIPE TYPE & CLASS	PIPE GRADE (1 IN X)	PIPE LENGTH (m)	DATUM RL
12/1 – 1/3			DN160	SDR21 PE100	100	22.892	4.0

(PRIVATE SANITARY DRAIN IN YERONGA SHS)

MAINTENANCE HOLE/SHAFT No.	MH/MS TYPE	MH/MS COVER TYPE	JUNCTION LINE	DOWNSTREAM STRUCTURE DROP TYPE	DEPTH TO HOUSE CONNECTION	HOUSE CONNECTION INVERT LEVEL	HOUSE CONNECTION TYPE	HOUSE CONNECTION LOT No.	DISTANCE FROM D/S STRUCTURE
3/2	G 900mm DIA		2						
1/EXT	LRB HORIZ. TP 7.0m RADIUS								
2/EXT	LRB HORIZ. TP 7.0m RADIUS								
3/EXT	G 900mm DIA								
4/EXT	LRB HORIZ. TP 7.0m RADIUS								
5/EXT	LRB HORIZ. TP 7.0m RADIUS								
6/EXT	G 900mm DIA								

MAINTENANCE HOLE/SHAFT No.	JUNCTION INVERT LEVEL	DEPTH TO INVERT BELOW FSL	INVERT LEVEL (IL)	FINISHED SURFACE LEVEL (FSL)	EXISTING SURFACE LEVEL (ESL)	SETOUT COORDINATES	CHAINAGE (CH)
3/2		1.311 0.958	9.683 10.036	10.994	10.994	E: 502133.206 N: 6956411.652	0.000
1/EXT		1.138 1.138	10.460 10.460	11.598	11.598	E: 502138.075 N: 6956391.025	21.194
2/EXT		1.157 1.157	10.485 10.485	11.643	11.643	E: 502138.255 N: 6956389.753	22.480
3/EXT		1.316 1.071	10.722 10.968	12.038	12.038	E: 502138.824 N: 6956377.930	34.317
4/EXT		0.965 0.965	11.452 11.452	12.417	12.417	E: 502137.974 N: 6956365.850	46.427
5/EXT		0.959 0.959	11.479 11.479	12.439	12.439	E: 502137.895 N: 6956365.182	47.100
6/EXT		1.130	12.367	13.497	13.497	E: 502134.220 N: 6956343.287	69.302

MAINTENANCE HOLE/SHAFT No.	EMBEDMENT TYPE	BULKHEADS (B) / TRENCHSTOPS (T)	PIPE NOMINAL DIAMETER (DN)	PIPE TYPE & CLASS	PIPE GRADE (1 IN X)	PIPE LENGTH (m)	DATUM RL
3/2 – 1/EXT			PRIVATE DN150	uPVC SN8	50.00	21.194	-1.0
1/EXT – 2/EXT			PRIVATE DN150	uPVC SN8	50.00	1.286	
2/EXT – 3/EXT			PRIVATE DN150	uPVC SN8	50.00	11.837	
3/EXT – 4/EXT			PRIVATE DN150	uPVC SN8	25.00	12.110	
4/EXT – 5/EXT			PRIVATE DN150	uPVC SN8	25.00	0.672	
5/EXT – 6/EXT			PRIVATE DN150	uPVC SN8	25.00	22.202	



Notes

C FURTHER ISSUES RESPONSE	MK	AR	2022.02.10
B FURTHER ISSUES LETTER	TJ	AR	2021.11.10
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ECONOMIC DEVELOPMENT QUEENSLAND

PARKSIDE YERONGA - SUBDIVISION

70 PARK ROAD, YERONGA, BRISBANE

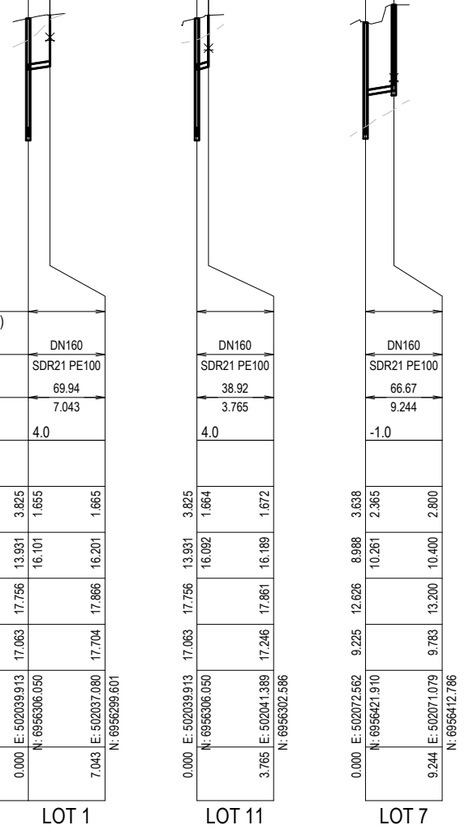
File Name: CI-702-L01.DWG	DDJ	TJ	AR	2021.11.10
	Dwn.	Dsgn.	Chkd.	YYYY.MM.DD

Title
SEWER LONGITUDINAL SECTION - 1

Project No. 301048272
Scale 1:100 @A1
Revision C
Drawing No. **CI-702-L01**

ORIGINAL SHEET - ISO A1 COORD - MGA/YY-Zone DATUM - mAHD

MAINTENANCE HOLE/SHAFT No.		12/1	1/LOT 1		12/1	1/LOT 11		1/2	1/LOT 7	
MH/MS TYPE	G	900mm DIA	END		900mm DIA	END		900mm DIA	G	900mm DIA
MH/MS COVER TYPE										
JUNCTION LINE	1			1			2			
DOWNSTREAM STRUCTURE DROP TYPE										
DEPTH TO HOUSE CONNECTION		0.823			1.127			2.475		
HOUSE CONNECTION INVERT LEVEL		17.044			16.734			10.725		
HOUSE CONNECTION TYPE		OB			OB			OB		
HOUSE CONNECTION LOT No.		Lot 1			Lot 11			Lot 7		
DISTANCE FROM D/S STRUCTURE		7.043			3.765			9.244		
EMBEDMENT TYPE										
BULKHEADS (B) / TRENCHSTOPS (T)										
PIPE NOMINAL DIAMETER (DN)		DN160			DN160			DN160		
PIPE TYPE & CLASS		SDR21 PE100			SDR21 PE100			SDR21 PE100		
PIPE GRADE (1 IN X)		69.94			38.92			66.67		
PIPE LENGTH (m)		7.043			3.765			9.244		
DATUM RL		4.0			4.0			-1.0		
JUNCTION INVERT LEVEL										
DEPTH TO INVERT BELOW FSL	3.825	1.655	1.665	3.825	1.664	1.672	3.638	2.365	2.800	
INVERT LEVEL (IL)	13.931	16.101	16.201	13.931	16.092	16.189	8.988	10.261	10.400	
FINISHED SURFACE LEVEL (FSL)	17.756		17.866	17.756		17.861	12.626		13.200	
EXISTING SURFACE LEVEL (ESL)	17.063		17.704	17.063		17.246	9.225		9.783	
SETOUT COORDINATES	0.000	E: 502039.913 N: 6956306.050	E: 502037.080 N: 6956299.601	0.000	E: 502039.913 N: 6956306.050	E: 502041.389 N: 6956302.586	0.000	E: 502072.562 N: 6956421.910	E: 502071.079 N: 6956412.786	
CHAINAGE (CH)	0.000		7.043	0.000		3.765	0.000		9.244	
LINE NUMBER		LOT 1			LOT 11			LOT 7		



HORIZONTAL

SCALE 1:1000 (A1) 0 20 40m

SCALE 1:2000 (A3) 0 20 40m

VERTICAL

SCALE 1:100 (A1) 0 2 4m

SCALE 1:200 (A3) 0 2 4m

Notes

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ECONOMIC DEVELOPMENT QUEENSLAND

PARKSIDE YERONGA - SUBDIVISION

70 PARK ROAD, YERONGA, BRISBANE

File Name: CI-702-L01.DWG	DDJ	TJ	AR	2021.11.10
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Title
SEWER LONGITUDINAL SECTION - 2

Project No. 301048272

Scale 1:100 @A1

Revision C

Drawing No. **CI-702-L02**

ORIGINAL SHEET - ISO A1 COORD - MGA/YY-Zone DATUM - mAHD

Appendix E - Erosion Hazard Assessment

BRISBANE CITY COUNCIL ABN 72 002 765 795

Erosion Hazard Assessment - June 2014

Brisbane City Council (BCC), *Erosion Hazard Assessment* form must be read in conjunction with the *Erosion Hazard Assessment- Supporting Technical Notes* (June 2014 or later version) for explanatory terms and Certification information.

What is an Erosion Hazard Assessment?
Soil erosion and sediment from urban development, particularly during construction activities, is a significant source of sediment pollution in Brisbane's waterways. The Erosion Hazard Assessment determines whether the risk of soil erosion and sediment pollution to the environment is 'low' , 'medium' or 'high'.

When is the EHA required?
An *Erosion Hazard Assessment* form must be completed and lodged with BCC for any Development Application (ie MCU or ROL) that will result in soil disturbance OR Operational Works or Compliance Assessment Application for 'Filling' or Excavation.

Failure to submit this form during lodgement of an application may result in assessment delays or refusal of the application.

Privacy Statement
The personal information collected on this form will be used by Brisbane City Council for the purposes of fulfilling your request and undertaking associated Council functions and services. Your personal information will not be disclosed to any third party without your consent, unless this is required or permitted by law.

Assessment Details

1 Please turn over and complete the erosion hazard assessment.

2 Based on the erosion hazard assessment overleaf, is the site:

☐ ***A 'low' risk site***

Best practice erosion and sediment control (ESC) must be implemented but no erosion and sediment control plans need to be submitted with the development application. Factsheets outlining best practice ESC can be found at http://www.waterbydesign.com.au/factsheets

☐ ***A 'medium' risk site***

If the development is approved, the applicant will need to engage a Registered Professional Engineer (RPEQ) or Certified Professional in Erosion and Sediment Control (CPESC) to prepare an ESC Program and Plan and supporting documentation — in accordance with the requirements of the Infrastructure Design Planning Scheme Policy.

☑ ***A 'high' risk site***

If the development is approved, the applicant will need to engage a RPEQ and CPESC to prepare an ESC Program and Plan and supporting documentation — in accordance with the requirements of the Infrastructure Design Planning Scheme Policy. The plans and program will need to be certified by a CPESC.

3 Site Information and Certification

Application number (if known)

Site address

70 PARK RD YERONGA

Postcode

I certify that:

☑ I have made all relevant enquiries and am satisfied no matters of significance have been withheld from the assessment manager.

☑ I am a person with suitable qualifications and/or experience in erosion and sediment control.

☑ The Erosion Hazard Assessment was completed in accordance with the Erosion Hazard Assessment Supporting Technical Notes and the BCC Infrastructure Design Planning Scheme Policy.

☑ The Erosion Hazard Assessment accurately reflects the site's overall risk of soil erosion and sediment pollution to the environment.

☑ I acknowledge and accept that the BCC, as assessment manager, relies, in good faith, on this certification as part of its development assessment process and the provision of false or misleading information to the BCC constitutes an offence for which BCC may take punitive steps/ action against me/ enforcement action against me.

Certified by *Print name*

ANTHONY RAADSCHELDERS
FOR AND ON BEHALF OF STANTEC

Certifier's signature

Date

8 / 9 / 2021

Assessment Table

Table 1: Low Risk Test

		Yes	*No*
1.1	is the area of land disturbance > 1000 m^2	✓	
1.2	does any land disturbance occur in a BCC mapped waterway corridor		✓
1.3	is there any slope on site (longer than three metres in length) before, during or after construction that is steeper than 5%	✓	
1.4	does any land disturbance occur below 5 m AHD		✓
1.5	does development involve endorsement of a staging plan	✓	
1.6	is there an upstream catchment passing through the site > 1 hectare	✓	

Have you answered 'yes' to any of the questions in Table 1?	*Yes*	*No*	
	✓		**If '*No*' then site is <u>low risk</u> with respect to erosion and sediment control**

If '*Yes*' then proceed to Table 2

Table 2: Medium Risk Test

		Yes	*No*	
2.1	is the area of land disturbance > 1 hectare	✓		**If '*No*' then site is <u>medium risk</u> with respect to erosion and sediment control**

If '*Yes*' then proceed to Table 3

Table 3: High Risk Test

		Yes	*No*
3.1	is there an upstream catchment passing through the site > 1 hectare	✓	
3.2	does any land disturbance occurs in a BCC mapped waterway corridor		✓
3.3	is there any slope on site (longer than three metres in length) before, during or after construction that is steeper than 15%	✓	

Have you answered 'yes' to any of the questions in Table 3?	*Yes*	*No*	
	✓		**If '*No*' then site is <u>medium risk</u> with respect to erosion and sediment control**

If '*Yes*' then site is <u>high risk</u> with respect to erosion and sediment control

Appendix F - Acid Sulfate Soils Assessment

Butler Partners
geotechnical • geo-environmental • groundwater

Acid Sulfate Soils Investigation
Yeronga Priority Development Area
70 Park Road, Yeronga

Prepared for
Economic Development Queensland
Project No. 019-113B

31 August 2021

Butler Partners
geotechnical • geo-environmental • groundwater

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Acid Sulfate Soils Investigation
Yeronga Priority Development Area
70 Park Road, Yeronga
Project No.: 019-113B
31 August 2021

TABLE OF CONTENTS

BUTLER PARTNERS PTY LTD

www.butlerpartners.com.au

SECTION 1 - INTRODUCTION

1.1 Project

It is understood that Economic Development Queensland (EDQ) is currently in the process of selling the Yeronga Priority Development Area (PDA) site located at 70 Park Road, Yeronga and is proposed to be developed into a community, residential and commercial precinct. The overall development area comprises one large property lot; Lot 3 on SP300888 covering an area of 3.12ha. At the time of the investigation, the site was vacant with no buildings present.

Butler Partners Pty Ltd (Butler Partners) has visited the site on various occasions, since first being commissioned in March 2019 by Rosenlund Contractors (Rosenlund) after Construction and Demolition (C&D) Waste containing asbestos containing material (ACM) was identified during demolition works beneath the former Yeronga TAFE building. Butler Partners subsequently supervised the removal of the C&D waste. As part of pre-sale due diligence, Butler Partners was commissioned by EDQ in September 2020 to complete a due diligence detailed environmental site assessment (DESA). In addition to the DESA, given the site falls within an area where acid sulfate soils (ASS) may be present, EDQ commissioned Butler Partners to complete an ASS investigation in October 2020. The sample locations are presented in the attached Drawing No. 1 Rev A.

1.2 Proposed Scope of Work

The following scope of work was proposed for the ASS investigation:

- drilling and sampling of thirteen bores (one per proposed future lot); and
- selected soil samples to undergo Chromium Suite laboratory analysis.

Using the results of the fieldwork and laboratory testing outcomes, it was proposed that a report would be produced that would provide information on the potential for ASS and in addition, provide an Acid Sulfate Soil Management Plan (ASSMP) where necessary.

1.3 ASS Impacts

Oxidation of disturbed ASS has the potential to impact on both soil and groundwater quality during the excavation works and may result in the release of sulphuric acid (acid leachate). Release of acid leachate into the receiving environment has the potential to adversely affect flora and fauna (i.e. lowering of pH and fish kills).

Potential oxidation of ASS and release of acid leachate may occur from:

- lowering of the groundwater table;
- excavation, transportation and placement of ASS at a disposal/treatment area;
- acidic runoff from ASS treatment and/or storage areas;
- discharge from sediment basins and accumulated waters; and
- acid leachate entering groundwater at the proposed treatment area.

1.4 Commission

Based on the anticipated subsurface conditions and the scope of work, a fee to undertake preliminary ASS investigation was presented in an email proposal dated 8 October 2020. Butler Partners was subsequently commissioned by EDQ to conduct the investigation work as proposed.

SECTION 2 - THE SITE

2.1 Background Information

It is understood that no previous ASS assessment has been carried out prior to Butler Partners being commissioned to complete ASS investigation.

2.2 Site Description

The site is located at 70 Park Road, Yeronga and occupies a total area of approximately 3.12ha. The site has been unoccupied following the demolition of the former TAFE buildings and removal of most of the concrete and bituminous concrete hardstand areas. Limited survey information was available at the time of reporting, however, the topography of the proposed development area varies between RL5mAHD and RL20mAHD. A recent Nearmap image of the site, with the approximate site boundaries highlighted blue and is presented in Photograph 1.

Photograph 1: An aerial view of the site with the approximate boundary outlined in blue (Image Source NearMap, Image Dated 17 September 2020)

2.3 Geology

Reference to the Geological Survey on Queensland Globe indicates that the site is mapped in an area of the Aspley Formation (comprising conglomerate sandstone and minor shale).

2.3.1 Acid Sulfate Soils Mapping

The ASS overlay accessed through the Brisbane City Council (BCC) City Plan 2014 indicates that the site is mapped in an area where the ground surface levels are above RL5mAHD and below RL20mAHD. An extract of the overlay is presented as Figure 1 below.

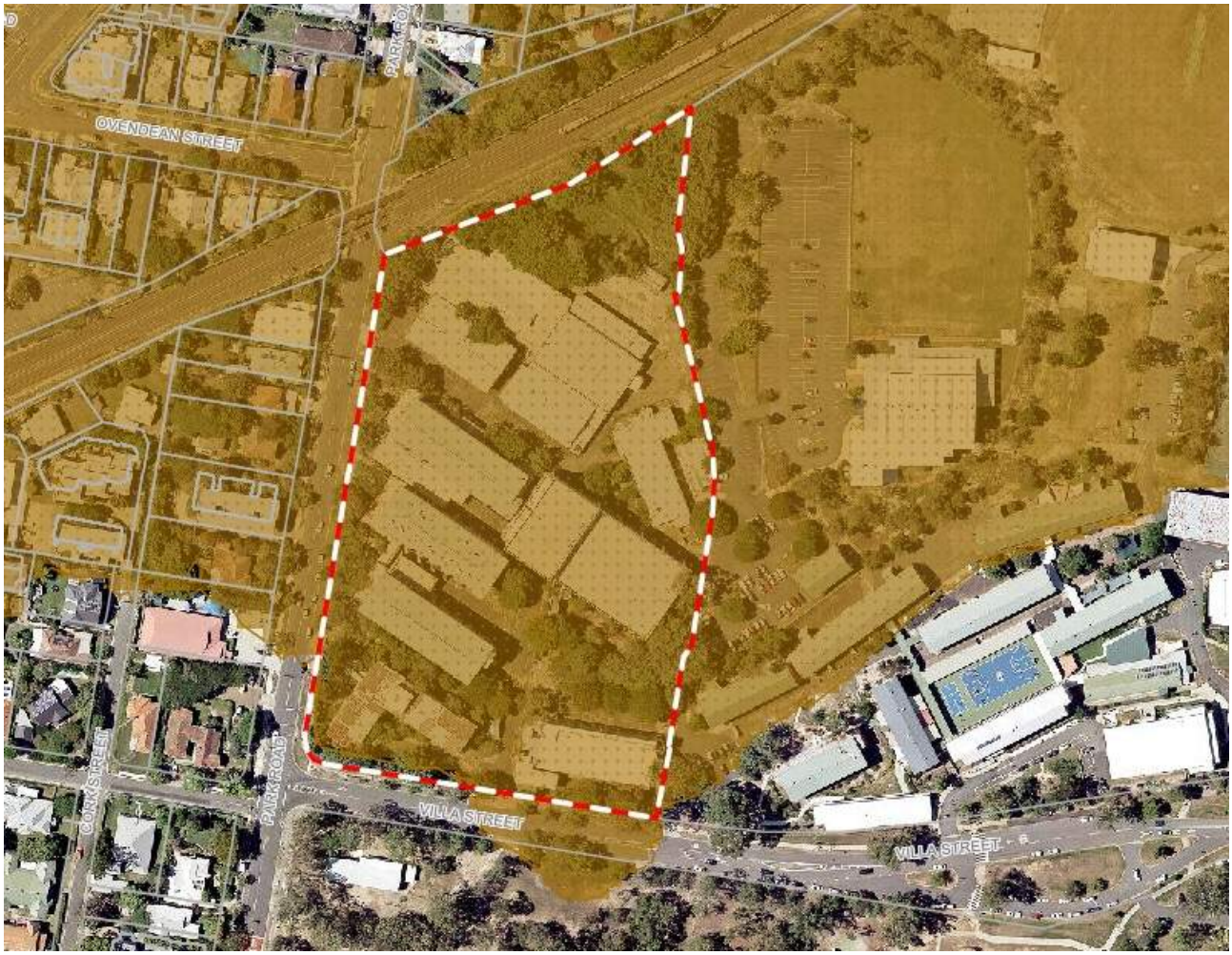


Figure 1: An aerial view of the site with ASS and RL5mAHD to RL20mAHD overlay (Image Source, BCC, Image Dated 19 October 2020)

SECTION 3 - FIELDWORK

3.1 Drilling and Sampling Methods

The ASS investigation comprised the drilling and sampling of thirteen bores (Bores 201 to 211 and GW02 and GW03), to varying depths from between 0.35m to 2.9m, with a truck mounted Hydrapower Scout drilling rig using solid flight auger drilling techniques. Disturbed samples were collected for ASS testing during the installation of both groundwater wells (GW02 and GW03) on the 1 October 2020. An additional eleven ASS bores (Bores 201 to 211) were drilled and sampled on the 9 October 2020. Strata identification was based on the inspection of cuttings brought to the surface on the auger and inspection of disturbed samples recovered for subsequent laboratory testing. On completion of drilling, the bores were backfilled with drill spoil and the surface plugged.

Samples were placed in plastic bags that were sealed (after removing as much air as possible), labelled with a unique identifier and frozen prior to analysis.

3.2 Bore Locations and Supervision

Bore locations were set out based on information provided by EDQ and their approximate locations are shown on Drawing No. 1 Rev A. The ground surface level at each bore location was interpolated from BCC's City Plan 2014 Contour Map.

An experienced senior geotechnician and environmental scientist logged the stratigraphy encountered in the bores and directed the insitu sampling and testing program.

SECTION 4 - INVESTIGATION RESULTS

4.1 Subsurface Conditions

The subsurface conditions encountered in the bores are given on Bore Report sheets included in Appendix A, using classification and descriptive terms defined in accompanying notes (which are based on Australian Standard AS1726-1993).

For a description of the subsurface conditions encountered at the bore locations, the Bore Report sheets should be consulted. However, in broad summary, the subsurface conditions encountered at the bore locations comprised variable layers of fill between 0.05m to 2.1m depths overlying silty/sandy clay and underlain by sandstone in some locations.

4.2 Groundwater

Free groundwater was encountered during the auger drilling of Bore 209 and the depth of groundwater encountered during auger drilling is summarised in Table 1.

Table 1: Groundwater Observations During Auger Drilling

Bore	Date	Depth (m)
209	9 October 2020	1.5

4.3 Laboratory Testing

4.3.1 Chromium Suite Tests

Based on the results of the screening tests, the stratigraphy encountered at the bore locations and a strategy to provide reasonable site, depth and stratigraphic coverage, twenty-six samples were selected for analysis using the Chromium Suite test method to provide quantitative data on ASS. Soil samples were frozen until transported to Australian Laboratory Services' (ALS) NATA accredited chemical testing laboratory under standard chain of custody protocols. A summary of results is summarised in Table 2 and laboratory test report sheets are attached in Appendix B.

Table 2: Summary of Chromium Suite Test Results

Bore	Depth (m)	Sample Description	pH_{KCL}	Titratable Actual Acidity % Pyrite S	Chromium Reducible Sulfur – (S_{CR}) %S	Acid Neutralising Capacity % Pyrite S	Net Acidity %S	ALS Calculated Liming Rate (kg/t)[1]
201	1.8 – 2.0	Silty Sand	4.1	**0.12**	0.009	–	**0.13**	6
	2.3 – 2.5	Silty Sand	4.4	**0.09**	0.020	–	**0.13**	6
202	0.8 – 1.0	Silty Sand	4.5	**0.08**	0.017	–	**0.09**	4
	1.3 – -1.5	Sandstone	4.7	**0.04**	0.016	–	**0.06**	3
203	1.3 – 1.5	Silty Clay	4.6	**0.04**	0.019	–	**0.06**	3
	1.8 – 2.0	Silty Sand	5.1	0.02	0.017	–	**0.04**	2
204	1.3 – 1.5	Silty Clay	4.6	**0.05**	0.029	–	**0.08**	4
	1.8 – 2.0	Silty Clay	4.1	**0.11**	0.022	–	**0.13**	6
205	0.1 – 0.2	Sandstone	6.0	<0.02	0.018	–	0.02	1
	0.25 – 0.35	Sandstone	4.8	**0.04**	0.024	–	**0.07**	3
206	1.4 – 1.5	Silty Clay	4.9	**0.03**	0.019	–	**0.05**	2
	1.8 – 2.0	Silty Clay	4.8	**0.03**	0.016	–	**0.04**	2
207	2.3 – 2.5	Silty Clay	4.5	**0.06**	0.021	–	**0.08**	4
	2.75 – -2.85	Silty Clay	4.7	**0.04**	0.019	–	**0.06**	3
208	1.8 – 2.0	Silty Clay	4.7	**0.05**	0.024	–	**0.08**	4
	2.3 – 2.5	Silty Clay	5.0	0.02	0.023	–	**0.04**	2
209	1.8 – 2.0	Sandy Clay	4.3	**0.10**	0.023	–	**0.13**	6
	2.3 – 2.5	Silty Clay	4.4	**0.08**	0.013	–	**0.10**	4
210	0.8 – 1.0	Sandstone	4.8	**0.06**	0.012	–	**0.07**	3
	1.15 – 1.25	Sandstone	4.4	**0.14**	**0.038**	–	**0.17**	8
211	0.65 – 0.75	Sandy Clay	4.3	**0.15**	0.021	–	**0.17**	8
	1.3 – 1.5	Sandy Clay	5.4	0.02	0.012	–	**0.04**	2
GW02	2.5 – 3.0	Silty Clay	4.3	**0.11**	0.012	–	**0.12**	6
	4.5 – 4.6	Sandstone	4.9	**0.03**	0.010	–	**0.04**	2
GW03	1.5 – 1.75	Silty Clay	4.3	**0.12**	0.012	–	**0.13**	6
	2.25 – 2.5	Silty Clay	4.3	**0.12**	0.009	–	**0.13**	6

Figures in **bold** equal or exceed the QASSIT Action Criteria for disturbance of >1000 tonnes of soil (refer to section 5.1)

[1] Calculated by ALS on a dry weight basis assuming use of fine ag-lime (C_aCO_3) with a neutralising value of 100% and using a safety factor of 1.5 to allow for non-homogeneous mixing and poor reactivity of lime

[2]No ANC was tested for this sample batch due to all pH_{KCL} results being <6.5

The reported liming rates for the neutralisation of soils are summarised in Table 2 for each sample, based on the use of good quality, fine ag-lime, with a neutralising value of 100% and incorporate a factor of safety of 1.5. If lime of a lower neutralising value is proposed for use, it will be necessary to increase the nominated liming rate (e.g. the values given in Table 2 should be increased by 25%, if lime with a neutralising value of 80% is to be used).

4.3.2 QA/QC Methods

The samples were dispatched under Chain on Custody documentation provided in Appendix B in order to identify sample movements.

A review of the data quality within the ALS laboratory reports indicated no outliers exist for ASS analysis with respect to sample holding times, laboratory method blanks, matrix spikes or laboratory control samples and surrogate spikes. As such, the overall quality of the analytical data produced is considered to be and acceptable standard for interpretive use. The laboratory's internal QA/QC results are included in Appendix B.

SECTION 5 - ACID SULFATE SOIL DISCUSSION

5.1 Assessment Criteria of Acid Sulfate Soils

ASS in Queensland are assessed in accordance with the Queensland Acid Sulfate Soils Investigation Team (QASSIT) *Guidelines for Sampling and Analysis of Lowland Acid Sulfate Soils (ASS)* in Queensland 1998 (QASSIT Guidelines), the Queensland Acid Sulfate Soils Management Advisory Committee's (QASSMAC) *Queensland Acid Sulfate Soil Technical Manual; Soil Management Guidelines Version 2014* (Guidelines) and the State Planning Policy 2013 Guideline – *State Interest Guideline – Emissions and Hazardous Activities – Guidance on Acid Sulfate Soils – April 2016*. The Guidelines provide Action Criteria for assessing the results of laboratory testing quantifying the acid producing effects based on the sum of existing plus potential acidity. These action criteria are presented in Table 3.

Table 3: Action Criteria Based on ASS Analysis for Three Broad Texture Categories

Type of Material		Action Criteria (1 – 1000 tonnes disturbed)		Action Criteria (> 1000 tonnes disturbed)	
		Existing + Potential Acidity		Existing + Potential Acidity	
Texture Range	Approximate Clay Content (%)	Equivalent Sulfur %S	Equivalent Acidity Mol H^+/tonne	Equivalent Sulfur %S	Equivalent Acidity Mol H^+/tonne
Coarse Texture Sands to loamy sands	<5	0.03	18	0.03	18
Medium Texture Sandy loams to light clays	5-40	0.06	36	0.03	18
Fine Texture Medium to heavy clays, silty clays	>40	0.1	62	0.03	18

The volume of natural soil to be disturbed during site development works is anticipated to exceed 1,000 tonnes and the *'>1000 tonnes disturbed Action Criteria'* from Table 3 has therefore been used as the basis for assessment of the presence of ASS requiring treatment.

