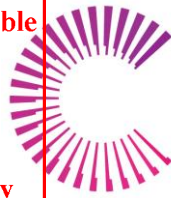


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**Context
Engineering**

Industrial Development

618 Clayton Road

Clayton South

Stormwater Management Plan



Prepared For TROON GROUP

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Context Engineering

ABN 56 650 431 637



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Report Number: R001 - C_23011

Issue	Date	Issue Details	Author	Checked	Approved
A	14 April 2023	Preliminary Issue	EG	NR	NR
B	19 July 2023	Final Issue	EG	NR	NR
C	6 November 2023	RFI Response	EG	NR	NR



Executive Summary

Context Engineering has been commissioned by Troon Group to compile this Stormwater Management Plan for the proposed development of the site located at 618 Clayton Road, Clayton South.

The proposed site involves the creation of an industrial development consisting of nine (9) new warehouses over a historical landfill. These buildings will be connected via large hardstand areas and a centrally located private road with access to Clayton Road. Each warehouse will also be serviced via adjacent office buildings and carparking spaces.

A summary of the investigation and outcomes presented in this report are as follows:

- Lawful Point of Discharge (Section 4) – Existing catchment C1 and developed catchment D1 lawful point of discharge to existing gully pit in Clayton Road to the north-west of the site. Existing catchment C2 and C3 discharge to Fraser Road and Deals Road, causing frequent, severe stormwater ponding. Developed catchment D2 to discharge to existing council-owned stormwater infrastructure to the south of the site.
- Stormwater Hydrology (Section 5) – Increase in unmitigated flows from existing to developed case.
- Detention Design (Section 6) – Proposed detention requirement for D1 and D2 is 1740m³ and 1100m³ respectively. Detention sized to ensure that flows match capacity of outlet pipe.
- Stormwater Quality Management (Section 7) – Stormwater to be treated by proprietary Filterra devices.

It is recommended that the proposed Development Application be approved.

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Appendix B	Preliminary Engineering Drawings
Appendix C	Architectural Plans
Appendix D	DBYD and Council Mapping
Appendix E	Code Response Report

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1. Introduction

Context Engineering has been commissioned by Troon Group to compile this Stormwater Management Plan to support the development application for the proposed industrial warehouses over the following parcels of land:

Property Address:	618 Clayton Road, Clayton South
Property Description:	Lot 1 on TP424544
Client:	Troon Group
Council:	City of Kingston
Site Area:	10.355ha

<i>Project Number:</i>	<i>C_23011</i>
<i>This Report:</i>	<i>Stormwater Management Plan</i>
<i>Additional Reports:</i>	<i>Engineering Services Report</i>

The proposed site involves the creation of an industrial development consisting of nine (9) new warehouses over a historical landfill. These buildings will be connected via large hardstand areas and a centrally located private road with access to Clayton Road. Each warehouse will also be serviced via adjacent office buildings and carparking spaces.

This report describes the stormwater management issues associated with the proposed development and includes discussion on the following key items:

- Lawful Point of Discharge;
- Stormwater Quantity; and
- Stormwater Quality.

This report demonstrates that the proposed development can be suitably serviced with all stormwater management services described and supports the type and scale of development that is proposed.

1.1 Objectives

The analysis in this report provides details of existing engineering conditions and proposed design to demonstrate the outcomes of the relevant City of Kingston Council policies.

The objectives of investigations undertaken for this report is as below:

- Identify the lawful point of discharge for the development;
- Confirm detention management requirements for the development; and
- Confirm the stormwater quality management requirements for the development.

Based on the outcomes of the above investigations, this report provides stormwater management recommendations suitable to demonstrate compliance with City of Kingston requirements.

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2. Site Characteristics

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2.1 Location

The proposed development is situated on a single existing allotment at 618 Clayton Road, Clayton South, described as Lot 1 on TP424544. The property is within the City of Kingston and is classified as Industrial 1 Zone (IN1Z) under the Planning Scheme zoning. The site is located in the suburb of Clayton South and is in close proximity to surrounding amenities, including several other industrial developments in the area. It is situated approximately 1.5km from the Dingley Bypass, which provides connectivity to the east and west. The allotment is currently bound by Clayton Road to the west, Fraser Road to the north, Deals Road to the east and existing industrial development to the south.

In accordance with the site survey, the area of the existing allotment in this proposal is 10.355 hectares.

Full details of the site topography and existing features are shown on the detailed survey in Appendix A. A general locality plan is presented in Figure 2-1 below.



Figure 2-1: Site Location (Source: Nearmap)

2.2 Land Usage

The site is currently developed as a historic landfill area, with the surface of the lot comprised of associated gas management infrastructure and otherwise vacant land. The Landfill Rehabilitation Plan, Clayton Road Landfill by Tonkin & Taylor Pty Ltd (dated Feb 2015) outlines that the site operated between 1975 and 1989 and was subsequently capped. There is no formal driveway connection to the lot, however site aerals indicate that vehicles currently access the lot from Fraser Road to the north.

2.3 Topography

Due to the size and usage of the lot, topographic levels vary significantly across the development area. Survey indicates that the lot grades from the high point of RL 47.4m in the southern portion of the site to existing drainage swales along the northern, eastern and western boundaries of the site. The maximum grade on the site is approximately 14.3% in the south-eastern corner of the lot fronting Deals Road.

Survey of the site also showed that there is a raised, elongated mound along the western boundary of the site. This has been assumed to be an earthen stockpile does not form part of the waste capping layer.



2.4 Upstream Catchment

Vicplan and Lidar (5m tiles accessed from ELVIS 6 March 2023) contours indicate that the properties and roads surrounding the site grade away from the development area, as shown in purple in Figure 2-2 below.

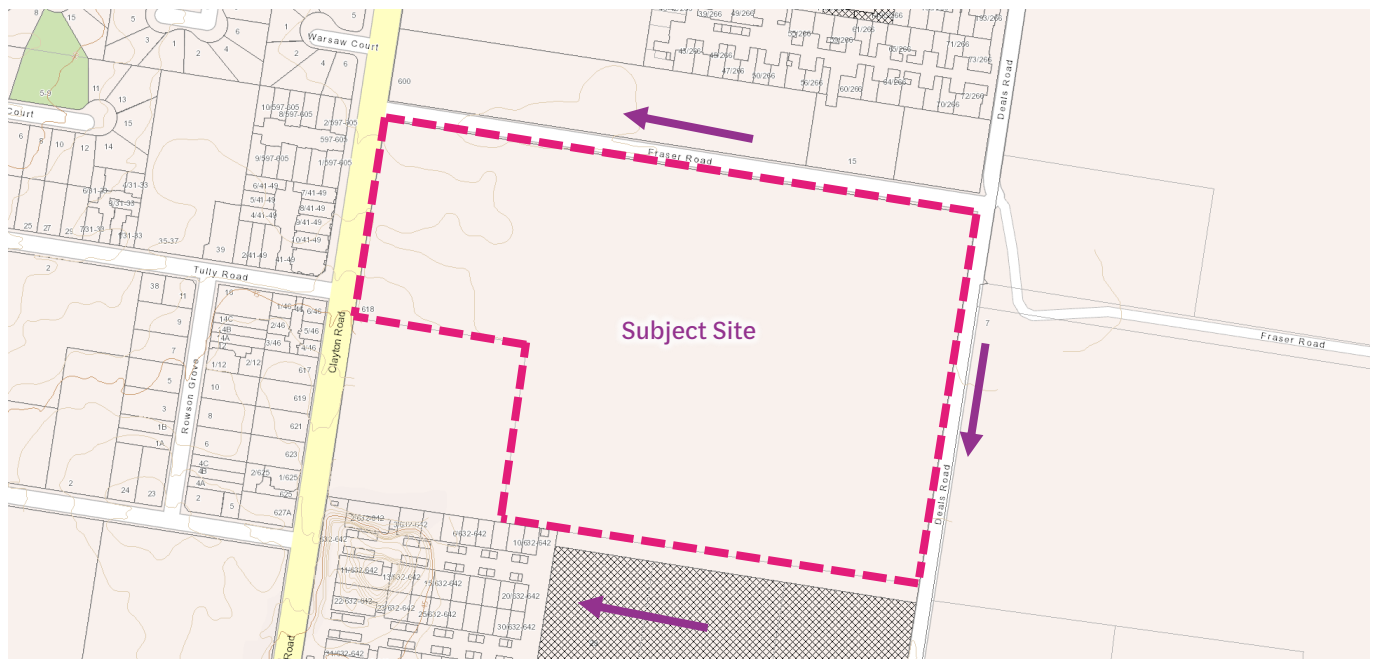


Figure 2-2 External Contour Analysis

As such, the site is not impacted by upstream catchments.

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2.5 Existing Stormwater

City of Kingston infrastructure mapping indicates that there are limited council-owned stormwater pipes surrounding the site. There is an existing 225mm connection to the north-west of the site which discharges to an existing 300mm pipe in Clayton Road. There is an additional 225mm connection to west of the site which discharges into the same network. This is shown by DBYD plans in Figure 2-3 below.



Figure 2-3 Existing Stormwater Infrastructure (Source: DBYD)

Investigations of the area also identified an existing stormwater network to the south, as shown in Figure 2-4 below.

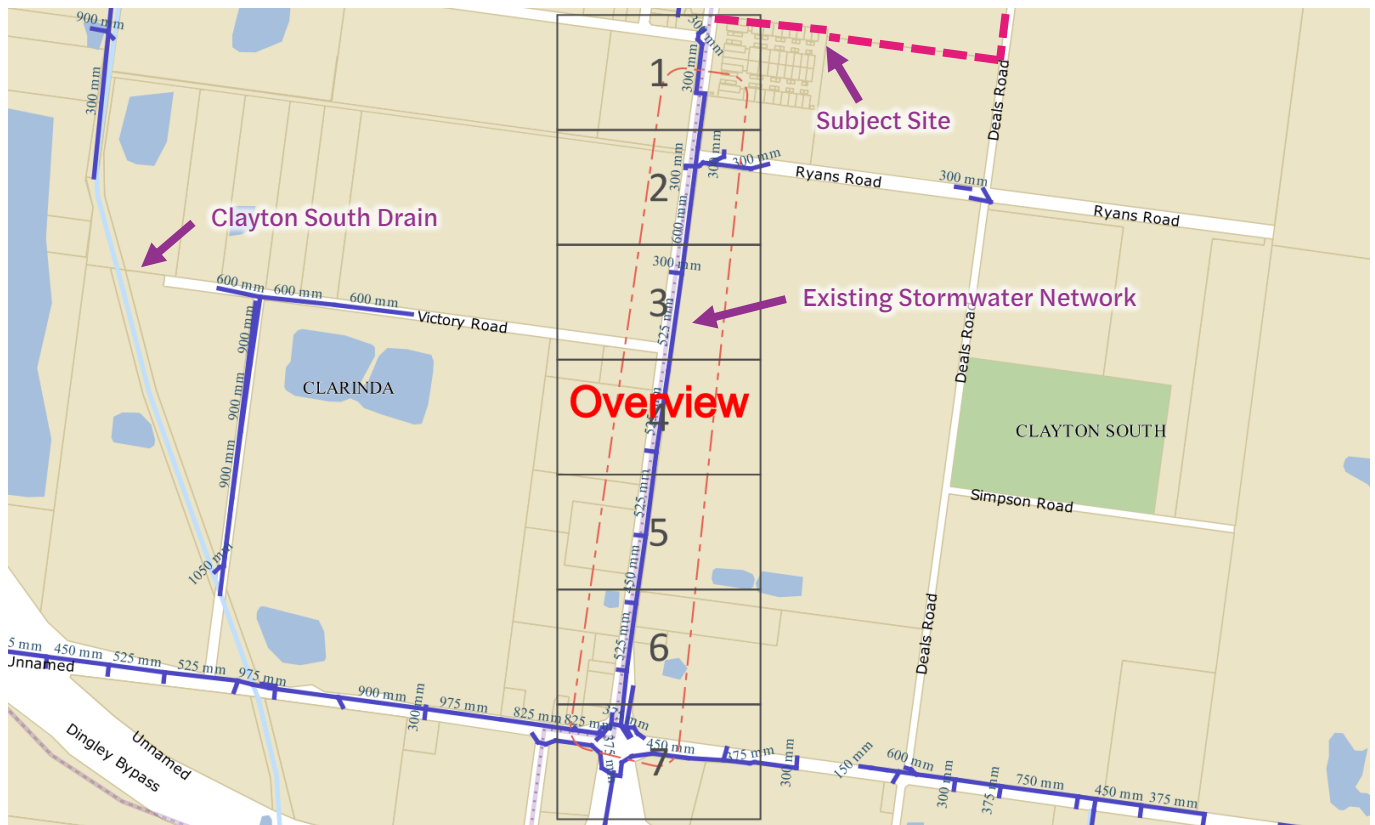


Figure 2-4 Existing Southern Stormwater Network (Source: DBYD)

The upstream infrastructure of this stormwater network begins at the existing road gully pit in Clayton Road adjacent to the subject site, as shown in Figure 2-5 below.



Figure 2-5 Existing Clayton Road Gully Inlet Pit

This network extends south along Clayton Road and ultimately discharges into the Clayton South Drain to the west of the site. This drain is shown in Figure 2-6 below.

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Figure 2-6 Clayton South Drain (Source: Google Street View 2019)

DBYD infrastructure indicates that the upstream pipe work connection into a 600mm pipe south of Ryans Road. However, DBYD mapping also shows that the capacity of this network is limited by a 450mm pipe approximately 800m south of the site, as shown in Figure 2-7 below.



Figure 2-7 Existing 450mm Stormwater Pipe

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3. Proposed Development

The proposed site involves the creation of an industrial development consisting of nine (9) new warehouses over a historical landfill. These buildings will be connected via large hardstand areas and a centrally located private road with access to Clayton Road. Each warehouse will also be serviced via adjacent office buildings and carparking spaces.

Civil construction works will include earthworks to establish the warehouse building pads, internal pavement and the construction of one (1) new vehicle crossover to Clayton Road.

To service this development, new water, sewer and stormwater reticulation will be provided. Stormwater flow mitigation will be managed via on-site detention tanks and stormwater quality treatment will be managed via a proprietary system. The total impervious area of the site has been measured as approximately 94% of the development area.

The indicative layout of the proposed development is shown in Figure 3-1 below. Refer Appendix C for architectural plans.

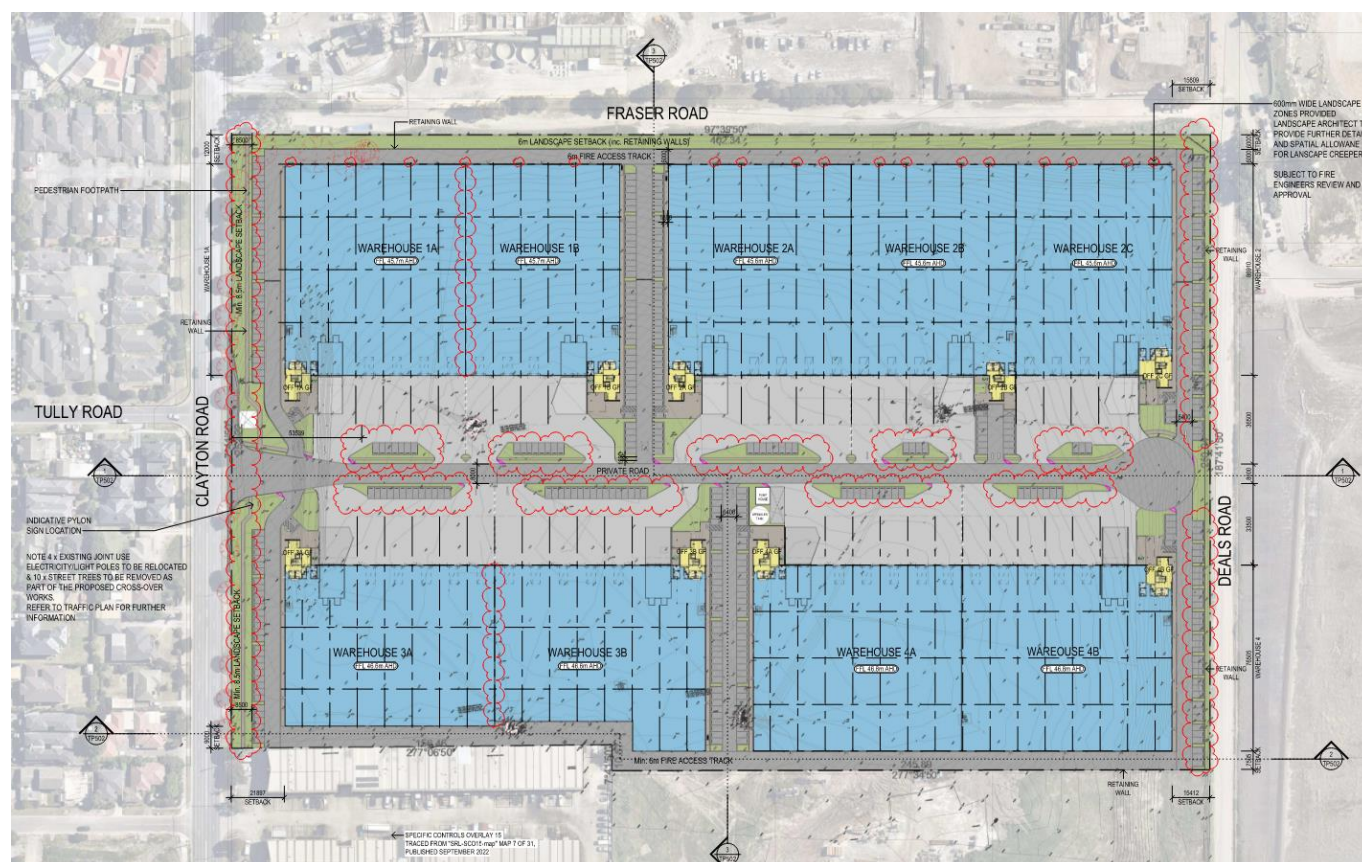


Figure 3-1 Developed Layout Plan

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4. Lawful Point of Discharge

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4.1 Methodology and Data Sources

To determine the lawful points of discharge for the site, the existing catchment extents and flow direction for the site were identified. Catchment boundaries and associated discharge locations were estimated using the following data sources:

- **Landfill Rehabilitation Plan:** Clayton Road Landfill by Tonkin & Taylor Pty Ltd dated February 2015
- **Site Survey:** 23319-S1-D1 by Taylors dated 10 February 2023
- **Google Maps Street View:** Historical imagery from 2007 to 2022
- **Site Aerials:** Nearmaps historical imagery from 2009 to 2022
- **City of Kingston Infrastructure Mapping:** DBYD stormwater assets accessed 16 Feb 2023
- **Site Lidar:** 5m DEM File accessed 2 Feb 2023
- **Site Photos:** Site investigation conducted on 15 March 2023

4.2 Existing Catchment Summary Plan

The existing site was found to be split between three existing catchments, with each catchment directing flows to the adjacent roads surrounding the site. These catchment boundaries are shown in **pink**, with flow direction shown in **purple** in Figure 4-1 below.

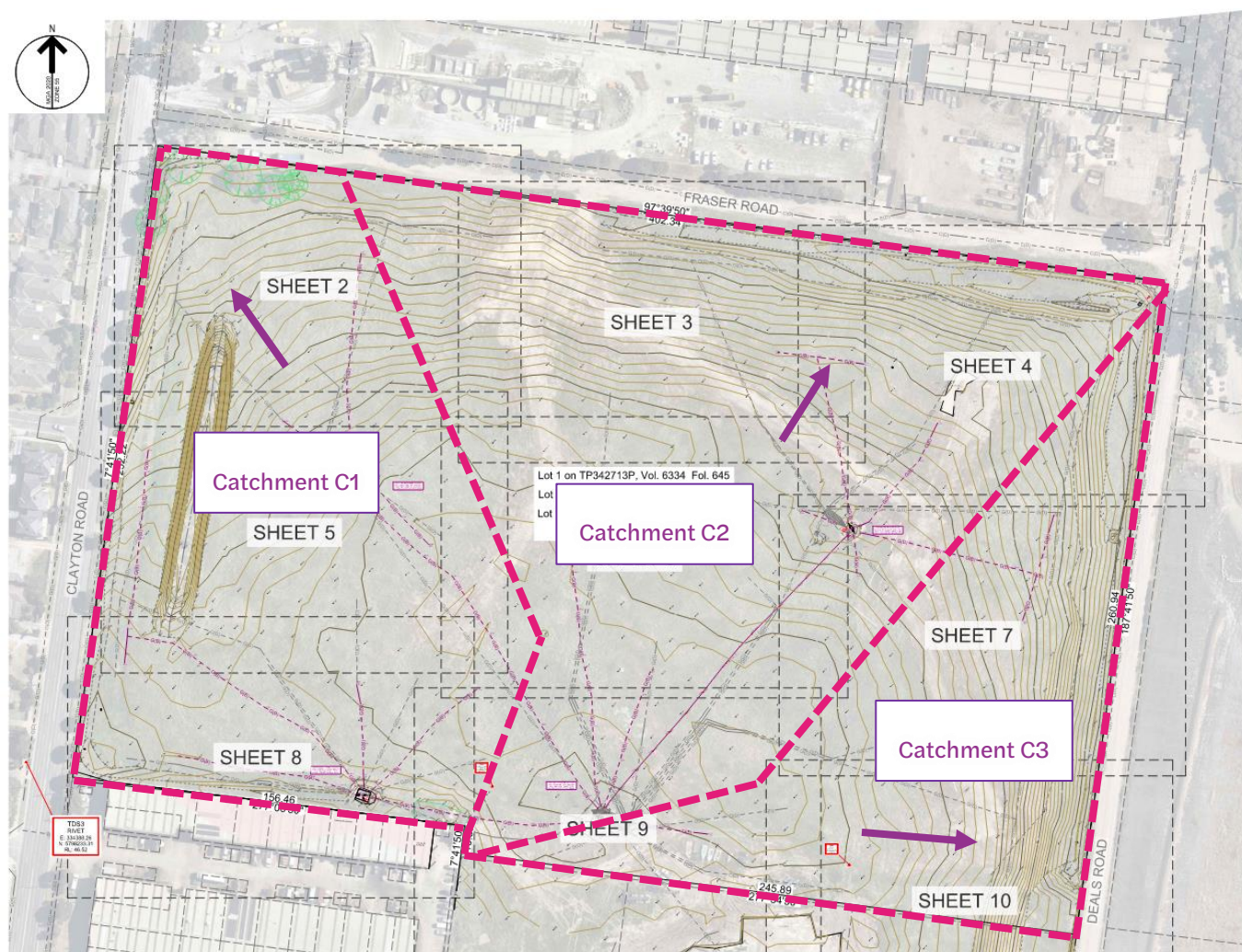


Figure 4-1 Existing Lawful Points of Discharge



The associated discharge locations for each of these catchments are as follow:

- **Catchment 1:** Discharges flow from north-western corner of the site to existing gully pit in Clayton Road
- **Catchment 2:** Discharges flow from the north-eastern corner of the site to Fraser Road
- **Catchment 3:** Discharges flow from the south-eastern corner of the site to Deals Road

These catchments and discharge locations were determined through investigations as described in Section 4.3 to Section 4.5 below.

4.3 Landfill Rehabilitation Plan

Appendix B of the Landfill Rehabilitation Plan, Clayton Road Landfill by Tonkin & Taylor Pty Ltd (dated Feb 2015) includes the original cap design by Golder in 1988. Section 6 of this report identifies that the intended discharge locations for the site are located in the north-west, north-east and south-east corners of the site. These drains are noted to be sized for a 1 in 5 storm event, with further evaluation of the drainage design recommended by an appropriately qualified civil engineer. However, further documentation around this has not been sighted.

4.4 Site Survey

Survey of the site indicates that the site grades from a high point in the south-central portion of the site towards adjacent roads to the north, west and east. The lot develops a steep gradient along these respective boundaries, with approximate location of surface drains shown in purple in Figure 4-2 below.

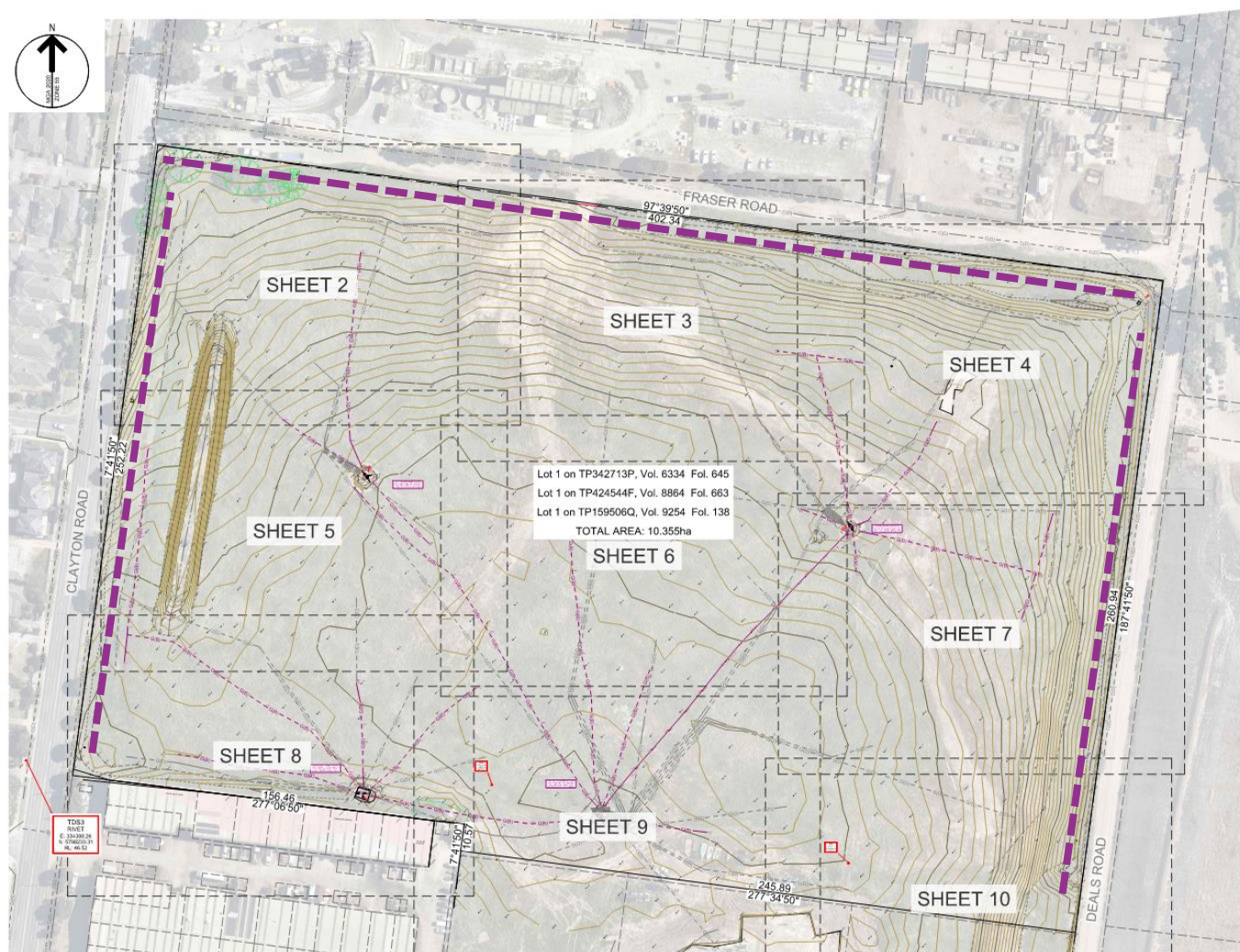


Figure 4-2 Site Survey Surface Drains

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It is noted that in some areas, there is no outer bund of the surface drain, indicating that flows are directed to adjacent roads, as shown in Figure 4-3 below.

