STATE PLANNING COMMISSION

Agenda Report for Decision

Meeting Date: 8 December 2022

Item Name	Code Amendment Initiation Advice to the Minister for Planning – Proposal to Initiate the Lot 501 Bedford Park Code Amendment
Presenters	Paul Bennett, Jason Bailey and Nadia Gencarelli
Purpose of Report	Decision
Item Number	4.1
Strategic Plan Reference	4. Discharging Statutory Obligations
Work Plan Reference	4.2 Advise the Minister on Code Amendments
Confidentiality	Not Confidential (Release Delayed). To be released following final decision by the Minister for Planning on initiation of the Code Amendment. Anticipated by January 2023
Related Decisions	SPC Agenda Report – Item 3.3 – Code Amendment Initiation Advice to the Minister for Planning and Local Government – Bedford Park Code Amendment – 25 November 2021

Recommendation

It is recommended that the State Planning Commission (the Commission) resolves to:

1. Approve the designation of this item as Not Confidential (Release Delayed), with the meeting papers for the item to be released following final decision by the Minister for Planning (the Minister) on initiation of the Code Amendment. Anticipated by January 2023.
2. Advise the Minister that it:

   2.1 Recommends the approval of the Lot 501 Bedford Park Code Amendment under section 73(2)(vii) of the *Planning, Development and Infrastructure Act 2016* (the Act), subject to the following conditions applied under section 73(5)(b) of the Act:

   a) Prior to approval of the Code Amendment, the Designated Entity must demonstrate to the satisfaction of the Minister that all necessary agreements or deeds are fully executed as required to secure the funding and/or delivery of all infrastructure required to accommodate the development of the affected area, as proposed by the Code Amendment, to the satisfaction of all relevant infrastructure providers.

   b) The scope of the proposed Code Amendment does not include the creation of new planning rules, and is limited to the spatial application of zones, subzones, overlays or technical and numerical variations provided for under the published Planning and Design Code (the Code) (on the date the Amendment is released for consultation).

c) The Code Amendment is prepared by a person with qualifications and experience that is equivalent to an Accredited Professional—Planning Level 1 under the Act.

d) Troon Group Pty Ltd must withdraw the previously initiated Bedford Park Code Amendment.

2.2 Recommends that Bunnings Properties Pty Ltd (care of Future Urban) be the Designated Entity responsible for undertaking the Code Amendment process.

3. Specify that the Designated Entity consults with the following nominated individuals and entities, under section 73(6)(e) of the Act:
    - Department for Infrastructure and Transport
    - Attorney-General's Department, Aboriginal Affairs and Reconciliation
    - Green Adelaide Landscape Boards
    - Utility providers including SA Power Networks, ElectraNet Pty Ltd, APA Group, SA Water, EPIC Energy, NBN, and other telecommunications providers
    - State Members of Parliament for the electorates in which the proposed Code Amendment applies.
4. Resolve under section 73(6)(f) of the Act, not to specify further investigations or information requirements in addition to that outlined in the Proposal to Initiate.
5. Recommend that the Minister approve the initiation of the Code Amendment by signing the Proposal to Initiate (**Attachment 1**) and approval letters with conditions (**Attachment 2**).
6. Approve and authorise the Chair of the Commission to sign the advice to the Minister as provided in **Attachment 3**.
7. Authorise the Chair to finalise any minor amendments to the advice and attachments as required.

Background

Section 73(2)(b)(vii) of the Act provides that a proposal to amend the Code may be initiated by a person who has an interest in the relevant land with the approval of the Minister, acting on the advice of the Commission, in relation to the following matters:

- Strategic assessment against the State Planning Policies and *The 30-Year Plan for Greater Adelaide: 2017 Update.*
- Any person or body that must be consulted by the Designated Entity, pursuant to section 73(6)(e) of the Act.
- Any investigations to be carried out or information to be obtained by the Designated Entity, in accordance with section 73(6)(f) of the Act.

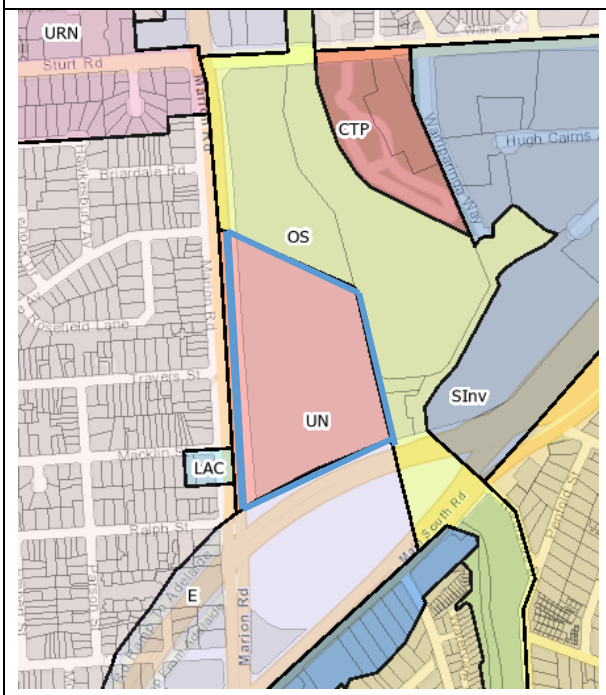
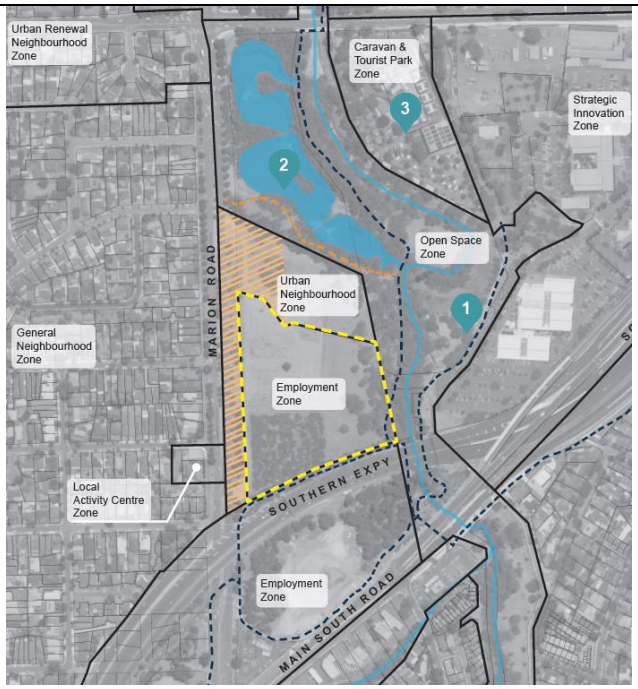
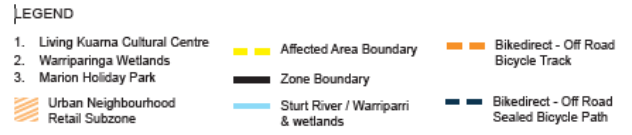
The purpose of this report is therefore to provide the Commission with advice to be provided to the Minister in relation to the Proposal to Initiate submitted by Bunnings Properties Pty Ltd (**Attachment 1**).

Discussion

Scope of the Amendment

The Proposal seeks to rezone 4.029 hectares of undeveloped land located adjacent Marion Road and the Southern Expressway to facilitate the development of large format bulky goods by applying the Employment Zone over the affected area. The Proposal will replace the existing initiated Bedford Park Code Amendment (by the Troon Group Pty Ltd), making minor changes to the affected area to reflect a recent subdivision, and changing the Designated Entity.

The affected area and current zoning are shown in the figures below.

Current South Australian Property and Planning Atlas (SAPPA) Zoning	Proposed Zoning
	
The Affected Area is located within the: • Urban Neighbourhood Zone • Urban Neighbourhood Retail Subzone. The following Overlays apply to the land: • Airport Building Heights (Regulated) (All structures over 45 metres) • Advertising Near Signalised Intersections • Affordable Housing • Hazards (Bushfire - Urban Interface) • Heritage Adjacency • Hazards (Flooding General) • Major Urban Transport Routes • Noise and Air Emissions • Non-stop Corridor • Prescribed Wells Area • Regulated and Significant Tree • Traffic Generating Development • Water Resources.	 Proposed Zoning: • Employment Zone • No change to existing Overlays anticipated by proponent. Land surrounding the affected area is within the Employment Zone, Local Activity Centre Zone, Urban Neighbourhood Zone, General Neighbourhood Zone and Open Space Zone.

Advice to the Minister

The attached advice to the Minister sets out the statutory and procedural elements that must be considered as part of the initiation of a Code Amendment (**Attachment 3**).

The advice recommends that the Minister approve the initiation of the Code Amendment for the following reasons and subject to conditions (as set out below).

Strategic considerations

The Proposal will provide additional employment land supply within the Inner South region of Greater Adelaide to service projected population growth over the next 10-15 years. The zoning will facilitate a range of low-impact employment uses, including large format bulky goods/service trade premises on an underutilised site. The northern portion of the site, outside the affected area and not forming part of the Proposal, will be retained in the Urban Neighbourhood Zone, facilitating an integrated aboriginal housing development. This portion of the land is higher amenity, and more suited to residential development, abutting the wetlands and separated from the Southern Expressway.

The southern portion of the land is well positioned for employment activities, being adjacent arterial roads with high traffic volumes.

Further strategic considerations and discussion are provided in **Attachment 3**.

Procedural considerations

The Proposal meets all procedural requirements, as detailed in the attached advice to the Minister (**Attachment 3**).

Conditions proposed and items specified

A number of conditions have been recommended to be specified by the Minister, pursuant to sections 73(5)(b) of the Act. In addition, it has been recommended that the Commission specify persons or bodies to be consulted with by the Designated Entity under section 73(6)(e) of the Act, as outlined in the advice to the Minister (**Attachment 3**).

Attachments:

1. Proposal to Initiate the Lot 501 Bedford Park Code Amendment (#19367394).
2. Draft approval letters to:
    a) Bunnings Properties Pty Ltd (#19468541)
    b) City of Marion (#19468388).
3. State Planning Commission Advice to the Minister (#19465248).

Prepared by: Catherine Hollingsworth

Endorsed by: Paul Bennett

Date: 17 November 2022

PROPOSAL TO INITIATE AN AMENDMENT TO THE PLANNING AND DESIGN CODE

LOT 501 BEDFORD PARK CODE AMENDMENT

BY BUNNINGS PROPERTIES PTY LTD

Bunnings Properties Pty Ltd

Date: 7 October 2022

This proposal to initiate document together with conditions specified by the Minister forms the basis for the preparation of a proposed amendment to the Planning and Design Code for the purpose of section 73(2)(b) of the Planning, Development and Infrastructure Act 2016.

MINISTER FOR PLANNING

DATE:

Proprietary Information Statement

The information contained in this document produced by Future Urban Pty Ltd is solely for the use of the Client identified on the cover sheet for the purpose for which it has been prepared and Future Urban Pty Ltd undertakes no duty to or accepts any responsibility to any third party who may rely upon this document.

Document Control

Revision	Description	Author	Date
V1	Draft	EN	09.09.2022
V2	Draft	MO	09.09.2022
V3	Updated	EN	20.09.2022
V4	For submission	EN	29.09.2022

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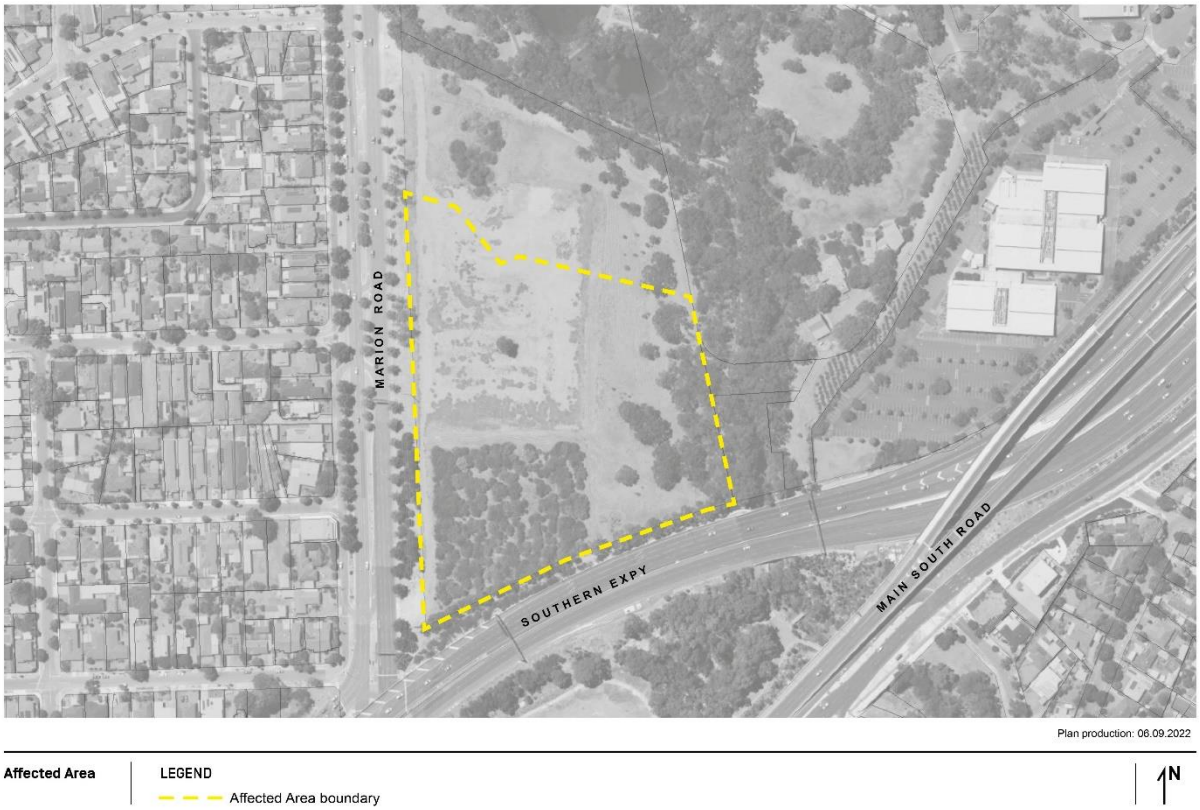
APPENDICES

1. INTRODUCTION

Bunnings Properties Pty Ltd (the Proponent) is proposing to initiate an amendment (the Code Amendment) to the Planning and Design Code (the Code) as it relates to a portion of the land (the Affected Area) located at Lot 707 Marion Road, Bedford Park (Lot 707), which is presently vacant and soon to be owned by the Proponent. Refer **Figure 1.1** for the Affected Area.

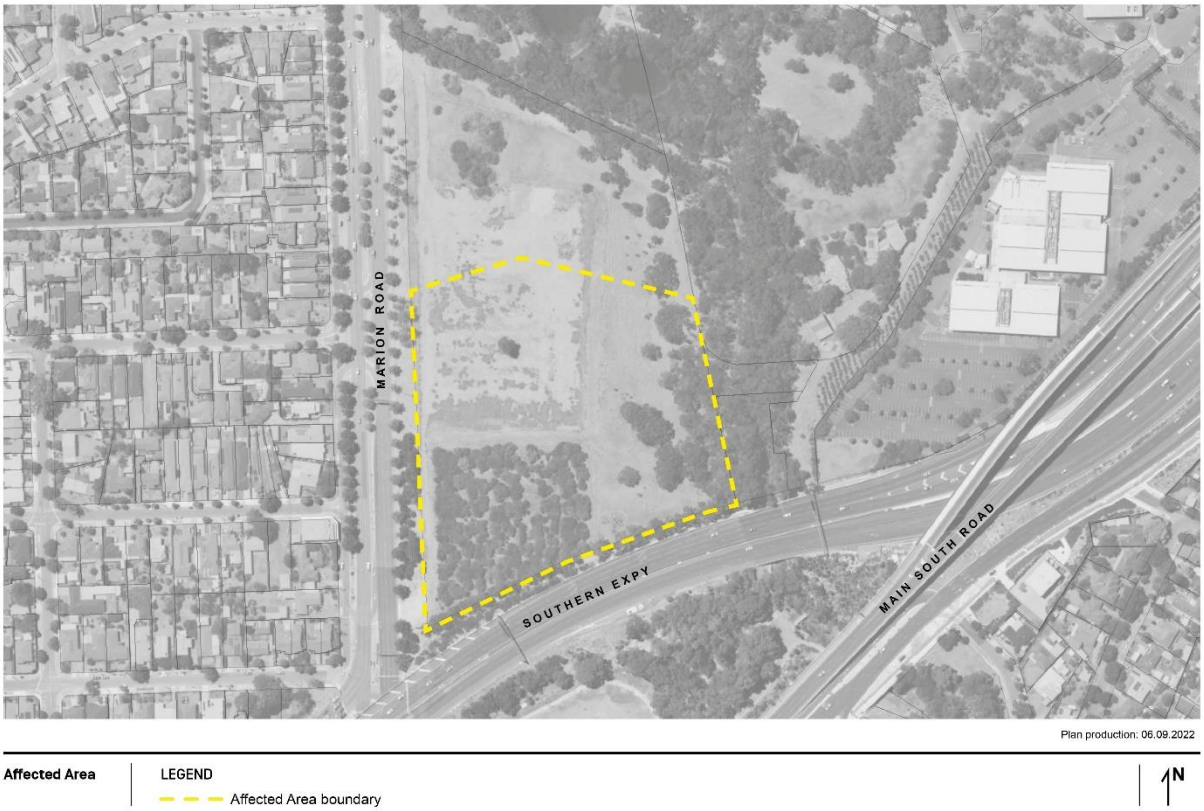
Figure 1.1 *Affected Area and current zoning*



The purpose of this proposal to initiate is to seek approval of the Minister for Planning (the Minister) to initiate the Code Amendment under section 73(2)(b) of the *Planning, Development and Infrastructure Act 2016* (the Act).