5.2 Discussion of Results – Acid Sulfate Soil Assessment

The results of Chromium Suite testing undertaken on twenty-six samples recovered from the bores, indicate that one of the twenty-six samples (Bore 210 – 1.15m to 1.25m) reported low levels of potential acidity greater than the Action Criteria of 0.03%S, with a chromium reducible sulfur (Scr) result of 0.038%S.

Twenty-two of the twenty-six samples recovered reported low levels of titratable actual acidity (TAA) greater than or equal to the Action Criteria of 0.03%S.

Based on the results of the investigation, the soils encountered in the test locations include zones that are acidic, but are considered to mainly comprise residual soils that have been derived from the deep in place weathering of rock. Based on a visual assessment, the site geology, and the surface elevation, the soils are considered **not** to be ASS. The Chromium Suite test results indicate that there is no potential for the generation of additional acidity due to the oxidation of pyrite. As such, an ASSMP will not be required for the site.

The acidic soils are of relatively low permeability, therefore, all cut to fill that is uniformly compacted in accordance with an appropriate engineering specification, would be essentially impermeable and 'acid leachate' would be negligible. However, if the soils are placed in temporary loose stockpiles and exposed to the weather, they may leach acid and may therefore require the construction of a containment bund such that runoff can be collected and tested prior to leaving site.

Because the soils are acidic, all stormwater collected during earthworks should be checked prior to offsite discharge; if the pH is outside the range of 6.5pH to 8.5pH units, it should be treated to bring it within this range, prior to discharge.

It is suggested that all earthworks be inspected by an experienced environmental scientist/engineer to ensure that if any (currently unidentified) zones of ASS do exist, they are identified and the soils appropriately treated.

BUTLER PARTNERS PTY LTD

KRISTINA JORGENSEN
Environmental Scientist

RICHARD PEARCE
Environmental Scientist

Reviewed By:
SUZANNE WALKER
Principal

SECTION 6 - REFERENCES

Ahern C.R, Ahern M.R and Powell, B. (1998). *Guidelines for Sampling and Analysis of Lowland Acid Sulfate* Soils *(ASS) in* Queensland*.* QASSIT, Department of Natural Resources, Indooroopilly.

Ahern C.R, McElnea A.E, Sullivan L.A. (2004). *Acid Sulfate Soils Laboratory Methods Guidelines.* In: *Queensland Acid Sulfate Soil Manual 2004.* Dept Natural Resources, Mines and Energy, Indooroopilly, Queensland, Australia.

ANZECC (2000).*Australian and New Zealand Guidelines for Fresh and Marine Water Quality.* Australian and New Zealand Environment and Conservation Council, Canberra, Australia.

Dear S.E, Ahern C.R, O'Brien L.E, Dobos S.K, McElena A.E, Moore N.G and Watling K.M, 2014. *Queensland Acid Sulfate Soil Technical Manual; Soil Management Guidelines*. Brisbane: Department of Science, Information Technology, Innovation and the Arts, Queensland Government.

NEPC (2013). *National Environment Protection (Assessment of Site Contamination) Amendment Measure 2013 (No. 1) (NEPM)*. National Environmental Protection Council, Adelaide, Australia.

Powell, B and Ahern, C.R. (1999). *Nature, Origin and Distribution of Acid Sulfate Soils: Issues for Queensland,* Queensland Department of Natural Resources and Mines, Queensland.

Queensland Government (2013). *State Planning Policy State Interest Guideline - Emissions and Hazardous Activities - Guidance on Acid Sulfate Soils, December 2013.* Department of State Development, Infrastructure and Planning, Brisbane, Australia.

Queensland Government, *State Planning Policy – state interest guideline – Water Quality*, April 2016

Queensland Government State Planning Policy – Department of Infrastructure, Local Government and Planning, July 2017.

Simpson S.L, Mosley L, Batley G.E and Shand P, P 2018. *National acid sulfate soils guidance: Guidelines for the dredging of acid sulfate soil sediments and associated dredge spoil management,* Department of Agriculture and Water Resources, Canberra, ACT. CC by 4.0.

Sullivan L, Ward N, Toppler N and Lancaster G, 2018, *National acid sulfate soils guidance: National acid sulfate soils identification and laboratory methods manual,* Department of Agriculture and Water Resources, Canberra, ACT. CC by 4.0.

Important Information About Your

Geoenvironmental Report

Geoenvironmental studies are commissioned to gain information about environmental conditions on and beneath the surface of a site. The more comprehensive the study, the more reliable the assessment is likely to be. But remember: Any such assessment is to a greater or lesser extent based on professional opinions about conditions that cannot be seen or tested. Accordingly, no matter how many data are developed, risks created by unanticipated conditions will always remain. *Have realistic expectations.* Work with your geoenvironmental consultant to manage known and unknown risks. Part of that process should already have been accomplished, through the risk allocation provisions you and your geoenvironmental professional discussed and included in your contract's general terms and conditions. This document is intended to explain some of the concepts that may be included in your agreement, and to pass along information and suggestions to help you manage your risk.

Beware of Change; Keep Your Geoenvironmental Professional Advised

The design of a geoenvironmental study considers a variety of factors that are subject to change. Changes can undermine the applicability of a report's findings, conclusions, and recommendations. *Advise your geoenvironmental professional about any changes you become aware of.* Geoenvironmental professionals cannot accept responsibility or liability for problems that occur because a report fails to consider conditions that did not exist when the study was designed. Ask your geoenvironmental professional about the types of changes you should be particularly alert to. Some of the most common include:

- modification of the proposed development or ownership group,
- sale or other property transfer,
- replacement of or additions to the financing entity,
- amendment of existing regulations or introduction of new ones, or
- changes in the use or condition of adjacent property.

Should you become aware of any change, *do not rely on a geoenvironmental report.* Advise your geoenvironmental professional immediately; follow the professional's advice.

Recognize the Impact of Time

A geoenvironmental professional's findings, recommendations, and conclusions cannot remain valid indefinitely. The more time that passes, the more likely it is that important latent changes will occur. *Do not rely on a geoenvironmental report if too much time has elapsed since it was completed.* Ask your environmental professional to define "too much time." In the case of Phase I Environmental Site Assessments (ESAs), for example, more than 180 days after submission is generally considered "too much."

Prepare To Deal with Unanticipated Conditions

The findings, recommendations, and conclusions of a Phase I ESA report typically are based on a review of historical information, interviews, a site "walkover," and other forms of noninvasive research. When site subsurface conditions are not sampled in any way, the risk of unanticipated conditions is higher than it would otherwise be.

While borings, installation of monitoring wells, and similar invasive test methods can help reduce the risk of unanticipated conditions, *do not overvalue the effectiveness of testing.* Testing provides information about actual conditions only at the precise locations where samples are taken, and only when they are taken. Your geoenvironmental professional has applied that specific information to develop a general opinion about environmental conditions. *Actual conditions in areas not sampled may differ (sometimes sharply) from those predicted in a report.* For example, a site may contain an unregistered underground storage tank that shows no surface trace of its existence. *Even conditions in areas that were tested can change*, sometimes suddenly, due to any number of events, not the least of which include occurrences at

adjacent sites. Recognize, too, that *even some conditions in tested areas may go undiscovered,* because the tests or analytical methods used were designed to detect only those conditions assumed to exist.

Manage your risks by retaining your geoenvironmental professional to work with you as the project proceeds. Establish a contingency fund or other means to enable your geoenvironmental professional to respond rapidly, in order to limit the impact of unforeseen conditions. And to help prevent any misunderstanding, identify those empowered to authorize changes and the administrative procedures that should be followed.

Do Not Permit Any Other Party To Rely on the Report

Geoenvironmental professionals design their studies and prepare their reports to meet the specific needs of the clients who retain them, in light of the risk management methods that the client and geoenvironmental professional agree to, and the statutory, regulatory, or other requirements that apply. The study designed for a developer may differ sharply from one designed for a lender, insurer, public agency...or even another developer. *Unless the report specifically states otherwise, it was developed for you and only you.* Do not unilaterally permit any other party to rely on it. The report and the study underlying it may not be adequate for another party's needs, and you could be held liable for shortcomings your geoenvironmental professional was powerless to prevent or anticipate. Inform your geoenvironmental professional when you know or expect that someone else—a third-party—will want to use or rely on the report. *Do not permit third-party use or reliance until you first confer with the geoenvironmental professional who prepared the report.* Additional testing, analysis, or study may be required and, in any event, appropriate terms and conditions should be agreed to so both you and your geoenvironmental professional are protected from third-party risks. *Any party who relies on a geoenvironmental report without the express written permission of the professional who prepared it and the client for whom it was prepared may be solely liable for any problems that arise.*

Avoid Misinterpretation of the Report

Design professionals and other parties may want to rely on the report in developing plans and specifications. They need to be advised, in writing, that their needs may not have been considered when the study's scope was developed, and, even if their needs were considered, they might misinterpret geoenvironmental findings, conclusions, and recommendations. *Commission your geoenvironmental professional to explain pertinent elements of the report to others who are permitted to rely on it, and to review any plans, specifications or other instruments of professional service that incorporate any of the report's findings, conclusions, or recommendations.* Your geoenvironmental professional has the best understanding of the issues involved, including the fundamental assumptions that underpinned the study's scope.

Give Contractors Access to the Report

Reduce the risk of delays, claims, and disputes by giving contractors access to the full report, *providing that it is accompanied by a letter of transmittal that can protect you* by making it unquestionably clear that: 1) the study was not conducted and the report was not prepared for purposes of bid development, and 2) the findings, conclusions, and recommendations included in the report are based on a variety of opinions, inferences, and assumptions and are subject to interpretation. Use the letter to also advise contractors to consult with your geoenvironmental professional to obtain clarifications, interpretations, and guidance (a fee may be required for this service), and that—in any event—they should conduct additional studies to obtain the specific type and extent of information each prefers for preparing a bid or cost estimate. Providing access to the full report, with the appropriate caveats, helps prevent formation of adversarial attitudes and claims of concealed or differing conditions. If a contractor elects to ignore the warnings and advice in the letter of transmittal, it would do so at its own risk. Your geoenvironmental professional should be able to help you prepare an effective letter.

Do Not Separate Documentation from the Report

Geoenvironmental reports often include supplemental documentation, such as maps and copies of regulatory files, permits, registrations, citations, and correspondence with regulatory agencies. If subsurface explorations were performed, the report may contain final boring logs and copies of laboratory data. If remediation activities occurred on site, the report may include: copies of daily field reports; waste manifests; and information about the disturbance of subsurface materials, the type and thickness of any fill placed on site, and fill placement practices, among other types of documentation. *Do not separate supplemental documentation from the report. Do not, and do not permit any other party to redraw or modify any of the supplemental documentation for incorporation into other professionals' instruments of service.*

Understand the Role of Standards

Unless they are incorporated into statutes or regulations, standard practices and standard guides developed by the American Society for Testing and Materials (ASTM) and other recognized standards-developing organizations (SDOs) are little more than aspirational methods agreed to by a consensus of a committee. The committees that develop standards may not comprise those best-qualified to establish methods and, no matter what, no standard method can possibly consider the infinite client- and project-specific variables that fly in the face of the theoretical "standard conditions" to which standard practices and standard guides apply. In fact, these variables can be so pronounced that geoenvironmental professionals who comply with every directive of an ASTM or other standard procedure could run afoul of local custom and practice, thus violating the standard of care.

Accordingly, when geoenvironmental professionals indicate in their reports that they have performed a service "in general compliance" with one standard or another, it means they have applied professional judgement in creating and implementing a scope of service designed for the specific client and project involved, and which follows some of the general precepts laid out in the referenced standard. To the extent that a report indicates "general compliance" with a standard, you may wish to speak with your geoenvironmental professional to learn more about what was and was not done. *Do not assume a given standard was followed to the letter.* Research indicates that that seldom is the case.

Realize That Recommendations May Not Be Final

The technical recommendations included in a geoenvironmental report are based on assumptions about actual conditions, and so are preliminary or tentative. Final recommendations can be prepared only by observing actual conditions as they are exposed. For that reason, you should retain the geoenvironmental professional of record to observe construction and/or remediation activities on site, to permit rapid response to unanticipated conditions. *The geoenvironmental professional who prepared the report cannot assume responsibility or liability for the report's recommendations if that professional is not retained to observe relevant site operations.*

Understand That Geotechnical Issues Have Not Been Addressed

Unless geotechnical engineering was specifically included in the scope of professional service, a report is not likely to relate any findings, conclusions, or recommendations about the suitability of subsurface materials for construction purposes, especially when site remediation has been accomplished through the removal, replacement, encapsulation, or chemical treatment of on-site soils. The equipment, techniques, and testing used by geotechnical engineers differ markedly from those used by geoenvironmental professionals; their education, training, and experience are also significantly different. If you plan to build on the subject site, but have not yet had a geotechnical engineering study conducted, your geoenvironmental professional should be able to provide guidance about the next steps you should take. The same firm may provide the services you need.

Read Responsibility Provisions Closely

Geoenvironmental studies cannot be exact; they are based on professional judgement and opinion. Nonetheless, some clients, contractors, and others assume geoenvironmental reports are or certainly should be unerringly precise. Such assumptions have created unrealistic expectations that have led to wholly unwarranted claims and disputes. To help prevent such problems, geoenvironmental professionals have developed a number of report provisions and contract terms that explain who is responsible for what, and how risks are to be allocated. Some people mistake these for "exculpatory clauses," that is, provisions whose purpose is to transfer one party's rightful responsibilities and liabilities to someone else. Read the responsibility provisions included in a report and in the contract you and your geoenvironmental professional agreed to. *Responsibility provisions are not "boilerplate."* They are important.

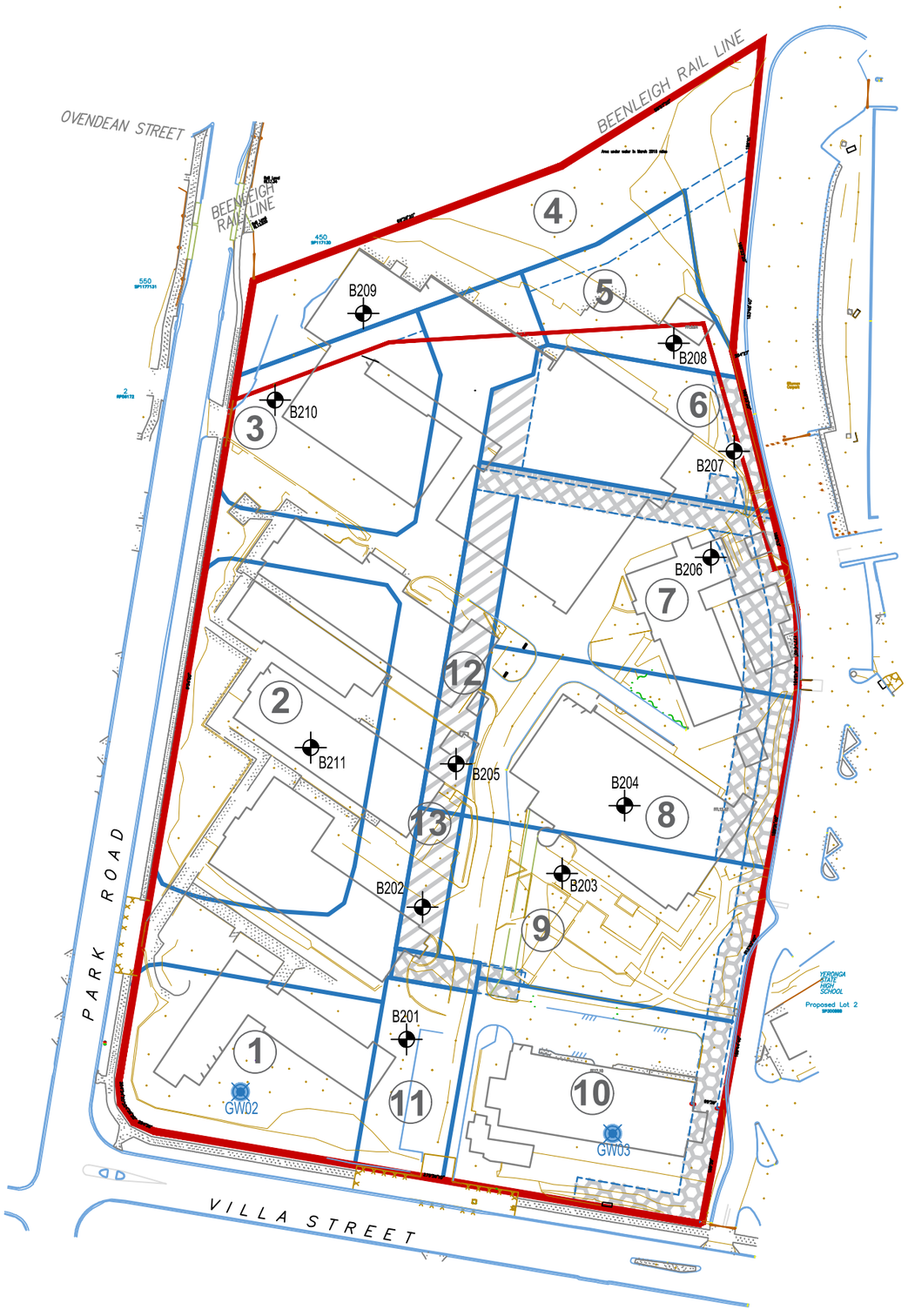
Rely on Your Geoenvironmental Professional for Additional Assistance

Membership in ASFE exposes geoenvironmental professionals to a wide array of risk management techniques that can be of genuine benefit for everyone involved with a geoenvironmental project. Confer with your ASFE-member geoenvironmental professional for more information.

ASFE
THE BEST PEOPLE ON EARTH

8811 Colesville Road/Suite G106, Silver Spring, MD 20910
Telephone: 301/565-2733 Facsimile: 301/589-2017
e-mail: info@asfe.org www.asfe.org

IIGR06055.0M



LEGEND

- B201 — Acid Sulfate Soil Bore Locations
- GW02 — Groundwater Monitoring Well (September 2020 Investigation)
- Site Boundary
- Future Lot Subdivision

Reference: RPS Australia Asia Pacific, 'Contour and Utility Investigative Survey, Yeronga TAFE', Drawing No. 139204DET_1_B, dated 23.04.2018, received 05.04.2019.

Butler Partners
geotechnical • geo-environmental • groundwater

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Acid Sulfate Soils Investigation

70 Park Road, Yeronga

Bore Locality Plan

CLIENT: Economic Development Queensland

SCALE AT A3:

0 10 20 30 40 50m

1:1250

DATE:	AUGUST 2021
DRAWN:	LA
APPROVED:	
PROJECT No:	019-113B
DRAWING No:	1 REV: A

File Location: Z:\Projects\2019Series\019-113B Yeronga, 70 Park Road\Drawings\Environmental\2020\019-113B Dwg1 RevA 191020

APPENDIX A

BORE REPORT SHEETS WITH EXPLANATORY NOTES

ENVIRONMENTAL BORE REPORT

Butler Partners
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Client: Economic Development Queensland
Project: Yeronga PDA
Location: 70 Park Road, Yeronga
Project No: 019-113B

BORE 201

Page No: 1 of 1
Date: 9 October 2020
Ground Surface Level: RL19.0m*

Depth (m)	Description	RL (m)	Lithology	Sample Type	Sample Depth (m)	Sample ID	Test Results
0		19.0					
	FILL - brown, gravelly silty clay, with medium to coarse gravel						
1		18.0					
	SILTY CLAY - grey-brown				1.8		
	SILTY SAND - red-brown, possible residual sandstone			D		B201-1	
2		17.0			2.0		
					2.3		
				D		B201-2	
	End of Bore at 2.5 m				2.5		
3		16.0					

D Disturbed Sample (ASS)
A Asbestos Sample
E Environmental Sample
( ) No Sample Recovery
C NMLC Coring
P PFAS Samples

This Environmental Bore Report is not intended for geotechnical engineering interpretation.

Rig: Hydrapower Scout
Drilling Method: Auger
Logged By: RP
Groundwater: No free groundwater encountered during drilling
Handheld GPS Coordinates - E: 0502050
Remarks: *Ground surface levels are approximate, based off BCCs City Plan 2014 Contour Map
Handheld GPS Coordinates - N: 6956286

ENVIRONMENTAL BORE REPORT

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Client: Economic Development Queensland
Project: Yeronga PDA
Location: 70 Park Road, Yeronga
Project No: 019-113B

BORE 202

Page No: 1 of 1
Date: 9 October 2020
Ground Surface Level: RL16.5m*

Depth (m)	Description	RL (m)	Lithology	Sample Type	Sample Depth (m)	Sample ID	Test Results
0		16.5					
	FILL - brown, gravelly silty clay, with fine to coarse gravel						
	SILTY SAND - red-brown (possible residual sandstone)	16.0					
				D	0.8 1.0	B202-1	
1							
	SANDSTONE - brown, extremely weathered			D	1.3	B202-2	
	End of Bore at 1.5 m	15.0			1.5		
2		14.0					
3							

D Disturbed Sample (ASS)
A Asbestos Sample
E Environmental Sample
( ) No Sample Recovery
C NMLC Coring
P PFAS Samples

This Environmental Bore Report is not intended for geotechnical engineering interpretation.

Rig: Hydrapower Scout
Drilling Method: Auger
Logged By: KVB
Groundwater: No free groundwater encountered during drilling
Handheld GPS Coordinates - E: 0502051
Remarks: *Ground surface levels are approximate, based off BCCs City Plan 2014 Contour Map
Handheld GPS Coordinates - N: 6956332

ENVIRONMENTAL BORE REPORT

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Client: Economic Development Queensland
Project: Yeronga PDA
Location: 70 Park Road, Yeronga
Project No: 019-113B

BORE 203

Page No: 1 of 1
Date: 9 October 2020
Ground Surface Level: RL15.0m*

Depth (m)	Description	RL (m)	Lithology	Sample Type	Sample Depth (m)	Sample ID	Test Results
0		15.0					
	FILL - brown, gravelly silty clay, with fine to coarse gravel						
	- dark brown, with fine gravel						
1		14.0					
	SILTY CLAY - grey mottled brown, with trace of fine to coarse sand			D	1.3	B203-1	
	SILTY SAND - orange-brown (residual sandstone)				1.5		
	- pale grey-brown			D	1.8	B203-2	
2	End of Bore at 2 m	13.0			2.0		
3		12.0					

D Disturbed Sample (ASS)
A Asbestos Sample
E Environmental Sample
( ) No Sample Recovery
C NMLC Coring
P PFAS Samples

This Environmental Bore Report is not intended for geotechnical engineering interpretation.

Rig: Hydrapower Scout
Drilling Method: Auger
Logged By: RP
Groundwater: No free groundwater encountered during drilling
Handheld GPS Coordinates - E: 0502084
Remarks: *Ground surface levels are approximate, based off BCCs City Plan 2014 Contour Map
Handheld GPS Coordinates - N: 6956342

ENVIRONMENTAL BORE REPORT

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Client: Economic Development Queensland
Project: Yeronga PDA
Location: 70 Park Road, Yeronga
Project No: 019-113B

BORE 204

Page No: 1 of 1
Date: 9 October 2020
Ground Surface Level: RL12.0m*

Depth (m)	Description	RL (m)	Lithology	Sample Type	Sample Depth (m)	Sample ID	Test Results
0		12.0					
	FILL - brown, gravelly sand, with fine to coarse gravel						
	- pale grey, silty clay, with trace of sand						
	SILTY CLAY - dark brown, with sand			D	0.8 1.0	B204-1	
1		11.0					
	- brown, with sand, with fine gravel			D	1.3 1.5	B204-2	
	- grey mottled orange			D	1.8 2.0	B204-3	
2	End of Bore at 2 m	10.0					
3		9.0					

D Disturbed Sample (ASS)
A Asbestos Sample
E Environmental Sample
( ) No Sample Recovery
C NMLC Coring
P PFAS Samples

This Environmental Bore Report is not intended for geotechnical engineering interpretation.

Rig: Hydrapower Scout
Drilling Method: Auger
Logged By: KVB
Groundwater: No free groundwater encountered during drilling
Handheld GPS Coordinates - E: 050219
Remarks: *Ground surface levels are approximate, based off BCCs City Plan 2014 Contour Map
Handheld GPS Coordinates - N: 6956348

ENVIRONMENTAL BORE REPORT

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Client: Economic Development Queensland
Project: Yeronga PDA
Location: 70 Park Road, Yeronga
Project No: 019-113B

BORE 205

Page No: 1 of 1
Date: 9 October 2020
Ground Surface Level: RL13.5m*

Depth (m)	Description	RL (m)	Lithology	Sample Type	Sample Depth (m)	Sample ID	Test Results
0		13.5					
	FILL - brown, gravelly silty sand, with fine to coarse gravel			D	0.1 0.2	B205-1	
	SANDSTONE - pale grey, weathered			D	0.25 0.35	B205-2	
	End of Bore at 0.35 m (Refusal)	13.0					
1							
		12.0					
2							
		11.0					
3							

D Disturbed Sample (ASS)
A Asbestos Sample
E Environmental Sample
( ) No Sample Recovery
C NMLC Coring
P PFAS Samples

This Environmental Bore Report is not intended for geotechnical engineering interpretation.

Rig: Hydrapower Scout
Drilling Method: Auger
Logged By: KVB
Groundwater: No free groundwater encountered during drilling
Handheld GPS Coordinates - E: 0502063
Remarks: *Ground surface levels are approximate, based off BCCs City Plan 2014 Contour Map
Handheld GPS Coordinates - N: 6956379

ENVIRONMENTAL BORE REPORT

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Client: Economic Development Queensland
Project: Yeronga PDA
Location: 70 Park Road, Yeronga
Project No: 019-113B

BORE 206

Page No: 1 of 1
Date: 9 October 2020
Ground Surface Level: RL10.5m*

Depth (m)	Description	RL (m)	Lithology	Sample Type	Sample Depth (m)	Sample ID	Test Results
		10.5					
0	*FILL* - pale brown, gravelly sand, with fine to coarse gravel						
	- red	10.0					
	- pale grey, sandy clay						
1	*SILTY CLAY* - dark brown, trace of sand, trace of organic			D	1.4 1.5	B206-1	
	- brown, with sand, with fine gravel	9.0		D	1.8 2.0	B206-2	
2	End of Bore at 2 m						
		8.0					
3							

D Disturbed Sample (ASS)
A Asbestos Sample
E Environmental Sample
( ) No Sample Recovery
C NMLC Coring
P PFAS Samples

This Environmental Bore Report is not intended for geotechnical engineering interpretation.

Rig: Hydrapower Scout
Drilling Method: Auger
Logged By: RP
Groundwater: No free groundwater encountered during drilling
Handheld GPS Coordinates - E: 0502119
Remarks: *Ground surface levels are approximate, based off BCCs City Plan 2014 Contour Map
Handheld GPS Coordinates - N: 6956396

ENVIRONMENTAL BORE REPORT

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Client: Economic Development Queensland
Project: Yeronga PDA
Location: 70 Park Road, Yeronga
Project No: 019-113B

BORE 207

Page No: 1 of 1
Date: 9 October 2020
Ground Surface Level: RL10.0m*

Depth (m)	Description	RL (m)	Lithology	Sample Type	Sample Depth (m)	Sample ID	Test Results
0		10.0					
	FILL - brown, silty clay, with trace of fine to medium gravel						
	- grey-brown, gravelly silt, with trace of fine to medium sand						
1		9.0					
2		8.0					
	SILTY CLAY - grey-brown				2.3		
	- with trace of charcoal			D		B207-1	
					2.5		
	- grey mottled orange				2.75		
				D		B207-2	
					2.85		
3	End of Bore at 2.9 m	7.0					

D Disturbed Sample (ASS)
A Asbestos Sample
E Environmental Sample
( ) No Sample Recovery
C NMLC Coring
P PFAS Samples

This Environmental Bore Report is not intended for geotechnical engineering interpretation.

Rig: Hydrapower Scout
Drilling Method: Auger
Logged By: RP
Groundwater: No free groundwater encountered during drilling
Handheld GPS Coordinates - E: 0502117
Remarks: *Ground surface levels are approximate, based off BCCs City Plan 2014 Contour Map
Handheld GPS Coordinates - N: 6956423

ENVIRONMENTAL BORE REPORT

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Client: Economic Development Queensland
Project: Yeronga PDA
Location: 70 Park Road, Yeronga
Project No: 019-113B

BORE 208

Page No: 1 of 1
Date: 9 October 2020
Ground Surface Level: RL8.4m*

Depth (m)	Description	RL (m)	Lithology	Sample Type	Sample Depth (m)	Sample ID	Test Results
0		8.4					
	FILL - grey-brown, gravelly sand, with trace of fine to medium gravel						
		8.0					
	- grey-brown, silty clay, with trace of fine to medium gravel						
1							
		7.0					
	SILTY CLAY - grey-brown						
	- grey, with some organics (tree roots)			D	1.8 2.0	B208-1	
2							
	- grey mottled brown			D	2.3 2.5	B208-2	
		6.0					
	End of Bore at 2.5 m						
3							

D Disturbed Sample (ASS)
A Asbestos Sample
E Environmental Sample
( ) No Sample Recovery
C NMLC Coring
P PFAS Samples

This Environmental Bore Report is not intended for geotechnical engineering interpretation.