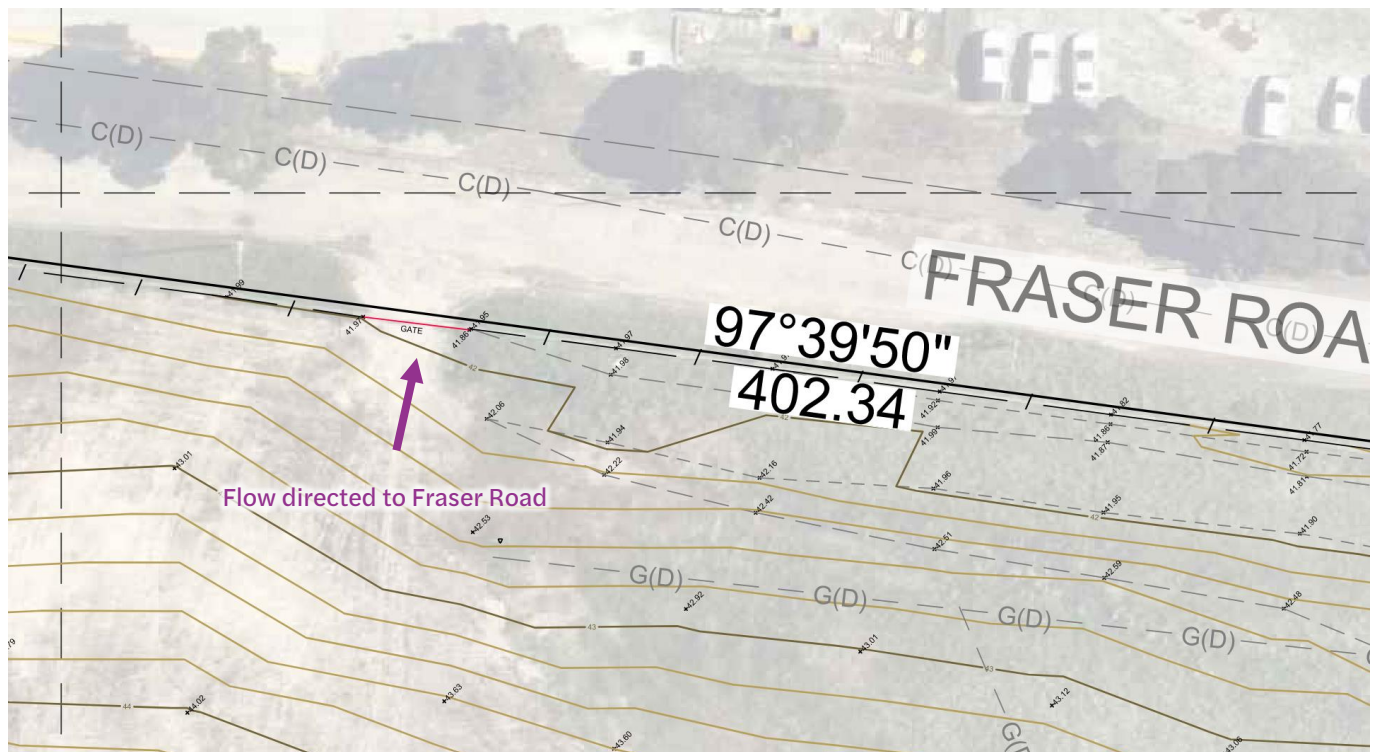


Figure 4-3 Northern Boundary Surface Drain

4.5 Google Maps Street View and Site Aerials

Investigation of site photos and aerials of the site over a 10 year period from 2009 – 2019 indicates severe, consistent stormwater ponding along Fraser Road and Deals Road, particularly in locations where there is no outer bund as mentioned in Section 4.4 above.

The following images show the extent and severity of the stormwater ponding over this time period.



Figure 4-4 Fraser Road Stormwater Ponding 2009 (Source: Google Street View 2009)

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Figure 4-5 Fraser Road Stormwater Ponding 2015 (Source: Google Street View 2015)

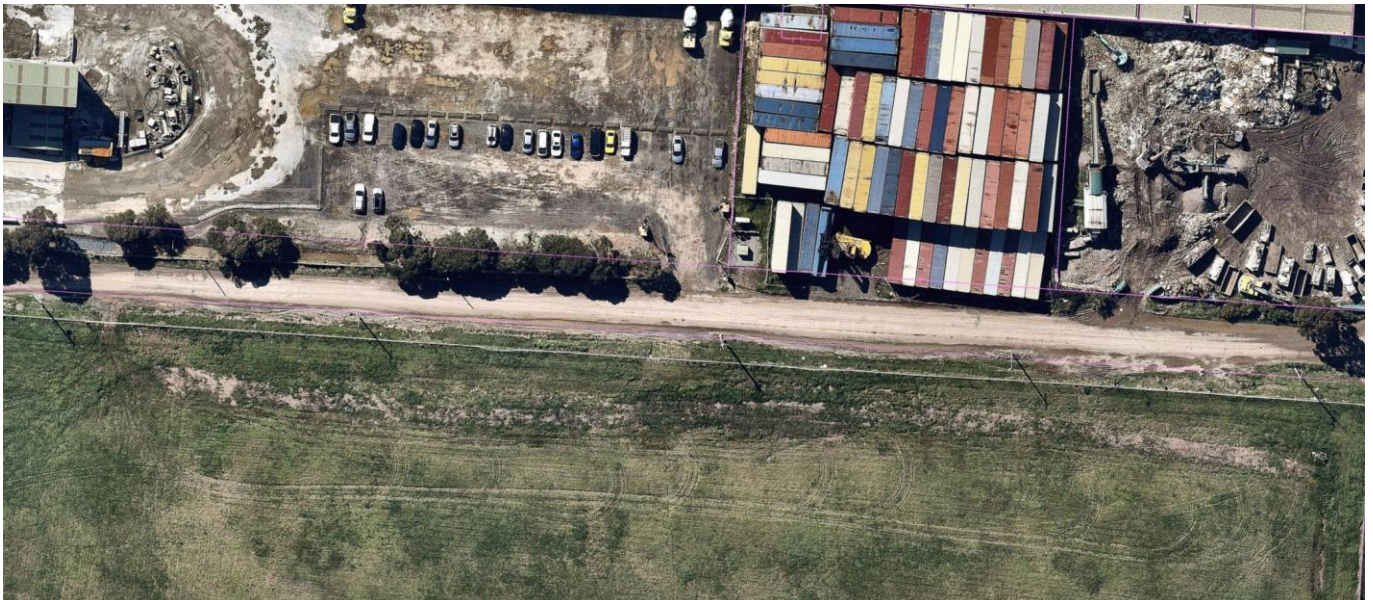


Figure 4-6 Fraser Road Stormwater Ponding 2019 (Source: Nearmap 2019)



Figure 4-7 Deals Road and Fraser Road Intersection Stormwater Ponding (Source: Google Street View 2009)

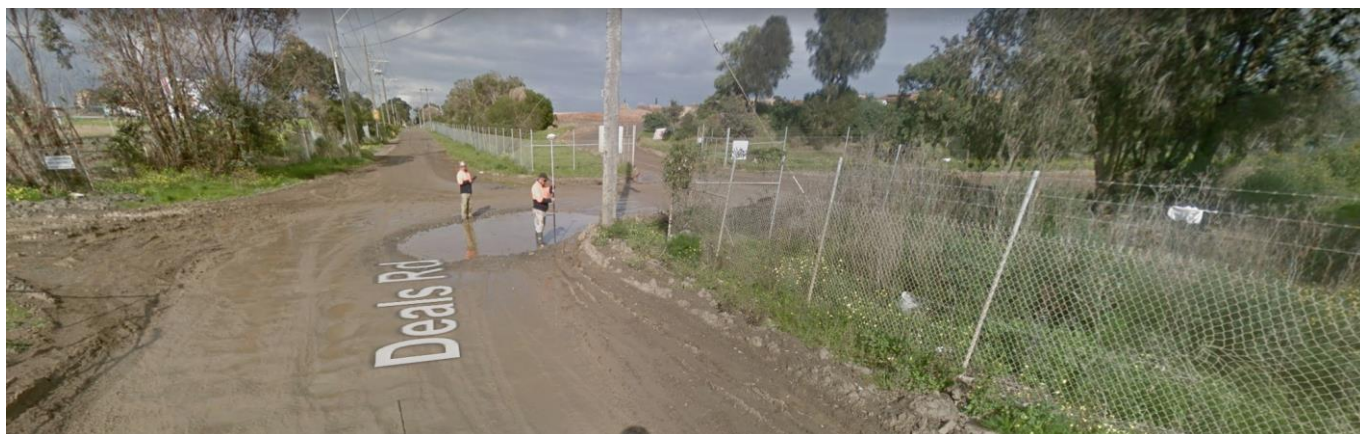


Figure 4-8 Deals Road and Fraser Road Intersection Stormwater Ponding (Source: Google Street View 2014)



Figure 4-9 Deals Road and Fraser Road Intersection Stormwater Ponding (Source: Nearmap 2019)

The existing inlet pit on Clayton Road is also visible from historical Google Street View imagery, as shown Figure 4-10. It has been reasonably assumed that this is the lawful point of discharge for existing catchment C1.



Figure 4-10 Clayton Road Existing Gully Inlet Pit (Source: Google Street View 2015)



4.6 Developed Catchment and Discharge Location

In the developed case, site flows will be consolidated into two catchments as shown in Figure 4-11, with discharge locations to the existing northern and southern stormwater infrastructure. Stormwater quantity will be managed via a proposed detention tank for each catchment and stormwater quality treatment will be included via proprietary Filterra systems.

The proposed stormwater discharge arrangement is a significant improvement from the current configuration, as summarised below:

- Consolidates site flows to two discharge locations;
- Reduces site runoff (and associated ponding) on Fraser and Deals Road; and
- Includes upgrading the existing council-owned infrastructure in Clayton Road.

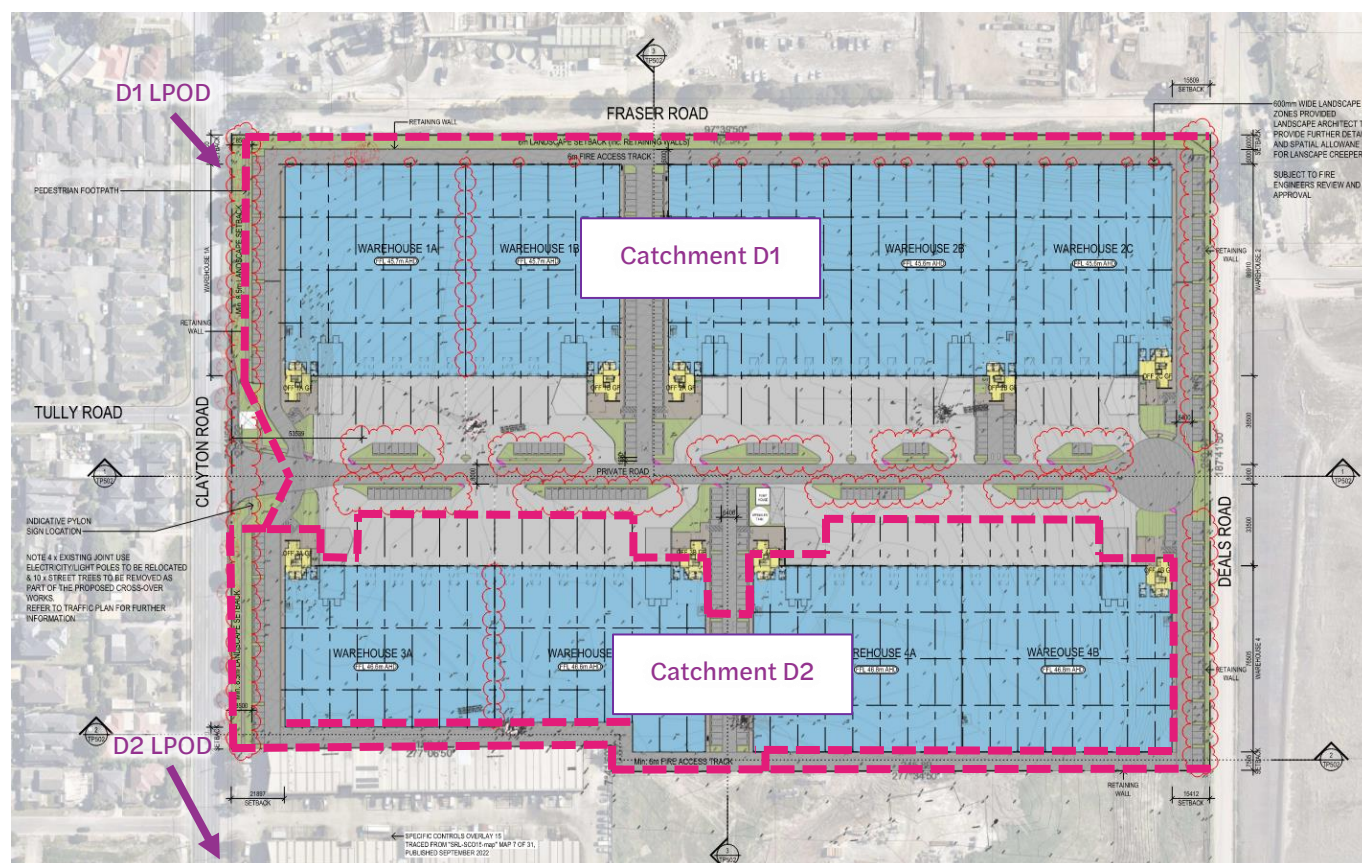


Figure 4-11 Developed Catchment Plan

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5. Stormwater Hydrology

5.1 Introduction

This section of the report addresses peak stormwater discharge resulting from the site and identifies whether attenuation measures are necessary to ensure “no-worsening” of the peak flows from the site.

Methodology

Civil Design Requirements for Developers Part A: Integrated Stormwater Management by City of Kingston (September 2018) outlines that detention systems must be used where appropriate to reduce ‘permissible site discharge’. For industrial sites, the permissible site discharge is required to be calculated on:

- 1 in 10-year ARI storm event using a ‘Coefficient of Runoff’ based on the lower of; existing site imperviousness (where $C < 0.7$) or $C = 0.7$ (maximum allowable upper limit due to a lack of capacity in the existing council drainage system).
- Industrial development shall store the difference between the ‘permissible site discharge rate’ rate (based on 1 in 10-year ARI) and the discharge rate for the proposed development based on a 1 in 10-year ARI storm event.

For the purposes of this development, the following methodology was adopted to determine the permissible site discharge.

1. Evaluate site flows based on existing imperviousness;
2. Evaluate site flows using a C_{10} value of 0.7;
3. Size tank to match the lower of the permissible site flows; and
4. Adjust tank sizing to match capacity of the outlet pipe.

The Rational Method has been utilised to estimate the peak flow of event hydrographs for both the existing and developed case scenarios.

The results of the Rational Method calculations are used in the following sections to:

- i. Evaluate the impact of the proposed development on the surrounding infrastructure, and;
- ii. Quantify the discharge of stormwater from the site and surrounding catchments for the proposed future development.

Catchments

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In the existing case, the site is divided between three catchments, as summarised in Table 5-1 below.

Table 5-1 Existing Catchment Areas

Catchment	Area
C1	3.46 ha
C2	4.57 ha
C3	2.32 ha

Time of Concentration

The time concentration for each existing catchment was determined using methods in accordance with the Queensland Urban Drainage Manual QUDM (2017). QUDM is a standard document which contains best practise guidelines for urban drainage management and was considered appropriate in this application. The time of concentration for Catchment C1 calculation is summarised in Table 5-2 below.



Table 5-2 Pre-Developed Time of Concentration

Catchment	Flow Component	Length	Roughness (Horton's "n")	Average Slope (%) / Fall (m)	Travel Time (min)	Tc (min)
Catchment C1	Sheet Flow	100	0.035	1.5 %	16	19
	Channel Flow	200		3m	3	

Using this methodology, the time of concentration for C2 and C3 were calculated as 20 minutes and 17 minutes respectively.

C₁₀

The C₁₀ value for the existing site imperviousness of 0% was conservatively adopted as 0.2.

5.2 Permissible Site Discharge

This section describes the permissible site discharge for the site in accordance with the guidelines in Developers Part A: Integrated Stormwater Management by City of Kingston.

Catchment 1

The permissible site discharge for catchment C1 was calculated using the Rational Method as detailed in Table 5-3 below.

Table 5-3 Permissible Site Discharge (Imperviousness/ Infiltration)

	Q ₁₀ (m ³ /s)
Catchment C1 Permissible Site Discharge, C ₁₀ = 0.2	0.104
Catchment C1 Permissible Site Discharge, C ₁₀ = 0.7	0.363

As such, the lower flow rate of 0.104m³/s was adopted as the permissible site discharge.

Catchment 2

Formal correspondence from City of Kingston Council (issued 14 September 2023) specified the maximum allowable discharge to the southern location to be 0.03m³/s. Accordingly, this was adopted as the maximum permissible discharge for the catchment.

5.3 Developed Site Discharge

Catchments

In the developed case, the site consists of two catchments, as summarised in Table 5-4 below, with the remainder of the site bypassing quality and quantity treatment.

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Table 5-4 Developed Catchment Areas

Catchment	Area
D1	6.100 ha
D2	3.502 ha

C₁₀ Value

The developed C₁₀ value for the site was adopted as 0.9, in accordance with Section 6.1 of the Civil Design Requirements for Developers Part A: Integrated Stormwater Management by City of Kingston (September 2018).

Time of Concentration

The time of concentration for the developed catchments is comprised of sheet flow to inlets as well as piped flow. The time of concentration for each catchment is summarised below, using a 5-minute inlet time.

Table 5-5 Developed Time of Concentration

Catchment	Time of Concentration
D1	14 min
D2	11 min

Catchment 1 Flow Summary

The proposed development will alter the time of concentration (t_c), area, C₁₀ value and the discharge volume for Catchment 1 (discharging to the existing gully inlet pit on Clayton Road) and increase the flow discharging from the site in all storm events. Therefore, it will be necessary to provide the development with an on-site detention system for developed catchment D1.

Catchment 2 Flow Summary

Developed catchment D2 is proposed to discharge to the existing stormwater infrastructure to the south of the site. In the existing case, site flows do not discharge to this existing infrastructure, however this is an improved outcome as it will consolidate C2 and C3 flows and reduce the severe stormwater ponding on Fraser and Deals Road. To ensure that the existing infrastructure is not exceeded, the development conservatively included detention storage for Catchment 2.

5.4 Maximum Mitigated Flow Rates

To achieve “no-worsening” of the peak flows from the site, the maximum mitigated flow rate for each catchment in the 1 in 10 year storm event is specified in Table 5-6 below.

Table 5-6 Maximum Mitigated Flow Rate (1 in 10 year storm event)

Catchment	Maximum Flow Rate (1 in 10 year storm event)
D1	0.104 m ³ /s
D2	0.03m ³ /s



6. Detention Design

DRAINS hydrologic software has been utilised to undertake the assessment of permissible site discharge and developed stormwater discharge for the purposes of the on-site detention specification process. DRAINS version 2020.061 has been utilised in this assessment.

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6.1 Modifiable Inputs

The DRAINS software package has several inputs that can be used to manipulate the hydraulic behaviour of the model. The values adopted in this model are all default values, and are presented in Table 6-1 below:

Table 6-1 - DRAINS Modifiable Inputs

Input	Modelled Value
Antecedent Moisture Condition	3
Paved Depression Storage (mm)	1
Supplementary Depression Storage (mm)	1
Grassed (Pervious) Depression Storage (mm)	5
Soil Type	3

Depression Storage values of 1mm for paved/supplementary and 5mm for grassed (pervious) areas were adopted in this model as recommended in the DRAINS user manual.

An Antecedent Moisture Condition (AMC) of 3.0 has been adopted as a default value for this site.

A soil type classification type of 3 is representative of soil with slow infiltration rates (may have layers that impede downward movement of water). This value is the default (conservative) value adopted by DRAINS and is considered to represent the existing site conditions well.

6.2 DRAINS Calibration

Table 6-2 below provides a summary of the process of calibration of the DRAINS model against Rational Method calculations.

The results indicate that the DRAINS model is programmed with a satisfactory level of accuracy for the purposes of this exercise.

Table 6-2 - DRAINS Calibration – Catchment D1 (Developed)

ARI	5	10	20	50	100
Rational Method	0.797	0.992	1.153	1.647	1.923
DRAINS (m³/s)	0.991	1.170	1.380	1.690	1.950
Change	+24%	+18%	+20%	+3%	+1%



6.3 D1 Detention Design Parameters

A process of iteration using a combination of detention system height, storage and outlet pipework arrangement have been used to determine the optimal design for the detention system.

Table 6-3 below provides the final dimensions of the proposed D1 detention system incorporated into the design model.

Table 6-3 – Catchment D1 Detention Design Parameters

Feature	Modelled Value
Base Area	1000m ²
Peak Water Depth (Q ₁₀)	1.74m
Peak Discharge	0.092m ³ /s (< 0.104m ³ /s)
Outlet Pipe Size / Level	175mm orifice with 300mm outlet pipe
Weir Size / Level	1m @ 1.7m high
Total Detention Volume	1740m ³

6.4 D2 Detention Design Parameters

Table 6-3 below provides the final dimensions of the proposed D1 detention system incorporated into the design model.

Table 6-4 – Catchment D2 Detention Design Parameters

Feature	Modelled Value
Base Area	1100m ²
Peak Water Depth (Q ₁₀)	1.0m
Peak Discharge	0.029m ³ /s (< 0.03m ³ /s)
Outlet Pipe Size / Level	120mm orifice with 300mm outlet pipe
Weir Size / Level	1m high
Total Detention Volume	1100m ³

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6.5 Detention System Layout

The D1 detention tank will be located in the north-western corner of the site underneath the western carpark and will discharge into the existing gully pit in Clayton Road adjacent to the site. City of Kingston Infrastructure mapping indicates that the existing northern infrastructure is limited by the capacity of the 225mm connection to the gully inlet pit in Clayton Road. In the developed case, this infrastructure is proposed to be upgraded to a 300mm pipe. As such, the D1 detention tank outlet was conservatively specified as 300mm at 1% grade.

The D2 detention tank will be located in a below ground tank in the south-western corner of the site that will discharge into the proposed stormwater infrastructure in Clayton Road. This will also require extension of the existing 300mm pipe to the south.

Preliminary layouts of the proposed detention system are shown in Preliminary Engineering Drawings in Appendix B.



7. Stormwater Quality Management

7.1 Introduction

This section of the report aims to identify the requirements for stormwater quality management resulting from the proposed development and identify suitable stormwater treatment devices to comply with relevant requirements of the City of Kingston Planning Scheme.

7.2 Water Quality Objectives

In accordance with Victoria's Best Practise Environmental Management (BPEMG) targets, the development must demonstrate the following minimum reduction in mean annual loads from the unmitigated development:

Table 7-1 - Water Quality Objectives

Pollutant	Minimum Reduction in Mean Load (%)
Total Suspended Solids	80
Total Phosphorus	45
Total Nitrogen	45
Gross Pollutants	90

7.3 Catchment Areas and Source Nodes

The catchment areas used for the water quality assessment are limited to the subject site. The subject site has been separated into pollutant source nodes for MUSIC modelling using the "split catchment" approach as follows:

Table 7-2 – Catchment Areas and Imperviousness

Catchment Type	D1A Area (ha)	D1B Area (ha)	D2 Area (ha)	Bypass (ha)	Imperviousness
Roof	1.402	2.069	2.997	0.000	100
Hardstand	0.034	0.071	0.024	0.000	100
Driveway	0.762	1.606	0.414	0.288	100
Landscape	0.011	1.450	0.067	0.465	0

7.4 MUSIC Modelling Guidelines and Parameters

The MUSIC modelling of the site was confirmed via 2nd and 3rd party verification and products using the following guidelines and parameters:

- MUSIC Version 6.3.0
- Rainfall Station: 750-850mm, Koo Wee Rup, 1991-1980, 6 minute
- Melbourne MUSIC Guidelines (Melbourne Water 2016) utilising modified % impervious area, rainfall threshold, soil properties and pollutant concentration
- No drainage routing between nodes

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7.5 Proposed Treatment Devices

The proposed stormwater quality treatment system has been designed using a proprietary Ocean Protect products. This system will be integrated into the proposed stormwater configuration as specified in the detailed design stage.

The Ocean Protect Filterra is biofiltration system that operates similarly to a traditional bioretention, which traps and absorbs pollutants from stormwater runoff such as total suspended solids, hydrocarbons, nutrients, metals and other common pollutants. The system consists of mulch and proprietary filter treatment media that is suitable for urban developments in industrial areas.

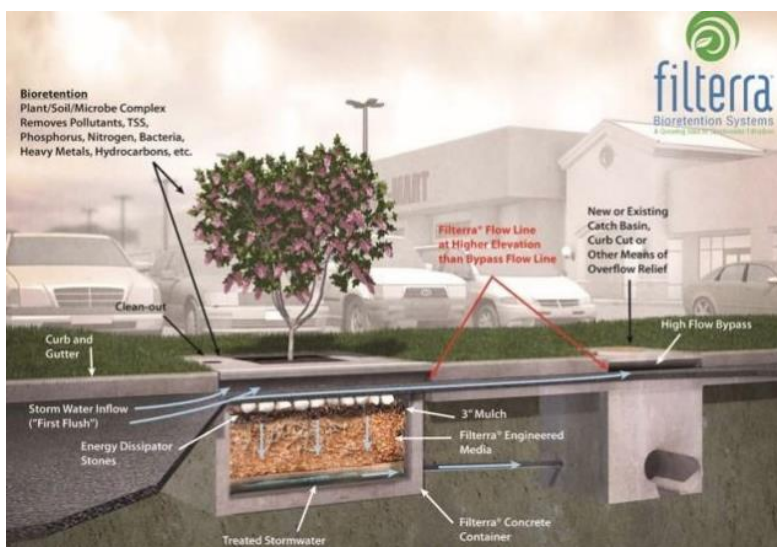


Figure 7-1 Ocean Protect StormFilter

Compliance has been demonstrated via 2nd and 3rd party independent verification.

