

Development Plan Amendment

By the Council

City of Charles Sturt

St Clair Residential Draft
Development Plan Amendment
(Trident Plastics Site) (Privately
Funded)

Explanatory Statement and Analysis

*For Consultation
July 2020*

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Have Your Say

This Draft Development Plan Amendment (DPA) will be available for inspection by the public at the City of Charles Sturt, 72 Woodville Road, Woodville from Thursday 16 July 2020 until Friday 11 September 2020.

During this time anyone may make a written submission about any of the changes the DPA is proposing. Submissions should be sent to:

**The Chief Executive Officer
City of Charles Sturt
PO Box 1
WOODVILLE SA 5011**

Email - Jim Gronthos – jgronthos@charlessturt.sa.gov.au (please ensure subject line references the ‘St Clair Residential (Trident Plastics Site) Draft DPA (Privately Funded)’

Submissions should indicate whether the author wishes to speak at a public meeting about the draft DPA. If no-one requests to be heard, no public meeting will be held.

If requested, a meeting will be held at 6pm on Monday 21 September 2020 at the City of Charles Sturt, 72 Woodville Road, Woodville.

Should social distancing restrictions remain in force, the public meeting will be held electronically. The details of the electronic meeting will be published on Council’s website, following the conclusion of the public consultation period.

Planning and Design Code

A new planning system is currently being introduced into South Australia. The new *Planning, Development and Infrastructure Act 2016* (PDI Act) is being introduced in stages. The *Planning and Design Code* is the cornerstone of the new planning system and consolidates the planning rules contained in South Australia's 72 Development Plans into one rulebook. In this regard the Charles Sturt Council Development Plan will be superseded by the new *Planning and Design Code* in September 2020 (subject to Parliamentary resolution).

We are currently in the transition between the two pieces of legislation. This Development Plan Amendment (DPA) has been prepared and consulted on under the *Development Act 1993* to amend Council's current Development Plan.

Existing zones and policy areas in the current Development Plan will be transitioned to the equivalent zone in the *Planning and Design Code*. Regarding the policy changes proposed in this draft DPA, all changes utilise existing zones within the current Development Plan with some local additions (i.e. not the 'new' zones proposed within the *Planning and Design Code*).

If the draft DPA is approved by the Minister for Planning, the changes will be transitioned into the new *Planning and Design Code* after September 2020, and they will not be consolidated into the Council's Development Plan.

Refer to the SA Planning Portal at www.saplanningportal.sa.gov.au for more information.

Explanatory Statement

Introduction

The *Development Act 1993* provides the legislative framework for undertaking amendments to a Development Plan. The *Development Act 1993* allows either the relevant council or, under prescribed circumstances, the Minister responsible for the administration of the *Development Act 1993* (the Minister), to amend a Development Plan.

Before amending a Development Plan, a council must first reach agreement with the Minister regarding the range of issues the amendment will address. This is called a Statement of Intent. Once the Statement of Intent is agreed to, a Development Plan Amendment (DPA) (this document) is written, which explains what policy changes are being proposed and why, and how the amendment process will be conducted.

A DPA may include:

- An Explanatory Statement (this section)
- Analysis, which may include:
 - Background information
 - Investigations
 - Recommended policy changes
 - Statement of statutory compliance
- References/Bibliography
- Certification by Council's Chief Executive Officer
- Appendices
- The Amendment.

Need for the amendment

The subject land, presently occupied by Trident Plastics (who are a tenant of the site), is located within the Urban Employment Zone of the Development Plan.

However, and as illustrated in **Figure 1** on page 5, due to the surrounding re-development of St Clair, the Trident Plastics site has become an 'industrial island', wedged between residential housing to the east, south and west.

The proximity of residential development places a significant constraint on the potential growth and intensification of activities associated with Trident Plastics (as well as 'other' alternative commercial development opportunities for the site). There is a risk that continued encroachment of housing will lead to increasing interface concerns including (but not limited to) visual impact, noise, odour and truck movements. Accordingly, the long-term use of the site for industrial/commercial activities appears constrained and uncertain.

The provisions of the Urban Employment Zone are generally reflective of the existing land use activities undertaken by Trident Plastics and seeks to accommodate a range of employment generating industrial and commercial activities. In contrast, the existing zone is restrictive towards the establishment of residential activities which would be compatible with adjoining residential housing.

Therefore, it is appropriate to consider an alternative policy framework for the site which facilitates a new form of development that is compatible with surrounding housing. In this way, informed investment decisions can be made including the potential relocation of existing operations to a more suitable location as well as any remediation works that may be required prior to the development of the site for a more sensitive land use.

In this context, the Proponent, Prosperity Assets Pty Ltd (who own the land) is seeking to re-develop the Trident Plastics industrial site for residential purposes.

In further support for the proposal, it is also noted:

- Council's Industrial Land Study (2008) sought to identify and protect 'Prime Industrial Land' across the Council area. The subject site was not identified as 'Prime Industrial Land' which supports its potential re-zoning to support establishment of an alternative land use which is compatible with surrounding residential development.
- More recently, Council's 'Urban Employment Land 'Review' (2019) considered the zoning of the subject land and recommended that further consideration be given to its re-zoning to a new zone which is compatible with surrounding residential development.
- The subject land measures approximately 29,700m² with a frontage to Torrens Road of approximately 170 metres. In this regard, and as will be outlined within **Section 3** of this draft DPA, the site can be developed in such a way to support a residential outcome while providing road and pedestrian connectivity, useable public open space and infrastructure.
- The subject land is located adjacent Torrens Road, which provides for road and public transport connectivity, as well as being near other public transport links such as the Outer Harbor railway line.
- The subject site is well placed to support residential development being surrounded by the St Clair master-planned development which is a well-connected and walkable community, served by shops (e.g. St Clair Village Square), services and facilities (e.g. Woodville High School and St Clair Recreation Centre/Precinct), and public open space (e.g. St Clair Oval).

Having regard to all the above, the Council considers it appropriate to investigate planning policy amendments to facilitate residential land uses for the site.

Following receipt of a Statement of Justification from the Proponent, Council agreed to undertake a Privately Funded Development Plan Amendment (DPA), following assessment against Council's '*Privately Funded Development Plan Amendments Policy*'.

The aim of the draft DPA is to investigate policy amendments to encourage a medium-density residential outcome for the site, which is compatible with the surrounding residential character of the locality. In this way, future development on the site will integrate seamlessly with existing housing in the locality.

Statement of Intent

The Statement of Intent relating to this draft DPA was agreed by the Minister on 15 December 2019.

The issues and investigations agreed to in the Statement of Intent have been undertaken or addressed during the preparation of this draft DPA.

Affected area

The existing zoning arrangements and the area affected by the proposed draft DPA are illustrated in **Figure 1** below (as identified in the Statement of Intent (SOI)).

The Affected Area, which covers approximately 2.97 hectares in area, is located within the *Urban Employment Zone*. However, the Affected Area has become 'wedged' and surrounded by the *Residential Zone* to the east, west and south. To the west of the Affected Area is *Cheltenham Park Policy Area 22*, while to the south and east is *Woodville Medium Density Policy Area 21*.

To the north, on the opposite side of Torrens Road, is *Bulky Goods Policy Area 6* of the *Urban Employment Zone*.



Figure 1: Affected Area

Developer Funded DPA

This draft DPA process has been funded by the Proponent Prosperity Assets Pty Ltd in accordance with a Development Plan Funding Agreement with Council. However, Council retains full control over the draft DPA process and decision-making responsibilities in accordance with the *Development Act, 1993*.

Summary of proposed policy changes

As illustrated in **Figure 1** above, *Woodville Medium Density Policy Area 21* of the *Residential Zone*, is located to the east and south of the Affected Area.

The draft DPA proposes to extend *Woodville Medium Density Policy Area 21* of the *Residential Zone* over the Affected Area.

In this context, only minor amendments are considered necessary to accommodate site specific circumstances as follows:

- Amend the Desired Character Statement for *Woodville Medium Density Policy Area 21* to:
 - Explicitly identify that the Policy Area includes the Trident Plastics Factory site.
 - Replace references to 'Viscount Plastics' (the previous site operator) with 'Trident Plastics'.
 - Identify that higher buildings (up to 3-storeys) may be appropriate in certain locations within the Policy Area such as land adjacent Torrens Road.
- Amend PDC 4 to include reference that three-storey building heights may be appropriate adjacent to Torrens Road (as well as adjacent public open space connections).
- Replace existing PDC 9 with the following:
 - New PDC 9 to allow for provision of new road access from Torrens Road to/from the Affected Area (with no new road access to/from Torrens Road for the remainder of the Policy Area)
 - Include a new Policy Area PDC (to be PDC 10) to restrict vehicular access to individual allotments to/from Torrens Road (both for the Affected Area and the remainder of the Policy Area)
- Include a new Policy Area PDC (to be PDC 11) to ensure future provision of an internal road network that services the Affected Area, provides a key vehicle connection to Torrens Road, provides secondary vehicle connection with existing roads to the east and south of the Affected Area, and provides safe and convenient pedestrian linkages with the surrounding locality.
- Re-number existing PDC 10 and PDC 11, as PDC 12 and PDC 13 respectively (no change to the content of these existing PDCs).
- Amending various Maps (i.e. Council Index Map, Zone Map ChSt/9 and Policy Area Map ChSt/9).

In addition, and to ensure consistency with *South Australian Planning Policy Library Technical Information Sheet No. 6 (Affordable Housing – Overlay 1)* and *Sheet No. 8 (Noise and Air Emissions – Overlay 3)*, it is proposed to introduce the Affordable Housing Overlay and Noise and Air Emissions Overlay to the Affected Area.

While no new specific Affordable Housing or Noise and Air Emission policy provisions are to be introduced to the Development Plan, the following Maps will be amended to identify these Overlays apply to the Affected Area:

- Map ChSt/9 – Noise and Air Emissions Overlay.
- Map ChSt/9 – Affordable Housing Overlay.

In accordance with advice provided by the Minister for Planning (in approving the Statement of Intent on 15 December 2019), the draft DPA does not propose to amend *Concept Plan Map ChSt/18 (Cheltenham Park and Woodville Medium Density)* of the Development Plan – which presently applies to land immediately to the east and west of the Affected Area. Rather than updating the Concept Plan, all desired development outcomes, associated with the draft DPA, have been incorporated within the Desired Character Statement and Principles of Development Control (PDC) of the proposed Policy Area.

Legal requirements

Prior to the preparation of this draft DPA, council received advice from a person or persons holding prescribed qualifications pursuant to Section 25(4) of the *Development Act, 1993*.

The draft DPA has assessed the extent to which the proposed amendment:

- Accords with the Planning Strategy
- Accords with the Statement of Intent
- Accords with other parts of council's Development Plan
- Complements the policies in Development Plans for adjoining areas
- Accords with relevant infrastructure planning
- Satisfies the requirements prescribed by the *Development Regulations 2008*.

Consultation

This draft DPA is now released for formal agency and public consultation. The following government agencies and organisations are to be formally consulted:

- Department of Planning, Transport and Infrastructure (DPTI) – Development Planning
- Department of Planning, Transport and Infrastructure (DPTI) – Transport Services
- Department for Communities and Social Inclusion (DCSI)
- Environment Protection Authority (EPA)
- SA Housing Authority
- Electranet Pty Ltd
- Distribution Lessor Corporation
- SA Power Networks (SAPN)
- SA Water

The following Members of Parliament will be consulted:

- State Member for Cheltenham – Mr. Joe Szakacs
- Federal Member for Adelaide – Mr. Steve Georganas MP
- Federal Member for Hindmarsh – Hon. Mark Butler MP

The following adjoining Councils will be consulted:

- City of Port Adelaide Enfield
- City of West Torrens
- City of Adelaide
- City of Prospect

In addition, landowners and occupiers within the investigation area; landowners immediately surrounding the investigation area, as well as Trident Plastics (as tenant of the Affected Area) will also be consulted.

All written and verbal, agency and public submissions made during the consultation phase will be recorded, considered, summarised and responses provided. Subsequent changes to the draft DPA may occur as a result of this consultation process.

In the preparation of the investigations (as outlined in **Section 3** of this report), preliminary engagement has already occurred with the following key stakeholders:

- DPTI – Development Planning
- DPTI – Transport Services
- SA Power Networks (SAPN)
- SA Water
- Environment Protection Authority (EPA)

Note: The SOI identified that the Department of State Development (DSD) were to be consulted both during the Investigation Phase and Consultation Phase of the DPA. However, this Department no longer exists and accordingly, consultation did not occur with the DSD.

Important Note for Agencies: This DPA includes modules from the State Planning Policy Library. As the policy library was subject to agency consultation during its development, agencies are requested to comment only on the range and application of the modules selected and not on the actual policy content, except where that policy has been included as a local addition. Agencies are invited to comment on any additional issues (if relevant).

The final stage

When Council has considered the comments received and made any appropriate changes, a report on this (the *Summary of Consultations and Proposed Amendments* report) will be sent to the Minister.

The Minister will then either approve (with or without changes) or refuse the draft DPA.

Analysis

1. Background

The Affected Area is presently occupied by Trident Plastics (who are tenants of the land) who use injection moulding to manufacture a range of plastic products including automotive components, white good components, bottles, containers and mobile garbage bins. However, due to the re-development of St Clair, the factory site has become an 'industrial island' surrounded by adjoining housing to the east, west and south.

The proximity of residential development has placed a significant constraint on the potential growth and intensification of activities associated with the Trident Plastics factory. It is highly likely that continued encroachment of housing within the St Clair Estate will lead to interface issues including (but not limited to) visual impact, noise, odour and truck movements.

In addition, the spatial area and configuration of the Affected Area, as well as the sensitive interface with residential housing represents a significant barrier to the expansion and/or intensification of commercial/industrial activities on the site (either by Trident Plastics or other future operators). In this context, the long-term use of the site for industrial activities appears constrained and uncertain.

On this basis, the proponent Prosperity Assets Pty Ltd (owner of the land) is seeking to pursue the re-zoning of the Affected Area to establish a future residential use which is compatible with the residential character of the locality. This will allow the landowner and tenant to make informed investment decisions including the potential relocation of Trident Plastic's existing operations to a more suitable location, as well any remediation works that may be required prior to the development of the site for future housing.

Currently, the Urban Employment Zone which applies to the Affected Area contains policy which limits residential development opportunities for the site. More specifically, a 'dwelling' is listed as a form of non-complying development in the Zone (except where it is for short term workers accommodation, a caretaker's residence or minor alterations and additions to an existing dwelling).

Accordingly, the focus for this draft DPA is to investigate the potential re-zoning of the Affected Area to an appropriate zone to facilitate a residential development outcome which is consistent with the character and density of residential development within St Clair, while also providing vehicular, pedestrian and open space linkages throughout the locality.

As outlined within the Background Section above, the Affected Area site is well placed to support residential development being surrounded by the St Clair master-planned development which is a well-connected and walkable community, served by shops (e.g. St Clair Village Square), services and facilities (e.g. Woodville High School and St Clair Recreation Centre/Precinct), public open space (e.g. St Clair Oval) and public transport linkages (bus and rail).

In this way, future residential development on the site will integrate seamlessly with existing housing and services in the locality.

As mentioned above, Council has previously considered the appropriateness of the Affected Area for ongoing industrial uses and considered the possibility of its re-zoning for an alternative use. In particular:

- Council's 'Industrial Land Study' (2008) sought to identify and protect 'Prime Industrial Land' across the Council area. The Affected Area was not identified as 'Prime Industrial Land'.
- More recently, Council's 'Urban Employment Land Review' (2019) considered the zoning of the Affected Area and recommended that further consideration be given to its re-zoning to a new zone which is compatible with surrounding residential development.

On 21 October 2019, Council resolved that the request from the Proponent is consistent with Council's Privately Funded DPA Policy and endorsed a Statement of Intent (SOI) to seek agreement from the Minister

for Planning to investigate and prepare the St Clair Residential Development (Trident's Plastics Site) as a privately funded draft DPA.

The SOI was agreed by the Minister for Planning on 15 December 2019.

Subject to future detailed analysis and design, *one possible future outcome* for the Affected Area could be to support a residential yield in the order of 80-90 low-medium density residential allotments and an 'apartment' site in the order of 40-50 apartments. This could be arranged in a manner to provide for 'higher' density residential development fronting Torrens Road and open space, with a transition down (in height and density) at the interface with existing residential allotments to the east and south of the Affected Area. In addition, the Affected Area could support provision of public open space to connect with the existing open space network, an internal road and pedestrian network and access to the existing road network (i.e. Torrens Road, Ashworth Avenue and Charles Mathews Circle).

2. The strategic context and policy directions

2.1 Consistency with the Planning Strategy

The Planning Strategy presents current State Government planning policy for development in South Australia. In particular, it seeks to guide and coordinate State Government activity in the construction and provision of services and infrastructure that influence the development of South Australia. It also indicates directions for future development to the community, the private sector and local government.

The following volumes of the Planning Strategy are relevant to this DPA:

- *The 30-Year Plan for Greater Adelaide (2017 update)*

The draft DPA supports the policies of the Planning Strategy by:

- Facilitating additional housing opportunities at increased densities within an established urban area and walkable neighbourhood.
- Facilitating additional housing opportunities at increased densities near public transport routes.
- Providing for increased potential in urban green cover through new public open space and street tree plantings.
- Requiring good urban design outcomes.
- Facilitating walking and cycling infrastructure.
- Providing for increased potential for new public open space areas.
- Requiring stormwater management to consider Water Sensitive Urban Design principles (WSUD).
- Ensuring potential land / water contamination and remediation options are investigated to ensure the land is suitable for the intended use.

The draft DPA also supports policies of the Planning Strategy which seeks to ensure industry is located in appropriate locations, where they are able to adapt and grow, separated from housing and other sensitive land uses.

A detailed assessment of the draft DPA against the Planning Strategy is contained in **Appendix A**.

2.2 Consistency with other key strategic policy documents

This draft DPA accords with other key policy documents as set out below.

2.2.1 Council's Strategic Directions Report (Section 30)

The Council's planning priorities are expressed in its Strategic Directions Report (Section 30 Development Plan Review). The City of Charles Sturt's most recent Strategic Directions Report (SDR) was approved by the Minister in May 2014.

The SDR outlines recommended planning policy actions and a five-year DPA implementation program which is intended to address a number of identified planning issues. Importantly, the SDR refers to the 'Charles Sturt Industrial Land Study' (2008) which formed the key reference document for the Urban Employment Zone DPA which was consolidated into the Development Plan in October 2017. The purpose of the study was to identify and protect 'Prime Industrial Areas' across the Council area.

The SDR indicates that the 'Prime Industrial Areas' include Royal Park, Hendon, Woodville North, Athol Park, Arndale, West Croydon/Kilkenny, Beverley, Port Road/South Road and Hindmarsh. The Trident Plastics site does not form one of the 'Prime Industrial Areas' and was earmarked in the SDR as a site which should be investigated further given the proximity of existing and proposed residential development.

For this reason, the proposed draft DPA is consistent with the SDR by implementing a clear recommendation to undertake further investigations into the future use of the site.

As will be discussed within **Section 3.1.2** below, the 2008 Study has been 'superseded' by Council's 'Urban Employment Land Review (2019)', which specifically identified the need to consider re-zoning of the Affected Area given proximity of housing.

2.2.2 City of Charles Sturt Community Plan

The 'Community Plan 2016-2027 Charles Sturt - A Leading, Liveable City' highlights the following 'Liveability' objectives that aim to ensure that Charles Sturt will continue to evolve as a destination of choice to live and visit:

- *An urban environment that is adaptive to a changing and growing City; and*
- *Create valued urban places that bring people together and reflect local character and identity.*

The draft DPA will assist to provide the local community with additional housing opportunities close to existing facilities and services. It will also introduce contemporary policies to assist to create an urban environment in St Clair that is adaptive to the changes and growth occurring in the broader Council area. In this way, a valued urban space will be created that reflects the emerging character and identity of St Clair.

2.2.3 Infrastructure planning

Where relevant, a DPA must consider relevant infrastructure planning (both physical and social infrastructure) as identified by Council (usually through the Strategic Directions Report), the Minister and/or other government agencies. The following infrastructure matters have been identified as requiring investigation as part of this draft DPA process:

- Assessment of traffic impacts including vehicular access and egress to and from the Affected Area and impacts on the surrounding road network.
- Integration with surrounding residential development in terms of vehicular access, pedestrian movements and open space linkages.
- The capacity of the existing stormwater system within the locality and the need for future stormwater management requirements, including WSUD, to accommodate future development.
- Open space provision and walking/cycling network connections.

The findings of the investigations for these matters are discussed within **Section 3** of this report.

2.2.4 Current Ministerial and Council DPAs

This draft DPA has considered the following Council DPAs which are currently being progressed:

Council DPAs	Response/Comment
Kilkenny Mixed Use (Residential and Commercial) draft DPA (Privately Funded)	<p>This is a site specific DPA and the focus of the proposal is to rezone the relevant area from Urban Employment Zone to Suburban Activity Node Zone to facilitate higher density residential and mixed-use development.</p> <p>Given this, the proposed DPA will not be affected by this DPA.</p>
Woodville Road and Environs Revitalisation DPA	<p>This is a site specific DPA which seeks to review the zoning along the Woodville Road corridor to better facilitate mixed use development reflective of the masterplan previously prepared for this location.</p> <p>Given this, the proposed DPA will not be affected by this DPA.</p>
Findon Road, Kidman Park Mixed Use (Residential and Commercial) DPA – (Privately Funded) (Metcash site)	<p>This is a site specific DPA and the focus of the proposal is to rezone land along Findon Road, Kidman Park from an Urban Employment Zone to a Mixed-Use Zone to facilitate medium density residential uses and commercial opportunities.</p> <p>Given this, the proposed DPA will not be affected by this DPA.</p>

This draft DPA has also considered the following Ministerial DPAs which are currently being processed:

Ministerial DPAs	Response/Comment
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There are no current Ministerial DPAs on consultation or post-consultation that will be affected by this draft DPA.

2.2.5 Existing Ministerial Policy

This draft DPA does not propose to change any existing Ministerial policy within the Development Plan.

3. Investigations

3.1 Investigations undertaken prior to the Statement of Intent

3.1.1 Charles Sturt Industrial Land Study (2008)

The City of Charles Sturt Industrial Land Study reviewed the future of industrial land within the Council area. Industrial areas were assessed against the *Prime Industrial Area Assessment Matrix*, developed from the Metropolitan Adelaide Industrial Land Study to determine their importance as ongoing industrial land.

While the Study did not specifically reference a need to re-zone the Affected Area, it noted:

- Viscount Plastics (the operator of the site at the time of the Study) was a 'significant occupier' within the Outer North District.
- However, the site was not a 'Prime Industrial Area' and was more particularly described as an 'Other Industrial Area'.
- The Affected Area was spatially separated from the 'Woodville North Precinct' (located to the northern side of Torrens Road), which was identified as a 'Prime Industrial Area'.

The industrial areas were also assessed against a *Rezoning Potential Assessment Matrix* to determine their suitability to being rezoned to an alternative use. In this regard, the Study identified a number of 'criteria for rezoning potential'. Several of these key criteria are applicable to the Affected Area as follows:

- Land that is not a Prime Industrial Area.
- The land is no longer conducive to industrial use.
- There are compelling reasons for change, such as an inability to resolve access or interface issues.
- It would resolve existing or potential residential interface issues.
- The land is an isolated pocket of industrial use, with only a low level of connectivity to other industrial development.

Implications for the draft DPA

Given the Affected Area was not identified as 'Prime Industrial Area', and the Affected Area accords with several of the key 'criteria for rezoning potential' identified within the Study, this supports the sites potential re-zoning to a Residential Zone.

3.1.2 Urban Employment Land Review (July 2019)

Council's 'Urban Employment Land Review' (2019) sought to investigate the previous recommendations and land use assessment framework of the 2008 Industrial Land Study, to re-confirm those precincts (still) considered worthy of retention in the longer term as Prime Industrial/Employment Areas. The Land Review specifically considered the zoning of the Affected Area (refer **Figure 2** over page) and recommended that further consideration be given to a new zone that would allow for land uses on the site which are compatible with surrounding residential development.

The relevant excerpt from the Urban Employment Land Review is provided below:

... [the Outer North Precinct] ...includes a section of land on the southern side of Torrens Road. This section of the Precinct was previously considered for rezoning as part of the Cheltenham Park Racecourse DPA to a residential based zone. The final Authorised Ministerial DPA removed this section of the Precinct which has resulted in the site physically wedged by a residential zone on its eastern, southern and western sides...

Further consideration could be given in the short term (2-5 years) to rezone this section of the Precinct to consolidate it with the adjoining Residential Zone. Although an established industry occupies the site a rezoning (subject to investigations) would not preclude the industry to continue its operations (with existing land use rights) but would present an

opportunity to develop the land with compatible land uses with the adjoining residential areas if, and when the existing industry decides to relocate. Future consideration for rezoning within this precinct must be guided by advice of the EPA.

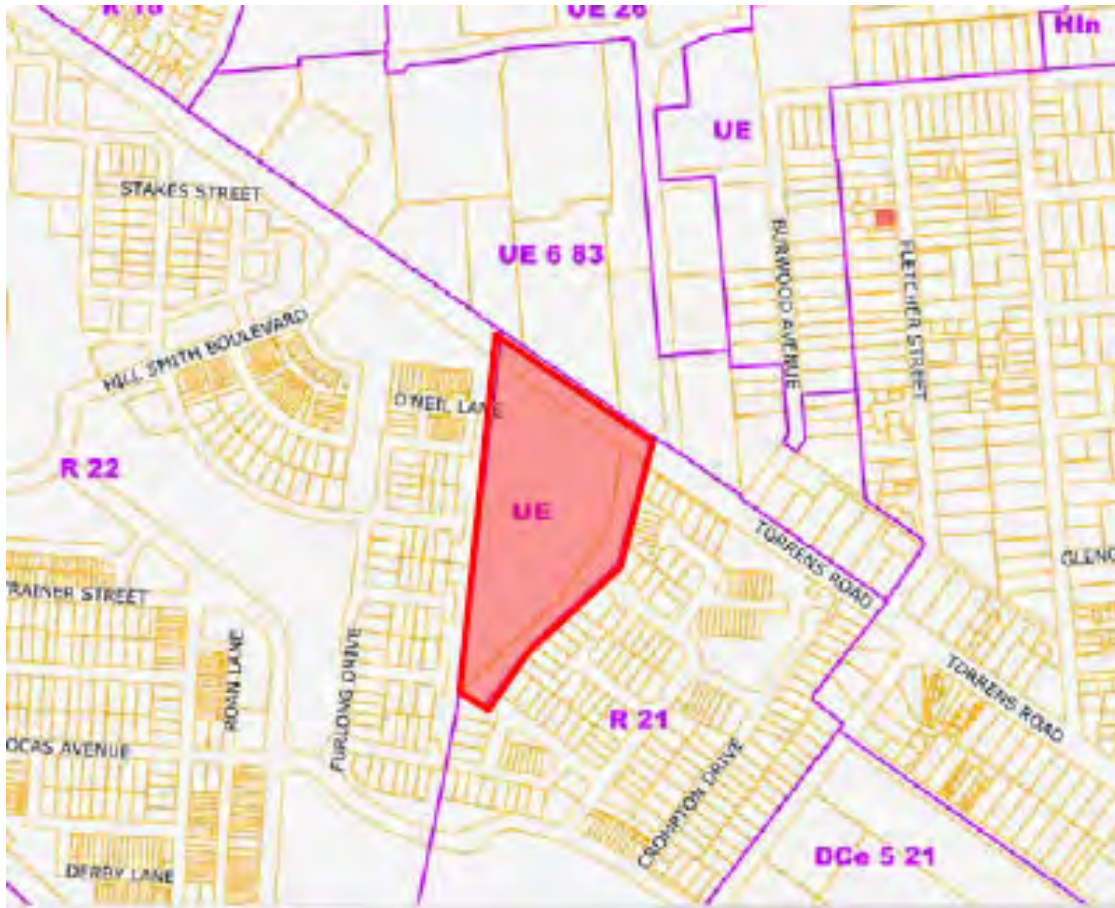


Figure 2 – Affected Area identified within the Urban Employment Land Review (2019)

Implications for the draft DPA

The findings of the Urban Employment Land Review support consideration of the re-zoning of the Affected Area to a Residential Zone.

As mentioned in the text quoted above, re-zoning would not preclude Trident Plastics from continuing to operate from the site under existing land use rights, until such times as a suitable location has been identified for its relocation and the Affected Area is ready to be developed for residential purposes.

3.1.3 City of Charles Sturt Open Space Strategy 2025 – Directions Report (August 2015)

The intent of the Open Space Strategy 2025 is to assist the City of Charles Sturt to strategically provide, develop and manage open space over the 10-year period 2015 – 2025. The Strategy involved a review of the Council's 2006 Open Space Strategy, while also considering current and future community needs (demand) and open space issues and opportunities (supply).

The Strategy considers all types of open space including recreation parks, sportsgrounds, linear open space, waterfront reserves, natural areas and other open spaces. Given the large amount of open space in the City and the importance of open space to the community, the Strategy seeks to identify opportunities for further open space enhancements and innovations. In addition, the Strategy aims to address gaps in open space provision and guide the provision of additional open space as part of future urban developments.

In preparing the Strategy, the Council area was divided into five planning precincts (A to E) that connect similar suburbs and reflect main roads and other barriers. The Affected Area is located within Precinct B ('the City's North').

Open space provision within Precinct B has been identified as 3.59 hectares/1,000 people, comprising a mix of district, neighbourhood and local open spaces which include sportsgrounds, recreation parks, linear open space and streetscapes. As illustrated in **Figure 3** over page, a key focus of the Strategy is to incorporate new open spaces linked to urban development within St Clair.

The Affected Area is located immediately to the east of an existing area of 'Local Open Space' which provides direct connectivity to the much larger area of St Clair Open Space which is identified as 'District Open Space'. The existing St Clair open space network presently provides a range of facilities which support active and passive recreation opportunities.

The provision of open space will be discussed in detail within **Section 3.2.7** below, however, having regard to the Open Space Strategy, the provision of local open space within the site, which provides a level of amenity and useable space for future residents of the Affected Area, and which has an opportunity to connect to the existing open space network, is likely to be a desirable outcome to service residential development within the Affected Area, and fulfil a key intent of the Open Space Strategy to deliver an enhanced and connected open space network.

Implications for the draft DPA

Given the final form of development likely to occur within the Affected Area has not yet been determined, it is not possible to be definitive about the size and location of the final open space provision to be delivered.

However, it is desirable that the provision of future open space should provide connectivity to the existing open space network, and as outlined in Council's Open Space Strategy, it should be designed to accommodate local activities such as recreation and walking.

Further discussion on this matter occurs later in **Section 3.2.7** (Open Space).

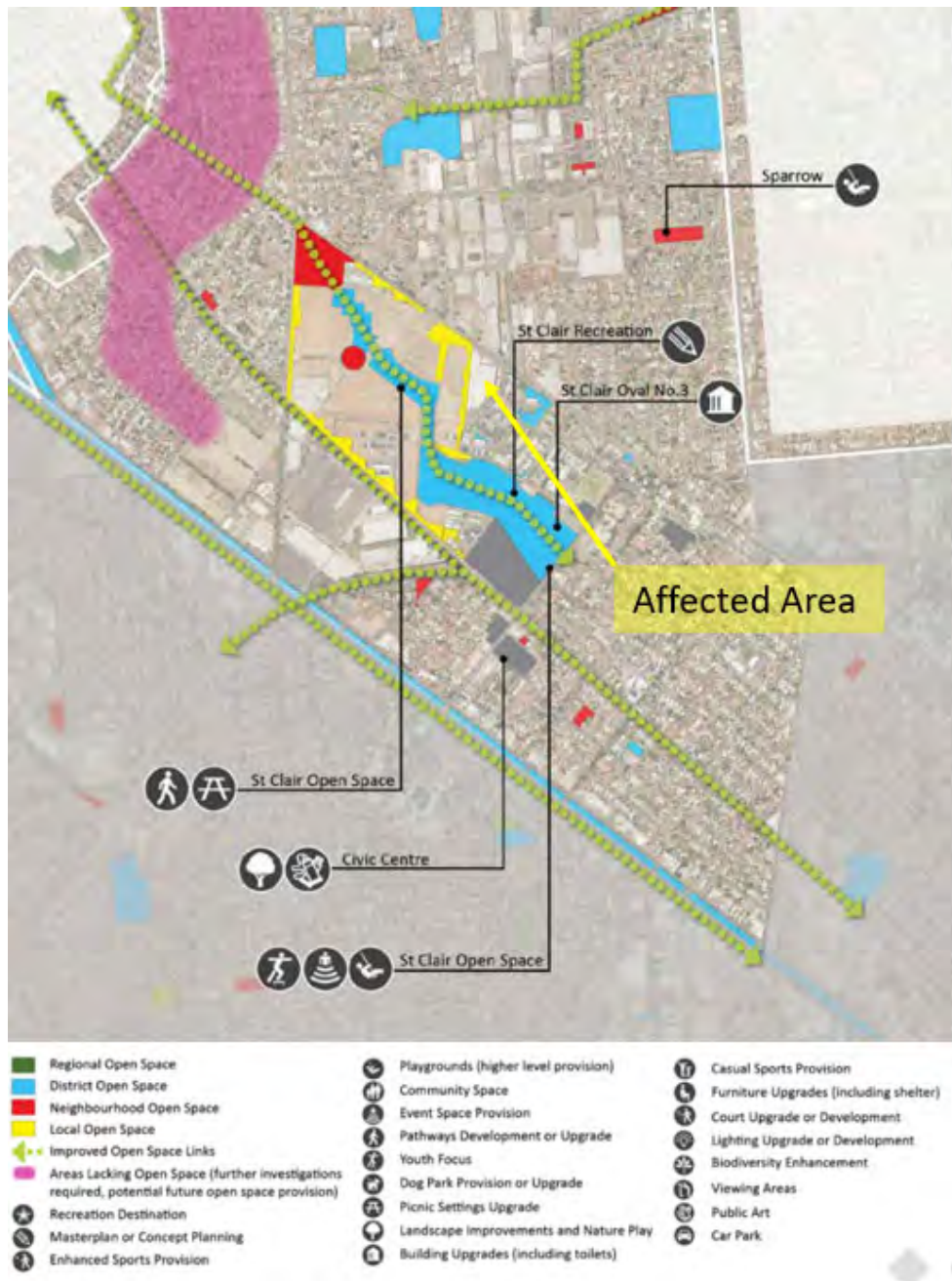


Figure 3 – Precinct B – The City's North (Source: CCS Open Space Strategy)

3.1.4 City of Charles Sturt Infrastructure Guidelines (October 2019)

This document provides guidelines for the construction of public infrastructure and development of land within the Council area. The guide references relevant standards and/or requirements that are applicable to future development to ensure that existing public infrastructure is maintained in a good condition post-development and any new infrastructure is constructed to required standards.

Implications for the draft DPA

As new development proposals are lodged for development approval with Council, it is expected that the fundamentals and minimum requirements of the Guidelines will apply, with assessment undertaken in consultation with Council's Engineering Department.

3.1.5 City of Charles Sturt Transport Plan 2016-2031

This Plan is the overarching document for all detailed Council Transport Strategies, including the City's 'Walking and Cycling Strategy' and 'Road Safety Strategy'. The Transport Plan seeks to promote a reduction in car dependence and promote 'other' transport modes, including public transport, cycling, and walking.

The Transport Plan identifies five (5) Theme Areas, each of which identify specific outcomes. By encouraging and facilitating a form of future residential development, designed to contemporary standards, which integrates with existing residential communities and is within walking distance of public transport, open space, shops and other services, the draft DPA aligns with the following Theme Areas and Outcomes:

- **Theme Area 1: Protect our environment and minimise our ecological footprint**
 - **Outcome 1.2**
Encourage walking for short vehicle trips such as local shopping trips and trips to schools and community facilities, reducing vehicle emissions
 - **Outcome 1.10**
Focus on creating local streets that integrate and promote active travel with the built environment
- **Theme Area 2: Create a safe, healthy and supportive community which encourages participation, creativity and diversity**
 - **Outcome 2.2**
Utilise best design principles to create safe and walkable streets through the use of design principles including passive surveillance, improved street lighting, and enhancing the built environment.
 - **Outcome 2.15**
Develop and strengthen links between local streets and recreational and social land uses
- **Theme Area 5: Build healthy, functional and attractive neighbourhoods**
 - **Outcome 5.4**
Work with developers and land use planners to create destinations and liveable spaces for communities.

Implications for the draft DPA

While the final form of development is not yet known, by encouraging and facilitating a form of future residential development, designed to contemporary standards, which integrates with existing residential communities and is within walking distance of public transport, open space, shops and other services, as outlined above, the draft DPA will assist Council to deliver on a number of key 'Theme Areas' and 'Outcomes' of the Transport Plan.

3.2 Investigations undertaken to inform this DPA

To ensure consistency with the Statement of Intent (SOI) the following investigations have been undertaken:

3.2.1 Development Plan Policy – Review of Adjacent Policy Areas

As identified earlier in this document (refer **Figure 1**, page 5), the *Residential Zone* is located immediately to the south, east and west of the Affected Area.

More specifically, immediately to the west is *Cheltenham Park Policy Area 22*, while immediately to the south and east is *Woodville Medium Density Policy Area 21*.

Key parameters of these adjacent Policy Areas are summarised below:

Policy Area 21

- The primary intent of the Policy Area is to support development comprising primarily medium-density housing providing compact, affordable and adaptable housing choices designed to complement surrounding areas of open space, neighbouring centres and public transport nodes.
- The policy area will be developed at a gross density of approximately 20 dwellings per hectare. There may be sites within the policy area where dwellings will be developed between a range of 15 dwellings per hectare (for lower density) and up to 35-40 dwellings per hectare (for higher density).
- Housing will be primarily up to two-storeys, however three-storey buildings may be appropriate in certain locations such as adjoining public open space areas and open space connections.
- Development should be carried out in accordance with the *Concept Plan Map ChSt/18*.

Policy Area 22

- The primary intent of the Policy Area is to support a range of housing, including medium to high density dwellings and affordable housing.
- An overall density of at least 20 dwellings per hectare should be achieved.
- Medium to high density housing should be located close to areas of open space, public transport routes, local shops and public facilities.
- Buildings should be two-storeys to four-storeys in height, with taller buildings located in areas such as adjacent to public open space and open space connection.
- The policy area will include a mixed-use development precinct integrated with a passenger rail transit station.
- A total of 35 per cent of the policy area will be retained for open space, with at least 11 hectares located in one or two parcels.
- Development should be carried out in accordance with the *Concept Plan Map ChSt/18*.

There are a number of similarities between the policy areas, particularly in relation to residential development outcomes. However, Policy Area 22 is somewhat more 'expansive' than Policy Area 21, and in particular seeks to support an overall higher density of development, as well as supporting mixed-use development integrated with the rail transit system, a spatially significant open space system (set around the St Clair Recreation precinct) and building heights of up to four-storeys.

The existing character of the locality immediately to the south, east and west of the Affected Area, generally comprises exclusively residential development at low-medium densities, along with one and two-storey building heights. In recognition of this existing policy setting, it is considered appropriate to extend the current policies of the ***Residential Zone – Woodville Medium Density Policy Area 21***, over the Affected Area, with only minor site-specific amendments proposed to the Policy Area (this will be discussed in greater detail within **Section 4**).

3.2.2 Urban Form and Density

Extension of *Woodville Medium Density Policy Area 21* over the Affected Area, will provide for an urban form and density which integrates with surrounding residential development and can be summarised as follows:

- Development that supports best practice in sustainable urban development outcomes.
- Medium density housing providing compact, affordable and adaptable housing choices designed to complement the surrounding locality. Specifically, the Policy Area contemplates a range of densities, from 15 dwellings per hectare up to 35 to 40 dwellings per hectare.
- A wide range of dwelling types.
- Buildings should generally be of one or two-storeys, however three-storeys (12 metres) may be appropriate in areas adjacent public open space and open space connections.
- Where building heights exceed 2 or more storeys, the building design will consider and address interface impacts including solar access to adjoining properties and acoustic and visual privacy of adjoining residents.

In this regard, and while the final form of development within the Affected Area is not known at this time, and will be subject to separate demand and the assessment of a future development proposal, one *possible* development scenario could include:

- A higher built form 'apartment' site of up to three-storeys potentially adjacent Torrens Road and the adjoining open space network to the west of the Affected Area.
- Higher built form 1-3 storey 'townhouses' may be developed on individual allotments within the site, adjacent to the existing open space network to the west of the Affected Area, and potential future public open space areas within the Affected Area.
- Lower built form 1-2 storey 'dwellings' may be developed on individual allotments located adjacent to existing residential allotments to the south and east (i.e. those neighbouring dwellings located outside the Affected Area).

Implications for the draft DPA

The policies proposed to apply to the Affected Area will result in a consistent urban form and residential densities in accordance with current envisaged development outcomes which apply to adjacent land to the south and east (also located within *Residential Zone – Woodville Medium Density Policy Area 21*), as well as being compatible with adjacent residential land to the west (located within *Residential Zone – Cheltenham Park Policy 22*).

3.2.3 Transport Investigations

CIRQA Traffic Consultants (refer **Appendix B**) were engaged to undertake transport investigations associated with the potential development of the Affected Area for residential development. In particular, CIRQA considered potential traffic generation, the associated impact on the adjacent existing road network, active and sustainable transport provisions and consideration of appropriate infrastructure upgrades/requirements.

In general terms, CIRQA note that redevelopment of the site will present an opportunity to consolidate access provisions on Torrens Road and improve safety and efficiency of movements into and out of the site.

Redevelopment for residential purposes will reduce the number of heavy commercial vehicle movements associated with the site which will provide traffic capacity and safety benefits.

CIRQA also noted that consideration was given to the Affected Area when residential re-development occurred immediately to the east of the Affected Area. At the time of that earlier re-development, the design of the road system to the east was considered conducive to allow for future connection into the Affected Area (in particular via Ashworth Avenue and Charles Mathews Circle).

As illustrated in **Figure 4** below, the existing road network arrangement to the east of the Affected Area means that the western ends of Ashworth Avenue and Charles Mathews Circle, terminate adjacent the Affected Area. This further reinforces that future connection, through the Affected Area was anticipated when the area to the east was re-developed for residential purposes.



Figure 4 – Western End of Charles Mathews Circle – Termination Point adjacent Affected Area

Access and Transport Infrastructure

Primary Access - Torrens Road

CIRQA identified that it is desirable to consolidate access provisions on Torrens Road (i.e. direct property access to Torrens Road should be minimised where possible).

However, CIRQA consider that at least one (1) primary intersection should be provided on Torrens Road to service the majority of the Affected Area.

CIRQA identified potential options to support access to Torrens Road which include:

- The primary intersection could be formed by retention of the existing right turn lane into the Affected Area (i.e. the right-in lane presently servicing the Tridents Plastics site). However, CIRQA note that it would be desirable to restrict right-out movements from this intersection, due to the proximity to access points on the northern side of Torrens Road, as well as the Torrens Road / Audley Street intersection, which present a possible conflict risk.
- The primary access location could be located closer to the western boundary of the Affected Area, where right-out movements could be more safely accommodated onto Torrens Road.
- Given the length of frontage to Torrens Road (approximately 170 metres), additional access points could be provided, for example an additional intersection or direct access point, provided adequate separation was provided to other intersections/access points. Any secondary access point/intersection would likely be restricted to left in/left out movements only.

In addition, the future treatment of Torrens Road should seek to improve pedestrian safety and connectivity across Torrens Road. For example, this may include the provision of pedestrian refuges within the median.

The provision of rear-access to allotments fronting Torrens Road should be considered to minimise the requirements for direct access to Torrens Road.

Secondary Access – Local Roads

In addition to primary access to Torrens Road, CIRQA considered possible secondary road connections from within the Affected Area to the east and south, specifically to provide for connection to Ashworth Avenue and Charles Mathews Circle.

CIRQA consider this to be a desirable outcome as it will allow for direct integration with the balance of the St Clair development and reduce demand on the Torrens Road access point, particularly if right turn movements from the site onto Torrens Road were to be restricted.

Internal Road Network

The future internal road network should be designed in accordance with the City of Charles Sturt's Engineering guidelines, with specific regard given to on-street parking provisions, pedestrian and cyclist connectivity, waste collection and appropriate traffic management treatments at all new intersections.

Allowing for permeability to the existing footpath and cycle networks is a highly desirable outcome.

Traffic Generation and Distribution

CIRQA's analysis includes an assessment of traffic generation associated with the Affected Area. This includes a forecast of existing traffic generation associated with Trident Plastics, as well as that likely to be generated by future residential development.

CIRQA adopt a conservative ('worst case') approach and their assessment assumes that right-out movements to Torrens Road will be restricted. However, as mentioned above, it should be noted that right out movements could be provided, dependent on the location of the future access point. CIRQA assume that connection will be provided to Ashworth Avenue.

The forecasts identify that re-development would result in a reduction in the overall number of traffic movements to / from the Affected Area (when compared to existing traffic generation associated with Trident Plastics). In particular, the frequency and volume of heavy vehicle movements will also reduce.

SIDRA intersection modelling software has been used to compare the impacts of existing traffic volumes against future forecasts. The SIDRA modelling indicates that the impacts of the proposal on the adjacent road network will be negligible, and movements will be readily accommodated at the primary access point to Torrens Road, with minimal impact on existing traffic movements on Torrens Road.

Should more than one access point be provided to Torrens Road, this would result in a further improvement in performance.

Given there is presently no connection from the Affected Area to the east, CIRQA note that providing connection via Ashworth Avenue will result in an increase to traffic on the adjacent local road network to the east and south (i.e. Ashworth Avenue, Crompton Drive and Brocas Avenue). **Figure 5** over page highlights the location of these local roads, relative to the Affected Area.

Further, there is also likely to be some re-distribution of existing traffic through the 'new' road network. For example, St Clair residents who presently utilise Actil Avenue as a means to / from Torrens Road, may choose to use the 'new' road network through the Affected Area to navigate to / from Torrens Road.



Figure 5 – Affected Area and location of surrounding roads

To assess the impact to the local road network, CIRQA adopt a conservative assessment as follows:

- It is forecast the proposed connection to Ashworth Avenue would result in an additional (approximate) 50 am. and 30 pm. peak hour trips associated with re-development of the Affected Area.
- It is predicted these additional trips would be distributed to / from the broader network via Ashworth Avenue and Crompton Drive (i.e. via Brocas Avenue).
- It is forecast that an additional (approximate) 55 am. and 80 pm peak hour trips would be re-distributed, from existing routes, to use the 'new' road network to achieve access to / from Torrens Road (i.e. existing residents using the 'new' connection).
- Assuming that the peak hour volumes equate to 10% of the daily traffic volumes (and averaging the am and pm peak hours) a maximum of 1,075 vehicles per day are forecast from the connection between the Affected Area and road network to the east.
- A similar number of vehicle movements are expected on Ashworth Avenue, between the Affected Area and Reid Street.
- Those vehicle movements would then be distributed between Ashworth Avenue and Crompton Avenue (i.e. each road is forecast to have less than 1,000 vehicles per day).
- CIRQA assess that these conservative estimates are well within the capacity of the 'local road' network, recognising that 'local roads' of this nature typically accommodate a traffic capacity in the order of 2,000 vehicles per day (vpd) (although the City of Charles Sturt typically adopts a lower limit capacity of 1,500 vpd for 'local roads')
- In practical terms, daily trips are expected to be lower as CIRQA have adopted a conservative ('worst case') approach to the analysis, and they have assumed 'all' movements will occur to/from

the new Torrens Road access point, where in reality some will continue to utilise Actil Avenue as the point of connection.

- The additional trips on Ashworth Avenue and Crompton Drive would be distributed to / from Brocas Avenue. Brocas Avenue operates as a 'collector road' and additional traffic volumes will be readily accommodated on this road.
- Flow on impacts to Actil Avenue and Leslie Street West are anticipated to be relatively low, and these roads will readily accommodate the additional traffic volumes.

CIRQA also consider the potential connection of the Affected Area to Charles Mathews Circle. It is anticipated that with future re-development, Charles Mathews Circle will provide access to a limited portion of the Affected Area (for example, to provide connection to a number of residential dwellings). On this basis, it is predicted that additional movements on Charles Mathews Circle will be low and well within the capacity of this 'local road'.

Vehicle Parking

Council's Development Plan (*Table ChSt/2 – Off Street Vehicle Parking Requirements*) already includes off-street vehicle parking rates for residential development types. Vehicle parking rates for specified 'forms of development' within Table ChSt/2, relevant to the draft DPA are provided as follows:

Form of Development	Number of Required Car Parking Spaces	
Dwelling (detached and semi-detached)	2 onsite car parking spaces, one of which is covered (the second space can be tandem)	
Dwelling (group, row and residential flat building)	Dwelling Size	Average spaces per dwelling where the dwelling is located within 1km of a District Centre
	3 or more bedrooms or a floor area 130sqm or more	1.25 plus an additional 0.25 visitor parking spaces
	2 bedrooms or a floor area of more than 75sqm and less than 130sqm	1 plus an additional 0.25 visitor parking spaces
	1 bedroom or a floor area of 75sqm or less	1 plus an additional 0.25 visitor parking spaces

These rates are considered to be appropriate to support future residential development on the Affected Area.

In relation to the provision of on-street vehicle parking, Council's Development Plan, and specifically, PDC 17 of the *General Section: Land Division* module already provides guidance on this matter as follows:

- PDC 17** *The design of the land division should provide space sufficient for on-street visitor car parking for the number and size of allotments, taking account of:*
- The size of proposed allotments and sites and opportunities for on-site parking*
 - The availability and frequency of public and community transport*
 - On-street parking demand likely to be generated by nearby uses*
 - Except in the Urban Core Zone, at least one on-street visitor car parking space being provided for every two residential allotments*
 - On-street visitor car parking being located as close as is practicable to the allotments they serve*

CIRQA noted that this requirement is reasonable, recognising that additional visitor parking may be considered appropriate to support an 'apartment' style development. However, this can be determined at the future 'development application' stage in consultation with Council's Engineering Section.

Preliminary Consultation with Road Authority (DPTI – Transport Services)

In accordance with the requirements of the SOI, CIRQA undertook preliminary consultation with DPTI Transport representatives, given DPTI are responsible for the care and control of Torrens Road (a secondary arterial road). A summary of their preliminary consultation is provided below:

- DPTI are generally supportive of the proposed re-zoning of the Affected Area for residential purposes.
- DPTI supports the consolidation of access provisions on Torrens Road.
- While DPTI's preference is for minimisation of access on Torrens Road, no objection was raised to the provision of at least one primary intersection on Torrens Road to service the majority of the Affected Area.
- Future access proposals to / from Torrens Road will be subject of further detailed assessment and design by DPTI Transport Services (as required at the land division / development application stage).

DPTI's preliminary comments are included within ***Appendix B***.

Implications for the draft DPA

The Transport Investigations undertaken by CIRQA indicate that redevelopment of the Affected Area will present an opportunity to consolidate access provisions on Torrens Road and improve safety and efficiency of movements into and out of the Affected Area. Re-development for residential purposes will reduce the number of heavy commercial vehicle movements associated with the existing Trident Plastics Factory which will provide traffic capacity and safety benefits on Torrens Road.

While it is desirable to consolidate access provisions on Torrens Road, at least one primary intersection should be provided on Torrens Road to service the majority of the Affected Area. The Transport Investigations identify there are several possible locations for the future intersection with Torrens Road, and this can be resolved at the land division / development application stage in consultation with DPTI and Council.

The future design and treatment of Torrens Road should seek to improve pedestrian safety and connectivity across Torrens Road, and this may include the provision of pedestrian refuges within the median. This can be determined at the land division / development application stage in consultation with DPTI and Council.

The Transport Investigations identify that it is desirable to provide secondary road connections from within the Affected Area to Ashworth Avenue (to the east) to facilitate equitable traffic distribution and provide greater connection to the broader road network (primarily to the south and east). This will also lessen demand on the Torrens Road access point.

In addition, secondary road connection from within the Affected Area to Charles Mathews Circle is also feasible to allow for future connection to / from the south of the Affected Area.

The future internal road network should be designed in accordance with the City of Charles Sturt's Engineering guidelines, with specific regard given to on-street parking provisions, pedestrian and cyclist connectivity, waste collection and appropriate traffic management treatments at all new intersections. Future connection to the existing footpath and cycle networks is highly desirable.

SIDRA analysis has been used to compare the impacts of existing traffic volumes against future predicted forecasts. The analysis indicates that re-development will result in a reduction in the overall number of traffic movements (when compared to existing traffic generation associated with Trident Plastics), and the frequency and volume of heavy vehicle movements will also reduce. Further, impacts on the adjacent road network to the east and south will be negligible and movements will be readily accommodated within the surrounding road network.

While direct connection to the local road network (via Ashworth Avenue and Charles Mathews Circle) will result in an increase to local traffic on the adjacent local road network to the east and south, the additional traffic volumes will be within the capacity of these typical local roads, particularly as these roads were designed in anticipation of the Affected Area being developed for residential purposes.

In terms of future vehicle access, policy amendments are proposed as follows:

- Amendment to Policy Area PDC 9 to allow for road access and vehicular access to / from the Affected Area to Torrens Road.
- Insert a new Policy Area PDC (to be PDC 10) which identifies that the Affected Area should be serviced by an internal road network that provides connection to a primary vehicle access point on Torrens Road, services land within the Affected Area; provides safe and convenient secondary road linkages to existing roads to the south and east of the Affected Area; and provides safe and convenient pedestrian linkages with the surrounding locality.

In relation to off-street and on-street vehicle parking requirements the Development Plan contains existing policy. In this respect, *Table ChSt/2* provides off-street vehicle parking requirements to support future residential development (including specific rates for detached and semi-detached dwellings, group dwellings, row dwellings and residential flat buildings), while PDC 17(d) within the General Section: *Land Division* module requires the provision of at least one (1) on-street parking space for every two residential allotments created. On this basis, no additional policies are recommended in the draft DPA.

3.2.4 Public Transport

As illustrated in **Figure 6** over page, the locality is well serviced by both bus and rail routes as follows (as at April 2020).

Bus Routes

- Stop 28 Torrens Road – north side of Torrens Road (near 581 Torrens Road)
 - Served by routes 230, 232 and J8
 - Provides connection to the Adelaide CBD and Marion
- Stop 28 Torrens Road – south side of Torrens Road (close to eastern boundary of Affected Area)
 - Served by routes 230, 232, 232R and J8
 - Provides connection to Port Adelaide and West Lakes
- Stop 224 Woodville Road – west side of Woodville Road (approx. 600 metres from Affected Area)
 - Served by routes 100, 101 and 300
 - Provides connection to Arndale
- Stop 224 Woodville Road – east side of Woodville Road (approx. 600 metres from Affected Area)
 - Served by routes 100, 100B, 100P, 101, 300, 300H, 300J and 300M
 - Provides a variety of suburban connections including Arndale, Glen Osmond and Flinders University

Rail Routes

The Affected Area is located in reasonable proximity to both St Clair Railway Station (approx. 600 metres) and Woodville Railway Station (approx. 700 metres).

- St Clair Railway station is serviced by the Outer Harbour line which provides for connection to the Adelaide CBD and Port Adelaide, with services running generally every 15-30 minutes during peak weekdays periods.
- Woodville Railway Station is serviced by the Outer Harbour line (connection to the Adelaide CBD and Port Adelaide, generally every 15-30 minutes during peak weekdays periods) and the Grange line, which provides for connection to Adelaide CBD and Grange, with services running generally every 15-30 minutes during peak weekdays periods.



Figure 6 – Public Transport Linkages

Implications for the draft DPA

The Affected Area is located in close proximity to existing public transport routes, which provide for a variety of city and suburban based connections. In this context, the Affected Area is ideally placed to take advantage of existing transit connections and thereby future development on the site can respond to existing Development Plan policies which seek to support the usage of public transport. On this basis, no additional policies are recommended.

3.2.5 Infrastructure and Servicing

Greenhill Engineering (refer **Appendix C**) were engaged to prepare preliminary advice in relation to existing infrastructure available to service the Affected Area.

The investigation included the following:

- Dial Before You Dig (DBYD) investigation.
- Review of existing services and easements within and adjacent the Affected Area including electrical; telecommunications; potable water; sewer; gas; and stormwater requirements.
- Liaison with service authorities including SA Water; SA Power Networks; APA Group; NBN Co.; and the City of Charles Sturt.

As expected within an urban infill setting, key infrastructure services are available to the Affected Area. The Greenhill findings are summarised under separate headings below.

Electrical Supply

Existing infrastructure within and adjacent the Affected Area includes:

- 66kV high voltage overhead power lines which follow the Torrens Road alignment (outside the Affected Area).
- 33kV high voltage overhead power lines along the western boundary (within the Affected Area).
- Three (3) transformers located on the Affected Area.
- Two (2) of the transformers are supplied by underground cables from the 33kV line.
- The third transformer takes power from an 11kV overhead power line from Torrens Road.

There are presently four (4) Easements registered to the relevant Certificate of Title, all for electricity purposes (refer **Figure 7** and **Appendix D**).

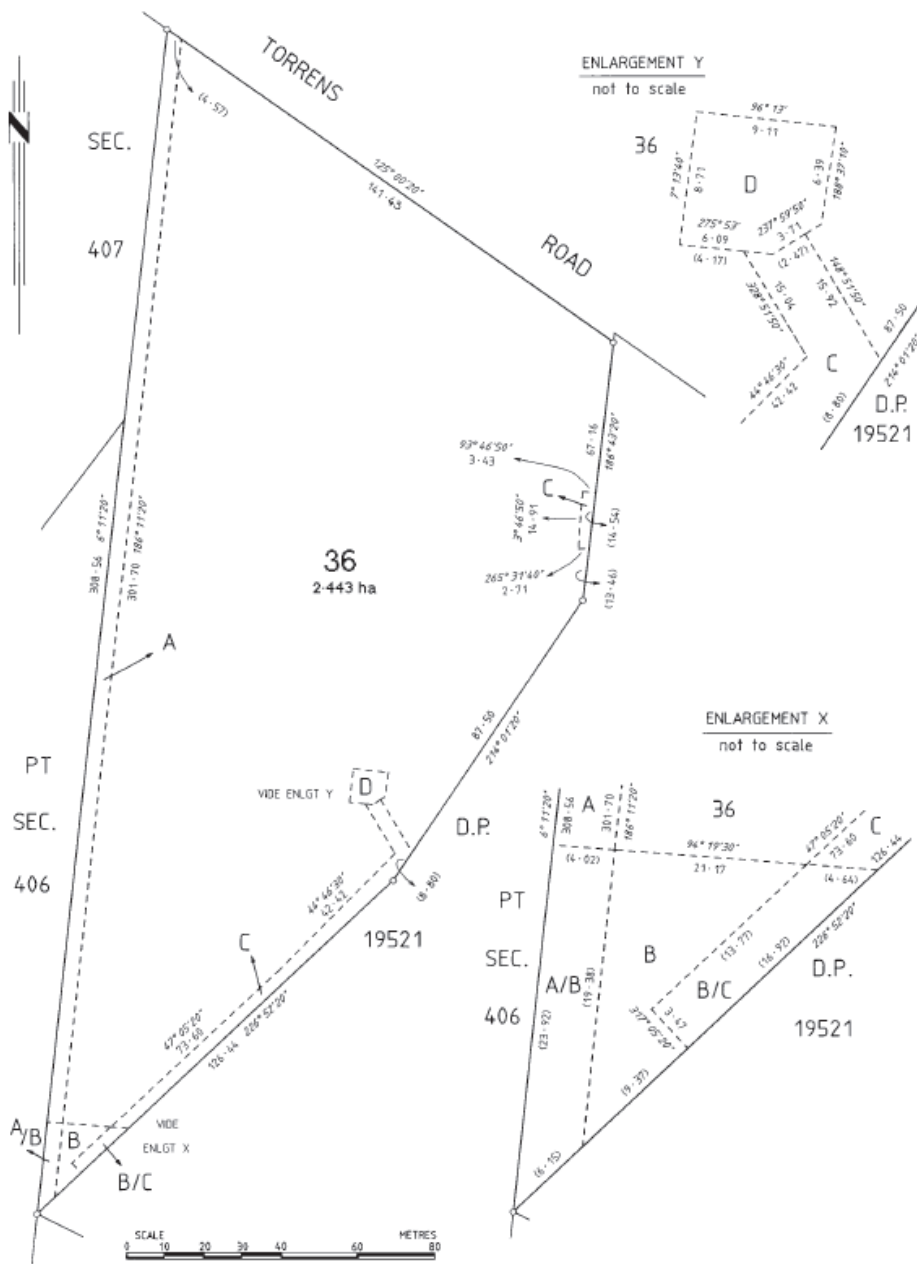


Figure 7 – Easements (Source: Certificate of Title)

SA Power Networks (SAPN) have confirmed they will convert the existing 33kV line to an 11kV overhead line, commencing in 2021. During conversion, the 'new' line will be integrated into the existing 11kV Network using the established easements.

SAPN (refer **Appendix E**) have confirmed the status of all easements as follows:

- **Easement A:**
 - The infrastructure contained in this easement will remain overhead in its current location, after conversion to 11kV.
 - The 11kv overhead line can be replaced with underground cables of similar capacity, as and when required. This would occur at the developers cost.
 - The location of the underground cables could be integrated into the electrical distribution design for the future development, in consultation with SAPN (at the developers cost).
- **Easements, B, C and D:**
 - The infrastructure contained within these easements provides electricity supply solely to the existing Trident Plastics Factory.
 - All infrastructure can be removed when the supply is no longer required.
 - The easements can be extinguished once the infrastructure has been removed.

Given this, the existing easements will not preclude future development of the Affected Area, and the 11kV underground line can be incorporated within the electrical distribution design associated with future development (for example, to follow an internal road network).

On this basis, Easement A will no longer be required (or could be relocated), while Easements B, C and D can be extinguished (in consultation with a Licensed Surveyor).

In terms of future servicing requirements, SAPN have provided preliminary advice as follows:

- There are no capacity issues given the proximity of the Cheltenham sub-station.
- Future connection points are to be confirmed with SAPN at the detailed design phase of any future land division / development application, as multiple connection points are available.
- Standard SAPN augmentation charges will apply with no foreseeable headworks required.
- An underground electrical reticulation and street lighting scheme will be required to support future re-development of the site, like that of adjacent residential development to the east and west.

Implications for the draft DPA

Existing electricity easements A, B, C and D will not preclude future development of the Affected Area. Easements, B, C and D relate to infrastructure associated with the Trident Plastics Factory and can be extinguished once the infrastructure has been removed.

In the short term, Easement A is required to maintain the 'new' 11kV overhead power line, however, this can be 're-routed' underground to align with the electrical distribution network associated with future development of the Affected Area. At that time, Easement A can be extinguished (or re-located if required).

The future electrical supply to support development on the Affected Area, should be installed underground in accordance with PDC 8 of the General Section: *Infrastructure* module which provides:

In urban areas, electricity supply (except transmission lines) serving new development should be installed underground, excluding lines having a capacity greater than or equal to 33kV.

On this basis, no new policies are proposed in relation to the provision of an underground electricity supply.

As the final form of development has not yet been determined, further discussions will be required with SAPN during the detailed design phase of any future development application / land division regarding servicing requirements (and easement locations – if required).

In terms of the existing 66kV overhead power lines outside the Affected Area which follow the Torrens Road alignment, the future site layout must ensure the location of buildings and structures can achieve minimum safe clearance distances as set out in the *Electricity (General) Regulations 2012*, with further guideline advice provided within the document *Building Safely Near Overhead Powerlines* prepared by the Office of the Technical Regulator. To achieve these requirements, the future site layout may seek to incorporate road reserves, open space, and/or public reserves adjacent the power lines to allow for provision of appropriate clearance distances.

PDC 14 of the General Section: *Infrastructure* module of the Development Plan states:

Land division for the purpose of residential and other sensitive land uses should not occur within electricity line corridors or existing electricity easements unless the resultant allotments are large enough to enable accommodation of safe clearances and expected structures.

On this basis, no additional policies are considered necessary in relation to clearance distances.

Sewer

Existing infrastructure comprises:

- 300mm sewer main located within Torrens Road with a maintenance hole available for connection adjoining the site.
- Two (2) existing 100mm connections that serve the site.
- Local roads surrounding the site contain a network of 150mm diameter sewer mains.

SA Water have provided preliminary advice as follows:

- There is sufficient capacity in the existing sewer network to cater for re-development.
- A standard SA water system will be sufficient to service the site, with 150mm and 225mm diameter mains proposed to gravitate to the existing sewer system in adjacent roads.
- For all Torrens Titled residential allotments, 100mm connections have been assumed.
- New mains connections can either connect to Torrens Road or the sewer in Ashworth Avenue and Charles Mathews Circle.
- Connection to future Apartment Buildings will be determined by the number of fixture units in accordance with SA Water standard requirements.
- SA Water sewer augmentation charges do not apply (at the date of issue of the Greenhill Report).
- SA Water have no listed requirements for sewer infrastructure headworks.

Potable Water Supply

Existing infrastructure comprises:

- 150mm diameter water main and 600mm diameter water main located within Torrens Road.
- A 200mm water main, connecting from the existing 600mm water main, directly into the site.
- An existing water meter on site.
- 100mm water mains surrounding the site within the existing St Clair local road network that serve the adjacent residential area.

In terms of proposed infrastructure, SA Water have advised:

- Construction of a 150mm internal ring main that links Torrens Road with Ashworth Avenue. This will require the upgrade of approximately 65m of existing 100mm diameter mains in Ashworth Avenue.
- Residential lots can be serviced by 20mm connections.
- An Apartment site can be serviced by 150mm main and 40mm connections.
- SA Water potable water augmentation charges do not apply (at the date of issue of the Greenhill Report).

Greenhill have assumed there is sufficient capacity in the existing potable water network to cater for the development and no allowance has been made for any associated upgrade of existing potable water infrastructure or headworks.

Recycled Water

The City of Charles Sturt ('the Council') have indicated that 560mm and 280mm diameter recycled water mains are located within Torrens Road adjacent the site. In addition, a 100mm diameter Council operated recycled water system is located within the St Clair housing development that surrounds the site.

Greenhill have consulted with Council who confirmed they are unlikely to require future residential dwellings to connect to the existing recycled water network. However, Council would seek to connect reserve areas/open space areas to be irrigated using recycled water. Greenhill understand that future development of the Affected Area can connect to the existing 280mm diameter main located on the south side of Torrens Road to irrigate reserve areas only.

Council are currently undertaking a review of their recycled water network capacity and, as of May 2020, are unable to confirm if there is sufficient capacity in the existing recycled water network to support irrigation of future open space within the Affected Area. Similarly, Council are unable to confirm if further headworks or augmentation charges will be required to facilitate future connection and supply.

Accordingly, these matters are unable to be determined further at this time and will require further consideration at the development application stage.

Implications for the draft DPA

The Council do not currently require the connection of residential dwellings to the recycled water network. However, Council will seek for open space / reserve areas within the Affected Area to be connected for irrigation purposes.

Council are currently undertaking a review of their recycled water network capacity and, as of May 2020, are unable to confirm if there is sufficient capacity in the existing recycled water network to support irrigation of future open space within the Affected Area. Similarly, Council are unable to confirm if further headworks or augmentation charges will be required to facilitate future connection and supply.

Accordingly, these matters are unable to be determined further at this time and will require further consideration at the development application stage.

Gas Supply

There is an existing and active 150mm standard pressure gas main and an abandoned gas main located in the Torrens Road verge, adjacent the site. Within the surrounding residential area, there is a 63mm mains located within the road verge.

The site has an existing connection to the active gas main within Torrens Road.

Following consultation with APA Group, Greenhill have assumed the following:

- No headworks will be required with future re-development of the Affected Area as there is existing infrastructure adjacent the site.
- APA Group typically do not charge for the provision of gas reticulation services in locations where there is an existing gas supply network.
- APA Group will install their gas reticulation infrastructure within the common services trench at their own cost.
- Gas infrastructure will be provided in a similar manner to adjacent residential sites.

Telecommunications Supply

There is existing NBN Co. infrastructure located within Torrens Road adjacent the site, as well as cables internal to the site. The residential sites surrounding the Affected Area are also serviced by the NBN network.

Telstra infrastructure is located in Torrens Road and also internal to the existing site.

In addition, there is Optus infrastructure located in Torrens Road, on the northern side of the road.

It is assumed that existing internal telecommunication connections (i.e. within the Affected Area) will be disconnected or abandoned when the existing site is demolished and cleared. There will be costs associated with the removal of this infrastructure.

NBN Co. have advised there will be no backhaul charges associated for residential development within the Affected Area, and standard NBN Co. deployment contribution charges will apply.

It is assumed that underground telecommunication infrastructure will be provided to the Affected Area, in a similar manner to adjacent residential sites.

Implications for the draft DPA

Servicing Requirements - Summary

As expected within an urban infill setting, key infrastructure services are available to the Affected Area.

As the final form of development has not yet been determined, further discussions will be required with relevant service providers (including SA Power Networks; SA Water; Council; APA Group and NBN Co.) during the detailed design phase of any future development application/land division.

Should it be determined during the detailed design/development application phase for future development, that infrastructure upgrades are required, the relevant service authority may seek developer contributions to fund these upgrades.

The Development Plan currently contains a number of policies that guide the provision of service infrastructure, primarily General Section policies within the *Infrastructure* and *Land Division* modules.

On this basis, no additional policies are considered necessary for these matters.

Stormwater Drainage

In terms of the existing site, Greenhill (refer **Appendix C**) identify the following matters:

- Most of the site is presently impervious, covered by buildings, concrete and sealed pavements.
- The existing site falls towards Torrens Road and the existing road drainage system.
- There is a large underground stormwater drain, located on the northern side of Torrens Road.
- Existing stormwater pits at the site connect to the existing drain via an underground pipe system. One crossing appears to drain the existing roof area, while the other drains the car parking area and yard.
- There is a 375mm pipe at the end of Ashworth Avenue which extends into the site.
- All local roads surrounding the site contain a typical underground pit and pipe drainage system.
- Council flood mapping from the 1-in-100-year rainfall event shows stormwater flows within Torrens Road adjacent to the site, however there is no inundation of the site.

Greenhill note that re-development of the site will likely result in a reduction in the extent of impervious area, due to provision of increased pervious areas such as open space/reserve areas, landscaping within allotments and road verges.

Council have identified the following requirements for the management of stormwater:

- Preference to utilise the existing 600mm connection into the Torrens Road drain.
- Pre-development flows for a 1-in-5-year rainfall event cannot be exceeded by post development flows for a 1-in-100-year Average Recurrence Interval (ARI) rainfall event.
- Incorporation of WSUD principles are strongly encouraged.
- Finished Floor Levels of future development to comply with the Council's Infrastructure Guidelines.
- Water quality reduction targets as set out in the SA Water Sensitive Urban Design Policy:
 - Total Suspended Solids (TSS): 80% reduction target;
 - Total Phosphorus (TP): 60% reduction target;
 - Total Nitrogen (TN): 45% reduction target; and
 - Gross Pollutants: 90% reduction target.

Greenhill advise there are several options available to manage future stormwater discharge from the Affected Area in association with re-development. These options could include establishment of a typical underground pit and pipe minor stormwater system with connection to existing infrastructure in Torrens Road; use of an onsite detention system (i.e. integration of a detention basin with the design of the site, for example within an area of open space/reserve); and discharge of stormwater to the existing wetlands located to the west of the Affected Area (refer **Figure 8** over page).

Greenhill advise that these options can be further considered at the development application stage, in consultation with Council's Engineering Section to ensure the stormwater management methods are appropriate to the proposed development, and achieve relevant Council requirements, including the Infrastructure Guidelines discussed in **Section 3.1.4**.



Figure 8 – View east towards the wetlands to the west of Affected Area

Implications for the draft DPA

Stormwater

The high-level investigations undertaken by Greenhill identify several options to manage stormwater run-off from the re-developed site. These options will be further considered at the development application stage to ensure the stormwater management methods are appropriate to the proposed development and achieve relevant Council requirements.

The Development Plan contains a significant number of General Section policies in relation to flooding and stormwater management, which are considered in the assessment of a development application. These include:

- Hazards – PDCs 5 and 6
- Infrastructure – Objectives 2 and 5; and PDCs 1 and 4
- Land Division – PDCs 1, 13 and 14
- Natural Resources – Objectives 6 and 7; and PDCs 7-16
- Open Space and Recreation – PDC 2, 8
- Residential Development – PDC 1
- Transportation and Access – PDC 45

On this basis, no additional policies are considered necessary to address matters relating to stormwater management and flooding. Further, and as outlined in **Section 3.1.4**, it is expected that future development will be undertaken in accordance with the relevant standards and requirements set out in Council's Infrastructure Guidelines.

3.2.6 Environmental Assessment

AGON Environmental ('AGON') undertook a Preliminary Site Investigation (PSI) of the Affected Area in July 2018.

The PSI was undertaken in accordance with the guidance provided within *Schedule B2 of the National Environment Protection Council (1999), National Environment Protection (Assessment of Site Contamination) Measures*, as amended in 2013 (the NEPM).

The objectives of the PSI were to identify potentially contaminating activities (PCAs) which may have occurred at the site and provide a preliminary assessment of potential risks to human health and the environment associated with any contamination which may have been caused by the PCAs at the site.

The PSI provided an overview of previous land use activities at the site as follows:

- Prior to the 1940s, the Affected Area was used for grazing purposes.
- Since the 1940s, the site has been used for light industrial purposes.
- A railway corridor formerly occupied the western portion of the site from the 1940s, until the railway line was removed in the late 1970s and then sealed in the 1990s.
- The main factory shed on the site was first constructed in the 1940s and was initially used for the fabrication of steel fencing.
- From the 1990s, the site has been used for plastic injection moulding.
- Onsite buildings were expanded and added during the 1940s up to the 1980s.
- Since the 1980s the site has retained its current layout.

In summary, the PSI identified:

- Based on the review of available site information, no significant soil or groundwater contamination was identified.
- Potentially contaminating activities associated with historical and current land uses included:
 - Underground Storage Tank (UST)
 - Former steel fabrication operations
 - Chemical storage area/oil store
 - Former railway line
 - Importation of fill materials onto the site
 - Use of pesticides and herbicides
 - Transformer compounds
 - Groundwater impacts from regional industrial activities
 - Asbestos Containing Material (ACM)

In conclusion AGON noted:

It is considered that site contamination impacts from the identified PCAs are not likely to pose a significant risk to human health or the environment in the site's current form that would preclude the ongoing industrial use of the site.

However, it should be noted that this assessment is preliminary in nature; if redevelopment or a change in use of the site is proposed, further investigation of site soils and groundwater targeting the identified PCAs (including beneath building slabs) should be undertaken to characterise the nature and extent of any impacts present on the site and determine the suitability of the site for the proposed use.

Further to the PSI, in March 2020, AGON completed a further Environmental Assessment of the Affected Area (refer **Appendix F**). The objectives of this assessment were to further identify potentially contaminating activities (PCAs) that may have occurred or are occurring at the site and to undertake a soil and groundwater investigation to provide an initial characterisation of potential contamination risks.

In addition, and as identified within the SOI, the assessment also examined existing EPA licensed activities within the immediate locality, to consider potential off-site impacts and separation requirements.

In summary, in terms of soil and groundwater investigations, the AGON report identified:

- Fill materials are present across the site at depths ranging from 0.25m to 1.1m below ground level.
- Some contaminants are present in site soils in discrete locations at concentrations in excess of health-based investigation/screening levels for a residential land use setting.
- Arsenic is present in shallow fill materials in excess of health-based investigation/screening levels in four (4) locations along the eastern boundary of the site at depths to 0.6m, with petroleum

hydrocarbons detected in excess of the health-based investigation/screening levels in two (2) borehole locations (adjacent to an underground storage tank at the site).

- Although these concentrations exceed the relevant criteria (indicating that further investigation is required), these impacts are likely to be highly localised and not indicative of widespread or significant contamination at the site.

It is anticipated that any remediation works required are likely to be minor and could be undertaken during the site demolition/clearance phase.

In addition, given the localised nature of the findings, it is considered unlikely that the identified impacts will preclude the re-development of the site for residential purposes.

In terms of groundwater analysis, AGON identified minor metal and nutrient concentrations above the adopted assessment criteria. However, AGON noted:

- The elevated boron and selenium concentrations are considered to be representative of background conditions.
- The elevated nutrient concentrations may be related to the historical use of the region for agricultural grazing (pre-1940s).
- The elevated hexavalent chromium concentration is considered to be minor and is likely to result from previous industrial uses in the area (including a former munitions plant to the north; the former Holden Woodville plant to the south; and a former linen factory to the south). Although the site was previously used as a steel manufacturing plant, it is considered unlikely that the site is the source of the observed chromium impact, given the industrial history of the local area.

AGON undertook an assessment of EPA Licensed Activities within 1km of the Affected Area. This search identified several licensed activities including:

- Discharge of stormwater
- Railway operations
- Dredging and earthworks drainage
- Petrol stations
- Chemical storage and warehousing
- Spray painting or powder coating
- Activities producing listed waste
- Abrasive blasting

These activities are identified as being generally light industrial activities which are not anticipated to present significant environmental risks to future occupants of the Affected Area. In addition, the site is buffered from these activities by surrounding residential areas (to the east, west and south), and a range of commercial, residential and light industrial land uses (to the north across Torrens Road).

Therefore, AGON consider these EPA Licensed Activities are unlikely to impact negatively on the use of the site either in its current disposition or upon its re-development for residential purposes.

As a result of the investigations undertaken, AGON conclude:

“The results of the investigations undertaken by AGON have identified minor contamination impacts at the site which are not considered likely to present a significant ongoing risk to human health or the environment and would not preclude the residential redevelopment of the site”.

As part of the investigations to inform the draft DPA, the EPA were consulted, and they have undertaken a review of the AGON Environmental Assessment Report (March 2020) and provided preliminary comments which can be summarised as follows (refer **Appendix G**):

- *The EPA considers the [AGON] report was undertaken generally in accordance with the National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended 2013 (NEPM).*

- *Site contamination assessment reforms are occurring alongside State-wide planning reforms as part of the transition to the Planning and Design Code. The reforms will introduce procedural requirements for consideration of site contamination as part of a development application when land uses changes.*
- *In the interim, the EPA considers there is sufficient policy in the current City of Charles Sturt Development Plan to ensure that site contamination can be properly addressed at the development application stage to assure the Planning Authority that the land would be suitable for residential use.*

In summary, the Environmental Assessment has identified a range of minor contamination issues that may warrant further assessment and remediation.

However, any additional environmental investigations can be undertaken during the 'Development Application' Phase when the Affected Area is to be developed for residential purposes.

It is noted the current Charles Sturt Council Development Plan provides significant policy guidance on site contamination matters, primarily under General Section: *Hazards* module as follows:

Objective 7: *Protection of human health and the environment wherever site contamination has been identified or suspected to have occurred.*

Objective 8: *Appropriate assessment and remediation of site contamination to ensure land is suitable for the proposed use and provides a safe and healthy living and working environment.*

PDC 12: *Development, including land division, should not occur on contaminated land or on potentially contaminated land unless either of the following applies*

(a) remediation of the site is undertaken to a standard that makes it suitable and safe for the proposed use

(b) the site will be maintained in a condition, or the development will be undertaken in a manner, that will not pose a threat to the health and safety of the environment or to occupiers of the site or land in the locality.

In addition, the Desired Character Statement of the proposed policy area (Policy Area 21) identifies that where necessary, the proper remediation of potentially contaminated industrial land should be carried out to ensure land is suitable for the intended use.

Implications for the draft DPA

The Environmental Assessment has identified minor contamination impacts at the site which are not considered likely to present a significant ongoing risk to human health or the environment and would not preclude the residential redevelopment of the site.

It is anticipated that any required remediation works are likely to be minor and could be undertaken during the site demolition/clearance phase associated with a future 'Development Application'.

Current Development Plan policy provides significant guidance on this issue and requires appropriate remediation when contaminated land is to be used for a more sensitive use. Given this, no additional policies are proposed.

Based on preliminary consultation, this approach is supported by the EPA who have undertaken a preliminary review of the AGON Environmental Assessment Report (March 2020).

3.2.7 Open Space

Section 50 of the *Development Act 1993* (*Open Space Contribution Scheme*) provides a legislative framework for the allocation of public open space and the contribution of funds towards future open space.

Where an application proposes the division of land into more than 20 allotments within a Council area, and one or more of the allotments is less than one hectare in area, the council may require up to 12.5% of the land to be vested in the Council to be held as open space. Alternatively, a financial contribution may be payable to the council based on a set formula, or a combination of land and financial contribution can be agreed.

Where the division of land is for 20 allotments or less, and one or more allotments is less than one hectare in area, or undertaken under the *Community Titles Act 1996*, the State Planning Commission may require a contribution or enter into an agreement where certain land will be vested in the Council or Crown to be held as open space and a contribution will be made.

The statutory provision of open space (either as land, a financial contribution or a combination of both) is therefore dependent on a land division proposal, its type and the number of allotments proposed.

Given the final form of development (i.e. allotment layout and yield) has not yet been determined, the definitive allocation and extent of open space cannot be specified within this draft DPA.

However, as identified in Council's Open Space Strategy (see **Section 3.1.3** above) the Affected Area abuts an area of existing 'Local Open Space' which provides direct connectivity to the larger St Clair 'District Level Open Space'. This, together with the relatively small size of the Affected Area indicates that only a 'Local Open Space' provision is likely to be required with future development of the Affected Area.

Council have provided the following guidance regarding the composition of future open space provision for the Affected Area:

- Reserve areas and footpaths should link with the existing north-south corridor ('local open space') to the west of the Affected Area.
- Reserve areas should allow for provision of large trees (as well as street tree planting).
- A children's playground is not required, given the proximity of existing facilities within the surrounding open space network. Other passive recreational opportunities may be considered.

Council's Development Plan contains several General Section policies within the *Land Division* and *Open Space and Recreation* modules, which provide guidance on open space provision and development.

Further, the Desired Character for proposed Policy Area provides additional guidance on the desirability for future open space provision, as well as the composition and connectivity of open space through the Policy Area, and provides:

- The policy area should have a 'leafy garden village feel' and provide opportunities for open space corridors.
- Increased densities generally located adjacent to areas of high public amenity, including public open spaces.
- A sub-division layout which delivers movement networks (vehicular, pedestrian and cyclist) which connect key areas of open space.

Implications for the draft DPA

While it is acknowledged that the final form of development has not yet been determined, it is desirable that an area of local open space be provided within future development of the Affected Area. Such open space provision should provide direct connectivity to the existing local open space network as identified within Council's Open Space Strategy.

Sufficient policy guidance is provided within the *Land Division* and *Open Space and Recreation* modules, along with the proposed Policy Area. On this basis, no additional policies are proposed.

3.2.8 Mature Trees to West of Affected Area

As illustrated in **Figure 9** and **Figure 10** below, the area of existing Local Open Space, abutting the western edge of the Affected Area, contains several large, mature trees. All trees are located outside the Affected Area, on land which is owned and maintained by Council, setback at a range of approximately 4-5 metres from the existing acoustic wall.

Eight (8) of these trees are identified as Significant Trees (i.e. have a trunk circumference greater than 3 metres measured at 1 metre above ground level), and three (3) are Regulated Trees (i.e. have a trunk circumference between 2-3 metres measured at 1 metre above ground level) pursuant to the *Development Regulations, 2008*. These trees are all of the *Eucalyptus cladocalyx* species ('Sugar Gum').

Images of each tree are provided in **Appendix H**.



Figure 9 – Location of Trees to West of Affected Area



Figure 10 – Image of Trees to West of Affected Area (looking south)

As illustrated in **Figure 11** below, the tree crowns are clear of the Affected Area, which appears to be a consequence of current and previous pruning practices, to ensure clearance from the existing Trident Factory building and overhead powerlines along the western boundary of the Affected Area.



View to the North



View to the South

Figure 11 – View Along the Western Boundary of the Affected Area

From an environmental and amenity perspective, it is considered desirable that these trees are protected, retained, and integrated with future development on the Affected Area (for example, with any future public open space allocation). In particular, at a future development application / land division stage, a suitably experienced and qualified arborist should be engaged to assess and report on the health and structure of all Regulated/Significant Trees, with a particular focus on the potential impact of specific design scenarios and, if required, specific management techniques to be incorporated with future development to protect the trees.

Council's Development Plan currently contains specific policies intended to protect and conserve Regulated and Significant Trees. Specifically, General Section policies under the *Land Division*, *Regulated Trees* and *Significant Trees* modules provide relevant guidance, including policy relating to achieving balanced development outcomes while conserving and protecting trees, along with the management of groundwork activities. Specifically:

- *Land Division: PDC 4(j)*
- *Regulated Trees: Objectives 1 and 2; PDCs 1 and 2*
- *Significant Trees: Objectives 1 and 2; PDCs 1, 2, 3, 4 and 5*

Implications for the draft DPA

Given existing policy provisions contained within the General Section of the Charles Sturt Council Development Plan (*Land Division*, *Regulated Trees* and *Significant Trees* modules), available to manage and reduce the impact of future development on Regulated and Significant Trees, no additional policies are proposed.

3.2.9 Residential Interface and Existing Acoustic Wall

The western boundary of the Affected Area abuts *Cheltenham Park Policy Area 22* of the *Residential Zone*. However, no residential allotments immediately adjoin the Affected Area at this location, and instead consists of an area of existing 'local open space'.

The eastern and southern boundaries of the Affected Area abut *Woodville Medium Density Policy Area 21* of the *Residential Zone*. More specifically, these boundaries abut the side and rear boundaries of adjoining residential allotments, as well as the termination point of existing local roads (Charles Mathews Circle and Ashworth Avenue) and private access driveways.

As illustrated in **Figure 12** and **Figure 13** below, the eastern, western and southern boundaries of the Affected Area presently contain an 'acoustic wall' of varying heights, which assists to manage the interface between the existing Tridents Plastics Factory site and surrounding residential area.

Noting the Affected Area is proposed to be re-zoned to a Residential Zone and developed for residential purposes, it is anticipated the 'acoustic wall' will no longer be required to manage industrial interface impacts and could be removed and replaced with alternative forms of boundary fencing, landscaping and/or areas of open space as required to complement the future layout of the site.

In terms of future residential development of the Affected Area, Council's Development Plan already contains numerous policies intended to reduce adverse impacts associated with new development, as well as the integration of new development adjacent established residential areas.

In this regard, General Section policies under the *Design and Appearance, Medium and High-Rise Development (3 or more storeys)* and *Residential Development* modules, as well as within the *Residential Zone* and *Policy Area 21* provide relevant guidance including the management of building envelope requirements, overshadowing and visual and acoustic privacy.



Figure 12 – Existing Acoustic Wall along the Western Boundary



Figure 13 – Existing Acoustic Wall along the Eastern Boundary

Implications for the draft DPA

As the final form of future development has not yet been determined, definitive arrangements for the 'acoustic wall' cannot be specified within this draft DPA, however it is anticipated that it will no longer be required to manage industrial interface impacts.

Given the 'acoustic wall' is located on the boundaries of the site, future alterations to existing boundary arrangements (including demolition of the acoustic wall) will require negotiation with relevant adjoining landowners in accordance with the *Fences Act 1975* outside of the development application process.

Noting existing policies within the Development Plan available to manage and reduce the potential for adverse impacts of new development on existing development, and to assist with the integration of new development into established residential areas, no additional policies are proposed.

3.2.10 Interface – Urban Employment Zone

The Urban Employment Zone is located to the northern side of Torrens Road, adjacent the Affected Area.

However, this arrangement is consistent with those established residential areas to the east and west, and the alignment of Torrens Road provides approximately 25 metres of separation distance from the Affected Area.

Further, established land uses within the Urban Employment Zone, directly adjacent the Affected Area are relatively 'benign' from an interface perspective and include a Place of Worship ('Islamic Arabic Centre'), and a storage facility ('Woodville North Storage King') which are not anticipated to have a significant impact on future residential amenity.

Notwithstanding, in the event that alternative industrial / commercial land use developments are proposed adjacent the Affected Area, the Urban Employment Zone contains numerous provisions (including Objective 5 and PDCs 3, 13, 16, 17, 18, 21, 22, 23, 27 and 30) which seek to protect residential development from incompatible activities.

In addition, the Desired Character Statement of Policy Area 21 acknowledges that development within the Policy Area should be designed to ensure that it does not compromise the long-term viability of adjacent industrial / commercial uses.

Implications for the draft DPA

Having regard to existing policy provision within the Development Plan, no additional policies are considered necessary to address matters relating to the interface with the Urban Employment Zone to the north, across Torrens Road.

3.2.11 Noise and Air Emissions Overlay

The South Australian Planning Policy Library *Technical Information Sheet 08: Noise and Air Emissions – Overlay 3* (April 2013) provides direction on the intent of the Overlay and when it may be applied.

It indicates that when the Overlay is introduced into a Development Plan (via a DPA process), additional planning policies to protect new noise and air quality sensitive development, from noise and air emissions generated from major transport corridors (road and rail) and mixed land uses, should be considered for assessment purposes.

Noise and air quality sensitive development includes land uses such as residential dwellings.

The Overlay provisions may be applied when an Affected Area is adjacent to certain designated roads and/or when the Affected Area is to be within a 'mixed use zone'.

The Technical Information Sheet classifies Torrens Road as a "Type B" road (defined as being a type of road which carries 25,000 – 49,999 vehicles per day, is a freight route, is a DPTI major traffic route, or is the basis of a growth corridor). The Technical Information Sheet specifies that for a Type B road with a speed limit of 50-60 km/hr (i.e. as per Torrens Road where a 60km/h speed limit applies) the Overlay designated area should apply to a maximum distance of 60 metres from the cadastral boundary of the road.

It is noted that the current Development Plan does not identify the section of Torrens Road adjacent the Affected Area as a 'designated road'. Further, the Development Plan does not identify those adjoining and established residential areas to the east and west, as being within the 'Noise and Air Emissions Overlay' – despite their location adjacent Torrens Road.

Notwithstanding, and having regard to current and contemporary advice contained within the Technical Information Sheet, it is appropriate to introduce the Overlay to the Affected Area. Given the future allotment configuration has not yet been determined, it is appropriate to introduce the Overlay across the entirety of the Affected Area.

Implications for the draft DPA

Having regard to the South Australian Planning Policy Library *Technical Information Sheet 08: Noise and Air Emissions – Overlay 3* (April 2013), and recognising that the future allotment configuration has not yet been determined, it is proposed to introduce the Noise and Air Emissions Overlay, across the entirety of the Affected Area.

Associated planning policies are already contained in the Overlay Section of Council's Development Plan and will apply when the Overlay Map is introduced.

3.2.12 Affordable Housing Overlay

The South Australian Planning Policy Library *Technical Information Sheet 06: Affordable Housing – Overlay 1* (September 2011) provides direction on the intent of the Overlay and when it is to be applied. While the guide does not specifically identify that the Overlay should apply to the Residential Zone, the Overlay must be selected and mapped where the re-zoning process will provide the potential for increased dwelling yield.

As the draft DPA proposes policy to provide for medium density housing and is likely to result in the development of more than 20 dwellings within the Affected Area, it is considered appropriate to encourage the provision of affordable housing as an integral component of future development.

The Affordable Housing Overlay and associated policies are already contained within the Development Plan. These policies provide guidance for the provision of affordable housing for developments comprising more than 20 dwellings. On this basis, it is proposed to introduce the Affordable Housing Overlay and associated policies to the Affected Area.

In addition, Objective 1 of *Woodville Medium Density Policy Area 21* encourages affordable housing choices within the Policy Area.

Implications for the draft DPA

Having regard to the South Australian Planning Policy Library *Technical Information Sheet 06: Affordable Housing – Overlay 1* (September 2011), it is proposed to introduce the Affordable Housing Overlay across the Affected Area.

Associated planning policies are already contained in the Overlay Section of Council's Development Plan and will apply when the Overlay Map is introduced.

3.2.13 Waste Management

The management of waste, within a medium density 'infill' development scenario, is an important consideration to ensure that efficient, convenient, and sustainable practices are employed.

While the final development form of the Affected Area has not yet been determined, functional and affordable solutions to manage waste will encourage greater recovery of resources and enhance the quality of life for the community as the development proceeds.

While there are a number of resources available on this issue, particular regard has been given to the City of Charles Sturt' *Residential Waste and Recycling Guidelines for New Developments December 2010*.

The Guidelines assist in the development of effective and efficient waste and recycling systems for new developments at the design phase and provides flexibility in options to allow site-specific waste and recycling solutions to be put forward for larger residential developments.

In addition to helping developers comply with Development Plan requirements for waste and recycling, use of the Guidelines will result in waste systems in new residential developments delivering benefits for future residents and the wider community by providing access to waste and recycling services and reducing the disposal of waste to landfill. In undertaking waste management within the Affected Area, it is expected that future development will meet the aims of this Guideline.

The Development Plan contains several provisions which contain references to waste management including General Section modules; *Infrastructure; Medium and High-Rise Development (3 or more storeys); Residential Development; and Waste*.

Implications for the draft DPA

Having regard to the existing suite of Development Plan policies that are available, no new policies are considered necessary to provide guidance on this matter.

4. Recommended Policy Changes

4.1 Proposed Development Plan Policy

The draft DPA proposes to extend the adjacent *Residential Zone - Woodville Medium Density Policy Area 21* over the Affected Area.

In this context, only minor amendments are considered necessary to accommodate site specific circumstances as follows:

- Amend the Desired Character Statement for *Woodville Medium Density Policy Area 21* to:
 - Explicitly identify that the Policy Area includes the Trident Plastics Factory site.
 - Replace references to 'Viscount Plastics' (the previous site operator) with 'Trident Plastics'.
 - Identify that higher buildings (up to 3-storeys) may be appropriate in certain locations within the Policy Area such as land adjacent Torrens Road.
- Amend PDC 4 to include reference that three-storey building heights may be appropriate adjacent to Torrens Road (as well as adjacent public open space connections).
- Replace existing PDC 9 with the following:
 - New PDC 9 to allow for provision of new road access from Torrens Road to/from the Affected Area (with no new road access to/from Torrens Road for the remainder of the Policy Area)
 - Include a new Policy Area PDC (to be PDC 10) to restrict vehicular access to individual allotments to/from Torrens Road (both for the Affected Area and the remainder of the Policy Area)
- Include a new Policy Area PDC (to be PDC 11) to ensure future provision of an internal road network that services the Affected Area, provides a key vehicle connection to Torrens Road, provides secondary vehicle connection with existing roads to the east and south of the Affected Area, and provides safe and convenient pedestrian linkages with the surrounding locality.
- Re-number existing PDC 10 and PDC 11, as PDC 12 and PDC 13 respectively (no change to the content of these existing PDCs).
- Amending various Maps (i.e. Council Index Map, Zone Map ChSt/9 and Policy Area Map ChSt/9).

In addition, and to ensure consistency with *South Australian Planning Policy Library Technical Information Sheet No. 6 (Affordable Housing – Overlay 1)* and *Sheet No. 8 (Noise and Air Emissions – Overlay 3)*, it is proposed to introduce the Affordable Housing Overlay and Noise and Air Emissions Overlay to the Affected Area.

While no new specific Affordable Housing or Noise and Air Emission policy provisions are to be introduced to the Development Plan, the following Maps will be amended to identify these Overlays apply to the Affected Area:

- Map ChSt/9 – Noise and Air Emissions Overlay.
- Map ChSt/9 – Affordable Housing Overlay.

In accordance with advice provided by the Minister for Planning (in approving the Statement of Intent on 15 December 2019), the draft DPA does not propose to amend *Concept Plan Map ChSt/18 (Cheltenham Park and Woodville Medium Density)* of the Development Plan – which presently applies to land immediately to the east and west of the Affected Area. Rather than updating the Concept Plan, all desired development outcomes, associated with the draft DPA, have been incorporated within the Desired Character Statement and Principles of Development Control (PDC) of the proposed Policy Area.

4.2 Transition to the Planning and Design Code

As outlined earlier in the draft DPA, South Australia's planning system is currently in a period of transition. In particular, existing Council Development Plans which apply under the *Development Act 1993*, will be replaced with a new *Planning and Design Code* ('the Code') under the *Planning, Development and Infrastructure Act 2016* (PDI Act) which is being introduced on a staged basis.

In this regard the Charles Sturt Council Development Plan will be superseded by the Code in September 2020 (subject to Parliamentary resolution).

While this draft DPA has been prepared and consulted on under the *Development Act 1993* with an intention to amend Council's current Development Plan, it is acknowledged that zones and policy areas within the Development Plan (including any amendments approved by this draft DPA) will be transitioned to an equivalent zone in the Code.

It is therefore important to identify the policy framework which is likely to apply to the Affected Area, under the Code, both as currently proposed, and if the draft DPA is approved by Council and then the Minister for Planning.

Based on the *draft* consultation version of the *Planning and Design Code (Phase Three – Urban Areas)*, dated October 2019, the proposed zoning arrangements for the Affected Area and surrounding land are illustrated in **Figure 14** below.

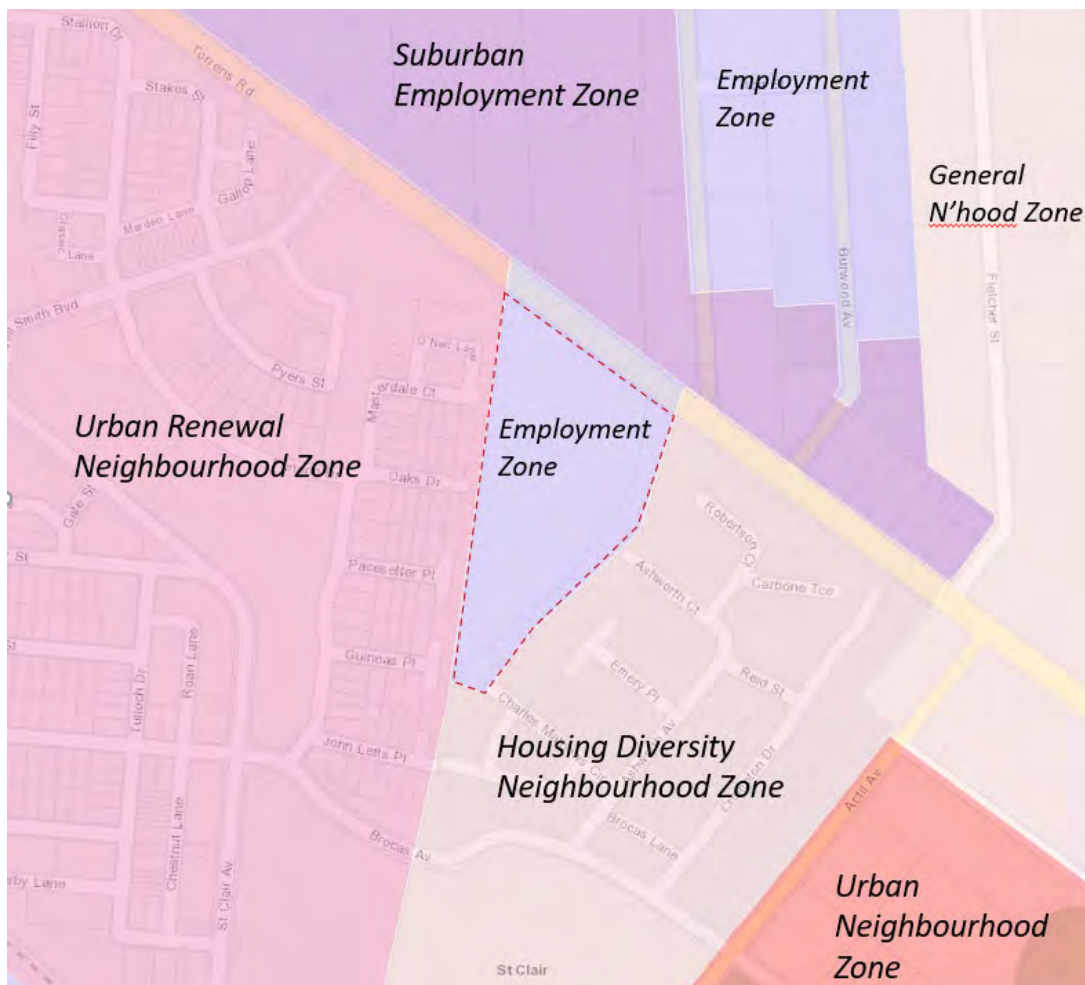


Figure 14 – Zoning Arrangements under the Planning and Design Code (Source: P&D Code Consultation Map Viewer)

As depicted in **Figure 14**, under the Code, the Affected Area is currently proposed to be zoned as 'Employment Zone'. This largely reflects the existing policy framework and land use activities of Trident Plastics, with the new zone seeking to support a range of industrial, and high impact activities such as general industry and warehousing.

Land to the west of the Affected Area, is to transition to the 'Urban Renewal Neighbourhood Zone' (under the Development Plan this area is within *Cheltenham Park Policy Area 22* of the *Residential Zone*).

Land to the east of the Affected Area, is to transition to the 'Housing Diversity Neighbourhood Zone' (under the Development Plan this area is within *Woodville Medium Density Policy Area 21* of the *Residential Zone*).

To the north of the Affected Area, across Torrens Road, the 'Suburban Employment Zone' is intended to apply.

As illustrated in **Figure 14**, under the current proposed arrangement, the Affected Area would be 'disconnected' from the remainder of the 'Employment Zone', which is located further to the north.

Having regard to the location of the Affected Area, and the residential policy content proposed within this draft DPA, it is appropriate to examine and consider the proposed zoning arrangements immediately to the east and west of the Affected Area, acknowledging that, if this draft DPA is approved, it will likely be appropriate to extend one of these Zones across the Affected Area.

Before discussing each Zone, it is important to identify the following definitions which are specified within the Code, which assist with an understanding of the zone policy provisions:

- *Low Rise - means up to and including 2 building levels.*
- *Medium Rise - means 3 to 6 building levels.*
- *Low Density – less than 35 dwelling units per hectare*
- *Medium Density - 35 to 70 dwelling units per hectare*
- *High Density – greater than 70 dwelling units per hectare*

Urban Renewal Neighbourhood Zone

According to the *Guide to the Draft Planning and Design Code*, prepared by the State Planning Commission, dated October 2019, the overarching intent of the Urban Renewal Neighbourhood Zone is as follows:

This zone supports the renewal of sites with medium to high density housing in precincts where the housing stock is being replaced as it no longer meets market and community needs. This zone seeks to establish a new character and actively encourages a new urban form, urban renewal, and new housing.

The key land use and built form outcomes in relation to residential development, articulated within the *draft* version of the Code for the Urban Renewal Neighbourhood Zone are outlined as follows:

- **Desired Outcome 1 (DO)**
Housing that no longer meets community preferences is replaced with new diverse low-medium rise housing options. Housing density increases, taking advantage of well-located urban land. Employment and community services will improve access to jobs, goods and services without compromising residential amenity.
- **Performance Outcome 1.1 (PO)**
Residential development accommodates range of housing choices.
- **Performance Outcome 2.1**
Buildings contribute to a low-medium rise residential character with the taller buildings located on sites that are a suitable size and dimension to manage massing and impacts on adjoining residential development.

- Deemed to Satisfy / Designated Performance Feature 2.1 (DTS/DPF)
Building height (excluding garages, carports and outbuildings) not exceeding:
 - a) 4 building levels and 15m where the site
 - (i) is at least 1200m²;
 - (ii) has a frontage of at least 35m
 - b) 3 building levels and 12m in all other circumstances
- Performance Outcome 8.1
Allotments created for residential purposes accommodate a diverse range of medium density housing

Housing Diversity Neighbourhood Zone

According to the *Guide to the Draft Planning and Design Code*, prepared by the State Planning Commission, dated October 2019, the overarching intent of the Housing Diversity Neighbourhood Zone is as follows:

Development in this zone will generally retain a low-rise residential character and will involve replacing existing dwellings with medium density housing, primarily in the form of terrace housing, group dwellings or residential flat buildings.

The key land use and built form outcomes in relation to residential development, articulated within the *draft* version of the Code for the Housing Diversity Neighbourhood Zone are outlined as follows:

- Desired Outcome 1
Low-rise medium density housing that supports a range of needs and lifestyles located within easy reach of a diversity of services and facilities. Employment and community service uses contribute to making the neighbourhood a convenient place to live without compromising residential amenity.
- Performance Outcome 1.2
Residential development accommodates range of housing choices.
- Performance Outcome 2.1
Allotments created for residential purposes accommodate a diverse range of low-medium density housing.
- Performance Outcome 3.1
Buildings contribute to a low-rise residential character and complement the height of nearby buildings
- Deemed to Satisfy / Designated Performance Feature 10.1
Residential Flat Buildings that are 2 or more building levels:
 - (a) *Have a building depth or length no greater than 20m; and*
 - (b) *Are setback at least 4m from other dwellings or other residential flat buildings*

Recognising that, consistent with the intent of the draft DPA, both zones seek to accommodate residential development and a range of housing types, it is appropriate to compare anticipated building heights and densities of the new zones, with the existing Development Plan policy framework, to assist with a determination of the most appropriate policy 'fit' for the Affected Area under the Code.

This comparison is undertaken in **Figure 15** over page.

Zone / Policy Area	Policy Area 21 (Development Plan)	Housing Diversity Neighbourhood Zone (Code)	Policy Area 22 (Development Plan)	Urban Renewal Neighbourhood Zone (Code)
Density	Low - Medium Density (15dw/ha to 35-40dw/ha)	Low - Medium Density (less than 35dw/ha to 35-70dw/ha)	Medium-High Density	Medium Density (35-70dw/ha)
Building Height	Generally, 1-2 storeys	1-2 storeys	1-4 storeys	1-4 storeys
Any Other Comments	Allows building heights up to 3 Storeys / 12m in certain locations	While the Zone specifies a 2-storey building height ('low rise'), 2 or more storeys is also anticipated as identified within DTS/DPF 10.1	Building heights can exceed 4 storeys in areas adjacent public open space, open space connection etc.	Allows for 'high density' development in certain locations

Figure 15 – Comparison of policies

Based on the above, the policy intent of the Housing Diversity Neighbourhood Zone is considered more appropriately aligned with proposed Policy Area 21. Both frameworks seek to accommodate a range of housing types, allowing for medium density outcomes.

While the Housing Diversity Neighbourhood Zone allows for slightly higher densities up to 70dw/ha, it is apparent the Zone seeks a balanced and diverse outcome and does not seek a 'higher' density of development 'across the board', which is similarly anticipated by Policy Area 21. Accordingly, it is anticipated that the Housing Diversity Neighbourhood Zone would allow for a range of dwelling types, at differing densities across the Affected Area, although primarily allowing for a medium density of development.

In terms of building height, while at first glance, the Housing Diversity Neighbourhood Zone appears to be more restrictive than Policy Area 21, it is noted that the 'new' Zone does not restrict building heights above 2-storeys (as specifically referenced by DTS/DPF 10.1), and development above 2-storeys would be 'performance assessed' against the provisions of the Code.

Therefore, building heights above 2 storeys could still be accommodated within appropriate locations on the Affected Area (for example, adjacent open space or Torrens Road), as anticipated by Policy Area 21.

It is therefore, recommended that if this draft DPA is approved by Council and then the Minister for Planning, that the **Housing Diversity Neighbourhood Zone** be applied to the Affected Area.

5. Consistency with the Residential Code

The Residential Development Code was introduced in 2009 to make simpler, faster and cheaper planning and building approvals for home construction and renovation.

As illustrated by the 'shaded' area within **Figure 16** below, residential land to the south, east and west of the Affected Area (located within *Cheltenham Park Policy Area 22* and *Woodville Medium Density Policy Area 21*), is currently located within the designated Residential Code Area.

Accordingly, it is anticipated the Residential Development Code will be applied to the Affected Area.



Figure 16 – Residential Code Areas surrounding the Affected Area (Source: Location SA website)

6. Statement of Statutory Compliance

Section 25 of the *Development Act 1993* prescribes that the draft DPA must assess the extent to which the proposed amendment:

- Accords with the Planning Strategy
- Accords with the Statement of Intent
- Accords with other parts of council's Development Plan
- Complements the policies in Development Plans for adjoining areas
- Accords with relevant infrastructure planning
- Satisfies the requirements prescribed by the *Development Regulations 2008*.

6.1 Accords with the Planning Strategy

Relevant strategies from the Planning Strategy are summarised in **Appendix A** of this document. This draft DPA is consistent with the direction of the Planning Strategy.

6.2 Accords with the Statement of Intent

The draft DPA has been prepared in accordance with the Statement of Intent agreed to on 15 December 2019. In particular, the proposed investigations outlined in the Statement of Intent have been addressed in **Section 3.2** of this document.

6.3 Accords with other parts of the Development Plan

The policies proposed in this draft DPA are consistent with the format, content and structure of the Charles Sturt Council Development Plan.

For example, the proposed Zone and Policy Area are already established within the Development Plan. The proposed amendments assist to provide clarity regarding site specific matters only. The draft DPA also utilises existing General Section Policies and Tables.

6.4 Complements the policies in the Development Plans for adjoining areas

The draft DPA applies to a specific area, located entirely within the Charles Sturt Development Plan, well separated from surrounding Council areas.

Accordingly, the policies proposed in this draft DPA will not affect and will complement the policies within the Development Plans for adjoining areas.

6.5 Accords with relevant infrastructure planning

This draft DPA complements current infrastructure planning for Council area, as discussed in **Section 2.2.3** and **Section 3.2.5** of this document.

6.6 Satisfies the requirements prescribed by the Regulations

The requirements for public consultation (Regulation 11) and the public meeting (Regulation 12) associated with this draft DPA will be met.

References/Bibliography

- AGON Environmental – *Preliminary Site Investigation 589-599 Torrens Road, St Clair* (July 2018)
- AGON Environmental – *Environmental Assessment 589-599 Torrens Road, St Clair* (March 2020)
- CIRQA – *Trident Plastics St Clair – Transport Investigations* (May 2020)
- Greenhill Engineering – *Trident Plastics Re Zoning – Preliminary Infrastructure and Servicing Report* (May 2020)
- City of Charles Sturt – *Community Plan 2016-2027*
- City of Charles Sturt – *Open Space Strategy 2025 – Directions Report*
- City of Charles Sturt – *Urban Employment Land Review* (July 2019)
- City of Charles Sturt – *Strategic Directions Report* (2014)
- City of Charles Sturt – *Infrastructure Guidelines* (2019)
- City of Charles Sturt – *Residential Waste and Recycling Guidelines for New Developments* (December 2010)
- Colliers International Consulting Services et al – *Industrial Land Study – Volume 1* (2008)
- Ekistics Planning and Design – *Statement of Justification* (September 2019)
- Location SA Map Viewer (Website) – www.location.sa.gov.au
- Government of South Australia: *Charles Sturt Council Development Plan* (Consolidated 13 February 2020)
- Government of South Australia: *Development Act 1993*
- Government of South Australia: *Development Regulations 2008*
- Government of South Australia: *Technical Information Sheet 06: Affordable Housing - Overlay 1*
- Government of South Australia: *Technical Information Sheet 08: Noise and Air Emissions - Overlay 3*
- Government of South Australia: *The 30-Year Plan for Greater Adelaide - 2017 Update*
- Government of South Australia: *Draft Planning and Design Code - Phase Three (Urban Areas)* – (October 2019)
- Government of South Australia: *Guide to the Draft Planning and Design Code* (October 2019)
- Office of the Technical Regulator - *Building Safely Near Overhead Powerlines*
- South Australia Property and Planning Atlas (Website) – www.maps.sa.gov.au/SAPPA

Schedule 4a Certificate

CERTIFICATION BY COUNCIL'S CHIEF EXECUTIVE OFFICER

DEVELOPMENT REGULATIONS 2008

SCHEDULE 4A

Development Act 1993 – Section 25 (10) – Certificate - Public Consultation

CERTIFICATE OF CHIEF EXECUTIVE OFFICER THAT A DEVELOPMENT PLAN AMENDMENT (DPA) IS SUITABLE FOR THE PURPOSES OF PUBLIC CONSULTATION

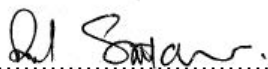
I Paul Sutton, as Chief Executive Officer of the City of Charles Sturt, certify that the Statement of Investigations, accompanying this draft DPA, sets out the extent to which the proposed amendment or amendments-

- (a) accord with the Statement of Intent (as agreed between the City of Charles Sturt and the Minister under section 25(1) of the Act) and, in particular, all of the items set out in Regulation 9 of the *Development Regulations 2008*; and
- (b) accord with the Planning Strategy, on the basis that each relevant provision of the Planning Strategy that related to the amendment or amendment has been specifically identified and addressed, including by an assessment of the impacts of each policy reflected in the amendment or amendments against the Planning Strategy, and on the basis that any policy which does not fully or in part accord with the Planning Strategy has been specifically identified and an explanation setting out the reason or reasons for the departure from the Planning Strategy has been included in the Statement of Investigation; and
- (c) accord with the other parts of the Development Plan (being those parts not affected by the amendment or amendments); and
- (d) complement the policies in the Development Plans for adjoining areas; and
- (e) satisfy the other matters (if any) prescribed under section 25(10)(e) of the *Development Act 1993*.

The following persons have provided advice to Council for the purposes of section 25(4) of the Act:

Jim Gronthos

DATED this 24th day of.....June.....2020



Paul Sutton
Chief Executive Officer
City of Charles Sturt

Appendices

Appendix A - Assessment of the Planning Strategy

Appendix B – Transport Investigations, CIRQA Traffic Consultants (May 2020)

Appendix C – Infrastructure and Services Assessment, Greenhill Engineering
(May 2020)

Appendix D – Certificate of Title

Appendix E – Letter from SA Power Networks (18 May 2020)

Appendix F - Environmental Assessment, AGON Environmental (March 2020)

Appendix G – Peer Review – EPA (30 April 2020)

Appendix H – Mature Trees located to West of Affected Area

Appendix A - Assessment of the Planning Strategy

30-Year Plan for Greater Adelaide – 2017 Update DPA Response

Transit Corridors, growth areas and activity centres

Policies

P1. Deliver a more compact urban form by locating the majority of Greater Adelaide's urban growth within existing built-up areas by increasing density at strategic locations close to public transport (Map 2).

The draft DPA will facilitate population growth within the existing urban area close to public transport.

P4. Ensure that the bulk of new residential development in Greater Adelaide is low to medium rise with high rise limited to the CBD, parts of the Park Lands frame, significant urban boulevards, and other strategic locations where the interface with lower rise areas can be managed.

The draft DPA will facilitate medium density development, with interface building heights managed via existing Development Plan policies.

P5. Encourage medium rise development along key transport corridors, within activity centres and in urban renewal areas that support public transport use.

The draft DPA will encourage medium rise development in an urban renewal area close to public transport linkages.

P6. Promote urban renewal opportunities and maximise the use of government-owned land to achieve higher densities along transit corridors.

The draft DPA will facilitate urban renewal opportunities and facilitate increased residential densities adjacent a secondary arterial road.

A4. Rezone strategic sites to unlock infill growth opportunities that directly support public transport infrastructure investment.

The draft DPA will unlock infill growth opportunities at St Clair which will support public transport usage.

Design quality

P26. Develop and promote a distinctive and innovative range of building typologies for residential housing which responds to metropolitan Adelaide's changing housing needs, reflects its character and climate, and provides a diversity of price points.

The draft DPA will support future development of a range of dwelling types, which is consistent with the established character of St Clair, and provide a diversity of price points.

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P28. Promote permeable, safe, attractive, accessible and connected movement networks (streets, paths, trails and greenways) in new growth areas and infill redevelopment areas that incorporate green infrastructure.	The draft DPA will support infill development that allows for connected movement to the existing street, footpath and open space network.
P29. Encourage development that positively contributes to the public realm by ensuring compatibility with its surrounding context and provides active interfaces with streets and public open spaces.	The draft DPA will encourage development that is consistent with the character of St Clair and contributes to and interacts with the public realm and open space network.
P30. Support the characteristics and identities of different neighbourhoods, suburbs and precincts by ensuring development considers context, location and place.	The draft DPA will support the emerging residential character of St Clair.
P32. Encourage higher density housing to include plantable space for trees and other vegetation where possible.	The draft DPA will encourage medium density development and allow for future street tree planting and the provision of open space.
A16. Ensure that the local area planning process adequately address interface issues in the local context and identify appropriate locations for: <ul style="list-style-type: none"> • medium and high-rise buildings • sensitive infill in areas of protection and areas of heritage value • where there should be minimum and maximum height limits. 	The draft DPA will adopt existing Zone, Policy Area and General Section policies which already apply to St Clair, which assist to manage infill development impacts.
Housing mix, affordability and competitiveness	
P36. Increase housing supply near jobs, services and public transport to improve affordability and provide opportunities for people to reduce their transport costs	The draft DPA will support increased housing supply close to main roads and public transport services, as well as in proximity to the Adelaide CBD and centre areas both within the City of Charles Sturt and nearby Councils.
P37. Facilitate a diverse range of housing types and tenures (including affordable housing) through increased policy flexibility in residential and mixed-use areas,	The draft DPA will facilitate options for a diverse range of dwelling types within an urban infill setting.

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including:

- ancillary dwellings such as granny flats, laneway and mews housing
- dependent accommodation such as nursing homes
- assisted living accommodation
- aged-specific accommodation such as retirement villages
- small lot housing types
- in-fill housing and renewal opportunities.

P45. Promote affordable housing in well located areas close to public transport and which offers a housing mix (type and tenure) and quality built form that is well integrated into the community.

The draft DPA will draw on existing Development Plan Policy which seeks to promote the development of affordable housing and will apply the Affordable Housing Overlay to the Affected Area.

Health, wellbeing and inclusion
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P47. Plan future suburbs and regenerate and renew existing ones to be healthy neighbourhoods that include:

- diverse housing options that support affordability
- access to local shops, community services and facilities
- access to fresh food and a range of food services
- safe cycling and pedestrian friendly streets that are tree-lined for comfort and amenity
- diverse areas of quality public open space (including local parks, community gardens and playgrounds)
- sporting and recreation facilities
- walkable connections to public transport and community infrastructure.

The draft DPA will facilitate development of a medium density neighbourhood that includes a range of dwelling types; access to local services and shops within St Clair; provision of open space; and connection to the existing open space network.

P49. Encourage more trees (including productive trees) and water sensitive urban landscaping in the private and public realm, reinforcing neighbourhood character and

The draft DPA will encourage street tree planting and provision of open space, as well as facilitate connection to the existing open space network. Given the Affected Area is presently fully sealed/developed – the draft DPA will result in a significant 'greening' of the site.

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creating cooler, shady and walkable neighbourhoods and access to nature.	
P50. Provide diverse areas of quality public open space in neighbourhoods (especially in higher density areas) such as local parks, community gardens, playgrounds, greenways and sporting facilities to encourage active lifestyles and support access to nature within our urban environment.	<p>The draft DPA will facilitate provision of public open space, which is connected to new housing, and connected to the wider open space network.</p> <p>The design and layout of future open space provision will occur in consultation with Council.</p>
The economy and jobs	
P55. Promote certainty to undertake development while at the same time providing scope for innovation.	<p>The draft DPA will promote certainty that the Affected Area can be developed for housing, thereby supporting the economy and jobs. The relocation of Trident Plastics to a different and more appropriate site, which will better cater for growth and intensification opportunities, will also promote greater certainty for an existing industry.</p>
P56. Ensure there are suitable land supplies for the retail, commercial and industrial sectors.	<p>While the draft DPA will re-zone land within the existing Urban Employment Zone to Residential, the previous studies (2008 and 2019) used to inform this draft DPA, indicate there are other more suitable and 'Prime Industrial Lands' within the Council area.</p>
P73. Provide sufficient strategic employment land options with direct access to major freight routes to support activities that require separation from housing and other sensitive land uses.	<p>The draft DPA seeks to remove an existing isolated 'pocket' of Urban Employment Zone. The draft DPA will not have a detrimental impact on the 'remaining' Urban Employment Zone to the north of Torrens Road, which has been determined to be a 'Prime Industrial Area'.</p>
Transport	
P74. Ensure development does not adversely impact the transport function of freight and/or major traffic routes and maintains access to markets (Refer to Map 7).	<p>The draft DPA will not have an adverse impact on Torrens Road (or any local roads).</p>
P78. Improve, prioritise and extend walking and cycling infrastructure by providing safe, universally accessible and convenient connections to activity centres, open space and public transport (see Map 8).	<p>The draft DPA will facilitate the extension and improvement of existing footpath connections across St Clair, and provide connections to the open space network, and support public transport usage.</p>

30-Year Plan for Greater Adelaide – 2017 Update	DPA Response
Infrastructure	
<p>P86. Ensure that new urban infill and fringe and township development are aligned with the provision of appropriate community and green infrastructure, including:</p> <ul style="list-style-type: none"> • walking and cycling paths and facilities • local stormwater and flood management including water sensitive urban design • public open space • sports facilities • street trees • community facilities, such as child care centres, schools, community hubs and libraries. 	<p>The draft DPA will accommodate urban infill which provides footpaths and local road connections, open space which connects to the existing open space network, street trees and efficient connection to the rest of St Clair and its associated services and facilities.</p>
Biodiversity	
<p>P95. Support the enhancement of the urban biodiversity of metropolitan Adelaide through a connected and diverse network of green infrastructure.</p>	<p>The draft DPA will facilitate the provision of open space, across a site which is presently fully sealed/developed and allow for connection to the existing open space network.</p>
Open space, sport and recreation	
<p>P99. Ensure quality open space is within walking distance of all neighbourhoods to:</p> <ul style="list-style-type: none"> • link, integrate and protect biodiversity assets and natural habitats • provide linkages to encourage walking and cycling to local activities, local activity centres and regional centres • be multi-functional, multiuse (including the shared use of strategically located school facilities) and able to accommodate changing use over time • incorporate the principles of Crime Prevention Through Environmental Design for safety and amenity 	<p>The draft DPA will facilitate provision of open space which is connected to and interacts with future housing. Open space within the Affected Area will connect to the existing open space network which will facilitate walking and cycling activities, access to local services. Future open space provision will be sited and designed in consultation with Council requirements.</p>

30-Year Plan for Greater Adelaide – 2017 Update	DPA Response
<ul style="list-style-type: none"> • contain appropriate and low maintenance species and locate trees to maximise shade • encourage unstructured recreation opportunities such as the provision of a variety of paths and children’s play equipment • foster a connection to the natural environment through the provision of nature play spaces and urban forest opportunities. 	
<p>P103. Ensure that public open space is adequately greened and irrigated (where appropriate) to act as a natural cooling system to reduce heat island effects in urban areas.</p>	<p>Future open space will be sited, designed and installed in accordance with Council’s guidelines and requirements, to ensure it is fit for purpose.</p>
<p>P105. Deliver a more compact urban form to:</p> <ul style="list-style-type: none"> • protect valuable primary production land • reinforce the Hills Face Zone, character preservation districts and Environment and Food Production Areas • conserve areas of nature protection areas • safeguard the Mount Lofty Ranges Watershed • reduce vehicle travel and associated greenhouse gas emissions. 	<p>The draft DPA will facilitate medium density infill development, located in close proximity to public transport linkages, the Adelaide CBD and local shops and services.</p>
<p>P107. Increase the proportion of low-rise, medium-density apartments and attached dwellings to support carbon-efficient living.</p>	<p>The draft DPA will facilitate the future development of medium density housing.</p>
Water	
<p>P115. Incorporate water-sensitive urban design in new developments to manage water quality, water quantity and water use efficiency and to support public stormwater systems.</p>	<p>Stormwater management options have been considered in the investigations for this draft DPA (see Section 3.2.5). The draft DPA will facilitate opportunities to incorporate water sensitive urban design in new development, with the detailed design to occur in consultation with Council.</p> <p>As the Development Plan already contains a number of</p>

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	policies in relation to stormwater infrastructure/WSUD, primarily under General Section policies for Land Division and Natural Resources, no additional policies are considered necessary on this issue.
Emergency management and hazard avoidance	
P121. Ensure risk posed by known or potential contamination of sites is adequately managed to enable appropriate development and safe use of land.	<p>As discussed within Section 3.2.6, a Preliminary Site Investigation and Environmental Assessment has been undertaken to inform the investigations for this draft DPA.</p> <p>The investigations identified a range of minor contamination issues that may warrant further assessment and remediation. However, any additional environmental investigations can be undertaken during the 'Development Application' Phase when the Affected Area is to be developed for residential purposes.</p> <p>As the Development Plan already contains a number of policies in relation to site contamination, primarily under General Section policies for Hazards, as well as within the proposed Policy Area, no additional policies are considered necessary on this issue.</p>
Targets	
Target 1. 85% of all new housing in metropolitan Adelaide will be built in established urban areas by 2045	The draft DPA will assist in meeting this target by facilitating additional housing opportunities at increased densities within an established urban area.
Target 2. 60% of all new housing in metropolitan Adelaide will be built within close proximity to current and proposed fixed line (rail, tram, O-Bahn and bus) and high frequency bus routes by 2045"	The draft DPA will assist the facilitation of additional housing opportunities at increased densities within an established area in close proximity to current bus and rail routes.
Target 4. Increase the percentage of residents living in walkable neighbourhoods in Inner, Middle and Outer Metropolitan Adelaide by 25% by 2045	<p>The draft DPA will assist in meeting this target by facilitating additional housing opportunities, at increased densities, within an established urban area.</p> <p>The Affected Area is in close proximity to local and district level open space, shops, services, and public transport linkages.</p>
Target 5. Urban green cover is increased by 20% in metropolitan Adelaide by 2045.	The draft DPA will assist in meeting this target by providing for increased potential in urban green cover through new public open space and street tree plantings.
Target 6. Increase housing choice by 25% to meet changing household needs in Greater Adelaide by 2045	The draft DPA will assist in meeting this target by facilitating additional housing opportunities via a range of housing and apartment types.