Rig: Hydrapower Scout
Drilling Method: Auger
Logged By: RP
Groundwater: No free groundwater encountered during drilling
Handheld GPS Coordinates - E: 050217
Remarks: *Ground surface levels are approximate, based off BCCs City Plan 2014 Contour Map
Handheld GPS Coordinates - N: 6956452

ENVIRONMENTAL BORE REPORT

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Client: Economic Development Queensland
Project: Yeronga PDA
Location: 70 Park Road, Yeronga
Project No: 019-113B

BORE 209

Page No: 1 of 1
Date: 9 October 2020
Ground Surface Level: RL10.5m*

Depth (m)	Description	RL (m)	Lithology	Sample Type	Sample Depth (m)	Sample ID	Test Results
		10.5					
0	*FILL* - brown, gravelly silty sand, with fine to coarse gravels and some cobbles						
	- red-brown, silty sand, with fine to medium gravel	10.0					
1	- dark brown, silty sand						
	SILTY SAND - grey mottled orange, with fine gravel	9.0					
	SANDY CLAY - orange-brown			D	1.8 2.0	B209-1	
2	*SILTY CLAY* - pale grey, with sand			D	2.3 2.5	B209-2	
	End of Bore at 2.5 m	8.0					
3							

D Disturbed Sample (ASS)
A Asbestos Sample
E Environmental Sample
( ) No Sample Recovery
C NMLC Coring
P PFAS Samples

This Environmental Bore Report is not intended for geotechnical engineering interpretation.

Rig: Hydrapower Scout
Drilling Method: Auger
Logged By: RP
Groundwater: Free groundwater encountered at 1.5m during drilling
Handheld GPS Coordinates - E: 0502051
Remarks: *Ground surface levels are approximate, based off BCCs City Plan 2014 Contour Map
Handheld GPS Coordinates - N: 6956463

ENVIRONMENTAL BORE REPORT

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Client: Economic Development Queensland
Project: Yeronga PDA
Location: 70 Park Road, Yeronga
Project No: 019-113B

BORE 210

Page No: 1 of 1
Date: 9 October 2020
Ground Surface Level: RL11.0m*

Depth (m)	Description	RL (m)	Lithology	Sample Type	Sample Depth (m)	Sample ID	Test Results
0		11.0					
	FILL - brown, gravelly silty sand, with fine to coarse gravel, with asphalt, with concrete						
	SILTY SAND - brown						
	SANDSTONE - pale brown				0.8		
				D		B210-1	
1		10.0			1.0		
					1.15		
				D		B210-2	
					1.25		
	End of Bore at 1.25 m (Refusal)						
2		9.0					
3		8.0					

D Disturbed Sample (ASS)
A Asbestos Sample
E Environmental Sample
( ) No Sample Recovery
C NMLC Coring
P PFAS Samples

This Environmental Bore Report is not intended for geotechnical engineering interpretation.

Rig: Hydrapower Scout
Drilling Method: Auger
Logged By: KVB
Groundwater: No free groundwater encountered during drilling
Handheld GPS Coordinates - E: 0502016
Remarks: *Ground surface levels are approximate, based off BCCs City Plan 2014 Contour Map
Handheld GPS Coordinates - N: 6956445

ENVIRONMENTAL BORE REPORT

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Client: Economic Development Queensland
Project: Yeronga PDA
Location: 70 Park Road, Yeronga
Project No: 019-113B

BORE 211

Page No: 1 of 1
Date: 9 October 2020
Ground Surface Level: RL17.5m*

Depth (m)	Description	RL (m)	Lithology	Sample Type	Sample Depth (m)	Sample ID	Test Results
0		17.5					
	FILL - gravelly silty clay, with medium to fine gravel						
	SANDY CLAY - grey-brown (residual sandstone)	17.0		D	0.65 0.75	B211-1	
1	- orange-brown			D	1.3	B211-2	
	End of Bore at 1.5 m	16.0			1.5		
2		15.0					
3							

D Disturbed Sample (ASS)
A Asbestos Sample
E Environmental Sample
( ) No Sample Recovery
C NMLC Coring
P PFAS Samples

This Environmental Bore Report is not intended for geotechnical engineering interpretation.

Rig: Hydrapower Scout
Drilling Method: Auger
Logged By: RP
Groundwater: No free groundwater encountered during drilling
Handheld GPS Coordinates - E: 0502019
Remarks: *Ground surface levels are approximate, based off BCCs City Plan 2014 Contour Map
Handheld GPS Coordinates - N: 6956348

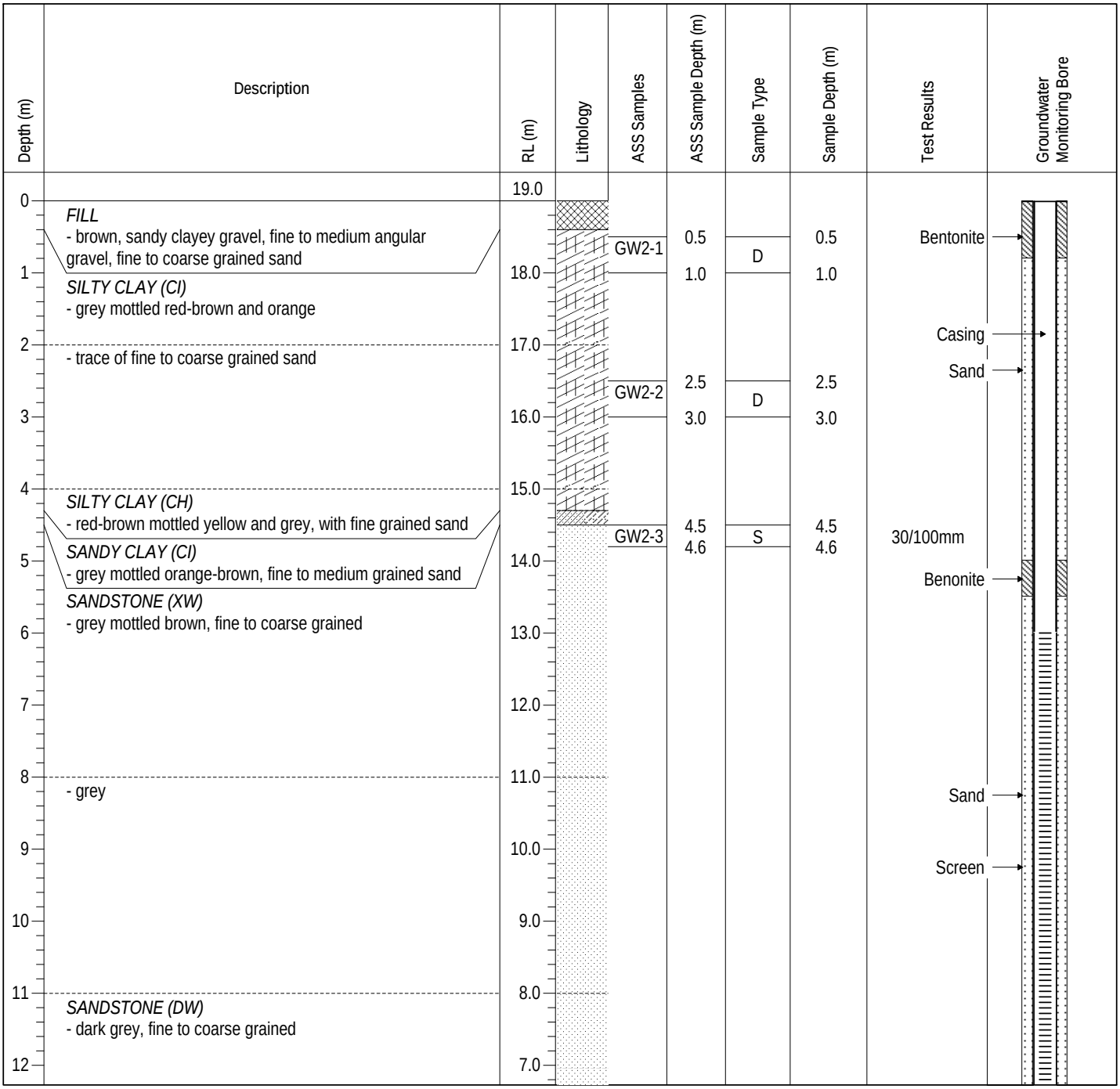
BORE REPORT

Butler Partners
geotechnical • geo-environmental • groundwater

Client: Economic Development Queensland
Project: Mixed Use Development
Location: 70 Park Road, Yeronga
Project No: 019-113B

BORE GW02

Page No: 1 of 2
Date: 1 October 2020
Ground Surface Level: RL19.0m*



D Disturbed Sample
B Bulk Sample
U Undisturbed Tube (50mm diameter)
pp Pocket Penetrometer Test (kPa)

S Standard Penetrometer Test (SPT)
HB SPT Hammer Bouncing
( ) No Sample Recovery
V Vane Shear Strength, Uncorrected (kPa)

C NMLC Coring
Is(50) Point Load Test Result (MPa)
(d) Diametral Point Load Strength Test
(a) Axial Point Load Strength Test

Rig: Hydrapower Scout
Drilling Method: Auger
Groundwater: No free groundwater encountered during drilling
Remarks: *Ground surface levels are approximate, based off BCCs City Plan 2014 Contour Map

Logged by: WR

BORE REPORT

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Client: Economic Development Queensland
Project: Mixed Use Development
Location: 70 Park Road, Yeronga
Project No: 019-113B

BORE GW02

Page No: 2 of 2
Date: 1 October 2020
Ground Surface Level: RL19.0m*

Depth (m)	Description	RL (m)	Lithology	ASS Samples	ASS Sample Depth (m)	Sample Type	Sample Depth (m)	Test Results	Groundwater Monitoring Bore
13	*SANDSTONE (DW)* - dark grey, fine to coarse grained	6.0							
14		5.0							
15		4.0							
16		3.0							
17		2.0							
18		1.0							
19		0.0							
20	End of Bore at 20 m	-1.0							
21		-2.0							
22		-3.0							
23		-4.0							
24		-5.0							

D Disturbed Sample
B Bulk Sample
U Undisturbed Tube (50mm diameter)
pp Pocket Penetrometer Test (kPa)

S Standard Penetrometer Test (SPT)
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C NMLC Coring
Is(50) Point Load Test Result (MPa)
(d) Diametral Point Load Strength Test
(a) Axial Point Load Strength Test

Rig: Hydrapower Scout
Drilling Method: Auger
Groundwater: No free groundwater encountered during drilling
Remarks: *Ground surface levels are approximate, based off BCCs City Plan 2014 Contour Map

Logged by: WR

BORE REPORT

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Client: Economic Development Queensland
Project: Mixed Use Development
Location: 70 Park Road, Yeronga
Project No: 019-113B

BORE GW03

Page No: 1 of 2
Date: 1 October 2020
Ground Surface Level: RL17.5m*

Depth (m)	Description	RL (m)	ASS Samples	ASS Sample Depth (m)	Sample Type	Sample Depth (m)	Test Results
0		14.5					
0	*FILL* - brown, silty sandy gravel, fine to coarse angular gravel, fine to coarse sand		GW3-1	0.0	D	0.0	Bentonite
			GW3-2	0.25	D	0.25	
1	*SILTY CLAY (CI)* - brown mottled grey and orange-brown		GW3-3	0.5	D	0.5	
			GW3-4	0.75	D	0.75	
		13.0	GW3-5	1.0	D	1.0	
2	- brown mottled red and orange-brown, with fine to medium grained sand		GW3-6	1.25	D	1.25	
			GW3-7	1.5	D	1.5	
			GW3-8	1.75	D	1.75	
		12.0	GW3-9	2.0	D	2.0	
3			GW3-10	2.25	D	2.25	
			GW3-11	2.5	D	2.5	
		11.0	GW3-12	2.75	D	2.75	
				3.0		3.0	Sand
4	*SILTY CLAY (CH)* - grey mottled red and orange, trace of fine to coarse grained sand	10.0					Casing
							Bentonite
5	- dark grey with orange-grey, red bands		GW3-13	5.0	S	5.0	10,13,16
		9.0					N=29
6				5.95		5.95	
	SANDY CLAY (CL) - orange-yellow mottled red and grey, fin to coarse grained sand	8.0					
7				7.0		7.0	
	SANDSTONE (XW) - yellow with orange and brown bands, fine to coarse grained	7.0	GW3-14		S		30/95mm
8				7.95		7.95	Sand
		6.0					
9							Screen
		5.0					
10							
		4.0					
11							
		3.0					
12							

D Disturbed Sample
B Bulk Sample
U Undisturbed Tube (50mm diameter)
pp Pocket Penetrometer Test (kPa)

S Standard Penetrometer Test (SPT)
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Is(50) Point Load Test Result (MPa)
(d) Diametral Point Load Strength Test
(a) Axial Point Load Strength Test

Rig: Hydrapower Scout
Drilling Method: Auger
Groundwater: No free groundwater encountered during drilling
Remarks: *Ground surface levels are approximate, based off BCCs City Plan 2014 Contour Map

Logged by: WR

BORE REPORT

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Client: Economic Development Queensland
Project: Mixed Use Development
Location: 70 Park Road, Yeronga
Project No: 019-113B

BORE GW03

Page No: 2 of 2
Date: 1 October 2020
Ground Surface Level: RL17.5m*

Depth (m)	Description	RL (m)	Lithology	ASS Samples	ASS Sample Depth (m)	Sample Type	Sample Depth (m)	Test Results	Groundwater Monitoring Bore
13	*SANDSTONE (XW)* - yellow with orange and brown bands, fine to coarse grained	2.0							
14		1.0							
15		0.0							
16		-1.0							
17		-2.0							
18	*SANDSTONE (DW)* - grey, fine to coarse grained	-3.0							
19		-4.0							
20		-5.0							
21	End of Bore at 20 m	-6.0							
22		-7.0							
23		-8.0							
24		-9.0							

D Disturbed Sample
B Bulk Sample
U Undisturbed Tube (50mm diameter)
pp Pocket Penetrometer Test (kPa)

S Standard Penetrometer Test (SPT)
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Drilling Method: Auger
Groundwater: No free groundwater encountered during drilling
Remarks: *Ground surface levels are approximate, based off BCCs City Plan 2014 Contour Map

Logged by: WR

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Notes on Description and Classification of Soil

The methods of description and classification of soils used in this report are generally based on Australian Standard AS1726-1993 Geotechnical Site Investigations.

Soil description is based on an assessment of disturbed samples, as recovered from bores and excavations, or from undisturbed materials as seen in excavations and exposures or in undisturbed samples. Descriptions given on report sheets are an interpretation of the conditions encountered at the time of investigation.

In the case of cone or piezocone penetrometer tests, actual soil samples are not recovered and soil description is inferred based on published correlations, past experience and comparison with bore and/or test pit data (if available).

Soil classification is based on the particle size distribution of the soil and the plasticity of the portion of the material finer than 0.425mm. The description of particle size distribution and plasticity is based on the results of visual field estimation, laboratory testing or both. When assessed in the field, the properties of the soil are estimated; precise description will always require laboratory testing to define soil properties.

Where soil can be clearly identified as FILL this will be noted as the main soil type followed by a description of the composition of the fill (e.g. FILL – yellow-brown, fine to coarse grained gravelly clay fill with concrete rubble). If the soil is assessed as possibly being fill this will be noted as an additional observation.

Soils are generally described using the following sequence of terms. In certain instances, not all of the terms will be included in the soil description.

MAIN SOIL TYPE (CLASSIFICATION GROUP SYMBOL)
- strength/density, colour, structure/grain size, secondary and minor components, additional observations

Information on the definition of descriptive and classification terms follows.

SOIL TYPE and CLASSIFICATION GROUP SYMBOLS

	Major Divisions	Particle Size	Classification Group Symbol	Typical Names
COARSE GRAINED SOILS (more than half of material is larger than 0.075mm)	BOULDERS	>200mm		
	COBBLES	63 – 200mm		
	GRAVELS (more than half of coarse fraction is larger than 2.36mm)	Coarse: 20 – 63mm Medium: 6 – 20mm Fine: 2.36 – 6mm	GW	Well graded gravels, gravel-sand mixtures, little or no fines.
			GP	Poorly graded gravels and gravel-sand mixtures, little or no fines, uniform gravels.
			GM	Silty gravels, gravel-sand-silt mixtures.
			GC	Clayey gravels, gravel-sand-clay mixtures.
	SANDS (more than half of coarse fraction is smaller than 2.36mm)	Coarse: 0.6 – 2.36mm Medium: 0.2 – 0.6mm Fine: 0.075 – 0.2mm	SW	Well graded sands, gravelly sands, little or no fines.
			SP	Poorly graded sands and gravelly sands; little or no fines, uniform sands.
			SM	Silty sands, sand-silt mixtures.
			SC	Clayey sands, sand-clay mixtures.
FINE GRAINED SOILS (more than half of material is smaller than 0.075mm)	SILTS & CLAYS (liquid limit <50%)		ML	Inorganic silts and very fine sands, silty/clayey fine sands or clayey silts with low plasticity.
			CL and CI	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays.
			OL	Organic silts and organic silty clays of low plasticity.
	SILTS & CLAYS (liquid limit >50%)		MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils.
			CH	Inorganic clays of high plasticity.
			OH	Organic clays of medium to high plasticity, organic silts.
	HIGHLY ORGANIC SOILS		Pt	Peat and other highly organic soils.

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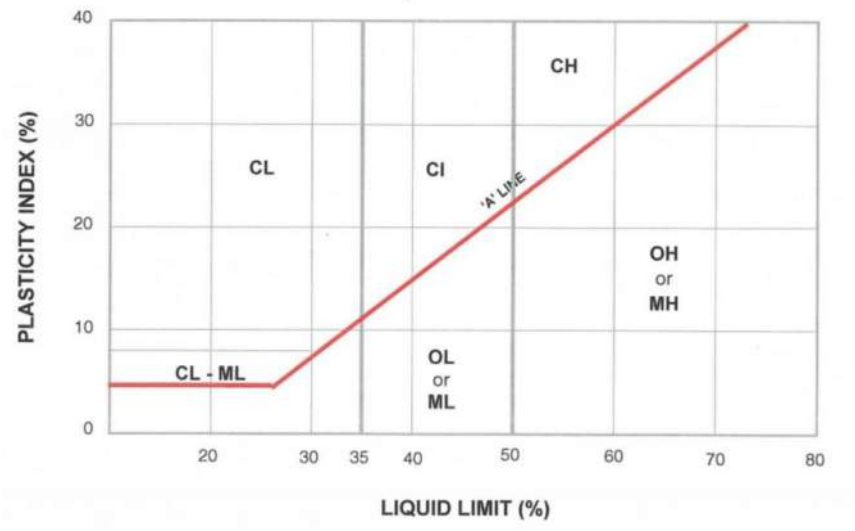
PLASTICITY CHART FOR CLASSIFICATION OF FINE GRAINED SOILS



(Reference: Australian Standard AS1726-1993 Geotechnical site investigations)

DESCRIPTIVE TERMS FOR MATERIAL PROPORTIONS

Coarse Grained Soils		Fine Grained Soils	
% Fines	Modifier	% Coarse	Modifier
<5	Omit, or use 'trace'	<15	Omit, or use trace.
5 – 12	Describe as 'with clay/silt' as applicable.	15 – 30	Describe as 'with sand/gravel' as applicable.
>12	Prefix soil as 'silty/clayey' as applicable	>30	Prefix soil as 'sandy/gravelly' as applicable.

STRENGTH TERMS – COHESIVE SOILS

Strength Term	Undrained Shear Strength	Field Guide to Strength
Very soft	<12kPa	Exudes between the fingers when squeezed in hand.
Soft	12 – 25kPa	Can be moulded by light finger pressure.
Firm	25 – 50kPa	Can be moulded by strong finger pressure.
Stiff	50 – 100kPa	Cannot be moulded by fingers, can be indented by thumb.
Very stiff	100 – 200kPa	Can be indented by thumb nail.
Hard	>200kPa	Can be indented with difficulty by thumb nail.

DENSITY TERMS – NON COHESIVE SOILS

Density Term	Density Index	SPT "N"	CPT Cone Resistance
Very loose	<15%	0 – 5	0 – 2MPa
Loose	15 – 35%	5 – 10	2 – 5MPa
Medium dense	35 – 65%	10 – 30	5 – 15MPa
Dense	65 – 85%	30 – 50	15 – 25MPa
Very dense	>85%	>50	>25MPa

COLOUR

The colour of a soil will generally be described in a 'moist' condition using simple colour terms (e.g. black, grey, red, brown etc.) modified as necessary by "pale", "dark", "light" or "mottled". Borderline colours will be described as a combination of colours (e.g. grey-brown).

EXAMPLE

e.g. CLAYEY SAND (SC) – medium dense, grey-brown, fine to medium grained with silt.

Indicates a medium dense, grey-brown, fine to medium grained clayey sand with silt.

Notes on Description and Classification of Rock

The methods of description and classification of rock used in this report are generally based on Australian Standard AS1726-1993 *Geotechnical site investigations*.

Rock description is based on an assessment of disturbed samples, as recovered from bores and excavations, or from undisturbed materials as seen in excavations and exposures, or in core samples. Descriptions given on report sheets are an interpretation of the conditions encountered at the time of investigation.

Notes outlining the method and terminology adopted for the description of rock defects are given below, however, detailed information on defects can generally only be determined where rock core is taken, or excavations or exposures allow detailed observation and measurement.

Rocks are generally described using the following sequence of terms. In certain instances not all of the terms will be included in the rock description.

ROCK TYPE (WEATHERING SYMBOL), strength, colour, grain size, defect frequency

Information on the definition of descriptive and classification terms follows.

ROCK TYPE

In general, simple rock names are used rather than precise geological classifications.

ROCK MATERIALS WEATHERING CLASSIFICATION

Term	Weathering Symbol	Definition
Residual soil	RS	Soil developed from extremely weathered rock; the mass structure and substance fabrics are no longer evident; there is a large change in volume but the soil has not been significantly transported.
Extremely weathered	XW	Rock is weathered to such an extent that it has 'soil' properties, i.e. it either disintegrates or can be remoulded in water.
Distinctly weathered *	DW	Rock strength usually changed by weathering. The rock may be highly discoloured, usually by ironstaining. Porosity may be increased by leaching, or may be decreased due to deposition of weathering products in pores.
- Highly weathered	HW	Rock substance affected by weathering to the extent that limonite staining or bleaching affects the whole of the rock substance and other signs of chemical or physical decomposition are evident. Porosity and strength may be increased or decreased compared to the fresh rock, usually as a result of iron leaching or deposition. The colour and strength of the original fresh rock substance is no longer recognisable.
- Moderately weathered	MW	Rock substance affected by weathering to the extent that staining extends throughout the whole of the rock substance and the original colour of the fresh rock may be no longer recognisable.
Slightly weathered	SW	Rock is slightly discoloured but shows little or no change of strength from fresh rock.
Fresh	FR	Rock shows no sign of decomposition or staining.

** Subdivision of this weathering grade into highly and moderately may be used where applicable.*

STRENGTH OF ROCK MATERIAL

Term	Symbol	Point Load Index I_s (50)	Field Guide To Strength
Extremely low	EL	<0.03MPa	Easily remoulded by hand to a material with soil properties.
Very low	VL	0.03 – 0.1MPa	Material crumbles under firm blows with sharp end of pick; can be peeled with knife; too hard to cut a triaxial sample by hand. Pieces up to 30mm thick can be broken by finger pressure.
Low	L	0.1 – 0.3MPa	Easily scored with a knife; indentations 1mm to 3mm show in the specimen with firm blows of the pick point; has dull sound under hammer. A piece of core 150mm long 50mm diameter may be broken by hand. Sharp edges of core may be friable and break during handling.
Medium	M	0.3 – 1.0MPa	Readily scored with a knife; a piece of core 150mm long by 50mm diameter can be broken by hand with difficulty.
High	H	1.0 – 3.0MPa	A piece of core 150mm long by 50mm diameter cannot be broken by hand but can be broken by a pick with a single firm blow; rock rings under hammer.
Very high	VH	3.0 – 10.0MPa	Hand specimen breaks with pick after more than one blow; rock rings under hammer.
Extremely high	EH	>10MPa	Specimen requires many blows with geological pick to break through intact material; rock rings under hammer.

Notes:
1. *These terms refer to the strength of the rock material and not to the strength of the rock mass which may be considerably weaker due to the effect of rock defects.*
2. *The field guide visual assessment for rock strength may be used for preliminary assessment or when point load testing is not available.*
3. *Anisotropy of rock may affect the field assessment of strength.*

COLOUR

The colour of a rock will generally be described in a 'moist' condition using simple colour terms (e.g. black, grey, red, brown, etc) modified as necessary by 'pale', 'dark', 'light' or 'mottled'. Borderline colours will be described as a combination of colours (e.g. grey-brown).

GRAIN SIZE

Descriptive Term	Particle Size Range
Coarse grained	0.6 – 2.0mm
Medium grained	0.2 – 0.6mm
Fine grained	0.06 – 0.2mm

DEFECT FREQUENCY

Where appropriate, a defect frequency may be recorded as part of the rock description and will be expressed as the number of natural (or interpreted natural) defects present in an equivalent one metre length of core; by use of the following defect frequency descriptive terms; or both. The descriptive terms refer to the spacing of all types of natural defects along which the rock is discontinuous and include, bedding plane partings, joints and other rock defects, but excludes known artificial fractures such as drilling breaks.

Defect Frequency	Description
Fragmented	Rock core is comprised primarily of fragments of length less than 20mm, and mostly of width less than the core diameter.
Highly Fractured	Core lengths are generally less than 20mm to 40mm with occasional fragments.
Fractured	Core lengths are mainly 30mm to 100mm with occasional shorter and longer sections.
Fractured to Slightly Fractured	Core lengths are mainly 100mm to 300mm with occasional shorter to longer sections.
Slightly Fractured	Core lengths are generally 300mm to 1,000mm with occasional longer sections and occasional sections of 100mm to 300mm.
Unbroken	The core does not contain any fractures.

EXAMPLE

e.g. SANDSTONE (XW) – low strength, pale brown, fine to coarse grained, slightly fractured.

ROCK DEFECT LOGGING

Defects are discontinuities in the rock mass and include joints, sheared zones, cleavages and bedding partings. The ability to observe and log defects will depend on the investigation methodology. Defects logged in core are described using the abbreviations noted in the following tables.

The *depth* noted in the description is measured in metres from the ground surface, the *defect angle* is measured in degrees from horizontal, and the defect *thickness* is measured normal to the plane of the defect and is in millimetres (unless otherwise noted).

Defects are generally described using the following sequence of terms:

Depth, Defect Type, Defect Angle (dip), Surface Roughness, Infill, Thickness

DEFECT TYPE

B	– Bedding
J	– Joint
S	– Shear Zone
C	– Crushed Zone

SURFACE ROUGHNESS

i	- rough or irregular, stepped
ii	- smooth, stepped
iii	- slickensided, stepped
iv	- rough or irregular, undulating
v	- smooth, undulating
vi	- slickensided, undulating
vii	- rough or irregular, planar
viii	- smooth planar
ix	- slickensided, planar

INFILL

Infill refers to secondary minerals or other materials formed on the surface of the defect and some common descriptions are given in the following table together with their abbreviations.

Ls	- limonite staining
Fe	- iron staining
Cl	- clay
Mn	- manganese staining
Qtz	- quartz
Ca	- calcite
Clean	- no visible infill

EXAMPLE

3.59m, J, 90, vii, Ls, 1mm

indicates a joint at 3.59m depth that is at 90° to horizontal (i.e. vertical), is rough or irregular and planar, limonite stained and 1mm thick.

APPENDIX B

LABORATORY DOCUMENTATION

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EB2026680**	Page	: 1 of 8
Client	: **BUTLER PARTNERS PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: MIKE MELLES	Contact	: Andrew Epps
Address	: PO BOX 2267 FORTITUDE VALLEY BC QLD, AUSTRALIA 4006	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: +61 07 38523800	Telephone	: +61 7 3552 8639
Project	: 019-113B	Date Samples Received	: 12-Oct-2020 18:04
Order number	: 202829	Date Analysis Commenced	: 15-Oct-2020
C-O-C number	: ASS01	Issue Date	: 15-Oct-2020 16:51
Sampler	: KIERAN VAN BRECHT, RICHARD PEARCE		
Site	: Yeronga		
Quote number	: EN/222 (Planned event Tables)		
No. of samples received	: 40		
No. of samples analysed	: 26		

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Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Ben Felgendrejeris	Senior Acid Sulfate Soil Chemist	Brisbane Acid Sulphate Soils, Stafford, QLD

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- ASS: EA033 (CRS Suite): ANC not required because pH KCl less than 6.5
- ASS: EA033 (CRS Suite): Liming rate is calculated and reported on a dry weight basis assuming use of fine agricultural lime (CaCO3) and using a safety factor of 1.5 to allow for non-homogeneous mixing and poor reactivity of lime. For conversion of Liming Rate from 'kg/t dry weight' to 'kg/m3 in-situ soil', multiply 'reported results' x 'wet bulk density of soil in t/m3'.