Quality treatment for the site will include multiple Filterra systems for the site to service each catchment, with the total requirement for the site is presented below.

Device Type	Required Installation
Filterra Bioscape System	Approx 290m ² (total)

Detailed plans and certification of compliance with the relevant stormwater quality objectives will be provided to Council with the Operational Works application.

7.6 MUSIC Modelling Diagram

A diagrammatic layout of the MUSIC model interface used to model the proposed development with the Ocean Protect devices incorporated is presented in Figure 7-2 below:

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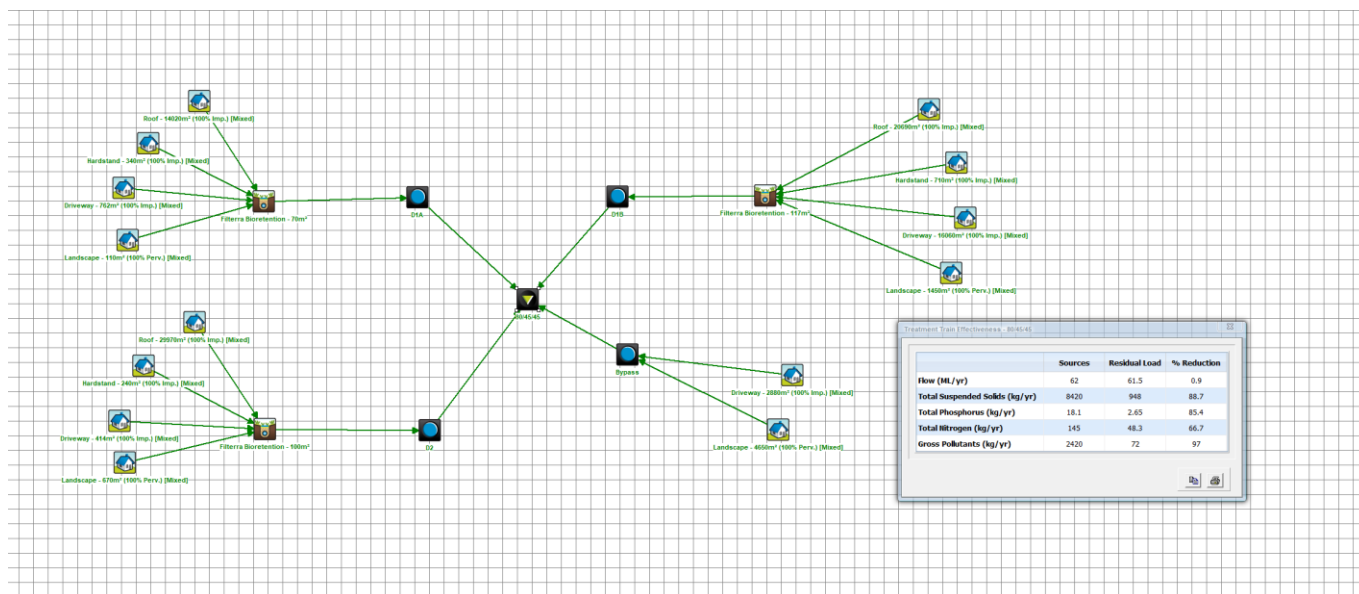


Figure 7-2 MUSIC Modelling Layout and Results

7.7 MUSIC Modelling Stormwater Quality Improvement

MUSIC was used to model the treatment train effectiveness in terms of the percentage of pollutants being removed from the system using the proposed treatment device.

The results of the MUSIC modelling compared to the stated Water Quality Objectives (WQO's) are presented below.

Figure 7-3 MUSIC Modelling Stormwater Quality Improvement

Pollutant	Minimum Reduction in Mean Load	MUSIC Results (Combined system)
Total Suspended Solids	80%	88.7%
Total Phosphorus	45%	85.4%
Total Nitrogen	45%	66.7%
Gross Pollutants	90 %	97.0%

The results indicate that the proposed proprietary Ocean Protect system is sufficient in achieving the water quality objectives and exceeds the minimum required pollutant reduction targets.

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8. Conclusion

Context Engineering has been commissioned by Troon Group to compile this Stormwater Management Plan for the proposed development of the site located at 618 Clayton Road, Clayton South.

The proposed site involves the creation of an industrial development consisting of nine (9) new warehouses over a historical landfill. These buildings will be connected via large hardstand areas and a centrally located private road with access to Clayton Road. Each warehouse will also be serviced via adjacent office buildings and carparking spaces.

A summary of the investigation and outcomes presented in this report are as follows:

- Lawful Point of Discharge (Section 4) – Existing catchment C1 and developed catchment D1 lawful point of discharge to existing gully pit in Clayton Road to the north-west of the site. Existing catchment C2 and C3 discharge to Fraser Road and Deals Road, causing frequent, severe stormwater ponding. Developed catchment D2 to discharge to existing council-owned stormwater infrastructure to the south of the site.
- Stormwater Hydrology (Section 5) – Increase in unmitigated flows from existing to developed case.
- Detention Design (Section 6) – Proposed detention requirement for D1 and D2 is 1740m³ and 1100m³ respectively. Detention sized to ensure that flows match capacity of outlet pipe.
- Stormwater Quality Management (Section 7) – Stormwater to be treated by proprietary Filterra devices.

9. Recommendations

It is recommended that the proposed Development Application be approved.

10. Disclaimer

This report has been prepared on behalf of and for the exclusive use of Troon Group and is subject to and issued in accordance with the agreement between Context Engineering.

Our investigation and analysis has been specifically catered for the particular requirements Troon Group and may not be applicable beyond this scope. For this reason, any other third parties are not authorised to utilise this report without further input and advice from Context Engineering.

Context Engineering accepts no liability or responsibility whatsoever for the report in respect of any use of or reliance upon this report by any third party.

The investigation and analysis have relied on information provided by others. We accept no responsibility for the accuracy of material supplied by others. The accuracy of the investigation, analysis and report are dependent upon the accuracy of this information.

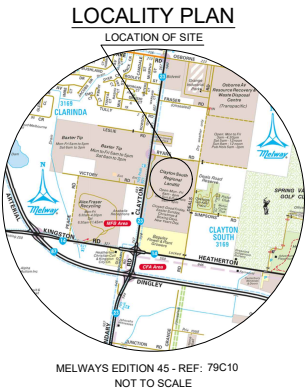
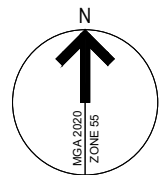
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618 Clayton Road, Clayton South
STORMWATER MANAGEMENT PLAN

Appendix A Site Survey

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SEE SHEET 11 FOR
SURVEY REPORT, NOTES
AND LEGEND

WARNING
BEWARE OF UNDERGROUND & OVERHEAD SERVICES
The locations of existing utility services are approximate only and their exact position should be proven on site. No guarantee is given that all existing utility services are shown. Locate all utility services before commencement of works.
DIAL 1100 BEFORE YOU DIG
www.1100.com.au

LICENSED SURVEYOR CERTIFICATION:

This plan has been prepared from a survey completed on the 03/02/2023. The survey was carried out under my direction and supervision in accordance with the Surveying Act 2004. This plan is accurate and correctly represents the adopted boundaries and achieves the survey accuracy required by Regulation 7(1) of the Surveying (Cadastral Surveys) Regulations 2015.

Digitally Signed:

ADVERTISED PLAN

CLIENT:

TROON GROUP



PROJECT:

618 CLAYTON ROAD
CLAYTON SOUTH VIC 3169

DRAWING:

**PLAN OF TITLE RE-ESTABLISHMENT,
FEATURE, LEVEL AND SERVICES SURVEY**

Proj. Ref:	23319/S1	Approved by:	SST
Sheet:	1 of 11	Approval Date:	10/02/2023

15 0m 15 30 45 60
1:750 @ A1

DRAWING NUMBER:

23319-S1-D1

VERSION:

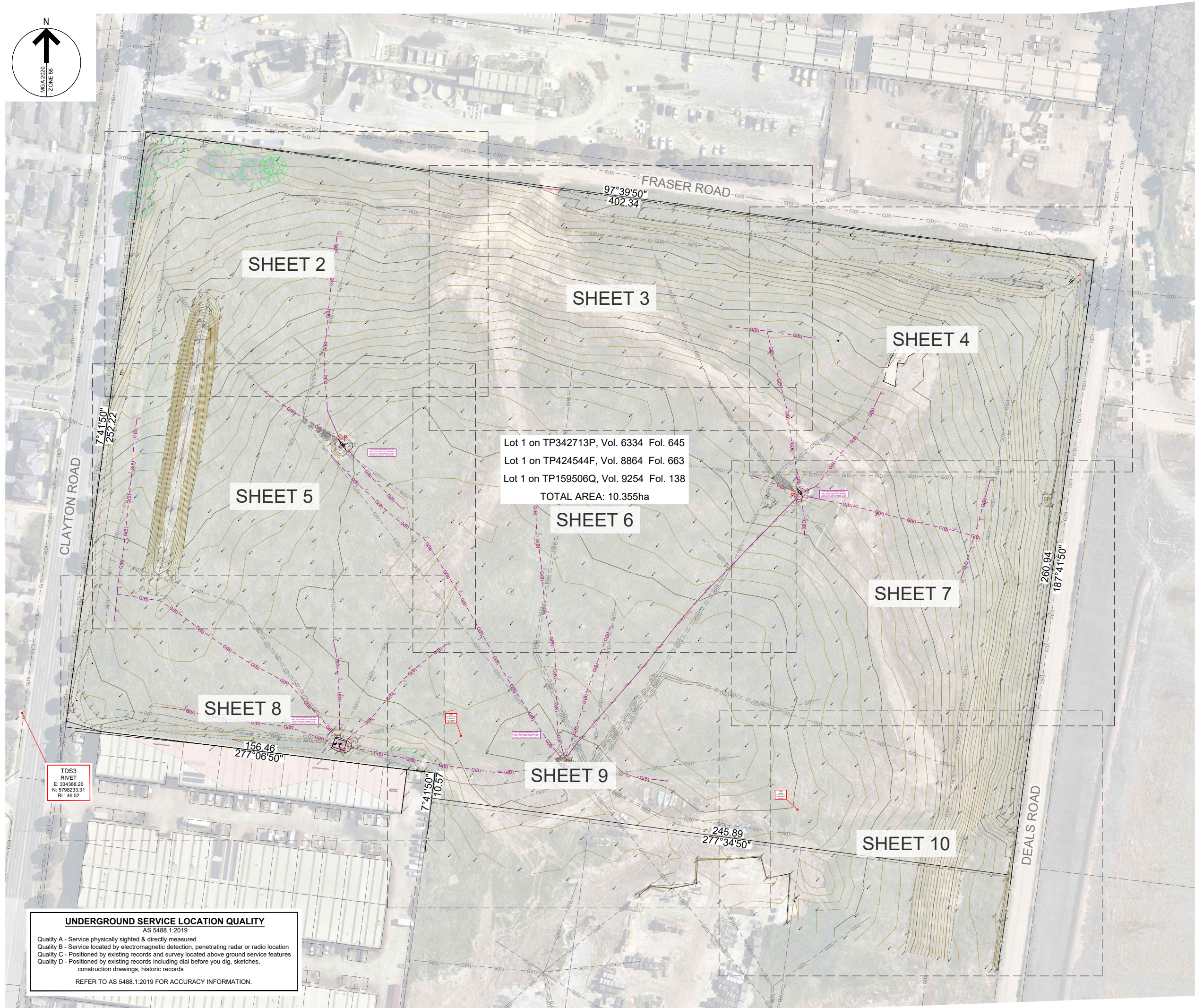
01

TAYLORS

Urban Development | Infrastructure

8/270 Ferntree Gully Road, Notting Hill VIC 3168

Phone: (03) 9501 2800 | www.taylorsds.com.au



UNDERGROUND SERVICE LOCATION QUALITY

AS 5488.1:2019

Quality A - Service physically sighted & directly measured
Quality B - Service located by electromagnetic detection, penetrating radar or radio location
Quality C - Positioned by existing records and survey located above ground service features
Quality D - Positioned by existing records including dial before you dig, sketches, construction drawings, historic records

REFER TO AS 5488.1:2019 FOR ACCURACY INFORMATION.

618 Clayton Road, Clayton South

STORMWATER MANAGEMENT PLAN

















Appendix B Preliminary Engineering Drawings

TROON GROUP

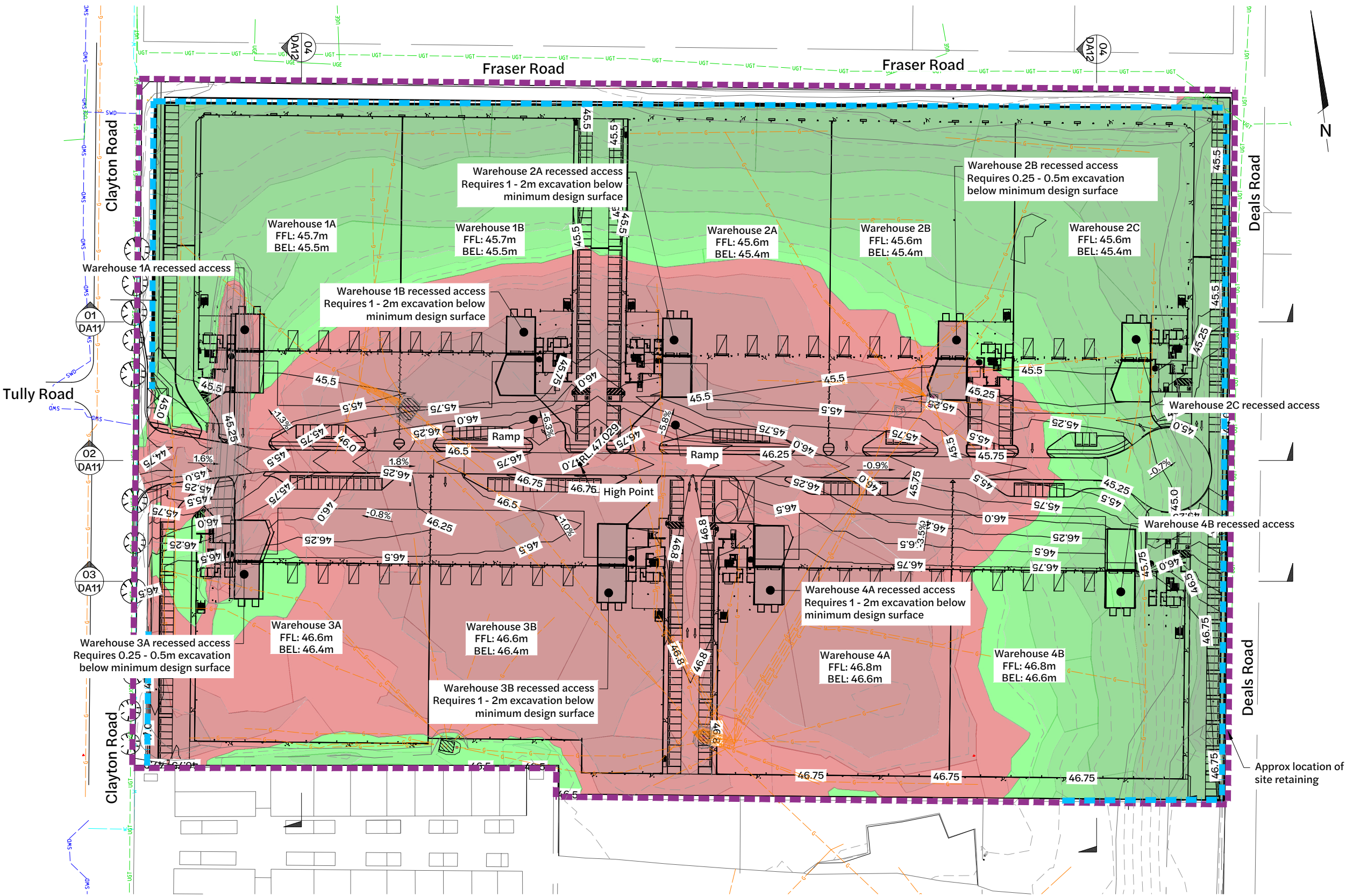
**ADVERTISED
PLAN**

Legend

- Property Boundary
- 0.25 Design Contour
- 0.5 Existing Surface Contour
- Existing Stormwater Drainage
- Existing Sewerage Reticulation
- Existing Water Reticulation
- Existing Gas
- Existing Overhead Electrical
- Approx Retaining Wall Location

Bulk Earthworks Legend			
Cut		Fill	
	> 15.0m		> 15.0m
	10.0 to 15.0m		10.0 to 15.0m
	5.0 to 10.0m		5.0 to 10.0m
	2.0 to 5.0m		2.0 to 5.0m
	1.0 to 2.0m		1.0 to 2.0m
	0.5 to 1.0m		0.5 to 1.0m
	0.25 to 0.5m		0.25 to 0.5m
	0.0 to 0.25m		0.0 to 0.25m
Earthworks Schedule (Stripped Surface to Bulk Earthworks)			
Type		Volume (m³)	
Cut		-33,000 (approx)	
Fill		84,000 (approx)	
Total Balance		51,000 (approx)*	
*100mm strip and 200mm pavement and structural slab depth. Recessed areas 1.3m below design surface.			

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Bulk Earthwork Layout Plan
1:750 Scale

ENERGY SERVICE PROVIDERS

AGL, ORIGIN, ERGON ENERGY, energex

Note: Service locations are approximate only from provider plans. Locations are to be confirmed prior to the start of construction. Refer **Before You Dig** service location plans - available at www.hyda.com.au




TELECOMMUNICATIONS SERVICE PROVIDERS

'yes' OPTUS, Telstra, visionstream, nbn

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Revision	Date	Issue Details	Drawn	Designed	QR Code	Status	Scale	Client	Project	Drawing Title	Project No.	Drawing No.	Revision
1	05.03.23	Issued for Approval	EG	EG		Issued for Approval Not for Construction	1:750 1:1500 15 0 15 30m A1 A3	Troon Group	618 Clayton Road Clayton South	Context Engineering	C_23011	DA10	4
2	29.05.23	Issued for Information	EG	EG									
3	19.07.23	Issued for Approval	EG	EG									
4	06.11.23	Futher Information Request Response	CG	EG									

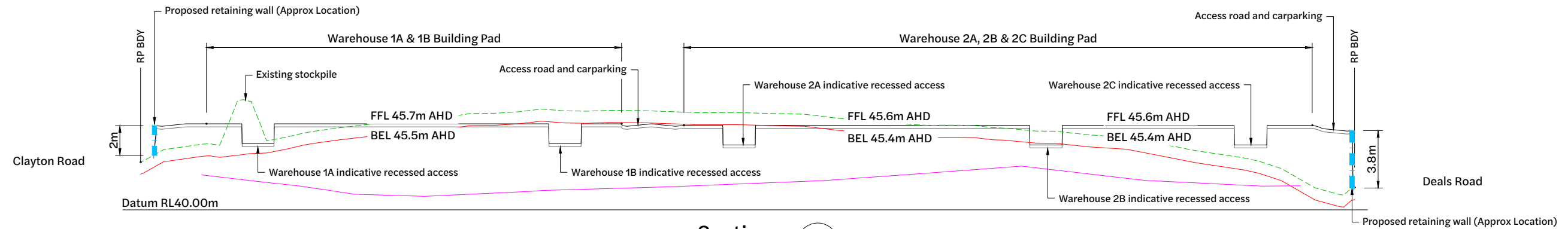
Legend

- | | |
|---|--|
|  | Existing Surface |
| | Minimum Design Surface - 0.8m Below Assumed Surface* |
|  | Minimum Capping Layer- 2.5m above depth to waste encountered** |
| | Design Surface |
| | Bulk Earthworks Surface |
|  | Proposed Retaining Wall (Approx Location) |

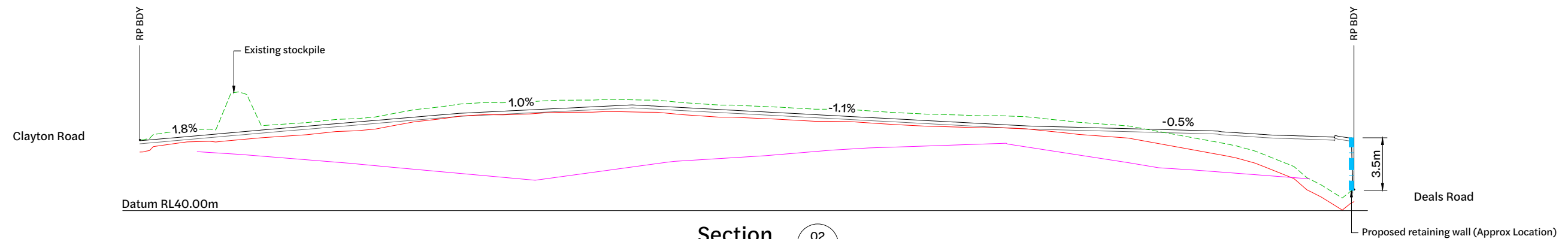
* Assumed surface does not include existing stockpile

** Refer Clayton Road Landfill - Cap Soil Assessment by Resolve Environmental for depth of waste.

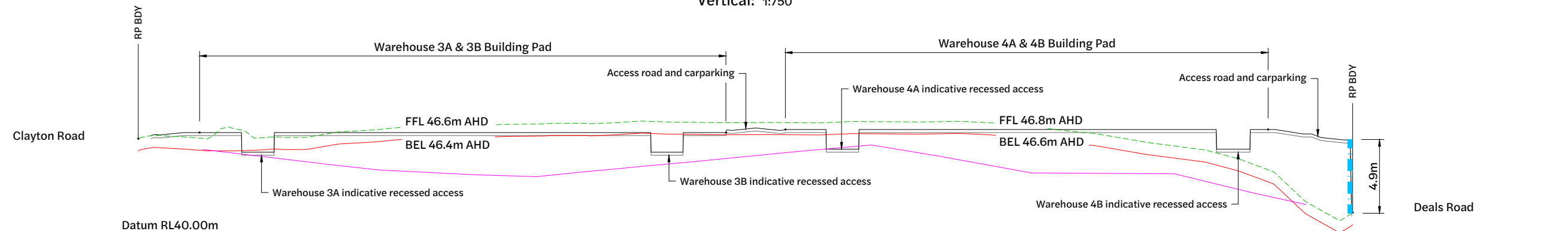
ADVERTISED PLAN



Section
Horizontal: 1:750
Vertical: 1:750







Section
Horizontal: 1:750
Vertical: 1:750



Section 03
Horizontal: 1:750
Vertical: 1:750







Note:

Typical sections have been drawn with 5x vertical exaggeration to assist with visualizing site levels and grades.

Revision			Date	Issue Details	Drawn	Designed	QR Code	Status	Scale	Client	Project	Drawing Title			
1	29.05.23	Issued for Approval		EG	EG			Issued for Approval Not for Construction		Troon Group	618 Clayton Road Clayton South		Bulk Earthworks Sections (Sheet 1 of 2)		
2	19.07.23	Issued for Approval		EG	EG								Project No. C_23011	Drawing No. DA11	Revision 3
3	06.11.23	Futher Information Request Response		CG	EG										

FILE: BLANCHET.C, TROM, 648 CLAYTON ROAD CLAYTON, N.S. MODEL: AUTOCAPDA.DRW, INCL.C, TROM.DWG, BULK EARTHWORK SECTIONS DWG, LAST EDITED BY: COME

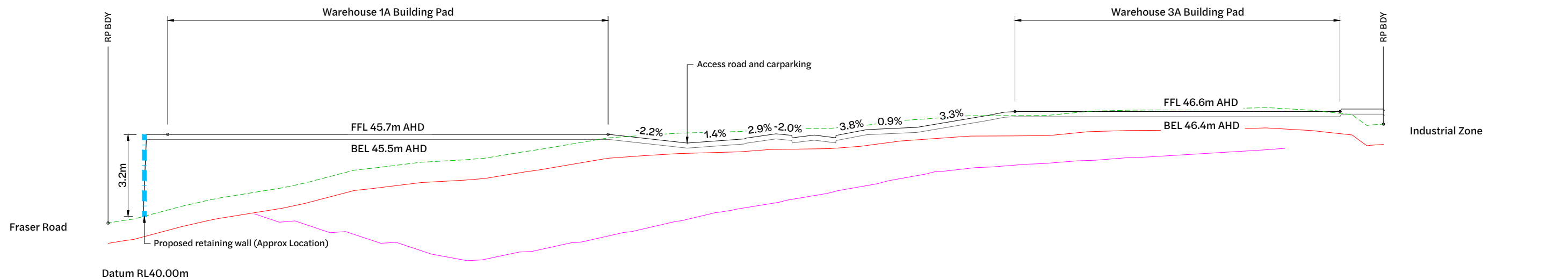
Legend

-  Existing Surface
 Minimum Design Surface - 0.8m Below Assumed Surface*
 Minimum Capping Layer- 2.5m above depth to waste encountered**
 Design Surface
 Bulk Earthworks Surface
 Proposed Retaining Wall (Approx Location)

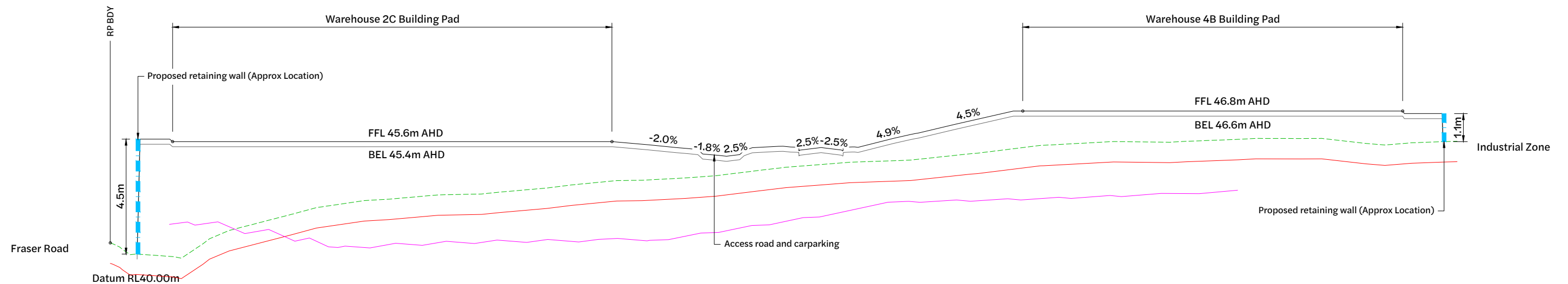
* Assumed surface does not include existing stockpile

**** Refer Clayton Road Landfill - Cap Soil Assessment by Resolve Environmental for depth of waste.**

**ADVERTISED
PLAN**








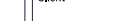









Section 04
Horizontal: 1:400 DA10
Vertical: 1:400



Section 05
Horizontal: 1:400 DA10
Vertical: 1:400

Note:

Typical sections have been drawn with 5x vertical exaggeration to assist with visualizing site levels and grades.