Appendix B – Transport Investigations



**TRIDENT PLASTICS, ST CLAIR
DEVELOPMENT PLAN AMENDMENT**

TRANSPORT INVESTIGATIONS



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DOCUMENT CONTROL

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Transport Investigations

Project number: 19393

Client: Ekistics

Client contact: Mr Chris Carrey

Version	Date	Details/status	Prepared by	Approved by
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APPENDIX A: TORRENS ROAD ACCESS POINT MODELLING RESULTS

1. INTRODUCTION

CIRQA has been engaged to provide traffic impact investigations for the proposed Trident Plastics Development Plan Amendment (DPA). Specifically, CIRQA's investigations relate to the proposed rezoning of land (from Urban Employment to Residential) on the southern side of Torrens Road (the Trident Plastics premises).

This report includes assessment of the potential traffic generation associated with the potential rezoning and redevelopment of the subject land, the associated impact on the adjacent existing road network, active and sustainable transport provisions and consideration of appropriate infrastructure upgrades/requirements.

The assessment also includes high level consideration of potential cumulative impacts of redevelopment of the subject site, as well as the potential impact of connections to adjacent developments.

2. BACKGROUND

2.1 STUDY AREA

The subject site is located approximately 7.5 km north-west of Adelaide's Central Business District (CBD) and comprises approximately 29,696 m². The site is bound by Torrens Road to the north-east, a reserve/bikeway to the west and residential dwellings to the remaining sides. Figure 1 illustrates the subject site and adjacent road network.

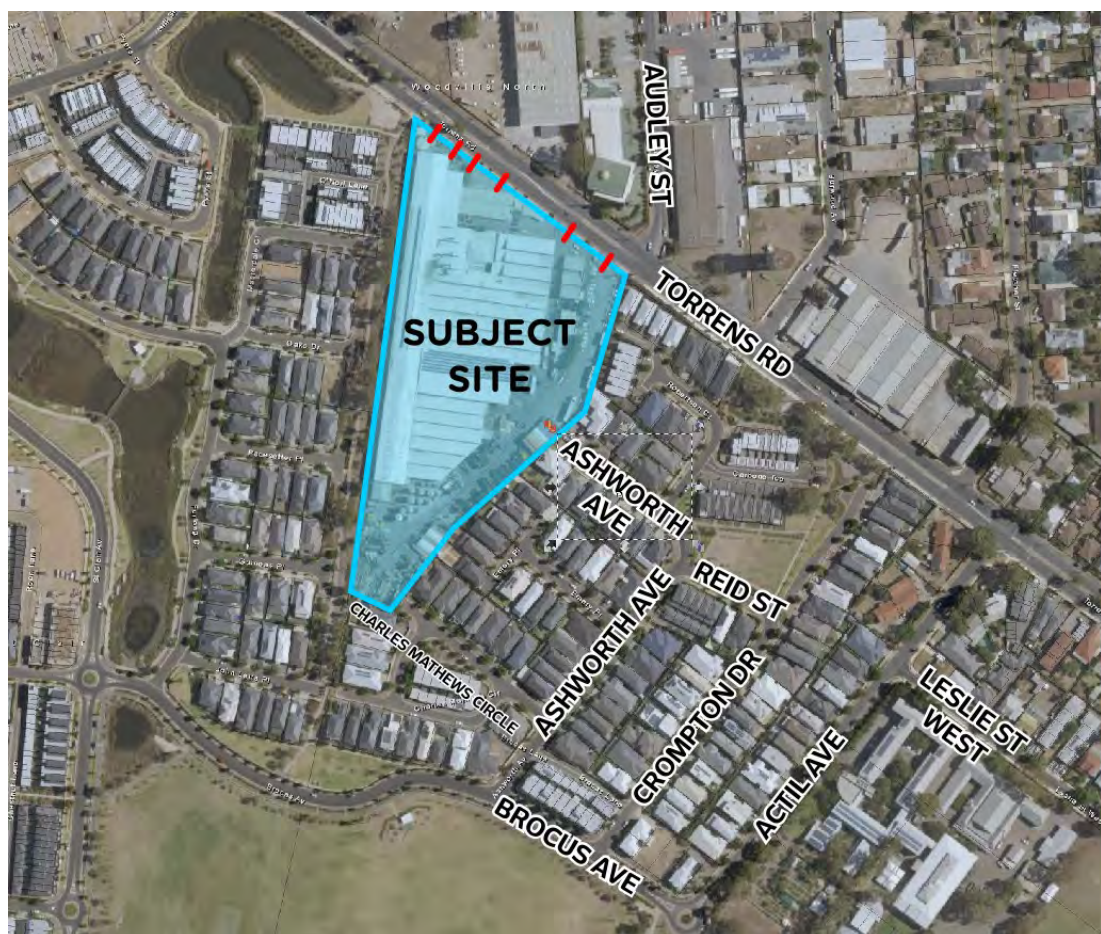


Figure 1 - Subject site and adjacent road network

The City of Charles Sturt's Development Plan identifies that the site is currently located within an 'Urban Employment' Zone. The primary purpose of this zone is to provide employment opportunities through both commercial and industrial land uses.

The existing land use is reflective of the current zoning with Trident Plastics, a manufacturing company, operating within the subject site. The site is regularly accessed by heavy vehicles via Torrens Road. Approximately 16,785 m² of buildings (office/warehouse/factory) have been constructed on-site.

The site is serviced directly via Torrens Road, with six crossovers providing access to the subject site. Two of the access points are one-way (ingress and egress only) with the remaining access points being two-way. Raised medians and central turning lanes on Torrens Road restrict movements to the majority of the sites access points. Right-in movements into the site are only permitted at one access point where a short right turn lane is provided. Right-out movements are only permitted at the easternmost access point.

2.2 ADJACENT ROAD NETWORK

Torrens Road is an arterial road under the care and control of the Department of Planning, Transport and Infrastructure (DPTI). Adjacent the site, Torrens Road comprises two traffic lanes and a bicycle lane in each direction, separated by a raised median. Traffic data obtained from DPTI indicates that this section of Torrens Road has an Annual Average Daily Traffic (AADT) volume in the order of 17,100 vehicles per day (vpd), of which approximately 4% are commercial vehicles. Adjacent the site, a 60 km/h speed limit applies on Torrens Road. South of Audley Street, Torrens Road is gazetted for B-Double use.

Ashworth Avenue is a local road under the care and control of the City of Charles Sturt. Ashworth Avenue comprises an 8 m wide carriageway (approximate) with a single unmarked traffic lane in each direction. Based on the number of dwellings accessed via Ashworth Avenue, it is estimated that the road has an AADT volume in the order of 840 vpd. A 40 km/h speed limit applies on Ashworth Avenue.

Crompton Drive is a local road under the care and control of the City of Charles Sturt. Crompton Drive comprises an 8 m wide carriageway (approximate) with a single unmarked traffic lane in each direction. Based on the number of dwellings accessed via Crompton Drive, it is estimated that the road has an AADT volume in the order of 330 vpd. A 40 km/h speed limit applies on Crompton Drive.

Reid Street is a local road under the care and control of the City of Charles Sturt. Reid Street comprises an 8 m wide carriageway (approximate) with a single unmarked traffic lane in each direction. Reid Street forms a link between Ashworth Avenue and Crompton Drive. A 40 km/h speed limit applies on Reid Street.

Charles Mathews Circle is a local road under the care and control of the City of Charles Sturt. Charles Mathews Circle comprises an unmarked 7.2 m wide carriageway, albeit on the southern section of the road, a 6 m wide carriageway services rear-access dwellings. It is estimated that the road has an AADT volume in the order of 224 vpd. A 40 km/h speed limit applies on Charles Mathews Circle.

Brocas Avenue is a local road under the care and control of the City of Charles Sturt. Brocas Avenue comprises a 9 m wide carriageway (approximate) with a

single unmarked traffic lane in each direction. A 40 km/h speed limit applies on Brocas Avenue.

Actil Avenue is a local road under the care and control of the City of Charles Sturt. Actil Avenue comprises an 8.9 m wide carriageway (approximate) with a single unmarked traffic lane in each direction. A 40 km/h speed limit applies on Actil Avenue.

Leslie Street West is a local road under the care and control of the City of Charles Sturt. Leslie Street West comprises a 6 m wide carriageway (approximate) with a single unmarked traffic lane in each direction. A 40 km/h speed limit applies on Leslie Street West.

2.3 WALKING AND CYCLING

A sealed footpath is provided on Ashworth Avenue, as well as both sides of Torrens Road and Brocas Avenue. Pedestrians and cyclists are also serviced by an off-street shared path, located along the western boundary of the subject site.

There are limited formal crossing facilities for pedestrians on Torrens Road (i.e. midblock locations). However, pedestrian crossing movements are facilitated at a signalised pedestrian crossing. The crossing is located 310 m south of the subject site on Torrens Road.

Part-time cycling lanes are provided on Torrens Road. The cycling lanes operate between 7:30 am to 9:00 am, Monday to Friday for southbound cyclists and 4:30 pm to 6:00 pm, Monday to Friday for northbound cyclists. For Ashworth Avenue and Brocas Avenue where on-street cycling facilities are not provided, cyclists can cycle on-street under a standard shared arrangement with motorists. Torrens Road and the nearby off-street paths adjacent the subject site and along Brocas Avenue form part of the BikeDirect network.

In addition, the Outer Harbor Greenway is located approximately 400 m south-west of the subject site. The Outer Harbor Greenway is primarily located adjacent the Outer Harbor train line, providing a convenient route to/from the city and other destinations.

2.4 PUBLIC TRANSPORT

Numerous public transport services operate within close vicinity to the subject site. Specifically, high frequency bus services operate along Torrens Road and frequent train services operate along the Outer Harbor train line.

Bus stops are located immediately adjacent the site on Torrens Road providing connectivity to West Lakes Centre Interchange and Port Adelaide Interchange as well as the City and metropolitan Adelaide via interchange services. Bus routes servicing the Torrens Road bus stops (directly opposite the site) include:

- 230 – Port Adelaide Interchange to City
- 232 – Port Adelaide Interchange to City
- 232R – City to Rosewater
- J8 – West Lakes Centre Interchange to Marion Centre Interchange

Additional bus stops on both sides of Woodville Road are located approximately 575 m from the subject site. The Woodville Road bus stops are serviced by the following bus routes, which differ from the bus routes servicing the Torrens Road bus stops:

- 100 – Arndale Centre Interchange to Glen Osmond
- 100B – Arndale Centre Interchange / Urrbrae Agricultural School to Brooklyn Park
- 100P – Arndale Centre Interchange to Plympton
- 101 – Arndale Centre Interchange to Flinders University
- 300 – Suburban Connector
- 300H – Suburban Connector
- 300J – Suburban Connector
- 300M – Suburban Connector

The Woodville and St Clair Railway stations are located within 650 m from the subject site. The Woodville Railway Station is serviced by trains operating on both the Grange and Outer Harbor Railway lines. The St Clair Railway Station is only serviced by trains operating on the Outer Harbor line. All train services provide a connection to the Adelaide CBD. Services generally operate on the Outer Harbor line every 15-30 minutes during peak weekday periods. The Grange line services also operate at a similar frequency during peak weekday periods.

Figure 2 illustrates the location of the above stops and train stations in respect to the subject site.



Figure 2 - Nearby bus stops and railway stations

3. PROPOSED REZONING

It is proposed to rezone the subject land to enable residential development on the site. It is anticipated that the rezoning will allow primarily residential development, with higher density development focused on the land adjacent Torrens Road.

It is noted that the rezoning and redevelopment of the Trident Plastics site was considered during the planning and design of the adjacent development to the east (former Sheridan site). Consideration was given to the potential future connection of future roads within the subject site to roads within the adjacent site (former Sheridan site). In particular, these connections were allowed for at the western ends of Ashworth Avenue and Charles Mathews Circle.

3.1 ANTICIPATED DEVELOPMENT YIELDS

It is anticipated that the subject site could be developed to accommodate in the order of 86 low-to-medium density dwellings and 40 to 50 apartments. A concept layout for the potential redevelopment of the site is shown in Figure 3. It is noted that the internal allotment and road layout is only a concept for use in the DPA application, providing consideration to access arrangements and land provisions for road reserves and other considerations.

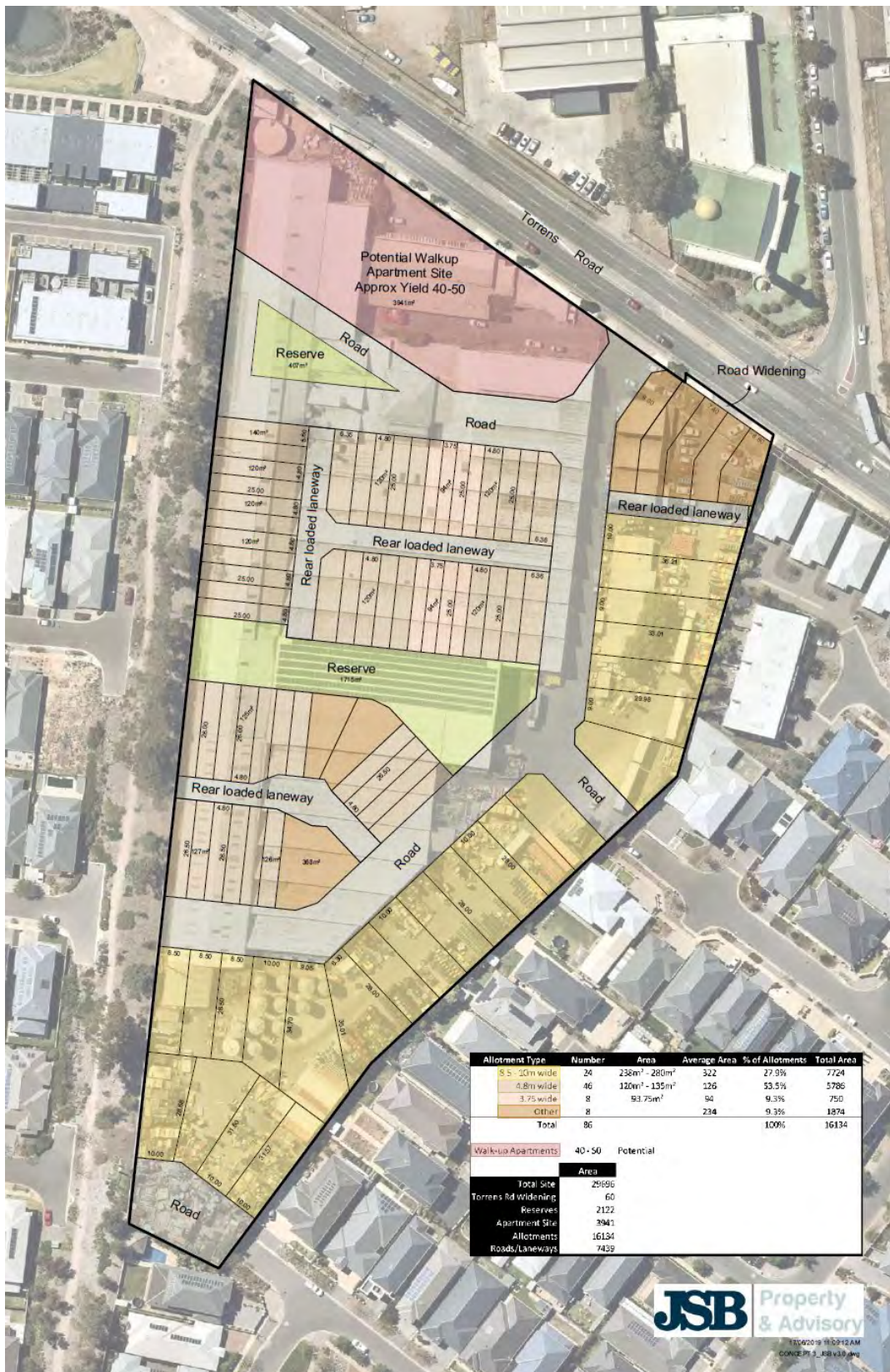


Figure 3 – High level concept layout for the development of the subject site

3.2 ROAD AUTHORITY CONSULTATION

Liaison has been undertaken with both DPTI and the City of Charles Sturt in relation to the proposed rezoning. DPTI representatives have advised that they are generally supportive of the rezoning. DPTI supports the consolidation of access provisions on Torrens Road. DPTI has identified a preference for road connections to/from the adjacent St Clair residential development (albeit this differs from the City of Charles Sturt's position which seeks to avoid vehicle connection across the adjacent reserve and shared path).

While DPTI's preference is for minimisation of access on Torrens Road, no objection has been noted to the potential for access to be accommodated via this road as indicated on the concept layout. DPTI has, however, noted that future access proposals would be subject to further assessment, design and associated review.

While Council has identified a preference for no direct access provision to/from the west, Council representatives have advised they are comfortable with the potential connections via Ashworth Avenue and Charles Mathews Circle (as well as Torrens Road).

4. ACCESS AND TRANSPORT INFRASTRUCTURE

Access provisions on Torrens Road for future development within the site should be consolidated where possible (i.e. direct property access to Torrens Road minimised where possible). Generally, it is considered that at least one primary intersection on Torrens Road should be provided to service the majority of the overall site. The primary intersection could be formed by the retention of the existing right turn lane into the subject site.

Based on the current concept plan, it is considered desirable to restrict right-out movements from the proposed intersection. While one of the Trident facility's access points currently permit right-out movements, the proximity of the intersection to opposite access points and the intersection of Audley Street with Torrens Road, right-out movements would present a conflict risk in this location. Consideration could, however, be given to an alternative primary access location closer to the western boundary of the site (where right turn movements could be more safely accommodated).

Given the site's frontage, additional access could potentially be provided to service the site (either by way of an additional minor road connection or direct access to the apartment site). If proposed, additional intersections/access points would need to ensure adequate separation from other intersections/access points. It is also likely that any secondary access (whether intersections or access points) would be restricted to left-in and/or left-out movements only. Nevertheless, this would be subject to further design input to confirm appropriate provisions and can be investigated further (including negotiation with DPTI and Council) as the future site layout and internal road network is planned in more detail.

Additionally, treatment of Torrens Road should also seek to improve pedestrian safety and connectivity across Torrens Road (i.e. pedestrian refuges could be provided).

In addition to the primary access point on Torrens Road, a connection to Ashworth Avenue has been proposed. This will provide a greater connection to the broader road network (primarily in the southern and western directions) and lessen the demand on the Torrens Road access point. Should the right-out movement onto Torrens Road not be provided, the Ashworth Avenue connection will provide connections to alternative roads where motorists can turn right-out onto Torrens Road.

An extension of Charles Mathews Circle has also been proposed. This is intended to provide access to allotments in the southern corner of the subject site. Design of such a connection should include consideration of 'turnaround facilities' and

refuse collection vehicle access requirements (particularly if provided as a 'dead-end' as illustrated on the concept plan).

Consideration has been given to the impact on the local roads adjacent the proposed connection, however, as noted above, the development of the former Sheridan site was designed (and assessed) with the potential residential rezoning of the Trident Plastics site in mind.

The potential for access to the existing road network to the west of the subject site was considered. However, due to the adjacent reserve and off-street path located along the western side of the subject site, Council's preference was that no vehicular connection be accommodated via the west (and such a position is considered appropriate). The assessment therefore assumes all access is via Torrens Road or the road network to the east of the site.

In order to service the future development of the subject site, an internal road network will also be required. The internal road network should provide connectivity between the primary intersections and the connection to Ashworth Avenue. Provision of rear access to allotments fronting Torrens Road would be desirable to minimise the requirement for direct access to Torrens Road.

The internal road network should be designed in accordance with the City of Charles Sturt's engineering guidelines. In particular, the design of the road network should include consideration of on-street parking provisions, pedestrian and cyclist connectivity, waste collection provisions and appropriate traffic management treatments at all new intersections. Permeability to the existing footpath and cycling networks is highly desirable (including connectivity to/from the path in the reserve located to the west of the site).

In respect to on-street parking, the Development Plan requires the provision of one on-street space per two allotments created. Such a requirement is considered to be reasonable albeit some additional off-street visitor parking may be required within the apartment site (depending on the ultimate yields and road network design).

5. TRAFFIC GENERATION AND DISTRIBUTION

In order to determine the impacts of the proposed rezoning on the adjacent road network, traffic volumes associated with the existing and potential future site (based upon the above yields) have been forecast.

Traffic volumes have generally been forecast using rates adopted from the NSW Roads and Maritime Services' *"Guide to Traffic Generating Developments"* (the RMS Guide) or other rates considered appropriate based on CIRQA's experience. The proportion of heavy vehicle movements assumed for each use has also been identified.

- **Low density residential**
 - 0.8 am and 0.8 pm peak hour trips per dwelling;
 - 2% of peak hour trips assumed to be commercial vehicles;
- **Medium density residential**
 - 0.65 am and pm peak hour trips per dwelling;
 - 2% of peak hour trips assumed to be commercial vehicles;
- **High density residential**
 - 0.53 am and pm peak hour trips per dwelling;
 - 2% of peak hour trips assumed to be commercial vehicles;
- **Industry (Factory)**
 - 1 am and 1 pm peak hour trip per 100 m² of gross floor area;
 - 5% of peak hour trips assumed to be commercial vehicles.

Traffic volumes have been distributed to various directions surrounding the subject site in order to determine the rezoning's potential impact. The proposed primary intersection on Torrens Road (Give Way intersection) has been considered in this assessment. For the assessment, it has been assumed that the right-out movement from the proposed Torrens Road intersection will be restricted. In addition, the impact on the nearby roads; Ashworth Avenue, Crompton Drive and Brocas Avenue has also been considered.

5.1 EXISTING TRAFFIC

The above industry (factory) rate is applicable to the subject site. Based on this rate, it is estimated that the existing site generates in the order of 168 trips during the am and pm peak hours. This includes 34 commercial vehicle trips during the am and pm peak hours.

In addition, it has been estimated that 60% of movements will be into the site and 40% out for the am peak period and vice versa for the pm peak. The distribution

of trips to/from the adjacent road network (via Torrens Road) is illustrated in Figure 4 below.



Figure 4 – Assumed distribution of current traffic from the subject site

On the basis of the above generation and distribution, Figure 5 illustrates the movements forecast for the Torrens Road access points (these have been consolidated in one location for clarity).

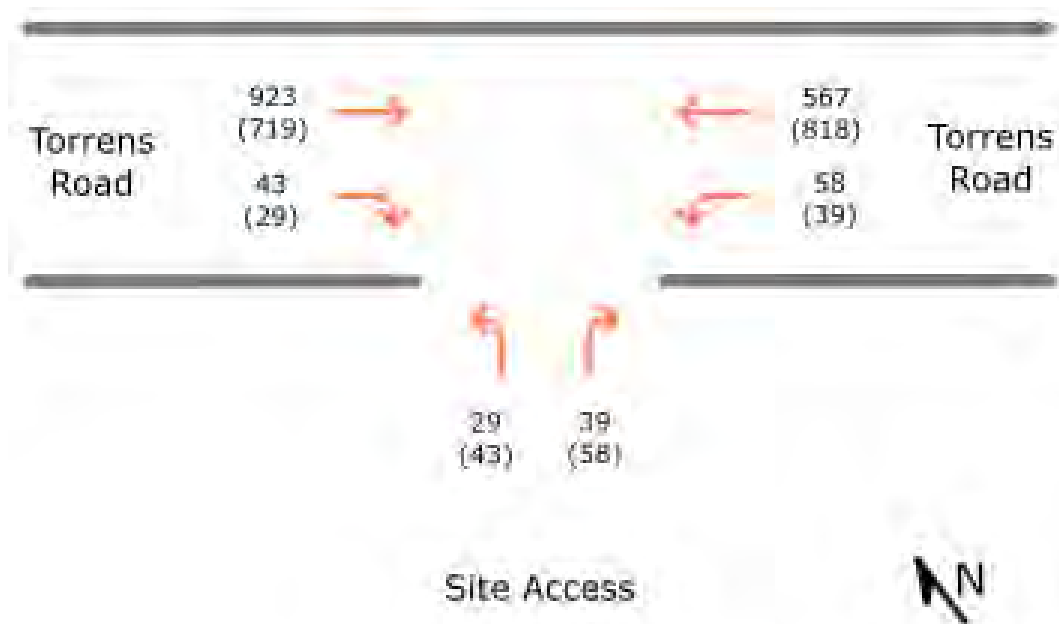


Figure 5 – Estimated existing movements from the access points (consolidated) to/from Torrens Road during the am (pm) peak hours

5.2 FUTURE TRAFFIC GENERATION

For the purposes of the following assessment, the maximum anticipated development yields have been adopted (86 low/medium density dwellings and 50 high density dwellings). This will provide a conservative assessment with regard to traffic impacts on the adjacent road network. In addition, all medium density development has been conservatively assessed using the low-density traffic generation rate.

Based upon the traffic generation rates identified above, it is forecast that the proposed rezoning site could generate up to 96 movements during the am and pm peak hours with 2% of peak hour movements assumed to be commercial vehicles.

The following in/out distributions have been adopted for the purposes of this assessment:

- **residential** – 30% in and 70% out during the am peak hour (vice versa during the pm peak hour).

The distribution of future trips associated with the site has been estimated using demographic data from the 2016 ABS Census. This included demographic data from the City of Charles Sturt in relation to the location of residents' places of work and residential origins of workers within the vicinity of the subject site. The following distribution has been assumed:

- north – 10%;
- north-west – 25%;
- south-east – 35%;
- south – 15%; and
- south-west – 15%.

In addition, it is anticipated that the proposed Ashworth Avenue connection and Torrens Road access point will result in a redistribution of traffic from the adjacent development (former Sheridan site). To assess the redistribution of traffic, the 146 dwellings accessed via Ashworth Avenue and Crompton Drive were redistributed using the above distribution assumed for the proposed development. It is noted that the redistribution has been undertaken in a conservative manner. All traffic that would currently turn left-out, left-in or right-in from Torrens Road has been assumed to occur at the proposed Torrens Road access point. In reality, a large portion of the movements would continue to their existing access routes (i.e. via Actil Avenue).

The resulting traffic distribution and vehicle movements at the primary access point on Torrens Road are illustrated in Figure 6. Movements at the proposed Ashworth Avenue connection are illustrated in Figure 7. It is noted that the distribution is based on a primary access point on Torrens Road (no right-out movements) and a connection to Ashworth Avenue. Through bound movements were taken from a recent DPTI turning movement survey (6 February 2020) at the nearby Torrens Road/Hill Smith Boulevard intersection.

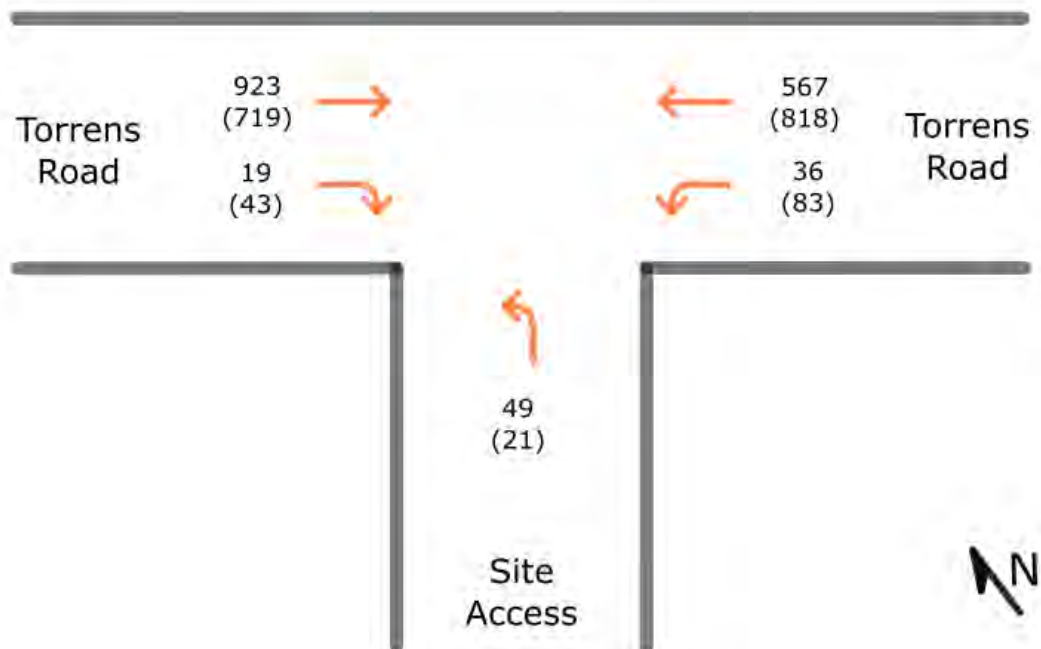


Figure 6 – Forecast traffic at the proposed Torrens Road access point by the proposed rezoning during the am (pm) peak hours

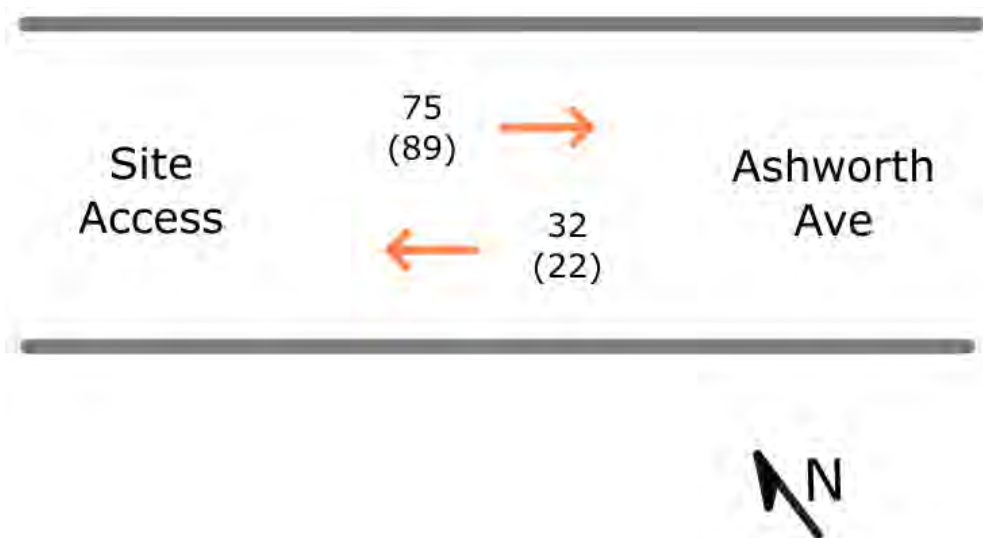


Figure 7 – Forecast movements at the Ashworth Avenue connection

Due to the assumption that right-out movements will not be permitted at the proposed Torrens Road access point, southbound and south-eastbound movements from the subject site are anticipated to exit via Leslie Street West and Actil Avenue. South-westbound movements are anticipated to exit the site via St Clair Avenue (Cheltenham Parade intersection).

6. TRAFFIC IMPACT

SIDRA Intersection modelling software (Version 7) has been used to assess the impacts of the proposed rezoning and anticipated development on the adjacent road network. The SIDRA output for the proposed Torrens Road access point are provided in Appendix A.

The SIDRA modelling has indicated that the proposed Torrens Road access point would operate well within its capacity. The intersection would operate with a Degree of Saturation (DoS) of less than 0.254 for all movements during the am and pm peak hours. All movements other than the right-in from Torrens Road (pm peak hour) would operate with a Level of Service (LOS) of A for the am and pm peak hours. The right-in movement from Torrens Road would operate with a LOS of B during the pm peak hour. In addition, the modelling indicated that the average delays would be less than 12.1 seconds and the 95th percentile queue distance would be less than 2.4 m for all movements during the am and pm peak hours.

It is forecast that proposed connection to Ashworth Avenue would result in the order of 50 am and 30 pm additional peak hour trips associated with the subject (Trident) site on Ashworth Avenue and Crompton Drive (combined). An additional 55 am and 80 pm trips are also conservatively forecast to redistribute for the existing adjacent (former Sheridan) site to Torrens Road via Ashworth Avenue (based on the same broad distribution assumptions applied to the subject site).

Assuming that the peak hour volumes equate to 10% of the daily traffic volumes (and averaging the am and pm peak hours), a maximum of 1,075 vehicles per day would be forecast on the connection between the subject and the adjacent site. A similar level of traffic would be accommodated on Ashworth Avenue between the site and Reid Street. Total future volumes to the south-east of Reid Street on Ashworth Avenue and Crompton Avenue would then be lower (i.e. less than 1,000 vpd) as movements would be distributed between Ashworth Avenue and Crompton Avenue. The above volumes will be well within the generally accepted local road traffic capacity of 2,000 vehicle per day (albeit it is noted that City of Charles Sturt typically adopts a lower limit of 1,500 vpd). In reality, the number of daily trips would likely be less as a conservative daily traffic generation rate (per dwelling) has been adopted for the assessment of both the subject site and the adjacent existing residential development. In addition, it has been assumed that all left-out, left-in and right-in movements to/from Torrens Road will occur at the proposed Torrens Road access point. In reality, a portion of the movements would continue as per their existing access route (i.e via Actil Ave). This would result in a reduced number of daily trips on the northern end of Ashworth Avenue (reducing the forecasted 1,075 daily trips at the proposed connection).

The additional trips associated with the subject site distributed to Ashworth Avenue and Crompton Drive would be undertaken via Brocas Avenue and the surrounding road network. However, this would be offset by the redistribution of existing movements from the adjacent residential development detailed above. Accordingly, there will be minimal change in traffic volumes on Brocas Avenue (and even a potential reduction in volumes due to the redistribution of existing movements).

Actil Avenue and Leslie Street West are anticipated to accommodate southbound and south-eastbound movements exiting the subject site. In the order of 41 am and 18 pm peak hour trips are anticipated to exit the subject site via these roads (approximately 200 vehicles per day). Such numbers of additional movements split between Actil Avenue and Leslie Street West, are anticipated to be readily accommodated at the intersections.

The proposed extension of Charles Mathews Circle to accommodate dwellings in the southern end of the subject site is anticipated to have a minimal impact on the overall performance of the road. Based upon the development concept design, the four allotments would generate in the order of four peak hour trips (in both the am and pm peak hours). This number of additional trips would have a negligible impact on the road and be readily accommodated.

In addition to the above, it is noted that the existing site is estimated to generate 168 movements during the am and pm peak hours. Of those movements, it is estimated that 20% are commercial vehicle movements. In comparison, it has been forecast that the rezoning of the subject site will generate in the order of 96 movements during the am and pm peak hours. The redevelopment of the site for residential use would therefore be likely to result in a notable reduction in the level of traffic generated by the site. In addition, the number of commercial vehicles accessing the subject site will be significantly reduced. The overall impact of the proposed rezoning and subject redevelopment will therefore be positive.

7. SUMMARY

The subject rezoning (DPA) within the Trident Plastics site will facilitate the future redevelopment of the study area for residential development. It is anticipated that in the order of 136 low, medium and high-density dwellings could ultimately be developed within the overall site.

The redevelopment of the site will present an opportunity to consolidate access provisions on Torrens Road and improve safety and efficiency of movements into and out of the site. Of particular note, the future redevelopment will be likely to reduce the number of heavy commercial vehicle movements associated with the site which will provide traffic capacity and safety benefits.

It is considered desirable that at least one connection be provided on Torrens Road to service the site (albeit additional intersections or access points could be accommodated subject to detailed design and assessment). Additional vehicular connectivity is also desirable via the existing road network to the east of the site (and such future connections were anticipated as part of the adjacent development).

The intersection on Torrens Road can be provided as a priority-controlled T-intersection. The existing separated right turn lane (into the subject site) could be utilised in the proposed intersection. However, in this location, it would be desirable to restrict right-out movements. Alternatively, consideration could be given to relocation of the primary access to be near the site's western boundary and there may be potential (subject to liaison with DPTI) to achieve all movements.

The primary intersections should connect to an internal road network designed and constructed in accordance with the City of Charles Sturt's requirements. The planning and design of the internal layout shall ensure adequate provisions for on-street parking, waste collection vehicle movements and appropriate traffic control treatments within the site.

An assessment has been undertaken of the traffic generation associated with the subject site. This includes a forecast of existing generation as well as that associated with the anticipated future yields. The forecasts identify that the ultimate redevelopment of the site will result in the reduction of the overall movements generated by the subject site.

SIDRA intersection modelling software has been used to compare the impacts of existing site volumes against the future forecasts. The SIDRA analyses indicate that the impacts of the proposal on the adjacent road network will be negligible. Movements will be readily accommodated at the proposed access point on Torrens Road with minimal impact on the existing movements on Torrens Road.

Should additional access points be proposed, the performance of the proposed access points is likely to improve. It is anticipated that the Ashworth Avenue connection will increase local traffic on the northern end of Ashworth Avenue and decrease local traffic on the southern end of Ashworth Avenue and Crompton Drive. However, the additional traffic volumes will be within the capacity of a typical local road. The forecast additional traffic on Brocas Avenue will be offset by the redistribution of movements (from the existing development) to the Torrens Road access point. It is noted that a number of conservative assumptions have been made throughout the assessment. In reality, the impact of the rezoning is anticipated to be less than stated in the assessment.

APPENDIX A

TORRENS ROAD ACCESS POINT MODELLING RESULTS

INPUT VOLUMES

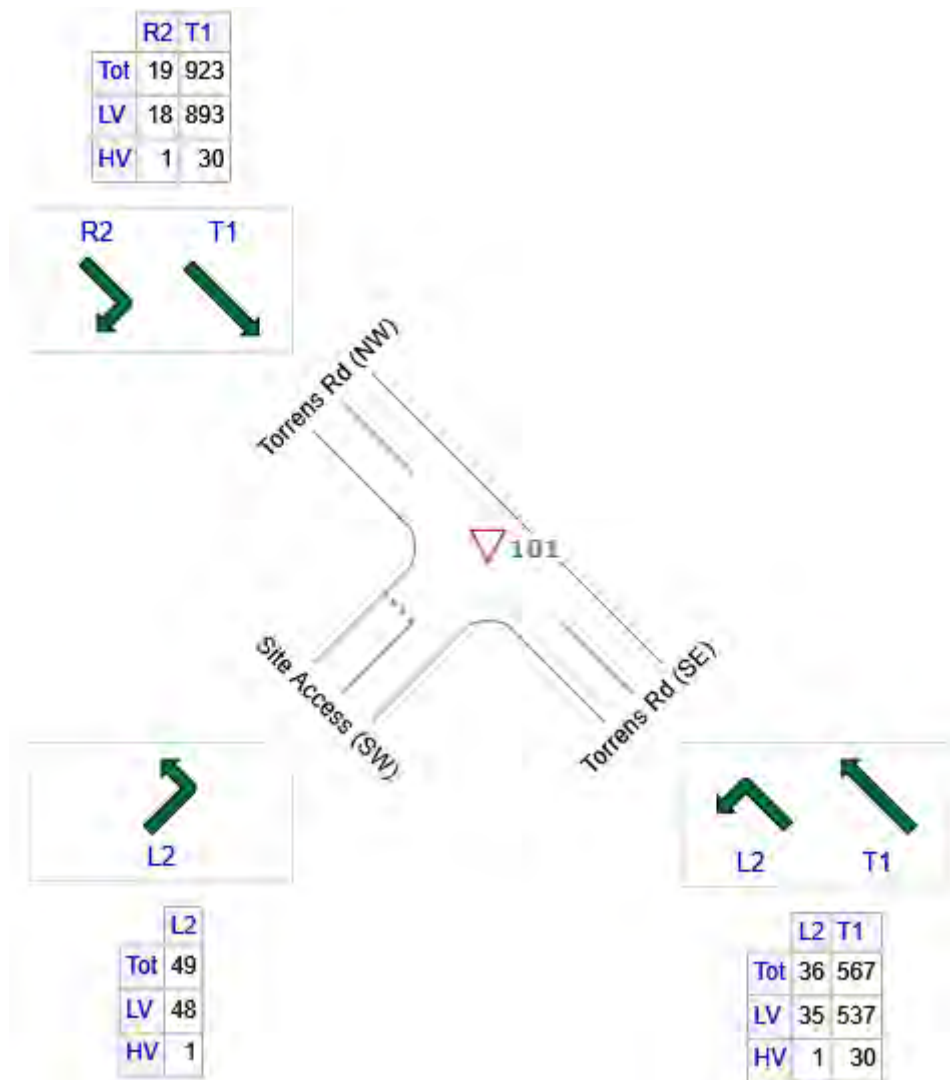
Vehicles and pedestrians per 60 minutes

▽ Site: 101 [Torrens Rd/Site Access (No right out) - AM Future]

New Site

Giveway / Yield (Two-Way)

Volume Display Method: Total and Veh



	All MCs	Light Vehicles (LV)	Heavy Vehicles (HV)
SE: Torrens Rd (SE)	603	572	31
NW: Torrens Rd (NW)	942	911	31
SW: Site Access (SW)	49	48	1
Total	1594	1531	63

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Organisation: CIRQA PTY LTD | Created: Thursday, 26 March 2020 12:08:11 PM

Project: C:\Users\JeremyBayly\Cirqa Pty Ltd\Cirqa Pty Ltd Team Site - Public\2019\19393 Trident Plastics 589-599 Torrens Road St Clair DPA
 \SIDRA\19393 Site Access Torrens Rd with redist Sheridan Dev 26MAR20.sip7

INPUT VOLUMES

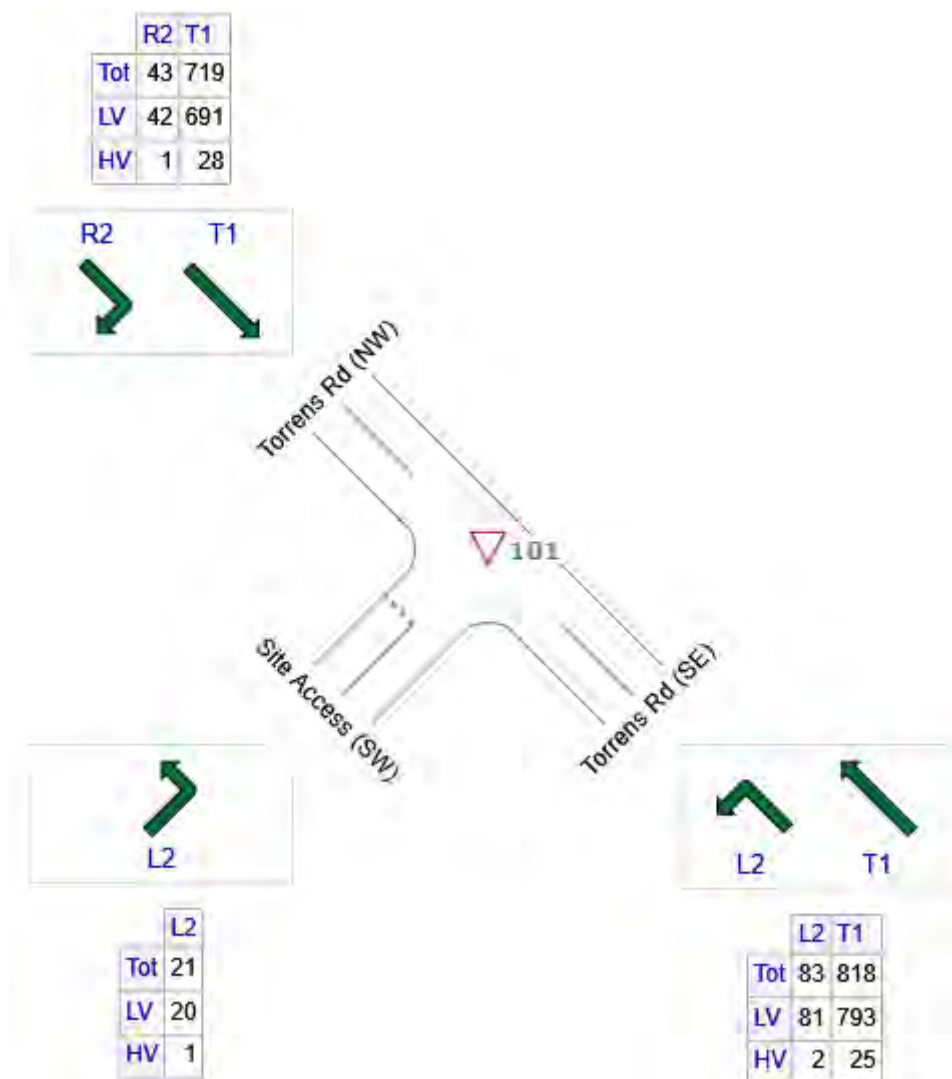
Vehicles and pedestrians per 60 minutes

▽ Site: 101 [Torrens Rd/Site Access (No right out) - PM Future]

New Site

Giveway / Yield (Two-Way)

Volume Display Method: Total and Veh



	All MCs	Light Vehicles (LV)	Heavy Vehicles (HV)
SE: Torrens Rd (SE)	901	874	27
NW: Torrens Rd (NW)	762	733	29
SW: Site Access (SW)	21	20	1
Total	1684	1627	57

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Project: C:\Users\JeremyBayly\Cirqa Pty Ltd\Cirqa Pty Ltd Team Site - Public\2019\19393 Trident Plastics 589-599 Torrens Road St Clair DPA
 \SIDRA\19393 Site Access Torrens Rd with redist Sheridan Dev 26MAR20.sip7

INTERSECTION SUMMARY

▽ Site: 101 [Torrens Rd/Site Access (No right out) - AM Future]

New Site

Giveway / Yield (Two-Way)

Intersection Performance - Hourly Values		
Performance Measure	Vehicles	Persons
Travel Speed (Average)	59.4 km/h	59.4 km/h
Travel Distance (Total)	1695.3 veh-km/h	2034.3 pers-km/h
Travel Time (Total)	28.5 veh-h/h	34.3 pers-h/h
Demand Flows (Total)	1678 veh/h	2013 pers/h
Percent Heavy Vehicles (Demand)	4.0 %	
Degree of Saturation	0.254	
Practical Spare Capacity	286.2 %	
Effective Intersection Capacity	6613 veh/h	
Control Delay (Total)	0.22 veh-h/h	0.26 pers-h/h
Control Delay (Average)	0.5 sec	0.5 sec
Control Delay (Worst Lane)	8.9 sec	
Control Delay (Worst Movement)	8.9 sec	8.9 sec
Geometric Delay (Average)	0.4 sec	
Stop-Line Delay (Average)	0.1 sec	
Idling Time (Average)	0.0 sec	
Intersection Level of Service (LOS)	NA	
95% Back of Queue - Vehicles (Worst Lane)	0.2 veh	
95% Back of Queue - Distance (Worst Lane)	1.3 m	
Queue Storage Ratio (Worst Lane)	0.00	
Total Effective Stops	68 veh/h	81 pers/h
Effective Stop Rate	0.04 per veh	0.04 per pers
Proportion Queued	0.02	0.02
Performance Index	29.1	29.1
Cost (Total)	615.47 \$/h	615.47 \$/h
Fuel Consumption (Total)	114.6 L/h	
Carbon Dioxide (Total)	272.8 kg/h	
Hydrocarbons (Total)	0.020 kg/h	
Carbon Monoxide (Total)	0.326 kg/h	
NOx (Total)	0.379 kg/h	

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

NA: Intersection LOS for Vehicles is Not Applicable for two-way sign control since the average intersection delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Intersection Performance - Annual Values		
Performance Measure	Vehicles	Persons
Demand Flows (Total)	805,390 veh/y	966,467 pers/y
Delay	104 veh-h/y	125 pers-h/y
Effective Stops	32,523 veh/y	39,027 pers/y
Travel Distance	813,725 veh-km/y	976,469 pers-km/y
Travel Time	13,700 veh-h/y	16,441 pers-h/y
Cost	295,425 \$/y	295,425 \$/y
Fuel Consumption	55,030 L/y	
Carbon Dioxide	130,940 kg/y	
Hydrocarbons	9 kg/y	
Carbon Monoxide	156 kg/y	
NOx	182 kg/y	

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MOVEMENT SUMMARY

▽ Site: 101 [Torrens Rd/Site Access (No right out) - AM Future]

New Site

Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back Vehicles veh	of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
SouthEast: Torrens Rd (SE)											
4	L2	38	2.8	0.168	5.6	LOS A	0.0	0.0	0.00	0.07	57.6
5	T1	597	5.3	0.168	0.0	LOS A	0.0	0.0	0.00	0.03	59.7
Approach		635	5.1	0.168	0.3	NA	0.0	0.0	0.00	0.04	59.5
NorthWest: Torrens Rd (NW)											
11	T1	972	3.3	0.254	0.0	LOS A	0.0	0.0	0.00	0.00	59.9
12	R2	20	5.3	0.028	8.9	LOS A	0.1	0.8	0.54	0.70	50.7
Approach		992	3.3	0.254	0.2	NA	0.1	0.8	0.01	0.01	59.7
SouthWest: Site Access (SW)											
1	L2	52	2.0	0.052	6.8	LOS A	0.2	1.3	0.36	0.60	52.4
Approach		52	2.0	0.052	6.8	LOS A	0.2	1.3	0.36	0.60	52.4
All Vehicles		1678	4.0	0.254	0.5	NA	0.2	1.3	0.02	0.04	59.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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INTERSECTION SUMMARY

▽ Site: 101 [Torrens Rd/Site Access (No right out) - PM Future]

New Site

Giveway / Yield (Two-Way)

Intersection Performance - Hourly Values		
Performance Measure	Vehicles	Persons
Travel Speed (Average)	59.1 km/h	59.1 km/h
Travel Distance (Total)	1791.1 veh-km/h	2149.4 pers-km/h
Travel Time (Total)	30.3 veh-h/h	36.3 pers-h/h
Demand Flows (Total)	1773 veh/h	2127 pers/h
Percent Heavy Vehicles (Demand)	3.4 %	
Degree of Saturation	0.248	
Practical Spare Capacity	294.4 %	
Effective Intersection Capacity	7135 veh/h	
Control Delay (Total)	0.34 veh-h/h	0.41 pers-h/h
Control Delay (Average)	0.7 sec	0.7 sec
Control Delay (Worst Lane)	12.1 sec	
Control Delay (Worst Movement)	12.1 sec	12.1 sec
Geometric Delay (Average)	0.5 sec	
Stop-Line Delay (Average)	0.2 sec	
Idling Time (Average)	0.1 sec	
Intersection Level of Service (LOS)	NA	
95% Back of Queue - Vehicles (Worst Lane)	0.3 veh	
95% Back of Queue - Distance (Worst Lane)	2.4 m	
Queue Storage Ratio (Worst Lane)	0.00	
Total Effective Stops	105 veh/h	126 pers/h
Effective Stop Rate	0.06 per veh	0.06 per pers
Proportion Queued	0.02	0.02
Performance Index	31.1	31.1
Cost (Total)	656.27 \$/h	656.27 \$/h
Fuel Consumption (Total)	119.9 L/h	
Carbon Dioxide (Total)	284.9 kg/h	
Hydrocarbons (Total)	0.021 kg/h	
Carbon Monoxide (Total)	0.343 kg/h	
NOx (Total)	0.357 kg/h	

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

NA: Intersection LOS for Vehicles is Not Applicable for two-way sign control since the average intersection delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Intersection Performance - Annual Values		
Performance Measure	Vehicles	Persons
Demand Flows (Total)	850,863 veh/y	1,021,036 pers/y
Delay	165 veh-h/y	198 pers-h/y
Effective Stops	50,462 veh/y	60,554 pers/y
Travel Distance	859,749 veh-km/y	1,031,699 pers-km/y
Travel Time	14,539 veh-h/y	17,447 pers-h/y
Cost	315,007 \$/y	315,007 \$/y
Fuel Consumption	57,568 L/y	
Carbon Dioxide	136,749 kg/y	
Hydrocarbons	10 kg/y	
Carbon Monoxide	165 kg/y	
NOx	171 kg/y	

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MOVEMENT SUMMARY

▽ Site: 101 [Torrens Rd/Site Access (No right out) - PM Future]

New Site
Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back Vehicles veh	of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
SouthEast: Torrens Rd (SE)											
4	L2	87	2.4	0.248	5.6	LOS A	0.0	0.0	0.00	0.11	57.3
5	T1	861	3.1	0.248	0.0	LOS A	0.0	0.0	0.00	0.05	59.5
Approach		948	3.0	0.248	0.5	NA	0.0	0.0	0.00	0.05	59.3
NorthWest: Torrens Rd (NW)											
11	T1	757	3.9	0.198	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
12	R2	45	2.3	0.094	12.1	LOS B	0.3	2.4	0.68	0.87	48.7
Approach		802	3.8	0.198	0.7	NA	0.3	2.4	0.04	0.05	59.2
SouthWest: Site Access (SW)											
1	L2	22	4.8	0.025	7.4	LOS A	0.1	0.7	0.42	0.62	52.0
Approach		22	4.8	0.025	7.4	LOS A	0.1	0.7	0.42	0.62	52.0
All Vehicles		1773	3.4	0.248	0.7	NA	0.3	2.4	0.02	0.06	59.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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APPENDIX B

Preliminary Comments - DPTI

From: Psyridis, Jim (DPTI) <Jim.Psyridis@sa.gov.au>

Sent: Monday, 20 April 2020 5:37 PM

To: Ben Wilson (CIRQA) <ben@cirqa.com.au>

Cc: Henderson, Matthew (DPTI) <Matthew.Henderson2@sa.gov.au>; Xavier, Teresa (DPTI) <Teresa.Xavier@sa.gov.au>; Lucas, Chelsea (DPTI) <Chelsea.Lucas@sa.gov.au>; Svetec, Reece (DPTI) <Reece.Svetec@sa.gov.au>

Subject: preliminary comments: Trident Plastics Development Plan Amendment

Hi Ben

Please find preliminary comments on the Trident Plastics DPA (thx Matt, Teresa)

In summary: DPTI is broadly supportive of the proposed residential rezoning and can consider a junction of Torrens Road subject to further analysis and appropriate location and per comments below.

- DPTI is broadly supportive of the intent to rationalise the number of connections to Torrens Road .
 - The existing vehicle access arrangements serving the site are undesirable in terms of the number of access points and the location of those accesses in close proximity to other conflict points.
- The road layout for the proposed residential development should maximise connectivity to the existing St Clair road network in preference to creating an additional junction on Torrens Road.
 - Potential for a number of internal connections to the St Clair road network to be facilitated in the design of future residential development on this site. (A desirable outcome from the SOI)
- The available routes to/from Torrens Road and Woodville Road are not considered to be unduly circuitous.
- Any assessment of the proposed right-in, left-in, left-out arrangements illustrated in the attached concept plan will need to consider:
 - Safety implications and treatments of a new junction located in close proximity to the Torrens Road/Audley Street junction given Audley Street is a connector road
 - Ensure sufficient right turn capacity will exist within the existing storage lane on Torrens Road (assessment for both AM and PM peaks, SIDRA model & Austroads Guide references required)

Alternative locations should also be canvassed as part of any assessment.

- The road layout of residential development of this site should maximise the opportunity for pedestrian and cycle connectivity with the broader St Clair residential development.
- Final advice at formal assessment may be subject to change

Thanks

Jim Psyridis

A/Manager, Transport Assessment

0401997363

Appendix C – Infrastructure and Services Assessment



Preliminary Infrastructure and Servicing Report

Tridents Plastics Re Zoning

Prepared for:

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19.2295

Revision C

25 May 2020

Preliminary Infrastructure and Servicing Report

Reference No.: 19672

Prepared by: Bradley Seidel

Reviewed by: Cindy Oliver

Revision History

Revision:	Date:	Details:	Approved by:	Signed:
A	19 March 2020	Issued for Information	Cindy Oliver Principal Engineer	
B	26 March 2020	Issued for Information	Cindy Oliver Principal Engineer	
C	25 May 2020	Issued for Information	Cindy Oliver Principal Engineer	

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1 Introduction

GREENHILL has been engaged by Prosperity Assets Pty Ltd to undertake a preliminary engineering assessment of the existing infrastructure at the Trident Plastics Factory at 589 – 599 Torrens Road, St Clair and assess if the existing infrastructure is adequate for the sites re-zoning from urban employment to residential.

This investigation includes the following:

- Identification of the existing services surrounding the site including;
 - A Dial Before You Dig (DBYD) investigation;
 - Review of existing services and easements within and adjacent the proposed subdivision including: electrical, telecommunications, potable water, sewer, gas and stormwater requirements; and
 - Liaison with service authorities (SA Water, SAPN, APA Group, NBN Co and The City of Charles Sturt (CCS)).

This report outlines:

- The nature and approximate location of the existing service infrastructure; informed by a DBYD enquiry and from liaison with the relevant authorities;
- Preliminary stormwater drainage modelling and stormwater quality modelling for the proposed development site
- The servicing requirements of the proposed development; and
- Any substantial constraints that the existing infrastructure may have upon the proposed development.

In reading this report please note:

- The information presented is conceptual only and shall not be used for the purpose of construction or detailed design;
- The information provided relies upon advice provided by the relevant authorities, or assumptions based upon current practice of authorities;

This report does not include an assessment of the proposed road infrastructure requirements from the CCS or the Department of Planning Transport and Infrastructure (DPTI). Refer to assessment and reports by CIRQA for Road Infrastructure requirements.

2 Background

The site is approximately three hectares in area and located 8 km north west of the Adelaide CBD. The site is currently utilised by the Trident Plastics Factory and zoned as urban employment. The site is bordered by Torrens Road to the North, the St Clair development to the east, south and west. There are multiple cul-de-sac heads terminating at the boundary of the site and a reserve located along the western boundary.

The site is proposed to be re zoned to residential to be consistent with the land east, south and west of the site. North of the site the area is currently zoned as urban employment.

An aerial image of the site is shown below.



Figure 1: Proposed Development Site Location

3 Infrastructure Review and Assessment

The following provides a summary of the existing infrastructure and advice in relation to likely new infrastructure required for the purpose of servicing the proposed development. The assessment has been based on the proposed layout received 23 January 2020 included in Appendix A.

3.1 Service Assessment

The infrastructure located on, or adjacent to the site, as identified by a DBYD enquiry and the associated service authorities, is as follows:

- Sewer (SA Water);
- Potable water (SA Water);
- Recycled Water (SA Water and CCS);
- Road & stormwater (CCS);
- Gas (APA Group);
- Telecommunications (NBN Co, Nextgen, Optus, TPG and Telstra); and
- Electrical (SAPN).
- Refer to Appendix D for the DBYD information of the above services and written CCS comments.

Information has been sought from the above service authorities pertaining to the existing infrastructure and their requirements for new infrastructure to service the proposed development. The responses and our relevant assumptions for the infrastructure requirements are presented in this report.

The site is located within the St Clair development. The St Clair residential development has a master plan which includes consideration to the Tridents Plastics Site and how it is incorporated into the St Clair development.

3.2 Demolition and Earthworks

The site currently is utilised as the Trident Plastics Factory which will have to be demolished before the construction of a residential subdivision. GREENHILL do not have the expertise to discuss the processes involved with the demolition of the existing infrastructure within the site however, we note that some of the following issues may arise after demolition has occurred.

- The requirement for environmental testing and audits;
- Soil remediation;
- Hazardous material disposal or capping; and
- Site filling
- Removal of underground services.

Bulk earthworks of the site would likely be required to form final road and allotment levels. We cannot confirm if there is sufficient existing material on the site to form final levels or if there will be an excess or shortfall of suitable material.

We have not assessed environmental or geotechnical issues. It is recommended that geotechnical investigations be undertaken to determine the soil profile of the site.

3.3 Stormwater Drainage

Existing Infrastructure

The majority of the existing site is impervious, covered by buildings, concrete and asphaltic concrete sealed pavements with only a small impervious area. The existing site falls to Torrens Road and to the existing road drainage system.

There is a large underground stormwater drain (a 2.1 m by 0.9 m rectangular conduit), located on the northern side of Torrens Road. Existing stormwater pits at the site connect to the existing large drain via an underground pipe system (there are two 600 mm diameter reinforced concrete pipe connections). One crossing appears to drain the roof area of the former factory building, while the other drains the carparking space and yard.

There is a 375 mm pipe at the end of Ashworth Court that extends into the site.

All local roads surrounding the site contain a typical underground pit and pipe drainage system.

The CCS flood mapping for the 1 in 100 year rainfall event shows stormwater flows in Torrens Road adjacent to the site but there is no inundation of the site. Flood mapping is available from <https://intramaps.charlessturt.sa.gov.au/IntraMaps90/> and shown in the figure below.

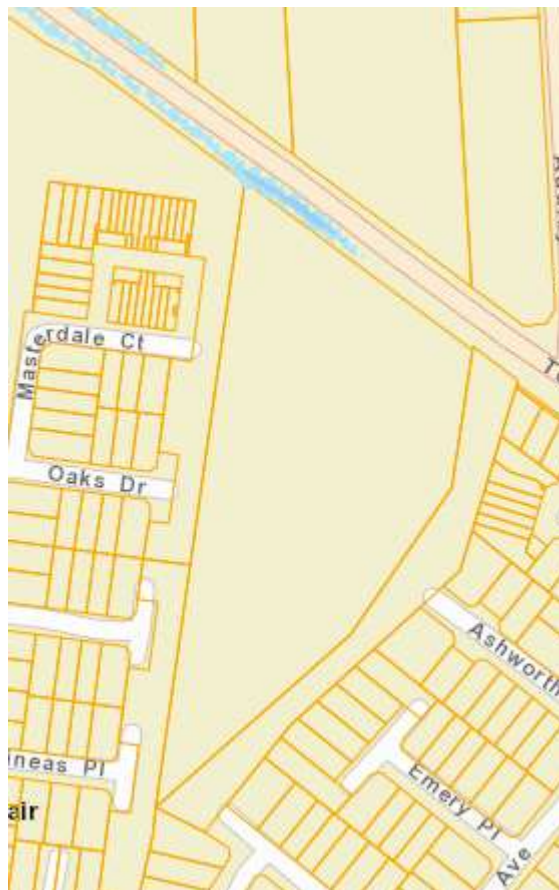


Figure 2: CCS 1 in 100 Year Event Flood Mapping

Proposed Infrastructure:

The CCS have advised the following requirements for the management of stormwater for the development:

- Preference would be to utilise the existing 600mm connection into the Torrens Road drain
- Post development 1:100 to be restricted to pre-development 1:5
- Incorporation of WSUD strongly encouraged
- Small section of ponding on Torrens Road in 1:100 event in NE corner of site, finished levels will need to meet conditions in Development Guide 33.

The CCS strongly recommend reviewing the infrastructure guidelines, found on their website

<https://www.charlessturt.sa.gov.au/development-and-infrastructure/infrastructure/infrastructure-guidelines>

The proposed rezoning of the site will change the catchment characteristics with a likely reduction in the impervious area and increase in pervious area for the proposed redevelopment.

There will be increased pervious areas due to the additional reserve areas, pervious allotment areas and road verges. It is assumed that the site will be graded as towards Torrens Road and utilise the existing 600 mm diameter pipes draining into the large box culvert however, there is the option to connect into the surrounding developments pit and pipe systems which drain to the adjacent wetland. The wetland to the west is assumed to have sufficient capacity to treat any flows produced from the site.

Preliminary DRAINS Model:

For the preliminary DRAINS modelling the catchment parameters adopted are based on the existing and assumed future catchment characteristics with appropriate estimated impervious areas and time of entry to the drainage system.

An ILSAX type hydrology model suitable for residential developments has been used with an initial loss of 45 mm and 3 mm continuing loss. A paved area depression storage loss of 1 mm, was adopted.

At the outlet to the box culvert in Torrens Road the hydraulic grade line has been set so that the downstream pipe is flowing full during the minor storm and at the surface level during a 100 Year event.

This preliminary model focused on the potential future requirements for the stormwater system on site. Council require that the 1 in 100 (1% Annual Exceedance Probability AEP) post development Annual Recurrence Interval (ARI) be restricted to the pre development 1 in 5 ARI (0.2 Exceedances per Year (EY)).

The estimated pre development stormwater flows are summarised below. Results in Appendix B.

Pre Development 5 Year AEP	Pre Development 100 Year AEP
0.410 m ³ /s	0.935 m ³ /s

A typical underground pit and pipe minor stormwater system is proposed for the development with connection into the existing 600 mm pipes on Torrens Road. The development will result in a decrease in the amount of runoff produced from the site. We have assumed that the apartment site will drain via one of the 600 mm road crossings fronting the site and the remainder of the site will utilise the other. The peak flows from the developed site are shown below with results in Appendix B.

Post Development 5 Year AEP	Post Development 100 Year AEP
0.202 m ³ /s	0.366 m ³ /s

Council require that the post development 100-year AEP be restricted to the pre development 5-year AEP. Assuming the above conditions must be met a detention basin of approximately 1000 m² in area and detention capacity of approximately 1200 m³ will be required onsite. The discharge from the basin is controlled with 525 mm diameter pipe. We have assumed that the water level at the outlet is at road surface level in the major storm event.

For the preliminary modelling we have assumed all runoff from residential allotments, roads and reserves is captured by the detention basin. Ideally this basin is located downstream, close to the 600 mm diameter outlet pipe near Torrens Road. The sketch located in Appendix E shows the required basin size but located in the central reserve area assuming the site can be graded towards the central reserve and that the outlet pipe can grade to the 600 mm road crossing at Torrens Road.

Further discussions with CCS should be undertaken in regard for the need of onsite detention for the development, given that developing the site will reduce the quantity of stormwater runoff. There may be the option to connect the future system into the local roads drainage network which will direct runoff to the St Clair wetlands. There may also be the option to drain the site via a new pipe system connected directly to the wetlands. The wetlands are assumed to have sufficient storage capacity and therefore onsite detention may be reduced or not required however; stormwater modelling of the surrounding drainage network would likely be requested by CCS to confirm the surround pipe system has adequate capacity to cater for this development.

Runoff Quality Management:

A preliminary MUSIC model was prepared to assess what treatment options are required to meet the development approval requirements for the quality targets indicated below. Council endorse the pollution reduction targets as set out in the South Australian Water Urban Sensitive Urban Design Policy.

- Total Suspended Solids (TSS): 80% reduction target;
- Total Phosphorus (TP): 60% reduction target;
- Total Nitrogen (TN): 45% reduction target and
- Gross Pollutants: 90% reduction target.

In modelling the quality of stormwater runoff, appropriate default parameters for the MUSIC hydrology model and stormwater treatment measures have been adopted, suitable for South Australia.

The proposed stormwater treatment train includes bio retention systems, residential rainwater tanks for capture and reuse and GPT's.

The bio retention system is designed to be lined and vegetated with a subsurface drain.

Allotments are assumed to have a minimum 1000 L rainwater tank that captures runoff from the roof areas. The rainwater tanks are modelled on the assumption that the runoff from the roof area is to be harvested and reused for toilet flushing only.

The apartment is assumed to connect directly to the existing drainage system in Torrens Road and is not included in the sources to be treated.

The results of the MUSIC model indicate that the EPA water quality targets are achieved as summarised below. The MUSIC model input and results are attached in Appendix B.

Pollutant	EPA Quality Targets (%)	Target Achieved (%)
Suspended Solids	80	92.7
Total Phosphorus	60	59.9
Total Nitrogen	45	73.3
Gross Pollutants	90	98.1

The above preliminary modelling is based on the requirement for a detention basin in the reserve area and the opportunity for bio retention. Further discussion during detailed design with CCS should be undertaken to discuss the required pollution reduction targets for the site. If the opportunity arises to discharge directly into the wetlands adjacent the site, a reduced amount of water quality measures may be allowed for the site.

3.4 Sewer

Existing Infrastructure

There is a 300 mm diameter sewer main (Vitrified Clay (VC)) located in Torrens Road and a maintenance hole available for connection adjoining the site. There are two existing 100 mm connections that currently serve the site.

The local roads surrounding the site contain a network of 150 mm diameter sewer mains (PVCU and PVC).

Proposed Infrastructure

SA Water have provided preliminary advice for the site and confirmed that there is currently sufficient capacity in the existing sewer network to cater for the development. A standard SA Water sewer system will be sufficient to service the future site, with 150 mm and 225 mm diameter mains proposed to gravitate to an existing sewer system in adjacent roads. For all Torrens Titled residential allotments 100 mm connections are assumed. New mains can either connect to Torrens Road or the sewer in Ashworth Court and Charles Mathews Circuit.

Since the number of fixture units for the apartment building has not been provided the size of the connection for the apartment building will be determined by the number of fixture units within the property in accordance with SA Water's wastewater connection fact sheet. The AS3500.2 AS/NZS Plumbing and Drainage Part 2: Sanitary plumbing and drainage Table 3.3.1 "Maximum Fixture Unit Loading for Vented Drains" should be applied as follows:

- 1 x DN100 connection laid at SA Water's standard minimum grade of 2% can service up to 205 Fixture Units (FU).
- 1 x DN150 connection laid at SA Water's standard minimum grade of 1% can service up to 855 Fixture Units (FU).

It has been assumed the final surface levels of the site can be made to allow the sewer to grade towards the connection points proposed by SA Water.

SA Water have listed no requirements for sewer infrastructure headworks.

At the date of issue of this report, SA Water sewer augmentation charges do not apply.

3.5 Potable Water Supply

Existing Infrastructure

There is an existing 150 mm diameter water main (Cast Iron Concrete Lined (CICL)) and a 600 mm diameter water main (Mild Steel Concrete Lined (MSCS)) located in Torrens Road. A search of the SA Water asset information (via Aqua Maps) indicates a 200 mm water (Ductile Iron Concrete Lined (DICL)) main, connecting from the existing 600 mm water main, connecting directly into the site. There is an existing water meter on site.

There are 100 mm water mains (PVCO) surrounding the site within the existing St Clair local road network that serve the adjacent residential area.

Proposed Infrastructure

SA Water have advised to construct a 150 mm internal ring main that links Torrens Road with Ashworth Court. These works require the upgrade of approximately 65 m of existing 100 mm diameter mains in Ashworth Court. 100 mm diameter mains will be sufficient to service other allotments in the development.

Residential lots can be serviced by 20 mm connections. The apartment site will require a minimum 150 mm main and 40 mm connection to service the site.

We have assumed there is sufficient capacity in the existing potable water network to cater for the development. No allowance has been made for any associated upgrade of existing potable water infrastructure or headworks.

At the date of issue of this report, SA Water potable water augmentation charges do not apply.

3.6 Recycled Water

Existing Infrastructure

Data from the CCS indicates a 560 mm and 280 mm diameter recycled water main located in Torrens Road fronting the site. It also indicates a 100 mm diameter Council operated recycled water system through the St Clair development that surrounds the site.

Proposed Infrastructure

The CCS have advised that they would be unlikely to require domestic dwellings to connect to the existing recycled water network however, CCS would seek to connect reserves areas to irrigate open spaces using recycled water. We have allowed for the development to connect to the existing network from the existing 280 mm diameter main on the south side of Torrens Road to irrigate reserves only. The CCS are currently undertaking a review of their recycled water network capacity and could not confirm there is sufficient capacity in the existing recycled water network or if headworks or augmentation will be required. A proposed recycled water layout for the development is included in Appendix E.

3.7 Electrical Supply

Existing Infrastructure

There are existing 66kV high voltage overhead power lines along Torrens Road. There are existing 33kV high voltage overhead power lines in the reserve along the western boundary of the site.

There are two, 33kV high voltage power connections to the site that are taken underground to two of the three existing transformers on site. The third transformer takes power from 11kV overhead power lines from Torrens Road.

The existing infrastructure has been provided by SAPN. Refer to Appendix C for a schematic plan.

Proposed Infrastructure

SAPN have provided preliminary advice regarding the proposed site re-zoning. They have advised that there aren't any capacity issues for the site given the Cheltenham Substation is located nearby and the proposed redevelopment is similar in nature to adjacent developments. The connection points for the development will need to be confirmed with SAPN when an electrical design is provided for approval as multiple connection points are available from Torrens Road and the surrounding development. The two 33kV transformers on-site would be able to power the developed site, but may need to be relocated.

The standard augmentation charges at the time of application will apply with no foreseeable headworks required. The development is expected to generate less than 1,000 kVA based on the layout provided.

An underground electrical reticulation and street lighting scheme will be required for redevelopment of the site, similar to that of adjacent developments. A preliminary common services layout is included in Appendix E.

Future discussions with SAPN will be held during detailed design regarding the high voltage power lines internal to and surrounding the site.

3.8 Telecommunication Supply

Existing Infrastructure

NBN have existing infrastructure in Torrens Road adjoining the site, as well as cables internal to the site. The residential developments surrounding the site are serviced by the NBN network.

Telstra infrastructure is located in Torrens Road and also internal to the existing site.

There is Optus infrastructure located in Torrens Road, on the northern side of the road.

Proposed Infrastructure

It is assumed that during the demolition of the existing site that the internal telecommunications will be removed or abandoned. Liaison with Telstra and NBN will be required to disconnect the site at Torrens Road during demolition and there will be costs associated with the removal of the infrastructure.

For a new residential development at this location NBN have advised that no backhaul charges will apply to this area. The standard NBN Co. deployment contribution charges will apply.

It is assumed that underground telecommunications infrastructure will be provided to the development similar to that of adjacent developments as per the preliminary common services layout included in Appendix E.

3.9 Gas Supply

Existing Infrastructure

There is an active 150 mm standard pressure main and an abandoned gas main located in the Torrens road verge fronting the site. In the residential developments surrounding the site there is 63 mm mains located in the verge.

The existing site has a connection to the active gas main in Torrens Road.

Proposed Infrastructure

We have assumed no headworks will be required as existing gas infrastructure is fronting the development.

APA Group do not typically charge for the provision of gas reticulation services in locations such as this where there is an existing gas supply network. This will need to be confirmed with the APA Group. It is assumed the APA Group will install their gas reticulation infrastructure within the common service trench at their cost. It is assumed that underground gas infrastructure will be provided to the development similar to that of adjacent developments as per the preliminary common services layout included in Appendix E.

4 Conclusion

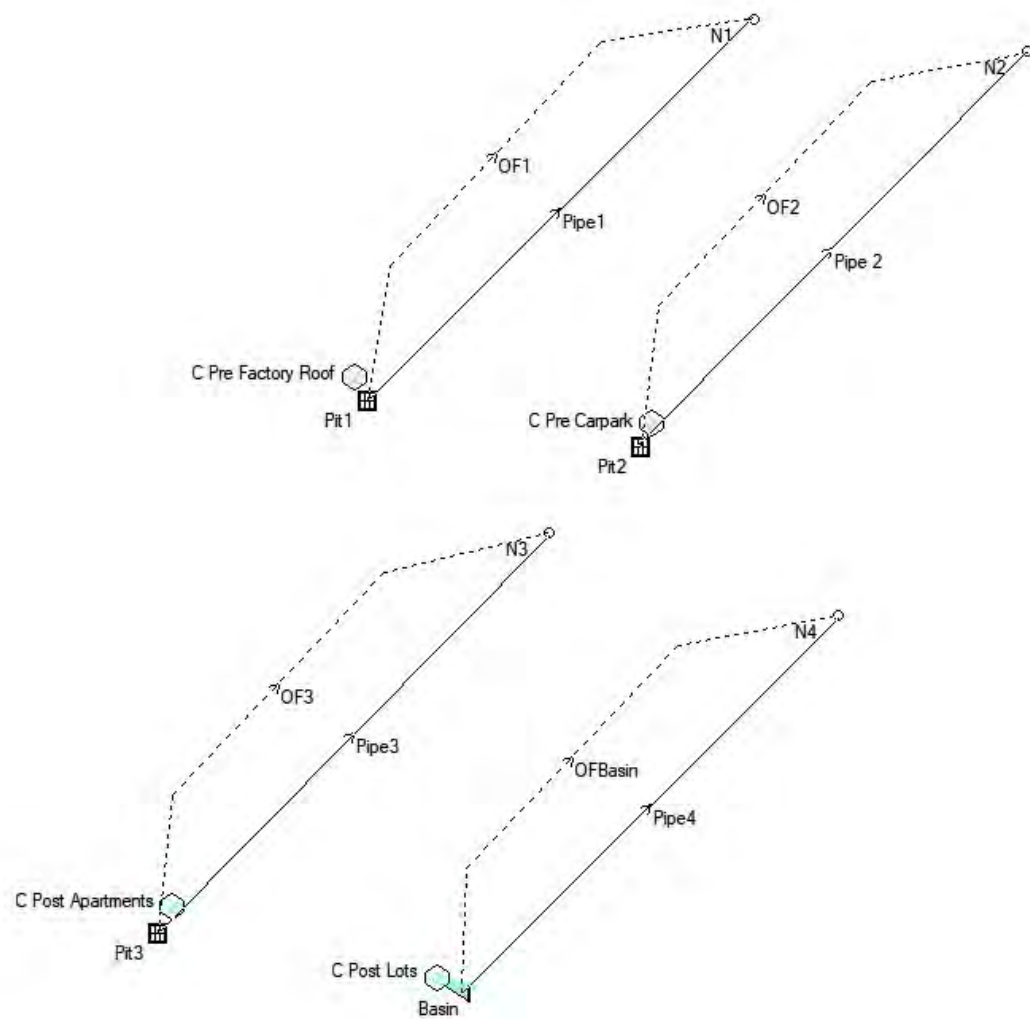
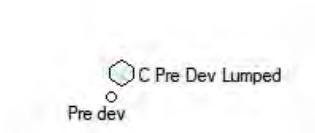
Subject to further detailed investigations and discussions with service providers, the site can be suitably serviced by stormwater, sewer, water, electricity, telecommunications and gas. On this basis, there are no infrastructure constraints that would prevent the site being rezoned to residential or which would constrain the future development of the site.

Appendix A – Concept Plan



Allotment Type	Number	Area	Average Area	% of Allotments	Total Area
8.5 - 10m wide	24	238m² - 280m²	322	27.9%	7724
4.8m wide	46	120m² - 135m²	126	53.5%	5786
3.75 wide	8	93.75m²	94	9.3%	750
Other	8		234	9.3%	1874
Total	86			100%	16134
Walk-up Apartments	40 - 50	Potential			
	Area				
Total Site	29696				
Torrens Rd Widening	60				
Reserves	2122				
Apartment Site	3941				
Allotments	16134				
Roads/Laneways	7439				

Appendix B – DRAINS and MUSIC Modelling



Project Name: Trident Plastics Re-zoning

Project Number: 19.2295

DRAINS : Data

PIT / NODE DETAILS

		Version 15																		
Name	Type	Family	Size	Ponding Volume (cu.m)	Pressure Change Coeff. Ku	Surface Elev (m)	Max Pond Depth (m)	Base Inflow (cu.m/s)	Blocking Factor	x	y	Bolt-down lid	id	Part Full Shock Loss	Inflow Hydrograph	Pit is	Internal Width (mm)	Inflow is Misaligned	Minor Safe Pond Depth (m)	Major Safe Pond Depth (m)
Pre dev	Node					30		0		669	-299		2		No					
Post	Node					30		0		666.667	-411.806		2567		No					
Pit1	OnGrade	Greenhill JB	Greenhill JB		1.5	7		0	0	850.596	-308.062	No	10540	1 x Ku	No	New				
N1	Node					7		0		932.189	-227.697		11232374		No					
Pit2	OnGrade	Greenhill JB	Greenhill JB		1.5	7		0	0	908.237	-317.959	No	10543	1 x Ku	No	New				
N2	Node					7		0		989.657	-234.529		11232376		No					
Pit3	OnGrade	Greenhill JB	Greenhill JB		1.5	7.15		0	0	806.481	-420.197	No	10545	1 x Ku	No	New				
N3	Node					7		0		888.889	-336.111		10643498		No					
N4	Node					7		0		949.871	-353.485		3926		No					

DETENTION BASIN DETAILS

Name	Elev	Surf. Area	Not Used	Outlet Type	K	Dia(mm)	Centre RL	Pit Family	Pit Type	x	y	HED	Crest RL	Crest Leng	id
Basin	6.235	500		Culvert	0.5					870.621	-432.735	No			1313188
	7.735	1000													

SUB-CATCHMENT DETAILS

Name	Pit or Node	Total Area (ha)	Paved Area %	Grass Area %	Supp Area %	Paved Time (min)	Grass Time (min)	Supp Time (min)	Paved Length (m)	Grass Length (m)	Supp Length (m)	Paved Slope(%)	Grass Slope %	Supp Slope %	Paved Rough	Grass Rough	Supp Rough	Lag Time or Factor	Gutter Length (m)	Gutter Slope %	Gutter FlowFactor	Rainfall Multiplier
C Pre Dev Lumped	Pre dev	3.018	85	5	10	10	15	2											0			1
C Post Dev Lumped	Post	3.018	83	15	2	10	15	2											0			1
C Pre Factory Roof	Pit1	1.644	100	0	0	10	15	2											0			1
C Pre Carpark	Pit2	1.374	75	5	20	10	15	2											0			1
C Post Apartments	Pit3	0.3987	90	8	2	8	15	2											0			1
C Post Lots	Basin	2.4	75	15	10	8	15	2											0			1

PIPE DETAILS

Name	From	To	Length (m)	U/S IL (m)	D/S IL (m)	Slope (%)	Type	Dia (mm)	I.D. (mm)	Rough	Pipe Is	No. Pipes	Chg From	At Chg	Chg (m)	RI (m)	Chg (m)	RL (m)	etc (m)
Pipe1	Pit1	N1	10	5.85	5.8	0.5	Concrete, u	600	600	0.3	New	1	Pit1		0				
Pipe 2	Pit2	N2	10	5.85	5.8	0.5	Concrete, u	600	600	0.3	New	1	Pit2		0				
Pipe3	Pit3	N3	10	5.85	5.8	0.5	Concrete, u	600	600	0.3	New	1	Pit3		0				
Pipe4	Basin	N4	145	6.235	5.8	0.3	Concrete, u	525	525	0.3	NewFixed	1	Basin		0				

DETAILS of SERVICES CROSSING PIPES

Pipe	Chg (m)	Bottom Elev (m)	Height of S Chg (m)	Bottom Elev (m)	Height of S Chg (m)	Bottom Elev (m)	Height of S etc (m)
------	---------	-----------------	---------------------	-----------------	---------------------	-----------------	---------------------

CHANNEL DETAILS

Name	From	To	Type	Length (m)	U/S IL (m)	D/S IL (m)	Slope (%)	Base Width (m)	L.B. Slope (1:?)	R.B. Slope (1:?)	Manning n	Depth (m)	Roofed
------	------	----	------	------------	------------	------------	-----------	----------------	------------------	------------------	-----------	-----------	--------

OVERFLOW ROUTE DETAILS

Name	From	To	Travel Time (min)	Spill Level (m)	Crest Length (m)	Weir Coeff. C	Cross Section	Safe Depth Major Stori (m)	SafeDepth Minor Stori (m)	Safe DxV (sq.m/sec)	Bed Slope (%)	D/S Area Contributing %	id	U/S IL	D/S IL	Length (m)
------	------	----	-------------------	-----------------	------------------	---------------	---------------	----------------------------	---------------------------	---------------------	---------------	-------------------------	----	--------	--------	------------

OF1	Pit1	N1	0.1				4 m wide p	0.3	0.15	0.4	1	0	4733965	15
OF2	Pit2	N2	0.1				4 m wide p	0.3	0.15	0.4	1	0	4733968	15
OF3	Pit3	N3	0.1				4 m wide p	0.3	0.15	0.4	1	0	4733971	15
OFBasin	Basin	N4	0.1	7.435	3	1.45	4 m wide p	0.3	0.15	0.4	1	0	4733974	15

PIPE COVER DETAILS

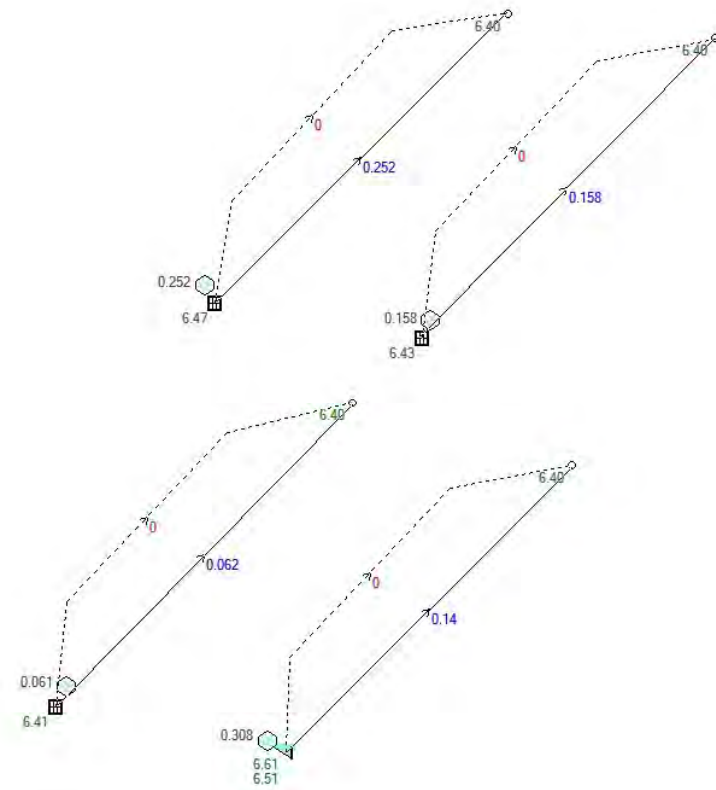
Name	Type	Dia (mm)	Safe Cover	Cover (m)	
Pipe1	Concrete, ur	600	0.6	0.51	Unsafe
Pipe 2	Concrete, ur	600	0.6	0.51	Unsafe
Pipe3	Concrete, ur	600	0.6	0.55	Unsafe
Pipe4	Concrete, ur	525	0.6	-0.57	Unsafe

This model has no pipes with non-return valves

Results for median storm in critical 0.2EY ensembles
using Standard hydraulic model.

0.393

0.384



Project Name: Trident Plastics Re-zoning

Project Number: 19.2295

DRAINS : 0.2EY Results

DRAINS results prepared from Version 2020.012

PIT / NODE DETAILS

Name	Max HGL	Max Pond HGL	Max Surface Flow Arriving (cu.m/s)	Version 8 Max Pond Volume (cu.m)	Min Freeboard (m)	Overflow (cu.m/s)	Constraint
Pit1	6.47			0.27		0.53	0 None
N1	6.4			0			
Pit2	6.43			0.173		0.57	0 None
N2	6.4			0			
Pit3	6.41			0.066		0.74	0 None
N3	6.4			0			
N4	6.4			0			

SUB-CATCHMENT DETAILS

Name	Max Flow Q (cu.m/s)	Paved Max Q (cu.m/s)	Grassed Max Q (cu.m/s)	Paved Tc (min)	Grassed Tc (min)	Supp. Tc (min)	Due to Storm
C Pre Dev Lumj	0.393		0.393	0	10	15	2 0.2EY AEP, 15 min burst, Storm 2
C Post Dev Lurr	0.384		0.384	0	10	15	2 0.2EY AEP, 15 min burst, Storm 2
C Pre Factory R	0.252		0.252	0	10	15	2 0.2EY AEP, 15 min burst, Storm 2
C Pre Carpark	0.158		0.158	0.001	10	15	2 0.2EY AEP, 15 min burst, Storm 2
C Post Apartme	0.061		0.061	0	8	15	2 0.2EY AEP, 10 min burst, Storm 3
C Post Lots	0.308		0.308	0	8	15	2 0.2EY AEP, 10 min burst, Storm 3

PIPE DETAILS

Name	Max Q (cu.m/s)	Max V (m/s)	Max U/S HGL (m)	Max D/S HGL (m)	Due to Storm
Pipe1	0.252		0.92	6.412	6.4 0.2EY AEP, 15 min burst, Storm 2
Pipe 2	0.158		0.58	6.405	6.4 0.2EY AEP, 15 min burst, Storm 2
Pipe3	0.062		0.23	6.402	6.4 0.2EY AEP, 10 min burst, Storm 3
Pipe4	0.14		0.86	6.604	6.4 0.2EY AEP, 20 min burst, Storm 7

CHANNEL DETAILS

Name	Max Q (cu.m/s)	Max V (m/s)	Due to Storm
------	----------------	-------------	--------------

OVERFLOW ROUTE DETAILS

Name	Max Q U/S	Max Q D/S	Safe Q	Max D	Max DxV	Max Width	Max V	Due to Storm
OF1	0		0	0.908	0	0	0	0
OF2	0		0	0.908	0	0	0	0
OF3	0		0	0.908	0	0	0	0
OFBasin	0		0	0.908	0	0	0	0

DETENTION BASIN DETAILS

Name	Max WL	MaxVol	Max Q Total	Max Q Low Level	Max Q High Level
Basin	6.61		209.3	0.14	0.14

Run Log for Prelim trident plastics DRAINS run at 15:56:41 on 18/3/2020 using version 2020.012

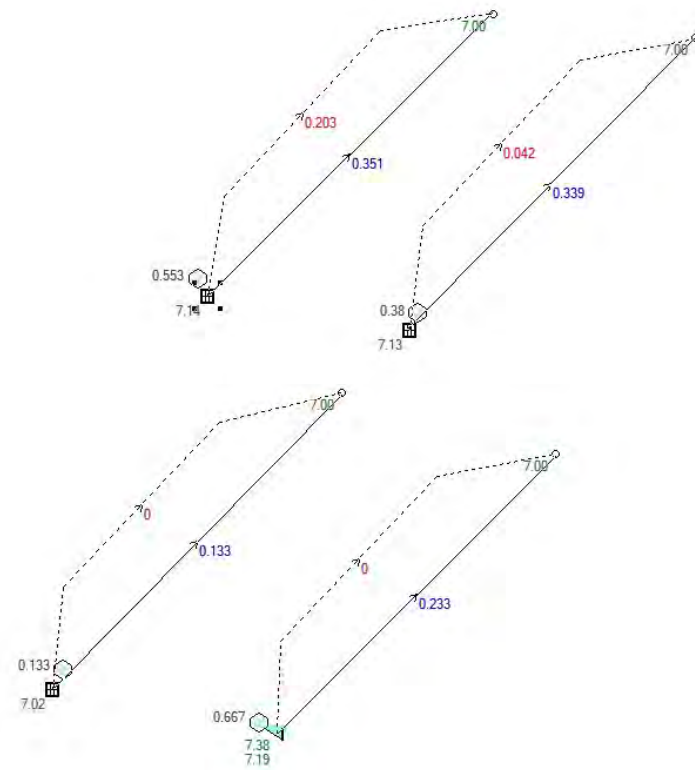
No water upwelling from any pit. Freeboard was adequate at all pits.

Flows were safe in all overflow routes.

Results for median storm in critical 1% AEP ensembles
using Standard hydraulic model.

0.88

0.843



Project Name: Trident Plastics Re-zoning

Project Number: 19.2295

DRAINS : Q100 results

DRAINS results prepared from Version 2020.012

PIT / NODE DETAILS

Name	Max HG HGL	Max Poi Flow Arriving (cu.m/s)	Max Surface Flow Arriving (cu.m/s)	Version 8		Overflow Constraint
				Max Poi Min Volume Freeboa (cu.m) (m)	Freeboa (cu.m/s)	
Pit1	7.14		0.553	0.01	0.203	Inlet Capacity
N1	7		0.204			
Pit2	7.13		0.423	0.02	0.042	Inlet Capacity
N2	7		0.08			
Pit3	7.02		0.139	0.13	0	None
N3	7		0			
N4	7		0			

SUB-CATCHMENT DETAILS

Name	Max Flow Q (cu.m/s)	Paved Max Q (cu.m/s)	Grassed Max Q (cu.m/s)	Paved Tc (min)	Grassed Tc (min)	Supp. Tc (min)	Due to Storm
C Pre Dev Lumped	0.88	0.864		0.02	10	15	2 1% AEP, 10 min burst, Storm 9
C Post Dev Lumped	0.843	0.843		0	10	15	2 1% AEP, 10 min burst, Storm 10
C Pre Factory Roof	0.553	0.553		0	10	15	2 1% AEP, 10 min burst, Storm 8
C Pre Carpark	0.38	0.347		0.037	10	15	2 1% AEP, 10 min burst, Storm 9
C Post Apartments	0.133	0.133		0	8	15	2 1% AEP, 10 min burst, Storm 3
C Post Lots	0.667	0.667		0	8	15	2 1% AEP, 10 min burst, Storm 3

PIPE DETAILS

Name	Max Q (cu.m/s)	Max V (m/s)	Max U/S HGL (m)	Max D/2 Due to Storm	
				HGL (m)	
Pipe1	0.351	1.24	7.023	7	1% AEP, 10 min burst, Storm 9
Pipe 2	0.339	1.2	7.021	7	1% AEP, 10 min burst, Storm 9
Pipe3	0.133	0.47	7.004	7	1% AEP, 10 min burst, Storm 3
Pipe4	0.233	1.08	7.343	7	1% AEP, 25 min burst, Storm 4

CHANNEL DETAILS

Name	Max Q (cu.m/s)	Max V (m/s)	Due to Storm

OVERFLOW ROUTE DETAILS

Name	Max Q L (cu.m/s)	Max Q T Safe Q (cu.m/s)	Max D (m)	Max Dx (m)	Max W (m)	Max V (m/s)	Due to Storm
OF1	0.203	0.203	1.479	0.07	0.06	4	0.93 1% AEP, 10 min burst, Storm 9
OF2	0.042	0.042	1.479	0.036	0.02	4	0.49 1% AEP, 10 min burst, Storm 9
OF3	0	0	1.479	0	0	0	0
OFBasin	0	0	1.479	0	0	0	0

DETENTION BASIN DETAILS

Name	Max WL	MaxVol	Max Q Total	Max Q	
				Low Lev	High Level
Basin	7.38	769.8	0.233	0.233	0

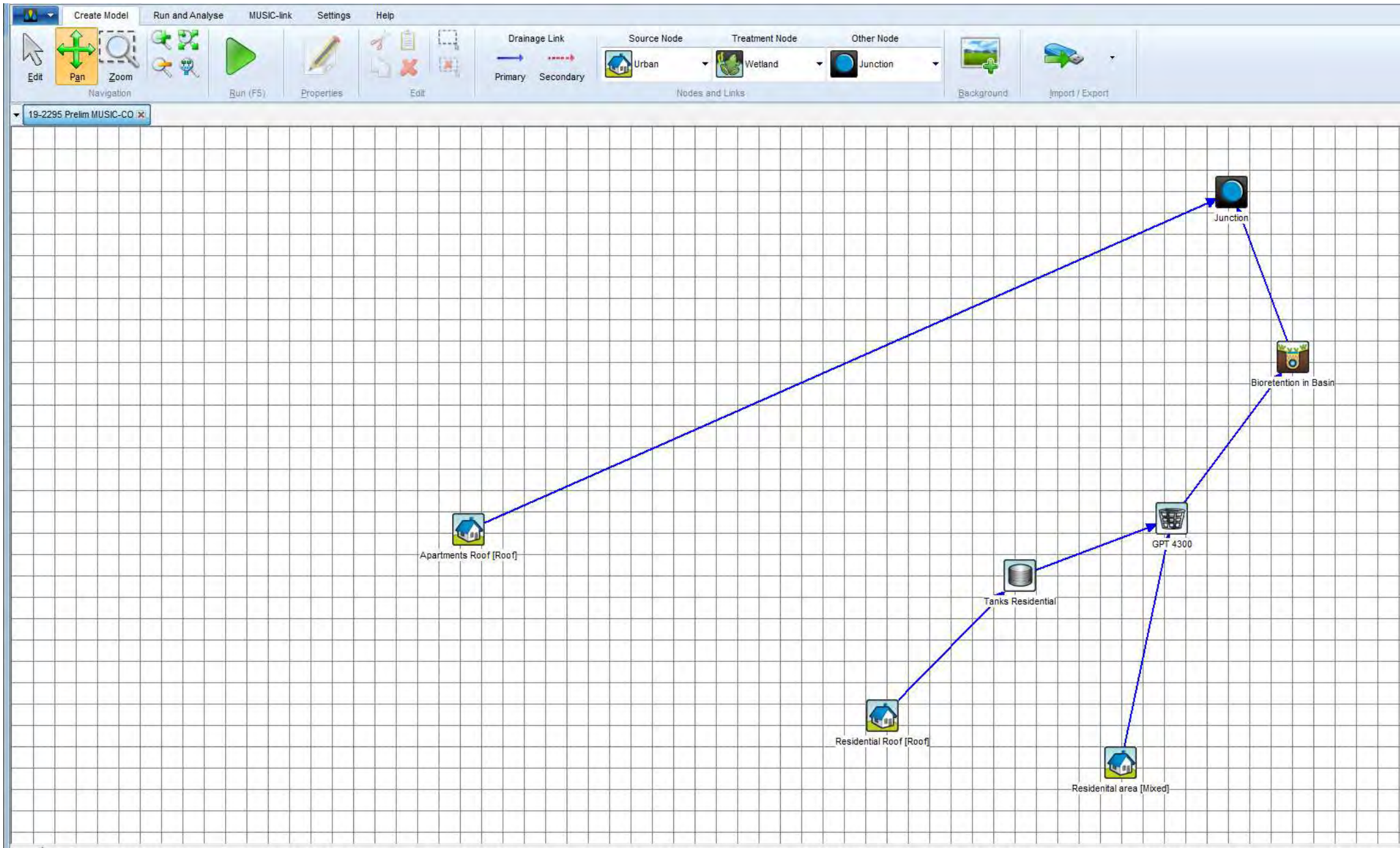
Run Log for Prelim trident plastics DRAINS run at 15:59:41 on 18/3/2020 using version 2020.012

No water upwelling from any pit.

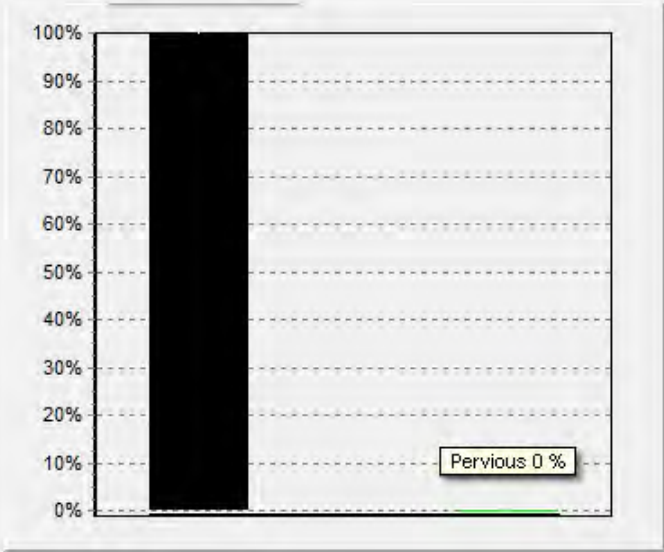
Freeboard was less than 0.15m at Pit3, Pit2, Pit1

Flows were safe in all overflow routes.

Music Treatment Train Layout



Music Input Parameters Source Nodes:

Location: Apartments Roof	
Areas	
Total Area (ha): 0.394	Zoning/Surface Type: Roof
	
<input type="checkbox"/> Import Flow	
Fluxes... Notes...	

Rainfall-Runoff Parameters	
Impervious Area Properties	
Rainfall Threshold (mm/day)	1.00
Pervious Area Properties	
Soil Storage Capacity (mm)	40
Initial Storage (% of Capacity)	25
Field Capacity (mm)	30
Infiltration Capacity Coefficient - a	200.0
Infiltration Capacity Exponent - b	1.00
Groundwater Properties	
Initial Depth (mm)	10
Daily Recharge Rate (%)	25.00
Daily Baseflow Rate (%)	5.00
Daily Deep Seepage Rate (%)	0.00

Location

Residential Roof

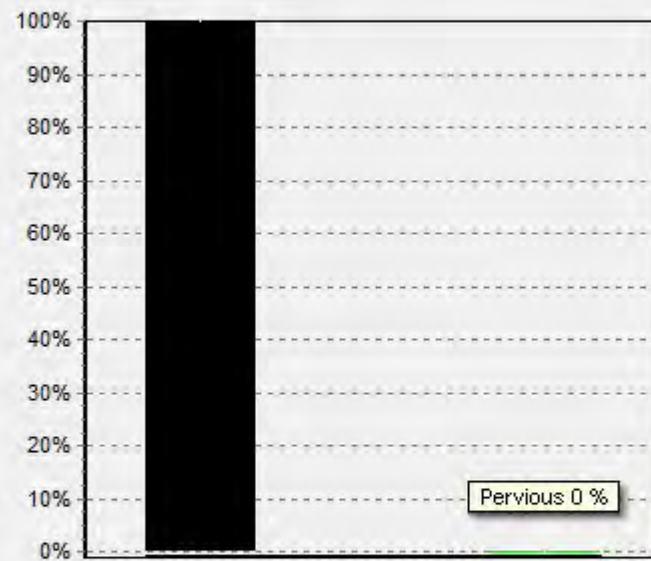
Areas

Total Area (ha)

0.807

Zoning/Surface Type:

Roof



☐ Import Flow

Fluxes...

Notes...

Rainfall-Runoff Parameters

Impervious Area Properties

Rainfall Threshold (mm/day)

1.00

Pervious Area Properties

Soil Storage Capacity (mm)

40

Initial Storage (% of Capacity)

25

Field Capacity (mm)

30

Infiltration Capacity Coefficient - a

200.0

Infiltration Capacity Exponent - b

1.00

Groundwater Properties

Initial Depth (mm)

10

Daily Recharge Rate (%)

25.00

Daily Baseflow Rate (%)

5.00

Daily Deep Seepage Rate (%)

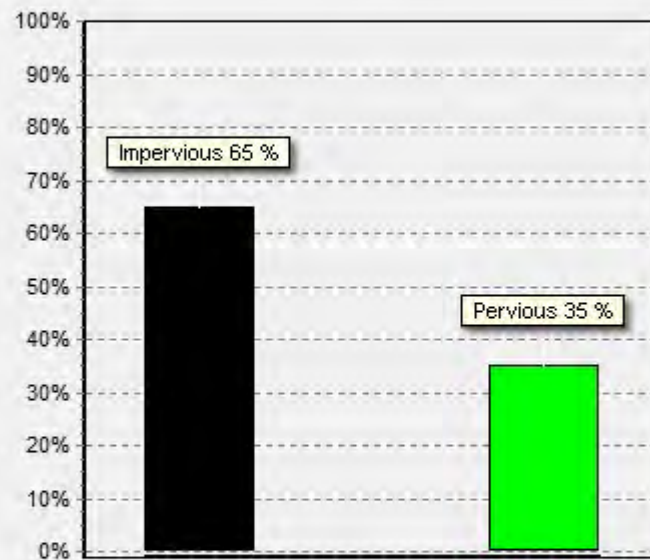
0.00

Location

Areas

Total Area (ha)

Zoning/Surface Type:



☐ Import Flow

[Fluxes...](#)

[Notes...](#)

Rainfall-Runoff Parameters

Impervious Area Properties

Rainfall Threshold (mm/day)

Pervious Area Properties

Soil Storage Capacity (mm)

Initial Storage (% of Capacity)

Field Capacity (mm)

Infiltration Capacity Coefficient - a

Infiltration Capacity Exponent - b

Groundwater Properties


Initial Depth (mm)

Daily Recharge Rate (%)

Daily Baseflow Rate (%)

Daily Deep Seepage Rate (%)

Music Input Parameters Treatment Nodes: Rainwater Tanks

Location **Tanks Residential**  [Products >>](#)

Inlet Properties

Low Flow By-pass (cubic metres per sec)	0.000000
High Flow By-pass (cubic metres per sec)	0.258000

Individual Tank Properties

+ Number of Tanks	86
-------------------	----

Total Tank Properties

Storage Properties

Volume below overflow pipe (kL)	86.00
Depth above overflow (metres)	0.20
Surface Area (square metres)	68.8
Initial Volume (kL)	43.00

Outlet Properties

Overflow Pipe Diameter (mm)	185
-----------------------------	-----

☐ Use Custom Outflow and Storage Relationship

[Define Custom Outflow and Storage](#) (not Defined)

[Re-use](#) [Fluxes...](#) [Notes...](#) [More](#)

☒ Use stored water for irrigation or other purpose

Max Drawdown height (m) Range: (0 - 1.25)

Annual Demand

☐ Enabled

Daily Demand

☒ Enabled

Daily Demand Properties

Demand (kL/day)

Distribution Uniform

Custom Demand

☐ Enabled

Music Input Parameters Treatment Nodes: GPT

Location: GPT 4300

Products >>

Inlet Properties

Low Flow By-pass (cubic metres per sec) 0.00000

High Flow By-pass (cubic metres per sec) 0.01200

Transfer Functions

☒ Total Suspended Solids (mg/L)

☐ Total Nitrogen (mg/L)

☐ Total Phosphorus (mg/L)

☐ Gross Pollutants (kg/ML)

Total Suspended Solids (mg/L)

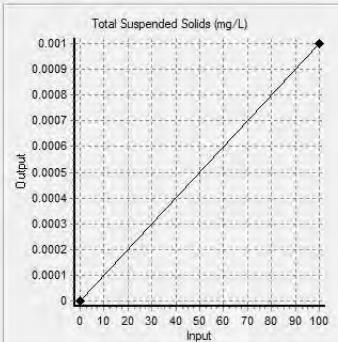
Transfer Functions

☐ Concentration Based Capture Efficiency

☒ Flow Based Capture Efficiency

☐ Both

Concentration Efficiency Transfer Function



Drag points on the graph to modify the transfer function

Percentage Capture

Inflow (m^3/s)	% Capture
0.0000	61.0000
0.0120	61.0000
1.0000	23.0000

Apply All

Transfer Functions

☐ Total Suspended Solids (mg/L)

☒ Total Nitrogen (mg/L)

☐ Total Phosphorus (mg/L)

☐ Gross Pollutants (kg/ML)

Total Nitrogen (mg/L)

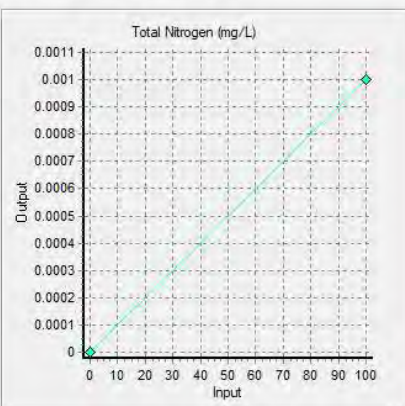
Transfer Functions

☐ Concentration Based Capture Efficiency

☒ Flow Based Capture Efficiency

☐ Both

Concentration Efficiency Transfer Function



Drag points on the graph to modify the transfer function

Percentage Capture

Inflow (m^3/s)	% Capture
0.0000	1.0000
0.0120	1.0000
1.0000	1.0000

Apply All

Transfer Functions

☐ Total Suspended Solids (mg/L)

☐ Total Nitrogen (mg/L)

☒ Total Phosphorus (mg/L)

☐ Gross Pollutants (kg/ML)

Total Phosphorus (mg/L)

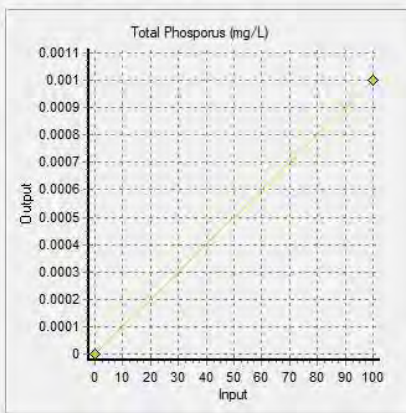
Transfer Functions

☐ Concentration Based Capture Efficiency

☒ Flow Based Capture Efficiency

☐ Both

Concentration Efficiency Transfer Function



Drag points on the graph to modify the transfer function

Percentage Capture

Inflow (m^3/s)	% Capture
0.0000	29.0000
0.0120	29.0000
1.0000	23.0000

Apply All

Transfer Functions

☐ Total Suspended Solids (mg/L)

☐ Total Nitrogen (mg/L)

☐ Total Phosphorus (mg/L)

☒ Gross Pollutants (kg/ML)

Gross Pollutants (kg/ML)

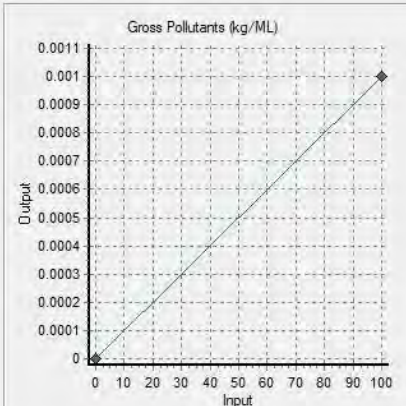
Transfer Functions

☐ Concentration Based Capture Efficiency

☒ Flow Based Capture Efficiency

☐ Both

Concentration Efficiency Transfer Function




Drag points on the graph to modify the transfer function

Percentage Capture

Inflow (m^3/s)	% Capture
0.0000	98.0000
0.0120	98.0000
1.0000	23.0000

Apply All

Music Input Parameters Treatment Nodes: Bioretention

Location		Bioretention in Basin		 Products >>	
Inlet Properties					
Low Flow By-pass (cubic metres per sec)		<input type="text" value="0.000"/>			
High Flow By-pass (cubic metres per sec)		<input type="text" value="0.060"/>			
Storage Properties					
Extended Detention Depth (metres)		<input type="text" value="0.30"/>			
Surface Area (square metres)		<input type="text" value="234.00"/>			
Filter and Media Properties					
Filter Area (square metres)		<input type="text" value="150.00"/>			
Unlined Filter Media Perimeter (metres)		<input type="text" value="50.00"/>			
Saturated Hydraulic Conductivity (mm/hour)		<input type="text" value="180.00"/>			
Filter Depth (metres)		<input type="text" value="0.40"/>			
TN Content of Filter Media (mg/kg)		<input type="text" value="400"/>			
Orthophosphate Content of Filter Media (mg/kg)		<input type="text" value="40.0"/>			
Infiltration Properties					
Exfiltration Rate (mm/hr)		<input type="text" value="0.00"/>			
Lining Properties					
Is Base Lined?		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			
Vegetation Properties					
<input checked="" type="radio"/> Vegetated with Effective Nutrient Removal Plants					
<input type="radio"/> Vegetated with Ineffective Nutrient Removal Plants					
<input type="radio"/> Unvegetated					
Outlet Properties					
Overflow Weir Width (metres)		<input type="text" value="2.00"/>			
Underdrain Present?		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			
Submerged Zone With Carbon Present?		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			
Depth (metres)		<input type="text" value="0.45"/>			
Fluxes...		Notes...		More	

Model Outputs: Treatment Train Effectiveness

	Sources	Residual Load	% Reduction
Flow (ML/yr)	5.58	4.13	25.9
Total Suspended Solids (kg/yr)	744	54.3	92.7
Total Phosphorus (kg/yr)	1.73	0.694	59.9
Total Nitrogen (kg/yr)	14.6	3.9	73.3
Gross Pollutants (kg/yr)	255	4.96	98.1

Appendix C – Preliminary Servicing Advice

Bradley Seidel

From: Cleere, Kylie <Kylie.Cleere@sawater.com.au>
Sent: Thursday, 19 March 2020 2:56 PM
To: Bradley Seidel
Cc: Cindy Oliver
Subject: RE: 19.2295 Request for Preliminary Servicing Advice – Trident Plastics Re Zoning, Woodville North – COMMERCIAL IN CONFIDENCE

Follow Up Flag: Follow up
Flag Status: Completed

Hi Bradley,

I am expecting the response for the sewer mid next week and will forward as soon as it is available.

Based on the information provided:

- 86 Residential allotments
- Apartments, approx. 40-50 max 3 storey
- Development Start Date – 3 + years

Should these details change, a new investigation will be required.

I can provide the following response.

Water

- Construct 150mm internal ring main to link Torrens Rd with Ashworth Court to service allotments and apartments. This requires the upgrade of approx. 65m of existing 100mm main in Ashworth Ct.
- Remaining reticulation mains within development to be 100mm



No fire flow analysis has been undertaken.

The proposed development is not within a current Augmentation charge area.

Please note this is a preliminary response and all requirements will be confirmed upon receipt of a lodged SCAP application and/ or connection application.

Thank you,

Kylie Cleere

Senior Development Services Officer
7424 1218

From: Bradley Seidel <BSeidel@greenhillaustralia.com.au>

Sent: Thursday, 19 March 2020 9:30 AM

To: Cleere, Kylie <Kylie.Cleere@sawater.com.au>

Cc: Cindy Oliver <Cindy@greenhillaustralia.com.au>

Subject: RE: 19.2295 Request for Preliminary Servicing Advice – Trident Plastics Re Zoning, Woodville North – COMMERCIAL IN CONFIDENCE

Bradley Seidel

From: Cleere, Kylie <Kylie.Cleere@sawater.com.au>
Sent: Wednesday, 25 March 2020 2:51 PM
To: Bradley Seidel
Cc: Cindy Oliver
Subject: RE: 19.2295 Request for Preliminary Servicing Advice – Trident Plastics Re Zoning, Woodville North – COMMERCIAL IN CONFIDENCE

Follow Up Flag: Follow up
Flag Status: Flagged

Hi Bradley,

Further to my email below, I can provide the following response.

Sewer

- There is sufficient capacity within the received network to accommodate the proposed development.
- The number of fixture units for the apartment building has not been provided however please note that in accordance with SA Water's wastewater connection fact sheet, the size of the connection will be determined by the number of fixture units within the property
- The AS3500.2 AS/NZS Plumbing and Drainage Part 2: Sanitary plumbing and drainage Table 3.3.1 "Maximum Fixture Unit Loading for Vented Drains" should be applied as follows:
 - 1 x DN100 connection laid at SA Water's standard minimum grade of 2% can service up to 205 Fixture Units (FU).
 - 1 x DN150 connection laid at SA Water's standard minimum grade of 1% can service up to 855 Fixture Units (FU).



Thank you,

Kylie Cleere

Senior Development Services Officer
7424 1218

From: Cleere, Kylie

Sent: Thursday, 19 March 2020 2:56 PM

To: 'Bradley Seidel' <BSeidel@greenhillaustralia.com.au>

Bradley Seidel

From: Darren Marshall <Darren.Marshall@sapowernetworks.com.au>
Sent: Monday, 17 February 2020 11:12 AM
To: Bradley Seidel
Subject: RE: 19.2295 Request for Preliminary Servicing Advice – Trident Plastics Re Zoning, Woodville North – COMMERCIAL IN CONFIDENCE
Attachments: Infrastructure Map.pdf
Follow Up Flag: Follow up
Flag Status: Flagged

Hi Bradley,

Apologise for the late reply.

Here is some information in response to your request.

The proposed layout is typical of residential developments in the area and based on the number of allotments the total load would be less than 1,000kVA. Based on this, servicing would be similar to adjacent developments and there doesn't appear to be any capacity issues due to the close proximity of the Cheltenham Substation. The Connection points will be from existing infrastructure on Torrens Road and adjacent developments but this will be confirmed when we receive an application for a connection. Standard augmentation charges per kVA would apply at the rates applicable at the time of application.

The site currently has three supply points

- 11/0.4kV Pole mounted TF off Torrens Road supplied by an overhead line
- Two 33/0.4kV ground level TF stations on the Northern end of the property supplied by underground cables.

Existing infrastructure that may affect the development,

- 66kV overhead mains on Torrens Road.
- 33kV overhead mains on the Western boundary

I have attached a map showing approximate location of our infrastructure.

Please contact me if you have any questions

Kind regards,

Darren Marshall

Senior Network Project Officer

Direct: 08 8300 2116

Mobile: 0403 582 282

darren.marshall@sapowernetworks.com.au

12 Senna Road Wingfield SA 5013

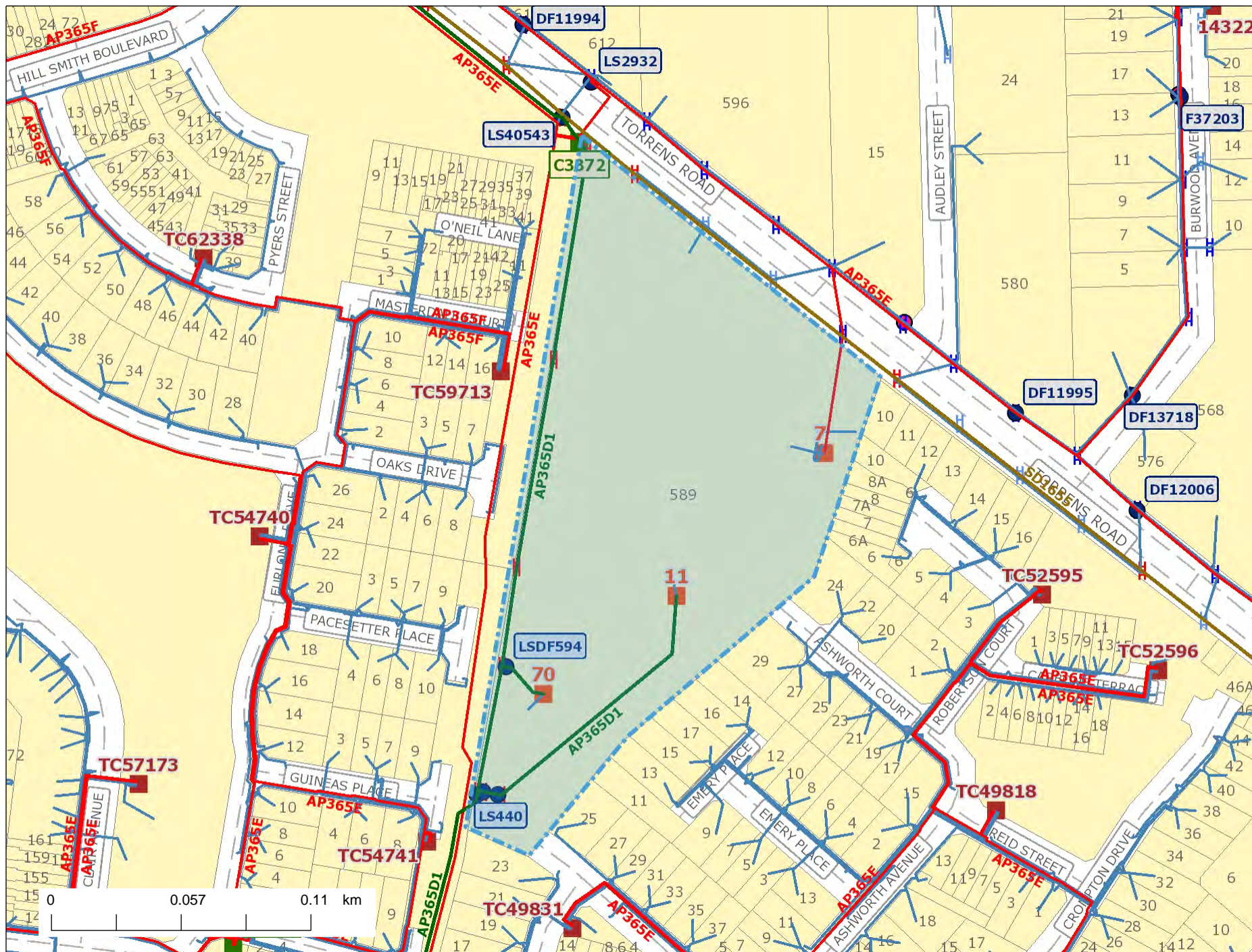
www.sapowernetworks.com.au



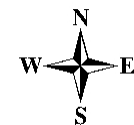
From: Bradley Seidel <BSeidel@greenhillaustralia.com.au>

Sent: Monday, 10 February 2020 4:33 PM

Trident Plastics



- Substation
- Transformer
- Bulk Supply
- Transformer Cubicle
- HV Switching Cubicle
- e HV Switching Device
- e LV Switching Device
- LV Switching Container
- Service Pit/Pillar
- Service Point
- Public Light
- Floodlight
- ⊕ Light Column
- H Pole
- ~ 7.6kV Conductor
- ~ 11kV Conductor
- ~ 19kV Conductor
- ~ 33kV Conductor
- ~ 66kV Conductor
- ~ LV Conductor
- ~ Not In Service
- ~ Broadband Cable



Disclaimer: The Plan/Sketch is supplied at your request and is subject to your agreement that SA Power Networks shall not be liable or responsible for the correctness or otherwise of any such information supplied pursuant to this request. Upon acceptance of this condition SA Power Networks grants you permission to use the Plan/Sketch as a guide to the location of SA Power Networks assets. The Plan/Sketch must be returned to SA Power Networks if you fail to accept the conditions of use.

17/02/2020 11:04 AM

Bradley Seidel

From: Jodie Lunn <jodielunn@nbnco.com.au>
Sent: Friday, 7 February 2020 2:00 PM
To: Bradley Seidel
Subject: RE: 19.2295 Request for Preliminary Servicing Advice – Trident Plastics Re Zoning, Woodville North – COMMERCIAL IN CONFIDENCE

Follow Up Flag: Follow up
Flag Status: Completed

NBN Classification - Commercial

Hi Bradley,

As discussed this morning, no backhaul charges will apply for **nbn** to service this development with FTTP – only the per premises contribution will apply.