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	B201-1 1.8-2.0	B201-2 2.3-2.5	B202-1 0.8-1.0	B202-2 1.3-1.5	B203-1 1.3-1.5
				Client sampling date / time	09-Oct-2020 00:00	09-Oct-2020 00:00	09-Oct-2020 00:00	09-Oct-2020 00:00	09-Oct-2020 00:00
Compound	CAS Number	LOR	Unit		EB2026680-001	EB2026680-002	EB2026680-003	EB2026680-004	EB2026680-005
					Result	Result	Result	Result	Result
EA033-A: Actual Acidity									
pH KCl (23A)	----	0.1	pH Unit		4.1	4.4	4.5	4.7	4.6
Titratable Actual Acidity (23F)	----	2	mole H+ / t		74	59	47	24	23
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S		0.12	0.09	0.08	0.04	0.04
EA033-B: Potential Acidity									
Chromium Reducible Sulfur (22B)	----	0.005	% S		0.009	0.020	0.017	0.016	0.019
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t		<10	12	11	10	12
EA033-D: Retained Acidity									
KCl Extractable Sulfur (23Ce)	----	0.02	% S		<0.02	<0.02	----	----	----
HCl Extractable Sulfur (20Be)	----	0.02	% S		<0.02	0.02	----	----	----
Net Acid Soluble Sulfur (20Je)	----	0.02	% S		<0.02	0.02	----	----	----
acidity - Net Acid Soluble Sulfur (a-20J)	----	10	mole H+ / t		<10	11	----	----	----
sulfidic - Net Acid Soluble Sulfur (s-20J)	----	0.02	% pyrite S		<0.02	<0.02	----	----	----
EA033-E: Acid Base Accounting									
ANC Fineness Factor	----	0.5	-		1.5	1.5	1.5	1.5	1.5
Net Acidity (sulfur units)	----	0.02	% S		0.13	0.13	0.09	0.06	0.06
Net Acidity (acidity units)	----	10	mole H+ / t		80	83	58	35	35
Liming Rate	----	1	kg CaCO3/t		6	6	4	3	3
Net Acidity excluding ANC (sulfur units)	----	0.02	% S		0.13	0.13	0.09	0.06	0.06
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t		80	83	58	35	35
Liming Rate excluding ANC	----	1	kg CaCO3/t		6	6	4	3	3

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	B203-2 1.8-2.0	B204-2 1.3-1.5	B204-3 1.8-2.0	B205-1 0.1-0.2	B205-2 0.25-0.35
				Client sampling date / time	09-Oct-2020 00:00	09-Oct-2020 00:00	09-Oct-2020 00:00	09-Oct-2020 00:00	09-Oct-2020 00:00
Compound	CAS Number	LOR	Unit		EB2026680-006	EB2026680-008	EB2026680-009	EB2026680-010	EB2026680-011
					Result	Result	Result	Result	Result
EA033-A: Actual Acidity									
pH KCl (23A)	----	0.1	pH Unit		5.1	4.6	4.1	6.0	4.8
Titratable Actual Acidity (23F)	----	2	mole H+ / t		14	32	67	4	28
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S		0.02	0.05	0.11	<0.02	0.04
EA033-B: Potential Acidity									
Chromium Reducible Sulfur (22B)	----	0.005	% S		0.017	0.029	0.022	0.018	0.024
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t		11	18	14	11	15
EA033-D: Retained Acidity									
KCl Extractable Sulfur (23Ce)	----	0.02	% S		----	----	<0.02	----	----
HCl Extractable Sulfur (20Be)	----	0.02	% S		----	----	<0.02	----	----
Net Acid Soluble Sulfur (20Je)	----	0.02	% S		----	----	<0.02	----	----
acidity - Net Acid Soluble Sulfur (a-20J)	----	10	mole H+ / t		----	----	<10	----	----
sulfidic - Net Acid Soluble Sulfur (s-20J)	----	0.02	% pyrite S		----	----	<0.02	----	----
EA033-E: Acid Base Accounting									
ANC Fineness Factor	----	0.5	-		1.5	1.5	1.5	1.5	1.5
Net Acidity (sulfur units)	----	0.02	% S		0.04	0.08	0.13	0.02	0.07
Net Acidity (acidity units)	----	10	mole H+ / t		24	50	81	16	43
Liming Rate	----	1	kg CaCO3/t		2	4	6	1	3
Net Acidity excluding ANC (sulfur units)	----	0.02	% S		0.04	0.08	0.13	0.02	0.07
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t		24	50	81	16	43
Liming Rate excluding ANC	----	1	kg CaCO3/t		2	4	6	1	3

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	B206-1 1.4-1.5	B206-2 1.8-2.0	B207-1 2.3-2.5	B207-2 2.75-2.85	B208-1 1.8-2.0
			Client sampling date / time	09-Oct-2020 00:00	09-Oct-2020 00:00	09-Oct-2020 00:00	09-Oct-2020 00:00	09-Oct-2020 00:00
Compound	CAS Number	LOR	Unit	EB2026680-012	EB2026680-013	EB2026680-014	EB2026680-015	EB2026680-016
				Result	Result	Result	Result	Result
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	4.9	4.8	4.5	4.7	4.7
Titratable Actual Acidity (23F)	----	2	mole H+ / t	19	18	38	24	32
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	0.03	0.03	0.06	0.04	0.05
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	0.019	0.016	0.021	0.019	0.024
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	12	<10	13	12	15
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	1.5	1.5	1.5	1.5	1.5
Net Acidity (sulfur units)	----	0.02	% S	0.05	0.04	0.08	0.06	0.08
Net Acidity (acidity units)	----	10	mole H+ / t	31	27	51	36	47
Liming Rate	----	1	kg CaCO3/t	2	2	4	3	4
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	0.05	0.04	0.08	0.06	0.08
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	31	27	51	36	47
Liming Rate excluding ANC	----	1	kg CaCO3/t	2	2	4	3	4

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	B208-2 2.3-2.5	B209-1 1.8-2.0	B209-2 2.3-2.5	B210-1 0.8-1.0	B210-2 1.15-1.25
			Client sampling date / time	09-Oct-2020 00:00	09-Oct-2020 00:00	09-Oct-2020 00:00	09-Oct-2020 00:00	09-Oct-2020 00:00
Compound	CAS Number	LOR	Unit	EB2026680-017	EB2026680-018	EB2026680-019	EB2026680-020	EB2026680-021
				Result	Result	Result	Result	Result
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	5.0	4.3	4.4	4.8	4.4
Titratable Actual Acidity (23F)	----	2	mole H+ / t	14	65	51	38	84
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	0.02	0.10	0.08	0.06	0.14
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	0.023	0.023	0.013	0.012	0.038
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	14	15	<10	<10	24
EA033-D: Retained Acidity								
KCl Extractable Sulfur (23Ce)	----	0.02	% S	----	<0.02	<0.02	----	<0.02
HCl Extractable Sulfur (20Be)	----	0.02	% S	----	<0.02	<0.02	----	<0.02
Net Acid Soluble Sulfur (20Je)	----	0.02	% S	----	<0.02	<0.02	----	<0.02
acidity - Net Acid Soluble Sulfur (a-20J)	----	10	mole H+ / t	----	<10	<10	----	<10
sulfidic - Net Acid Soluble Sulfur (s-20J)	----	0.02	% pyrite S	----	<0.02	<0.02	----	<0.02
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	1.5	1.5	1.5	1.5	1.5
Net Acidity (sulfur units)	----	0.02	% S	0.04	0.13	0.10	0.07	0.17
Net Acidity (acidity units)	----	10	mole H+ / t	28	80	60	45	108
Liming Rate	----	1	kg CaCO3/t	2	6	4	3	8
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	0.04	0.13	0.10	0.07	0.17
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	28	80	60	45	108
Liming Rate excluding ANC	----	1	kg CaCO3/t	2	6	4	3	8

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	B211-1 0.65-0.75	B211-2 1.3-1.5	GW02-2 2.5-3.0	GW02-3 4.5-4.6	GW03-7 1.50-1.75
				Client sampling date / time	24-Sep-2020 00:00	24-Sep-2020 00:00	01-Oct-2020 00:00	01-Oct-2020 00:00	01-Oct-2020 00:00
Compound	CAS Number	LOR	Unit		EB2026680-022	EB2026680-023	EB2026680-025	EB2026680-026	EB2026680-033
					Result	Result	Result	Result	Result
EA033-A: Actual Acidity									
pH KCl (23A)	----	0.1	pH Unit		4.3	5.4	4.3	4.9	4.3
Titratable Actual Acidity (23F)	----	2	mole H+ / t		96	15	71	17	74
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S		0.15	0.02	0.11	0.03	0.12
EA033-B: Potential Acidity									
Chromium Reducible Sulfur (22B)	----	0.005	% S		0.021	0.012	0.012	0.010	0.012
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t		13	<10	<10	<10	<10
EA033-D: Retained Acidity									
KCl Extractable Sulfur (23Ce)	----	0.02	% S		<0.02	----	<0.02	----	<0.02
HCl Extractable Sulfur (20Be)	----	0.02	% S		<0.02	----	<0.02	----	<0.02
Net Acid Soluble Sulfur (20Je)	----	0.02	% S		<0.02	----	<0.02	----	<0.02
acidity - Net Acid Soluble Sulfur (a-20J)	----	10	mole H+ / t		<10	----	<10	----	<10
sulfidic - Net Acid Soluble Sulfur (s-20J)	----	0.02	% pyrite S		<0.02	----	<0.02	----	<0.02
EA033-E: Acid Base Accounting									
ANC Fineness Factor	----	0.5	-		1.5	1.5	1.5	1.5	1.5
Net Acidity (sulfur units)	----	0.02	% S		0.17	0.04	0.12	0.04	0.13
Net Acidity (acidity units)	----	10	mole H+ / t		109	22	78	24	81
Liming Rate	----	1	kg CaCO3/t		8	2	6	2	6
Net Acidity excluding ANC (sulfur units)	----	0.02	% S		0.17	0.04	0.12	0.04	0.13
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t		109	22	78	24	81
Liming Rate excluding ANC	----	1	kg CaCO3/t		8	2	6	2	6

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	GW03-10 2.25-2.50	----	----	----	----
			Client sampling date / time	01-Oct-2020 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	EB2026680-036	--------	--------	--------	--------
				Result	----	----	----	----
EA033-A: Actual Acidity								
pH KCl (23A)	----	0.1	pH Unit	**4.3**	----	----	----	----
Titratable Actual Acidity (23F)	----	2	mole H+ / t	**78**	----	----	----	----
sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	**0.12**	----	----	----	----
EA033-B: Potential Acidity								
Chromium Reducible Sulfur (22B)	----	0.005	% S	**0.009**	----	----	----	----
acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	----	----	----	----
EA033-D: Retained Acidity								
KCl Extractable Sulfur (23Ce)	----	0.02	% S	<0.02	----	----	----	----
HCl Extractable Sulfur (20Be)	----	0.02	% S	<0.02	----	----	----	----
Net Acid Soluble Sulfur (20Je)	----	0.02	% S	<0.02	----	----	----	----
acidity - Net Acid Soluble Sulfur (a-20J)	----	10	mole H+ / t	<10	----	----	----	----
sulfidic - Net Acid Soluble Sulfur (s-20J)	----	0.02	% pyrite S	<0.02	----	----	----	----
EA033-E: Acid Base Accounting								
ANC Fineness Factor	----	0.5	-	**1.5**	----	----	----	----
Net Acidity (sulfur units)	----	0.02	% S	**0.13**	----	----	----	----
Net Acidity (acidity units)	----	10	mole H+ / t	**84**	----	----	----	----
Liming Rate	----	1	kg CaCO3/t	**6**	----	----	----	----
Net Acidity excluding ANC (sulfur units)	----	0.02	% S	**0.13**	----	----	----	----
Net Acidity excluding ANC (acidity units)	----	10	mole H+ / t	**84**	----	----	----	----
Liming Rate excluding ANC	----	1	kg CaCO3/t	**6**	----	----	----	----

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **EB2026680**	Page	: 1 of 3
Client	: **BUTLER PARTNERS PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: MIKE MELLES	Contact	: Andrew Epps
Address	: PO BOX 2267 FORTITUDE VALLEY BC QLD, AUSTRALIA 4006	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: +61 07 38523800	Telephone	: +61 7 3552 8639
Project	: 019-113B	Date Samples Received	: 12-Oct-2020
Order number	: 202829	Date Analysis Commenced	: 15-Oct-2020
C-O-C number	: ASS01	Issue Date	: 15-Oct-2020
Sampler	: KIERAN VAN BRECHT, RICHARD PEARCE		
Site	: Yeronga		
Quote number	: EN/222 (Planned event Tables)		
No. of samples received	: 40		
No. of samples analysed	: 26		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Ben Felgendrejeris	Senior Acid Sulfate Soil Chemist	Brisbane Acid Sulphate Soils, Stafford, QLD

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EA033-A: Actual Acidity (QC Lot: 3307639)									
EB2026680-010	B205-1 0.1-0.2	EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	0.00	No Limit
		EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	4	4	0.00	No Limit
		EA033: pH KCl (23A)	----	0.1	pH Unit	6.0	6.0	0.00	0% - 20%
EB2026300-009	Anonymous	EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	<0.02	0.00	No Limit
		EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	<2	0.00	No Limit
		EA033: pH KCl (23A)	----	0.1	pH Unit	8.6	8.6	0.00	0% - 20%
EA033-A: Actual Acidity (QC Lot: 3307640)									
EB2026680-020	B210-1 0.8-1.0	EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	0.06	0.06	0.00	No Limit
		EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	38	38	0.00	0% - 50%
		EA033: pH KCl (23A)	----	0.1	pH Unit	4.8	4.8	0.00	0% - 20%
EA033-B: Potential Acidity (QC Lot: 3307639)									
EB2026680-010	B205-1 0.1-0.2	EA033: Chromium Reducible Sulfur (22B)	----	0.005	% S	0.018	0.022	19.6	No Limit
		EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	11	14	19.6	No Limit
EB2026300-009	Anonymous	EA033: Chromium Reducible Sulfur (22B)	----	0.005	% S	0.183	0.180	1.50	0% - 20%
		EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	114	112	1.50	0% - 50%
EA033-B: Potential Acidity (QC Lot: 3307640)									
EB2026680-020	B210-1 0.8-1.0	EA033: Chromium Reducible Sulfur (22B)	----	0.005	% S	0.012	0.012	0.00	No Limit
		EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	<10	0.00	No Limit

Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EA033-A: Actual Acidity (QCLot: 3307639)								
EA033: pH KCl (23A)	----	----	pH Unit	----	4.4 pH Unit	100	91.0	107
EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	15 mole H+ / t	111	70.0	124
EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	----	----	----	----
EA033-A: Actual Acidity (QCLot: 3307640)								
EA033: pH KCl (23A)	----	----	pH Unit	----	4.4 pH Unit	100	91.0	107
EA033: Titratable Actual Acidity (23F)	----	2	mole H+ / t	<2	15 mole H+ / t	107	70.0	124
EA033: sulfidic - Titratable Actual Acidity (s-23F)	----	0.02	% pyrite S	<0.02	----	----	----	----
EA033-B: Potential Acidity (QCLot: 3307639)								
EA033: Chromium Reducible Sulfur (22B)	----	0.005	% S	<0.005	0.155 % S	111	77.0	121
EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	----	----	----	----
EA033-B: Potential Acidity (QCLot: 3307640)								
EA033: Chromium Reducible Sulfur (22B)	----	0.005	% S	<0.005	0.155 % S	105	77.0	121
EA033: acidity - Chromium Reducible Sulfur (a-22B)	----	10	mole H+ / t	<10	----	----	----	----
EA033-D: Retained Acidity (QCLot: 3307639)								
EA033: Net Acid Soluble Sulfur (20Je)	----	0.02	% S	<0.02	----	----	----	----
EA033: acidity - Net Acid Soluble Sulfur (a-20J)	----	10	mole H+ / t	<10	----	----	----	----
EA033: sulfidic - Net Acid Soluble Sulfur (s-20J)	----	0.02	% pyrite S	<0.02	----	----	----	----
EA033: KCl Extractable Sulfur (23Ce)	----	0.02	% S	<0.02	0.04779 % S	101	70.0	128
EA033: HCl Extractable Sulfur (20Be)	----	0.02	% S	<0.02	0.279 % S	104	70.0	120
EA033-D: Retained Acidity (QCLot: 3307640)								
EA033: Net Acid Soluble Sulfur (20Je)	----	0.02	% S	<0.02	----	----	----	----
EA033: acidity - Net Acid Soluble Sulfur (a-20J)	----	10	mole H+ / t	<10	----	----	----	----
EA033: sulfidic - Net Acid Soluble Sulfur (s-20J)	----	0.02	% pyrite S	<0.02	----	----	----	----
EA033: KCl Extractable Sulfur (23Ce)	----	0.02	% S	<0.02	0.04779 % S	101	70.0	128
EA033: HCl Extractable Sulfur (20Be)	----	0.02	% S	<0.02	0.279 % S	104	70.0	120

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EB2026680**	Page	: 1 of 6
Client	: **BUTLER PARTNERS PTY LTD**	Laboratory	: Environmental Division Brisbane
Contact	: MIKE MELLES	Telephone	: +61 7 3552 8639
Project	: 019-113B	Date Samples Received	: 12-Oct-2020
Site	: Yeronga	Issue Date	: 15-Oct-2020
Sampler	: KIERAN VAN BRECHT, RICHARD PEARCE	No. of samples received	: 40
Order number	: 202829	No. of samples analysed	: 26

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA033-A: Actual Acidity								
Snap Lock Bag - frozen (EA033)								
GW02-2 - 2.5-3.0,	GW02-3 - 4.5-4.6,	**01-Oct-2020**	**15-Oct-2020**	01-Oct-2021	✓	**15-Oct-2020**	13-Jan-2021	✓
GW03-7 - 1.50-1.75,	GW03-10 - 2.25-2.50							
Snap Lock Bag - frozen (EA033)								
B201-1 - 1.8-2.0,	B201-2 - 2.3-2.5,	**09-Oct-2020**	**15-Oct-2020**	09-Oct-2021	✓	**15-Oct-2020**	13-Jan-2021	✓
B202-1 - 0.8-1.0,	B202-2 - 1.3-1.5,							
B203-1 - 1.3-1.5,	B203-2 - 1.8-2.0,							
B204-2 - 1.3-1.5,	B204-3 - 1.8-2.0,							
B205-1 - 0.1-0.2,	B205-2 - 0.25-0.35,							
B206-1 - 1.4-1.5,	B206-2 - 1.8-2.0,							
B207-1 - 2.3-2.5,	B207-2 - 2.75-2.85,							
B208-1 - 1.8-2.0,	B208-2 - 2.3-2.5,							
B209-1 - 1.8-2.0,	B209-2 - 2.3-2.5,							
B210-1 - 0.8-1.0,	B210-2 - 1.15-1.25							
Snap Lock Bag - frozen (EA033)								
B211-1 - 0.65-0.75,	B211-2 - 1.3-1.5	**24-Sep-2020**	**15-Oct-2020**	24-Sep-2021	✓	**15-Oct-2020**	13-Jan-2021	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA033-B: Potential Acidity								
Snap Lock Bag - frozen (EA033)								
GW02-2 - 2.5-3.0,	GW02-3 - 4.5-4.6,	**01-Oct-2020**	**15-Oct-2020**	01-Oct-2021	✓	**15-Oct-2020**	13-Jan-2021	✓
GW03-7 - 1.50-1.75,	GW03-10 - 2.25-2.50							
Snap Lock Bag - frozen (EA033)								
B201-1 - 1.8-2.0,	B201-2 - 2.3-2.5,	**09-Oct-2020**	**15-Oct-2020**	09-Oct-2021	✓	**15-Oct-2020**	13-Jan-2021	✓
B202-1 - 0.8-1.0,	B202-2 - 1.3-1.5,							
B203-1 - 1.3-1.5,	B203-2 - 1.8-2.0,							
B204-2 - 1.3-1.5,	B204-3 - 1.8-2.0,							
B205-1 - 0.1-0.2,	B205-2 - 0.25-0.35,							
B206-1 - 1.4-1.5,	B206-2 - 1.8-2.0,							
B207-1 - 2.3-2.5,	B207-2 - 2.75-2.85,							
B208-1 - 1.8-2.0,	B208-2 - 2.3-2.5,							
B209-1 - 1.8-2.0,	B209-2 - 2.3-2.5,							
B210-1 - 0.8-1.0,	B210-2 - 1.15-1.25							
Snap Lock Bag - frozen (EA033)								
B211-1 - 0.65-0.75,	B211-2 - 1.3-1.5	**24-Sep-2020**	**15-Oct-2020**	24-Sep-2021	✓	**15-Oct-2020**	13-Jan-2021	✓
EA033-C: Acid Neutralising Capacity								
Snap Lock Bag - frozen (EA033)								
GW02-2 - 2.5-3.0,	GW02-3 - 4.5-4.6,	**01-Oct-2020**	**15-Oct-2020**	01-Oct-2021	✓	**15-Oct-2020**	13-Jan-2021	✓
GW03-7 - 1.50-1.75,	GW03-10 - 2.25-2.50							
Snap Lock Bag - frozen (EA033)								
B201-1 - 1.8-2.0,	B201-2 - 2.3-2.5,	**09-Oct-2020**	**15-Oct-2020**	09-Oct-2021	✓	**15-Oct-2020**	13-Jan-2021	✓
B202-1 - 0.8-1.0,	B202-2 - 1.3-1.5,							
B203-1 - 1.3-1.5,	B203-2 - 1.8-2.0,							
B204-2 - 1.3-1.5,	B204-3 - 1.8-2.0,							
B205-1 - 0.1-0.2,	B205-2 - 0.25-0.35,							
B206-1 - 1.4-1.5,	B206-2 - 1.8-2.0,							
B207-1 - 2.3-2.5,	B207-2 - 2.75-2.85,							
B208-1 - 1.8-2.0,	B208-2 - 2.3-2.5,							
B209-1 - 1.8-2.0,	B209-2 - 2.3-2.5,							
B210-1 - 0.8-1.0,	B210-2 - 1.15-1.25							
Snap Lock Bag - frozen (EA033)								
B211-1 - 0.65-0.75,	B211-2 - 1.3-1.5	**24-Sep-2020**	**15-Oct-2020**	24-Sep-2021	✓	**15-Oct-2020**	13-Jan-2021	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA033-D: Retained Acidity								
Snap Lock Bag - frozen (EA033)								
GW02-2 - 2.5-3.0,	GW02-3 - 4.5-4.6,	**01-Oct-2020**	**15-Oct-2020**	01-Oct-2021	✓	**15-Oct-2020**	13-Jan-2021	✓
GW03-7 - 1.50-1.75,	GW03-10 - 2.25-2.50							
Snap Lock Bag - frozen (EA033)								
B201-1 - 1.8-2.0,	B201-2 - 2.3-2.5,	**09-Oct-2020**	**15-Oct-2020**	09-Oct-2021	✓	**15-Oct-2020**	13-Jan-2021	✓
B202-1 - 0.8-1.0,	B202-2 - 1.3-1.5,							
B203-1 - 1.3-1.5,	B203-2 - 1.8-2.0,							
B204-2 - 1.3-1.5,	B204-3 - 1.8-2.0,							
B205-1 - 0.1-0.2,	B205-2 - 0.25-0.35,							
B206-1 - 1.4-1.5,	B206-2 - 1.8-2.0,							
B207-1 - 2.3-2.5,	B207-2 - 2.75-2.85,							
B208-1 - 1.8-2.0,	B208-2 - 2.3-2.5,							
B209-1 - 1.8-2.0,	B209-2 - 2.3-2.5,							
B210-1 - 0.8-1.0,	B210-2 - 1.15-1.25							
Snap Lock Bag - frozen (EA033)								
B211-1 - 0.65-0.75,	B211-2 - 1.3-1.5	**24-Sep-2020**	**15-Oct-2020**	24-Sep-2021	✓	**15-Oct-2020**	13-Jan-2021	✓
EA033-E: Acid Base Accounting								
Snap Lock Bag - frozen (EA033)								
GW02-2 - 2.5-3.0,	GW02-3 - 4.5-4.6,	**01-Oct-2020**	**15-Oct-2020**	01-Oct-2021	✓	**15-Oct-2020**	13-Jan-2021	✓
GW03-7 - 1.50-1.75,	GW03-10 - 2.25-2.50							
Snap Lock Bag - frozen (EA033)								
B201-1 - 1.8-2.0,	B201-2 - 2.3-2.5,	**09-Oct-2020**	**15-Oct-2020**	09-Oct-2021	✓	**15-Oct-2020**	13-Jan-2021	✓
B202-1 - 0.8-1.0,	B202-2 - 1.3-1.5,							
B203-1 - 1.3-1.5,	B203-2 - 1.8-2.0,							
B204-2 - 1.3-1.5,	B204-3 - 1.8-2.0,							
B205-1 - 0.1-0.2,	B205-2 - 0.25-0.35,							
B206-1 - 1.4-1.5,	B206-2 - 1.8-2.0,							
B207-1 - 2.3-2.5,	B207-2 - 2.75-2.85,							
B208-1 - 1.8-2.0,	B208-2 - 2.3-2.5,							
B209-1 - 1.8-2.0,	B209-2 - 2.3-2.5,							
B210-1 - 0.8-1.0,	B210-2 - 1.15-1.25							
Snap Lock Bag - frozen (EA033)								
B211-1 - 0.65-0.75,	B211-2 - 1.3-1.5	**24-Sep-2020**	**15-Oct-2020**	24-Sep-2021	✓	**15-Oct-2020**	13-Jan-2021	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Chromium Suite for Acid Sulphate Soils	EA033	3	28	**10.71**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Chromium Suite for Acid Sulphate Soils	EA033	2	28	**7.14**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Chromium Suite for Acid Sulphate Soils	EA033	2	28	**7.14**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Chromium Suite for Acid Sulphate Soils	EA033	SOIL	In house: Referenced to Ahern et al 2004. This method covers the determination of Chromium Reducible Sulfur (SCR); pHKCl; titratable actual acidity (TAA); acid neutralising capacity by back titration (ANC); and net acid soluble sulfur (SNAS) which incorporates peroxide sulfur. It applies to soils and sediments (including sands) derived from coastal regions. Liming Rate is based on results for samples as submitted and incorporates a minimum safety factor of 1.5.