Revision			Issue Details		Drawn	Designed	QR Code	Status	Scale	Client	Project		Drawing Title																																																																																																																																																																							
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1	29.05.23	Issued for Approval	EG	EG																																																																																																																																																																																

Legend

- Property Boundary
- Existing Stormwater Drainage
- Existing Sewerage Reticulation
- Existing Water Reticulation
- Existing Gas
- Existing Overhead Electrical
- Proposed Stormwater
- Proposed Stormwater Inlet

Catchment D1 Legal Point of Discharge
Existing 225m connection in Clayton Road to existing gully pit to be removed and replaced with 300mm pipe
Approx SL: 42.05m

Proposed Detention Tank
SL: 45.5m
Inlet IL: 41.760m
Outlet IL: 41.600m
Min storage volume: 1740m³

Indicative D1A Filterra Location
Treatment Area: 70m²

Major flows exceeding capacity of piped infrastructure to be directed to Clayton Road

Indicative D2 Filterra Location
Treatment Area: 100m²

Proposed detention tank
SL: 46.6m
Slab depth: 0.2m
Inlet IL: 44.425m
Outlet IL: 44.400m
Min storage volume: 1100m³

Catchment D2 Legal Point of Discharge
Existing 300m pipe in Clayton Road

Assumed SL (Lidar): 44.6m
Assumed Cover: 0.6m
Approx Connection IL: 43.7m

Proposed 300mm outlet pipe in Clayton Road
Length: 15m
Grade: 0.5%
USIL: 44.425m
DSIL: 44.35m

Proposed 300mm stormwater pipe in Clayton Road
Length: 115m
Grade: 0.5%
USIL: 44.35m
DSIL: 43.775m

Stormwater Drainage Layout Plan
1:1000 Scale

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Note: Service locations are approximate only from provider plans. Locations are to be confirmed prior to the start of construction. Refer **Before You Dig** service location plans - available at www.byda.com.au

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Note: Service locations are approximate only from provider plans. Locations are to be confirmed prior to the start of construction. Refer **Before You Dig** service location plans - available at www.byda.com.au

Revision	Date	Issue Details	Drawn	Designed	QR Code	Status	Scale	Client	Project	Drawing Title	Project No.	Drawing No.	Revision
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2	19.07.23	Issued for Approval	EG	EG									
3	06.11.23	Further Information Request Response	CG	EG									

Scale

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

Client

Troon Group

Project

618 Clayton Road
Clayton South

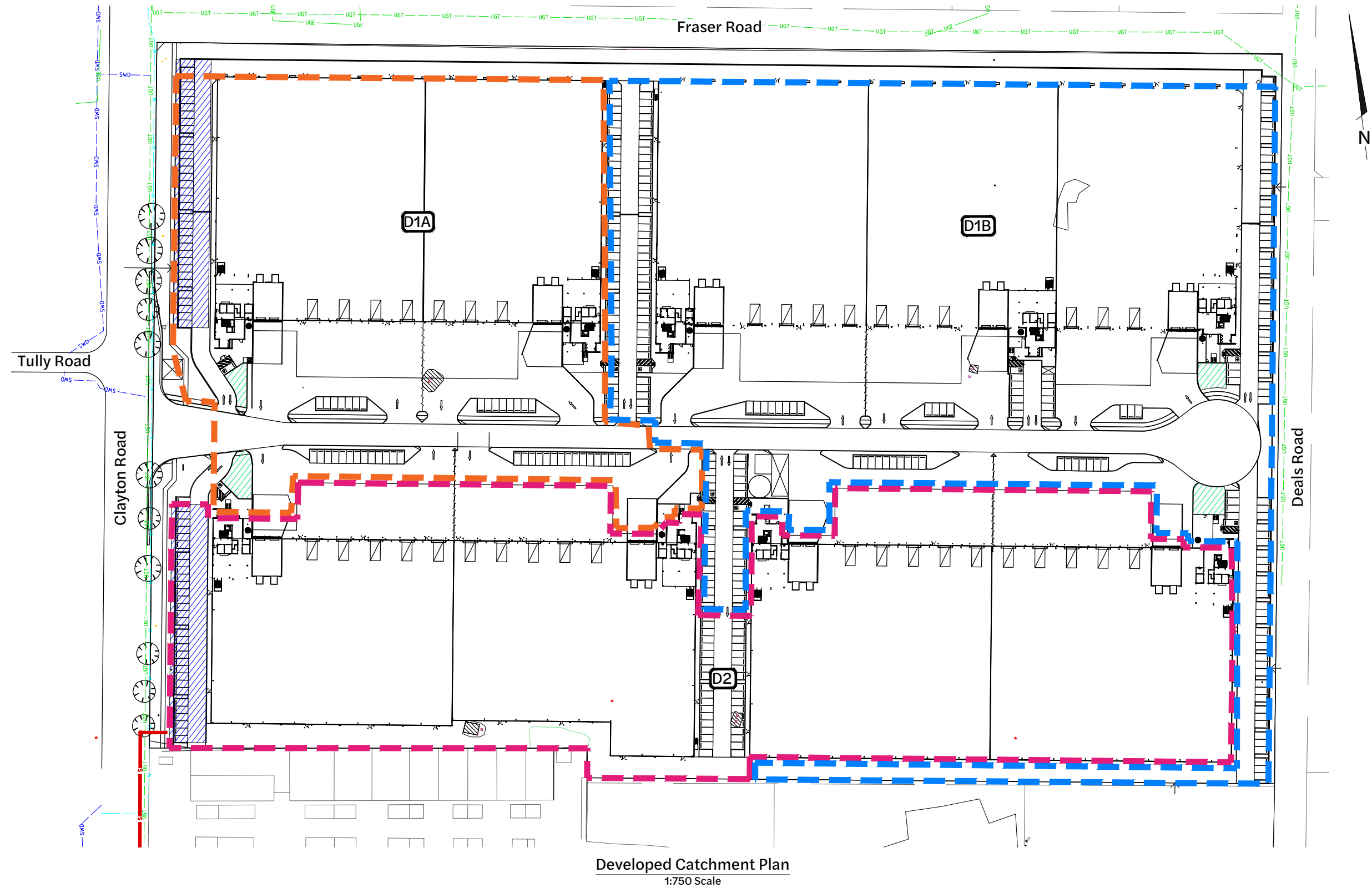
Disclaimer
All dimensions to be checked on site by contractor prior to construction. Use written dimensions only, do not scale.

Drawing Title

Stormwater
Drainage Layout Plan

Legend

- Property Boundary
- Existing Stormwater Drainage
- Existing Water Reticulation
- Existing Gas
- Existing Undergorund Electrical
- Catchment D1A Boundary
- Catchment D1B Boundary
- Catchment D2 Boundary



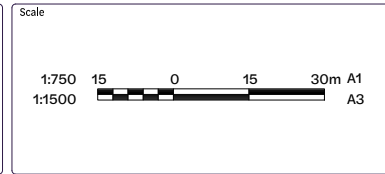
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Revision	Date	Issue Details	Drawn	Designed
1	28.03.23	Issued for Approval	CG	EG
2	30.06.23	Issued for Approval	EG	EG
3	06.11.23	Futher information Request Response	CG	EG

QR Code

Status

Issued for Approval
Not for Construction



Client

Troon Group

Project

618 Clayton Road
Clayton South

Disclaimer
All dimensions to be checked on site by contractor prior to construction. Use written dimensions only, do not scale.

Context
Engineering

Drawing Title		
Developed Catchment Plan		
Project No. C_23011	Drawing No. DA42	Revision 3

ENERGY SERVICE PROVIDERS

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Note: Service locations are approximate only from provider plans. Locations are to be confirmed prior to the start of construction. Refer **Before You Dig** service location plans - available at www.byda.com.au

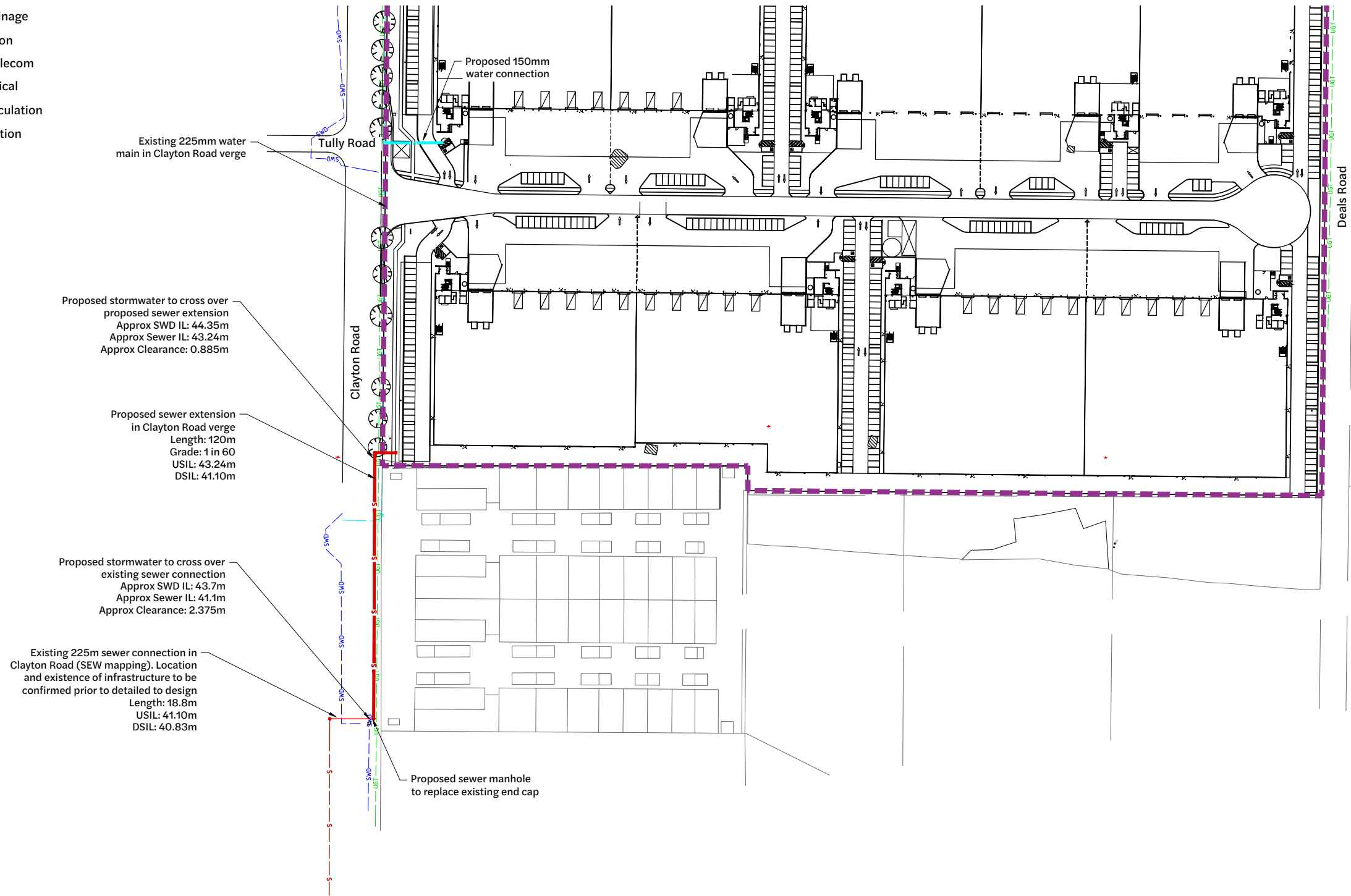
TELECOMMUNICATIONS
SERVICE PROVIDERS

'yes' OPTUS Telstra visionstream nbn

Note: Service locations are approximate only from provider plans. Locations are to be confirmed prior to the start of construction. Refer **Before You Dig** service location plans - available at www.byda.com.au

Legend

- Property Boundary
- Existing Sewerage Reticulation
- Existing Stormwater Drainage
- Existing Water Reticulation
- Existing Underground Telecom
- Existing Overhead Electrical
- Proposed Sewerage Reticulation
- Proposed Water Reticulation



Sewer & Water Layout Plan
1:1000 Scale

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Note: Service locations are approximate only from provider plans. Locations are to be confirmed prior to the start of construction. Refer **Before You Dig** service location plans - available at www.byda.com.au

TELECOMMUNICATIONS SERVICE PROVIDERS

'yes' OPTUS, Telstra, visionstream, nbn

Note: Service locations are approximate only from provider plans. Locations are to be confirmed prior to the start of construction. Refer **Before You Dig** service location plans - available at www.byda.com.au

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2	30.06.23	Issued for Approval	EG	EG									
3	06.11.23	Further Information Request Response	CG	EG									

FILE: Z:\ARCHIVE\C_23011-618 CLAYTON ROAD CLAYTON S\MODELS\AUTOCAD\DA DRAWINGS\C_23011 DA50_SEWER & WATER LAYOUT PLAN.DWG LAST SAVED BY: CONTE

Legend

- Property Boundary
- 0.5 Existing Surface Contour
- Existing Stormwater Drainage
- Existing Sewerage Reticulation
- Existing Water Reticulation
- Existing Gas
- Existing Overhead Electrical
- Proposed Sediment Fence (or As Directed by Site Superintendent)
- Temporary Exit Washdown Device - Refer Detail
- Proposed Area of Disturbance
- Inlet Protection

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PLAN



Erosion and Sediment Control Layout Plan
1:1000 Scale

ENERGY SERVICE PROVIDERS

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Note: Service locations are approximate only from provider plans. Locations are to be confirmed prior to the start of construction. Refer **Before You Dig** service location plans - available at www.byda.com.au

TELECOMMUNICATIONS SERVICE PROVIDERS

'yes' OPTUS, Telstra, visionstream, nbn

Note: Service locations are approximate only from provider plans. Locations are to be confirmed prior to the start of construction. Refer **Before You Dig** service location plans - available at www.byda.com.au

Revision	Date	Issue Details	Drawn	Designed	QR Code	Status	Scale	Client	Project	Drawing Title
1	19.07.23	Issued for Approval	EG	EG		Issued for Approval Not for Construction	1:1000 10 0 10 20 30 40 50m A1 1:2000 A3	Troon Group	618 Clayton Road Clayton South	Erosion and Sediment Control Layout Plan
2	06.11.23	Futher Information Request Response	CG	EG						

Context Engineering

Project No. C_23011 Drawing No. DA80 Revision 2

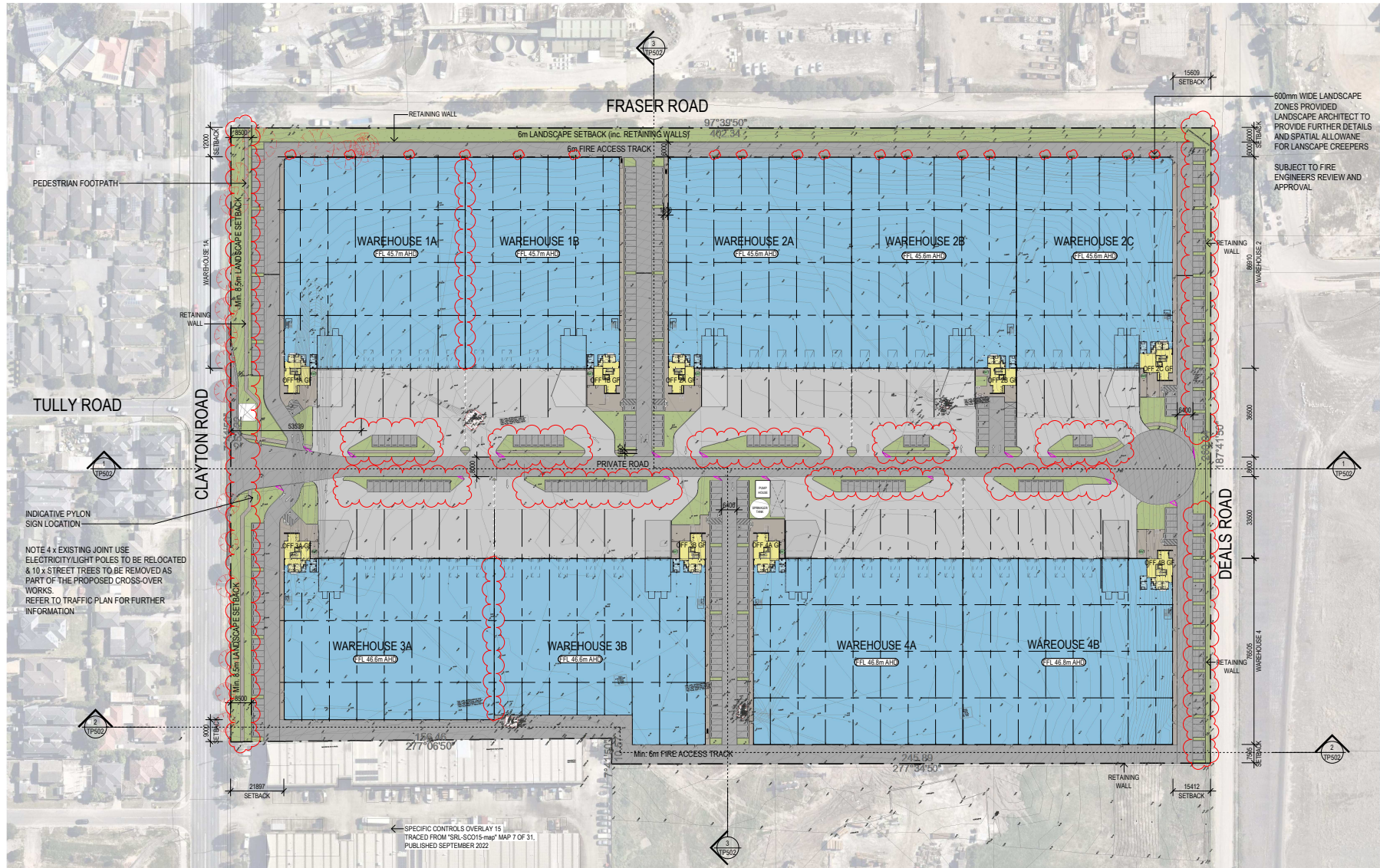
618 Clayton Road, Clayton South

STORMWATER MANAGEMENT PLAN

Appendix C Architectural Plans

TROON GROUP

**ADVERTISED
PLAN**



SITE CONCEPT PLAN
SCALE: 1 : 1000

ADVERTISED PLAN

LEGEND

- INDICATES EXTENT OF HEAVY DUTY HARDSTAND TO CIVIL ENGINEERS DETAILS
- INDICATES EXTENT OF LIGHT DUTY PAVEMENT TO CIVIL ENGINEERS DETAILS
- CONCRETE PAVING WITH EXPOSED AGGREGATE FINISH OR SIMILAR
- AREA OF GRASS / LANDSCAPING. REFER TO LANDSCAPE ARCHITECTS DRAWINGS FOR LANDSCAPE LAYOUT AND DETAILS
- SPECIFIC CONTROLS OVERLAY 15 TRACED FROM "SRL-SC015-map" MAP 7 OF 31, PUBLISHED SEPTEMBER 2022
- INDICATES LOCATION OF GAS PIT
- TREE TO BE REMOVED

NOTES

- ALL NEW CROSSOVERS IN ACCORDANCE WITH LOCAL COUNCIL REQUIREMENTS
- ALL PARKING SPACES IN ACCORDANCE WITH VICTORIAN PLANNING SCHEME
- ALL DISABLED PARKING SPACES IN ACCORDANCE WITH AUSTRALIAN STANDARD AS2890 (8.4m x 2.4m)
- SITE STORMWATER DRAINAGE IN ACCORDANCE WITH LOCAL AUTHORITY & COUNCIL REQUIREMENTS
- ALL RELATIVE LEVELS ARE SHOWN TO A H.D. (Australian Height Datum)
- AREAS CALCULATED HAVE BEEN TAKEN TO OUTSIDE FACE OF WALL GIRT TO WAREHOUSE AREAS AND OUTSIDE FACE OF EXTERNAL WALL TO ALL OTHER OFFICE AREAS.
- LEVELS SHOWN ARE INDICATIVE ONLY AND ARE SUBJECT TO FURTHER CIVIL ENGINEER DETAILED DESIGN. LEVELS MAY VARY +/- 300mm
- ALL EXTERNAL LIGHTING TO BE ENERGY EFFICIENT, WITH SUITABLE BAFFLES, INSTALLED AS PER AS1158.4 AND LOCATED SO THAT NO DIRECT LIGHT IS EMITTED OUTSIDE THE SITE.
- SURVEY OVERLAIN ON PLAN IS PROVIDED BY TAYLORS, DOCUMENT NAME "23319 - PS (V1)"

DEVELOPMENT ANALYSIS

	AREA	PERCENTAGE
SITE AREA	103,536m ²	
SITE COVERAGE	65,529m ²	63%
PERMEABILITY	7,603m ²	7.4%

PLEASE NOTE OVERALL AREAS ARE BASED ON THE EXISTING SURVEY PROVIDED BY TAYLORS, DOCUMENT NAME "23219 - PS (V1)"

DEVELOPMENT ANALYSIS

BUILDING	GLA	NFA
WAREHOUSE 1		WAREHOUSE 1
TENANCY 1A		TENANCY 1A
WAREHOUSE	6,430 m ²	5372 m ²
OFFICE	135 m ²	129 m ²
OFFICE	6,891 m ²	5800 m ²
TENANCY 1B		TENANCY 1B
WAREHOUSE	5,487 m ²	4595 m ²
OFFICE	135 m ²	129 m ²
OFFICE	5,948 m ²	5023 m ²
TOTAL WAREHOUSE 1 AREA	12,653 m ²	10823 m ²
WAREHOUSE 2		WAREHOUSE 2
TENANCY 2A		TENANCY 2A
WAREHOUSE	6,505 m ²	5436 m ²
OFFICE	135 m ²	129 m ²
OFFICE	325 m ²	299 m ²
OFFICE	6,966 m ²	5864 m ²
TENANCY 2B		TENANCY 2B
WAREHOUSE	5,867 m ²	4963 m ²
OFFICE	126 m ²	120 m ²
OFFICE	335 m ²	308 m ²
OFFICE	6,328 m ²	5391 m ²
TENANCY 2C		TENANCY 2C
WAREHOUSE	5,487 m ²	4585 m ²
OFFICE	152 m ²	146 m ²
OFFICE	306 m ²	279 m ²
OFFICE	5,945 m ²	5010 m ²
TOTAL WAREHOUSE 2 AREA	19,239 m ²	16,265 m ²
WAREHOUSE 3		WAREHOUSE 3
TENANCY 3A		TENANCY 3A
WAREHOUSE	5,688 m ²	4588 m ²
OFFICE	135 m ²	129 m ²
OFFICE	6,148 m ²	4887 m ²
TENANCY 3B		TENANCY 3B
WAREHOUSE	5,918 m ²	4888 m ²
OFFICE	135 m ²	129 m ²
OFFICE	325 m ²	299 m ²
OFFICE	6,379 m ²	5116 m ²
TOTAL WAREHOUSE 3 AREA	12,528 m ²	10,003 m ²
WAREHOUSE 4		WAREHOUSE 4
TENANCY 4A		TENANCY 4A
WAREHOUSE	6,547 m ²	5305 m ²
OFFICE	135 m ²	129 m ²
OFFICE	325 m ²	299 m ²
OFFICE	7,007 m ²	5733 m ²
TENANCY 4B		TENANCY 4B
WAREHOUSE	6,507 m ²	5339 m ²
OFFICE	133 m ²	127 m ²
OFFICE	328 m ²	313 m ²
OFFICE	6,968 m ²	5779 m ²
TOTAL WAREHOUSE 4 AREA	13,975 m ²	11,512 m ²
TOTAL AREA	58,581 m ²	48,603 m ²

PARKING	NO.
WAREHOUSE 1	
1A RATE (PER 100m ²)	0.60
CAR BAYS	41
ACCESSIBLE	1
TB RATE (PER 100m ²)	0.82
CAR BAYS	48
ACCESSIBLE	1
WH1 TOTAL	91
WAREHOUSE 2	
2A RATE (PER 100m ²)	0.76
CAR BAYS	48
ACCESSIBLE	1
2B & 2C RATE (PER 100m ²)	0.51
CAR BAYS	60
ACCESSIBLE	2
WH2 TOTAL	111
WAREHOUSE 3	
3A RATE (PER 100m ²)	0.75
CAR BAYS	45
ACCESSIBLE	1
3B RATE (PER 100m ²)	0.86
CAR BAYS	53
ACCESSIBLE	1
WH3 TOTAL	100
WAREHOUSE 4	
4A RATE (PER 100m ²)	0.72
CAR BAYS	47
ACCESSIBLE	1
4B RATE (PER 100m ²)	0.68
CAR BAYS	44
ACCESSIBLE	1
WH4 TOTAL	93
CAR PARK TOTAL	395

No.	DATE	REVISION	BY	CHK
P2	05.05.2023	PRELIMINARY ISSUE	JB	GA
P3	07.06.23	PRELIMINARY ISSUE	JB	BM
A	07.08.2023	COUNCIL SUBMISSION	JB	BM
P4	20.10.2023	PRELIMINARY ISSUE	SP	BM
PS	27.10.2023	PRELIMINARY ISSUE	SP	BM

All areas indicated are indicative for design and planning purposes only and should not be used for any contractual reasons without verification by a licensed surveyor or further design development being completed.