By way of background, a Code Amendment, on similar terms to the one now proposed, was proposed by Troon Group Pty Ltd (the Troon Group Code Amendment). The Troon Group Code Amendment was initiated by the Honourable Josh Teague, the former Minister for Planning and Local Government. A copy of the initiation letter is contained in **Appendix 1**. Troon Group had executed a contract with the former registered owners of the land, the Indigenous Land and Sea Corporation (ILSC), to purchase the southern portion of the land (3.76ha) subject to certain pre-conditions being met. The Affected Area for the Troon Group Code Amendment is demonstrated in **Figure 1.2** below.

Figure 1.2 *Affected Area for the Troon Group Code Amendment*



Since the initiation of the Troon Group Code Amendment, land division application 21028762 to divide Lot 707 from one into three allotments has been approved. A copy of the plan of division and approval documentation is contained in **Appendix 2**. In accordance with the current contractual arrangements, on deposit of the approved plan of division and creation of the new allotments the following will occur:

- the Proponent will become the registered owner of allotment 501 and 502 on the plan of division, Lot 501 being the Affected Area for the Code Amendment; and
- ILSC will retain ownership of allotment 503 on the plan of division.

Troon Group will shortly no longer have an interest in any part of Lot 707, however as a consequence of various contractual arrangements, the Proponent has a demonstrated interest in the land.

As such, it is necessary for a new Proposal to Initiate to be prepared and submitted in order to amend both the Affected Area and the Designated Entity.

With the exception of changes to the Affected Area and the Proponent, the basis for the Code Amendment remains the same. Specifically, the Proponent has a vision to develop the Affected Area, which generally comprises large format bulky goods/service trade premises.

The rezoning and subsequent future development of the Area Affected for commercial purposes will provide essential funding to enable the development of the northern portion of the land by ILSC for small scale retail and medium density indigenous housing (Elders Village) in accordance with the Urban Neighbourhood Zone.

This Proposal to Initiate details the scope, relevant strategic and policy considerations, nature of investigations to be carried out and information to be collected for the Code Amendment.

It also details the timeframes to be followed in undertaking the Code Amendment, should this Proposal to Initiate be approved by the Minister.

This Proposal to Initiate also incorporates the investigation and engagement requirements set out in the initiation approval letter for the Troon Group Code Amendment.

The Proponent acknowledges that the Minister may specify conditions on approving this Proposal to Initiate, under section 73(5) of the Act. In the event of inconsistency between this Proposal to Initiate and any conditions specified by the Minister, the conditions will apply.

1.2 Designated Entity for Undertaking the Code Amendment

In accordance with section 73(4)(a) of the Act, the Proponent will be the Designated Entity responsible for undertaking the Code Amendment process. As a result:

- The Proponent acknowledges that it will be responsible for undertaking the Code Amendment in accordance with the requirements of the Act.
- The Proponent declares that it has not and does not intend to enter into an agreement with a third party for the recovery of costs incurred in relation to the Code Amendment under section 73(9) of the Act. If the Proponent does enter into such an agreement, the Proponent will notify the Department prior to finalising the Engagement Report under section 73(7) of the Act.

The Proponent's contact person responsible for managing the Code Amendment and receiving all official documents relating to this Code Amendment is:

Michael Osborn (Director – Future Urban)
michael@futureurban.com.au
(08) 8221 5511

The Proponent intends to undertake the Code Amendment by utilising professional expertise of employees of Future Urban including:

- Michael Osborn who has a planning qualification (Graduate Diploma in Urban and Regional Planning – 1992) and significant experience (25 years) in the areas of planning policy preparation and land use investigations. In addition, this person has experience in engagement and the preparation of engagement plans and will ensure engagement accords with the Community Engagement Charter.
- Kayla Gaskin from the Future Urban team who has IAP2 accreditation.
- Emily Nankivell from the Future Urban team.

The Proponent acknowledges that the Minister may, under section 73(4)(b) of the Act, determine that the Chief Executive of the Department will be the Designated Entity responsible for undertaking the Code Amendment. In this case, the Proponent acknowledges and agrees that they will be required to pay the reasonable costs of the Chief Executive in undertaking the Code Amendment.

1.3 Rationale for the Code Amendment

In considering the rationale to rezone the Affected Area from the Urban Neighbourhood Zone to Employment Zone, there are a number of key influencing factors, including:

- The Employment Zone broadens the range of uses which could be accommodated on the Affected Area;
- Investigations have identified that there is demand for bulky goods retailing within the locality, with the area, configuration and arterial road frontage/access representing an orderly opportunity to accommodate the demand;

- Bulky goods are recognised as a unique form of large format retailing which is an envisaged use within the Employment Zone;
- The retention of the Urban Neighbourhood Zone on the northern portion of existing Lot 707 (approved Lot 503) will enable the housing and small-scale retail outcomes envisaged by the ILSC to be delivered;
- The establishment of the Employment Zone for the Affected Area will enable the demonstrated bulky goods demands to be delivered, enhancing the employment generating activities in the locality; and
- A review of available land in the existing employment type zones has identified that they are already fully developed or do not have direct access to a primary arterial road, which suggests there is limited opportunity to capture additional large format employment generating uses within the Council area.

2. SCOPE OF CODE AMENDMENT

2.1 Affected Area

The proposal seeks to amend the Code for the Affected Area which comprises the portion of Allotment 707 identified as Lot 501 on the Plan of Division (contained in **Appendix 1**) in Deposited plan 51254, Hundred of Noarlunga, which is contained in Certificate of Title Volume 5658 Folio 449. The Affected Area is located within the suburb of Bedford Park, which is within the City of Marion (Council). The current Certificate of Title is included as **Appendix 3**.

The Affected Area has frontage to Marion Road of approximately 236 metres and a frontage to the Southern Expressway of approximately 220 metres. Marion Road and the Southern Expressway are State Maintained Roads. The Affected Area has no direct access to the Southern Expressway.

The Affected Area comprises approximately 4.029 hectares. The Affected Area is presently vacant, however, does contain scattered vegetation throughout, including seven significant trees and 15 regulated trees. An olive grove also forms part of the established landscape character. An electricity easement is located adjacent and parallel to the Marion Road frontage. Easements are also located adjacent and parallel to the eastern boundary of the Affected Area.

The land adjoins the Warriparinga Wetlands to the north and east. Residential development is located on the western side of Marion Road.

Refer to **Appendix 4** for a location map, which includes the current zoning identified by the Code.

The Affected Area is located within the Urban Neighbourhood Zone. In addition, in approximate terms, the western half of the land is also located within the Urban Neighbourhood Retail Subzone.

2.2 Scope of Proposed Amendments

Current Policy	**Urban Neighbourhood Zone** **Urban Neighbourhood Retail Subzone** **Overlays:** • Airport Building Heights (Regulated) (All structures over 45 metres) • Advertising Near Signalised Intersections • Affordable Housing • Hazards (Bushfire - Urban Interface) • Heritage Adjacency • Hazards (Flooding General) • Major Urban Transport Routes • Noise and Air Emissions • Non-stop Corridor • Prescribed Wells Area • Regulated and Significant Tree • Traffic Generating Development • Water Resources

Amendment Outline	The overall intent of the amendment is to enable the further development of large format employment generating uses such as bulky goods outlets and service trades premises. This will necessitate the Area Affected being rezoned from the Urban Neighbourhood Zone to an alternate zone, with the Employment Zone considered the most appropriate, noting this zone does not anticipate retail uses which may compete with established centres. The proponent has confirmed with Council that is has no intention to establish a retail fuel outlet within the Affected Area. The proponent seeks to formalise such a commitment via a separate agreement with the Council.
Intended Policy	• Rezone the area Affected to Employment Zone, as shown on plan included as **Appendix 5**. • No change to existing overlays is likely, but will be investigated as part of the Code Amendment.

3. STRATEGIC PLANNING DOCUMENTS

Proposed Code Amendments occur within a state, regional and local strategic setting, which includes:

- Strategic Planning Policies (SPPs);
- Regional Plans; and
- Other relevant strategic documents.

3.1 Summary of Strategic Planning Outcomes

The key strategic planning considerations and relevant investigations undertaken to support the Proposal to Initiate, include (but are not limited to):

- Integrated planning;
- Design quality;
- Biodiversity;
- Employment lands;
- Strategic transport and infrastructure; and
- Emissions and hazardous activities.

3.2 Alignment with State Planning Policies

The SPPs set out the State's overarching goals and requirements for the planning system. Under section 66(3)(f) of the Act, the Code must comply with any principle prescribed by an SPP.

The Code Amendment should be initiated because the strategic planning outcomes sought to be achieved through the Code Amendment align with or seeks to implement the following SPPs:

State Planning Policy (SPP)	Code Amendment Alignment with SPPs
State Planning Policy 1 – Integrated Planning *(1.1) An adequate supply of land (well serviced by infrastructure) is available that can accommodate housing and employment growth over the relevant forecast period* *(1.3) Plan growth in areas of the state that is connected to and integrated with, existing and proposed public transport routes, infrastructure, services and employment lands*	The zoning of the Affected Area has been amended in recent years, arising from the broad Southern Innovation Areas DPA in 2018 and the introduction of the Code in 2021. The various zones which have applied have arisen from broader investigations/translations and have not been tailored to support a defined development outcome for the Affected Area. The Proponents proposal provides for employment growth, which is presently anticipated within the Urban Neighbourhood Zone. However, the detailed policies of the Urban Neighbourhood Zone relating to the nature, form and scale of employment uses do not reflect market demands within the catchment area.

	Whilst in theory the current zone supports housing and employment growth, the proposed Code Amendment will more definitively support a market responsive outcome and therefore achieve Policy 1.1. The Affected Area is well suited to accommodating employment generating uses given frontage and proximity to arterial and State Maintained roads which provides exposure and accessibility. The Affected Area has direct access to Marion Road and is conveniently located relative to Sturt Road and the Southern Expressway. The establishment of employment generating uses in this location is therefore logical and supports the previous investment in major road infrastructure, in accordance with Policy 1.2.
State Planning Policy 2 – Design Quality *(2.1) Promote best practice in the design of buildings, places and the public realm by applying the Principles of Good Design* *(2.3) The development of environmentally sustainable buildings and places by applying Water Sensitive Urban Design and energy efficiency design solutions* *(2.10) Facilitate development that positively contributes to the public realm by providing active interfaces with streets and public open spaces*	Since the preparation of the SPPs, Phase 3 of the Code has been introduced. Such contains both General Development and Zone policies which promote design quality through the development application process. On the basis that the Employment Zone be applied to the Affected Area, policies relating to design will be incorporated which provide a particular focus on building form, materiality and landscaping.
State Planning Policy 4 – Biodiversity *(4.1) Minimise impacts of development on areas with recognized natural character and values, such as native vegetation and critical habitat so that critical life-supporting functions to our state can be maintained.*	The land contained within the current Certificate of Title comprises some native vegetation including seven significant and 15 regulated trees. The Preliminary Tree Assessment prepared by Arborman Tree Solutions **(Appendix 5**) has identified that 12 of the trees have moderate retention value, which are able to be considered in further detail as part of any future development application. Vegetation is located further to the east and north of the Affected Area within the adjoining Warriparinga Wetlands. Extensive landscaping is likely to be required given the policies within the Code which seek 10% of a commercial development site to be landscaped.

State Planning Policy 9 – Employment Lands *(9.2) Enable opportunities for employment and encourage development of underutilised lands connected to, and integrated with, housing, infrastructure, transport and essential services.* *(9.4) Adaptable policies that allow commercial and industrial-focussed employment lands to support local economies and evolve in response to changing business and community needs.* *(9.8) Allow for competition within the retail sector by providing an appropriate supply of land for all retail formats in areas that are easily accessible to communities.* *(9.12) Plan for employment and industrial precincts in strategic locations that improve economic productivity; are protected from encroachment; connect to efficient supply chains; and are located to provide transport access and connectivity.*	The Affected Area is presently vacant and generating no economic value. The present Urban Neighbourhood Zone does not support the establishment of large format employment generating uses. Such represents a lost opportunity. The Code Amendment seeks to rezone the Affected Area to the Employment Zone, which is best suited to accommodate bulky goods and service trade premises, a commercial form of employment land activity which supports the local economy. Whilst SPP 9.8 allows for competition within the retail sector, the Employment Zone only provides for limited general retail, and hence won't compete with the Urban Neighbourhood Zone which is to be retained on the adjacent land. A retail floor space analysis has been undertaken by Deep End Services (**Appendix 7**). The analysis identified that the population catchment for the Affected Area could support up to 34,595 square metres of hardware floor space, with a current undersupply of 13,500 square metres. An undersupply of 47,500 sqm of other large format retailing was also identified in the catchment area. Given the locational attributes of the Affected Area, the rezoning presents a significant and supportable opportunity to rezone the land to Employment and enable the provision of large format retailing.
State Planning Policy 11 – Strategic Transport and Infrastructure *(11.2) Development that maximises the use of current and planned investment in transport infrastructure, corridors, nodes and services.* *(11.4) Minimise negative transport-related impacts on communities and the environment.*	Marion Road is an arterial and State Maintained Road which is designed to accommodate significant volumes of traffic. Preliminary investigations undertaken by traffic engineers MFY have identified appropriate access locations for the Affected Area. **Appendix 8** includes a summary of the investigations undertaken by MFY and the engagement with the Department of Infrastructure and Transport to date.

State Planning Policy 16 – Emissions and Hazardous Activities *(16.1) Protect communities and the environment from risks associated with industrial emissions and hazards (including radiation) while ensuring that industrial and infrastructure development remains strong through:* *a) supporting a compatible land use mix through appropriate zoning controls* *b) appropriate separation distances between industrial sites that are incompatible with sensitive land uses* *c) controlling or minimising emissions or impacts are unavoidable, at the receiver.*	Desired Outcome 1 of the proposed Employment Zone states: *A diverse range of low-impact light industrial, commercial and business activities that complement the role of other zones accommodating significant industrial, shopping and business activities.* Such provides an effective and appropriate transition to the Urban Neighbourhood Zone, particularly having regard to the *Interface Between Land Use* General Development Policies within the Code.

3.3 Alignment with Regional Plans

As with the SPPs, the directions set out in Regional Plans provide the long-term vision as well as setting the spatial patterns for future development in a region. This includes consideration of land use integration, transport infrastructure and the public realm.

The 30 Year Plan for Greater Adelaide – 2017 is relevant for this Code Amendment.

Regional Plan identified priorities or targets	Code Amendment Alignment with Regional Plan
Transit corridors, growth areas and activity centres *P8. Provide retail and other services outside designated activity centres where they will contribute to the principles of accessibility, a transit-focused and connected city, high quality urban design, and economic growth and competitiveness.*	Analysis has indicated that there is a significant undersupply of large format retail within the catchment area. Given the established nature of the catchment areas, the utilisation of vacant and underutilised land, which has direct access to the arterial road network, provides an optimum opportunity to respond to the undersupply. The Affected Area has direct access to Marion Road and will complement the nature and form of other large format retailing locations within the catchment area. The extent of undersupply is such that the proposal will not be of detriment to the primacy and viability of established centres.

The economy and jobs *P56. Ensure there are suitable land supplies for the retail, commercial and industrial sectors.* *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.*	The proposed Code Amendment will increase the supply of employment land, as sought by P56. The Affected Area is well suited to accommodate employment land that is intended to accommodate bulky goods/service trade premises, given its direct access to Marion Road and proximity to the Southern Expressway. The Affected Area is of a sufficient area to ensure impacts on sensitive receivers are managed. Both bulky goods outlets and service trade premises are inherently low impact uses as they are in essence large format retail outlets. Hours of operation and deliveries provide means to control potential impacts. Existing and future public roads will provide separation between existing and future sensitive uses, optimising the ability to manage potential interface issues. Further investigations are proposed to confirm measures which can ensure an appropriate interface is achieved between the proposed future commercial and residential areas.
Climate Change *P116. Incorporate water sensitive urban design in new development to manage water quality, water quantity and water use efficiency and to support public stormwater systems.*	Investigations will be undertaken to ensure policy settings are in place which ensure that future development adopts principles of water sensitive urban design.