Preparation Methods	Method	Matrix	Method Descriptions
Drying at 85 degrees, bagging and labelling (ASS)	EN020PR	SOIL	In house

Appendix G – Demand Calculations

Water Demand Preliminary Assessment

WOOD & GRIEVE ENGINEERS
Brisbane Civil
Phone:
(07) 3811 4500

Sheet No. 1 of 1

Job: **Parkside Yeronga**
Description: Water Demand Calculations

Job No. **301048272**

By: AR
Date: 8/09/21

Rev E

Council Area: Brisbane City Council
Water/ Wastewater Authority: Queensland Urban Utilities

Existing Demand (Water)

Description	Category	EP/unit	Quantity	EP
Subject Site				
Former TAFE site	Education Facility	18	3.13	56.34
				0
	Sub-total Subject Site			56.34
				0
			Total EP	**56**
			Average Day (AD) (l/s)	**0.150**
			Peak Hour (PH) (l/s)	**0.420**

Proposal Demand (Water)

Description	Category	EP/unit	Quantity	EP
Subject Site				
Townhouses	Attached Dwelling	1.75	38	66.5
Retirement/ Lifestyle Units	Attached Dwelling	1.75	178	311.5
Affordable Living Units	Attached Dwelling	1.75	78	136.5
	Sub-total Residential Hi Res			*515*
			High Density Residential - Average Day (AD) (l/s)	**1.37**
			High Density Residential - Peak Hour (PH) (PH/AD=3.5) (l/s)	**4.79**
Commercial		0.006	6000	36
Community Purpose		0.006	730	4.38
	Sub-total Commerical			*40*
			Commercial - Average Day (AD) (l/s)	**0.11**
			Commercial - Peak Hour (PH) (PH/AD=2.8) (l/s)	**0.30**
			Total EP	***555***
			Non Revenue Losses (30L/EP/d)- Average Day (AD) (l/s)	**0.19**
			Total - Average Day (AD) (l/s)	**1.67**
			Peak Hour (PH) (l/s)	**5.29**

Sewerage Network Capacity Preliminary Assessment

WOOD & GRIEVE ENGINEERS
Brisbane Civil
Phone:
(07) 3811 4500

Sheet No. 1 of 1

Job: **Parkside Yeronga**
Description: Sewerage Demand Calculations

Job No. **301048272**

By: AR
Date: 8/06/21

Rev E

Council Area: Brisbane City Council
Water/ Wastewater Authority: Queensland Urban Utilities

Existing Flow (Sewer)

Description	Category	EP/unit	Quantity	EP
External Catchment				
Yeronga SHS	Education Purposes	18	9.87	177.66
Townhouses	Attached Dwelling	1.79	28	50.12
Houses	Detached Dwelling	2.65	7	18.55
Scout Den and Tennis Courts	Community facitlies	18	0.22	3.96
Child Care (45 Park Rd)	Education Purposes	18	0.1542	2.78
Clinic (58 Park Rd)	Community facitlies	18	0.174	3.13
	Sub total External			256
Subject Site				
Former TAFE site	Education Facility	18	3.13	56.34
				0
	Sub-total Subject Site			56.34
				0
			Total EP	**312**
			Average Dry Weather Flow (ADWF)(baseline - 210l/EP/d)(l/s)	**0.759**
			Peak Dry Weather Flow (PDWF)(l/s)	**1.952**
			Peak Wet Weather Flow (PWWF)(5xADWF)(l/s)	**3.796**

Parkside Yeronga Proposal Flow (Sewer)

Description	Category	EP/unit	Quantity	EP
External Catchment				
Yeronga SHS	Education Purposes	18	9.87	177.7
Townhouses	Attached Dwelling	1.79	28	50.1
Houses	Deteched Dwelling	2.65	7	18.6
Scout Den and Tennis Courts	Community facitlies	18	0.22	4.0
Child Care (45 Park Rd)	Education Purposes	18	0.1542	2.8
Clinic (58 Park Rd)	Community facitlies	18	0.174	3.1
	Sub total External			256
			Average Dry Weather Flow (ADWF-baseline-210L/EP/d)(l/s)	**0.62**
			Peak Dry Weather Flow (PDWF-baseline-210L/EP/d)(l/s)	**1.63**
			Peak Wet Weather Flow (PWWF-baseline-210L/EP/d)(l/s)	**3.11**
Subject Site				
Townhouses	Attached Dwelling	1.75	38	66.5
Retirement/ Lifestyle Units		1.75	178	311.5
Affordable Living Units		1.75	78	136.5
Commercial		0.006	6000	36.0
Community Purposes		0.006	730	4.4
	Sub-total Subject Site			555
			Average Dry Weather Flow (ADWF-Nusewer-180L/EP/d)(l/s)	**1.16**
			Peak Dry Weather Flow (PDWF-Nusewer-180L/EP/d)(l/s)	**3.76**
			Peak Wet Weather Flow (PWWF-Nusewer-180L/EP/d)(l/s)	**6.07**
			Total EP	**811**
			Average Dry Weather Flow (ADWF)(l/s)	**1.78**
			Peak Dry Weather Flow (PDWF)(l/s)	**5.39**
			Peak Wet Weather Flow (PWWF)(l/s)	**9.18**

Appendix H – Urban Utilities Service Advice Notice

Urban Utilities
GPO Box 2765
BRISBANE QLD 4001
Phone: 07 3432 2200
www.urbanutilities.com.au/development

5 May 2021

Stantec Australia Pty Ltd
232 St Pauls Terrace
Fortitude Valley QLD 4006

Via Email: ben.miles@stantec.com

Dear Sir / Madam

Urban Utilities Services Advice Notice

Urban Utilities application number:	20-SRV-49057
Applicant name:	Stantec Australia Pty Ltd
Street address:	70 Park Road, Yeronga
Real Property Description:	Lot 3 on SP300888

Proposed service connection/alteration/disconnection type:

Drinking water	☑
Non-drinking water/recycled water	☐
Wastewater	☑

Urban Utilities provides this Services Advice Notice in response to the request received on 14 December 2020. In accordance with section 99BRAC(3) of the *South-East Queensland Water (Distribution and Retail Restructuring) Act 2009,* this Services Advice Notice provides advice about the proposed connection having regard to the connections policy in the Urban Utilities Water Netserv Plan, the charges and conditions that may apply to the connection and other relevant matters about the connection. All terms used in this Services Advice Notice are defined by reference to the Urban Utilities Water Netserv Plan.

This Services Advice Notice does not constitute an application for connection, is not an approval to connect to the Urban Utilities network(s) and does not bind any future Urban Utilities' decision if the applicant applies for a connection.

Urban Utilities understands that the proposal will consist of a mixed use development comprising a total of 256 apartments, 38 townhouses, 6,000m^2 commercial Gross Floor Area (GFA) and 750m^2 community use GFA. As per the request for a Services Advice Notice submitted, a material change of use and reconfiguration of a lot will be applied for as part of this development.

This Services Advice Notice issued 5 May 2021 supersedes the Services Advice Notice issued 10 February 2021.

Based on your proposal and discussion with Urban Utilities officers, the following advice is provided:

Urban Utilities Services Advice

Infrastructure and Design

The project site is within the Priority Development Area (PDA). Development applications for priority development areas are assessed by Economic Development Queensland (EDQ).

The infrastructure funding framework within each PDA is also prescribed and managed by EDQ under an Infrastructure Charges Offset Plan (ICOP). The developer should review the current ICOP and development scheme to understand the broader infrastructure obligations specific to this site.

Water

The site is currently serviced by an existing 150mm diameter uPVC water main in Villa Street and an existing DN125 PE water main in the western verge of Park Road.

Based on the information provided by the applicant, the water infrastructure required to service the proposed development will connect to the existing DN125 PE water main in the western verge of Park Road.

Figure 1 below provides an illustration of the existing water and wastewater infrastructure surrounding the subject site.

Figure 1: Existing infrastructure within the vicinity of the subject site

Urban Utilities advises that each lot is to be serviced independently with separate water property service(s) and meter(s) (domestic, fire, etc.).

Wastewater

The site is currently serviced by an existing combined drain with the neighbouring property 25 Oakwood Street, Yeronga. The combined drain discharges to the existing 150mm diameter sewer main in Park Road at MH122778.

Combined drains are common private house drains that serve two or more properties and are not owned by Urban Utilities. Maintenance of combined drains is the responsibility of the property owners that connect to it. Issues/enquiries related to combined drains are managed by Brisbane City Council (BCC).

Urban Utilities require that the combined drain be disestablished as part of the proposed development and Urban Utilities wastewater infrastructure provided to service the site and upstream properties in accordance with Urban Utilities requirements, including but not limited to, the *SEQ Water Supply and Sewerage Design and Construction Code* (SEQ WS&S D&C Code).

Based on the information provided by the applicant, it is expected that wastewater infrastructure necessary to service the proposed development and the adjoining property 25 Oakwood Street will connect to the existing 150mm diameter sewer main in Park Road at MH122778.

Urban Utilities advises that each lot is to be serviced independently with a separate wastewater property service.

The water and wastewater infrastructure required for the proposed development is to be provided in accordance with Urban Utilities requirements, including but not limited to, the *SEQ WS&S D&C Code*.

Network Demand and Capacity

Water

An assessment of the water supply available at the site, including computational hydraulic modelling of the network under peak demand and fire flow conditions, has been completed.

The analysis assumes a Peak Hour Demand of 6.59L/s and Fire Flow Demand of 45L/s for commercial and residential buildings with heights not exceeding 6 storeys (corresponding to the details of the proposed development).

The assessment indicates that the existing water supply infrastructure has insufficient capacity to service the proposed development in accordance with the *SEQ WS&S D&C Code.*

To service the proposed development in accordance with the *SEQ WS&S D&C Code,* the developer is required to undertake one of the following upgrade options – options are listed in order of decreasing preference:

- **Upgrade Option 1 – Park Road and Ovendean Street.** Works required for this option comprise the following, refer to **Attachment 1** for details:
    - Relocate the boundary valve between Yeronga PRV and Tarragindi Reservoir from RV83507 at the eastern end of Ovendean Street to RV31547 in Park Road north of the intersection with Ovendean Street;
    - Provide a DN180 PE water main connection (or equivalent) from the existing DN125 PE water main end of line in Park Road south of the railway (Point A) to the existing 100mm diameter water main end of line in Park Road north of the railway (Point B); and
    - Replace the existing 100mm diameter water main in Ovendean Street, Park Road and Fairfield Road with a DN180 PE water main (or equivalent) from the existing 100mm diameter water main end of line in Park Road north of the railway (Point B) to the existing 300mm diameter water main in the north-western verge of Fairfield Road (Point C).

- **Upgrade Option 2 – Dublin Street.** Works required for this option comprise the following, refer to **Attachment 2** for details:
    - Provide a DN180 PE water main connection (or equivalent) from the existing DN125 PE water main in Park Road at the intersection with Dublin Street (Point D) to the existing 100mm diameter water main end of line in Dublin Street at the intersection with Cork Street (Point E);
    - Replace existing 100mm diameter water main in Dublin Street and the railway corridor with a DN180 PE water main (or equivalent) from the existing 100mm diameter water main end of line in Dublin Street at the intersection with Cork Street (Point E) to the existing 300mm diameter water main in the south-eastern verge of Fairfield Road (Point F); and
    - Provide an additional water main in Park Road, to provide a second source of supply to the proposed development from the water network to fulfil the requirements of the *SEQ WS&S D&C Code*, particularly relating to isolation valves.
- **Upgrade Option 3 – Park Road.** Works required for this option comprise the following, refer to **Attachment 3** for details:
    - Provide a DN180 PE water main (or equivalent) augmentation from the development site (Point G) to the existing 150mm diameter water main in the northern verge of School Road (Point H) and including DN180 PE (or equivalent) cross connection(s) to the existing 100mm diameter water main in Park Road at least at the intersection with Querrin Street (Point I); and
    - A minimum of two (2) water main supplies are to be provided to the proposed development to fulfil the requirements of the *SEQ WS&S D&C Code*, particularly relating to isolation valves.

As stated above, the upgrade options are listed in order of decreasing preference (i.e. Upgrade Option 1 is most preferred, Upgrade Option 3 is least preferred) due to the hydraulic performance of the options and how efficiently each option meets the necessary requirements. Urban Utilities expects that the preferred option (Upgrade Option 1) is implemented. Other options will only be considered if the preferred option cannot practicably be implemented. In such circumstances, the applicant is to provide justification as part of any subsequent Water Approval application for Urban Utilities consideration.

Indicative flow and pressure advice is provided in **Table 1** below for the new DN180 PE water main in the "East Road" (new BCC road within the development site), adjacent proposed Lot 8 and for each of the following scenarios:

- **Scenario A:** existing network configuration;
- **Scenario B:** Upgrade Option 1 works completed;
- **Scenario C:** Upgrade Option 2 works completed; and
- **Scenario D:** Upgrade Option 3 works completed.

Table 1: Indicative Flow and Pressure Advice

Assumed Connection Main	Estimated RL Connection (m AHD)	Hydraulic Grade Line (m AHD)			Pressure (kPa) [1]		
		0 L/s	10 L/s	20 L/s	0 L/s	10 L/s	20 L/s
Scenario A: existing network configuration	16	66	-	-	496	-	-
Scenario B: Upgrade Option 1 works completed	16	67	65	61	506	486	446
Scenario C: Upgrade Option 2 works completed	16	67	65	60	506	481	431

Scenario D: Upgrade Option 3 works completed	16	67	64	59	506	476	421

Notes:

[1] Modelled pressure in supply main, relative to the estimated connection RL (m AHD).

[2] Designers are required to adjust the Hydraulic Grade Line/Pressure model results for site/building RL differences and calculate the extra hydraulic losses from point of connection with the main.

[3] Field performance of cast iron spun (or cement) lined mains can be variable. Field testing to ascertain actual pressure drops may be advisable.

[4] Indicative flow and pressure results assume a background demand of 2/3 Peak Hour has been applied throughout the network.

Disclaimer

Information provided by Urban Utilities is based on hydraulic modelling ("Hydraulic Modelling Information"). Model results are for the anticipated performance. ***The Hydraulic Modelling Information has not been verified by field measurements and may be inaccurate due to field conditions.***

As such, users relying on Hydraulic Modelling Information do so at their own risk and should make their own independent investigations to verify model outputs.

The Hydraulic Modelling Information does not state nor imply a guaranteed level of service. Designers are referred to Urban Utilities' Customer Charter and Customer Service Standards for facility hydraulic service considerations. ***Urban Utilities does not provide a service of minimum flows and pressures to private fire-fighting systems.***

Due to changing operational circumstances, pressure and flows delivered to a service may vary. Designers are advised to make adequate provisions within the fire system installation for the pressure, flow and reliability requirements, for the life of the system.

Wastewater

A hydraulic assessment of the sewerage network servicing the site under peak wet weather flow conditions has been completed.

The analysis assumes a Peak Wet Weather Flow from the development of 7.28L/s (corresponding to the details of the proposed development).

The assessment indicates that the existing wastewater network has sufficient capacity to service the proposed development in accordance with the *SEQ WS&S D&C Code*.

Land and Easements

Water and Wastewater in Private Properties

Easements are to be provided in accordance with Urban Utilities requirements, please refer to the Urban Utilities *Easement Guidelines* and other information available at:
https://urbanutilities.com.au/development/our-services/easements

Infrastructure Integration

No infrastructure integration is required in this instance.

Contributed Assets

No contributing assets are required in this instance.

Infrastructure Charges (as at 1 July 2020)

Infrastructure Charges will be levied in accordance with the Urban Utilities' *Water Netserv Plan (Part A) Charges Schedule* and the *South-East Queensland Water (Distribution and Retail Restructuring) Act 2009* applicable at the time the water approval application is lodged.

Further information is available at:
www.urbanutilities.com.au/development/help-and-advice/water-netserv-plan

Trade Waste

The **proposed development** (the subject of this Services Advice Notice) has been identified as a potential generator of Trade Waste. Trade Waste is water-borne waste from business, trade or manufacturing premises excluding domestic sewerage, stormwater, and prohibited substances. It is an offence under section 193(1) of the ***Water Supply (Safety and Reliability) Act 2008*** to discharge trade waste into Urban Utilities' infrastructure without a Trade Waste Approval.

To obtain a Trade Waste Approval, the proponent for the proposed development must apply to Urban Utilities, who will assess and decide the application. Any Trade Waste Approval granted by Urban Utilities will be subject to Trade Waste Approval conditions and the Urban Utilities Trade Waste Environmental Management Plan (**TWEMP**).

The TWEMP and an online application form are available on the Urban Utilities website:

www.urbanutilities.com.au/business/business-services/trade-waste

For advice on the suitability of waste for discharge to sewer, and likely Trade Waste Approval conditions, you may contact Urban Utilities on **13 26 57**.

Proposed trade waste drainage solutions will be assessed for compliance with plumbing and drainage regulations and the requirements of the TWEMP at the time of plumbing compliance assessment. Proposed trade waste solutions that do not meet the requirements in the TWEMP and plumbing and drainage regulations may result in delays to the plumbing compliance process and the issue of a Trade Waste Approval.

Further information is available at the following website:
www.urbanutilities.com.au/business/business-services/trade-waste

Connection Application Process

A formal assessment as to whether your application qualifies as a Standard Connection, Minor Works Approval, or Major Works Approval will be resolved on application for a Water Approval. For the purposes of preliminary advice, and based on the information provided, it is expected that the following applications will be required to assess the ability to connect to Urban Utilities networks:

1. Network and/or Property Service Connection – Non-Standard Connection (Major Works)
The Water Approval will require connection works to be undertaken. You will be able to choose which consultants and contractors to appoint to design and construct the works, including live works (in most cases) and then maintain the works for a specified period (usually 12 months) in accordance with the conditions stated in your Water Approval.

Please note that the information provided within this section is subject to the specific aspects of the development and water application.

Fees and Charges

Urban Utilities fees and charges are stated in the Urban Utilities' Water Netserv Plan (Part A) Charges Schedule. The fees and charges that are likely to be associated with these applications are outlined below:

1. Application Phase – per service
Base Application Fee – Network (11 to 50 lots)

2. Design, Construction and Maintenance Phases
Non-Standard Connection (Major Works)- per service
Audit and Compliance Fee – Major Works

Non-Standard Connection (Design Approval Fee) – Reticulation per service
Network Connection (11 to 50 lots)

Non-Standard Connection (Design Approval) – Network Connection Complex Asset
Design Approval – complex asset (price on application)

Re-checking Amended Plans Fee
Re-checking Amended Plans Fee (per plan page, technical report or other document)

Works Inspection Fee – Reticulation
Works Inspection Fee - Reticulation (per inspection)
Works Re-inspection Fee - Reticulation (per inspection)

Works Inspection Fee – Complex Asset
Works Inspection Fee – Complex Asset (per inspection)
Works Re-Inspection Fee – Complex Asset (per inspection)

Notes:
1. The customer may incur additional fees and charges during the approval and works phase, including but not limited to, fees levied by the RPEQ and construction contractor, fees associated with the provision of maintenance/uncompleted works bond(s), re-checking amended plans fees, re-inspection of works fees and infrastructure agreement preparation fees;
2. Reticulation comprises infrastructure with a diameter of 300mm and below and complex assets comprise treatment, storage, pump facilities and infrastructure with a diameter greater than 300mm.
3. The above estimates are indicative only and are subject to review of the detailed application upon lodgement; and
4. Please refer to the Urban Utilities Water Netserv Plan and Developer Customer Price List at www.urbanutilities.com.au/development

Time Frames for Assessment

Non-Standard Connection Assessments (for applications other than Standard Connection)
To be completed within 20 business days of receipt of a properly made application (including payment of the relevant assessment fee), or within a further 20 business days of receipt of requested information (unless extended by agreement).

Design Phase
Typically for an application classified as **major works**, the assessment of the design phase is to be completed within 20 business days of receipt of all designs, or within a further 20 business days of receipt of requested information.

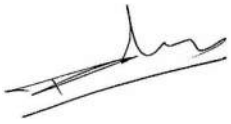
This Services Advice Notice is current for a period of twelve (12) months from the date of issue. Should you wish to proceed with applying for a service connection please lodge your application via

Urban Utilities Developer Applications Portal at **www.urbanutilities.com.au/development**. Please include your Services Advice Notice reference number in your application.

If you have any questions in relation to this Services Advice Notice, please do not hesitate to contact your account manager, Ben Flower on 07 3855 6596 or ben.flower@urbanutilities.com.au.

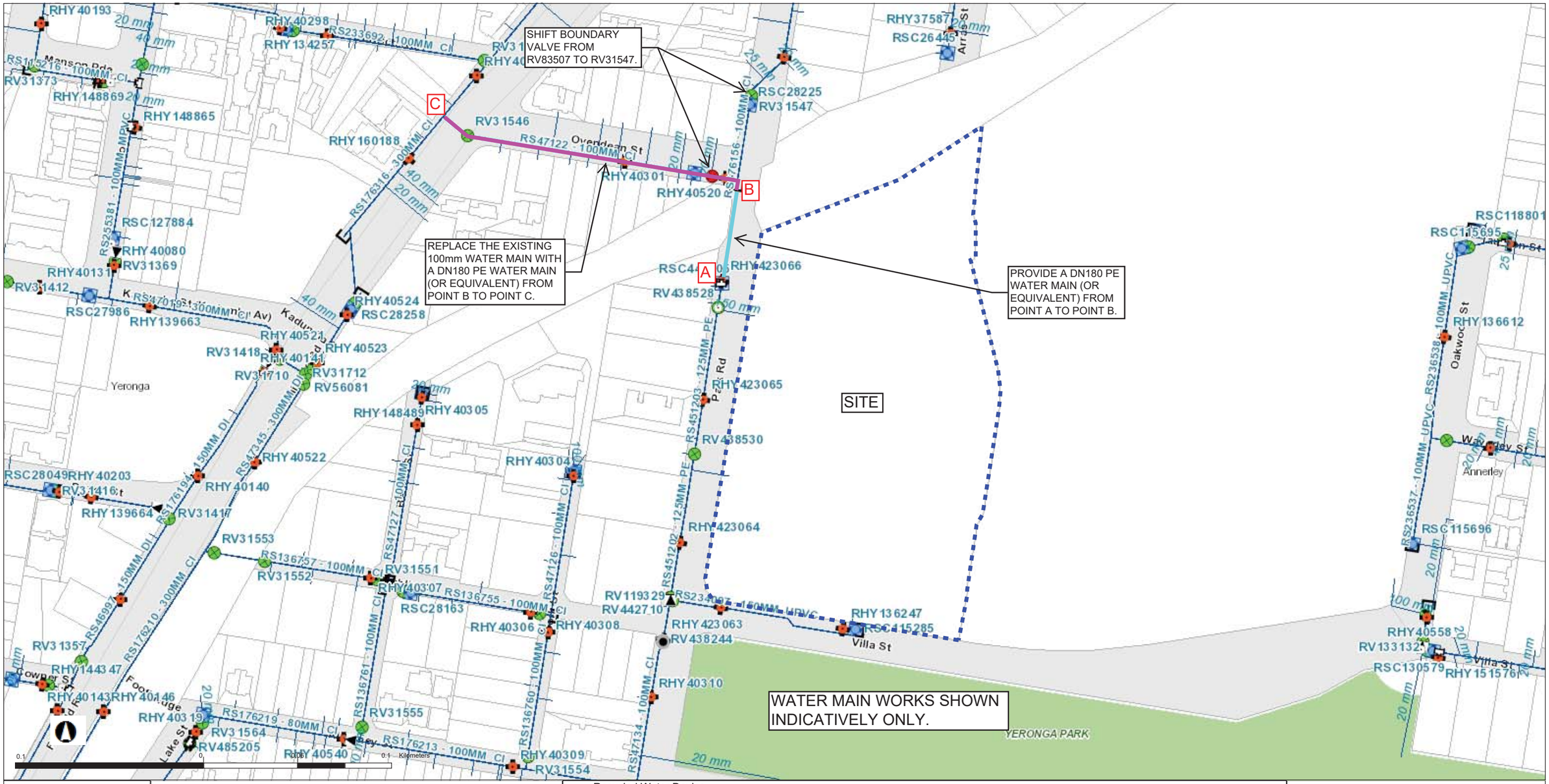
Alternatively, please email DCMTenquiries@urbanutilities.com.au.

Yours sincerely



Devendra Yadav
Senior Engineer
Urban Utilities

ATTACHMENT 1 - 20-SRV-49057 - REQUIRED WATER INFRASTRUCTURE - UPGRADE OPTION 1



Project Title

Map Title

Produced By: User name

Date Created: 01/02/2021

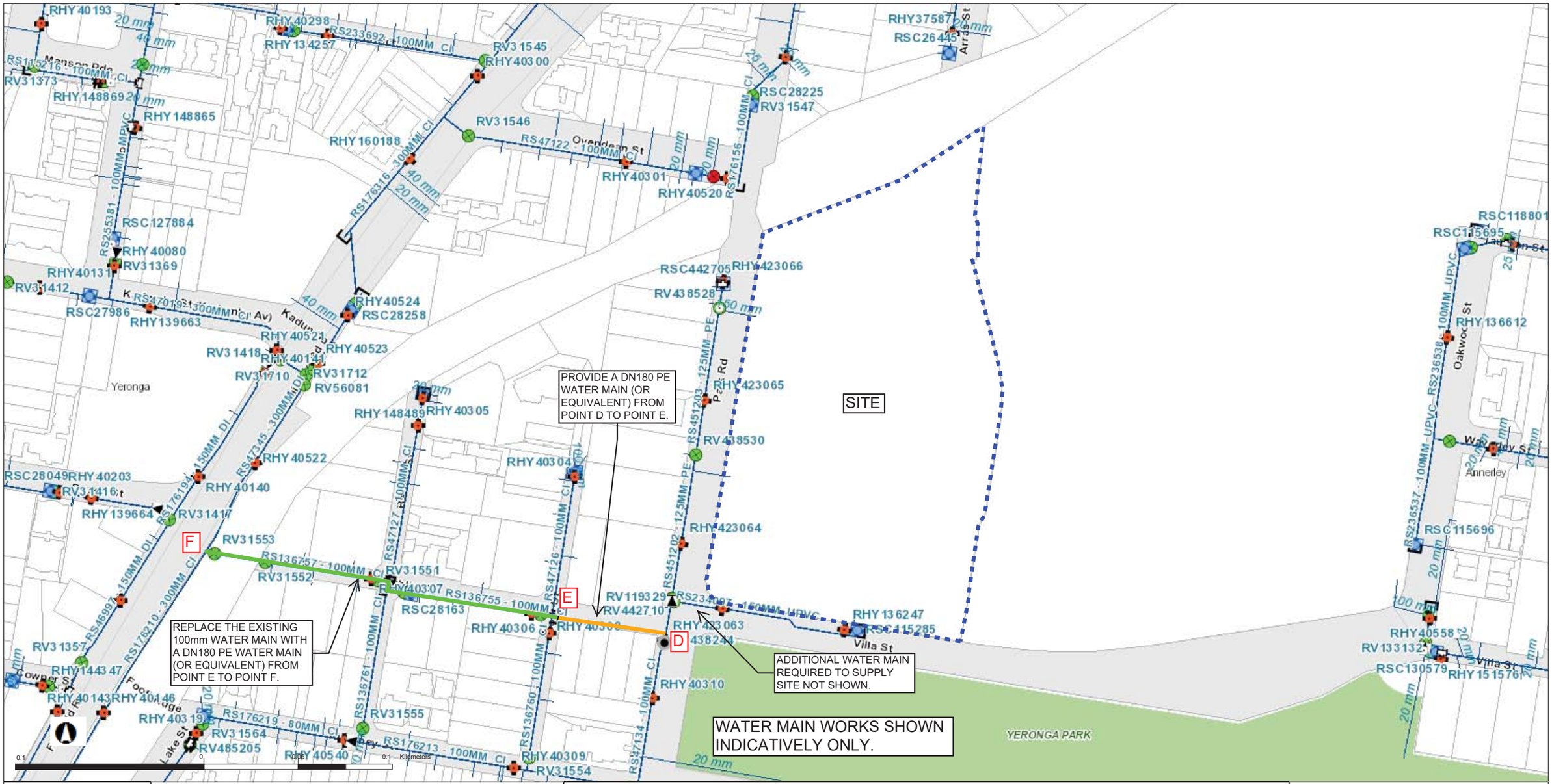
Copyright © 2020 Urban Utilities

Scale: 1: 2,257

Recycled Water Device

- <all other values>
- PRESSURE GAUGE
- FLOW METER
- LEVEL SENSOR
- PRESSURE GAUGE - ISOLATED
- FLOW METER - ISOLATED
- LEVEL SENSOR - ISOLATED

ATTACHMENT 2 - 20-SRV-49057 - REQUIRED WATER INFRASTRUCTURE - UPGRADE OPTION 2



Project Title

Map Title

Produced By: User name

Date Created: 01/02/2021

Scale: 1: 2,257

Recycled Water Device

- <all other values>
- PRESSURE GAUGE
- FLOW METER
- LEVEL SENSOR
- PRESSURE GAUGE - ISOLATED
- FLOW METER - ISOLATED
- LEVEL SENSOR - ISOLATED

ATTACHMENT 3 - 20-SRV-49057 - REQUIRED WATER INFRASTRUCTURE - UPGRADE OPTION 3

SITE

G

PROVIDE A DN180 PE WATER MAIN (OR EQUIVALENT) AUGMENTATION FROM POINT G TO POINT H.

WATER MAIN WORKS SHOWN INDICATIVELY ONLY.

I

PROVIDE A DN180 PE WATER MAIN (OR EQUIVALENT) CROSS CONNECTION FROM THE PROPOSED DN180 PE WATER MAIN IN PARK ROAD TO AT LEAST POINT I.