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watson
young

PROJECT:
PROPOSED INDUSTRIAL DEVELOPMENT
618 CLAYTON ROAD, CLAYTON STH VIC

TITLE:
ESTATE MASTER PLAN



CLIENT:
TROON
GROUP

DATE: JANUARY, 2022
DRAWN BY: JB
SCALE: 1:1000 @ B1
SCALE:

JOB NO:
21326
DRAWING NO:
TP002
REVISION:
P5

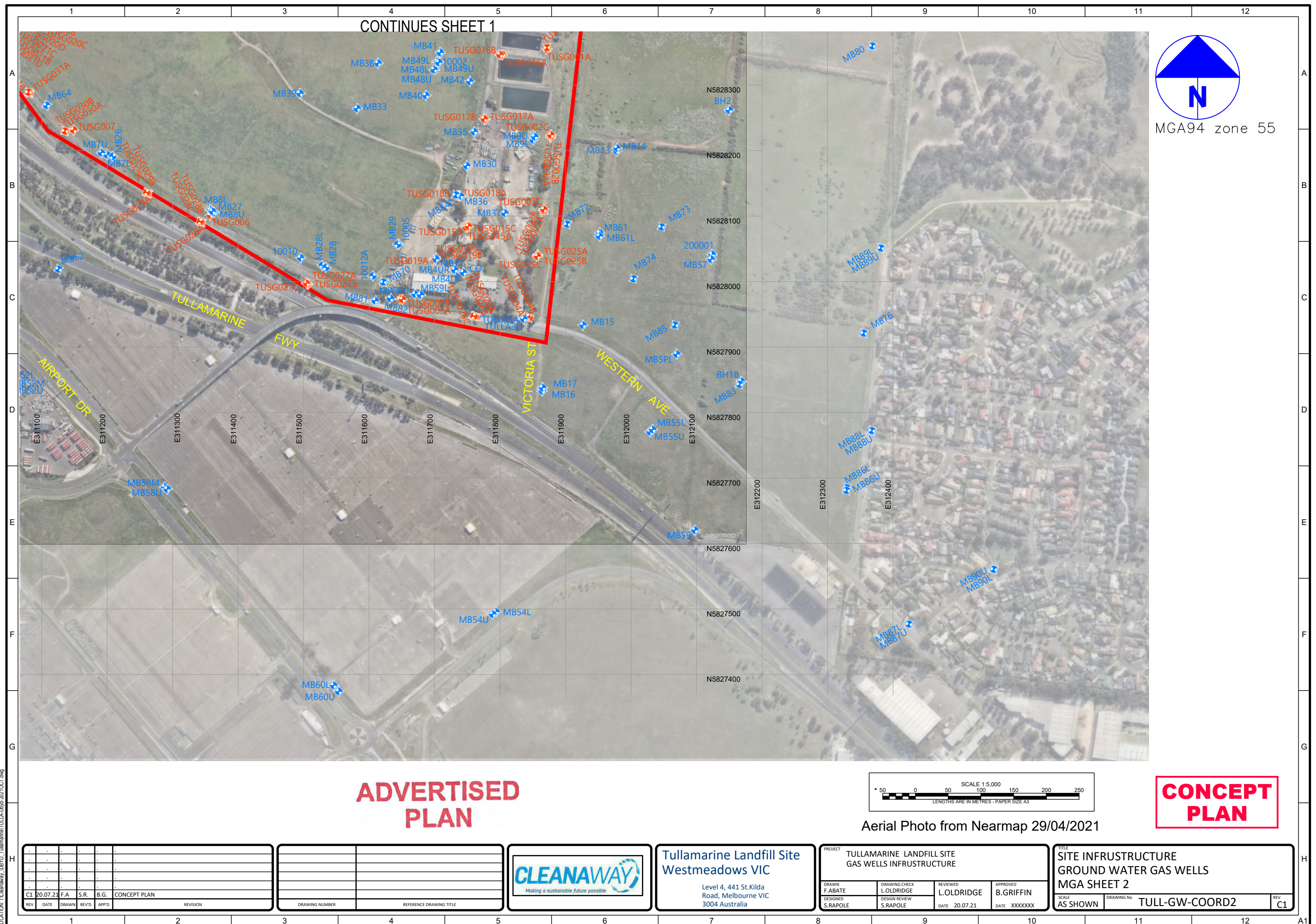
618 Clayton Road, Clayton South

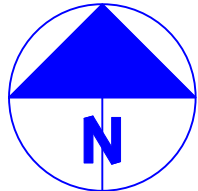
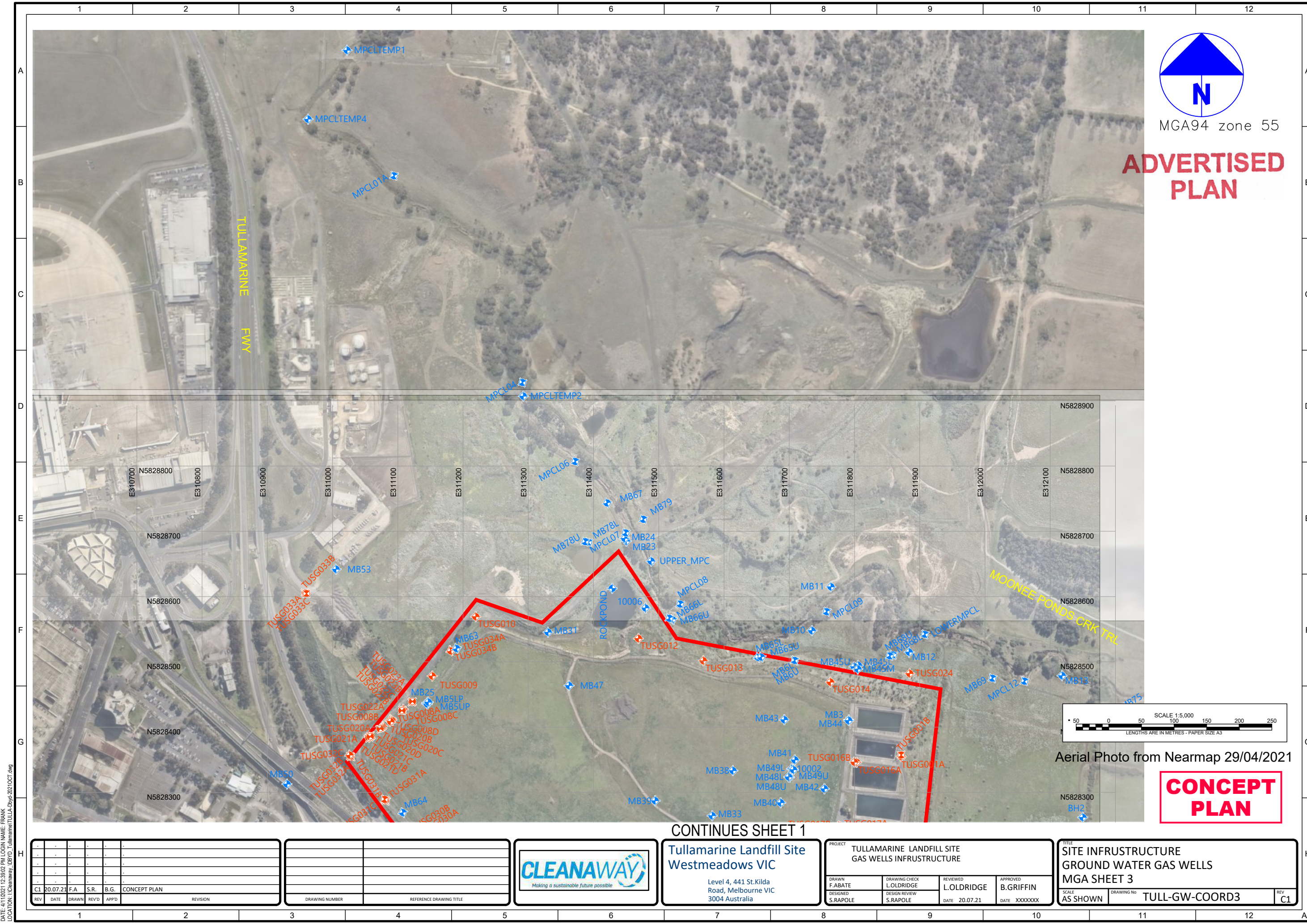
STORMWATER MANAGEMENT PLAN

Appendix D DBYD and Council Mapping

TROON GROUP

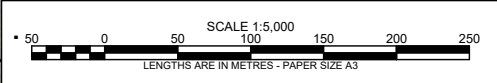
**ADVERTISED
PLAN**





MGA94 zone 55

**ADVERTISED
PLAN**



Aerial Photo from Nearmap 29/04/2021

**CONCEPT
PLAN**

CONTINUES SHEET 1

**Tullamarine Landfill Site
Westmeadows VIC**

Level 4, 441 St.Kilda
Road, Melbourne VIC
3004 Australia



PROJECT
TULLAMARINE LANDFILL SITE
GAS WELLS INFRASTRUCTURE

DRAWN
F.ABATE
DESIGNED
S.RAPOLE
DRAWING CHECK
L.OLDRIDGE
DESIGN REVIEW
S.RAPOLE
REVIEWED
L.OLDRIDGE
DATE
20.07.21
APPROVED
B.GRIFFIN
DATE
XXXXXX

TITLE
SITE INFRASTRUCTURE
GROUND WATER GAS WELLS
MGA SHEET 3

SCALE
AS SHOWN
DRAWING No
TULL-GW-COORD3
REV
C1

DATE: 4/11/2021 12:39:02 PM LOGIN NAME: FRANK
LOCATION: I:\Cleanaway\DB\Tullamarine\TULLA-GW-2021\COORD.dwg

REV	DATE	DRAWN	REV'D	APP'D	CONCEPT PLAN	REVISION
C1	20.07.21	F.A.	S.R.	B.G.	CONCEPT PLAN	

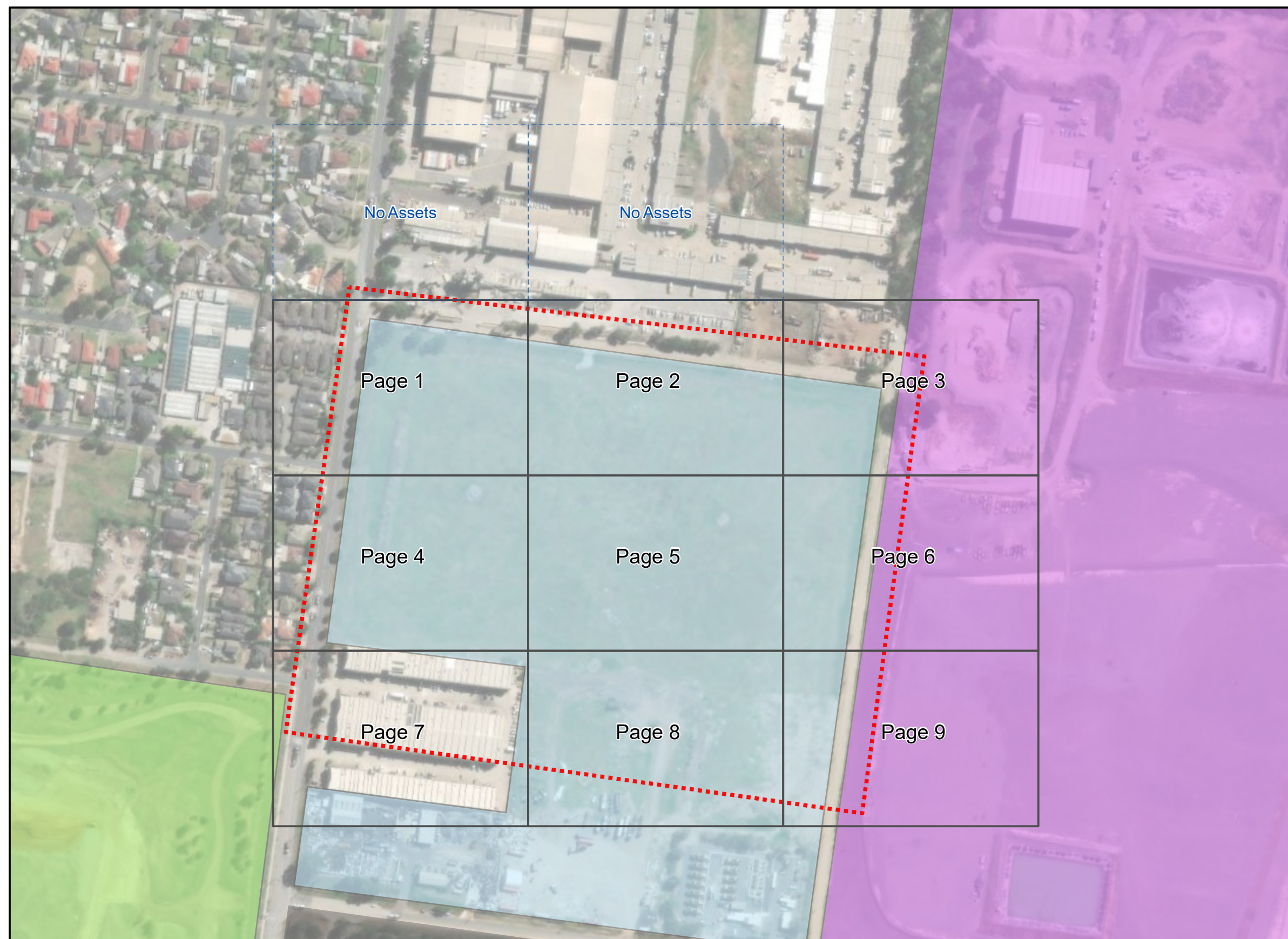
DRAWING NUMBER	REFERENCE DRAWING TITLE

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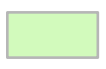
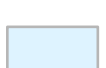


LFG Monitoring Bore Locations				
Point No.	MGA94 Zone 55		AHD	
	Easting	Northing	Top Of Casing	Ground Level
TUSG001A	311871.54	5828354.93	113.67	113.82
TUSG001B	311871.61	5828357.25	113.60	113.74
TUSG002A	311877.15	5828220.11	118.03	117.46
TUSG002B	311877.38	5828221.78	118.06	117.47
TUSG002C	311877.61	5828223.94	118.06	117.48
TUSG003A	311866.06	5828106.23	115.94	115.31
TUSG003B	311866.41	5828108.10	115.93	115.33
TUSG003C	311866.93	5828110.12	115.93	115.33
TUSG004A	311841.14	5827946.22	115.10	114.61
TUSG004B	311844.72	5827944.65	115.09	114.41
TUSG005A	311647.26	5827973.39	116.54	115.93
TUSG005B	311651.11	5827972.71	116.61	115.97
TUSG006	311357.21	5828101.40	115.80	115.20
TUSG007	311148.79	5828231.46	113.96	113.37
TUSG008A	311089.83	5828411.74	112.39	111.71
TUSG008B	311087.84	5828409.85	112.51	111.84
TUSG008C	311090.98	5828410.18	111.99	111.39
TUSG008D	311089.08	5828408.47	112.00	111.39
TUSG009	311152.77	5828478.33	110.35	109.75
TUSG010	311219.49	5828569.25	107.05	106.47
TUSG012	311468.82	5828535.76	106.92	105.00
TUSG013	311568.35	5828501.75	104.84	104.20
TUSG014	311763.06	5828468.99	106.52	105.93
TUSG015A	311749.96	5828083.49	117.31	116.73
TUSG015B	311747.99	5828083.04	117.33	116.77
TUSG015C	311751.60	5828084.41	117.32	116.72
TUSG016A	311803.24	5828346.12	114.04	114.19
TUSG016B	311799.79	5828346.39	114.07	114.21
TUSG017A	311777.96	5828247.66	116.70	116.87
TUSG017B	311775.72	5828248.43	116.74	116.83
TUSG018A	311736.81	5828130.92	117.80	117.18
TUSG018B	311735.20	5828131.47	117.81	117.18
TUSG019A	311699.62	5828033.79	118.86	118.28
TUSG019B	311700.35	5828035.68	118.65	118.07
TUSG019C	311701.12	5828037.38	118.48	117.88
TUSG020A	311076.89	5828401.03	112.97	112.32
TUSG020B	311075.67	5828399.99	113.05	112.37
TUSG020C	311074.36	5828398.91	113.14	112.46
TUSG020D	311072.76	5828397.67	113.22	112.55
TUSG021A	311056.43	5828384.59	113.75	113.09
TUSG021B	311055.42	5828383.47	113.77	113.12
TUSG021C	311058.90	5828386.55	113.71	113.03
TUSG021D	311057.62	5828385.55	113.73	113.07
TUSG022A	311108.51	5828427.35	111.76	111.09
TUSG022B	311107.39	5828426.37	111.82	111.13
TUSG022C	311106.21	5828425.28	111.89	111.18
TUSG023A	311122.46	5828439.38	111.48	110.79
TUSG023B	311121.34	5828438.14	111.48	110.82
TUSG024	311884.58	5828482.18	93.49	92.55
TUSG025A	311857.51	5828041.05	115.61	114.70
TUSG025B	311857.27	5828039.88	115.62	114.69
TUSG025C	311857.05	5828038.65	115.63	114.69
TUSG026A	311763.09	5827946.88	115.48	114.57
TUSG026B	311761.38	5827947.01	115.49	114.59
TUSG026C	311759.81	5827947.20	115.52	114.56
TUSG027A	311507.27	5827995.95	115.74	114.72
TUSG027B	311505.90	5827996.65	115.74	114.72
TUSG027C	311504.30	5827997.41	115.75	114.75
TUSG028A	311344.75	5828090.22	113.56	113.68
TUSG028B	311343.41	5828090.93	113.56	113.68
TUSG028C	311341.95	5828091.68	113.54	113.66
TUSG029A	311263.08	5828134.42	113.02	113.15
TUSG029B	311261.58	5828135.29	113.00	113.13
TUSG029C	311260.25	5828136.11	113.02	113.14
TUSG030A	311136.45	5828229.09	112.65	112.73
TUSG030B	311135.49	5828229.98	112.58	112.72
TUSG031A	311081.88	5828286.89	112.55	112.70
TUSG031B	311080.88	5828288.15	112.55	112.71
TUSG031C	311079.83	5828289.30	112.55	112.69
TUSG032A	311028.27	5828354.14	114.24	113.20
TUSG032B	311027.20	5828355.52	114.23	113.22
TUSG032C	311026.21	5828357.03	114.26	113.26
TUSG033A	310957.45	5828605.91	113.98	114.06
TUSG033B	310958.59	5828605.30	113.99	114.08
TUSG033C	310959.99	5828604.56	113.96	114.06
TUSG034A	311181.63	5828517.36	108.63	107.72
TUSG034B	311181.10	5828516.71	108.66	107.69

Survey Datum: MGA94 Zone 55
Level Datum: AHD vide TULLAMARINE PM 18 R.L. = 112.790
Surveyor: Riley Brightmore
Date of Survey: 30/07/2020

Groundwater/Monitoring Well Locations				
Well No.	MGA94 Zone 55		AHD	
	Easting	Northing	Lid cover level	Top of PVC casing level
10002	311705.20	5828335.36	119.80	119.70
10005	311645.25	5828256.85	119.11	119.06
10006	311479.60	5828081.55	98.80	97.75
10010	311485.53	5828036.22	117.31	117.25
10012A	311805.76	5828008.74	118.04	117.93
BH19	311208.50	5827847.55	109.62	109.05
20001	311212.66	5828041.43	110.16	109.91
BH2	311249.96	5828261.77	110.60	110.39
MB3	311791.22	5828411.14	113.10	113.02
CO	311744.06	5828013.85	119.34	119.26
MB4B	311744.06	5828013.85	119.34	119.30
MB4B	311730.67	5828018.06	119.09	118.95
MB4P	311344.41	5828437.05	110.36	110.16
MB5UP	311482.23	5828445.87	110.27	110.16
MB7L	311189.80	5828193.55	115.03	114.93
MB7U	311191.12	5828196.84	114.52	114.43
MB8L	311283.84	5828205.67	116.15	116.10
MB8U	311357.70	5828109.49	115.96	115.87
MB8L	311850.85	5828216.46	117.03	117.00
MB8U	311852.85	5828221.22	117.44	117.33
MB10	311734.79	5828547.87	95.32	95.28
MB11	311763.89	5828614.99	89.20	89.17
MB12	311883.76	5828116.84	91.27	91.14
MB13	311978.51	5828195.20	115.16	114.89
MB14	311978.54	5828203.72	115.13	114.90
MB15	311928.57	5827933.51	114.38	114.18
MB16	311864.13	5827813.08	114.66	114.47
MB17	311864.94	5827837.96	114.56	114.33
MB18	311450.29	5828085.00	93.55	92.59
MB19	311447.62	5828089.28	94.56	92.50
MB20	311346.78	5828418.29	110.05	110.26
MB21	311208.52	5828191.27	114.97	114.87
MB22	311186.79	5828107.28	116.01	115.94
MB23L	311208.42	5828024.50	117.42	117.36
MB28	311534.06	5828021.57	117.73	117.61
MB29	311043.47	5828076.78	119.18	119.11
MB30	311749.13	5828176.80	117.03	117.06
MB31	311330.26	5828545.46	105.28	105.20
MB32	311581.83	5828264.53	122.86	122.13
MB33	311760.45	5828228.67	117.93	117.79
MB35	311719.58	5828110.76	118.09	117.91
MB37	311807.18	5828104.42	117.88	117.73
MB38	311613.59	5828133.43	120.51	120.52
MB39	311404.18	5828037.28	119.68	119.55
MB40	311686.86	5828284.18	122.07	121.29
MB41	311708.60	5828349.71	119.10	119.07
MB42	311751.81	5828485.99	117.02	116.97
MB43	311692.39	5828411.36	116.43	116.46
MB44	311790.99	5828410.11	113.16	113.06
MB45L	311803.88	5828494.61	96.18	96.07
MB45U	311805.05	5828494.86	96.43	96.73
MB46U	311799.47	5828492.77	96.56	96.62
MB47	311862.49	5828463.70	110.31	110.27
MB48L	311869.03	5828124.68	120.47	120.43
MB48U	311700.50	5828121.07	120.44	120.42
MB49L	311703.70	5828136.05	119.82	119.72
MB49U	311708.44	5828134.72	119.80	119.55
MB50	311096.10	5828012.77	115.94	114.77
MB51L	311082.73	5828194.53	115.06	114.77
MB51U	311086.00	5828191.55	115.12	114.91
MB52L	311209.81	5827845.54	111.89	111.72
MB52U	311045.56	5827842.49	111.92	111.75
MB52U	311048.67	5827833.94	111.98	111.90
MB53	311005.29	5828041.92	114.15	114.20
MB54L	311793.70	5827495.62	111.43	110.55
MB54U	311788.80	5827492.20	111.39	110.55
MB55L	311032.85	5827774.08	112.52	111.86
MB55U	311029.06	5827770.71	112.79	112.59
MB56	311007.45	5827620.60	112.20	111.43
MB57	311222.39	5828033.95	110.19	110.19
MB58A	311287.71	5827886.42	113.49	112.75
MB58U	311291.74	5827881.11	113.44	112.67
MB59L	311678.52	5827975.74	119.86	119.73
MB59U	311670.38	5827980.84	119.94	119.84
MB60L	311654.86	5827813.45	109.89	109.07
MB60U	311653.67	5827774.23	109.52	108.78
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MB61	311951.83	5828074.35	114.58	114.44
MB62	311225.85	5828018.98	114.01	113.83
MB63	311189.97	5828120.45	107.99	107.12
MB64	311107.63	5828269.12	113.42	112.48
MB65L	311052.36	5828056.92	99.71	99.88
MB65U	311057.11	5828057.25	99.74	99.67
MB66U	311020.86	5828044.85	98.63	97.62
MB67	311402.76	5828134.48	93.46	92.92
MB68L	311859.26	5828110.71	93.11	92.08
MB68U	311854.22	5828109.22	93.42	92.43
MB69	311862.96	5827999.27	120.42	119.36
MB71	311701.92	5828034.59	118.08	117.99
MB72	311902.43	5828087.60	115.37	115.31
MB73	311204.89	5828063.53	113.07	112.98
MB74	311003.74	5828064.50	113.23	113.14
MB75	311219.66	5828413.28	90.25	89.44
MB76	311355.49	5827921.26	103.62	103.74
MB78L	311882.88	5828683.58	96.43	96.50
MB78U	311887.37	5828684.10	96.70	96.65
MB79	311476.41	5828718.38	95.04	94.88
MB80	311268.47	5828356.77	93.87	92.77
MB81	311809.18	5827970.83	114.10	113.97
MB82	311632.66	5827974.23	116.59	116.51
MB83	311655.96	5827943.07	110.15	110.00
MB84L	311724.64	5828112.34	118.03	117.86
MB85	311067.15	5827933.65	111.42	111.21
MB86L	311229.60	5827885.35	110.48	110.31
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MB87U	311424.44	5827477.03	110.02	109.94
MB88L	311267.73	5827772.43	109.02	108.95
MB88U	311267.73	5827772.43	109.02	108.95
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MB97L	311281.57	5828003.13	94.30	94.24
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MB99L	311281.57	5828003.13	94.30	94.24
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TOPAL3	311836.12	5829479.02	89.26	88.63
TOPAL3	311836.12	5829479.02	89.26	88.63
TOPAL3	311836.12	5829479.02	89.26	88.63
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TOPAL3	311836.12	5829479.02	89.26	88.63
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Legend

-  BYDA Enquiry
-  Detailed map page
-  No dig site assets
-  Site Boundary - Victory Road Landfill
-  Site Boundary - Clayton Road Landfill
-  Site Boundary - Clayton Road Regional Landfill
-  Site Boundary - Fraser Road Landfill

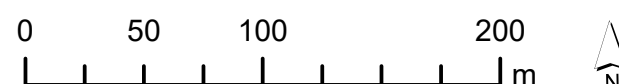
**ADVERTISED
PLAN**

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In an emergency contact Cleanaway on 13 13 39