3.4 Alignment with Other Relevant Documents

Additional documents may relate to the broader land use intent within the scope of this proposed Code Amendment (or directly to the Affected Area) and therefore are identified for consideration in the preparation of the Code Amendment.

The following table identifies other documents relevant to this proposed Code Amendment:

Other Relevant Documents	Code Amendment Alignment with Other Relevant Documents
City of Marion – Community Vision>Towards 2040	*Prosperous* *'By 2040 our city will be a diverse and clean economy that attracts investment and jobs, and creates exports in sustainable business precincts while providing access to education and skills development'.*

City of Marion Strategic Plan 2019 - 2029	*Prosperous* *10 Year Strategies* *P1 We will ensure that our development regulation and interaction with business allows for a thriving economy, increased visitation, and vibrant atmosphere.* *P2 We will work with universities, business peak groups, Regional, State and Federal Governments to facilitate local economic growth.* *P4 We will seek to activate our city through quality streetscapes and place making initiatives to deliver vibrant and prosperous business precincts.* *Key Outcomes* • *An exciting urban environment that attracts business investment and economic activity* • *A city that promotes and supports business growth and offers increased local employment and skills development opportunity* *Key Challenges and Opportunities* • *The number of GST registered business in Marion is falling while the number of jobs remains static and our population is increasing.*

4. INVESTIGATIONS AND ENGAGEMENT

4.1 Investigations already Undertaken

The table below identifies what investigations have already been undertaken in support of the proposed Code Amendment.

Investigation/s Undertaken	Summary of Scope of Investigations	Summary of Outcome of Recommendations
Retail floorspace capacity analysis (Deep End Services)	Determine the sustainable amount of bulky goods and large format retail floorspace that can be accommodated. The Retail floorspace capacity analysis is included as **Appendix 7**.	Development of the Affected Area would serve a catchment of over 170,000 persons. There is an undersupply of hardware floorspace of 13,533 sqm in 2021. There is an undersupply of other large format retail floorspace of 47,500sqm. There is insufficient demand to support either a large hardware store (15,000sqm) or a showroom development with 13,000 sqm of LFR. Assessed scenarios would not result in other centres or precincts experiencing unreasonable reductions in sales levels. The proposed development would generate positive economic benefits associated with employment generation during construction and operation.
Proposed Code Amendment – Marion Road Bedford Park (MFY)	The preliminary traffic advice is included as **Appendix 8**.	The preliminary investigations have identified that the primary issue relates to the provision of safe and convenient access without compromising the functionality of the adjacent road network. The investigations therefore considered potential access options for the Area Affected, which is intended to be included in the Employment Zone. The investigations determined that there would be a preference for a signalised intersection to service the Area Affected.

		SIDRA modelling has been prepared to verify potential implications of a signalised access, with such modelling being reviewed by DIT. The investigations have also considered implications for access in respect to the land to the immediate north of the Area Affected. Investigations will continue to progress to inform the Code Amendment.
Limited Soil Assessment (Fyfe)	One of the key objectives of the report was to identify any potential contamination matters that may affect the future commercial development of the land. The Assessment is included as **Appendix 9**.	The assessment identified that soils across the site do not represent a risk to human health when considering the proposed future commercial land use.
Cultural Heritage Management Plan (Independent Heritage Consultants)	IHC were engaged by the Kaurna Nations Cultural Heritage Association to prepare a Cultural Heritage Management Plan. The aim was to provide a management plan for mitigating the potential impacts of future development to tangible heritage sites, objects and remains as well as intangible cultural heritage sites.	There is a single heritage site listed on the Department of Premier and Cabinet Register of Aboriginal sites and objects. This site is located adjacent to the Sturt River and extends partially across the south-eastern portion of the Area Affected. A high risk of encountering cultural materials within area has been identified through previous studies. More broadly, Warriparinga forms part of an important cultural landscape for the Kaurna people and hence a management approach, considering the significance of the wider landscape has been strongly advocated. The Management Plan recommends several risk mitigations actions which primarily relate to future construction activity. Actions include training, heritage supervision and response measures arising from specific events (ie site discovery).

		The appointment of a Kaurna Heritage Coordinator also forms part of the Management Plan response, to act as the principal point of contact with the future site contractor.
Preliminary Infrastructure and Servicing Report	The purpose of this report was to undertake a preliminary assessment of the infrastructure services and stormwater requirements for the Affected Area. The draft Preliminary Infrastructure and Servicing Report is included as **Appendix 10**.	The current report remains in progress and further work is required in respect to stormwater management and some servicing elements.

4.2 Further Investigations Proposed

The Proponent has already undertaken the key investigations to support the Code Amendment.

In addition to the investigations already undertaken and identified above, the table below outlines what additional investigations that will be undertaken to support the Code Amendment.

Further Investigations Proposed	**Explanation of how the further investigations propose to address an identified issue or question**
Final Infrastructure and Servicing Report	Identify any stormwater capacity constrains appurtenant to the Area Affected and options to manage stormwater in terms of both quantity and quality. Identify any infrastructure capacity issues having regard to the development potential arising from the Code Amendment. Identify any need for augmentation and associated responsibilities.
Environmental Noise Assessment	Consider future interface between residential and non-residential uses.
Final Traffic Advice	Continue engagement with DIT to verify access solutions.
Potential impacts on Warriparinga Wetlands and Sturt River	In accordance with the previous approval to initiate the Proponent will investigate future development and management measures to ensure protection of the Warriparinga Wetlands and Sturt River.
Existing Overlays	In accordance with the previous approval to initiate the Proponent will investigate the relevance of existing Overlays to the proposed Employment Zone.

There is low probability that infrastructure agreement(s) will be required to be entered in connection with the Code Amendment process.

The main infrastructure required will be traffic lights which would be the responsibility of the future developer to support a future development application process. Such presents no change to the current circumstance where a new intersection would be necessary to service the development of Lot 707 under the current zone.

4.3 Engagement already Undertaken

In accordance with Practice Direction 2, the Council has been consulted on the proposal, including both the former proposal and this amended proposal. Early engagement has occurred at various levels. The consultation included an initial briefing with Council staff on 27 July 2021. In addition, a briefing was undertaken with the Strategic Planning Committee of Council on 3 August 2021.

The minutes arising from the briefing stated the following:

"Mr Michael Osborn, Director, Future Urban gave a presentation on the proposed privately funded Code Amendment for Lot 707, Marion Road, Bedford Park. The presentation provided an explanation of the land, location, current zoning and a high level vision for the proposal. It was advised by Mr Osborn that the Minister for Aboriginal Affairs has written a letter for the proposed development noting there are no issues from an Aboriginal Cultural Heritage Perspective.

Discussion points noted below:

- *Proponents would like to continue the discussion and work with Council to advance investigations as needed, with the intention of progressing the privately funded code amendment, having a level of support from Council as part of the process.*
- *Members concerned that the development is not sympathetic to the natural environment, respectful of the cultural significance of the site and how a development of this nature would impact/integrate with the potential Kaurna Elders Village.*
- *A number of attempts to use the Council owned land adjacent to the proposed site have been declined in the past due to impacts of a cultural area. Given the current proposal, Council may have an opportunity to investigate options with the Minister to unlock the land."*

Following the above, the Council formally responded to the proponent in respect to its notification of intent to formally seek the approval of the Minister to initiate a Code Amendment. Council resolved the following in respect to the Code Amendment, as outlined in the letter included as **Appendix 11**.

Advises the Troon Group that Council acknowledges their intention to lodge a 'Proposal to Initiate' a Code Amendment with the Minister, seeking to rezone the southern section of Lot 707 (3.5 ha) to 'Employment Zone', providing opportunity for the development of bulky goods type facilities whilst retaining the northern portion within the Urban Neighbourhood Zone.

This acknowledgement relates to the lodgement of a 'Proposal to Initiate' only, with Council reserving the right to provide more definitive comment on the proposed rezoning once full details are made available as part of the Code Amendment process, and subject to:

- *The Troon Group entering into a Land Management Agreement or other legal agreement to exclude the use of the land fora retail fuel outlet.*
- *The Troon Group granting a Council easement on the land to allow the formalisation of a shared use pedestrian and cycle path on the Western side of the river.*

The Proponent has since contacted the Council to advise of the proposed changes to the Code Amendment (to the Designated Entity and Affected Area). A copy of the email to the Council is contained in **Appendix 11**. The Designated Entity is awaiting written confirmation from the Council and will provide this to the Department in due course.

In addition, the following engagement has or will occur in respect of this proposal:

- Liaison with DIT in respect to access to Marion Road (refer traffic advice contained in **Appendix 8**).

- Preliminary consultation with the Local Members of Parliament. The Designated Entity is currently seeking to undertake preliminary consultation with the Local Members of Parliament and can provide further information about the preliminary engagement to DTI in due course.

4.4 Further Engagement Proposed

In addition to the engagement already undertaken and identified above, and Engagement Plan has been prepared and is enclosed (**Appendix 12**). The table below provides a summary of the additional engagement which will be undertaken to support the Code Amendment and includes those stakeholders that the Designated Entity was required to consult with in accordance with the letter initiating the Troon Group Code Amendment (refer letter in **Appendix 1**).

Further Engagement Proposed	**Explanation of how the further engagement propose to address an identified issue or question**
Meeting with DIT	Resolve access considerations.
Meetings with Council	Identify and resolve matters relating to stormwater, planning policy and formalisation of rights of access to land adjacent the eastern boundary of the Area Affected.
Direct communication with ILSC	Confirm comfortable with the outcomes sought by the Code Amendment.
Direct communication with the Attorney General's Department (lead agency on Aboriginal Affairs and Reconciliation)	Identify and resolve matters relating to Aboriginal Affairs regarding the Affected Area.
Direct communication with Green Adelaide Landscape Board	To identify and resolve any matters relating to the Warriparinga Wetland and Sturt River.
Direct communication with Utility Providers	To understand current serving arrangements for the Affected Area and resolve matters relating to utility provision.
Direct communication with the State Members of Parliament	To share information about the project, to ascertain interest in the Code Amendment, involve in process to ensure any issues are understood and assist in sharing information about the project with the community.
Direct communication with other agencies, local government bodies and specific interest groups.	To ascertain interest in the Code Amendment and involve in process to ensure any issues are understood.
Direct communication with adjacent and surrounding landowners	Identify the potential impact of the proposed Code Amendment on the neighbouring land.

5. CODE AMENDMENT PROCESS

5.1 Engagement Plan

The Code Amendment process will occur in accordance with the Community Engagement Charter and Practice Direction 2 – Consultation on the Preparation or Amendment of a Designated Instrument.

The Designated Entity has prepared an Engagement Plan (**Appendix 12**) which includes the following mandatory consultation requirements (which may be in addition to the engagement outlined in this Proposal to Initiate):

- The Local Government Association must be notified in writing of the proposed Code Amendment;
- The Council must be notified in writing of the proposed Code Amendment;
- If the Code Amendment has a specific impact on 1 or more particular pieces of land in a particular zone on subzone (rather than more generally), the Designated Entity must take reasonable steps to give a notice in accordance with Regulation 20 of the Planning, Development and Infrastructure (General) Regulations 2017 to:
  - » the owners or occupiers of the land; and
  - » owners or occupiers of each piece of adjacent land;
- Consultation must also occur with any person or body specified by the State Planning Commission under section 73(6)(e) of the Act.

5.2 Engagement Report

Once engagement on the Code Amendment is complete, the Designated Entity will prepare an Engagement Report under section 73(7) of the Act.

The Designated Entity must ensure that a copy of the Engagement Report is furnished on the Minister and also published on the SA Planning Portal. This will occur in accordance with Practice Direction 2.

The Engagement Plan and the Engagement Report will also be considered by the State Planning Commission during the final stages of the Code Amendment process. The Commission will provide a report to the Environment, Resources and Development Committee of Parliament under section 74(3) of the Act. The Commission's report will provide information about the reason for the Code Amendment, the consultation undertaken on the Code Amendment and any other information considered relevant by the Commission.

5.3 Code Amendment Timetable

The Proponent (where it is also the Designated Entity) commits to undertaking the Code Amendment in line with the timeframe outlined below. If a timeframe is exceeded (or expected to be exceeded) the Proponent agrees to provide an amended timetable to the Department with an explanation of the delay, for approval by the Minister of an extension of time for the Code Amendment. The timetable is attached in **Appendix 13**.

APPENDIX 1. INITIATION LETTER

The Hon Josh Teague MP

Government of South Australia

Minister for Planning and Local Government

GPO Exchange
10 Franklin Street
Adelaide SA 5000

GPO Box 464
Adelaide SA 5001
DX 336

Tel 08 8207 1723
Fax 08 8207 1736

21MPL2272

Troon Group Pty Ltd
C/- Mr Michael Osborn
Director
Future Urban

By email: michael@futureurban.com.au

Dear Mr Osborn

I write to advise that I have considered the advice of the State Planning Commission (the Commission) and have approved the Proposal to Initiate the Bedford Park Code Amendment (the Code Amendment), pursuant to section 73(2)(b)(vii) of the *Planning, Development and Infrastructure Act 2016* (the Act).

The initiation approval is on the basis that, under section 73(4)(a) of the Act, Troon Group Pty Ltd will be the Designated Entity responsible for undertaking the Code Amendment process.

Pursuant to section 73(5) of the Act, the approval is also subject to the following conditions:

- The scope of the proposed Code Amendment does not include the creation of new planning rules, and is limited to the spatial application of zones, subzones, overlays, or technical and numerical variations provided for under the published Planning and Design Code, on the date the Amendment is released for consultation.
- The Code Amendment is prepared by a person with qualifications and experience that is equivalent to an Accredited Professional—Planning Level 1 under the Act.
- Prior to approval of the Code Amendment, the Designated Entity must demonstrate to my satisfaction, as Minister for Planning and Local Government, that all necessary agreements or deeds are fully executed as required to secure the funding and/or delivery of all infrastructure required to accommodate the development of the affected area, as proposed by the Code Amendment, to the satisfaction of all relevant infrastructure providers.

In addition, the Commission has specified, under section 73(6)(e) of the Act, that the Designated Entity must consult with the following stakeholders:

- Department for Infrastructure and Transport
- Department of the Premier and Cabinet, Aboriginal Affairs and Reconciliation
- Green Adelaide Landscape Board

- Utility providers, including SA Power Networks, ElectraNet Pty Ltd, APA Group, SA Water, EPIC Energy, NBN, and other telecommunications providers
- State Members of Parliament for the electorates in which the proposed Code Amendment applies.

Further, the Commission has, under section 73(6)(f) of the Act, resolved to specify the following further investigations or information requirements in addition to that outlined in the Proposal to Initiate:

- Investigate the potential impacts of future development and management measures to ensure protection of the Warriparinga Wetlands and Sturt River.
- Investigate the relevance of existing Overlays to the proposed Employment Zone.

In addition, it should be noted that further investigations may be required in response to feedback or advice received through the engagement process.

In accordance with sections 44(6) & 73(6)(d) of the Act, consultation in writing must be undertaken with:

- The City of Marion
- Owners or occupiers of the land and adjacent land in accordance with Regulation 20 of the *Planning, Development and Infrastructure (General) Regulations 2017*.

Further, engagement must meet the Community Engagement Charter as guided by the Community Engagement Charter toolkit at: https://plan.sa.gov.au/resources/learning_and_toolkits/community_engagement_charter_toolkit/overview.

I will make a determination on whether to approve the proposed amendments at the completion of the Code Amendment process.

For further information, please contact Ms Nadia Gencarelli, A/Team Leader, Code Amendments, within the Attorney-General's Department on (08) 7109 7036 or via email Nadia.Gencarelli@sa.gov.au.

Yours sincerely

Hon Josh Teague MP
Minister for Planning and Local Government

10 / 1 / 2022

Enc Proposal to Initiate the Bedford Park Code Amendment

APPENDIX 2. PLAN OF DIVISION AND APPROVAL

DECISION NOTIFICATION FORM

Section 126(1) of the Planning, Development and Infrastructure Act 2016

TO THE APPLICANT(S):

Name: Brent Dowsett
Postal address: C/- Mattsson & Martyn, PO BOX 248 MARDEN SA 5070
Email: admin@mmsurvey.com.au

Name: Indigenous Land Corporation
Postal address: C/- Mattsson & Martyn, PO BOX 248 MARDEN SA 5070
Email: admin@mmsurvey.com.au

IN REGARD TO:

Development application no.: 21028762	Lodged on: 24 Nov 2021
Nature of proposed development: Land Division 1 into 3 Torrens Title Allotments	

LOCATION OF PROPOSED DEVELOPMENT:

Location reference: LOT 707 MARION RD BEDFORD PARK SA 5042		
Title ref.: CT 5658/449	**Plan Parcel:** D51254 AL707	**Council:** CITY OF MARION

DECISION:

Decision type	**Decision** (granted/refused)	**Decision date**	**No. of conditions**	**No. of reserved matters**	**Entity responsible for decision** (relevant authority)
Planning Consent	Granted	16 Aug 2022	4	0	Assessment Manager at City of Marion
Land Division Consent	Granted	16 Aug 2022	7	0	Assessment Manager at City of Marion
Development Approval - Planning Consent; Land Division Consent	Granted	16 Aug 2022	11	0	City of Marion

FROM THE RELEVANT AUTHORITY: City of Marion
Date: 16 Aug 2022

CONDITIONS

Planning Consent

Condition 1

The development granted Development Approval shall be undertaken and completed in accordance with the stamped plans and documentation, except where varied by conditions below (if any).