H

Fairfield Rd
Park Rd
Villa St
Yeronga Park Accs
Yeronga
Christensen St
Querrin St
School Rd
YERONGA PARK

0.1 0 0.06 0.1 Kilometers

Recycled Water Device

- <all other values>
- PRESSURE GAUGE
- FLOW METER
- LEVEL SENSOR
- PRESSURE GAUGE - ISOLATED

UrbanUtilities

Project Title

Map Title

Printed from UrbanView

Produced By: User name

Date Created: 01/02/2021

Scale: 1: 2,257

Appendix I – Services Records

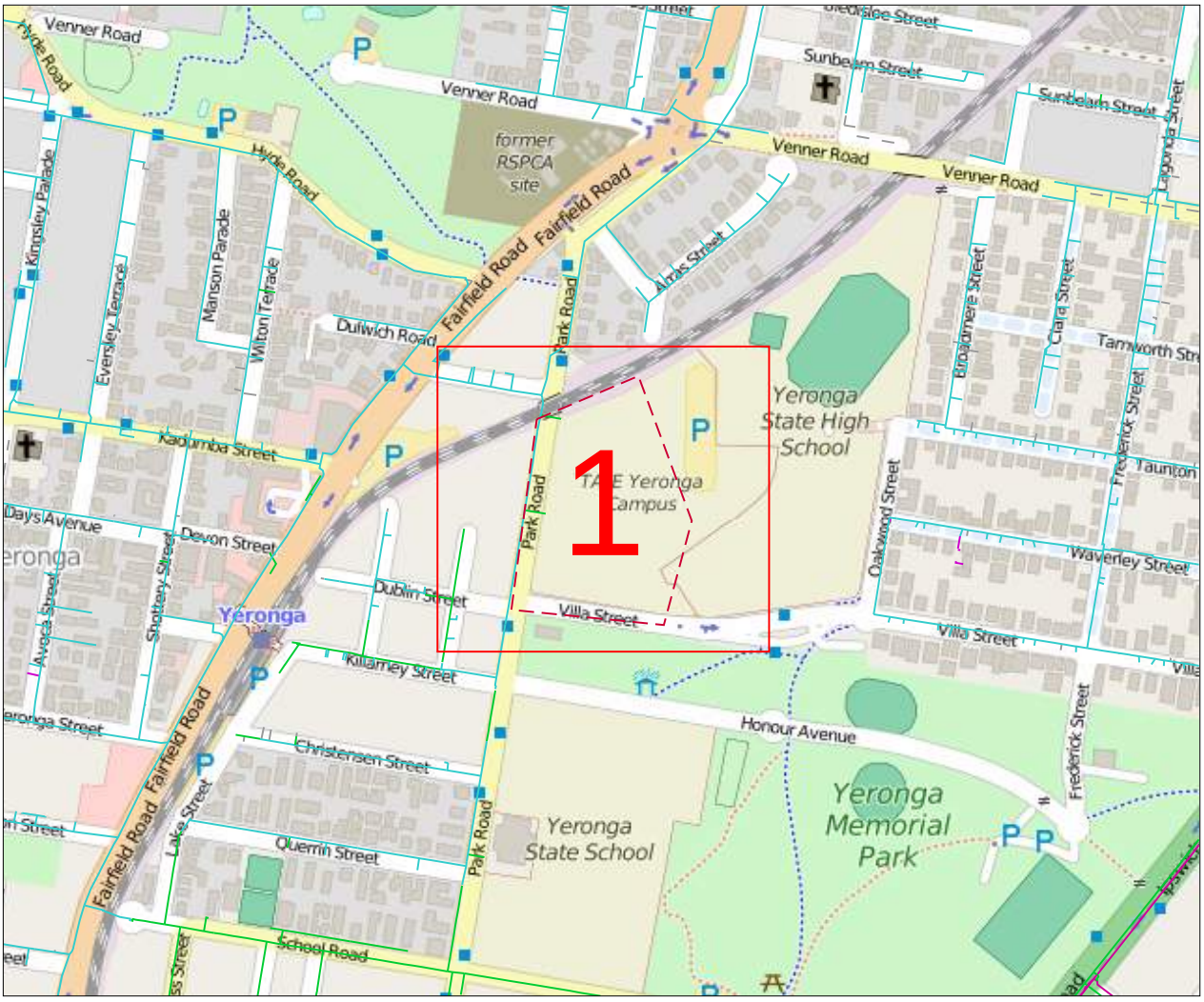
- Key Dial Before You Dig Searches

DIAL BEFORE YOU DIG www.1100.com.au The Essential First Step

operated by apa

04/02/2019 **SCALE: DO NOT SCALE** **REF NO:** 79844965

As work on APA underground plant is ongoing any drawing with an issue date of more than 30 days previous can no longer be considered valid. All persons planning civil works on any site are advised to contact APA to confirm location. All underground gas pipelines are the property of APA & are not to be accessed by unauthorised persons. All care is taken with preparation of the drawings & no responsibility is accepted for errors or omissions



Enquiry: 79844965

Papersize: A4 **Scale:** 1: 6000

0 0.07km

NORTH

Data Source

Pipeline Data Copyright APA Group, Property Parcels Copyright QLD Government, UBD Imagery – Copyright Sensis, DBYD Dig Location provided by DBYD.

operated by apa

This maps is created in colour and shall be printed in colour

Legend

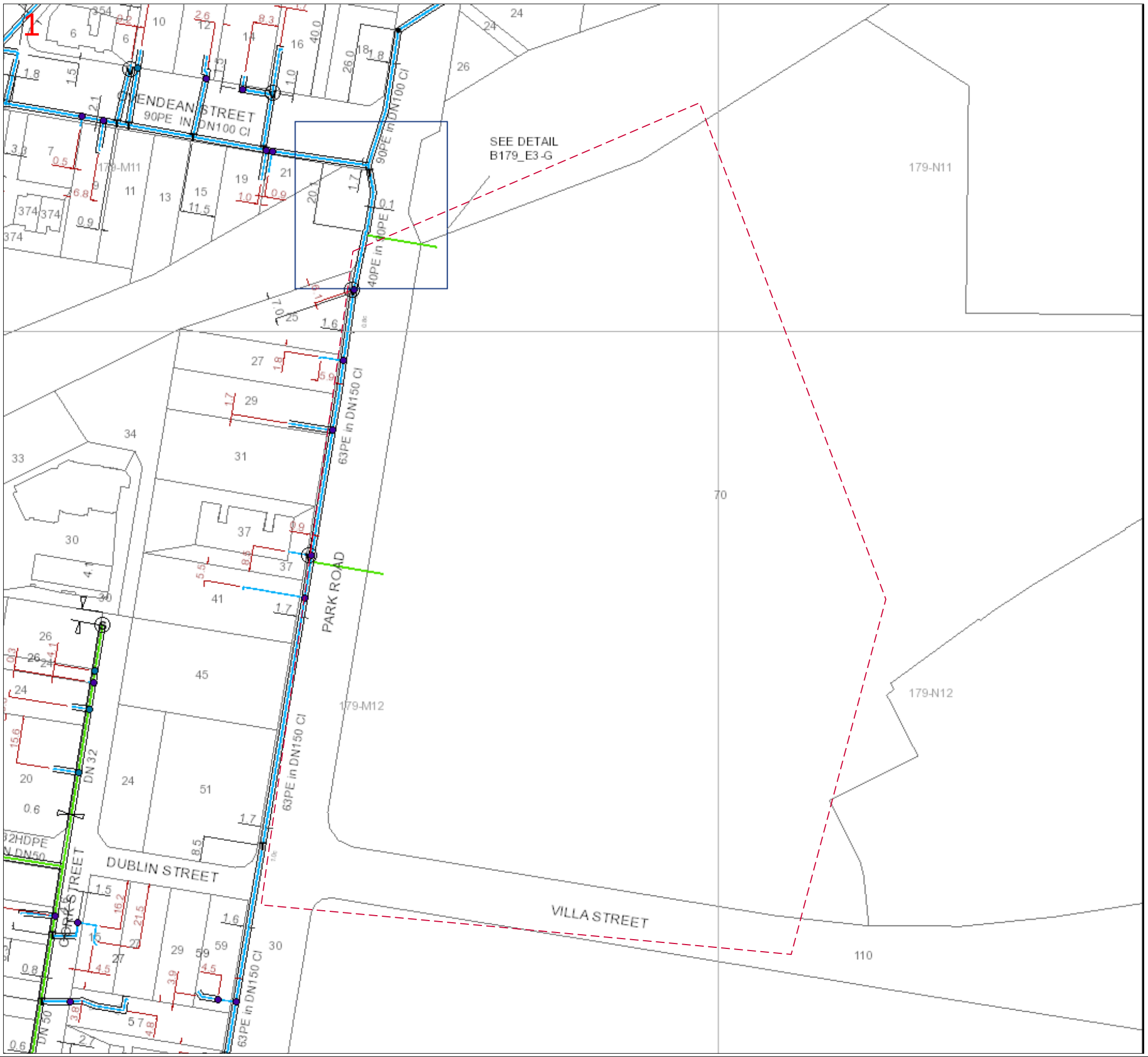
Distribution Main	Gas Assets and Fittings	Pipe Materials
Class 900 Transmission	Gate Station	CI Cast Iron
Class 600 Transmission	Regulator Station	CU Copper
Class 300 Transmission	Block/ Emergency Valve	GAL Wrought Galvanised Iron
High Pressure Steel	Isolation Valve	PGAL Poly Coated Wrought Galvanised Iron
High Pressure PE Trunk	Test Point	ST Steel
High Pressure/ Class 500	Syphon	NY/ NY11 Nylon
Medium Pressure PE/ Nylon	Anode	PE Polyethylene
Medium Pressure (Alloys)	Pipeline Marker	MDPE Medium Density Polyethylene
Low Pressure	Trace Wire Point	HDPE High Density Polyethylene
LPG	Reducer	DN Nominal Diameter
TLP	Pipe Connector/ Tee	OD Outside Diameter
Proposed/ Under Construction	Pipe Connector	
Idle Gas Pipe	End Cap	
Abandoned Gas Pipe		
Sleeve		

Examples: 40PE in DN80 CI — 40mm Polyethylene in an 80mm (Nominal Diameter) Cast Iron Sleeve

63PE INS — 63mm Polyethylene inserted in another pipe

Line/ Polygon Request

APA Group does not guarantee the accuracy or completeness of the map and does not make any warranty about the data. APA Group is not under any liability to the user for any loss or damage (including consequential loss or damage) which the user may suffer resulting from the use of this map.



79844965 Map Sheet: 1

Papersize: A3 Scale: 1: 1000

0 0.01km

NORTH

Map Key:

1

This maps is created in colour and shall be printed in colour

Legend

Distribution Main

- Class 900 Transmission
- Class 600 Transmission
- Class 300 Transmission
- High Pressure Steel
- High Pressure PE Trunk
- High Pressure/ Class 500 (1)
- Medium Pressure PE/ Nylon
- Medium Pressure (Allgas)
- Low Pressure
- LPG
- TLP
- Proposed/ Under Construction
- Idle Gas Pipe
- Abandoned Gas Pipe
- Sleeve

(1) Medium Pressure in AGN/ Nylon in Allgas

Gas Assets and Fittings

- Gate Station
- R Regulator Station
- V Block/ Emergency Valve
- V Isolation Valve
- T Test Point
- S Syphon
- A Anode
- M Pipeline Marker
- W Trace Wire Point
- Reducer
- Pipe Connector/ Tee
- Pipe Connector
- End Cap

Pipe Materials

CI	Cast Iron
CU	Copper
GAL	Wrought Galvanised Iron
PGAL	Poly Coated Wrought Galvanised Iron
ST	Steel
NY/ NY11	Nylon
PE	Polyethylene
MDPE	Medium Density Polyethylene
HDPE	High Density Polyethylene
DN	Nominal Diameter
OD	Outside Diameter

Examples: 40PE in DN80 CI — 40mm Polyethylene in an 80mm (Nominal Diameter) Cast Iron Sleeve

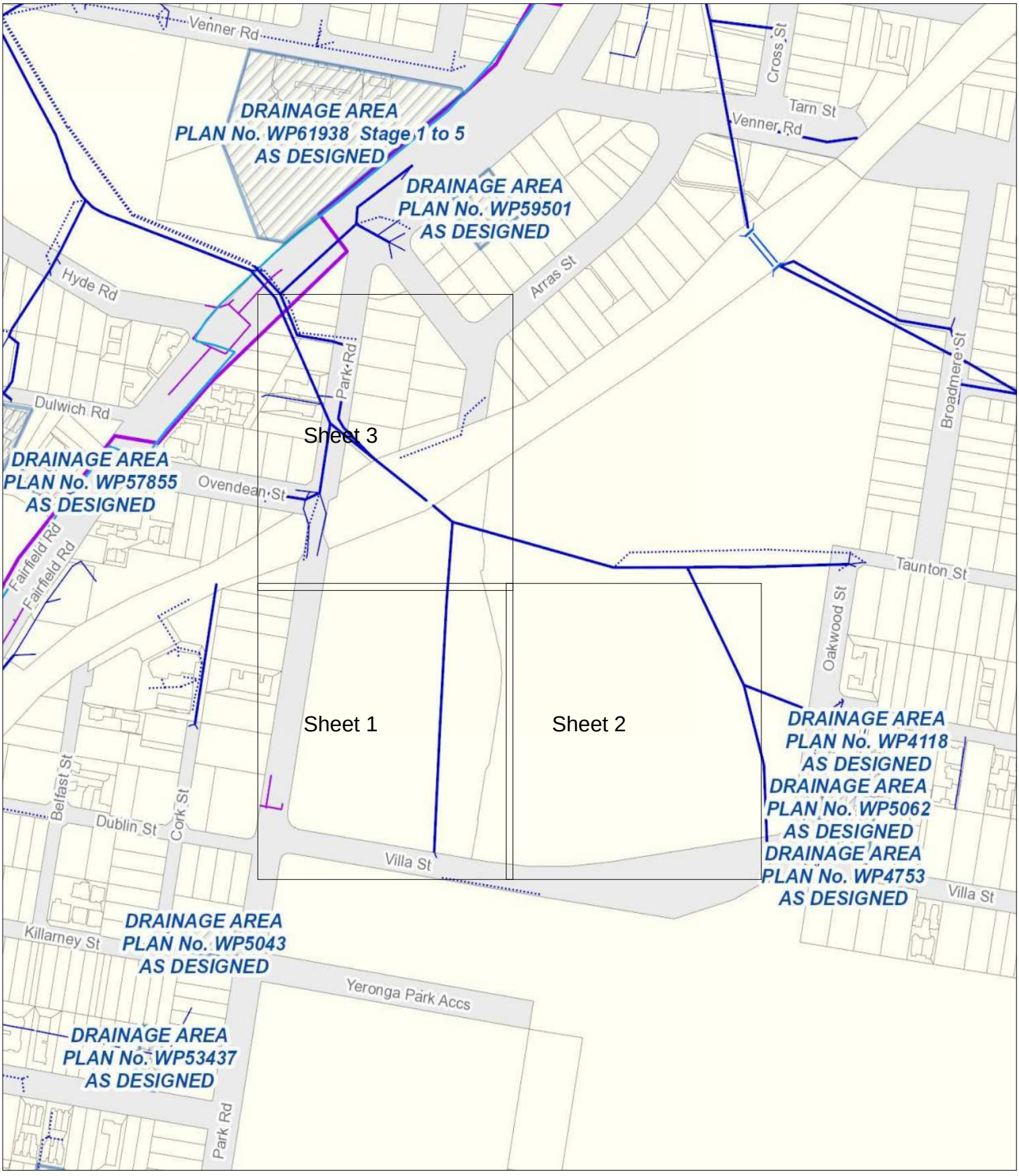
63PE INS — 63mm Polyethylene inserted in another pipe

Line/ Polygon Request

operated by apa

Data Source

Pipeline Data Copyright APA Group, Property Parcels Copyright QLD Government, UBD Imagery – Copyright Sensis, DBYD Dig Location provided by DBYD.



Sequence Number: 79844961

Map Sheet Overview

Date: Feb 04, 2019

BCC Stormwater and Cable Networks

6956852

501764 N 502519

6956025

Disclaimer:

BCC Stormwater and Cable Networks

Sequence Number: 79844961

Scale = 1:1000

Metres 20 40

Date: Feb 04, 2019

Location:

6956441

501953 N 502145

6956231

Sheet 1

Disclaimer:

BRISBANE CITY

BCC Stormwater and Cable Networks

Sequence Number: 79844961

Scale = 1:1000

Metres 20 40

Date: Feb 04, 2019

Location:

6956441

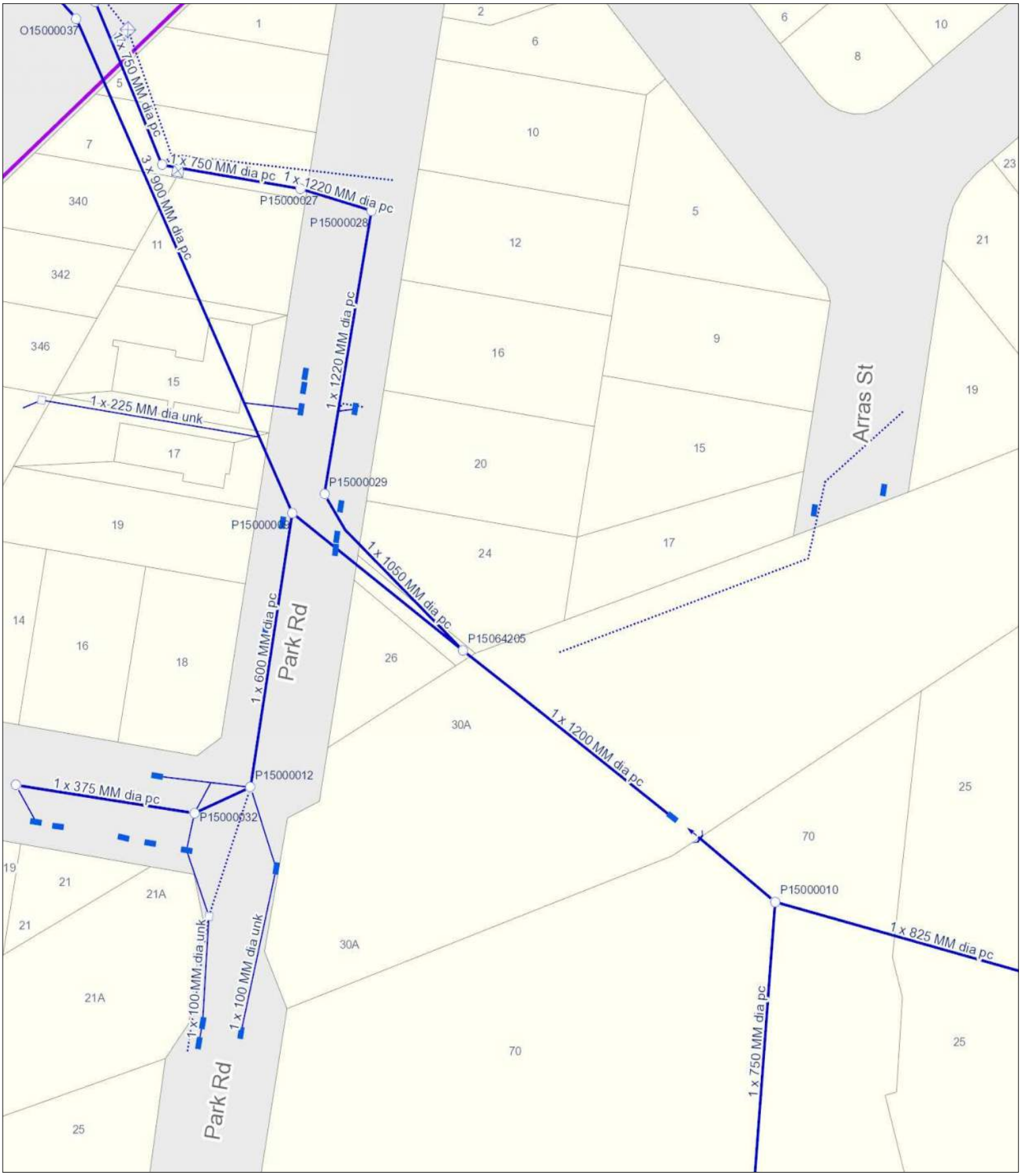
502138 N 502330

6956231

Sheet 2

Disclaimer:

BRISBANE CITY



BCC Stormwater and Cable Networks

Sequence Number: 79844961

Scale = 1:1000

Metres 20 40

Date: Feb 04, 2019

Disclaimer:

Location:

6956646

501953 N 502145

6956436

Sheet 3

Legend

Stormwater Network

 Stormwater Drain

 Stormwater Gully / Roofwater Connection

 Future Stormwater Drain

 Stormwater Maintenance Hole

 Stormwater Roofwater Pit

 Stormwater Gully Pit

 Stormwater Field Inlet

 Stormwater Quality Improvement Device

 Stormwater Culvert

BCC Cable Network

 Traffic System Cable

 Traffic Signal Ducting

 Traffic Light Conduit

 Fibre Optic Cable Location

 Flood Telemetry Conduit

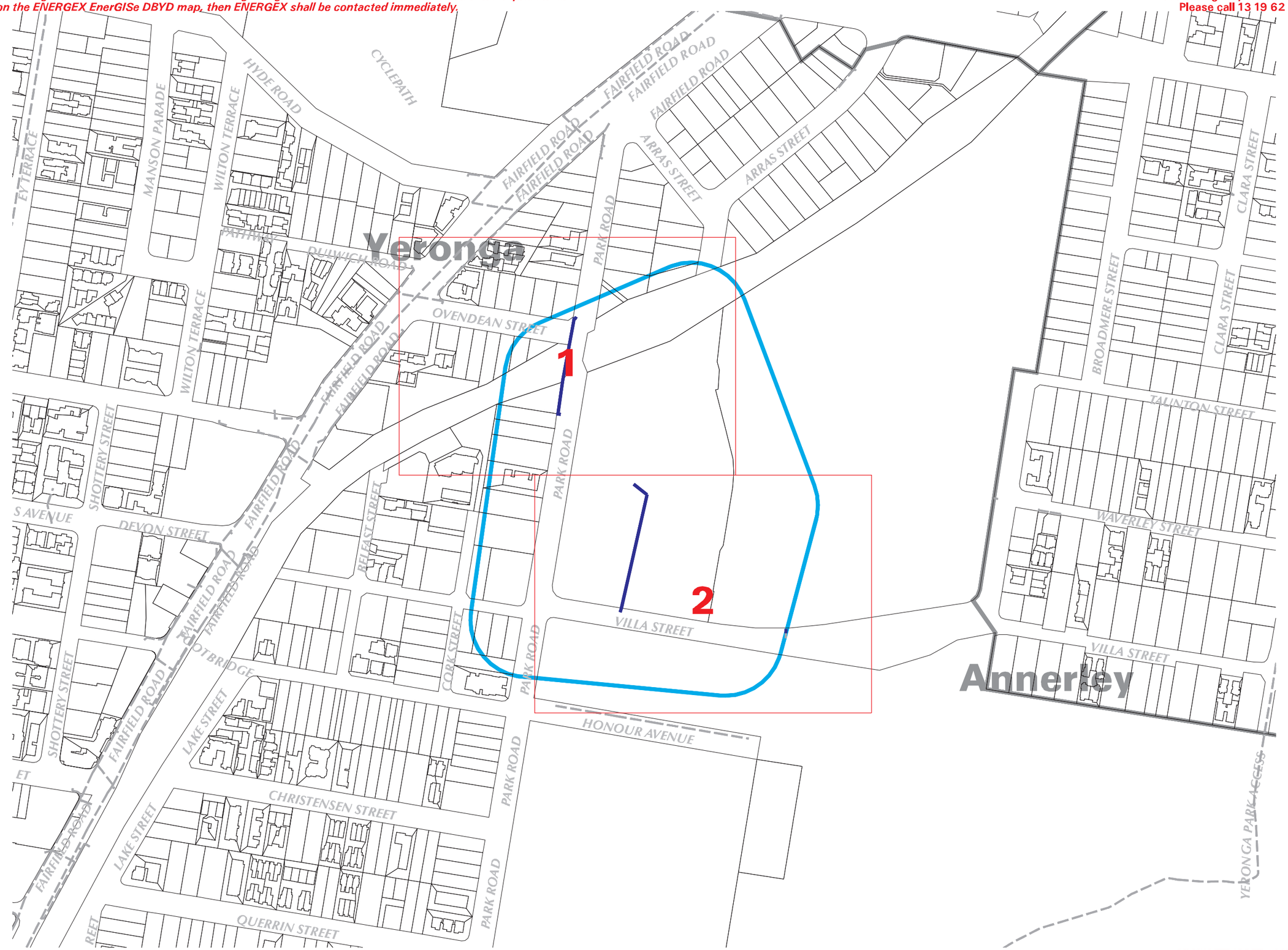
 Parking Sensor Ducting

 Fibre Optic Pit Location

PAPER SIZE A3

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

For Emergency Situations Please call 13 19 62



energex

EnerGISe
DBYD

Date: 04 Feb 19 Time: 15.41.27
Requested By: DBYD

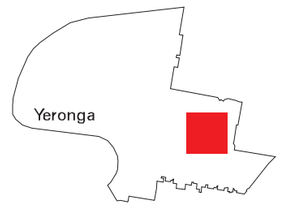
NOT TO SCALE

0 100m

Enquiry No: 79844962
KEY MAP

Enquiry Area

LOCALITY DIAGRAM



This output provides details of the ENERGEX electrical network. As variations may 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.

UNCONTROLLED COPY

PAPER SIZE A3

PAPER SIZE A3 Map has been designed to be reproduced in colour

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

For Emergency Situations Please call 13 19 62

energex

EnerGISe
DBYD

Date: 04 Feb 19 Time: 15.41.38
Requested By: DBYD

SCALE 1:1000

20 0 20m

Enquiry No: 79844962

STRIP No: 1

- Ground Transformer
- Cubicle Transformer
- Ring Main Unit
- Metering Unit
- Link Pillar
- Service Pillar
- Junction Pillar
- Pit
- Cable Joint
- Cable Termination
- Cable Marker
- Street Light Pole
- Earth
- Planned Work labelled by Work Order
- Cable Voltage Less Than 33kV
- Cable Voltage 33kV or Higher
- Direct-Lay Cable
- Conduit
- Multi-Section Duct
- Trench
- Cable Tray
- Tunnel

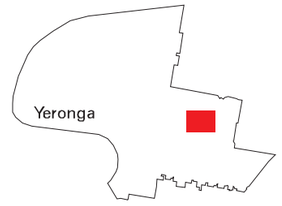
N W E S

INDEX TO SHEETS

1

2

LOCALITY DIAGRAM



This output provides details of the ENERGEX electrical network. As variations may 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.

UNCONTROLLED COPY

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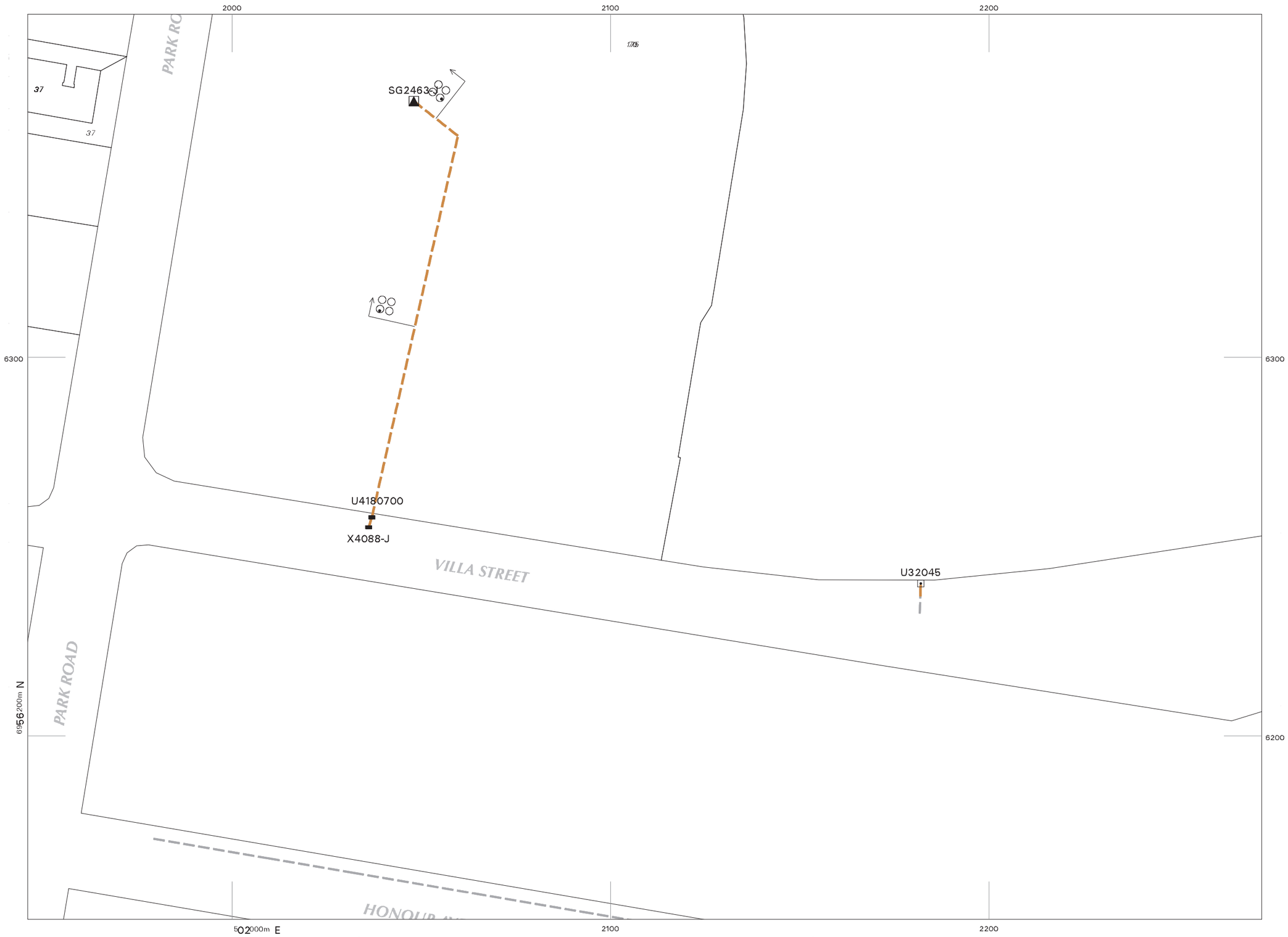
PAPER SIZE A3 Map has been designed to be reproduced in colour

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

For Emergency Situations Please call 13 19 62



energex

EnerGISe
DBYD

Date: 04 Feb 19 Time: 15.41.54
Requested By: DBYD

SCALE 1:1000

20 0 20m

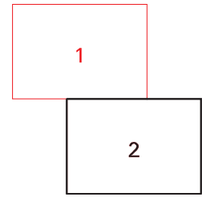
Enquiry No: 79844962

STRIP No: 2

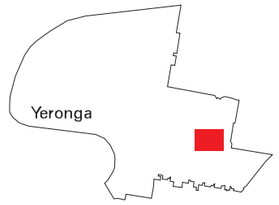
- *Ground Transformer*
- *Cubicle Transformer*
- *Ring Main Unit*
- *Metering Unit*
- *Link Pillar*
- *Service Pillar*
- *Junction Pillar*
- *Pit*
- *Cable Joint*
- *Cable Termination*
- *Cable Marker*
- *Street Light Pole*
- *Earth*
- *Planned Work labelled by Work Order*
- *Cable Voltage Less Than 33kV*
- *Cable Voltage 33kV or Higher*
- *Direct-Lay Cable*
- *Conduit*
- *Multi-Section Duct*
- *Trench*
- *Cable Tray*
- *Tunnel*

N W E S

INDEX TO SHEETS



LOCALITY DIAGRAM



This output provides details of the ENERGEX electrical network. As variations may 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.