Index Sheet

Plans generated by SmarterWX™ Automate



Scale 1:4,500

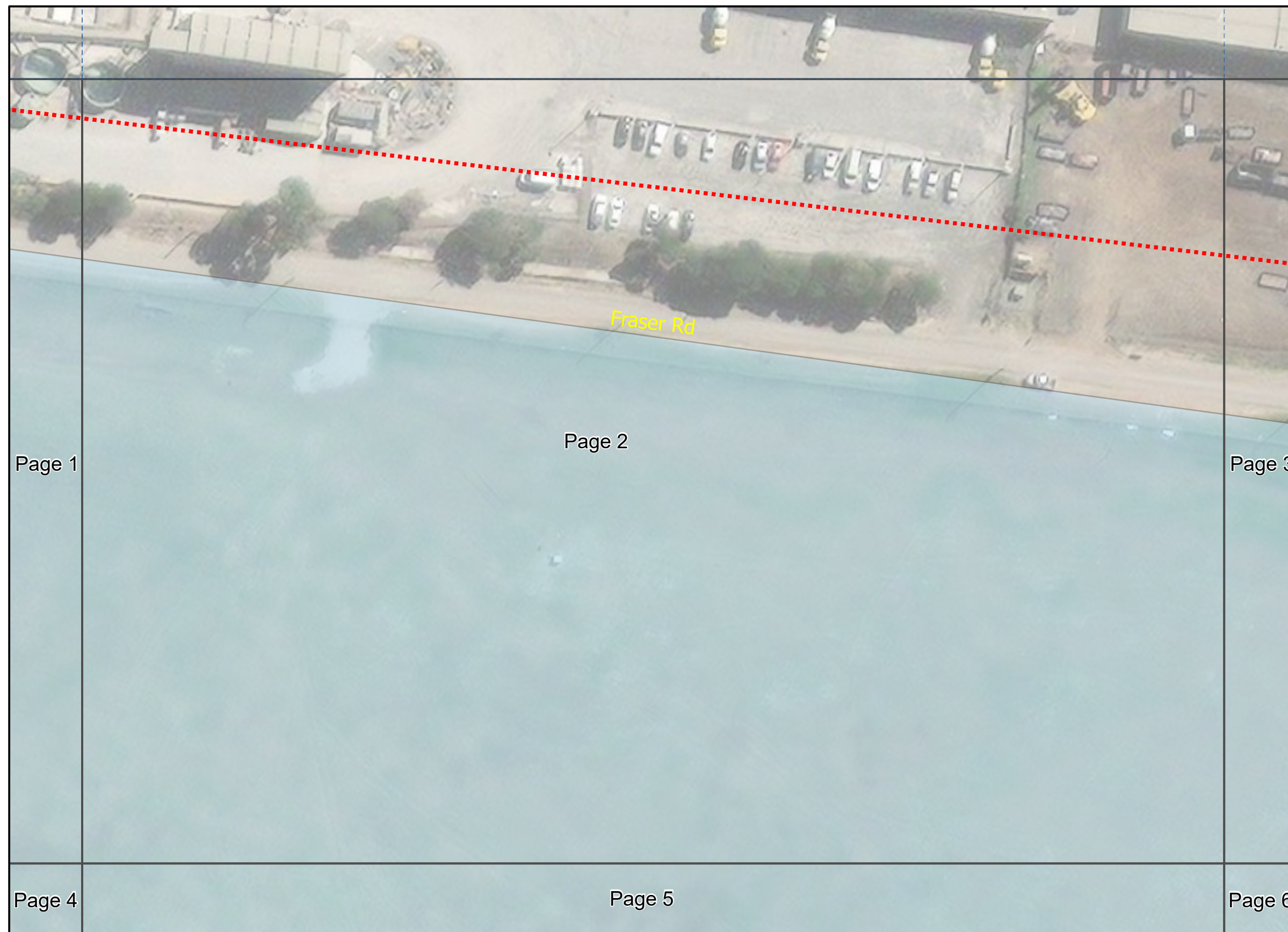


Legend

- BYDA Enquiry
- Site Boundary - Clayton Road Landfill

**ADVERTISED
PLAN**

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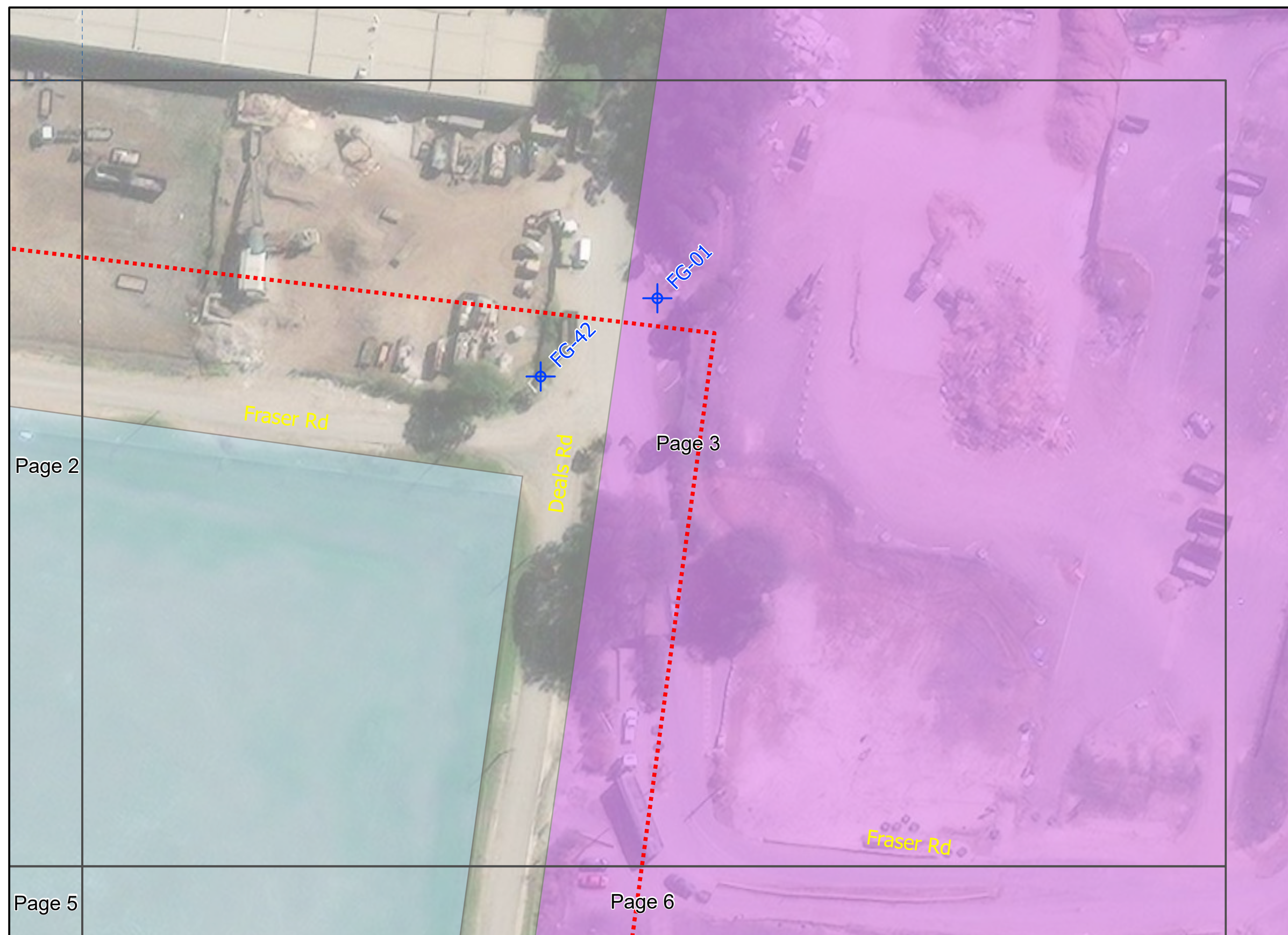


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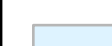

- BYDA Enquiry
- Site Boundary - Clayton Road Landfill

**ADVERTISED
PLAN**

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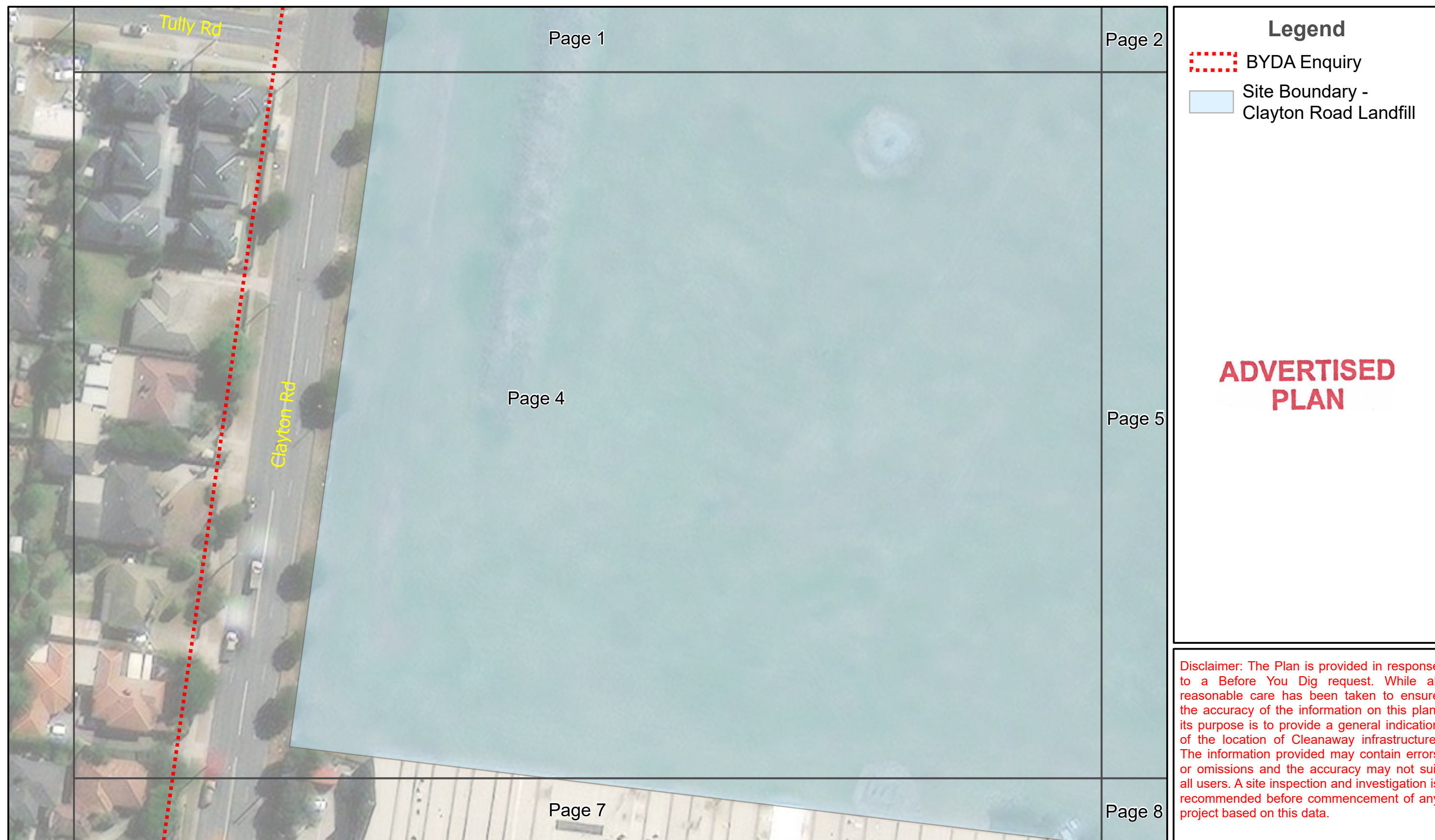


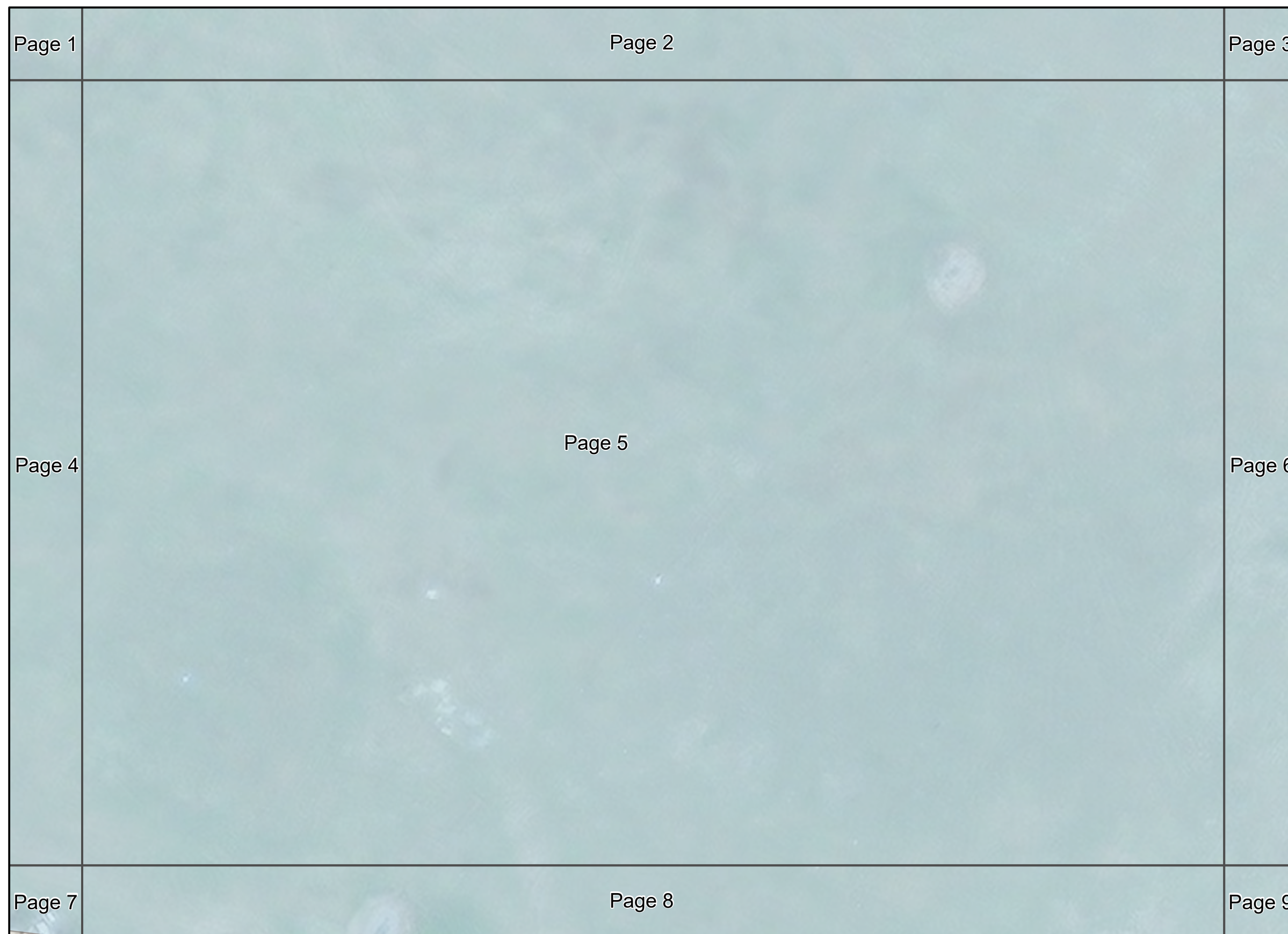
Legend

-  BYDA Enquiry
-  Site Boundary - Clayton Road Landfill
-  Site Boundary - Fraser Road Landfill


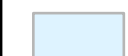
ADVERTISED PLAN

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Legend



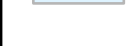
-  BYDA Enquiry
-  Site Boundary - Clayton Road Landfill

**ADVERTISED
PLAN**

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Legend

-  BYDA Enquiry
-  Site Boundary - Clayton Road Landfill
-  Site Boundary - Fraser Road Landfill

**ADVERTISED
PLAN**

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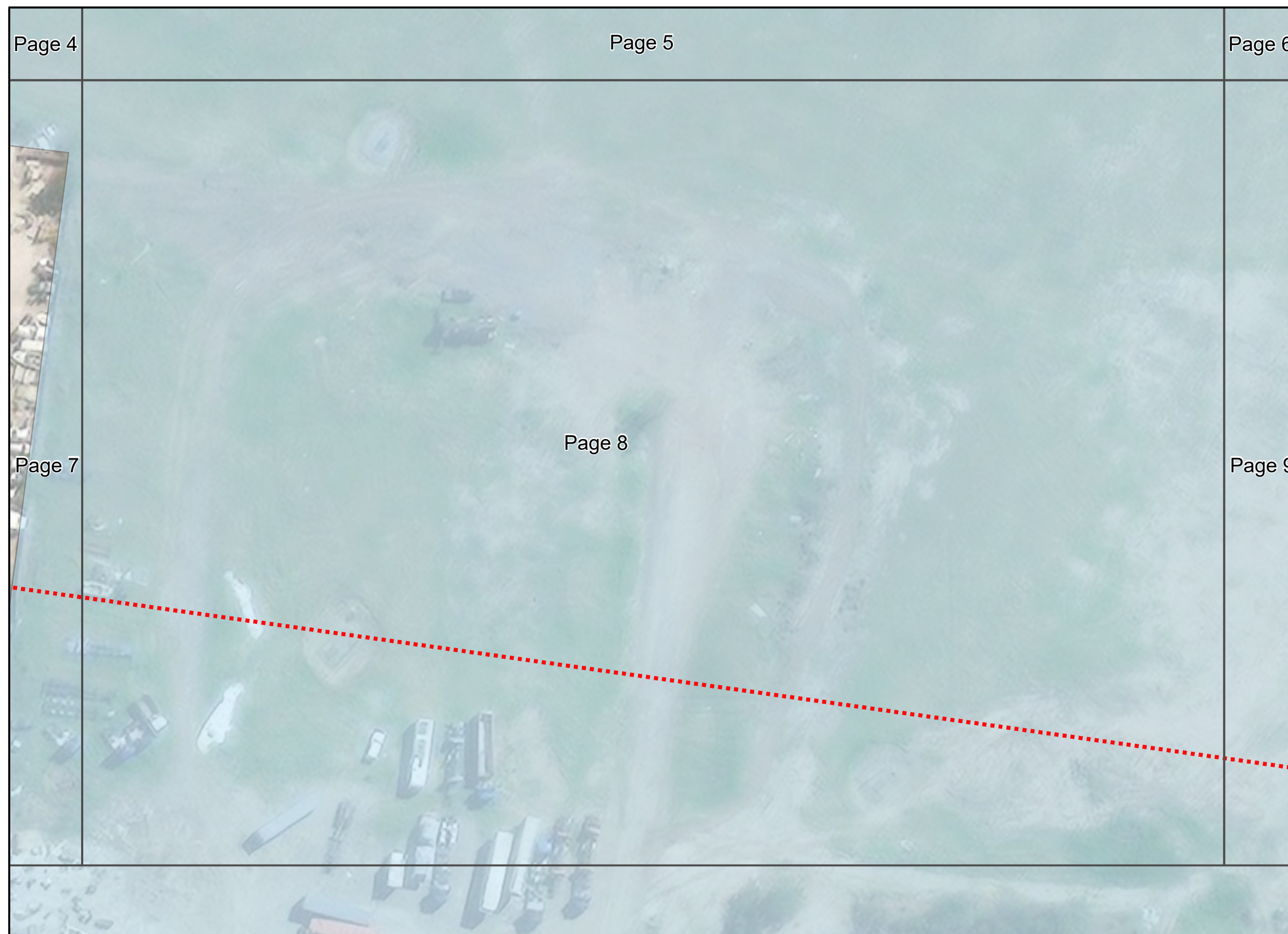


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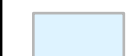
- BYDA Enquiry
- Site Boundary - Victory Road Landfill
- Site Boundary - Clayton Road Landfill

ADVERTISED PLAN

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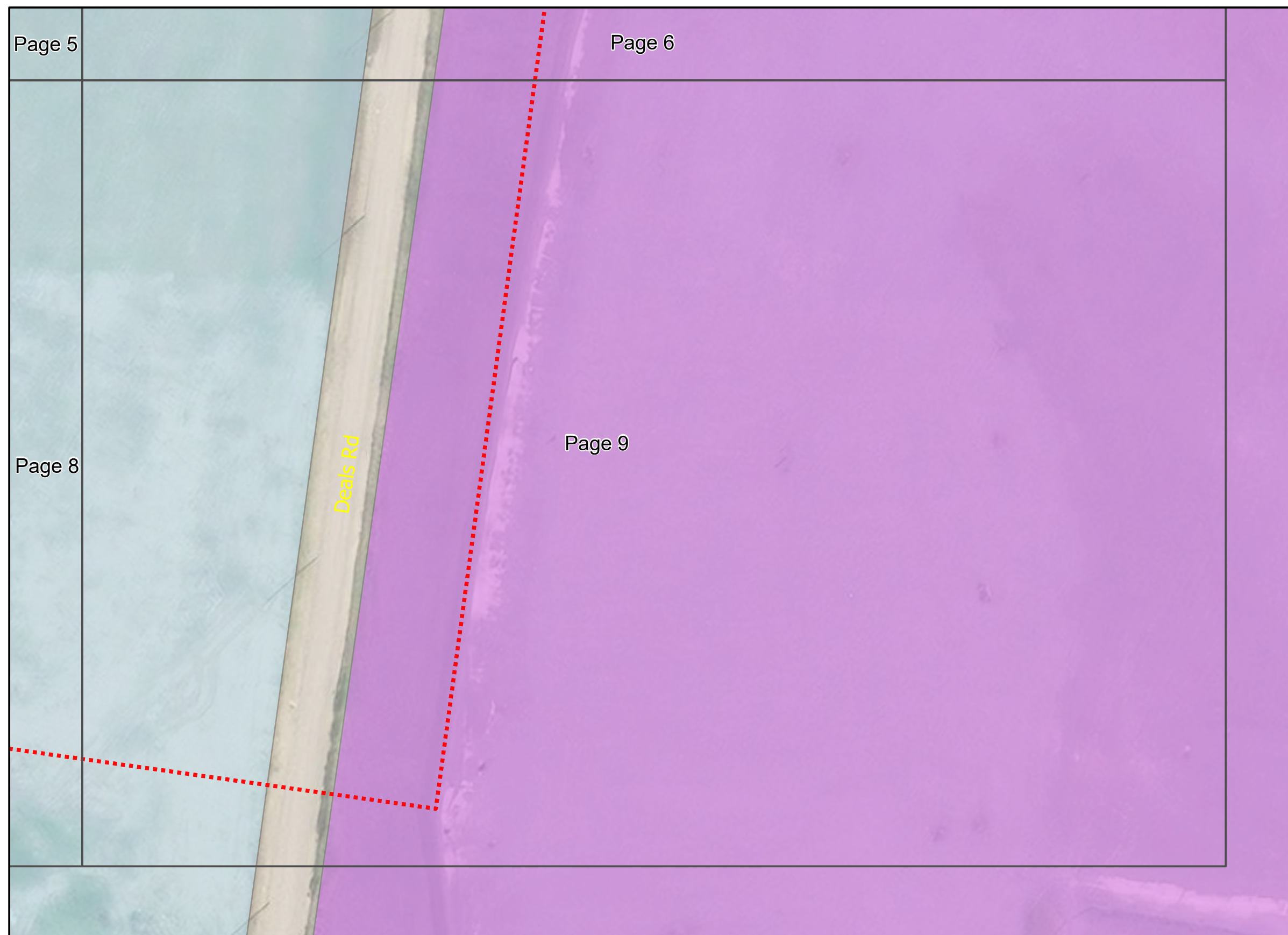


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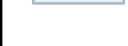
-  BYDA Enquiry
-  Site Boundary - Clayton Road Landfill

ADVERTISED PLAN

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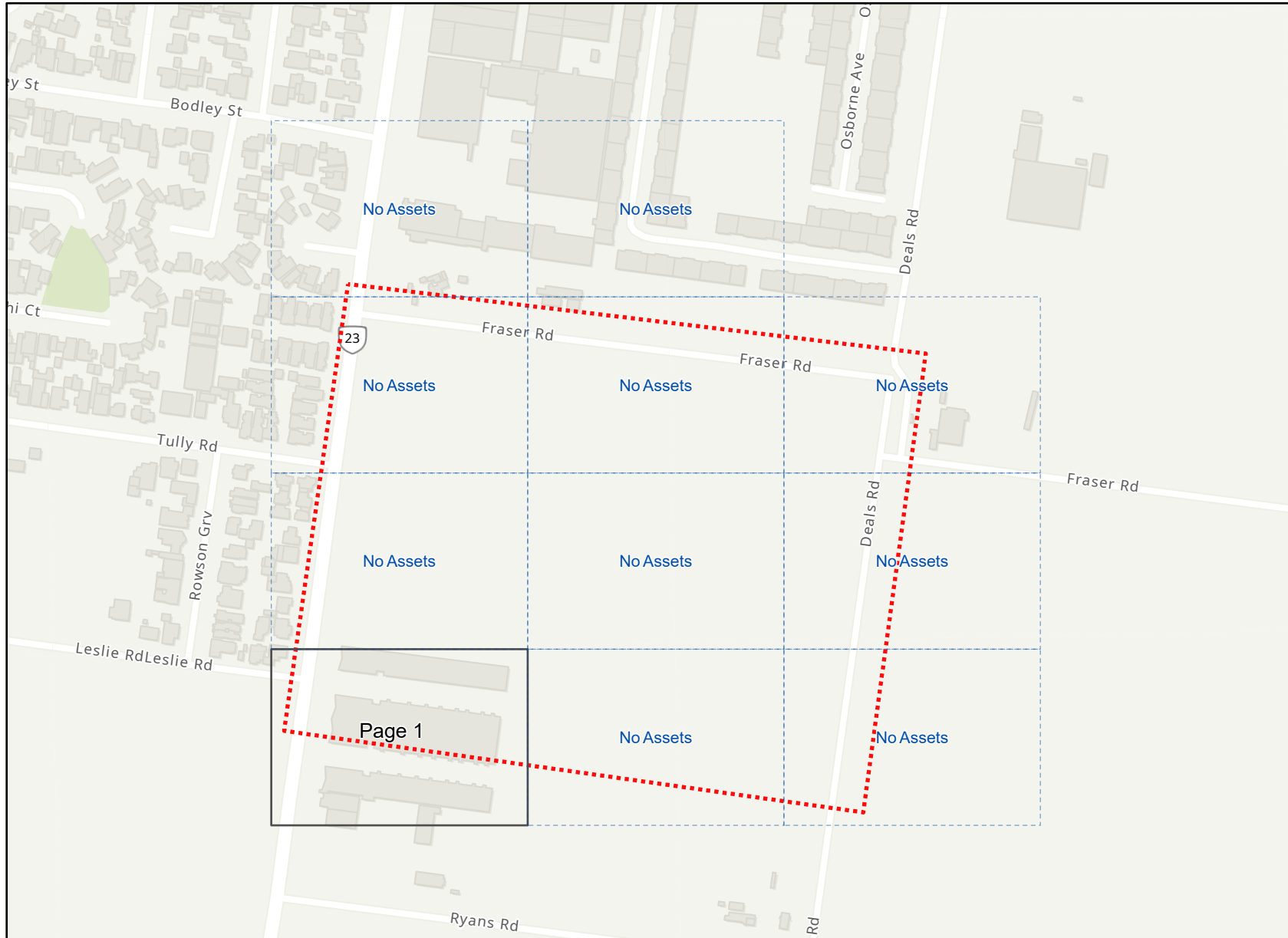


Legend

-  BYDA Enquiry
-  Site Boundary - Clayton Road Landfill
-  Site Boundary - Fraser Road Landfill

ADVERTISED PLAN

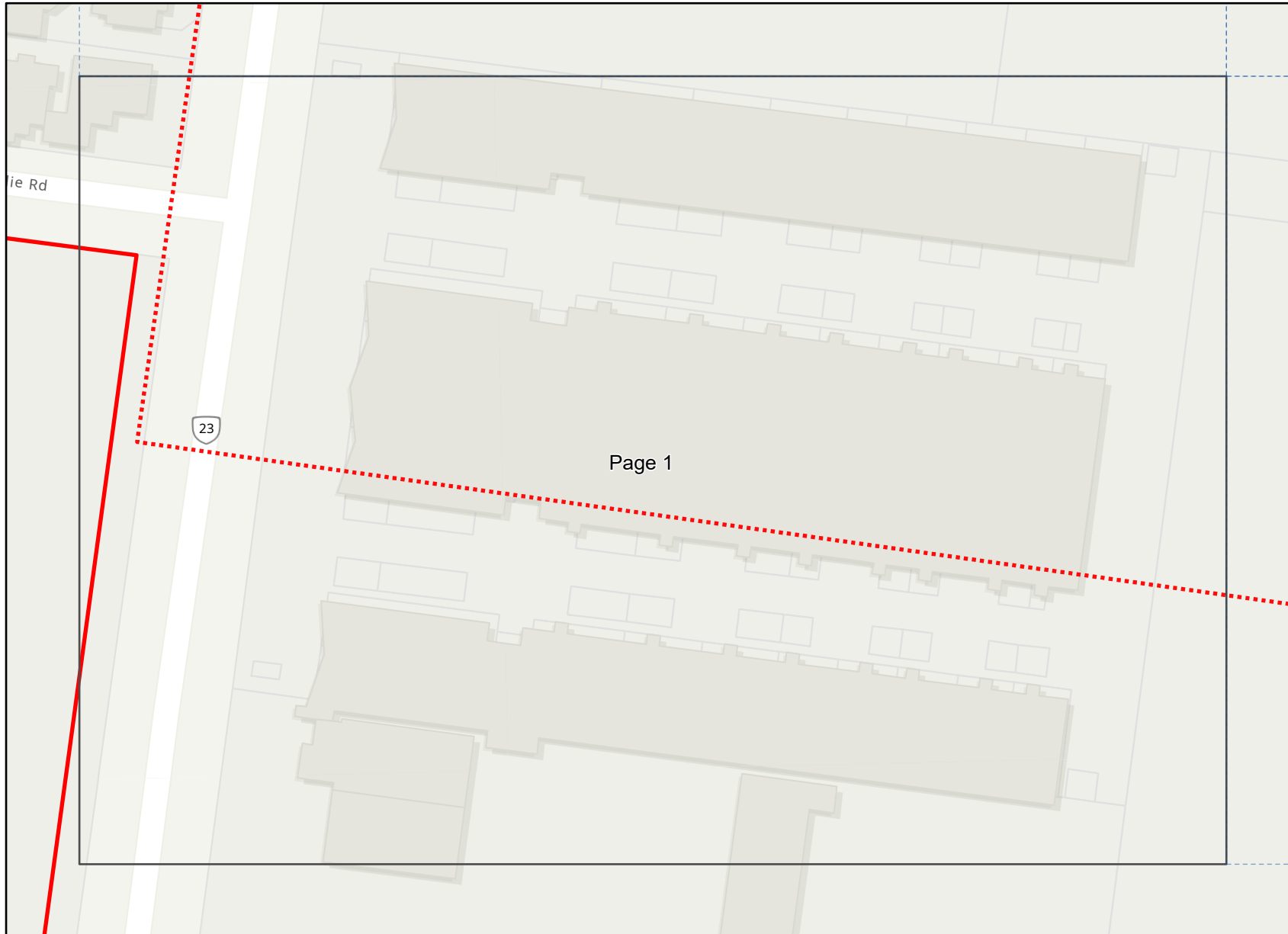
Disclaimer: The Plan is provided in response to a Before You Dig request. While all reasonable care has been taken to ensure the accuracy of the information on this plan, its purpose is to provide a general indication of the location of Cleanaway infrastructure. The information provided may contain errors or omissions and the accuracy may not suit all users. A site inspection and investigation is recommended before commencement of any project based on this data.