Conditions imposed by Commissioner of Highways under Section 122 of the Act

Condition 2
Vehicular access to serve the site shall be located in accordance with the Mattsson & Martyn plan, Proposed Division, Job Reference 17034/06/21, dated 14/04/22. The final design of the access points shall be undertaken as part of any future land use applications

for the allotments.

Condition 3
All vehicles shall enter and exit the site in a forward direction.

Condition 4
Stormwater run-off shall be collected on-site and discharged without impacting the integrity and safety of the adjacent road network. Any alterations to the road drainage infrastructure required to facilitate this shall be at the applicant's cost.

Land Division Consent

Condition 1
The final survey plan shall be available to the Council, prior to the Council advising the State Planning Commission that it has no objection to the issue of a certificate pursuant to Section 138 of the Planning, Development and Infrastructure Act.

Condition 2
All buildings and all deleterious materials such as concrete slabs, footings, retaining walls, irrigation, water or sewer pipes and other rubbish shall be cleared from the subject land, prior to the Council advising the State Planning Commission that it has no objection to the issue of a certificate pursuant to Section 138 of the Planning, Development and Infrastructure Act.

Conditions imposed by South Australian Water Corporation under Section 122 of the Act

Condition 3
SA Water's water and sewer network is available for connection in this area. An investigation will need to be undertaken to determine infrastructure needs, appropriate fees and charges.

The financial requirements of SA Water shall be met for the provision of water and sewer supply services.

Sewer extension may be required.

Condition 4
This development may need an easement to be vested to SA Water and noted on the lodged Final Plan. Further information on the easement will be advised when an investigation is completed.

Condition 5
Please note for Torrens Title developments that it is the developers responsibility to ensure that all internal pipework, water and wastewater, is contained within the new allotment boundaries.

Conditions imposed by SPC Planning Services under Section 122 of the Act

Condition 6
Payment of $7908.00 into the Planning and Development Fund (1 allotment/s @ $7908.00 /allotment). Payment may be made via credit card (Visa or MasterCard) online at plan.sa.gov.au, over the phone on 7109 7018, or cheques may be made payable to the State Planning Commission, marked "Not Negotiable" and sent to GPO Box 1815, Adelaide 5001.

Condition 7

A final plan complying with the requirements for plans set out in the Manual of Survey Practice Volume 1 (Plan Presentation and Guidelines) issued by the Registrar General to be lodged with the State Planning Commission for Land Division Certificate purposes.

ADVISORY NOTES

Planning Consent

Advisory Note 1

The owner/applicant is advised that infrastructure located within Council road reserve (i.e. area between the kerb and allotment boundary) should be designed and constructed (including modified) in accordance with relevant / current Council standards. This includes, but is not limited to, driveway crossovers, alterations to kerbing and footpaths, stormwater easement connections and domestic stormwater connection to the street watertable.

Further information on the standards can be obtained via Council's website.

marion.sa.gov.au > Search Civil engineering > Click 'Civil engineering infrastructure - standard drawing index'

Advisory Note 2

The owner/applicant is advised that consent from any relevant easement or encumbrance owner may be required prior to any construction.

Easements may include, but are not limited to: drainage, Council easements (i.e. stormwater, encroachments, access etc), power transmission (SA Power Networks), telecommunications, or other forms of access (such as vehicle) rights of way.

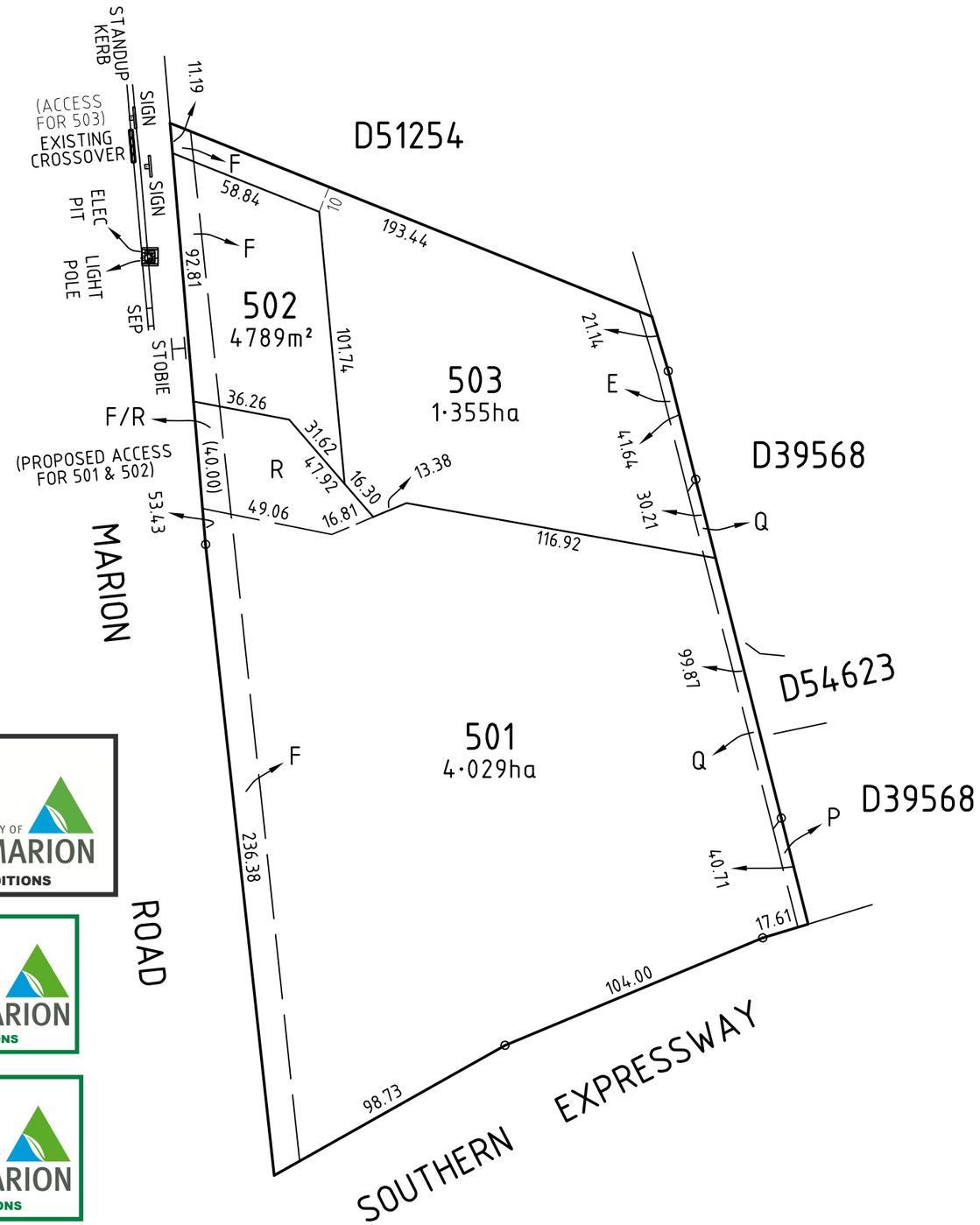
Easements and encumbrances would be registered on the relevant Certificate of Title. The location of easements on the land would be shown on the Deposited Plan. A copy of the Certificate of Title and Deposited Plan can be obtained from the South Australian Integrated Land Information System (SAILIS) at: https://sailis.lssa.com.au/home/auth/login

Land Division Consent

None

CONTACT DETAILS OF CONSENT AUTHORITIES

Name: City of Marion	Type of consent: Planning and Land Division
Telephone: 0883756600	Email: devadmin@marion.sa.gov.au
Postal address: PO Box 21 Oaklands Park, Oaklands Park SA 5047	



DEVELOPMENT APPROVAL
16/08/2022
GRANTED
RELEVANT AUTHORITY:
Section 98 - CITY OF MARION
CITY OF MARION
REFER TO DECISION NOTIFICATION FORM FOR ANY CONDITIONS

LAND DIVISION CONSENT
16/08/2022
GRANTED
RELEVANT AUTHORITY:
Section 96 - ASSESSMENT MANAGER
CITY OF MARION
REFER TO DECISION NOTIFICATION FORM FOR ANY CONDITIONS

PLANNING CONSENT
16/08/2022
GRANTED
RELEVANT AUTHORITY:
Section 96 - ASSESSMENT MANAGER
CITY OF MARION
REFER TO DECISION NOTIFICATION FORM FOR ANY CONDITIONS

0 25 50 100 150 200
SCALE METRES

PROPOSED DIVISION

ALLOTMENT 707 IN D51254
MARION ROAD

AREA: BEDFORD PARK
HUNDRED: NOARLUNGA
COUNCIL: CITY OF MARION

DEVELOPMENT No:
TITLE SYSTEM: REAL PROPERTY ACT
TITLE REFERENCE: CT 5658/449
MAP REF: 6627/01/F
AUTHORITY FOR DATA: D51254

STATEMENTS CONCERNING EASEMENTS, ANNOTATIONS AND AMENDMENTS

- SUBJECT LAND IS VACANT.
- PORTION OF ALLOTMENTS 501, 502, & 503 MARKED F IS SUBJECT TO AN EASEMENT TO ETSA CORPORATION VIDE TG 7679811.
- PORTION OF ALLOTMENTS 501 & 503 MARKED Q IS SUBJECT TO A SERVICE EASEMENT FOR SEWERAGE PURPOSES VIDE SED 28859 Q.
- PORTION OF ALLOTMENT 503 MARKED E IS SUBJECT TO A SERVICE EASEMENT TO THE SOUTH AUSTRALIAN WATER CORPORATION FOR SEWERAGE PURPOSES.
- PORTION OF ALLOTMENT 501 MARKED P IS SUBJECT TO AN EASEMENT TO THE MINISTER FOR INFRASTRUCTURE VIDE T 4805663.
- PORTION OF ALLOTMENT 501 MARKED R IS TO BE SUBJECT TO A FREE AND UNRESTRICTED RIGHT OF WAY IN FAVOUR OF ALLOTMENT 502.

14/04/22 - BOUNDARY & RIGHT OF WAY DIMENSIONS ALTERED.

DATA SUBJECT TO SURVEY

IMPORTANT NOTE
THIS PLAN WAS PREPARED AS A PROPOSED SUBDIVISION & SHOULD NOT BE USED FOR ANY OTHER PURPOSE.
THE DIMENSIONS SHOWN HEREON ARE SUBJECT TO SURVEY & THE REQUIREMENTS OF COUNCIL & OTHER RELEVANT AUTHORITIES.
NO RELIANCE SHOULD BE PLACED ON THE INFORMATION ON THIS PLAN FOR ANY FINANCIAL DEALINGS INVOLVING THIS LAND. THIS NOTE IS AN INTEGRAL PART OF THE PLAN.

JOB REFERENCE:	DATE DRAWN:	DRAWN:
17034/06/21	10/08/21	BIM

MATTSSON & MARTYN
SURVEYING & PLANNING CONSULTANTS
63 BEULAH RD, NORWOOD SA 5067
PHONE: (08) 7006 0122
EMAIL: admin@mmsurvey.com.au
WEBSITE: mattssonmartyn.com.au

APPENDIX 3. CERTIFICATE OF TITLE

Government of South Australia
Department of Planning, Transport and Infrastructure

Product	Register Search (CT 5658/449)
Date/Time	21/08/2018 02:02PM
Customer Reference	A5310
Order ID	20180821023466
Cost	$28.75

REAL PROPERTY ACT, 1886
South Australia

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 5658 Folio 449

Parent Title(s)	CT 4183/459, CT 5211/988				
Creating Dealing(s)	RTC 8653564				
Title Issued	31/05/1999	**Edition**	3	**Edition Issued**	05/07/2012

Estate Type

FEE SIMPLE

Registered Proprietor

INDIGENOUS LAND CORPORATION
OF GPO BOX 652 ADELAIDE SA 5001

Description of Land

ALLOTMENT 707 DEPOSITED PLAN 51254
IN THE AREA NAMED BEDFORD PARK
HUNDRED OF NOARLUNGA

Easements

SUBJECT TO EASEMENT(S) OVER THE LAND MARKED F TO THE ETSA CORPORATION (TG 7679811)

SUBJECT TO EASEMENT(S) OVER THE LAND MARKED P TO THE MINISTER FOR INFRASTRUCTURE (T 4805663)

SUBJECT TO SERVICE EASEMENT(S) OVER THE LAND MARKED E AND Q FOR SEWERAGE PURPOSES TO SOUTH AUSTRALIAN WATER CORPORATION (223LG RPA)