Cheers

Jodie

Jodie Lunn

Senior Business Development Manager SA/NT

New Developments; Business, Enterprise & Government

+61 412 050773

jodielunn@nbnco.com.au

business **nbn**™

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PLEASE CONSIDER OUR ENVIRONMENT BEFORE PRINTING

From: Jodie Lunn
Sent: Tuesday, 28 January 2020 10:32 AM
To: Bradley Seidel <BSeidel@greenhillaustralia.com.au>
Subject: RE: 19.2295 Request for Preliminary Servicing Advice – Trident Plastics Re Zoning, Woodville North – COMMERCIAL IN CONFIDENCE

NBN Classification - Commercial

Thanks Bradley,

A planning assessment is underway, I'll come back to you once completed

Cheers

Jodie

Jodie Lunn

Senior Business Development Manager SA/NT

New Developments; Business, Enterprise & Government

+61 412 050773

jodielunn@nbnco.com.au

business nbn™

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PLEASE CONSIDER OUR ENVIRONMENT BEFORE PRINTING

From: Bradley Seidel <BSeidel@greenhillaustralia.com.au>

Sent: Thursday, 23 January 2020 2:44 PM

Cc: Cindy Oliver <Cindy@greenhillaustralia.com.au>

Subject: [External] 19.2295 Request for Preliminary Servicing Advice – Trident Plastics Re Zoning, Woodville North –
COMMERCIAL IN CONFIDENCE

This message is from an **external sender - be cautious**, particularly with links and attachments.

COMMERCIAL IN CONFIDENCE

To whom it may concern,

We have been engaged by White Box Investments to undertake an investigation of the servicing requirements required for the proposed re-zoning of the Trident Plastics Factory
Refer to the attached layout plan and screenshot of the site area below.

From: Ryan Nelson <rnelson@charlessturt.sa.gov.au>
Sent: Friday, 22 May 2020 2:53 PM
To: Cindy Oliver <Cindy@greenhillaustralia.com.au>
Cc: James Cursaro <jcursaro@charlessturt.sa.gov.au>
Subject: RE: 19.2295 Request for Information: Council Civil and Stormwater requirements for re-zoning of Tridents Plastics Site. COMMERCIAL IN CONFIDENCE

Hi Cindy,

We are currently undertaking a review of our entire recycled water network capacity.

We are unlikely to want domestic dwellings within this site to connect to the network, however we would be seeking any reserves/open space to be irrigated using recycled water.

The ideal connection point would be the existing 280mm main on the south side of Torrens Road as this would not need any augmentation besides the physical connection point.

Thanks,

Ryan Nelson
Project Engineer – Civil & Stormwater
Engineering Strategy & Assets

72 Woodville Road Woodville SA 5011
P: 08 8408 1862 F: 08 8408 1122

www.charlessturt.sa.gov.au

<https://filedrop.charlessturt.sa.gov.au/filedrop/rnelson@charlessturt.sa.gov.au>

Cindy Oliver

From: Chris Carrey <ccarrey@ekistics.com.au>
Sent: Friday, 22 May 2020 3:10 PM
To: Cindy Oliver
Subject: Trident Plastics

Hi Cindy

See an additional comment from Ryan Nelson at Council below.

Thanks

From a capacity point of view the stormwater from the site would be able to drain to the wetlands with the following conditions:

- *Detention requirements must still be met before leaving the site*
- *The water must be treated prior to leaving the site. Our preference would be through the use of raingardens throughout the development but a GPT would also be acceptable*

I believe Greenhills confusion is their belief that the Torrens Road drain is pumped to the wetlands. Whilst this is true, the interception point (pump station) is located upstream of this development and the surrounding roads discharge points.

Kind regards

Chris Carrey
Planning Consultant

ekistics

Level 1, 16 Vardon Avenue, Adelaide

p> 08 7231 0286
m> 0434 484 046
w> ekistics.com.au

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Appendix D – Dial Before You Dig Information

APA Group
PO Box 6014 Halifax Street
South Australia 5000

20/01/2020

GREENHILL
Mr Bradley Seidel
Level 1 64 Hindmarsh Square
Adelaide
SA 5000

bseidel@greenhillaustralia.com.au

Dear Mr Bradley Seidel

Sequence Number: 93970905
Worksite Address: 589 Torrens Road
St Clair
SA 5011

Thank you for your Dial Before You Dig enquiry regarding the location of Gas Assets, we can confirm that the APA Group's Network's Division has **Critical Gas Assets** in the vicinity of the above location.

You are hereby notified that **before you commence any works** you are required to complete the attached 'Work In The Vicinity Of Critical Gas Assets' request form and forward this to APA asap

As laid out in the **Duty of Care** requirements supplied, any activity in the vicinity of Critical Gas Assets operated by APA requires a Third Party Works Authorisation and potentially attendance on site by an APA representative during any work. Please ensure you read and comply with all the relevant requirements. Should you have any questions with regards to the attached information please contact our DBYD officer - 1800 085 628.

**Caution - Damage to gas assets could result in possible explosion and fire with the risk of personal injury.
For Gas Emergencies please call 1800 GAS LEAK (1800 427 532)**

Please find enclosed the following information:-

- APA's Duty of Care, If you are unclear of your obligations under these requirements please contact the APA Representative listed above immediately
- An overview map with your requested area highlighted to assist in locating APA's Gas Assets
- A map(s) showing APA's Gas Assets in the requested area, this information is valid for 30 days from the date of this response, **please check this represents the area you requested**, if it does not, please contact the APA Representative listed above immediately
- A 'Work In The Vicinity Of Critical Gas Assets' request form, please complete and forward to APA asap via DBYDNetworksAPA@apa.com.au, Fax (08) 7131 0132 or the address above

The outcome of this request maybe that a qualified APA Group Representative will be required on site when you undertake your proposed works, if this is the case, this will need to be arranged dependent on their availability. Whilst we will aim to facilitate this within 2 business days from a decision, **this cannot be guaranteed.**

Please Note: For some DBYD enquiries, you might receive 2 responses from the APA Group. Please read both responses carefully as they will relate to different assets. It is your responsibility to action all requirements set out in APA Group responses.

Please take some time to review the entire response document and check the information supplied and please let us have any feedback by sending an email to DBYDNetworksAPA@apa.com.au or contacting us direct on 1800 085 628.

Duty of Care - Working Around Gas Assets

General Conditions

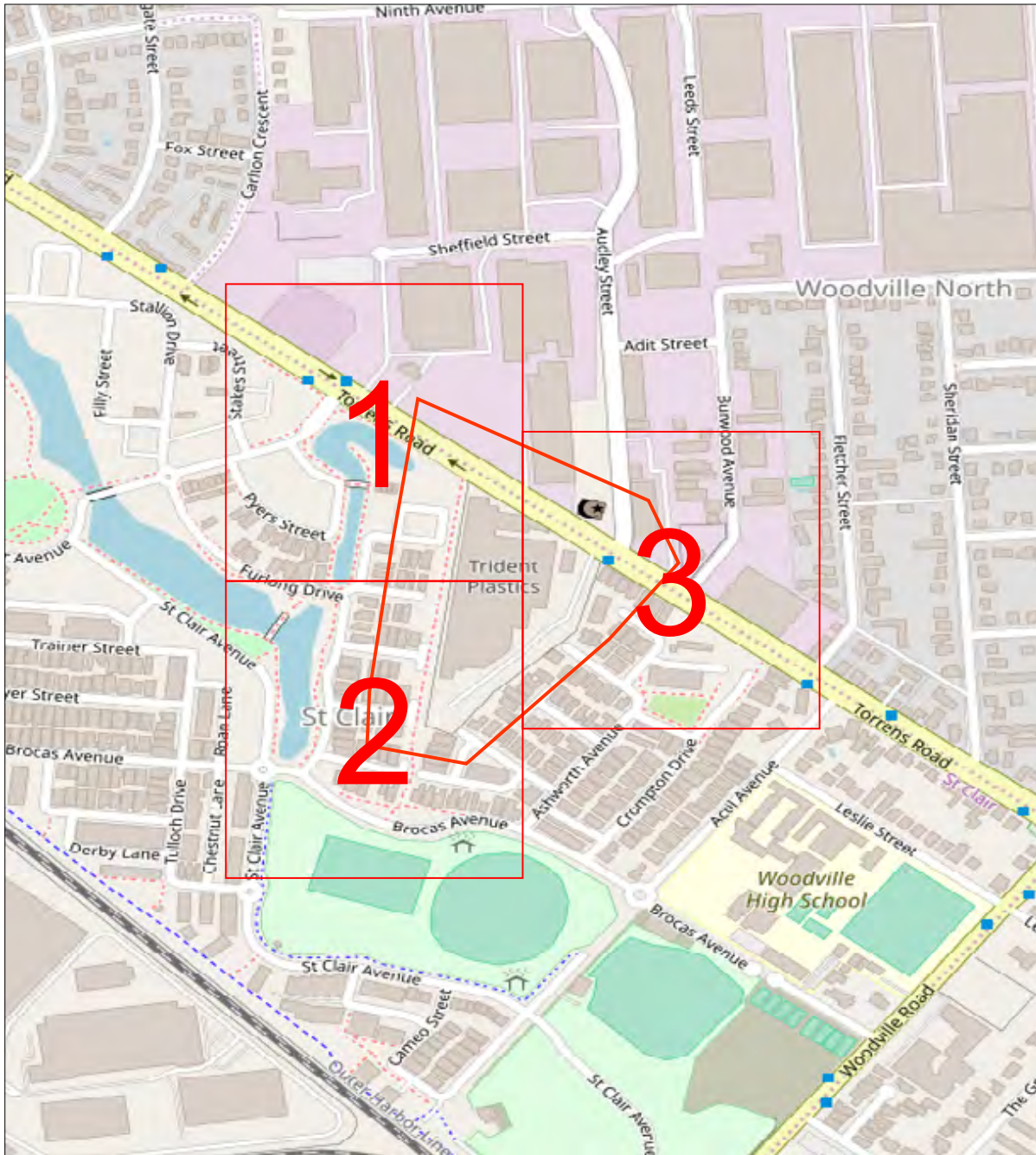
- This location enquiry is valid for 30 days from the date of this response
- Expired locations, i.e., over 30 days from the date of this response, require a new Dial Before You Dig request to validate location information
- The location information supplied in this document shall be used as a guide only. APA Group shall not be liable or responsible for the accuracy of any such information supplied pursuant to this request
- It is the responsibility of the excavator to expose all Gas Assets, including Gas Services pipelines (see below), **by hand** (Please Note: Do not use vacuum excavation systems as damage to Gas Assets may occur). Gas Asset depths may vary according to ground conditions
- Gas Service pipelines (inlet service) connecting Gas Assets in the street to the gas meter on the property are typically **not** marked on the map
- Generally, a map of the Gas Service pipeline (inlet service) connection can be found inside the gas meter box
- This information has been generated by an automated system based on the area highlighted in your DBYD request and has not been independently verified. **It is your responsibility** to ensure that the information supplied in this response matches the dig site you defined when submitting your Dial Before You Dig enquiry. If the information does not match the dig site or you have any question, please contact APA immediately using the details listed on the first page and / or please resubmit your enquiry
- For **Gas Emergencies** please call **1800 GAS LEAK (1800 427 532)**

Critical Gas Assets - Conditions

It is your responsibility to follow these important conditions when working in the vicinity of Critical Gas Assets:-

- **PRIOR** to any work commencing, a 'Work In The Vicinity Of Critical Gas Assets' request form **must be submitted** to APA Group, see form attached.
- Once submitted, if you have not received any response from APA within 2 business days please contact us immediately via 1800 085 628
- If a qualified APA Group Representative is required on site when you undertake your proposed works, this will need to be arranged dependent on their availability.
- Whilst we will aim to facilitate this within **2 business days** from a decision, **this cannot be guaranteed**. Charges for APA Group supervision may apply
- Penalties apply to excavators commencing work in the vicinity of Critical Gas Assets **prior to receiving an APA Group 'Third Party Works Authorisation'**

Site Address	589 Torrens Road St Clair 5011	Sequence No	93970905
Name	Mr Bradley Seidel		
Email	bseidel@greenhillaustralia.com.au		



Scale 1: 6000



Enquiry Area

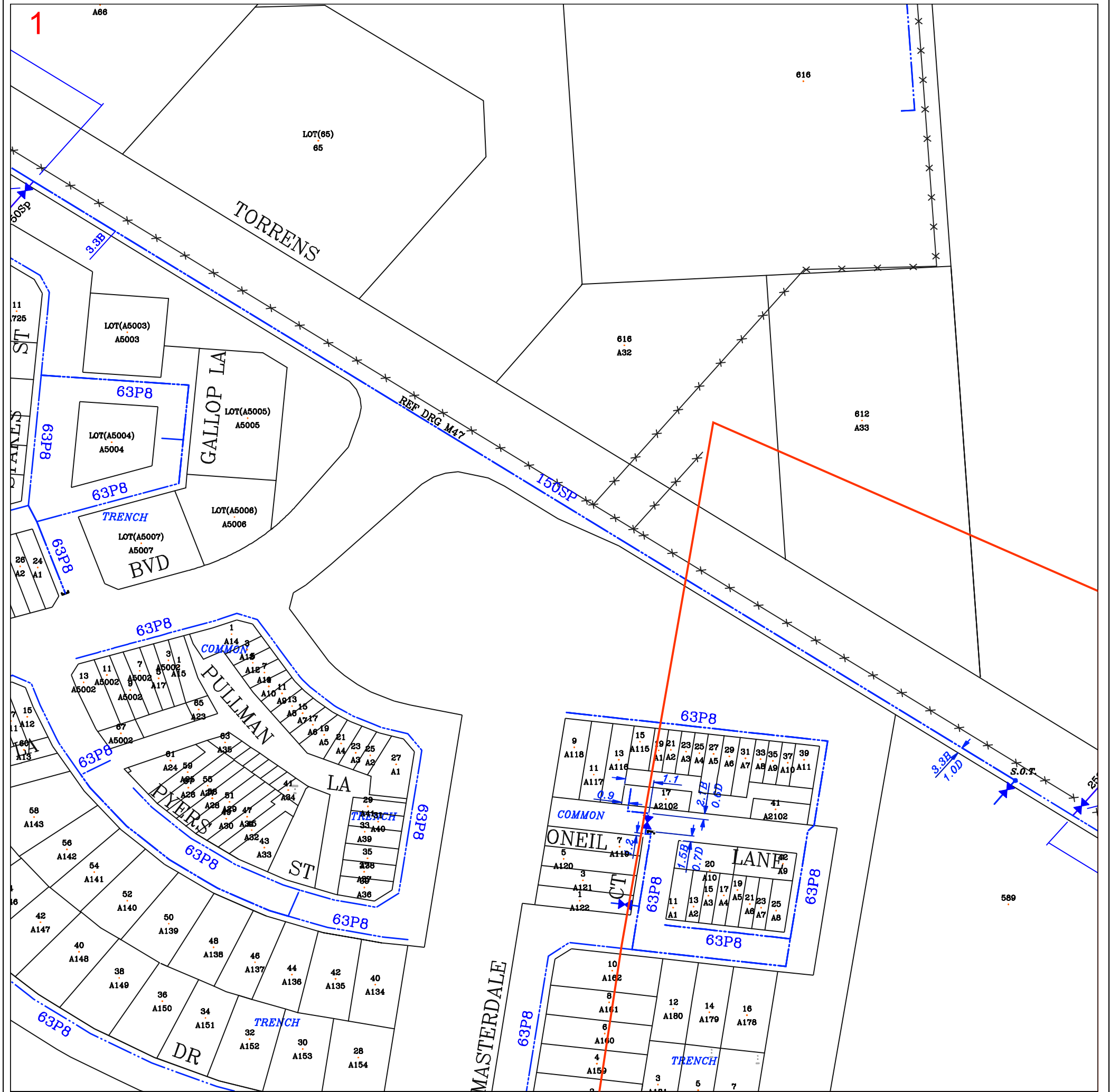


Map Key Area



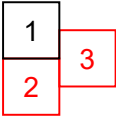
Site Address	589 Torrens Road St Clair 5011	Sequence No	93970905
Email	bseidel@greenhillaustralia.com.au	Map Reference	UbdAde 104M2,104M3,104N2,104N3

Before you commence any works you are required to complete the attached 'Work In The Vicinity Of Critical Gas Assets' request form and forward this to APA asap



ITEM	SYMBOL	TERMS	ITEM	SYMBOL
LOW PRESSURE 1.2 - 1.7kPa	—	B = BOUNDARY	DIAL BEFORE YOU DIG REQUESTED AREA	
MEDIUM PRESSURE 35 - 100kPa	—	D = DEPTH	PRIORITY MAIN COVERAGE	
HIGH PRESSURE 70 - 350kPa	—	BoK = BACK OF KERB		
TRANSMISSION PRESSURE 900 - 15000kPa	—	FoK = FRONT OF KERB		
PROPOSED MAIN (COLOUR BY PRESSURE)	—			
ABANDONED MAIN	—			

Map Key



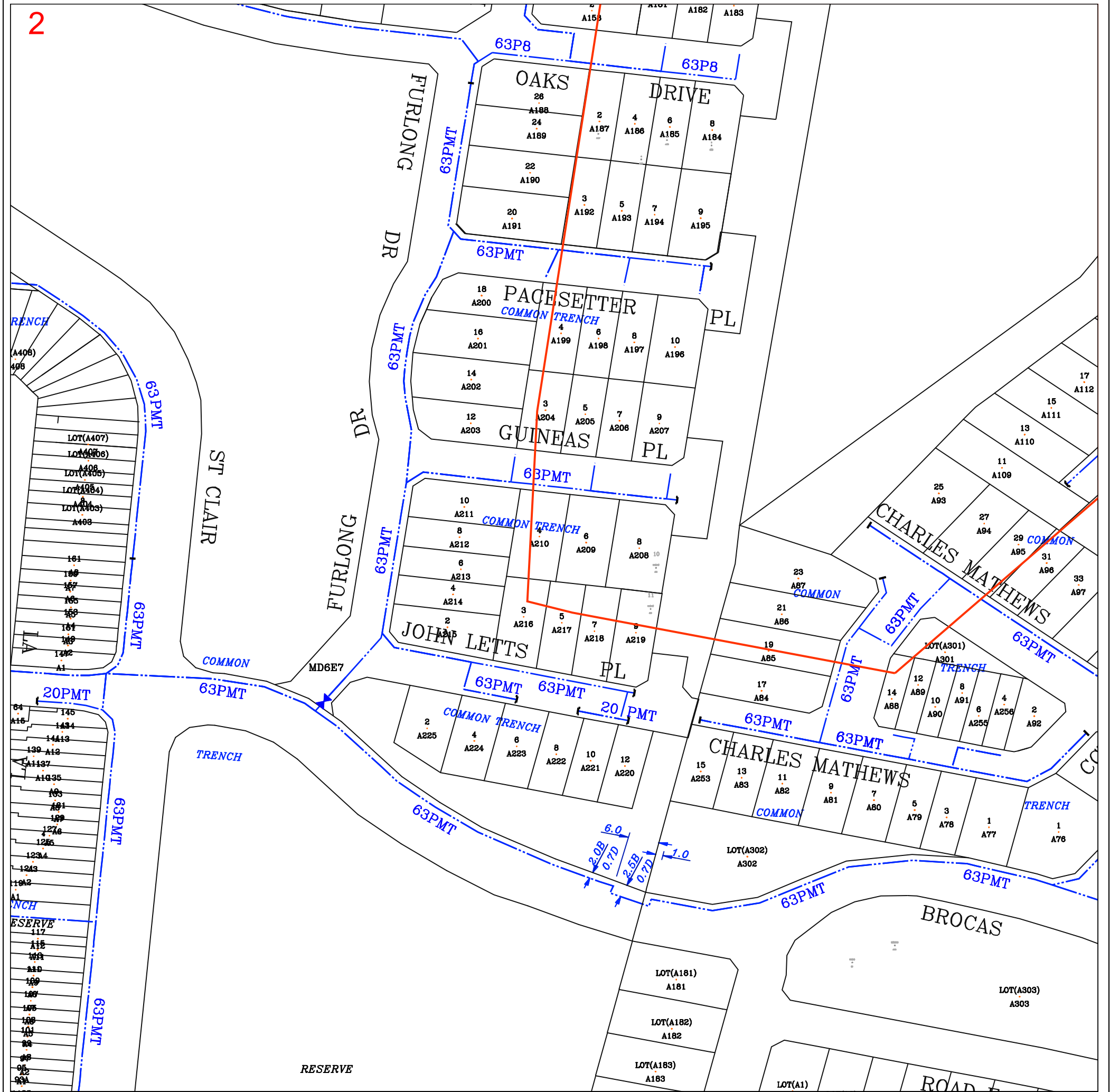
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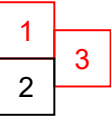
Site Address	589 Torrens Road St Clair 5011	Sequence No	93970905
Email	bseidel@greenhillaustralia.com.au	Map Reference	UbdAde 104M2,104M3,104N2,104N3

Before you commence any works you are required to complete the attached 'Work In The Vicinity Of Critical Gas Assets' request form and forward this to APA asap



ITEM	SYMBOL	TERMS	ITEM	SYMBOL
LOW PRESSURE 1.2 - 1.7kPa	—	B = BOUNDARY	DIAL BEFORE YOU DIG REQUESTED AREA	—
MEDIUM PRESSURE 35 - 100kPa	—	D = DEPTH	PRIORITY MAIN COVERAGE	—
HIGH PRESSURE 70 - 350kPa	—	BoK = BACK OF KERB		
TRANSMISSION PRESSURE 900 - 15000kPa	—	FoK = FRONT OF KERB		
PROPOSED MAIN (COLOUR BY PRESSURE)	—			
ABANDONED MAIN	—			

Map Key



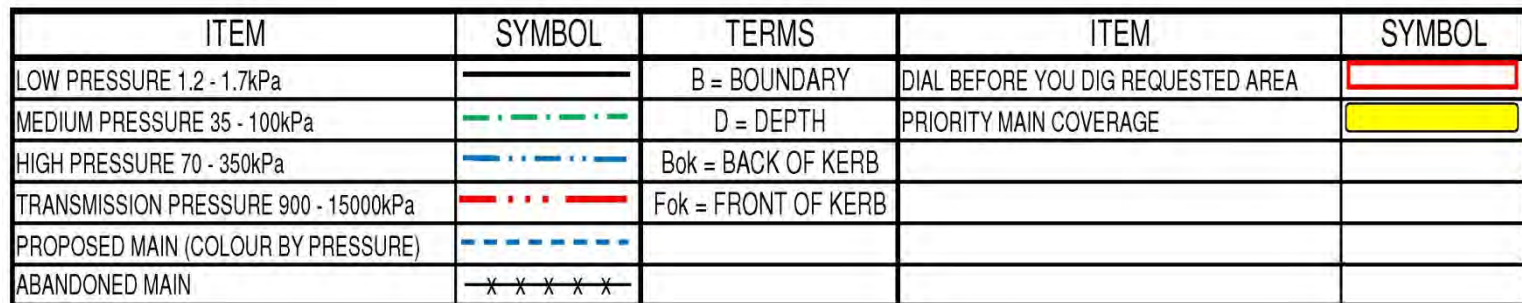
Scale 1:1000

0 0.01km





Before you commence any works you are required to complete the attached 'Work In The Vicinity Of Critical Gas Assets' request form and forward this to APA
asap



1	3
2	



NORTH CAROLINA STATE UNIVERSITY

WORK IN THE VICINITY OF CRITICAL GAS ASSETS

It is **your responsibility** to read and complete this request form

1. This request is required to confirm whether you need a 'Third Party Works Authorisation' and a qualified APA Group Representative on site when you undertake your proposed works
2. You **must not commence any excavation activity** in relation to this request without receiving a verbal or written confirmation re the outcome from an APA Group Representative. Once submitted, if you have not received any response from APA within 2 business days please contact us immediately via 1800 085 628
3. If a qualified APA Group Representative is required on site when you undertake your proposed works, this will need to be arranged dependent on their availability. Whilst we will aim to facilitate this within 2 business days from a decision, **this cannot be guaranteed**. Charges for APA Group supervision may apply
4. Penalties apply to excavators commencing work in the vicinity of Critical Gas Assets **prior to receiving an APA Group 'Third Party Works Authorisation'**
5. This request form must be accompanied by a detailed schedule of works

For further information refer to:

South Australia: Gas Industry Act 1997 – Section 83, Notice of work that may affect gas infrastructure.

Northern Territory: Energy Pipelines Act as in force at 8 March 2007 – Section 66, Threat to pipeline.

Return to: DBYDNetworksAPA@apa.com.au or APA Group, PO Box 6014, Halifax Street, SA 5000 or Fax to (08) 7131 0132 (Please note – new fax number)

Enquiries:

Should you have any questions with regards to the attached information please contact our Dial Before You Dig officer - 1800 085 628.

Work / Excavation Site Details:

Number:	Street:		
Suburb:		State:	
Sequence Number: 93970905			
Company Name			
Site Contact Person:			
Phone:		Mobile:	

Description of Work / Excavation:

Describe the work to be undertaken.			
Tick Applicable Box			
Excavation		Change to surface level	
Service crossing		Boring	
Proving		Other (provide details)	
Earthworks			
Excavator Size, Tooth Type & Tooth Size (provide details)			

Work / Excavation Drawings Attached:

Yes ☐

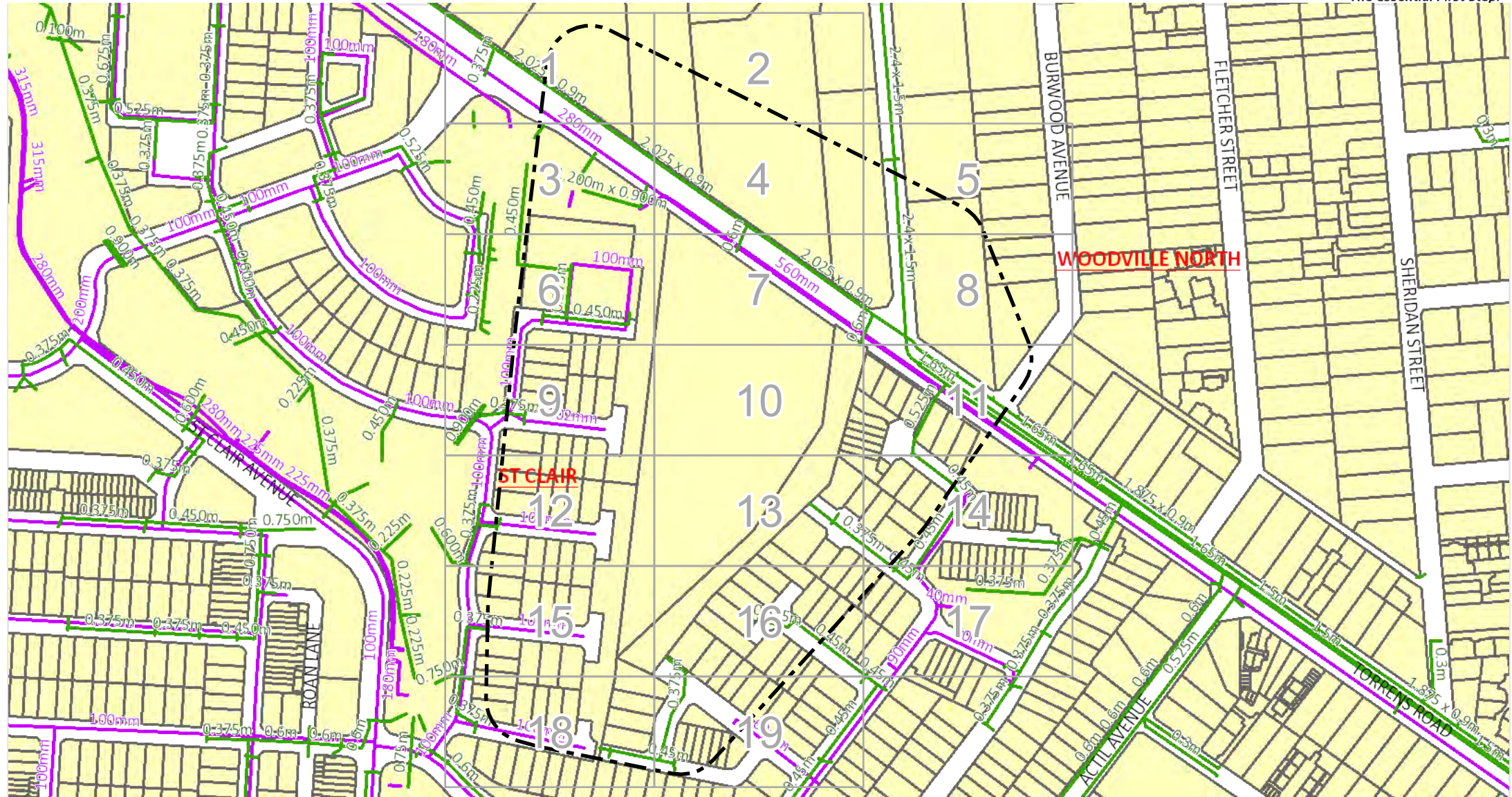
No ☐

Proposed Dates and Times:

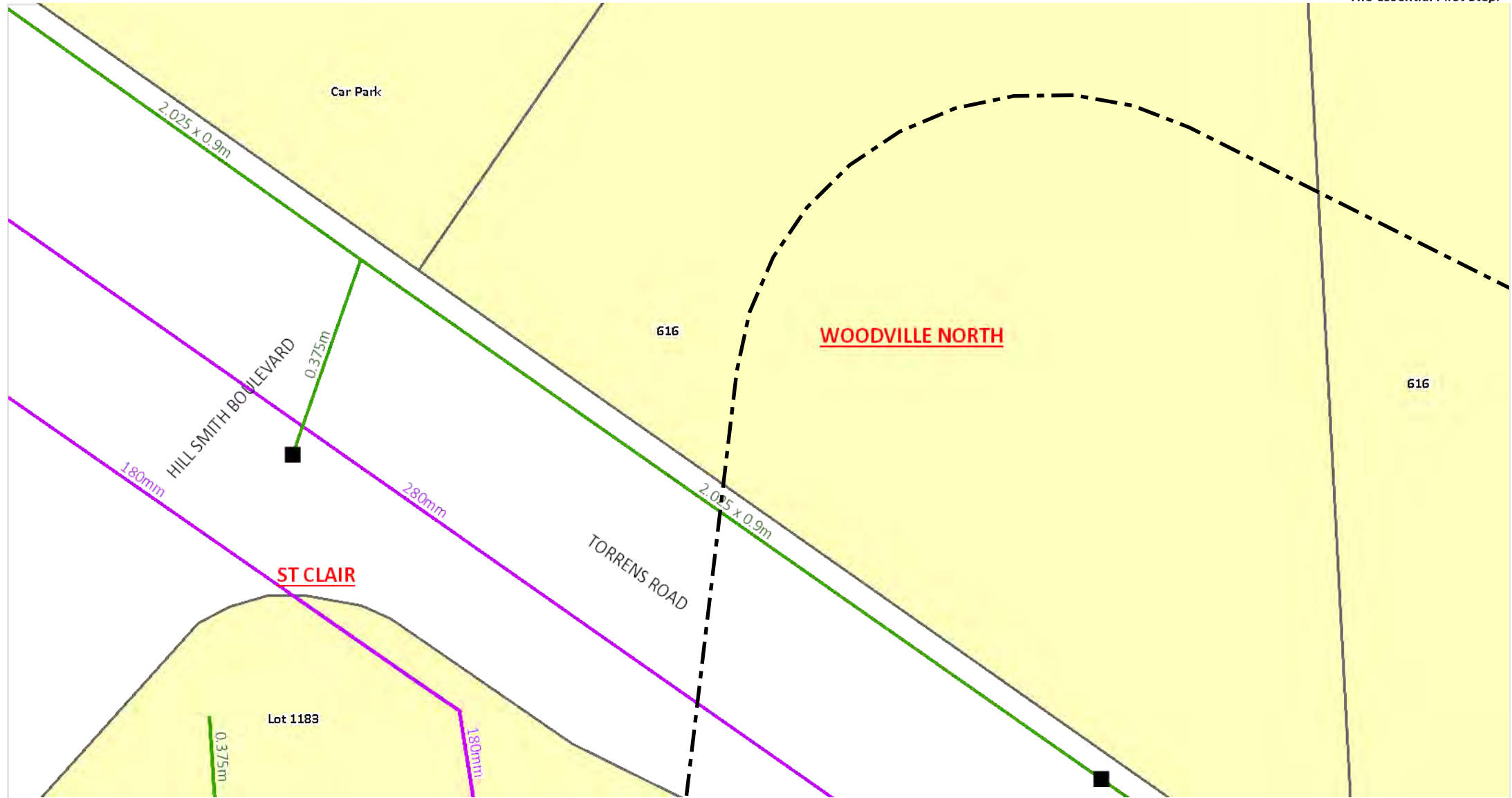
From			To	
Excavation	Date	Time	Date	Time
	/ /	am/pm	/ /	am/pm
Backfill	Date	Time	Date	Time
	/ /	am/pm	/ /	am/pm

Third Party Works Authorisation requested by:

Company Name			
Requestors Name			
Phone:		Mobile:	
Fax:		Email:	
Signature			



Sequence No: 93970901
 Job No: 18890287
 Location: 589 Torrens Road, St Clair, SA 5011

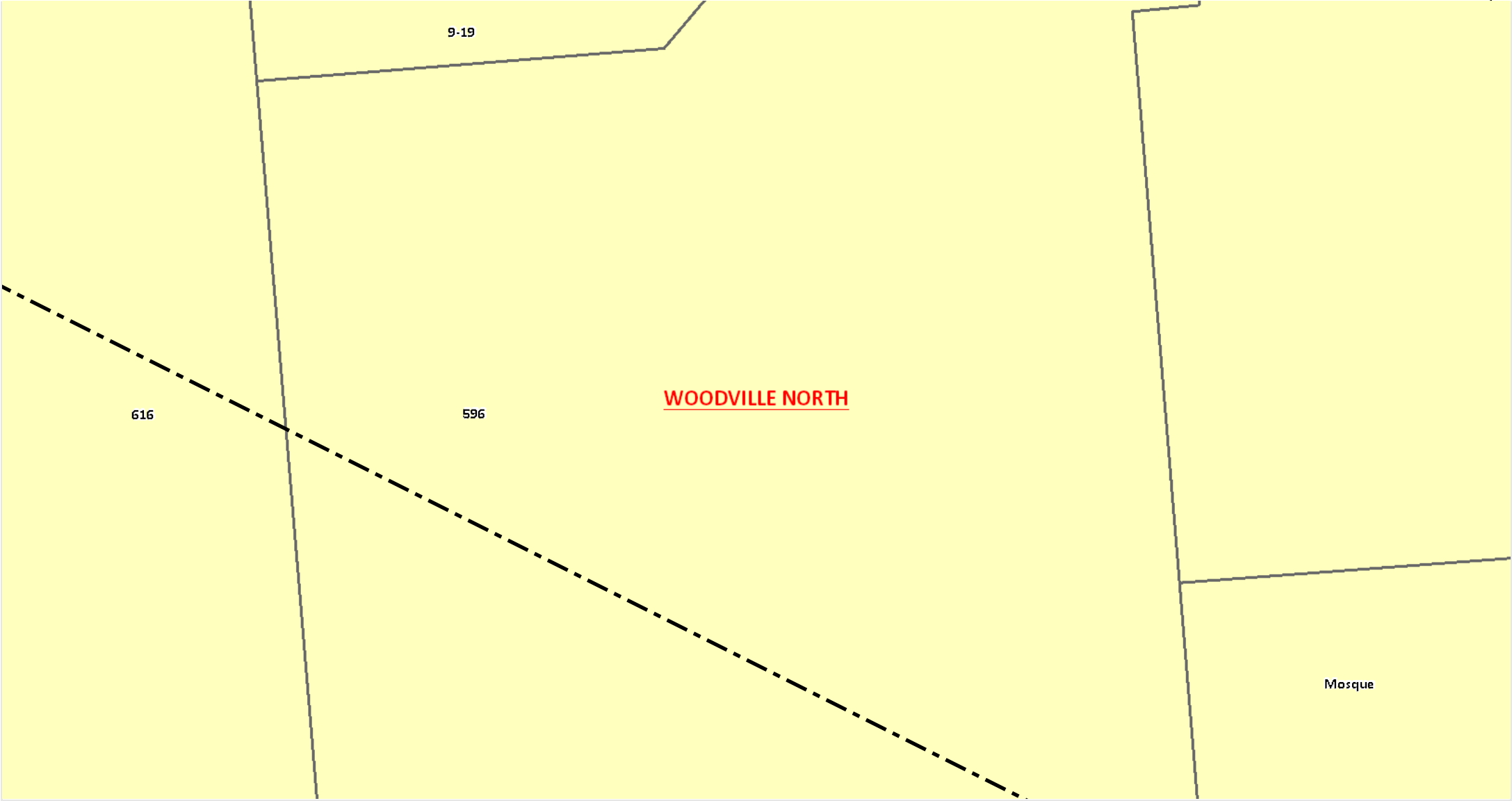


Legend | Scale: 1:500 | Tile No: 1

DBYD Enquiry Area	Valve	Communications & Electrical
Stormwater Pits	Water Meter	Cadastre
Unconfirmed Pits	RW Supply Main	Council Boundary
Stormwater Drains	RW Supply Connection	State Council Boundaries
Gross Pollutant Trap		







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Legend | Scale: 1:500 | Tile No: 2

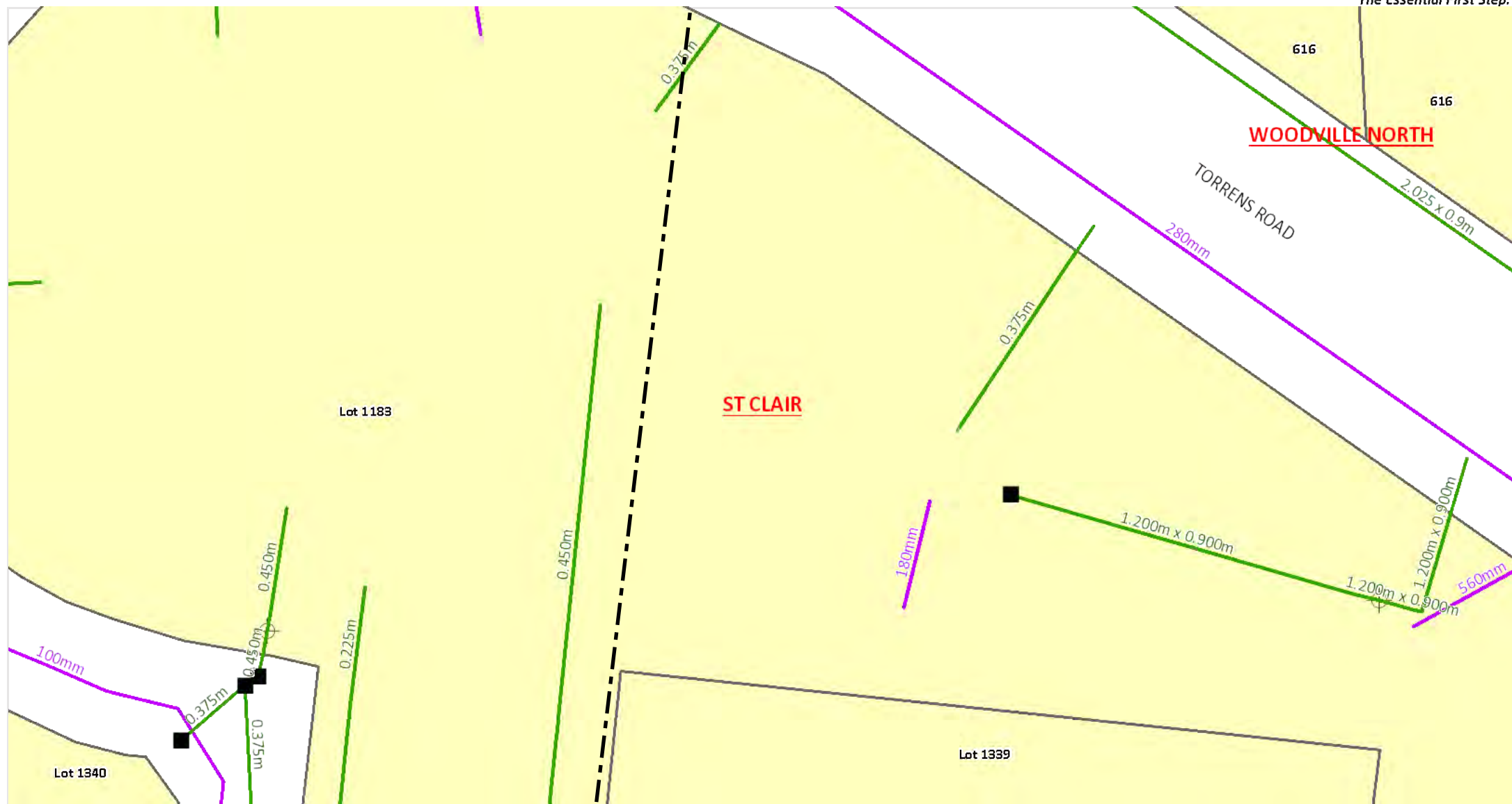


	DBYD Enquiry Area		Valve		Communications & Electrical
	Stormwater Pits		Water Meter		Cadastral
	Unconfirmed Pits		RW Supply Main		Council Boundary
	Stormwater Drains		RW Supply Connection		State Council Boundaries
	Gross Pollutant Trap				



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Sequence No: 93970901
 Job No: 18890287
 Location: 589 Torrens Road, St Clair, SA 5011



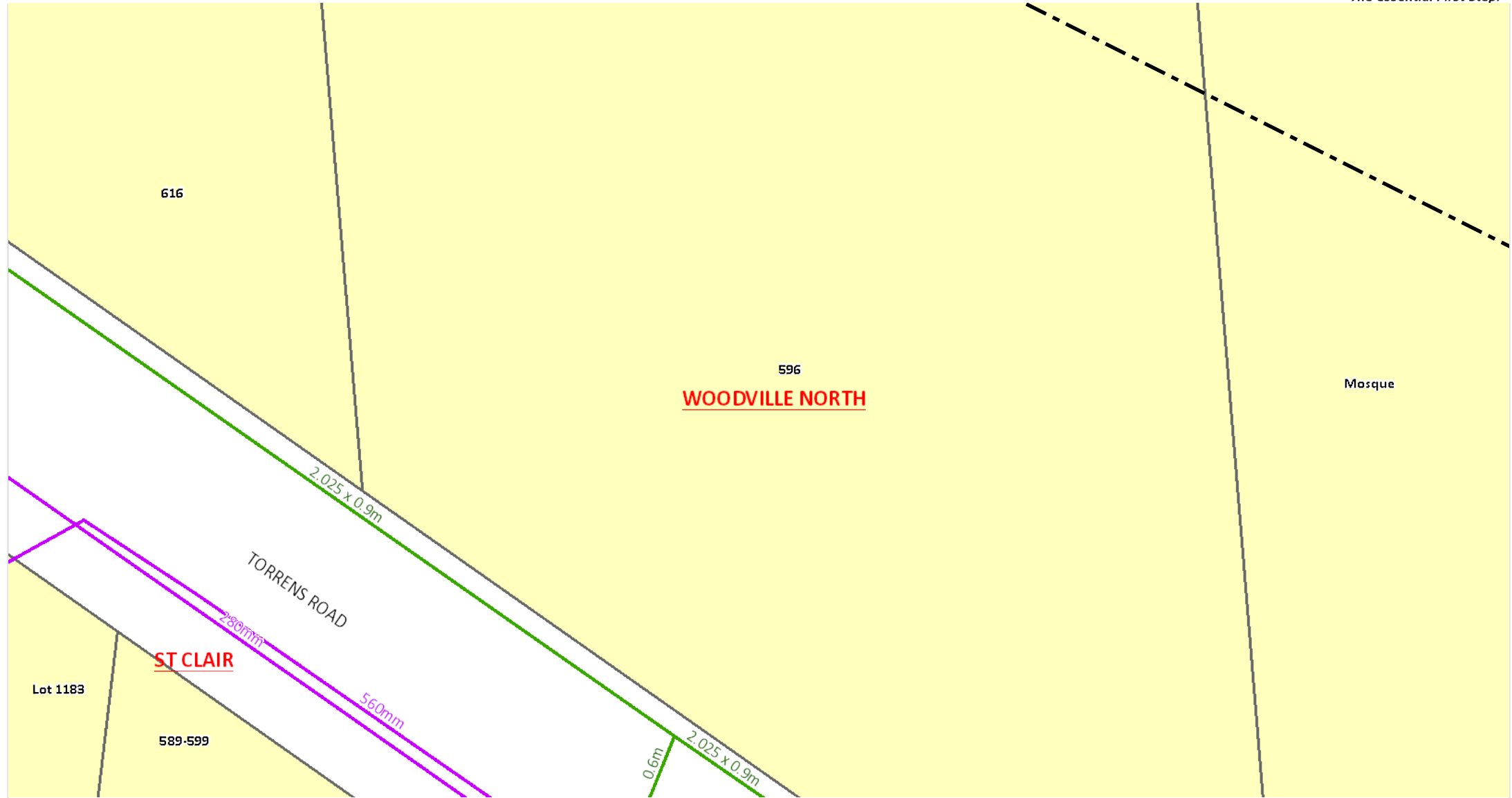
Legend | Scale: 1:500 | Tile No: 3

DBYD Enquiry Area	Valve	Communications & Electrical
Stormwater Pits	Water Meter	Cadastre
Unconfirmed Pits	RW Supply Main	Council Boundary
Stormwater Drains	RW Supply Connection	State Council Boundaries
Gross Pollutant Trap		



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Sequence No: 93970901
 Job No: 18890287
 Location: 589 Torrens Road, St Clair, SA 5011



Legend | Scale: 1:500 | Tile No: 4

DBYD Enquiry Area	Valve	Communications & Electrical
Stormwater Pits	Water Meter	Cadastre
Unconfirmed Pits	RW Supply Main	Council Boundary
Stormwater Drains	RW Supply Connection	State Council Boundaries
Gross Pollutant Trap		

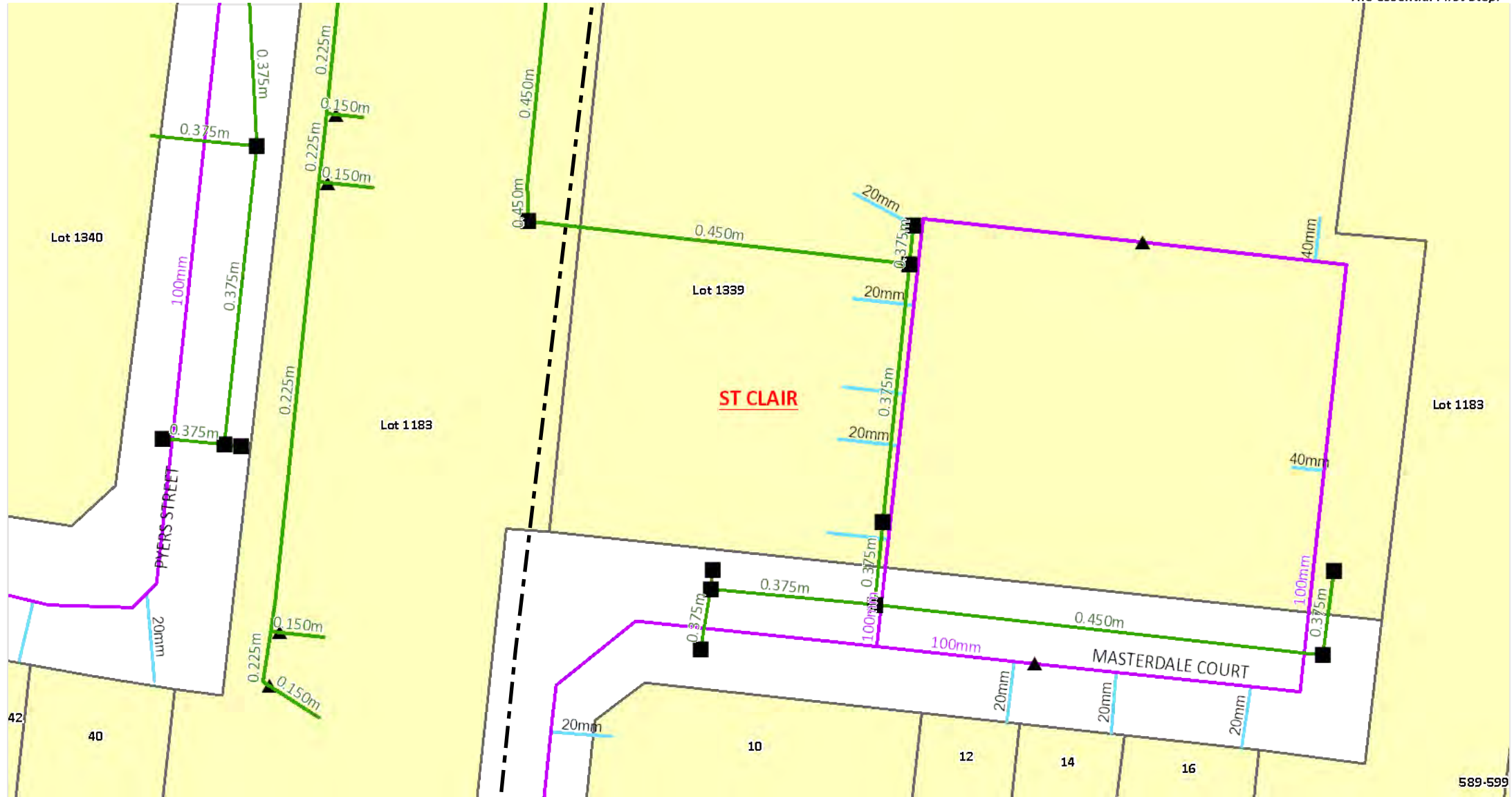


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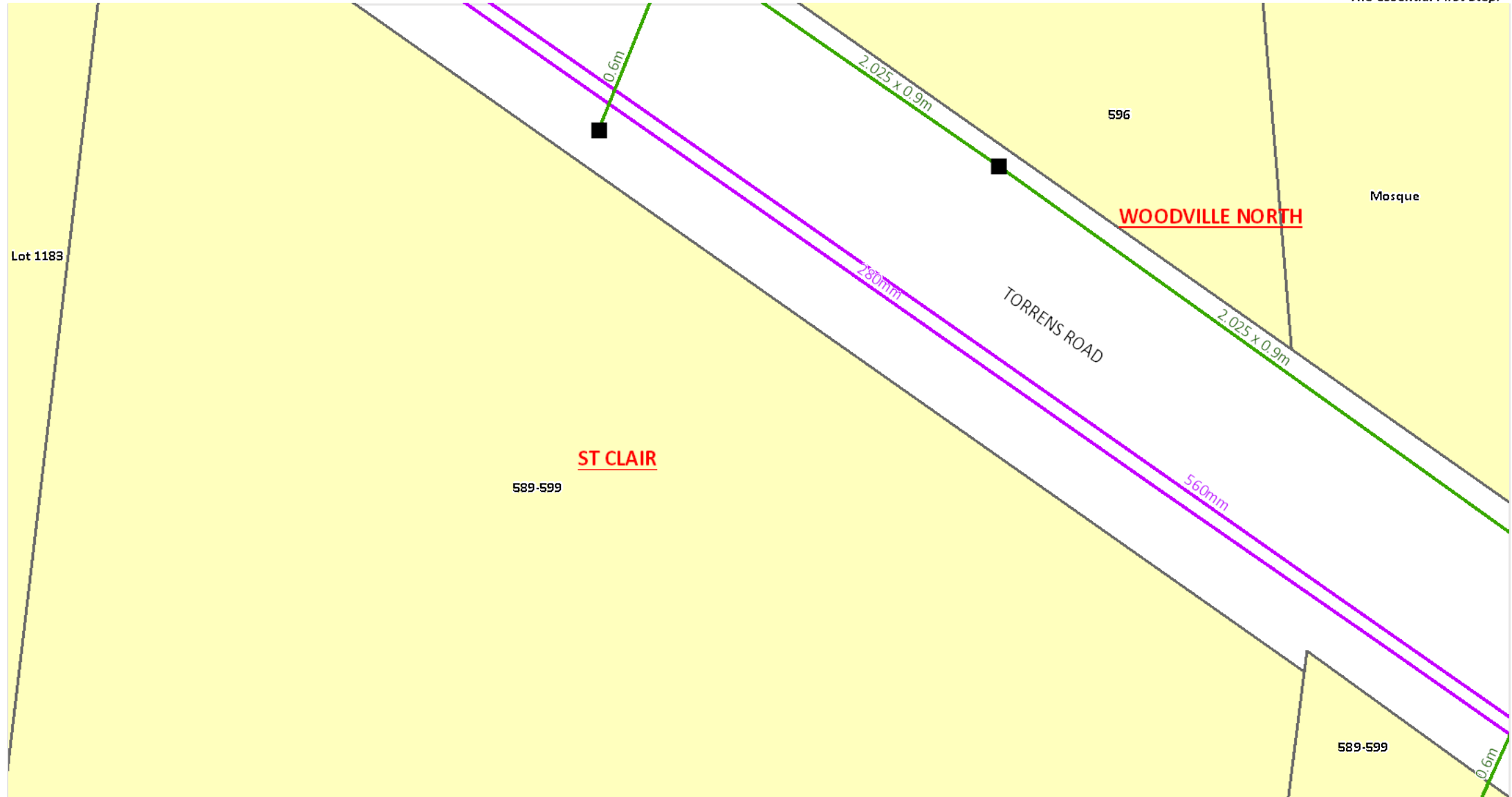


Legend | Scale: 1:500 | Tile No: 6



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Sequence No: 93970901
 Job No: 18890287
 Location: 589 Torrens Road, St Clair, SA 5011



Legend | Scale: 1:500 | Tile No: 7

DBYD Enquiry Area	Valve	Communications & Electrical
Stormwater Pits	Water Meter	Cadastre
Unconfirmed Pits	RW Supply Main	Council Boundary
Stormwater Drains	RW Supply Connection	State Council Boundaries
Gross Pollutant Trap		



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Sequence No: 93970901
 Job No: 18890287
 Location: 589 Torrens Road, St Clair, SA 5011



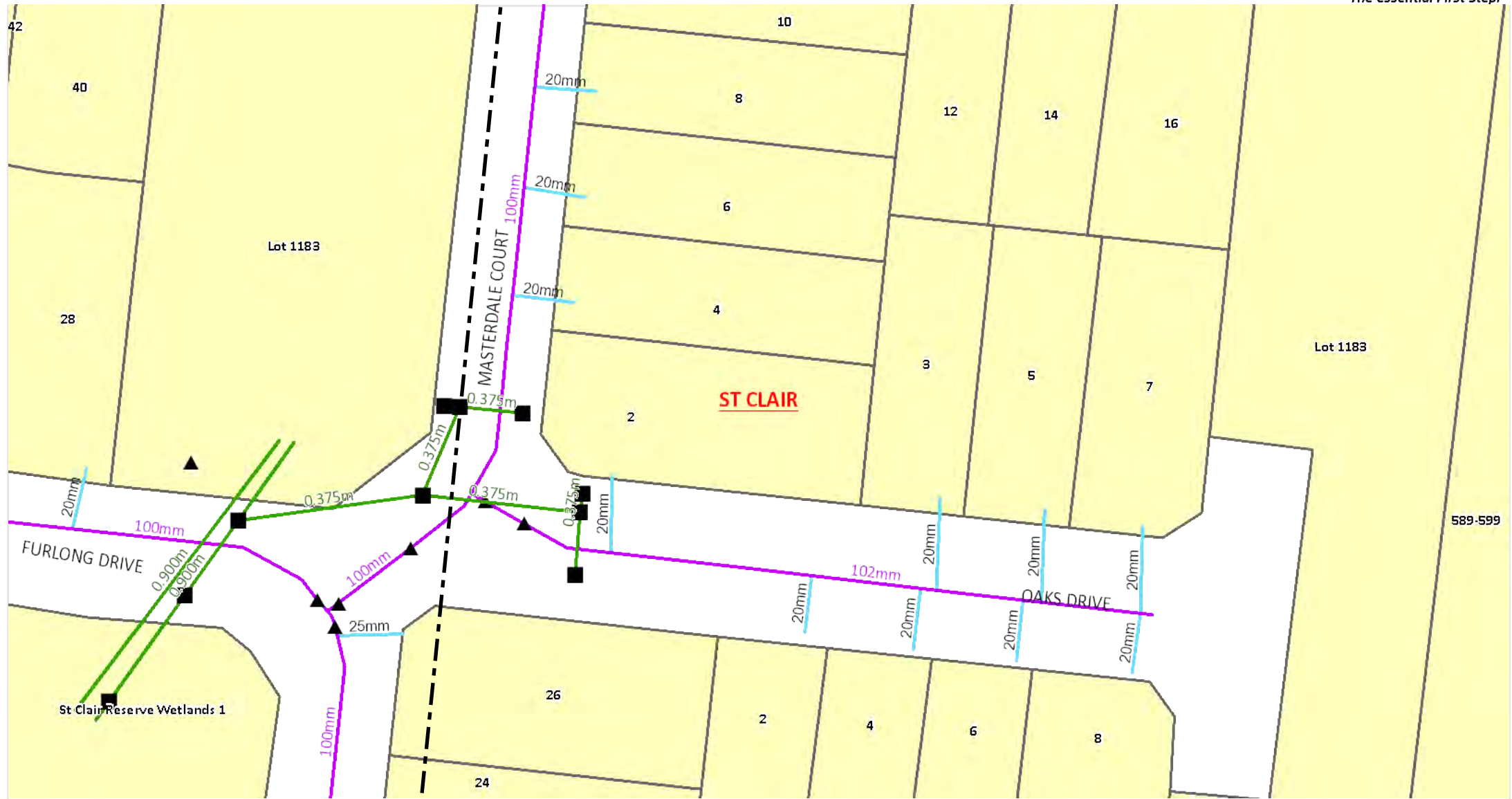
Legend | Scale: 1:500 | Tile No: 8

DBYD Enquiry Area	Valve	Communications & Electrical
Stormwater Pits	Water Meter	Cadastre
Unconfirmed Pits	RW Supply Main	Council Boundary
Stormwater Drains	RW Supply Connection	State Council Boundaries
Gross Pollutant Trap		



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Sequence No: 93970901
 Job No: 18890287
 Location: 589 Torrens Road, St Clair, SA 5011



Legend | Scale: 1:500 | Tile No: 9

DBYD Enquiry Area	Valve	Communications & Electrical
Stormwater Pits	Water Meter	Cadastre
Unconfirmed Pits	RW Supply Main	Council Boundary
Stormwater Drains	RW Supply Connection	State Council Boundaries
Gross Pollutant Trap		



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Legend | Scale: 1:500 | Tile No: 10

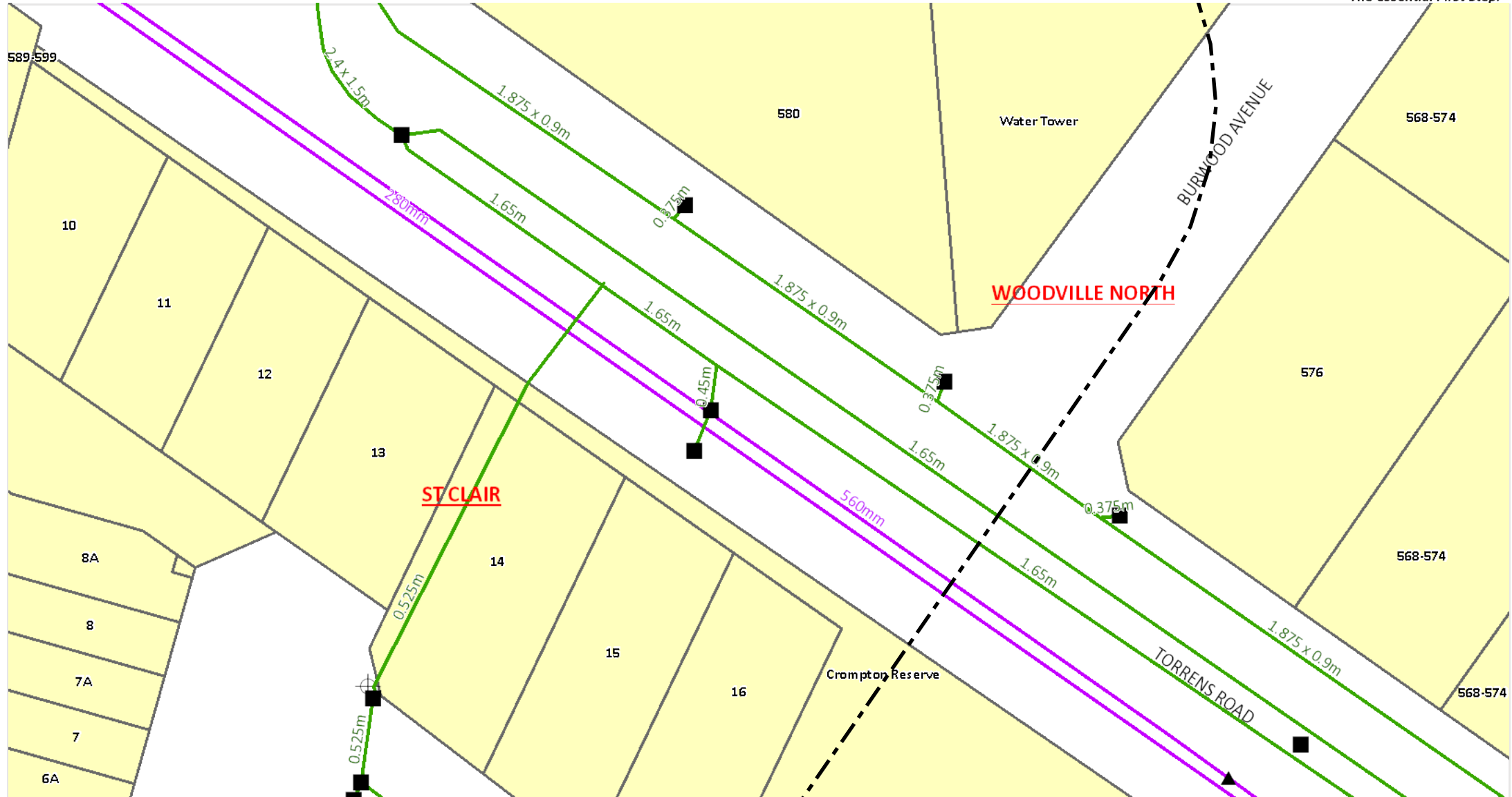


 DBYD Enquiry Area	 Valve	 Communications & Electrical
 Stormwater Pits	 Water Meter	 Cadastre
 Unconfirmed Pits	 RW Supply Main	 Council Boundary
 Stormwater Drains	 RW Supply Connection	 State Council Boundaries
 Gross Pollutant Trap		



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Sequence No: 93970901
 Job No: 18890287
 Location: 589 Torrens Road, St Clair, SA 5011



Legend | Scale: 1:500 | Tile No: 11

DBYD Enquiry Area

Stormwater Pits

Unconfirmed Pits

Stormwater Drains

Gross Pollutant Trap

Valve

Water Meter

RW Supply Main

RW Supply Connection

Communications & Electrical

Cadastre

Council Boundary

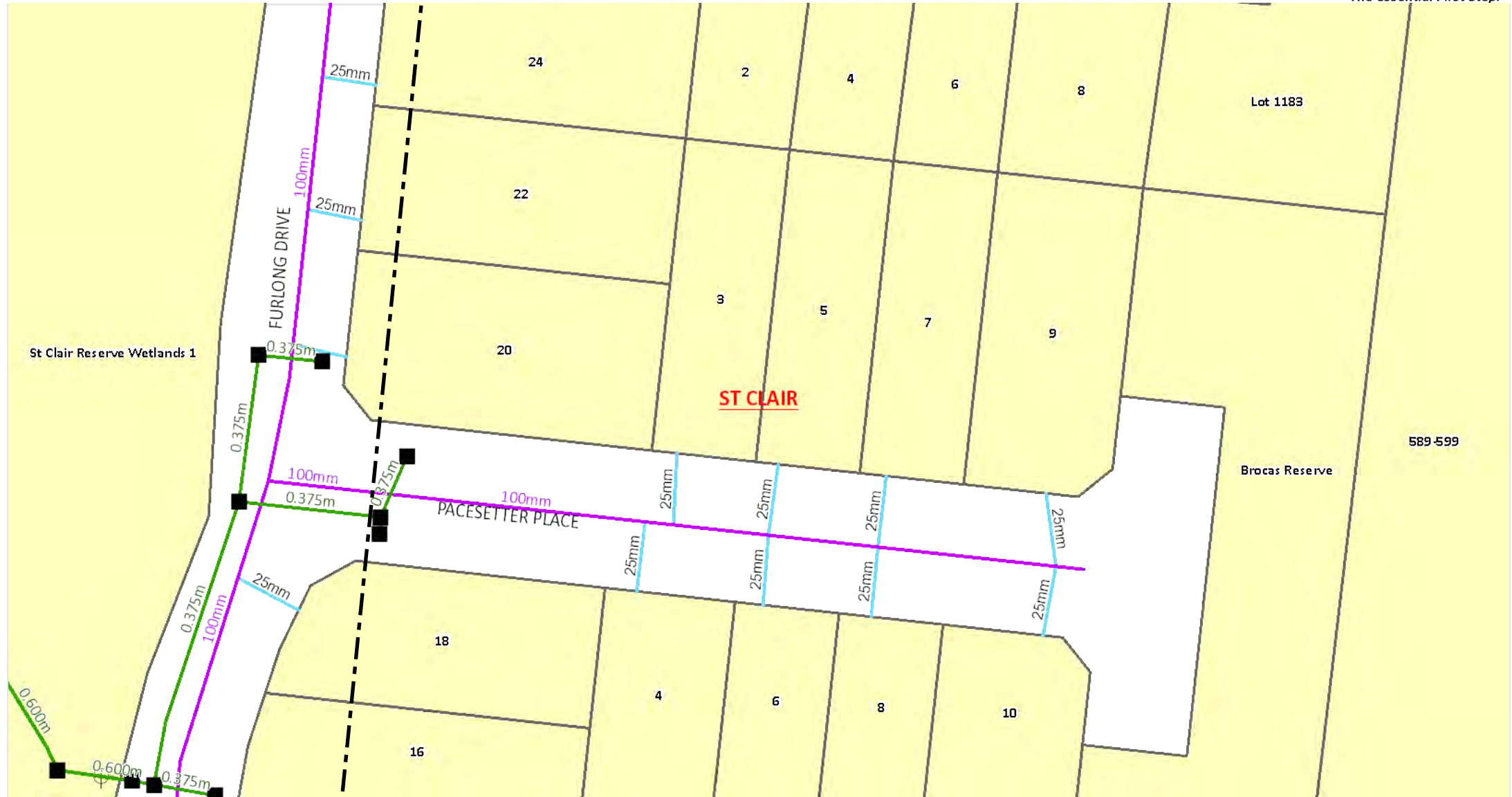
State Council Boundaries

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Charles Sturt General Plan.docx (Data last updated 18 June 2017)

Sequence No: 93970901
 Job No: 18890287
 Location: 589 Torrens Road, St Clair, SA 5011



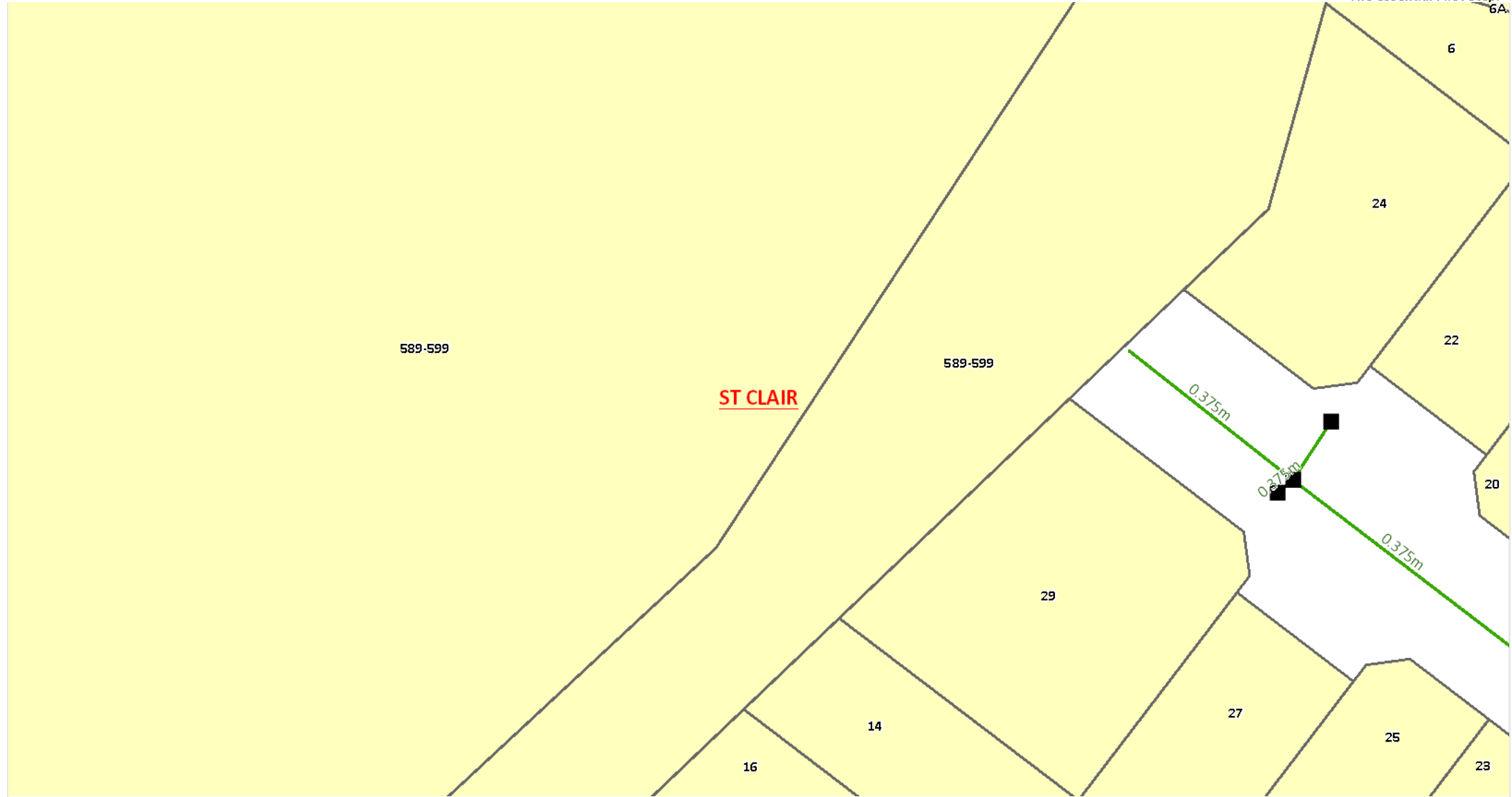
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DBYD Enquiry Area	Valve	Communications & Electrical
Stormwater Pits	Water Meter	Cadastral
Unconfirmed Pits	RW Supply Main	Council Boundary
Stormwater Drains	RW Supply Connection	State Council Boundaries
Gross Pollutant Trap		



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Sequence No: 93970901
 Job No: 18890287
 Location: 589 Torrens Road, St Clair, SA 5011



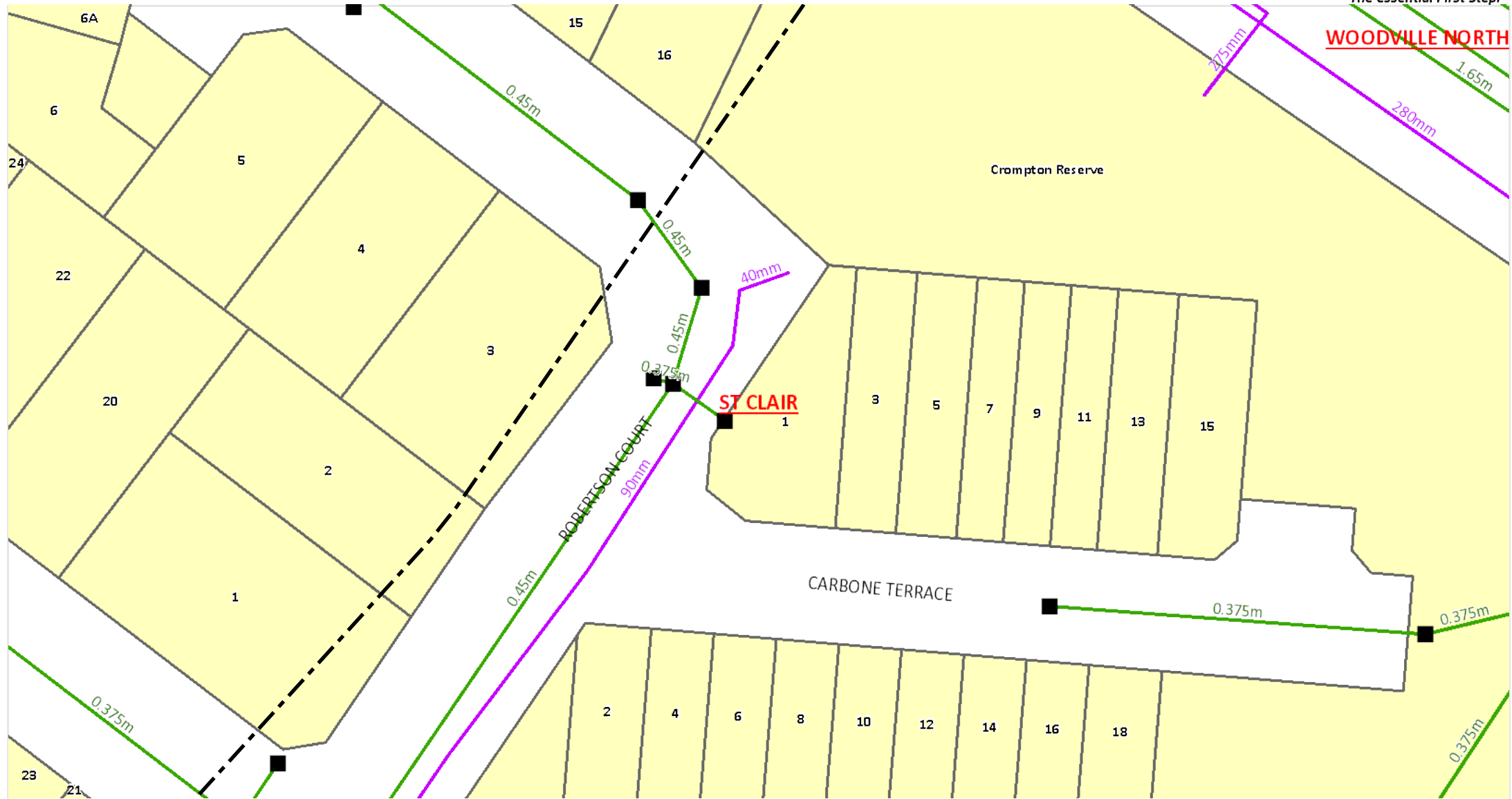
Legend | Scale: 1:500 | Tile No: 13

DBYD Enquiry Area	Valve	Communications & Electrical
Stormwater Pits	Water Meter	Cadastre
Unconfirmed Pits	RW Supply Main	Council Boundary
Stormwater Drains	RW Supply Connection	State Council Boundaries
Gross Pollutant Trap		



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Sequence No: 93970901
 Job No: 18890287
 Location: 589 Torrens Road, St Clair, SA 5011



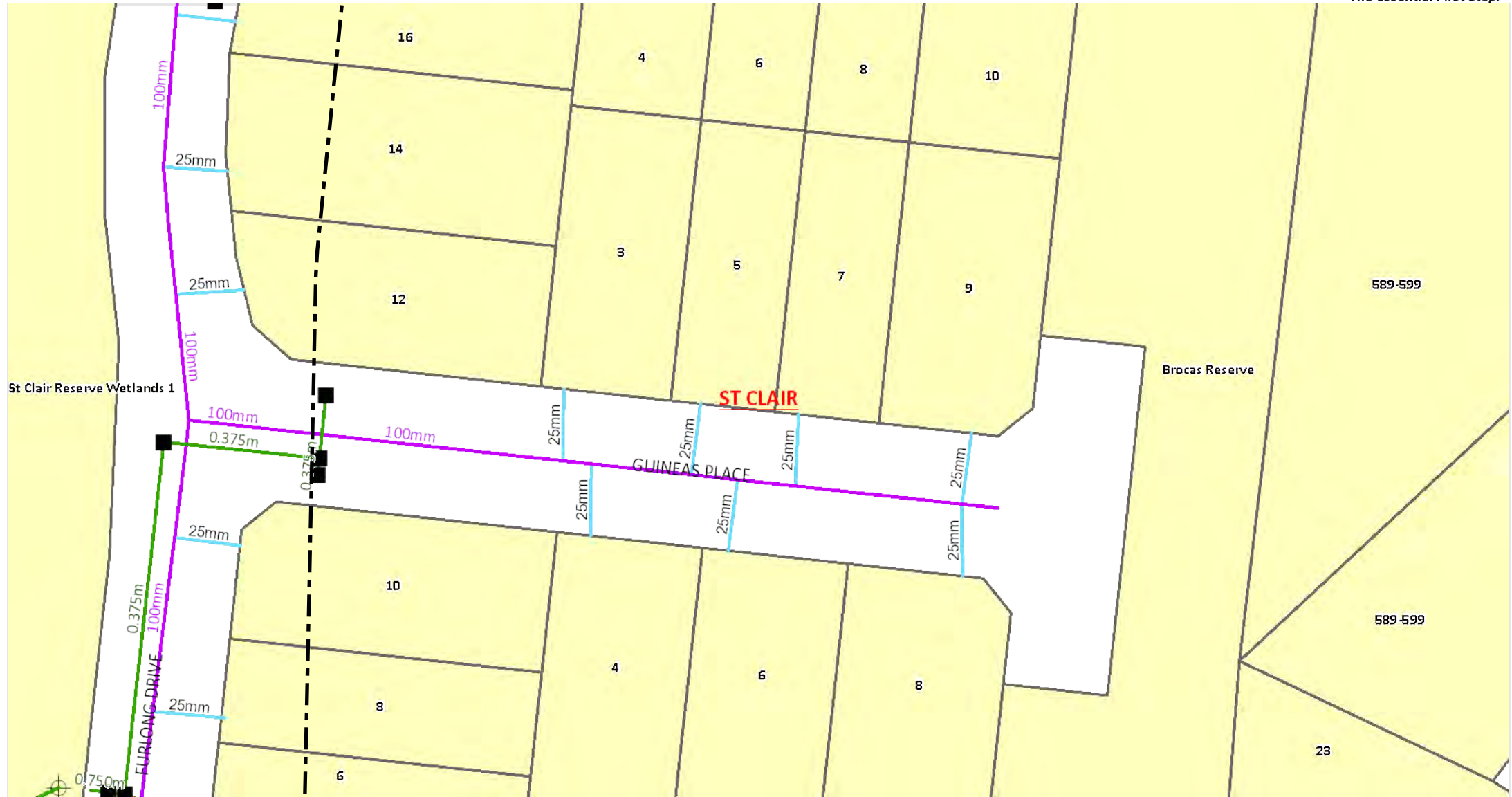
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DBYD Enquiry Area	Valve	Communications & Electrical
Stormwater Pits	Water Meter	Cadastre
Unconfirmed Pits	RW Supply Main	Council Boundary
Stormwater Drains	RW Supply Connection	State Council Boundaries
Gross Pollutant Trap		



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Sequence No: 93970901
 Job No: 18890287
 Location: 589 Torrens Road, St Clair, SA 5011



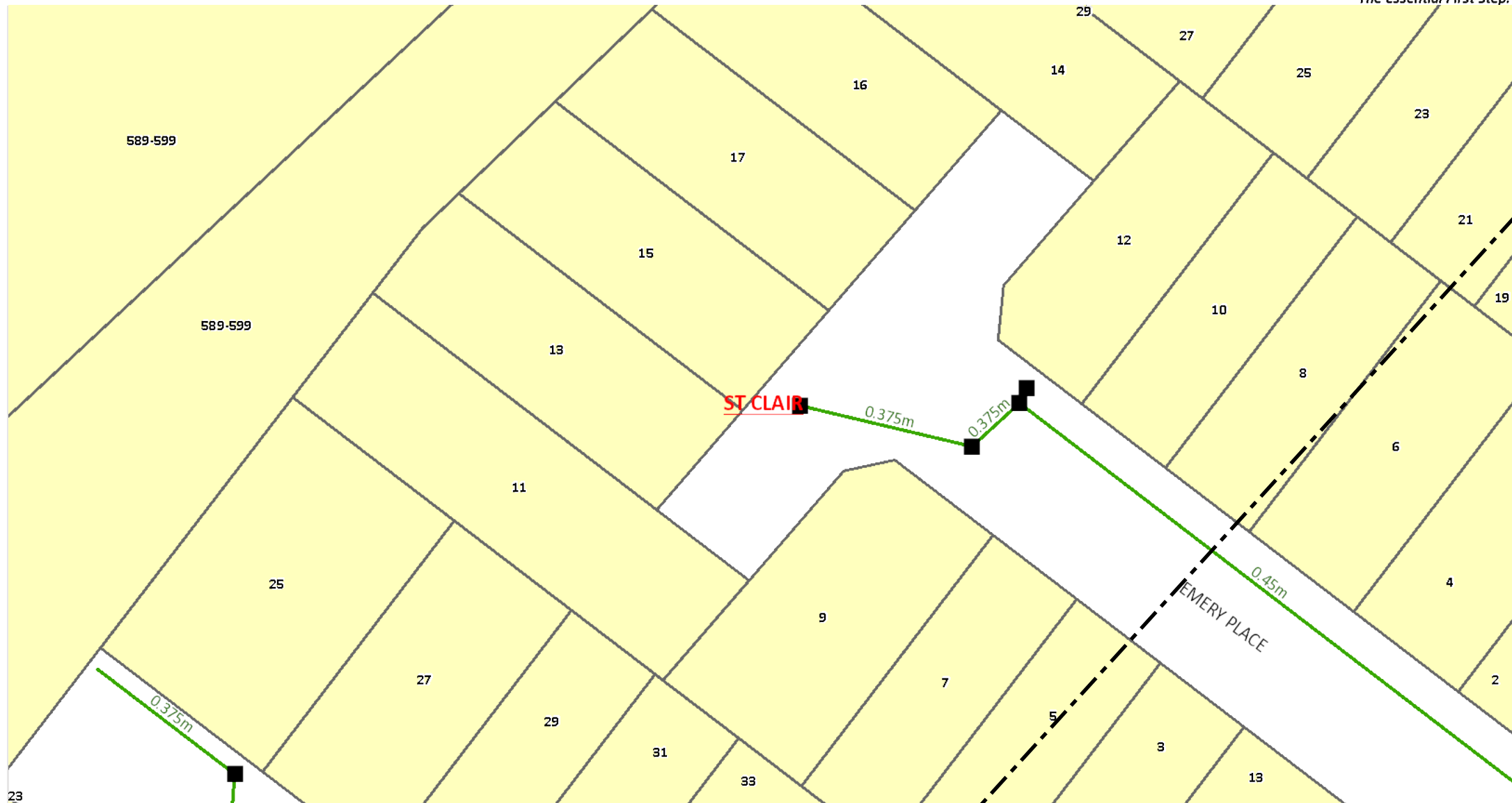
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DBYD Enquiry Area	Valve	Communications & Electrical
Stormwater Pits	Water Meter	Cadastre
Unconfirmed Pits	RW Supply Main	Council Boundary
Stormwater Drains	RW Supply Connection	State Council Boundaries
Gross Pollutant Trap		



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Sequence No: 93970901
 Job No: 18890287
 Location: 589 Torrens Road, St Clair, SA 5011



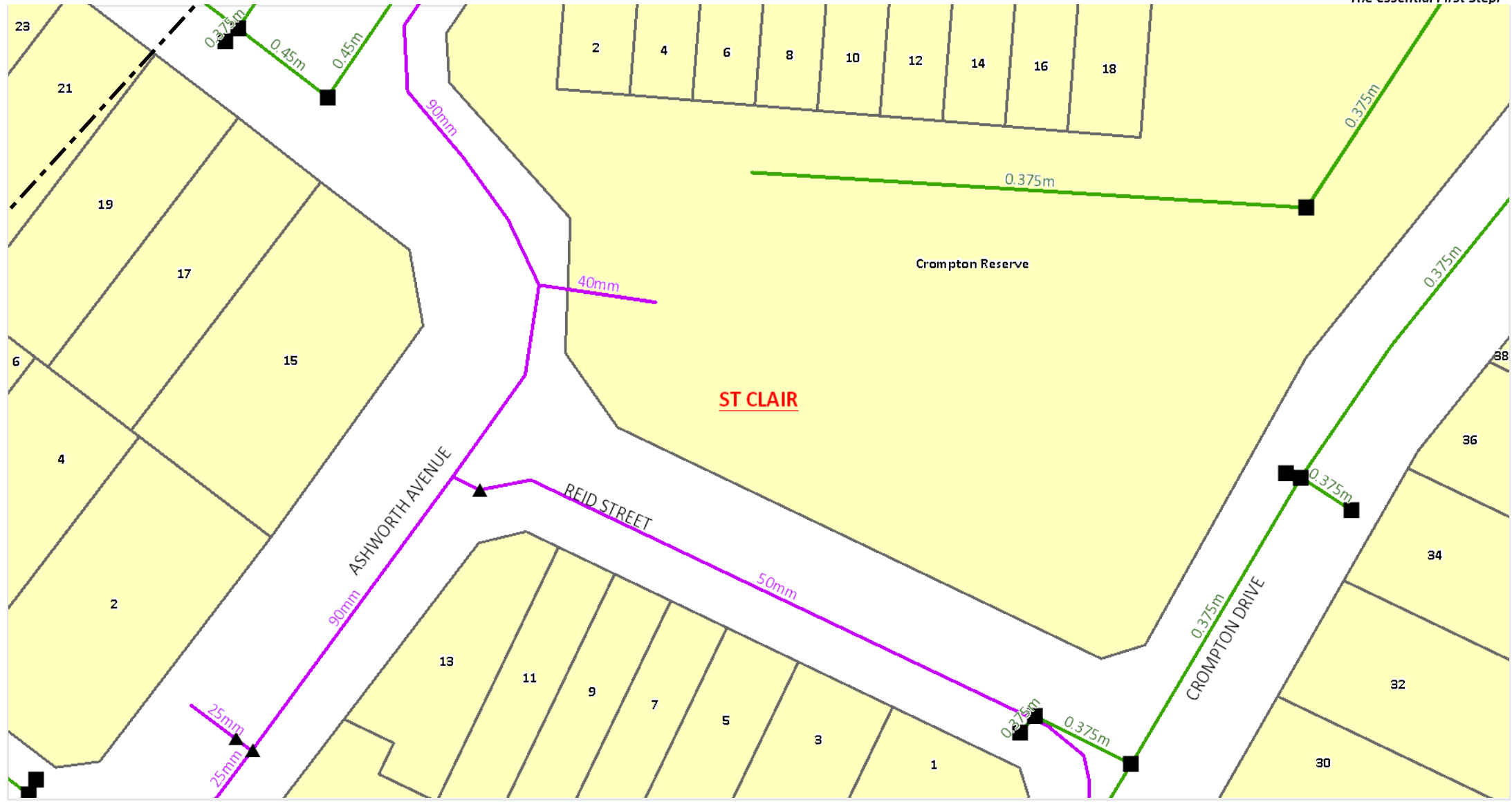
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DBYD Enquiry Area	Valve	Communications & Electrical
Stormwater Pits	Water Meter	Cadastre
Unconfirmed Pits	RW Supply Main	Council Boundary
Stormwater Drains	RW Supply Connection	State Council Boundaries
Gross Pollutant Trap		



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Sequence No: 93970901
Job No: 18890287
Location: 589 Torrens Road, St Clair, SA 5011

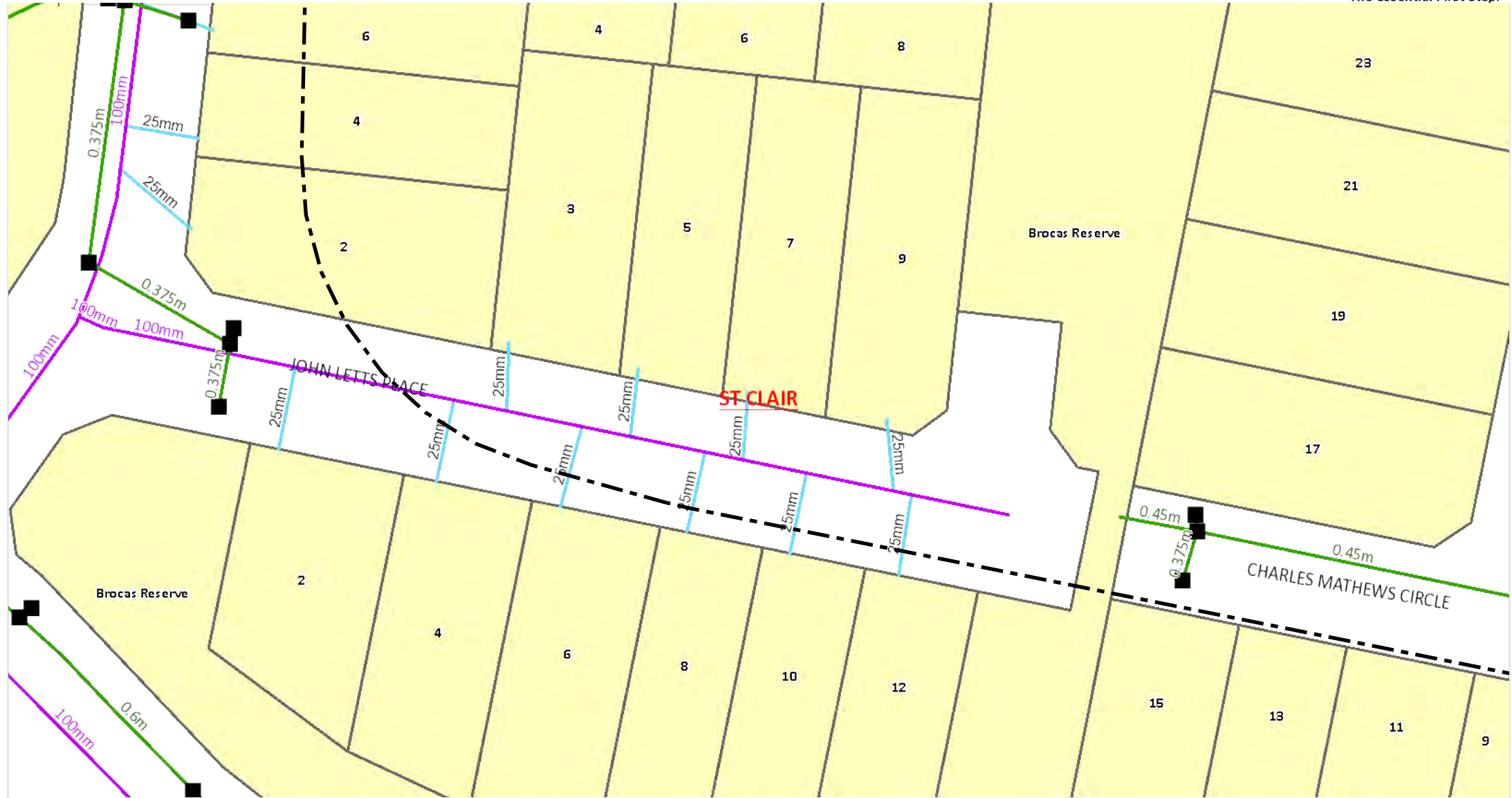


Legend | Scale: 1:500 | Tile No: 17

DBYD Enquiry Area	Valve	Communications & Electrical
Stormwater Pits	Water Meter	Cadastre
Unconfirmed Pits	RW Supply Main	Council Boundary
Stormwater Drains	RW Supply Connection	State Council Boundaries
Gross Pollutant Trap		

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Sequence No: 93970901
 Job No: 18890287
 Location: 589 Torrens Road, St Clair, SA 5011

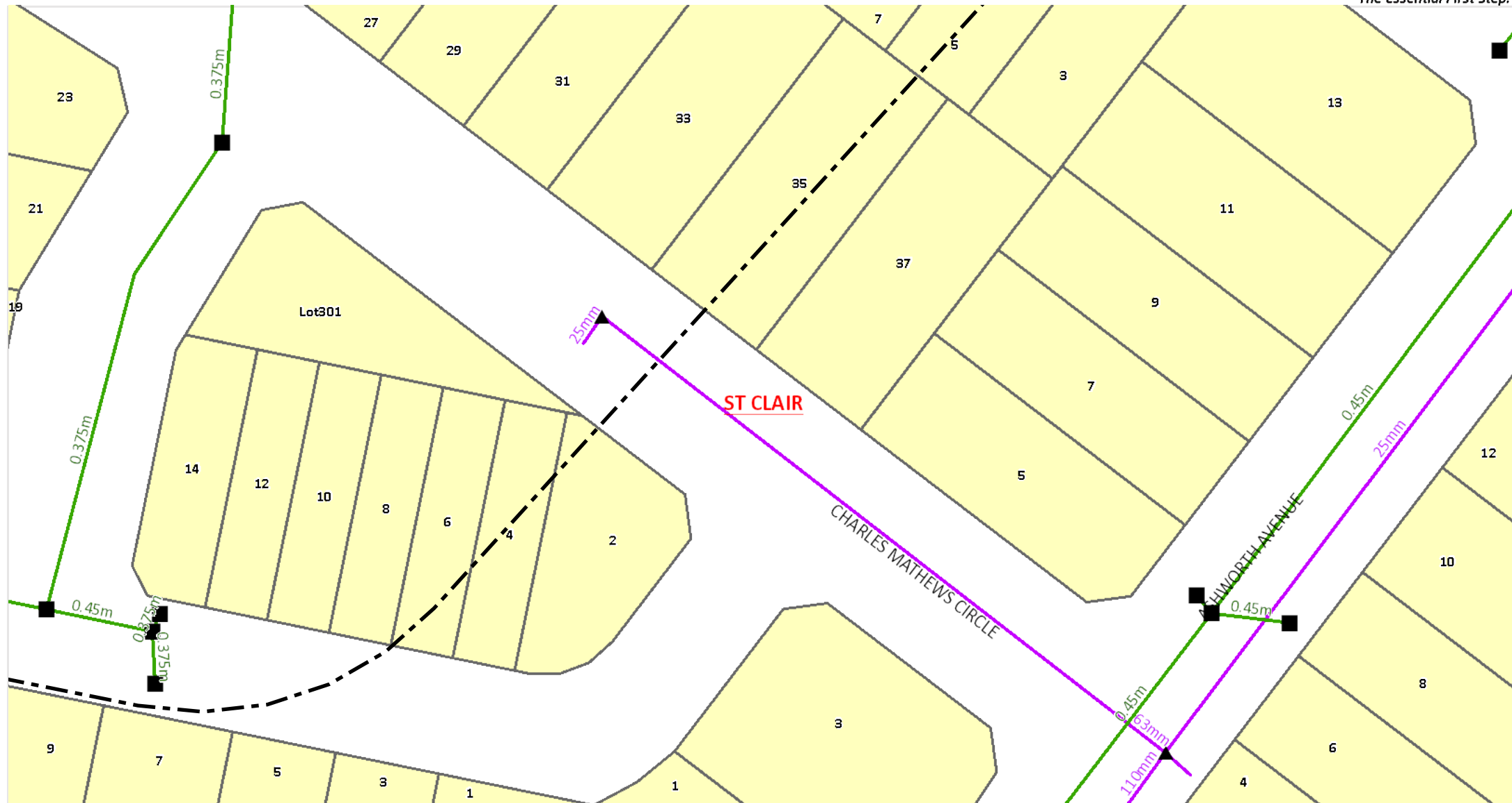


Legend | Scale: 1:500 | Tile No: 18



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Sequence No: 93970901
 Job No: 18890287
 Location: 589 Torrens Road, St Clair, SA 5011



Legend | Scale: 1:500 | Tile No: 19


DBYD Enquiry Area	Valve	Communications & Electrical
Stormwater Pits	Water Meter	Cadastre
Unconfirmed Pits	RW Supply Main	Council Boundary
Stormwater Drains	RW Supply Connection	State Council Boundaries
Gross Pollutant Trap		









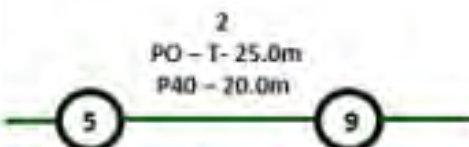
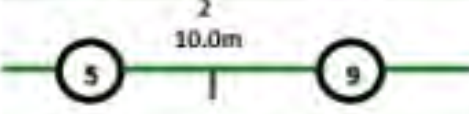





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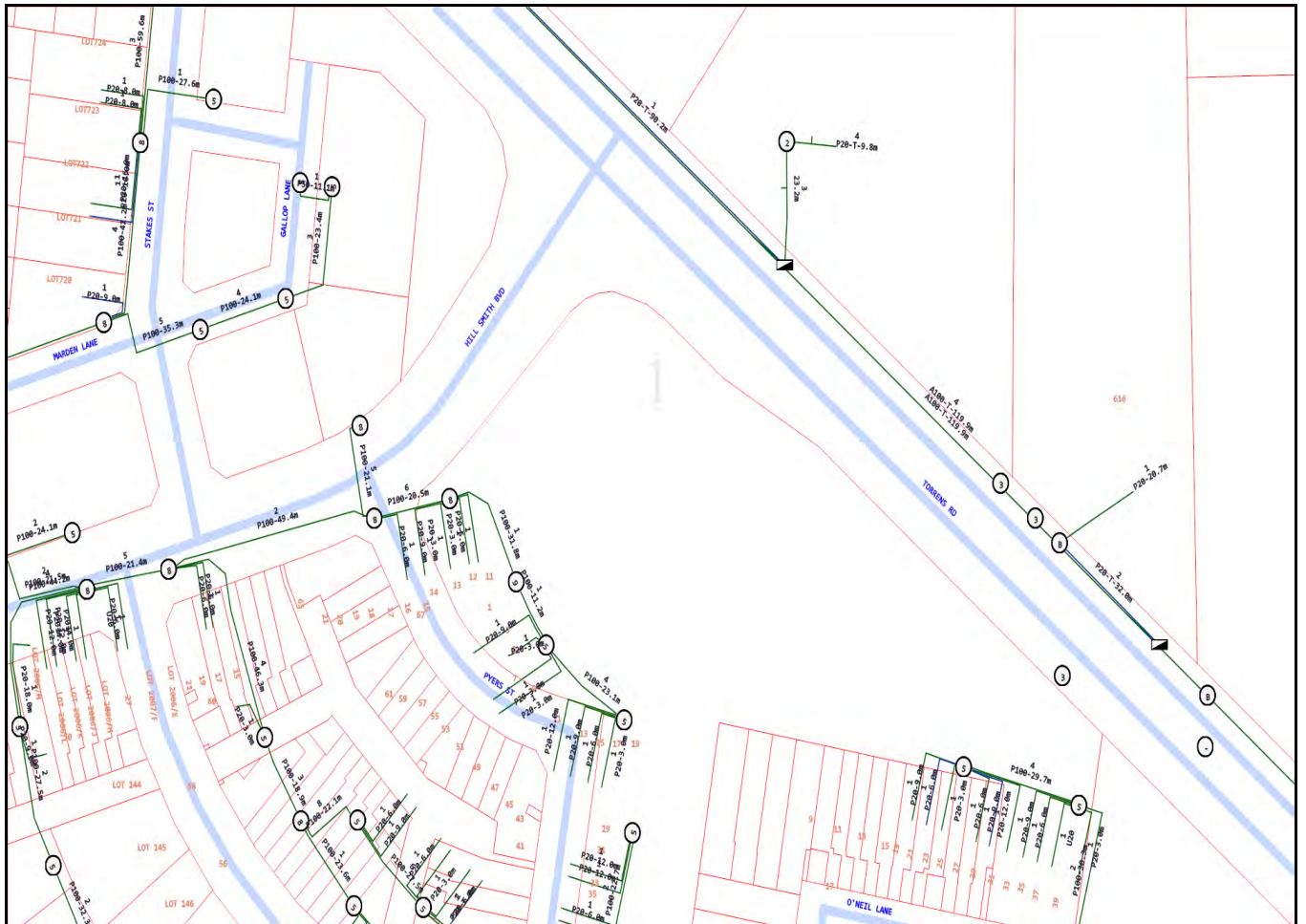


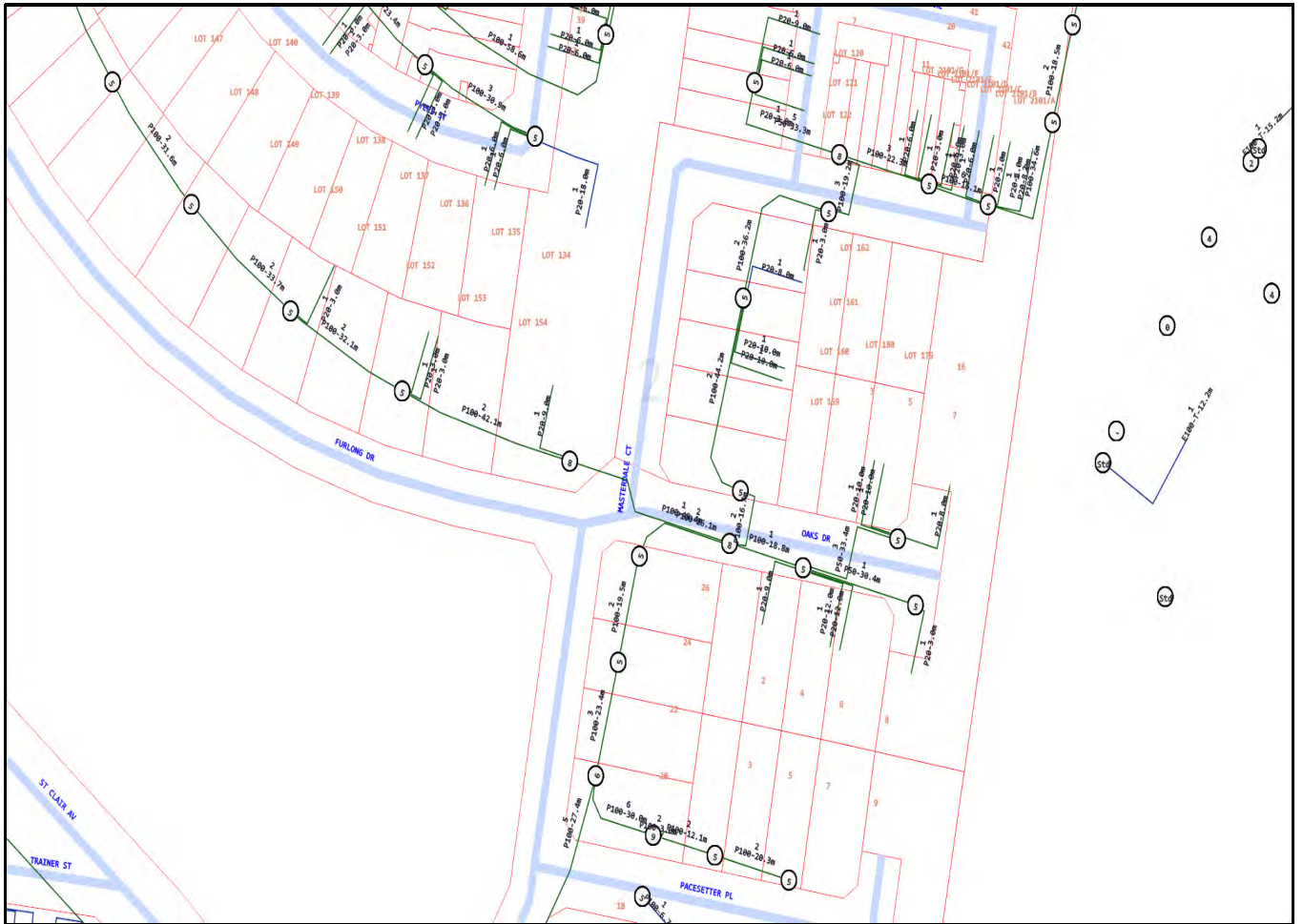
Indicative Plans

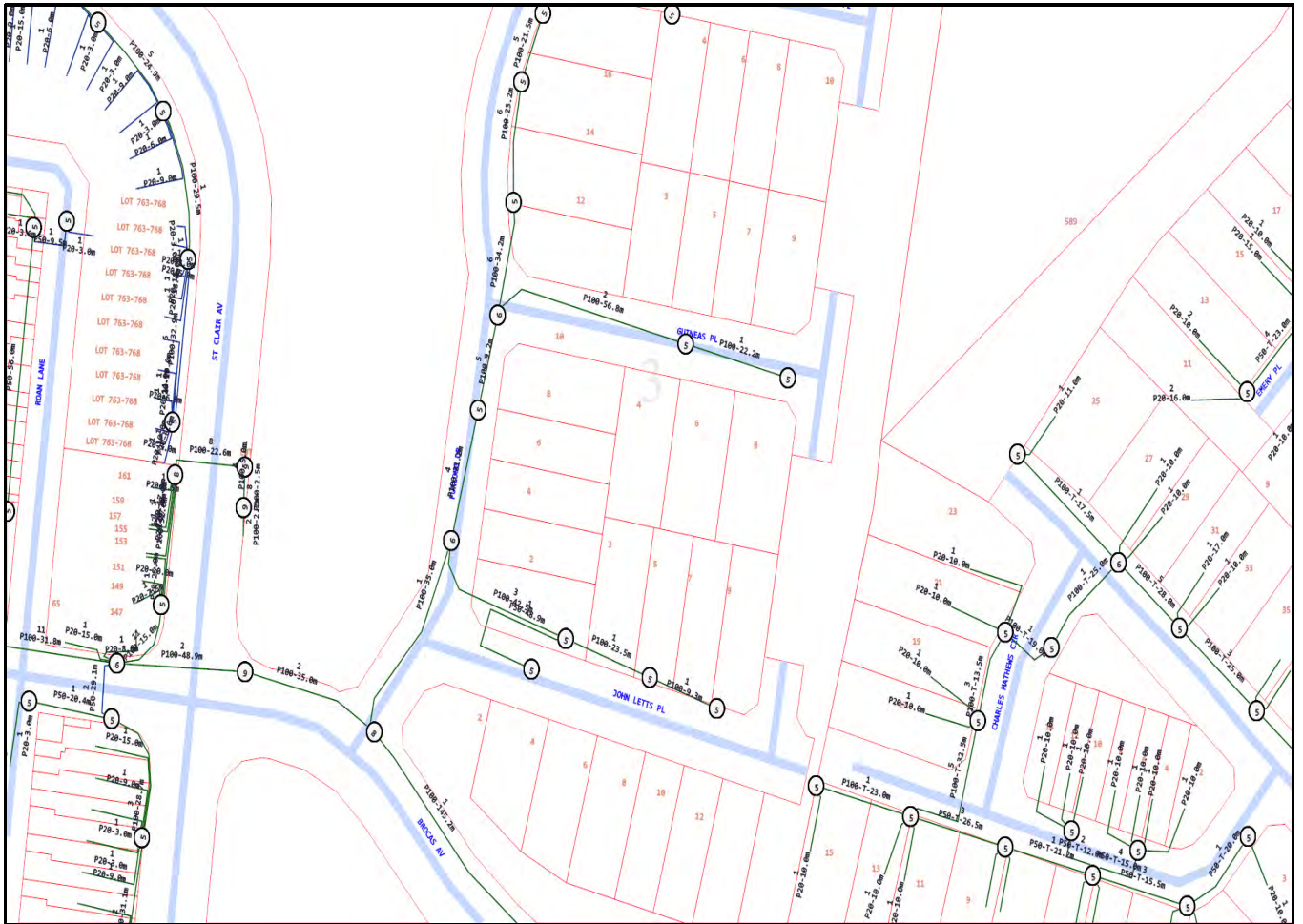
Issue Date:	20/01/2020	 DIAL BEFORE YOU DIG www.1100.com.au
Location:	589 Torrens Road , St Clair , SA , 5011	

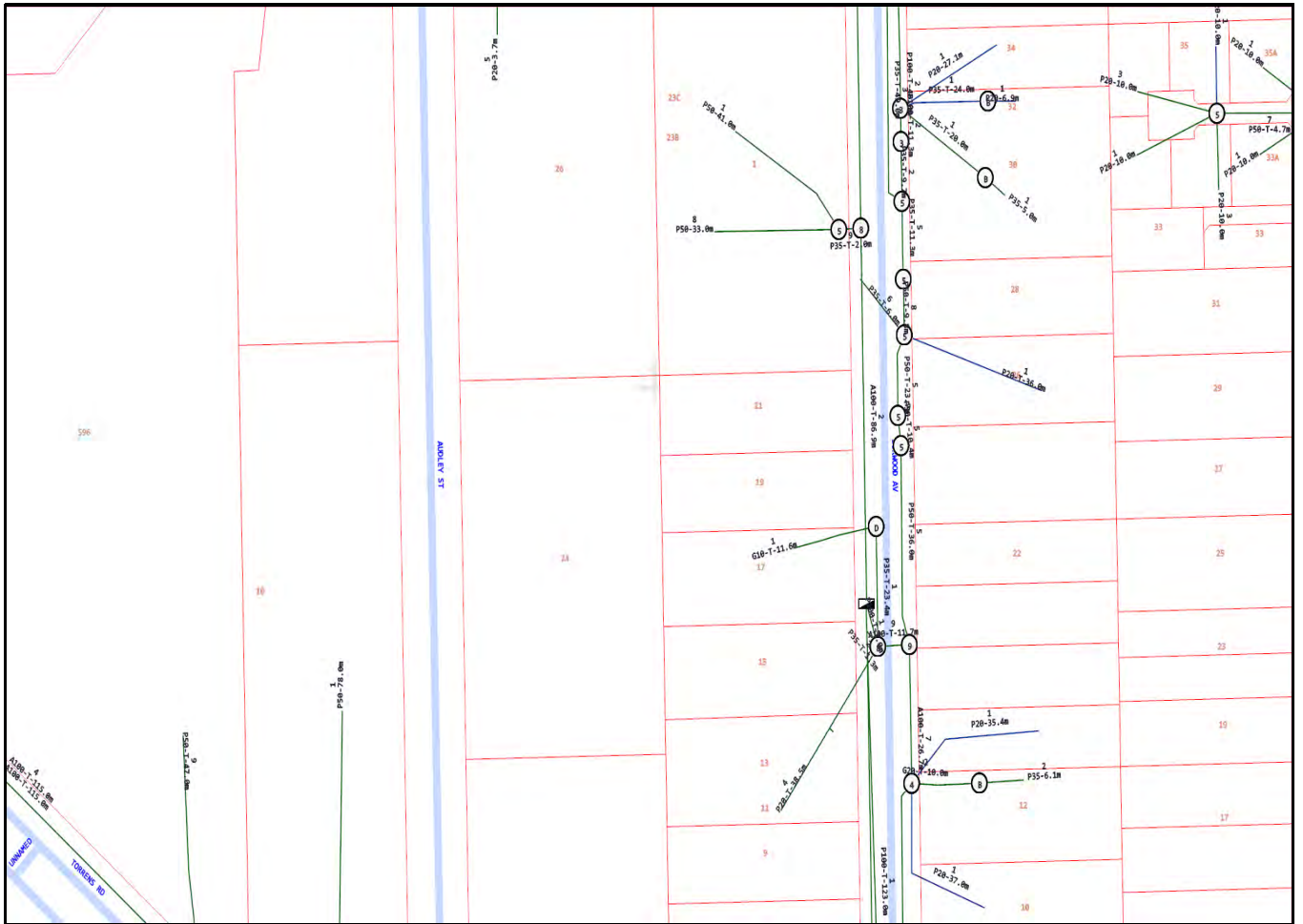
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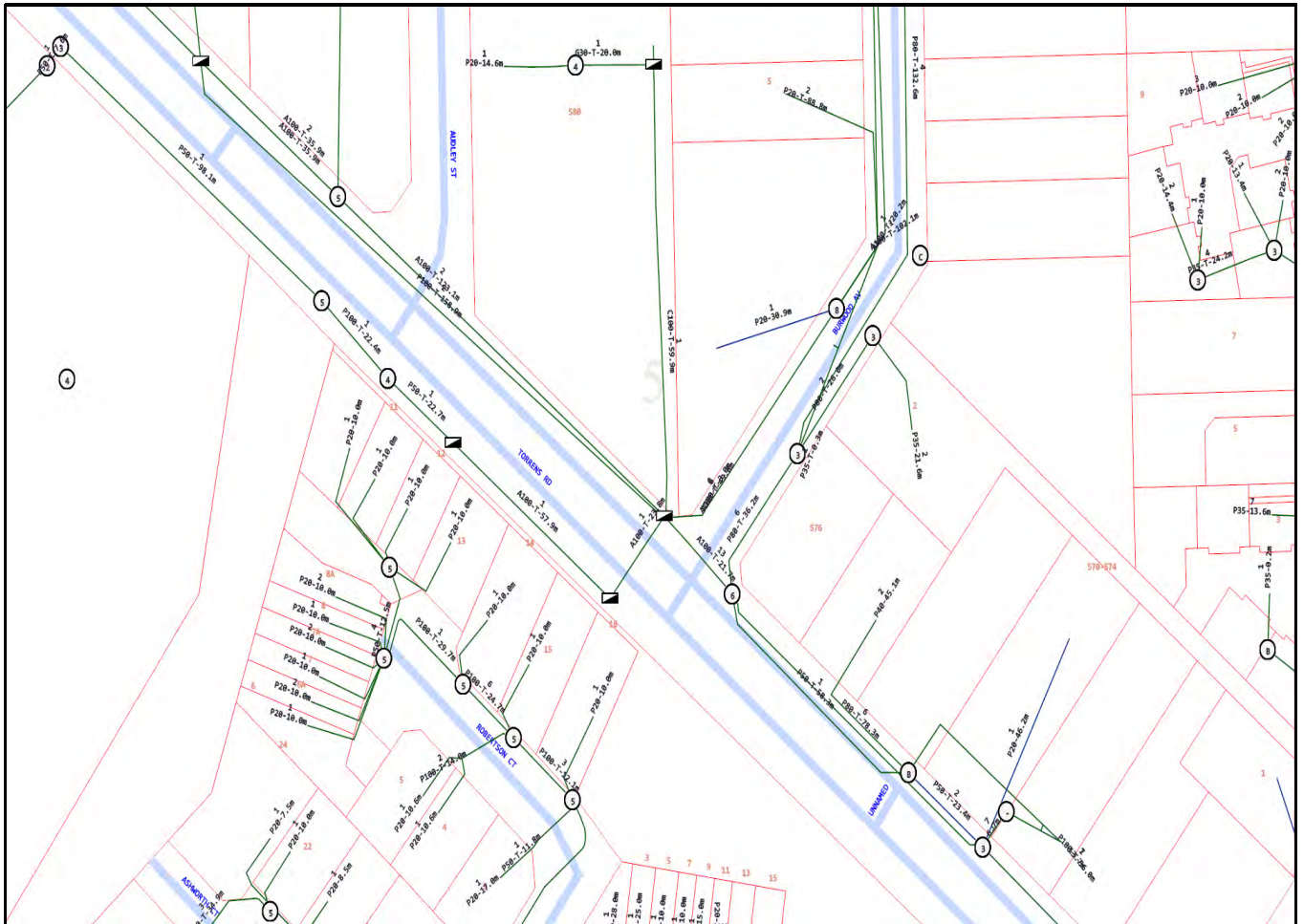
	<h2>LEGEND</h2>
	<p>Parcel and the location</p>
	<p>Pit with size "5"</p>
	<p>Power Pit with size "2E". Valid PIT Size: e.g. 2E, 5E, 6E, 8E, 9E, E, null.</p>
	<p>Manhole</p>
	<p>Pillar</p>
	<p>Cable count of trench is 2. One "Other size" PVC conduit (PO) owned by Telstra (-T-), between pits of sizes, "5" and "9" are 25.0m apart. One 40mm PVC conduit (P40) owned by NBN, between pits of sizes, "5" and "9" are 20.0m apart.</p>
	<p>2 Direct buried cables between pits of sizes, "5" and "9" are 10.0m apart.</p>
	<p>Trench containing any INSERVICE/CONSTRUCTED (Copper/RF/Fibre) cables.</p>
	<p>Trench containing only DESIGNED/PLANNED (Copper/RF/Fibre/Power) cables.</p>
	<p>Trench containing any INSERVICE/CONSTRUCTED (Power) cables.</p>
	<p>Road and the street name "Broadway ST".</p>
<p>Scale</p>	<p>0 20 40 60 Meters 1:2000 1 cm equals 20 m</p> 