Legend

- BYDA Enquiry
- Detailed map page
- No dig site assets

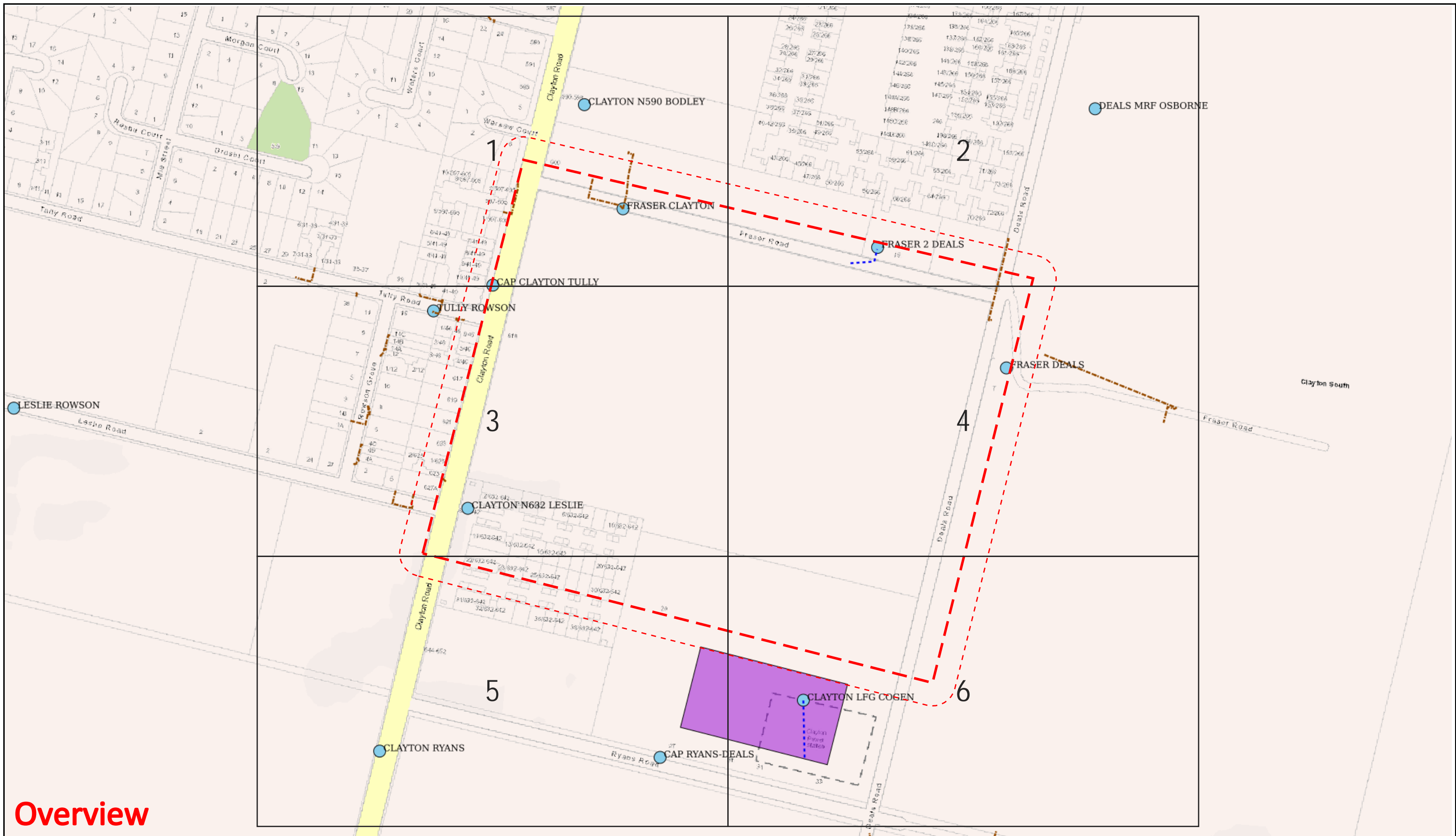
Disclaimer: The Plan is provided in response to a Before You Dig request. While all reasonable care has been taken to ensure the accuracy of the information on this plan, its purpose is to provide a general indication of the location of EDL Energy infrastructure. The information provided may contain errors or omissions and the accuracy may not suit all users. A site inspection and investigation is recommended before commencement of any project based on this data.



Legend

-  BYDA Enquiry
-  LFG Pipeline - 225mm HDPE

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Overview

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Scale: 1:3075



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ISSUE DATE: 16 Feb 2023

DBYD Sequence Number: 221276954

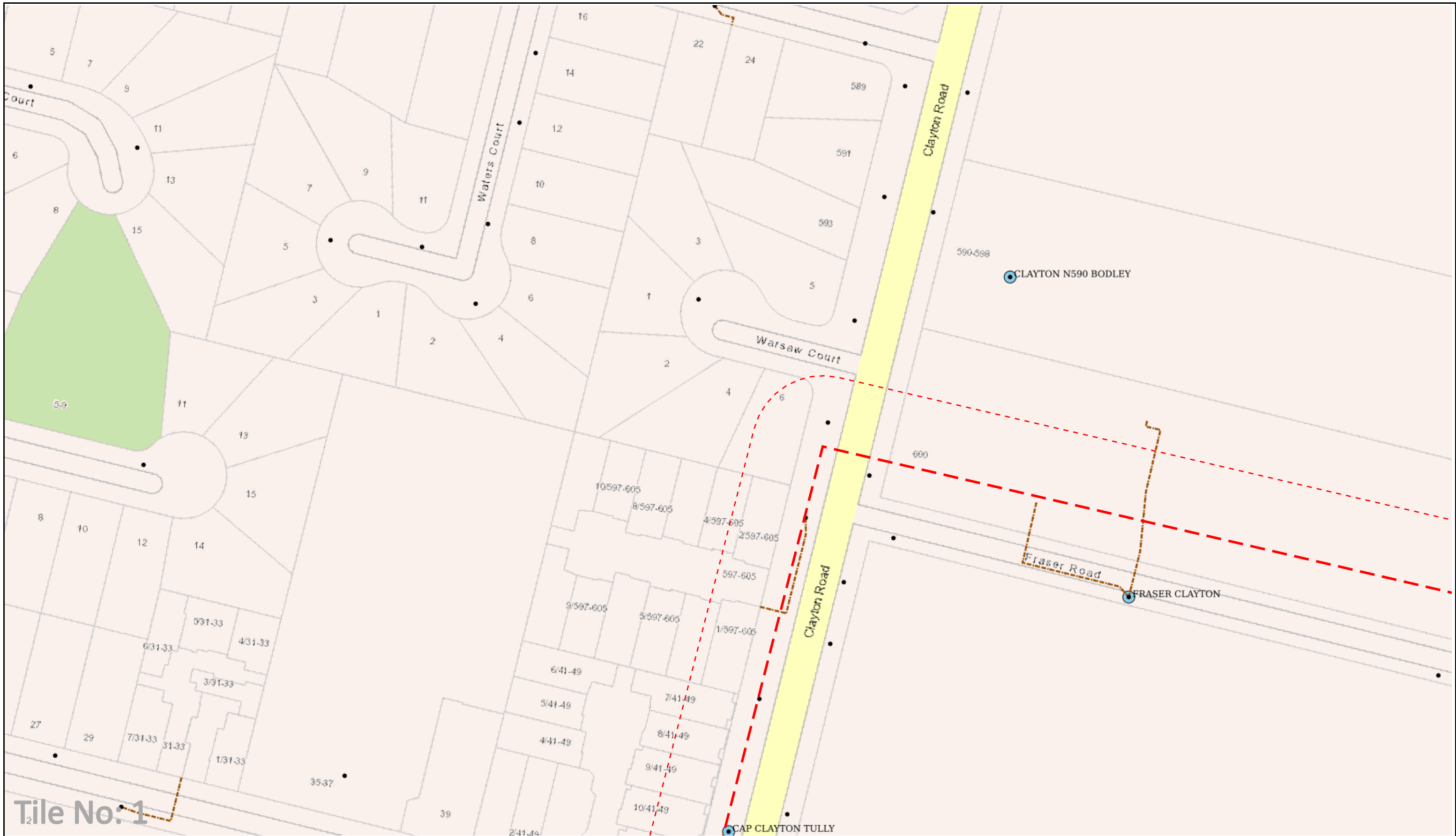
Legend

- DBYD Work Area
- Asset Search Area
- Zone Substation

- High Voltage Cable
- - - Low Voltage Cable
- Communication Cable
- - - Earth Cable

- SWER Substation
- Distribution Substation
- Pole

**ADVERTISED
PLAN**



Tile No: 1

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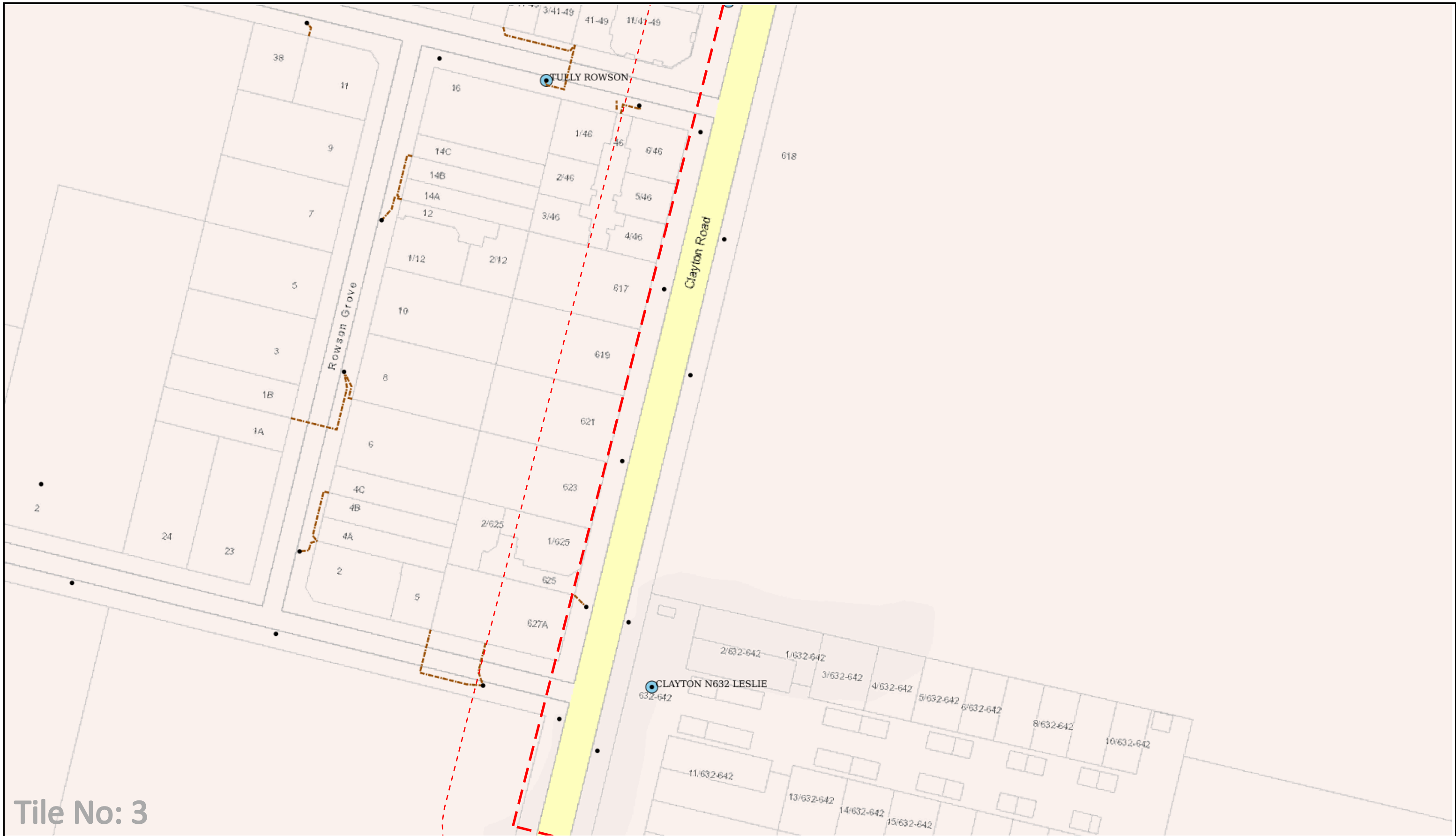
ISSUE DATE: 16 Feb 2023

DBYD Sequence Number: 221276954

Legend

- | | | |
|-------------------|---------------------|-------------------------|
| DBYD Work Area | High Voltage Cable | SWER Substation |
| Asset Search Area | Low Voltage Cable | Distribution Substation |
| Zone Substation | Communication Cable | Pole |
| | Earth Cable | |

**ADVERTISED
PLAN**



Tile No: 3

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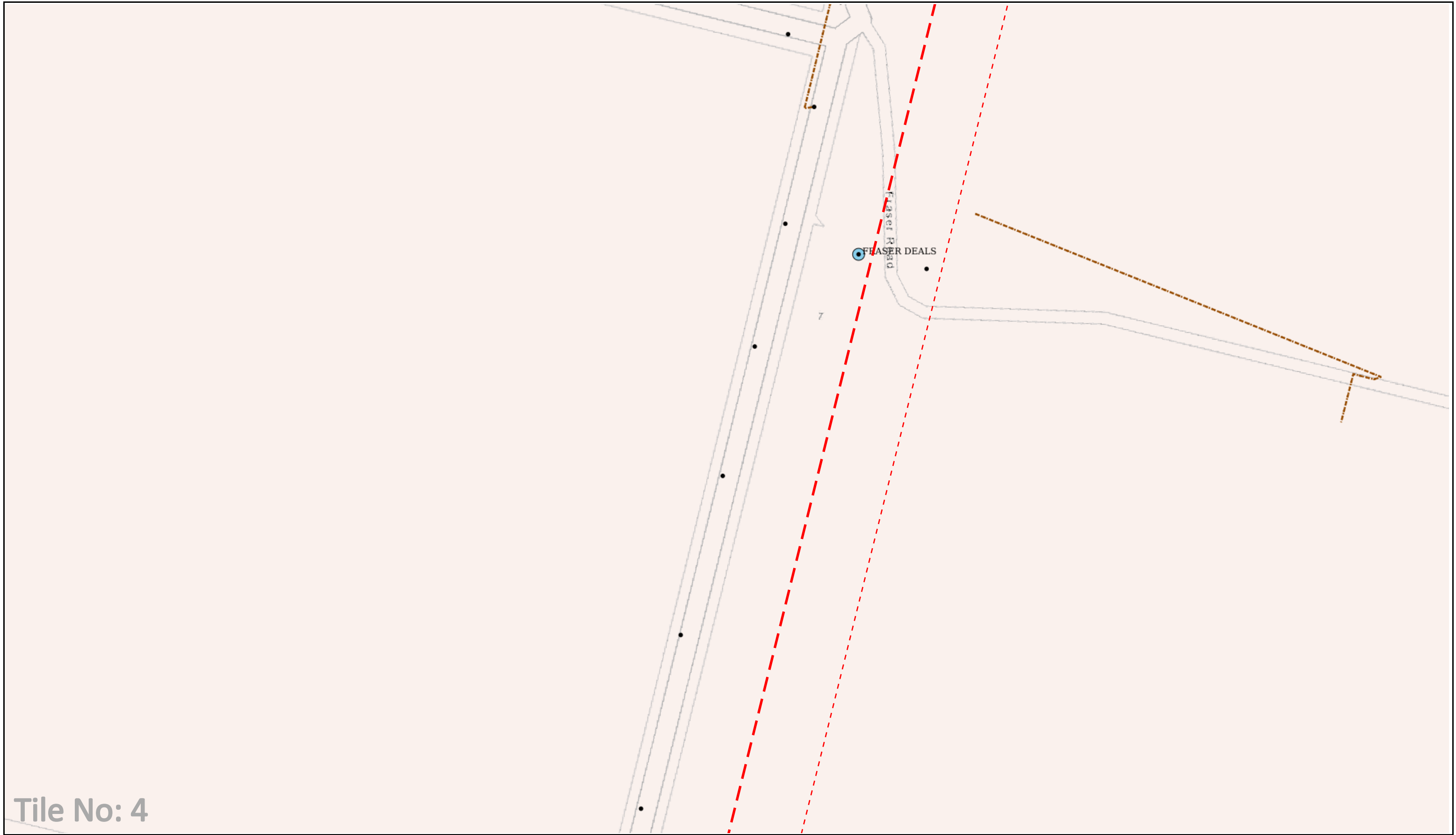
Legend

- DBYD Work Area
- Asset Search Area
- Zone Substation

- High Voltage Cable
- Low Voltage Cable
- Communication Cable
- Earth Cable

- SWER Substation
- Distribution Substation
- Pole

**ADVERTISED
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Tile No: 4

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ISSUE DATE: 16 Feb 2023

DBYD Sequence Number: 221276954

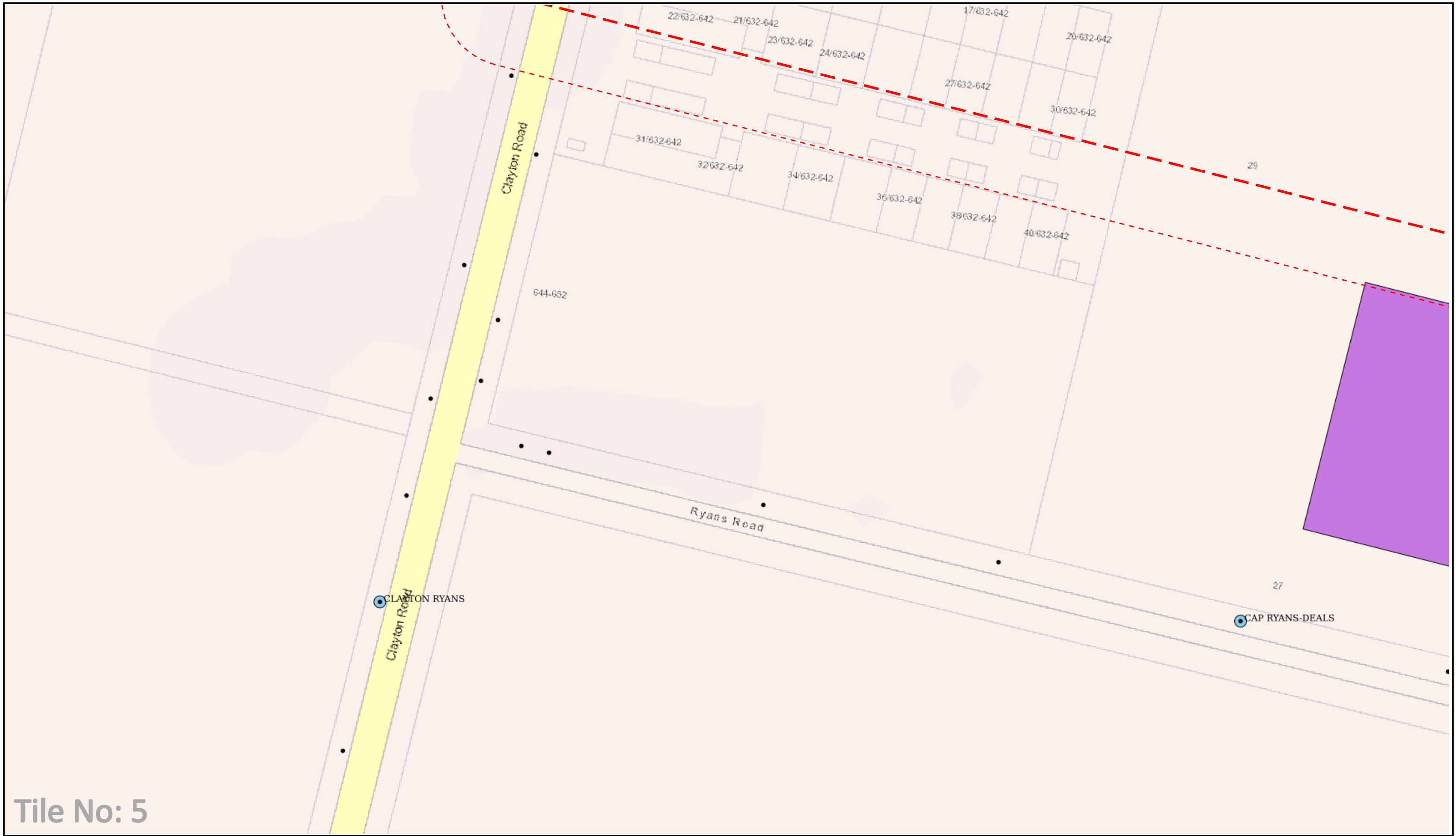
Legend

- DBYD Work Area
- Asset Search Area
- Zone Substation

- High Voltage Cable
- Low Voltage Cable
- Communication Cable
- Earth Cable

- SWER Substation
- Distribution Substation
- Pole

**ADVERTISED
PLAN**



Tile No: 5

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united energy
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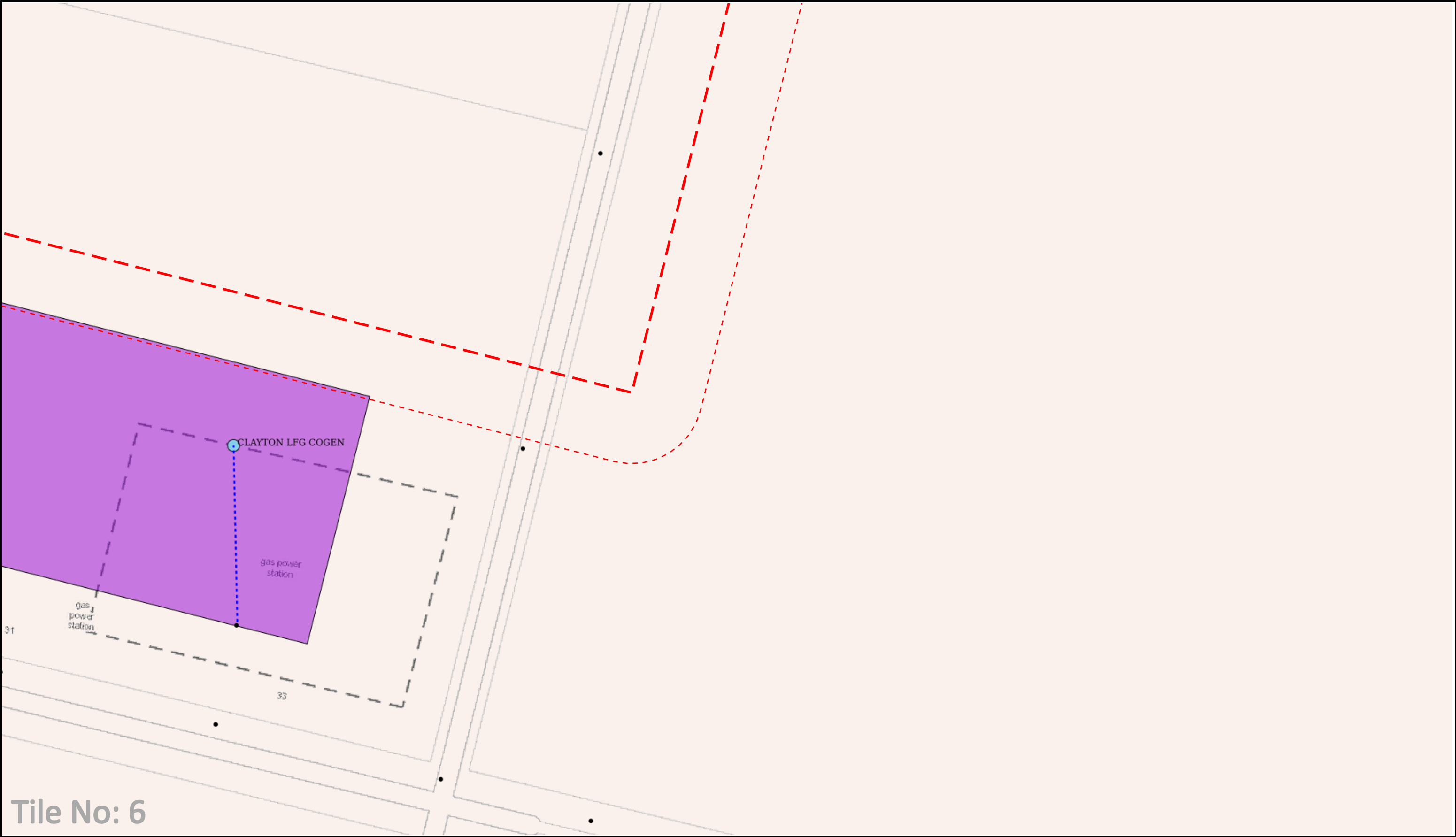
ISSUE DATE: 16 Feb 2023