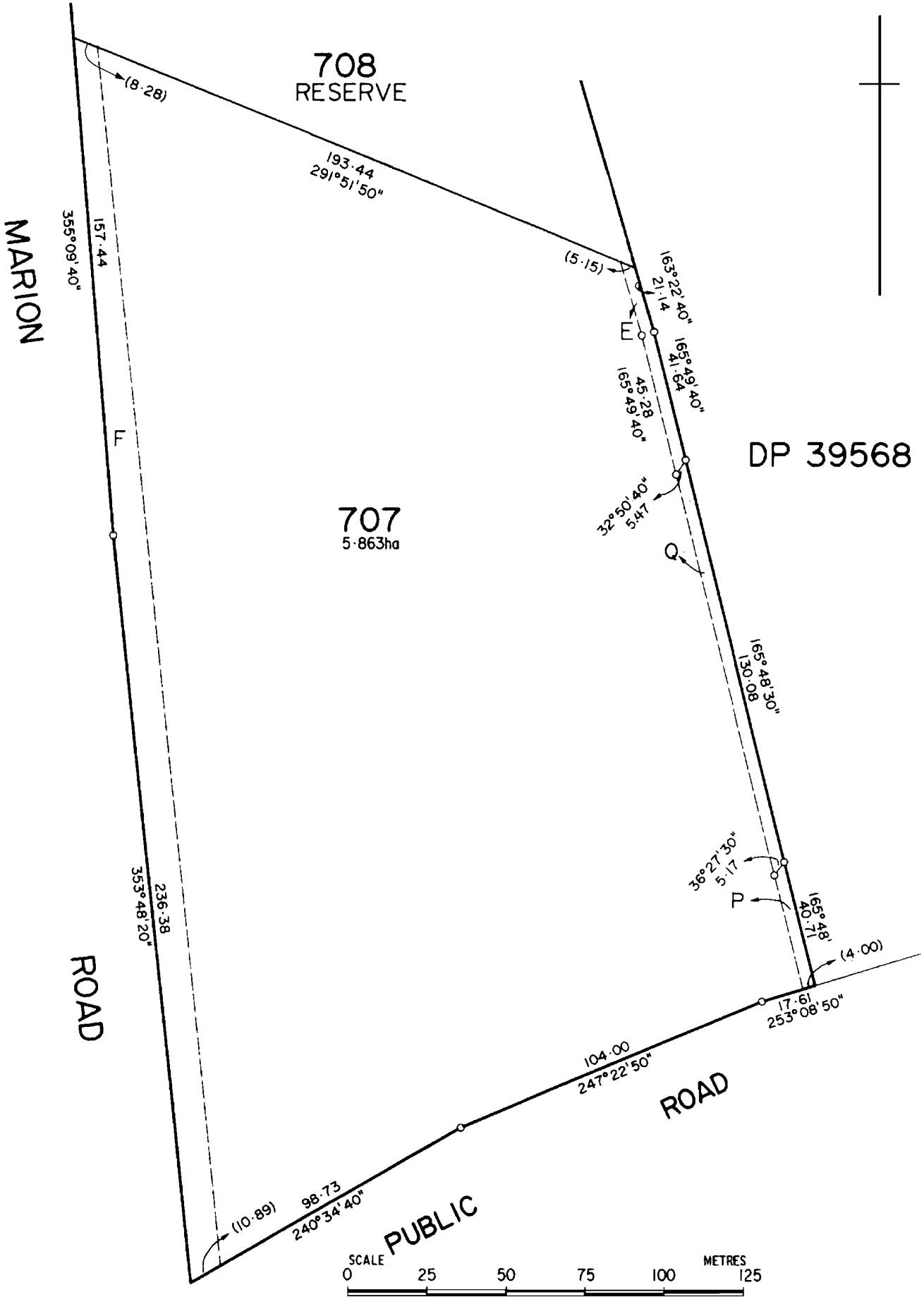
Schedule of Dealings

NIL

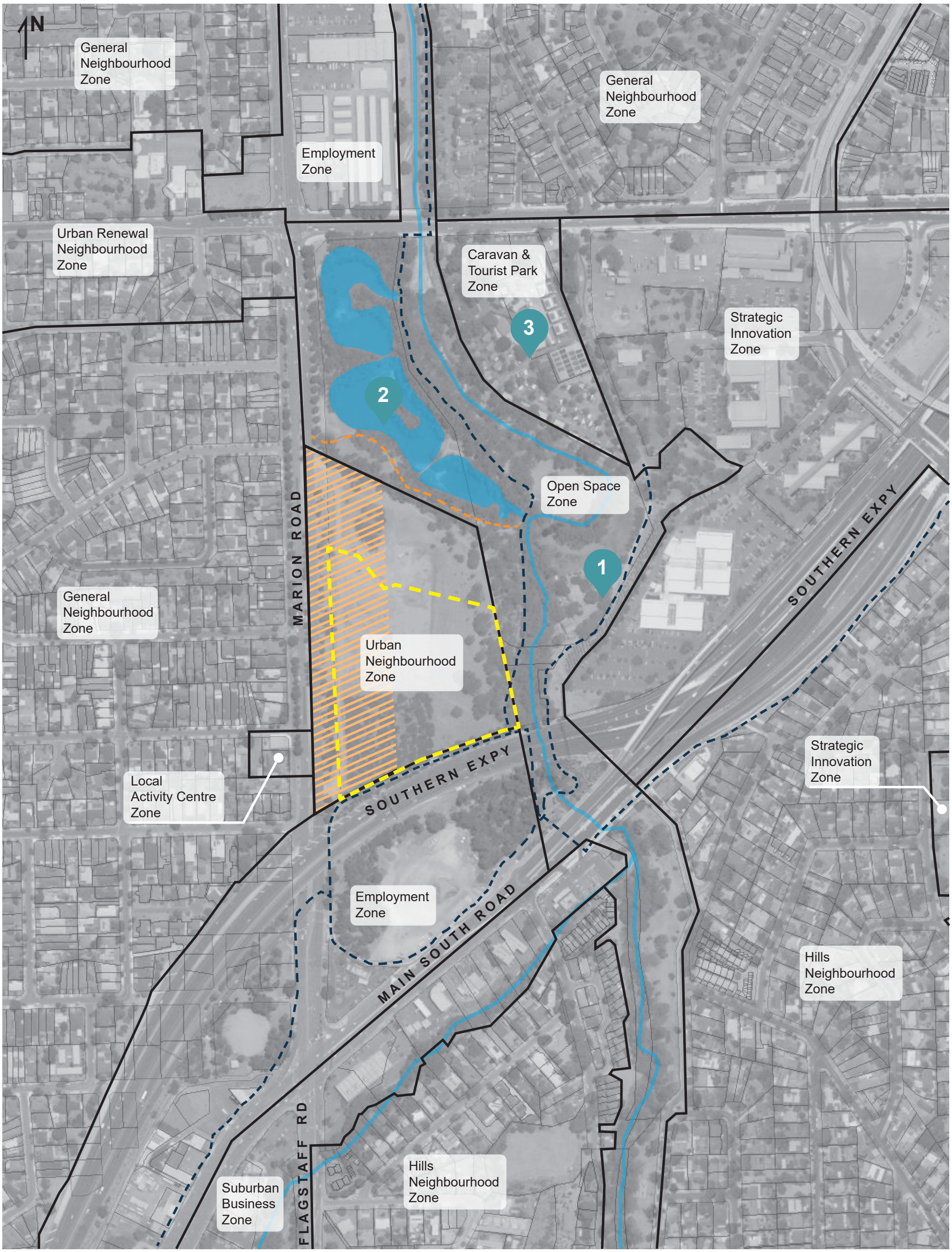
Notations

Dealings Affecting Title	NIL
Priority Notices	NIL
Notations on Plan	NIL
Registrar-General's Notes	NIL
Administrative Interests	NIL

Product	Register Search (CT 5658/449)
Date/Time	21/08/2018 02:02PM
Customer Reference	A5310
Order ID	20180821023466
Cost	$28.75



APPENDIX 4. LOCATION PLAN AND CURRENT ZONE



Context & Current Zoning Plan

Bedford Park

LEGEND

1. Living Kuarna Cultural Centre
2. Warriparinga Wetlands
3. Marion Holiday Park

Urban Neighbourhood Retail Subzone

Affected Area Boundary

Zone Boundary

Sturt River / Warriparri & wetlands

Bikedirect - Off Road Bicycle Track

Bikedirect - Off Road Sealed Bicycle Path

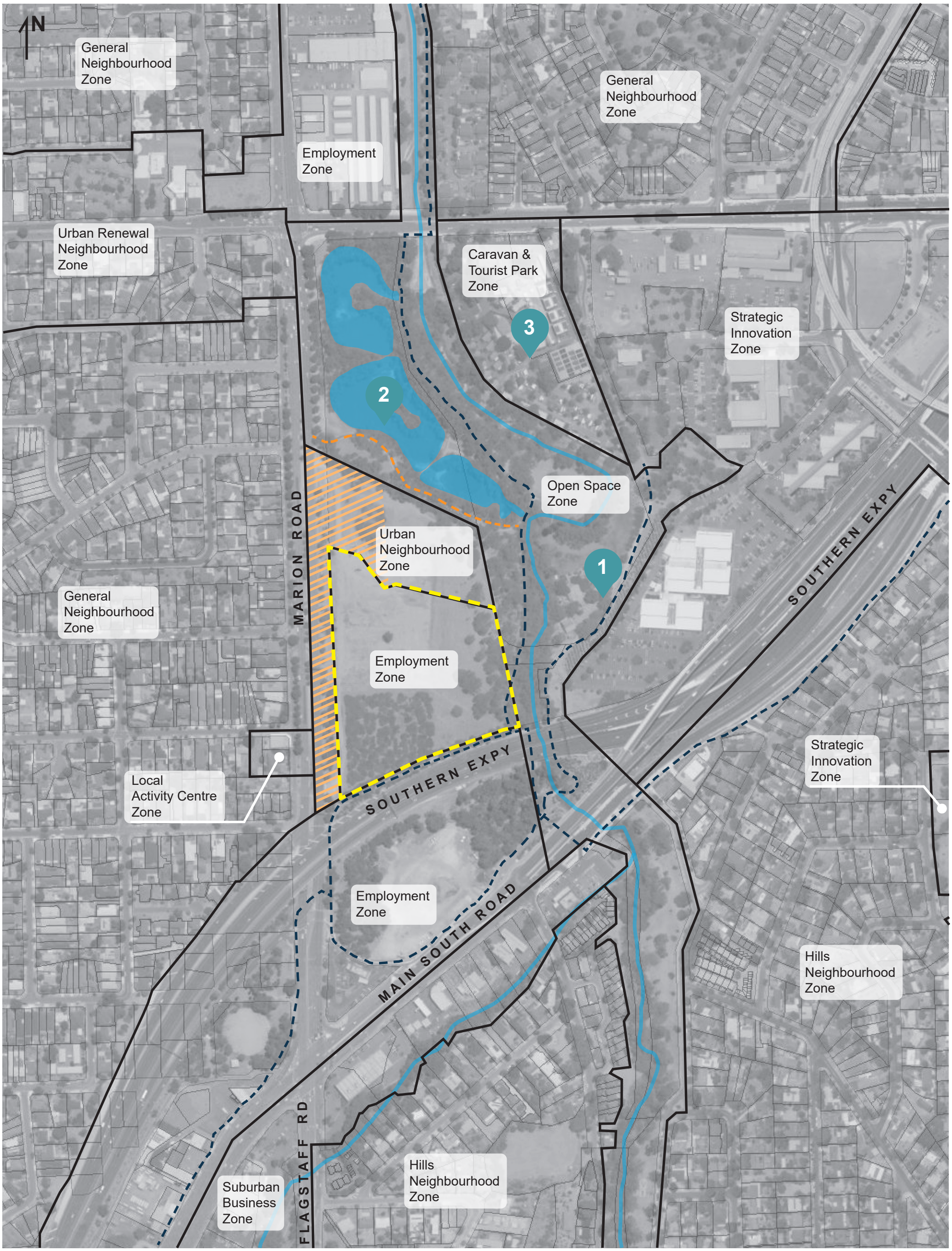
September 2022

Revision B

1:4000 at A3

FUTURE URBAN

APPENDIX 5. PROPOSED ZONE OUTCOME



Context & Proposed Zoning Plan
Bedford Park

LEGEND

1. Living Kuarna Cultural Centre
2. Warriparinga Wetlands
3. Marion Holiday Park

Urban Neighbourhood Retail Subzone

Affected Area Boundary

Zone Boundary

Sturt River / Warriparri & wetlands

Bikedirect - Off Road Bicycle Track

Bikedirect - Off Road Sealed Bicycle Path

September 2022

Revision B

1:4000 at A3

FUTURE URBAN

APPENDIX 6. PRELIMINARY TREE ASSESSMENT

arborman® tree solutions
PROFESSIONALS IN ARBORICULTURE

Preliminary Tree Assessment

Site: Lot 707 Marion Road, Bedford Park

Date: Wednesday, 4 August 2021

ATS6458-707MarRdPTA

Contents

Report Reference Number: ATS6458-707MARRDPTA

Report prepared for
Raya Giffard, Project Advisor, Indigenous Land and Sea Corporation

Author
Marcus Lodge, Consulting Arborist, Arborman Tree Solutions Pty Ltd

Executive Summary

Arborman Tree Solutions was engaged by Indigenous Land and Sea Corporation to undertake Preliminary Tree Assessment of the trees within the identified survey area at Lot 707 Marion Road, Bedford Park. The purpose of this assessment is to evaluate tree suitability for retention through a Tree Retention Rating system and provide Preliminary Tree Protection advice for trees to be retained. This assessment provides information in accordance with Australian Standard *AS4970-2009 Protection of trees on development sites* (AS4970-2009) and relevant legislation.

The assessment considered twenty three trees which are identified as a mix of five native and/or locally indigenous species. The majority of trees are considered to be in Good to Fair overall condition and have extended useful life expectancies; only Tree 10 is displaying poor overall condition as evidenced by its poor health and reduced structural rating due to codominant stems with an included bark union, along with a degree of decay. The Tree Protection Zone radii for these trees, as measured from the centre of the trunk, have been calculated; alterations to the area around these trees should be restricted in accordance with the guidelines of AS4970-2009.

The assessment has identified seven Significant Trees, and fifteen Regulated Trees as defined in the *PDI Act 2016*; the remaining tree is unregulated. Significant and Regulated Trees should be preserved if they meet aesthetic and/or environmental criteria as described in the *Planning, Development and Infrastructure (General) Regulations 2017*. None of the trees are considered to provide 'important' aesthetic and/or environmental benefit and as such their protection as Regulated/Significant Trees is not warranted.

There are twelve trees, Trees 1, 3, 4, 8, 9, 11, 13 and 19-23, that have a Moderate Retention Rating. It is my opinion, as Regulated/Significant Trees with a Moderate Retention Rating, these trees do not display attributes described within the *PDI Act 2016*, that would warrant their retention as important trees. However, they are worthy of consideration for retention if they can be adequately protected in an otherwise reasonable and expected development.

The remaining trees achieve Low Retention Rating. The trees that achieve a Low Retention Rating should not form a constraint to an otherwise reasonable and expected development.

It is recommended the design of any future development consider the extent of the TPZs for the trees to be retained and determine if the encroachment can be reduced to ensure these trees are not impacted. The removal of these trees may be approved if it can be demonstrated that they are restricting an otherwise reasonable and expected development and alternative design solutions are not available to retain them.

Brief

Arborman Tree Solutions was engaged by the Indigenous Land and Sea Corporation to undertake a Preliminary Tree Assessment of the trees within the identified survey area at Lot 707 Marion Road, Bedford Park. The purpose of a Preliminary Tree Assessment is to evaluate trees' suitability for retention through a Tree Retention Rating system and provide Preliminary Tree Protection advice for trees to be retained.

In accordance with section 2.2 of the Australian Standard *AS4970-2009 Protection of trees on development sites* (2.2) the following information is provided:

- Identification of the species of each tree and assessment of their health and structure.
- Identification of the legislative status of trees as defined in the *Planning, Development and Infrastructure Act 2016* (*PDI Act 201*) and the *Native Vegetation Act 1991*.
- Tree Retention Rating for each tree, this has been applied to all trees regardless of legislative status.
- Identify the Tree Protection Zone for each tree.

Note: This report is intended to provide preliminary advice to assist with determining scope for development and guide design. The City Council may require further information to approve the removal of any Significant Trees/Regulated Trees.

Documents and Information Provided

The following information was provided for the preparation of this assessment

- Email instruction on scope of works
- Site Plan identifying the area to be assessed

Method

A site inspection was undertaken on Tuesday, 20 July 2021. Trees in this report were mapped using a Trimble Geo7X handheld and assigned a unique tree number. Individual tree findings were recorded using the Tree Assessment Form (TAF©). Tree Health Indicator (THI©), Tree Structure Assessment (TSA©) and Useful Life Expectancy (ULE), were assessed using the methodology described in Appendix A. Legislative Status was identified for all trees controlled under the relevant legislation.

Each tree's suitability for retention was determined by reviewing principles under the *PDI Act 2016* or relevant authority and applying these findings in the Tree Retention Rating (TRR©) method, as described within Appendix A. Tree Protection Zones were calculated using the Australian Standard *AS4970-2009* (Section 3.2). Mapping was performed using GIS and CAD software.

Limitations: Tree management options such as pruning, soil amelioration, pathogen treatment are not part of this report; these should be considered in relation to any proposed development.

Site Location

Figure 1: Survey Area - Lot 707 Marion Road, Bedford Park

Assessment

Arborman Tree Solutions was engaged by Indigenous Land and Sea Corporation to undertake Preliminary Tree Assessment of the trees within the identified survey area at Lot 707 Marion Road, Bedford Park. The purpose of this assessment is to evaluate tree suitability for retention through a Tree Retention Rating system and provide Preliminary Tree Protection advice for trees to be retained. This assessment provides information in accordance with Australian Standard *AS4970-2009 Protection of trees on development sites* (AS4970-2009) and relevant legislation.

Tree Assessment

The assessment considered twenty three trees which are identified as a mix of five native and/or locally indigenous species as shown in Table 1 below. The majority of trees are considered to be in Good to Fair overall condition and have extended useful life expectancies; only Tree 10 is displaying poor overall condition as evidenced by its poor health and reduced structural rating due to codominant stems with an included bark union, along with a degree of decay.

Table 1 – Tree Population

Botanic Name	Common Name	Number of Trees	Origin	Tree Number
Acacia linearifolia	Narrow-Leaved Wattle	2	Native	6 and 7
Eucalyptus camaldulensis	River Red Gum	6	Indigenous	9, 11, 13, 14, 17 and 23
Eucalyptus leucoxylon	South Australian Blue Gum	3	Indigenous	12, 15 and 16
Eucalyptus microcarpa	Grey Box	10	Indigenous	1-5 and 18-22
Eucalyptus populnea	Poplar Box	2	Native	8 and 10

Findings on individual tree health and condition is presented in Appendix B - Tree Assessment Findings.

Acacia saligna (Narrow-Leaved Wattle) is an upright and spreading shrub or small tree usually growing 2-6 metres tall, but occasionally reaching up to 10 m in height. This species is relatively short-lived with a lifespan of only 10-20 years, except in drier locations where it may persist for longer periods. This very adaptable and aggressive species tolerates relatively dry, low nutrient, soils and grows very vigorously in better conditions. Hence, golden wreath wattle (*Acacia saligna*) has often been included in revegetation and amenity plantings and was used in dune rehabilitation projects following sand mining activities. Where it has been used for dune stabilisation and rehabilitation it has spread and invaded coastal sand dunes and nearby bushland areas.

Eucalyptus camaldulensis (River Red Gum) is a large tree reaching 25-35 metres in height with a broad spreading crown, as the tree matures it can develop buttress roots from its very thick trunk. This species is the most widespread and best known of the Australian eucalypts. As the common name would suggest it is generally found along waterways and on floodplains, despite this it is a very adaptable tree and will grow in a wide variety of soils and conditions. An advantage of this species heritage as a floodplain tree for the urban environment is that it is able to adapt to changes in soil levels and moisture content to a much greater extent than many other eucalypts being able to withstand changes in soil level, drought and water logging for extended periods. This is at least partially due to the species characteristic of deep sinker roots within two to three metres of the trunk that can extend considerable depths into the soil to areas of permanent water.

Eucalyptus leucoxylon (South Australian Blue Gum) is a native of South Australia and will achieve a height of between 15-25 metres, generally with a straight trunk and shapely crown but short bent and gnarled when on poor soils. South Australian Blue Gum naturally occurs on Kangaroo Island, throughout most of the Mount Lofty Ranges, near Penola extending to the Grampians and some scattered occurrences have been recorded in areas of the southern Flinders Ranges. This species whilst effective in large gardens is generally not recommended for small areas due to its size and reputation, not necessarily warranted, for limb loss. South Australian Blue Gum is generally cultivated for shade, timber (woodlots) and honey production.