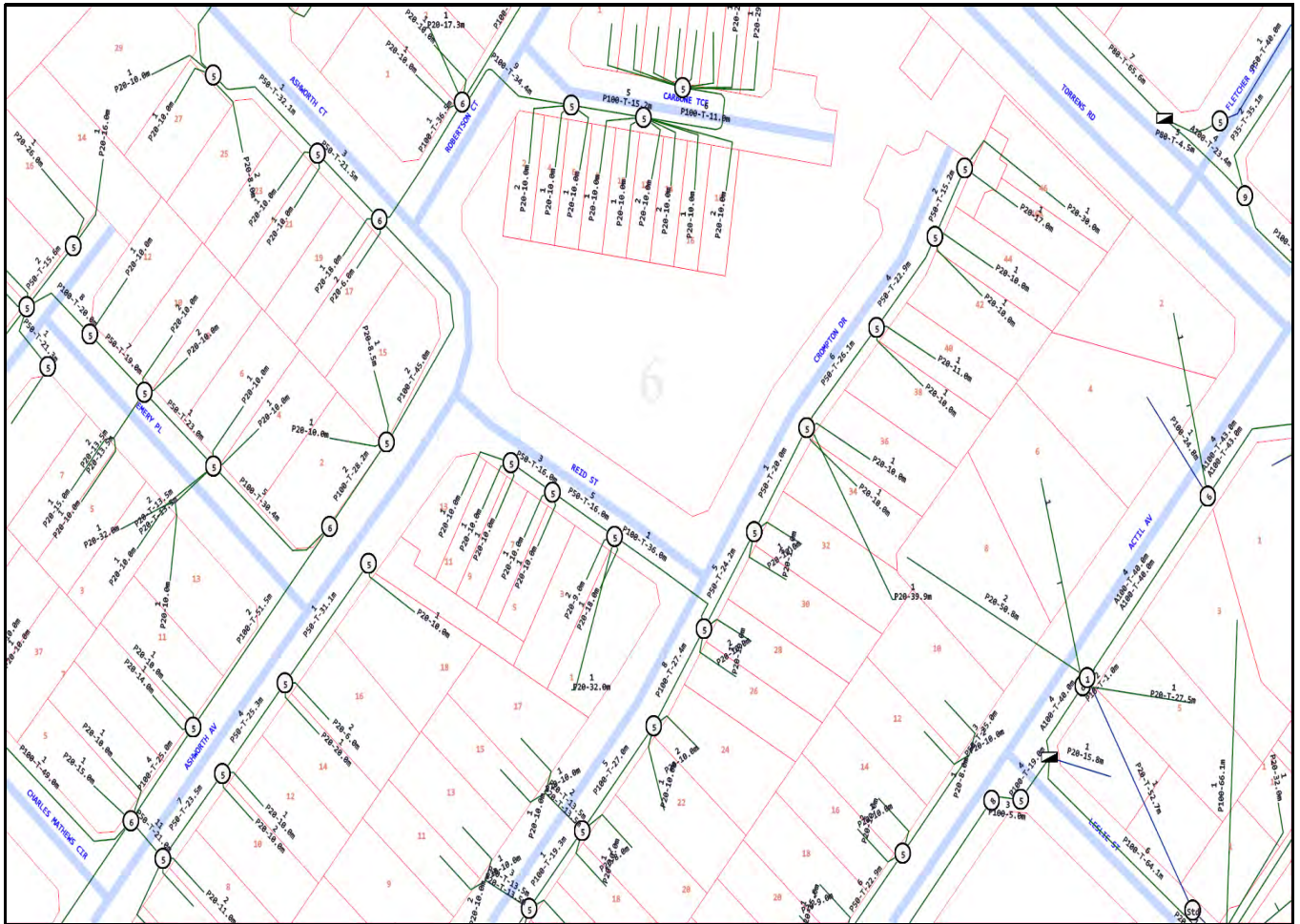




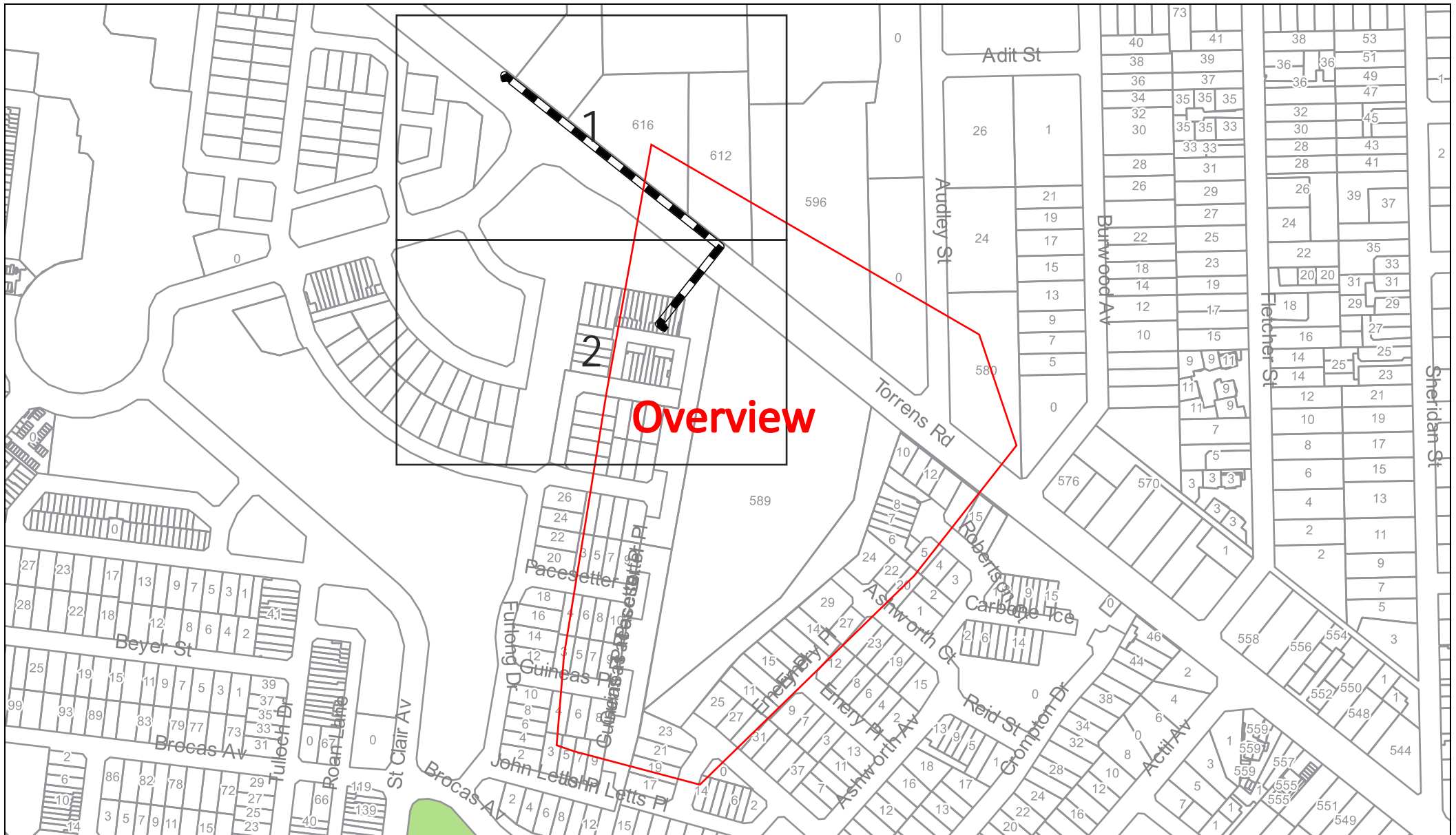








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Sequence Number: 93970899

Date: 20/01/2020

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LEGEND

Digsite



Area

Assets



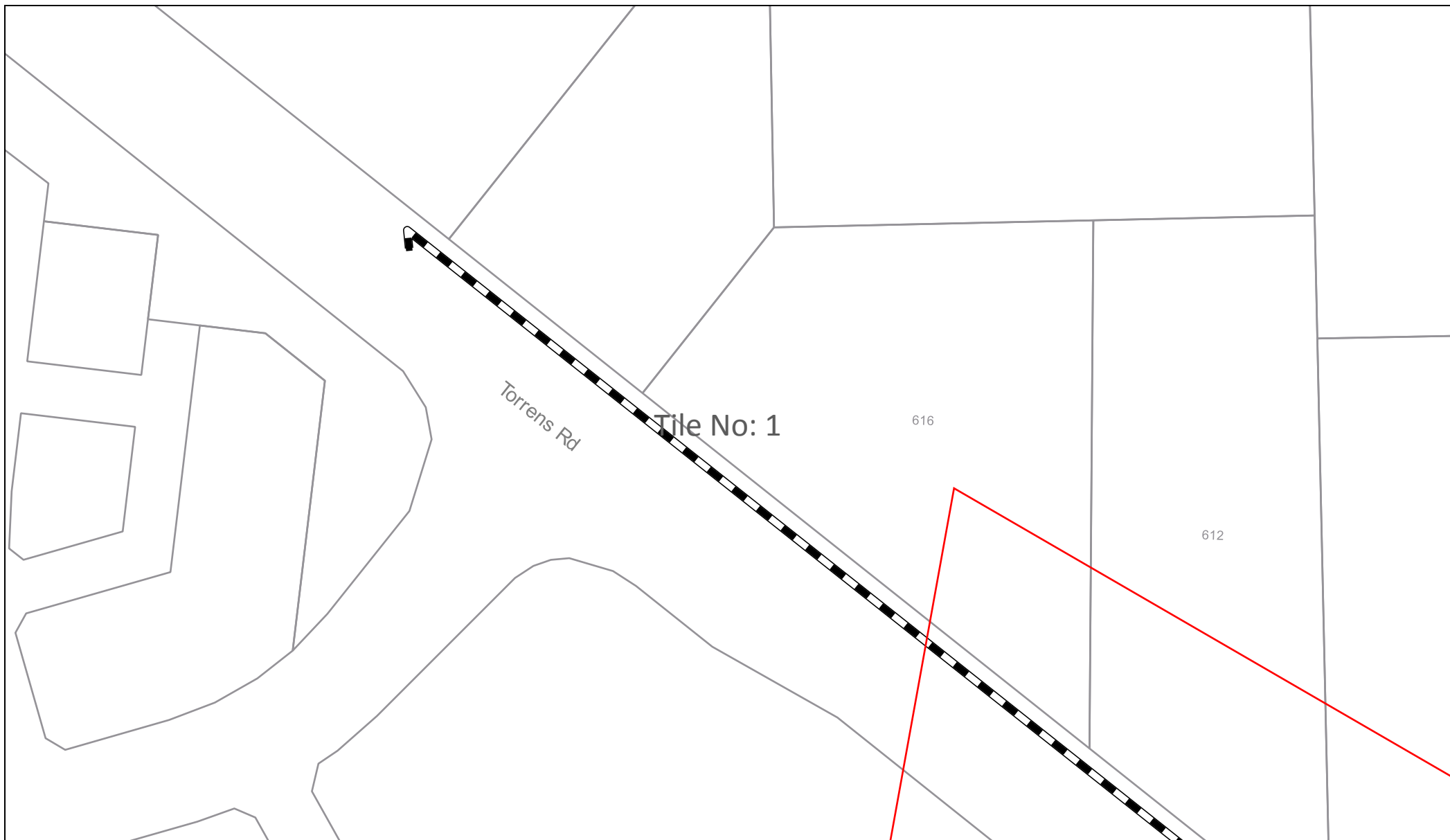
Cable



3rd Party Duct



Marker Post



Sequence Number: 93970899

Date: 20/01/2020

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LEGEND

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Assets



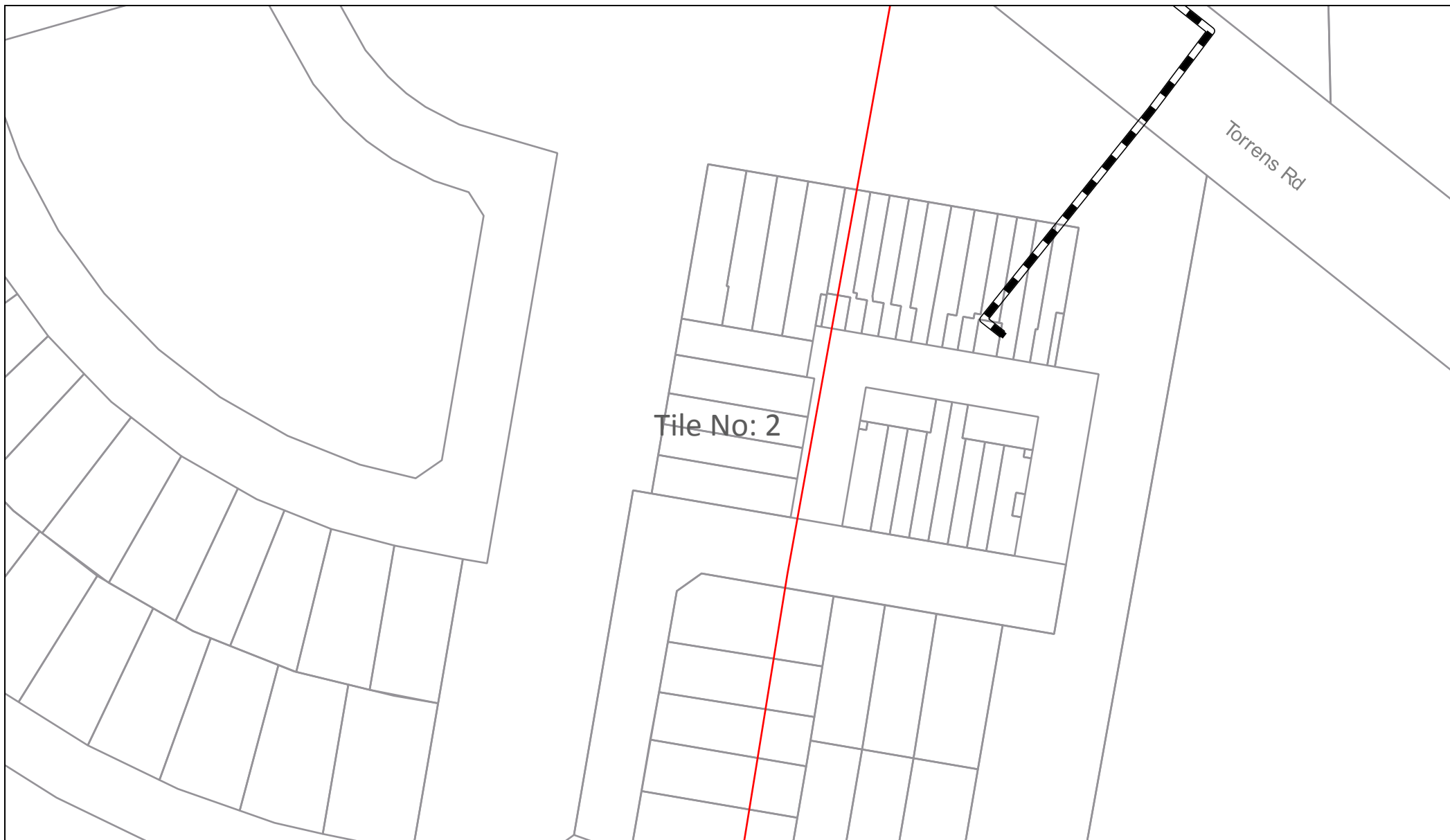
Cable



3rd Party Duct



Marker Post



Sequence Number: 93970899

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LEGEND

Digsite



Assets



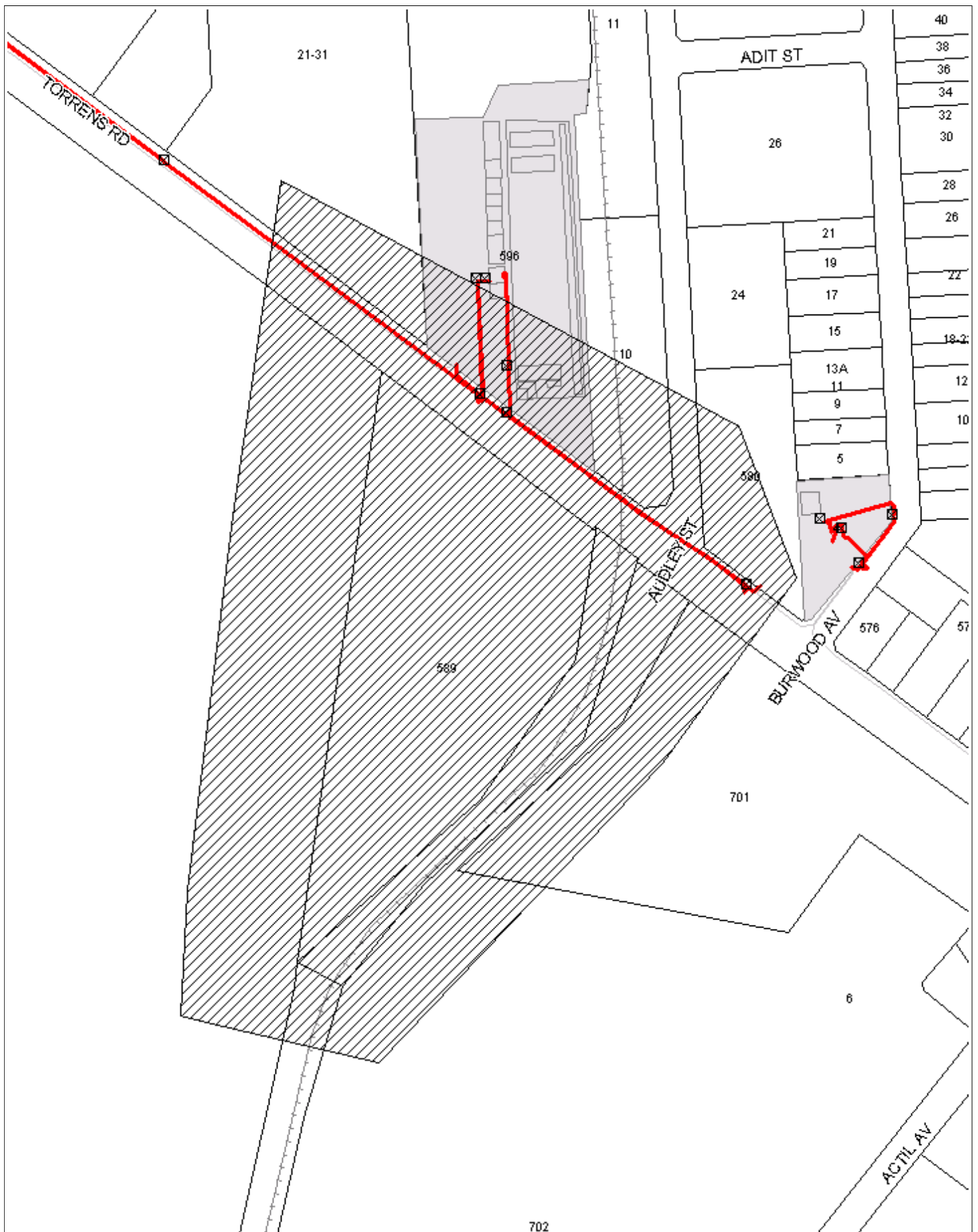
Cable



3rd Party Duct



Marker Post



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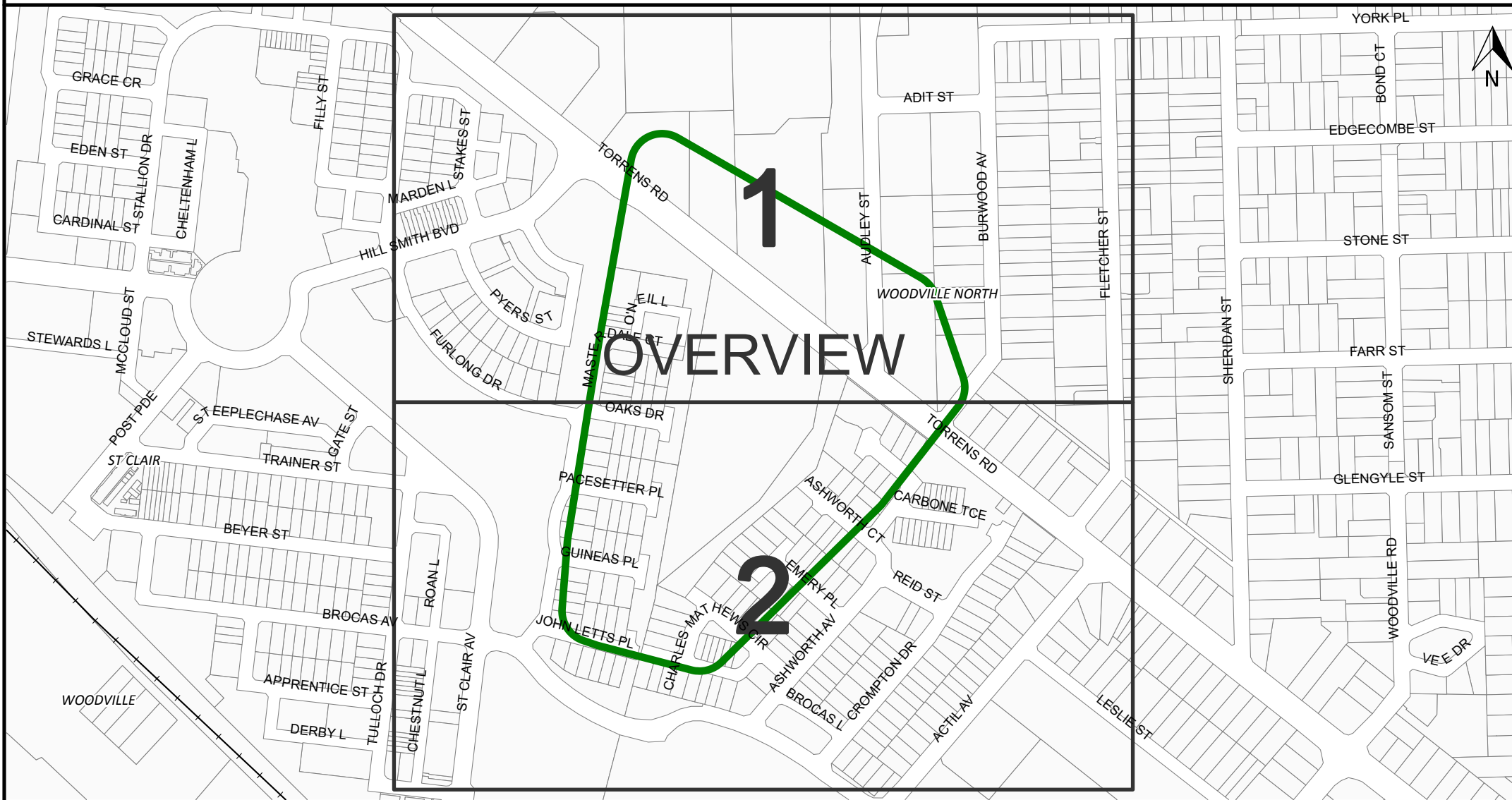
Sequence Number: 93970904

Date Generated: 20/01/2020



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For urgent onsite assistance contact 1800 505 777
Optus Limited ACN 052 833 208





- GIP
- Inspection Opening
- Valve
- Maintenance Hole
- Maintenance Shaft
- Wastewater Connections
- Decommissioned Asbestos Mains
- Ancillary Pipes
- Gravity Mains
- Low Pressure
- Pumping Mains
- Vacuum Mains
- Railway
- Land Parcels
- △ CP Facility
- CP Anode/Cathode Cables
- CP Electricity Supply Cables
- CP Anode Bed Outlines

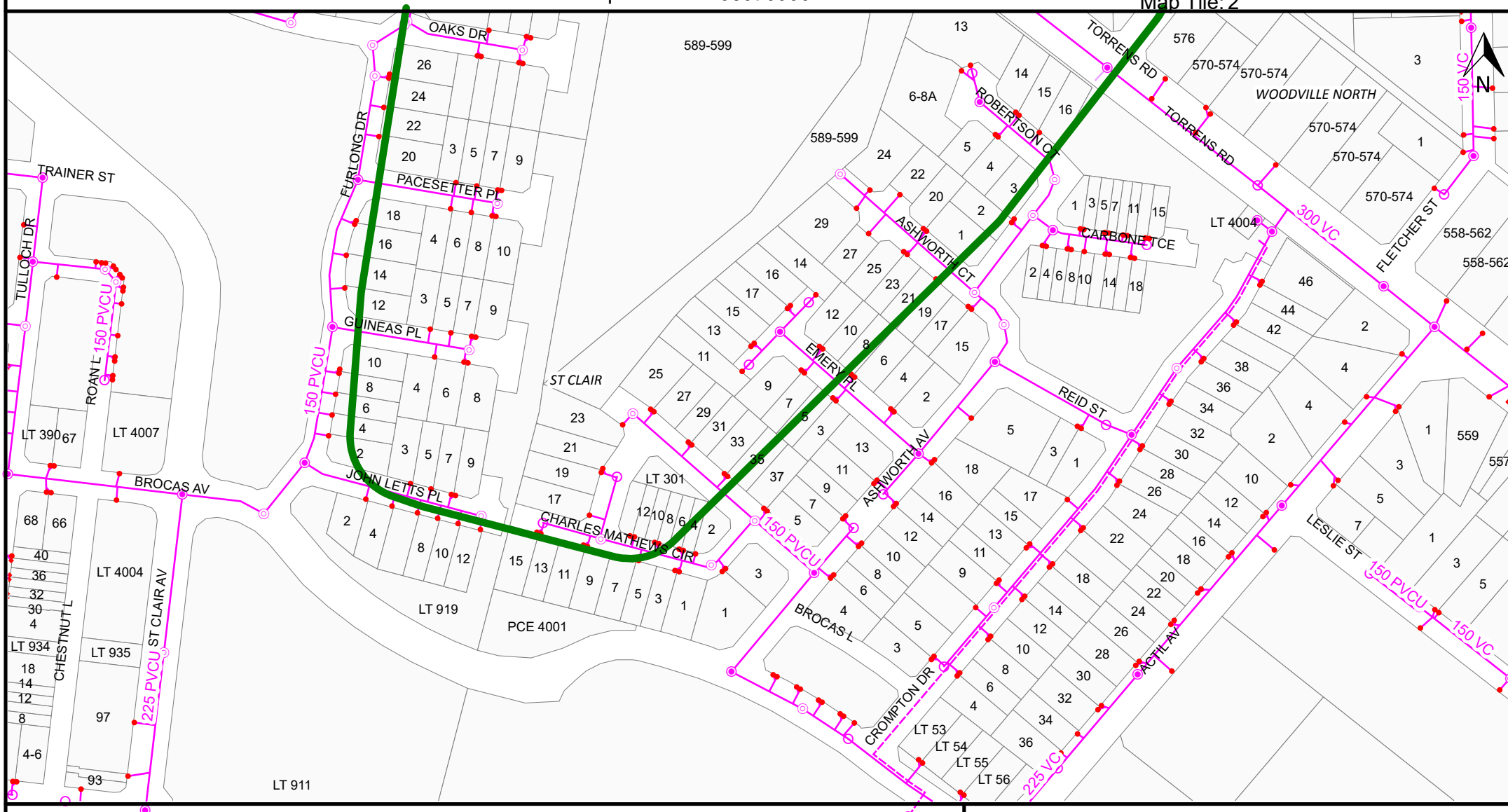
CP = Cathodic Protection

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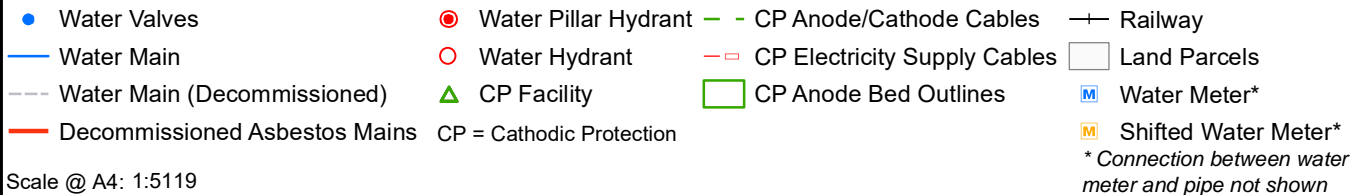
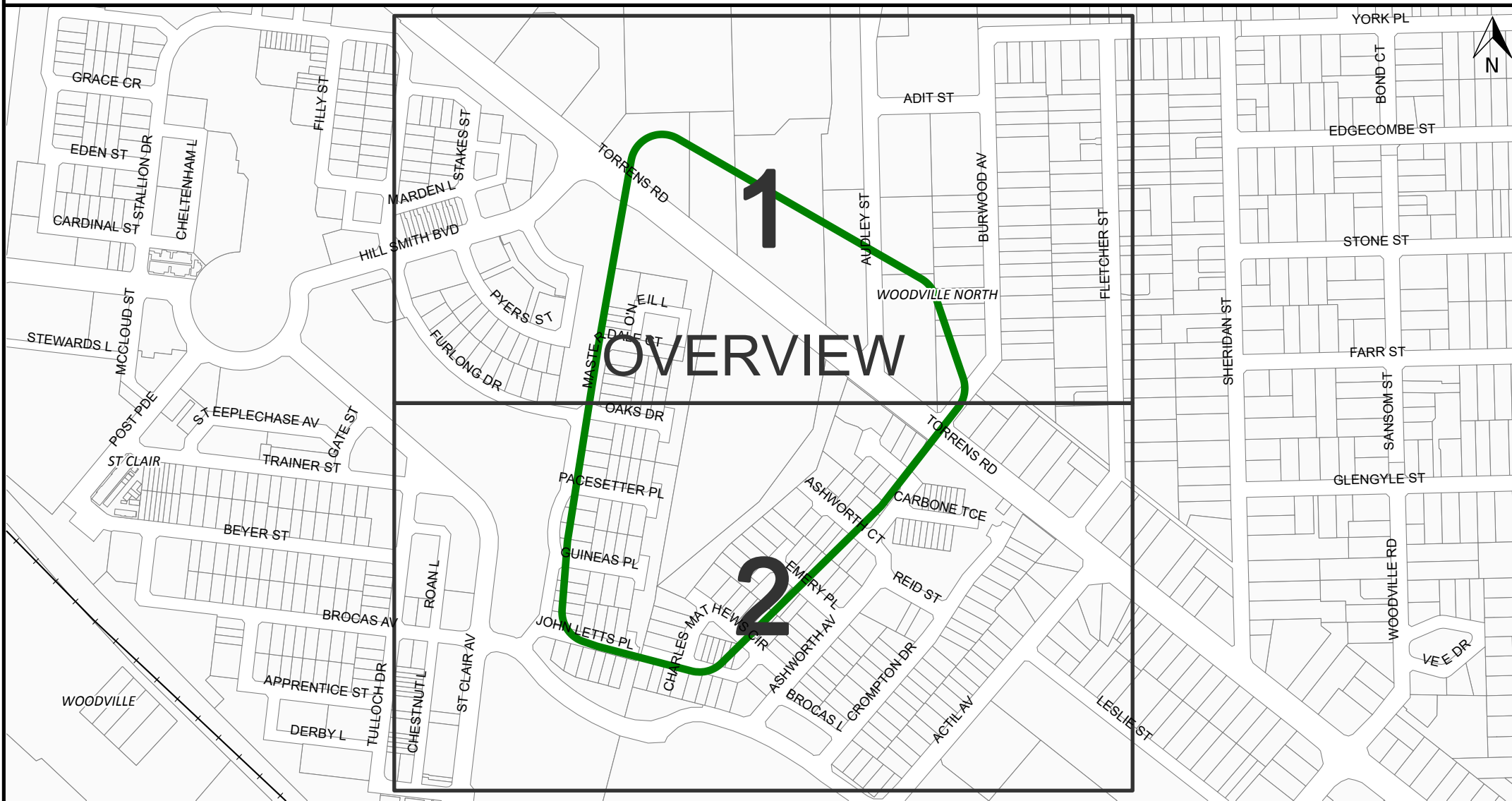
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Scale @ A4: 1:2500



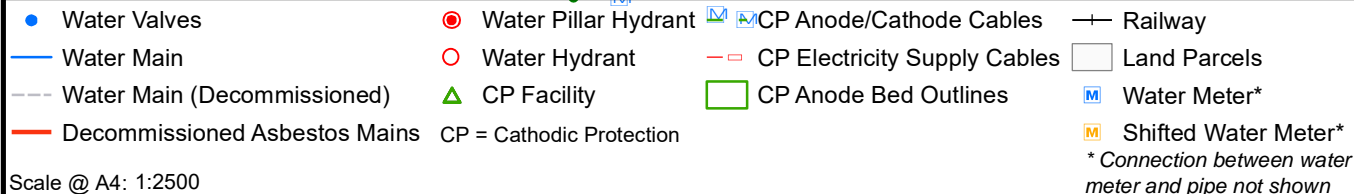
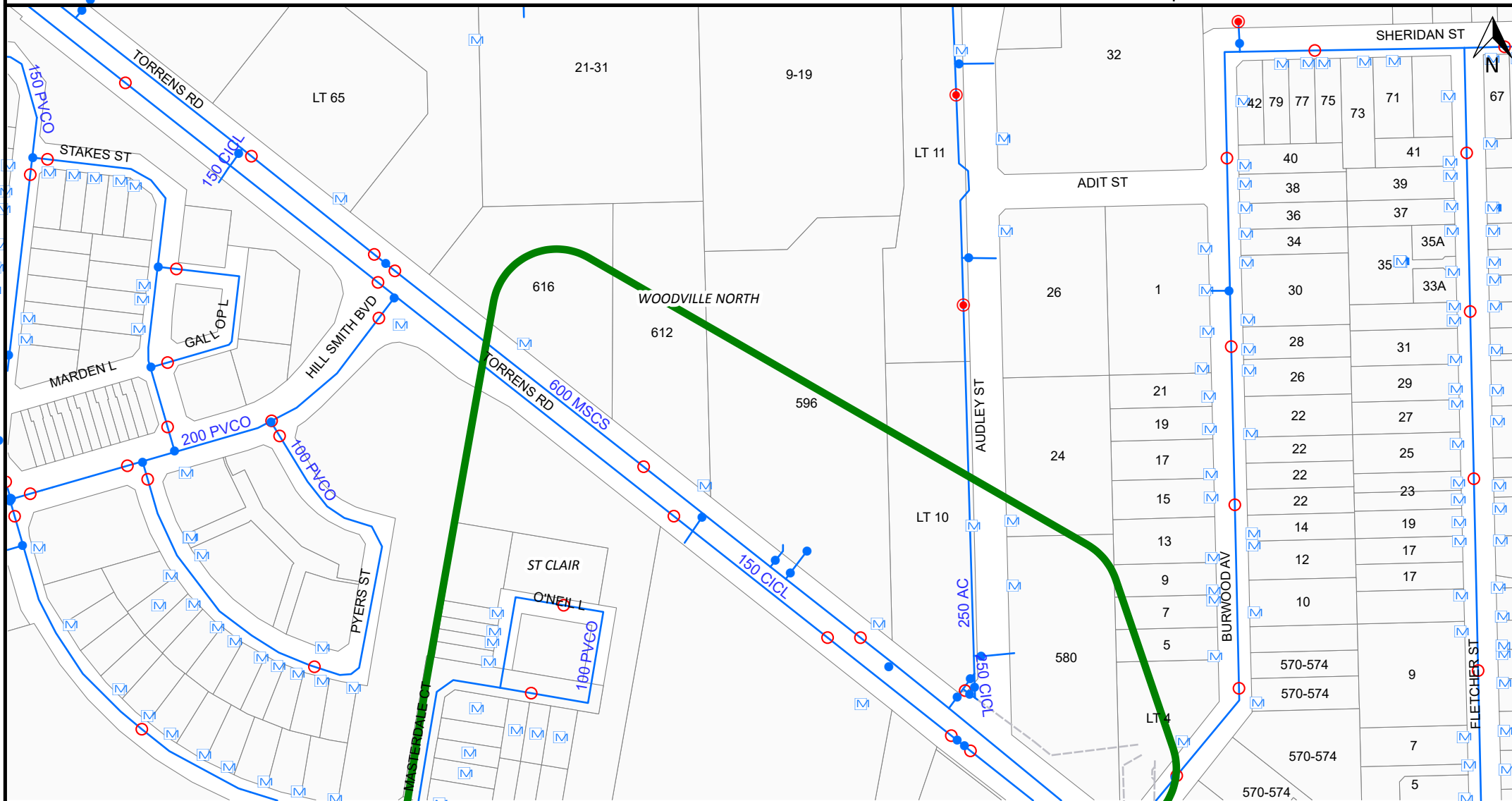
- | | | | | |
|---------------------|---------------------------------|--------------------|----------------|------------------------------------|
| • GIP | ○ Inspection Opening | — Gravity Mains | — Railway | — CP Anode/Cathode Cables |
| ● Valve | — Wastewater Connections | - - - Low Pressure | □ Land Parcels | - - - CP Electricity Supply Cables |
| ○ Maintenance Hole | — Decommissioned Asbestos Mains | — Pumping Mains | ▲ CP Facility | □ CP Anode Bed Outlines |
| ○ Maintenance Shaft | — Ancillary Pipes | - - - Vacuum Mains | | CP = Cathodic Protection |

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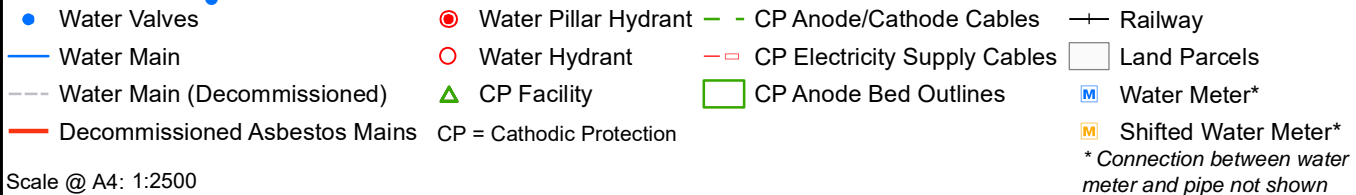
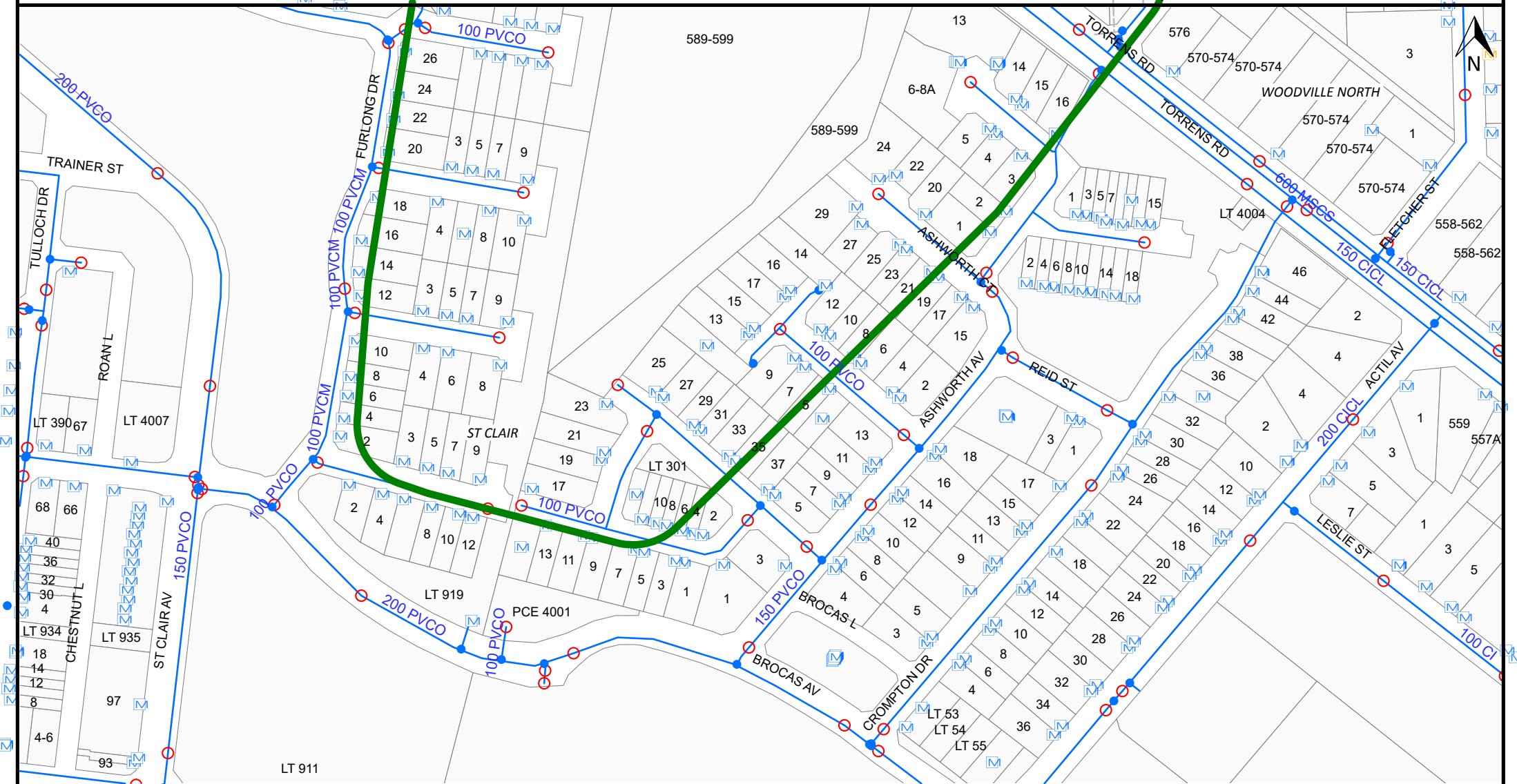


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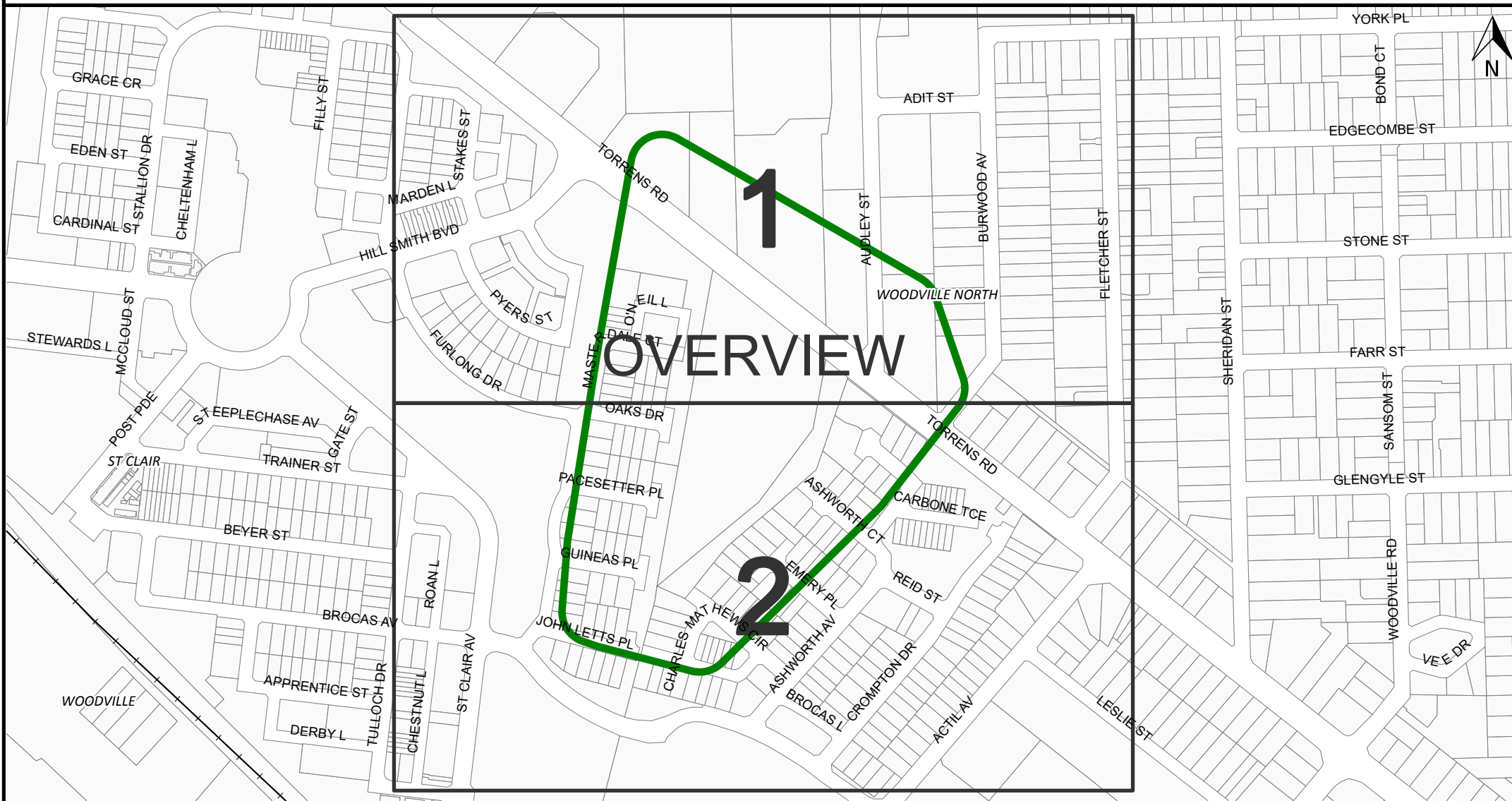


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- Recycled Water Main — CP Anode/Cathode Cables ▲ CP Facility □ Land Parcels
- Recycled Water Connection — CP Electricity Supply Cables □ CP Anode Bed Outlines — Railway
- Recycled Water Valve CP = Cathodic Protection

Scale @ A4: 1:5119

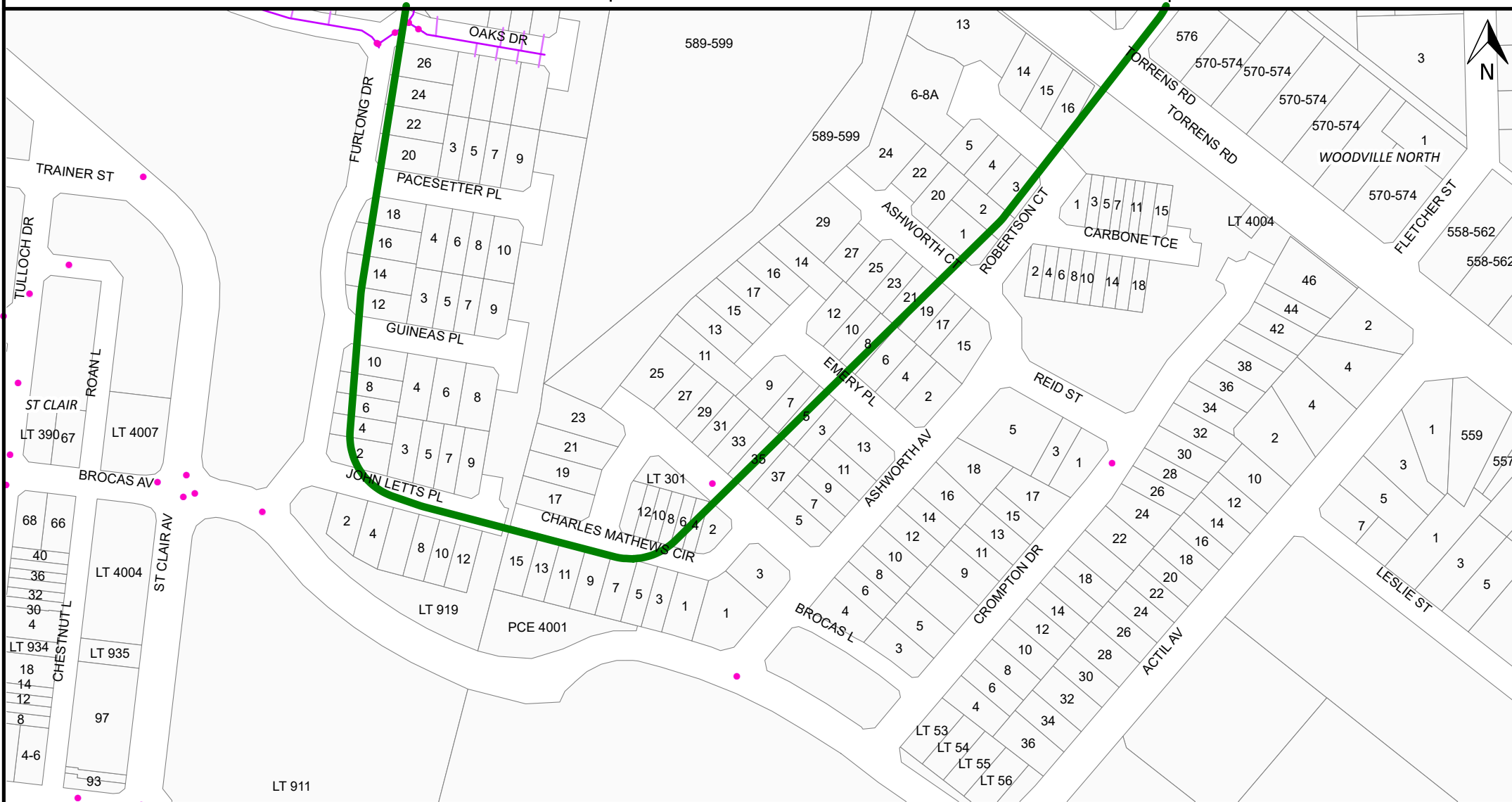
This advice and/or information is given for your private use only. The accuracy of the advice and information is not guaranteed and no responsibility is accepted by the crown, the South Australian Water Corporation or their officers, agents or servants for any loss or damage caused by reliance upon this advice and/or information, as a result of any error, omission, incorrect description or statement therein whether caused by negligence or otherwise.












- Recycled Water Main — CP Anode/Cathode Cables ▲ CP Facility □ Land Parcels
- Recycled Water Connection — CP Electricity Supply Cables □ CP Anode Bed Outlines — Railway
- Recycled Water Valve CP = Cathodic Protection

Scale @ A4: 1:2500

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- | | | | |
|--|--|---|--|
|  Recycled Water Main |  CP Anode/Cathode Cables |  CP Facility |  Land Parcels |
|  Recycled Water Connection |  CP Electricity Supply Cables |  CP Anode Bed Outlines |  Railway |
|  Recycled Water Valve | CP = Cathodic Protection | | |

This advice and/or information is given for your private use only. The accuracy of the advice and information is not guaranteed and no responsibility is accepted by the crown, the South Australian Water Corporation or their officers, agents or servants for any loss or damage caused by reliance upon this advice and/or information, as a result of any error, omission, incorrect description or statement therein whether caused by negligence or otherwise.

To:

GREENHILL - Mr Bradley Seidel

Level 1 64 Hindmarsh Square

Adelaide

SA

5000

Enquiry Details			
Utility ID	50800		
Sequence Number	93970902		
Enquiry Date	20/01/2020 16:57		
Response	HIGH RISK – DO NOT CONTINUE WORK		
Address	589 Torrens Road St Clair		
Location in Road	CarriageWay, Footpath, Nature Strip		
Activity	Planning & Design		

Enquirer Details			
Customer ID	1925844		
Contact	Mr Bradley Seidel		
Company	GREENHILL		
Email	bseidel@greenhillaustralia.com.au		
Phone	08 8406 1300	Mobile	0439 976 097

Underground cable locations ASSETS FOUND

The process:

1. You made an enquiry with Dial Before You Dig (1100).
2. Dial Before You Dig referred your enquiry to SA Power Networks (South Australia's Distribution Network).
3. SA Power Networks has checked their records and have found underground assets in your request area.
4. **DO NOT CONTINUE WORK UNTIL YOU RECEIVE FURTHER NOTIFICATION FROM SA POWER NETWORKS.**
5. Your DBYD request is in the vicinity of critical SA Power Networks infrastructure. To help you excavate safely SA Power Networks will send further information to assist you to define and locate these critical assets.

Expect to receive a further response within 2 working days.

If your excavation needs to be undertaken in emergency conditions, please call SA Power Networks cable locations on (08) 8292 0218 (7am – 4pm) or Emergency Dispatch on 131366 out of business hours.

Please note: Underground services in the vicinity of any proposed earthworks must be located by hand digging (pot-holing) prior to the commencement of works. Persons conducting works will be held responsible for any resulting loss or damage to the services associated with infrastructure

Important information and conditions of use for users of underground services information supplied by SA Power Networks

Indicative information only

The accompanying information is intended only to indicate the presence of SA Power Networks' underground services and/or to convey general indicative information in respect of the location marked on the plans. **The information does not necessarily provide current, comprehensive or accurate description or location of the underground services or associated infrastructure.**

The information may also describe or indicate the presence of underground services or infrastructure not owned by SA Power Networks, for example, electrical services connected to an SA Power Networks' service point. SA Power Networks takes no responsibility for services or infrastructure that is not owned or operated by SA Power Networks or the accuracy or completeness of their description or location in the accompanying information.

Additional technical information may be requested from SA Power Networks for planning or engineering design (non-digging) purposes. Such requests are to be directed to SA Power Networks Builders and Contractors Electrical Service Line (1300 650 014).

Identifying the location of underground services

Working near or around live electrical cables can be hazardous. **An on-site assessment is strongly recommended prior to undertaking ANY works and is necessary to determine the location of the underground services.** This can be undertaken by SA Power Networks or an alternative professional locating service provider. Enquiries can be made about SA Power Networks' cable location service by telephoning (08) 8292 0218.

Restrictions may apply in regard to your excavation particularly if your excavation is greater than 300mm below ground level and less than 3.0m from an SA Power Networks asset. Further explanation regarding restricted exclusion zones can be found at <http://www.sapowernetworks.com.au/public/download.jsp?id=1775> OR search sapowernetworks.com.au for NICC 404 and by referring to the figures on pages 10, 11 or 12.

Underground services in the vicinity of any proposed earthworks must be located by hand digging (pot-holing) prior to the commencement of the works. Persons conducting works will be held responsible for any resulting loss or damage to the services or associated infrastructure.

Working near high voltage 66kV underground cables

Persons intending to conduct earthworks in the vicinity of an SA Power Networks high voltage 66kV underground cable MUST first obtain a site-specific clearance by contacting the SA Power Networks Cable Management Technical Officer on 0403 582 174.

Basis of information supply

The accompanying information is supplied at the request of, and is only provided for use by, the requestor. The information is valid for 30 days from the date of issue.

SA Power Networks, its employees, agents and contractors shall accept no responsibility for any inaccuracy or incompleteness in the information provided or liability in respect of any personal injury, death, loss or damage to any real or personal property or otherwise that arises out of or in connection with, directly or indirectly, the provision of or reliance upon the information.

It is the requestor's responsibility to ensure that the information provided accords with the area depicted on the requestor's Dial Before You Dig request. The information provided should not be used in respect of any area outside of the area depicted on the Dial Before You Dig request. SA Power Networks does not warrant that the information is suitable for the requestor's intended purposes.

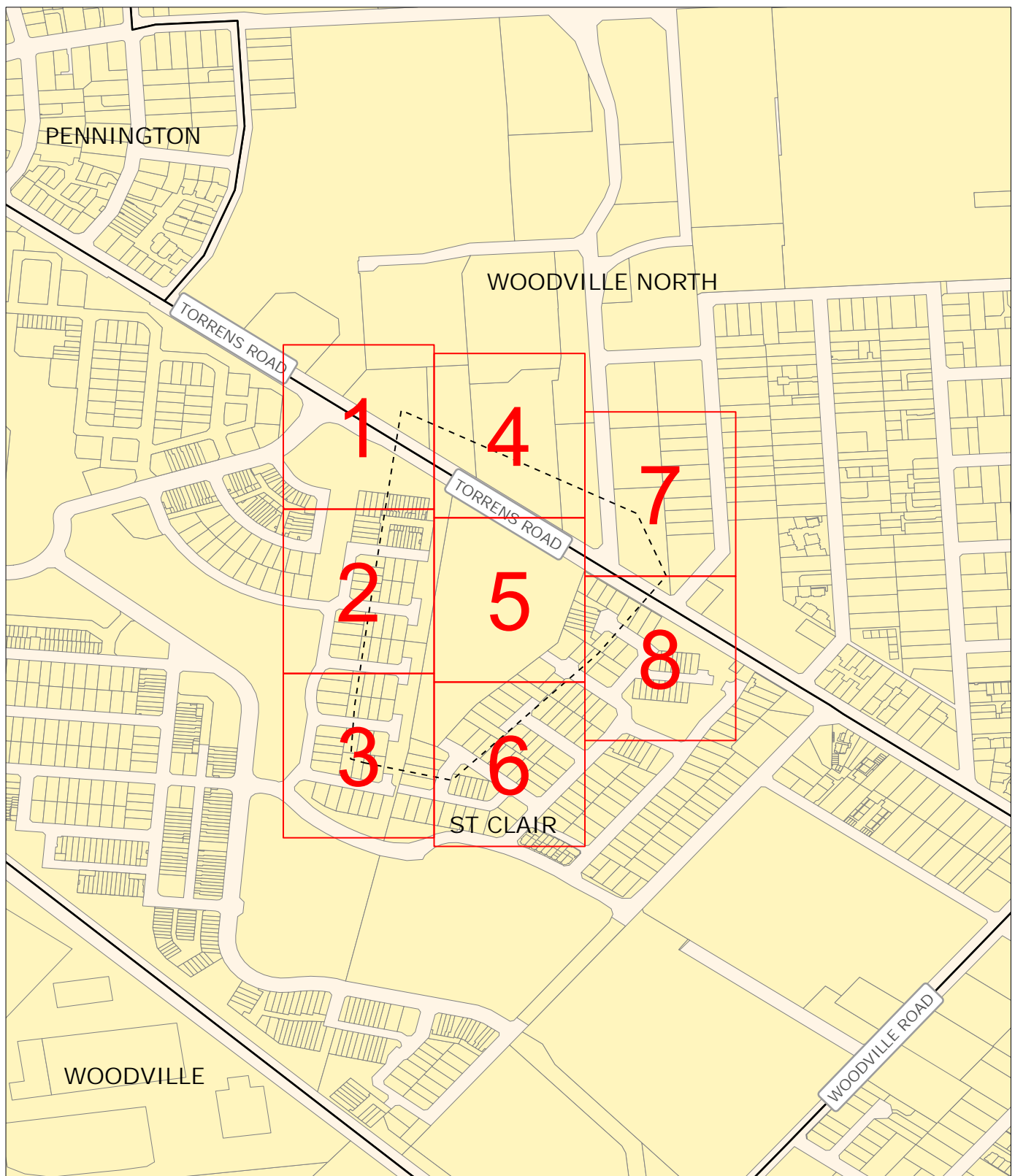
Any use of the accompanying information is subject to the requestor's agreement to the conditions contained in this document. Upon acceptance of these conditions, SA Power Networks grants the requestor permission to use the information. The information must be returned to SA Power Networks if the conditions are not accepted.

Important note: It is an offence under the Electricity Act 1996 (SA) to cause damage to or interfere with electrical infrastructure

Overview Map

Sequence No: 93970902

589 Torrens Road St Clair

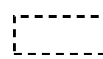


Disclaimer: The Plan/Sketch is supplied at your request and is subject to your agreement that SA Power Networks shall not be liable or responsible for the correctness or otherwise of any such information supplied pursuant to this request. Upon acceptance of this condition SA Power Networks grants you permission to use the Plan/Sketch as a guide to the location of SA Power Networks assets. The Plan/Sketch must be returned to SA Power Networks if you fail to accept the conditions of use.



LEGEND:

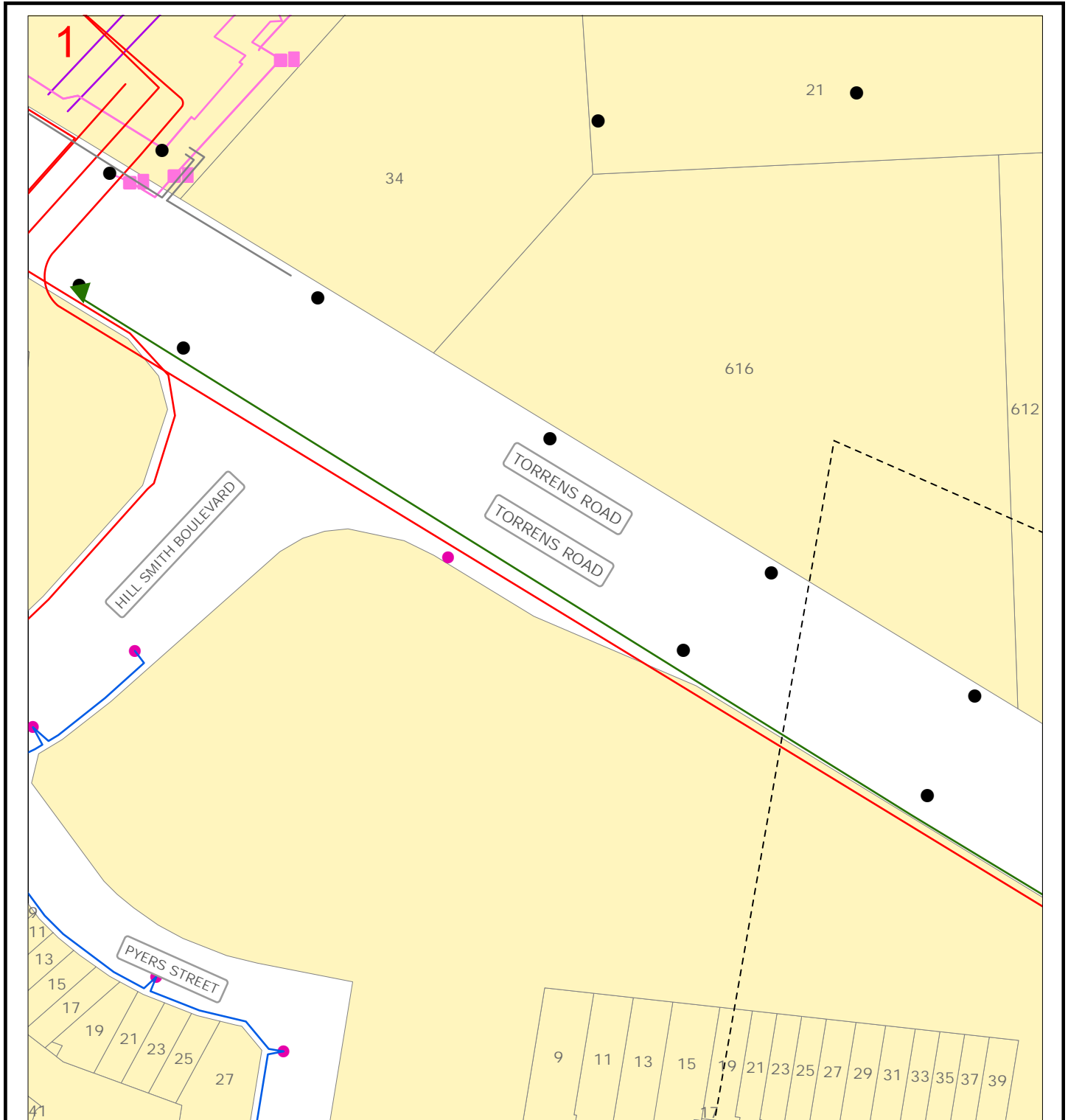
1 Detail Map

 DBYD Requested Area

Map 1

Sequence No: 93970902

589 Torrens Road St Clair



Note: The presence of lighting columns and cable exits may indicate unidentified additional cables.

LEGEND:

Cable Exits

- 66kV/132kV
- 33kV
- 19kV
- 11kV
- 7.6kV
- Not In Service
- Low Voltage

Cables

- 66kV/132kV
- 33kV
- 19kV
- 11kV
- 7.6kV
- Not In Service
- Low Voltage

DBYD Requested Area

- HV Switching Cubicle
- Transformer Cubicle
- Cable Joint Bay
- LV Switching Cubicle/Pit
- Service Pit/Pillar
- Earthing Grid

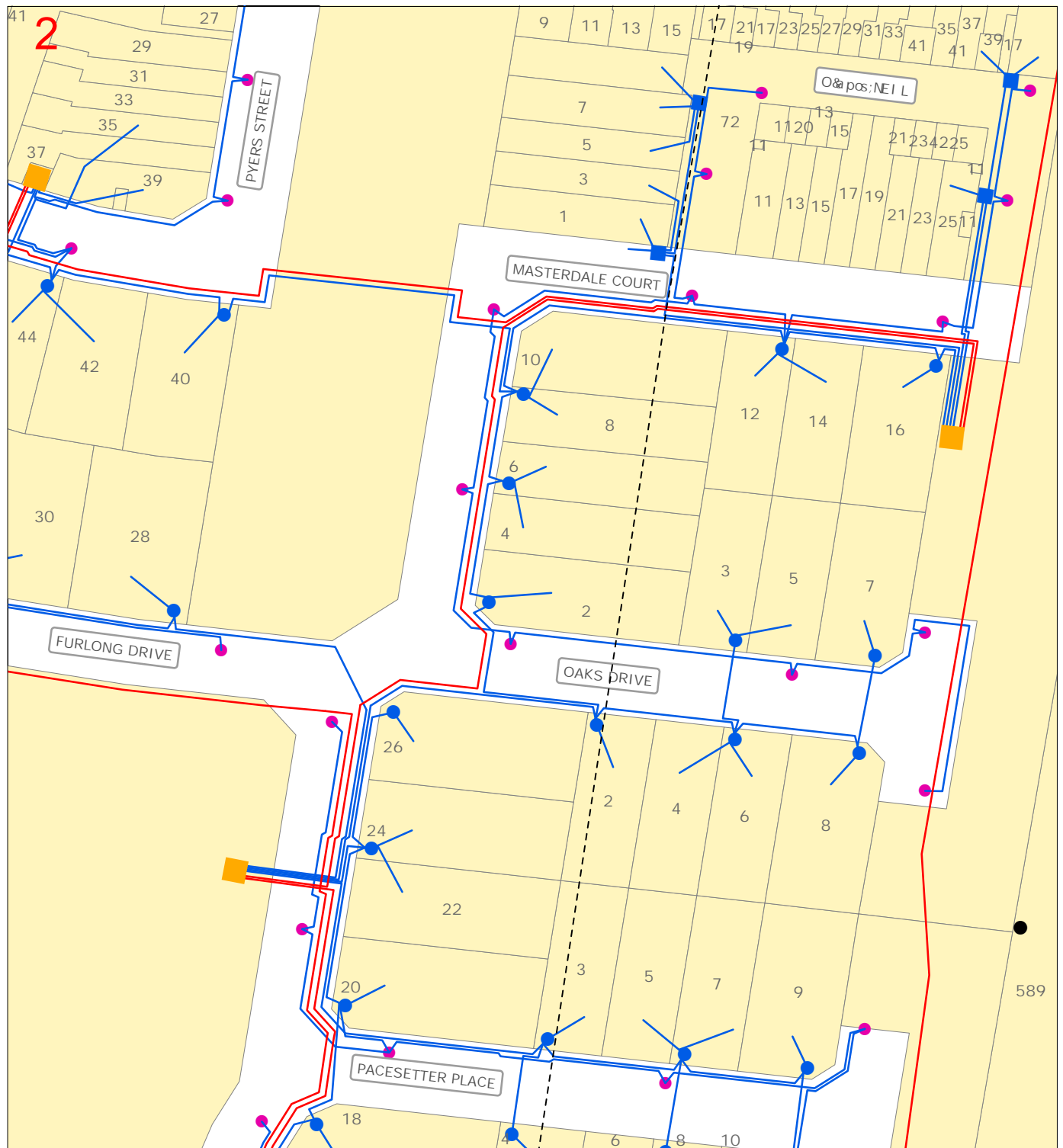
Fibre Optic Cable/Duct

- Fibre Manhole/Pit
- Pilot Cable
- Pilot Manhole/Pit
- Substation
- Electricity Pole
- Light Column



0 0.009km

Map 2

Sequence No: 93970902
589 Torrens Road St Clair


Note: The presence of lighting columns and cable exits may indicate unidentified additional cables.

LEGEND:
Cable Exits

- 66kV/132kV
- 33kV
- 19kV
- 11kV
- 7.6kV
- Not In Service
- Low Voltage

Cables

- 66kV/132kV
- 33kV
- 19kV
- 11kV
- 7.6kV
- Not In Service
- Low Voltage

DBYD Requested Area

- HV Switching Cubicle
- Transformer Cubicle
- Cable Joint Bay
- LV Switching Cubicle/Pit
- Service Pit/Pillar
- Earthing Grid

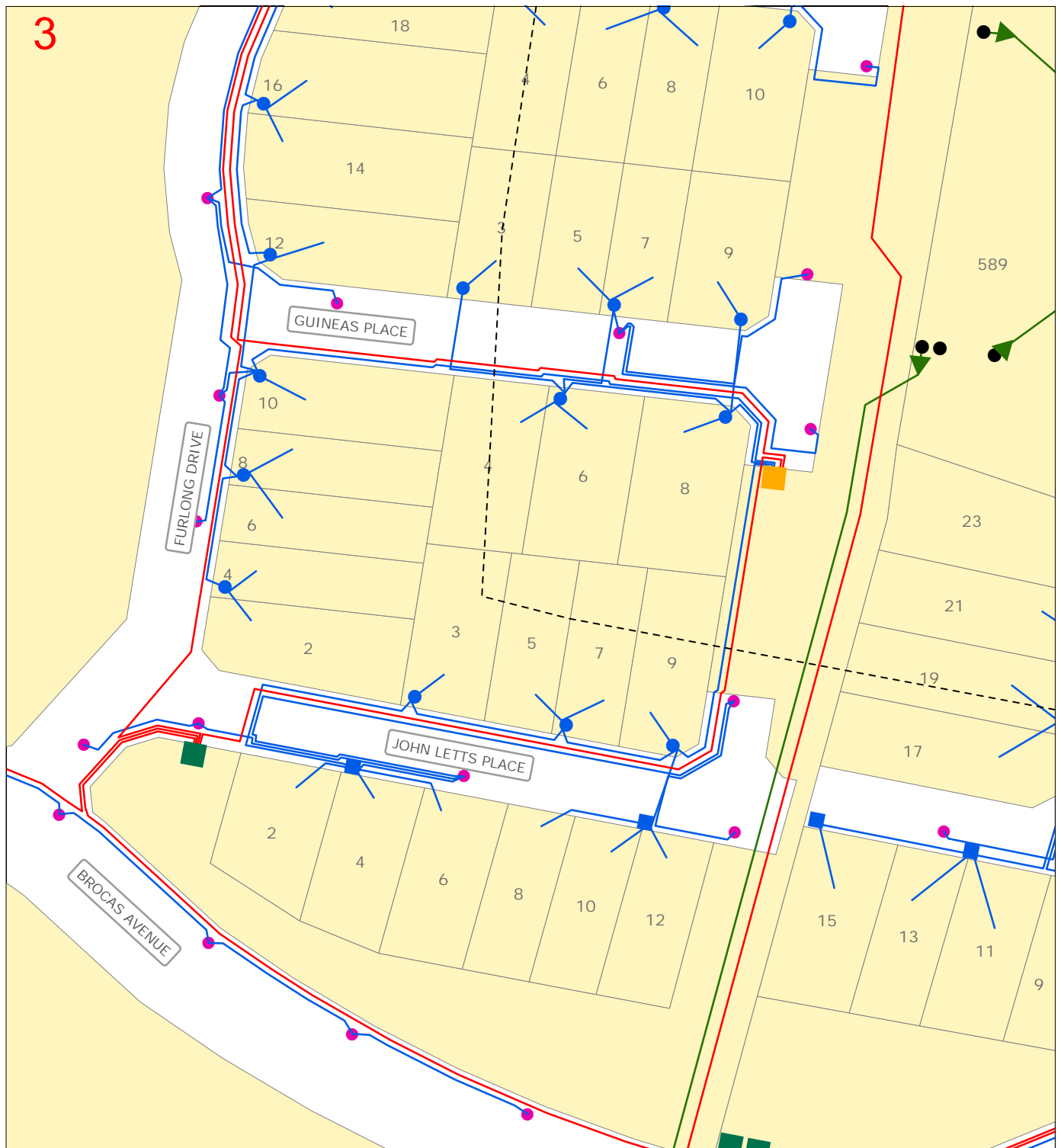
Fibre Optic Cable/Duct

- Fibre Manhole/Pit
- Pilot Cable
- Pilot Manhole/Pit
- Substation
- Electricity Pole
- Light Column










0 0.009km

Map 3








Sequence No: 93970902
589 Torrens Road St Clair



Note: The presence of lighting columns and cable exits may indicate unidentified additional cables.

LEGEND:
Cable Exits


-  66kV/132kV
-  33kV
-  19kV
-  11kV
-  7.6kV
-  Not In Service
-  Low Voltage


Cables


-  66kV/132kV
-  33kV
-  19kV
-  11kV
-  7.6kV
-  Not In Service
-  Low Voltage


 DBYD Requested Area

 HV Switching Cubicle

 Transformer Cubicle

 Cable Joint Bay


 LV Switching Cubicle/Pit


 Service Pit/Pillar


 Earthing Grid


 Fibre Optic Cable/Duct

 Fibre Manhole/Pit

 Pilot Cable

 Pilot Manhole/Pit

 Substation

 Electricity Pole

 Light Column


0 0.009km

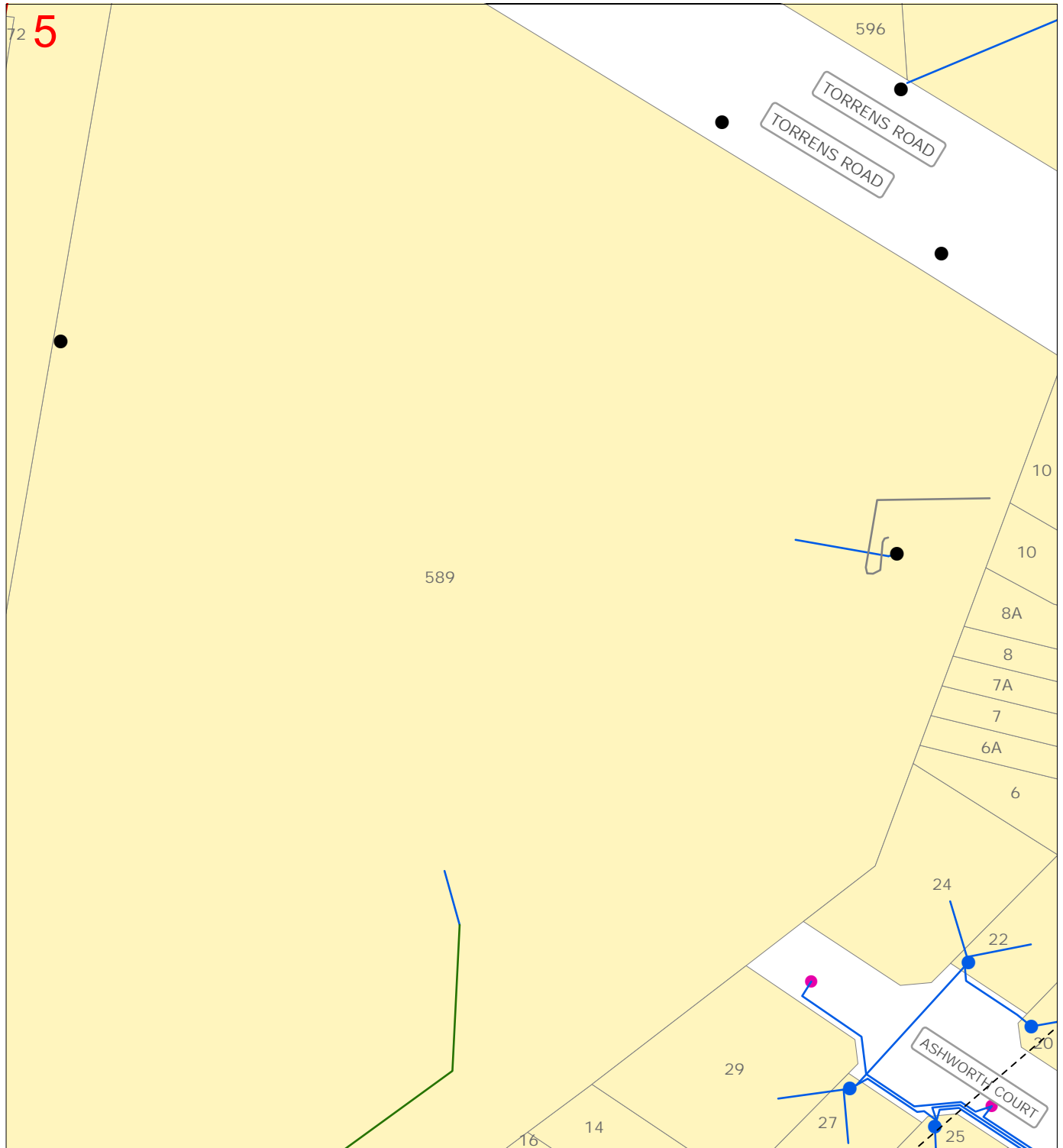
Sequence No: 93970902

LEGEND:

Map 5

Sequence No: 93970902

589 Torrens Road St Clair



Note: The presence of lighting columns and cable exits may indicate unidentified additional cables.

LEGEND:

Cable Exits

- 66kV/132kV
- 33kV
- 19kV
- 11kV
- 7.6kV
- Not In Service
- Low Voltage

Cables

- 66kV/132kV
- 33kV
- 19kV
- 11kV
- 7.6kV
- Not In Service
- Low Voltage

DBYD Requested Area

- HV Switching Cubicle
- Transformer Cubicle
- Cable Joint Bay
- LV Switching Cubicle/Pit
- Service Pit/Pillar
- Earthing Grid

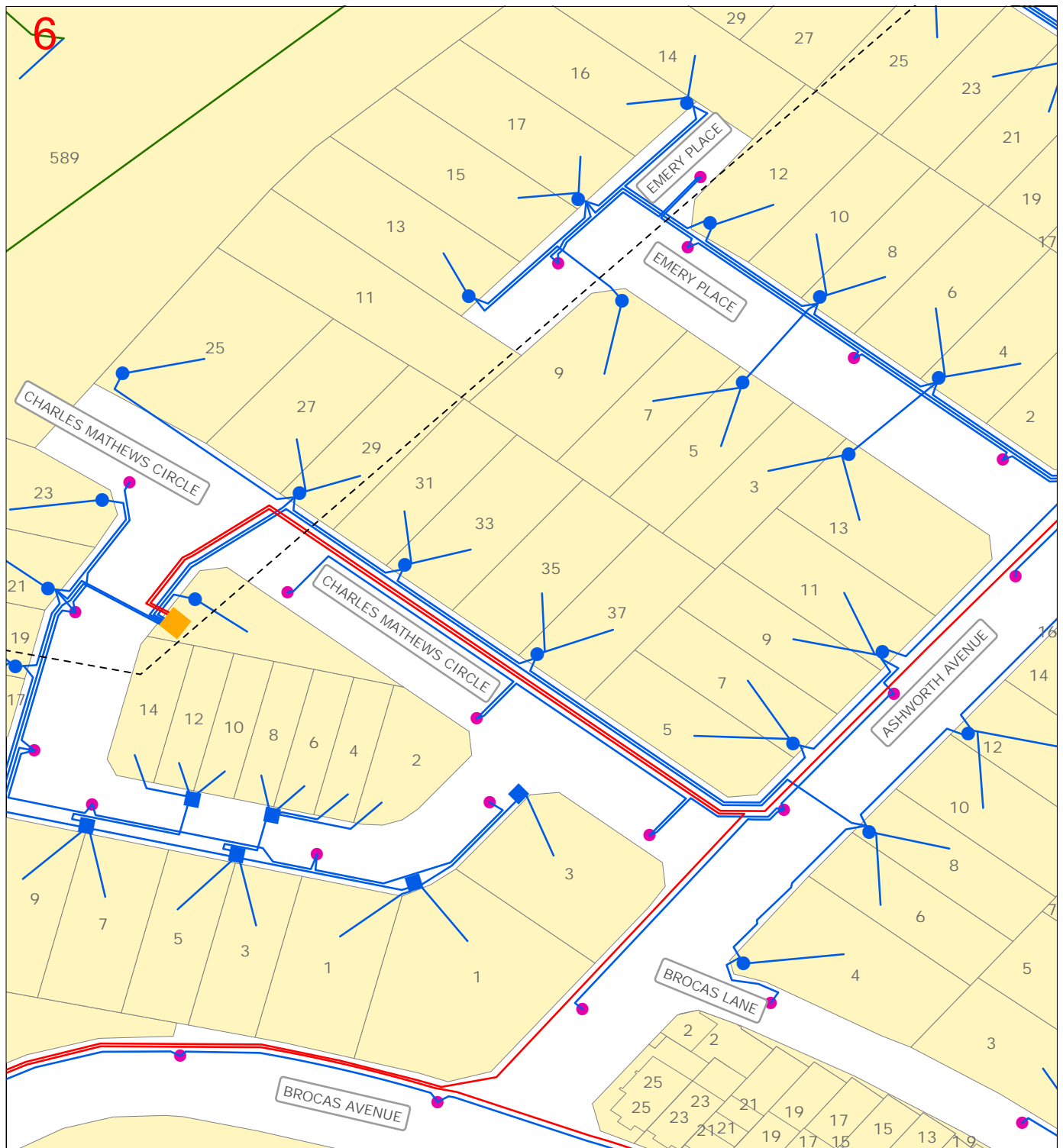
Fibre Optic Cable/Duct

- Fibre Manhole/Pit
- Pilot Cable
- Pilot Manhole/Pit
- Substation
- Electricity Pole
- Light Column










0 0.009km

Map 6








Sequence No: 93970902
589 Torrens Road St Clair



Note: The presence of lighting columns and cable exits may indicate unidentified additional cables.







LEGEND:
Cable Exits


-  66kV/132kV
-  33kV
-  19kV
-  11kV
-  7.6kV
-  Not In Service
-  Low Voltage







Cables

-  66kV/132kV
-  33kV
-  19kV
-  11kV
-  7.6kV
-  Not In Service
-  Low Voltage

 DBYD Requested Area

-  HV Switching Cubicle
-  Transformer Cubicle
-  Cable Joint Bay
-  LV Switching Cubicle/Pit
-  Service Pit/Pillar
-  Earthing Grid

 Fibre Optic Cable/Duct

-  Fibre Manhole/Pit
-  Pilot Cable
-  Pilot Manhole/Pit
-  Substation
-  Electricity Pole
-  Light Column

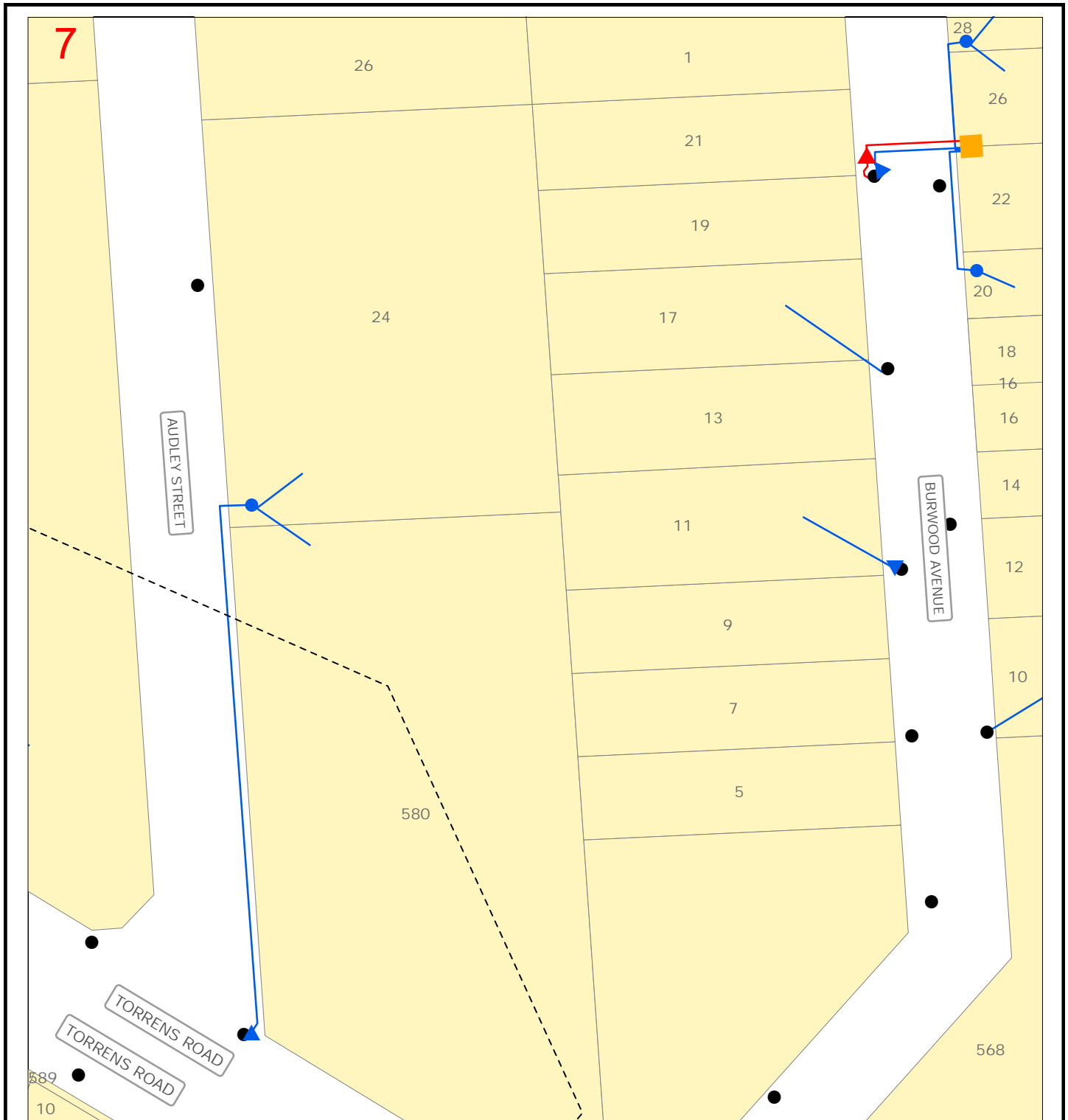


0 0.009km

Map 7





























Sequence No: 93970902

589 Torrens Road St Clair



Note: The presence of lighting columns and cable exits may indicate unidentified additional cables.

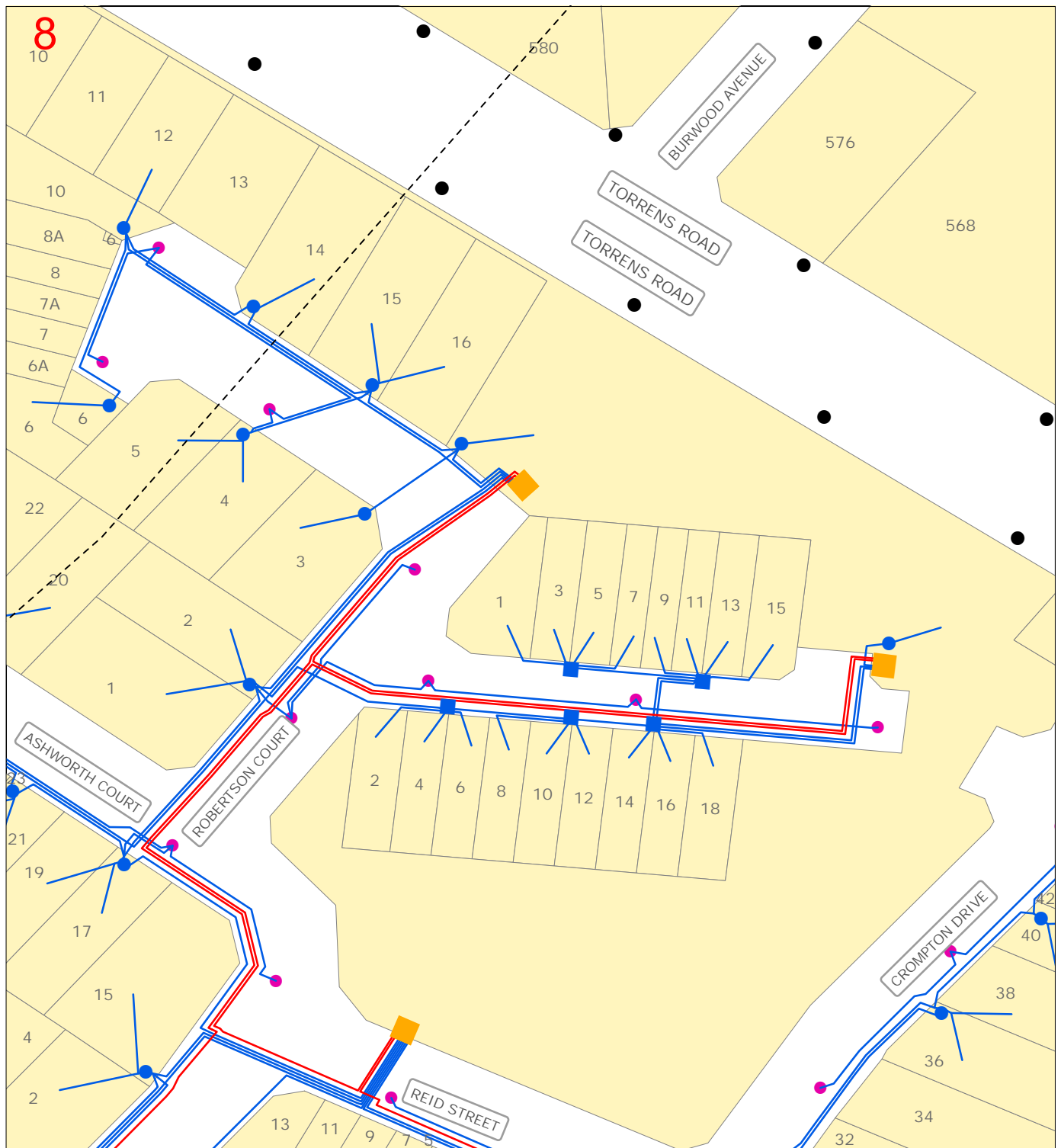
LEGEND:

Cable Exits		Cables			
	66kV/132kV		66kV/132kV		DBYD Requested Area
	33kV		33kV		HV Switching Cubicle
	19kV		19kV		Transformer Cubicle
	11kV		11kV		Cable Joint Bay
	7.6kV		7.6kV		LV Switching Cubicle/Pit
	Not In Service		Not In Service		Service Pit/Pillar
	Low Voltage		Low Voltage		Earthing Grid
					Fibre Optic Cable/Duct
					Fibre Manhole/Pit
					Pilot Cable
					Pilot Manhole/Pit
					Substation
					Electricity Pole
					Light Column










A horizontal line segment with a bracket above it. Below the left end is the number 0, and below the right end is the number 0.009km.

Map 8








Sequence No: 93970902
589 Torrens Road St Clair



Note: The presence of lighting columns and cable exits may indicate unidentified additional cables.

LEGEND:
Cable Exits


-  66kV/132kV
-  33kV
-  19kV
-  11kV
-  7.6kV
-  Not In Service
-  Low Voltage

Cables

-  66kV/132kV
-  33kV
-  19kV
-  11kV
-  7.6kV
-  Not In Service
-  Low Voltage

 DBYD Requested Area

 HV Switching Cubicle


 Transformer Cubicle

 Cable Joint Bay

 LV Switching Cubicle/Pit

 Service Pit/Pillar

 Earthing Grid

 Fibre Optic Cable/Duct

 Fibre Manhole/Pit

 Pilot Cable

 Pilot Manhole/Pit

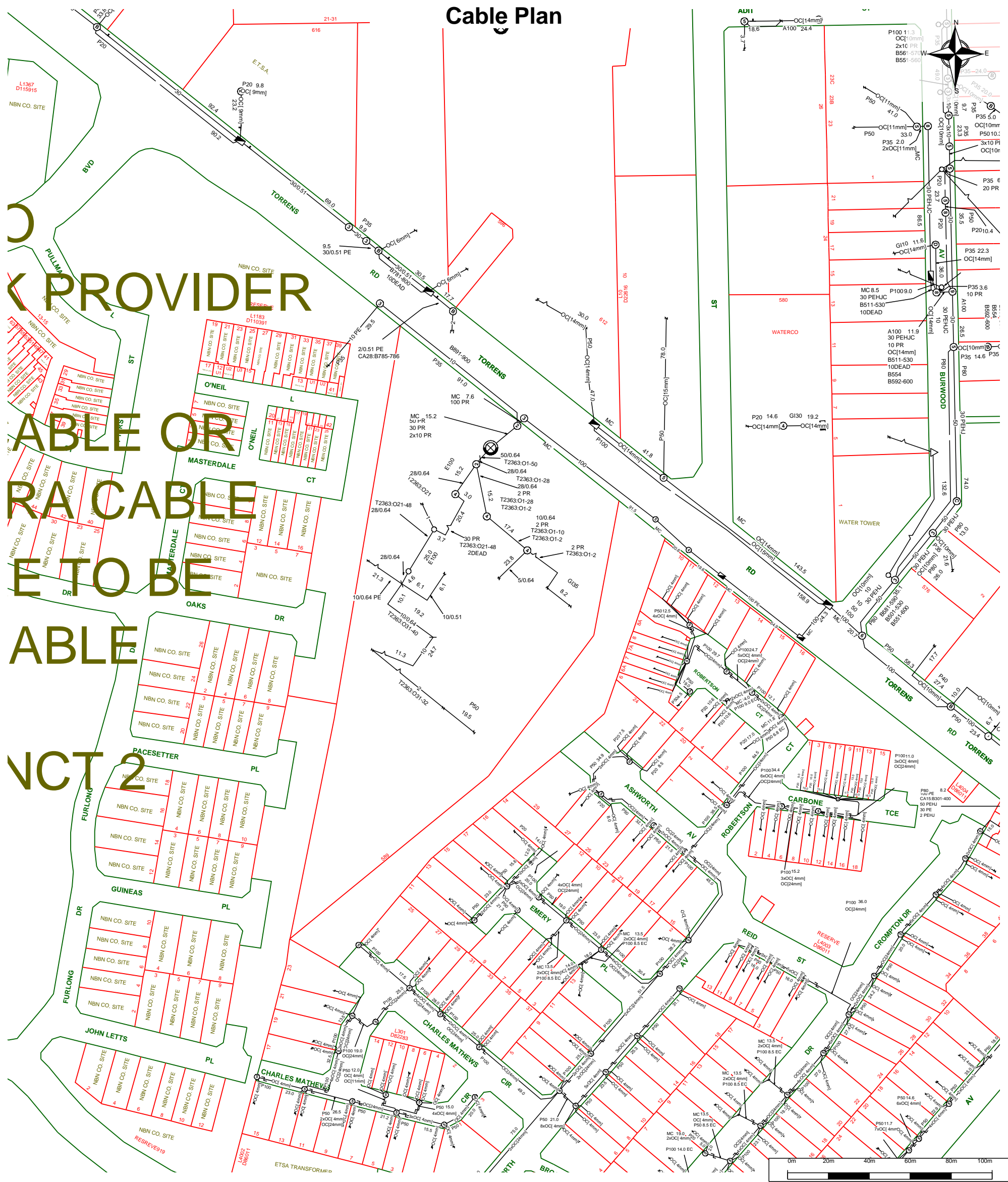
 Substation

 Electricity Pole

 Light Column


0 0.009km

Cable Plan



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 24/01/2020 15:32:22

Sequence Number: 93970903

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

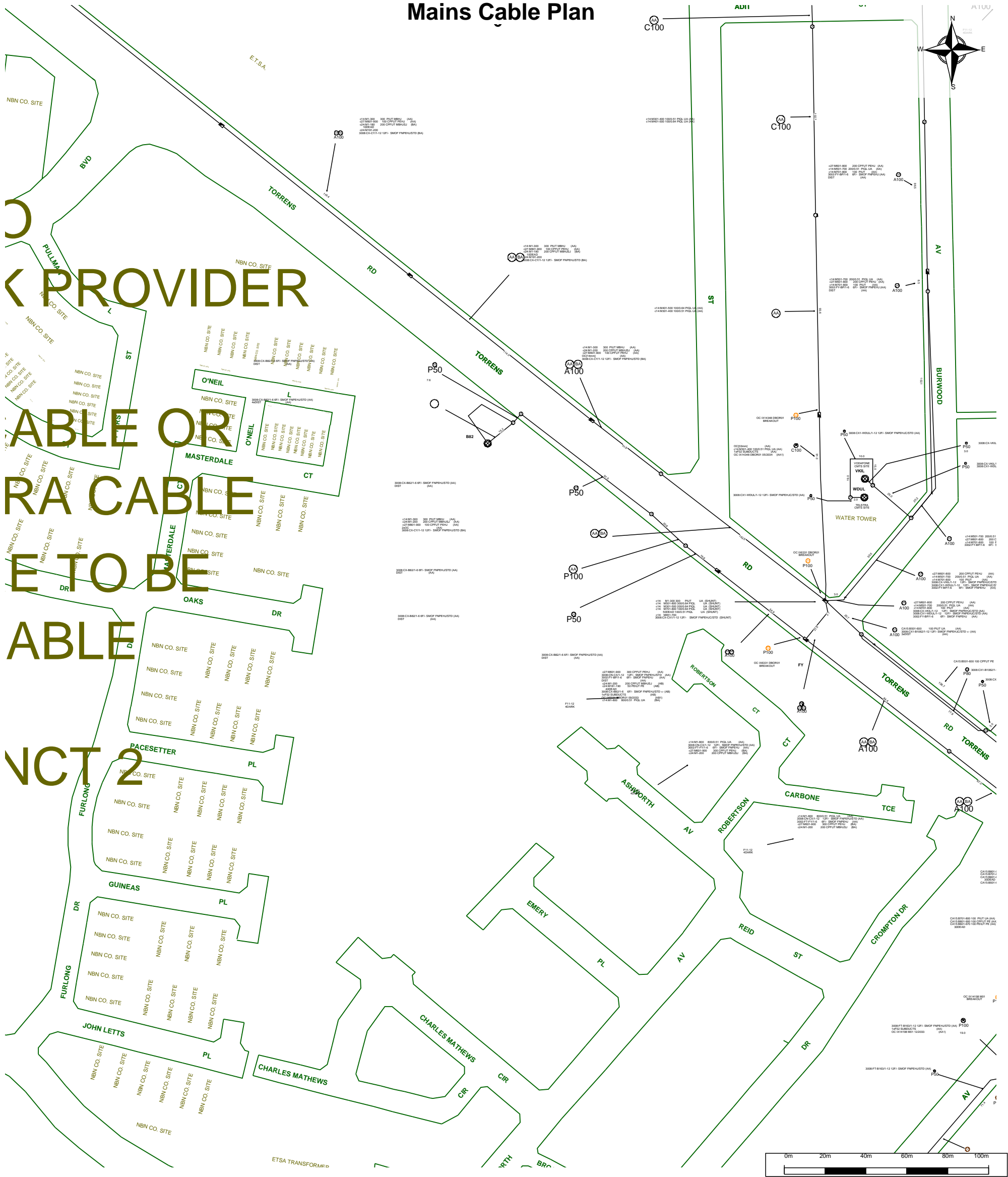
WARNING - Due to the nature of Telstra underground plant and the age of some cables and records, it is impossible to ascertain the precise location of all Telstra plant from Telstra's plans. The accuracy and/or completeness of the information supplied can not be guaranteed as property boundaries, depths 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



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 24/01/2020 15:32:25

Sequence Number: 93970903

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.

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.



Response Cover Letter

Date: 20/01/2020

PIPE Networks
Level 17, 127 Creek St
Brisbane QLD 4000
Phone: +61 732339895
Fax: +61 732339880

To:

Mr Bradley Seidel - Customer ID: 1925844
GREENHILL - Mr Bradley Seidel
Level 1 64 Hindmarsh Square
Adelaide
SA
5000

Email: bseidel@greenhillaustralia.com.au
Phone: 08 8406 1300
Fax: Not Supplied
Mobile: 0439 976 097

Dear Mr Bradley Seidel

The following is our response to your Dial Before You Dig enquiry.

Assets Affected: PIPE Networks

Sequence Number: 93970900

Location: 589 Torrens Road
St Clair
SA
5011

Commencement Date: 21/01/2020

Please read over the attached documents for more information about your enquiry.

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.**



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

Attention: Mr Bradley Seidel
Fax: Not Supplied
DBYD Enquiry Number: 93970900

Date: 20/01/2020

Location: 589 Torrens Road
St Clair
SA
5011

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.

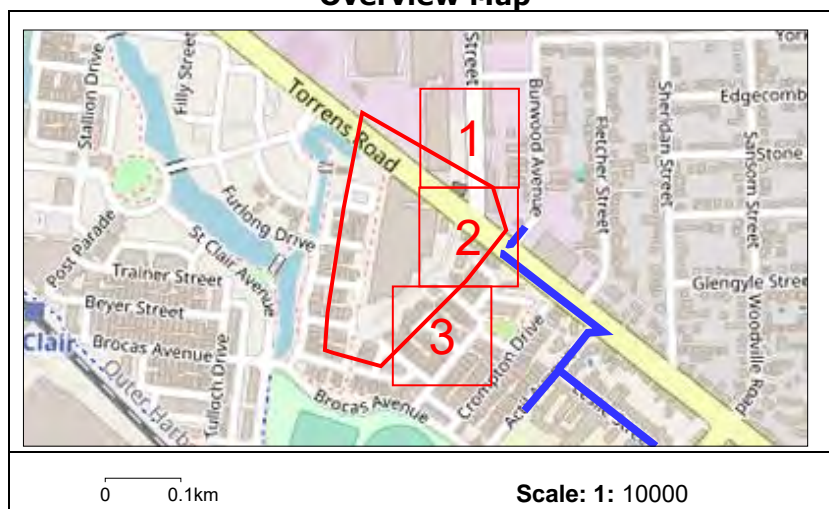
This network is vital to our operations and as such, it is critical that no works commence within the area until a PIPE Networks representative has contacted you.

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: 93970900

Map Sheet: 1

Scale: 1:750

0 0.008km

LEGEND

DBYD Request Area

Asset

Line



Manhole



Area



Duct

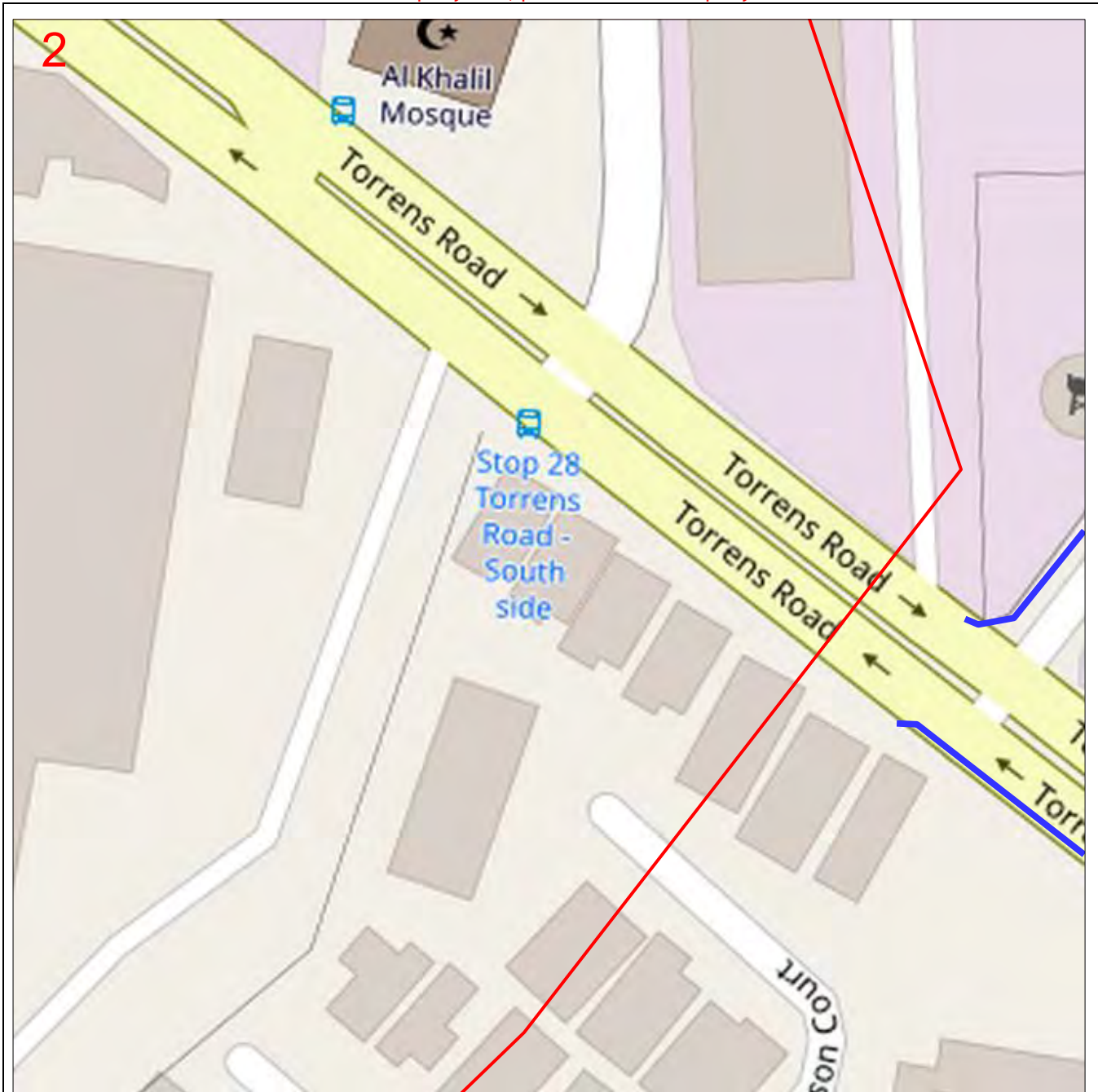


DISCLAIMER: No responsibility/liability is taken by PIPE Networks for any inaccuracy, error, omission or action based on the information supplied in this correspondence. © 2013 PIPE Networks Ltd.

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: 93970900

Map Sheet: 2

Scale: 1:750

0 0.008km

LEGEND

DBYD Request Area Asset

Line

Area

Manhole

Duct

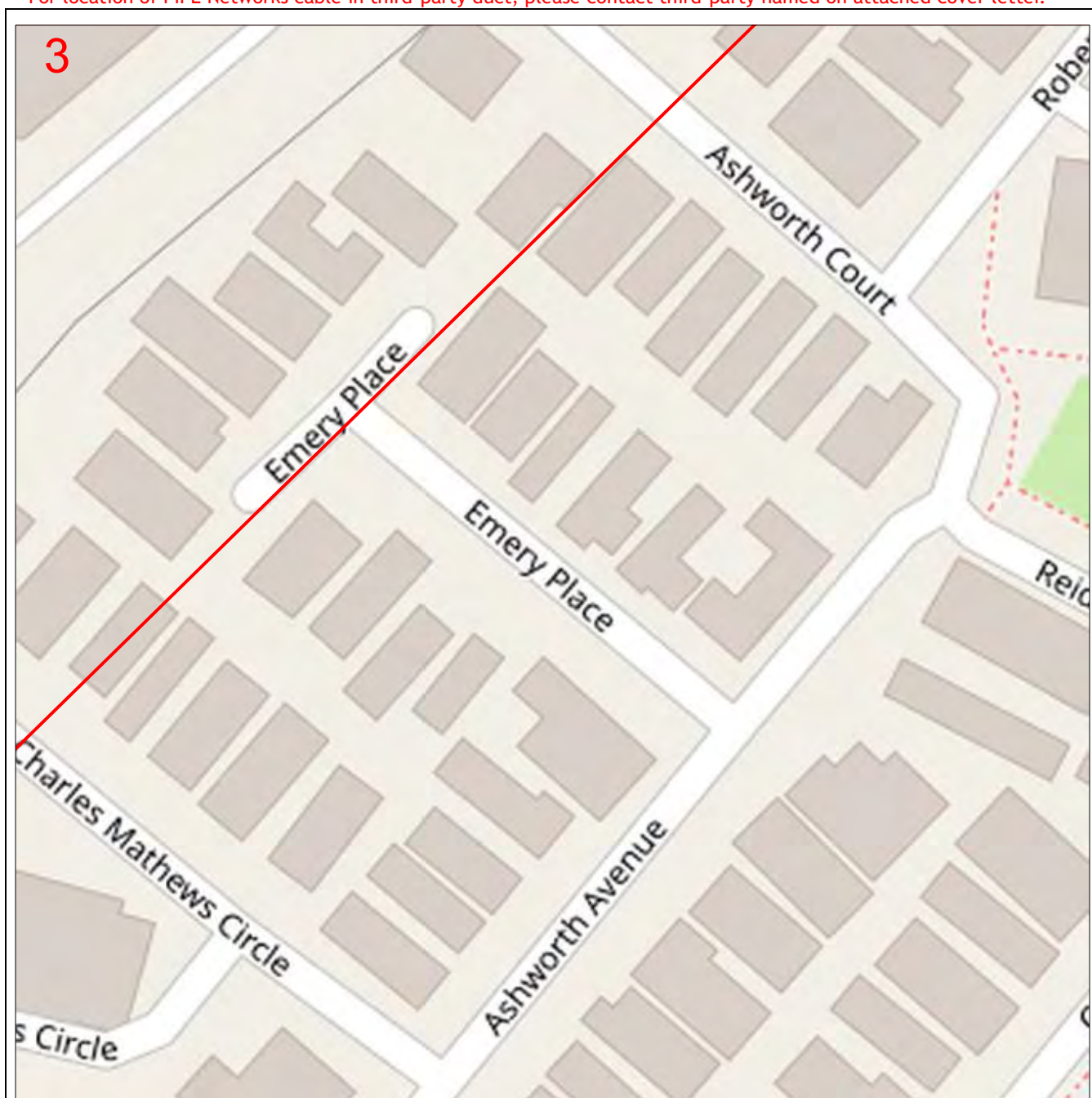


DISCLAIMER: No responsibility/liability is taken by PIPE Networks for any inaccuracy, error, omission or action based on the information supplied in this correspondence. © 2013 PIPE Networks Ltd.

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: 93970900

Map Sheet: 3

Scale: 1:750

0 0.008km

LEGEND

DBYD Request Area Asset

Line

Area

Manhole

Duct



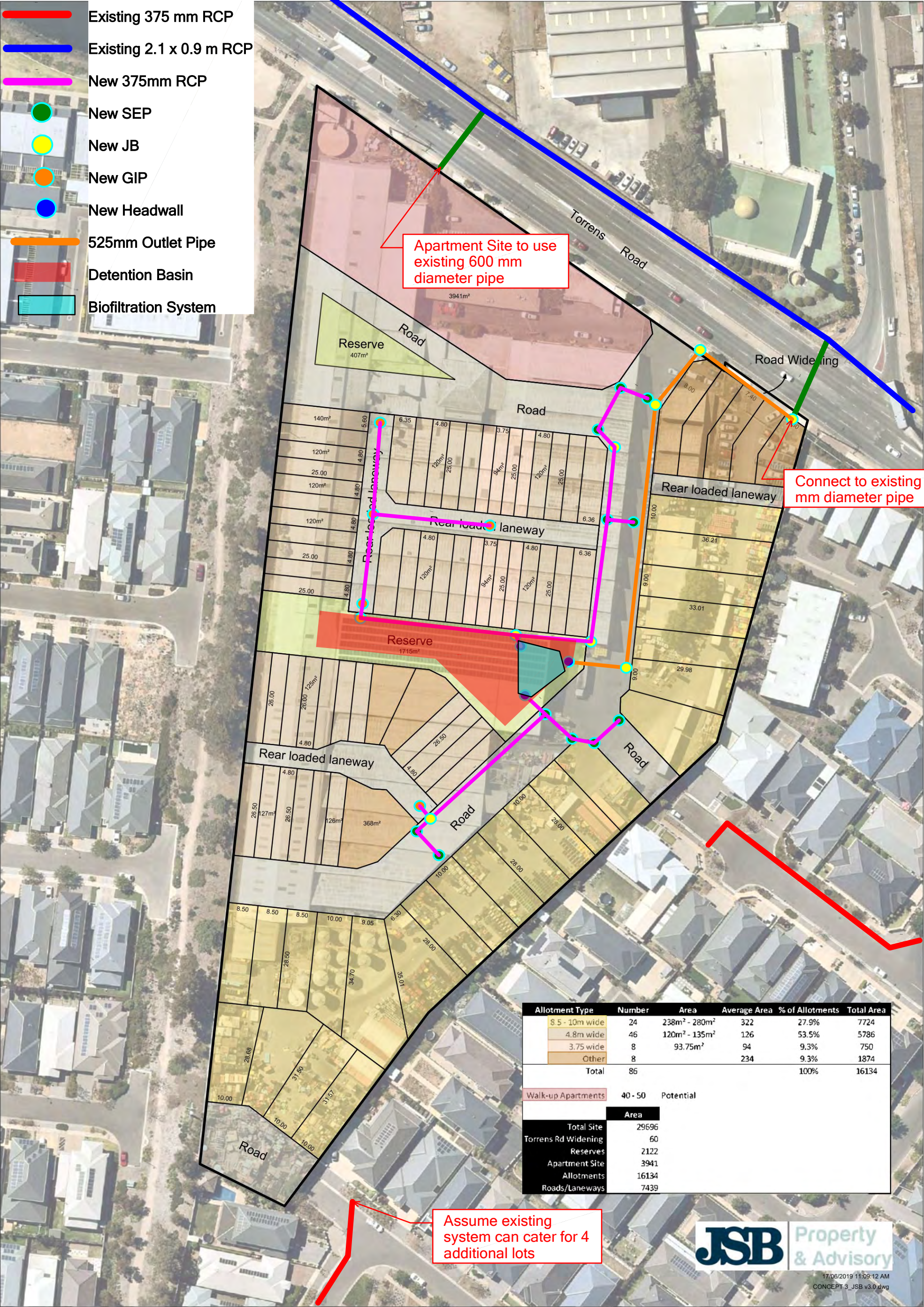
DISCLAIMER: No responsibility/liability is taken by PIPE Networks for any inaccuracy, error, omission or action based on the information supplied in this correspondence. © 2013 PIPE Networks Ltd.

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.**

Appendix E – Service Sketches

Stormwater Sketch

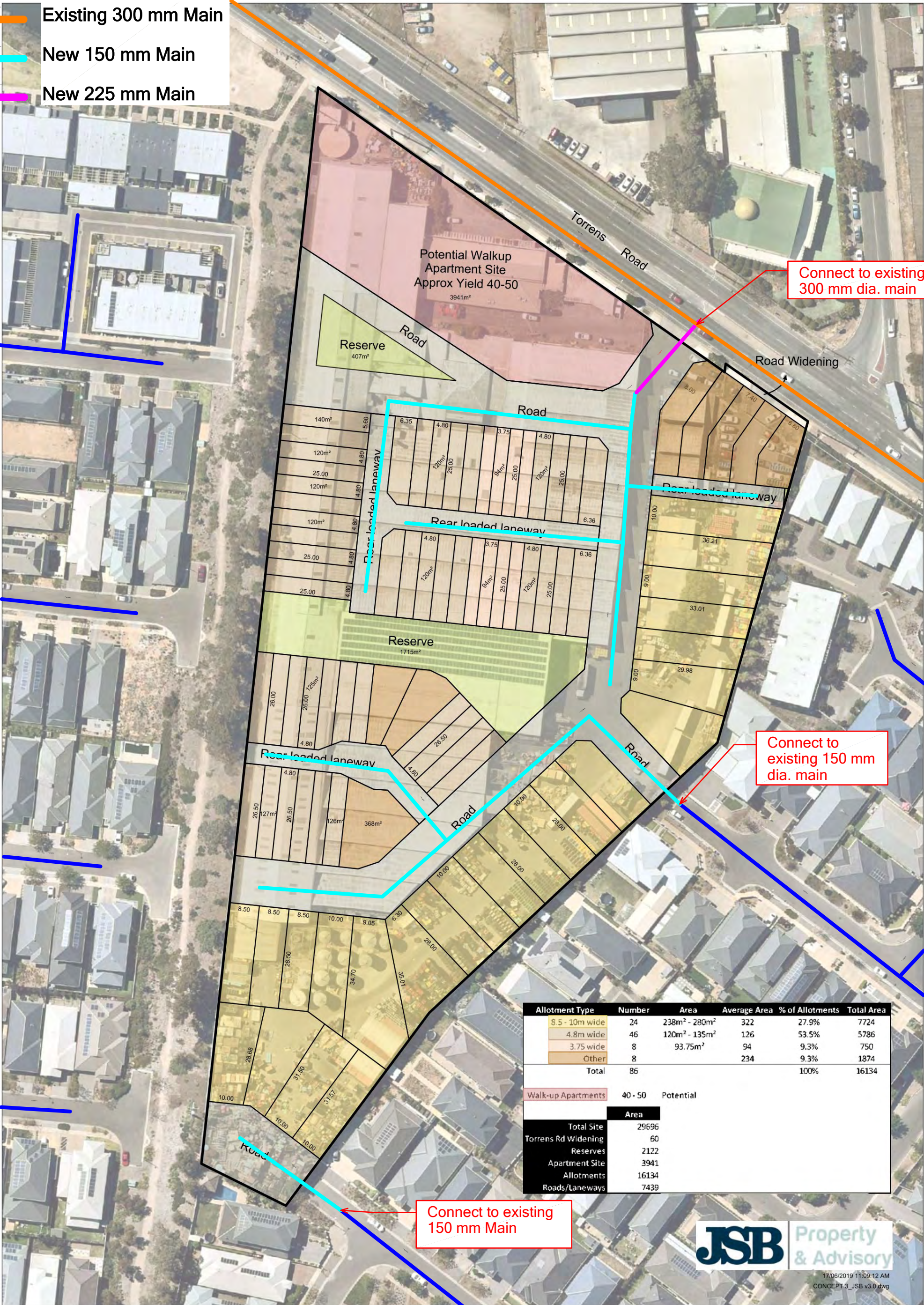
- Existing 600 mm RCP
- Existing 375 mm RCP
- Existing 2.1 x 0.9 m RCP
- New 375mm RCP
- New SEP
- New JB
- New GIP
- New Headwall
- 525mm Outlet Pipe
- Detention Basin
- Biofiltration System



Allotment Type	Number	Area	Average Area	% of Allotments	Total Area
8.5 - 10m wide	24	238m ² - 280m ²	322	27.9%	7724
4.8m wide	46	120m ² - 135m ²	126	53.5%	5786
3.75 wide	8	93.75m ²	94	9.3%	750
Other	8		234	9.3%	1874
Total	86			100%	16134
Walk-up Apartments	40 - 50	Potential			
		Area			
Total Site		29696			
Torrens Rd Widening		60			
Reserves		2122			
Apartment Site		3941			
Allotments		16134			
Roads/Laneways		7439			

Sewer Main Sketch

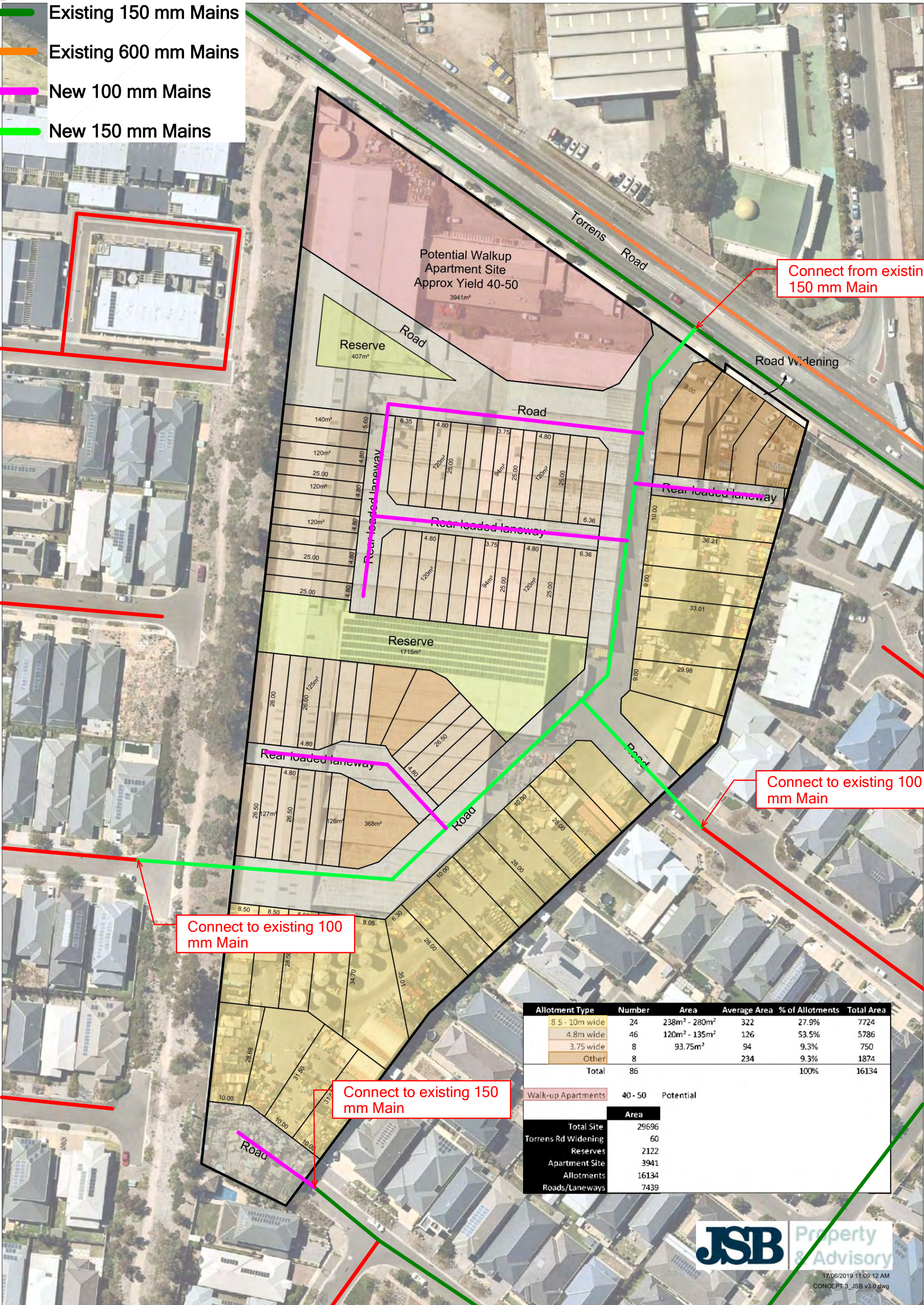
- Existing 150 mm Main
- Existing 300 mm Main
- New 150 mm Main
- New 225 mm Main



Allotment Type	Number	Area	Average Area	% of Allotments	Total Area
8.5 - 10m wide	24	238m ² - 280m ²	322	27.9%	7724
4.8m wide	46	120m ² - 135m ²	126	53.5%	5786
3.75 wide	8	93.75m ²	94	9.3%	750
Other	8		234	9.3%	1874
Total	86			100%	16134
Walk-up Apartments	40 - 50	Potential			
	Area				
Total Site	29696				
Torrens Rd Widening	60				
Reserves	2122				
Apartment Site	3941				
Allotments	16134				
Roads/Laneways	7439				

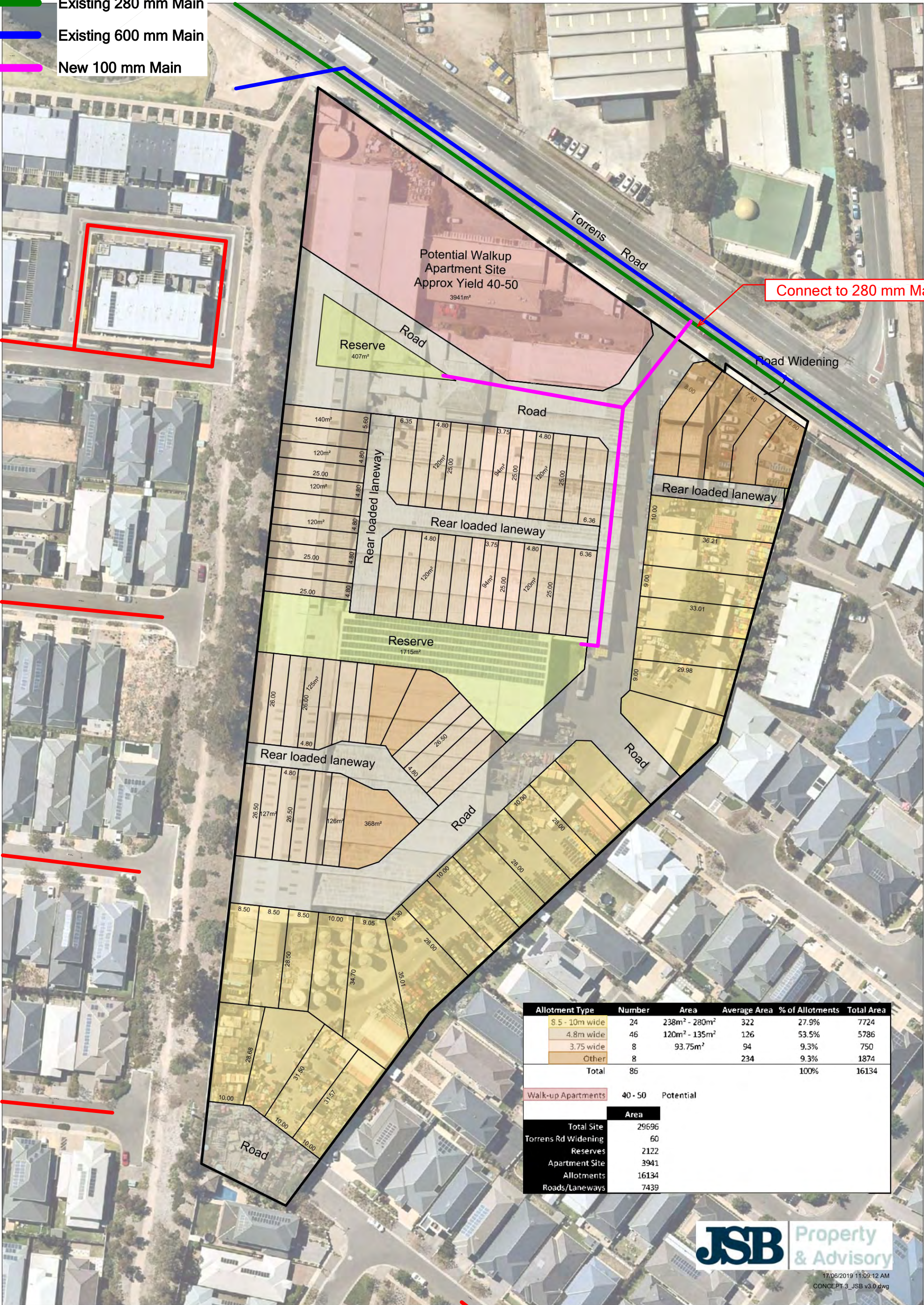
Potable Water Main Sketch

- Existing 100 mm Mains
- Existing 150 mm Mains
- Existing 600 mm Mains
- New 100 mm Mains
- New 150 mm Mains



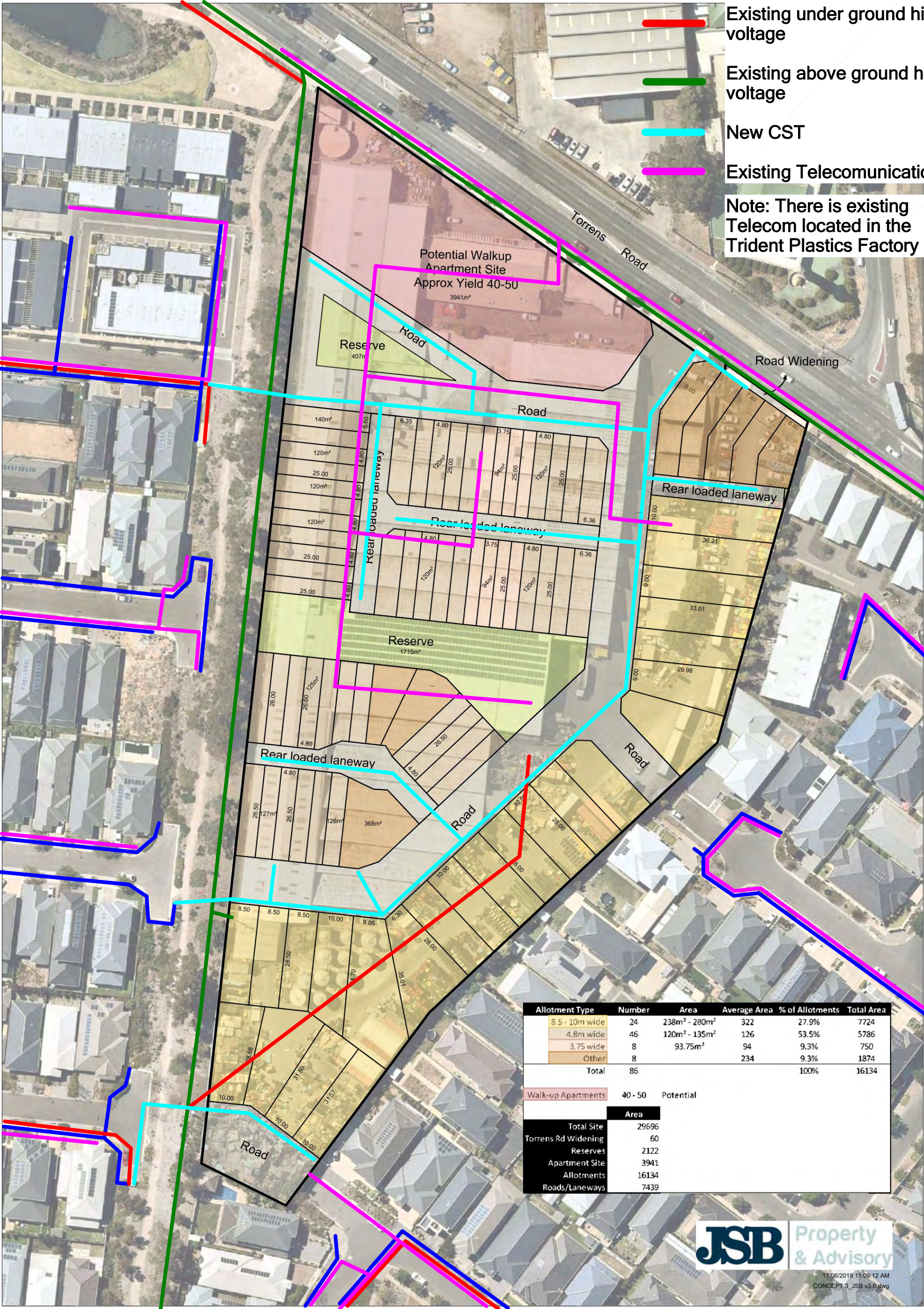
Recycled Water Main Sketch

- Existing 100 mm Main
- Existing 280 mm Main
- Existing 600 mm Main
- New 100 mm Main



Connect to 280 mm Main

Allotment Type	Number	Area	Average Area	% of Allotments	Total Area
8.5 - 10m wide	24	238m² - 280m²	322	27.9%	7724
4.8m wide	46	120m² - 135m²	126	53.5%	5786
3.75 wide	8	93.75m²	94	9.3%	750
Other	8		234	9.3%	1874
Total	86			100%	16134
Walk-up Apartments	40 - 50	Potential			
	Area				
Total Site	29696				
Torrens Rd Widening	60				
Reserves	2122				
Apartment Site	3941				
Allotments	16134				
Roads/Laneways	7439				



Appendix D – Certificate of Title

REAL PROPERTY ACT, 1886



The Registrar-General certifies that this Title Register Search displays the records maintained in the Register Book and other notations at the time of searching.