UNCONTROLLED COPY

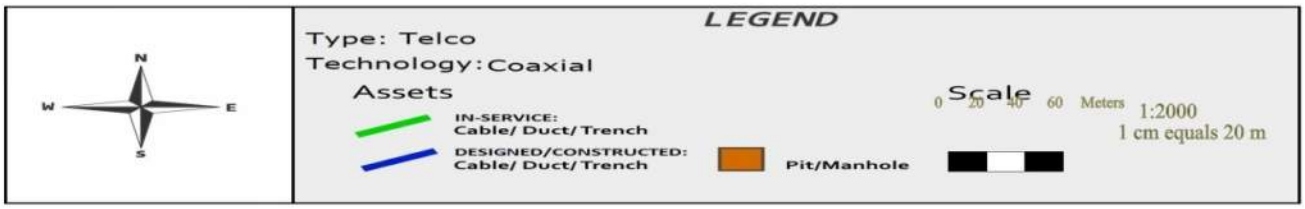
PAPER SIZE A3 Map has been designed to be reproduced in colour

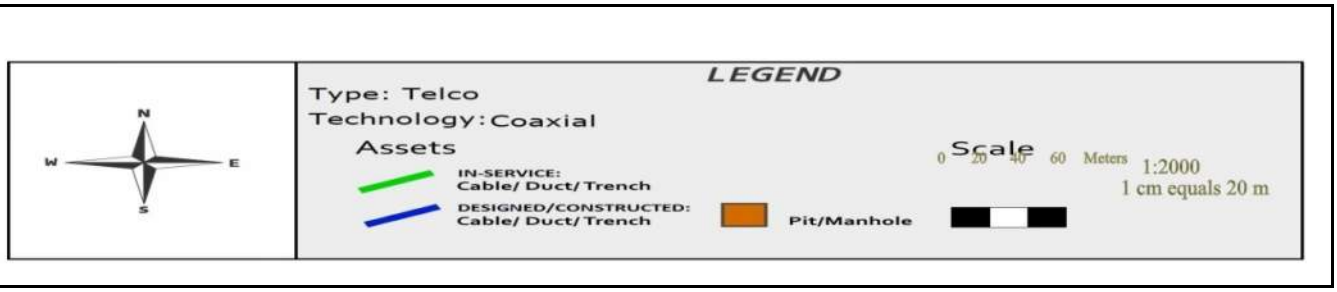
Indicative Plans

Issue Date:	04/02/2019
Location:	70 Park Road , Yeronga , QLD , 4104

1

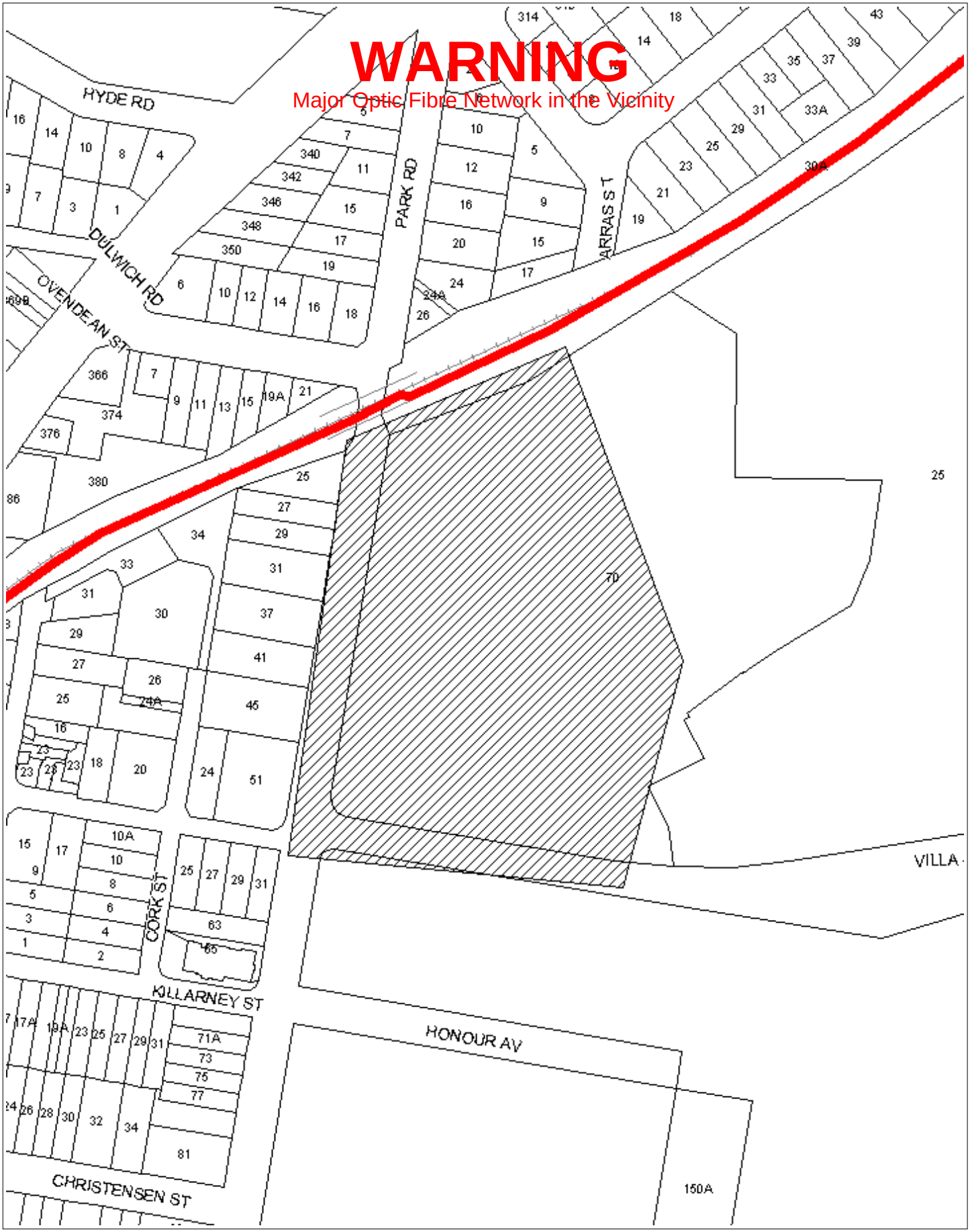
2





Emergency Contacts

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



Sequence Number: 79844964

Date Generated: 04/02/2019

For all Optus DBYD plan enquiries –
Email: Fibre.Locations@optus.net.au
For urgent onsite assistance contact 1800 505 777
Optus Limited ACN 052 833 208

Level 17, PIPE Networks House, 127 Creek Street, Brisbane 4000
PH:(07) 3233 9895 FAX:(07) 3233 9880

Attention: Ms Sandra Rey
Fax: Not Supplied
DBYD Enquiry Number: 79844959

Date: 04/02/2019

Location: 70 Park Road
Yeronga
QLD
4104

DBYD ENQUIRY RETURN:

PIPE Networks **DOES** own or operate telecommunications network infrastructure within the area detailed above.

The affected network **is contained in the PIPE Networks duct network** and can be found on **PIPE Networks** own network plans.

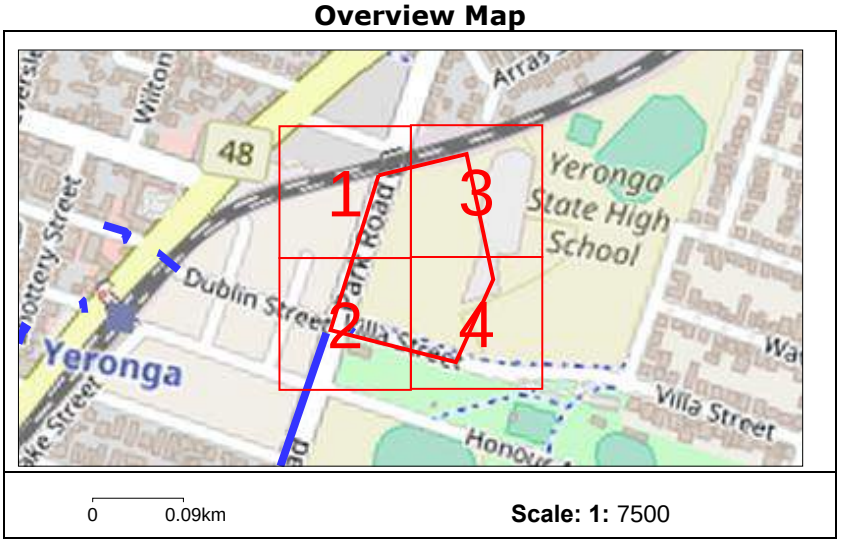
This network is vital to our operations and as such, it is critical that no works commence within the area until a PIPE Networks representative has contacted you.

A PIPE Networks representative will contact you within 24 hours to further discuss your intended works. If you do not hear from PIPE networks within 24hours please call us for assistance.

Due to continued network expansion, this network information can only be considered valid and accurate for 28 days from issue.

PIPE Networks will seek compensation for any damage to its network through negligence or ignorance of your duty of care.

Overview Map



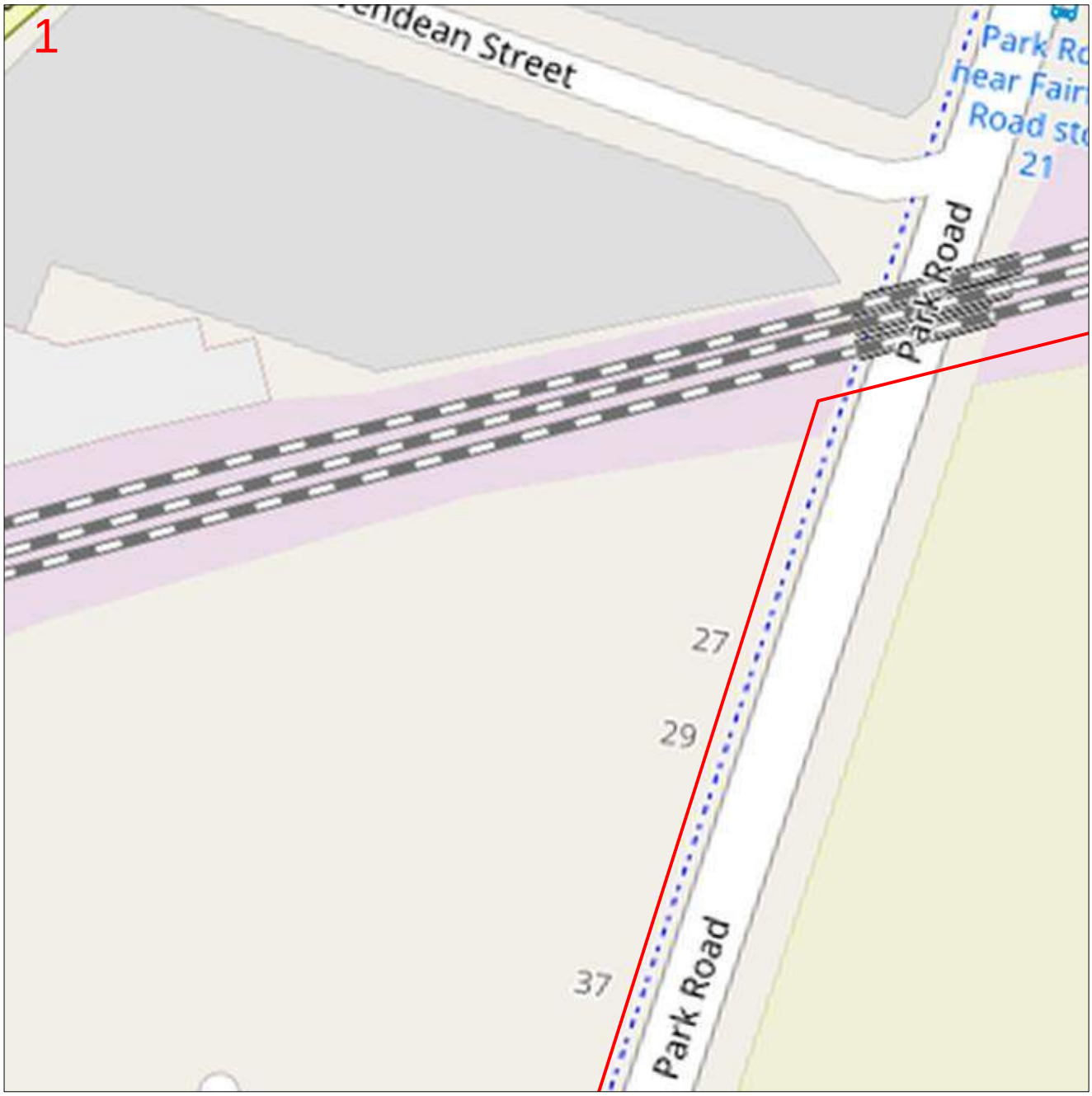
PIPE Networks (for information specific to this job only)
Ph (07) 3233 9895
Email: dbyd@pipenetworks.com

DISCLAIMER: *No responsibility/liability is taken by PIPE Networks for any inaccuracy, error, omission or action based on the information supplied in this correspondence.*

Note: *If the works fall in an area that adjacent to PIPE Networks infrastructure, a pre-inspection is required prior to commencement of works. Contact PIPE Networks to arrange an inspection time.* ***NO WORKS TO COMMENCE PRIOR TO INSPECTION.***

Only PIPE Networks' duct displayed.

For location of PIPE Networks cable in third-party duct, please contact third-party named on attached cover letter.



Enquiry Number: 79844959

Map Sheet: 1

Scale: 1:750

0 0.008km

LEGEND

DBYD Request Area **Asset**

Line

Area

Manhole

Duct

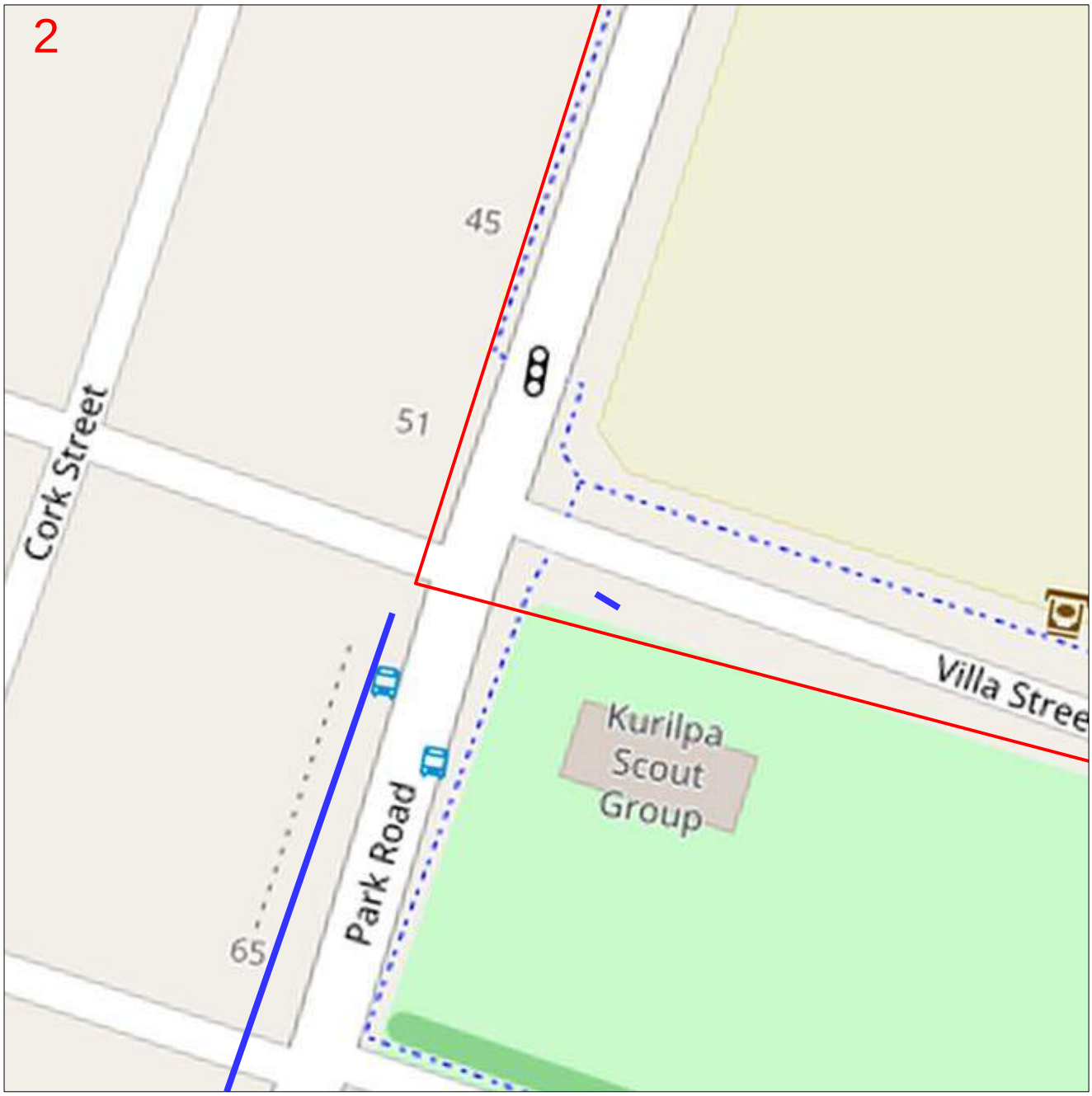
N

DISCLAIMER: *No responsibility/liability is taken by PIPE Networks for any inaccuracy, error, omission or action based on the information supplied in this correspondence. © 2013 PIPE Networks Ltd.*

Note: *If the works fall in an area that is adjacent to PIPE Networks infrastructure, a pre-inspection is required prior to commencement of works. Contact PIPE Networks to arrange an inspection time.* ***NO WORKS TO COMMENCE PRIOR TO INSPECTION.***

Only PIPE Networks' duct displayed.

For location of PIPE Networks cable in third-party duct, please contact third-party named on attached cover letter.



Enquiry Number: 79844959

Map Sheet: 2

Scale: 1:750

0 0.008km

LEGEND

DBYD Request Area

Line

Area

Asset

Manhole

Duct

N

DISCLAIMER: *No responsibility/liability is taken by PIPE Networks for any inaccuracy, error, omission or action based on the information supplied in this correspondence. © 2013 PIPE Networks Ltd.*

Note: *If the works fall in an area that is adjacent to PIPE Networks infrastructure, a pre-inspection is required prior to commencement of works. Contact PIPE Networks to arrange an inspection time.* ***NO WORKS TO COMMENCE PRIOR TO INSPECTION.***

Only PIPE Networks' duct displayed.

For location of PIPE Networks cable in third-party duct, please contact third-party named on attached cover letter.

Enquiry Number: 79844959

Map Sheet: 3

Scale: 1:750

0 0.008km

LEGEND

DBYD Request Area **Asset**

Line

Area

Manhole

Duct

N

Note: *If the works fall in an area that is adjacent to PIPE Networks infrastructure, a pre-inspection is required prior to commencement of works. Contact PIPE Networks to arrange an inspection time.* ***NO WORKS TO COMMENCE PRIOR TO INSPECTION.***

Only PIPE Networks' duct displayed.

For location of PIPE Networks cable in third-party duct, please contact third-party named on attached cover letter.

Enquiry Number: 79844959

Map Sheet: 4

Scale: 1:750

0 0.008km

LEGEND

DBYD Request Area **Asset**

Line

Area

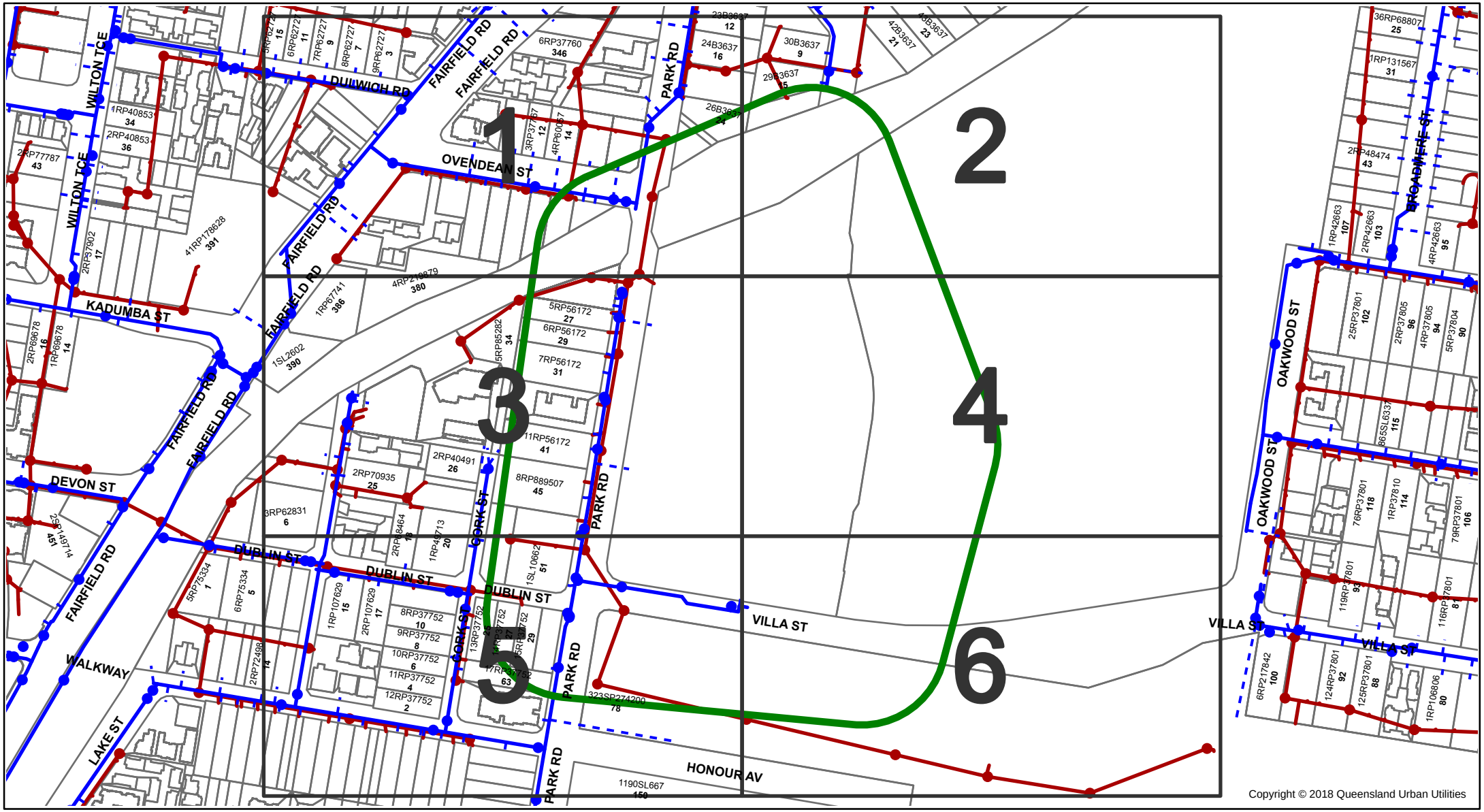
Manhole

Duct

N

Note: *If the works fall in an area that is adjacent to PIPE Networks infrastructure, a pre-inspection is required prior to commencement of works. Contact PIPE Networks to arrange an inspection time.* ***NO WORKS TO COMMENCE PRIOR TO INSPECTION.***

Queensland Urban Utilities - Water & Sewer Infrastructure



QUEENSLAND Urban Utilities

DBYD - Queensland Urban Utilities
Water & Sewer Infrastructure

DBYD Reference No: 79844967

Date DBYD Ref Recieved: 4/02/2019 4:38:00 PM
Date DBYD Job to Commence: 6/02/2019 12:00:00 AM
Date DBYD Map Produced: 4/02/2019
This Map is valid for 30 days
Produced By: Queensland Urban Utilities

GDA

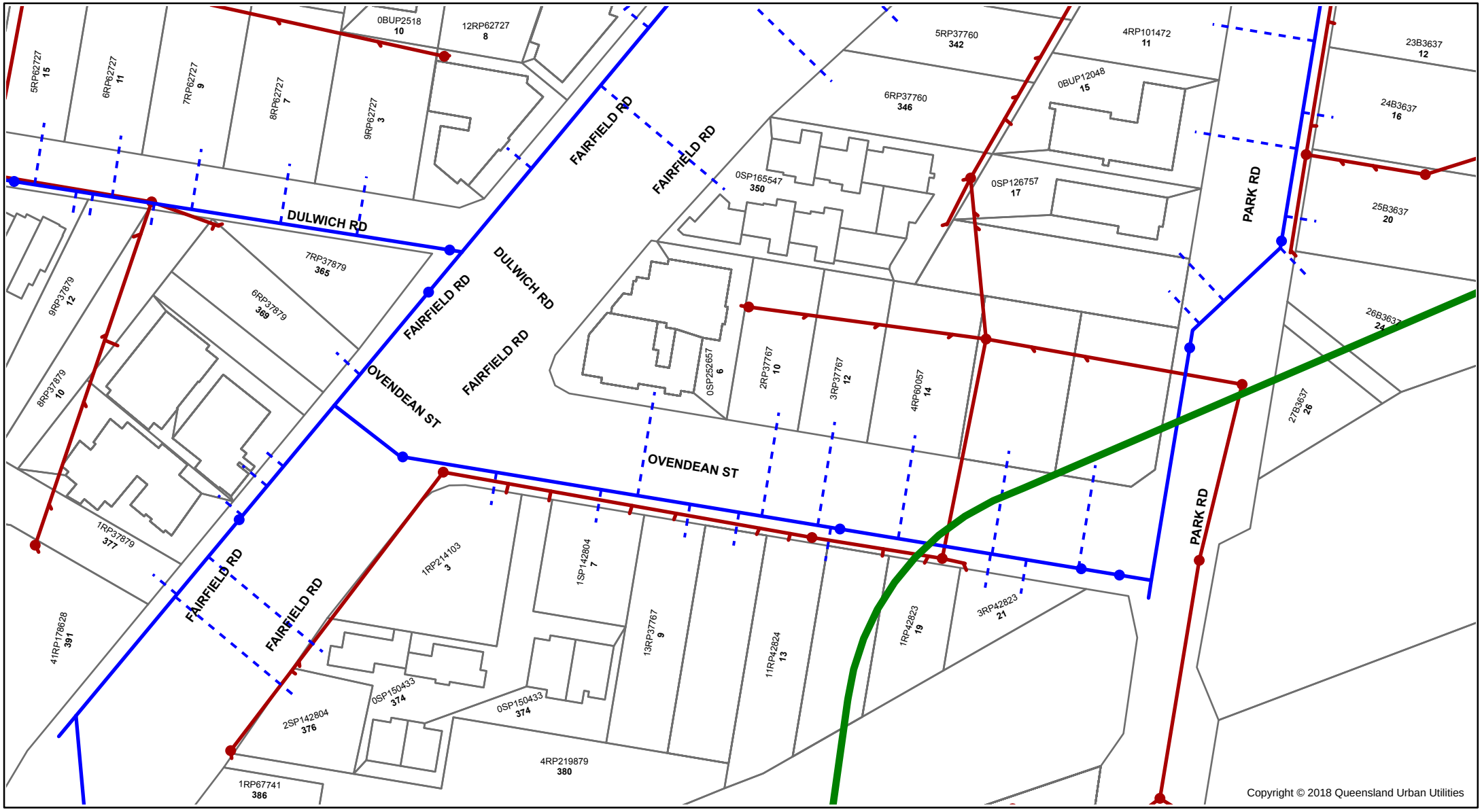
Sewer	Water
Infrastructure	Infrastructure
Major Infrastructure	Major Infrastructure
Network Pipelines	Network Pipelines
Recycled Water Pipelines	Water Service (Indicative only)
Network Structures	Network Structures

N

Map Scale
1:3075

For further information, please call Queensland Urban Utilities on 13 26 57 (7am-7pm weekdays). Faults and emergencies 13 23 64 (24/7).
www.urbanutilities.com.au ABN 86 673 835 011

Queensland Urban Utilities - Water & Sewer Infrastructure



QUEENSLAND Urban Utilities

DBYD - Queensland Urban Utilities
Water & Sewer Infrastructure

DBYD Reference No: 79844967

Date DBYD Ref Recieved: 4/02/2019 4:38:00 PM
Date DBYD Job to Commence: 6/02/2019 12:00:00 AM
Date DBYD Map Produced: 4/02/2019
This Map is valid for 30 days
Produced By: Queensland Urban Utilities