Eucalyptus microcarpa (Grey Box) is a tree 6 to 20 metres tall, although reduced to a large, erect-stemmed mallee on some steep rocky sites near Adelaide. The bark is rough to the small branches, finely fissured and tightly held and grey. The adult leaves are glossy, green to olive green and the flowers are white and occur in umbels of seven on the ends of the twigs. This species was the dominant species of the Black Forest extending from the suburb of Black Forest through Hazelwood Park into the hills face zones of the Burnside and Mitcham councils and then further into the Southern Mt Lofty Ranges.

Eucalyptus populnea (Poplar Box) is a small to medium-sized tree that is endemic to eastern Australia. It has rough, fibrous, or flaky bark on the trunk and branches, egg-shaped, elliptical, or more or less round leaves, flower buds arranged in groups of seven to fifteen or more, white flowers and conical, hemispherical or cup-shaped fruit. Poplar Box typically grows to a height of 20 metres and as wide, this species forms a lignotuber from which it can regenerate after fire. Poplar Box is widespread in New South Wales where it is found on the western plains north from Narrandera and Pooncarie, extending into Queensland as far as Rockhampton. This eucalypt is most commonly found on red soils with a sandy loam to clay loam texture.

Legislative Assessment

The assessment has identified seven Significant Trees, and fifteen Regulated Trees as defined in the *PDI Act 2016*; the remaining tree is unregulated. Significant and Regulated Trees should be preserved if they meet aesthetic and/or environmental criteria as described in the *Planning, Development and Infrastructure (General) Regulations 2017*. None of the trees are considered to provide 'important' aesthetic and/or environmental benefit and as such their protection as Regulated/Significant Trees is not warranted.

Table 2 - Legislative Status

Legislative Status	Number of Trees	Tree Numbers
Significant	7	3, 4, 6, 7, 9, 15 and 18
Regulated	15	1, 2, 5, 8, 11-14, 16, 17 and 19-23
Unregulated	1	10

Retention Assessment

Trees that provide an environmental and/or aesthetic contribution to the area, are in good condition will achieve a High or Moderate Retention Rating and conservation of these trees is encouraged. Trees that do not provide this contribution and/or are in poor condition will achieve a Low Retention Rating; these trees will display one or more of the following or similar attributes:

a) are in poor condition due to health and/or structural decline,
b) have poor form that impacts their aesthetic value,
c) provide limited environmental and/or aesthetic benefit,
d) are a short lived species and/or have a short Useful Life Expectancy,
e) represent a material risk to persons or property,
f) are identified as causing or threatening to cause substantial damage to a structure of value,

The assessment has identified twelve trees, Trees 1, 3, 4, 8, 9, 11, 13 and 19-23, as having a Moderate Retention Rating. It is my opinion, as Regulated/Significant Trees with a Moderate Retention Rating, these trees do not display attributes described within the *PDI Act 2016*, that would warrant their retention as important trees. However, they are worthy of consideration for retention if they can be adequately protected in an otherwise reasonable and expected development.

Table 3 - Retention Rating

Retention Rating	Number of Trees	Tree Numbers
Moderate	12	1, 3, 4, 8, 9, 11, 13 and 19-23
Low	11	2, 5-7, 10, 12 and 14-18

The remaining trees achieved a Low Retention Rating indicating that development constraint, alternative designs or tree-friendly construction methodologies are not warranted. As such, tree removal could be considered to achieve development (this includes Regulated/Significant Trees).

Tree Protection Assessment

Australian Standard AS4970-2009 *Protection of trees on development sites* prescribes the use of a Tree Protection Zone (TPZ) as the principle means of protecting trees throughout the development process. If encroachment is required within any TPZ, the Project Arborist should be consulted to identify impacts and recommend mitigation measures. The Tree Protection Zones should be used to inform any future development of the site, maintaining these areas as open space. The Tree Protection Zone radii are included in Table 4 and Appendix D - Tree Assessment Summary.

The Tree Protection Zone radii for these trees, as measured from the centre of the trunk, have been calculated and are shown below in Table 4; alterations to the area around these trees should be restricted in accordance with the guidelines of AS4970-2009.

Table 4 – Tree Protection Zones

Tree Number	TPZ Radius (metres)		Tree Number	TPZ Radius (metres)		Tree Number	TPZ Radius (metres)
1	5.69		9	9.4		17	7.68
2	5.35		10	4.51		18	5.72
3	5.75		11	7.73		19	6.5
4	5.95		12	7.24		20	5.2
5	5.1		13	6.39		21	5.69
6	6.15		14	8.4		22	5.32
7	6.19		15	6.98		23	8.52
8	5.97		16	5.96			

Conclusion

There are twelve trees, Trees 1, 3, 4, 8, 9, 11, 13 and 19-23, that have a Moderate Retention Rating. It is my opinion, as Regulated/Significant Trees with a Moderate Retention Rating, these trees do not display attributes described within the *PDI Act 2016*, that would warrant their retention as important trees. However, they are worthy of consideration for retention if they can be adequately protected in an otherwise reasonable and expected development.

It is recommended the design of any future development consider the extent of the TPZs of the trees to be retained and determine if the encroachment can be reduced to ensure these trees are not impacted. The removal of these trees may be approved if it can be demonstrated that they are restricting an otherwise reasonable and expected development and alternative design solutions are not available to retain them.

The remaining trees achieve Low Retention Rating. The trees that achieve a Low Retention Rating should not form a constraint to an otherwise reasonable and expected development.

The Regulated or Significant Trees require Development Approval prior to any tree damaging activity occurring. This includes development activities within the TPZ, tree removal and potentially pruning.

A Project Arborist should be appointed to assist in the design around trees to be retained; the development impacts and tree protection requirements are to be included in a Development Impact Report and a Tree Protection Plan as identified in Australian Standard *AS4970 2009 Protection of trees on development sites*.

Thank you for the opportunity to provide this report. Should you require further information, please contact me and I will be happy to be of assistance.

Yours sincerely

MARCUS LODGE
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Australian Arborist License AL11
Diploma in Arboriculture
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Quantified Tree Risk Assessment (QTRA) License – 5780
VALID Tree Risk Assessment (VALID) – 2018
Native Vegetation Council Trained Arborist 2019

Definitions

Circumference: trunk circumference measured at one metre above ground level. This measurement is used to determine the status of the tree in relation to the *Planning, Development and Infrastructure Act 2016*.

Diameter at Breast Height (DBH): trunk diameter measured at 1.4 metres above ground level used to determine the Tree Protection Zone as described in Australian Standard AS4970-2009 *Protection of trees on development sites*.

Diameter at Root Buttress (DRB): trunk diameter measured just above the root buttress as described in Australian Standard AS4970-2009 *Protection of trees on development sites* and is used to determine the Structural Root Zone.

Tree Damaging Activity Tree damaging activity includes those activities described within the *Planning, Development and Infrastructure Act 2016* such as removal, killing, lopping, ringbarking or topping or any other substantial damage such as mechanical or chemical damage, filling or cutting of soil within the TPZ. Can also include forms of pruning above and below the ground.

Tree Protection Zone (TPZ): area of root zone that should be protected to prevent substantial damage to the tree's health.

Structural Root Zone (SRZ): calculated area within the tree's root zone that is considered essential to maintain tree stability.

Project Arborist A person with the responsibility for carrying out a tree assessment, report preparation, consultation with designers, specifying tree protection measures, monitoring and certification. The Project Arborist must be competent in arboriculture, having acquired through training, minimum Australian Qualification Framework (AQTF) Level 5, Diploma of Horticulture (Arboriculture) and/or equivalent experience, the knowledge and skills enabling that person to perform the tasks required by this standard.

Important: The following definition of important was described by Commissioner Nolan of the Environment, Resource and Development Court in the case of Savoy Developments Pty Ltd v Town of Gawler [2013] SAERDC 32.

"In my view, for habitat to be raised to the level of 'important' (as sought by Objective 2(d)), it must be beyond that likely to be expected in any mature tree of indigenous origins – that is, it is beyond the normal level that might be expected or that it is so unique or special that it may be considered important. From the evidence before me I do not consider the trees to provide "important habitat for native fauna"."

This definition of important, whilst in this case relating to Habitat Value, has been related when looking at all Objectives that use the term "*Important*".

Notable: The *Planning, Development and Infrastructure Act 2016* and local Development Plan also use the term "notable" when assessing the visual contribution of a tree. The Environment, Resource and Development Court does not appear to have defined the term "notable" as applied in the *Planning, Development and Infrastructure Act 2016* however, when researching definitions it is clear that this term bears equal or similar weight as the term "important" and as such for a tree to be "notable" it has to have a similar level of attributes to an important tree. When compared to a typical example of the species for a tree to be described as "notable" it would also be considered to be a noteworthy, remarkable, outstanding, momentous, memorable, impressive, extraordinary or an exceptional example of the species or of greater importance in regard to its value as a visual element than other similar sized example of the species.

***PDI Act 2016*:** the *Planning, Development and Infrastructure Act 2016* and associated *Planning, Development and Infrastructure (General) Regulations 2017* includes provisions for the control of Regulated and Significant Trees within the 18 metropolitan Adelaide councils, townships in the Adelaide Hills Council and parts of the Mount Barker Council; these provisions do not apply in areas outside of these councils.

Regulated Tree: is recognised as any tree in the prescribed council areas with a trunk circumference of two metres or more. In the case of trees with multiple trunks, those with trunks with a total circumference of two metres or more and an average circumference 625 mm or more. The circumference is measured at a point one metre above natural ground level.

Significant Tree: *The Planning, Development and Infrastructure Act 2016* identifies a Significant Tree as any tree in Metropolitan Adelaide or townships in the Adelaide Hills Council or parts of the Mount Barker Council with a trunk circumference of three metres or more. In the case of trees with multiple trunks, those with trunks with a total circumference of three metres or more and an average circumference 625 mm or more. The circumference is measured at a point one metre above natural ground level.

Unregulated or Exempt Tree: unregulated and/or exempt trees have a trunk circumference of less than two metres and/or are excluded from control due to species, proximity to a structure or other reason as defined in the *Planning, Development and Infrastructure (General) Regulations 2017*.

References

Australian Standard AS4970–2009 ***Protection of trees on development sites***: Standards Australia.

Matheny N. Clark J. 1998: ***Trees and Development a Technical Guide to Preservation of Trees During Land Development***: International Society of Arboriculture, Champaign, Illinois, USA.

Dunster J.A., Smiley E.T., Metheny N. and Lilly S. 2013. ***Tree Risk Assessment Manual***. International Society of Arboriculture, Champaign, Illinois USA.

Appendix A - Tree Assessment Methodology

Tree Assessment Form (TAF©)

Record	Description
Tree	In botanical science, a tree is a perennial plant which consists of one or multiple trunks which supports branches and leaves. Trees are generally taller than 5 metres and will live for more than ten seasons, with some species that live for hundreds or thousands of seasons.
Genus and Species	Botanical taxonomy of trees uses the binominal system of a genus and species, often there are subspecies and subgenus as well as cultivars. When identifying tree species, identification techniques such as assessing the tree's form, flower, stem, fruit and location are used. Identifying the right species is critical in assessing the tree's legalisation and environmental benefit. All efforts are made to correctly identify each tree to species level, where possible. Genus is the broader group to which the tree belongs e.g. *Eucalyptus, Fraxinus* and *Melaleuca*. Species identifies the specific tree within the genus e.g. *Eucalyptus camaldulensis*, *Fraxinus griffithi* or *Melaleuca styphelioides*. Trees will also be assigned the most commonly used Common Name. Common Names are not generally used for identification due to their nonspecific use, i.e. *Melia azedarach* is commonly known as White Cedar in South Australia but is also called Chinaberry Tree, Pride of India, Bead-tree, Cape Lilac, Syringa Berrytree, Persian Lilac, and Indian Lilac; equally similar common names can refer to trees from completely different Genus e.g. Swamp Oak, Tasmanian Oak and English Oak are from the *Casuarina, Eucalyptus* and *Quercus* genus's respectively.
Height	Tree height is estimated by the arborist at the time of assessment. Tree height is observed and recorded in the following ranges; <5m, 5-10m, 10-15m and >20m.
Spread	Tree crown spread is estimated by the arborist at the time of assessment and recorded in the following ranges <5m, 5-10m, 10-15m, 15-20m, >20m.
Health	Tree health is assessed using the Arborman Tree Solutions - Tree Health Assessment Method that is based on international best practice.
Structure	Tree structure is assessed using Arborman Tree Solutions - Tree Structure Assessment Method that is based on international best practice.
Tree Risk Assessment	Tree Risk is assessed using Tree Risk Assessment methodology. The person conducting the assessment has been trained in the International Society of Arboriculture Tree Risk Assessment Qualification (TRAQ), Quantified Tree Risk Assessment (QTRA) and/or VALID Tree Risk Assessment (VALID). Refer to the Methodology within the report for additional information.
Legislative Status	Legislation status is identified through the interpretation of the *Development Act 1993*, the *Natural Resource Management Act 2004,* the *Native Vegetation Act 1991* and/or any other legislation that may apply.
Mitigation	Measures to reduce tree risk, improve tree condition, remove structural flaws, manage other conditions as appropriate may be recommended in the form of pruning and is listed in the Tree Assessment Findings (Appendix B). Tree pruning is recommended in accordance with AS4373-2007 *Pruning amenity trees* where practicable. Where measures to mitigate risk is not possible and the risk is unacceptable, then tree removal or further investigation is recommended.

Useful Life Expectancy (ULE)

ULE Rating	Definition
Surpassed	The tree has surpassed its Useful Life Expectancy. Trees that achieve a surpassed ULE may do so due to poor health, structure or form. Additionally, trees that are poorly located such as under high voltage powerlines or too close to structures may also achieve a surpassed ULE. Trees that achieve this status will be recommended for removal as there are no reasonable options to retain them.
<10 years	The tree displays either or both Poor Health and/or Structure and is considered to have a short Useful Life Expectancy of less than ten years. Some short-lived species such as *Acacia sp*. may naturally achieve a short ULE.
>10 years	The tree displays Fair Health or Structure and Good Health or Structure and is considered to have a Useful Life Expectancy of ten years or more. Trees identified as having a ULE of >10, will require mitigation such as pruning, stem injections or soil amelioration to increase their ULE.
>20 years	The tree displays Good Health and Structure and is considered to have an extended Useful Life Expectancy of more than twenty years.

Maturity (Age)

Age Class	Definition
Senescent	The tree has surpassed its optimum growing period and is declining and/or reducing in size. May be considered as a veteran in relation to its ongoing management. Tree will have generally reached greater than 80% of its expected life expectancy.
Mature	A mature tree is one that has reached its expected overall size, although the tree's trunk is still expected to continue growing. Tree maturity is also assessed based on species; as some trees are much longer lived than others. Tree will have generally reached 20-80% of its expected life expectancy.
Semi Mature	A tree which has established but has not yet reached maturity. Normally tree establishment practices such as watering will have ceased. Tree will generally not have reached 20% of its expected life expectancy.
Juvenile	A newly planted tree or one which is not yet established in the landscape. Tree establishment practices such as regular watering will still be in place. Tree will generally be a newly planted specimen up to five years old; this may be species dependant.

Tree Health Assessment (THA©)

Category	Description
Good	Tree displays normal vigour, uniform leaf colour, no or minor dieback (<5%), crown density (>90%). When a tree is deciduous, healthy axillary buds and typical internode length is used to determine its health. A tree with good health would show no sign of disease and no or minor pest infestation was identified. The tree has little to no pest and/or disease infestation.
Fair	Tree displays reduced vigour abnormal leaf colour, a moderate level of dieback (<15%), crown density (>70%) and in deciduous trees, reduced axillary buds and internode length. Minor pest and/or disease infestation potentially impacting on tree health. Trees with fair health have the potential to recover with reasonable remedial treatments.
Poor	Tree displays an advanced state of decline with low or no vigour, chlorotic or dull leaf colour, with high crown dieback (>15%), low crown density (<70%) and/or in deciduous trees, few or small axillary buds and shortened internode length. Pest and or disease infestation is evident and/or widespread. Trees with poor health are highly unlikely to recover with any remedial treatments; these trees have declined beyond the point of reversal.
Dead	The tree has died and has no opportunity for recovery.

Tree Structural Assessment (TSA©)

Category	Description
Good	Little to no branch failure observed within the crown, well-formed unions, no included bark, good branch and trunk taper present, root buttressing and root plate are typical. Trees that are identified as having good health display expected condition for their age, species and location.
Fair	The tree may display one or more of the following a history of minor branch failure, included bark unions may be present however, are stable at this time, acceptable branch and trunk taper present, root buttressing and root plate are typical. Trees with fair structure will generally require reasonable remediation methods to ensure the tree's structure remains viable.
Poor	History of significant branch failure observed in the crown, poorly formed unions, unstable included bark unions present, branch and/or trunk taper is abnormal, root buttressing and/or root plate are atypical.
Failed	The structure of the tree has or is in the process of collapsing.