Certificate of Title - Volume 5075 Folio 792

Parent Title(s)	CT 1890/105			
Creating Dealing(s)	TG 7247478			
Title Issued	18/06/1992	Edition	11	Edition Issued 14/09/2018

Estate Type

FEE SIMPLE

Registered Proprietor

PROSPERITY ASSETS PTY. LTD. (ACN: 626 816 519)
OF 315 WAKEFIELD STREET ADELAIDE SA 5000

Description of Land

ALLOTMENT 36 DEPOSITED PLAN 4058
IN THE AREA NAMED ST CLAIR
HUNDRED OF YATALA

Easements

SUBJECT TO EASEMENT(S) OVER THE LAND MARKED A TO THE ELECTRICITY TRUST OF SOUTH AUSTRALIA (T 1341097)

SUBJECT TO EASEMENT(S) OVER THE LAND MARKED B.C AND D TO THE ELECTRICITY TRUST OF SOUTH AUSTRALIA (TG 7247478)

Schedule of Dealings

Dealing Number	Description
12985969	MORTGAGE TO COMMONWEALTH BANK OF AUSTRALIA (ACN: 123 123 124)

Notations

Dealings Affecting Title	NIL
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Priority Notices	NIL
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Notations on Plan	NIL
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Registrar-General's Notes

PLAN FOR LEASE PURPOSES VIDE G745/1989

Administrative Interests	NIL
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REAL PROPERTY ACT, 1886



The Registrar-General certifies that this Title Register Search displays the records maintained in the Register Book and other notations at the time of searching.



Certificate of Title - Volume 5220 Folio 775

Parent Title(s)	CT 4288/862			
Creating Dealing(s)	CONVERTED TITLE			
Title Issued	17/10/1994	Edition	11	Edition Issued 14/09/2018

Estate Type

FEE SIMPLE

Registered Proprietor

PROSPERITY ASSETS PTY. LTD. (ACN: 626 816 519)
OF 315 WAKEFIELD STREET ADELAIDE SA 5000

Description of Land

ALLOTMENT 1 DEPOSITED PLAN 19521
IN THE AREA NAMED ST CLAIR
HUNDRED OF YATALA

Easements

NIL

Schedule of Dealings

Dealing Number	Description
12985969	MORTGAGE TO COMMONWEALTH BANK OF AUSTRALIA (ACN: 123 123 124)

Notations

Dealings Affecting Title	NIL
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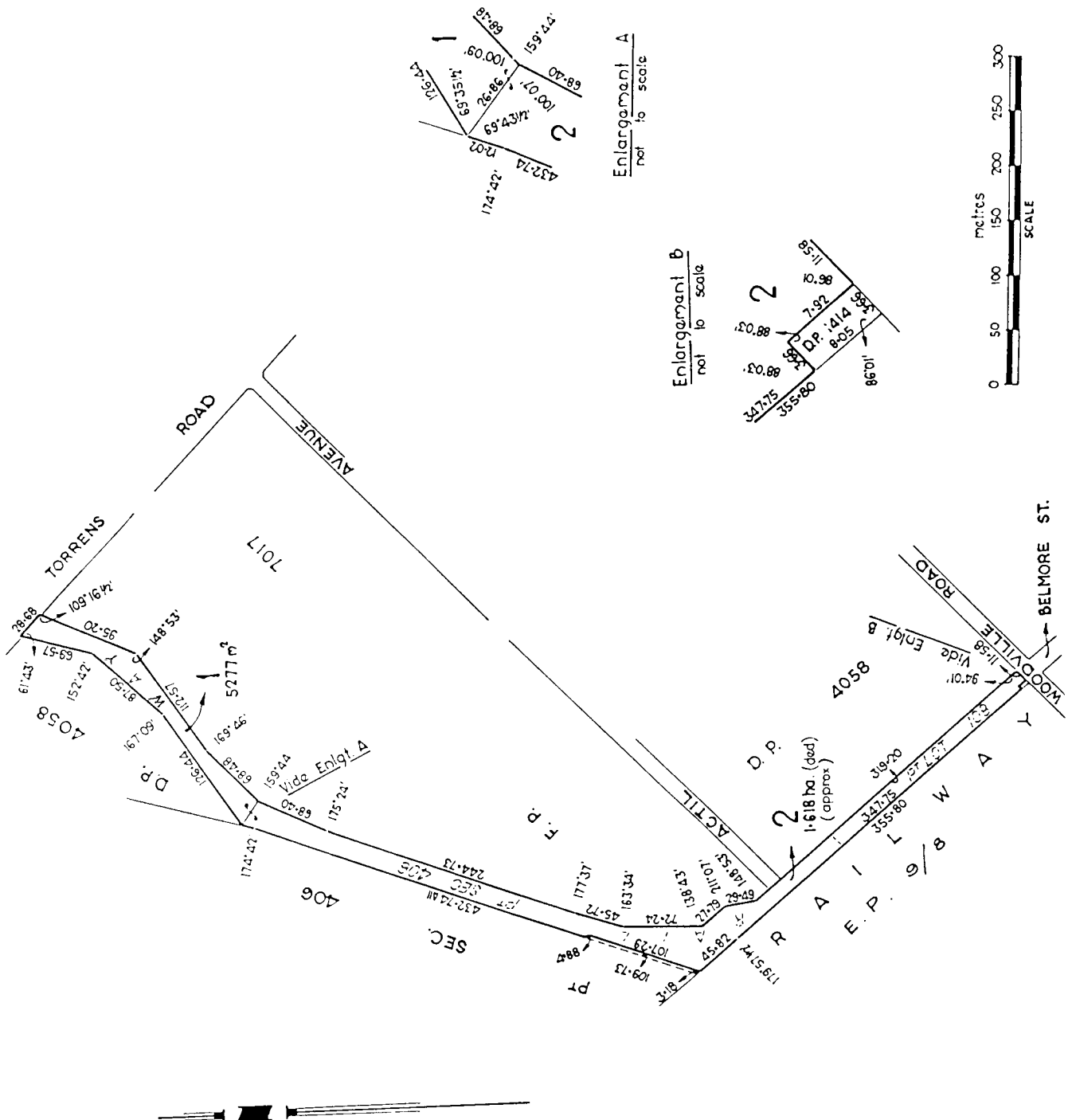
Priority Notices	NIL
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Notations on Plan	NIL
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Registrar-General's Notes

PLAN FOR LEASE PURPOSES VIDE G745/1989

Administrative Interests	NIL
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Appendix E – SA Power Networks

Our Ref: Trident Plastics

18 May 2020

City of Charles Sturt
PO Box 1
Woodville SA 5011

Dear Sir/Madam

RE: Develop Plan Amendment for Trident Plastics Site – 589-599 Torrens Road St Clair

We refer to your recent request for information pertaining to existing easements to the Electricity Trust of South Australia as detailed in Certificate of Title - Volume 5075 Folio 792.

The easements are for a 33,000-volt distribution line which SA Power Networks will be converting to 11,000 volt (11kV) commencing in 2021. During the conversion the line will be integrated into the existing 11kV Network using the established easements.

Set out below are further details concerning the individual easements identified in your request,

1. Easement over the land marked A.

- The infrastructure contained in this easement will remain Overhead (OH) in its current location after conversion to 11kV.
- The OH line can be replaced with Underground (UG) cables of similar capacity at the developers cost.
- The location of the UG cables could be integrated into the Electrical Distribution design for the development in consultation with SA Power Networks at the developers cost.

2. Easement over the land marked B, C & D.

- The infrastructure contained with these easements is to supply electricity to Trident plastics and can be removed when supply is no longer required to the site.
- The easements can be extinguished once the infrastructure is removed

If you have any further enquiries, please contact the Project Manager assigned to this project, Darren Marshall at our Wingfield office on 0403582282 or darren.marshall@sapowernetworks.com.au.

Yours sincerely



James Case
Customer Solutions Manager Adelaide

Appendix F – Environmental Assessment

ENVIRONMENTAL ASSESSMENT

589 – 599 Torrens Road St Clair SA



Prepared for:	Prosperity Assets C/O White Box Investments
Date:	26 March 2020
Reference No:	JC0482
Report Version:	JC0482.EA/02

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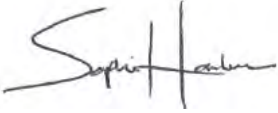

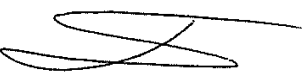
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AGON DOCUMENT CONTROL

Report Title:		Project Reference		
ENVIRONMENTAL ASSESSMENT 589 – 599 Torrens Road St Clair, SA		JC0482.EA		
Written:		Approved:		
 Sophie Hambour Environmental Scientist		 David Project National Environmental Manager		
 Justin Symonds Senior Environmental Engineer				
Rev No	Status	Date	Author	Reviewer
01	Draft	20/03/20	SH/JS	DP
02	Final	26/03/20	SH	DP

Rev No	Copies	Recipient
01	1 electronic	White Box Investments – Mr Matt Woodman
02	1 electronic	White Box Investments – Mr Matt Woodman Ekistics – Mr Kieron Barnes

EXECUTIVE SUMMARY

Agon Environmental was engaged by White Box Investments, on behalf of Prosperity Assets Pty Ltd, to conduct an Environmental Assessment of the Trident Plastics site located at 589-599 Torrens Road, St Clair SA. It is currently proposed that the site be rezoned for mixed residential and commercial use (currently zoned Industry). The objectives of this assessment were primarily to identify potentially contaminating activities (PCAs) that may have occurred or occurring at the site and to undertake a soil and groundwater investigation to provide an initial characterisation of potential contamination risks identified at the site.

The soil and groundwater investigations included the drilling of 17 boreholes across the site and sampling of two existing groundwater wells. Soil and groundwater samples were then analysed for a wide range of organic and inorganic compounds. The results of the soil investigations identified that fill materials are present across the site at depths ranging from 0.25 to greater than 1.1 m below ground level (mBGL). Soil analytical results indicate that some contaminants are present in site soils in discrete locations at concentrations in excess of Heath-based Investigation/ Screening Levels (HIL/ HSL) for a residential land use setting. Arsenic is present in shallow fill materials in excess of HILs in four locations along the eastern boundary of the site (former railway alignment), at depths to 0.6 m, with petroleum hydrocarbons (TRH F2 fraction) and C16-C34 detected in excess of the HSLs in two boreholes (BH12 and BH13) adjacent to the underground storage tank at the site and possibly associated with a former bitumen layer or previous surface oil spillage.

Although these concentrations exceed the relevant criteria (indicating that further investigation is required), these impacts are likely to be highly localised and not indicative of widespread or significant contamination at the site. It is anticipated that any remediation works required are likely to be minor and could be undertaken during site demolition/ clearance works. In addition, given their localised nature, it is considered unlikely that the impacts identified will preclude the redevelopment of the site for residential purposes.

Groundwater analysis identified minor metal and nutrient concentrations above the adopted assessment criteria. Elevated boron and selenium concentrations are considered to be representative of background conditions, while the elevated nutrients may be related to the historical use of the region as grazing land (pre-1940s). The elevated hexavalent chromium concentration observed is considered to be minor and is likely to result from previous industrial uses in the area (including a former munitions plant to the north; the former Holden Woodville plant to the south; and a former linen factory to the south). Although the site was previously used as a steel manufacturing plant, it is considered unlikely that the site is the source of the observed chromium impact, given the industrial history of the local area.

A range of licensed activities have been identified within 1 km of the site. These activities are generally light industry (spray painting, petrol stations), and are not anticipated to present significant environmental risks to occupants of the site. In addition, the site is buffered from these activities by a range of commercial, residential and light industrial land uses. Therefore, it is considered that these activities are unlikely to impact negatively on the use of the site either in its current disposition or upon its redevelopment for residential purposes.

The results of the investigations undertaken by Agon have identified minor contamination impacts at the site which are not considered likely to present a significant ongoing risk to

human health or the environment and would not preclude the residential redevelopment of the site.

1.0 INTRODUCTION

1.1 Background

Agon Environmental Pty Ltd (Agon) was engaged by White Box Investments, on behalf of Prosperity Assets Pty Ltd, to conduct an Environmental Assessment of the Trident Plastics site located at 589-599 Torrens Road, St Clair SA ("the site", see Figure 1). Agon understands that White Box is currently proposed that the site be rezoned for mixed residential and commercial use (currently zoned Industry). The City of Charles Sturt (Council) has endorsed a Statement of Intent (SOI) for a Development Plan Amendment (DPA) which is the first step in the rezoning process.

1.2 Objective

The objectives of this assessment were to:

- Identify potentially contaminating activities (PCAs) that may have occurred or are occurring at the site; and
- A soil and groundwater investigation to provide an initial characterisation of the nature and extent of potential contamination risks identified at the site, targeting the potentially contamination activities identified.

1.3 Scope of Work

The scope of works undertaken as a part of this investigation included the following tasks:

- Soil Investigation.
 - Drilling of 17 boreholes across the site to target specific areas of potential contamination and to provide general site coverage; and
 - Collection and analysis of soil samples for a range of contaminants.
- Groundwater sampling.
 - Gauging of water levels and collection of groundwater samples from two existing wells present on the site (MW01 and MW02); and
 - Analysis of groundwater samples for a broad range of organic and inorganic contaminants.
- Preparation of this Environmental Assessment report.

1.4 Supporting Documentation

Agon has reviewed the following reports and other documentation pertaining to the site:

- AEC Environmental Pty Ltd (2007) *Preliminary Environmental Site Assessment, Trident Plastics, 589 Torrens Road Woodville South Australia*. 2821/01. August 2007.
- Agon Environmental Pty Ltd (2018) *Preliminary Site Investigation, 589 – 599 Torrens Road, St Clair, SA*. 16 July 2018. Ref JC0270/02

2.0 SITE DETAILS

2.1 Site Identification

The site comprises two land parcels which are outlined red within **Figure 1**. The total size of the area is approximately 2.97 Ha. The land parcel and Certificate of Title details are provided in Table 1. The current Certificate of Titles and Deposited Plans are provided in Appendix A.



Figure 1: Site Land Parcel

Source: SAPP (DPTI 2020)

Table 1: Land Parcel Details

CT Volume/ Folio	Plan/ Parcel	Address	Hundred	Site Area
5075/792	DP4058 A36	589-599 Torrens Road St Clair	Yatala	2.44 Ha
5220/775	DP19521 A1			5,280m ²

2.2 Site Zoning

The site is situated in the suburb of St Clair, within the Charles Sturt Council area. The site is currently zoned “Urban Employment”. Under the Charles Sturt Council Development Plan (DPTI 2020), the primary objectives of the Urban Employment Zone are:

1. A mixed-use employment zone that accommodates a range of industrial land uses together with other related employment and business activities.

2. *Development designed and located to provide primary vehicle access via arterial and distributor roads to minimise impacts on residential streets.*
3. *Commercial uses, including shops, offices, consulting rooms, personal service establishments and training centre that provide services for businesses and an expanding workforce, located along the fringes of the zone on arterial roads.*
4. *Provision for large floor plate enterprises, such as major logistics and manufacturing plants, high technology and/or research and development related uses, located to take advantage of existing transport networks.*
5. *The effective location and management of activities at the interface of industrial/commercial activity with land uses that are sensitive to these operations.*
6. *Development that promotes business clusters that provide a range of economic and environmental benefits.*
7. *Development that contributes to the desired character of the zone.*

2.3 Physical Setting and Land Use

The site is situated approximately 8.5 km north west of the Adelaide Central Business District. The site was occupied by Trident Plastics Pty Ltd at the time of this investigation.

Land use at the site is identified as “Utilities Industry”, with surrounding land uses comprising “Residential” to the east and south of the site, “Vacant Land” to the west of the site and “Commercial” and “Public Institution” to the north (north of Torrens Road).

Land use in the wider local area also includes areas of Residential and Vacant Land to the west (St Clair Development), Utility Industry to the north, Retail Commercial to the south (Charles Sturt Industrial Estate), and a Recreation / Reserve and Education Centre to the south / south east (Woodville High School; St Clair Oval). The land use surrounding the site and in the wider local area are detailed in Table 2.

Table 2: Surrounding Land Uses

Direction	Land Use
North	Torrens Road, various commercial/industrial premises (Evans & Clark National Auction House, City Shelving, Storage King, Mosque).
East	Residential, Woodville High School, St Clair Oval (former Actil site – Australian Cotton Textile Industries Ltd), Woodville Road.
South	Residential, Outer Harbour Railway Line, Charles Sturt Industrial Estate (Former General Motors-Holden Factory) Port Road.
West	St Clair Development; Residential; Vacant Land, Urban Wetland Areas, (former Cheltenham Racecourse), Cheltenham Parade.

It is noted that the area to the south east of the site shaded pink and green in **Figure 3** (identified as Residential and Recreation / Reserve land use) is the location of the former Australian Cotton Textile Industries Ltd (Actil) site. The area shaded blue in **Figure 3** (identified as Retail commercial land use) is the current Charles Sturt Industrial Estate, and is the location of the former General Motors-Holden factory.

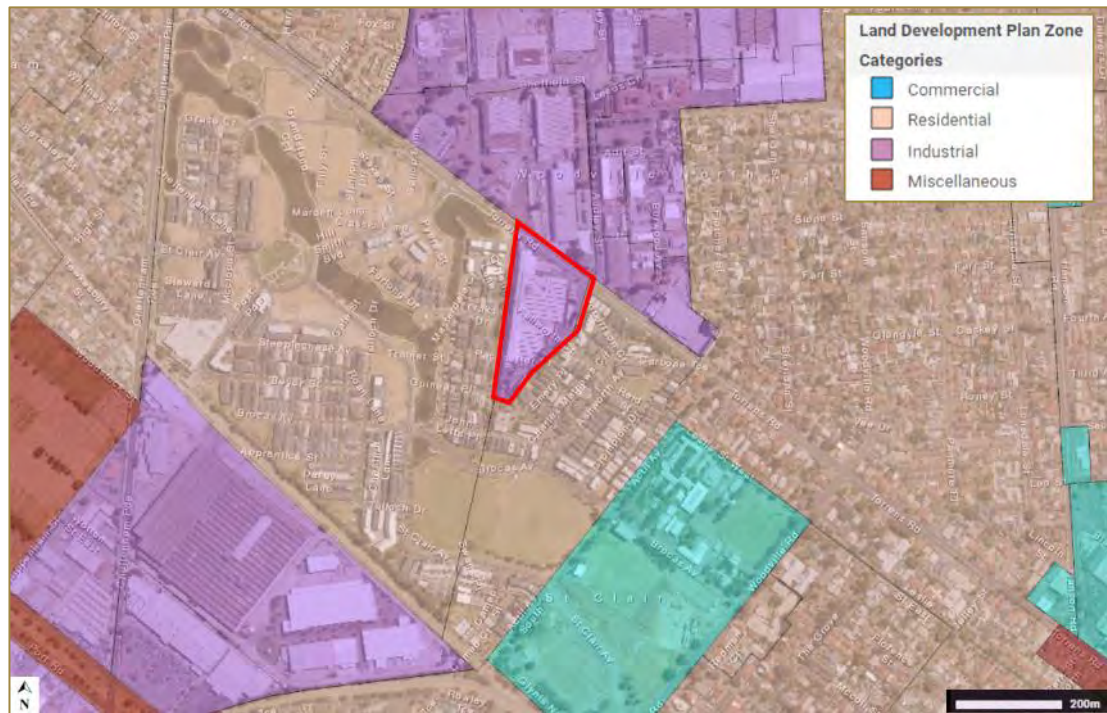


Figure 2: Site Zoning Map

Source: Location SA Map Viewer (SA Gov 2018)

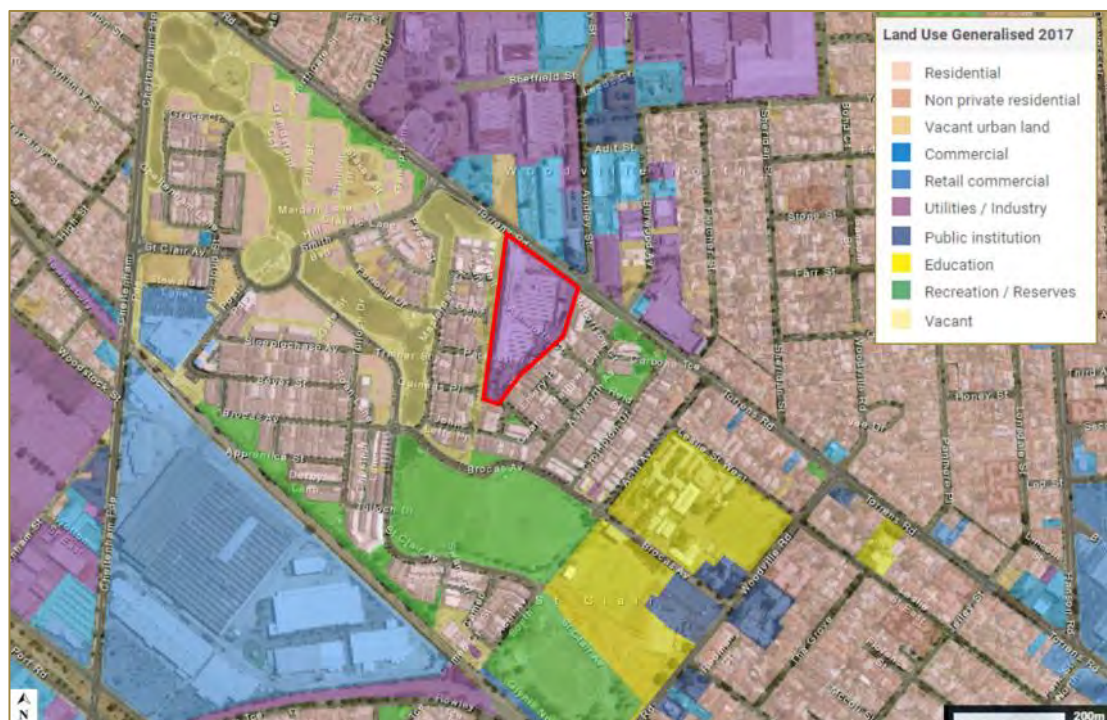


Figure 3: Surrounding Land Use

Source: Location SA Map Viewer (SA Gov 2018)

2.4 Environmental Setting

2.4.1 Geology

Geological information, as presented in the South Australian Resources Information Geoserver (SARIG – DSD 2018), indicates that natural soils at the site are likely to comprise Pleistocene Aged sediment of the Pooraka Formation (clay, sand and carbonate earth, silty, with gravel lenses). In the wider vicinity, natural soil is likely to comprise Holocene Aged coastal marine sediment of the Saint Kilda Formation (calcareous, fossiliferous sand and mud of intertidal sand flats, beaches and tidal marshes; organic, gypseous clay of supratidal flats) and Pleistocene Aged Undifferentiated calcrete.

Seventeen boreholes were drilled to maximum depth of 4 metres below ground level (mBGL) as a part of the soil investigation program detailed in Section 4.0. The subsurface conditions generally consisted of shallow fill material comprising sandy gravel and reworked natural soils. The fill materials extended from 0.25 m to below 1.1 m and were typically underlain by natural dark brown silty sands or silty clayey sands and brown to red brown silty clays or sandy clays.

2.4.2 Hydrogeology

A search for registered groundwater wells within a 2 km radius of the site was undertaken using the online Water Connect website (DEW 2020).

A total of 670 registered well records were identified within a 2 km radius of the site. The registered wells identified include Water Point Wells, Engineering Wells and Water Wells, with the primary purposes listed as Domestic, Monitoring and Investigation Wells. Additional purposes included Drainage, Observation, Irrigation, Managed Aquifer Recharge and Environmental Wells.

Standing water levels (SWL) within these wells ranged from 1.0 metres below ground level (m BGL), to 17 m BGL. Salinities recorded in the registered wells ranged from 121 mg/L Total Dissolved Solids (TDS) to 43,120 mg/L TDS, indicating highly variable water quality in the area.

Groundwater information obtained from the Water Connect website indicates that there is one registered groundwater well on the site, located in the north east corner of Allotment 36. This Drainage Well (unit number 6628-13902) was drilled to a final depth of 14.6 m BGL on 23 February 1987. The standing water level recorded in 1987 was 6.1 m BGL. This well was not observed during the site works undertaken in February 2020.

A review of previous reports indicates that three groundwater investigation wells were installed across the site on 2 and 9 July 2008. These wells were drilled to a depth of 8 m BGL and encountered groundwater at depths between 5.3 m BGL to 5.5 m BGL. Salinity was recorded at 1,800 mg/L TDS to 3,370 mg/L TDS. These wells were surveyed, and the groundwater flow direction was measured to be in a north westerly direction. During the February 2020 environmental investigations only two of the monitoring wells (MW01 and MW02) were located. Groundwater within these monitoring wells was gauged at 4.819 (MW01) and 4.535 (MW02) mBGL, respectively.

3.0 EXISTING SITE INFORMATION

3.1 History of Occupancy and Site Activities

The site located at 589-599 Torrens Road, St Clair was originally grazing land prior to the 1940s, but has been used for light industrial land purposes since that period.

A railway corridor formerly occupied the western portion of the site from the 1940s until the rail line was removed in the late 1970s and then sealed in the 1990s.

The main shed on the site was first constructed in the 1940s and was initially used for the fabrication of steel fencing and, from the 1990s, for plastic injection moulding. Site buildings were expanded and added during the 1940s up to the 1980s; since this period the site has retained its current layout.

A review of historical information relating to the site indicated the factory building has been used for steel manufacturing and fabrication from the 1940's to the early 1990's (Cyclone Company of Australia & Boral Cyclone). Plastic moulding operations commenced on the site in the early 1990's and has continued to the present day (Premier Plastic, Plas-Tec Holding, Viscount Plastics and Trident Plastics).

3.2 Public Register Searches

3.2.1 Dangerous Substance Licence Search

A search of the SafeWork SA Dangerous Substance Licence database was undertaken for the site in 2018. Records held for the site are summarised in Table 3. SafeWork SA's response dated 2 July 2018 is included in Appendix B.

Table 3: Dangerous Substances Licence Search

Class	Quantity	Storage Type
2	2.75 kL	Gas tank above ground external
2	0.76 kL	Gas cylinder above ground external
3	2.2 kL	Package internal (Drum/can/bin/box)
3	11kL	Liquid tank underground external
3	0.75 kL	Package internal (Drum/can/bin/box)

3.2.2 EPA Environmental Authorisations

A search of environmental authorisations (licenses) issued by the EPA was undertaken within 1 km of the site. This search revealed a number of licensed activities, including the following:

- discharge of stormwater;
- railway operations;
- dredging and earthworks drainage;
- petrol stations;
- chemical storage and warehousing;

- spray painting or powder coating;
- activities producing listed waste; and
- abrasive blasting.

These activities are generally light industry, and are not anticipated to present significant environmental risks to occupants of the site. In addition, the site is buffered from these activities by surrounding residential areas (to the east, west and south), and a range of commercial, residential and light industrial land uses (to the north across Torrens Road). Therefore, it is considered that these activities are unlikely to impact negatively on the use of the site either in its current disposition or upon its redevelopment for residential purposes.

A plan showing the location of environmental authorisations relative to the site, along with a full list of all authorisations is included in Appendix B.

3.3 Previous Investigations

Agon has reviewed the following available reports and other documentation pertaining to the site and neighbouring properties, relevant details from the reports are summarised below.

AEC Environmental Pty Ltd (2007) Preliminary Environmental Site Assessment, Trident Plastics, 589 Torrens Road Woodville South Australia. 2821/01. August 2007.

A Preliminary Environmental Site Assessment for the site located at 589 Torrens Road, Woodville was carried out by AEC Environmental Pty Ltd (AEC), dated August 2007. At the time of this assessment the registered owner of each title was listed as Viscount Plastics (Australia Pty Ltd) and the entire site was occupied by Trident Plastics, a plastic moulding company.

A site inspection was conducted by AEC on 7 May 2007. The majority of the site was covered by a large office/ factory/ warehouse building. A large fire water tank was located in the northern corner of the site and a canopy and shed was located in the eastern portion of the site. The majority of the remainder of the site was covered by bitumen paved roads, carparking areas and storage areas.

The following items were noted within the site:

- A oil/ chemical store is was located in the eastern portion of the site. The building was used to store various containers of oil and grease. Several unidentified containers were also noted. Containers were stored over concrete bunded area.
- A decommissioned underground storage tank was noted adjacent the oil/ chemical store.
- An electricity transformer compound was located near the centre of the site, to the east of the main building.

AEC conducted soil and groundwater field investigations. Three monitoring wells were installed as part of the assessment to a depth of 8 mBGL. These wells encountered groundwater at depths between 5.3 m BGL and 5.5 m BGL.

Previous site investigations undertaken by AEC in 2007 identified no significant soil or groundwater impacts in excess of residential health investigation levels; minor metals concentrations were recorded in site soils along a former rail corridor in the east of the site.

Agon Environmental Pty Ltd (2018) Preliminary Site Investigation, 589 – 599 Torrens Road, St Clair, SA. 16 July 2018. Ref JC0270/02

A Preliminary Site Investigation (PSI) was undertaken by Agon in 2018 to inform due diligence investigations for White Box prior to the purchase of the property. The PSI identified a number of potentially contaminating activities associated with historical and current land uses and are summarised below in Table 4.

The 2018 PSI considered that site contamination impacts from the identified potentially contaminating activities are not likely to pose a significant risk to human health or the environment in the site's current form that would preclude the ongoing industrial use of the site.

However, the 2018 PSI noted that the assessment was preliminary in nature; if redevelopment or a change in use of the site is proposed, Agon (2018) recommended that further investigation of site soils and groundwater targeting the identified potentially contaminating activities (including beneath building slabs) be undertaken to characterise the nature and extent of any impacts present on the site and determine the suitability of the site for the proposed use.

Table 4: Potentially Contaminating Activities and Potential Contaminants of Concern

Potentially Contaminating Activity (PCA)	Potential Contaminants of Concern (PCOCs)	Area of Site Potentially Impacted by PCA/PCOC
PCA01 Underground Storage Tank	Monocyclic Aromatic Hydrocarbon (BTEX), Polycyclic aromatic hydrocarbons (PAH) Total Recoverable Hydrocarbons (TRH)	A decommissioned underground storage tank (UST) is located in the east of the site. Records indicate this tank has a capacity of 11 kL, and anecdotal evidence indicates it has been emptied and filled with sand.
PCA02 Former Steel Fabrication operations	BTEX TRH & PAH Solvents	Whole of site; The site was used for steel fabrication from the 1940's to the 1990's. Plastic moulding operations commenced on the site in the 1990's and continues to the present day.
PCA03 Chemical Storage Area/ Oil Store	Acids and acidic solutions Alkalis and alkaline solutions Cr compounds & solutions Hydrocarbons and Oils (TRH & PAH) Organic solvents Zinc compounds & solutions.	An oil/ chemical storage shed (located in the eastern portion of the site) was noted in the 2007 site inspection (AEC 2007). Chemicals and oils were stored over concrete bunded areas. The onsite storage and disposal of various chemicals including solvents and oils is likely to have occurred from the 1940's onwards associated with metal fabrication and plastic moulding activities. The area surrounding the store is sealed with bitumen, and the store itself is bunded and sits on a concrete slab.
PCA04 Former Railway Line	Arsenic Organochlorine Pesticides (OCPs) Organophosphorus Pesticides (OPPs) PAH	Allotment 1 (along the eastern boundary of the site) has been owned by the Railways Commission from the 1940's to the 1980's. A review of the historical aerial imagery show a railway line was present on the allotment. Previous use of herbicides, and potential leakage of fuels or lubricants may have occurred within the rail corridor.
PCA05 Importation of fill materials onto the site	Metals PAHs & TRH Asbestos containing material (ACM)	Whole of site; Fill beneath the site appeared to be comprised of sand and crushed rock to 0.4 mBGL.
PCA06 Use of pesticides and herbicides	OCPs OPPs Metals	Historical use of pesticides and herbicides associated with historical management of vegetation on the site (farming/grazing activities pre-1940's) or use of termiticide treatments on wooden buildings may have resulted in OCP or OPP residues in site soils, which may persist in soils for many decades.
PCA07 Transformer Compounds	Polychlorinated biphenyls (PCB)	Two transformer compounds are located adjacent to the main factory shed. These compounds are unsealed. Leakage of oil coolant containing PCBs from the transformers could have resulted in impacts to soils in these areas.
PCA08 Groundwater impacts from regional industrial activities	Solvents including TCE and other Chlorinated Hydrocarbons Chromium (CrVI)	Whole of site; TCE impacts to groundwater in the local area have been identified in previous investigations on nearby sites.
PCA09 Asbestos Containing Material (ACM)	ACM	An Asbestos Register Review was completed from the site dated 20 July 2017 by Carters Asbestos Management. Numerous instances of ACM were identified on the site. The Review noted the next review recommended July 2018.

4.0 FIELD PROGRAM

4.1 Sampling Plan and Rationale

Seventeen (17) boreholes were advanced to a maximum depth of 4.0 metres below ground level (mBGL). The drilling was undertaken on 24 - 25 February 2020 by a Landcruiser mounted Pushtube drill rig under the supervision of a qualified environmental scientist. All soil samples collected from the boreholes were screened onsite for the presence of volatile organic compounds using a photoionisation detector.

Two existing groundwater monitoring wells were gauged, purged and sampled using micro purge (low flow) pump. The third existing groundwater well was unable to be located at the time of this investigation.

The following sampling plan was implemented to assess the identified PCAs identified in Table 4, Section 3.3. and meet the objectives of this investigation. The rationale for the borehole placement is described in Table 5. Sample locations are shown on Figure 4.

Borehole logs are presented in Appendix C, while the groundwater purge forms are included in Appendix D. The field methodology for the soil and groundwater investigations is included in Appendix E, while a copy of the calibration certificate for photoionisation detector is provided in Appendix F.

Table 5: Sampling Plan and Rationale

Potentially Contaminating Activity	Sample Rationale
PCA02 Former Steel Fabrication operations	Boreholes BH01-BH17 These locations are considered likely to intercept any potential soil contamination arising from these activities: <ul style="list-style-type: none"> Activities associated with occupants including former steel fabrication operations Fill of unknown origin imported to the site for levelling during the construction of the site buildings (beneath sealed hardstands) and in the railway corridor (beneath bitumen). Pesticide residues present across the site, particularly around site boundaries and the footprints of the buildings.
PCA05 Importation of fill materials onto the site	
PCA06 Use of pesticides and herbicides	
PCA03 Chemical Storage Area/ Oil Store	Boreholes BH12, BH13, BH14, BH15 These locations are considered likely to intercept any potential soil contamination arising from impacts associated with leakage of fuel from the UST and from potential spillage that may have occurred around the chemical storage area / oil store.
PCA01 Underground Storage Tank	
PCA04 Former Railway Line	Boreholes BH05, BH06, BH07, BH16, BH17 These locations are considered likely to intercept any potential soil contamination arising from impacts from rail operations would be confined to soils that are currently beneath the bitumen seal.
PCA08 Groundwater impacts from regional industrial activities	MW01, MW02 These wells were considered to assess the nature and extent of potential contaminants of concern in groundwater beneath the site from former onsite and offsite land uses.



Figure 4: Surrounding Land Use

Source: Location SA Map Viewer (SA Gov 2018)

4.2 Assessment Criteria

4.2.1 Soil

This soil assessment has been prepared with regard to the following guidelines:

- National Environment Protection Council (1999; amended 2013) National Environmental Protection Measures – Assessment of Site Contamination
- Standards Australia (2005) AS 4482.1: Guide to the investigation and sampling of potentially contaminated soils: Part 1 – Non-volatile and semi-volatile compounds

The NEPM was used to assess the suitability of site soils for the proposed site use. The criteria within the NEPM provides an initial indication of the contamination status of site soils within the context of land use. Based on the current and proposed land use (residential), soil chemical data were compared to the:

- NEPM Health Investigation Level (HIL) Residential A: (with garden/accessible soil also includes childcare centres, preschools and primary schools.)
- NEPM Health Investigation Level (HIL) Residential B: (with minimal opportunities for soil access; includes dwellings with fully and permanently paved yard space such as high-rise buildings and apartments); and
- Health Screening Level (HSL) Level Residential A/B criteria.

In addition to the above, soil analytical results have also been compared to the following criteria for reference:

- Ecological Screening Levels (ESLs) for Urban Residential;
- Ecological Investigation Levels (EILs) for Urban Residential; and
- Total Petroleum Hydrocarbon Management Limits (MLs) for Residential.

4.2.2 Groundwater

Reference has been made to the SA EPA Guidelines for the Assessment and Remediation of Groundwater (2018) for the assessment of groundwater beneath the site, which requires assessment of water quality in relation to a particular environmental value. The following environmental values have been selected for the site based on a review of possible sensitive groundwater receptors:

- **Drinking water (human):** While use of groundwater from beneath the site is considered unlikely, numerous domestic and town water supply bores are noted within 2km, including a domestic bore approximately to the immediate north of the site. This is also supported by a TDS of approximately 1,600 mg/L (using conversion factor of 0.6) in MW01, which suggests groundwater in that portion of the site are fresh to brackish.
- **Freshwater:** Man-made lakes are present to the immediate west of the site within the St Clair housing development. It is considered possible that groundwater from beneath the site may interact with these lakes.

- **Recreational:** Man-made lakes are present to the immediate west of the site within the St Clair housing development. Swimming pools, which can be filled using groundwater, may also be present within the vicinity of the site.

Given the above environmental values for groundwater, and in accordance with the SA EPA Guideline for the Assessment and Remediation of Site Contamination (2018), reference has been made to the following guidelines:

- Australian Drinking Water Guidelines (2011) – NHRMC, NRMMC (2011).
- Australian Water Quality Guidelines – ANZECC & ARMCANZ (2000).
- Guidelines for Safe Recreational Environments – WHO (2017); and
- Guidelines for Managing Risk in Recreational Water – NHMRC (2008).
- National Environmental Protection Measures (ASC) – Health Screening Levels for Vapour Intrusion (Sand; 4-8m).

4.3 Laboratory Analysis

Based on the identified PCAs, selected soil samples representative of each soil type were analysed for the following:

- NEPM HIL Screen and SA EPA Waste Screen, including metals, organic and inorganic analytes;
- Metals (arsenic, barium beryllium, boron, cadmium, chromium, cobalt, copper, lead, manganese, mercury, nickel, selenium, zinc);
- Total Recoverable Hydrocarbons (TRH); Polycyclic Aromatic Hydrocarbons (PAH); Benzene, Toluene, Ethylbenzene, Xylene and Naphthalene (BTEXN);
- Volatile Organic Compounds (VOCs), Semi- Volatile Organic Compounds (SVOCs);
- Organochlorine Pesticides (OCP) / Organophosphorus Pesticides (OPP);
- Phenols; and
- NEPM Screen for Soil Classification (% Iron/ Cation Exchange Capacity/ pH / Total organic carbon/ % Clay Content).

Based on the identified PCAs, selected groundwater samples were analysed for the following:

- Total Recoverable Hydrocarbons (TRH); Polycyclic Aromatic Hydrocarbons (PAH); Benzene, Toluene, Ethylbenzene, Xylene and Naphthalene (BTEXN).
- Volatile Organic Compounds (VOCs), Semi- Volatile Organic Compounds (SVOCs);
- Metals (arsenic, barium beryllium, boron, cadmium, chromium, cobalt, copper, lead, manganese, mercury, nickel, selenium, zinc, hexavalent chromium (CrVI));
- Nutrients; and
- Natural Attenuation Parameters.

The primary analysing laboratory was Eurofins MGT, who are accredited by the National Association of Testing Authorities (NATA) for all analysis undertaken.

5.0 RESULTS

5.1 Soil Conditions

Fill materials were identified in all boreholes drilled across the site and ranged from 0.25 m to greater than 1.1 m BGL (borehole refusal). Fill materials were typically comprised of gravelly sand or sandy gravel pavement materials, overlying layers of reworked natural soils (silty sands, gravelly sands and clayey sands). Minimal foreign inclusions were observed within the boreholes; however, it is noted that a layer of bitumen was observed within BH12 at 0.6 mBGL. Boreholes BH11 (1.1 m BGL), BH13 (0.6 mBGL) and BH15 (0.7 mBGL) refused on a hard layer that appeared to be a former bitumen pavement.

Readings of volatile organic compounds (VOCs) were measured onsite using a photoionisation detector (PID). Readings were observed between 0.0 to 3,074 parts per million (ppm). The maximum concentration of 3,074 ppm was associated with moderate to high hydrocarbon odour which was present within BH13, adjacent to the underground fuel storage tank (UST) on the site at a depth of 0.3 mBGL to 0.6 m BGL. No other visual or olfactory indicators of contamination were noted within the boreholes.

Natural soils beneath the site were observed to include sandy and silty clays, silty and clayey sands and clayey silts.

5.2 Soil Analytical Results

Tabulated analytical results are provided in Appendix G, with the laboratory chain of custody documentation and certificates of analysis included in Appendix H.

Soil exceedances are discussed below and tabulated in Table 6. All concentrations of analytes in the natural soils were below the adopted assessment criteria.

Concentrations of **arsenic** in shallow fill material (at depths to 0.6 m) were reported in excess of the NEPM Heath Based Investigation Levels (HIL) Residential A criterion (100 mg/kg) and the NEPM Ecological based Investigation Levels (EILs) Urban Residential criterion (100 mg/kg), in the following samples:

- BH05_0.3-0.4 (140 mg/kg);
- BH06_0.5-0.6 (140 mg/kg);
- BH16_0.5-0.6 (120 mg/kg); and
- BH17_0.3-0.4 (160 mg/kg).

These arsenic concentrations were reported below the NEPM HIL B criterion (500 mg/kg) for Residential land use with minimal opportunities for soil access; includes dwellings with fully and permanently paved yard space such as high-rise buildings and apartments.

Concentrations of **petroleum hydrocarbons** (TRH F2 fraction, C10-C16 minus Naphthalene)) were detected in excess of the adopted health based assessment criteria in two boreholes adjacent to the onsite UST (BH12 and BH13) in the following samples:

- BH12_0.3-0.4; and
- BH13_0.5-0.6.

It is noted that in addition to these exceedances, other heavy chain hydrocarbon fractions were identified in shallow samples boreholes BH12 and BH13. It is therefore likely that the identified hydrocarbon impacts are associated with possible surface spillage or leakage of oils or lubricants, or with the identified bitumen layer in this location.

Table 6: Soil Exceedances

Analyte	Criteria	Sample Location and Depth	Concentration (mg/kg)
Arsenic	NEPM HIL A = 100 mg/kg	BH05_0.3-0.4	140
		BH06_0.5-0.6	140
	NEPM HIL B = 500 mg/kg	BH16_0.5-0.6	120
		BH17_0.3-0.4	160
Total Recoverable Hydrocarbons (TRH) F2 Fraction	NEPM HSL A/B = 110 mg/kg	BH12_0.3-0.4	190
		BH13_0.5-0.6	1,400

NOTES:

HIL = Health Investigation Level

HSL = Health Screening Level for Vapour Intrusion, 0-1 m, Sand

HIL/ HSL A = Low density residential with access to soils

HIL/ HSL B = High density residential with no access to soils

It is noted that hydrocarbon concentrations in excess of ecological assessment criteria (see Section 4.2) have been recorded (see Tables, Appendix G). Although these exceedances may require further assessment in later iterations of investigations, these have not been included as part of this assessment, which has a focus on potential health risks to human occupants of the site under a residential land use scenario.

5.3 Groundwater Conditions and Parameters

Final groundwater parameters were measured during purging of the wells on 24 February 2020 just prior to sampling and are summarised in Table 7.

Groundwater purge details are presented in Appendix D.

Table 7: Groundwater Parameters

Well ID	SWL	Volume (L)	DO (ppm)	EC (µS/cm)	pH	Redox (mV)	Temperature (°C)
MW01	4.819	8	1.32	2,783	7.00	125.3	22
MW02	4.535	8	0.10	12,410	6.94	121.3	20

Notes: DO = Dissolved Oxygen, EC = Electrical Conductivity, Redox = Reduction / Oxidisation Potential.

5.4 Groundwater Analytical Results

The majority of groundwater analytical results (tabulated in Appendix G, with laboratory reports in presented Appendix H) were below the adopted assessment criteria; exceptions are summarised in Table 8.

Table 8: Groundwater Exceedances

Well ID	Analyte	Criterion	Concentration (mg/L)
MW01	Boron	ANZECC (2000) Freshwater 95% (0.37 mg/L) ANZECC (2000) Freshwater 99% (0.09 mg/L)	0.66
	Hexavalent Chromium	ANZECC (2000) Freshwater 95% (0.001 mg/L) ANZECC (2000) Freshwater 99% (0.0001 mg/L)	0.008
	Selenium	ANZECC (2000) Freshwater 95% (0.011 mg/L) ANZECC (2000) Freshwater 99% (0.005 mg/L) ANZECC (2000) Recreational Water Quality and Aesthetics (0.01 mg/L) ADWG (2015) Health (0.01 mg/L)	0.017
	Ammonia as N	ANZECC (2000) Recreational Water Quality and Aesthetics (0.01 mg/L)	0.03
	Nitrate as N	ANZECC (2000) Freshwater 95% (0.158 mg/L) ANZECC (2000) Freshwater 99% (0.0038 mg/L)	5.2
MW02	Boron	ANZECC (2000) Freshwater 95% (0.37 mg/L) ANZECC (2000) Freshwater 99% (0.09 mg/L) ANZECC (2000) Recreational Water Quality and Aesthetics (1 mg/L)	2.1
	Selenium	ANZECC (2000) Freshwater 95% (0.011 mg/L) ANZECC (2000) Freshwater 99% (0.005 mg/L) ANZECC (2000) Recreational Water Quality and Aesthetics (0.01 mg/L) ADWG (2015) Health (0.01 mg/L)	0.023
	Sulphate	ANZECC (2000) Recreational Water Quality and Aesthetics (400 mg/L)	800
	Nitrate as N	ANZECC (2000) Freshwater 95% (0.158 mg/L) ANZECC (2000) Freshwater 99% (0.0038 mg/L)	3.7

5.5 Quality Assurance and Quality Control

To confirm the reliability and repeatability of the laboratory analysis undertaken, a number of quality assurance and quality control (QAQC) measurement procedures were undertaken as part of this assessment.

A review of Quality Assurance and Quality Control results is included in Appendix I.

6.0 PRELIMINARY CONCEPTUAL SITE MODEL

6.1 Introduction

The Preliminary Conceptual Site Model (CSM) is fundamental to site characterisation, representing the physical hydrogeological system and the potential pathways by which chemical substances may migrate.

This information and descriptions of site conditions and history, geology, hydrogeology and sources of contamination assist in the identification of potential exposure pathways between the source/s of the contamination and receptors. Where the pathway is incomplete the exposure to the chemical substances via that pathway cannot occur.

This preliminary CSM relates specifically to the open areas of the site, an assessment of soils beneath the buildings at the site has not been made and should be undertaken at a later date.

6.2 Site Overview

The site located at 589-599 Torrens Road, St Clair was originally grazing land prior to the 1940s, but has been used for light industrial land purposes since that period.

A railway corridor formerly occupied the western portion of the site from the 1940s until the rail line was removed in the late 1970s and then sealed in the 1990s.

The main factory shed on the site was first constructed in the 1940s, and was initially used for the fabrication of steel fencing and, from the 1990s, for plastic injection moulding. Site buildings were expanded and added during the 1940s up to the 1980s; since this period the site has retained its current layout.

A review of historical information relating to the site indicated the factory building has been used for steel manufacturing and fabrication from the 1940's to the early 1990's (Cyclone Company of Australia & Boral Cyclone). Plastic moulding operations commenced on the site in the early 1990's and has continued to the present day (Premier Plastic, Plas-Tec Holding, Viscount Plastics and Trident Plastics).

6.3 Potential Sources of Contamination

Potential sources of contamination or Potentially Contaminating Activities (PCAs) identified during the investigation are listed in Table 4, Section 3.2. Potential exposure pathways and sensitive receptors are also discussed below, with comment made as to whether the pathways are complete, likely, unlikely or not complete provided in

6.4 Potential Pathways and Sensitive Receptors

Potential exposure pathways are discussed below, with comment made as to whether the pathways are complete, likely, unlikely or not complete are detailed in Table 8.

6.5 Summary

Minor soil impacts relating to the historical operation of the site (above human health criteria) were identified during the intrusive investigations, including arsenic (which appears to be associated with a former railway alignment) and petroleum hydrocarbons (possibly associated with the adjacent UST/ oil storage area or shallow bitumen). All impacts are considered to be minor in nature, and do not pose a significant ongoing risk to human health, but may require limited remediation as a part of any future development of the site.

It is noted that boreholes around the UST met refusal on a shallow hard layer (possibly bitumen); it is considered likely that this harder layer may have restricted the migration of the identified hydrocarbon impacts from shallow fill to deeper soils. The lack of observed hydrocarbon impacts in the groundwater sample collected from the adjacent groundwater well (MW01) supports this conclusion.

Groundwater concentrations were reported above human health and environmental criteria for several metals and inorganic compounds. With the exception of hexavalent chromium, the groundwater exceedances were considered to be representative of background or regional groundwater conditions.

The elevated hexavalent chromium concentration observed is considered to be minor, and is likely to result from previous industrial uses in the area (including a former munitions plant to the north of Torrens Road, currently a storage warehouse; the former Holden Woodville plant to the south; and a former linen factory to the south, currently part of the St Clair residential development). Although the site was previously used as a steel manufacturing plant, it is considered unlikely that the site is the source of the observed chromium impact, given the industrial history of the local area.

Table 9: Exposure Scenarios, Potential Sources, Pathways and Sensitive Receptors

Potentially Contaminating Activity (PCA)	Potential Contaminants of Concern (PCOC)	Exposure Pathways	Potential Receptors	Transport Pathways
PCA01 Underground Storage Tank	BTEX, PAH, TRH	SOIL <ul style="list-style-type: none"> Ecological Receptors Dermal Contact Ingestion Leaching 	Future occupants (Dermal, Ingestion and Inhalation of vapours).	SOIL Fill material was observed in all boreholes drilled across the site to a maximum depth of 1.1 m (Refusal on pavement). Testing of soils identified concentrations of arsenic in boreholes drilled within the former railway corridor (BH05, BH06, BH16, BH17), in excess of the adopted assessment criteria. Hydrocarbon impacted soil was identified in boreholes within the vicinity of the UST (BH12 and BH13) with analytical soils results reporting TRH in excess of the adopted assessment criteria. Asbestos materials are known to be present in building materials onsite, although no asbestos fragments were visually identified within any of the boreholes. Pathway potentially complete for direct exposure risks for current or future site users and soil biota from access to the site surface soils. Pathway potentially complete for workers during excavation works; potential exposure pathway for maintenance works in shallow fill materials.
PCA02 Former Steel Fabrication operations	BTEX, PAH, solvents, TRH		Workers during demolition and future excavation works.	
PCA03 Chemical Storage Area/ Oil Store	Acidic & alkaline solutions; Cr compounds; Hydrocarbons; Oils.		Groundwater users within the vicinity of the site.	
PCA04 Former Railway Line	Arsenic, Zinc, OCPs, OPPs, PAH		Soil biota onsite plants and other organisms in open space areas and under future development of the site.	
PCA05 Importation of fill materials onto the site	Metals, PAHs, TRH, ACM	GROUNDWATER <ul style="list-style-type: none"> Dermal Contact Ingestion Down Gradient Aquatic Environment Down Gradient Recreational 		GROUNDWATER Groundwater analytical results identified minor metal and nutrient concentrations above the selected human health and environmental assessment criteria. The boron and selenium concentrations are considered to be representative of background conditions, while the elevated nutrients may be related to the historical use of the region as grazing land (pre-1940s). Elevated hexavalent chromium concentrations are likely to have resulted from the later industrial use of the area and may be attributed to the steel manufacture at the site. Given the historical industrial land uses of the wider area, migration of hexavalent chromium from offsite is also considered possible. Pathway potentially complete for migration of contaminated groundwater from offsite sources. Pathway considered potentially complete for access or direct exposure to groundwater beneath the site. Groundwater use is considered unlikely under the continued use or development of the site. No registered domestic groundwater bores are present on the site, although groundwater extraction by nearby users is considered likely. Pathway considered potentially complete for downgradient users and sensitive receptors, including man-made lakes at the St Clair housing development (to the immediate west).
PCA06 Use of pesticides and herbicides	OCPs, OPPs, Metals			
PCA07 Transformer Compounds	PCBs			
PCA08 Groundwater impacts from	TCE, Chlorinated Hydrocarbons Chromium (CrVI)			

Potentially Contaminating Activity (PCA)	Potential Contaminants of Concern (PCOC)	Exposure Pathways	Potential Receptors	Transport Pathways
<p>regional industrial activities</p> <p>PCA09 Asbestos Containing Material (ACM)</p>	ACM	<p>VAPOUR</p> <ul style="list-style-type: none"> • Dermal Contact • Ingestion • Inhalation • Fire / Explosion 		<p>VAPOUR</p> <p>Hydrocarbon concentrations reported in excess of vapour screening levels (HSLs) within BH13 (adjacent to UST area) for the proposed residential setting, however impacts appear to be highly isolated.</p> <p>Neither soil vapour or an indoor air assessment has not been undertaken at the site and no volatile or semi volatile compounds were detected in site groundwater.</p> <p>Vapour migration/intrusion via soil or groundwater is possible; transport pathway considered potentially complete under proposed development.</p>

7.0 DISCUSSION AND CONCLUSIONS

The findings of the limited soil assessment undertaken at the site identified that the open space areas of the site are generally considered to be free of widespread contamination, although discrete, localised areas of contamination are present from historical activities at the site. This includes elevated concentrations of arsenic along the eastern boundary of the site, which is likely to be associated with a former railway alignment; and elevated hydrocarbon concentrations in the vicinity of the underground storage tank/ oil store.

A range of (generally light industrial) activities have been identified within 1 km of the site. These activities are generally light industry (spray painting, petrol stations), and are not anticipated to present significant environmental risks to occupants of the site. In addition, the site is buffered from these activities by surrounding residential areas (to the east, west and south), and a range of commercial, residential and light industrial land uses (to the north across Torrens Road). Therefore, it is considered that these activities are unlikely to impact negatively on the use of the site either in its current disposition or upon its redevelopment for residential purposes.

Although these concentrations exceed the relevant criteria (indicating that further investigation is required), these impacts are likely to be highly localised and not indicative of widespread or significant contamination at the site. It is anticipated that any remediation works required are likely to be minor and could be undertaken during site demolition/ clearance works. In addition, given their localised nature, it is considered unlikely that the impacts identified will pose a significant ongoing risk to human health, or preclude the redevelopment of the site for residential purposes.

The groundwater assessment undertaken included the sampling of the two existing monitoring wells (MW01 and MW02) present at the site. Groundwater data collected from these wells indicate that analyte concentrations above human health and environmental criteria were reported for several metals (boron, selenium and hexavalent chromium) and inorganic compounds (nitrate as N and ammonia as N). With the exception of hexavalent chromium, the groundwater exceedances were considered to be representative of background or regional groundwater conditions.

The elevated hexavalent chromium concentration observed is considered to be minor and is likely to result from previous industrial uses in the area (including a former munitions plant to the north of Torrens Road, currently a storage warehouse; the former Holden Woodville plant to the south; and a former linen factory to the south, currently part of the St Clair residential development). The risk associated with the elevated hexavalent chromium concentrations is generally considered to be low, given that concentrations of hexavalent chromium in cross-gradient well MW02 were reported below the laboratory limit of reporting.

In summary, the results of the investigations undertaken by Agon have identified minor, localised contamination impacts at the site which are not considered likely to present a significant ongoing risk to human health or the environment and would not preclude the residential redevelopment of the site.

LIMITATIONS OF THIS REPORT

This report has been prepared in accordance with industry recognised standards and procedures current at the time of the work. The report presents the results of the assessment based on the quoted scope of works (unless otherwise agreed in writing) for the specific purposes of the engagement by the Client. No warranties expressed or implied are offered to any third parties and no liability will be accepted for use of this report by third parties.

The assessment of environmental and human health risk included in this report relate to the whole site as described in the report. If the site is subject to demolition works or redevelopment, the risk profile of the site will change and the conclusions of this report will no longer be valid. If the site is subject to subdivision, the risk profile of each division of the site will change and the conclusion of this report will no longer be valid.

Consideration of the aesthetic and geotechnical suitability of site soils has been excluded from this report. Aesthetic and geotechnical suitability may need to be addressed in subsequent assessments. An assessment of soils beneath buildings present at the site has not been undertaken and should be undertaken in conjunction with a detailed site assessment.

All information provided by third parties has been assumed to be correct and complete. Agon does not assume any liability for misrepresentation of information by third parties or for matters not visible, accessible or present on the subject site.

Opinions and judgements expressed herein are based on Agon's understanding of current regulatory standards and should not be construed as legal opinions.

No responsibility is accepted for use of any part of this report in any other context or for any other purpose or by third parties other than those listed above.

This report should be read in full.

REFERENCES

AEC Environmental Pty Ltd (2007) *Preliminary Environmental Site Assessment, Trident Plastics, 589 Torrens Road Woodville South Australia. 2821/01.* August 2007.

Agon Environmental Pty Ltd (2018) *Preliminary Site Investigation, 589 – 599 Torrens Road, St Clair, SA.* 16 July 2018. Ref JC0270/02

ANZECC & ARMCANZ (2000), Australian Water Quality Guidelines

DPTI – Department of Planning Transport and Infrastructure (2018) *Property Location Browser*, located at: <http://www.maps.sa.gov.au/plb>.

NEPC – National Environmental Protection Council (2013) National Environment Protection (Assessment of Site Contamination) Measure (NEPM) 1999, Amended 2013.

NHMRC/ NRMCC – National Health and Medical Research Council/ Natural Resource Management Ministerial Council (2011) *Australian Drinking Water Guidelines, Amended 2016.* Commonwealth of Australia.

NHMRC (2008), Guidelines for Managing Risk in Recreational Water

WHO (2017), Guidelines for Safe Recreational Environments

APPENDIX A: CERTIFICATE OF TITLE



Certificate of Title

Title Reference CT 5075/792
Status CURRENT
Easement YES
Owner Number 71038655
Address for Notices CARE 589 TORRENS ROAD WOODVILLE SA 5011
Area 2.44HA (APPROXIMATE)

Estate Type

FEE SIMPLE

Registered Proprietor

POSEIDON INVESTMENTS (SA) PTY. LTD. (ACN: 612 475 742)
OF 589 - 599 TORRENS ROAD WOODVILLE SA 5011

Description of Land

ALLOTMENT 36 DEPOSITED PLAN 4058
IN THE AREA NAMED ST CLAIR
HUNDRED OF YATALA

Last Sale Details

Dealing Reference TRANSFER (T) 12584792
Dealing Date 12/08/2016
Sale Price \$0
Sale Type NO MONETARY CONSIDERATION

Constraints

Encumbrances

Dealing Type	Dealing Number	Beneficiary
MORTGAGE	12803307	WESTPAC BANKING CORPORATION (ACN: 007 457 141)
MORTGAGE	12892394	SCOTTISH PACIFIC (BFS) PTY. LTD. (ACN: 101 657 041)

Stoppers

NIL

Valuation Numbers

Valuation Number	Status	Property Location Address
2504812052	CURRENT	589-599 TORRENS ROAD, ST CLAIR, SA 5011



Notations

Dealings Affecting Title

NIL

Notations on Plan

NIL

Registrar-General's Notes

PLAN FOR LEASE PURPOSES VIDE G745/1989

Administrative Interests

NIL

Certificate of Title

Title Reference: CT 5075/792
Status: CURRENT
Parent Title(s): CT 1890/105
Dealing(s) Creating Title: TG 7247478
Title Issued: 18/06/1992
Edition: 10

Dealings

Lodgement Date	Completion Date	Dealing Number	Dealing Type	Dealing Status	Details
03/04/2018	09/04/2018	12900569	DISCHARGE OF MORTGAGE	REGISTERED	12656458
16/03/2018	23/03/2018	12892394	MORTGAGE	REGISTERED	SCOTTISH PACIFIC (BFS) PTY. LTD. (ACN: 101 657 041)
08/03/2018	14/03/2018	12888138	DISCHARGE OF MORTGAGE	REGISTERED	12876445
15/02/2018	19/02/2018	12876445	MORTGAGE	REGISTERED	OCTET FINANCE PTY. LTD. (ACN: 124 477 916)
24/11/2017	30/11/2017	12833298	VARIATION OF ORDER OF PRIORITY	REGISTERED	WESTPAC BANKING CORPORATION (ACN: 007 457 141), KANTFIELD PTY. LTD. (ACN: 006 073 418), ENGINEERING COMPOUNDS AND RESINS PTY. LTD. (ACN: 005 612 322), GENERAL POLYMERS (AUST) PTY. LTD. (ACN: 064 184 327), & others 12656458 12803307
03/10/2017	06/10/2017	12803307	MORTGAGE	REGISTERED	WESTPAC BANKING CORPORATION (ACN: 007 457 141)
03/10/2017	06/10/2017	12803306	DISCHARGE OF MORTGAGE	REGISTERED	12584793
22/12/2016	24/01/2017	12656458	MORTGAGE	REGISTERED	KANTFIELD PTY. LTD. (ACN: 006 073 418), ENGINEERING COMPOUNDS AND RESINS PTY. LTD. (ACN: 005 612 322), GENERAL POLYMERS (AUST) PTY. LTD. (ACN: 064 184 327), M.E. HOGG AUSTRALIA PTY. LTD. (ACN: 114 219 082)
18/08/2016	09/09/2016	12584793	MORTGAGE	REGISTERED	COMMONWEALTH BANK OF

Lodgement Date	Completion Date	Dealing Number	Dealing Type	Dealing Status	Details
				D	AUSTRALIA (ACN: 123 123 124)
18/08/2016	09/09/2016	12584792	TRANSFER	REGISTERED	POSEIDON INVESTMENTS (SA) PTY. LTD. (ACN: 612 475 742)
18/08/2016	09/09/2016	12584791	DISCHARGE OF MORTGAGE	REGISTERED	11355239
18/08/2016	09/09/2016	12584790	DISCHARGE OF MORTGAGE	REGISTERED	10865444
18/08/2016	09/09/2016	12584789	WITHDRAWAL OF CAVEAT	REGISTERED	11202623
24/02/2011	07/03/2011	11541172	DISCHARGE OF MORTGAGE	REGISTERED	11355238
09/03/2010	23/03/2010	11355239	MORTGAGE	REGISTERED	POLY PACIFIC PTY. LTD.
09/03/2010	23/03/2010	11355238	MORTGAGE	REGISTERED	MITSUBISHI MOTORS AUSTRALIA LTD. (ACN: 007 870 395) BIBBY FINANCIAL SERVICES AUSTRALIA PTY. LTD.
26/06/2009	02/07/2009	11202623	CAVEAT	REGISTERED	COMMONWEALTH BANK OF AUSTRALIA
19/12/2007	05/02/2008	10865444	MORTGAGE	REGISTERED	JAN STIG SAURBREY, STEEN LESLIE SAURBREY
19/12/2007	05/02/2008	10865443	TRANSFER	REGISTERED	10614211
19/12/2007	05/02/2008	10865442	WITHDRAWAL OF CAVEAT	REGISTERED	TRIDENT PLASTICS (SA) PTY. LTD.
03/01/2007	12/01/2007	10614211	CAVEAT	REGISTERED	VISCOUNT PLASTICS (AUSTRALIA) PTY. LTD. (ACN: 007 862 393)
06/06/2005	28/06/2005	10239008	CHANGE OF NAME	REGISTERED	PLAS-TEC PTY. LTD.
11/08/1994	20/10/1994	7771463	TRANSFER	REGISTERED	6849482
11/08/1994	20/10/1994	7771462	WITHDRAWAL OF CAVEAT	REGISTERED	
03/01/1990	02/03/1990	6849482	CAVEAT	REGISTERED	
02/01/1990	02/03/1990	6849227	LEASE	REGISTERED	
02/01/1990	02/03/1990	6849226	LEASE	REGISTERED	



Certificate of Title

Title Reference CT 5220/775
Status CURRENT
Easement NO
Owner Number 71038655
Address for Notices CARE 589 TORRENS ROAD WOODVILLE SA 5011
Area 5280M² (APPROXIMATE)

Estate Type

FEE SIMPLE

Registered Proprietor

POSEIDON INVESTMENTS (SA) PTY. LTD. (ACN: 612 475 742)
OF 589 - 599 TORRENS ROAD WOODVILLE SA 5011

Description of Land

ALLOTMENT 1 DEPOSITED PLAN 19521
IN THE AREA NAMED ST CLAIR
HUNDRED OF YATALA

Last Sale Details

Dealing Reference TRANSFER (T) 12584792
Dealing Date 12/08/2016
Sale Price \$0
Sale Type NO MONETARY CONSIDERATION

Constraints

Encumbrances

Dealing Type	Dealing Number	Beneficiary
MORTGAGE	12803307	WESTPAC BANKING CORPORATION (ACN: 007 457 141)
MORTGAGE	12892394	SCOTTISH PACIFIC (BFS) PTY. LTD. (ACN: 101 657 041)

Stoppers

NIL

Valuation Numbers

Valuation Number	Status	Property Location Address
2504812052	CURRENT	589-599 TORRENS ROAD, ST CLAIR, SA 5011



Notations

Dealings Affecting Title

NIL

Notations on Plan

NIL

Registrar-General's Notes

PLAN FOR LEASE PURPOSES VIDE G745/1989

Administrative Interests

NIL

Certificate of Title

Title Reference: CT 5220/775
Status: CURRENT
Parent Title(s): CT 4288/862
Dealing(s) Creating Title: CONVERTED TITLE
Title Issued: 17/10/1994
Edition: 10

Dealings

Lodgement Date	Completion Date	Dealing Number	Dealing Type	Dealing Status	Details
03/04/2018	09/04/2018	12900569	DISCHARGE OF MORTGAGE	REGISTERED	12656458
16/03/2018	23/03/2018	12892394	MORTGAGE	REGISTERED	SCOTTISH PACIFIC (BFS) PTY. LTD. (ACN: 101 657 041)
08/03/2018	14/03/2018	12888138	DISCHARGE OF MORTGAGE	REGISTERED	12876445
15/02/2018	19/02/2018	12876445	MORTGAGE	REGISTERED	OCTET FINANCE PTY. LTD. (ACN: 124 477 916)
24/11/2017	30/11/2017	12833298	VARIATION OF ORDER OF PRIORITY	REGISTERED	WESTPAC BANKING CORPORATION (ACN: 007 457 141), KANTFIELD PTY. LTD. (ACN: 006 073 418), ENGINEERING COMPOUNDS AND RESINS PTY. LTD. (ACN: 005 612 322), GENERAL POLYMERS (AUST) PTY. LTD. (ACN: 064 184 327), & others 12656458 12803307
03/10/2017	06/10/2017	12803307	MORTGAGE	REGISTERED	WESTPAC BANKING CORPORATION (ACN: 007 457 141)
03/10/2017	06/10/2017	12803306	DISCHARGE OF MORTGAGE	REGISTERED	12584793
22/12/2016	24/01/2017	12656458	MORTGAGE	REGISTERED	KANTFIELD PTY. LTD. (ACN: 006 073 418), ENGINEERING COMPOUNDS AND RESINS PTY. LTD. (ACN: 005 612 322), GENERAL POLYMERS (AUST) PTY. LTD. (ACN: 064 184 327), M.E. HOGG AUSTRALIA PTY. LTD. (ACN: 114 219 082)
18/08/2016	09/09/2016	12584793	MORTGAGE	REGISTERED	COMMONWEALTH BANK OF

Lodgement Date	Completion Date	Dealing Number	Dealing Type	Dealing Status	Details
				D	AUSTRALIA (ACN: 123 123 124)
18/08/2016	09/09/2016	12584792	TRANSFER	REGISTERED	POSEIDON INVESTMENTS (SA) PTY. LTD. (ACN: 612 475 742)
18/08/2016	09/09/2016	12584791	DISCHARGE OF MORTGAGE	REGISTERED	11355239
18/08/2016	09/09/2016	12584790	DISCHARGE OF MORTGAGE	REGISTERED	10865444
18/08/2016	09/09/2016	12584789	WITHDRAWAL OF CAVEAT	REGISTERED	11202623
24/02/2011	07/03/2011	11541172	DISCHARGE OF MORTGAGE	REGISTERED	11355238
09/03/2010	23/03/2010	11355239	MORTGAGE	REGISTERED	POLY PACIFIC PTY. LTD.
09/03/2010	23/03/2010	11355238	MORTGAGE	REGISTERED	MITSUBISHI MOTORS AUSTRALIA LTD. (ACN: 007 870 395)
26/06/2009	02/07/2009	11202623	CAVEAT	REGISTERED	BIBBY FINANCIAL SERVICES AUSTRALIA PTY. LTD.
19/12/2007	05/02/2008	10865444	MORTGAGE	REGISTERED	COMMONWEALTH BANK OF AUSTRALIA
19/12/2007	05/02/2008	10865443	TRANSFER	REGISTERED	JAN STIG SAURBREY, STEEN LESLIE SAURBREY
19/12/2007	05/02/2008	10865442	WITHDRAWAL OF CAVEAT	REGISTERED	10614211
03/01/2007	12/01/2007	10614211	CAVEAT	REGISTERED	TRIDENT PLASTICS (SA) PTY. LTD.
06/06/2005	28/06/2005	10239008	CHANGE OF NAME	REGISTERED	VISCOUNT PLASTICS (AUSTRALIA) PTY. LTD. (ACN: 007 862 393)
11/08/1994	20/10/1994	7771463	TRANSFER	REGISTERED	PLAS-TEC PTY. LTD.
11/08/1994	20/10/1994	7771462	WITHDRAWAL OF CAVEAT	REGISTERED	6849482
03/01/1990	02/03/1990	6849482	CAVEAT	REGISTERED	

APPENDIX B: DATABASE SEARCH RESULTS



2 July 2018

Sophie Hambour
Agon Environmental Pty Ltd
Unit 3, 224 Glen Osmond Road
FULLARTON SA 5063

Licensing, Customer Services Team

Level 4 World Park A
33 Richmond Road
Keswick SA 5035

GPO Box 465
Adelaide SA 5001

DX 715 Adelaide

Phone 1300 365 255

Email licensing.safework@sa.gov.au

ABN 50-560-588-327

www.safework.sa.gov.au

Dear Sophie

DANGEROUS SUBSTANCES LICENCE SEARCH

PROPERTY DETAILS: 589-599 Torrens Road, St Clair SA 5011

Further to your application for a Dangerous Substance Search dated 25 June 2018 for the abovementioned site, SafeWork SA's records show the following current and/or historical storage:

Class	Quantity	Storage Type
2	2.75KL	Gas tank above ground external
2	0.76KL	Gas cylinder above ground external
3	2.2KL	Package internal (Drum/can/bin/box)
3	11KL	Liquid tank underground external
3	0.75KL	Package internal (Drum/can/bin/box)

Yours sincerely

**MANAGER
CUSTOMER SERVICES TEAM
SAFEWORK SA**

APPENDIX B: SA EPA Environmental Authorisations

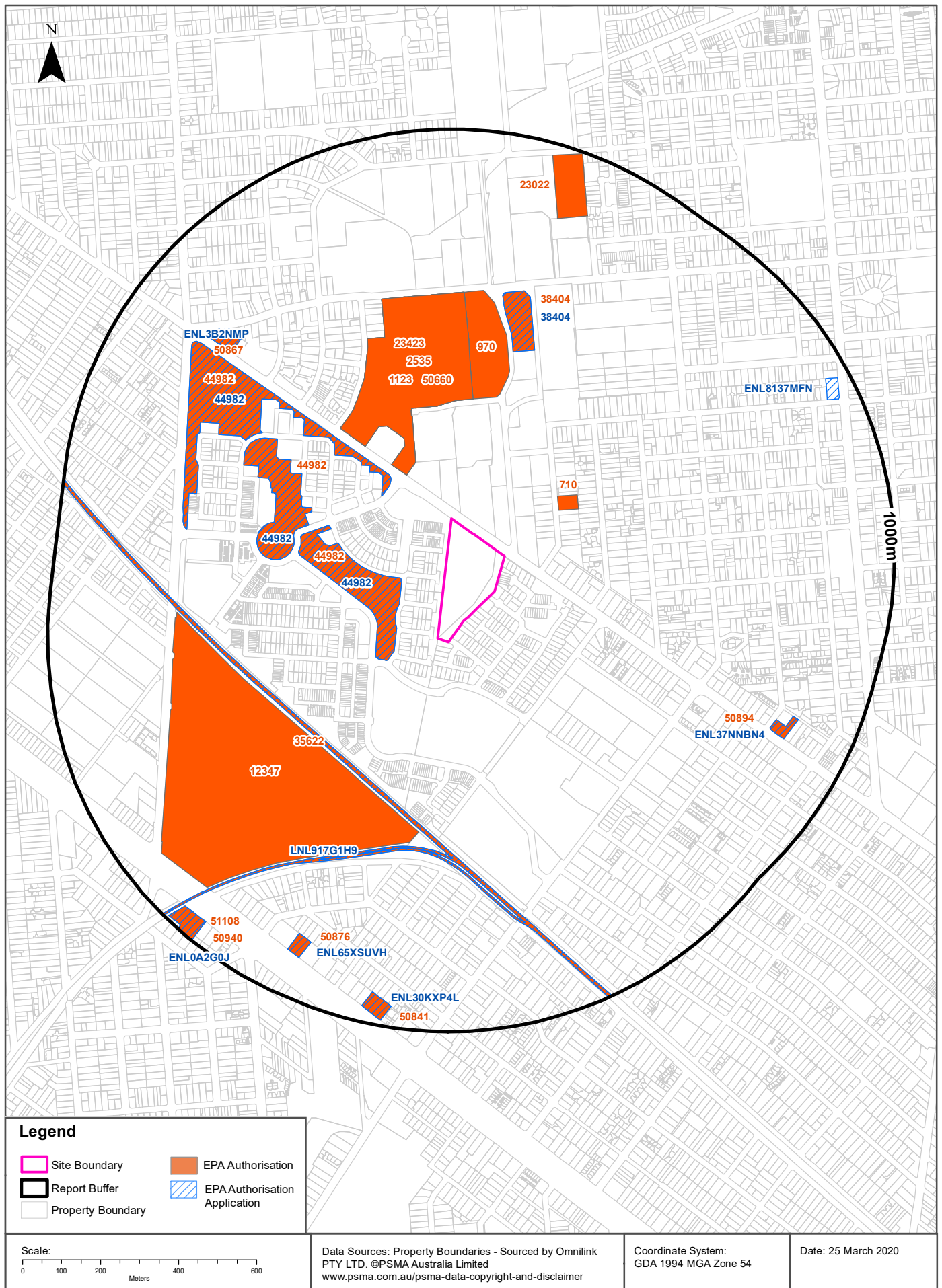
Record Type	RecordNumber	Status	Entity	Site Address	Activity	Distance	Direction
LICENCE	44982	Issued	CITY OF CHARLES STURT	Cooke Crescent and Crown Terrace Royal Park, Lochside Drive West Lakes and Torrens Road St. Clair, SA	Discharge during the licence period of stormwater to underground aquifers from a stormwater drainage system situated in metropolitan Adelaide	107m	West
LICENCE APPLICATION	44982	Proceed To Authorisation	City of Chales Sturt	see below	Discharge during the licence period of stormwater to underground aquifers from a stormwater drainage system situated in metropolitan Adelaide	107m	West
LICENCE	1123	Surrendered	ARROWCREST GROUP PTY. LTD.	Burleigh Avenue, WOODVILLE NORTH SA 5012	Abrasive blasting,Activities producing listed wastes,Ferrous and non-ferrous metal melting works,Fuel burning not coal or wood,Surface coating works (spray painting or powder coating)	160m	North
LICENCE	2535	Issued	B & R ENCLOSURES PTY. LTD.	505 Grand Junction Road, WINGFIELD SA 5013	Activities producing listed wastes,Surface coating works (spray painting or powder coating)	160m	North
LICENCE	23423	Transferred	J.M. & B.S. PASCOE PTY. LTD.	34 Burleigh Avenue, WOODVILLE NORTH SA 5012	Activities producing listed wastes,Surface coating works (spray painting or powder coating)	160m	North
LICENCE	50660	Issued	J & J PASCOE PTY LTD	34 Burleigh Avenue, WOODVILLE NORTH SA 5012	Activities producing listed wastes,Surface coating works (spray painting or powder coating)	160m	North
LICENCE	710	Issued	M.K. BIRRELL & CO. PROPRIETARY LIMITED	16-18 Burwood Avenue, WOODVILLE NORTH SA 5012	Activities producing listed wastes	182m	North East
LICENCE	970	Surrendered	COOPER-STANDARD AUTOMOTIVE (AUSTRALIA) PTY LTD	6 Sheffield Street, WOODVILLE NORTH SA	Activities producing listed wastes	312m	North
LICENCE	35622	Issued	LAING O'ROURKE AUSTRALIA CONSTRUCTION PTY LTD	Various Locations Along The Adelaide Metropolitan Rail Network, SA	Railway operations	388m	South East
LICENCE APPLICATION	LNL917G1H9	Authorisation Updated	BOWMANS RAIL PTY LTD	Various Locations across Inner and Outer Harbour of the Port of Adelaide	Railway operations	388m	South East
LICENCE	12347	Surrendered	AI AUTOMOTIVE PTY LTD (RECEIVERS & MANAGERS APPOINTED)(IN LIQUIDATION)	853-867 Port Road, WOODVILLE SA 5011	Activities producing listed wastes,Fuel burning comprising the burning of fuel to stove enamel or to bake or dry substances releasing dust or air impurities,Surface coating works - metal finishing	406m	South West
LICENCE	38404	Issued	O.E. & D.R. POPE PTY. LTD.	58-62 Audley Street, WOODVILLE NORTH SA 5012	Activities producing listed wastes,Fuel burning comprising the burning of fuel to stove enamel or to bake or dry substances releasing dust or air impurities	456m	North
LICENCE APPLICATION	38404	Proceed To Authorisation	OE & DR Pope Pty Ltd	58-62 Audley Street, Woodville North SA 5012	Activities producing listed wastes,Fuel burning comprising the burning of fuel to stove enamel or to bake or dry substances releasing dust or air impurities	456m	North
LICENCE APPLICATION	ENL3B2NMP	Authorisation Updated	UNITED PETROLEUM PTY LTD	652-656 Torrens Road, PENNINGTON SA 5013	Petrol stations	707m	North West
LICENCE	50867	Issued	UNITED PETROLEUM PTY LTD	652-656 Torrens Road, PENNINGTON SA 5013	Petrol stations	707m	North West
LICENCE	50894	Issued	ANDRASH WOODVILLE NTH PTY LTD	504-506 Torrens Road, WOODVILLE NORTH SA 5012	Petrol stations	788m	South East
LICENCE APPLICATION	ENL37NNBN4	Authorisation Updated	ANDRASH WOODVILLE NTH PTY LTD	504-506 Torrens Road, WOODVILLE NORTH SA 5012	Petrol stations	788m	South East
LICENCE	23022	Issued	AXIS MANUFACTURE PTY LTD	Allotment 8, Park Avenue, WOODVILLE NORTH SA 5012	Chemical storage and warehousing facilities,Chemical works (inorganic),Chemical works (organic)	818m	North
LICENCE	50876	Issued	EUREKA OPERATIONS PTY LTD	827 Port Road, WOODVILLE SA 5011	Petrol stations	836m	South West
LICENCE APPLICATION	ENL65XSUVH	Authorisation Updated	EUREKA OPERATIONS PTY LTD	827 Port Road, WOODVILLE SA 5011	Petrol stations	836m	South West
LICENCE APPLICATION	ENL30KXP4L	Authorisation Updated	LIBERTY OIL CONVENIENCE PTY LTD	801 Port Road, WOODVILLE SA 5011	Petrol stations	918m	South
LICENCE	50841	Issued	LIBERTY OIL CONVENIENCE PTY LTD	801 Port Road, WOODVILLE SA 5011	Petrol stations	918m	South
LICENCE APPLICATION	ENL8137MFN	Authorisation Updated	G.P.L (NO. 9) PTY LTD	107-111 HANSON Road, WOODVILLE SA 5011	Petrol stations	920m	North East
LICENCE APPLICATION	ENL0A2G0J	Authorisation Updated	SHAHIN ENTERPRISES PTY. LTD.	938-942 Port Road, WOODVILLE WEST SA 5011	Petrol stations	940m	South West
LICENCE	51108	Issued	ON THE RUN PTY LTD	938-942 Port Road, WOODVILLE WEST SA 5011	Petrol stations	940m	South West
LICENCE	50940	Transferred	SHAHIN ENTERPRISES PTY. LTD.	938-942 Port Road, WOODVILLE WEST SA 5011	Petrol stations	940m	South West
LICENCE	22103	Issued	CITY OF CHARLES STURT	Various Locations Within The City of Charles Sturt, SA	Dredging - for each day on which dredging occurs during the licence period,Earthworks drainage - for each day on which earthworks drainage takes place during the licence period	-	-
LICENCE	25322	Issued	CITY OF PORT ADELAIDE ENFIELD	Various Locations Within City of Port Adelaide Enfield, PORT ADELAIDE, SA	Earthworks drainage - for each day on which earthworks drainage takes place during the licence period	-	-



Scale: 0 30 60 90 120 Meters	Data Sources Aerial Imagery: © Aerometrex Pty Ltd	Coordinate System: GDA 1994 MGA Zone 54	Date: 25 March 2020
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EPA Authorisations and Applications



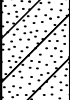

589-599 Torrens Road, St Clair, SA 5011



APPENDIX C: BOREHOLE LOGS


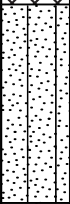
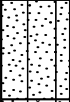
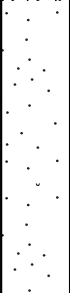
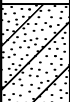

PROJECT NUMBER JC0482	DRILL MODEL Landcruiser mount Eziprobe	BOREHOLE NUMBER BH01
PROJECT NAME Trident Plastics	DRILL METHOD Pushtube	DRILLING DATE 24/02/2020
CLIENT Prosperity Assets	TOTAL DEPTH 2.0 m	COORDINATES 274904/6138694 +/- 2m
ADDRESS 589-599 Torrens Road, St Clair, SA	DIAMETER 50 mm	
	DRILLING COMPANY WB Drilling	

COMMENTS SI.M: Slightly Moist.	LOGGED BY JS/SH
	CHECKED BY OP

Depth (m)	PID	Samples	Graphic Log	Moisture	Material Description	Additional Observations
0.2	23.6 ppm	BH01_0.1-0.2		D	BITUMEN. FILL, sandy gravel, sandstone gravels to 40 mm, angular, cream gravels, dry, fine grained, loose sand.	
0.4					CORELOSS.	
0.6	47.5 ppm	BH01_0.5-0.6		M	FILL (REWORKED NATURAL), silty sand, fine grained, loose, brown to dark brown, dry, medium plasticity (fines), minor sub-angular gravels.	
0.8	25.4 ppm					
1.0				D to SI.M	Sandy CLAY, low to medium plasticity, firm/semi-friable, orange-brown becoming pale brown, dry to slightly moist, fine grained sand.	
1.2						
1.4	18.4 ppm	BH01_1.4-1.5				
1.6						
1.8						
2.0					End of Borehole 2.0 m	
2.2						
2.4						
2.6						
2.8						

PROJECT NUMBER JC0482	DRILL MODEL Landcruiser mount Eziprobe	BOREHOLE NUMBER BH02
PROJECT NAME Trident Plastics	DRILL METHOD Pushtube	DRILLING DATE 24/02/2020
CLIENT Prosperity Assets	TOTAL DEPTH 2.0 m	COORDINATES 274925 / 6138702 +/- 12m
ADDRESS 589-599 Torrens Road, St Clair, SA	DIAMETER 50 mm	
	DRILLING COMPANY WB Drilling	

COMMENTS	LOGGED BY JS/SH CHECKED BY OP
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Depth (m)	PID	Samples	Graphic Log	Moisture	Material Description	Additional Observations
0.2				D	BITUMEN. FILL, sandy gravel, sandstone gravels to 30 mm, sub-angular, light brown, dry, fine grained sand.	
0.4		BH02_0.3-0.4			Silty SAND, fine to medium grained, dark brown, dry, soft.	
0.6						
0.8		BH02-0.7-0.8			As above but increased sand, brown.	
1.0		BH02_1.0-1.1			Silty CLAY, medium to high plasticity, stiff, brown, dry, minor fine grained sands.	
1.2						
1.4						
1.6					Sandy CLAY, medium plasticity, soft to stiff, brown, dry, fine grained sand.	
1.8		BH02_1.7-1.8				
2.0					End of Borehole 2.0 m	
2.2						
2.4						
2.6						
2.8						


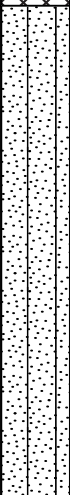


PROJECT NUMBER JC0482	DRILL MODEL Landcruiser mount Eziprobe	BOREHOLE NUMBER BH03
PROJECT NAME Trident Plastics	DRILL METHOD Pushtube	DRILLING DATE 24/02/2020
CLIENT Prosperity Assets	TOTAL DEPTH 2.0 m	COORDINATES 274932 / 6138725 +/- 3m
ADDRESS 589-599 Torrens Road, St Clair, SA	DIAMETER 50 mm	
	DRILLING COMPANY WB Drilling	

COMMENTS SI.M: Slightly Moist.	LOGGED BY JS/SH
	CHECKED BY OP

Depth (m)	PID	Samples	Graphic Log	Moisture	Material Description	Additional Observations
				-	BITUMEN	
0.2				D	FILL, sandy gravel, sandstone gravels to 40 mm, angular, cream to light orange-brown, dry, fine grained sand.	
0.4	1.4 ppm	BH03_0.3-0.4		M	FILL, gravelly sand, fine grained sand, orange, moist, gravels to 10 mm sub-angular.	
0.6	0.2 ppm	BH03_0.6-0.7 QC02		SI.M	FILL, silty sand, stiff to firm, dark brown, slightly moist, trace of gravels to 10 mm.	
0.8					FILL, gravels to 15 mm angular, slightly moist, minor sandy clay, brown.	
1.0	0.1 ppm	BH03_0.9-1.0			Sandy CLAY, low to medium plasticity, soft to firm, slightly moist, brown, fine grained sand.	
1.2					Sandy CLAY, medium to high plasticity, very firm to stiff, brown mottling to dark brown / black, slightly moist.	
1.4	0.1 ppm	BH03_1.3-1.4			Sandy CLAY, medium to high plasticity, very firm to stiff, brown mottling to light brown, slightly moist, trace of gravels to 5 mm..	
1.6					Sandy CLAY, medium to high plasticity, soft, friable, brown mottling to light brown, slightly moist, trace of gravels to 5 mm.	
1.8						
2.0					End of Borehole 2.0 m	
2.2						
2.4						
2.6						
2.8						






PROJECT NUMBER JC0482	DRILL MODEL Landcruiser mount Eziprobe	BOREHOLE NUMBER BH04
PROJECT NAME Trident Plastics	DRILL METHOD Pushtube	DRILLING DATE 24/02/2020
CLIENT Prosperity Assets	TOTAL DEPTH 2.0 m	COORDINATES 274838 / 6138777 +/- 3m
ADDRESS 589-599 Torrens Road, St Clair, SA	DIAMETER 50 mm	
	DRILLING COMPANY WB Drilling	

COMMENTS	LOGGED BY JS/SH
	CHECKED BY OP

Depth (m)	PID	Samples	Graphic Log	Moisture	Material Description	Additional Observations
0.2	21.8 ppm	BH04_0.0-0.1		D	FILL (REWORKED NATURAL), silty sand, fine grained sand, brown, dry, trace cream mottling, minor angular gravels to 10 mm.	Gravels at surface, organic materials (rootlets) and moderate coreless in loose fill.
0.4						
0.6	57.8 ppm	BH04_0.5-0.6			Silty SAND, fine grained, loose, brown, dry, low plasticity (fines).	Moderate coreloss in loose silty sand.
0.8						
1.0	10.5 ppm	BH04_1.0-1.1			Clayey SAND, fine grained, slightly dense to dense, orange-brown, dry, low plasticity (fines).	
1.2						
1.4						
1.6	8.8 ppm	BH04_1.5-1.6				
1.8						
2.0	8.0 ppm	BH04_1.9-2.0			End of Borehole 2.0 m	
2.2						
2.4						
2.6						
2.8						






PROJECT NUMBER JC0482	DRILL MODEL Landcruiser mount Eziprobe	BOREHOLE NUMBER BH05
PROJECT NAME Trident Plastics	DRILL METHOD Pushtube	DRILLING DATE 24/02/2020
CLIENT Prosperity Assets	TOTAL DEPTH 2.0 m	COORDINATES 274457 / 6138699 +/- 2m
ADDRESS 589-599 Torrens Road, St Clair, SA	DIAMETER 50 mm	
	DRILLING COMPANY WB Drilling	

COMMENTS SI.M: Slightly Moist.	LOGGED BY JS/SH
	CHECKED BY OP

Depth (m)	PID	Samples	Graphic Log	Moisture	Material Description	Additional Observations
0.2	254 ppm	BH05_0.1-0.2		D	BITUMEN. FILL, pavement, gravelly sand, fine grained, loose, yellow to brown, dry, cream sandstone gravels to 60 mm, sub-angular.	No odour noted.
0.4	243.2 ppm	BH05_0.3-0.4		D to SI.M	FILL (REWORKED NATURAL), clayey sand, fine grained, dense, dark brown, dry to slightly moist, low plasticity (fines).	
0.8	159.4 ppm	BH05_0.7-0.8		SI.M	Sandy Clayey SILT, low plasticity, pale, brown, slightly moist, fine grained sand.	
1.0	2137 ppm	BH05_1.0-1.1			Clayey, Silty SAND, loose, slightly dense, low plasticity (fines) slightly moist.	
1.6	162.1 ppm	BH05_1.5-1.6		M	Sandy Clayey SILT, low plasticity, pale brown, slightly moist, fine grained sand.	
2.0					End of Borehole 2.0 m	
2.2						
2.4						
2.6						
2.8						





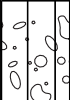

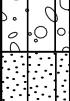
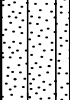

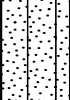
PROJECT NUMBER JC0482	DRILL MODEL Landcruiser mount Eziprobe	BOREHOLE NUMBER BH06
PROJECT NAME Trident Plastics	DRILL METHOD Pushtube	DRILLING DATE 24/02/2020
CLIENT Prosperity Assets	TOTAL DEPTH 2.0 m	COORDINATES 274949 / 6138662 +/- 3m
ADDRESS 589-599 Torrens Road, St Clair, SA	DIAMETER 50 mm	
	DRILLING COMPANY WB Drilling	

COMMENTS SI.M: Slightly Moist.	LOGGED BY JS/SH
	CHECKED BY OP

Depth (m)	PID	Samples	Graphic Log	Moisture	Material Description	Additional Observations
0.2	6.3 ppm	BH06_0.1-0.2		D	BITUMEN. FILL, gravelly sand, fine grained, loose, yellow to brown, dry, cream sandstone gravels to 60 mm, sub-angular.	
0.4					FILL, gravelly silty sand, fine grained, dark brown, dry, low plasticity (fines), angular sandstone gravels to 40 mm.	
0.6	0.6 ppm	BH06_0.5-0.6			Silty SAND, fine grained, slightly dense, brown, dry, low plasticity (fines).	
0.8						
1.0	4.5 ppm	BH06_0.9-1.0			Clayey Silty SAND, fine grained, dense, brown, dry, low plasticity (fines).	
1.2						
1.4	4.8 ppm	BH06_1.3-1.4		D to SI.M	Silty SAND, fine grained, loose, orange-brown to light brown, dry to slightly moist, low plasticity (fines), XXX.	
1.6						
1.8	4.9 ppm	BH06_1.8-1.9 QC03		M	Silty Clayey SAND, fine grained, dense, dark brown, moist, low to medium plasticity (fines).	
2.0					End of Borehole 2.0 m	
2.2						
2.4						
2.6						
2.8						

PROJECT NUMBER JC0482	DRILL MODEL Landcruiser mount Eziprobe	BOREHOLE NUMBER BH07
PROJECT NAME Trident Plastics	DRILL METHOD Pushtube	DRILLING DATE 24/02/2020
CLIENT Prosperity Assets	TOTAL DEPTH 2.0 m	COORDINATES 274937 6138619 +/- 3m
ADDRESS 589-599 Torrens Road, St Clair, SA	DIAMETER 50 mm	
	DRILLING COMPANY WB Drilling	

COMMENTS Inf.M: Inferred Moist.	LOGGED BY JS/SH
	CHECKED BY OP

Depth (m)	PID	Samples	Graphic Log	Moisture	Material Description	Additional Observations
0.2	0.2 ppm	BH07_0.1-0.2		Inf. M	BITUMEN. FILL (REWORKED NATURAL), sandy silty clay, fine grained, dark brown, inferred moist, minor sub-rounded/sub-angular gravels to 10mm.	Water added.
0.4	0.1 ppm	BH07_0.4-0.5				
0.6						
0.8	0.0 ppm	BH07_0.8-0.9		M	Sandy Clayey SILT, low to medium plasticity, soft to firm, pale brown, moist, fine grained sands.	
1.0						
1.2						
1.4	0.4 ppm	BH07_1.3-1.4			Silty SAND, fine grained, slightly dense, pale brown, moist, low plasticity fines, minor clay.	
1.6						
1.8	0.2 ppm	BH07_1.8-1.9				
2.0					End of Borehole 2.0 m	
2.2						
2.4						
2.6						
2.8						

PROJECT NUMBER JC0482	DRILL MODEL Landcruiser mount Eziprobe	BOREHOLE NUMBER BH08
PROJECT NAME Trident Plastics	DRILL METHOD Pushtube	DRILLING DATE 24/02/2020
CLIENT Prosperity Assets	TOTAL DEPTH 2.0 m	COORDINATES 274885 / 6138620 +/- 3m
ADDRESS 589-599 Torrens Road, St Clair, SA	DIAMETER 50 mm	
	DRILLING COMPANY WB Drilling	

COMMENTS SI.M: Slightly Moist.	LOGGED BY JS/SH
	CHECKED BY OP

Depth (m)	PID	Samples	Graphic Log	Moisture	Material Description	Additional Observations
				-	BITUMEN.	
0.2	0.1 ppm	BH08_0.15-0.25		D	FILL, gravelly sand, sub-angular sandstone gravels to 40 mm, cream, fine grained, yellow, dry..	
0.4	9.3 ppm	BH08_0.3-0.4		SI.M	Silty SAND, fine grained, dense, dark brown, slightly moist, low plasticity (fines).	
0.8	0.5 ppm	BH08_0.7-0.8			Sandy Clayey SILT, low to medium plasticity, soft to slightly firm, pale brown, slightly moist, fine grained sand.	
1.2	0.4 ppm	BH08_1.2-1.3			SAND, medium to coarse grained, loose, brown, slightly moist, minor silts.	
1.8	0.0 ppm	BH08_1.8-1.9				
2					End of Borehole 2.0 m	
2.2						
2.4						
2.6						
2.8						

PROJECT NUMBER JC0482	DRILL MODEL Landcruiser mount Eziprobe	BOREHOLE NUMBER BH09
PROJECT NAME Trident Plastics	DRILL METHOD Pushtube	DRILLING DATE 24/02/2020
CLIENT Prosperity Assets	TOTAL DEPTH 2.0 m	COORDINATES 274812 / 61385237 +/- 2m
ADDRESS 589-599 Torrens Road, St Clair, SA	DIAMETER 50 mm	
	DRILLING COMPANY WB Drilling	

COMMENTS	LOGGED BY JS/SH
	CHECKED BY OP

Depth (m)	PID	Samples	Graphic Log	Moisture	Material Description	Additional Observations
				-	BITUMEN.	
0.2	5.2 ppm	BH09_0.1-0.2		D	FILL, pavement, gravelly sand, fine grained, yellow to brown with cream mottling, dry, sub-angular sandstone gravels to 20 mm.	
0.4						
0.6	0.5 ppm	BH09_0.5-0.6			Silty SAND, fine grained, dense, dark brown, dry, low plasticity (fines).	
0.8						
1.0	0.5 ppm	BH09_1.0-1.1			Silty SAND, fine grained, dense, brown to orange-brown, dry, low plasticity (fines), minor clay increasing with depth.	
1.2						
1.4	1.0 ppm	BH09_1.4-1.5				
1.6						
1.8						
2.0	0.0 ppm	BH09_1.9-2.0				
2.2					End of Borehole 2.0 m	
2.4						
2.6						
2.8						

PROJECT NUMBER JC0482	DRILL MODEL Landcruiser mount Eziprobe	BOREHOLE NUMBER BH10
PROJECT NAME Trident Plastics	DRILL METHOD Pushtube	DRILLING DATE 24/02/2020
CLIENT Prosperity Assets	TOTAL DEPTH 2.0 m	COORDINATES 274812 / 6138527 +/-2m
ADDRESS 589-599 Torrens Road, St Clair, SA	DIAMETER 50 mm	
	DRILLING COMPANY WB Drilling	

COMMENTS	LOGGED BY JS/SH
	CHECKED BY OP

Depth (m)	PID	Samples	Graphic Log	Moisture	Material Description	Additional Observations
0.0					BITUMEN.	
0.1	0.5 ppm	BH10_0.1-0.2		D	Sandy GRAVEL, angular to 10 mm, orange, dry, fine to coarse grained sand.	
0.2						
0.3						
0.4	0.2 ppm	BH10_0.4-0.5			Silty SAND, fine to medium grained, friable, dark brown, dry.	
0.5						
0.6					Sandy Silty CLAY, stiff to firm, dark brown, dry, fine to medium grained sand.	
0.7						
0.8	0.0 ppm	BH10_0.8-0.9			As above but red-brown.	
0.9						
1.0						
1.1						
1.2					As above but medium plasticity, red brown to orange, dry, fine grained sands.	
1.3	0.4 ppm	BH10_1.3-1.4				
1.4						
1.5						
1.6						
1.7	0.0 ppm	BH10_1.7-1.8		M	Silty CLAY, medium to high plasticity, very stiff, brown, slightly moist.	
1.8						
1.9						
2.0					End of borehole 2.0 m	
2.1						
2.2						
2.3						
2.4						
2.5						
2.6						
2.7						
2.8						

PROJECT NUMBER JC0482	DRILL MODEL Landcruiser mount Eziprobe	BOREHOLE NUMBER BH11
PROJECT NAME Trident Plastics	DRILL METHOD Pushtube	DRILLING DATE 24/02/2020
CLIENT Prosperity Assets	TOTAL DEPTH 1.1 m	COORDINATES 274903 / 6138644 +/- 4m
ADDRESS 589-599 Torrens Road, St Clair, SA	DIAMETER 50 mm	
	DRILLING COMPANY WB Drilling	

COMMENTS	LOGGED BY JS/SH
	CHECKED BY OP

Depth (m)	PID	Samples	Graphic Log	Moisture	Material Description	Additional Observations
0.2	0.2 ppm			-	ASPHALT.	
		BH11_0.2-0.3		D	FILL, gravelly sand / sandy gravels, gravels to 30 mm, fine to coarse grained sands, loose, cream to orange, dry.	
0.4		BH11_0.3-0.4		M	FILL, silty sandy clay, medium plasticity, brown, moist, minor angular gravels to 20 mm, minor rounded gravels to 10 mm.	Refusal on bitumen (former roadway).
1	0.1 ppm	BH11_1.0-1.1				
1.2					Refusal at 1.1 m	
1.4						
1.6						
1.8						
2						
2.2						
2.4						
2.6						
2.8						


PROJECT NUMBER JC0482	DRILL MODEL Landcruiser mount Eziprobe	BOREHOLE NUMBER BH12
PROJECT NAME Trident Plastics	DRILL METHOD Pushtube	DRILLING DATE 24/02/2020
CLIENT Prosperity Assets	TOTAL DEPTH 2.0 m	COORDINATES 274903 / 6138644 +/- 4m
ADDRESS 589-599 Torrens Road, St Clair, SA	DIAMETER 50 mm	
	DRILLING COMPANY WB Drilling	

COMMENTS SI.M: Slightly Moist.	LOGGED BY JS/SH
	CHECKED BY OP

Depth (m)	PID	Samples	Graphic Log	Moisture	Material Description	Additional Observations
0.0	0.0 ppm	BH12_0.1-0.2		D	BITUMEN.	
0.2	12.0 ppm	BH12_0.3-0.4			FILL, pavement, gravelly sand, fine to coarse grained, yellow to brown and cream mottling, dry, angular sandstone gravels to 40 mm.	
0.4					FILL, silty/clayey sand, fine to medium grained, very dense, dark brown with black mottling, dry, minor sub-rounded gravels to 10 mm.	Bitumen, ash. Former bitumen roadway at 0.6m.
0.6	0.1				FILL, sandy gravel, sandstone gravels to 30 mm, angular to sub-angular, cream with yellow to brown mottling, dry, fine to coarse grained sand.	
0.8	0.4 ppm	BH12_0.7-0.8		SI.M	SAND, fine grained, loose to slightly dense, dark brown, slightly moist.	
1.0		BH12_0.8-0.9				
1.2						
1.4		BH12_1.3-1.4			Clayey Silty SAND, fine grained, pale brown, slightly moist, low plasticity fines.	Fines increasing with depth.
1.6						
1.8	0.1 ppm	BH12_1.9-2.0				
2.0						
2.2						
2.4						
2.6						
2.8	0.1 ppm	BH12_2.9-3.0				
3.0						
3.2						
3.4	0 ppm	BH12_3.4-3.5		SI.M to M	Sandy Silty CLAY, medium plasticity, soft becoming firm, pale brown becoming red brown, slightly moist to moist, fine grained sands.	
3.6						
3.8						
4.0	1.2 ppm	BH12_3.9-4.0			End of Borehole 4.0 m	
4.2						
4.4						
4.6						
4.8						





















PROJECT NUMBER JC0482	DRILL MODEL Landcruiser mount Eziprobe	BOREHOLE NUMBER BH13
PROJECT NAME Trident Plastics	DRILL METHOD Pushtube	DRILLING DATE 24/02/2020
CLIENT Prosperity Assets	TOTAL DEPTH 0.6 m	COORDINATES 274914 / 6138640 +/-3m
ADDRESS 589-599 Torrens Road, St Clair, SA	DIAMETER 50 mm	
	DRILLING COMPANY WB Drilling	

COMMENTS	LOGGED BY JS/SH
	CHECKED BY OP

Depth (m)	PID	Samples	Graphic Log	Moisture	Material Description	Additional Observations
0.2	3074 ppm 0.0 ppm	BH13_0.1-0.2		-	ASPHALT.	Hydrocarbon odour. Refusal on Bitumen (former roadway).
				D	FILL, sandy gravel, orange to cream, dry.	
0.4		BH13_0.3-0.4		M	FILL, silty clay, dark brown with slight mottling light brown, moist, trace of inclusions of angular gravels to 30 mm.	
0.6		BH13_0.5-0.6				
0.6					Refusal at 0.6 m	
0.8						
1						
1.2						
1.4						
1.6						
1.8						
2						
2.2						
2.4						
2.6						
2.8						





PROJECT NUMBER JC0482	DRILL MODEL Landcruiser mount Eziprobe	BOREHOLE NUMBER BH14
PROJECT NAME Trident Plastics	DRILL METHOD Pushtube	DRILLING DATE 24/02/2020
CLIENT Prosperity Assets	TOTAL DEPTH 4 m	COORDINATES 274918 / 6138655 +/-3m
ADDRESS 589-599 Torrens Road, St Clair, SA	DIAMETER 50 mm	
	DRILLING COMPANY WB Drilling	

COMMENTS SI.M: Slightly Moist	LOGGED BY JS/SH
	CHECKED BY OP

Depth (m)	PID	Samples	Graphic Log	Moisture	Material Description	Additional Observations
0.2	47 ppm	BH14_0.2-0.3		D	FILL, sandy gravel, sub-angular gravels to 40 mm, pale brown, dry, fine grained sands.	
0.4	54.9 ppm	BH14_0.4-0.5			Silty SAND, fine grained, slightly dense, brown becoming pale brown, dry, low plasticity (fines).	Silt increasing with depth. Minor clay from 0.9-1.1 m.
0.6						
0.8						
1.0						
1.2	59.5 ppm	BH14_1.1-1.2		M	Sandy Silty CLAY, friable, pale orange to brown, slightly moist, fine grained sands.	Minor coreloss (200 mm).
1.4						
1.6						
1.8						
2.0	96.1 ppm	BH14_1.9-2.0 QC05				
2.2						
2.4						
2.6						
2.8						
3.0	98.8 ppm	BH14_2.9-3.0				
3.2						
3.4	67.2 ppm	BH14_3.4-3.5 QC06		SI.M to M	CLAY, medium plasticity, stiff, red brown, slightly moist to moist.	
3.6						
3.8						
4.0	35.4 ppm	BH14_3.9-4.0			End of Borehole 4.0 m	
4.2						
4.4						
4.6						
4.8						








PROJECT NUMBER JC0482	DRILL MODEL Landcruiser mount Eziprobe	BOREHOLE NUMBER BH15
PROJECT NAME Trident Plastics	DRILL METHOD Pushtube	DRILLING DATE 24/02/2020
CLIENT Prosperity Assets	TOTAL DEPTH 0.7 m	COORDINATES 274917 / 6138641 +/- 3m
ADDRESS 589-599 Torrens Road, St Clair, SA	DIAMETER 50 mm	
	DRILLING COMPANY WB Drilling	

COMMENTS SI.M: Slightly Moist. Refusal on concrete.	LOGGED BY JS/SH
	CHECKED BY OP

Depth (m)	PID	Samples	Graphic Log	Moisture	Material Description	Additional Observations
0.2	52.9 ppm 10.0 ppm	BH15_0.1-0.2		D	BITUMEN. FILL, gravelly sand, fine to coarse grained, loose, dry, sandstone gravels to 20 mm.	
0.4		BH15_0.2-0.3		SI.M	FILL, sandy silty clay, low to medium plasticity, firm, dark brown, slightly moist, fine to coarse grained sands, sub-angular gravels to 30 mm.	
0.6	77.8 ppm 70.6 ppm	BH15_0.5-0.6		D	BITUMEN., FILL, sandy gravel, fine to coarse grained, sub-angular to angular sandstone gravels to 40 mm, loose, dry.	
		BH15_0.6-0.7		D to SI.M	FILL, silty sand, fine to medium grained, loose to slightly dense, brown to dark brown, dry to slightly moist.	
0.8					Refusal at 0.7 m	
1.0						
1.2						
1.4						
1.6						
1.8						
2.0						
2.2						
2.4						
2.6						
2.8						










PROJECT NUMBER JC0482	DRILL MODEL Landcruiser mount Eziprobe	BOREHOLE NUMBER BH16
PROJECT NAME Trident Plastics	DRILL METHOD Pushtube	DRILLING DATE 24/02/2020
CLIENT Prosperity Assets	TOTAL DEPTH 2.0 m	COORDINATES 274873 / 6138565 +/- 3m
ADDRESS 589-599 Torrens Road, St Clair, SA	DIAMETER 50 mm	
	DRILLING COMPANY WB Drilling	

COMMENTS SI.M: Slightly Moist.	LOGGED BY JS/SH
	CHECKED BY OP

Depth (m)	PID	Samples	Graphic Log	Moisture	Material Description	Additional Observations
0.2	22.0 ppm	BH16_0.1-0.2		D	BITUMEN. FILL, pavement, gravelly sand, fine to coarse grained, yellow to brown, dry, sub-angular gravels to 20 mm.	
0.4					BITUMEN.	
0.6	37.5 ppm	BH16_0.5-0.6			SAND, fine grained, loose, dark brown, dry, minor silt.	Fines increasing with depth. Becoming brown with depth.
1.0	31.3 ppm	BH16_1.0-1.1 QC07		D to SI.M	Sandy Silty CLAY / Silty Clayey SAND, medium plasticity, fine to medium grained sands, firm, red brown to brown, dry to slightly moist.	
1.4	35.7 ppm	BH16_1.4-1.5				
1.8						
2.0	36.4 ppm	BH16_1.9-2.0				
2.2					End of borehole 2.0 m	
2.4						
2.6						
2.8						

PROJECT NUMBER JC0482	DRILL MODEL Landcruiser mount Eziprobe	BOREHOLE NUMBER BH17
PROJECT NAME Trident Plastics	DRILL METHOD Pushtube	DRILLING DATE 24/02/2020
CLIENT Prosperity Assets	TOTAL DEPTH 2.0 m	COORDINATES 274536 / 6138525 +/- 2m
ADDRESS 589-599 Torrens Road, St Clair, SA	DIAMETER 50 mm	
	DRILLING COMPANY WB Drilling	

COMMENTS SI.M: Slightly Moist.	LOGGED BY JS/SH
	CHECKED BY OP

Depth (m)	PID	Samples	Graphic Log	Moisture	Material Description	Additional Observations
0.2	527 ppm	BH17_0.1-0.2		D	BITUMEN.	
0.4	856 ppm	BH17_0.3-0.4 QC08			Gravelly SAND, fine to coarse grained, loose, yellow/brown to cream, dry, sub-angular gravels to 20 mm.	
0.6					Silty SAND, fine grained, loose, becoming slightly dense, brown to orange, dry, low plasticity (fines).	
1.0	15.4 ppm	BH17_0.9-1.0			Sandy Silty CLAY, low plasticity, friable, pale brown, dry, fine grained sand.	Minor calcareous material at 0.7-0.8 m.
1.2						Minor calcareous gravels at 0.9-1.1 m. Sand content increasing with depth from 1.4 m.
1.4						
1.6	15.0 ppm	BH17_1.5-1.6				
1.8						
2.0	27.7 ppm	BH17_1.9-2.0			Silty Clayey SAND, fine grained, loose, pale brown, dry, low plasticity (fines).	
2.2					End of borehole 2.0 m	
2.4						
2.6						
2.8						

APPENDIX D: FIELD FORMS

PROJECT DETAILS:

Client:	PROSPERITY
Project:	TRIDENT PLASTICS
Site Location:	TORRENS RD STUART

Date:	24.2
Job No. :	510482
Sampler:	SH

WELL DETAILS

Well ID:	MW01
Well Condition:	
Well diameter (mm):	50
Screen length (m):	
Initial SWL (m):	4.819
Total Depth (m):	7.9

PURGING

Purge method:	MP
Time started:	10:45
Time stopped:	
Pump Depth:	~1m from base
Pre-purge SWL:	4.819

FIELD ANALYSES

Time	CPM	Volume (L)	SWL (mbTOC)	DO (ppm)	Cond (mS/cm)	pH	Redox (mV)	Temp (°C)
Stabilisation Criteria				± 10 %	± 3 %	± 0.05	± 10	± 10 %
			4.819					
10:50	4	1	4.823	1.20	2701.9	6.78	125.1	23.4
10:55	4	2	4.821	1.18	2746.6	6.91	125.3	22.6
11:00	4	3	4.823	1.28	2752.8	6.97	125.2	22
11:02	4	4	4.824	1.36	2781	6.98	125.1	21.9
11:04	4	5	4.825	1.29	2785	7.00	125.6	21.9
11:06	4	6	4.825	1.30	2782	7:00	125.0	21.9
11:08	4	7	4.825	1.31	2780	7:00	125.4	22
11:10	4	8	4.825	1.32	2783	7:00	125.8	22
~ sampled ~								

OBSERVATIONS (odour, sheen, colour, turbidity)

& tubing in well. SWL - 4.819.

 no odour light brown
 no sheen turbid
 becoming
 clear

WEATHER/ CONDITIONS:

clear sunshine

Sampling method:	C.F
Time sampled:	11:10
Sample Details (Primary/ QC samples):	
MW01 - QC01	
Sample Containers Used:	
(QC01)	
Field Filtered (Y/N)	Y

EQUIPMENT USED:	
CALIBRATED BY:	KENNARDS
CALIB DATE:	

PROJECT DETAILS:

Client:	PROSPERITY
Project:	TRIDENT PLASTICS
Site Location:	TORRENS RD ST CLAIR

Date:	24.2
Job No. :	R 941510482
Sampler:	SM

WELL DETAILS

Well ID:	MW02
Well Condition:	
Well diameter (mm):	50
Screen length (m):	
Initial SWL (m):	4.535
Total Depth (m):	7.890

PURGING

Purge method:	M.P
Time started:	12:10
Time stopped:	
Pump Depth:	~1m from base
Pre-purge SWL:	4.545

FIELD ANALYSES

Time	CPM	Volume (L)	SWL (mbTOC)	DO (ppm)	Cond (mS/cm)	pH	Redox (mV)	Temp (°C)
Stabilisation Criteria				± 10 %	± 3 %	± 0.05	± 10	± 10 %
	4	1	4.545	0.43	11945.8	7.13	124.3	22.8
12:17	4	2	5.545	0.33	12254	7.05	127.7	21.
12:21	4	3	5.545	0.25	12364	6.99	127.8	20
12:23	4	4	5.545	0.19	12389.9	6.97	127.8	20
12:27	4	5	5.545	0.13	12.39	6.96	121.6	20
12:30	4	6	5.545	0.12	12.40	6.95	121.6	20
12:33	4	7	5.545	0.11	12.38	6.95	121.6	20
12:36	4	8	5.545	0.10	12.41	6.94	121.3	20.

OBSERVATIONS (odour, sheen, colour, turbidity)

* tubing in well - unable SWL
 in tubing in 4.535
 after tubing out.
 * no colour
 * no sheen

WEATHER/ CONDITIONS:

clear sunshine

Sampling method:	L.F
Time sampled:	12:40
Sample Details (Primary/ QC samples):	
MW02	
Sample Containers Used:	
Field Filtered (Y/N)	
Y	

EQUIPMENT USED:	
CALIBRATED BY:	R. GUNVARDI
CALIB DATE:	

APPENDIX E: SOIL AND GROUNDWATER METHODOLOGY

Table D1: Soil Assessment Field Methodology

Activity	Description
Service Clearance	Prior to the commencement of soil investigations, the sample locations were cleared for underground utilities by experienced service location contractors, in consultation with the Dial-Before-You-Dig service plans.
Soil Sample Collection	Soil samples were collected at the following typical depth intervals: <ul style="list-style-type: none"> • 0.2-0.3 mBGL; (below bitumen seal) • 0.4-0.5 mBGL; • 0.9-1.0 mBGL; and • At changes in lithology, or at the presence of visual or olfactory indicators of contamination, to a maximum of 2.0 mBGL.
Sample Storage and Handling	Samples were collected using disposable nitrile gloves and placed directly into laboratory supplied Teflon-lined 250 mL soil jars and polypropylene jars. Samples were placed immediately on ice in a cooler prior to transport to the Adelaide office of Eurofins. The sample batch was sent under Chain of Custody (CoC) documentation to the analysing laboratory.
Field Records and Soil Logging	Soil profiles were logged in general accordance with the Australian Standard AS1726-1993 and the Unified Soil Classification System (USCS).
Laboratory Analysis	The primary analysing laboratory was Eurofins MGT, who are accredited by the National Association of Testing Authorities (NATA) for all analysis undertaken.

Table C2: Groundwater Assessment Field Methodology

Activity	Description
Groundwater Gauging	Onsite monitoring well caps were opened, the Standing Water Level (SWL) and Total Depth and presence of LNAPL (Light Non-Aqueous Phase Liquids) were measured in each well using an interface probe prior to purging.
Groundwater Purging	Wells were purged using Micropurge low flow sample pump kits. During purging a calibrated Water Quality Meter (WQM) was used to measure water parameters, including temperature, electrical conductivity, redox, dissolved oxygen and pH. Wells yielding sufficient groundwater were purged until the water parameters had stabilised to within 10% and at least one well volume purged. Once stabilised, water in the wells was considered representative of site groundwater.
Field Records	At each groundwater sampling location, the field data was recorded, including (but not limited to): <ul style="list-style-type: none"> • Sample collection equipment and method. • Purging records. • Sample equipment decontamination procedures, where non-disposable sampling equipment was utilised. • Comments on any exceptional issues regarding the sample collected. • Field records are provided in Appendix C and D.
Groundwater Sample Collection	Groundwater samples were collected directly from the tubing connected to the pump, and into laboratory-prepared bottles, and were placed on ice in a portable cooler prior to delivery to the primary laboratory. Samples collected for metals analysis were field filtered (0.45 micron filter), prior to filling acid preserved laboratory provided sample bottles. All samples were sent under Chain of Custody (CoC) documentation to the analysing laboratories.
Decontamination	Decontamination of the Micropurge pump and Interface Probe was undertaken following sampling of each well using a phosphate free detergent (Decon 90 Solution) and mains water.
Calibration	The WQM and PID were supplied and calibrated by Kennards, calibration records provided in Appendix F.
Laboratory Analysis	The primary analysing laboratory was Eurofins MGT, who are accredited by the National Association of Testing Authorities (NATA) for all analysis undertaken.

APPENDIX F: CALIBRATION CERTIFICATES

EQUIPMENT CERTIFICATION REPORT**PGN9003842-9003846 - INTERFACE METER**Plant Number: 235273 Serial Number: 250607Probe Length: 60m

ITEM	TEST	PASS	COMMENTS
Battery	Compartment / Capacity	<input checked="" type="checkbox"/> 8,5V	9v
Probe	Clean / Operation	<input checked="" type="checkbox"/>	
Earth Lead	Check if equipped	<input checked="" type="checkbox"/>	
Tape Check	Cleaned / Checked for cuts	<input checked="" type="checkbox"/>	
Function test	At surface level	<input checked="" type="checkbox"/>	

Checked By: Wilma Fouchier Date: 31/2/20 Signed: _____**Accessories List:**

Interface Meter	Tape Guide	Decon 90 Solution
Brush	Spare 9v Battery	Transport Box

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EQUIPMENT CERTIFICATION REPORT

PGN9003871 WATER QUALITY METER – MULTIFUNCTION (SMART TROLL)

Plant Number: 235640 Serial Number: 532889

SENSOR	CONCENTRATION	SPAN 1	SPAN 2	TRACEABILITY	PASS
pH	pH 6.88 / pH 4.00	6.88 pH	4.00 pH	325169 330434	<input checked="" type="checkbox"/>
Conductivity	12.88 mS/cm	12.88 mS/cm		322351	<input checked="" type="checkbox"/>
Dissolved Oxygen	Sodium Sulphite / Air	0.0% in Sodium Sulphite	% Saturation in Air	10465	<input checked="" type="checkbox"/>
ORP	240mV @ 25°C	240mV	-	3822	<input checked="" type="checkbox"/>

Battery Status <u>100 %</u>	Temperature <u>22.4 °C</u>
Electrical Test & Tag (AS/NZS 3760)	Electrodes Cleaned and Checked

Note: Calibration solution traceability information is available upon request.

Checked By: Wilma Fouché Date: 21/2/20 Signed: [Signature]

Accessories List:

User's Manual & USB	pH Sensor	Conductivity Sensor
Dissolved Oxygen Sensor with Wetting Cap	Redox (ORP) Sensor with Wetting Cap	Flow Cell 500ml
Charger Adaptor & Comm Cable	Desiccant Satchel	iPod & Transit Case
Storage Cap	Testing Cap	Calibration Test Tube
External Battery Pack for iPod		



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EQUIPMENT CERTIFICATION REPORT

PGN9003827 GAS DETECTOR - PID

Plant Number: 335011 Serial Number: 592-912894

SENSOR	CONCENTRATION	SPAN 1	SPAN 2	TRACEABILITY	PASS
PID Isobutylene	100ppm	0	100ppm	Lot # 642799	<input checked="" type="checkbox"/>
		0,0	100,1		

Data Cleared ☒

Battery Status <u>100</u> (%)	Temperature <u> </u> °C
Electrical Test & Tag (AS/NZS 3760)	Inlet Filter Checked/Changed

Note: Calibration traceability information is available upon request.