DBYD Sequence Number: 221276954

Legend

- DBYD Work Area
- Asset Search Area
- Zone Substation
- High Voltage Cable
- Low Voltage Cable
- Communication Cable
- Earth Cable
- SWER Substation
- Distribution Substation
- Pole

ADVERTISED PLAN



Tile No: 6

WARNING

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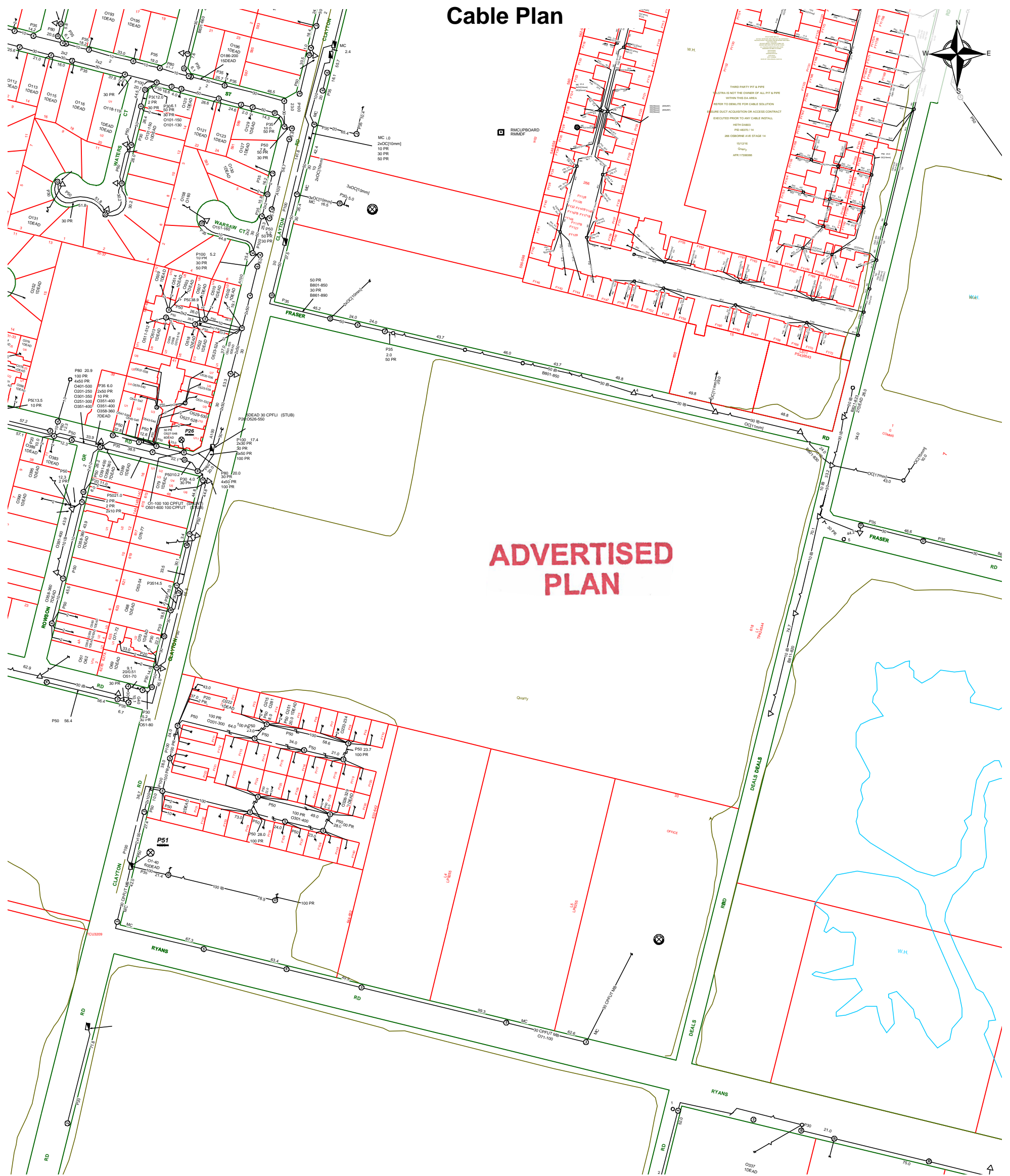
DBYD Sequence Number: 221276954

Legend

DBYD Work Area	High Voltage Cable	SWER Substation
Asset Search Area	Low Voltage Cable	Distribution Substation
Zone Substation	Communication Cable	Pole
	Earth Cable	

ADVERTISED PLAN

Cable Plan



Report Damage: <https://service.telstra.com.au/customer/general/forms/report-damage-to-telstra-equipment>
Ph - 13 22 03
Email - Telstra.Plans@team.telstra.com
Planned Services - ph 1800 653 935 (AEST bus hrs only) General Enquiries

TELSTRA LIMITED A.C.N. 086 174 781

Generated On 16/02/2023 12:54:17

Sequence Number: 221276949

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

Telstra plans and location information conform to Quality Level "D" of the Australian Standard AS 5488-Classification of Subsurface Utility Information.

As such, Telstra supplied location information is indicative only. Spatial accuracy is not applicable to Quality Level D.

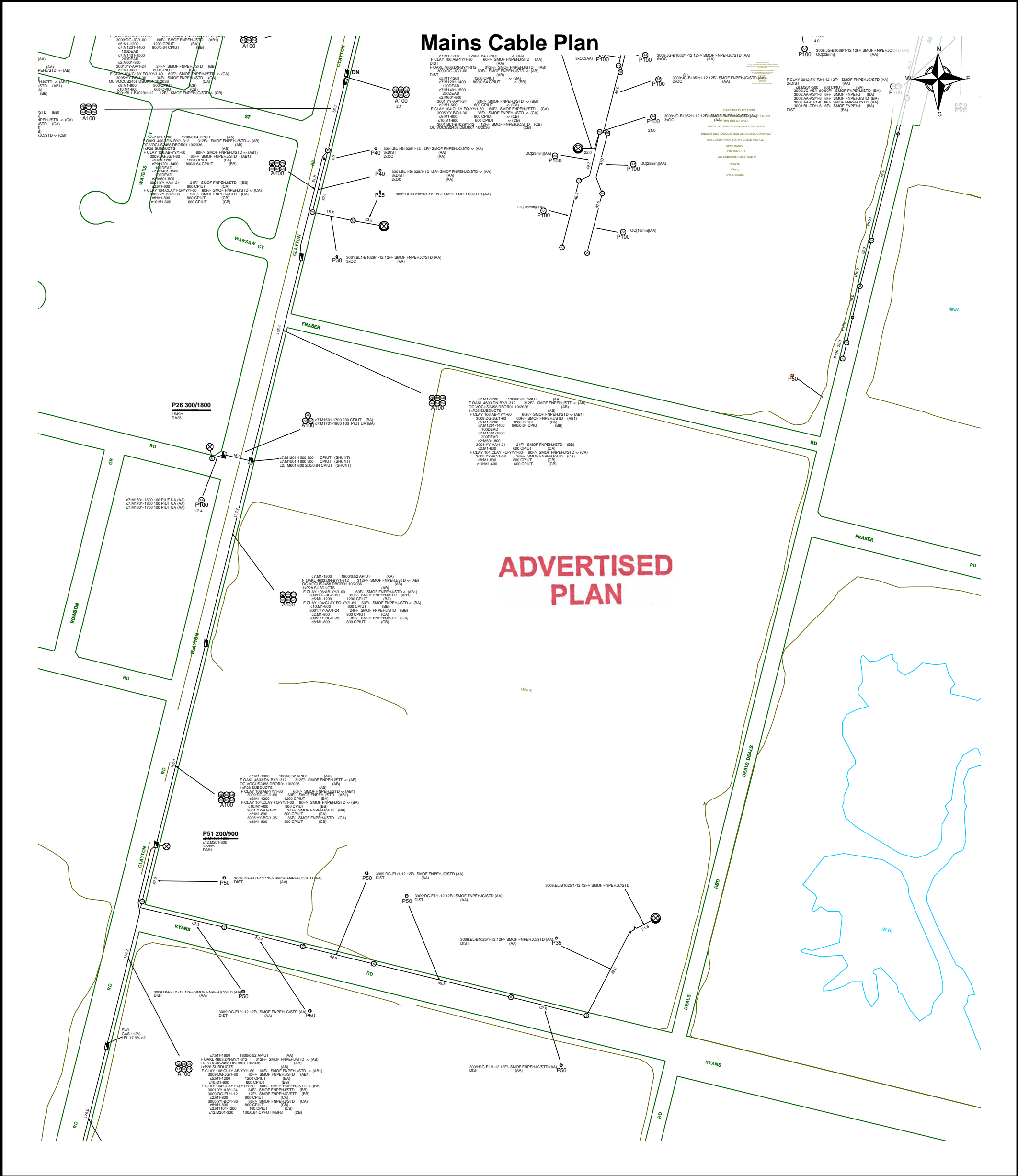
Refer to AS 5488 for further details. The exact position of Telstra assets can only be validated by physically exposing it.


Telstra does not warrant or hold out that its plans are accurate and accepts no responsibility for any inaccuracy.

Further on site investigation is required to validate the exact location of Telstra plant prior to commencing construction work.

A Certified Locating Organisation is an essential part of the process to validate the exact location of Telstra assets and to ensure the asset is protected during construction works.

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





Report Damage: <https://service.telstra.com.au/customer/general/forms/report-damage-to-telstra-equipment>

Ph - 13 22 03

Email - Telstra.Plans@team.telstra.com

Planned Services - ph 1800 653 935 (AEST bus hrs only) General Enquiries

Sequence Number: 221276949

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.

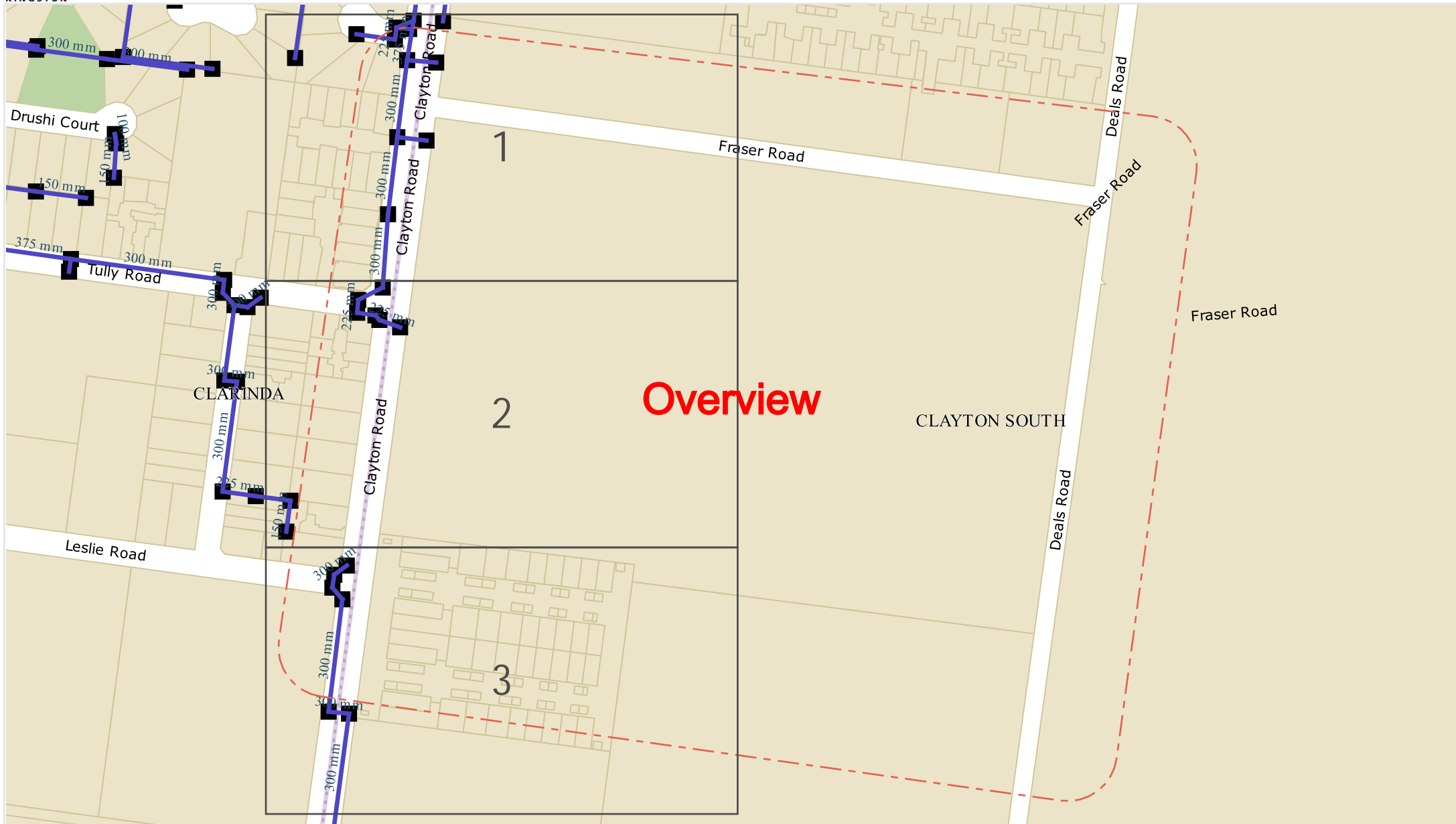
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Generated On 16/02/2023 12:54:20

WARNING

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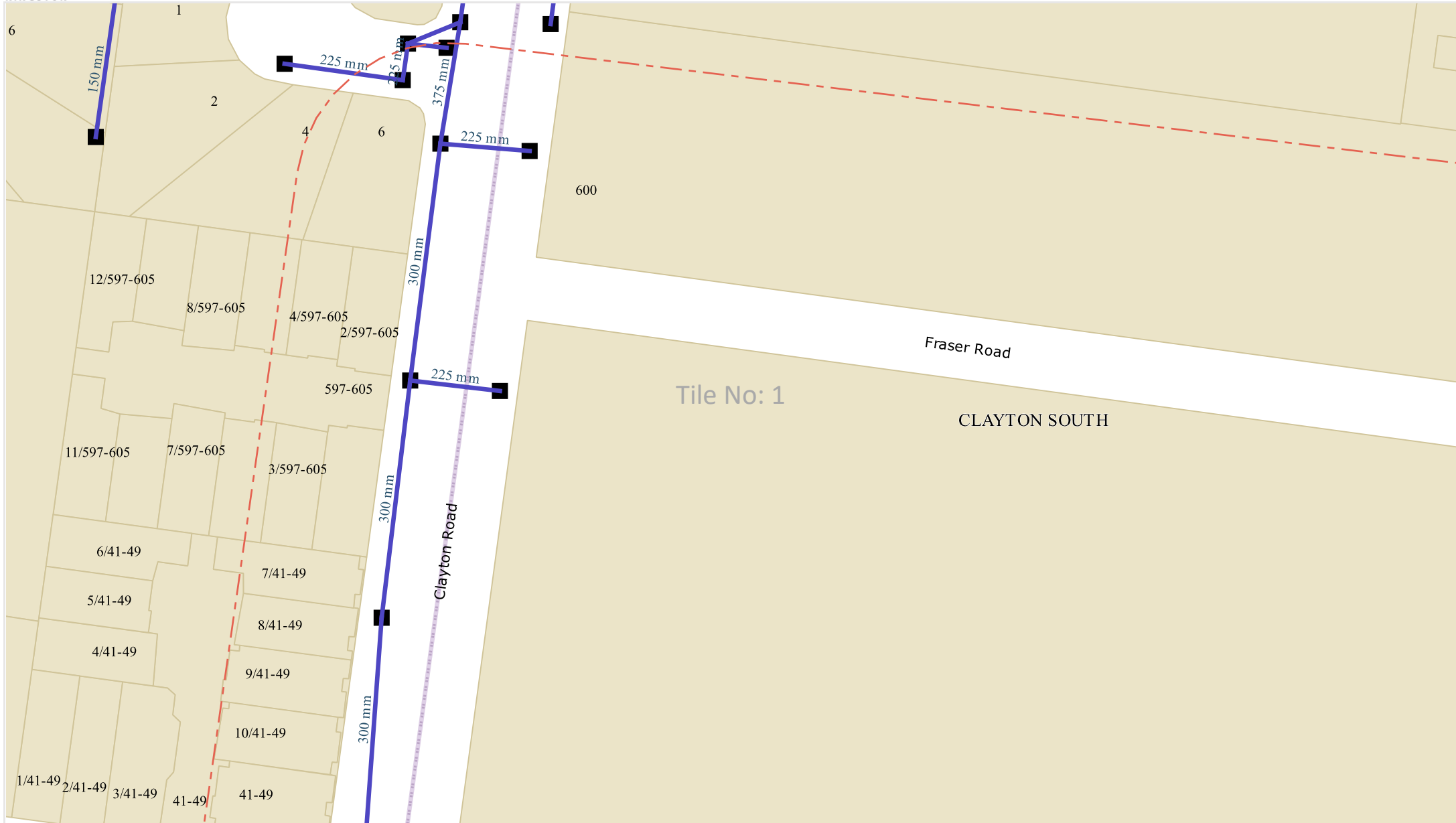


Legend | Scale: 1:3075






- | | |
|---|---|
|  Pipes |  Watercourse |
|  Pits |  Reserve |
|  Waterbody |  Property |
| |  Suburbs |

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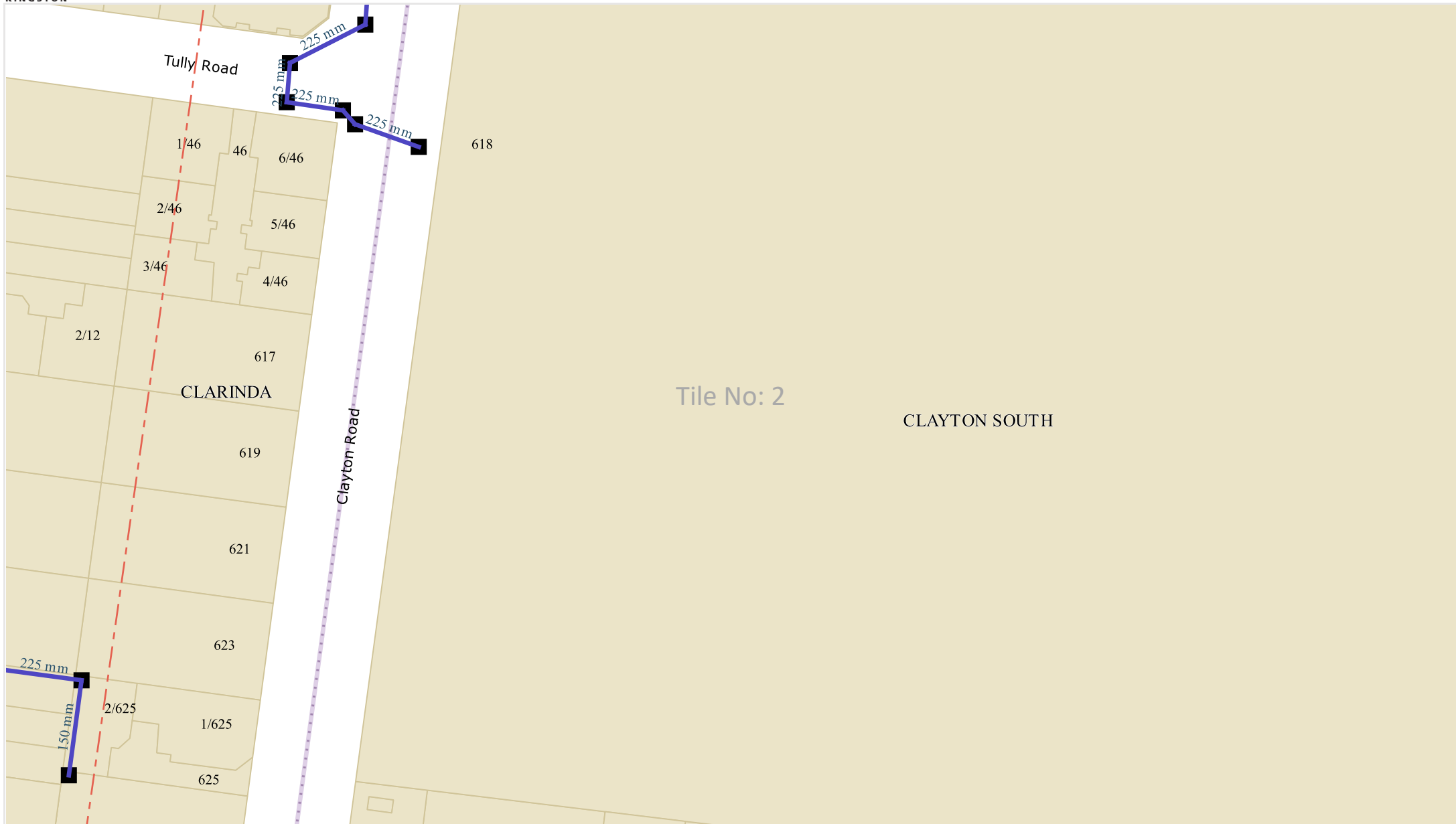


Legend | Scale: 1:1000



- | | |
|---|---|
|  Pipes |  Watercourse |
|  Pits |  Reserve |
|  Waterbody |  Property |
| |  Suburbs |

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Legend | Scale: 1:1000






- | | |
|---|---|
|  Pipes |  Watercourse |
|  Pits |  Reserve |
|  Waterbody |  Property |
| |  Suburbs |

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Legend | Scale: 1:1000



- | | |
|---|---|
|  Pipes |  Watercourse |
|  Pits |  Reserve |
|  Waterbody |  Property |
| |  Suburbs |

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618 Clayton Road, Clayton South

STORMWATER MANAGEMENT PLAN

Appendix E Code Response Report

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**Industrial Development
618 Clayton Road
Clayton Road**

**Provision Compliance
Report**



Prepared For TROON GROUP

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Context Engineering

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This Document Has Been Approved by The Following Appropriately Qualified and Experienced Professional Civil Engineer:

Nicholas Rees

BEng (Hons), MIEAust, CPEng, NER, Registered Professional Engineer of Queensland (RPEQ) No. 18700

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Report Number: R003 - C_23011

Issue	Date	Issue Details	Author	Checked	Approved
A	26 June 2023	Preliminary Issue	EG	NR	NR



1.0 Executive Summary

Context Engineering has been commissioned by Troon Group to compile this Provision Compliance Report for the proposed development of the site located at 618 Clayton Road, Clayton South.

The proposed site involves the creation of an industrial development consisting of nine (9) new warehouses over a historical landfill. These buildings will be connected via large hardstand areas and a centrally located private road with access to Clayton Road. Each warehouse will also be serviced via adjacent office buildings and carparking spaces.

A summary of the investigation and outcomes presented in this report are as follows:

- Stormwater Management in Urban Developments Provision – Development complies with acceptable outcomes or presents performance solutions.

It is recommended that the proposed Development Application be approved.

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2.0 Stormwater Management in Urban Development

2.1 Clause 53.18 – 5 Stormwater Management Objectives for Building and Works

Performance Outcomes	Acceptable Outcomes	Does the proposal meet the acceptable outcomes?	Council Use
Objective a) To encourage stormwater management that maximises the retention and reuse of stormwater. b) To encourage development that reduces the impact of stormwater on the drainage system and filters sediment and waste from stormwater prior to discharge from the site. c) To encourage stormwater management that contributed to cooling, local habitat improvements and provision of attractive an enjoyable spaces. d) To ensure that industrial and commercial chemical pollutants and other toxicants do not enter the stormwater system.	Standard W2 The stormwater management system should be designed to: <ul style="list-style-type: none">• Meet the current best practice performance objectives for stormwater quality as contained in the Urban Stormwater- Best Practise Environmental Management Guidelines (Victorian Stormwater Committee, 1999).• Minimise the impact of chemical pollutants and other toxicants including, but not limited to, bunding and covering or roofing of storage, loading and work areas.• Contribute to cooling, improving local habitat and providing attractive and enjoyable outcomes.	<input checked="" type="checkbox"/> Complies <input type="checkbox"/> Performance Solution <input type="checkbox"/> Not Applicable Stormwater runoff from the site to be treated via proprietary Filterra system. Refer Civil Engineering Report by Context Engineering for further details.	ADVERTISED PLAN

2.2 Clause 53.18 – 6 Site Management Objectives

Performance Outcomes	Acceptable Outcomes	Does the proposal meet the acceptable outcomes?	Council Use
<p>PO1</p> <p>a) To protect drainage infrastructure and receiving waters from sedimentation and contamination</p> <p>b) To protect the site and surrounding area from environmental degradation prior to and during construction of subdivision works</p>	<p>Standard W3</p> <p>An application should describe how the site will be managed prior to and during construction period and may set out requirements for managing:</p> <ul style="list-style-type: none"> • Erosion and sediment. • Stormwater. • Litter, concrete and other construction wastes. • Chemical contamination. <p>ADVERTISED PLAN</p>	<p><input checked="" type="checkbox"/> Complies</p> <p><input type="checkbox"/> Performance Solution</p> <p><input type="checkbox"/> Not Applicable</p> <p>Erosion and sediment control during construction is detailed in the Engineering Services by Context Engineering.</p> <p>Refer drawing C_23065 DA80 Erosion and Sediment Control Layout Plan for further details.</p>	

3. Recommendations

It is recommended that the proposed Development Application be approved.

4. Disclaimer

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Our investigation and analysis has been specifically catered for the particular requirements Troon Group and may not be applicable beyond this scope. For this reason, any other third parties are not authorised to utilise this report without further input and advice from Context Engineering.

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The investigation and analysis have relied on information provided by others. We accept no responsibility for the accuracy of material supplied by others. The accuracy of the investigation, analysis and report are dependent upon the accuracy of this information

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