Tree Form Assessment (TFA©)

Category	Description
Good	Form is typical of the species and has not been altered by structures, the environment or other trees.
Fair	The form has minor impacts from structures, the environment or adjacent trees which has altered its shape. There may be slight phototropic response noted or moderate pruning which has altered the tree's form.
Poor	The tree's form has been substantially impacted by structures, the environment, pruning or other trees. Phototropic response is evident and unlikely to be corrected.
Atypical	Tree form is highly irregular due to structures or other trees impacting its ability to correctly mature. Extreme phototropic response is evident; or the tree has had a substantially failure resulting in its poor condition, or extensive pruning has altered the tree's form irreversibly.

Priority

Category	Description
Low	Identified works within this priority should be carried out within 12 months.
Medium	Identified works within this priority should be carried out within 6 months.
High	Identified works within this priority should be carried out within 3 months.
Urgent	Identified works within this priority should be carried out immediately. Works within this priority rating will be brought to attention of the responsible person at the time of assessment.

Tree Retention Rating (TRR)

The Tree Retention Rating is based on a number of factors that are identified as part of the standard tree assessment criteria including Condition, Size, Environmental, Amenity and Special Values. These factors are combined in a number of matrices to provide a Preliminary Tree Retention Rating and a Tree Retention Rating Modifier which combine to provide a Tree Retention Rating that is measurable, consistent and repeatable

Preliminary Tree Retention Rating

The Preliminary Tree Retention Rating is conducted assessing Tree Health and Structure to give an overall Condition Rating and Height and Spread to give an overall Size Rating. The following matrices identify how these are derived.

Condition Matrix				
Structure	**Health**			
	Good	**Fair**	**Poor**	**Dead**
Good	C1	C2	C3	C4
Fair	C2	C2	C3	C4
Poor	C3	C3	C4	C4
Failed	C4	C4	C4	C4

Size Matrix					
Spread	**Height**				
	>20	**15-20**	**10-15**	**5-10**	**<5**
>20	S1	S1	S1	S2	S3
15-20	S1	S1	S2	S3	S3
10-15	S1	S2	S2	S3	S4
5-10	S2	S3	S3	S4	S5
<5	S3	S3	S4	S5	S5

The results from the Condition and Size Matrices are then placed in the Preliminary Tree Retention Rating Matrix.

Preliminary Tree Retention Rating				
Size	**Condition**			
	C1	**C2**	**C3**	**C4**
S1	High	Moderate	Low	Low
S2	Moderate	Moderate	Low	Low
S3	Moderate	Moderate	Low	Low
S4	Moderate	Moderate	Low	Low
S5	Low	Low	Low	Low

The Preliminary Tree Retention Rating gives a base rating for all trees regardless of other environmental and/or amenity factors and any Special Value considerations. The Preliminary Tree Retention Rating can only be modified if these factors are considered to be of high or low enough importance to warrant increasing or, in a few cases, lowering the original rating.

Tree Retention Rating Modifier

The Preliminary Tree Retention Rating is then qualified against the recognised Environmental and Amenity benefits that trees present to the community thereby providing a quantitative measure to determine the overall Tree Retention Rating. Data is collected in relation to Environmental and Amenity attributes which are compared through a set of matrices to produce a Tree Retention Rating Modifier.

Environmental Matrix				
Origin	**Habitat**			
	Active	**Inactive**	**Potential**	**No Habitat**
Indigenous	E1	E1	E2	E3
Native	E1	E2	E3	E3
Exotic	E2	E3	E3	E4
Weed	E3	E3	E4	E4

Amenity Matrix				
Character	**Aesthetics**			
	High	**Moderate**	**Low**	**None**
Important	P1	P1	P2	P3
Moderate	P1	P2	P3	P3
Low	P2	P3	P3	P4
None	P3	P3	P4	P4

Tree Retention Rating Modifier				
Amenity	**Environment**			
	E1	**E2**	**E3**	**E4**
P1	High	High	Moderate	Moderate
P2	High	Moderate	Moderate	Moderate
P3	Moderate	Moderate	Moderate	Moderate
P4	Moderate	Moderate	Moderate	Low

Tree Retention Rating

The results of the Preliminary Tree Retention Rating and the Tree Retention Rating Modifier matrices are combined in a final matrix to give the actual Tree Retention Rating.

Tree Retention Rating Matrix			
Tree Retention Rating Modifier	**Preliminary Tree Retention Rating**		
	High	**Moderate**	**Low**
High	Important	High	Moderate
Moderate	High	Moderate	Low
Low	Moderate	Low	Low

Special Value Trees

There are potentially trees that have Special Value for reasons outside of normal Arboricultural assessment protocols and therefore would not have been considered in the assessment to this point; to allow for this a Special Value characteristic that can override the Tree Retention Rating can be selected. Special Value characteristics that could override the Tree Retention Rating would include factors such as the following:

Cultural Values

Memorial Trees, Avenue of Honour Trees, Aboriginal Heritage Trees, Trees planted by Dignitaries and various other potential categories.

Environmental Values

Rare or Endangered species, Remnant Vegetation, Important Habitat for rare or endangered wildlife, substantial habitat value in an important biodiversity area and various other potential categories.

Where a tree achieves one or more Special Value characteristics the Tree Retention Rating will automatically be overridden and assigned the value of Important.

Tree Retention Rating Definitions

Important These trees will in all instances be required to be retained within any future development/redevelopment. It is highly unlikely that trees that achieve this rating would be approved for removal or any other tree damaging activity. Trees will be either remnant, or naturally occurring species with environmental value, will have active hollows and be in good overall condition.

High These trees will in most instances be required to be retained within any future development/redevelopment. It is unlikely that trees that achieve this rating would be approved for removal or any other tree damaging activity. Trees will be either remnant, or naturally occurring species with environmental value but are starting to decline or will be a planted native and have active hollows and be in good condition. Or may provide a high aesthetic contribution to an area and be in good overall condition

Moderate Trees with a moderate retention rating provide limited environmental benefit and amenity to the area. These trees may be semi mature or exotic species with limited environmental value. Moderate trees may also be large trees that display fair overall condition.

Low These trees may not be considered suitable for retention in a future development/redevelopment. These trees will either be young trees that are easily replaced. or in poor overall condition. Trees in this category do not warrant special works or design modifications to allow for their retention. Trees in this category are likely to be approved for removal and/or other tree damaging activity in an otherwise reasonable and expected development. Protection of these trees, where they are identified to be retained, should be consistent with Australian Standard AS4970-2009 *Protection of trees on development sites*.

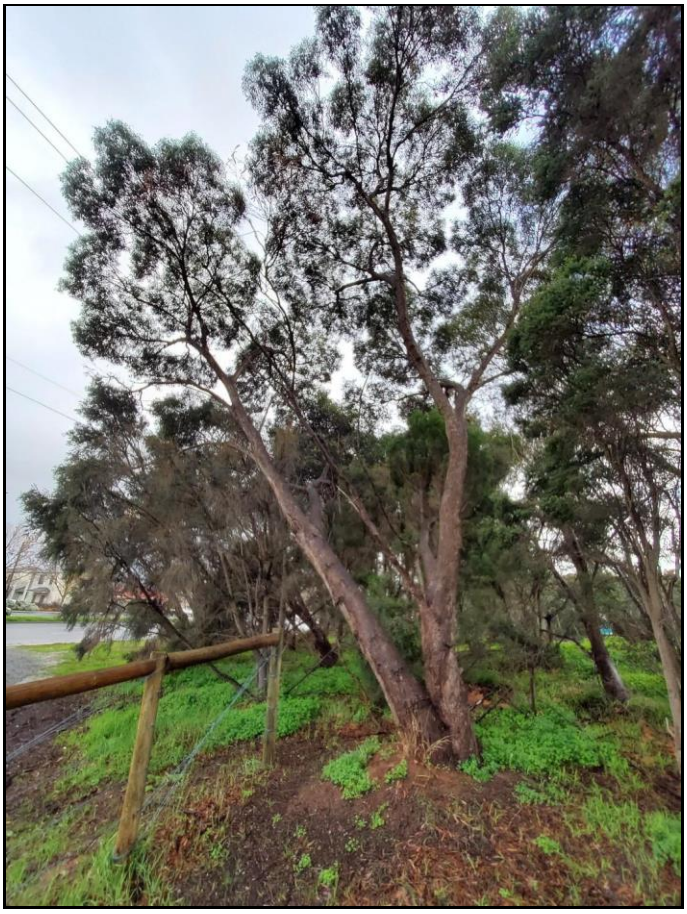
Appendix B - Tree Assessment Findings

Eucalyptus microcarpa

Tree No: 1

Grey Box

Inspected:	20 July 2021
Height:	5-10 metres
Spread:	5-10 metres
Health:	Good
Structure:	Good
Form:	Good
Trunk Circumference:	>2 metres
Useful Life Expectancy:	>20 years
Tree Protection Zone:	5.69 metres



Observations

The health and structure of this tree indicate it is in good overall condition and has adapted to its local environment.

Legislative Status	Regulated

This tree has a trunk circumference greater than two metres and is not subject to any exemption from regulation and therefore it is identified as a Regulated Tree as defined in the Planning, Development and Infrastructure Act 2016.

Retention Rating	Moderate

This tree has a Moderate Retention Rating and could be considered for retention in any future development.

Recommendation	Could be Retained

This tree has a Moderate Retention Rating and is worthy of consideration for retention if suitable design and protection opportunities are available.

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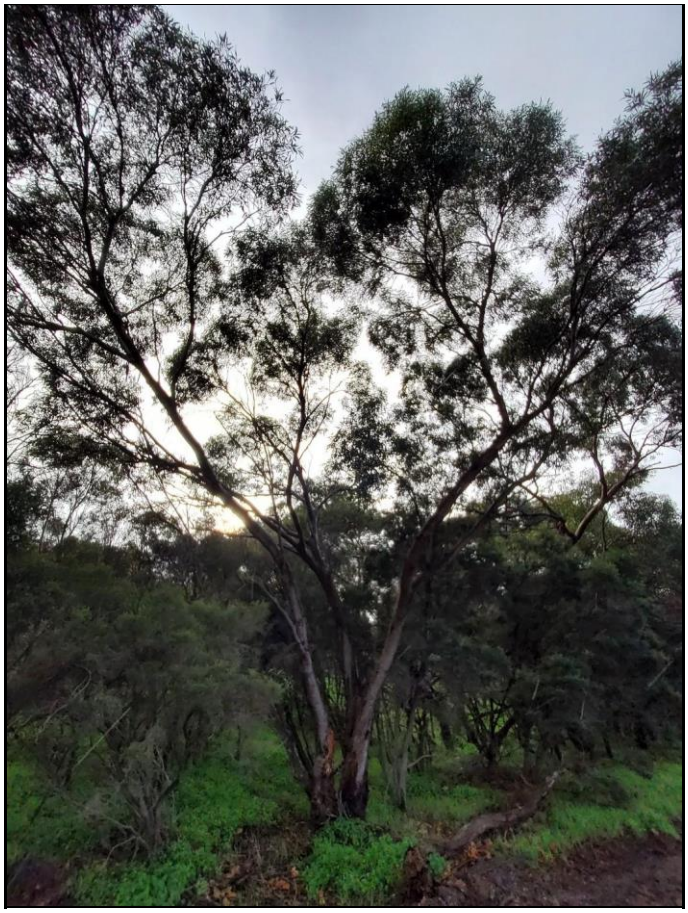
Eucalyptus microcarpa

Tree No: 2

Grey Box

Inspected:	20 July 2021
Height:	5-10 metres
Spread:	10-15 metres
Health:	Good
Structure:	Fair
Form:	Good
Trunk Circumference:	>2 metres
Useful Life Expectancy:	>20 years
Tree Protection Zone:	5.35 metres



Observations

This tree is considered to be in fair condition as indicated by the reduced overall structural rating.

Legislative Status	Regulated

This tree has a trunk circumference greater than two metres and is not subject to any exemption from regulation and therefore it is identified as a Regulated Tree as defined in the Planning, Development and Infrastructure Act 2016.

Retention Rating	Low

This tree has a Low Retention Rating and should not form a material constraint to the redevelopment of this site.

Recommendation	Could be Retained

This tree has a Moderate Retention Rating and is worthy of consideration for retention if suitable design and protection opportunities are available.

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PROFESSIONALS IN ARBORICULTURE

Eucalyptus microcarpa

Tree No: 3

Grey Box

Inspected:	20 July 2021
Height:	5-10 metres
Spread:	10-15 metres
Health:	Good
Structure:	Good
Form:	Good
Trunk Circumference:	>3 metres
Useful Life Expectancy:	>20 years
Tree Protection Zone:	5.75 metres

Observations

The health and structure of this tree indicate it is in good overall condition and has adapted to its local environment.

Legislative Status	Significant

This tree has a trunk circumference greater than three metres and is not subject to any exemption from regulation and therefore it is identified as a Significant Tree as defined in the Planning, Development and Infrastructure Act 2016.

Retention Rating	Moderate

This tree has a Moderate Retention Rating and could be considered for retention in any future development.

Recommendation	Could be Retained

This tree has a Moderate Retention Rating and is worthy of consideration for retention if suitable design and protection opportunities are available.

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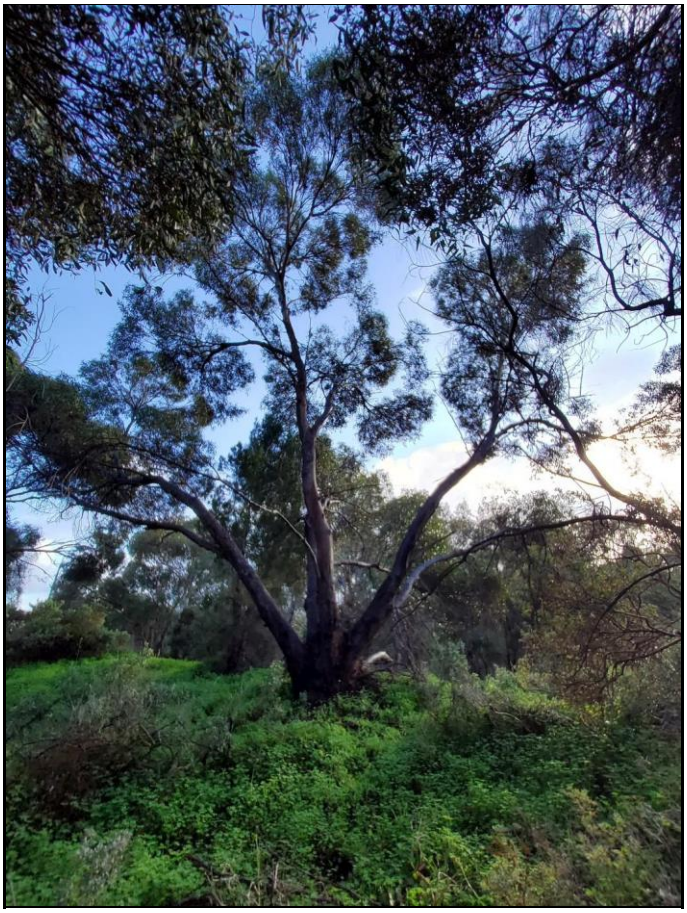
Eucalyptus microcarpa

Tree No: 4

Grey Box

Inspected:	20 July 2021
Height:	5-10 metres
Spread:	15-20 metres
Health:	Good
Structure:	Good
Form:	Good
Trunk Circumference:	>3 metres
Useful Life Expectancy:	>20 years
Tree Protection Zone:	5.95 metres



Observations

The health and structure of this tree indicate it is in good overall condition and has adapted to its local environment.

Legislative Status	Significant

This tree has a trunk circumference greater than three metres and is not subject to any exemption from regulation and therefore it is identified as a Significant Tree as defined in the Planning, Development and Infrastructure Act 2016.

Retention Rating	Moderate

This tree has a Moderate Retention Rating and could be considered for retention in any future development.

Recommendation	Could be Retained

This tree has a Moderate Retention Rating and is worthy of consideration for retention if suitable design and protection opportunities are available.