Checked By: Wilma Fouché Date: 21/2/20 Signed: [Signature]

Accessories List:

User's Manual	Charger / Comms Adaptor	Wall Charger
2x Spare Air Filters	1x Spare Rechargeable Battery	Carry Transit Case
	Calibration Report	



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APPENDIX G: TABULATED ANALYTICAL RESULTS

	Field ID	BH01_0.1-0.2	BH01_0.5-0.6	BH01_0.8-0.9	BH02_0.3-0.4	BH02_1.7-1.8	BH03_0.3-0.4	BH03_0.9-1.0	BH04_0.0-0.1	BH04_0.5-0.6	BH05_0.1-0.2	BH05_0.3-0.4	BH05_0.7-0.8	BH05_1.5-1.6	BH06_0.1-0.2	BH06_0.5-0.6	BH06_1.8-1.9	BH07_0.1-0.2
Lab Report Number		704508	704508	704508	704508	704508	704508	704508	704508	704508	704508	704508	707264	704508	704508	707264	704508	704508
Date		24/02/2020	24/02/2020	24/02/2020	24/02/2020	24/02/2020	24/02/2020	24/02/2020	24/02/2020	24/02/2020	24/02/2020	24/02/2020	24/02/2020	24/02/2020	24/02/2020	24/02/2020	24/02/2020	24/02/2020
Sample Comments													707264					

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	BH14_0.2-0.3	BH14_1.1-1.2	BH14_1.9-2.0	BH14_3.4-3.5	BH15_0.2-0.3	BH15_0.5-0.6	BH15_0.6-0.7	BH16_0.1-0.2	BH16_0.5-0.6	BH16_1.0-1.1	BH17_0.3-0.4	BH17_0.9-1.0	BH17_1.9-2.0
Lab Rep	704508	704508	704508	704508	704508	704508	704508	704508	704508	704508	704508	707264	704508
Sample	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	25/02/2020	24/02/2020	25/02/2020

Field ID	BH01_0.1-0.2	BH01_0.5-0.6	BH01_0.8-0.9	BH02_0.3-0.4	BH02_1.7-1.8	BH03_0.3-0.4	BH03_0.9-1.0	BH04_0.0-0.1	BH04_0.5-0.6	BH05_0.1-0.2	BH05_0.3-0.4	BH05_0.7-0.8	BH05_1.5-1.6	BH06_0.1-0.2	BH06_0.5-0.6	BH06_1.8-1.9	BH07_0.1-0.2
Lab Report Number	704508	704508	704508	704508	704508	704508	704508	704508	704508	704508	704508	707264	704508	704508	707264	704508	704508
Date	24/02/2020	24/02/2020	24/02/2020	24/02/2020	24/02/2020	24/02/2020	24/02/2020	24/02/2020	24/02/2020	24/02/2020	24/02/2020	24/02/2020	24/02/2020	24/02/2020	24/02/2020	24/02/2020	24/02/2020
Sample Comments												707264					

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Notes:

* EILs for fill material calculated based on 29 cmol/kg CEC, 5% clay content, 0.8% organic carbon content, pH of 7.8

** EILs for natural material calculated based on 10 cmol/kg CEC, 10% clay content, 0.1% organic carbon content, pH of 7.7

Notes:

* EILs for fill material calculated based on 29 cmol/kg CEC, 5% clay content, 0.8% organic carbon content, pH of 7.8

** EILs for natural material calculated based on 10 cmol/kg CEC, 10% clay content, 0.1% organic carbon content, pH of 7.7

[illegible]

GROUNDWATER ANALYTICAL RESULTS

Field ID	MW01	MW02
Lab Report	704508	704508
Date	24/02/2020	24/02/2020

	Unit	EQL	ANZECC 2000 FW 95%	ANZECC 2000 FW 99%	ANZECC 2000 Recreational water quality and aesthetics	NEPM 2013 Table 1A(4) Res HSL A & B GW for Vapour Intrusion, Sand 4-8m	ADWG 2015 Health	NHMRC (2010) Guidelines for Managing Risk in Recreational Waters*	ADWG 2017 Aesthetic		
Phenols											
2-Chlorophenol	µg/L	3	490	340			300	3000	0.1	<3	<3
2,4-Dichlorophenol	µg/L	3	160	120			200	2000	0.3	<3	<3
2,4,5-Trichlorophenol	µg/L	10			1					<10	<10
2,4,6-Trichlorophenol	µg/L	10	20	3	10		20	20	2	<10	<10
2,6-Dichlorophenol	µg/L	3								<3	<3
4-chloro-3-methylphenol	µg/L	10								<10	<10
Pentachlorophenol	µg/L	10	10	3.6	10		10	100		<10	<10
2,3,4,6-Tetrachlorophenol	µg/L	10	20	10	1					<10	<10
4,6-Dinitro-2-methylphenol	µg/L	30								<30	<30
2,4-Dimethylphenol	µg/L	3								<3	<3
2-Methylphenol	µg/L	3								<3	<3
2-Nitrophenol	µg/L	10								<10	<10
2,4-Dinitrophenol	mg/L	0.03	0.045	0.013						<0.03	<0.03
3&4-Methylphenol (m&p-cresol)	µg/L	6								<6	<6
4-Nitrophenol	µg/L	30								<30	<30
Phenol	µg/L	3	320	85						<3	<3
Amino Aliphatics											
N-nitrosodi-n-butylamine	µg/L	5								<5	<5
N-nitrosodi-n-propylamine	µg/L	5								<5	<5
Amino Aromatics											
1-naphthylamine	µg/L	5								<5	<5
2-naphthylamine	µg/L	5								<5	<5
Diphenylamine	µg/L	5			500					<5	<5
Anilines											
2-nitroaniline	µg/L	5								<5	<5
Aniline	µg/L	5	250	8						<5	<5
Chlorinated Hydrocarbons											
Benzyl chloride	mg/L	0.005								<0.005	<0.005
Hexachlorocyclopentadiene	µg/L	5					0.7	7		<5	<5
Hexachloroethane	µg/L	5	360	290						<5	<5
1,1-dichloroethane	µg/L	1								<1	<1
1,1-dichloroethene	µg/L	1			0.3		30	300		<1	<1
1,2,3-trichloropropane	µg/L	1								<1	<1
1,2-dichloroethane	µg/L	1			10		3	30		<1	<1
1,2-dichloropropane	µg/L	1								<1	<1
1,3-dichloropropane	µg/L	1								<1	<1
Bromochloromethane	µg/L	1								<1	<1
1,1,1,2-tetrachloroethane	µg/L	1								<1	<1
Bromodichloromethane	µg/L	1								<1	<1
1,1,1-trichloroethane	µg/L	1								<1	<1
Chloroform	µg/L	5								<5	<5
1,1,2,2-tetrachloroethane	µg/L	1								<1	<1
Chloromethane	µg/L	1								<1	<1
cis-1,3-dichloropropene	µg/L	1								<1	<1
Dibromomethane	µg/L	1								<1	<1
Dichloromethane	µg/L	1					4	40		<1	<1
Hexachlorobutadiene	µg/L	5								<5	<5
Other chlorinated hydrocarbons EPAVic	µg/L	5								<5	<5
Trichloroethene	µg/L	1			30					<1	<1
Chlorinated hydrocarbons EPAVic	µg/L	5								<5	<5
cis-1,2-dichloroethene	µg/L	1								<1	<1
1,1,2-trichloroethane	µg/L	1	6,500	5,400			4	40		<1	<1
trans-1,3-dichloropropene	µg/L	1					50	500		<1	<1
Vinyl chloride	µg/L	1					0.3	3		<1	<1
Bromoform	µg/L	1								<1	<1
Carbon tetrachloride	µg/L	1			3		3	30		<1	<1
Chlorodibromomethane	µg/L	1								<1	<1
Chloroethane	µg/L	1								<1	<1
trans-1,2-dichloroethene	µg/L	1								<1	<1
Tetrachloroethene	µg/L	1			10		50	500		<1	<1
Explosives											
2,6-dinitrotoluene	µg/L	5								<5	<5
Nitrobenzene	µg/L	50	550	230						<50	<50
2,4-Dinitrotoluene	µg/L	5	65	16						<5	<5
Halogenated Benzenes											
1,2,3,4-tetrachlorobenzene	mg/L	0.005								<0.005	<0.005
1,2,3,5-Tetrachlorobenzene	mg/L	0.005								<0.005	<0.005
1,2,3-trichlorobenzene	µg/L	5	10	3						<5	<5
1,2,4,5-tetrachlorobenzene	µg/L	5								<5	<5
1,3,5-Trichlorobenzene	µg/L	5								<5	<5
Pentachlorobenzene	µg/L	5								<5	<5
1,2,4-trichlorobenzene	µg/L	5	170	85						<5	<5
1,2-dichlorobenzene	µg/L	1	160	120			1500	15000	1	<1	<1
1,3-dichlorobenzene	µg/L	1	260	160					20	<1	<1
1,4-dichlorobenzene	µg/L	1	60	40			40	400	0.3	<1	<1
Bromobenzene	µg/L	1								<1	<1
4-chlorotoluene	µg/L	1								<1	<1
Chlorobenzene	µg/L	1					300	3000	10	<1	<1

GROUNDWATER ANALYTICAL RESULTS

										Field ID	MW01	MW02
										Lab Report	704508	704508
										Date	24/02/2020	24/02/2020
	Unit	EQL	ANZECC 2000 FW 95%	ANZECC 2000 FW 99%	ANZECC 2000 Recreational water quality and aesthetics	NEPM 2013 Table 1A(4) Res HSL A & B GW for Vapour Intrusion, Sand 4-8m	ADWG 2015 Health	NHMRC (2010) Guidelines for Managing Risk in Recreational Waters*	ADWG 2017 Aesthetic			
Halogenated Hydrocarbons												
Iodomethane	µg/L	1									<1	<1
Bromomethane	µg/L	1					1	10			<1	<1
1,2-dibromoethane	µg/L	1					1	10			<1	<1
Dichlorodifluoromethane	µg/L	1									<1	<1
Trichlorofluoromethane	µg/L	1									<1	<1
Herbicides												
Pronamide	µg/L	5					70	700			<5	<5
Trifluralin	mg/L	0.005	0.0044	0.0026	0.5		0.09	0.9			<0.005	<0.005
MAH												
Total MAH	mg/L	0.003									<0.003	<0.003
1,3,5-trimethylbenzene	µg/L	1									<1	<1
Styrene	µg/L	1					30	300	4		<1	<1
Isopropylbenzene	µg/L	1									<1	<1
1,2,4-trimethylbenzene	µg/L	1									<1	<1
Nitroaromatics												
2-Picoline	µg/L	5									<5	<5
4-aminobiphenyl	µg/L	5									<5	<5
Pentachloronitrobenzene	µg/L	5			6		30	300			<5	<5
Organic												
Methane	mg/L	0.05									<0.05	<0.05
Other												
Acetophenone	µg/L	5									<5	<5
Phthalates												
Bis(2-ethylhexyl) phthalate	µg/L	5					10	100			<5	<5
Butyl benzyl phthalate	µg/L	5									<5	<5
Diethylphthalate	µg/L	5	1,000	900							<5	<5
Di-n-butyl phthalate	µg/L	5	26	9.9							<5	<5
Dimethyl phthalate	µg/L	5	3,700	3,000							<5	<5
Di-n-octyl phthalate	µg/L	5									<5	<5
Solvents												
Acetone	mg/L	0.001									<0.001	<0.001
4-Methyl-2-pentanone	µg/L	1									<1	<1
Allyl chloride	mg/L	0.001									<0.001	<0.001
Carbon disulfide	µg/L	1									<1	<1
Methyl Ethyl Ketone	µg/L	1									<1	<1
SVOCs												
3,3-Dichlorobenzidine	µg/L	5									<5	<5
4-(dimethylamino) azobenzene	µg/L	5									<5	<5
4-bromophenyl phenyl ether	µg/L	5									<5	<5
4-chlorophenyl phenyl ether	µg/L	5									<5	<5
Bis(2-chloroethoxy) methane	µg/L	5									<5	<5
Bis(2-chloroisopropyl) ether	µg/L	5									<5	<5
Dibenzofuran	µg/L	5									<5	<5
N-nitrosopiperidine	µg/L	5									<5	<5
VOCs												
Dibenz(a,j)acridine	mg/L	0.005									<0.005	<0.005
Inorganics												
Ferrous Iron	mg/L	0.05									0.27	0.39
Phosphate total (P)	mg/L	0.01									0.01	0.02
Reactive Phosphorus as P	mg/L	0.01									<0.01	<0.01
Ammonia as N	mg/L	0.01	0.9	0.32	0.01						0.03	0.01
Kjeldahl Nitrogen Total	mg/L	0.2									0.6	<0.2
Nitrite + Nitrate as N	mg/L	0.05									5.2	3.7
Nitrite (as N)	mg/L	0.02			1						<0.02	<0.02
Sulphate	mg/L	5			400				250		210	800
Nitrogen (Total)	µg/L	200									5,800	3,700
Nitrate (as N)	mg/L	0.02	0.158	0.0038	10						5.2	3.7

*Potable values multiplied by a factor of 10

Relative Percent Differences
Soil

Lab Report Number			Field ID	BH01_0.8-0.9	QC01	RPD	BH06_1.8-1.9	QC03	RPD	BH14_1.9-2.0	QC05	RPD	BH16_1.0-1.1	QC07	RPD	BH17_0.3-0.4	QC08	RPD
			704508	704508	704508		704508	704508		704508	704508		704508					
			soil	soil	soil		soil	soil		soil	soil		soil					
			Date	24/02/2020	24/02/2020		24/02/2020	24/02/2020		25/02/2020	24/02/2020		25/02/2020	25/02/2020		25/02/2020	25/02/2020	
	Unit	EQL																
Metals																		
Arsenic	mg/kg	2	4.9	5.3	8	4.4	4.8	9	5.4	5.3	2	6.6	5.0	28	160	170	6	
Beryllium	mg/kg	2	<2	<2	0	<2	<2	0	<2	<2	0	<2	<2	0	<2	<2	0	
Boron	mg/kg	10	17	25	38	40	46	14	49	53	8	22	24	9	<10	13	26	
Cadmium	mg/kg	0.4	<0.4	<0.4	0	<0.4	<0.4	0	<0.4	<0.4	0	<0.4	<0.4	0	<0.4	<0.4	0	
Cobalt	mg/kg	5	7.5	8.0	6	16	17	6	15	16	6	10	7.7	26	5.5	5.9	7	
Copper	mg/kg	5	16	19	17	31	30	3	29	29	0	26	19	31	15	14	7	
Chromium (III+VI)	mg/kg	5	31	33	6	58	59	2	60	57	5	42	33	24	20	22	10	
Lead	mg/kg	5	11	12	9	19	19	0	16	17	6	13	11	17	27	18	40	
Manganese	mg/kg	5	150	160	6	460	550	18	420	470	11	220	140	44	200	200	0	
Mercury	mg/kg	0.1	<0.1	<0.1	0	<0.1	<0.1	0	<0.1	<0.1	0	0.3	<0.1	100	0.1	<0.1	0	
Nickel	mg/kg	5	15	18	18	27	28	4	26	26	0	20	17	16	8.6	9.3	8	
Selenium	mg/kg	2	<2	<2	0	<2	<2	0	<2	<2	0	<2	<2	0	<2	<2	0	
Zinc	mg/kg	5	27	32	17	56	58	4	58	55	5	33	26	24	44	34	26	
Moisture Content (dried @ 103°C)	%	1	10	12	18	17	19	11	20	19	5	11	9.1	19	3.8	4.8	23	

*RPDs have only been considered where a concentration is greater than 1 times the EQL.

**Elevated RPDs are highlighted as per QAQC Profile settings (Acceptable RPDs for each EQL multiplier range are: 81 (1 - 10 x EQL); 50 (10 - 30 x EQL); 30 (> 30 x EQL))

***Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any methods in the row header relate to those used in the primary laboratory

Relative Percent Differences
Groundwater

Lab Report Number			Field ID	MW01	QC01	RPD
			Matrix Type	704508	704508	
				water	water	
				Date	24/02/2020	
	Unit	EQL				
Metals						
Arsenic (filtered)	mg/L	0.001		<0.001	<0.001	0
Beryllium (filtered)	mg/L	0.001		<0.001	<0.001	0
Boron (filtered)	mg/L	0.05		0.66	0.68	3
Cadmium (filtered)	mg/L	0.0002		<0.0002	<0.0002	0
Cobalt (filtered)	mg/L	0.001		<0.001	<0.001	0
Copper (filtered)	mg/L	0.001		<0.001	<0.001	0
Chromium (III+VI) (filtered)	mg/L	0.001		0.003	0.003	0
Chromium (hexavalent)	mg/L	0.005		0.008	0.007	13
Lead (filtered)	mg/L	0.001		<0.001	<0.001	0
Manganese (filtered)	mg/L	0.005		<0.005	<0.005	0
Mercury (filtered)	mg/L	0.0001		<0.0001	<0.0001	0
Nickel (filtered)	mg/L	0.001		<0.001	<0.001	0
Selenium (filtered)	mg/L	0.001		0.017	0.017	0
Zinc (filtered)	mg/L	0.005		<0.005	<0.005	0
BTEX						
Benzene	µg/L	1		<1	<1	0
Ethylbenzene	µg/L	1		<1	<1	0
Toluene	µg/L	1		<1	<1	0
Xylene (o)	µg/L	1		<1	<1	0
Xylene (m & p)	µg/L	2		<2	<2	0
Xylene Total	µg/L	3		<3	<3	0
TRH						
C6-C10	µg/L	20		<20	<20	0
C6-C10 (F1 minus BTEX)	µg/L	20		<20	<20	0
C10-C16	µg/L	50		<50	<50	0
C10-C16 (F2 minus Naphthalene)	µg/L	50		<50	<50	0
C16-C34	µg/L	100		<100	<100	0
C34-C40	µg/L	100		<100	<100	0
C10-C40 (Sum of total)	µg/L	100		<100	<100	0
TPH						
C6-C9	µg/L	20		<20	<20	0
C10-C14	µg/L	50		<50	<50	0
C15-C28	µg/L	100		<100	<100	0
C29-C36	µg/L	100		<100	<100	0
+C10-C36 (Sum of total)	µg/L	100		<100	<100	0
PAH						
Acenaphthylene	µg/L	1		<1	<1	0
Anthracene	µg/L	1		<1	<1	0
Benz(a)anthracene	µg/L	1		<1	<1	0
Acenaphthene	µg/L	1		<1	<1	0
Naphthalene	µg/L	1		<1	<1	0
Benzo(a) pyrene	µg/L	1		<1	<1	0
Benzo(b+j)fluoranthene	µg/L	1		<1	<1	0
Benzo(g,h,i)perylene	µg/L	1		<1	<1	0
Benzo(k)fluoranthene	µg/L	1		<1	<1	0
Chrysene	µg/L	1		<1	<1	0
Dibenz(a,h)anthracene	µg/L	1		<1	<1	0
Fluoranthene	µg/L	1		<1	<1	0
Fluorene	µg/L	1		<1	<1	0
Indeno(1,2,3-c,d)pyrene	µg/L	1		<1	<1	0
Phenanthrene	µg/L	1		<1	<1	0
Pyrene	µg/L	1		<1	<1	0
PAHs (Sum of total)	µg/L	1		<1	<1	0

*RPDs have only been considered where a concentration is greater than 1 times the EQL.

**Elevated RPDs are highlighted as per QAQC Profile settings

(Acceptable RPDs for each EQL multiplier range are: 81 (1 - 10 x EQL); 50 (10 - 30 x EQL); 30 (> 30 x EQL))

***Interlab Duplicates are matched on a per compound basis as methods vary between laboratories.

Any methods in the row header relate to those used in the primary laboratory

			Field ID	RN01	TB01
			Lab Report Number	704508	704508
			Matrix Type	water	water
			Date	24/02/2020	24/02/2020
	Unit	EQL			
Metals					
Arsenic (filtered)	mg/L	0.001		<0.001	
Beryllium (filtered)	mg/L	0.001		<0.001	
Boron (filtered)	mg/L	0.05		<0.05	
Cadmium (filtered)	mg/L	0.0002		<0.0002	
Cobalt (filtered)	mg/L	0.001		<0.001	
Copper (filtered)	mg/L	0.001		<0.001	
Chromium (III+VI) (filtered)	mg/L	0.001		<0.001	
Lead (filtered)	mg/L	0.001		<0.001	
Manganese (filtered)	mg/L	0.005		<0.005	
Mercury (filtered)	mg/L	0.0001		<0.0001	
Nickel (filtered)	mg/L	0.001		<0.001	
Selenium (filtered)	mg/L	0.001		<0.001	
Zinc (filtered)	mg/L	0.005		<0.005	
BTEX					
Benzene	µg/L	1		<1	<1
Ethylbenzene	µg/L	1		<1	<1
Toluene	µg/L	1		<1	<1
Xylene (o)	µg/L	1		<1	<1
Xylene (m & p)	µg/L	2		<2	<2
Xylene Total	µg/L	3		<3	<3
TRH					
C6-C10	µg/L	20		<20	<20
C6-C10 (F1 minus BTEX)	µg/L	20		<20	<20
C10-C16	µg/L	50		<50	
C10-C16 (F2 minus Naphthalene)	µg/L	50		<50	
C16-C34	µg/L	100		<100	
C34-C40	µg/L	100		<100	
C10-C40 (Sum of total)	µg/L	100		<100	
TPH					
C6-C9	µg/L	20		<20	<20
C10-C14	µg/L	50		<50	
C15-C28	µg/L	100		<100	
C29-C36	µg/L	100		<100	
+C10-C36 (Sum of total)	µg/L	100		<100	
PAH					
Acenaphthylene	µg/L	1		<1	
Anthracene	µg/L	1		<1	
Benz(a)anthracene	µg/L	1		<1	
Acenaphthene	µg/L	1		<1	
Naphthalene	µg/L	1		<1	<10
Benzo(a) pyrene	µg/L	1		<1	
Benzo(b+j)fluoranthene	µg/L	1		<1	
Benzo(g,h,i)perylene	µg/L	1		<1	
Benzo(k)fluoranthene	µg/L	1		<1	
Chrysene	µg/L	1		<1	
Dibenz(a,h)anthracene	µg/L	1		<1	
Fluoranthene	µg/L	1		<1	
Fluorene	µg/L	1		<1	
Indeno(1,2,3-c,d)pyrene	µg/L	1		<1	
Phenanthrene	µg/L	1		<1	
Pyrene	µg/L	1		<1	
PAHs (Sum of total)	µg/L	1		<1	

APPENDIX H: LABORATORY REPORTS AND CHAIN OF CUSTODY DOCUMENTATION

Agon Environmental Pty Ltd
3/224 Glen Osmond Road
Fullarton
SA 5063



NATA Accredited
Accreditation Number 1261
Site Number 1254

Accredited for compliance with ISO/IEC 17025 – Testing
The results of the tests, calibrations and/or
measurements included in this document are traceable
to Australian/national standards.

Attention: Justin Symonds

Report 704508-S
Project name Trident Torrens Road
Project ID JC0482
Received Date Feb 27, 2020

Client Sample ID			BH01_0.1-0.2	BH01_0.5-0.6	BH01_0.8-0.9	BH02_0.3-0.4
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			M20-Fe38152	M20-Fe38153	M20-Fe38154	M20-Fe38155
Date Sampled			Feb 24, 2020	Feb 24, 2020	Feb 24, 2020	Feb 24, 2020
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	-	-	< 20	-
TRH C10-C14	20	mg/kg	-	-	< 20	-
TRH C15-C28	50	mg/kg	-	-	< 50	-
TRH C29-C36	50	mg/kg	-	-	< 50	-
TRH C10-C36 (Total)	50	mg/kg	-	-	< 50	-
BTEX						
Benzene	0.1	mg/kg	-	-	< 0.1	-
Toluene	0.1	mg/kg	-	-	< 0.1	-
Ethylbenzene	0.1	mg/kg	-	-	< 0.1	-
m&p-Xylenes	0.2	mg/kg	-	-	< 0.2	-
o-Xylene	0.1	mg/kg	-	-	< 0.1	-
Xylenes - Total	0.3	mg/kg	-	-	< 0.3	-
4-Bromofluorobenzene (surr.)	1	%	-	-	84	-
Volatile Organics						
1.1-Dichloroethane	0.5	mg/kg	-	-	< 0.5	-
1.1-Dichloroethene	0.5	mg/kg	-	-	< 0.5	-
1.1.1-Trichloroethane	0.5	mg/kg	-	-	< 0.5	-
1.1.1.2-Tetrachloroethane	0.5	mg/kg	-	-	< 0.5	-
1.1.2-Trichloroethane	0.5	mg/kg	-	-	< 0.5	-
1.1.2.2-Tetrachloroethane	0.5	mg/kg	-	-	< 0.5	-
1.2-Dibromoethane	0.5	mg/kg	-	-	< 0.5	-
1.2-Dichlorobenzene	0.5	mg/kg	-	-	< 0.5	-
1.2-Dichloroethane	0.5	mg/kg	-	-	< 0.5	-
1.2-Dichloropropane	0.5	mg/kg	-	-	< 0.5	-
1.2.3-Trichloropropane	0.5	mg/kg	-	-	< 0.5	-
1.2.4-Trimethylbenzene	0.5	mg/kg	-	-	< 0.5	-
1.3-Dichlorobenzene	0.5	mg/kg	-	-	< 0.5	-
1.3-Dichloropropane	0.5	mg/kg	-	-	< 0.5	-
1.3.5-Trimethylbenzene	0.5	mg/kg	-	-	< 0.5	-
1.4-Dichlorobenzene	0.5	mg/kg	-	-	< 0.5	-
2-Butanone (MEK)	0.5	mg/kg	-	-	< 0.5	-
2-Propanone (Acetone)	0.5	mg/kg	-	-	< 0.5	-
4-Chlorotoluene	0.5	mg/kg	-	-	< 0.5	-
4-Methyl-2-pentanone (MIBK)	0.5	mg/kg	-	-	< 0.5	-
Allyl chloride	0.5	mg/kg	-	-	< 0.5	-

Client Sample ID			BH01_0.1-0.2	BH01_0.5-0.6	BH01_0.8-0.9	BH02_0.3-0.4
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			M20-Fe38152	M20-Fe38153	M20-Fe38154	M20-Fe38155
Date Sampled			Feb 24, 2020	Feb 24, 2020	Feb 24, 2020	Feb 24, 2020
Test/Reference	LOR	Unit				
Volatile Organics						
Benzene	0.1	mg/kg	-	-	< 0.1	-
Bromobenzene	0.5	mg/kg	-	-	< 0.5	-
Bromochloromethane	0.5	mg/kg	-	-	< 0.5	-
Bromodichloromethane	0.5	mg/kg	-	-	< 0.5	-
Bromoform	0.5	mg/kg	-	-	< 0.5	-
Bromomethane	0.5	mg/kg	-	-	< 0.5	-
Carbon disulfide	0.5	mg/kg	-	-	< 0.5	-
Carbon Tetrachloride	0.5	mg/kg	-	-	< 0.5	-
Chlorobenzene	0.5	mg/kg	-	-	< 0.5	-
Chloroethane	0.5	mg/kg	-	-	< 0.5	-
Chloroform	0.5	mg/kg	-	-	< 0.5	-
Chloromethane	0.5	mg/kg	-	-	< 0.5	-
cis-1.2-Dichloroethene	0.5	mg/kg	-	-	< 0.5	-
cis-1.3-Dichloropropene	0.5	mg/kg	-	-	< 0.5	-
Dibromochloromethane	0.5	mg/kg	-	-	< 0.5	-
Dibromomethane	0.5	mg/kg	-	-	< 0.5	-
Dichlorodifluoromethane	0.5	mg/kg	-	-	< 0.5	-
Ethylbenzene	0.1	mg/kg	-	-	< 0.1	-
Iodomethane	0.5	mg/kg	-	-	< 0.5	-
Isopropyl benzene (Cumene)	0.5	mg/kg	-	-	< 0.5	-
m&p-Xylenes	0.2	mg/kg	-	-	< 0.2	-
Methylene Chloride	0.5	mg/kg	-	-	< 0.5	-
o-Xylene	0.1	mg/kg	-	-	< 0.1	-
Styrene	0.5	mg/kg	-	-	< 0.5	-
Tetrachloroethene	0.5	mg/kg	-	-	< 0.5	-
Toluene	0.1	mg/kg	-	-	< 0.1	-
trans-1.2-Dichloroethene	0.5	mg/kg	-	-	< 0.5	-
trans-1.3-Dichloropropene	0.5	mg/kg	-	-	< 0.5	-
Trichloroethene	0.5	mg/kg	-	-	< 0.5	-
Trichlorofluoromethane	0.5	mg/kg	-	-	< 0.5	-
Vinyl chloride	0.5	mg/kg	-	-	< 0.5	-
Xylenes - Total	0.3	mg/kg	-	-	< 0.3	-
Total MAH*	0.5	mg/kg	-	-	< 0.5	-
Vic EPA IWRG 621 CHC (Total)*	0.5	mg/kg	-	-	< 0.5	-
Vic EPA IWRG 621 Other CHC (Total)*	0.5	mg/kg	-	-	< 0.5	-
4-Bromofluorobenzene (surr.)	1	%	-	-	84	-
Toluene-d8 (surr.)	1	%	-	-	78	-
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene ^{N02}	0.5	mg/kg	-	-	< 0.5	-
TRH C6-C10	20	mg/kg	-	-	< 20	-
TRH C6-C10 less BTEX (F1) ^{N04}	20	mg/kg	-	-	< 20	-
TRH >C10-C16	50	mg/kg	-	-	< 50	-
TRH >C10-C16 less Naphthalene (F2) ^{N01}	50	mg/kg	-	-	< 50	-
TRH >C16-C34	100	mg/kg	-	-	< 100	-
TRH >C34-C40	100	mg/kg	-	-	< 100	-
TRH >C10-C40 (total)*	100	mg/kg	-	-	< 100	-

Client Sample ID			BH01_0.1-0.2	BH01_0.5-0.6	BH01_0.8-0.9	BH02_0.3-0.4
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			M20-Fe38152	M20-Fe38153	M20-Fe38154	M20-Fe38155
Date Sampled			Feb 24, 2020	Feb 24, 2020	Feb 24, 2020	Feb 24, 2020
Test/Reference	LOR	Unit				
Semivolatiles Organics						
2-Methyl-4,6-dinitrophenol	5	mg/kg	-	-	< 5	-
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	-	-	< 0.5	-
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	-	-	0.6	-
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	-	-	1.2	-
1-Chloronaphthalene	0.5	mg/kg	-	-	< 0.5	-
1-Naphthylamine	0.5	mg/kg	-	-	< 0.5	-
1,2-Dichlorobenzene	0.5	mg/kg	-	-	< 0.5	-
1,2,3-Trichlorobenzene	0.5	mg/kg	-	-	< 0.5	-
1,2,3,4-Tetrachlorobenzene	0.5	mg/kg	-	-	< 0.5	-
1,2,3,5-Tetrachlorobenzene	0.5	mg/kg	-	-	< 0.5	-
1,2,4-Trichlorobenzene	0.5	mg/kg	-	-	< 0.5	-
1,2,4,5-Tetrachlorobenzene	0.5	mg/kg	-	-	< 0.5	-
1,3-Dichlorobenzene	0.5	mg/kg	-	-	< 0.5	-
1,3,5-Trichlorobenzene	0.5	mg/kg	-	-	< 0.5	-
1,4-Dichlorobenzene	0.5	mg/kg	-	-	< 0.5	-
2-Chloronaphthalene	0.5	mg/kg	-	-	< 0.5	-
2-Chlorophenol	0.5	mg/kg	-	-	< 0.5	-
2-Methylnaphthalene	0.5	mg/kg	-	-	< 0.5	-
2-Methylphenol (o-Cresol)	0.2	mg/kg	-	-	< 0.2	-
2-Naphthylamine	0.5	mg/kg	-	-	< 0.5	-
2-Nitroaniline	0.5	mg/kg	-	-	< 0.5	-
2-Nitrophenol	1.0	mg/kg	-	-	< 1	-
2-Picoline	0.5	mg/kg	-	-	< 0.5	-
2,3,4,6-Tetrachlorophenol	5	mg/kg	-	-	< 5	-
2,4-Dichlorophenol	0.5	mg/kg	-	-	< 0.5	-
2,4-Dimethylphenol	0.5	mg/kg	-	-	< 0.5	-
2,4-Dinitrophenol	5	mg/kg	-	-	< 5	-
2,4-Dinitrotoluene	0.5	mg/kg	-	-	< 0.5	-
2,4,5-Trichlorophenol	1	mg/kg	-	-	< 1	-
2,4,6-Trichlorophenol	1	mg/kg	-	-	< 1	-
2,6-Dichlorophenol	0.5	mg/kg	-	-	< 0.5	-
2,6-Dinitrotoluene	0.5	mg/kg	-	-	< 0.5	-
3&4-Methylphenol (m&p-Cresol)	0.4	mg/kg	-	-	< 0.4	-
3-Methylcholanthrene	0.5	mg/kg	-	-	< 0.5	-
3,3'-Dichlorobenzidine	0.5	mg/kg	-	-	< 0.5	-
4-Aminobiphenyl	0.5	mg/kg	-	-	< 0.5	-
4-Bromophenyl phenyl ether	0.5	mg/kg	-	-	< 0.5	-
4-Chloro-3-methylphenol	1	mg/kg	-	-	< 1	-
4-Chlorophenyl phenyl ether	0.5	mg/kg	-	-	< 0.5	-
4-Nitrophenol	5	mg/kg	-	-	< 5	-
4,4'-DDD	0.5	mg/kg	-	-	< 0.5	-
4,4'-DDE	0.5	mg/kg	-	-	< 0.5	-
4,4'-DDT	0.5	mg/kg	-	-	< 0.5	-
7,12-Dimethylbenz(a)anthracene	0.5	mg/kg	-	-	< 0.5	-
a-BHC	0.5	mg/kg	-	-	< 0.5	-
Acenaphthene	0.5	mg/kg	-	-	< 0.5	-
Acenaphthylene	0.5	mg/kg	-	-	< 0.5	-
Acetophenone	0.5	mg/kg	-	-	< 0.5	-
Aldrin	0.5	mg/kg	-	-	< 0.5	-

Client Sample ID			BH01_0.1-0.2	BH01_0.5-0.6	BH01_0.8-0.9	BH02_0.3-0.4
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			M20-Fe38152	M20-Fe38153	M20-Fe38154	M20-Fe38155
Date Sampled			Feb 24, 2020	Feb 24, 2020	Feb 24, 2020	Feb 24, 2020
Test/Reference	LOR	Unit				
Semivolatile Organics						
Aniline	0.5	mg/kg	-	-	< 0.5	-
Anthracene	0.5	mg/kg	-	-	< 0.5	-
b-BHC	0.5	mg/kg	-	-	< 0.5	-
Benz(a)anthracene	0.5	mg/kg	-	-	< 0.5	-
Benzo(a)pyrene	0.5	mg/kg	-	-	< 0.5	-
Benzo(b&j)fluoranthene ^{N07}	0.5	mg/kg	-	-	< 0.5	-
Benzo(g,h,i)perylene	0.5	mg/kg	-	-	< 0.5	-
Benzo(k)fluoranthene	0.5	mg/kg	-	-	< 0.5	-
Benzyl chloride	0.5	mg/kg	-	-	< 0.5	-
Bis(2-chloroethoxy)methane	0.5	mg/kg	-	-	< 0.5	-
Bis(2-chloroisopropyl)ether	0.5	mg/kg	-	-	< 0.5	-
Bis(2-ethylhexyl)phthalate	0.5	mg/kg	-	-	< 0.5	-
Butyl benzyl phthalate	0.5	mg/kg	-	-	< 0.5	-
Chrysene	0.5	mg/kg	-	-	< 0.5	-
d-BHC	0.5	mg/kg	-	-	< 0.5	-
Di-n-butyl phthalate	0.5	mg/kg	-	-	< 0.5	-
Di-n-octyl phthalate	0.5	mg/kg	-	-	< 0.5	-
Dibenz(a,h)anthracene	0.5	mg/kg	-	-	< 0.5	-
Dibenz(a,j)acridine	0.5	mg/kg	-	-	< 0.5	-
Dibenzofuran	0.5	mg/kg	-	-	< 0.5	-
Dieldrin	0.5	mg/kg	-	-	< 0.5	-
Diethyl phthalate	0.5	mg/kg	-	-	< 0.5	-
Dimethyl phthalate	0.5	mg/kg	-	-	< 0.5	-
Dimethylaminoazobenzene	0.5	mg/kg	-	-	< 0.5	-
Diphenylamine	0.5	mg/kg	-	-	< 0.5	-
Endosulfan I	0.5	mg/kg	-	-	< 0.5	-
Endosulfan II	0.5	mg/kg	-	-	< 0.5	-
Endosulfan sulphate	0.5	mg/kg	-	-	< 0.5	-
Endrin	0.5	mg/kg	-	-	< 0.5	-
Endrin aldehyde	0.5	mg/kg	-	-	< 0.5	-
Endrin ketone	0.5	mg/kg	-	-	< 0.5	-
Fluoranthene	0.5	mg/kg	-	-	< 0.5	-
Fluorene	0.5	mg/kg	-	-	< 0.5	-
g-BHC (Lindane)	0.5	mg/kg	-	-	< 0.5	-
Heptachlor	0.5	mg/kg	-	-	< 0.5	-
Heptachlor epoxide	0.5	mg/kg	-	-	< 0.5	-
Hexachlorobenzene	0.5	mg/kg	-	-	< 0.5	-
Hexachlorobutadiene	0.5	mg/kg	-	-	< 0.5	-
Hexachlorocyclopentadiene	0.5	mg/kg	-	-	< 0.5	-
Hexachloroethane	0.5	mg/kg	-	-	< 0.5	-
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	-	-	< 0.5	-
Methoxychlor	0.5	mg/kg	-	-	< 0.5	-
N-Nitrosodibutylamine	0.5	mg/kg	-	-	< 0.5	-
N-Nitrosodipropylamine	0.5	mg/kg	-	-	< 0.5	-
N-Nitrosopiperidine	0.5	mg/kg	-	-	< 0.5	-
Naphthalene	0.5	mg/kg	-	-	< 0.5	-
Nitrobenzene	0.5	mg/kg	-	-	< 0.5	-
Pentachlorobenzene	0.5	mg/kg	-	-	< 0.5	-
Pentachloronitrobenzene	0.5	mg/kg	-	-	< 0.5	-

Client Sample ID			BH01_0.1-0.2	BH01_0.5-0.6	BH01_0.8-0.9	BH02_0.3-0.4
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			M20-Fe38152	M20-Fe38153	M20-Fe38154	M20-Fe38155
Date Sampled			Feb 24, 2020	Feb 24, 2020	Feb 24, 2020	Feb 24, 2020
Test/Reference	LOR	Unit				
Semivolatile Organics						
Pentachlorophenol	1	mg/kg	-	-	< 1	-
Phenanthrene	0.5	mg/kg	-	-	< 0.5	-
Phenol	0.5	mg/kg	-	-	< 0.5	-
Pronamide	0.5	mg/kg	-	-	< 0.5	-
Pyrene	0.5	mg/kg	-	-	< 0.5	-
Trifluralin	0.5	mg/kg	-	-	< 0.5	-
Phenol-d6 (surr.)	1	%	-	-	46	-
Nitrobenzene-d5 (surr.)	1	%	-	-	67	-
2-Fluorobiphenyl (surr.)	1	%	-	-	79	-
2,4,6-Tribromophenol (surr.)	1	%	-	-	49	-
% Clay	1	%	-	5.0	-	-
Conductivity (1:5 aqueous extract at 25°C as rec.)	10	uS/cm	-	170	-	-
pH (units)(1:5 soil:CaCl2 extract at 25°C as rec.)	0.1	pH Units	-	7.8	-	-
Total Organic Carbon	0.1	%	-	0.8	-	-
% Moisture	1	%	2.4	8.9	10	7.9
Heavy Metals						
Arsenic	2	mg/kg	< 2	3.8	4.9	< 2
Beryllium	2	mg/kg	< 2	< 2	< 2	< 2
Boron	10	mg/kg	< 10	< 10	17	< 10
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	12	20	31	16
Cobalt	5	mg/kg	< 5	5.5	7.5	< 5
Copper	5	mg/kg	6.0	39	16	10
Iron	20	mg/kg	-	16000	-	-
Lead	5	mg/kg	15	92	11	26
Manganese	5	mg/kg	47	180	150	180
Mercury	0.1	mg/kg	< 0.1	0.4	< 0.1	< 0.1
Nickel	5	mg/kg	< 5	8.6	15	5.8
Selenium	2	mg/kg	< 2	< 2	< 2	< 2
Zinc	5	mg/kg	19	110	27	30
Heavy Metals						
Iron (%)	0.01	%	-	1.6	-	-
Cation Exchange Capacity						
Cation Exchange Capacity	0.05	meq/100g	-	29	-	-

Client Sample ID			BH02_1.7-1.8	BH03_0.3-0.4	BH03_0.9-1.0	BH04_0.0-0.1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			M20-Fe38156	M20-Fe38157	M20-Fe38158	M20-Fe38159
Date Sampled			Feb 24, 2020	Feb 24, 2020	Feb 24, 2020	Feb 24, 2020
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	-	-	-	< 20
TRH C10-C14	20	mg/kg	-	-	-	< 20
TRH C15-C28	50	mg/kg	-	-	-	< 50
TRH C29-C36	50	mg/kg	-	-	-	< 50
TRH C10-C36 (Total)	50	mg/kg	-	-	-	< 50

Client Sample ID			BH02_1.7-1.8	BH03_0.3-0.4	BH03_0.9-1.0	BH04_0.0-0.1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			M20-Fe38156	M20-Fe38157	M20-Fe38158	M20-Fe38159
Date Sampled			Feb 24, 2020	Feb 24, 2020	Feb 24, 2020	Feb 24, 2020
Test/Reference	LOR	Unit				
BTEX						
Benzene	0.1	mg/kg	-	-	-	< 0.1
Toluene	0.1	mg/kg	-	-	-	< 0.1
Ethylbenzene	0.1	mg/kg	-	-	-	< 0.1
m&p-Xylenes	0.2	mg/kg	-	-	-	< 0.2
o-Xylene	0.1	mg/kg	-	-	-	< 0.1
Xylenes - Total	0.3	mg/kg	-	-	-	< 0.3
4-Bromofluorobenzene (surr.)	1	%	-	-	-	106
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene ^{N02}	0.5	mg/kg	-	-	-	< 0.5
TRH C6-C10	20	mg/kg	-	-	-	< 20
TRH C6-C10 less BTEX (F1) ^{N04}	20	mg/kg	-	-	-	< 20
TRH >C10-C16	50	mg/kg	-	-	-	< 50
TRH >C10-C16 less Naphthalene (F2) ^{N01}	50	mg/kg	-	-	-	< 50
TRH >C16-C34	100	mg/kg	-	-	-	< 100
TRH >C34-C40	100	mg/kg	-	-	-	< 100
TRH >C10-C40 (total)*	100	mg/kg	-	-	-	< 100
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	-	-	-	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	-	-	-	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	-	-	-	1.2
Acenaphthene	0.5	mg/kg	-	-	-	< 0.5
Acenaphthylene	0.5	mg/kg	-	-	-	< 0.5
Anthracene	0.5	mg/kg	-	-	-	< 0.5
Benz(a)anthracene	0.5	mg/kg	-	-	-	< 0.5
Benzo(a)pyrene	0.5	mg/kg	-	-	-	< 0.5
Benzo(b&j)fluoranthene ^{N07}	0.5	mg/kg	-	-	-	< 0.5
Benzo(g,h,i)perylene	0.5	mg/kg	-	-	-	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	-	-	-	< 0.5
Chrysene	0.5	mg/kg	-	-	-	< 0.5
Dibenz(a,h)anthracene	0.5	mg/kg	-	-	-	< 0.5
Fluoranthene	0.5	mg/kg	-	-	-	< 0.5
Fluorene	0.5	mg/kg	-	-	-	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	-	-	-	< 0.5
Naphthalene	0.5	mg/kg	-	-	-	< 0.5
Phenanthrene	0.5	mg/kg	-	-	-	< 0.5
Pyrene	0.5	mg/kg	-	-	-	< 0.5
Total PAH*	0.5	mg/kg	-	-	-	< 0.5
2-Fluorobiphenyl (surr.)	1	%	-	-	-	66
p-Terphenyl-d14 (surr.)	1	%	-	-	-	82
Organochlorine Pesticides						
Bifenthrin	0.05	mg/kg	-	-	-	< 0.05
Organophosphorus Pesticides						
Chlorpyrifos	0.2	mg/kg	-	-	-	< 0.2
Polychlorinated Biphenyls						
Aroclor-1016	0.1	mg/kg	-	-	-	< 0.1
Aroclor-1221	0.1	mg/kg	-	-	-	< 0.1
Aroclor-1232	0.1	mg/kg	-	-	-	< 0.1
Aroclor-1242	0.1	mg/kg	-	-	-	< 0.1
Aroclor-1248	0.1	mg/kg	-	-	-	< 0.1

Client Sample ID			BH02_1.7-1.8	BH03_0.3-0.4	BH03_0.9-1.0	BH04_0.0-0.1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			M20-Fe38156	M20-Fe38157	M20-Fe38158	M20-Fe38159
Date Sampled			Feb 24, 2020	Feb 24, 2020	Feb 24, 2020	Feb 24, 2020
Test/Reference	LOR	Unit				
Polychlorinated Biphenyls						
Aroclor-1254	0.1	mg/kg	-	-	-	< 0.1
Aroclor-1260	0.1	mg/kg	-	-	-	< 0.1
Total PCB*	0.1	mg/kg	-	-	-	< 0.1
Dibutylchloredate (surr.)	1	%	-	-	-	104
Tetrachloro-m-xylene (surr.)	1	%	-	-	-	83
Triazines						
Atrazine	0.2	mg/kg	-	-	-	< 0.2
NEPM 2013 Acid Herbicides						
Picloram	0.5	mg/kg	-	-	-	< 0.5
2,4-D	0.5	mg/kg	-	-	-	< 0.5
2,4,5-T	0.5	mg/kg	-	-	-	< 0.5
MCPA	0.5	mg/kg	-	-	-	< 0.5
MCPB	0.5	mg/kg	-	-	-	< 0.5
Mecoprop	0.5	mg/kg	-	-	-	< 0.5
Warfarin (surr.)	1	%	-	-	-	99
NEPM 2013 Organochlorine Pesticides						
Endosulfan sulphate	0.05	mg/kg	-	-	-	< 0.05
Mirex	0.01	mg/kg	-	-	-	< 0.01
4,4'-DDD	0.05	mg/kg	-	-	-	< 0.05
4,4'-DDE	0.05	mg/kg	-	-	-	< 0.05
4,4'-DDT	0.05	mg/kg	-	-	-	< 0.05
Aldrin	0.05	mg/kg	-	-	-	< 0.05
Chlordanes - Total	0.1	mg/kg	-	-	-	< 0.1
Dieldrin	0.05	mg/kg	-	-	-	< 0.05
Endosulfan I	0.05	mg/kg	-	-	-	< 0.05
Endosulfan II	0.05	mg/kg	-	-	-	< 0.05
Endrin	0.05	mg/kg	-	-	-	< 0.05
Heptachlor	0.05	mg/kg	-	-	-	< 0.05
Hexachlorobenzene	0.05	mg/kg	-	-	-	< 0.05
Methoxychlor	0.05	mg/kg	-	-	-	< 0.05
Toxaphene	1	mg/kg	-	-	-	< 1
Dibutylchloredate (surr.)	1	%	-	-	-	104
Tetrachloro-m-xylene (surr.)	1	%	-	-	-	83
NEPM 2013 Phenols						
2-Methylphenol (o-Cresol)	0.2	mg/kg	-	-	-	< 0.2
3&4-Methylphenol (m&p-Cresol)	0.4	mg/kg	-	-	-	< 0.4
Pentachlorophenol	1	mg/kg	-	-	-	< 1
Phenol	0.5	mg/kg	-	-	-	< 0.5
Phenol-d6 (surr.)	1	%	-	-	-	42
Chromium (hexavalent)	1	mg/kg	-	-	-	< 1
Cyanide (free)	5	mg/kg	-	-	-	< 5
% Moisture	1	%	13	4.7	15	3.9
Heavy Metals						
Arsenic	2	mg/kg	3.1	< 2	53	25
Beryllium	2	mg/kg	< 2	< 2	< 2	< 2
Boron	10	mg/kg	19	< 10	31	< 10
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	0.6
Chromium	5	mg/kg	26	< 5	12	60

Client Sample ID			BH02_1.7-1.8	BH03_0.3-0.4	BH03_0.9-1.0	BH04_0.0-0.1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			M20-Fe38156	M20-Fe38157	M20-Fe38158	M20-Fe38159
Date Sampled			Feb 24, 2020	Feb 24, 2020	Feb 24, 2020	Feb 24, 2020
Test/Reference	LOR	Unit				
Heavy Metals						
Cobalt	5	mg/kg	7.9	< 5	6.3	10
Copper	5	mg/kg	14	9.6	12	64
Lead	5	mg/kg	8.8	21	21	92
Manganese	5	mg/kg	210	40	240	840
Mercury	0.1	mg/kg	< 0.1	< 0.1	0.5	< 0.1
Nickel	5	mg/kg	12	< 5	< 5	37
Selenium	2	mg/kg	< 2	< 2	< 2	< 2
Zinc	5	mg/kg	26	27	18	200

Client Sample ID			BH04_0.5-0.6	BH05_0.1-0.2	BH05_0.3-0.4	BH05_1.5-1.6
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			M20-Fe38160	M20-Fe38161	M20-Fe38162	M20-Fe38163
Date Sampled			Feb 24, 2020	Feb 24, 2020	Feb 24, 2020	Feb 24, 2020
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	-	-	-
TRH C10-C14	20	mg/kg	< 20	-	-	-
TRH C15-C28	50	mg/kg	< 50	-	-	-
TRH C29-C36	50	mg/kg	< 50	-	-	-
TRH C10-C36 (Total)	50	mg/kg	< 50	-	-	-
BTEX						
Benzene	0.1	mg/kg	< 0.1	-	-	-
Toluene	0.1	mg/kg	< 0.1	-	-	-
Ethylbenzene	0.1	mg/kg	< 0.1	-	-	-
m&p-Xylenes	0.2	mg/kg	< 0.2	-	-	-
o-Xylene	0.1	mg/kg	< 0.1	-	-	-
Xylenes - Total	0.3	mg/kg	< 0.3	-	-	-
4-Bromofluorobenzene (surr.)	1	%	82	-	-	-
Volatile Organics						
1.1-Dichloroethane	0.5	mg/kg	< 0.5	-	< 0.5	-
1.1-Dichloroethene	0.5	mg/kg	< 0.5	-	< 0.5	-
1.1.1-Trichloroethane	0.5	mg/kg	< 0.5	-	< 0.5	-
1.1.1.2-Tetrachloroethane	0.5	mg/kg	< 0.5	-	< 0.5	-
1.1.2-Trichloroethane	0.5	mg/kg	< 0.5	-	< 0.5	-
1.1.2.2-Tetrachloroethane	0.5	mg/kg	< 0.5	-	< 0.5	-
1.2-Dibromoethane	0.5	mg/kg	< 0.5	-	< 0.5	-
1.2-Dichlorobenzene	0.5	mg/kg	< 0.5	-	< 0.5	-
1.2-Dichloroethane	0.5	mg/kg	< 0.5	-	< 0.5	-
1.2-Dichloropropane	0.5	mg/kg	< 0.5	-	< 0.5	-
1.2.3-Trichloropropane	0.5	mg/kg	< 0.5	-	< 0.5	-
1.2.4-Trimethylbenzene	0.5	mg/kg	< 0.5	-	< 0.5	-
1.3-Dichlorobenzene	0.5	mg/kg	< 0.5	-	< 0.5	-
1.3-Dichloropropane	0.5	mg/kg	< 0.5	-	< 0.5	-
1.3.5-Trimethylbenzene	0.5	mg/kg	< 0.5	-	< 0.5	-
1.4-Dichlorobenzene	0.5	mg/kg	< 0.5	-	< 0.5	-
2-Butanone (MEK)	0.5	mg/kg	< 0.5	-	< 0.5	-
2-Propanone (Acetone)	0.5	mg/kg	< 0.5	-	< 0.5	-
4-Chlorotoluene	0.5	mg/kg	< 0.5	-	< 0.5	-

Client Sample ID			BH04_0.5-0.6	BH05_0.1-0.2	BH05_0.3-0.4	BH05_1.5-1.6
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			M20-Fe38160	M20-Fe38161	M20-Fe38162	M20-Fe38163
Date Sampled			Feb 24, 2020	Feb 24, 2020	Feb 24, 2020	Feb 24, 2020
Test/Reference	LOR	Unit				
Volatile Organics						
4-Methyl-2-pentanone (MIBK)	0.5	mg/kg	< 0.5	-	< 0.5	-
Allyl chloride	0.5	mg/kg	< 0.5	-	< 0.5	-
Benzene	0.1	mg/kg	< 0.1	-	< 0.1	-
Bromobenzene	0.5	mg/kg	< 0.5	-	< 0.5	-
Bromochloromethane	0.5	mg/kg	< 0.5	-	< 0.5	-
Bromodichloromethane	0.5	mg/kg	< 0.5	-	< 0.5	-
Bromoform	0.5	mg/kg	< 0.5	-	< 0.5	-
Bromomethane	0.5	mg/kg	< 0.5	-	< 0.5	-
Carbon disulfide	0.5	mg/kg	< 0.5	-	< 0.5	-
Carbon Tetrachloride	0.5	mg/kg	< 0.5	-	< 0.5	-
Chlorobenzene	0.5	mg/kg	< 0.5	-	< 0.5	-
Chloroethane	0.5	mg/kg	< 0.5	-	< 0.5	-
Chloroform	0.5	mg/kg	< 0.5	-	< 0.5	-
Chloromethane	0.5	mg/kg	< 0.5	-	< 0.5	-
cis-1.2-Dichloroethene	0.5	mg/kg	< 0.5	-	< 0.5	-
cis-1.3-Dichloropropene	0.5	mg/kg	< 0.5	-	< 0.5	-
Dibromochloromethane	0.5	mg/kg	< 0.5	-	< 0.5	-
Dibromomethane	0.5	mg/kg	< 0.5	-	< 0.5	-
Dichlorodifluoromethane	0.5	mg/kg	< 0.5	-	< 0.5	-
Ethylbenzene	0.1	mg/kg	< 0.1	-	< 0.1	-
Iodomethane	0.5	mg/kg	< 0.5	-	< 0.5	-
Isopropyl benzene (Cumene)	0.5	mg/kg	< 0.5	-	< 0.5	-
m&p-Xylenes	0.2	mg/kg	< 0.2	-	< 0.2	-
Methylene Chloride	0.5	mg/kg	< 0.5	-	< 0.5	-
o-Xylene	0.1	mg/kg	< 0.1	-	< 0.1	-
Styrene	0.5	mg/kg	< 0.5	-	< 0.5	-
Tetrachloroethene	0.5	mg/kg	< 0.5	-	< 0.5	-
Toluene	0.1	mg/kg	< 0.1	-	< 0.1	-
trans-1.2-Dichloroethene	0.5	mg/kg	< 0.5	-	< 0.5	-
trans-1.3-Dichloropropene	0.5	mg/kg	< 0.5	-	< 0.5	-
Trichloroethene	0.5	mg/kg	< 0.5	-	< 0.5	-
Trichlorofluoromethane	0.5	mg/kg	< 0.5	-	< 0.5	-
Vinyl chloride	0.5	mg/kg	< 0.5	-	< 0.5	-
Xylenes - Total	0.3	mg/kg	< 0.3	-	< 0.3	-
Total MAH*	0.5	mg/kg	< 0.5	-	< 0.5	-
Vic EPA IWRG 621 CHC (Total)*	0.5	mg/kg	< 0.5	-	< 0.5	-
Vic EPA IWRG 621 Other CHC (Total)*	0.5	mg/kg	< 0.5	-	< 0.5	-
4-Bromofluorobenzene (surr.)	1	%	82	-	82	-
Toluene-d8 (surr.)	1	%	74	-	76	-
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene ^{N02}	0.5	mg/kg	< 0.5	-	-	-
TRH C6-C10	20	mg/kg	< 20	-	-	-
TRH C6-C10 less BTEX (F1) ^{N04}	20	mg/kg	< 20	-	-	-
TRH >C10-C16	50	mg/kg	< 50	-	-	-
TRH >C10-C16 less Naphthalene (F2) ^{N01}	50	mg/kg	< 50	-	-	-
TRH >C16-C34	100	mg/kg	< 100	-	-	-
TRH >C34-C40	100	mg/kg	< 100	-	-	-
TRH >C10-C40 (total)*	100	mg/kg	< 100	-	-	-

Client Sample ID			BH04_0.5-0.6	BH05_0.1-0.2	BH05_0.3-0.4	BH05_1.5-1.6
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			M20-Fe38160	M20-Fe38161	M20-Fe38162	M20-Fe38163
Date Sampled			Feb 24, 2020	Feb 24, 2020	Feb 24, 2020	Feb 24, 2020
Test/Reference	LOR	Unit				
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	< 0.1	< 0.1	-	-
4,4'-DDD	0.05	mg/kg	< 0.05	< 0.05	-	-
4,4'-DDE	0.05	mg/kg	< 0.05	< 0.05	-	-
4,4'-DDT	0.05	mg/kg	< 0.05	< 0.05	-	-
a-BHC	0.05	mg/kg	< 0.05	< 0.05	-	-
Aldrin	0.05	mg/kg	< 0.05	< 0.05	-	-
b-BHC	0.05	mg/kg	< 0.05	< 0.05	-	-
d-BHC	0.05	mg/kg	< 0.05	< 0.05	-	-
Dieldrin	0.05	mg/kg	< 0.05	< 0.05	-	-
Endosulfan I	0.05	mg/kg	< 0.05	< 0.05	-	-
Endosulfan II	0.05	mg/kg	< 0.05	< 0.05	-	-
Endosulfan sulphate	0.05	mg/kg	< 0.05	< 0.05	-	-
Endrin	0.05	mg/kg	< 0.05	< 0.05	-	-
Endrin aldehyde	0.05	mg/kg	< 0.05	< 0.05	-	-
Endrin ketone	0.05	mg/kg	< 0.05	< 0.05	-	-
g-BHC (Lindane)	0.05	mg/kg	< 0.05	< 0.05	-	-
Heptachlor	0.05	mg/kg	< 0.05	< 0.05	-	-
Heptachlor epoxide	0.05	mg/kg	< 0.05	< 0.05	-	-
Hexachlorobenzene	0.05	mg/kg	< 0.05	< 0.05	-	-
Methoxychlor	0.05	mg/kg	< 0.05	< 0.05	-	-
Toxaphene	1	mg/kg	< 1	< 1	-	-
Aldrin and Dieldrin (Total)*	0.05	mg/kg	< 0.05	< 0.05	-	-
DDT + DDE + DDD (Total)*	0.05	mg/kg	< 0.05	< 0.05	-	-
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	< 0.1	< 0.1	-	-
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	< 0.1	< 0.1	-	-
Dibutylchloroendate (surr.)	1	%	121	116	-	-
Tetrachloro-m-xylene (surr.)	1	%	121	119	-	-
Organophosphorus Pesticides						
Azinphos-methyl	0.2	mg/kg	< 0.2	< 0.2	-	-
Bolstar	0.2	mg/kg	< 0.2	< 0.2	-	-
Chlorfenvinphos	0.2	mg/kg	< 0.2	< 0.2	-	-
Chlorpyrifos	0.2	mg/kg	< 0.2	< 0.2	-	-
Chlorpyrifos-methyl	0.2	mg/kg	< 0.2	< 0.2	-	-
Coumaphos	2	mg/kg	< 2	< 2	-	-
Demeton-S	0.2	mg/kg	< 0.2	< 0.2	-	-
Demeton-O	0.2	mg/kg	< 0.2	< 0.2	-	-
Diazinon	0.2	mg/kg	< 0.2	< 0.2	-	-
Dichlorvos	0.2	mg/kg	< 0.2	< 0.2	-	-
Dimethoate	0.2	mg/kg	< 0.2	< 0.2	-	-
Disulfoton	0.2	mg/kg	< 0.2	< 0.2	-	-
EPN	0.2	mg/kg	< 0.2	< 0.2	-	-
Ethion	0.2	mg/kg	< 0.2	< 0.2	-	-
Ethoprop	0.2	mg/kg	< 0.2	< 0.2	-	-
Ethyl parathion	0.2	mg/kg	< 0.2	< 0.2	-	-
Fenitrothion	0.2	mg/kg	< 0.2	< 0.2	-	-
Fensulfothion	0.2	mg/kg	< 0.2	< 0.2	-	-
Fenthion	0.2	mg/kg	< 0.2	< 0.2	-	-
Malathion	0.2	mg/kg	< 0.2	< 0.2	-	-
Merphos	0.2	mg/kg	< 0.2	< 0.2	-	-

Client Sample ID			BH04_0.5-0.6	BH05_0.1-0.2	BH05_0.3-0.4	BH05_1.5-1.6
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			M20-Fe38160	M20-Fe38161	M20-Fe38162	M20-Fe38163
Date Sampled			Feb 24, 2020	Feb 24, 2020	Feb 24, 2020	Feb 24, 2020
Test/Reference	LOR	Unit				
Organophosphorus Pesticides						
Methyl parathion	0.2	mg/kg	< 0.2	< 0.2	-	-
Mevinphos	0.2	mg/kg	< 0.2	< 0.2	-	-
Monocrotophos	2	mg/kg	< 2	< 2	-	-
Naled	0.2	mg/kg	< 0.2	< 0.2	-	-
Omethoate	2	mg/kg	< 2	< 2	-	-
Phorate	0.2	mg/kg	< 0.2	< 0.2	-	-
Pirimiphos-methyl	0.2	mg/kg	< 0.2	< 0.2	-	-
Pyrazophos	0.2	mg/kg	< 0.2	< 0.2	-	-
Ronnel	0.2	mg/kg	< 0.2	< 0.2	-	-
Terbufos	0.2	mg/kg	< 0.2	< 0.2	-	-
Tetrachlorvinphos	0.2	mg/kg	< 0.2	< 0.2	-	-
Tokuthion	0.2	mg/kg	< 0.2	< 0.2	-	-
Trichloronate	0.2	mg/kg	< 0.2	< 0.2	-	-
Triphenylphosphate (surr.)	1	%	100	108	-	-
Semivolatile Organics						
2-Methyl-4,6-dinitrophenol	5	mg/kg	< 5	-	-	-
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	-	-	-
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	-	-	-
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	-	-	-
1-Chloronaphthalene	0.5	mg/kg	< 0.5	-	-	-
1-Naphthylamine	0.5	mg/kg	< 0.5	-	-	-
1,2-Dichlorobenzene	0.5	mg/kg	< 0.5	-	-	-
1,2,3-Trichlorobenzene	0.5	mg/kg	< 0.5	-	-	-
1,2,3,4-Tetrachlorobenzene	0.5	mg/kg	< 0.5	-	-	-
1,2,3,5-Tetrachlorobenzene	0.5	mg/kg	< 0.5	-	-	-
1,2,4-Trichlorobenzene	0.5	mg/kg	< 0.5	-	-	-
1,2,4,5-Tetrachlorobenzene	0.5	mg/kg	< 0.5	-	-	-
1,3-Dichlorobenzene	0.5	mg/kg	< 0.5	-	-	-
1,3,5-Trichlorobenzene	0.5	mg/kg	< 0.5	-	-	-
1,4-Dichlorobenzene	0.5	mg/kg	< 0.5	-	-	-
2-Chloronaphthalene	0.5	mg/kg	< 0.5	-	-	-
2-Chlorophenol	0.5	mg/kg	< 0.5	-	-	-
2-Methylnaphthalene	0.5	mg/kg	< 0.5	-	-	-
2-Methylphenol (o-Cresol)	0.2	mg/kg	< 0.2	-	-	-
2-Naphthylamine	0.5	mg/kg	< 0.5	-	-	-
2-Nitroaniline	0.5	mg/kg	< 0.5	-	-	-
2-Nitrophenol	1.0	mg/kg	< 1	-	-	-
2-Picoline	0.5	mg/kg	< 0.5	-	-	-
2,3,4,6-Tetrachlorophenol	5	mg/kg	< 5	-	-	-
2,4-Dichlorophenol	0.5	mg/kg	< 0.5	-	-	-
2,4-Dimethylphenol	0.5	mg/kg	< 0.5	-	-	-
2,4-Dinitrophenol	5	mg/kg	< 5	-	-	-
2,4-Dinitrotoluene	0.5	mg/kg	< 0.5	-	-	-
2,4,5-Trichlorophenol	1	mg/kg	< 1	-	-	-
2,4,6-Trichlorophenol	1	mg/kg	< 1	-	-	-
2,6-Dichlorophenol	0.5	mg/kg	< 0.5	-	-	-
2,6-Dinitrotoluene	0.5	mg/kg	< 0.5	-	-	-
3&4-Methylphenol (m&p-Cresol)	0.4	mg/kg	< 0.4	-	-	-
3-Methylcholanthrene	0.5	mg/kg	< 0.5	-	-	-

Client Sample ID			BH04_0.5-0.6	BH05_0.1-0.2	BH05_0.3-0.4	BH05_1.5-1.6
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			M20-Fe38160	M20-Fe38161	M20-Fe38162	M20-Fe38163
Date Sampled			Feb 24, 2020	Feb 24, 2020	Feb 24, 2020	Feb 24, 2020
Test/Reference	LOR	Unit				
Semivolatile Organics						
3,3'-Dichlorobenzidine	0.5	mg/kg	< 0.5	-	-	-
4-Aminobiphenyl	0.5	mg/kg	< 0.5	-	-	-
4-Bromophenyl phenyl ether	0.5	mg/kg	< 0.5	-	-	-
4-Chloro-3-methylphenol	1	mg/kg	< 1	-	-	-
4-Chlorophenyl phenyl ether	0.5	mg/kg	< 0.5	-	-	-
4-Nitrophenol	5	mg/kg	< 5	-	-	-
4,4'-DDD	0.5	mg/kg	< 0.5	-	-	-
4,4'-DDE	0.5	mg/kg	< 0.5	-	-	-
4,4'-DDT	0.5	mg/kg	< 0.5	-	-	-
7,12-Dimethylbenz(a)anthracene	0.5	mg/kg	< 0.5	-	-	-
a-BHC	0.5	mg/kg	< 0.5	-	-	-
Acenaphthene	0.5	mg/kg	< 0.5	-	-	-
Acenaphthylene	0.5	mg/kg	< 0.5	-	-	-
Acetophenone	0.5	mg/kg	< 0.5	-	-	-
Aldrin	0.5	mg/kg	< 0.5	-	-	-
Aniline	0.5	mg/kg	< 0.5	-	-	-
Anthracene	0.5	mg/kg	< 0.5	-	-	-
b-BHC	0.5	mg/kg	< 0.5	-	-	-
Benz(a)anthracene	0.5	mg/kg	< 0.5	-	-	-
Benzo(a)pyrene	0.5	mg/kg	< 0.5	-	-	-
Benzo(b&j)fluoranthene ^{N07}	0.5	mg/kg	< 0.5	-	-	-
Benzo(g,h,i)perylene	0.5	mg/kg	< 0.5	-	-	-
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	-	-	-
Benzyl chloride	0.5	mg/kg	< 0.5	-	-	-
Bis(2-chloroethoxy)methane	0.5	mg/kg	< 0.5	-	-	-
Bis(2-chloroisopropyl)ether	0.5	mg/kg	< 0.5	-	-	-
Bis(2-ethylhexyl)phthalate	0.5	mg/kg	< 0.5	-	-	-
Butyl benzyl phthalate	0.5	mg/kg	< 0.5	-	-	-
Chrysene	0.5	mg/kg	< 0.5	-	-	-
d-BHC	0.5	mg/kg	< 0.5	-	-	-
Di-n-butyl phthalate	0.5	mg/kg	< 0.5	-	-	-
Di-n-octyl phthalate	0.5	mg/kg	< 0.5	-	-	-
Dibenz(a,h)anthracene	0.5	mg/kg	< 0.5	-	-	-
Dibenz(a,j)acridine	0.5	mg/kg	< 0.5	-	-	-
Dibenzofuran	0.5	mg/kg	< 0.5	-	-	-
Dieldrin	0.5	mg/kg	< 0.5	-	-	-
Diethyl phthalate	0.5	mg/kg	< 0.5	-	-	-
Dimethyl phthalate	0.5	mg/kg	< 0.5	-	-	-
Dimethylaminoazobenzene	0.5	mg/kg	< 0.5	-	-	-
Diphenylamine	0.5	mg/kg	< 0.5	-	-	-
Endosulfan I	0.5	mg/kg	< 0.5	-	-	-
Endosulfan II	0.5	mg/kg	< 0.5	-	-	-
Endosulfan sulphate	0.5	mg/kg	< 0.5	-	-	-
Endrin	0.5	mg/kg	< 0.5	-	-	-
Endrin aldehyde	0.5	mg/kg	< 0.5	-	-	-
Endrin ketone	0.5	mg/kg	< 0.5	-	-	-
Fluoranthene	0.5	mg/kg	< 0.5	-	-	-
Fluorene	0.5	mg/kg	< 0.5	-	-	-
g-BHC (Lindane)	0.5	mg/kg	< 0.5	-	-	-

Client Sample ID			BH04_0.5-0.6	BH05_0.1-0.2	BH05_0.3-0.4	BH05_1.5-1.6
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			M20-Fe38160	M20-Fe38161	M20-Fe38162	M20-Fe38163
Date Sampled			Feb 24, 2020	Feb 24, 2020	Feb 24, 2020	Feb 24, 2020
Test/Reference	LOR	Unit				
Semivolatile Organics						
Heptachlor	0.5	mg/kg	< 0.5	-	-	-
Heptachlor epoxide	0.5	mg/kg	< 0.5	-	-	-
Hexachlorobenzene	0.5	mg/kg	< 0.5	-	-	-
Hexachlorobutadiene	0.5	mg/kg	< 0.5	-	-	-
Hexachlorocyclopentadiene	0.5	mg/kg	< 0.5	-	-	-
Hexachloroethane	0.5	mg/kg	< 0.5	-	-	-
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	-	-	-
Methoxychlor	0.5	mg/kg	< 0.5	-	-	-
N-Nitrosodibutylamine	0.5	mg/kg	< 0.5	-	-	-
N-Nitrosodipropylamine	0.5	mg/kg	< 0.5	-	-	-
N-Nitrosopiperidine	0.5	mg/kg	< 0.5	-	-	-
Naphthalene	0.5	mg/kg	< 0.5	-	-	-
Nitrobenzene	0.5	mg/kg	< 0.5	-	-	-
Pentachlorobenzene	0.5	mg/kg	< 0.5	-	-	-
Pentachloronitrobenzene	0.5	mg/kg	< 0.5	-	-	-
Pentachlorophenol	1	mg/kg	< 1	-	-	-
Phenanthrene	0.5	mg/kg	< 0.5	-	-	-
Phenol	0.5	mg/kg	< 0.5	-	-	-
Pronamide	0.5	mg/kg	< 0.5	-	-	-
Pyrene	0.5	mg/kg	< 0.5	-	-	-
Trifluralin	0.5	mg/kg	< 0.5	-	-	-
Phenol-d6 (surr.)	1	%	42	-	-	-
Nitrobenzene-d5 (surr.)	1	%	62	-	-	-
2-Fluorobiphenyl (surr.)	1	%	65	-	-	-
2.4.6-Tribromophenol (surr.)	1	%	41	-	-	-
% Moisture	1	%	3.3	2.7	6.7	15
Heavy Metals						
Arsenic	2	mg/kg	34	-	140	4.2
Beryllium	2	mg/kg	< 2	-	< 2	< 2
Boron	10	mg/kg	< 10	-	< 10	27
Cadmium	0.4	mg/kg	< 0.4	-	0.5	< 0.4
Chromium	5	mg/kg	14	-	42	45
Cobalt	5	mg/kg	< 5	-	8.1	15
Copper	5	mg/kg	8.6	-	44	21
Lead	5	mg/kg	14	-	89	14
Manganese	5	mg/kg	160	-	300	330
Mercury	0.1	mg/kg	< 0.1	-	0.2	< 0.1
Nickel	5	mg/kg	5.6	-	15	19
Selenium	2	mg/kg	< 2	-	< 2	< 2
Zinc	5	mg/kg	14	-	180	42

Client Sample ID			BH06_0.1-0.2	BH06_1.8-1.9	BH07_0.1-0.2	BH07_0.8-0.9
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			M20-Fe38164	M20-Fe38165	M20-Fe38166	M20-Fe38167
Date Sampled			Feb 24, 2020	Feb 24, 2020	Feb 24, 2020	Feb 24, 2020
Test/Reference	LOR	Unit				
% Moisture	1	%	2.6	17	12	16
Heavy Metals						
Arsenic	2	mg/kg	< 2	4.4	2.3	5.3
Beryllium	2	mg/kg	< 2	< 2	< 2	< 2
Boron	10	mg/kg	< 10	40	< 10	36
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	< 5	58	24	54
Cobalt	5	mg/kg	< 5	16	6.2	14
Copper	5	mg/kg	< 5	31	15	27
Lead	5	mg/kg	< 5	19	29	16
Manganese	5	mg/kg	48	460	220	330
Mercury	0.1	mg/kg	< 0.1	< 0.1	0.2	0.4
Nickel	5	mg/kg	< 5	27	7.9	24
Selenium	2	mg/kg	< 2	< 2	< 2	< 2
Zinc	5	mg/kg	< 5	56	65	47

Client Sample ID			BH08_0.3-0.4	BH08_1.2-1.3	BH09_0.1-0.2	BH09_0.5-0.6
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			M20-Fe38168	M20-Fe38169	M20-Fe38170	M20-Fe38171
Date Sampled			Feb 24, 2020	Feb 24, 2020	Feb 24, 2020	Feb 24, 2020
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	-	-	-
TRH C10-C14	20	mg/kg	< 20	-	-	-
TRH C15-C28	50	mg/kg	< 50	-	-	-
TRH C29-C36	50	mg/kg	< 50	-	-	-
TRH C10-C36 (Total)	50	mg/kg	< 50	-	-	-
BTEX						
Benzene	0.1	mg/kg	< 0.1	-	-	-
Toluene	0.1	mg/kg	< 0.1	-	-	-
Ethylbenzene	0.1	mg/kg	< 0.1	-	-	-
m&p-Xylenes	0.2	mg/kg	< 0.2	-	-	-
o-Xylene	0.1	mg/kg	< 0.1	-	-	-
Xylenes - Total	0.3	mg/kg	< 0.3	-	-	-
4-Bromofluorobenzene (surr.)	1	%	106	-	-	-
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene ^{N02}	0.5	mg/kg	< 0.5	-	-	-
TRH C6-C10	20	mg/kg	< 20	-	-	-
TRH C6-C10 less BTEX (F1) ^{N04}	20	mg/kg	< 20	-	-	-
TRH >C10-C16	50	mg/kg	< 50	-	-	-
TRH >C10-C16 less Naphthalene (F2) ^{N01}	50	mg/kg	< 50	-	-	-
TRH >C16-C34	100	mg/kg	< 100	-	-	-
TRH >C34-C40	100	mg/kg	< 100	-	-	-
TRH >C10-C40 (total)*	100	mg/kg	< 100	-	-	-

Client Sample ID			BH08_0.3-0.4	BH08_1.2-1.3	BH09_0.1-0.2	BH09_0.5-0.6
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			M20-Fe38168	M20-Fe38169	M20-Fe38170	M20-Fe38171
Date Sampled			Feb 24, 2020	Feb 24, 2020	Feb 24, 2020	Feb 24, 2020
Test/Reference	LOR	Unit				
Phenols (Halogenated)						
2-Chlorophenol	0.5	mg/kg	< 0.5	-	-	-
2,4-Dichlorophenol	0.5	mg/kg	< 0.5	-	-	-
2,4,5-Trichlorophenol	1	mg/kg	< 1	-	-	-
2,4,6-Trichlorophenol	1	mg/kg	< 1	-	-	-
2,6-Dichlorophenol	0.5	mg/kg	< 0.5	-	-	-
4-Chloro-3-methylphenol	1	mg/kg	< 1	-	-	-
Pentachlorophenol	1	mg/kg	< 1	-	-	-
Tetrachlorophenols - Total	10	mg/kg	< 10	-	-	-
Total Halogenated Phenol*	1	mg/kg	< 1	-	-	-
Phenols (non-Halogenated)						
2-Cyclohexyl-4,6-dinitrophenol	20	mg/kg	< 20	-	-	-
2-Methyl-4,6-dinitrophenol	5	mg/kg	< 5	-	-	-
2-Methylphenol (o-Cresol)	0.2	mg/kg	< 0.2	-	-	-
2-Nitrophenol	1.0	mg/kg	< 1	-	-	-
2,4-Dimethylphenol	0.5	mg/kg	< 0.5	-	-	-
2,4-Dinitrophenol	5	mg/kg	< 5	-	-	-
3&4-Methylphenol (m&p-Cresol)	0.4	mg/kg	< 0.4	-	-	-
4-Nitrophenol	5	mg/kg	< 5	-	-	-
Dinoseb	20	mg/kg	< 20	-	-	-
Phenol	0.5	mg/kg	< 0.5	-	-	-
Total Non-Halogenated Phenol*	20	mg/kg	< 20	-	-	-
Phenol-d6 (surr.)	1	%	27	-	-	-
% Moisture	1	%	8.4	8.8	4.3	7.2
Heavy Metals						
Arsenic	2	mg/kg	2.3	2.6	7.0	3.3
Beryllium	2	mg/kg	< 2	< 2	< 2	< 2
Boron	10	mg/kg	< 10	< 10	< 10	15
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	18	14	26	26
Cobalt	5	mg/kg	5.7	5.4	9.5	7.1
Copper	5	mg/kg	10	6.9	17	18
Lead	5	mg/kg	20	5.7	55	31
Manganese	5	mg/kg	200	190	390	240
Mercury	0.1	mg/kg	0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	6.7	7.5	12	11
Selenium	2	mg/kg	< 2	< 2	< 2	< 2
Zinc	5	mg/kg	18	15	110	47

Client Sample ID			BH10_0.1-0.2	BH10_0.4-0.5	BH10_0.8-0.9	BH10_1.3-1.4
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			M20-Fe38172	M20-Fe38173	M20-Fe38174	M20-Fe38175
Date Sampled			Feb 24, 2020	Feb 24, 2020	Feb 24, 2020	Feb 24, 2020
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	-	< 0.5	-
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	-	0.6	-
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	-	1.2	-
Acenaphthene	0.5	mg/kg	< 0.5	-	< 0.5	-
Acenaphthylene	0.5	mg/kg	< 0.5	-	< 0.5	-
Anthracene	0.5	mg/kg	< 0.5	-	< 0.5	-
Benz(a)anthracene	0.5	mg/kg	< 0.5	-	< 0.5	-
Benzo(a)pyrene	0.5	mg/kg	< 0.5	-	< 0.5	-
Benzo(b&j)fluoranthene ^{N07}	0.5	mg/kg	< 0.5	-	< 0.5	-
Benzo(g,h,i)perylene	0.5	mg/kg	< 0.5	-	< 0.5	-
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	-	< 0.5	-
Chrysene	0.5	mg/kg	< 0.5	-	< 0.5	-
Dibenz(a,h)anthracene	0.5	mg/kg	< 0.5	-	< 0.5	-
Fluoranthene	0.5	mg/kg	< 0.5	-	< 0.5	-
Fluorene	0.5	mg/kg	< 0.5	-	< 0.5	-
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	-	< 0.5	-
Naphthalene	0.5	mg/kg	< 0.5	-	< 0.5	-
Phenanthrene	0.5	mg/kg	< 0.5	-	< 0.5	-
Pyrene	0.5	mg/kg	< 0.5	-	< 0.5	-
Total PAH*	0.5	mg/kg	< 0.5	-	< 0.5	-
2-Fluorobiphenyl (surr.)	1	%	63	-	50	-
p-Terphenyl-d14 (surr.)	1	%	85	-	84	-
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	< 0.1	-	-	-
4,4'-DDD	0.05	mg/kg	< 0.05	-	-	-
4,4'-DDE	0.05	mg/kg	< 0.05	-	-	-
4,4'-DDT	0.05	mg/kg	< 0.05	-	-	-
a-BHC	0.05	mg/kg	< 0.05	-	-	-
Aldrin	0.05	mg/kg	< 0.05	-	-	-
b-BHC	0.05	mg/kg	< 0.05	-	-	-
d-BHC	0.05	mg/kg	< 0.05	-	-	-
Dieldrin	0.05	mg/kg	< 0.05	-	-	-
Endosulfan I	0.05	mg/kg	< 0.05	-	-	-
Endosulfan II	0.05	mg/kg	< 0.05	-	-	-
Endosulfan sulphate	0.05	mg/kg	< 0.05	-	-	-
Endrin	0.05	mg/kg	< 0.05	-	-	-
Endrin aldehyde	0.05	mg/kg	< 0.05	-	-	-
Endrin ketone	0.05	mg/kg	< 0.05	-	-	-
g-BHC (Lindane)	0.05	mg/kg	< 0.05	-	-	-
Heptachlor	0.05	mg/kg	< 0.05	-	-	-
Heptachlor epoxide	0.05	mg/kg	< 0.05	-	-	-
Hexachlorobenzene	0.05	mg/kg	< 0.05	-	-	-
Methoxychlor	0.05	mg/kg	< 0.05	-	-	-
Toxaphene	1	mg/kg	< 1	-	-	-
Aldrin and Dieldrin (Total)*	0.05	mg/kg	< 0.05	-	-	-
DDT + DDE + DDD (Total)*	0.05	mg/kg	< 0.05	-	-	-
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	< 0.1	-	-	-
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	< 0.1	-	-	-
Dibutylchloroendate (surr.)	1	%	107	-	-	-
Tetrachloro-m-xylene (surr.)	1	%	85	-	-	-

Client Sample ID			BH10_0.1-0.2	BH10_0.4-0.5	BH10_0.8-0.9	BH10_1.3-1.4
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			M20-Fe38172	M20-Fe38173	M20-Fe38174	M20-Fe38175
Date Sampled			Feb 24, 2020	Feb 24, 2020	Feb 24, 2020	Feb 24, 2020
Test/Reference	LOR	Unit				
Organophosphorus Pesticides						
Azinphos-methyl	0.2	mg/kg	< 0.2	-	-	-
Bolstar	0.2	mg/kg	< 0.2	-	-	-
Chlorfenvinphos	0.2	mg/kg	< 0.2	-	-	-
Chlorpyrifos	0.2	mg/kg	< 0.2	-	-	-
Chlorpyrifos-methyl	0.2	mg/kg	< 0.2	-	-	-
Coumaphos	2	mg/kg	< 2	-	-	-
Demeton-S	0.2	mg/kg	< 0.2	-	-	-
Demeton-O	0.2	mg/kg	< 0.2	-	-	-
Diazinon	0.2	mg/kg	< 0.2	-	-	-
Dichlorvos	0.2	mg/kg	< 0.2	-	-	-
Dimethoate	0.2	mg/kg	< 0.2	-	-	-
Disulfoton	0.2	mg/kg	< 0.2	-	-	-
EPN	0.2	mg/kg	< 0.2	-	-	-
Ethion	0.2	mg/kg	< 0.2	-	-	-
Ethoprop	0.2	mg/kg	< 0.2	-	-	-
Ethyl parathion	0.2	mg/kg	< 0.2	-	-	-
Fenitrothion	0.2	mg/kg	< 0.2	-	-	-
Fensulfothion	0.2	mg/kg	< 0.2	-	-	-
Fenthion	0.2	mg/kg	< 0.2	-	-	-
Malathion	0.2	mg/kg	< 0.2	-	-	-
Merphos	0.2	mg/kg	< 0.2	-	-	-
Methyl parathion	0.2	mg/kg	< 0.2	-	-	-
Mevinphos	0.2	mg/kg	< 0.2	-	-	-
Monocrotophos	2	mg/kg	< 2	-	-	-
Naled	0.2	mg/kg	< 0.2	-	-	-
Omethoate	2	mg/kg	< 2	-	-	-
Phorate	0.2	mg/kg	< 0.2	-	-	-
Pirimiphos-methyl	0.2	mg/kg	< 0.2	-	-	-
Pyrazophos	0.2	mg/kg	< 0.2	-	-	-
Ronnel	0.2	mg/kg	< 0.2	-	-	-
Terbufos	0.2	mg/kg	< 0.2	-	-	-
Tetrachlorvinphos	0.2	mg/kg	< 0.2	-	-	-
Tokuthion	0.2	mg/kg	< 0.2	-	-	-
Trichloronate	0.2	mg/kg	< 0.2	-	-	-
Triphenylphosphate (surr.)	1	%	97	-	-	-
% Moisture	1	%	5.4	6.0	11	9.5
Heavy Metals						
Arsenic	2	mg/kg	-	< 2	-	2.8
Beryllium	2	mg/kg	-	< 2	-	< 2
Boron	10	mg/kg	-	< 10	-	29
Cadmium	0.4	mg/kg	-	< 0.4	-	< 0.4
Chromium	5	mg/kg	-	18	-	22
Cobalt	5	mg/kg	-	5.1	-	6.7
Copper	5	mg/kg	-	9.8	-	12
Lead	5	mg/kg	-	12	-	7.4
Manganese	5	mg/kg	-	160	-	160
Mercury	0.1	mg/kg	-	< 0.1	-	< 0.1
Nickel	5	mg/kg	-	7.0	-	10

Client Sample ID			BH10_0.1-0.2	BH10_0.4-0.5	BH10_0.8-0.9	BH10_1.3-1.4
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			M20-Fe38172	M20-Fe38173	M20-Fe38174	M20-Fe38175
Date Sampled			Feb 24, 2020	Feb 24, 2020	Feb 24, 2020	Feb 24, 2020
Test/Reference	LOR	Unit				
Heavy Metals						
Selenium	2	mg/kg	-	< 2	-	< 2
Zinc	5	mg/kg	-	16	-	22

Client Sample ID			BH11_0.3-0.4	BH11_1.0-1.1	BH12_0.3-0.4	BH12_0.7-0.8
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			M20-Fe38176	M20-Fe38177	M20-Fe38178	M20-Fe38179
Date Sampled			Feb 24, 2020	Feb 24, 2020	Feb 24, 2020	Feb 24, 2020
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	-	< 20	< 20	-
TRH C10-C14	20	mg/kg	-	< 20	< 20	-
TRH C15-C28	50	mg/kg	-	< 50	360	-
TRH C29-C36	50	mg/kg	-	< 50	190	-
TRH C10-C36 (Total)	50	mg/kg	-	< 50	550	-
BTEX						
Benzene	0.1	mg/kg	-	< 0.1	< 0.1	-
Toluene	0.1	mg/kg	-	< 0.1	< 0.1	-
Ethylbenzene	0.1	mg/kg	-	< 0.1	< 0.1	-
m&p-Xylenes	0.2	mg/kg	-	< 0.2	< 0.2	-
o-Xylene	0.1	mg/kg	-	< 0.1	< 0.1	-
Xylenes - Total	0.3	mg/kg	-	< 0.3	< 0.3	-
4-Bromofluorobenzene (surr.)	1	%	-	89	76	-
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene ^{N02}	0.5	mg/kg	-	< 0.5	< 0.5	-
TRH C6-C10	20	mg/kg	-	< 20	< 20	-
TRH C6-C10 less BTEX (F1) ^{N04}	20	mg/kg	-	< 20	< 20	-
TRH >C10-C16	50	mg/kg	-	< 50	< 50	-
TRH >C10-C16 less Naphthalene (F2) ^{N01}	50	mg/kg	-	< 50	< 50	-
TRH >C16-C34	100	mg/kg	-	< 100	460	-
TRH >C34-C40	100	mg/kg	-	< 100	< 100	-
TRH >C10-C40 (total)*	100	mg/kg	-	< 100	460	-
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	-	< 0.5	0.7	-
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	-	0.6	1.1	-
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	-	1.2	1.4	-
Acenaphthene	0.5	mg/kg	-	< 0.5	< 0.5	-
Acenaphthylene	0.5	mg/kg	-	< 0.5	< 0.5	-
Anthracene	0.5	mg/kg	-	< 0.5	< 0.5	-
Benz(a)anthracene	0.5	mg/kg	-	< 0.5	< 0.5	-
Benzo(a)pyrene	0.5	mg/kg	-	< 0.5	0.7	-
Benzo(b&j)fluoranthene ^{N07}	0.5	mg/kg	-	< 0.5	< 0.5	-
Benzo(g,h,i)perylene	0.5	mg/kg	-	< 0.5	< 0.5	-
Benzo(k)fluoranthene	0.5	mg/kg	-	< 0.5	< 0.5	-
Chrysene	0.5	mg/kg	-	< 0.5	< 0.5	-
Dibenz(a,h)anthracene	0.5	mg/kg	-	< 0.5	< 0.5	-
Fluoranthene	0.5	mg/kg	-	< 0.5	0.6	-
Fluorene	0.5	mg/kg	-	< 0.5	< 0.5	-
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	-	< 0.5	< 0.5	-

Client Sample ID			BH11_0.3-0.4	BH11_1.0-1.1	BH12_0.3-0.4	BH12_0.7-0.8
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			M20-Fe38176	M20-Fe38177	M20-Fe38178	M20-Fe38179
Date Sampled			Feb 24, 2020	Feb 24, 2020	Feb 24, 2020	Feb 24, 2020
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Naphthalene	0.5	mg/kg	-	< 0.5	< 0.5	-
Phenanthrene	0.5	mg/kg	-	< 0.5	< 0.5	-
Pyrene	0.5	mg/kg	-	< 0.5	0.7	-
Total PAH*	0.5	mg/kg	-	< 0.5	2	-
2-Fluorobiphenyl (surr.)	1	%	-	52	56	-
p-Terphenyl-d14 (surr.)	1	%	-	74	93	-
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	< 0.1	-	-	-
4,4'-DDD	0.05	mg/kg	< 0.05	-	-	-
4,4'-DDE	0.05	mg/kg	< 0.05	-	-	-
4,4'-DDT	0.05	mg/kg	< 0.05	-	-	-
a-BHC	0.05	mg/kg	< 0.05	-	-	-
Aldrin	0.05	mg/kg	< 0.05	-	-	-
b-BHC	0.05	mg/kg	< 0.05	-	-	-
d-BHC	0.05	mg/kg	< 0.05	-	-	-
Dieldrin	0.05	mg/kg	< 0.05	-	-	-
Endosulfan I	0.05	mg/kg	< 0.05	-	-	-
Endosulfan II	0.05	mg/kg	< 0.05	-	-	-
Endosulfan sulphate	0.05	mg/kg	< 0.05	-	-	-
Endrin	0.05	mg/kg	< 0.05	-	-	-
Endrin aldehyde	0.05	mg/kg	< 0.05	-	-	-
Endrin ketone	0.05	mg/kg	< 0.05	-	-	-
g-BHC (Lindane)	0.05	mg/kg	< 0.05	-	-	-
Heptachlor	0.05	mg/kg	< 0.05	-	-	-
Heptachlor epoxide	0.05	mg/kg	< 0.05	-	-	-
Hexachlorobenzene	0.05	mg/kg	< 0.05	-	-	-
Methoxychlor	0.05	mg/kg	< 0.05	-	-	-
Toxaphene	1	mg/kg	< 1	-	-	-
Aldrin and Dieldrin (Total)*	0.05	mg/kg	< 0.05	-	-	-
DDT + DDE + DDD (Total)*	0.05	mg/kg	< 0.05	-	-	-
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	< 0.1	-	-	-
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	< 0.1	-	-	-
Dibutylchloroendate (surr.)	1	%	109	-	-	-
Tetrachloro-m-xylene (surr.)	1	%	83	-	-	-
Organophosphorus Pesticides						
Azinphos-methyl	0.2	mg/kg	< 0.2	-	-	-
Bolstar	0.2	mg/kg	< 0.2	-	-	-
Chlorfenvinphos	0.2	mg/kg	< 0.2	-	-	-
Chlorpyrifos	0.2	mg/kg	< 0.2	-	-	-
Chlorpyrifos-methyl	0.2	mg/kg	< 0.2	-	-	-
Coumaphos	2	mg/kg	< 2	-	-	-
Demeton-S	0.2	mg/kg	< 0.2	-	-	-
Demeton-O	0.2	mg/kg	< 0.2	-	-	-
Diazinon	0.2	mg/kg	< 0.2	-	-	-
Dichlorvos	0.2	mg/kg	< 0.2	-	-	-
Dimethoate	0.2	mg/kg	< 0.2	-	-	-
Disulfoton	0.2	mg/kg	< 0.2	-	-	-
EPN	0.2	mg/kg	< 0.2	-	-	-
Ethion	0.2	mg/kg	< 0.2	-	-	-

Client Sample ID			BH11_0.3-0.4	BH11_1.0-1.1	BH12_0.3-0.4	BH12_0.7-0.8
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			M20-Fe38176	M20-Fe38177	M20-Fe38178	M20-Fe38179
Date Sampled			Feb 24, 2020	Feb 24, 2020	Feb 24, 2020	Feb 24, 2020
Test/Reference	LOR	Unit				
Organophosphorus Pesticides						
Ethoprop	0.2	mg/kg	< 0.2	-	-	-
Ethyl parathion	0.2	mg/kg	< 0.2	-	-	-
Fenitrothion	0.2	mg/kg	< 0.2	-	-	-
Fensulfothion	0.2	mg/kg	< 0.2	-	-	-
Fenthion	0.2	mg/kg	< 0.2	-	-	-
Malathion	0.2	mg/kg	< 0.2	-	-	-
Merphos	0.2	mg/kg	< 0.2	-	-	-
Methyl parathion	0.2	mg/kg	< 0.2	-	-	-
Mevinphos	0.2	mg/kg	< 0.2	-	-	-
Monocrotophos	2	mg/kg	< 2	-	-	-
Naled	0.2	mg/kg	< 0.2	-	-	-
Omethoate	2	mg/kg	< 2	-	-	-
Phorate	0.2	mg/kg	< 0.2	-	-	-
Pirimiphos-methyl	0.2	mg/kg	< 0.2	-	-	-
Pyrazophos	0.2	mg/kg	< 0.2	-	-	-
Ronnel	0.2	mg/kg	< 0.2	-	-	-
Terbufos	0.2	mg/kg	< 0.2	-	-	-
Tetrachlorvinphos	0.2	mg/kg	< 0.2	-	-	-
Tokuthion	0.2	mg/kg	< 0.2	-	-	-
Trichloronate	0.2	mg/kg	< 0.2	-	-	-
Triphenylphosphate (surr.)	1	%	136	-	-	-
% Moisture	1	%	8.2	13	8.3	3.3
Heavy Metals						
Arsenic	2	mg/kg	5.0	4.0	5.6	< 2
Beryllium	2	mg/kg	< 2	< 2	< 2	< 2
Boron	10	mg/kg	10	13	14	< 10
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	25	25	25	6.1
Cobalt	5	mg/kg	6.4	5.9	5.8	10
Copper	5	mg/kg	17	13	16	< 5
Lead	5	mg/kg	35	17	44	11
Manganese	5	mg/kg	200	130	170	420
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	8.1	11	9.3	6.6
Selenium	2	mg/kg	< 2	< 2	< 2	< 2
Zinc	5	mg/kg	240	41	88	50

Client Sample ID			BH12_1.3-1.4 Soil M20-Fe38180 Feb 24, 2020	BH12_3.4-3.5 Soil M20-Fe38181 Feb 24, 2020	BH13_0.3-0.4 Soil M20-Fe38182 Feb 25, 2020	BH13_0.5-0.6 Soil M20-Fe38183 Feb 25, 2020
Sample Matrix						
Eurofins Sample No.						
Date Sampled						
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	90	730
TRH C15-C28	50	mg/kg	< 50	< 50	870	5200
TRH C29-C36	50	mg/kg	< 50	< 50	390	1900
TRH C10-C36 (Total)	50	mg/kg	< 50	< 50	1350	7830
Volatile Organics						
Tetrachloroethene	0.5	mg/kg	-	-	-	< 0.5
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	72	78	84	84
Volatile Organics						
1.1-Dichloroethane	0.5	mg/kg	-	-	< 0.5	-
1.1-Dichloroethene	0.5	mg/kg	-	-	< 0.5	-
1.1.1-Trichloroethane	0.5	mg/kg	-	-	< 0.5	-
1.1.1.2-Tetrachloroethane	0.5	mg/kg	-	-	< 0.5	-
1.1.2-Trichloroethane	0.5	mg/kg	-	-	< 0.5	-
1.1.2.2-Tetrachloroethane	0.5	mg/kg	-	-	< 0.5	-
1.2-Dibromoethane	0.5	mg/kg	-	-	< 0.5	-
1.2-Dichlorobenzene	0.5	mg/kg	-	-	< 0.5	-
1.2-Dichloroethane	0.5	mg/kg	-	-	< 0.5	-
1.2-Dichloropropane	0.5	mg/kg	-	-	< 0.5	-
1.2.3-Trichloropropane	0.5	mg/kg	-	-	< 0.5	-
1.2.4-Trimethylbenzene	0.5	mg/kg	-	-	< 0.5	-
1.3-Dichlorobenzene	0.5	mg/kg	-	-	< 0.5	-
1.3-Dichloropropane	0.5	mg/kg	-	-	< 0.5	-
1.3.5-Trimethylbenzene	0.5	mg/kg	-	-	< 0.5	-
1.4-Dichlorobenzene	0.5	mg/kg	-	-	< 0.5	-
2-Butanone (MEK)	0.5	mg/kg	-	-	< 0.5	-
2-Propanone (Acetone)	0.5	mg/kg	-	-	< 0.5	-
4-Chlorotoluene	0.5	mg/kg	-	-	< 0.5	-
4-Methyl-2-pentanone (MIBK)	0.5	mg/kg	-	-	< 0.5	-
Allyl chloride	0.5	mg/kg	-	-	< 0.5	-
Benzene	0.1	mg/kg	-	-	< 0.1	-
Bromobenzene	0.5	mg/kg	-	-	< 0.5	-
Bromochloromethane	0.5	mg/kg	-	-	< 0.5	-
Bromodichloromethane	0.5	mg/kg	-	-	< 0.5	-
Bromoform	0.5	mg/kg	-	-	< 0.5	-
Bromomethane	0.5	mg/kg	-	-	< 0.5	-
Carbon disulfide	0.5	mg/kg	-	-	< 0.5	-
Carbon Tetrachloride	0.5	mg/kg	-	-	< 0.5	-
Chlorobenzene	0.5	mg/kg	-	-	< 0.5	-
Chloroethane	0.5	mg/kg	-	-	< 0.5	-
Chloroform	0.5	mg/kg	-	-	< 0.5	-
Chloromethane	0.5	mg/kg	-	-	< 0.5	-

Client Sample ID			BH12_1.3-1.4	BH12_3.4-3.5	BH13_0.3-0.4	BH13_0.5-0.6
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			M20-Fe38180	M20-Fe38181	M20-Fe38182	M20-Fe38183
Date Sampled			Feb 24, 2020	Feb 24, 2020	Feb 25, 2020	Feb 25, 2020
Test/Reference	LOR	Unit				
Volatile Organics						
cis-1.2-Dichloroethene	0.5	mg/kg	-	-	< 0.5	-
cis-1.3-Dichloropropene	0.5	mg/kg	-	-	< 0.5	-
Dibromochloromethane	0.5	mg/kg	-	-	< 0.5	-
Dibromomethane	0.5	mg/kg	-	-	< 0.5	-
Dichlorodifluoromethane	0.5	mg/kg	-	-	< 0.5	-
Ethylbenzene	0.1	mg/kg	-	-	< 0.1	-
Iodomethane	0.5	mg/kg	-	-	< 0.5	-
Isopropyl benzene (Cumene)	0.5	mg/kg	-	-	< 0.5	-
m&p-Xylenes	0.2	mg/kg	-	-	< 0.2	-
Methylene Chloride	0.5	mg/kg	-	-	< 0.5	-
o-Xylene	0.1	mg/kg	-	-	< 0.1	-
Styrene	0.5	mg/kg	-	-	< 0.5	-
Tetrachloroethene	0.5	mg/kg	-	-	< 0.5	-
Toluene	0.1	mg/kg	-	-	< 0.1	-
trans-1.2-Dichloroethene	0.5	mg/kg	-	-	< 0.5	-
trans-1.3-Dichloropropene	0.5	mg/kg	-	-	< 0.5	-
Trichloroethene	0.5	mg/kg	-	-	< 0.5	-
Trichlorofluoromethane	0.5	mg/kg	-	-	< 0.5	-
Vinyl chloride	0.5	mg/kg	-	-	< 0.5	-
Xylenes - Total	0.3	mg/kg	-	-	< 0.3	-
Total MAH*	0.5	mg/kg	-	-	< 0.5	-
Vic EPA IWRG 621 CHC (Total)*	0.5	mg/kg	-	-	< 0.5	-
Vic EPA IWRG 621 Other CHC (Total)*	0.5	mg/kg	-	-	< 0.5	-
4-Bromofluorobenzene (surr.)	1	%	-	-	84	-
Toluene-d8 (surr.)	1	%	-	-	82	-
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene ^{N02}	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1) ^{N04}	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	190	1400
TRH >C10-C16 less Naphthalene (F2) ^{N01}	50	mg/kg	< 50	< 50	190	1400
TRH >C16-C34	100	mg/kg	< 100	< 100	1000	5700
TRH >C34-C40	100	mg/kg	< 100	< 100	230	1000
TRH >C10-C40 (total)*	100	mg/kg	< 100	< 100	1420	8100
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	-	-	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	-	-	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	-	-	1.2	1.2
Acenaphthene	0.5	mg/kg	-	-	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	-	-	< 0.5	< 0.5
Anthracene	0.5	mg/kg	-	-	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	-	-	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	-	-	< 0.5	< 0.5
Benzo(b&j)fluoranthene ^{N07}	0.5	mg/kg	-	-	< 0.5	< 0.5
Benzo(g,h,i)perylene	0.5	mg/kg	-	-	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	-	-	< 0.5	< 0.5
Chrysene	0.5	mg/kg	-	-	< 0.5	0.8
Dibenz(a,h)anthracene	0.5	mg/kg	-	-	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	-	-	< 0.5	< 0.5

Client Sample ID			BH12_1.3-1.4	BH12_3.4-3.5	BH13_0.3-0.4	BH13_0.5-0.6
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			M20-Fe38180	M20-Fe38181	M20-Fe38182	M20-Fe38183
Date Sampled			Feb 24, 2020	Feb 24, 2020	Feb 25, 2020	Feb 25, 2020
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Fluorene	0.5	mg/kg	-	-	< 0.5	1.1
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	-	-	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	-	-	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	-	-	< 0.5	< 0.5
Pyrene	0.5	mg/kg	-	-	0.8	0.7
Total PAH*	0.5	mg/kg	-	-	0.8	2.6
2-Fluorobiphenyl (surr.)	1	%	-	-	77	52
p-Terphenyl-d14 (surr.)	1	%	-	-	101	71
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	-	-	-	< 0.1
4.4'-DDD	0.05	mg/kg	-	-	-	< 0.05
4.4'-DDE	0.05	mg/kg	-	-	-	< 0.05
4.4'-DDT	0.05	mg/kg	-	-	-	< 0.05
a-BHC	0.05	mg/kg	-	-	-	< 0.05
Aldrin	0.05	mg/kg	-	-	-	< 0.05
b-BHC	0.05	mg/kg	-	-	-	< 0.05
d-BHC	0.05	mg/kg	-	-	-	< 0.05
Dieldrin	0.05	mg/kg	-	-	-	< 0.05
Endosulfan I	0.05	mg/kg	-	-	-	< 0.05
Endosulfan II	0.05	mg/kg	-	-	-	< 0.05
Endosulfan sulphate	0.05	mg/kg	-	-	-	< 0.05
Endrin	0.05	mg/kg	-	-	-	< 0.05
Endrin aldehyde	0.05	mg/kg	-	-	-	< 0.05
Endrin ketone	0.05	mg/kg	-	-	-	< 0.05
g-BHC (Lindane)	0.05	mg/kg	-	-	-	< 0.05
Heptachlor	0.05	mg/kg	-	-	-	< 0.05
Heptachlor epoxide	0.05	mg/kg	-	-	-	< 0.05
Hexachlorobenzene	0.05	mg/kg	-	-	-	< 0.05
Methoxychlor	0.05	mg/kg	-	-	-	< 0.05
Toxaphene	1	mg/kg	-	-	-	< 1
Aldrin and Dieldrin (Total)*	0.05	mg/kg	-	-	-	< 0.05
DDT + DDE + DDD (Total)*	0.05	mg/kg	-	-	-	< 0.05
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	-	-	-	< 0.1
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	-	-	-	< 0.1
Dibutylchloroendate (surr.)	1	%	-	-	-	56
Tetrachloro-m-xylene (surr.)	1	%	-	-	-	103
Polychlorinated Biphenyls						
Aroclor-1016	0.1	mg/kg	-	-	-	< 0.1
Aroclor-1221	0.1	mg/kg	-	-	-	< 0.1
Aroclor-1232	0.1	mg/kg	-	-	-	< 0.1
Aroclor-1242	0.1	mg/kg	-	-	-	< 0.1
Aroclor-1248	0.1	mg/kg	-	-	-	< 0.1
Aroclor-1254	0.1	mg/kg	-	-	-	< 0.1
Aroclor-1260	0.1	mg/kg	-	-	-	< 0.1
Total PCB*	0.1	mg/kg	-	-	-	< 0.1
Dibutylchloroendate (surr.)	1	%	-	-	-	56
Tetrachloro-m-xylene (surr.)	1	%	-	-	-	103

Client Sample ID			BH12_1.3-1.4	BH12_3.4-3.5	BH13_0.3-0.4	BH13_0.5-0.6
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			M20-Fe38180	M20-Fe38181	M20-Fe38182	M20-Fe38183
Date Sampled			Feb 24, 2020	Feb 24, 2020	Feb 25, 2020	Feb 25, 2020
Test/Reference	LOR	Unit				
Phenols (Halogenated)						
2-Chlorophenol	0.5	mg/kg	-	-	< 0.5	< 0.5
2,4-Dichlorophenol	0.5	mg/kg	-	-	< 0.5	< 0.5
2,4,5-Trichlorophenol	1	mg/kg	-	-	< 1	< 1
2,4,6-Trichlorophenol	1	mg/kg	-	-	< 1	< 1
2,6-Dichlorophenol	0.5	mg/kg	-	-	< 0.5	< 0.5
4-Chloro-3-methylphenol	1	mg/kg	-	-	< 1	< 1
Pentachlorophenol	1	mg/kg	-	-	< 1	< 1
Tetrachlorophenols - Total	10	mg/kg	-	-	< 10	< 10
Total Halogenated Phenol*	1	mg/kg	-	-	< 1	< 1
Phenols (non-Halogenated)						
2-Cyclohexyl-4,6-dinitrophenol	20	mg/kg	-	-	< 20	< 20
2-Methyl-4,6-dinitrophenol	5	mg/kg	-	-	< 5	< 5
2-Methylphenol (o-Cresol)	0.2	mg/kg	-	-	< 0.2	< 0.2
2-Nitrophenol	1.0	mg/kg	-	-	< 1	< 1
2,4-Dimethylphenol	0.5	mg/kg	-	-	< 0.5	< 0.5
2,4-Dinitrophenol	5	mg/kg	-	-	< 5	< 5
3&4-Methylphenol (m&p-Cresol)	0.4	mg/kg	-	-	< 0.4	< 0.4
4-Nitrophenol	5	mg/kg	-	-	< 5	< 5
Dinoseb	20	mg/kg	-	-	< 20	< 20
Phenol	0.5	mg/kg	-	-	< 0.5	< 0.5
Total Non-Halogenated Phenol*	20	mg/kg	-	-	< 20	< 20
Phenol-d6 (surr.)	1	%	-	-	57	44
Semivolatile Organics						
2-Methyl-4,6-dinitrophenol	5	mg/kg	-	-	< 5	-
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	-	-	< 0.5	-
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	-	-	0.6	-
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	-	-	1.2	-
1-Chloronaphthalene	0.5	mg/kg	-	-	< 0.5	-
1-Naphthylamine	0.5	mg/kg	-	-	< 0.5	-
1,2-Dichlorobenzene	0.5	mg/kg	-	-	< 0.5	-
1,2,3-Trichlorobenzene	0.5	mg/kg	-	-	< 0.5	-
1,2,3,4-Tetrachlorobenzene	0.5	mg/kg	-	-	< 0.5	-
1,2,3,5-Tetrachlorobenzene	0.5	mg/kg	-	-	< 0.5	-
1,2,4-Trichlorobenzene	0.5	mg/kg	-	-	< 0.5	-
1,2,4,5-Tetrachlorobenzene	0.5	mg/kg	-	-	< 0.5	-
1,3-Dichlorobenzene	0.5	mg/kg	-	-	< 0.5	-
1,3,5-Trichlorobenzene	0.5	mg/kg	-	-	< 0.5	-
1,4-Dichlorobenzene	0.5	mg/kg	-	-	< 0.5	-
2-Chloronaphthalene	0.5	mg/kg	-	-	< 0.5	-
2-Chlorophenol	0.5	mg/kg	-	-	< 0.5	-
2-Methylnaphthalene	0.5	mg/kg	-	-	< 0.5	-
2-Methylphenol (o-Cresol)	0.2	mg/kg	-	-	< 0.2	-
2-Naphthylamine	0.5	mg/kg	-	-	< 0.5	-
2-Nitroaniline	0.5	mg/kg	-	-	< 0.5	-
2-Nitrophenol	1.0	mg/kg	-	-	< 1	-
2-Picoline	0.5	mg/kg	-	-	< 0.5	-
2,3,4,6-Tetrachlorophenol	5	mg/kg	-	-	< 5	-
2,4-Dichlorophenol	0.5	mg/kg	-	-	< 0.5	-
2,4-Dimethylphenol	0.5	mg/kg	-	-	< 0.5	-

Client Sample ID			BH12_1.3-1.4	BH12_3.4-3.5	BH13_0.3-0.4	BH13_0.5-0.6
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			M20-Fe38180	M20-Fe38181	M20-Fe38182	M20-Fe38183
Date Sampled			Feb 24, 2020	Feb 24, 2020	Feb 25, 2020	Feb 25, 2020
Test/Reference	LOR	Unit				
Semivolatile Organics						
2,4-Dinitrophenol	5	mg/kg	-	-	< 5	-
2,4-Dinitrotoluene	0.5	mg/kg	-	-	< 0.5	-
2,4,5-Trichlorophenol	1	mg/kg	-	-	< 1	-
2,4,6-Trichlorophenol	1	mg/kg	-	-	< 1	-
2,6-Dichlorophenol	0.5	mg/kg	-	-	< 0.5	-
2,6-Dinitrotoluene	0.5	mg/kg	-	-	< 0.5	-
3&4-Methylphenol (m&p-Cresol)	0.4	mg/kg	-	-	< 0.4	-
3-Methylcholanthrene	0.5	mg/kg	-	-	< 0.5	-
3,3'-Dichlorobenzidine	0.5	mg/kg	-	-	< 0.5	-
4-Aminobiphenyl	0.5	mg/kg	-	-	< 0.5	-
4-Bromophenyl phenyl ether	0.5	mg/kg	-	-	< 0.5	-
4-Chloro-3-methylphenol	1	mg/kg	-	-	< 1	-
4-Chlorophenyl phenyl ether	0.5	mg/kg	-	-	< 0.5	-
4-Nitrophenol	5	mg/kg	-	-	< 5	-
4,4'-DDD	0.5	mg/kg	-	-	< 0.5	-
4,4'-DDE	0.5	mg/kg	-	-	< 0.5	-
4,4'-DDT	0.5	mg/kg	-	-	< 0.5	-
7,12-Dimethylbenz(a)anthracene	0.5	mg/kg	-	-	< 0.5	-
a-BHC	0.5	mg/kg	-	-	< 0.5	-
Acenaphthene	0.5	mg/kg	-	-	< 0.5	-
Acenaphthylene	0.5	mg/kg	-	-	< 0.5	-
Acetophenone	0.5	mg/kg	-	-	< 0.5	-
Aldrin	0.5	mg/kg	-	-	< 0.5	-
Aniline	0.5	mg/kg	-	-	< 0.5	-
Anthracene	0.5	mg/kg	-	-	< 0.5	-
b-BHC	0.5	mg/kg	-	-	< 0.5	-
Benz(a)anthracene	0.5	mg/kg	-	-	< 0.5	-
Benzo(a)pyrene	0.5	mg/kg	-	-	< 0.5	-
Benzo(b&j)fluoranthene ^{N07}	0.5	mg/kg	-	-	< 0.5	-
Benzo(g,h,i)perylene	0.5	mg/kg	-	-	< 0.5	-
Benzo(k)fluoranthene	0.5	mg/kg	-	-	< 0.5	-
Benzyl chloride	0.5	mg/kg	-	-	< 0.5	-
Bis(2-chloroethoxy)methane	0.5	mg/kg	-	-	< 0.5	-
Bis(2-chloroisopropyl)ether	0.5	mg/kg	-	-	< 0.5	-
Bis(2-ethylhexyl)phthalate	0.5	mg/kg	-	-	< 0.5	-
Butyl benzyl phthalate	0.5	mg/kg	-	-	< 0.5	-
Chrysene	0.5	mg/kg	-	-	< 0.5	-
d-BHC	0.5	mg/kg	-	-	< 0.5	-
Di-n-butyl phthalate	0.5	mg/kg	-	-	< 0.5	-
Di-n-octyl phthalate	0.5	mg/kg	-	-	< 0.5	-
Dibenz(a,h)anthracene	0.5	mg/kg	-	-	< 0.5	-
Dibenz(a,j)acridine	0.5	mg/kg	-	-	< 0.5	-
Dibenzofuran	0.5	mg/kg	-	-	< 0.5	-
Dieldrin	0.5	mg/kg	-	-	< 0.5	-
Diethyl phthalate	0.5	mg/kg	-	-	< 0.5	-
Dimethyl phthalate	0.5	mg/kg	-	-	< 0.5	-
Dimethylaminoazobenzene	0.5	mg/kg	-	-	< 0.5	-
Diphenylamine	0.5	mg/kg	-	-	< 0.5	-
Endosulfan I	0.5	mg/kg	-	-	< 0.5	-

Client Sample ID			BH12_1.3-1.4	BH12_3.4-3.5	BH13_0.3-0.4	BH13_0.5-0.6
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			M20-Fe38180	M20-Fe38181	M20-Fe38182	M20-Fe38183
Date Sampled			Feb 24, 2020	Feb 24, 2020	Feb 25, 2020	Feb 25, 2020
Test/Reference	LOR	Unit				
Semivolatile Organics						
Endosulfan II	0.5	mg/kg	-	-	< 0.5	-
Endosulfan sulphate	0.5	mg/kg	-	-	< 0.5	-
Endrin	0.5	mg/kg	-	-	< 0.5	-
Endrin aldehyde	0.5	mg/kg	-	-	< 0.5	-
Endrin ketone	0.5	mg/kg	-	-	< 0.5	-
Fluoranthene	0.5	mg/kg	-	-	< 0.5	-
Fluorene	0.5	mg/kg	-	-	< 0.5	-
g-BHC (Lindane)	0.5	mg/kg	-	-	< 0.5	-
Heptachlor	0.5	mg/kg	-	-	< 0.5	-
Heptachlor epoxide	0.5	mg/kg	-	-	< 0.5	-
Hexachlorobenzene	0.5	mg/kg	-	-	< 0.5	-
Hexachlorobutadiene	0.5	mg/kg	-	-	< 0.5	-
Hexachlorocyclopentadiene	0.5	mg/kg	-	-	< 0.5	-
Hexachloroethane	0.5	mg/kg	-	-	< 0.5	-
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	-	-	< 0.5	-
Methoxychlor	0.5	mg/kg	-	-	< 0.5	-
N-Nitrosodibutylamine	0.5	mg/kg	-	-	< 0.5	-
N-Nitrosodipropylamine	0.5	mg/kg	-	-	< 0.5	-
N-Nitrosopiperidine	0.5	mg/kg	-	-	< 0.5	-
Naphthalene	0.5	mg/kg	-	-	< 0.5	-
Nitrobenzene	0.5	mg/kg	-	-	< 0.5	-
Pentachlorobenzene	0.5	mg/kg	-	-	< 0.5	-
Pentachloronitrobenzene	0.5	mg/kg	-	-	< 0.5	-
Pentachlorophenol	1	mg/kg	-	-	< 1	-
Phenanthrene	0.5	mg/kg	-	-	< 0.5	-
Phenol	0.5	mg/kg	-	-	< 0.5	-
Pronamide	0.5	mg/kg	-	-	< 0.5	-
Pyrene	0.5	mg/kg	-	-	0.8	-
Trifluralin	0.5	mg/kg	-	-	< 0.5	-
Phenol-d6 (surr.)	1	%	-	-	57	-
Nitrobenzene-d5 (surr.)	1	%	-	-	92	-
2-Fluorobiphenyl (surr.)	1	%	-	-	77	-
2,4,6-Tribromophenol (surr.)	1	%	-	-	136	-
Chromium (hexavalent)	1	mg/kg	-	-	-	< 1
Chromium (trivalent)	5	mg/kg	-	-	-	23
Cyanide (total)	5	mg/kg	-	-	-	< 5
% Moisture	1	%	8.4	18	13	12
Heavy Metals						
Arsenic	2	mg/kg	-	-	-	4.5
Barium	10	mg/kg	-	-	-	75
Beryllium	2	mg/kg	-	-	-	< 2
Cadmium	0.4	mg/kg	-	-	-	< 0.4
Chromium	5	mg/kg	-	-	-	23
Cobalt	5	mg/kg	-	-	-	6.0
Copper	5	mg/kg	-	-	-	14
Iron	20	mg/kg	-	-	-	17000
Lead	5	mg/kg	-	-	-	24
Manganese	5	mg/kg	-	-	-	180

Client Sample ID			BH12_1.3-1.4	BH12_3.4-3.5	BH13_0.3-0.4	BH13_0.5-0.6
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			M20-Fe38180	M20-Fe38181	M20-Fe38182	M20-Fe38183
Date Sampled			Feb 24, 2020	Feb 24, 2020	Feb 25, 2020	Feb 25, 2020
Test/Reference	LOR	Unit				
Heavy Metals						
Mercury	0.1	mg/kg	-	-	-	< 0.1
Nickel	5	mg/kg	-	-	-	9.5
Silver	0.2	mg/kg	-	-	-	< 0.2
Zinc	5	mg/kg	-	-	-	76

Client Sample ID			BH14_0.2-0.3	BH14_1.1-1.2	BH14_1.9-2.0	BH14_3.4-3.5
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			M20-Fe38184	M20-Fe38185	M20-Fe38186	M20-Fe38187
Date Sampled			Feb 25, 2020	Feb 25, 2020	Feb 25, 2020	Feb 25, 2020
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	-	-	< 20	< 20
TRH C10-C14	20	mg/kg	-	-	< 20	< 20
TRH C15-C28	50	mg/kg	-	-	< 50	< 50
TRH C29-C36	50	mg/kg	-	-	< 50	< 50
TRH C10-C36 (Total)	50	mg/kg	-	-	< 50	< 50
BTEX						
Benzene	0.1	mg/kg	-	-	< 0.1	< 0.1
Toluene	0.1	mg/kg	-	-	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	-	-	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	-	-	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	-	-	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	-	-	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	-	-	80	77
Volatile Organics						
1.1-Dichloroethane	0.5	mg/kg	-	-	< 0.5	-
1.1-Dichloroethene	0.5	mg/kg	-	-	< 0.5	-
1.1.1-Trichloroethane	0.5	mg/kg	-	-	< 0.5	-
1.1.1.2-Tetrachloroethane	0.5	mg/kg	-	-	< 0.5	-
1.1.2-Trichloroethane	0.5	mg/kg	-	-	< 0.5	-
1.1.2.2-Tetrachloroethane	0.5	mg/kg	-	-	< 0.5	-
1.2-Dibromoethane	0.5	mg/kg	-	-	< 0.5	-
1.2-Dichlorobenzene	0.5	mg/kg	-	-	< 0.5	-
1.2-Dichloroethane	0.5	mg/kg	-	-	< 0.5	-
1.2-Dichloropropane	0.5	mg/kg	-	-	< 0.5	-
1.2.3-Trichloropropane	0.5	mg/kg	-	-	< 0.5	-
1.2.4-Trimethylbenzene	0.5	mg/kg	-	-	< 0.5	-
1.3-Dichlorobenzene	0.5	mg/kg	-	-	< 0.5	-
1.3-Dichloropropane	0.5	mg/kg	-	-	< 0.5	-
1.3.5-Trimethylbenzene	0.5	mg/kg	-	-	< 0.5	-
1.4-Dichlorobenzene	0.5	mg/kg	-	-	< 0.5	-
2-Butanone (MEK)	0.5	mg/kg	-	-	< 0.5	-
2-Propanone (Acetone)	0.5	mg/kg	-	-	< 0.5	-
4-Chlorotoluene	0.5	mg/kg	-	-	< 0.5	-
4-Methyl-2-pentanone (MIBK)	0.5	mg/kg	-	-	< 0.5	-
Allyl chloride	0.5	mg/kg	-	-	< 0.5	-
Benzene	0.1	mg/kg	-	-	< 0.1	-
Bromobenzene	0.5	mg/kg	-	-	< 0.5	-

Client Sample ID			BH14_0.2-0.3	BH14_1.1-1.2	BH14_1.9-2.0	BH14_3.4-3.5
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			M20-Fe38184	M20-Fe38185	M20-Fe38186	M20-Fe38187
Date Sampled			Feb 25, 2020	Feb 25, 2020	Feb 25, 2020	Feb 25, 2020
Test/Reference	LOR	Unit				
Volatile Organics						
Bromochloromethane	0.5	mg/kg	-	-	< 0.5	-
Bromodichloromethane	0.5	mg/kg	-	-	< 0.5	-
Bromoform	0.5	mg/kg	-	-	< 0.5	-
Bromomethane	0.5	mg/kg	-	-	< 0.5	-
Carbon disulfide	0.5	mg/kg	-	-	< 0.5	-
Carbon Tetrachloride	0.5	mg/kg	-	-	< 0.5	-
Chlorobenzene	0.5	mg/kg	-	-	< 0.5	-
Chloroethane	0.5	mg/kg	-	-	< 0.5	-
Chloroform	0.5	mg/kg	-	-	< 0.5	-
Chloromethane	0.5	mg/kg	-	-	< 0.5	-
cis-1.2-Dichloroethene	0.5	mg/kg	-	-	< 0.5	-
cis-1.3-Dichloropropene	0.5	mg/kg	-	-	< 0.5	-
Dibromochloromethane	0.5	mg/kg	-	-	< 0.5	-
Dibromomethane	0.5	mg/kg	-	-	< 0.5	-
Dichlorodifluoromethane	0.5	mg/kg	-	-	< 0.5	-
Ethylbenzene	0.1	mg/kg	-	-	< 0.1	-
Iodomethane	0.5	mg/kg	-	-	< 0.5	-
Isopropyl benzene (Cumene)	0.5	mg/kg	-	-	< 0.5	-
m&p-Xylenes	0.2	mg/kg	-	-	< 0.2	-
Methylene Chloride	0.5	mg/kg	-	-	< 0.5	-
o-Xylene	0.1	mg/kg	-	-	< 0.1	-
Styrene	0.5	mg/kg	-	-	< 0.5	-
Tetrachloroethene	0.5	mg/kg	-	-	< 0.5	-
Toluene	0.1	mg/kg	-	-	< 0.1	-
trans-1.2-Dichloroethene	0.5	mg/kg	-	-	< 0.5	-
trans-1.3-Dichloropropene	0.5	mg/kg	-	-	< 0.5	-
Trichloroethene	0.5	mg/kg	-	-	< 0.5	-
Trichlorofluoromethane	0.5	mg/kg	-	-	< 0.5	-
Vinyl chloride	0.5	mg/kg	-	-	< 0.5	-
Xylenes - Total	0.3	mg/kg	-	-	< 0.3	-
Total MAH*	0.5	mg/kg	-	-	< 0.5	-
Vic EPA IWRG 621 CHC (Total)*	0.5	mg/kg	-	-	< 0.5	-
Vic EPA IWRG 621 Other CHC (Total)*	0.5	mg/kg	-	-	< 0.5	-
4-Bromofluorobenzene (surr.)	1	%	-	-	80	-
Toluene-d8 (surr.)	1	%	-	-	72	-
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene ^{N02}	0.5	mg/kg	-	-	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	-	-	< 20	< 20
TRH C6-C10 less BTEX (F1) ^{N04}	20	mg/kg	-	-	< 20	< 20
TRH >C10-C16	50	mg/kg	-	-	< 50	< 50
TRH >C10-C16 less Naphthalene (F2) ^{N01}	50	mg/kg	-	-	< 50	< 50
TRH >C16-C34	100	mg/kg	-	-	< 100	< 100
TRH >C34-C40	100	mg/kg	-	-	< 100	< 100
TRH >C10-C40 (total)*	100	mg/kg	-	-	< 100	< 100
Semivolatile Organics						
2-Methyl-4.6-dinitrophenol	5	mg/kg	-	-	< 5	-
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	-	-	< 0.5	-
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	-	-	0.6	-
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	-	-	1.2	-