GDA

Sewer	Water
Infrastructure	Infrastructure
Major Infrastructure	Major Infrastructure
Network Pipelines	Network Pipelines
Recycled Water Pipelines	Water Service (Indicative only)
Network Structures	Network Structures

N

Map Scale
1:1000

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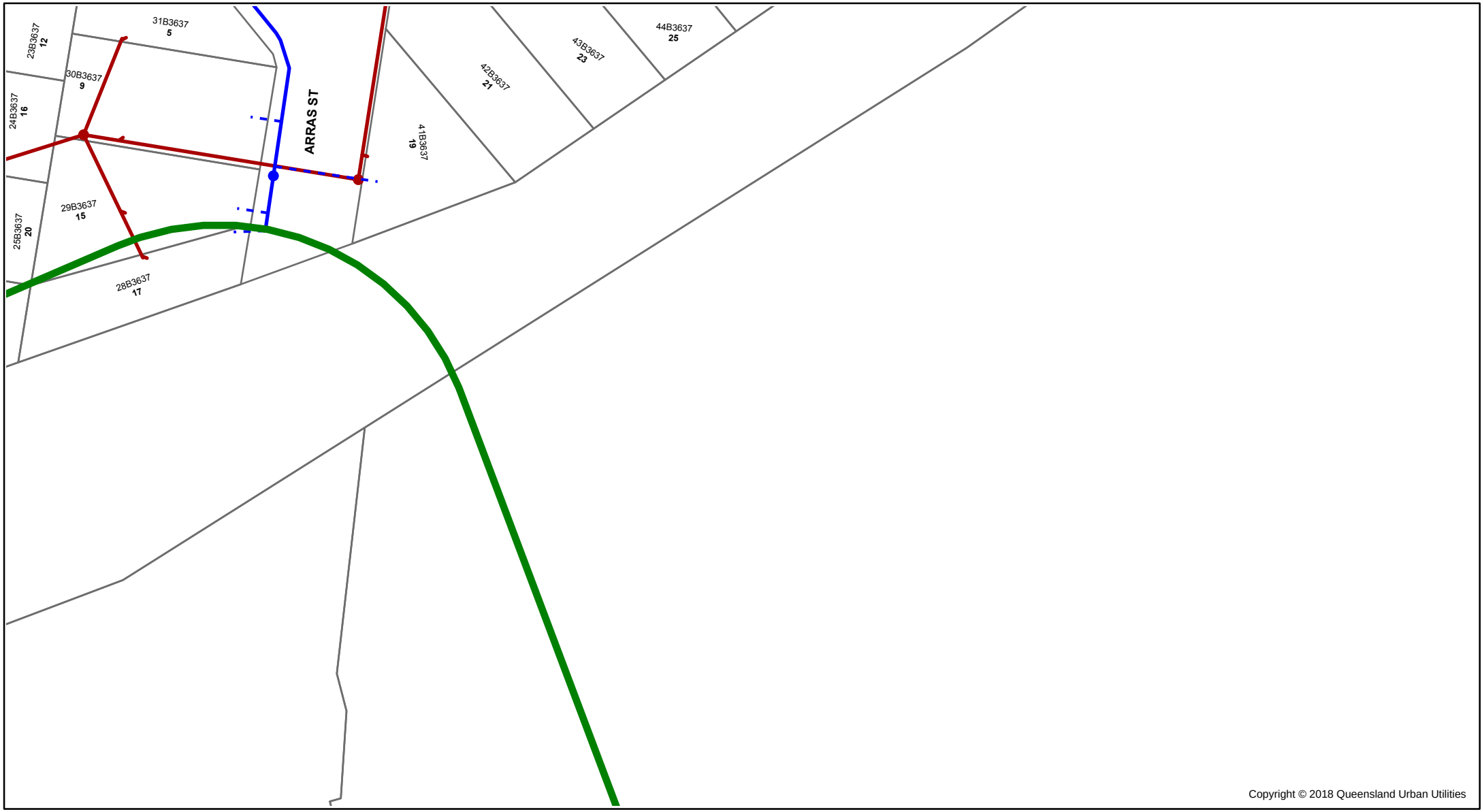

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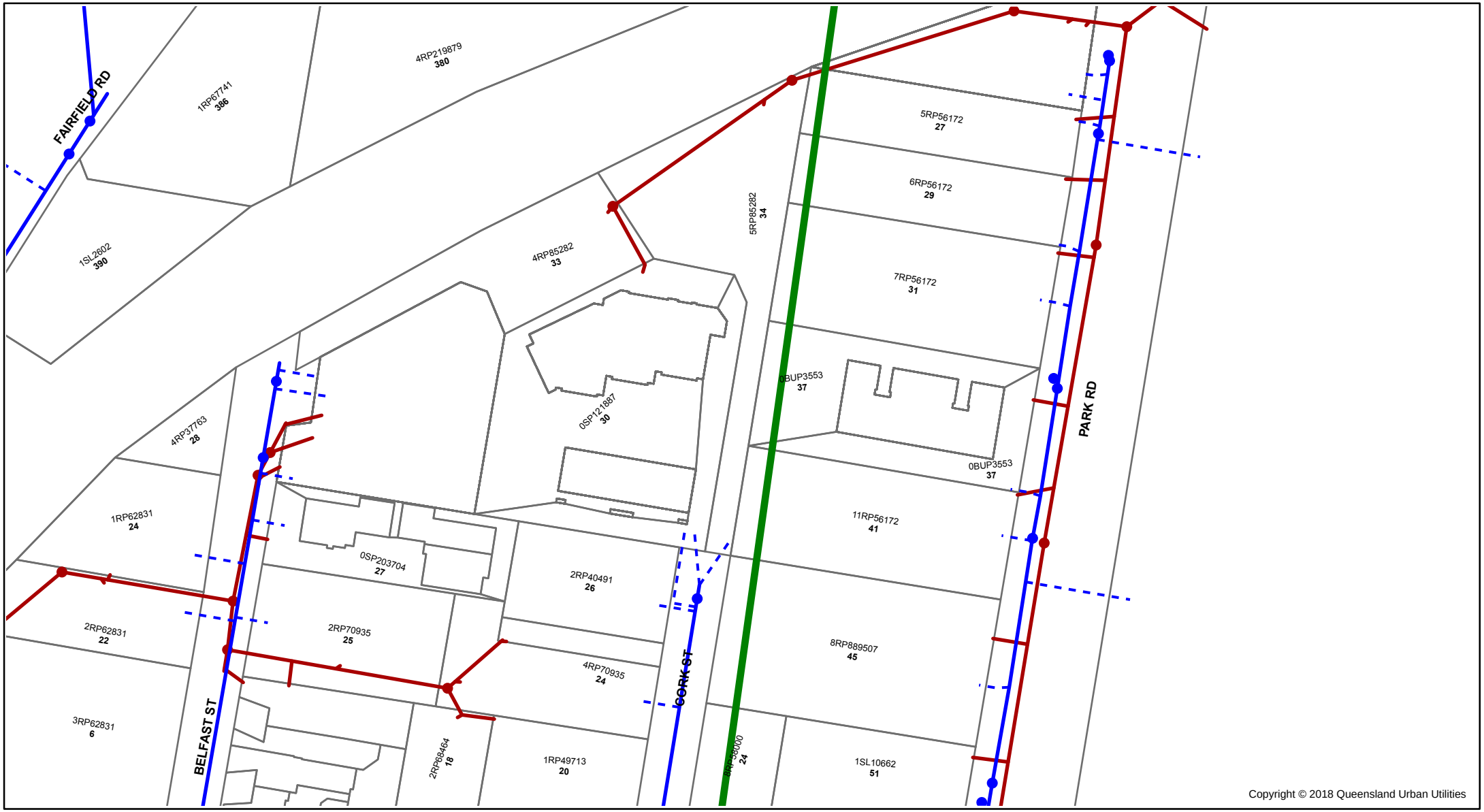

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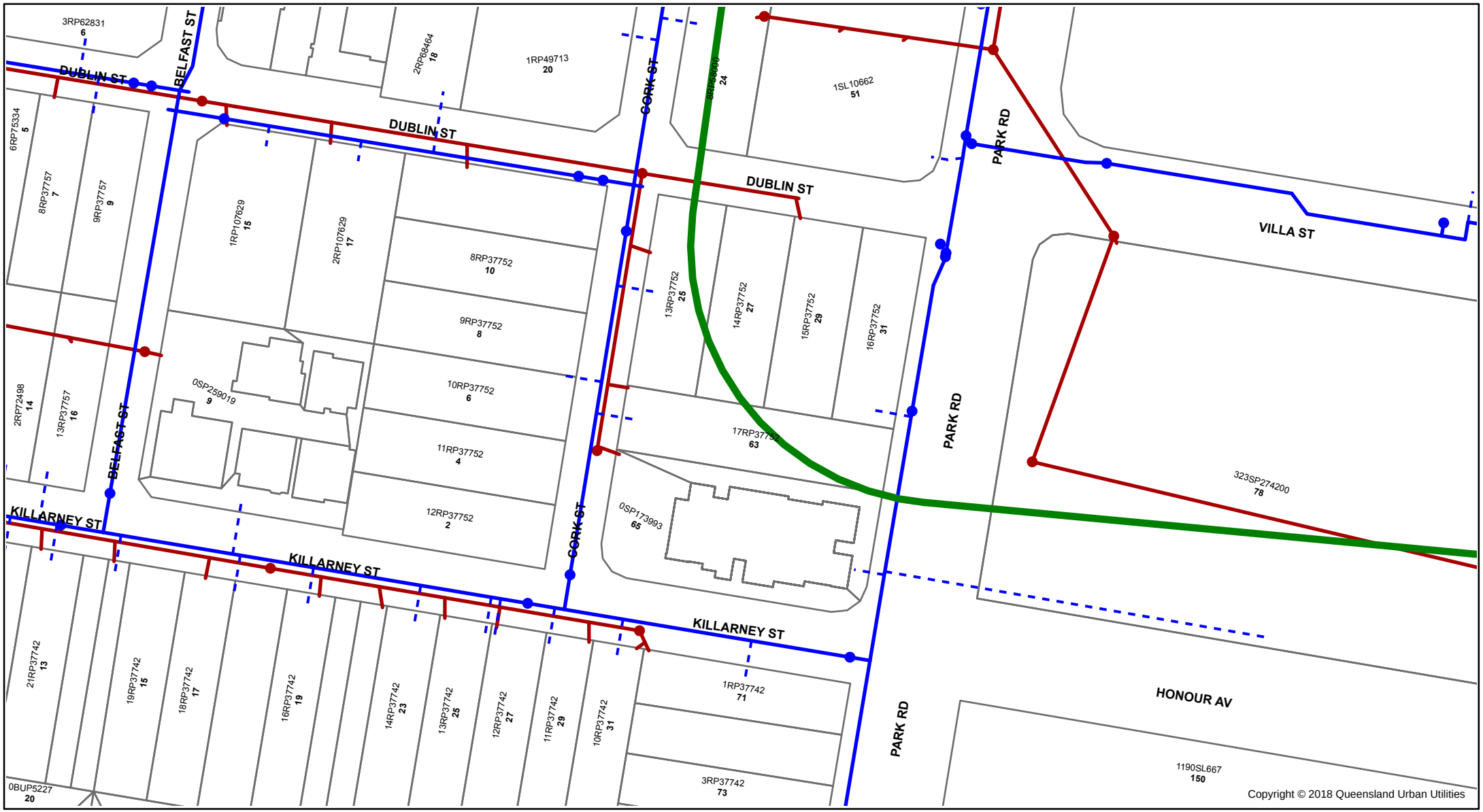

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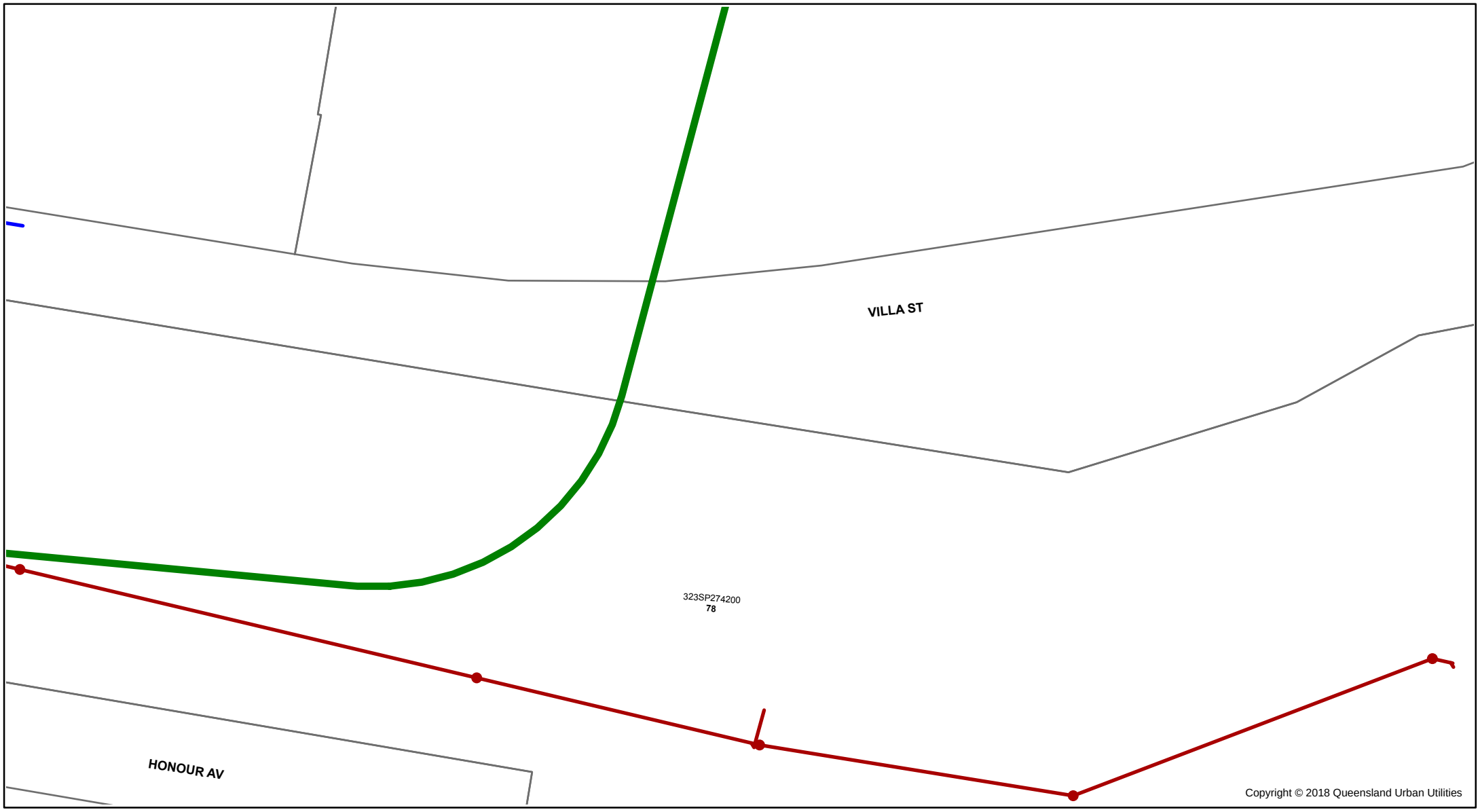

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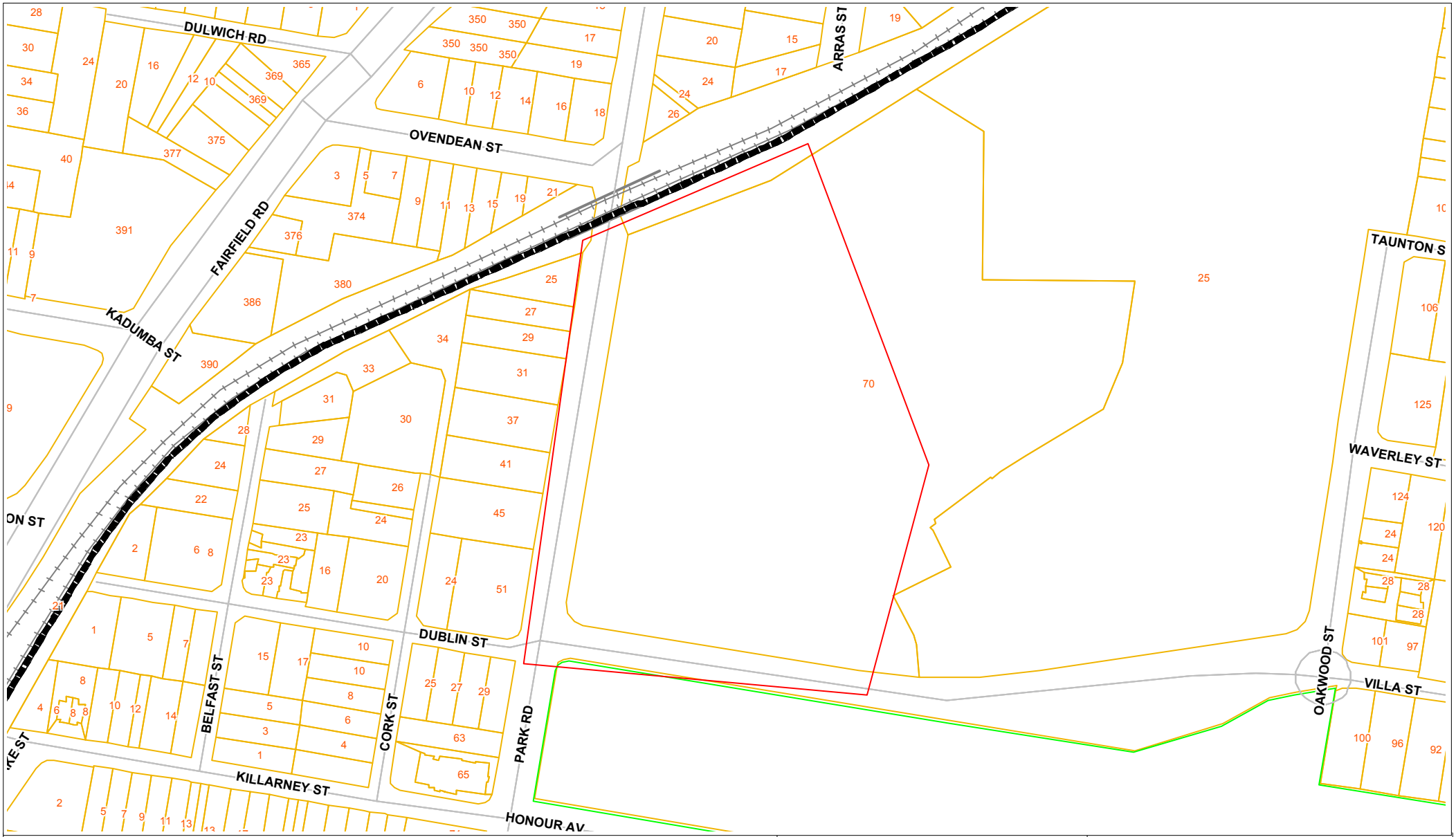


Sequence Number: 79844960

Date: 04/02/2019

DISCLAIMER: THIS DRAWING SHOULD NOT BE SCALED TO LOCATE CABLES. NO WARRANTY IS GIVEN THAT THE INFORMATION IS ACCURATE OR COMPLETE. IF YOU REQUIRE INFORMATION REGARDING LOCATING THE CABLE PLEASE CALL VISIONSTREAM. THIS DOCUMENT HAS BEEN PREPARED SOLELY FOR DIAL BEFORE YOU DIG USE. THIS PLAN CONTAINS COMMERCIALLY SENSITIVE INFORMATION AND IS TO BE TREATED ACCORDINGLY. NO SUCH INFORMATION IS TO BE PASSED ONTO OTHER PARTIES WITHOUT WRITTEN CONSENT FROM VISIONSTREAM PTY LTD.

Reef Networks

LEGEND

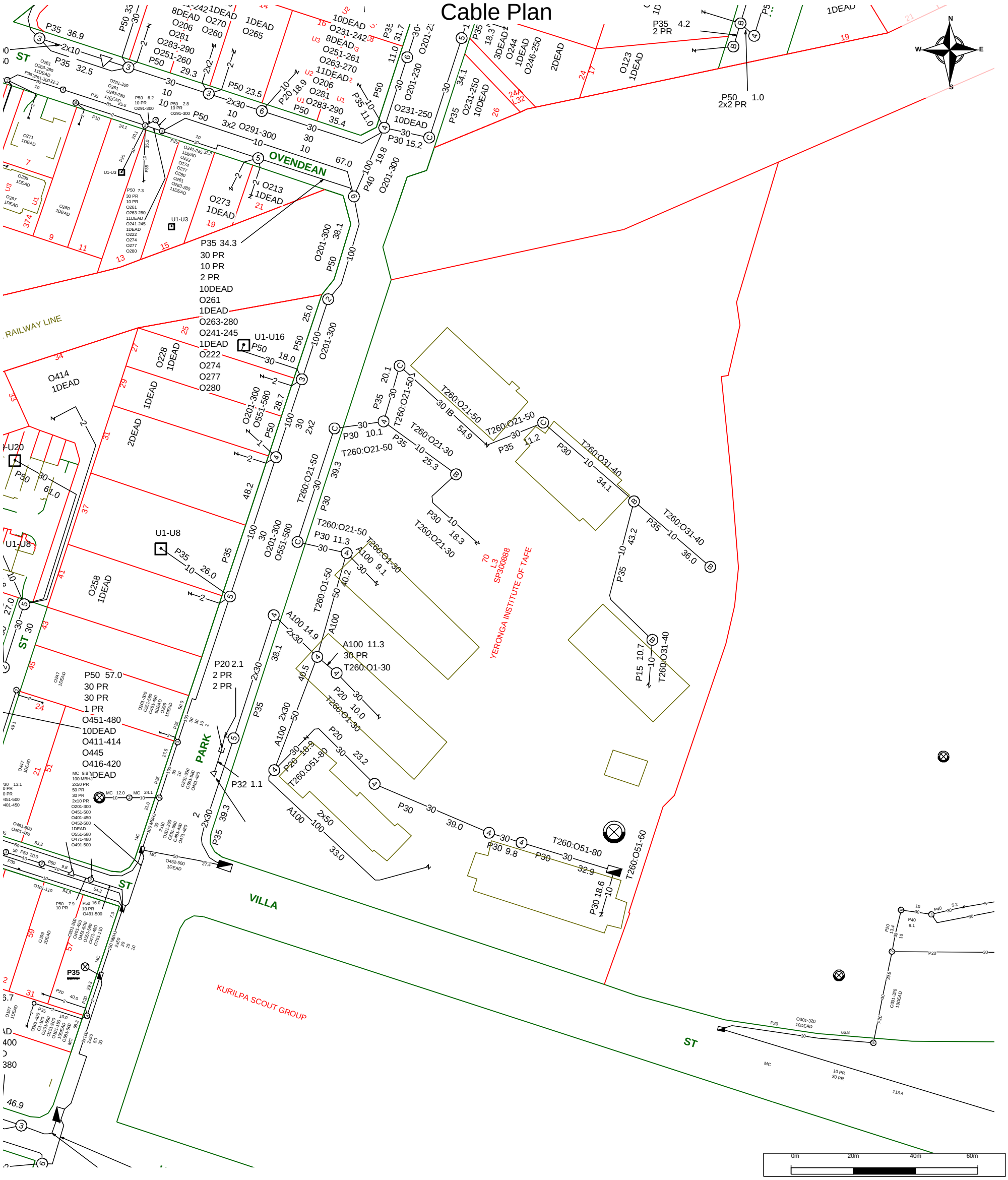
Digsite

- Point
- Line
- Area

Assets

- Cable

Cable Plan



Telstra	For all Telstra DBYD plan enquiries - email - Telstra.Plans@team.telstra.com For urgent onsite contact only - ph 1800 653 935 (bus hrs)
TELSTRA CORPORATION LIMITED A.C.N. 051 775 556	
Generated On 04/02/2019 16:42:40	Sequence Number: 79844963
	CAUTION: Fibre optic and/ or major network present in plot area. Please read the Duty of Care and contact Telstra Plan Services should you require any assistance.

The above plan must be viewed in conjunction with the Mains Cable Plan on the following page

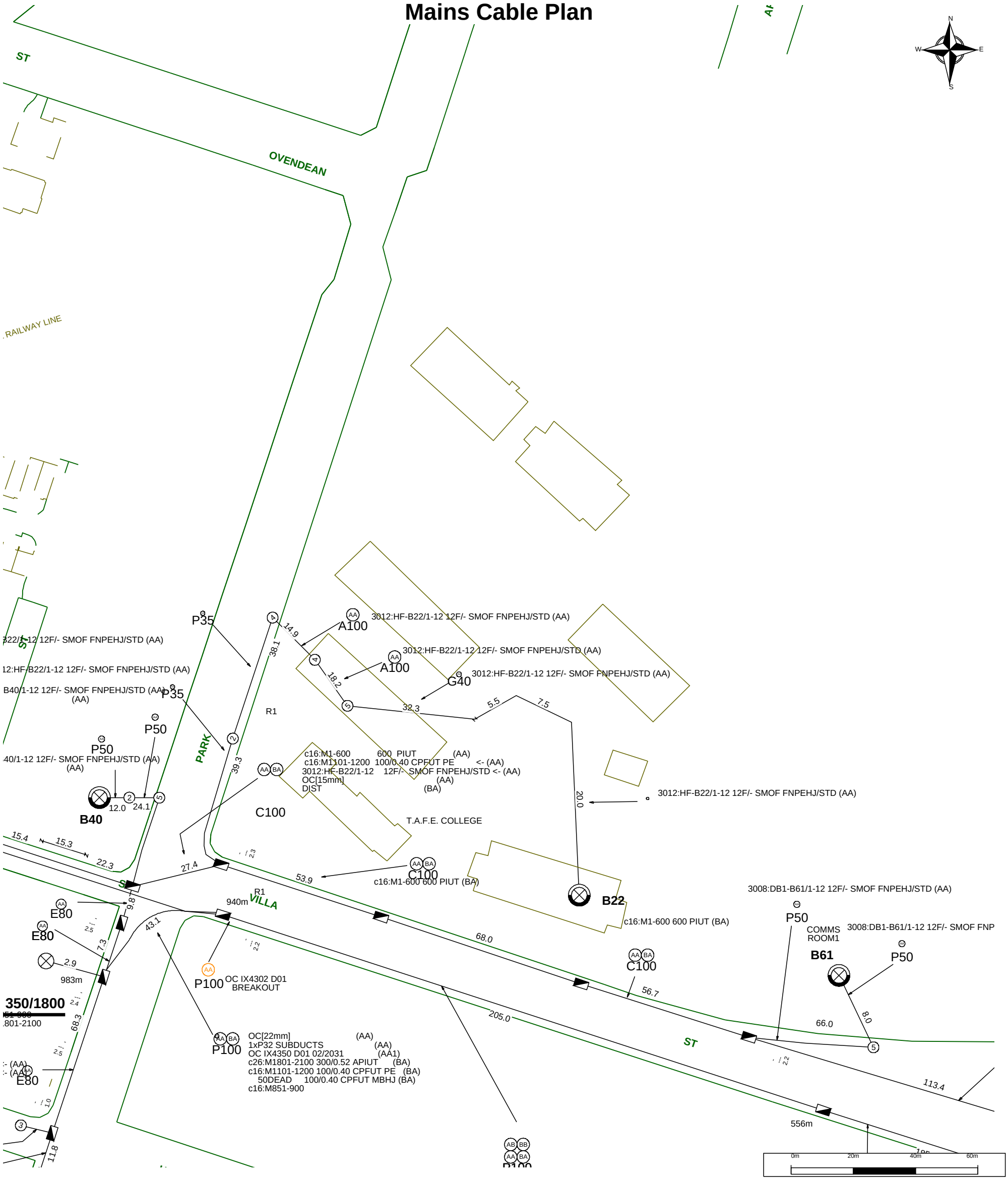
WARNING - Due to the nature of Telstra underground plant and the age of some cables and records, it is impossible to ascertain the precise location of all Telstra plant from Telstra's plans. The accuracy and/or completeness of the information supplied can not be guaranteed as property boundaries, depths and other natural landscape features may change over time, and accordingly the plans are indicative only. Telstra does not warrant or hold out that its plans are accurate and accepts no responsibility for any inaccuracy shown on the plans.

It is your responsibility to locate Telstra's underground plant by careful hand pot-holing prior to any excavation in the vicinity and to exercise due care during that excavation.

Please read and understand the information supplied in the duty of care statement attached with the Telstra plans. TELSTRA WILL SEEK COMPENSATION FOR LOSS CAUSED BY DAMAGE TO ITS PLANT.

Telstra plans and information supplied are valid for 60 days from the date of issue. If this timeframe has elapsed, please reapply for plans.

Mains Cable Plan



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email - Telstra.Plans@team.telstra.com
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Design with
community in mind

Level 3
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South Brisbane QLD 4101
Tel (07) 3811 4500

For more information please visit
www.Stantec.com

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