Client Sample ID			BH14_0.2-0.3	BH14_1.1-1.2	BH14_1.9-2.0	BH14_3.4-3.5
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			M20-Fe38184	M20-Fe38185	M20-Fe38186	M20-Fe38187
Date Sampled			Feb 25, 2020	Feb 25, 2020	Feb 25, 2020	Feb 25, 2020
Test/Reference	LOR	Unit				
Semivolatile Organics						
1-Chloronaphthalene	0.5	mg/kg	-	-	< 0.5	-
1-Naphthylamine	0.5	mg/kg	-	-	< 0.5	-
1,2-Dichlorobenzene	0.5	mg/kg	-	-	< 0.5	-
1,2,3-Trichlorobenzene	0.5	mg/kg	-	-	< 0.5	-
1,2,3,4-Tetrachlorobenzene	0.5	mg/kg	-	-	< 0.5	-
1,2,3,5-Tetrachlorobenzene	0.5	mg/kg	-	-	< 0.5	-
1,2,4-Trichlorobenzene	0.5	mg/kg	-	-	< 0.5	-
1,2,4,5-Tetrachlorobenzene	0.5	mg/kg	-	-	< 0.5	-
1,3-Dichlorobenzene	0.5	mg/kg	-	-	< 0.5	-
1,3,5-Trichlorobenzene	0.5	mg/kg	-	-	< 0.5	-
1,4-Dichlorobenzene	0.5	mg/kg	-	-	< 0.5	-
2-Chloronaphthalene	0.5	mg/kg	-	-	< 0.5	-
2-Chlorophenol	0.5	mg/kg	-	-	< 0.5	-
2-Methylnaphthalene	0.5	mg/kg	-	-	< 0.5	-
2-Methylphenol (o-Cresol)	0.2	mg/kg	-	-	< 0.2	-
2-Naphthylamine	0.5	mg/kg	-	-	< 0.5	-
2-Nitroaniline	0.5	mg/kg	-	-	< 0.5	-
2-Nitrophenol	1.0	mg/kg	-	-	< 1	-
2-Picoline	0.5	mg/kg	-	-	< 0.5	-
2,3,4,6-Tetrachlorophenol	5	mg/kg	-	-	< 5	-
2,4-Dichlorophenol	0.5	mg/kg	-	-	< 0.5	-
2,4-Dimethylphenol	0.5	mg/kg	-	-	< 0.5	-
2,4-Dinitrophenol	5	mg/kg	-	-	< 5	-
2,4-Dinitrotoluene	0.5	mg/kg	-	-	< 0.5	-
2,4,5-Trichlorophenol	1	mg/kg	-	-	< 1	-
2,4,6-Trichlorophenol	1	mg/kg	-	-	< 1	-
2,6-Dichlorophenol	0.5	mg/kg	-	-	< 0.5	-
2,6-Dinitrotoluene	0.5	mg/kg	-	-	< 0.5	-
3&4-Methylphenol (m&p-Cresol)	0.4	mg/kg	-	-	< 0.4	-
3-Methylcholanthrene	0.5	mg/kg	-	-	< 0.5	-
3,3'-Dichlorobenzidine	0.5	mg/kg	-	-	< 0.5	-
4-Aminobiphenyl	0.5	mg/kg	-	-	< 0.5	-
4-Bromophenyl phenyl ether	0.5	mg/kg	-	-	< 0.5	-
4-Chloro-3-methylphenol	1	mg/kg	-	-	< 1	-
4-Chlorophenyl phenyl ether	0.5	mg/kg	-	-	< 0.5	-
4-Nitrophenol	5	mg/kg	-	-	< 5	-
4,4'-DDD	0.5	mg/kg	-	-	< 0.5	-
4,4'-DDE	0.5	mg/kg	-	-	< 0.5	-
4,4'-DDT	0.5	mg/kg	-	-	< 0.5	-
7,12-Dimethylbenz(a)anthracene	0.5	mg/kg	-	-	< 0.5	-
a-BHC	0.5	mg/kg	-	-	< 0.5	-
Acenaphthene	0.5	mg/kg	-	-	< 0.5	-
Acenaphthylene	0.5	mg/kg	-	-	< 0.5	-
Acetophenone	0.5	mg/kg	-	-	< 0.5	-
Aldrin	0.5	mg/kg	-	-	< 0.5	-
Aniline	0.5	mg/kg	-	-	< 0.5	-
Anthracene	0.5	mg/kg	-	-	< 0.5	-
b-BHC	0.5	mg/kg	-	-	< 0.5	-
Benz(a)anthracene	0.5	mg/kg	-	-	< 0.5	-

Client Sample ID			BH14_0.2-0.3	BH14_1.1-1.2	BH14_1.9-2.0	BH14_3.4-3.5
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			M20-Fe38184	M20-Fe38185	M20-Fe38186	M20-Fe38187
Date Sampled			Feb 25, 2020	Feb 25, 2020	Feb 25, 2020	Feb 25, 2020
Test/Reference	LOR	Unit				
Semivolatile Organics						
Benzo(a)pyrene	0.5	mg/kg	-	-	< 0.5	-
Benzo(b&j)fluoranthene ^{N07}	0.5	mg/kg	-	-	< 0.5	-
Benzo(g,h,i)perylene	0.5	mg/kg	-	-	< 0.5	-
Benzo(k)fluoranthene	0.5	mg/kg	-	-	< 0.5	-
Benzyl chloride	0.5	mg/kg	-	-	< 0.5	-
Bis(2-chloroethoxy)methane	0.5	mg/kg	-	-	< 0.5	-
Bis(2-chloroisopropyl)ether	0.5	mg/kg	-	-	< 0.5	-
Bis(2-ethylhexyl)phthalate	0.5	mg/kg	-	-	< 0.5	-
Butyl benzyl phthalate	0.5	mg/kg	-	-	< 0.5	-
Chrysene	0.5	mg/kg	-	-	< 0.5	-
d-BHC	0.5	mg/kg	-	-	< 0.5	-
Di-n-butyl phthalate	0.5	mg/kg	-	-	< 0.5	-
Di-n-octyl phthalate	0.5	mg/kg	-	-	< 0.5	-
Dibenz(a,h)anthracene	0.5	mg/kg	-	-	< 0.5	-
Dibenz(a,j)acridine	0.5	mg/kg	-	-	< 0.5	-
Dibenzofuran	0.5	mg/kg	-	-	< 0.5	-
Dieldrin	0.5	mg/kg	-	-	< 0.5	-
Diethyl phthalate	0.5	mg/kg	-	-	< 0.5	-
Dimethyl phthalate	0.5	mg/kg	-	-	< 0.5	-
Dimethylaminoazobenzene	0.5	mg/kg	-	-	< 0.5	-
Diphenylamine	0.5	mg/kg	-	-	< 0.5	-
Endosulfan I	0.5	mg/kg	-	-	< 0.5	-
Endosulfan II	0.5	mg/kg	-	-	< 0.5	-
Endosulfan sulphate	0.5	mg/kg	-	-	< 0.5	-
Endrin	0.5	mg/kg	-	-	< 0.5	-
Endrin aldehyde	0.5	mg/kg	-	-	< 0.5	-
Endrin ketone	0.5	mg/kg	-	-	< 0.5	-
Fluoranthene	0.5	mg/kg	-	-	< 0.5	-
Fluorene	0.5	mg/kg	-	-	< 0.5	-
g-BHC (Lindane)	0.5	mg/kg	-	-	< 0.5	-
Heptachlor	0.5	mg/kg	-	-	< 0.5	-
Heptachlor epoxide	0.5	mg/kg	-	-	< 0.5	-
Hexachlorobenzene	0.5	mg/kg	-	-	< 0.5	-
Hexachlorobutadiene	0.5	mg/kg	-	-	< 0.5	-
Hexachlorocyclopentadiene	0.5	mg/kg	-	-	< 0.5	-
Hexachloroethane	0.5	mg/kg	-	-	< 0.5	-
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	-	-	< 0.5	-
Methoxychlor	0.5	mg/kg	-	-	< 0.5	-
N-Nitrosodibutylamine	0.5	mg/kg	-	-	< 0.5	-
N-Nitrosodipropylamine	0.5	mg/kg	-	-	< 0.5	-
N-Nitrosopiperidine	0.5	mg/kg	-	-	< 0.5	-
Naphthalene	0.5	mg/kg	-	-	< 0.5	-
Nitrobenzene	0.5	mg/kg	-	-	< 0.5	-
Pentachlorobenzene	0.5	mg/kg	-	-	< 0.5	-
Pentachloronitrobenzene	0.5	mg/kg	-	-	< 0.5	-
Pentachlorophenol	1	mg/kg	-	-	< 1	-
Phenanthrene	0.5	mg/kg	-	-	< 0.5	-
Phenol	0.5	mg/kg	-	-	< 0.5	-
Pronamide	0.5	mg/kg	-	-	< 0.5	-

Client Sample ID			BH14_0.2-0.3	BH14_1.1-1.2	BH14_1.9-2.0	BH14_3.4-3.5
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			M20-Fe38184	M20-Fe38185	M20-Fe38186	M20-Fe38187
Date Sampled			Feb 25, 2020	Feb 25, 2020	Feb 25, 2020	Feb 25, 2020
Test/Reference	LOR	Unit				
Semivolatile Organics						
Pyrene	0.5	mg/kg	-	-	< 0.5	-
Trifluralin	0.5	mg/kg	-	-	< 0.5	-
Phenol-d6 (surr.)	1	%	-	-	28	-
Nitrobenzene-d5 (surr.)	1	%	-	-	118	-
2-Fluorobiphenyl (surr.)	1	%	-	-	55	-
2,4,6-Tribromophenol (surr.)	1	%	-	-	67	-
% Clay	1	%	-	-	-	10
Conductivity (1:5 aqueous extract at 25°C as rec.)	10	uS/cm	-	-	-	410
pH (units)(1:5 soil:CaCl2 extract at 25°C as rec.)	0.1	pH Units	-	-	-	7.7
Total Organic Carbon	0.1	%	-	-	-	< 0.1
% Moisture	1	%	2.2	8.3	20	12
Heavy Metals						
Arsenic	2	mg/kg	< 2	3.3	5.4	-
Beryllium	2	mg/kg	< 2	< 2	< 2	-
Boron	10	mg/kg	< 10	13	49	-
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	-
Chromium	5	mg/kg	16	24	60	-
Cobalt	5	mg/kg	< 5	7.7	15	-
Copper	5	mg/kg	< 5	13	29	-
Iron	20	mg/kg	-	-	-	25000
Lead	5	mg/kg	14	8.1	16	-
Manganese	5	mg/kg	160	190	420	-
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	-
Nickel	5	mg/kg	< 5	12	26	-
Selenium	2	mg/kg	< 2	< 2	< 2	-
Zinc	5	mg/kg	17	23	58	-
Heavy Metals						
Iron (%)	0.01	%	-	-	-	2.5
Cation Exchange Capacity						
Cation Exchange Capacity	0.05	meq/100g	-	-	-	10

Client Sample ID			BH15_0.2-0.3	BH15_0.5-0.6	BH15_0.6-0.7	BH16_0.1-0.2
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			M20-Fe38188	M20-Fe38189	M20-Fe38190	M20-Fe38191
Date Sampled			Feb 25, 2020	Feb 25, 2020	Feb 25, 2020	Feb 25, 2020
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	-	< 20	-	-
TRH C10-C14	20	mg/kg	-	< 20	-	-
TRH C15-C28	50	mg/kg	-	51	-	-
TRH C29-C36	50	mg/kg	-	63	-	-
TRH C10-C36 (Total)	50	mg/kg	-	114	-	-

Client Sample ID			BH15_0.2-0.3	BH15_0.5-0.6	BH15_0.6-0.7	BH16_0.1-0.2
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			M20-Fe38188	M20-Fe38189	M20-Fe38190	M20-Fe38191
Date Sampled			Feb 25, 2020	Feb 25, 2020	Feb 25, 2020	Feb 25, 2020
Test/Reference	LOR	Unit				
BTEX						
Benzene	0.1	mg/kg	-	< 0.1	-	-
Toluene	0.1	mg/kg	-	< 0.1	-	-
Ethylbenzene	0.1	mg/kg	-	< 0.1	-	-
m&p-Xylenes	0.2	mg/kg	-	< 0.2	-	-
o-Xylene	0.1	mg/kg	-	< 0.1	-	-
Xylenes - Total	0.3	mg/kg	-	< 0.3	-	-
4-Bromofluorobenzene (surr.)	1	%	-	75	-	-
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene ^{N02}	0.5	mg/kg	-	< 0.5	-	-
TRH C6-C10	20	mg/kg	-	< 20	-	-
TRH C6-C10 less BTEX (F1) ^{N04}	20	mg/kg	-	< 20	-	-
TRH >C10-C16	50	mg/kg	-	< 50	-	-
TRH >C10-C16 less Naphthalene (F2) ^{N01}	50	mg/kg	-	< 50	-	-
TRH >C16-C34	100	mg/kg	-	< 100	-	-
TRH >C34-C40	100	mg/kg	-	< 100	-	-
TRH >C10-C40 (total)*	100	mg/kg	-	< 100	-	-
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	-	< 0.5	-	-
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	-	0.6	-	-
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	-	1.2	-	-
Acenaphthene	0.5	mg/kg	-	< 0.5	-	-
Acenaphthylene	0.5	mg/kg	-	< 0.5	-	-
Anthracene	0.5	mg/kg	-	< 0.5	-	-
Benz(a)anthracene	0.5	mg/kg	-	< 0.5	-	-
Benzo(a)pyrene	0.5	mg/kg	-	< 0.5	-	-
Benzo(b&j)fluoranthene ^{N07}	0.5	mg/kg	-	< 0.5	-	-
Benzo(g,h,i)perylene	0.5	mg/kg	-	< 0.5	-	-
Benzo(k)fluoranthene	0.5	mg/kg	-	< 0.5	-	-
Chrysene	0.5	mg/kg	-	< 0.5	-	-
Dibenz(a,h)anthracene	0.5	mg/kg	-	< 0.5	-	-
Fluoranthene	0.5	mg/kg	-	< 0.5	-	-
Fluorene	0.5	mg/kg	-	< 0.5	-	-
Indeno(1,2,3-cd)pyrene	0.5	mg/kg	-	< 0.5	-	-
Naphthalene	0.5	mg/kg	-	< 0.5	-	-
Phenanthrene	0.5	mg/kg	-	< 0.5	-	-
Pyrene	0.5	mg/kg	-	< 0.5	-	-
Total PAH*	0.5	mg/kg	-	< 0.5	-	-
2-Fluorobiphenyl (surr.)	1	%	-	84	-	-
p-Terphenyl-d14 (surr.)	1	%	-	115	-	-
% Moisture	1	%	11	6.7	6.7	4.3
Heavy Metals						
Arsenic	2	mg/kg	3.9	-	2.4	2.6
Beryllium	2	mg/kg	< 2	-	< 2	< 2
Boron	10	mg/kg	27	-	< 10	< 10
Cadmium	0.4	mg/kg	< 0.4	-	< 0.4	< 0.4
Chromium	5	mg/kg	30	-	20	5.5
Cobalt	5	mg/kg	7.2	-	< 5	< 5
Copper	5	mg/kg	16	-	9.0	6.7

Client Sample ID			BH15_0.2-0.3	BH15_0.5-0.6	BH15_0.6-0.7	BH16_0.1-0.2
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			M20-Fe38188	M20-Fe38189	M20-Fe38190	M20-Fe38191
Date Sampled			Feb 25, 2020	Feb 25, 2020	Feb 25, 2020	Feb 25, 2020
Test/Reference	LOR	Unit				
Heavy Metals						
Lead	5	mg/kg	35	-	13	6.1
Manganese	5	mg/kg	160	-	160	200
Mercury	0.1	mg/kg	< 0.1	-	< 0.1	< 0.1
Nickel	5	mg/kg	13	-	6.7	< 5
Selenium	2	mg/kg	< 2	-	< 2	< 2
Zinc	5	mg/kg	110	-	26	35

Client Sample ID			BH16_0.5-0.6	BH16_1.0-1.1	BH17_0.3-0.4	BH17_1.9-2.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			M20-Fe38192	M20-Fe38193	M20-Fe38194	M20-Fe38195
Date Sampled			Feb 25, 2020	Feb 25, 2020	Feb 25, 2020	Feb 25, 2020
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	-	-	< 20	-
TRH C10-C14	20	mg/kg	-	-	< 20	-
TRH C15-C28	50	mg/kg	-	-	< 50	-
TRH C29-C36	50	mg/kg	-	-	< 50	-
TRH C10-C36 (Total)	50	mg/kg	-	-	< 50	-
BTEX						
Benzene	0.1	mg/kg	-	-	< 0.1	-
Toluene	0.1	mg/kg	-	-	< 0.1	-
Ethylbenzene	0.1	mg/kg	-	-	< 0.1	-
m&p-Xylenes	0.2	mg/kg	-	-	< 0.2	-
o-Xylene	0.1	mg/kg	-	-	< 0.1	-
Xylenes - Total	0.3	mg/kg	-	-	< 0.3	-
4-Bromofluorobenzene (surr.)	1	%	-	-	87	-
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene ^{N02}	0.5	mg/kg	-	-	< 0.5	-
TRH C6-C10	20	mg/kg	-	-	< 20	-
TRH C6-C10 less BTEX (F1) ^{N04}	20	mg/kg	-	-	< 20	-
TRH >C10-C16	50	mg/kg	-	-	< 50	-
TRH >C10-C16 less Naphthalene (F2) ^{N01}	50	mg/kg	-	-	< 50	-
TRH >C16-C34	100	mg/kg	-	-	< 100	-
TRH >C34-C40	100	mg/kg	-	-	< 100	-
TRH >C10-C40 (total)*	100	mg/kg	-	-	< 100	-
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	-	-	-
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	-	-	-
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	-	-	-
Acenaphthene	0.5	mg/kg	< 0.5	-	-	-
Acenaphthylene	0.5	mg/kg	< 0.5	-	-	-
Anthracene	0.5	mg/kg	< 0.5	-	-	-
Benz(a)anthracene	0.5	mg/kg	< 0.5	-	-	-
Benzo(a)pyrene	0.5	mg/kg	< 0.5	-	-	-
Benzo(b&j)fluoranthene ^{N07}	0.5	mg/kg	< 0.5	-	-	-
Benzo(g,h,i)perylene	0.5	mg/kg	< 0.5	-	-	-
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	-	-	-
Chrysene	0.5	mg/kg	< 0.5	-	-	-

Client Sample ID			BH16_0.5-0.6	BH16_1.0-1.1	BH17_0.3-0.4	BH17_1.9-2.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			M20-Fe38192	M20-Fe38193	M20-Fe38194	M20-Fe38195
Date Sampled			Feb 25, 2020	Feb 25, 2020	Feb 25, 2020	Feb 25, 2020
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Dibenz(a,h)anthracene	0.5	mg/kg	< 0.5	-	-	-
Fluoranthene	0.5	mg/kg	< 0.5	-	-	-
Fluorene	0.5	mg/kg	< 0.5	-	-	-
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	-	-	-
Naphthalene	0.5	mg/kg	< 0.5	-	-	-
Phenanthrene	0.5	mg/kg	< 0.5	-	-	-
Pyrene	0.5	mg/kg	< 0.5	-	-	-
Total PAH*	0.5	mg/kg	< 0.5	-	-	-
2-Fluorobiphenyl (surr.)	1	%	67	-	-	-
p-Terphenyl-d14 (surr.)	1	%	82	-	-	-
% Moisture	1	%	5.0	11	3.8	7.0
Heavy Metals						
Arsenic	2	mg/kg	120	6.6	160	2.8
Beryllium	2	mg/kg	< 2	< 2	< 2	< 2
Boron	10	mg/kg	< 10	22	< 10	35
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	16	42	20	23
Cobalt	5	mg/kg	5.3	10	5.5	6.7
Copper	5	mg/kg	9.7	26	15	11
Lead	5	mg/kg	24	13	27	7.2
Manganese	5	mg/kg	250	220	200	150
Mercury	0.1	mg/kg	< 0.1	0.3	0.1	< 0.1
Nickel	5	mg/kg	8.0	20	8.6	9.8
Selenium	2	mg/kg	< 2	< 2	< 2	< 2
Zinc	5	mg/kg	19	33	44	20

Client Sample ID			QC01	QC03	QC05	QC07
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			M20-Fe38196	M20-Fe38197	M20-Fe38198	M20-Fe38199
Date Sampled			Feb 24, 2020	Feb 24, 2020	Feb 24, 2020	Feb 25, 2020
Test/Reference	LOR	Unit				
% Moisture	1	%	12	19	19	9.1
Heavy Metals						
Arsenic	2	mg/kg	5.3	4.8	5.3	5.0
Beryllium	2	mg/kg	< 2	< 2	< 2	< 2
Boron	10	mg/kg	25	46	53	24
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	33	59	57	33
Cobalt	5	mg/kg	8.0	17	16	7.7
Copper	5	mg/kg	19	30	29	19
Lead	5	mg/kg	12	19	17	11
Manganese	5	mg/kg	160	550	470	140
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	18	28	26	17
Selenium	2	mg/kg	< 2	< 2	< 2	< 2
Zinc	5	mg/kg	32	58	55	26

Client Sample ID			QC08
Sample Matrix			Soil
Eurofins Sample No.			M20-Fe38200
Date Sampled			Feb 25, 2020
Test/Reference	LOR	Unit	
% Moisture	1	%	4.8
Heavy Metals			
Arsenic	2	mg/kg	170
Beryllium	2	mg/kg	< 2
Boron	10	mg/kg	13
Cadmium	0.4	mg/kg	< 0.4
Chromium	5	mg/kg	22
Cobalt	5	mg/kg	5.9
Copper	5	mg/kg	14
Lead	5	mg/kg	18
Manganese	5	mg/kg	200
Mercury	0.1	mg/kg	< 0.1
Nickel	5	mg/kg	9.3
Selenium	2	mg/kg	< 2
Zinc	5	mg/kg	34

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.

A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results.

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Total Recoverable Hydrocarbons - 1999 NEPM Fractions	Melbourne	Feb 28, 2020	14 Days
- Method: LTM-ORG-2010 TRH C6-C40			
BTEX	Melbourne	Feb 28, 2020	14 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	Feb 28, 2020	14 Days
- Method: LTM-ORG-2010 TRH C6-C40			
SA Waste Screen			
Volatile Organics	Melbourne	Feb 28, 2020	7 Days
- Method: USEPA 8260 - MGT 350A Volatile Organics by GCMS			
Volatile Organics	Melbourne	Feb 28, 2020	7 Days
- Method: LTM-ORG-2150 VOCs in Soils Liquid and other Aqueous Matrices (USEPA 8260)			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	Feb 28, 2020	
- Method: LTM-ORG-2010 TRH C6-C40			
Polycyclic Aromatic Hydrocarbons	Melbourne	Feb 28, 2020	14 Days
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
Organochlorine Pesticides	Melbourne	Feb 28, 2020	14 Days
- Method: LTM-ORG-2220 OCP & PCB in Soil and Water (USEPA 8270)			
Polychlorinated Biphenyls	Melbourne	Feb 28, 2020	28 Days
- Method: LTM-ORG-2220 OCP & PCB in Soil and Water (USEPA 8082)			
Phenols (Halogenated)	Melbourne	Feb 28, 2020	14 Days
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
Phenols (non-Halogenated)	Melbourne	Feb 28, 2020	14 Days
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
Chromium (hexavalent)	Melbourne	Feb 28, 2020	28 Days
- Method: APHA 3500-Cr Hexavalent Chromium- (Extraction:- USEPA3060)			
Cyanide (total)	Melbourne	Feb 28, 2020	14 Days
- Method: LTM-INO-4020 Total Free WAD Cyanide by CFA			
SA Waste Metals : Metals M14SA	Melbourne	Feb 28, 2020	28 Days
- Method: LTM-MET-3030 by ICP-OES (hydride ICP-OES for Mercury)			
Organophosphorus Pesticides	Melbourne	Feb 28, 2020	14 Days
- Method: LTM-ORG-2200 Organophosphorus Pesticides by GC-MS (USEPA 8081)			
Semivolatile Organics	Melbourne	Feb 28, 2020	14 Days
- Method: LTM-ORG-2190 SVOC in Water & Soil by GC-MS			
NEPM 2013 Metals without Cr6+ (As, Be, B, Cd, Co, Cr, Cu, Hg, Pb, Ni, Mn, Se, Zn)	Melbourne	Feb 28, 2020	180 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
NEPM Screen Table 1(A) HIL's for Soil Contaminants - Basic Suite - Excluding Methyl Mercury/PBDE			
Triazines	Melbourne	Feb 28, 2020	14 Days
- Method: LTM-ORG-2210 Triazine Herbicides in Soil and Water by GC-MS/MS			
NEPM 2013 Acid Herbicides	Melbourne	Feb 28, 2020	14 Days
- Method: MGT 530			
NEPM 2013 Organochlorine Pesticides	Melbourne	Feb 28, 2020	14 Days
- Method: USEPA 8081 Organochlorine Pesticides			
NEPM 2013 Phenols	Melbourne	Feb 28, 2020	14 Days
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
Cyanide (free)	Melbourne	Feb 28, 2020	14 Days
- Method: LTM-INO-4020 Total Free WAD Cyanide by CFA			
NEPM 2013 Metals : Metals M12	Melbourne	Feb 28, 2020	28 Days
- Method: LTM-MET-3030 by ICP-OES (hydride ICP-OES for Mercury)			
Heavy Metals	Melbourne	Feb 28, 2020	180 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			

Description	Testing Site	Extracted	Holding Time
NEPM Screen for Soil Classification			
% Clay - Method: LTM-GEN-7040	Brisbane	Mar 05, 2020	0 Days
Conductivity (1:5 aqueous extract at 25°C as rec.) - Method: LTM-INO-4030 Conductivity	Melbourne	Feb 28, 2020	7 Days
pH (units)(1:5 soil:CaCl2 extract at 25°C as rec.) - Method: LTM-GEN-7090 pH in soil by ISE	Melbourne	Feb 28, 2020	7 Days
Total Organic Carbon - Method: LTM-INO-4060 Total Organic Carbon in water and soil	Melbourne	Mar 03, 2020	28 Days
Cation Exchange Capacity - Method: LTM-MET-3060 Cation Exchange Capacity by bases & Exchangeable Sodium Percentage	Melbourne	Mar 02, 2020	180 Days
% Moisture - Method: LTM-GEN-7080 Moisture	Melbourne	Feb 27, 2020	14 Days

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Fax:

Received: Feb 27, 2020 12:00 AM
Due: Mar 5, 2020
Priority: 5 Day
Contact Name: - ALL INVOICES

Project Name: Trident Torrens Road
Project ID: JC0482

Eurofins Analytical Services Manager : Michael Cassidy

Sample Detail						Chromium (hexavalent)	HOLD	Polycyclic Aromatic Hydrocarbons	Organochlorine Pesticides	Organophosphorus Pesticides	Phenols (WRC 621)	BTEX and Naphthalene	Volatile Organics	Moisture Set	NEPM Screen for Soil Classification	NEPM Screen Table 1(A) HIL's for Soil Contaminants - Basic Suite - Excluding	Semi-volatile Organics	Total Recoverable Hydrocarbons	SA Waste Screen	BTEXN and Volatile TRH	NEPM 2013 Metals without Cr6+ (As, Be, B, Cd, Co, Cr, Cu, Hg, Pb, Ni, Mn, Se, Zn)	NEPM 2013 Metals without Cr6+ (As, Be, B, Cd, Co, Cr, Cu, Hg, Pb, Ni, Mn, Se, Zn)	Eurofins mg/L Suite B19E: Total N, TKN, NOx, NO2, NO3, NH3, Total P, Reactive P	Eurofins mg/L Suite B16A: SO4, CH4, NO3, Fe2+	NEPM 2013 Filtered Metals without Cr6+ (As, Be, B, Cd, Co, Cr, Cu, Hg, Pb, Ni, Mn, Se, Zn)
Melbourne Laboratory - NATA Site # 1254 & 14271						X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217																									
Brisbane Laboratory - NATA Site # 20794															X										
Perth Laboratory - NATA Site # 23736																									
External Laboratory																									
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID																				
1	BH01_0.1-0.2	Feb 24, 2020		Soil	M20-Fe38152									X							X				
2	BH01_0.5-0.6	Feb 24, 2020		Soil	M20-Fe38153									X	X						X				
3	BH01_0.8-0.9	Feb 24, 2020		Soil	M20-Fe38154							X	X	X			X	X			X				
4	BH02_0.3-0.4	Feb 24, 2020		Soil	M20-Fe38155									X							X				
5	BH02_1.7-1.8	Feb 24, 2020		Soil	M20-Fe38156									X							X				
6	BH03_0.3-0.4	Feb 24, 2020		Soil	M20-Fe38157									X							X				
7	BH03_0.9-1.0	Feb 24, 2020		Soil	M20-Fe38158									X							X				
8	BH04_0.0-0.1	Feb 24, 2020		Soil	M20-Fe38159									X	X										
9	BH04_0.5-0.6	Feb 24, 2020		Soil	M20-Fe38160				X	X		X	X	X			X	X			X				
10	BH05_0.1-0.2	Feb 24, 2020		Soil	M20-Fe38161				X	X				X											

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Melbourne Laboratory - NATA Site # 1254 & 14271						X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217																									
Brisbane Laboratory - NATA Site # 20794															X										
Perth Laboratory - NATA Site # 23736																									
11	BH05_0.3-0.4	Feb 24, 2020		Soil	M20-Fe38162								X	X								X			
12	BH05_1.5-1.6	Feb 24, 2020		Soil	M20-Fe38163									X								X			
13	BH06_0.1-0.2	Feb 24, 2020		Soil	M20-Fe38164									X								X			
14	BH06_1.8-1.9	Feb 24, 2020		Soil	M20-Fe38165									X								X			
15	BH07_0.1-0.2	Feb 24, 2020		Soil	M20-Fe38166									X								X			
16	BH07_0.8-0.9	Feb 24, 2020		Soil	M20-Fe38167									X								X			
17	BH08_0.3-0.4	Feb 24, 2020		Soil	M20-Fe38168						X	X		X				X				X			
18	BH08_1.2-1.3	Feb 24, 2020		Soil	M20-Fe38169									X								X			
19	BH09_0.1-0.2	Feb 24, 2020		Soil	M20-Fe38170									X								X			
20	BH09_0.5-0.6	Feb 24, 2020		Soil	M20-Fe38171									X								X			
21	BH10_0.1-0.2	Feb 24, 2020		Soil	M20-Fe38172			X	X	X				X											
22	BH10_0.4-0.5	Feb 24, 2020		Soil	M20-Fe38173									X								X			
23	BH10_0.8-0.9	Feb 24, 2020		Soil	M20-Fe38174			X						X											

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Melbourne Laboratory - NATA Site # 1254 & 14271						X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217																								
Brisbane Laboratory - NATA Site # 20794															X									
Perth Laboratory - NATA Site # 23736																								
24	BH10_1.3-1.4	Feb 24, 2020		Soil	M20-Fe38175									X								X		
25	BH11_0.3-0.4	Feb 24, 2020		Soil	M20-Fe38176				X	X				X								X		
26	BH11_1.0-1.1	Feb 24, 2020		Soil	M20-Fe38177			X				X		X				X			X			
27	BH12_0.3-0.4	Feb 24, 2020		Soil	M20-Fe38178			X				X		X				X			X			
28	BH12_0.7-0.8	Feb 24, 2020		Soil	M20-Fe38179									X							X			
29	BH12_1.3-1.4	Feb 24, 2020		Soil	M20-Fe38180							X		X				X						
30	BH12_3.4-3.5	Feb 24, 2020		Soil	M20-Fe38181							X		X				X						
31	BH13_0.3-0.4	Feb 25, 2020		Soil	M20-Fe38182			X			X	X	X	X			X	X						
32	BH13_0.5-0.6	Feb 25, 2020		Soil	M20-Fe38183									X					X					
33	BH14_0.2-0.3	Feb 25, 2020		Soil	M20-Fe38184									X							X			
34	BH14_1.1-1.2	Feb 25, 2020		Soil	M20-Fe38185									X							X			
35	BH14_1.9-2.0	Feb 25, 2020		Soil	M20-Fe38186							X	X	X			X	X			X			
36	BH14_3.4-3.5	Feb 25, 2020		Soil	M20-Fe38187							X		X		X		X						

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Melbourne Laboratory - NATA Site # 1254 & 14271						X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217																								
Brisbane Laboratory - NATA Site # 20794															X									
Perth Laboratory - NATA Site # 23736																								
37	BH15_0.2-0.3	Feb 25, 2020		Soil	M20-Fe38188									X								X		
38	BH15_0.5-0.6	Feb 25, 2020		Soil	M20-Fe38189			X				X		X				X						
39	BH15_0.6-0.7	Feb 25, 2020		Soil	M20-Fe38190									X							X			
40	BH16_0.1-0.2	Feb 25, 2020		Soil	M20-Fe38191									X							X			
41	BH16_0.5-0.6	Feb 25, 2020		Soil	M20-Fe38192			X						X							X			
42	BH16_1.0-1.1	Feb 25, 2020		Soil	M20-Fe38193									X							X			
43	BH17_0.3-0.4	Feb 25, 2020		Soil	M20-Fe38194							X		X				X			X			
44	BH17_1.9-2.0	Feb 25, 2020		Soil	M20-Fe38195									X							X			
45	QC01	Feb 24, 2020		Soil	M20-Fe38196									X							X			
46	QC03	Feb 24, 2020		Soil	M20-Fe38197									X							X			
47	QC05	Feb 24, 2020		Soil	M20-Fe38198									X							X			
48	QC07	Feb 25, 2020		Soil	M20-Fe38199									X							X			
49	QC08	Feb 25, 2020		Soil	M20-Fe38200									X							X			

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Melbourne Laboratory - NATA Site # 1254 & 14271						X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217																							
Brisbane Laboratory - NATA Site # 20794															X								
Perth Laboratory - NATA Site # 23736																							
50	MW01	Feb 24, 2020		Water	M20-Fe38201	X		X				X	X			X	X				X	X	X
51	MW02	Feb 24, 2020		Water	M20-Fe38202	X		X				X	X			X	X				X	X	X
52	RN01	Feb 24, 2020		Water	M20-Fe38203			X				X					X						X
53	TB01	Feb 24, 2020		Water	M20-Fe38204														X				
54	QC01	Feb 24, 2020		Water	M20-Fe38205	X		X				X					X						X
55	BH01_1.4-1.5	Feb 24, 2020		Soil	M20-Fe38206		X																
56	BH02_0.7-0.8	Feb 24, 2020		Soil	M20-Fe38207		X																
57	BH02_1.0-1.1	Feb 24, 2020		Soil	M20-Fe38208		X																
58	BH03_0.6-0.7	Feb 24, 2020		Soil	M20-Fe38209		X																
59	BH03_1.3-1.4	Feb 24, 2020		Soil	M20-Fe38210		X																
60	BH04_1.0-1.1	Feb 24, 2020		Soil	M20-Fe38211		X																
61	BH04_1.9-2.0	Feb 24, 2020		Soil	M20-Fe38212		X																
62	BH05_0.7-0.8	Feb 24, 2020		Soil	M20-Fe38213		X																

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Company Name: Agon Environmental Pty Ltd
Address: 3/224 Glen Osmond Road
Fullarton
SA 5063

Project Name: Trident Torrens Road
Project ID: JC0482

Order No.: Agon 2017-2018
Report #: 704508
Phone: 08 8338 1009
Fax:

Received: Feb 27, 2020 12:00 AM
Due: Mar 5, 2020
Priority: 5 Day
Contact Name: - ALL INVOICES

Eurofins Analytical Services Manager : Michael Cassidy

Sample Detail						Chromium (hexavalent)	HOLD	Polycyclic Aromatic Hydrocarbons	Organochlorine Pesticides	Organophosphorus Pesticides	Phenols (WRC 621)	BTEX and Naphthalene	Volatile Organics	Moisture Set	NEPM Screen for Soil Classification	NEPM Screen Table 1(A) HIL's for Soil Contaminants - Basic Suite - Excluding	Semi-volatile Organics	Total Recoverable Hydrocarbons	SA Waste Screen	BTEXN and Volatile TRH	NEPM 2013 Metals without Cr6+ (As, Be, B, Cd, Co, Cr, Cu, Hg, Pb, Ni, Mn, Se, Zn)	Eurofins 1 mgt Suite B19E: Total N, TKN, NOx, NO2, NO3, NH3, Total P, Reactive P	Eurofins 1 mgt Suite B16A: SO4, CH4, NO3, Fe2+	NEPM 2013 Filtered Metals without Cr6+ (As, Be, B, Cd, Co, Cr, Cu, Hg, Pb, Ni, Mn, Fe2+)
Melbourne Laboratory - NATA Site # 1254 & 14271						X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217																								
Brisbane Laboratory - NATA Site # 20794															X									
Perth Laboratory - NATA Site # 23736																								
63	BH05_1.0-1.1	Feb 24, 2020		Soil	M20-Fe38214		X																	
64	BH06_0.5-0.6	Feb 24, 2020		Soil	M20-Fe38215		X																	
65	BH06_0.9-1.0	Feb 24, 2020		Soil	M20-Fe38216		X																	
66	BH06_1.3-1.4	Feb 24, 2020		Soil	M20-Fe38217		X																	
67	BH07_0.4-0.5	Feb 24, 2020		Soil	M20-Fe38218		X																	
68	BH07_1.3-1.4	Feb 24, 2020		Soil	M20-Fe38219		X																	
69	BH07_1.8-1.9	Feb 24, 2020		Soil	M20-Fe38220		X																	
70	BH08_0.15-0.25	Feb 24, 2020		Soil	M20-Fe38221		X																	
71	BH08_0.7-0.8	Feb 24, 2020		Soil	M20-Fe38222		X																	
72	BH08_1.8-1.9	Feb 24, 2020		Soil	M20-Fe38223		X																	
73	BH09_1.0-1.1	Feb 24, 2020		Soil	M20-Fe38224		X																	
74	BH09_1.4-1.5	Feb 24, 2020		Soil	M20-Fe38225		X																	

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Melbourne Laboratory - NATA Site # 1254 & 14271						X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217																									
Brisbane Laboratory - NATA Site # 20794															X										
Perth Laboratory - NATA Site # 23736																									
75	BH09_1.9-2.0	Feb 24, 2020		Soil	M20-Fe38226		X																		
76	BH10_1.7-1.8	Feb 24, 2020		Soil	M20-Fe38227		X																		
77	BH11_0.2-0.3	Feb 24, 2020		Soil	M20-Fe38228		X																		
78	BH12_0.1-0.2	Feb 24, 2020		Soil	M20-Fe38229		X																		
79	BH12_0.8-0.9	Feb 24, 2020		Soil	M20-Fe38230		X																		
80	BH12_1.9-2.0	Feb 24, 2020		Soil	M20-Fe38231		X																		
81	BH12_2.9-3.0	Feb 24, 2020		Soil	M20-Fe38232		X																		
82	BH12_3.9-4.0	Feb 24, 2020		Soil	M20-Fe38233		X																		
83	BH13_0.1-0.2	Feb 25, 2020		Soil	M20-Fe38234		X																		
84	BH14_0.4-0.5	Feb 25, 2020		Soil	M20-Fe38235		X																		
85	BH14_2.9-3.0	Feb 25, 2020		Soil	M20-Fe38236		X																		
86	BH14_3.9-4.0	Feb 25, 2020		Soil	M20-Fe38237		X																		
87	BH15_0.1-0.2	Feb 25, 2020		Soil	M20-Fe38238		X																		

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Melbourne Laboratory - NATA Site # 1254 & 14271						X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217																								
Brisbane Laboratory - NATA Site # 20794															X									
Perth Laboratory - NATA Site # 23736																								
88	BH16_1.4-1.5	Feb 25, 2020		Soil	M20-Fe38239		X																	
89	BH16_1.9-2.0	Feb 25, 2020		Soil	M20-Fe38240		X																	
90	BH17_0.1-0.2	Feb 25, 2020		Soil	M20-Fe38241		X																	
91	BH17_0.9-1.0	Feb 25, 2020		Soil	M20-Fe38242		X																	
92	BH17_1.5-1.6	Feb 25, 2020		Soil	M20-Fe38243		X																	
93	QC02	Feb 24, 2020		Soil	M20-Fe38244		X																	
94	QC04	Feb 24, 2020		Soil	M20-Fe38245		X																	
95	QC06	Feb 25, 2020		Soil	M20-Fe38246		X																	
96	BH4-1.5-1.6	Feb 24, 2020		Soil	M20-Fe38512		X																	
Test Counts						3	42	11	4	4	2	16	7	49	1	2	6	16	1	1	39	2	2	4

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples follows guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended May 2013 and are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil/sediment/solid results are reported on a dry basis, unless otherwise stated.
3. All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
4. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
5. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
6. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
7. Samples were analysed on an 'as received' basis.
8. Information identified on this report with blue colour, indicates data provided by customer, that may have an impact on the results.
9. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per kilogram	mg/L: milligrams per litre	ug/L: micrograms per litre
ppm: Parts per million	ppb: Parts per billion	%: Percentage
org/100mL: Organisms per 100 millilitres	NTU: Nephelometric Turbidity Units	MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery.
CRM	Certified Reference Material - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
QSM	US Department of Defense Quality Systems Manual Version 5.3
CP	Client Parent - QC was performed on samples pertaining to this report
NC	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 20-130% Phenols & 50-150% PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.3 where no positive PFAS results have been reported have been reviewed and no data was affected.

WA DWER (n=10): PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	mg/kg	< 20			20	Pass	
TRH C10-C14	mg/kg	< 20			20	Pass	
TRH C15-C28	mg/kg	< 50			50	Pass	
TRH C29-C36	mg/kg	< 50			50	Pass	
Method Blank							
Volatile Organics							
Tetrachloroethene	mg/kg	< 0.5			0.5	Pass	
Method Blank							
BTEX							
Benzene	mg/kg	< 0.1			0.1	Pass	
Toluene	mg/kg	< 0.1			0.1	Pass	
Ethylbenzene	mg/kg	< 0.1			0.1	Pass	
m&p-Xylenes	mg/kg	< 0.2			0.2	Pass	
o-Xylene	mg/kg	< 0.1			0.1	Pass	
Xylenes - Total	mg/kg	< 0.3			0.3	Pass	
Method Blank							
Volatile Organics							
1.1-Dichloroethane	mg/kg	< 0.5			0.5	Pass	
1.1-Dichloroethene	mg/kg	< 0.5			0.5	Pass	
1.1.1-Trichloroethane	mg/kg	< 0.5			0.5	Pass	
1.1.1.2-Tetrachloroethane	mg/kg	< 0.5			0.5	Pass	
1.1.2-Trichloroethane	mg/kg	< 0.5			0.5	Pass	
1.1.2.2-Tetrachloroethane	mg/kg	< 0.5			0.5	Pass	
1.2-Dibromoethane	mg/kg	< 0.5			0.5	Pass	
1.2-Dichlorobenzene	mg/kg	< 0.5			0.5	Pass	
1.2-Dichloroethane	mg/kg	< 0.5			0.5	Pass	
1.2-Dichloropropane	mg/kg	< 0.5			0.5	Pass	
1.2.3-Trichloropropane	mg/kg	< 0.5			0.5	Pass	
1.2.4-Trimethylbenzene	mg/kg	< 0.5			0.5	Pass	
1.3-Dichlorobenzene	mg/kg	< 0.5			0.5	Pass	
1.3-Dichloropropane	mg/kg	< 0.5			0.5	Pass	
1.3.5-Trimethylbenzene	mg/kg	< 0.5			0.5	Pass	
1.4-Dichlorobenzene	mg/kg	< 0.5			0.5	Pass	
2-Butanone (MEK)	mg/kg	< 0.5			0.5	Pass	
2-Propanone (Acetone)	mg/kg	< 0.5			0.5	Pass	
4-Chlorotoluene	mg/kg	< 0.5			0.5	Pass	
4-Methyl-2-pentanone (MIBK)	mg/kg	< 0.5			0.5	Pass	
Allyl chloride	mg/kg	< 0.5			0.5	Pass	
Bromobenzene	mg/kg	< 0.5			0.5	Pass	
Bromochloromethane	mg/kg	< 0.5			0.5	Pass	
Bromodichloromethane	mg/kg	< 0.5			0.5	Pass	
Bromoform	mg/kg	< 0.5			0.5	Pass	
Bromomethane	mg/kg	< 0.5			0.5	Pass	
Carbon disulfide	mg/kg	< 0.5			0.5	Pass	
Carbon Tetrachloride	mg/kg	< 0.5			0.5	Pass	
Chlorobenzene	mg/kg	< 0.5			0.5	Pass	
Chloroethane	mg/kg	< 0.5			0.5	Pass	
Chloroform	mg/kg	< 0.5			0.5	Pass	
Chloromethane	mg/kg	< 0.5			0.5	Pass	
cis-1.2-Dichloroethene	mg/kg	< 0.5			0.5	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
cis-1.3-Dichloropropene	mg/kg	< 0.5			0.5	Pass	
Dibromochloromethane	mg/kg	< 0.5			0.5	Pass	
Dibromomethane	mg/kg	< 0.5			0.5	Pass	
Dichlorodifluoromethane	mg/kg	< 0.5			0.5	Pass	
Iodomethane	mg/kg	< 0.5			0.5	Pass	
Isopropyl benzene (Cumene)	mg/kg	< 0.5			0.5	Pass	
Methylene Chloride	mg/kg	< 0.5			0.5	Pass	
Styrene	mg/kg	< 0.5			0.5	Pass	
trans-1.2-Dichloroethene	mg/kg	< 0.5			0.5	Pass	
trans-1.3-Dichloropropene	mg/kg	< 0.5			0.5	Pass	
Trichloroethene	mg/kg	< 0.5			0.5	Pass	
Trichlorofluoromethane	mg/kg	< 0.5			0.5	Pass	
Vinyl chloride	mg/kg	< 0.5			0.5	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	mg/kg	< 0.5			0.5	Pass	
TRH C6-C10	mg/kg	< 20			20	Pass	
TRH >C10-C16	mg/kg	< 50			50	Pass	
TRH >C16-C34	mg/kg	< 100			100	Pass	
TRH >C34-C40	mg/kg	< 100			100	Pass	
Method Blank							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	mg/kg	< 0.5			0.5	Pass	
Acenaphthylene	mg/kg	< 0.5			0.5	Pass	
Anthracene	mg/kg	< 0.5			0.5	Pass	
Benz(a)anthracene	mg/kg	< 0.5			0.5	Pass	
Benzo(a)pyrene	mg/kg	< 0.5			0.5	Pass	
Benzo(b&j)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Benzo(g,h,i)perylene	mg/kg	< 0.5			0.5	Pass	
Benzo(k)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Chrysene	mg/kg	< 0.5			0.5	Pass	
Dibenz(a,h)anthracene	mg/kg	< 0.5			0.5	Pass	
Fluoranthene	mg/kg	< 0.5			0.5	Pass	
Fluorene	mg/kg	< 0.5			0.5	Pass	
Indeno(1.2.3-cd)pyrene	mg/kg	< 0.5			0.5	Pass	
Naphthalene	mg/kg	< 0.5			0.5	Pass	
Phenanthrene	mg/kg	< 0.5			0.5	Pass	
Pyrene	mg/kg	< 0.5			0.5	Pass	
Method Blank							
Organochlorine Pesticides							
Bifenthrin	mg/kg	< 0.05			0.05	Pass	
Chlordanes - Total	mg/kg	< 0.1			0.1	Pass	
4.4'-DDD	mg/kg	< 0.05			0.05	Pass	
4.4'-DDE	mg/kg	< 0.05			0.05	Pass	
4.4'-DDT	mg/kg	< 0.05			0.05	Pass	
a-BHC	mg/kg	< 0.05			0.05	Pass	
Aldrin	mg/kg	< 0.05			0.05	Pass	
b-BHC	mg/kg	< 0.05			0.05	Pass	
d-BHC	mg/kg	< 0.05			0.05	Pass	
Dieldrin	mg/kg	< 0.05			0.05	Pass	
Endosulfan I	mg/kg	< 0.05			0.05	Pass	
Endosulfan II	mg/kg	< 0.05			0.05	Pass	
Endosulfan sulphate	mg/kg	< 0.05			0.05	Pass	
Endrin	mg/kg	< 0.05			0.05	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Endrin aldehyde	mg/kg	< 0.05			0.05	Pass	
Endrin ketone	mg/kg	< 0.05			0.05	Pass	
g-BHC (Lindane)	mg/kg	< 0.05			0.05	Pass	
Heptachlor	mg/kg	< 0.05			0.05	Pass	
Heptachlor epoxide	mg/kg	< 0.05			0.05	Pass	
Hexachlorobenzene	mg/kg	< 0.05			0.05	Pass	
Methoxychlor	mg/kg	< 0.05			0.05	Pass	
Toxaphene	mg/kg	< 1			1	Pass	
Method Blank							
Organophosphorus Pesticides							
Azinphos-methyl	mg/kg	< 0.2			0.2	Pass	
Bolstar	mg/kg	< 0.2			0.2	Pass	
Chlorfenvinphos	mg/kg	< 0.2			0.2	Pass	
Chlorpyrifos	mg/kg	< 0.2			0.2	Pass	
Chlorpyrifos-methyl	mg/kg	< 0.2			0.2	Pass	
Coumaphos	mg/kg	< 2			2	Pass	
Demeton-S	mg/kg	< 0.2			0.2	Pass	
Demeton-O	mg/kg	< 0.2			0.2	Pass	
Diazinon	mg/kg	< 0.2			0.2	Pass	
Dichlorvos	mg/kg	< 0.2			0.2	Pass	
Dimethoate	mg/kg	< 0.2			0.2	Pass	
Disulfoton	mg/kg	< 0.2			0.2	Pass	
EPN	mg/kg	< 0.2			0.2	Pass	
Ethion	mg/kg	< 0.2			0.2	Pass	
Ethoprop	mg/kg	< 0.2			0.2	Pass	
Ethyl parathion	mg/kg	< 0.2			0.2	Pass	
Fenitrothion	mg/kg	< 0.2			0.2	Pass	
Fensulfothion	mg/kg	< 0.2			0.2	Pass	
Fenthion	mg/kg	< 0.2			0.2	Pass	
Malathion	mg/kg	< 0.2			0.2	Pass	
Merphos	mg/kg	< 0.2			0.2	Pass	
Methyl parathion	mg/kg	< 0.2			0.2	Pass	
Mevinphos	mg/kg	< 0.2			0.2	Pass	
Monocrotophos	mg/kg	< 2			2	Pass	
Naled	mg/kg	< 0.2			0.2	Pass	
Omethoate	mg/kg	< 2			2	Pass	
Phorate	mg/kg	< 0.2			0.2	Pass	
Pirimiphos-methyl	mg/kg	< 0.2			0.2	Pass	
Pyrazophos	mg/kg	< 0.2			0.2	Pass	
Ronnel	mg/kg	< 0.2			0.2	Pass	
Terbufos	mg/kg	< 0.2			0.2	Pass	
Tetrachlorvinphos	mg/kg	< 0.2			0.2	Pass	
Tokuthion	mg/kg	< 0.2			0.2	Pass	
Trichloronate	mg/kg	< 0.2			0.2	Pass	
Method Blank							
Polychlorinated Biphenyls							
Aroclor-1016	mg/kg	< 0.1			0.1	Pass	
Aroclor-1221	mg/kg	< 0.1			0.1	Pass	
Aroclor-1232	mg/kg	< 0.1			0.1	Pass	
Aroclor-1242	mg/kg	< 0.1			0.1	Pass	
Aroclor-1248	mg/kg	< 0.1			0.1	Pass	
Aroclor-1254	mg/kg	< 0.1			0.1	Pass	
Aroclor-1260	mg/kg	< 0.1			0.1	Pass	
Total PCB*	mg/kg	< 0.1			0.1	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Triazines							
Atrazine	mg/kg	< 0.2			0.2	Pass	
Method Blank							
Phenols (Halogenated)							
2-Chlorophenol	mg/kg	< 0.5			0.5	Pass	
2,4-Dichlorophenol	mg/kg	< 0.5			0.5	Pass	
2,4,5-Trichlorophenol	mg/kg	< 1			1	Pass	
2,4,6-Trichlorophenol	mg/kg	< 1			1	Pass	
2,6-Dichlorophenol	mg/kg	< 0.5			0.5	Pass	
4-Chloro-3-methylphenol	mg/kg	< 1			1	Pass	
Pentachlorophenol	mg/kg	< 1			1	Pass	
Tetrachlorophenols - Total	mg/kg	< 10			10	Pass	
Method Blank							
Phenols (non-Halogenated)							
2-Cyclohexyl-4,6-dinitrophenol	mg/kg	< 20			20	Pass	
2-Methyl-4,6-dinitrophenol	mg/kg	< 5			5	Pass	
2-Methylphenol (o-Cresol)	mg/kg	< 0.2			0.2	Pass	
2-Nitrophenol	mg/kg	< 1			1.0	Pass	
2,4-Dimethylphenol	mg/kg	< 0.5			0.5	Pass	
2,4-Dinitrophenol	mg/kg	< 5			5	Pass	
3&4-Methylphenol (m&p-Cresol)	mg/kg	< 0.4			0.4	Pass	
4-Nitrophenol	mg/kg	< 5			5	Pass	
Dinoseb	mg/kg	< 20			20	Pass	
Phenol	mg/kg	< 0.5			0.5	Pass	
Method Blank							
NEPM 2013 Acid Herbicides							
Picloram	mg/kg	< 0.5			0.5	Pass	
2,4-D	mg/kg	< 0.5			0.5	Pass	
2,4,5-T	mg/kg	< 0.5			0.5	Pass	
MCPA	mg/kg	< 0.5			0.5	Pass	
MCPB	mg/kg	< 0.5			0.5	Pass	
Mecoprop	mg/kg	< 0.5			0.5	Pass	
Method Blank							
NEPM 2013 Organochlorine Pesticides							
Mirex	mg/kg	< 0.01			0.01	Pass	
Method Blank							
NEPM 2013 Phenols							
2-Methylphenol (o-Cresol)	mg/kg	< 0.2			0.2	Pass	
3&4-Methylphenol (m&p-Cresol)	mg/kg	< 0.4			0.4	Pass	
Pentachlorophenol	mg/kg	< 1			1	Pass	
Phenol	mg/kg	< 0.5			0.5	Pass	
Method Blank							
Semivolatile Organics							
2-Methyl-4,6-dinitrophenol	mg/kg	< 5			5	Pass	
1-Chloronaphthalene	mg/kg	< 0.5			0.5	Pass	
1-Naphthylamine	mg/kg	< 0.5			0.5	Pass	
1,2-Dichlorobenzene	mg/kg	< 0.5			0.5	Pass	
1,2,3-Trichlorobenzene	mg/kg	< 0.5			0.5	Pass	
1,2,3,4-Tetrachlorobenzene	mg/kg	< 0.5			0.5	Pass	
1,2,3,5-Tetrachlorobenzene	mg/kg	< 0.5			0.5	Pass	
1,2,4-Trichlorobenzene	mg/kg	< 0.5			0.5	Pass	
1,2,4,5-Tetrachlorobenzene	mg/kg	< 0.5			0.5	Pass	
1,3-Dichlorobenzene	mg/kg	< 0.5			0.5	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
1.3.5-Trichlorobenzene	mg/kg	< 0.5			0.5	Pass	
1.4-Dichlorobenzene	mg/kg	< 0.5			0.5	Pass	
2-Chloronaphthalene	mg/kg	< 0.5			0.5	Pass	
2-Chlorophenol	mg/kg	< 0.5			0.5	Pass	
2-Methylnaphthalene	mg/kg	< 0.5			0.5	Pass	
2-Naphthylamine	mg/kg	< 0.5			0.5	Pass	
2-Nitroaniline	mg/kg	< 0.5			0.5	Pass	
2-Nitrophenol	mg/kg	< 1			1.0	Pass	
2-Picoline	mg/kg	< 0.5			0.5	Pass	
2.3.4.6-Tetrachlorophenol	mg/kg	< 5			5	Pass	
2.4-Dichlorophenol	mg/kg	< 0.5			0.5	Pass	
2.4-Dimethylphenol	mg/kg	< 0.5			0.5	Pass	
2.4-Dinitrophenol	mg/kg	< 5			5	Pass	
2.4-Dinitrotoluene	mg/kg	< 0.5			0.5	Pass	
2.4.5-Trichlorophenol	mg/kg	< 1			1	Pass	
2.4.6-Trichlorophenol	mg/kg	< 1			1	Pass	
2.6-Dichlorophenol	mg/kg	< 0.5			0.5	Pass	
2.6-Dinitrotoluene	mg/kg	< 0.5			0.5	Pass	
3-Methylcholanthrene	mg/kg	< 0.5			0.5	Pass	
3.3'-Dichlorobenzidine	mg/kg	< 0.5			0.5	Pass	
4-Aminobiphenyl	mg/kg	< 0.5			0.5	Pass	
4-Bromophenyl phenyl ether	mg/kg	< 0.5			0.5	Pass	
4-Chloro-3-methylphenol	mg/kg	< 1			1	Pass	
4-Chlorophenyl phenyl ether	mg/kg	< 0.5			0.5	Pass	
4-Nitrophenol	mg/kg	< 5			5	Pass	
4.4'-DDD	mg/kg	< 0.5			0.5	Pass	
4.4'-DDE	mg/kg	< 0.5			0.5	Pass	
4.4'-DDT	mg/kg	< 0.5			0.5	Pass	
7.12-Dimethylbenz(a)anthracene	mg/kg	< 0.5			0.5	Pass	
a-BHC	mg/kg	< 0.5			0.5	Pass	
Acenaphthene	mg/kg	< 0.5			0.5	Pass	
Acenaphthylene	mg/kg	< 0.5			0.5	Pass	
Acetophenone	mg/kg	< 0.5			0.5	Pass	
Aldrin	mg/kg	< 0.5			0.5	Pass	
Aniline	mg/kg	< 0.5			0.5	Pass	
Anthracene	mg/kg	< 0.5			0.5	Pass	
b-BHC	mg/kg	< 0.5			0.5	Pass	
Benz(a)anthracene	mg/kg	< 0.5			0.5	Pass	
Benzo(a)pyrene	mg/kg	< 0.5			0.5	Pass	
Benzo(b&i)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Benzo(g,h,i)perylene	mg/kg	< 0.5			0.5	Pass	
Benzo(k)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Benzyl chloride	mg/kg	< 0.5			0.5	Pass	
Bis(2-chloroethoxy)methane	mg/kg	< 0.5			0.5	Pass	
Bis(2-chloroisopropyl)ether	mg/kg	< 0.5			0.5	Pass	
Bis(2-ethylhexyl)phthalate	mg/kg	< 0.5			0.5	Pass	
Butyl benzyl phthalate	mg/kg	< 0.5			0.5	Pass	
Chrysene	mg/kg	< 0.5			0.5	Pass	
d-BHC	mg/kg	< 0.5			0.5	Pass	
Di-n-butyl phthalate	mg/kg	< 0.5			0.5	Pass	
Di-n-octyl phthalate	mg/kg	< 0.5			0.5	Pass	
Dibenz(a,h)anthracene	mg/kg	< 0.5			0.5	Pass	
Dibenz(a,j)acridine	mg/kg	< 0.5			0.5	Pass	
Dibenzofuran	mg/kg	< 0.5			0.5	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Dieldrin	mg/kg	< 0.5			0.5	Pass	
Diethyl phthalate	mg/kg	< 0.5			0.5	Pass	
Dimethyl phthalate	mg/kg	< 0.5			0.5	Pass	
Dimethylaminoazobenzene	mg/kg	< 0.5			0.5	Pass	
Diphenylamine	mg/kg	< 0.5			0.5	Pass	
Endosulfan I	mg/kg	< 0.5			0.5	Pass	
Endosulfan II	mg/kg	< 0.5			0.5	Pass	
Endosulfan sulphate	mg/kg	< 0.5			0.5	Pass	
Endrin	mg/kg	< 0.5			0.5	Pass	
Endrin aldehyde	mg/kg	< 0.5			0.5	Pass	
Endrin ketone	mg/kg	< 0.5			0.5	Pass	
Fluoranthene	mg/kg	< 0.5			0.5	Pass	
Fluorene	mg/kg	< 0.5			0.5	Pass	
g-BHC (Lindane)	mg/kg	< 0.5			0.5	Pass	
Heptachlor	mg/kg	< 0.5			0.5	Pass	
Heptachlor epoxide	mg/kg	< 0.5			0.5	Pass	
Hexachlorobenzene	mg/kg	< 0.5			0.5	Pass	
Hexachlorobutadiene	mg/kg	< 0.5			0.5	Pass	
Hexachlorocyclopentadiene	mg/kg	< 0.5			0.5	Pass	
Hexachloroethane	mg/kg	< 0.5			0.5	Pass	
Indeno(1.2.3-cd)pyrene	mg/kg	< 0.5			0.5	Pass	
Methoxychlor	mg/kg	< 0.5			0.5	Pass	
N-Nitrosodibutylamine	mg/kg	< 0.5			0.5	Pass	
N-Nitrosodipropylamine	mg/kg	< 0.5			0.5	Pass	
N-Nitrosopiperidine	mg/kg	< 0.5			0.5	Pass	
Naphthalene	mg/kg	< 0.5			0.5	Pass	
Nitrobenzene	mg/kg	< 0.5			0.5	Pass	
Pentachlorobenzene	mg/kg	< 0.5			0.5	Pass	
Pentachloronitrobenzene	mg/kg	< 0.5			0.5	Pass	
Phenanthrene	mg/kg	< 0.5			0.5	Pass	
Pronamide	mg/kg	< 0.5			0.5	Pass	
Pyrene	mg/kg	< 0.5			0.5	Pass	
Trifluralin	mg/kg	< 0.5			0.5	Pass	
Method Blank							
% Clay	%	< 1			1	Pass	
Chromium (hexavalent)	mg/kg	< 1			1	Pass	
Conductivity (1:5 aqueous extract at 25°C as rec.)	uS/cm	< 10			10	Pass	
Cyanide (total)	mg/kg	< 5			5	Pass	
Total Organic Carbon	%	< 0.1			0.1	Pass	
Method Blank							
Heavy Metals							
Arsenic	mg/kg	< 2			2	Pass	
Arsenic	mg/kg	< 2			2	Pass	
Barium	mg/kg	< 10			10	Pass	
Beryllium	mg/kg	< 2			2	Pass	
Beryllium	mg/kg	< 2			2	Pass	
Boron	mg/kg	< 10			10	Pass	
Boron	mg/kg	< 10			10	Pass	
Cadmium	mg/kg	< 0.4			0.4	Pass	
Cadmium	mg/kg	< 0.4			0.4	Pass	
Chromium	mg/kg	< 5			5	Pass	
Chromium	mg/kg	< 5			5	Pass	
Cobalt	mg/kg	< 5			5	Pass	
Cobalt	mg/kg	< 5			5	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Copper	mg/kg	< 5			5	Pass	
Copper	mg/kg	< 5			5	Pass	
Iron	mg/kg	< 20			20	Pass	
Iron	mg/kg	< 20			20	Pass	
Lead	mg/kg	< 5			5	Pass	
Lead	mg/kg	< 5			5	Pass	
Manganese	mg/kg	< 5			5	Pass	
Manganese	mg/kg	< 5			5	Pass	
Mercury	mg/kg	< 0.1			0.1	Pass	
Mercury	mg/kg	< 0.1			0.1	Pass	
Nickel	mg/kg	< 5			5	Pass	
Nickel	mg/kg	< 5			5	Pass	
Selenium	mg/kg	< 2			2	Pass	
Selenium	mg/kg	< 2			2	Pass	
Silver	mg/kg	< 0.2			0.2	Pass	
Zinc	mg/kg	< 5			5	Pass	
Zinc	mg/kg	< 5			5	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	%	94			70-130	Pass	
TRH C10-C14	%	105			70-130	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	96			70-130	Pass	
Toluene	%	104			70-130	Pass	
Ethylbenzene	%	102			70-130	Pass	
m&p-Xylenes	%	102			70-130	Pass	
Xylenes - Total	%	104			70-130	Pass	
LCS - % Recovery							
Volatile Organics							
1.1-Dichloroethene	%	71			70-130	Pass	
1.1.1-Trichloroethane	%	91			70-130	Pass	
1.2-Dichlorobenzene	%	84			70-130	Pass	
1.2-Dichloroethane	%	84			70-130	Pass	
Trichloroethene	%	100			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	74			70-130	Pass	
TRH C6-C10	%	90			70-130	Pass	
TRH >C10-C16	%	101			70-130	Pass	
LCS - % Recovery							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	%	81			70-130	Pass	
Acenaphthylene	%	85			70-130	Pass	
Anthracene	%	82			70-130	Pass	
Benz(a)anthracene	%	87			70-130	Pass	
Benzo(a)pyrene	%	83			70-130	Pass	
Benzo(b&j)fluoranthene	%	73			70-130	Pass	
Benzo(g,h,i)perylene	%	83			70-130	Pass	
Benzo(k)fluoranthene	%	85			70-130	Pass	
Chrysene	%	95			70-130	Pass	
Dibenz(a,h)anthracene	%	77			70-130	Pass	
Fluoranthene	%	98			70-130	Pass	
Fluorene	%	84			70-130	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Indeno(1,2,3-cd)pyrene	%	84			70-130	Pass	
Naphthalene	%	90			70-130	Pass	
Phenanthrene	%	82			70-130	Pass	
Pyrene	%	100			70-130	Pass	
LCS - % Recovery							
Organochlorine Pesticides							
Bifenthrin	%	78			70-130	Pass	
Chlordanes - Total	%	85			70-130	Pass	
4,4'-DDD	%	97			70-130	Pass	
4,4'-DDE	%	105			70-130	Pass	
4,4'-DDT	%	101			70-130	Pass	
a-BHC	%	93			70-130	Pass	
Aldrin	%	111			70-130	Pass	
b-BHC	%	73			70-130	Pass	
d-BHC	%	95			70-130	Pass	
Dieldrin	%	95			70-130	Pass	
Endosulfan I	%	104			70-130	Pass	
Endosulfan II	%	101			70-130	Pass	
Endosulfan sulphate	%	81			70-130	Pass	
Endrin	%	78			70-130	Pass	
Endrin aldehyde	%	74			70-130	Pass	
Endrin ketone	%	84			70-130	Pass	
g-BHC (Lindane)	%	101			70-130	Pass	
Heptachlor	%	86			70-130	Pass	
Heptachlor epoxide	%	93			70-130	Pass	
Hexachlorobenzene	%	99			70-130	Pass	
Methoxychlor	%	96			70-130	Pass	
LCS - % Recovery							
Organophosphorus Pesticides							
Diazinon	%	75			70-130	Pass	
Dimethoate	%	72			70-130	Pass	
Ethion	%	96			70-130	Pass	
Fenitrothion	%	102			70-130	Pass	
Methyl parathion	%	109			70-130	Pass	
Mevinphos	%	80			70-130	Pass	
LCS - % Recovery							
Polychlorinated Biphenyls							
Aroclor-1260	%	120			70-130	Pass	
LCS - % Recovery							
Phenols (Halogenated)							
2-Chlorophenol	%	82			30-130	Pass	
2,4-Dichlorophenol	%	84			30-130	Pass	
2,4,5-Trichlorophenol	%	93			30-130	Pass	
2,4,6-Trichlorophenol	%	87			30-130	Pass	
2,6-Dichlorophenol	%	103			30-130	Pass	
4-Chloro-3-methylphenol	%	90			30-130	Pass	
Pentachlorophenol	%	63			30-130	Pass	
Tetrachlorophenols - Total	%	81			30-130	Pass	
LCS - % Recovery							
Phenols (non-Halogenated)							
2-Cyclohexyl-4,6-dinitrophenol	%	30			30-130	Pass	
2-Methyl-4,6-dinitrophenol	%	51			30-130	Pass	
2-Methylphenol (o-Cresol)	%	80			30-130	Pass	
2-Nitrophenol	%	99			30-130	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
2,4-Dimethylphenol	%	93			30-130	Pass	
2,4-Dinitrophenol	%	47			30-130	Pass	
3&4-Methylphenol (m&p-Cresol)	%	85			30-130	Pass	
4-Nitrophenol	%	111			30-130	Pass	
Dinoseb	%	65			30-130	Pass	
Phenol	%	80			30-130	Pass	
LCS - % Recovery							
NEPM 2013 Acid Herbicides							
Picloram	%	89			70-130	Pass	
2,4-D	%	88			70-130	Pass	
2,4,5-T	%	86			70-130	Pass	
MCPA	%	90			70-130	Pass	
MCPB	%	115			70-130	Pass	
Mecoprop	%	94			70-130	Pass	
LCS - % Recovery							
NEPM 2013 Organochlorine Pesticides							
Mirex	%	95			70-130	Pass	
LCS - % Recovery							
NEPM 2013 Phenols							
2-Methylphenol (o-Cresol)	%	83			30-130	Pass	
3&4-Methylphenol (m&p-Cresol)	%	71			30-130	Pass	
Pentachlorophenol	%	87			30-130	Pass	
Phenol	%	73			30-130	Pass	
LCS - % Recovery							
Semivolatile Organics							
2-Methyl-4,6-dinitrophenol	%	48			30-130	Pass	
1,2,4-Trichlorobenzene	%	89			70-130	Pass	
1,4-Dichlorobenzene	%	90			70-130	Pass	
2-Chlorophenol	%	74			30-130	Pass	
2-Nitrophenol	%	67			30-130	Pass	
2,4-Dichlorophenol	%	68			30-130	Pass	
2,4-Dimethylphenol	%	62			30-130	Pass	
2,4-Dinitrotoluene	%	73			70-130	Pass	
2,4,5-Trichlorophenol	%	70			30-130	Pass	
2,4,6-Trichlorophenol	%	80			30-130	Pass	
2,6-Dichlorophenol	%	74			30-130	Pass	
4-Chloro-3-methylphenol	%	70			30-130	Pass	
4-Nitrophenol	%	68			30-130	Pass	
Acenaphthene	%	82			70-130	Pass	
Acenaphthylene	%	85			70-130	Pass	
Anthracene	%	96			70-130	Pass	
Benz(a)anthracene	%	73			70-130	Pass	
Benzo(a)pyrene	%	76			70-130	Pass	
Benzo(b&j)fluoranthene	%	85			70-130	Pass	
Benzo(g,h,i)perylene	%	76			70-130	Pass	
Benzo(k)fluoranthene	%	96			70-130	Pass	
Chrysene	%	80			70-130	Pass	
Dibenz(a,h)anthracene	%	73			70-130	Pass	
Fluoranthene	%	91			70-130	Pass	
Fluorene	%	85			70-130	Pass	
Indeno(1,2,3-cd)pyrene	%	73			70-130	Pass	
N-Nitrosodipropylamine	%	103			70-130	Pass	
Naphthalene	%	83			70-130	Pass	
Phenanthrene	%	82			70-130	Pass	

Test				Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Pyrene				%	93			70-130	Pass	
LCS - % Recovery										
% Clay				%	90			70-130	Pass	
Chromium (hexavalent)				%	92			70-130	Pass	
Cyanide (total)				%	93			70-130	Pass	
Total Organic Carbon				%	105			70-130	Pass	
LCS - % Recovery										
Heavy Metals										
Arsenic				%	91			80-120	Pass	
Arsenic				%	103			80-120	Pass	
Barium				%	90			80-120	Pass	
Beryllium				%	87			80-120	Pass	
Beryllium				%	99			80-120	Pass	
Boron				%	84			80-120	Pass	
Boron				%	98			80-120	Pass	
Cadmium				%	103			80-120	Pass	
Cadmium				%	98			80-120	Pass	
Chromium				%	90			80-120	Pass	
Chromium				%	102			80-120	Pass	
Cobalt				%	90			80-120	Pass	
Cobalt				%	102			80-120	Pass	
Copper				%	91			80-120	Pass	
Copper				%	102			80-120	Pass	
Iron				%	94			80-120	Pass	
Iron				%	109			80-120	Pass	
Lead				%	90			80-120	Pass	
Lead				%	103			80-120	Pass	
Manganese				%	92			80-120	Pass	
Manganese				%	105			80-120	Pass	
Mercury				%	109			75-125	Pass	
Mercury				%	105			75-125	Pass	
Nickel				%	90			80-120	Pass	
Nickel				%	103			80-120	Pass	
Selenium				%	87			80-120	Pass	
Selenium				%	104			80-120	Pass	
Silver				%	98			80-120	Pass	
Zinc				%	92			80-120	Pass	
Zinc				%	104			80-120	Pass	
Test		Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery										
Total Recoverable Hydrocarbons - 1999 NEPM Fractions					Result 1					
TRH C10-C14		M20-Fe40597	NCP	%	101			70-130	Pass	
Spike - % Recovery										
Volatile Organics					Result 1					
1.1-Dichloroethene		M20-Ma00363	NCP	%	74			70-130	Pass	
1.1.1-Trichloroethane		M20-Ma00363	NCP	%	103			70-130	Pass	
1.2-Dichlorobenzene		M20-Ma00363	NCP	%	87			70-130	Pass	
1.2-Dichloroethane		M20-Ma00363	NCP	%	105			70-130	Pass	
Trichloroethene		M20-Ma00363	NCP	%	118			70-130	Pass	
Spike - % Recovery										
Total Recoverable Hydrocarbons - 2013 NEPM Fractions					Result 1					
TRH >C10-C16		M20-Fe40597	NCP	%	94			70-130	Pass	
Spike - % Recovery										
Phenols (non-Halogenated)					Result 1					

Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
2-Methyl-4,6-dinitrophenol	M20-Fe40221	NCP	%	46		30-130	Pass	
2,4-Dinitrophenol	M20-Fe23299	NCP	%	58		30-130	Pass	
Spike - % Recovery								
Organochlorine Pesticides				Result 1				
Bifenthrin	M20-Fe38708	NCP	%	97		70-130	Pass	
Chlordanes - Total	M20-Fe38708	NCP	%	91		70-130	Pass	
4,4'-DDD	M20-Fe38708	NCP	%	82		70-130	Pass	
4,4'-DDE	M20-Fe38708	NCP	%	100		70-130	Pass	
4,4'-DDT	M20-Fe38708	NCP	%	77		70-130	Pass	
Aldrin	M20-Fe38708	NCP	%	112		70-130	Pass	
Dieldrin	M20-Fe38708	NCP	%	82		70-130	Pass	
Endosulfan I	M20-Fe38708	NCP	%	93		70-130	Pass	
Endosulfan II	M20-Fe38708	NCP	%	88		70-130	Pass	
Endosulfan sulphate	M20-Fe38708	NCP	%	73		70-130	Pass	
Endrin	M20-Fe38708	NCP	%	122		70-130	Pass	
Heptachlor	M20-Fe38708	NCP	%	80		70-130	Pass	
Hexachlorobenzene	M20-Fe38708	NCP	%	80		70-130	Pass	
Methoxychlor	M20-Fe38708	NCP	%	95		70-130	Pass	
Spike - % Recovery								
Polychlorinated Biphenyls				Result 1				
Aroclor-1016	M20-Fe38159	CP	%	89		70-130	Pass	
Aroclor-1260	M20-Fe38159	CP	%	106		70-130	Pass	
Spike - % Recovery								
NEPM 2013 Acid Herbicides				Result 1				
Picloram	W20-Fe27264	NCP	%	74		70-130	Pass	
2,4-D	W20-Fe27264	NCP	%	76		70-130	Pass	
MCPA	W20-Fe27264	NCP	%	73		70-130	Pass	
MCPB	W20-Fe27264	NCP	%	95		70-130	Pass	
Spike - % Recovery								
NEPM 2013 Organochlorine Pesticides				Result 1				
Mirex	M20-Fe38708	NCP	%	101		70-130	Pass	
Spike - % Recovery								
				Result 1				
Chromium (hexavalent)	M20-Fe40462	NCP	%	101		70-130	Pass	
Spike - % Recovery								
Polycyclic Aromatic Hydrocarbons				Result 1				
Acenaphthene	M20-Fe38160	CP	%	97		70-130	Pass	
Pyrene	M20-Fe38160	CP	%	93		70-130	Pass	
Spike - % Recovery								
Organochlorine Pesticides				Result 1				
a-BHC	M20-Fe38708	NCP	%	100		70-130	Pass	
b-BHC	M20-Fe38708	NCP	%	80		70-130	Pass	
d-BHC	M20-Fe38708	NCP	%	71		70-130	Pass	
Endrin aldehyde	M20-Fe38708	NCP	%	118		70-130	Pass	
Endrin ketone	M20-Fe38708	NCP	%	76		70-130	Pass	
g-BHC (Lindane)	M20-Fe38708	NCP	%	77		70-130	Pass	
Heptachlor epoxide	M20-Fe38708	NCP	%	88		70-130	Pass	
Spike - % Recovery								
Organophosphorus Pesticides				Result 1				
Diazinon	B20-Fe34510	NCP	%	125		70-130	Pass	
Dimethoate	B20-Fe34510	NCP	%	99		70-130	Pass	
Ethion	B20-Fe34510	NCP	%	99		70-130	Pass	
Fenitrothion	B20-Fe34510	NCP	%	127		70-130	Pass	
Methyl parathion	B20-Fe34510	NCP	%	117		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Mevinphos	B20-Fe34510	NCP	%	76		70-130	Pass	
Spike - % Recovery								
Phenols (Halogenated)				Result 1				
2-Chlorophenol	M20-Fe38160	CP	%	78		30-130	Pass	
4-Chloro-3-methylphenol	M20-Fe38160	CP	%	43		30-130	Pass	
Pentachlorophenol	M20-Fe38160	CP	%	36		30-130	Pass	
Spike - % Recovery								
Phenols (non-Halogenated)				Result 1				
Phenol	M20-Fe38160	CP	%	87		30-130	Pass	
Spike - % Recovery								
Semivolatile Organics				Result 1				
1,2,4-Trichlorobenzene	M20-Fe38160	CP	%	96		70-130	Pass	
1,4-Dichlorobenzene	M20-Fe38160	CP	%	95		70-130	Pass	
2,4-Dinitrotoluene	M20-Fe38160	CP	%	78		70-130	Pass	
N-Nitrosodipropylamine	M20-Fe38160	CP	%	110		70-130	Pass	
Spike - % Recovery								
Heavy Metals				Result 1				
Beryllium	M20-Fe38162	CP	%	84		75-125	Pass	
Boron	M20-Fe38162	CP	%	74		75-125	Fail	Q08
Cadmium	M20-Fe38162	CP	%	94		75-125	Pass	
Cobalt	M20-Fe38162	CP	%	76		75-125	Pass	
Mercury	M20-Fe38162	CP	%	107		70-130	Pass	
Nickel	M20-Fe38162	CP	%	72		75-125	Fail	Q08
Selenium	M20-Fe38162	CP	%	83		75-125	Pass	
Silver	M20-Fe38162	CP	%	87		75-125	Pass	
Spike - % Recovery								
Phenols (non-Halogenated)				Result 1				
2-Cyclohexyl-4,6-dinitrophenol	M20-Fe41995	NCP	%	56		30-130	Pass	
Spike - % Recovery								
Heavy Metals				Result 1				
Arsenic	M20-Fe38173	CP	%	94		75-125	Pass	
Barium	M20-Fe38173	CP	%	97		75-125	Pass	
Beryllium	M20-Fe38173	CP	%	95		75-125	Pass	
Boron	M20-Fe38173	CP	%	91		75-125	Pass	
Cadmium	M20-Fe38173	CP	%	88		75-125	Pass	
Chromium	M20-Fe38173	CP	%	97		75-125	Pass	
Cobalt	M20-Fe38173	CP	%	95		75-125	Pass	
Copper	M20-Fe38173	CP	%	96		75-125	Pass	
Iron	M20-Fe38173	CP	%	162		75-125	Fail	Q08
Lead	M20-Fe38173	CP	%	103		75-125	Pass	
Manganese	M20-Fe38173	CP	%	137		75-125	Fail	Q08
Mercury	M20-Fe38173	CP	%	101		70-130	Pass	
Nickel	M20-Fe38173	CP	%	96		75-125	Pass	
Selenium	M20-Fe38173	CP	%	94		75-125	Pass	
Silver	M20-Fe38173	CP	%	80		75-125	Pass	
Zinc	M20-Fe38173	CP	%	98		75-125	Pass	
Spike - % Recovery								
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1				
TRH C6-C9	M20-Fe38178	CP	%	78		70-130	Pass	
Spike - % Recovery								
BTEX				Result 1				
Benzene	M20-Fe38178	CP	%	83		70-130	Pass	
Toluene	M20-Fe38178	CP	%	86		70-130	Pass	
Ethylbenzene	M20-Fe38178	CP	%	85		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
m&p-Xylenes	M20-Fe38178	CP	%	100		70-130	Pass	
o-Xylene	M20-Fe38178	CP	%	83		70-130	Pass	
Xylenes - Total	M20-Fe38178	CP	%	94		70-130	Pass	
Spike - % Recovery								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1				
Naphthalene	M20-Fe38178	CP	%	100		70-130	Pass	
TRH C6-C10	M20-Fe38178	CP	%	75		70-130	Pass	
Spike - % Recovery								
Polycyclic Aromatic Hydrocarbons				Result 1				
Acenaphthene	M20-Fe38183	CP	%	71		70-130	Pass	
Acenaphthylene	M20-Fe38183	CP	%	95		70-130	Pass	
Anthracene	M20-Fe38183	CP	%	72		70-130	Pass	
Benz(a)anthracene	M20-Fe38183	CP	%	73		70-130	Pass	
Benzo(a)pyrene	M20-Fe38183	CP	%	76		70-130	Pass	
Benzo(b&j)fluoranthene	M20-Fe38183	CP	%	72		70-130	Pass	
Benzo(g,h,i)perylene	M20-Fe38183	CP	%	78		70-130	Pass	
Benzo(k)fluoranthene	M20-Fe38183	CP	%	72		70-130	Pass	
Chrysene	M20-Fe38183	CP	%	80		70-130	Pass	
Dibenz(a,h)anthracene	M20-Fe38183	CP	%	84		70-130	Pass	
Fluoranthene	M20-Fe38183	CP	%	74		70-130	Pass	
Fluorene	M20-Fe38183	CP	%	103		70-130	Pass	
Indeno(1,2,3-cd)pyrene	M20-Fe38183	CP	%	78		70-130	Pass	
Naphthalene	M20-Fe38183	CP	%	89		70-130	Pass	
Phenanthrene	M20-Fe38183	CP	%	73		70-130	Pass	
Pyrene	M20-Fe38183	CP	%	72		70-130	Pass	
Spike - % Recovery								
Phenols (Halogenated)				Result 1				
2-Chlorophenol	M20-Fe38183	CP	%	79		30-130	Pass	
2,4-Dichlorophenol	M20-Fe38183	CP	%	102		30-130	Pass	
2,4,5-Trichlorophenol	M20-Fe38183	CP	%	81		30-130	Pass	
2,4,6-Trichlorophenol	M20-Fe38183	CP	%	69		30-130	Pass	
2,6-Dichlorophenol	M20-Fe38183	CP	%	119		30-130	Pass	
4-Chloro-3-methylphenol	M20-Fe38183	CP	%	75		30-130	Pass	
Tetrachlorophenols - Total	M20-Fe38183	CP	%	50		30-130	Pass	
Spike - % Recovery								
Phenols (non-Halogenated)				Result 1				
2-Methylphenol (o-Cresol)	M20-Fe38183	CP	%	80		30-130	Pass	
2-Nitrophenol	M20-Fe38183	CP	%	122		30-130	Pass	
2,4-Dimethylphenol	M20-Fe38183	CP	%	119		30-130	Pass	
3&4-Methylphenol (m&p-Cresol)	M20-Fe38183	CP	%	79		30-130	Pass	
4-Nitrophenol	M20-Fe38183	CP	%	94		30-130	Pass	
Dinoseb	M20-Fe38183	CP	%	36		30-130	Pass	
Phenol	M20-Fe38183	CP	%	83		30-130	Pass	
Spike - % Recovery								
				Result 1				
Cyanide (total)	K20-Fe35178	NCP	%	53		70-130	Fail	Q08
Spike - % Recovery								
Heavy Metals				Result 1				
Arsenic	M20-Fe38187	CP	%	94		75-125	Pass	
Barium	M20-Fe38187	CP	%	156		75-125	Fail	Q08
Beryllium	M20-Fe38187	CP	%	95		75-125	Pass	
Boron	M20-Fe38187	CP	%	89		75-125	Pass	
Cadmium	M20-Fe38187	CP	%	90		75-125	Pass	
Chromium	M20-Fe38187	CP	%	97		75-125	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Cobalt	M20-Fe38187	CP	%	98			75-125	Pass	
Copper	M20-Fe38187	CP	%	98			75-125	Pass	
Lead	M20-Fe38187	CP	%	102			75-125	Pass	
Mercury	M20-Fe38187	CP	%	95			70-130	Pass	
Nickel	M20-Fe38187	CP	%	98			75-125	Pass	
Selenium	M20-Fe38187	CP	%	95			75-125	Pass	
Silver	M20-Fe38187	CP	%	80			75-125	Pass	
Zinc	M20-Fe38187	CP	%	97			75-125	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	M20-Fe38198	CP	%	88			75-125	Pass	
Barium	M20-Fe38198	CP	%	100			75-125	Pass	
Beryllium	M20-Fe38198	CP	%	92			75-125	Pass	
Boron	M20-Fe38198	CP	%	91			75-125	Pass	
Cadmium	M20-Fe38198	CP	%	81			75-125	Pass	
Chromium	M20-Fe38198	CP	%	93			75-125	Pass	
Cobalt	M20-Fe38198	CP	%	90			75-125	Pass	
Copper	M20-Fe38198	CP	%	89			75-125	Pass	
Lead	M20-Fe38198	CP	%	98			75-125	Pass	
Manganese	M20-Fe38198	CP	%	148			75-125	Fail	Q08
Mercury	M20-Fe38198	CP	%	106			70-130	Pass	
Nickel	M20-Fe38198	CP	%	91			75-125	Pass	
Selenium	M20-Fe38198	CP	%	88			75-125	Pass	
Silver	M20-Fe38198	CP	%	72			75-125	Fail	Q08
Zinc	M20-Fe38198	CP	%	93			75-125	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
				Result 1	Result 2	RPD			
% Clay	M19-Oc35913	NCP	%	8.8	10	13	30%	Pass	
Conductivity (1:5 aqueous extract at 25°C as rec.)	S20-Fe39404	NCP	uS/cm	53	42	23	30%	Pass	
pH (units)(1:5 soil:CaCl2 extract at 25°C as rec.)	M20-Fe32950	NCP	pH Units	5.2	5.2	pass	30%	Pass	
Duplicate									
Cation Exchange Capacity				Result 1	Result 2	RPD			
Cation Exchange Capacity	B20-Fe35222	NCP	meq/100g	38	38	1.0	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C10-C14	M20-Fe38710	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C15-C28	M20-Fe38710	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH C29-C36	M20-Fe38710	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
TRH >C10-C16	M20-Fe38710	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH >C16-C34	M20-Fe38710	NCP	mg/kg	< 100		<1	30%	Pass	
TRH >C34-C40	M20-Fe38710	NCP	mg/kg	< 100		<1	30%	Pass	
Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Acenaphthene	M20-Fe38154	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Acenaphthylene	M20-Fe38154	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Anthracene	M20-Fe38154	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benz(a)anthracene	M20-Fe38154	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(a)pyrene	M20-Fe38154	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(b&j)fluoranthene	M20-Fe38154	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	

Duplicate								
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD		
Benzo(g,h,i)perylene	M20-Fe38154	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(k)fluoranthene	M20-Fe38154	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Chrysene	M20-Fe38154	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Dibenz(a,h)anthracene	M20-Fe38154	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Fluoranthene	M20-Fe38154	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Fluorene	M20-Fe38154	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Indeno(1,2,3-cd)pyrene	M20-Fe38154	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Naphthalene	M20-Fe38154	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Phenanthrene	M20-Fe38154	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Pyrene	M20-Fe38154	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Duplicate								
Organochlorine Pesticides				Result 1	Result 2	RPD		
Bifenthrin	M20-Fe38154	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Chlordanes - Total	M20-Fe38154	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
4,4'-DDD	M20-Fe38154	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
4,4'-DDE	M20-Fe38154	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
4,4'-DDT	M20-Fe38154	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
a-BHC	M20-Fe38154	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Aldrin	M20-Fe38154	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
b-BHC	M20-Fe38154	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
d-BHC	M20-Fe38154	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Dieldrin	M20-Fe38154	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endosulfan I	M20-Fe38154	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endosulfan II	M20-Fe38154	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endosulfan sulphate	M20-Fe38154	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endrin	M20-Fe38154	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endrin aldehyde	M20-Fe38154	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endrin ketone	M20-Fe38154	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
g-BHC (Lindane)	M20-Fe38154	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Heptachlor	M20-Fe38154	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Heptachlor epoxide	M20-Fe38154	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Hexachlorobenzene	M20-Fe38154	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Methoxychlor	M20-Fe38154	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Duplicate								
Organophosphorus Pesticides				Result 1	Result 2	RPD		
Azinphos-methyl	M20-Fe38154	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Bolstar	M20-Fe38154	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Chlorfenvinphos	M20-Fe38154	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Chlorpyrifos	M20-Fe38154	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Chlorpyrifos-methyl	M20-Fe38154	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Coumaphos	M20-Fe38154	CP	mg/kg	< 2	< 2	<1	30%	Pass
Demeton-S	M20-Fe38154	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Demeton-O	M20-Fe38154	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Diazinon	M20-Fe38154	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Dichlorvos	M20-Fe38154	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Dimethoate	M20-Fe38154	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Disulfoton	M20-Fe38154	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
EPN	M20-Fe38154	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Ethion	M20-Fe38154	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Ethoprop	M20-Fe38154	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Ethyl parathion	M20-Fe38154	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Fenitrothion	M20-Fe38154	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Fensulfothion	M20-Fe38154	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Fenthion	M20-Fe38154	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass

Duplicate								
Organophosphorus Pesticides				Result 1	Result 2	RPD		
Malathion	M20-Fe38154	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Merphos	M20-Fe38154	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Methyl parathion	M20-Fe38154	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Mevinphos	M20-Fe38154	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Monocrotophos	M20-Fe38154	CP	mg/kg	< 2	< 2	<1	30%	Pass
Naled	M20-Fe38154	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Omethoate	M20-Fe38154	CP	mg/kg	< 2	< 2	<1	30%	Pass
Phorate	M20-Fe38154	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Pirimiphos-methyl	M20-Fe38154	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Pyrazophos	M20-Fe38154	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Ronnel	M20-Fe38154	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Terbufos	M20-Fe38154	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Tetrachlorvinphos	M20-Fe38154	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Tokuthion	M20-Fe38154	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Trichloronate	M20-Fe38154	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Duplicate								
Triazines				Result 1	Result 2	RPD		
Atrazine	M20-Fe38154	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Duplicate								
Phenols (Halogenated)				Result 1	Result 2	RPD		
2-Chlorophenol	M20-Fe38154	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
2,4-Dichlorophenol	M20-Fe38154	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
2,4,5-Trichlorophenol	M20-Fe38154	CP	mg/kg	< 1	< 1	<1	30%	Pass
2,4,6-Trichlorophenol	M20-Fe38154	CP	mg/kg	< 1	< 1	<1	30%	Pass
2,6-Dichlorophenol	M20-Fe38154	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
4-Chloro-3-methylphenol	M20-Fe38154	CP	mg/kg	< 1	< 1	<1	30%	Pass
Pentachlorophenol	M20-Fe38154	CP	mg/kg	< 1	< 1	<1	30%	Pass
Tetrachlorophenols - Total	M20-Fe38154	CP	mg/kg	< 10	< 10	<1	30%	Pass
Duplicate								
Phenols (non-Halogenated)				Result 1	Result 2	RPD		
2-Cyclohexyl-4,6-dinitrophenol	M20-Fe38154	CP	mg/kg	< 20	< 20	<1	30%	Pass
2-Methyl-4,6-dinitrophenol	M20-Fe38154	CP	mg/kg	< 5	< 5	<1	30%	Pass
2-Methylphenol (o-Cresol)	M20-Fe38154	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
2-Nitrophenol	M20-Fe38154	CP	mg/kg	< 1	< 1	<1	30%	Pass
2,4-Dimethylphenol	M20-Fe38154	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
2,4-Dinitrophenol	M20-Fe38154	CP	mg/kg	< 5	< 5	<1	30%	Pass
3&4-Methylphenol (m&p-Cresol)	M20-Fe38154	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass
4-Nitrophenol	M20-Fe38154	CP	mg/kg	< 5	< 5	<1	30%	Pass
Dinoseb	M20-Fe38154	CP	mg/kg	< 20	< 20	<1	30%	Pass
Phenol	M20-Fe38154	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Duplicate								
NEPM 2013 Organochlorine Pesticides				Result 1	Result 2	RPD		
Mirex	M20-Fe38154	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass
Duplicate								
Semivolatile Organics				Result 1	Result 2	RPD		
1-Chloronaphthalene	M20-Fe40221	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
1-Naphthylamine	M20-Fe40221	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
1,2-Dichlorobenzene	M20-Fe40221	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
1,2,3-Trichlorobenzene	M20-Fe40221	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
1,2,3,4-Tetrachlorobenzene	M20-Fe40221	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
1,2,3,5-Tetrachlorobenzene	M20-Fe40221	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
1,2,4-Trichlorobenzene	M20-Fe40221	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
1,2,4,5-Tetrachlorobenzene	M20-Fe40221	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
1,3-Dichlorobenzene	M20-Fe40221	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass

Duplicate								
Semivolatile Organics				Result 1	Result 2	RPD		
1.3.5-Trichlorobenzene	M20-Fe40221	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
1.4-Dichlorobenzene	M20-Fe40221	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
2-Chloronaphthalene	M20-Fe40221	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
2-Methylnaphthalene	M20-Fe40221	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
2-Naphthylamine	M20-Fe40221	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
2-Nitroaniline	M20-Fe40221	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
2-Picoline	M20-Fe40221	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
2.3.4.6-Tetrachlorophenol	M20-Fe40221	NCP	mg/kg	< 5	< 5	<1	30%	Pass
2.4-Dinitrotoluene	M20-Fe40221	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
2.6-Dinitrotoluene	M20-Fe40221	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
3-Methylcholanthrene	M20-Fe40221	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
3.3'-Dichlorobenzidine	M20-Fe40221	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
4-Aminobiphenyl	M20-Fe40221	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
4-Bromophenyl phenyl ether	M20-Fe40221	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
4-Chlorophenyl phenyl ether	M20-Fe40221	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
4.4'-DDD	M20-Fe40221	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
4.4'-DDE	M20-Fe40221	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
4.4'-DDT	M20-Fe40221	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
7.12-Dimethylbenz(a)anthracene	M20-Fe40221	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
a-BHC	M20-Fe40221	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Acetophenone	M20-Fe40221	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Aldrin	M20-Fe40221	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Aniline	M20-Fe40221	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
b-BHC	M20-Fe40221	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzyl chloride	M20-Fe40221	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Bis(2-chloroethoxy)methane	M20-Fe40221	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Bis(2-chloroisopropyl)ether	M20-Fe40221	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Bis(2-ethylhexyl)phthalate	M20-Fe40221	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Butyl benzyl phthalate	M20-Fe40221	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
d-BHC	M20-Fe40221	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Di-n-butyl phthalate	M20-Fe40221	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Di-n-octyl phthalate	M20-Fe40221	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Dibenz(a,j)acridine	M20-Fe40221	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Dibenzofuran	M20-Fe40221	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Dieldrin	M20-Fe40221	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Diethyl phthalate	M20-Fe40221	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Dimethyl phthalate	M20-Fe40221	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Dimethylaminoazobenzene	M20-Fe40221	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Diphenylamine	M20-Fe40221	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Endosulfan I	M20-Fe40221	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Endosulfan II	M20-Fe40221	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Endosulfan sulphate	M20-Fe40221	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Endrin	M20-Fe40221	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Endrin aldehyde	M20-Fe40221	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Endrin ketone	M20-Fe40221	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
g-BHC (Lindane)	M20-Fe40221	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Heptachlor	M20-Fe40221	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Heptachlor epoxide	M20-Fe40221	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Hexachlorobenzene	M20-Fe40221	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Hexachlorobutadiene	M20-Fe40221	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Hexachlorocyclopentadiene	M20-Fe40221	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Hexachloroethane	M20-Fe40221	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Methoxychlor	M20-Fe40221	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
N-Nitrosodibutylamine	M20-Fe40221	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass

Duplicate								
Semivolatile Organics				Result 1	Result 2	RPD		
N-Nitrosodipropylamine	M20-Fe40221	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
N-Nitrosopiperidine	M20-Fe40221	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Nitrobenzene	M20-Fe40221	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Pentachlorobenzene	M20-Fe40221	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Pentachloronitrobenzene	M20-Fe40221	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Pronamide	M20-Fe40221	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Trifluralin	M20-Fe40221	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
% Moisture	M20-Fe38155	CP	%	7.9	8.5	8.0	30%	Pass
Duplicate								
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD		
Acenaphthene	M20-Fe38159	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Acenaphthylene	M20-Fe38159	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Anthracene	M20-Fe38159	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benz(a)anthracene	M20-Fe38159	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(a)pyrene	M20-Fe38159	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(b&j)fluoranthene	M20-Fe38159	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(g,h,i)perylene	M20-Fe38159	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(k)fluoranthene	M20-Fe38159	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Chrysene	M20-Fe38159	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Dibenz(a,h)anthracene	M20-Fe38159	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Fluoranthene	M20-Fe38159	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Fluorene	M20-Fe38159	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Indeno(1,2,3-cd)pyrene	M20-Fe38159	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Naphthalene	M20-Fe38159	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Phenanthrene	M20-Fe38159	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Pyrene	M20-Fe38159	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Duplicate								
Organochlorine Pesticides				Result 1	Result 2	RPD		
Bifenthrin	M20-Fe38159	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Chlordanes - Total	M20-Fe38159	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
4,4'-DDD	M20-Fe38159	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
4,4'-DDE	M20-Fe38159	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
4,4'-DDT	M20-Fe38159	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
a-BHC	M20-Fe38159	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Aldrin	M20-Fe38159	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
b-BHC	M20-Fe38159	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
d-BHC	M20-Fe38159	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Dieldrin	M20-Fe38159	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endosulfan I	M20-Fe38159	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endosulfan II	M20-Fe38159	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endosulfan sulphate	M20-Fe38159	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endrin	M20-Fe38159	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endrin aldehyde	M20-Fe38159	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endrin ketone	M20-Fe38159	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
g-BHC (Lindane)	M20-Fe38159	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Heptachlor	M20-Fe38159	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Heptachlor epoxide	M20-Fe38159	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Hexachlorobenzene	M20-Fe38159	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Methoxychlor	M20-Fe38159	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass

Duplicate								
Organophosphorus Pesticides				Result 1	Result 2	RPD		
Azinphos-methyl	M20-Fe38159	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Bolstar	M20-Fe38159	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Chlorfenvinphos	M20-Fe38159	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Chlorpyrifos	M20-Fe38159	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Chlorpyrifos-methyl	M20-Fe38159	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Coumaphos	M20-Fe38159	CP	mg/kg	< 2	< 2	<1	30%	Pass
Demeton-S	M20-Fe38159	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Demeton-O	M20-Fe38159	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Diazinon	M20-Fe38159	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Dichlorvos	M20-Fe38159	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Dimethoate	M20-Fe38159	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Disulfoton	M20-Fe38159	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
EPN	M20-Fe38159	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Ethion	M20-Fe38159	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Ethoprop	M20-Fe38159	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Ethyl parathion	M20-Fe38159	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Fenitrothion	M20-Fe38159	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Fensulfthion	M20-Fe38159	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Fenthion	M20-Fe38159	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Malathion	M20-Fe38159	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Merphos	M20-Fe38159	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Methyl parathion	M20-Fe38159	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Mevinphos	M20-Fe38159	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Monocrotophos	M20-Fe38159	CP	mg/kg	< 2	< 2	<1	30%	Pass
Naled	M20-Fe38159	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Omethoate	M20-Fe38159	CP	mg/kg	< 2	< 2	<1	30%	Pass
Phorate	M20-Fe38159	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Pirimiphos-methyl	M20-Fe38159	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Pyrazophos	M20-Fe38159	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Ronnel	M20-Fe38159	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Terbufos	M20-Fe38159	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Tetrachlorvinphos	M20-Fe38159	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Tokuthion	M20-Fe38159	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Trichloronate	M20-Fe38159	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Duplicate								
Triazines				Result 1	Result 2	RPD		
Atrazine	M20-Fe38159	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Duplicate								
Phenols (Halogenated)				Result 1	Result 2	RPD		
2-Chlorophenol	M20-Fe38159	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
2,4-Dichlorophenol	M20-Fe38159	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
2,4,5-Trichlorophenol	M20-Fe38159	CP	mg/kg	< 1	< 1	<1	30%	Pass
2,4,6-Trichlorophenol	M20-Fe38159	CP	mg/kg	< 1	< 1	<1	30%	Pass
2,6-Dichlorophenol	M20-Fe38159	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
4-Chloro-3-methylphenol	M20-Fe38159	CP	mg/kg	< 1	< 1	<1	30%	Pass
Pentachlorophenol	M20-Fe38159	CP	mg/kg	< 1	< 1	<1	30%	Pass
Tetrachlorophenols - Total	M20-Fe38159	CP	mg/kg	< 10	< 10	<1	30%	Pass
Duplicate								
Phenols (non-Halogenated)				Result 1	Result 2	RPD		
2-Cyclohexyl-4,6-dinitrophenol	M20-Fe38159	CP	mg/kg	< 20	< 20	<1	30%	Pass
2-Methyl-4,6-dinitrophenol	M20-Fe38159	CP	mg/kg	< 5	< 5	<1	30%	Pass
2-Methylphenol (o-Cresol)	M20-Fe38159	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
2-Nitrophenol	M20-Fe38159	CP	mg/kg	< 1	< 1	<1	30%	Pass
2,4-Dimethylphenol	M20-Fe38159	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass

Duplicate								
Phenols (non-Halogenated)				Result 1	Result 2	RPD		
2,4-Dinitrophenol	M20-Fe38159	CP	mg/kg	< 5	< 5	<1	30%	Pass
3&4-Methylphenol (m&p-Cresol)	M20-Fe38159	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass
4-Nitrophenol	M20-Fe38159	CP	mg/kg	< 5	< 5	<1	30%	Pass
Dinoseb	M20-Fe38159	CP	mg/kg	< 20	< 20	<1	30%	Pass
Phenol	M20-Fe38159	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Duplicate								
NEPM 2013 Acid Herbicides				Result 1	Result 2	RPD		
Picloram	W20-Fe27260	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
2,4-D	W20-Fe27260	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
2,4,5-T	W20-Fe27260	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
MCPA	W20-Fe27260	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
MCPB	W20-Fe27260	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Mecoprop	W20-Fe27260	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Duplicate								
NEPM 2013 Organochlorine Pesticides				Result 1	Result 2	RPD		
Mirex	M20-Fe38159	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Chromium (hexavalent)	M20-Fe41680	NCP	mg/kg	< 1	< 1	<1	30%	Pass
Cyanide (total)	M20-Fe38159	CP	mg/kg	< 5	< 5	<1	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Arsenic	M20-Fe38160	CP	mg/kg	34	32	6.0	30%	Pass
Barium	M20-Fe38160	CP	mg/kg	29	27	8.0	30%	Pass
Beryllium	M20-Fe38160	CP	mg/kg	< 2	< 2	<1	30%	Pass
Boron	M20-Fe38160	CP	mg/kg	< 10	< 10	<1	30%	Pass
Cadmium	M20-Fe38160	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass
Chromium	M20-Fe38160	CP	mg/kg	14	13	9.0	30%	Pass
Cobalt	M20-Fe38160	CP	mg/kg	< 5	< 5	<1	30%	Pass
Copper	M20-Fe38160	CP	mg/kg	8.6	7.4	15	30%	Pass
Lead	M20-Fe38160	CP	mg/kg	14	13	9.0	30%	Pass
Manganese	M20-Fe38160	CP	mg/kg	160	140	9.0	30%	Pass
Mercury	M20-Fe38160	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Nickel	M20-Fe38160	CP	mg/kg	5.6	< 5	13	30%	Pass
Selenium	M20-Fe38160	CP	mg/kg	< 2	< 2	<1	30%	Pass
Silver	M20-Fe38160	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Zinc	M20-Fe38160	CP	mg/kg	14	13	9.0	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Arsenic	M20-Fe38162	CP	mg/kg	140	140	2.0	30%	Pass
Barium	M20-Fe38162	CP	mg/kg	71	69	2.0	30%	Pass
Beryllium	M20-Fe38162	CP	mg/kg	< 2	< 2	<1	30%	Pass
Boron	M20-Fe38162	CP	mg/kg	< 10	< 10	<1	30%	Pass
Cadmium	M20-Fe38162	CP	mg/kg	0.5	0.4	2.0	30%	Pass
Chromium	M20-Fe38162	CP	mg/kg	42	41	3.0	30%	Pass
Cobalt	M20-Fe38162	CP	mg/kg	8.1	8.0	<1	30%	Pass
Copper	M20-Fe38162	CP	mg/kg	44	42	3.0	30%	Pass
Lead	M20-Fe38162	CP	mg/kg	89	87	3.0	30%	Pass
Manganese	M20-Fe38162	CP	mg/kg	300	290	2.0	30%	Pass
Mercury	M20-Fe38162	CP	mg/kg	0.2	0.2	1.0	30%	Pass
Nickel	M20-Fe38162	CP	mg/kg	15	15	1.0	30%	Pass
Selenium	M20-Fe38162	CP	mg/kg	< 2	< 2	<1	30%	Pass
Silver	M20-Fe38162	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Zinc	M20-Fe38162	CP	mg/kg	180	180	2.0	30%	Pass

Duplicate								
				Result 1	Result 2	RPD		
% Moisture	M20-Fe38165	CP	%	17	19	9.0	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Arsenic	M20-Fe38171	CP	mg/kg	3.3	3.0	8.0	30%	Pass
Barium	M20-Fe38171	CP	mg/kg	65	62	4.0	30%	Pass
Beryllium	M20-Fe38171	CP	mg/kg	< 2	< 2	<1	30%	Pass
Boron	M20-Fe38171	CP	mg/kg	15	14	4.0	30%	Pass
Chromium	M20-Fe38171	CP	mg/kg	26	25	5.0	30%	Pass
Cobalt	M20-Fe38171	CP	mg/kg	7.1	6.9	3.0	30%	Pass
Copper	M20-Fe38171	CP	mg/kg	18	17	4.0	30%	Pass
Iron	M20-Fe38171	CP	mg/kg	20000	19000	4.0	30%	Pass
Lead	M20-Fe38171	CP	mg/kg	31	32	1.0	30%	Pass
Manganese	M20-Fe38171	CP	mg/kg	240	230	4.0	30%	Pass
Mercury	M20-Fe38171	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Nickel	M20-Fe38171	CP	mg/kg	11	10	6.0	30%	Pass
Selenium	M20-Fe38171	CP	mg/kg	< 2	< 2	<1	30%	Pass
Silver	M20-Fe38171	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Zinc	M20-Fe38171	CP	mg/kg	47	45	3.0	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Arsenic	M20-Fe38173	CP	mg/kg	< 2	< 2	<1	30%	Pass
Barium	M20-Fe38173	CP	mg/kg	27	26	3.0	30%	Pass
Beryllium	M20-Fe38173	CP	mg/kg	< 2	< 2	<1	30%	Pass
Boron	M20-Fe38173	CP	mg/kg	< 10	< 10	<1	30%	Pass
Cadmium	M20-Fe38173	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass
Chromium	M20-Fe38173	CP	mg/kg	18	17	4.0	30%	Pass
Cobalt	M20-Fe38173	CP	mg/kg	5.1	< 5	5.0	30%	Pass
Copper	M20-Fe38173	CP	mg/kg	9.8	9.4	5.0	30%	Pass
Iron	M20-Fe38173	CP	mg/kg	14000	13000	4.0	30%	Pass
Lead	M20-Fe38173	CP	mg/kg	12	12	4.0	30%	Pass
Manganese	M20-Fe38173	CP	mg/kg	160	150	3.0	30%	Pass
Mercury	M20-Fe38173	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Nickel	M20-Fe38173	CP	mg/kg	7.0	6.3	10	30%	Pass
Selenium	M20-Fe38173	CP	mg/kg	< 2	< 2	<1	30%	Pass
Silver	M20-Fe38173	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Zinc	M20-Fe38173	CP	mg/kg	16	15	3.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
% Moisture	M20-Fe38175	CP	%	9.5	9.4	1.0	30%	Pass
Duplicate								
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD		
Acenaphthene	M20-Fe38176	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Acenaphthylene	M20-Fe38176	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Anthracene	M20-Fe38176	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(a)anthracene	M20-Fe38176	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(a)pyrene	M20-Fe38176	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(b&j)fluoranthene	M20-Fe38176	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(g,h,i)perylene	M20-Fe38176	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(k)fluoranthene	M20-Fe38176	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Chrysene	M20-Fe38176	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Dibenz(a,h)anthracene	M20-Fe38176	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Fluoranthene	M20-Fe38176	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Fluorene	M20-Fe38176	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Indeno(1,2,3-cd)pyrene	M20-Fe38176	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass

Duplicate								
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD		
Naphthalene	M20-Fe38176	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Phenanthrene	M20-Fe38176	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Pyrene	M20-Fe38176	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Duplicate								
Organochlorine Pesticides				Result 1	Result 2	RPD		
Bifenthrin	M20-Fe38176	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Chlordanes - Total	M20-Fe38176	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
4,4'-DDD	M20-Fe38176	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
4,4'-DDE	M20-Fe38176	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
4,4'-DDT	M20-Fe38176	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
a-BHC	M20-Fe38176	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Aldrin	M20-Fe38176	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
b-BHC	M20-Fe38176	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
d-BHC	M20-Fe38176	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Dieldrin	M20-Fe38176	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endosulfan I	M20-Fe38176	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endosulfan II	M20-Fe38176	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endosulfan sulphate	M20-Fe38176	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endrin	M20-Fe38176	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endrin aldehyde	M20-Fe38176	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endrin ketone	M20-Fe38176	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
g-BHC (Lindane)	M20-Fe38176	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Heptachlor	M20-Fe38176	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Heptachlor epoxide	M20-Fe38176	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Hexachlorobenzene	M20-Fe38176	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Methoxychlor	M20-Fe38176	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Duplicate								
Organophosphorus Pesticides				Result 1	Result 2	RPD		
Azinphos-methyl	M20-Fe38176	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Bolstar	M20-Fe38176	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Chlorfenvinphos	M20-Fe38176	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Chlorpyrifos	M20-Fe38176	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Chlorpyrifos-methyl	M20-Fe38176	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Coumaphos	M20-Fe38176	CP	mg/kg	< 2	< 2	<1	30%	Pass
Demeton-S	M20-Fe38176	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Demeton-O	M20-Fe38176	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Diazinon	M20-Fe38176	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Dichlorvos	M20-Fe38176	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Dimethoate	M20-Fe38176	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Disulfoton	M20-Fe38176	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
EPN	M20-Fe38176	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Ethion	M20-Fe38176	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Ethoprop	M20-Fe38176	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Ethyl parathion	M20-Fe38176	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Fenitrothion	M20-Fe38176	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Fensulfthion	M20-Fe38176	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Fenthion	M20-Fe38176	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Malathion	M20-Fe38176	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Merphos	M20-Fe38176	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Methyl parathion	M20-Fe38176	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Mevinphos	M20-Fe38176	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Monocrotophos	M20-Fe38176	CP	mg/kg	< 2	< 2	<1	30%	Pass
Naled	M20-Fe38176	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Omethoate	M20-Fe38176	CP	mg/kg	< 2	< 2	<1	30%	Pass

Duplicate								
Organophosphorus Pesticides				Result 1	Result 2	RPD		
Phorate	M20-Fe38176	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Pirimiphos-methyl	M20-Fe38176	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Pyrazophos	M20-Fe38176	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Ronnel	M20-Fe38176	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Terbufos	M20-Fe38176	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Tetrachlorvinphos	M20-Fe38176	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Tokuthion	M20-Fe38176	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Trichloronate	M20-Fe38176	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Duplicate								
Triazines				Result 1	Result 2	RPD		
Atrazine	M20-Fe38176	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Duplicate								
Phenols (Halogenated)				Result 1	Result 2	RPD		
2-Chlorophenol	M20-Fe38176	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
2,4-Dichlorophenol	M20-Fe38176	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
2,4,5-Trichlorophenol	M20-Fe38176	CP	mg/kg	< 1	< 1	<1	30%	Pass
2,4,6-Trichlorophenol	M20-Fe38176	CP	mg/kg	< 1	< 1	<1	30%	Pass
2,6-Dichlorophenol	M20-Fe38176	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
4-Chloro-3-methylphenol	M20-Fe38176	CP	mg/kg	< 1	< 1	<1	30%	Pass
Pentachlorophenol	M20-Fe38176	CP	mg/kg	< 1	< 1	<1	30%	Pass
Tetrachlorophenols - Total	M20-Fe38176	CP	mg/kg	< 10	< 10	<1	30%	Pass
Duplicate								
Phenols (non-Halogenated)				Result 1	Result 2	RPD		
2-Cyclohexyl-4,6-dinitrophenol	M20-Fe38176	CP	mg/kg	< 20	< 20	<1	30%	Pass
2-Methyl-4,6-dinitrophenol	M20-Fe38176	CP	mg/kg	< 5	< 5	<1	30%	Pass
2-Methylphenol (o-Cresol)	M20-Fe38176	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
2-Nitrophenol	M20-Fe38176	CP	mg/kg	< 1	< 1	<1	30%	Pass
2,4-Dimethylphenol	M20-Fe38176	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
2,4-Dinitrophenol	M20-Fe38176	CP	mg/kg	< 5	< 5	<1	30%	Pass
3&4-Methylphenol (m&p-Cresol)	M20-Fe38176	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass
4-Nitrophenol	M20-Fe38176	CP	mg/kg	< 5	< 5	<1	30%	Pass
Dinoseb	M20-Fe38176	CP	mg/kg	< 20	< 20	<1	30%	Pass
Phenol	M20-Fe38176	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Duplicate								
NEPM 2013 Organochlorine Pesticides				Result 1	Result 2	RPD		
Mirex	M20-Fe38176	CP	mg/kg	< 0.01	< 0.01	<1	30%	Pass
Duplicate								
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD		
TRH C6-C9	M20-Fe38177	CP	mg/kg	< 20	< 20	<1	30%	Pass
Duplicate								
BTEX				Result 1	Result 2	RPD		
Benzene	M20-Fe38177	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Toluene	M20-Fe38177	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Ethylbenzene	M20-Fe38177	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
m&p-Xylenes	M20-Fe38177	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
o-Xylene	M20-Fe38177	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Xylenes - Total	M20-Fe38177	CP	mg/kg	< 0.3	< 0.3	<1	30%	Pass
Duplicate								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD		
Naphthalene	M20-Fe38177	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
TRH C6-C10	M20-Fe38177	CP	mg/kg	< 20	< 20	<1	30%	Pass
Duplicate								
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD		
TRH C6-C9	M20-Fe38183	CP	mg/kg	< 20	< 20	<1	30%	Pass

Duplicate								
Volatile Organics				Result 1	Result 2	RPD		
Tetrachloroethene	M20-Fe38183	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Duplicate								
BTEX				Result 1	Result 2	RPD		
Benzene	M20-Fe38183	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Toluene	M20-Fe38183	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Ethylbenzene	M20-Fe38183	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
m&p-Xylenes	M20-Fe38183	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
o-Xylene	M20-Fe38183	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Xylenes - Total	M20-Fe38183	CP	mg/kg	< 0.3	< 0.3	<1	30%	Pass
Duplicate								
Volatile Organics				Result 1	Result 2	RPD		
1.1-Dichloroethane	M20-Fe38183	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
1.1-Dichloroethene	M20-Fe38183	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
1.1.1-Trichloroethane	M20-Fe38183	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
1.1.1.2-Tetrachloroethane	M20-Fe38183	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
1.1.2-Trichloroethane	M20-Fe38183	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
1.1.2.2-Tetrachloroethane	M20-Fe38183	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
1.2-Dibromoethane	M20-Fe38183	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
1.2-Dichlorobenzene	M20-Fe38183	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
1.2-Dichloroethane	M20-Fe38183	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
1.2-Dichloropropane	M20-Fe38183	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
1.2.3-Trichloropropane	M20-Fe38183	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
1.2.4-Trimethylbenzene	M20-Fe38183	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
1.3-Dichlorobenzene	M20-Fe38183	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
1.3-Dichloropropane	M20-Fe38183	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
1.3.5-Trimethylbenzene	M20-Fe38183	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
1.4-Dichlorobenzene	M20-Fe38183	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
2-Butanone (MEK)	M20-Fe38183	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
2-Propanone (Acetone)	M20-Fe38183	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
4-Chlorotoluene	M20-Fe38183	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
4-Methyl-2-pentanone (MIBK)	M20-Fe38183	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Allyl chloride	M20-Fe38183	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Bromobenzene	M20-Fe38183	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Bromochloromethane	M20-Fe38183	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Bromodichloromethane	M20-Fe38183	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Bromoform	M20-Fe38183	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Bromomethane	M20-Fe38183	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Carbon disulfide	M20-Fe38183	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Carbon Tetrachloride	M20-Fe38183	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Chlorobenzene	M20-Fe38183	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Chloroethane	M20-Fe38183	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Chloroform	M20-Fe38183	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Chloromethane	M20-Fe38183	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
cis-1.2-Dichloroethene	M20-Fe38183	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
cis-1.3-Dichloropropene	M20-Fe38183	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Dibromochloromethane	M20-Fe38183	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Dibromomethane	M20-Fe38183	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Dichlorodifluoromethane	M20-Fe38183	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Iodomethane	M20-Fe38183	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Isopropyl benzene (Cumene)	M20-Fe38183	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Methylene Chloride	M20-Fe38183	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Styrene	M20-Fe38183	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
trans-1.2-Dichloroethene	M20-Fe38183	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
trans-1.3-Dichloropropene	M20-Fe38183	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass

Duplicate								
Volatile Organics				Result 1	Result 2	RPD		
Trichloroethene	M20-Fe38183	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Trichlorofluoromethane	M20-Fe38183	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Vinyl chloride	M20-Fe38183	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Duplicate								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD		
Naphthalene	M20-Fe38183	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
TRH C6-C10	M20-Fe38183	CP	mg/kg	< 20	< 20	<1	30%	Pass
Duplicate								
Polychlorinated Biphenyls				Result 1	Result 2	RPD		
Aroclor-1016	M20-Fe35003	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Aroclor-1221	M20-Fe35003	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Aroclor-1232	M20-Fe35003	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Aroclor-1242	M20-Fe35003	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Aroclor-1248	M20-Fe35003	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Aroclor-1254	M20-Fe35003	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Aroclor-1260	M20-Fe35003	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Total PCB*	M20-Fe35003	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Cyanide (total)	K20-Fe35177	NCP	mg/kg	< 5	< 5	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
% Moisture	M20-Fe38185	CP	%	8.3	7.7	8.0	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Arsenic	M20-Fe38186	CP	mg/kg	5.4	5.1	6.0	30%	Pass
Barium	M20-Fe38186	CP	mg/kg	85	180	72	30%	Fail
Beryllium	M20-Fe38186	CP	mg/kg	< 2	< 2	<1	30%	Pass
Boron	M20-Fe38186	CP	mg/kg	49	48	1.0	30%	Pass
Cadmium	M20-Fe38186	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass
Chromium	M20-Fe38186	CP	mg/kg	60	56	8.0	30%	Pass
Cobalt	M20-Fe38186	CP	mg/kg	15	16	1.0	30%	Pass
Copper	M20-Fe38186	CP	mg/kg	29	28	1.0	30%	Pass
Lead	M20-Fe38186	CP	mg/kg	16	17	5.0	30%	Pass
Manganese	M20-Fe38186	CP	mg/kg	420	500	18	30%	Pass
Mercury	M20-Fe38186	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Nickel	M20-Fe38186	CP	mg/kg	26	25	3.0	30%	Pass
Selenium	M20-Fe38186	CP	mg/kg	< 2	< 2	<1	30%	Pass
Silver	M20-Fe38186	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Zinc	M20-Fe38186	CP	mg/kg	58	54	7.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Total Organic Carbon	M20-Fe38187	CP	%	< 0.1	< 0.1	<1	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Arsenic	M20-Fe38187	CP	mg/kg	2.9	2.8	3.0	30%	Pass
Barium	M20-Fe38187	CP	mg/kg	52	51	<1	30%	Pass
Beryllium	M20-Fe38187	CP	mg/kg	< 2	< 2	<1	30%	Pass
Boron	M20-Fe38187	CP	mg/kg	14	13	9.0	30%	Pass
Cadmium	M20-Fe38187	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass
Chromium	M20-Fe38187	CP	mg/kg	33	33	<1	30%	Pass
Cobalt	M20-Fe38187	CP	mg/kg	13	13	<1	30%	Pass
Copper	M20-Fe38187	CP	mg/kg	14	14	2.0	30%	Pass
Iron	M20-Fe38187	CP	mg/kg	25000	25000	1.0	30%	Pass

Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Lead	M20-Fe38187	CP	mg/kg	12	12	1.0	30%	Pass
Manganese	M20-Fe38187	CP	mg/kg	700	700	1.0	30%	Pass
Mercury	M20-Fe38187	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Nickel	M20-Fe38187	CP	mg/kg	16	16	<1	30%	Pass
Selenium	M20-Fe38187	CP	mg/kg	< 2	< 2	<1	30%	Pass
Silver	M20-Fe38187	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Zinc	M20-Fe38187	CP	mg/kg	30	31	1.0	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Iron (%)	M20-Fe38187	CP	%	2.5	2.5	1.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
% Moisture	M20-Fe38195	CP	%	7.0	7.3	5.0	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Arsenic	M20-Fe38197	CP	mg/kg	4.8	5.1	6.0	30%	Pass
Barium	M20-Fe38197	CP	mg/kg	97	100	7.0	30%	Pass
Beryllium	M20-Fe38197	CP	mg/kg	< 2	< 2	<1	30%	Pass
Boron	M20-Fe38197	CP	mg/kg	46	56	18	30%	Pass
Cadmium	M20-Fe38197	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass
Chromium	M20-Fe38197	CP	mg/kg	59	63	7.0	30%	Pass
Cobalt	M20-Fe38197	CP	mg/kg	17	17	<1	30%	Pass
Copper	M20-Fe38197	CP	mg/kg	30	32	6.0	30%	Pass
Lead	M20-Fe38197	CP	mg/kg	19	18	1.0	30%	Pass
Manganese	M20-Fe38197	CP	mg/kg	550	520	4.0	30%	Pass
Mercury	M20-Fe38197	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Nickel	M20-Fe38197	CP	mg/kg	28	29	3.0	30%	Pass
Selenium	M20-Fe38197	CP	mg/kg	< 2	< 2	<1	30%	Pass
Silver	M20-Fe38197	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Zinc	M20-Fe38197	CP	mg/kg	58	61	6.0	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Arsenic	M20-Fe38198	CP	mg/kg	5.3	5.1	5.0	30%	Pass
Barium	M20-Fe38198	CP	mg/kg	120	120	1.0	30%	Pass
Beryllium	M20-Fe38198	CP	mg/kg	< 2	< 2	<1	30%	Pass
Boron	M20-Fe38198	CP	mg/kg	53	51	5.0	30%	Pass
Cadmium	M20-Fe38198	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass
Chromium	M20-Fe38198	CP	mg/kg	57	56	2.0	30%	Pass
Cobalt	M20-Fe38198	CP	mg/kg	16	16	1.0	30%	Pass
Copper	M20-Fe38198	CP	mg/kg	29	28	1.0	30%	Pass
Lead	M20-Fe38198	CP	mg/kg	17	17	<1	30%	Pass
Manganese	M20-Fe38198	CP	mg/kg	470	470	1.0	30%	Pass
Mercury	M20-Fe38198	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Nickel	M20-Fe38198	CP	mg/kg	26	26	<1	30%	Pass
Selenium	M20-Fe38198	CP	mg/kg	< 2	< 2	<1	30%	Pass
Silver	M20-Fe38198	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Zinc	M20-Fe38198	CP	mg/kg	55	55	1.0	30%	Pass

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
N07	Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to the total of the two co-eluting PAHs
Q08	The matrix spike recovery is outside of the recommended acceptance criteria. An acceptable recovery was obtained for the laboratory control sample indicating a sample matrix interference.
Q15	The RPD reported passes Eurofins Environment Testing's QC - Acceptance Criteria as defined in the Internal Quality Control Review and Glossary page of this report.

Authorised By

Michael Cassidy	Analytical Services Manager
Emily Rosenberg	Senior Analyst-Metal (VIC)
Harry Bacalis	Senior Analyst-Volatile (VIC)
Jonathon Angell	Senior Analyst-Inorganic (QLD)
Joseph Edouard	Senior Analyst-Organic (VIC)
Scott Beddoes	Senior Analyst-Inorganic (VIC)



Glenn Jackson General Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

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Agon Environmental Pty Ltd
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Fullarton
SA 5063



NATA Accredited
Accreditation Number 1261
Site Number 1254

Accredited for compliance with ISO/IEC 17025 – Testing
The results of the tests, calibrations and/or
measurements included in this document are traceable
to Australian/national standards.

Attention: Justin Symonds

Report 704508-W
Project name Trident Torrens Road
Project ID JC0482
Received Date Feb 27, 2020

Client Sample ID			MW01	MW02	RN01	TB01
Sample Matrix			Water	Water	Water	Water
Eurofins Sample No.			M20-Fe38201	M20-Fe38202	M20-Fe38203	M20-Fe38204
Date Sampled			Feb 24, 2020	Feb 24, 2020	Feb 24, 2020	Feb 24, 2020
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene ^{N02}	0.01	mg/L	< 0.01	< 0.01	< 0.01	< 0.01
TRH C6-C10	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
TRH C6-C10 less BTEX (F1) ^{N04}	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
TRH >C10-C16	0.05	mg/L	< 0.05	< 0.05	< 0.05	-
TRH >C10-C16 less Naphthalene (F2) ^{N01}	0.05	mg/L	< 0.05	< 0.05	< 0.05	-
TRH >C16-C34	0.1	mg/L	< 0.1	< 0.1	< 0.1	-
TRH >C34-C40	0.1	mg/L	< 0.1	< 0.1	< 0.1	-
TRH >C10-C40 (total)*	0.1	mg/L	< 0.1	< 0.1	< 0.1	-
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	0.02	mg/L	< 0.02	< 0.02	< 0.02	< 0.02
TRH C10-C14	0.05	mg/L	< 0.05	< 0.05	< 0.05	-
TRH C15-C28	0.1	mg/L	< 0.1	< 0.1	< 0.1	-
TRH C29-C36	0.1	mg/L	< 0.1	< 0.1	< 0.1	-
TRH C10-C36 (Total)	0.1	mg/L	< 0.1	< 0.1	< 0.1	-
BTEX						
Benzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Toluene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Ethylbenzene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
m&p-Xylenes	0.002	mg/L	< 0.002	< 0.002	< 0.002	< 0.002
o-Xylene	0.001	mg/L	< 0.001	< 0.001	< 0.001	< 0.001
Xylenes - Total	0.003	mg/L	< 0.003	< 0.003	< 0.003	< 0.003
4-Bromofluorobenzene (surr.)	1	%	104	102	85	87
Dissolved Gases						
Methane	0.05	mg/L	< 0.05	< 0.05	-	-
Volatile Organics						
1.1-Dichloroethane	0.001	mg/L	< 0.001	< 0.001	-	-
1.1-Dichloroethene	0.001	mg/L	< 0.001	< 0.001	-	-
1.1.1-Trichloroethane	0.001	mg/L	< 0.001	< 0.001	-	-
1.1.1.2-Tetrachloroethane	0.001	mg/L	< 0.001	< 0.001	-	-
1.1.2-Trichloroethane	0.001	mg/L	< 0.001	< 0.001	-	-
1.1.2.2-Tetrachloroethane	0.001	mg/L	< 0.001	< 0.001	-	-
1.2-Dibromoethane	0.001	mg/L	< 0.001	< 0.001	-	-
1.2-Dichlorobenzene	0.001	mg/L	< 0.001	< 0.001	-	-
1.2-Dichloroethane	0.001	mg/L	< 0.001	< 0.001	-	-
1.2-Dichloropropane	0.001	mg/L	< 0.001	< 0.001	-	-

Client Sample ID			MW01 Water M20-Fe38201 Feb 24, 2020	MW02 Water M20-Fe38202 Feb 24, 2020	RN01 Water M20-Fe38203 Feb 24, 2020	TB01 Water M20-Fe38204 Feb 24, 2020
Sample Matrix						
Eurofins Sample No.						
Date Sampled						
Test/Reference	LOR	Unit				
Volatile Organics						
1,2,3-Trichloropropane	0.001	mg/L	< 0.001	< 0.001	-	-
1,2,4-Trimethylbenzene	0.001	mg/L	< 0.001	< 0.001	-	-
1,3-Dichlorobenzene	0.001	mg/L	< 0.001	< 0.001	-	-
1,3-Dichloropropane	0.001	mg/L	< 0.001	< 0.001	-	-
1,3,5-Trimethylbenzene	0.001	mg/L	< 0.001	< 0.001	-	-
1,4-Dichlorobenzene	0.001	mg/L	< 0.001	< 0.001	-	-
2-Butanone (MEK)	0.001	mg/L	< 0.001	< 0.001	-	-
2-Propanone (Acetone)	0.001	mg/L	< 0.001	< 0.001	-	-
4-Chlorotoluene	0.001	mg/L	< 0.001	< 0.001	-	-
4-Methyl-2-pentanone (MIBK)	0.001	mg/L	< 0.001	< 0.001	-	-
Allyl chloride	0.001	mg/L	< 0.001	< 0.001	-	-
Benzene	0.001	mg/L	< 0.001	< 0.001	-	-
Bromobenzene	0.001	mg/L	< 0.001	< 0.001	-	-
Bromochloromethane	0.001	mg/L	< 0.001	< 0.001	-	-
Bromodichloromethane	0.001	mg/L	< 0.001	< 0.001	-	-
Bromoform	0.001	mg/L	< 0.001	< 0.001	-	-
Bromomethane	0.001	mg/L	< 0.001	< 0.001	-	-
Carbon disulfide	0.001	mg/L	< 0.001	< 0.001	-	-
Carbon Tetrachloride	0.001	mg/L	< 0.001	< 0.001	-	-
Chlorobenzene	0.001	mg/L	< 0.001	< 0.001	-	-
Chloroethane	0.001	mg/L	< 0.001	< 0.001	-	-
Chloroform	0.005	mg/L	< 0.005	< 0.005	-	-
Chloromethane	0.001	mg/L	< 0.001	< 0.001	-	-
cis-1,2-Dichloroethene	0.001	mg/L	< 0.001	< 0.001	-	-
cis-1,3-Dichloropropene	0.001	mg/L	< 0.001	< 0.001	-	-
Dibromochloromethane	0.001	mg/L	< 0.001	< 0.001	-	-
Dibromomethane	0.001	mg/L	< 0.001	< 0.001	-	-
Dichlorodifluoromethane	0.001	mg/L	< 0.001	< 0.001	-	-
Ethylbenzene	0.001	mg/L	< 0.001	< 0.001	-	-
Iodomethane	0.001	mg/L	< 0.001	< 0.001	-	-
Isopropyl benzene (Cumene)	0.001	mg/L	< 0.001	< 0.001	-	-
m&p-Xylenes	0.002	mg/L	< 0.002	< 0.002	-	-
Methylene Chloride	0.001	mg/L	< 0.001	< 0.001	-	-
o-Xylene	0.001	mg/L	< 0.001	< 0.001	-	-
Styrene	0.001	mg/L	< 0.001	< 0.001	-	-
Tetrachloroethene	0.001	mg/L	< 0.001	< 0.001	-	-
Toluene	0.001	mg/L	< 0.001	< 0.001	-	-
trans-1,2-Dichloroethene	0.001	mg/L	< 0.001	< 0.001	-	-
trans-1,3-Dichloropropene	0.001	mg/L	< 0.001	< 0.001	-	-
Trichloroethene	0.001	mg/L	< 0.001	< 0.001	-	-
Trichlorofluoromethane	0.001	mg/L	< 0.001	< 0.001	-	-
Vinyl chloride	0.001	mg/L	< 0.001	< 0.001	-	-
Xylenes - Total	0.003	mg/L	< 0.003	< 0.003	-	-
Total MAH*	0.003	mg/L	< 0.003	< 0.003	-	-
Vic EPA IWRG 621 CHC (Total)*	0.005	mg/L	< 0.005	< 0.005	-	-
Vic EPA IWRG 621 Other CHC (Total)*	0.005	mg/L	< 0.005	< 0.005	-	-
4-Bromofluorobenzene (surr.)	1	%	104	102	-	-
Toluene-d8 (surr.)	1	%	107	102	-	-

Client Sample ID			MW01 Water M20-Fe38201 Feb 24, 2020	MW02 Water M20-Fe38202 Feb 24, 2020	RN01 Water M20-Fe38203 Feb 24, 2020	TB01 Water M20-Fe38204 Feb 24, 2020
Sample Matrix						
Eurofins Sample No.						
Date Sampled						
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Acenaphthene	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Acenaphthylene	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Anthracene	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Benz(a)anthracene	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Benzo(a)pyrene	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Benzo(b&j)fluoranthene ^{N07}	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Benzo(g,h,i)perylene	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Benzo(k)fluoranthene	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Chrysene	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Dibenz(a,h)anthracene	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Fluoranthene	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Fluorene	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Indeno(1.2.3-cd)pyrene	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Naphthalene	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Phenanthrene	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Pyrene	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Total PAH*	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
2-Fluorobiphenyl (surr.)	1	%	65	73	82	-
p-Terphenyl-d14 (surr.)	1	%	93	103	77	-
Semivolatile Organics						
2-Methyl-4,6-dinitrophenol	0.03	mg/L	< 0.03	< 0.03	-	-
1-Chloronaphthalene	0.005	mg/L	< 0.005	< 0.005	-	-
1-Naphthylamine	0.005	mg/L	< 0.005	< 0.005	-	-
1,2-Dichlorobenzene	0.005	mg/L	< 0.005	< 0.005	-	-
1,2,3-Trichlorobenzene	0.005	mg/L	< 0.005	< 0.005	-	-
1,2,3,4-Tetrachlorobenzene	0.005	mg/L	< 0.005	< 0.005	-	-
1,2,3,5-Tetrachlorobenzene	0.005	mg/L	< 0.005	< 0.005	-	-
1,2,4-Trichlorobenzene	0.005	mg/L	< 0.005	< 0.005	-	-
1,2,4,5-Tetrachlorobenzene	0.005	mg/L	< 0.005	< 0.005	-	-
1,3-Dichlorobenzene	0.005	mg/L	< 0.005	< 0.005	-	-
1,3,5-Trichlorobenzene	0.005	mg/L	< 0.005	< 0.005	-	-
1,4-Dichlorobenzene	0.005	mg/L	< 0.005	< 0.005	-	-
2-Chloronaphthalene	0.005	mg/L	< 0.005	< 0.005	-	-
2-Chlorophenol	0.003	mg/L	< 0.003	< 0.003	-	-
2-Methylnaphthalene	0.005	mg/L	< 0.005	< 0.005	-	-
2-Methylphenol (o-Cresol)	0.003	mg/L	< 0.003	< 0.003	-	-
2-Naphthylamine	0.005	mg/L	< 0.005	< 0.005	-	-
2-Nitroaniline	0.005	mg/L	< 0.005	< 0.005	-	-
2-Nitrophenol	0.01	mg/L	< 0.01	< 0.01	-	-
2-Picoline	0.005	mg/L	< 0.005	< 0.005	-	-
2,3,4,6-Tetrachlorophenol	0.01	mg/L	< 0.01	< 0.01	-	-
2,4-Dichlorophenol	0.003	mg/L	< 0.003	< 0.003	-	-
2,4-Dimethylphenol	0.003	mg/L	< 0.003	< 0.003	-	-
2,4-Dinitrophenol	0.03	mg/L	< 0.03	< 0.03	-	-
2,4-Dinitrotoluene	0.005	mg/L	< 0.005	< 0.005	-	-
2,4,5-Trichlorophenol	0.01	mg/L	< 0.01	< 0.01	-	-
2,4,6-Trichlorophenol	0.01	mg/L	< 0.01	< 0.01	-	-
2,6-Dichlorophenol	0.003	mg/L	< 0.003	< 0.003	-	-
2,6-Dinitrotoluene	0.005	mg/L	< 0.005	< 0.005	-	-

Client Sample ID			MW01 Water M20-Fe38201 Feb 24, 2020	MW02 Water M20-Fe38202 Feb 24, 2020	RN01 Water M20-Fe38203 Feb 24, 2020	TB01 Water M20-Fe38204 Feb 24, 2020
Sample Matrix						
Eurofins Sample No.						
Date Sampled						
Test/Reference	LOR	Unit				
Semivolatile Organics						
3&4-Methylphenol (m&p-Cresol)	0.006	mg/L	< 0.006	< 0.006	-	-
3-Methylcholanthrene	0.005	mg/L	< 0.005	< 0.005	-	-
3,3'-Dichlorobenzidine	0.005	mg/L	< 0.005	< 0.005	-	-
4-Aminobiphenyl	0.005	mg/L	< 0.005	< 0.005	-	-
4-Bromophenyl phenyl ether	0.005	mg/L	< 0.005	< 0.005	-	-
4-Chloro-3-methylphenol	0.01	mg/L	< 0.01	< 0.01	-	-
4-Chlorophenyl phenyl ether	0.005	mg/L	< 0.005	< 0.005	-	-
4-Nitrophenol	0.03	mg/L	< 0.03	< 0.03	-	-
4,4'-DDD	0.005	mg/L	< 0.005	< 0.005	-	-
4,4'-DDE	0.005	mg/L	< 0.005	< 0.005	-	-
4,4'-DDT	0.005	mg/L	< 0.005	< 0.005	-	-
7,12-Dimethylbenz(a)anthracene	0.005	mg/L	< 0.005	< 0.005	-	-
a-BHC	0.005	mg/L	< 0.005	< 0.005	-	-
Acenaphthene	0.001	mg/L	< 0.001	< 0.001	-	-
Acenaphthylene	0.001	mg/L	< 0.001	< 0.001	-	-
Acetophenone	0.005	mg/L	< 0.005	< 0.005	-	-
Aldrin	0.005	mg/L	< 0.005	< 0.005	-	-
Aniline	0.005	mg/L	< 0.005	< 0.005	-	-
Anthracene	0.001	mg/L	< 0.001	< 0.001	-	-
b-BHC	0.005	mg/L	< 0.005	< 0.005	-	-
Benz(a)anthracene	0.001	mg/L	< 0.001	< 0.001	-	-
Benzo(a)pyrene	0.001	mg/L	< 0.001	< 0.001	-	-
Benzo(b&j)fluoranthene ^{N07}	0.001	mg/L	< 0.001	< 0.001	-	-
Benzo(g,h,i)perylene	0.001	mg/L	< 0.001	< 0.001	-	-
Benzo(k)fluoranthene	0.001	mg/L	< 0.001	< 0.001	-	-
Benzyl chloride	0.005	mg/L	< 0.005	< 0.005	-	-
Bis(2-chloroethoxy)methane	0.005	mg/L	< 0.005	< 0.005	-	-
Bis(2-chloroisopropyl)ether	0.005	mg/L	< 0.005	< 0.005	-	-
Bis(2-ethylhexyl)phthalate	0.005	mg/L	< 0.005	< 0.005	-	-
Butyl benzyl phthalate	0.005	mg/L	< 0.005	< 0.005	-	-
Chrysene	0.001	mg/L	< 0.001	< 0.001	-	-
d-BHC	0.005	mg/L	< 0.005	< 0.005	-	-
Di-n-butyl phthalate	0.005	mg/L	< 0.005	< 0.005	-	-
Di-n-octyl phthalate	0.005	mg/L	< 0.005	< 0.005	-	-
Dibenz(a,h)anthracene	0.001	mg/L	< 0.001	< 0.001	-	-
Dibenz(a,j)acridine	0.005	mg/L	< 0.005	< 0.005	-	-
Dibenzofuran	0.005	mg/L	< 0.005	< 0.005	-	-
Dieldrin	0.005	mg/L	< 0.005	< 0.005	-	-
Diethyl phthalate	0.005	mg/L	< 0.005	< 0.005	-	-
Dimethyl phthalate	0.005	mg/L	< 0.005	< 0.005	-	-
Dimethylaminoazobenzene	0.005	mg/L	< 0.005	< 0.005	-	-
Diphenylamine	0.005	mg/L	< 0.005	< 0.005	-	-
Endosulfan I	0.005	mg/L	< 0.005	< 0.005	-	-
Endosulfan II	0.005	mg/L	< 0.005	< 0.005	-	-
Endosulfan sulphate	0.005	mg/L	< 0.005	< 0.005	-	-
Endrin	0.005	mg/L	< 0.005	< 0.005	-	-
Endrin aldehyde	0.005	mg/L	< 0.005	< 0.005	-	-
Endrin ketone	0.005	mg/L	< 0.005	< 0.005	-	-
Fluoranthene	0.001	mg/L	< 0.001	< 0.001	-	-

Client Sample ID			MW01 Water M20-Fe38201 Feb 24, 2020	MW02 Water M20-Fe38202 Feb 24, 2020	RN01 Water M20-Fe38203 Feb 24, 2020	TB01 Water M20-Fe38204 Feb 24, 2020
Sample Matrix						
Eurofins Sample No.						
Date Sampled						
Test/Reference	LOR	Unit				
Semivolatile Organics						
Fluorene	0.001	mg/L	< 0.001	< 0.001	-	-
g-BHC (Lindane)	0.005	mg/L	< 0.005	< 0.005	-	-
Heptachlor	0.005	mg/L	< 0.005	< 0.005	-	-
Heptachlor epoxide	0.005	mg/L	< 0.005	< 0.005	-	-
Hexachlorobenzene	0.005	mg/L	< 0.005	< 0.005	-	-
Hexachlorobutadiene	0.005	mg/L	< 0.005	< 0.005	-	-
Hexachlorocyclopentadiene	0.005	mg/L	< 0.005	< 0.005	-	-
Hexachloroethane	0.005	mg/L	< 0.005	< 0.005	-	-
Indeno(1.2.3-cd)pyrene	0.001	mg/L	< 0.001	< 0.001	-	-
Methoxychlor	0.005	mg/L	< 0.005	< 0.005	-	-
N-Nitrosodibutylamine	0.005	mg/L	< 0.005	< 0.005	-	-
N-Nitrosodipropylamine	0.005	mg/L	< 0.005	< 0.005	-	-
N-Nitrosopiperidine	0.005	mg/L	< 0.005	< 0.005	-	-
Naphthalene	0.001	mg/L	< 0.001	< 0.001	-	-
Nitrobenzene	0.05	mg/L	< 0.05	< 0.05	-	-
Pentachlorobenzene	0.005	mg/L	< 0.005	< 0.005	-	-
Pentachloronitrobenzene	0.005	mg/L	< 0.005	< 0.005	-	-
Pentachlorophenol	0.01	mg/L	< 0.01	< 0.01	-	-
Phenanthrene	0.001	mg/L	< 0.001	< 0.001	-	-
Phenol	0.003	mg/L	< 0.003	< 0.003	-	-
Pronamide	0.005	mg/L	< 0.005	< 0.005	-	-
Pyrene	0.001	mg/L	< 0.001	< 0.001	-	-
Trifluralin	0.005	mg/L	< 0.005	< 0.005	-	-
Phenol-d6 (surr.)	1	%	27	32	-	-
Nitrobenzene-d5 (surr.)	1	%	62	66	-	-
2-Fluorobiphenyl (surr.)	1	%	65	73	-	-
2.4.6-Tribromophenol (surr.)	1	%	31	51	-	-
Ammonia (as N)	0.01	mg/L	0.03	0.01	-	-
Chromium (hexavalent)	0.005	mg/L	0.008	< 0.005	-	-
Ferrous Iron - Fe2+	0.05	mg/L	0.27	0.39	-	-
Nitrate & Nitrite (as N)	0.05	mg/L	5.2	3.7	-	-
Nitrate (as N)	0.02	mg/L	5.2	3.7	-	-
Nitrite (as N)	0.02	mg/L	< 0.02	< 0.02	-	-
Phosphate total (as P)	0.01	mg/L	0.01	0.02	-	-
Phosphorus reactive (as P)	0.01	mg/L	< 0.01	< 0.01	-	-
Sulphate (as SO4)	5	mg/L	210	800	-	-
Total Kjeldahl Nitrogen (as N)	0.2	mg/L	0.6	< 0.2	-	-
Total Nitrogen (as N)*	0.2	mg/L	5.8	3.7	-	-
Heavy Metals						
Arsenic (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Beryllium (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Boron (filtered)	0.05	mg/L	0.66	2.1	< 0.05	-
Cadmium (filtered)	0.0002	mg/L	< 0.0002	< 0.0002	< 0.0002	-
Chromium (filtered)	0.001	mg/L	0.003	< 0.001	< 0.001	-
Cobalt (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Copper (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Lead (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Manganese (filtered)	0.005	mg/L	< 0.005	0.040	< 0.005	-

Client Sample ID			MW01	MW02	RN01	TB01
Sample Matrix			Water	Water	Water	Water
Eurofins Sample No.			M20-Fe38201	M20-Fe38202	M20-Fe38203	M20-Fe38204
Date Sampled			Feb 24, 2020	Feb 24, 2020	Feb 24, 2020	Feb 24, 2020
Test/Reference	LOR	Unit				
Heavy Metals						
Mercury (filtered)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001	-
Nickel (filtered)	0.001	mg/L	< 0.001	< 0.001	< 0.001	-
Selenium (filtered)	0.001	mg/L	0.017	0.023	< 0.001	-
Zinc (filtered)	0.005	mg/L	< 0.005	< 0.005	< 0.005	-

Client Sample ID			QC01
Sample Matrix			Water
Eurofins Sample No.			M20-Fe38205
Date Sampled			Feb 24, 2020
Test/Reference	LOR	Unit	
Total Recoverable Hydrocarbons - 2013 NEPM Fractions			
Naphthalene ^{N02}	0.01	mg/L	< 0.01
TRH C6-C10	0.02	mg/L	< 0.02
TRH C6-C10 less BTEX (F1) ^{N04}	0.02	mg/L	< 0.02
TRH >C10-C16	0.05	mg/L	< 0.05
TRH >C10-C16 less Naphthalene (F2) ^{N01}	0.05	mg/L	< 0.05
TRH >C16-C34	0.1	mg/L	< 0.1
TRH >C34-C40	0.1	mg/L	< 0.1
TRH >C10-C40 (total)*	0.1	mg/L	< 0.1
Total Recoverable Hydrocarbons - 1999 NEPM Fractions			
TRH C6-C9	0.02	mg/L	< 0.02
TRH C10-C14	0.05	mg/L	< 0.05
TRH C15-C28	0.1	mg/L	< 0.1
TRH C29-C36	0.1	mg/L	< 0.1
TRH C10-C36 (Total)	0.1	mg/L	< 0.1
BTEX			
Benzene	0.001	mg/L	< 0.001
Toluene	0.001	mg/L	< 0.001
Ethylbenzene	0.001	mg/L	< 0.001
m&p-Xylenes	0.002	mg/L	< 0.002
o-Xylene	0.001	mg/L	< 0.001
Xylenes - Total	0.003	mg/L	< 0.003
4-Bromofluorobenzene (surr.)	1	%	85
Polycyclic Aromatic Hydrocarbons			
Acenaphthene	0.001	mg/L	< 0.001
Acenaphthylene	0.001	mg/L	< 0.001
Anthracene	0.001	mg/L	< 0.001
Benz(a)anthracene	0.001	mg/L	< 0.001
Benzo(a)pyrene	0.001	mg/L	< 0.001
Benzo(b&j)fluoranthene ^{N07}	0.001	mg/L	< 0.001
Benzo(g,h,i)perylene	0.001	mg/L	< 0.001
Benzo(k)fluoranthene	0.001	mg/L	< 0.001
Chrysene	0.001	mg/L	< 0.001
Dibenz(a,h)anthracene	0.001	mg/L	< 0.001
Fluoranthene	0.001	mg/L	< 0.001
Fluorene	0.001	mg/L	< 0.001
Indeno(1,2,3-cd)pyrene	0.001	mg/L	< 0.001
Naphthalene	0.001	mg/L	< 0.001

Client Sample ID			QC01
Sample Matrix			Water
Eurofins Sample No.			M20-Fe38205
Date Sampled			Feb 24, 2020
Test/Reference	LOR	Unit	
Polycyclic Aromatic Hydrocarbons			
Phenanthrene	0.001	mg/L	< 0.001
Pyrene	0.001	mg/L	< 0.001
Total PAH*	0.001	mg/L	< 0.001
2-Fluorobiphenyl (surr.)	1	%	115
p-Terphenyl-d14 (surr.)	1	%	115
Chromium (hexavalent)	0.005	mg/L	0.007
Heavy Metals			
Arsenic (filtered)	0.001	mg/L	< 0.001
Beryllium (filtered)	0.001	mg/L	< 0.001
Boron (filtered)	0.05	mg/L	0.68
Cadmium (filtered)	0.0002	mg/L	< 0.0002
Chromium (filtered)	0.001	mg/L	0.003
Cobalt (filtered)	0.001	mg/L	< 0.001
Copper (filtered)	0.001	mg/L	< 0.001
Lead (filtered)	0.001	mg/L	< 0.001
Manganese (filtered)	0.005	mg/L	< 0.005
Mercury (filtered)	0.0001	mg/L	< 0.0001
Nickel (filtered)	0.001	mg/L	< 0.001
Selenium (filtered)	0.001	mg/L	0.017
Zinc (filtered)	0.005	mg/L	< 0.005

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.
A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results.

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: LTM-ORG-2010 TRH C6-C40	Melbourne	Feb 28, 2020	7 Days
Total Recoverable Hydrocarbons - Method: LTM-ORG-2010 TRH C6-C40	Melbourne	Feb 28, 2020	7 Days
Total Recoverable Hydrocarbons - 1999 NEPM Fractions - Method: LTM-ORG-2010 TRH C6-C40	Melbourne	Feb 28, 2020	7 Days
BTEX - Method: LTM-ORG-2010 TRH C6-C40	Melbourne	Feb 28, 2020	14 Days
SA Waste Screen			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: LTM-ORG-2010 TRH C6-C40	Melbourne	Feb 28, 2020	
Volatile Organics - Method: LTM-ORG-2150 VOCs in Soils Liquid and other Aqueous Matrices (USEPA 8260)	Melbourne	Feb 28, 2020	7 Days
Polycyclic Aromatic Hydrocarbons - Method: LTM-ORG-2130 PAH and Phenols in Soil and Water	Melbourne	Feb 28, 2020	7 Days
Chromium (hexavalent) - Method: LTM-INO-4100 Hexavalent Chromium in water	Melbourne	Feb 28, 2020	28 Days
Eurofins mgt Suite B16A: SO ₄ , CH ₄ , NO ₃ , Fe ²⁺			
Dissolved Gases - Method: LTM-ORG-2070 by Headspace GC-FID	Melbourne	Feb 28, 2020	14 Days
Ferrous Iron - Fe ²⁺ - Method: LTM-INO-4190 Ferrous Iron in Water by Discrete Analyser	Melbourne	Feb 28, 2020	7 Days
Nitrate (as N) - Method: LTM-INO-4120 Analysis of NO _x NO ₂ NH ₃ by FIA	Melbourne	Feb 28, 2020	28 Days
Sulphate (as SO ₄) - Method: LTM-INO-4110 Sulfate by Discrete Analyser	Melbourne	Feb 28, 2020	28 Days
Semivolatile Organics - Method: LTM-ORG-2190 SVOC in Water & Soil by GC-MS	Melbourne	Feb 28, 2020	7 Days
NEPM 2013 Filtered Metals without Cr ⁶⁺ (As, Be, B, Cd, Co, Cr, Cu, Hg, Pb, Ni, Mn, Se, Zn) - Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS	Melbourne	Feb 28, 2020	28 Days
Eurofins mgt Suite B19E: Total N, TKN, NO _x , NO ₂ , NO ₃ , NH ₃ , Total P, Reactive P			
Ammonia (as N) - Method: LTM-INO-4200 Ammonia by Discrete Analyser	Melbourne	Feb 28, 2020	28 Days
Nitrate & Nitrite (as N) - Method: LTM-INO-4120 Analysis of NO _x NO ₂ NH ₃ by FIA	Melbourne	Feb 28, 2020	28 Days
Nitrite (as N) - Method: LTM-INO-4120 Analysis of NO _x NO ₂ NH ₃ by FIA	Melbourne	Feb 28, 2020	2 Days
Phosphate total (as P) - Method: APHA 4500-P E. Phosphorus	Melbourne	Feb 28, 2020	28 Days
Phosphorus reactive (as P) - Method: APHA 4500-P	Melbourne	Feb 28, 2020	2 Days
Total Kjeldahl Nitrogen (as N) - Method: LTM-INO-4310 TKN in Waters & Soils by FIA	Melbourne	Feb 28, 2020	7 Days

Company Name: Agon Environmental Pty Ltd
Address: 3/224 Glen Osmond Road
Fullarton
SA 5063

Project Name: Trident Torrens Road
Project ID: JC0482

Order No.: Agon 2017-2018
Report #: 704508
Phone: 08 8338 1009
Fax:

Received: Feb 27, 2020 12:00 AM
Due: Mar 5, 2020
Priority: 5 Day
Contact Name: - ALL INVOICES

Eurofins Analytical Services Manager : Michael Cassidy

Sample Detail						Chromium (hexavalent)	HOLD	Polycyclic Aromatic Hydrocarbons	Organochlorine Pesticides	Organophosphorus Pesticides	Phenols (IWRG 621)	BTEX and Naphthalene	Volatile Organics	Moisture Set	NEPM Screen for Soil Classification	NEPM Screen Table 1(A) HIL's for Soil Contaminants - Basic Suite - Excluding	Semi-volatile Organics	Total Recoverable Hydrocarbons	SA Waste Screen	BTEXN and Volatile TRH	NEPM 2013 Metals without Cr6+ (As, Be, B, Cd, Co, Cr, Cu, Hg, Pb, Ni, Mn, Se, Zn)	Eurofins mg/L Suite B19E: Total N, TKN, NOx, NO2, NO3, NH3, Total P, Reactive P	Eurofins mg/L Suite B16A: SO4, CH4, NO3, Fe2+	NEPM 2013 Filtered Metals without Cr6+ (As, Be, B, Cd, Co, Cr, Cu, Hg, Pb, Ni, Mn, Se, Zn)
Melbourne Laboratory - NATA Site # 1254 & 14271						X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217																								
Brisbane Laboratory - NATA Site # 20794															X									
Perth Laboratory - NATA Site # 23736																								
External Laboratory																								
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID																			
1	BH01_0.1-0.2	Feb 24, 2020		Soil	M20-Fe38152									X							X			
2	BH01_0.5-0.6	Feb 24, 2020		Soil	M20-Fe38153									X	X						X			
3	BH01_0.8-0.9	Feb 24, 2020		Soil	M20-Fe38154							X	X	X			X	X			X			
4	BH02_0.3-0.4	Feb 24, 2020		Soil	M20-Fe38155									X							X			
5	BH02_1.7-1.8	Feb 24, 2020		Soil	M20-Fe38156									X							X			
6	BH03_0.3-0.4	Feb 24, 2020		Soil	M20-Fe38157									X							X			
7	BH03_0.9-1.0	Feb 24, 2020		Soil	M20-Fe38158									X							X			
8	BH04_0.0-0.1	Feb 24, 2020		Soil	M20-Fe38159									X	X									
9	BH04_0.5-0.6	Feb 24, 2020		Soil	M20-Fe38160				X	X		X	X	X			X	X			X			
10	BH05_0.1-0.2	Feb 24, 2020		Soil	M20-Fe38161				X	X				X										

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Company Name: Agon Environmental Pty Ltd
Address: 3/224 Glen Osmond Road
Fullarton
SA 5063

Project Name: Trident Torrens Road
Project ID: JC0482

Order No.: Agon 2017-2018
Report #: 704508
Phone: 08 8338 1009
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Received: Feb 27, 2020 12:00 AM
Due: Mar 5, 2020
Priority: 5 Day
Contact Name: - ALL INVOICES

Eurofins Analytical Services Manager : Michael Cassidy

Sample Detail						Chromium (hexavalent)	HOLD	Polyyclic Aromatic Hydrocarbons	Organochlorine Pesticides	Organophosphorus Pesticides	Phenols (WRC 621)	BTEX and Naphthalene	Volatile Organics	Moisture Set	NEPM Screen for Soil Classification	NEPM Screen Table 1(A) HIL's for Soil Contaminants - Basic Suite - Excluding	Semi-volatile Organics	Total Recoverable Hydrocarbons	SA Waste Screen	BTEXN and Volatile TRH	NEPM 2013 Metals without Cr6+ (As, Be, B, Cd, Co, Cr, Cu, Hg, Pb, Ni, Mn, Se, Zn)	Eurofins 1 mgt Suite B19E: Total N, TKN, NOx, NO2, NO3, NH3, Total P, Reactive P	Eurofins 1 mgt Suite B16A: SO4, CH4, NO3, Fe2+	NEPM 2013 Filtered Metals without Cr6+ (As, Be, B, Cd, Co, Cr, Cu, Hg, Pb, Ni, Mn, Fe2+)
Melbourne Laboratory - NATA Site # 1254 & 14271						X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217																								
Brisbane Laboratory - NATA Site # 20794															X									
Perth Laboratory - NATA Site # 23736																								
11	BH05_0.3-0.4	Feb 24, 2020		Soil	M20-Fe38162								X	X								X		
12	BH05_1.5-1.6	Feb 24, 2020		Soil	M20-Fe38163									X								X		
13	BH06_0.1-0.2	Feb 24, 2020		Soil	M20-Fe38164									X								X		
14	BH06_1.8-1.9	Feb 24, 2020		Soil	M20-Fe38165									X								X		
15	BH07_0.1-0.2	Feb 24, 2020		Soil	M20-Fe38166									X								X		
16	BH07_0.8-0.9	Feb 24, 2020		Soil	M20-Fe38167									X								X		
17	BH08_0.3-0.4	Feb 24, 2020		Soil	M20-Fe38168						X	X		X				X				X		
18	BH08_1.2-1.3	Feb 24, 2020		Soil	M20-Fe38169									X				X				X		
19	BH09_0.1-0.2	Feb 24, 2020		Soil	M20-Fe38170									X								X		
20	BH09_0.5-0.6	Feb 24, 2020		Soil	M20-Fe38171									X								X		
21	BH10_0.1-0.2	Feb 24, 2020		Soil	M20-Fe38172			X	X	X				X										
22	BH10_0.4-0.5	Feb 24, 2020		Soil	M20-Fe38173									X								X		
23	BH10_0.8-0.9	Feb 24, 2020		Soil	M20-Fe38174			X						X										

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Company Name: Agon Environmental Pty Ltd
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Project Name: Trident Torrens Road
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Eurofins Analytical Services Manager : Michael Cassidy

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Melbourne Laboratory - NATA Site # 1254 & 14271						X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217																								
Brisbane Laboratory - NATA Site # 20794															X									
Perth Laboratory - NATA Site # 23736																								
24	BH10_1.3-1.4	Feb 24, 2020		Soil	M20-Fe38175									X								X		
25	BH11_0.3-0.4	Feb 24, 2020		Soil	M20-Fe38176				X	X				X								X		
26	BH11_1.0-1.1	Feb 24, 2020		Soil	M20-Fe38177			X				X		X				X				X		
27	BH12_0.3-0.4	Feb 24, 2020		Soil	M20-Fe38178			X				X		X				X				X		
28	BH12_0.7-0.8	Feb 24, 2020		Soil	M20-Fe38179									X								X		
29	BH12_1.3-1.4	Feb 24, 2020		Soil	M20-Fe38180							X		X				X						
30	BH12_3.4-3.5	Feb 24, 2020		Soil	M20-Fe38181							X		X				X						
31	BH13_0.3-0.4	Feb 25, 2020		Soil	M20-Fe38182			X			X	X	X	X			X	X						
32	BH13_0.5-0.6	Feb 25, 2020		Soil	M20-Fe38183									X					X					
33	BH14_0.2-0.3	Feb 25, 2020		Soil	M20-Fe38184									X							X			
34	BH14_1.1-1.2	Feb 25, 2020		Soil	M20-Fe38185									X							X			
35	BH14_1.9-2.0	Feb 25, 2020		Soil	M20-Fe38186							X	X	X			X	X			X			
36	BH14_3.4-3.5	Feb 25, 2020		Soil	M20-Fe38187							X		X		X		X						

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Melbourne Laboratory - NATA Site # 1254 & 14271						X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217																								
Brisbane Laboratory - NATA Site # 20794															X									
Perth Laboratory - NATA Site # 23736																								
37	BH15_0.2-0.3	Feb 25, 2020		Soil	M20-Fe38188									X								X		
38	BH15_0.5-0.6	Feb 25, 2020		Soil	M20-Fe38189			X				X		X				X						
39	BH15_0.6-0.7	Feb 25, 2020		Soil	M20-Fe38190									X								X		
40	BH16_0.1-0.2	Feb 25, 2020		Soil	M20-Fe38191									X								X		
41	BH16_0.5-0.6	Feb 25, 2020		Soil	M20-Fe38192			X						X								X		
42	BH16_1.0-1.1	Feb 25, 2020		Soil	M20-Fe38193									X								X		
43	BH17_0.3-0.4	Feb 25, 2020		Soil	M20-Fe38194							X		X				X				X		
44	BH17_1.9-2.0	Feb 25, 2020		Soil	M20-Fe38195									X								X		
45	QC01	Feb 24, 2020		Soil	M20-Fe38196									X								X		
46	QC03	Feb 24, 2020		Soil	M20-Fe38197									X								X		
47	QC05	Feb 24, 2020		Soil	M20-Fe38198									X								X		
48	QC07	Feb 25, 2020		Soil	M20-Fe38199									X								X		
49	QC08	Feb 25, 2020		Soil	M20-Fe38200									X								X		

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Melbourne Laboratory - NATA Site # 1254 & 14271						X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217																							
Brisbane Laboratory - NATA Site # 20794															X								
Perth Laboratory - NATA Site # 23736																							
50	MW01	Feb 24, 2020		Water	M20-Fe38201	X		X				X	X			X	X				X	X	X
51	MW02	Feb 24, 2020		Water	M20-Fe38202	X		X				X	X			X	X				X	X	X
52	RN01	Feb 24, 2020		Water	M20-Fe38203			X				X					X						X
53	TB01	Feb 24, 2020		Water	M20-Fe38204														X				
54	QC01	Feb 24, 2020		Water	M20-Fe38205	X		X				X					X						X
55	BH01_1.4-1.5	Feb 24, 2020		Soil	M20-Fe38206		X																
56	BH02_0.7-0.8	Feb 24, 2020		Soil	M20-Fe38207		X																
57	BH02_1.0-1.1	Feb 24, 2020		Soil	M20-Fe38208		X																
58	BH03_0.6-0.7	Feb 24, 2020		Soil	M20-Fe38209		X																
59	BH03_1.3-1.4	Feb 24, 2020		Soil	M20-Fe38210		X																
60	BH04_1.0-1.1	Feb 24, 2020		Soil	M20-Fe38211		X																
61	BH04_1.9-2.0	Feb 24, 2020		Soil	M20-Fe38212		X																
62	BH05_0.7-0.8	Feb 24, 2020		Soil	M20-Fe38213		X																

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Melbourne Laboratory - NATA Site # 1254 & 14271						X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217																									
Brisbane Laboratory - NATA Site # 20794															X										
Perth Laboratory - NATA Site # 23736																									
63	BH05_1.0-1.1	Feb 24, 2020		Soil	M20-Fe38214		X																		
64	BH06_0.5-0.6	Feb 24, 2020		Soil	M20-Fe38215		X																		
65	BH06_0.9-1.0	Feb 24, 2020		Soil	M20-Fe38216		X																		
66	BH06_1.3-1.4	Feb 24, 2020		Soil	M20-Fe38217		X																		
67	BH07_0.4-0.5	Feb 24, 2020		Soil	M20-Fe38218		X																		
68	BH07_1.3-1.4	Feb 24, 2020		Soil	M20-Fe38219		X																		
69	BH07_1.8-1.9	Feb 24, 2020		Soil	M20-Fe38220		X																		
70	BH08_0.15-0.25	Feb 24, 2020		Soil	M20-Fe38221		X																		
71	BH08_0.7-0.8	Feb 24, 2020		Soil	M20-Fe38222		X																		
72	BH08_1.8-1.9	Feb 24, 2020		Soil	M20-Fe38223		X																		
73	BH09_1.0-1.1	Feb 24, 2020		Soil	M20-Fe38224		X																		
74	BH09_1.4-1.5	Feb 24, 2020		Soil	M20-Fe38225		X																		

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Melbourne Laboratory - NATA Site # 1254 & 14271						X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217																									
Brisbane Laboratory - NATA Site # 20794															X										
Perth Laboratory - NATA Site # 23736																									
75	BH09_1.9-2.0	Feb 24, 2020		Soil	M20-Fe38226		X																		
76	BH10_1.7-1.8	Feb 24, 2020		Soil	M20-Fe38227		X																		
77	BH11_0.2-0.3	Feb 24, 2020		Soil	M20-Fe38228		X																		
78	BH12_0.1-0.2	Feb 24, 2020		Soil	M20-Fe38229		X																		
79	BH12_0.8-0.9	Feb 24, 2020		Soil	M20-Fe38230		X																		
80	BH12_1.9-2.0	Feb 24, 2020		Soil	M20-Fe38231		X																		
81	BH12_2.9-3.0	Feb 24, 2020		Soil	M20-Fe38232		X																		
82	BH12_3.9-4.0	Feb 24, 2020		Soil	M20-Fe38233		X																		
83	BH13_0.1-0.2	Feb 25, 2020		Soil	M20-Fe38234		X																		
84	BH14_0.4-0.5	Feb 25, 2020		Soil	M20-Fe38235		X																		
85	BH14_2.9-3.0	Feb 25, 2020		Soil	M20-Fe38236		X																		
86	BH14_3.9-4.0	Feb 25, 2020		Soil	M20-Fe38237		X																		
87	BH15_0.1-0.2	Feb 25, 2020		Soil	M20-Fe38238		X																		

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Melbourne Laboratory - NATA Site # 1254 & 14271						X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217																								
Brisbane Laboratory - NATA Site # 20794															X									
Perth Laboratory - NATA Site # 23736																								
88	BH16_1.4-1.5	Feb 25, 2020		Soil	M20-Fe38239		X																	
89	BH16_1.9-2.0	Feb 25, 2020		Soil	M20-Fe38240		X																	
90	BH17_0.1-0.2	Feb 25, 2020		Soil	M20-Fe38241		X																	
91	BH17_0.9-1.0	Feb 25, 2020		Soil	M20-Fe38242		X																	
92	BH17_1.5-1.6	Feb 25, 2020		Soil	M20-Fe38243		X																	
93	QC02	Feb 24, 2020		Soil	M20-Fe38244		X																	
94	QC04	Feb 24, 2020		Soil	M20-Fe38245		X																	
95	QC06	Feb 25, 2020		Soil	M20-Fe38246		X																	
96	BH4-1.5-1.6	Feb 24, 2020		Soil	M20-Fe38512		X																	
Test Counts						3	42	11	4	4	2	16	7	49	1	2	6	16	1	1	39	2	2	4

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples follows guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended May 2013 and are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil/sediment/solid results are reported on a dry basis, unless otherwise stated.
3. All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
4. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
5. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
6. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
7. Samples were analysed on an 'as received' basis.
8. Information identified on this report with blue colour, indicates data provided by customer, that may have an impact on the results.
9. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per kilogram	mg/L: milligrams per litre	ug/L: micrograms per litre
ppm: Parts per million	ppb: Parts per billion	%: Percentage
org/100mL: Organisms per 100 millilitres	NTU: Nephelometric Turbidity Units	MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery.
CRM	Certified Reference Material - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
QSM	US Department of Defense Quality Systems Manual Version 5.3
CP	Client Parent - QC was performed on samples pertaining to this report
NC	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 20-130% Phenols & 50-150% PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.3 where no positive PFAS results have been reported have been reviewed and no data was affected.

WA DWER (n=10): PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	mg/L	< 0.01			0.01	Pass	
TRH C6-C10	mg/L	< 0.02			0.02	Pass	
TRH >C10-C16	mg/L	< 0.05			0.05	Pass	
TRH >C16-C34	mg/L	< 0.1			0.1	Pass	
TRH >C34-C40	mg/L	< 0.1			0.1	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	mg/L	< 0.02			0.02	Pass	
TRH C10-C14	mg/L	< 0.05			0.05	Pass	
TRH C15-C28	mg/L	< 0.1			0.1	Pass	
TRH C29-C36	mg/L	< 0.1			0.1	Pass	
Method Blank							
BTEX							
Benzene	mg/L	< 0.001			0.001	Pass	
Toluene	mg/L	< 0.001			0.001	Pass	
Ethylbenzene	mg/L	< 0.001			0.001	Pass	
m&p-Xylenes	mg/L	< 0.002			0.002	Pass	
o-Xylene	mg/L	< 0.001			0.001	Pass	
Xylenes - Total	mg/L	< 0.003			0.003	Pass	
Method Blank							
Dissolved Gases							
Methane	mg/L	< 0.05			0.05	Pass	
Method Blank							
Volatile Organics							
1.1-Dichloroethane	mg/L	< 0.001			0.001	Pass	
1.1-Dichloroethene	mg/L	< 0.001			0.001	Pass	
1.1.1-Trichloroethane	mg/L	< 0.001			0.001	Pass	
1.1.1.2-Tetrachloroethane	mg/L	< 0.001			0.001	Pass	
1.1.2-Trichloroethane	mg/L	< 0.001			0.001	Pass	
1.1.2.2-Tetrachloroethane	mg/L	< 0.001			0.001	Pass	
1.2-Dibromoethane	mg/L	< 0.001			0.001	Pass	
1.2-Dichlorobenzene	mg/L	< 0.001			0.001	Pass	
1.2-Dichloroethane	mg/L	< 0.001			0.001	Pass	
1.2-Dichloropropane	mg/L	< 0.001			0.001	Pass	
1.2.3-Trichloropropane	mg/L	< 0.001			0.001	Pass	
1.2.4-Trimethylbenzene	mg/L	< 0.001			0.001	Pass	
1.3-Dichlorobenzene	mg/L	< 0.001			0.001	Pass	
1.3-Dichloropropane	mg/L	< 0.001			0.001	Pass	
1.3.5-Trimethylbenzene	mg/L	< 0.001			0.001	Pass	
1.4-Dichlorobenzene	mg/L	< 0.001			0.001	Pass	
2-Butanone (MEK)	mg/L	< 0.001			0.001	Pass	
2-Propanone (Acetone)	mg/L	< 0.001			0.001	Pass	
4-Chlorotoluene	mg/L	< 0.001			0.001	Pass	
4-Methyl-2-pentanone (MIBK)	mg/L	< 0.001			0.001	Pass	
Allyl chloride	mg/L	< 0.001			0.001	Pass	
Bromobenzene	mg/L	< 0.001			0.001	Pass	
Bromochloromethane	mg/L	< 0.001			0.001	Pass	
Bromodichloromethane	mg/L	< 0.001			0.001	Pass	
Bromoform	mg/L	< 0.001			0.001	Pass	
Bromomethane	mg/L	< 0.001			0.001	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Carbon disulfide	mg/L	< 0.001			0.001	Pass	
Carbon Tetrachloride	mg/L	< 0.001			0.001	Pass	
Chlorobenzene	mg/L	< 0.001			0.001	Pass	
Chloroethane	mg/L	< 0.001			0.001	Pass	
Chloroform	mg/L	< 0.005			0.005	Pass	
Chloromethane	mg/L	< 0.001			0.001	Pass	
cis-1.2-Dichloroethene	mg/L	< 0.001			0.001	Pass	
cis-1.3-Dichloropropene	mg/L	< 0.001			0.001	Pass	
Dibromochloromethane	mg/L	< 0.001			0.001	Pass	
Dibromomethane	mg/L	< 0.001			0.001	Pass	
Dichlorodifluoromethane	mg/L	< 0.001			0.001	Pass	
Iodomethane	mg/L	< 0.001			0.001	Pass	
Isopropyl benzene (Cumene)	mg/L	< 0.001			0.001	Pass	
Methylene Chloride	mg/L	< 0.001			0.001	Pass	
Styrene	mg/L	< 0.001			0.001	Pass	
Tetrachloroethene	mg/L	< 0.001			0.001	Pass	
trans-1.2-Dichloroethene	mg/L	< 0.001			0.001	Pass	
trans-1.3-Dichloropropene	mg/L	< 0.001			0.001	Pass	
Trichloroethene	mg/L	< 0.001			0.001	Pass	
Trichlorofluoromethane	mg/L	< 0.001			0.001	Pass	
Vinyl chloride	mg/L	< 0.001			0.001	Pass	
Method Blank							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	mg/L	< 0.001			0.001	Pass	
Acenaphthylene	mg/L	< 0.001			0.001	Pass	
Anthracene	mg/L	< 0.001			0.001	Pass	
Benz(a)anthracene	mg/L	< 0.001			0.001	Pass	
Benzo(a)pyrene	mg/L	< 0.001			0.001	Pass	
Benzo(b&j)fluoranthene	mg/L	< 0.001			0.001	Pass	
Benzo(g,h,i)perylene	mg/L	< 0.001			0.001	Pass	
Benzo(k)fluoranthene	mg/L	< 0.001			0.001	Pass	
Chrysene	mg/L	< 0.001			0.001	Pass	
Dibenz(a,h)anthracene	mg/L	< 0.001			0.001	Pass	
Fluoranthene	mg/L	< 0.001			0.001	Pass	
Fluorene	mg/L	< 0.001			0.001	Pass	
Indeno(1.2.3-cd)pyrene	mg/L	< 0.001			0.001	Pass	
Naphthalene	mg/L	< 0.001			0.001	Pass	
Phenanthrene	mg/L	< 0.001			0.001	Pass	
Pyrene	mg/L	< 0.001			0.001	Pass	
Method Blank							
Semivolatile Organics							
2-Methyl-4.6-dinitrophenol	mg/L	< 0.03			0.03	Pass	
1-Chloronaphthalene	mg/L	< 0.005			0.005	Pass	
1-Naphthylamine	mg/L	< 0.005			0.005	Pass	
1.2-Dichlorobenzene	mg/L	< 0.005			0.005	Pass	
1.2.3-Trichlorobenzene	mg/L	< 0.005			0.005	Pass	
1.2.3.4-Tetrachlorobenzene	mg/L	< 0.005			0.005	Pass	
1.2.3.5-Tetrachlorobenzene	mg/L	< 0.005			0.005	Pass	
1.2.4-Trichlorobenzene	mg/L	< 0.005			0.005	Pass	
1.2.4.5-Tetrachlorobenzene	mg/L	< 0.005			0.005	Pass	
1.3-Dichlorobenzene	mg/L	< 0.005			0.005	Pass	
1.3.5-Trichlorobenzene	mg/L	< 0.005			0.005	Pass	
1.4-Dichlorobenzene	mg/L	< 0.005			0.005	Pass	
2-Chloronaphthalene	mg/L	< 0.005			0.005	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
2-Chlorophenol	mg/L	< 0.003			0.003	Pass	
2-Methylnaphthalene	mg/L	< 0.005			0.005	Pass	
2-Methylphenol (o-Cresol)	mg/L	< 0.003			0.003	Pass	
2-Naphthylamine	mg/L	< 0.005			0.005	Pass	
2-Nitroaniline	mg/L	< 0.005			0.005	Pass	
2-Nitrophenol	mg/L	< 0.01			0.01	Pass	
2-Picoline	mg/L	< 0.005			0.005	Pass	
2.3.4.6-Tetrachlorophenol	mg/L	< 0.01			0.01	Pass	
2.4-Dichlorophenol	mg/L	< 0.003			0.003	Pass	
2.4-Dimethylphenol	mg/L	< 0.003			0.003	Pass	
2.4-Dinitrophenol	mg/L	< 0.03			0.03	Pass	
2.4-Dinitrotoluene	mg/L	< 0.005			0.005	Pass	
2.4.5-Trichlorophenol	mg/L	< 0.01			0.01	Pass	
2.4.6-Trichlorophenol	mg/L	< 0.01			0.01	Pass	
2.6-Dichlorophenol	mg/L	< 0.003			0.003	Pass	
2.6-Dinitrotoluene	mg/L	< 0.005			0.005	Pass	
3&4-Methylphenol (m&p-Cresol)	mg/L	< 0.006			0.006	Pass	
3-Methylcholanthrene	mg/L	< 0.005			0.005	Pass	
3.3'-Dichlorobenzidine	mg/L	< 0.005			0.005	Pass	
4-Aminobiphenyl	mg/L	< 0.005			0.005	Pass	
4-Bromophenyl phenyl ether	mg/L	< 0.005			0.005	Pass	
4-Chloro-3-methylphenol	mg/L	< 0.01			0.01	Pass	
4-Chlorophenyl phenyl ether	mg/L	< 0.005			0.005	Pass	
4-Nitrophenol	mg/L	< 0.03			0.03	Pass	
4.4'-DDD	mg/L	< 0.005			0.005	Pass	
4.4'-DDE	mg/L	< 0.005			0.005	Pass	
4.4'-DDT	mg/L	< 0.005			0.005	Pass	
7.12-Dimethylbenz(a)anthracene	mg/L	< 0.005			0.005	Pass	
a-BHC	mg/L	< 0.005			0.005	Pass	
Acetophenone	mg/L	< 0.005			0.005	Pass	
Aldrin	mg/L	< 0.005			0.005	Pass	
Aniline	mg/L	< 0.005			0.005	Pass	
b-BHC	mg/L	< 0.005			0.005	Pass	
Benzyl chloride	mg/L	< 0.005			0.005	Pass	
Bis(2-chloroethoxy)methane	mg/L	< 0.005			0.005	Pass	
Bis(2-chloroisopropyl)ether	mg/L	< 0.005			0.005	Pass	
Bis(2-ethylhexyl)phthalate	mg/L	< 0.005			0.005	Pass	
Butyl benzyl phthalate	mg/L	< 0.005			0.005	Pass	
d-BHC	mg/L	< 0.005			0.005	Pass	
Di-n-butyl phthalate	mg/L	< 0.005			0.005	Pass	
Di-n-octyl phthalate	mg/L	< 0.005			0.005	Pass	
Dibenz(a,j)acridine	mg/L	< 0.005			0.005	Pass	
Dibenzofuran	mg/L	< 0.005			0.005	Pass	
Dieldrin	mg/L	< 0.005			0.005	Pass	
Diethyl phthalate	mg/L	< 0.005			0.005	Pass	
Dimethyl phthalate	mg/L	< 0.005			0.005	Pass	
Dimethylaminoazobenzene	mg/L	< 0.005			0.005	Pass	
Diphenylamine	mg/L	< 0.005			0.005	Pass	
Endosulfan I	mg/L	< 0.005			0.005	Pass	
Endosulfan II	mg/L	< 0.005			0.005	Pass	
Endosulfan sulphate	mg/L	< 0.005			0.005	Pass	
Endrin	mg/L	< 0.005			0.005	Pass	
Endrin aldehyde	mg/L	< 0.005			0.005	Pass	
Endrin ketone	mg/L	< 0.005			0.005	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
g-BHC (Lindane)	mg/L	< 0.005			0.005	Pass	
Heptachlor	mg/L	< 0.005			0.005	Pass	
Heptachlor epoxide	mg/L	< 0.005			0.005	Pass	
Hexachlorobenzene	mg/L	< 0.005			0.005	Pass	
Hexachlorobutadiene	mg/L	< 0.005			0.005	Pass	
Hexachlorocyclopentadiene	mg/L	< 0.005			0.005	Pass	
Hexachloroethane	mg/L	< 0.005			0.005	Pass	
Methoxychlor	mg/L	< 0.005			0.005	Pass	
N-Nitrosodibutylamine	mg/L	< 0.005			0.005	Pass	
N-Nitrosodipropylamine	mg/L	< 0.005			0.005	Pass	
N-Nitrosopiperidine	mg/L	< 0.005			0.005	Pass	
Nitrobenzene	mg/L	< 0.05			0.05	Pass	
Pentachlorobenzene	mg/L	< 0.005			0.005	Pass	
Pentachloronitrobenzene	mg/L	< 0.005			0.005	Pass	
Pentachlorophenol	mg/L	< 0.01			0.01	Pass	
Phenol	mg/L	< 0.003			0.003	Pass	
Pronamide	mg/L	< 0.005			0.005	Pass	
Trifluralin	mg/L	< 0.005			0.005	Pass	
Method Blank							
Ammonia (as N)	mg/L	< 0.01			0.01	Pass	
Chromium (hexavalent)	mg/L	< 0.005			0.005	Pass	
Ferrous Iron - Fe2+	mg/L	< 0.05			0.05	Pass	
Nitrate & Nitrite (as N)	mg/L	< 0.05			0.05	Pass	
Nitrate (as N)	mg/L	< 0.02			0.02	Pass	
Nitrite (as N)	mg/L	< 0.02			0.02	Pass	
Phosphate total (as P)	mg/L	< 0.01			0.01	Pass	
Phosphorus reactive (as P)	mg/L	< 0.01			0.01	Pass	
Sulphate (as SO4)	mg/L	< 5			5	Pass	
Total Kjeldahl Nitrogen (as N)	mg/L	< 0.2			0.2	Pass	
Method Blank							
Heavy Metals							
Arsenic (filtered)	mg/L	< 0.001			0.001	Pass	
Beryllium (filtered)	mg/L	< 0.001			0.001	Pass	
Cadmium (filtered)	mg/L	< 0.0002			0.0002	Pass	
Chromium (filtered)	mg/L	< 0.001			0.001	Pass	
Cobalt (filtered)	mg/L	< 0.001			0.001	Pass	
Copper (filtered)	mg/L	< 0.001			0.001	Pass	
Lead (filtered)	mg/L	< 0.001			0.001	Pass	
Manganese (filtered)	mg/L	< 0.005			0.005	Pass	
Mercury (filtered)	mg/L	< 0.0001			0.0001	Pass	
Nickel (filtered)	mg/L	< 0.001			0.001	Pass	
Selenium (filtered)	mg/L	< 0.001			0.001	Pass	
Zinc (filtered)	mg/L	< 0.005			0.005	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	90			70-130	Pass	
TRH C6-C10	%	89			70-130	Pass	
TRH >C10-C16	%	87			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	%	91			70-130	Pass	
TRH C10-C14	%	91			70-130	Pass	
LCS - % Recovery							
BTEX							

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Benzene	%	96			70-130	Pass	
Toluene	%	94			70-130	Pass	
Ethylbenzene	%	88			70-130	Pass	
m&p-Xylenes	%	91			70-130	Pass	
Xylenes - Total	%	92			70-130	Pass	
LCS - % Recovery							
Dissolved Gases							
Methane	%	88			70-130	Pass	
LCS - % Recovery							
Volatile Organics							
1.1-Dichloroethene	%	91			70-130	Pass	
1.1.1-Trichloroethane	%	81			70-130	Pass	
1.2-Dichlorobenzene	%	81			70-130	Pass	
1.2-Dichloroethane	%	90			70-130	Pass	
Trichloroethene	%	76			70-130	Pass	
LCS - % Recovery							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	%	93			70-130	Pass	
Acenaphthylene	%	94			70-130	Pass	
Anthracene	%	103			70-130	Pass	
Benz(a)anthracene	%	94			70-130	Pass	
Benzo(a)pyrene	%	89			70-130	Pass	
Benzo(b&j)fluoranthene	%	103			70-130	Pass	
Benzo(g,h,i)perylene	%	73			70-130	Pass	
Benzo(k)fluoranthene	%	100			70-130	Pass	
Chrysene	%	77			70-130	Pass	
Dibenz(a,h)anthracene	%	80			70-130	Pass	
Fluoranthene	%	110			70-130	Pass	
Fluorene	%	96			70-130	Pass	
Indeno(1,2,3-cd)pyrene	%	74			70-130	Pass	
Naphthalene	%	85			70-130	Pass	
Phenanthrene	%	114			70-130	Pass	
Pyrene	%	114			70-130	Pass	
LCS - % Recovery							
Semivolatile Organics							
2-Methyl-4,6-dinitrophenol	%	97			30-130	Pass	
1,2,4-Trichlorobenzene	%	116			70-130	Pass	
1,4-Dichlorobenzene	%	117			70-130	Pass	
2-Chlorophenol	%	79			30-130	Pass	
2-Methylphenol (o-Cresol)	%	75			30-130	Pass	
2-Nitrophenol	%	77			30-130	Pass	
2,4-Dichlorophenol	%	72			30-130	Pass	
2,4-Dimethylphenol	%	78			30-130	Pass	
2,4-Dinitrophenol	%	38			30-130	Pass	
2,4-Dinitrotoluene	%	96			70-130	Pass	
2,4,5-Trichlorophenol	%	86			30-130	Pass	
2,4,6-Trichlorophenol	%	77			30-130	Pass	
2,6-Dichlorophenol	%	75			30-130	Pass	
3&4-Methylphenol (m&p-Cresol)	%	63			30-130	Pass	
4-Chloro-3-methylphenol	%	77			30-130	Pass	
4-Nitrophenol	%	42			30-130	Pass	
N-Nitrosodipropylamine	%	104			70-130	Pass	
Pentachlorophenol	%	101			30-130	Pass	
Phenol	%	62			30-130	Pass	
LCS - % Recovery							

Test			Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Ammonia (as N)			%	112			70-130	Pass	
Chromium (hexavalent)			%	89			70-130	Pass	
Ferrous Iron - Fe2+			%	113			70-130	Pass	
Nitrate & Nitrite (as N)			%	104			70-130	Pass	
Nitrate (as N)			%	103			70-130	Pass	
Nitrite (as N)			%	108			70-130	Pass	
Phosphate total (as P)			%	89			70-130	Pass	
Phosphorus reactive (as P)			%	98			70-130	Pass	
Sulphate (as SO4)			%	109			70-130	Pass	
Total Kjeldahl Nitrogen (as N)			%	114			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
Naphthalene	M20-Fe36645	NCP	%	115			70-130	Pass	
TRH C6-C10	M20-Fe36645	NCP	%	95			70-130	Pass	
TRH >C10-C16	M20-Fe39807	NCP	%	99			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C6-C9	M20-Fe36645	NCP	%	95			70-130	Pass	
TRH C10-C14	M20-Fe39807	NCP	%	104			70-130	Pass	
Spike - % Recovery									
BTEX				Result 1					
Benzene	M20-Fe36645	NCP	%	106			70-130	Pass	
Toluene	M20-Fe36645	NCP	%	116			70-130	Pass	
Ethylbenzene	M20-Fe36645	NCP	%	111			70-130	Pass	
m&p-Xylenes	M20-Fe36645	NCP	%	126			70-130	Pass	
o-Xylene	M20-Fe36645	NCP	%	109			70-130	Pass	
Xylenes - Total	M20-Fe36645	NCP	%	120			70-130	Pass	
Spike - % Recovery									
Dissolved Gases				Result 1					
Methane	M20-Fe40426	NCP	%	111			70-130	Pass	
Spike - % Recovery									
Polycyclic Aromatic Hydrocarbons				Result 1					
Acenaphthene	M20-Fe31291	NCP	%	108			70-130	Pass	
Acenaphthylene	N20-Fe41060	NCP	%	101			70-130	Pass	
Anthracene	N20-Fe41060	NCP	%	86			70-130	Pass	
Benz(a)anthracene	N20-Fe41060	NCP	%	98			70-130	Pass	
Benzo(a)pyrene	N20-Fe41060	NCP	%	86			70-130	Pass	
Benzo(b&j)fluoranthene	N20-Fe41060	NCP	%	73			70-130	Pass	
Benzo(g,h,i)perylene	N20-Fe41060	NCP	%	83			70-130	Pass	
Benzo(k)fluoranthene	N20-Fe41060	NCP	%	116			70-130	Pass	
Chrysene	N20-Fe41060	NCP	%	94			70-130	Pass	
Dibenz(a,h)anthracene	N20-Fe41060	NCP	%	80			70-130	Pass	
Fluoranthene	N20-Fe41060	NCP	%	79			70-130	Pass	
Fluorene	N20-Fe41060	NCP	%	105			70-130	Pass	
Indeno(1,2,3-cd)pyrene	N20-Fe41060	NCP	%	87			70-130	Pass	
Naphthalene	N20-Fe41060	NCP	%	95			70-130	Pass	
Phenanthrene	N20-Fe41060	NCP	%	85			70-130	Pass	
Pyrene	M20-Fe31291	NCP	%	98			70-130	Pass	
Spike - % Recovery									
Semivolatile Organics				Result 1					
2-Methyl-4,6-dinitrophenol	N20-Fe41060	NCP	%	34			30-130	Pass	
1,2,4-Trichlorobenzene	M20-Fe31291	NCP	%	98			70-130	Pass	
1,4-Dichlorobenzene	M20-Fe31291	NCP	%	104			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
2-Chlorophenol	M20-Fe31291	NCP	%	50			30-130	Pass	
2-Methylphenol (o-Cresol)	N20-Fe41060	NCP	%	59			30-130	Pass	
2-Nitrophenol	N20-Fe41060	NCP	%	61			30-130	Pass	
2,4-Dichlorophenol	N20-Fe41060	NCP	%	62			30-130	Pass	
2,4-Dimethylphenol	N20-Fe41060	NCP	%	38			30-130	Pass	
2,4-Dinitrotoluene	M20-Fe31291	NCP	%	75			70-130	Pass	
2,4,5-Trichlorophenol	N20-Fe41060	NCP	%	43			30-130	Pass	
2,4,6-Trichlorophenol	N20-Fe41060	NCP	%	57			30-130	Pass	
2,6-Dichlorophenol	N20-Fe41060	NCP	%	62			30-130	Pass	
3&4-Methylphenol (m&p-Cresol)	N20-Fe41060	NCP	%	61			30-130	Pass	
4-Chloro-3-methylphenol	M20-Fe31291	NCP	%	49			30-130	Pass	
4-Nitrophenol	M20-Fe28538	NCP	%	55			30-130	Pass	
N-Nitrosodipropylamine	M20-Fe31291	NCP	%	115			70-130	Pass	
Pentachlorophenol	N20-Fe41060	NCP	%	49			30-130	Pass	
Phenol	M20-Fe31291	NCP	%	34			30-130	Pass	
Spike - % Recovery									
				Result 1					
Chromium (hexavalent)	M20-Fe42692	NCP	%	97			70-130	Pass	
Ferrous Iron - Fe2+	M20-Fe36775	NCP	%	98			70-130	Pass	
Nitrite (as N)	M20-Fe42928	NCP	%	105			70-130	Pass	
Phosphate total (as P)	M20-Fe36571	NCP	%	76			70-130	Pass	
Sulphate (as SO4)	M20-Fe40427	NCP	%	107			70-130	Pass	
Total Kjeldahl Nitrogen (as N)	M20-Fe38764	NCP	%	92			70-130	Pass	
Spike - % Recovery									
				Result 1					
Heavy Metals									
Arsenic (filtered)	M20-Fe40865	NCP	%	101			70-130	Pass	
Beryllium (filtered)	M20-Fe40865	NCP	%	93			75-125	Pass	
Boron (filtered)	M20-Fe40865	NCP	%	100			75-125	Pass	
Cadmium (filtered)	M20-Fe40865	NCP	%	96			70-130	Pass	
Chromium (filtered)	M20-Fe40865	NCP	%	93			70-130	Pass	
Cobalt (filtered)	M20-Fe40865	NCP	%	92			75-125	Pass	
Copper (filtered)	M20-Fe40865	NCP	%	88			70-130	Pass	
Lead (filtered)	M20-Fe40865	NCP	%	96			70-130	Pass	
Manganese (filtered)	M20-Fe40865	NCP	%	95			70-130	Pass	
Mercury (filtered)	M20-Fe40865	NCP	%	94			70-130	Pass	
Nickel (filtered)	M20-Fe40865	NCP	%	85			70-130	Pass	
Selenium (filtered)	M20-Fe40865	NCP	%	93			70-130	Pass	
Zinc (filtered)	M20-Fe40865	NCP	%	89			70-130	Pass	
Spike - % Recovery									
				Result 1					
Ammonia (as N)	M20-Fe38202	CP	%	107			70-130	Pass	
Nitrate & Nitrite (as N)	M20-Fe38202	CP	%	87			70-130	Pass	
Nitrate (as N)	M20-Fe38202	CP	%	87			70-130	Pass	
Spike - % Recovery									
				Result 1					
Semivolatile Organics									
2,4-Dinitrophenol	S20-Fe21050	NCP	%	52			30-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Dissolved Gases				Result 1	Result 2	RPD			
Methane	M20-Fe40427	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	

Duplicate								
Semivolatile Organics				Result 1	Result 2	RPD		
1-Chloronaphthalene	M20-Fe31053	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
1-Naphthylamine	M20-Fe31053	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
1,2-Dichlorobenzene	M20-Fe31053	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
1,2,3-Trichlorobenzene	M20-Fe31053	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
1,2,3,4-Tetrachlorobenzene	M20-Fe31053	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
1,2,3,5-Tetrachlorobenzene	M20-Fe31053	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
1,2,4-Trichlorobenzene	M20-Fe31053	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
1,2,4,5-Tetrachlorobenzene	M20-Fe31053	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
1,3-Dichlorobenzene	M20-Fe31053	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
1,3,5-Trichlorobenzene	M20-Fe31053	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
1,4-Dichlorobenzene	M20-Fe31053	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
2-Chloronaphthalene	M20-Fe31053	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
2-Methylnaphthalene	M20-Fe31053	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
2-Naphthylamine	M20-Fe31053	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
2-Nitroaniline	M20-Fe31053	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
2-Picoline	M20-Fe31053	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
2,3,4,6-Tetrachlorophenol	M20-Fe31053	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass
2,4-Dinitrotoluene	M20-Fe31053	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
2,6-Dinitrotoluene	M20-Fe31053	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
3-Methylcholanthrene	M20-Fe31053	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
3,3'-Dichlorobenzidine	M20-Fe31053	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
4-Aminobiphenyl	M20-Fe31053	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
4-Bromophenyl phenyl ether	M20-Fe31053	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
4-Chlorophenyl phenyl ether	M20-Fe31053	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
4,4'-DDD	M20-Fe31053	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
4,4'-DDE	M20-Fe31053	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
4,4'-DDT	M20-Fe31053	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
7,12-Dimethylbenz(a)anthracene	M20-Fe31053	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
a-BHC	M20-Fe31053	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Acetophenone	M20-Fe31053	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Aldrin	M20-Fe31053	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Aniline	M20-Fe31053	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
b-BHC	M20-Fe31053	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Benzyl chloride	M20-Fe31053	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Bis(2-chloroethoxy)methane	M20-Fe31053	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Bis(2-chloroisopropyl)ether	M20-Fe31053	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Bis(2-ethylhexyl)phthalate	M20-Fe31053	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Butyl benzyl phthalate	M20-Fe31053	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
d-BHC	M20-Fe31053	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Di-n-butyl phthalate	M20-Fe31053	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Di-n-octyl phthalate	M20-Fe31053	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Dibenz(a,j)acridine	M20-Fe31053	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Dibenzofuran	M20-Fe31053	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Dieldrin	M20-Fe31053	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Diethyl phthalate	M20-Fe31053	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Dimethyl phthalate	M20-Fe31053	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Dimethylaminoazobenzene	M20-Fe31053	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Diphenylamine	M20-Fe31053	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Endosulfan I	M20-Fe31053	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Endosulfan II	M20-Fe31053	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Endosulfan sulphate	M20-Fe31053	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Endrin	M20-Fe31053	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Endrin aldehyde	M20-Fe31053	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Endrin ketone	M20-Fe31053	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass

Duplicate								
Semivolatile Organics				Result 1	Result 2	RPD		
g-BHC (Lindane)	M20-Fe31053	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Heptachlor	M20-Fe31053	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Heptachlor epoxide	M20-Fe31053	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Hexachlorobenzene	M20-Fe31053	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Hexachlorobutadiene	M20-Fe31053	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Hexachlorocyclopentadiene	M20-Fe31053	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Hexachloroethane	M20-Fe31053	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Methoxychlor	M20-Fe31053	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
N-Nitrosodibutylamine	M20-Fe31053	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
N-Nitrosodipropylamine	M20-Fe31053	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
N-Nitrosopiperidine	M20-Fe31053	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Nitrobenzene	M20-Fe31053	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Pentachlorobenzene	M20-Fe31053	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Pentachloronitrobenzene	M20-Fe31053	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Pronamide	M20-Fe31053	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Trifluralin	M20-Fe31053	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Chromium (hexavalent)	M20-Fe38201	CP	mg/L	0.008	0.008	1.0	30%	Pass
Ferrous Iron - Fe2+	M20-Fe39822	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass
Phosphate total (as P)	M20-Fe38201	CP	mg/L	0.01	0.01	13	30%	Pass
Sulphate (as SO4)	M20-Fe38201	CP	mg/L	210	220	3.0	30%	Pass
Total Kjeldahl Nitrogen (as N)	M20-Fe39160	NCP	mg/L	54	50	8.6	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Arsenic (filtered)	M20-Fe40865	NCP	mg/L	0.002	0.002	1.0	30%	Pass
Beryllium (filtered)	M20-Fe40865	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Boron (filtered)	M20-Fe40865	NCP	mg/L	0.05	0.05	1.0	30%	Pass
Cadmium (filtered)	M20-Fe40865	NCP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass
Chromium (filtered)	M20-Fe40865	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Cobalt (filtered)	M20-Fe40865	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Copper (filtered)	M20-Fe40865	NCP	mg/L	0.015	0.014	2.0	30%	Pass
Lead (filtered)	M20-Fe40865	NCP	mg/L	0.005	0.005	1.0	30%	Pass
Manganese (filtered)	M20-Fe40865	NCP	mg/L	< 0.005	< 0.005	<1	30%	Pass
Mercury (filtered)	M20-Fe40865	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass
Nickel (filtered)	M20-Fe40865	NCP	mg/L	0.048	0.048	1.0	30%	Pass
Selenium (filtered)	M20-Fe40865	NCP	mg/L	0.001	< 0.001	11	30%	Pass
Zinc (filtered)	M20-Fe40865	NCP	mg/L	0.051	0.050	2.0	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Ammonia (as N)	M20-Fe38202	CP	mg/L	0.01	0.01	3.0	30%	Pass
Nitrate & Nitrite (as N)	M20-Fe38202	CP	mg/L	3.7	3.6	2.0	30%	Pass
Nitrate (as N)	M20-Fe38202	CP	mg/L	3.7	3.6	2.0	30%	Pass
Nitrite (as N)	M20-Fe38202	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass
Duplicate								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD		
Naphthalene	M20-Fe40433	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass
TRH C6-C10	M20-Fe40433	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass
Duplicate								
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD		
TRH C6-C9	M20-Fe40433	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass

Duplicate								
BTEX				Result 1	Result 2	RPD		
Benzene	M20-Fe40433	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Toluene	M20-Fe40433	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Ethylbenzene	M20-Fe40433	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
m&p-Xylenes	M20-Fe40433	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass
o-Xylene	M20-Fe40433	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Xylenes - Total	M20-Fe40433	NCP	mg/L	< 0.003	< 0.003	<1	30%	Pass
Duplicate								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD		
TRH >C10-C16	M20-Fe38205	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
TRH >C16-C34	M20-Fe38205	CP	mg/L	< 0.1	< 0.1	<1	30%	Pass
TRH >C34-C40	M20-Fe38205	CP	mg/L	< 0.1	< 0.1	<1	30%	Pass
Duplicate								
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD		
TRH C10-C14	M20-Fe38205	CP	mg/L	< 0.05	< 0.05	<1	30%	Pass
TRH C15-C28	M20-Fe38205	CP	mg/L	< 0.1	< 0.1	<1	30%	Pass
TRH C29-C36	M20-Fe38205	CP	mg/L	< 0.1	< 0.1	<1	30%	Pass
Duplicate								
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD		
Acenaphthene	M20-Fe38205	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Acenaphthylene	M20-Fe38205	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Anthracene	M20-Fe38205	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Benz(a)anthracene	M20-Fe38205	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Benzo(a)pyrene	M20-Fe38205	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Benzo(b&j)fluoranthene	M20-Fe38205	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Benzo(g,h,i)perylene	M20-Fe38205	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Benzo(k)fluoranthene	M20-Fe38205	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Chrysene	M20-Fe38205	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Dibenz(a,h)anthracene	M20-Fe38205	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Fluoranthene	M20-Fe38205	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Fluorene	M20-Fe38205	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Indeno(1,2,3-cd)pyrene	M20-Fe38205	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Naphthalene	M20-Fe38205	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Phenanthrene	M20-Fe38205	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Pyrene	M20-Fe38205	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass
Duplicate								
Semivolatile Organics				Result 1	Result 2	RPD		
2-Methyl-4,6-dinitrophenol	M20-Fe38205	CP	mg/L	< 0.03	< 0.03	<1	30%	Pass
2-Chlorophenol	M20-Fe38205	CP	mg/L	< 0.003	< 0.003	<1	30%	Pass
2-Methylphenol (o-Cresol)	M20-Fe38205	CP	mg/L	< 0.003	< 0.003	<1	30%	Pass
2-Nitrophenol	M20-Fe38205	CP	mg/L	< 0.01	< 0.01	<1	30%	Pass
2,4-Dichlorophenol	M20-Fe38205	CP	mg/L	< 0.003	< 0.003	<1	30%	Pass
2,4-Dimethylphenol	M20-Fe38205	CP	mg/L	< 0.003	< 0.003	<1	30%	Pass
2,4-Dinitrophenol	M20-Fe38205	CP	mg/L	< 0.03	< 0.03	<1	30%	Pass
2,4,5-Trichlorophenol	M20-Fe38205	CP	mg/L	< 0.01	< 0.01	<1	30%	Pass
2,4,6-Trichlorophenol	M20-Fe38205	CP	mg/L	< 0.01	< 0.01	<1	30%	Pass
2,6-Dichlorophenol	M20-Fe38205	CP	mg/L	< 0.003	< 0.003	<1	30%	Pass
3&4-Methylphenol (m&p-Cresol)	M20-Fe38205	CP	mg/L	< 0.006	< 0.006	<1	30%	Pass
4-Chloro-3-methylphenol	M20-Fe38205	CP	mg/L	< 0.01	< 0.01	<1	30%	Pass
4-Nitrophenol	M20-Fe38205	CP	mg/L	< 0.03	< 0.03	<1	30%	Pass
Pentachlorophenol	M20-Fe38205	CP	mg/L	< 0.01	< 0.01	<1	30%	Pass
Phenol	M20-Fe38205	CP	mg/L	< 0.003	< 0.003	<1	30%	Pass

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
N07	Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to the total of the two co-eluting PAHs

Authorised By

Michael Cassidy	Analytical Services Manager
Emily Rosenberg	Senior Analyst-Metal (VIC)
Harry Bacalis	Senior Analyst-Volatile (VIC)
Joseph Edouard	Senior Analyst-Organic (VIC)
Scott Beddoes	Senior Analyst-Inorganic (VIC)



Glenn Jackson

General Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please [click here](#).

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CHAIN OF CUSTODY RECORD

Environ (reg) ABN 50 615 185 521

☐ Sydney Laboratory
Unit F3 Bld F 19 Mars Road Lane Cove West NSW 2066
02 9000 8400 EnvironSampleWA@environ.com.au

☐ Brisbane Laboratory
Unit 1/21 Smallwood Place Muramba QLD 4172
07 5564 3000 EnvironSampleWA@environ.com.au

☐ Perth Laboratory
Unit 2/51 Leach Highway Kewdale WA 6105
08 9251 9600 EnvironSampleWA@environ.com.au

☒ Melbourne Laboratory
6 Altonway Road Dandenong South VIC 3175
03 8564 3000 EnvironSampleWA@environ.com.au

Company Agon Environmental Pty Ltd			Project No JCD482		Project Manager Justin Symonds		Sample(s) JS / SH	
Address 3/224 Glen Osmond Road, Fullarton, SA, 5063			Project Name Trident Torrens Road		EDD Format ±Sol ±Qu±ep		ESDAT	
Contact Name Justin Symonds			Email for Invoice finance@agonenviro.com.au		Email for Results justin.symonds@agonenviro.com.au		JS / SH	
Phone No 0400 534 819			Email for Results justin.symonds@agonenviro.com.au		JS / SH		JS / SH	
Special Directions			Containers Charge container type & size if necessary		Required Turnaround Time (TAT) Default will be 5 days if not stated		*Surcharge will apply	
Purchase Order Agon 2017-2018			500mL Plastic		250mL Plastic		125mL Plastic	
Quota ID No			200mL Amber Glass		40mL VOA vial		500mL PFAS Bottle	
			Jar (Glass or HDPE)		Other (Adherence AS/NZS 4362 WA Guidelines)		Sample Comments / Dangerous Goods Hazard Warning	
Nz			Client Sample ID		Sampled Date/Time dd/mm/yyyy hh:mm		Matrix Soil (S) Water (W)	
1			BH01_0.1-0.2		24/02/20		S	
2			BH01_0.5-0.6		24/02/20		S	
3			BH01_0.8-0.9		24/02/20		S	
4			BH01_1.4-1.5		24/02/20		S	
5			BH02_0.3-0.4		24/02/20		S	
6			BH02_0.7-0.8		24/02/20		S	
7			BH02_1.0-1.1		24/02/20		S	
8			BH02_1.7-1.8		24/02/20		S	
9			BH03_0.3-0.4		24/02/20		S	
10			BH03_0.6-0.7		24/02/20		S	
11			BH03_0.9-1.0		24/02/20		S	
12			BH03_1.3-1.4		24/02/20		S	
13			BH04_0.0-0.1		24/02/20		S	
14			BH04_0.5-0.6		24/02/20		S	
15			BH04_1.0-1.1		24/02/20		S	
16			BH04_1.9-2.0		24/02/20		S	
17			BH05_0.1-0.2		24/02/20		S	
18			BH05_0.3-0.4		24/02/20		S	
19			BH05_0.7-0.8		24/02/20		S	
20			BH05_1.0-1.1		24/02/20		S	
21			BH05_1.5-1.6		24/02/20		S	
22			BH06_0.1-0.2		24/02/20		S	
23			BH06_0.5-0.6		24/02/20		S	
24			BH06_0.9-1.0		24/02/20		S	
25			BH06_1.3-1.4		24/02/20		S	
26			BH06_1.6-1.9		24/02/20		S	
27			BH07_0.1-0.2		24/02/20		S	
28			BH07_0.4-0.5		24/02/20		S	
29			BH07_0.8-0.9		24/02/20		S	
30			BH07_1.3-1.4		24/02/20		S	
31			BH07_1.6-1.9		24/02/20		S	
32			BH08_0.15-0.25		24/02/20		S	
33			BH08_0.3-0.4		24/02/20		S	
34			BH08_0.7-0.8		24/02/20		S	
35			BH08_1.2-1.3		24/02/20		S	
36			BH08_1.6-1.9		24/02/20		S	
37			BH09_0.1-0.2		24/02/20		S	
38			BH09_0.5-0.6		24/02/20		S	
39			BH09_1.0-1.1		24/02/20		S	
40			BH09_1.4-1.5		24/02/20		S	
41			BH09_1.9-2.0		24/02/20		S	
42			BH10_0.1-0.2		24/02/20		S	
43			BH10_0.4-0.5		24/02/20		S	
44			BH10_0.8-0.9		24/02/20		S	
45			BH10_1.3-1.4		24/02/20		S	

[illegible]

Report # 704508 Jeff Davis - J. H. Davis

#AU_CAU001_EnviroSampleVic

From: Jeffy Joseph
Sent: Thursday, 27 February 2020 11:25 AM
To: #AU_CAU001_EnviroSampleVic
Subject: RE: JC0482 Trident Plastics - Torrens Road COC

Follow Up Flag: Follow up
Flag Status: Completed

704508

Regards

Jeffy Joseph
Lean Officer

Eurofins | Environment Testing
6 Monterey Rd
Dandenong South VIC 3175
AUSTRALIA
Phone : +61 3 8564 5000

Email : JeffyJoseph@eurofins.com
Website : <http://www.eurofins.com.au/environmental-testing>

From: #AU_CAU001_EnviroSampleVic <EnviroSampleVic@eurofins.com>
Sent: Thursday, 27 February 2020 10:17 AM
To: Jeffy Joseph <JeffyJoseph@eurofins.com>
Subject: FW: JC0482 Trident Plastics - Torrens Road COC

Hi Jeffy,

Can you double check this eCOC and then eReg it if it is all good.

Let me know if not ok.

Thanks,
Canh

Sample Receipt

Eurofins Environment Testing
6 Monterey Rd
Dandenong South 3175
AUSTRALIA
Phone : +61 3 8564 5000

Email : EnviroSampleVic@eurofins.com
Website : <http://environment.eurofins.com.au>

From: Justin Symonds [<mailto:Justin.Symonds@agonenviro.com.au>]
Sent: Wednesday, 26 February 2020 6:45 PM

#AU_CAU001_EnviroSampleVic

From: Justin Symonds <Justin.Symonds@agonenviro.com.au>
Sent: Wednesday, 26 February 2020 6:45 PM
To: Michael Cassidy
Cc: #AU_CAU001_EnviroSampleVic; Sophie Hambour; David Probert
Subject: JC0482 Trident Plastics - Torrens Road COC
Attachments: JC0482 - Trident Torrens Road.xlsm

Hi Michael,

See attached COC for JC0482. I have tried using the eCOC that was prepared, however it is a bit messy.

I also I needed to add a lot of extra analysis above what was prefilled, as such have had to add some extra columns and have not been able to put all the individual analysis into the suites. Is this something you are able to do on your side?

Lastly, would it be possible to get a cost breakdown for this analysis based on what I have included in the COC?

Happy to discuss over the phone tomorrow.

Thanks,

Justin Symonds MIEAust CPeng
Senior Environmental Engineer
Agon Environmental Pty Ltd
E: justin.symonds@agonenviro.com.au
M: 0400 534 819



ADELAIDE: (Head Office): 3/224 Glen Osmond Road, Fullarton SA 5063, T: **08 8338 1009**
CANBERRA: 4/10 Kennedy Street, Kingston ACT 2604, T: **02 5104 2177**
DARWIN: 1/41 Jessop Crescent, Berrimah NT 0828, PO Box 38845, Winnellie NT 0821, T: **08 7918 7807**
MELBOURNE: D1.1, 63-85 Turner Street, Port Melbourne VIC 3207, T: **03 8566 1567**

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PROJECT INFORMATION**Date Received:** 24.2.20 3x ESKIES**Company:** AGON**Contact person:** JUSTIN SYMONDS**Contact Number:** 8388 1009**Contact E-mail:** _____**Project Name/site:** TORRENS RD**Project Number:** JC0482**COC: Attached** ☐**E-mailed** ☒**Not received** ☐

Last modified on: 16 October 2019	Approved on: 16 October 2019	Version: QS1039_R2
Last modified by: H. Le	Approver: M. Makarios	Page 1 of 1
Editorial Committee: T. Lakeland, F. Sanjaya, H. Le, M. Makarios		Next required review date: 16 October 2022

#AU_CAU001_EnviroSampleVic

From: Michael Cassidy
Sent: Wednesday, 4 March 2020 4:10 PM
To: #AU_CAU001_EnviroSampleVic
Subject: FW: Eurofins Sample Receipt Advice - Report 704508 : Site Trident Torrens Road (JC0482)

Kind Regards,

Michael Cassidy

Phone: 8564 5940
Mobile: 0498 700 069
Email : MichaelCassidy@eurofins.com

From: Justin Symonds [<mailto:Justin.Symonds@agonenviro.com.au>]
Sent: Wednesday, 4 March 2020 4:10 PM
To: Michael Cassidy
Subject: Re: Eurofins Sample Receipt Advice - Report 704508 : Site Trident Torrens Road (JC0482)

EXTERNAL EMAIL*

Thanks michael,

Please accept below changes and analyze samples accordingly. Please also hold the additional jar.

Regards,
Justin

Get [Outlook for Android](#)

From: MichaelCassidy@eurofins.com <MichaelCassidy@eurofins.com>
Sent: Wednesday, 4 March 2020, 3:14 pm
To: Justin Symonds
Subject: Eurofins Sample Receipt Advice - Report 704508 : Site Trident Torrens Road (JC0482)

Dear Valued Client,

BH02 1.0- 1.9 INSTEAD OF BH02 1.0- 1.1; BH02 1.5-1.6 INSTEAD OF BH02 1.7-1.8; ONE
ADDITIONAL SAMPLE JAR : BH4-1.5-1.6

Please find attached a Sample Receipt Advice (SRA), a Summary Sheet and a scanned copy of your Chain-of-Custody (COC). It is important that you check this documentation to ensure that the details are correct such as the Client Job Number, Turn Around Time, any comments in the Notes section and sample numbers

as well as the requested analysis. If there are any irregularities then please contact your Eurofins Analytical Services Manager as soon as possible to make certain that they get changed.

Kind Regards,

Michael Cassidy
Analytical Services Manager

Eurofins Environment Testing

6 Monterey Road
DANDENONG SOUTH VIC 3175
AUSTRALIA

Phone: 8564 5940

Mobile: 0498 700 069

Email : MichaelCassidy@eurofins.com

Website : environment.eurofins.com.au

[EnviroNote 1079 - PFAS Fingerprinting](#)

[EnviroNote 1080 - Total Organofluorine Analysis & PFAS Investigations](#)

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APPENDIX I: QUALITY ASSURANCE AND QUALITY CONTROL

Data Representativeness

The data set was considered to effectively characterise the sampled soils with regard to waste classification. Holding times for soil were all in conformance with Table 3 in AS4482.1-2005. Samples were collected using nitrile gloves which were changed between each sample. Samples were placed into clean, laboratory-prepared acid-washed jars, which were placed in ice in a cooler box prior to transport to the laboratory.

Data Accuracy

Data accuracy is measured by comparing the results from each sample's analysis to a 'true' concentration, obtained by spiking a sample with known amount of a chemically similar 'surrogate' compound and comparing the surrogate analytical result to the true concentration value. Surrogates are only used for organic compounds. The ratio of these values is the surrogate recovery, and ideally this is 100%. Variation either side of 100% only up to predefined control limits is considered acceptable. Data accuracy control limits adopted for this waste classification investigation are as follows:

- Surrogate Recoveries should be in the range of 60% to 130%.
- All surrogate recoveries to be within the adopted acceptance range.
- All matrix spike recoveries to be within the acceptable range.

All laboratory QA/QC results were within control limits as indicated in the laboratory reports in Attachment C, with the exception of Laboratory Spike Recoveries of some metals. An acceptance recovery was obtained for the laboratory control sample indicating a sample matrix interference.

Data Precision

Data precision is measured by comparing the Relative Percentile Difference (RPD%) between results from a primary sample and a duplicate. The absolute value of the percent ratio of the difference between the primary and duplicate results, and the mean of the two results, is referred to as the relative percentile difference (RPD). All RPD values were within the acceptable ranges with the exception of some heavy metals. The elevated RPD result was considered to be a result of the heterogeneity of the fill material, and not as a result of field or laboratory deficiencies. Tabulated RPDs are provided in Table 2, Appendix G.

QAQC Conclusions

The QAQC results discussed above indicate that the data collected are reliable and form a suitable basis for the conclusions of this report.

Appendix G – EPA Peer Review



Environment Protection Authority
GPO Box 2607 Adelaide SA 5001
211 Victoria Square Adelaide SA 5000
T (08) 8204 2000 F (08) 8204 2020
Country areas 1800 623 445

EPA 437-280

Mr Jim Gronthos
Senior Policy Planner
City Of Charles Sturt
72 Woodville Road
WOODVILLE SA 5011

Dear Mr Gronthos

Trident Plastics Development Plan Amendment, Environmental Assessment Report

Thank you for providing the Environment Protection Authority (EPA) with the early opportunity to comment on the Trident Plastics DPA Environmental Assessment Report titled 589 -599 Torrens Road St Clair prepared by AGON Environmental, dated 26 March 2020.

The EPA has undertaken a review of the provided Environmental Assessment Report (the report) to ensure that potential environmental and human health impacts would not result from future residential development proposed subsequent to this DPA. The EPA's review has also considered whether appropriate planning policy is included in the development plan to ensure that site contamination would be properly addressed at the development application stage.

On 21 November 2019 the EPA provided comment on the City of Charles Sturt: St Clair Residential (Trident Plastics Site) Statement of Intent (SOI). As part of its review of the SOI, the EPA outlined that it held site contamination records which related to land surrounding the entire Tridents Factory site. Given that Schedule 3 Site Contamination, Part 2 of the *Environment Protection Regulations 2009* identifies plastic manufacture works as being a potentially contaminating activity (PCA) and that other PCAs may have occurred across the affected area, the EPA recommended that preliminary site contamination investigations occur to inform the DPA.

The SOI was later approved by the Minister for Planning on 15 December 2019. The approved SOI contains a number of investigations required to inform the DPA, including (as stated on page 11, Section 4.1.2):

- *An environmental assessment on the broad suitability of the subject land for residential development, and the need for more detailed investigations at the development application stage.*

The objectives of the provided report were to identify potentially contaminating activities that may have occurred or are occurring at the site, in addition to undertaking a soil and groundwater investigation to provide an initial characterisation of the nature and extent of potential contamination risks identified at

the site. The EPA considers the report was undertaken generally in accordance with the *National Environment Protection (Assessment of Site Contamination) Measure 1999*, as amended 2013 (NEPM).

The scope of works were undertaken over the entire subject site (i.e. proposed land to be rezoned as part of the Tridents Plastics DPA), which comprises two land parcels including Certificate of Title Volume 5075 Folio 792 and Certificate of Title Volume 5220 Folio 775 with a total combined land area of 2.97 hectares.

A review of historical information found that the subject site was originally grazing land prior to the 1940s, but has since been used for light industrial land purposes since that period. A railway corridor formerly occupied the western portion of the site from the 1940s until the rail line was removed in the late 1970s and then sealed in the 1990s. The main shed on the site was first constructed in the 1940s and was initially used for the fabrication of steel fencing and, from the 1990s, for plastic injection moulding. Site buildings were expanded and added during the 1940s up to the 1980s. Since this period the site has retained its current layout.

The report identified a number of PCAs that have been undertaken on the subject land. The Intrusive soil and groundwater assessments identified minor concentrations of arsenic and petroleum hydrocarbons in soil, likely to be associated with the former railway alignment and possible surface spills or leaks from the underground petroleum storage tanks/oil store. The groundwater investigations reported concentrations of several metals and inorganic compounds. With the exception of hexavalent chromium, they were all considered to be representative of regional groundwater conditions. The observed elevated hexavalent chromium concentration were considered to be minor localised contamination impacts that are not considered likely to present a significant ongoing risk to human health or the environment, and would not preclude the proposed residential redevelopment of the site.

As council would be aware site contamination assessment reforms are occurring alongside State-wide planning reforms. The reforms would introduce procedural requirements for consideration of site contamination as part of a development application when land uses changes. The current intent is to introduce these reforms alongside the Urban Areas Planning and Design Code release.

In the interim, the EPA acknowledges that the Charles Sturt Council Development Plan (consolidated 13 September 2018) contains site contamination objectives and principles of development control that are in general accordance with the South Australian planning policy library (Version 6, September 2011). The EPA considers there is sufficient policy in the City of Charles Sturt Development Plan to ensure that site contamination could be properly addressed at the development application stage to assure the Planning Authority that the land would be suitable for residential use.

For further information on this matter, please contact Helen Malone on 82042078 or helen.malone@epa.sa.gov.au.

Yours sincerely

James Cother

PRINCIPAL ADVISER, PLANNING POLICY & PROJECTS
PLANNING AND IMPACT ASSESSMENT
ENVIRONMENT PROTECTION AUTHORITY

30 April 2020




Appendix H – Mature Trees




Mature Trees Located to the West of the Affected Area (refer Section 3.2.8)




Approximate measurements as of 12 May 2020.



- Tree 1 commences at the northern end of the area highlighted yellow in the image below.
- Tree numbering progresses sequentially to the south.
- Tree 11 is situated at the southern end of the area highlighted yellow in the image below.



Tree No.	Species	Circumference (approx.) / Status	Setback from Acoustic Wall (approx.)	Photograph
1	Eucalyptus Cladocalyx	3.2m Significant	4.5m	
2	Eucalyptus Cladocalyx	3.6m Significant	4.5m	
3	Eucalyptus Cladocalyx	3m Significant	5m	 <p><i>Tree 3 – On Left</i></p>

Tree No.	Species	Circumference (approx.) / Status	Setback from Acoustic Wall (approx.)	Photograph
4	Eucalyptus Cladocalyx	2.6m Regulated	5m	 <p><i>Tree 4 – On Right</i></p>
5	Eucalyptus Cladocalyx	Two Trunks (2.85m / 2.6m) Significant	5m	
6	Eucalyptus Cladocalyx	3.95m Significant	4.5m	

Tree No.	Species	Circumference (approx.) / Status	Setback from Acoustic Wall (approx.)	Photograph
7	Eucalyptus Cladocalyx	3.1m Significant	4.5m	
8	Eucalyptus Cladocalyx	2.7m Regulated	4.5m	
9	Eucalyptus Cladocalyx	4.1m Significant	4.5m	 <p><i>Tree 9 – On Left</i></p>

Tree No.	Species	Circumference (approx.) / Status	Setback from Acoustic Wall (approx.)	Photograph
10	Eucalyptus Cladocalyx	2.25m Regulated	4.5m	 <p><i>Tree 10 – On Right</i></p>
11	Eucalyptus Cladocalyx	Two Trunks One is a multi-trunk, the other is 3.9m Significant	4m	

Development Plan Amendment

By the Council

Charles Sturt Council

St Clair Residential (Trident
Plastics Site) Draft Development
Plan Amendment (Privately
Funded)

The Amendment

For Consultation

July 2020

Amendment Instructions Table				
Name of Local Government Area: Charles Sturt Council				
Name of Development Plan: Charles Sturt Council Development Plan				
Name of DPA: St Clair Residential Draft Development Plan Amendment (Trident Plastics Site) (Privately Funded)				
<p><i>The following amendment instructions (at the time of drafting) relate to Council Development Plan consolidated on 13 February 2020.</i></p> <p><i>Where amendments to this Development Plan have been authorised after the aforementioned consolidation date, consequential changes to the following amendment instructions will be made as necessary to give effect to this amendment.</i></p>				
Amendment Instruction Number	Method of Change	Detail what in the Development Plan is to be amended, replaced, deleted or inserted.	Is Renumbering required (Y/N)	Subsequent Policy cross-references requiring update (Y/N) if yes please specify.
COUNCIL WIDE / GENERAL SECTION PROVISIONS (including figures and illustrations contained in the text)				
Amendments required (Yes/No): No				
ZONE AND/OR POLICY AREA AND/OR PRECINCT PROVISIONS (including figures and illustrations contained in the text)				
Amendments required (Yes/No): Yes				
Residential Zone				
Woodville Medium Density Policy Area 21				
1.	Amend	Paragraph 1 of the Desired Character Statement to include additional text in red: <i>The policy area is an infill site, formerly occupied by the Sheridan/Actil Factory and Trident Plastics Factory, located within close proximity of the Woodville District Centre and adjoining the former Cheltenham Racecourse, Woodville High School, St Clair Oval and Recreation Centre and the Woodville Railway Station.</i>	N	N
2.	Amend	Paragraph 9, sentence 4, to include additional text in red: <i>However, higher buildings may be appropriate in certain locations such as adjoining public open space areas, adjacent Torrens Road and within the southern portion of</i>	N	N

		<i>the site where higher density development is envisaged close to public transport and local facilities.</i>		
3.	Amend	Paragraph 10, sentence 2, of the Desired Character Statement to delete the words 'Viscount Plastics' and replace with ' <i>Trident Plastics</i> '.	N	N
4.	Amend	Paragraph 13, sentence 1, of the Desired Character Statement to include the additional text in red: <i>Areas adjacent the policy area, on the northern side of Torrens Road, include non-residential uses such as industry.</i>	N	N
5.	Amend	PDC 4 to include the additional text in red: <i>Buildings should generally be of one to two storeys in scale and, in any event, should not have a maximum height exceeding 3 storeys (12 metres) above natural ground level at any point. Three storey buildings may be appropriate in areas adjacent to public open space, open space connections, adjacent Torrens Road and within proximity of the Woodville Railway Station and local facilities.</i>	N	N
6.	Delete	Existing PDC 9: <i>9 No new road access nor any vehicular access to individual allotments should be provided from Torrens Road.</i>	N	N
7.	Insert	New PDC 9 as follows: <i>Except for the Trident Plastics Factory site, no new road access should be provided from Torrens Road.</i>	N	N
8.	Insert	New PDC after PDC 9 (to be numbered PDC 10) as follows: <i>No vehicular access to individual allotments should be provided from Torrens Road.</i>	Y	N
9.	Insert	New PDC after proposed PDC 10 (to be numbered PDC 11) as follows: <i>An internal road network should be provided to support residential development on the Trident Plastics Factory site that:</i> <i>a. Provides connection to a key vehicle access point on Torrens Road</i> <i>b. Services land within the Trident Plastics site</i> <i>c. Provides safe and convenient secondary vehicle access to neighbouring land to the east and south</i> <i>d. Provides safe and convenient pedestrian linkages with the surrounding locality</i>	Y	N
10.	Re-number	Existing PDC 10 to be re-numbered as PDC 12	Y	N
11.	Re-number	Existing PDC 11 to be re-numbered as PDC 13	Y	N
Policy Area 21 – reflecting the proposed amendments is provided in Attachment A				

TABLES				
Amendments required (Yes/No): N				
MAPPING (Structure Plans, Overlays, Enlargements, Zone Maps, Policy Area & Precinct Maps)				
Amendments required (Yes/No): Yes				
Map Reference Table				
Map(s)				
12.	Replace	Council Index Map with Map in Attachment B	N	N
13.	Replace	Overlay Map ChSt/9 – Noise and Air Emissions with Map in Attachment C	N	N
11.	Replace	Overlay Map ChSt/9 – Affordable Housing with Map in Attachment D	N	N
12.	Replace	Zone Map ChSt/9 with Map in Attachment E	N	N
13.	Replace	Policy Area Map ChSt/9 with Map in Attachment F	N	N

Attachment A

Woodville Medium Density Policy Area 21

Refer to the [Map Reference Tables](#) for a list of the maps that relate to this policy area.

OBJECTIVES

- 1 Development comprising primarily medium-density housing providing compact, affordable and adaptable housing choices designed to complement surrounding areas of open space, neighbouring centres and public transport nodes.
- 2 Development that supports best practice in sustainable urban development and design and in community service and infrastructure provision.
- 3 Development that contributes to the desired character of the policy area.

DESIRED CHARACTER

The policy area is an infill site, formerly occupied by the Sheridan/Actil factory *and Trident Plastics Factory*, located within close proximity of the Woodville District Centre and adjoining the former Cheltenham Racecourse, Woodville High School, St Clair Oval and Recreation Centre and the Woodville Railway Station. The site, formerly used for industrial purposes, is proposed to be replaced with housing after, where necessary, the proper remediation of potentially contaminated land is carried out to ensure land is suitable for the intended use.

The policy area will be characterised by an integrated residential subdivision which demonstrates best practice sustainable urban development, and design offering a wide range of predominately medium density allotment sizes and dwelling types, including the provision of affordable and adaptable housing. Increased densities will generally be located adjacent to areas of high public amenity including public open space areas and public transport nodes, and within the southern part of the site that is closest to the railway station, shopping precinct and other facilities. Smaller allotments are encouraged to accommodate medium density housing, the delivery of affordable and social housing products and smaller household formations. The subdivision layout and subsequent development will:

- (a) create attractive, well landscaped, legible and liveable environments
- (b) convey a sense of place to residents and visitors
- (c) establish movement networks for vehicular, pedestrian and bicycle traffic
- (d) adopt passive energy and water conservation principles
- (e) be based on a modified grid pattern.

The subdivision layout also needs to underpin the movement networks for vehicular, pedestrian and bicycle traffic by:

- (a) connecting key areas of open space
- (b) establishing links with open space, pedestrian and bicycle paths, and to services and facilities such as schools, shopping precincts, community establishments and health services in neighbouring suburbs
- (c) providing easy access to public transport routes
- (d) ensuring bicycle/pedestrian pathways are designed and landscaped so as to be easily identifiable, accessible and safe

- (e) minimising potential conflicts between vehicular traffic and bicycle/pedestrian pathways
- (f) reducing potential vehicular traffic intrusion into adjoining residential neighbourhoods.

The road access to Actil and Brocas Avenues must give consideration to drop off and pick up zones adjacent to Woodville High School.

It is desirable that development contributes to a cohesive housing form and style and is of a high architectural standard and scale appropriate to the size of allotments and to the streetscape character so as not to appear dominant with respect to neighbouring buildings and to complement the interface relationship between the public and private realms. This can be established in part through appropriate design that includes interesting roof forms such as high pitches and parapets, high ceilings, building articulation, recessed vehicle garaging, use of light colours and materials and through suitable attractive landscaping. The inclusion of front verandas will encourage street interaction and activity providing for passive surveillance and safer streets.

It is anticipated that the policy area will be developed at a gross density of approximately 20 dwellings per hectare. There may be sites within the policy area where dwellings will be developed between a range of 15 dwellings per hectare for lower density and up to 35 to 40 dwellings per hectare for higher density. Housing forms will primarily be up to two storeys. However, higher buildings may be appropriate in certain locations such as adjoining public open space areas, *adjacent Torrens Road* and within the southern portion of the site where higher density development is envisaged close to public transport and local facilities. The use of iconic built form and scale will be considered to emphasise major arrival focus points, accentuate key corners and terminate vistas. Development should create an appropriate height transition between higher level development within the policy area and established low rise residences adjacent to it.

The policy area should have a leafy garden village feel created by a seamless landscape between private gardens, street planting and integration with adjacent public open space. A primary central open space area will provide the main community focus, as well as providing a link between St Clair Oval and the future development of Cheltenham Park Policy Area 22 and *Viscount Plastics Trident Plastics*. This space could also be used for stormwater management. New streets shall create a sense of identity and cohesion through landscaping and, where possible, be developed with pedestrian movements focussed on one side, particularly where adjacent to public open spaces. In such locations the adjoining housing may be developed with reduced front setbacks.

Development of the policy area shall strongly emphasise both visual and physical connectivity with the surrounding area and facilities. Priority is given to establishing cohesive pedestrian and bicycle movement corridors and visual links between new development and adjoining areas including public recreation areas, public transport nodes and local shopping and community facilities. Development to facilitate connection with Woodville Road through the reopening of Brocas Avenue is desirable. The creation of a major arrival focus where Actil Avenue intersects with Brocas Avenue, through appropriate built form, landscaping and public open space, is envisaged.

New development will need to take into consideration the future development of the Cheltenham/Woodville locality by providing opportunities for integration, movement and open space corridors.

Areas adjacent to the policy area, *on the northern side of Torrens Road*, include non-residential uses such as industry. It will be important for development within the policy area to address reducing potential impacts on existing uses and vice versa. Development will acknowledge and respond to the activity and function of existing and adjoining land uses through solutions that mitigate adverse impacts without affecting the long term viability of those uses whilst allowing for future changes in use.

PRINCIPLES OF DEVELOPMENT CONTROL

- 1 Development should not be undertaken unless it is consistent with the desired character for the policy area.
- 2 Development should comprise a wide range of dwelling types covering a range of densities including both large and small housing allotments for medium density housing.

- 3 Development should be carried out in accordance with the Concept Plan Map ChSt/18 - Cheltenham Park and Woodville Medium Density.
- 4 Buildings should generally be of one to two storeys in scale and, in any event, should not have a maximum height exceeding 3 storeys (12 metres) above natural ground level at any point. Three storey buildings may be appropriate in areas adjacent to public open space, open space connections, *adjacent Torrens Road* and within proximity of the Woodville Railway Station and local facilities.
- 5 Dwellings should be designed within the following setback parameters:

Parameter	Value
Minimum setback from primary road frontage	4.5 metres - along Actil Avenue between Torrens Road and Brocas Avenue. 1.5 metres - where the allotment adjoins a public reserve and rear vehicular access is available. 3.5 metres - all other allotments.
Minimum setback from secondary road frontage	1.5 metres
Minimum setback from rear boundary	3 metres - single storey. 6 metres - 2 or more storeys. Nil - where adjoining a service or access lane.

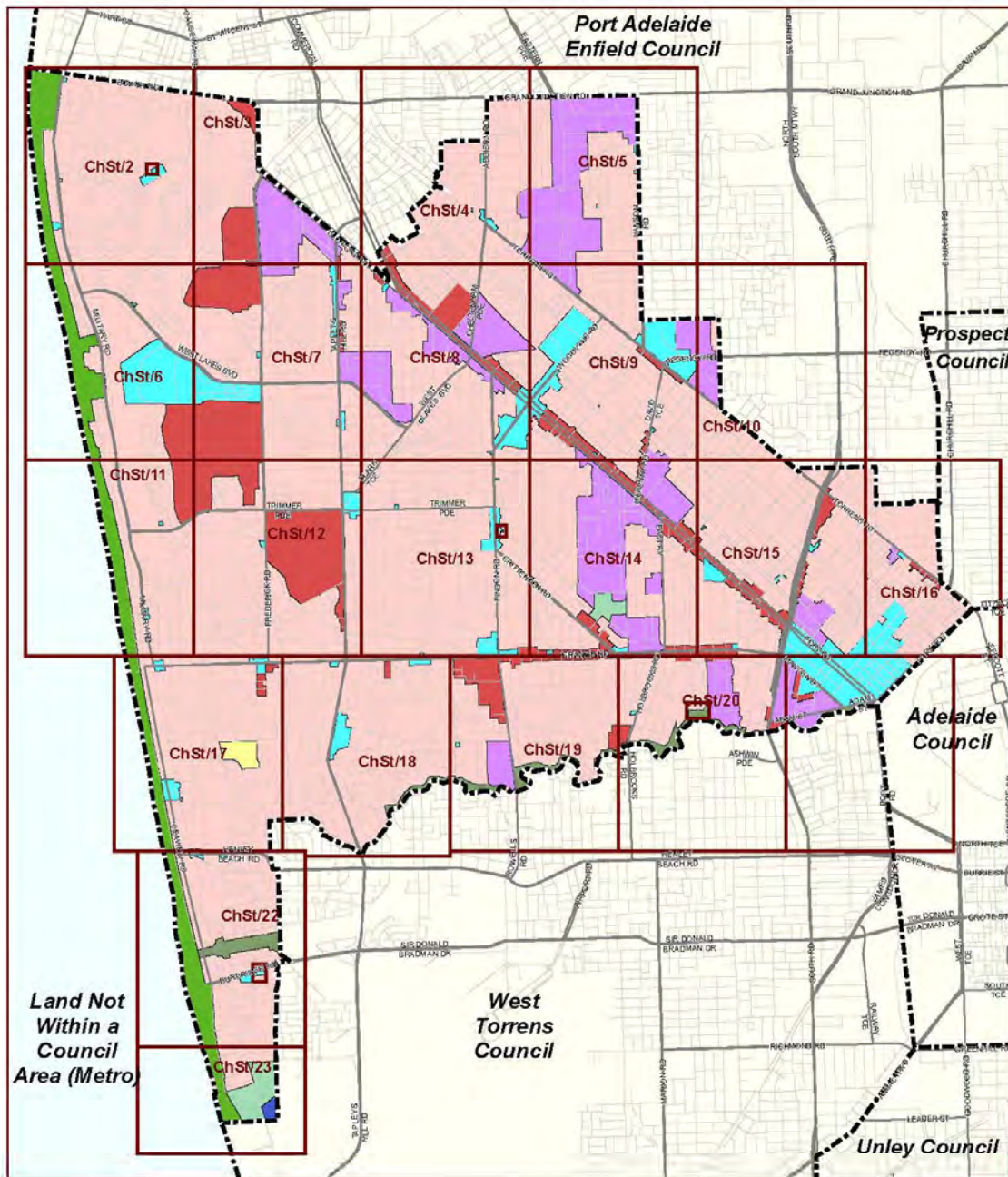
- 6 For two or more storey components of buildings, the rear setback distance may be reduced to not less than 3 metres where it can be demonstrated that all of the following can be achieved:
 - (a) solar access for adjoining properties will be maintained
 - (b) there will be minimal loss of visual and acoustic privacy for future residents
 - (c) direct overlooking of private open space areas of any adjoining sites from upper level living rooms will be avoided
 - (d) adequate private open space will be available.
- 7 Garages and carports whether freestanding or not should be designed within the following setback parameters, whichever provides the greatest distance:

Parameter	Value
Minimum setback from primary road frontage	5.5 metres
Minimum setback from secondary road frontage	1.5 metres
Minimum setback from other road frontages	0.5 metres behind the main face of the dwelling or in line with the main face of the dwelling where the dwelling incorporates building elements and projections that provide articulation in the building.

- 8 Allotments may have direct frontage to a public reserve provided that the public park has an area of at least 2000 square metres and that rear vehicular access is available to the allotments.
- ~~9 No new road access nor any vehicular access to individual allotments should be provided from Torrens Road.~~
- 9 *Except for the Trident Plastics Factory site, no new road access should be provided from Torrens Road.*
- 10 *No vehicular access to individual allotments should be provided from Torrens Road.*

- 11 *An internal road network should be provided to support residential development on the Trident Plastics Factory site that:*
- (a) provides connection to a key vehicle access point on Torrens Road*
 - (b) services land within the Trident Plastics site*
 - (c) provides safe and convenient secondary vehicle access to neighbouring land to the east and south*
 - (d) provides safe and convenient pedestrian linkages with the surrounding locality*
- 12 In the case of multiple dwellings on one site, access to parking and garaging areas from public streets should be via a common driveway.
- 13 Garage or carport openings greater than 6 metres or 50 per cent of the frontage width are not appropriate, except where either of the following apply:
- (a) a site having solely a vehicular access from the rear - no maximum width applies
 - (b) a site having a frontage of less than 12 metres and a dwelling of two or more storeys incorporating building elements and projections that provide articulation in the building - a maximum width of 6 metres or 80 per cent of the width of the site, whichever is the lesser distance.

Attachment B



For the purposes of the Development Plan unless otherwise clearly indicated, the zone/policy area/precinct boundaries depicted on or intended to be fixed by Maps ChSt/1 to Map ChSt/24 inclusive shall be read as conforming in all respects (as the case may require) to the land division boundaries, or to the centre line of roads or drain reserves or to the title boundaries, or to imaginary straight lines joining the positions defined by survey or by the measurements shown on the said maps against which the said zone/policy area/precinct boundaries are shown or otherwise indicated.

0

N
5km

Council Index Map

CHARLES STURT COUNCIL

Attachment C

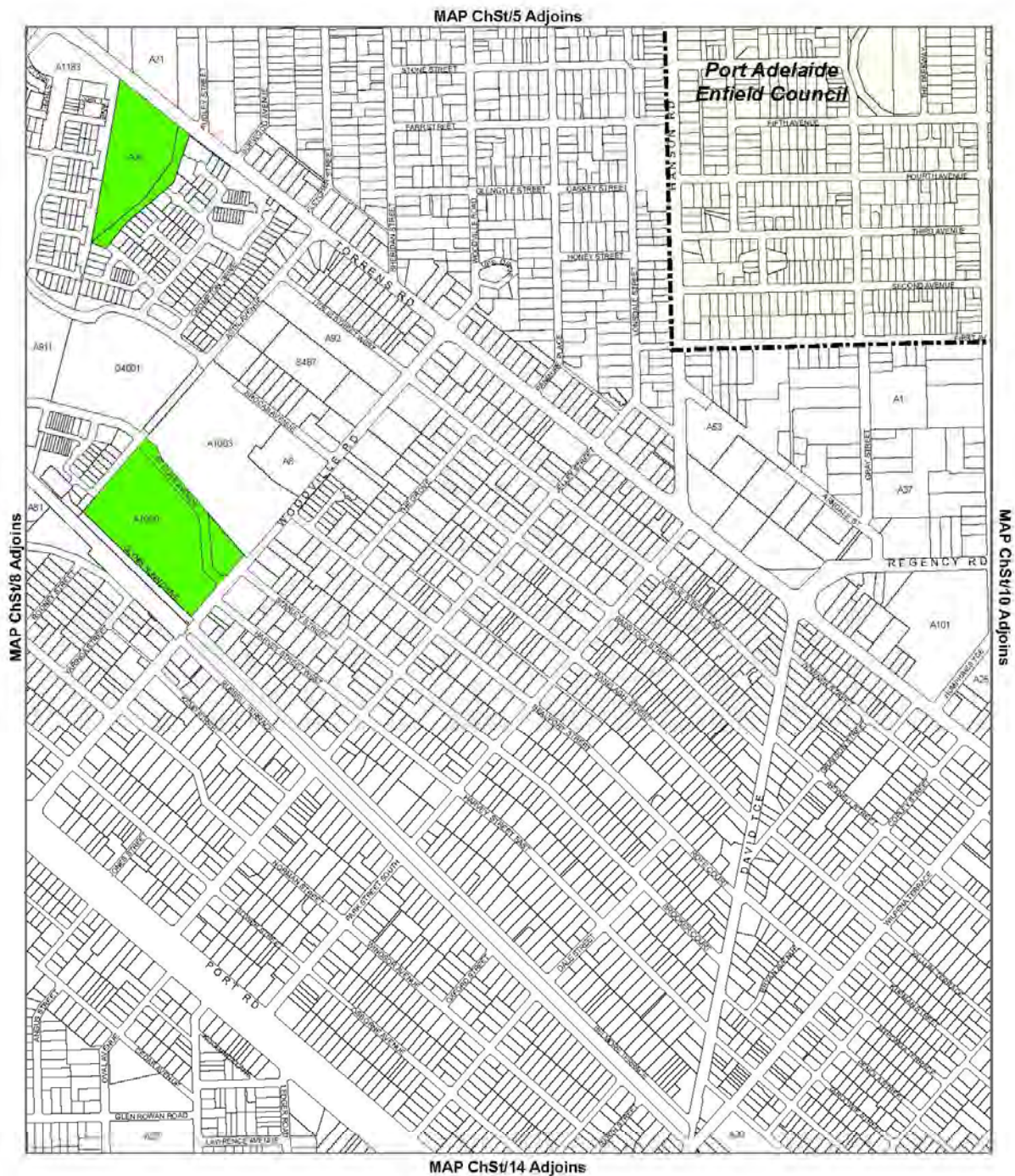


- Train Line
- Noise and Air Emissions Designated Area
- - - - - Development Plan Boundary



Overlay Map ChSt/9 NOISE AND AIR EMISSIONS

CHARLES STURT COUNCIL

Attachment D

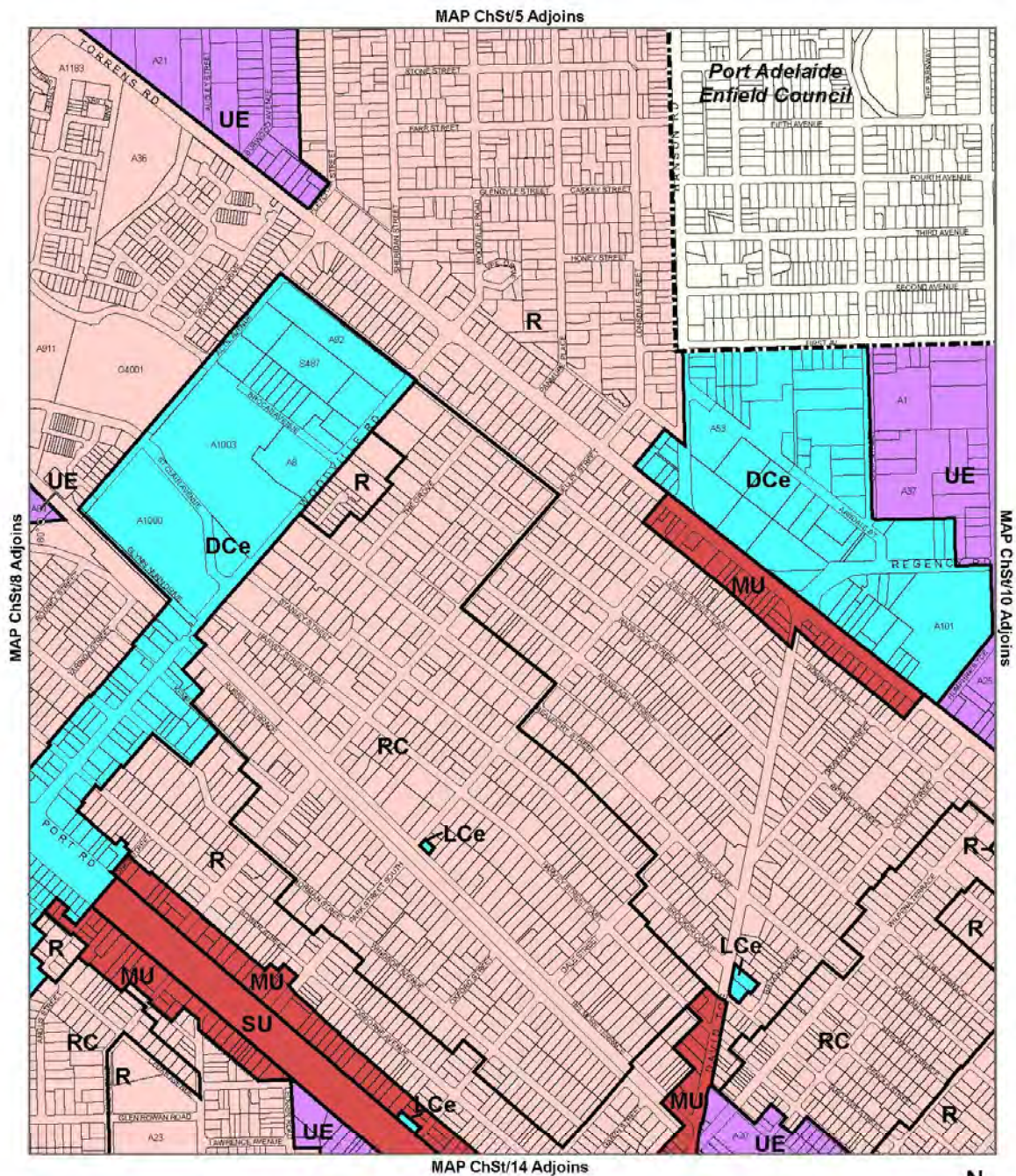


Overlay Map ChSt/9 AFFORDABLE HOUSING

 Affordable Housing Designated Area
 Development Plan Boundary

CHARLES STURT COUNCIL

Attachment E



Lambert's Conformal Conic (projection), GDA94

- Zones**
- DCe District Centre
 - LCe Local Centre
 - MU Mixed Use
 - R Residential
 - RC Residential Character
 - SU Special Use
 - UE Urban Employment
 - Zone Boundary
 - - - - - Development Plan Boundary



Zone Map ChSt/9

CHARLES STURT COUNCIL