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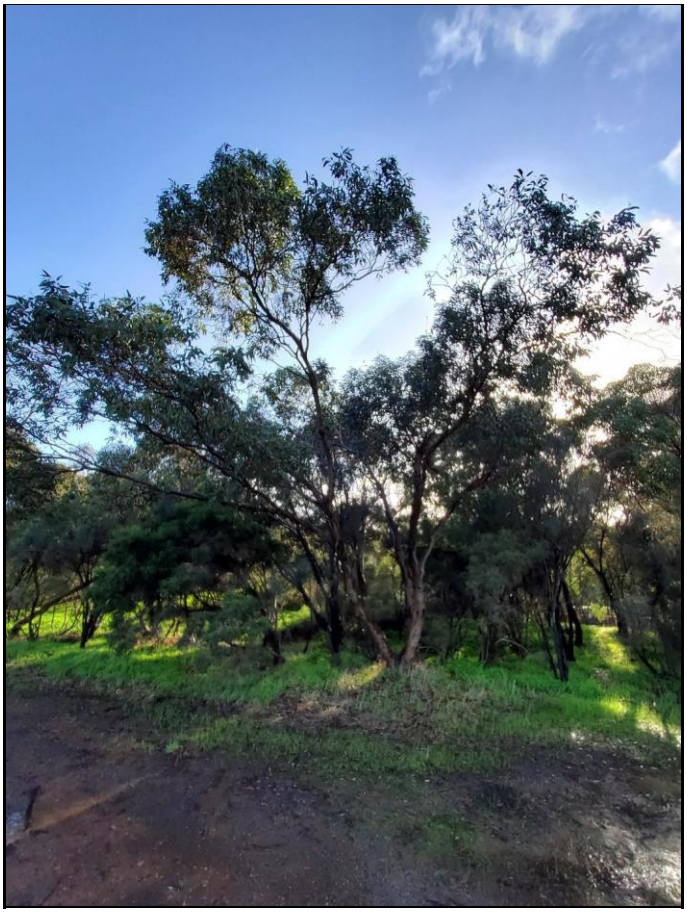
Eucalyptus microcarpa

Tree No: 5

Grey Box

Inspected:	20 July 2021
Height:	5-10 metres
Spread:	15-20 metres
Health:	Fair
Structure:	Fair
Form:	Good
Trunk Circumference:	>2 metres
Useful Life Expectancy:	>10 years
Tree Protection Zone:	5.10 metres



Observations

This tree is considered to be in fair overall condition as indicated by the health of the foliage and branches and the structural condition of the trunk, branches and crown.

Legislative Status	Regulated

This tree has a trunk circumference greater than two metres and is not subject to any exemption from regulation and therefore it is identified as a Regulated Tree as defined in the Planning, Development and Infrastructure Act 2016.

Retention Rating	Low

This tree has a Low Retention Rating and should not form a material constraint to the redevelopment of this site.

Recommendation	Could be Retained

This tree has a Moderate Retention Rating and is worthy of consideration for retention if suitable design and protection opportunities are available.

Acacia linearifolia

Tree No: 6

Narrow-Leaved Wattle

Inspected:	20 July 2021
Height:	<5 metres
Spread:	15-20 metres
Health:	Good
Structure:	Fair
Form:	Fair
Trunk Circumference:	>3 metres
Useful Life Expectancy:	>10 years
Tree Protection Zone:	6.15 metres

Observations

This tree is considered to be in fair condition as indicated by the reduced overall structural rating.

Legislative Status	Significant

This tree has a trunk circumference greater than three metres and is not subject to any exemption from regulation and therefore it is identified as a Significant Tree as defined in the Planning, Development and Infrastructure Act 2016.

Retention Rating	Low

This tree has a Low Retention Rating and should not form a material constraint to the redevelopment of this site.

Recommendation	Could be Retained

This tree has a Moderate Retention Rating and is worthy of consideration for retention if suitable design and protection opportunities are available.

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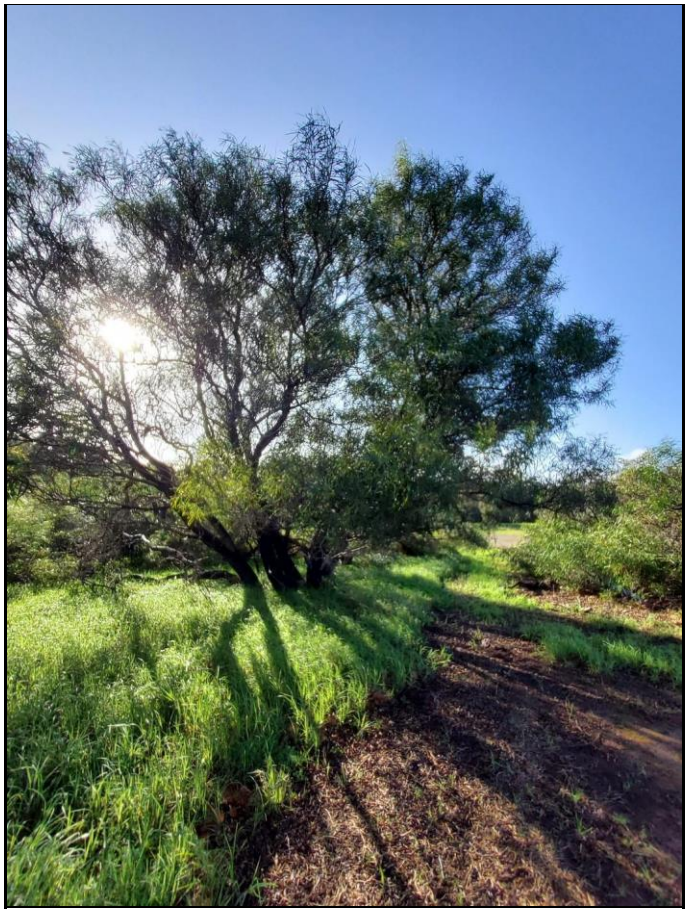
Acacia linearifolia

Tree No: 7

Narrow-Leaved Wattle

Inspected:	20 July 2021
Height:	5-10 metres
Spread:	5-10 metres
Health:	Good
Structure:	Fair
Form:	Good
Trunk Circumference:	>3 metres
Useful Life Expectancy:	>20 years
Tree Protection Zone:	6.19 metres



Observations

This tree is considered to be in fair condition as indicated by the reduced overall structural rating.

Legislative Status	Significant

This tree has a trunk circumference greater than three metres and is not subject to any exemption from regulation and therefore it is identified as a Significant Tree as defined in the Planning, Development and Infrastructure Act 2016.

Retention Rating	Low

This tree has a Low Retention Rating and should not form a material constraint to the redevelopment of this site.

Recommendation	Could be Retained

This tree has a Moderate Retention Rating and is worthy of consideration for retention if suitable design and protection opportunities are available.

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PROFESSIONALS IN ARBORICULTURE

Eucalyptus populnea

Tree No: 8

Poplar Box

Inspected:	20 July 2021
Height:	5-10 metres
Spread:	5-10 metres
Health:	Good
Structure:	Good
Form:	Good
Trunk Circumference:	>2 metres
Useful Life Expectancy:	>20 years
Tree Protection Zone:	5.97 metres

Observations

The health and structure of this tree indicate it is in good overall condition and has adapted to its local environment.

Legislative Status	Regulated

This tree has a trunk circumference greater than two metres and is not subject to any exemption from regulation and therefore it is identified as a Regulated Tree as defined in the Planning, Development and Infrastructure Act 2016.

Retention Rating	Moderate

This tree has a Moderate Retention Rating and could be considered for retention in any future development.

Recommendation	Could be Retained

This tree has a Moderate Retention Rating and is worthy of consideration for retention if suitable design and protection opportunities are available.

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PROFESSIONALS IN ARBORICULTURE

Eucalyptus camaldulensis

Tree No: 9

River Red Gum

Inspected:	20 July 2021
Height:	5-10 metres
Spread:	5-10 metres
Health:	Fair
Structure:	Good
Form:	Good
Trunk Circumference:	>3 metres
Useful Life Expectancy:	>10 years
Tree Protection Zone:	9.40 metres

Observations

This tree is considered to be in fair overall condition due to its moderately reduced health rating.

Legislative Status	Significant

This tree has a trunk circumference greater than three metres and is not subject to any exemption from regulation and therefore it is identified as a Significant Tree as defined in the Planning, Development and Infrastructure Act 2016.

Retention Rating	Moderate

This tree has a Moderate Retention Rating and could be considered for retention in any future development.

Recommendation	Could be Retained

This tree has a Moderate Retention Rating and is worthy of consideration for retention if suitable design and protection opportunities are available.

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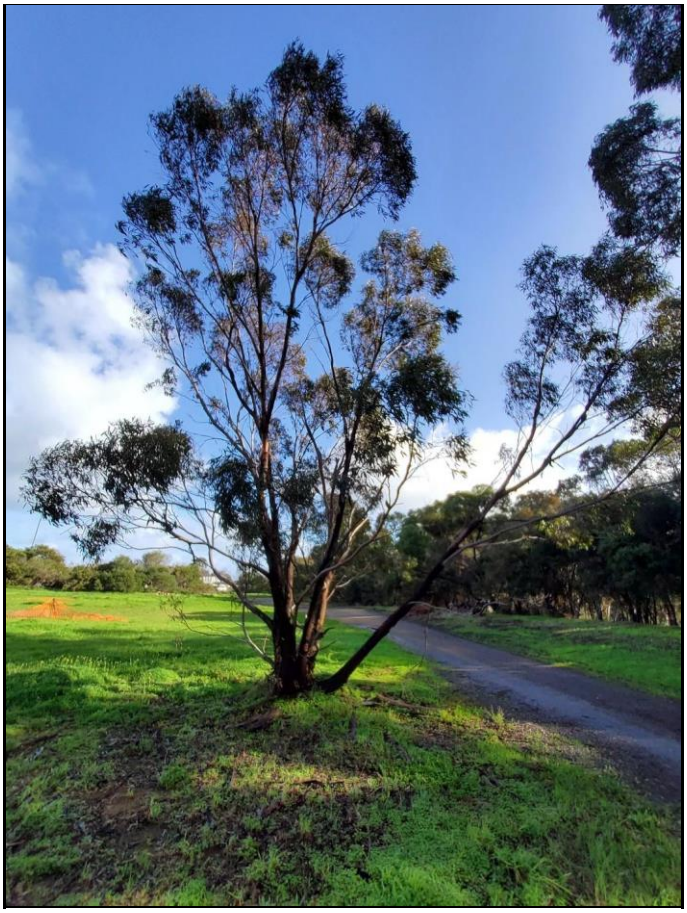
PROFESSIONALS IN ARBORICULTURE

Eucalyptus populnea

Tree No: 10

Poplar Box

Inspected:	20 July 2021
Height:	5-10 metres
Spread:	5-10 metres
Health:	Poor
Structure:	Fair
Form:	Fair
Trunk Circumference:	<2 metres
Useful Life Expectancy:	>10 years
Tree Protection Zone:	4.51 metres



Observations

This tree is considered to be in poor overall conditon due to its poor health and reduced structure rating. This tree has a codominant form with included bark in the primary structure, there is is also a moderate level of decay in the trunk.

Legislative Status	Unregulated

This tree does not achieve a regulated trunk circumference and therefore is not regulated by the Planning, Development and Infrastructure Act 2016.

Retention Rating	Low

This tree has a Low Retention Rating and should not form a material constraint to the redevelopment of this site.

Recommendation	Consider Removal

The removal of this tree may be considered to be reasonable as it does not provide important aesthetic and/or environmental benefits.

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Eucalyptus camaldulensis

Tree No: 11

River Red Gum

Inspected:	20 July 2021
Height:	5-10 metres
Spread:	5-10 metres
Health:	Good
Structure:	Good
Form:	Good
Trunk Circumference:	>2 metres
Useful Life Expectancy:	>10 years
Tree Protection Zone:	7.73 metres

Observations

The health and structure of this tree indicate it is in good overall condition and has adapted to its local environment.

Legislative Status	Regulated

This tree has a trunk circumference greater than two metres and is not subject to any exemption from regulation and therefore it is identified as a Regulated Tree as defined in the Planning, Development and Infrastructure Act 2016.

Retention Rating	Moderate

This tree has a Moderate Retention Rating and could be considered for retention in any future development.

Recommendation	Could be Retained

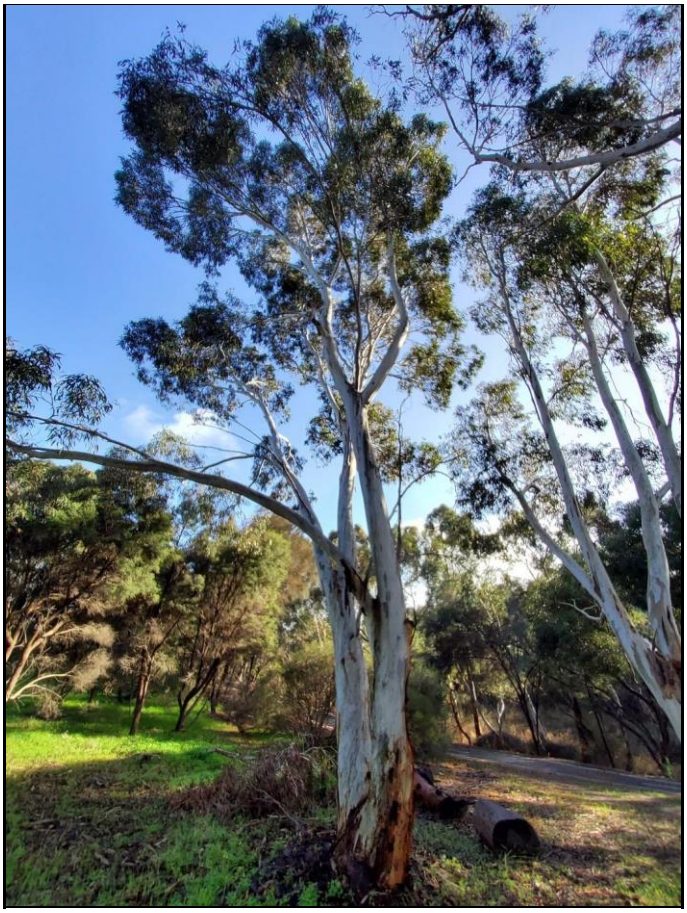
This tree has a Moderate Retention Rating and is worthy of consideration for retention if suitable design and protection opportunities are available.

Eucalyptus leucoxylon

Tree No: 12

South Australian Blue Gum

Inspected:	20 July 2021
Height:	5-10 metres
Spread:	10-15 metres
Health:	Good
Structure:	Fair
Form:	Good
Trunk Circumference:	>2 metres
Useful Life Expectancy:	>20 years
Tree Protection Zone:	7.24 metres



Observations

This tree is considered to be in fair condition as indicated by the reduced overall structural rating.

Legislative Status	Regulated

This tree has a trunk circumference greater than two metres and is not subject to any exemption from regulation and therefore it is identified as a Regulated Tree as defined in the Planning, Development and Infrastructure Act 2016.

Retention Rating	Low

This tree has a Low Retention Rating and should not form a material constraint to the redevelopment of this site.

Recommendation	Could be Retained

This tree has a Moderate Retention Rating and is worthy of consideration for retention if suitable design and protection opportunities are available.

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Eucalyptus camaldulensis

Tree No: 13

River Red Gum

Inspected:	20 July 2021
Height:	5-10 metres
Spread:	5-10 metres
Health:	Good
Structure:	Good
Form:	Good
Trunk Circumference:	>2 metres
Useful Life Expectancy:	>20 years
Tree Protection Zone:	6.39 metres

Observations

The health and structure of this tree indicate it is in good overall condition and has adapted to its local environment.

Legislative Status	Regulated

This tree has a trunk circumference greater than two metres and is not subject to any exemption from regulation and therefore it is identified as a Regulated Tree as defined in the Planning, Development and Infrastructure Act 2016.

Retention Rating	Moderate

This tree has a Moderate Retention Rating and could be considered for retention in any future development.

Recommendation	Could be Retained

This tree has a Moderate Retention Rating and is worthy of consideration for retention if suitable design and protection opportunities are available.

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Eucalyptus camaldulensis

Tree No: 14

River Red Gum

Inspected:	20 July 2021
Height:	5-10 metres
Spread:	5-10 metres
Health:	Good
Structure:	Fair
Form:	Good
Trunk Circumference:	>2 metres
Useful Life Expectancy:	>20 years
Tree Protection Zone:	8.40 metres

Observations

This tree is considered to be in fair condition as indicated by the reduced overall structural rating.

Legislative Status	Regulated

This tree has a trunk circumference greater than two metres and is not subject to any exemption from regulation and therefore it is identified as a Regulated Tree as defined in the Planning, Development and Infrastructure Act 2016.

Retention Rating	Low

This tree has a Low Retention Rating and should not form a material constraint to the redevelopment of this site.

Recommendation	Could be Retained

This tree has a Moderate Retention Rating and is worthy of consideration for retention if suitable design and protection opportunities are available.

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Eucalyptus leucoxylon

Tree No: 15

South Australian Blue Gum

Inspected:	20 July 2021
Height:	5-10 metres
Spread:	10-15 metres
Health:	Good
Structure:	Good
Form:	Good
Trunk Circumference:	>3 metres
Useful Life Expectancy:	>20 years
Tree Protection Zone:	6.98 metres

Observations

The health and structure of this tree indicate it is in good overall condition and has adapted to its local environment.

Legislative Status	Significant

This tree has a trunk circumference greater than three metres and is not subject to any exemption from regulation and therefore it is identified as a Significant Tree as defined in the Planning, Development and Infrastructure Act 2016.

Retention Rating	Low

This tree has a Low Retention Rating and should not form a material constraint to the redevelopment of this site.

Recommendation	Could be Retained

This tree has a Moderate Retention Rating and is worthy of consideration for retention if suitable design and protection opportunities are available.

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Eucalyptus leucoxylon

Tree No: 16

South Australian Blue Gum

Inspected:	20 July 2021
Height:	5-10 metres
Spread:	10-15 metres
Health:	Good
Structure:	Fair
Form:	Good
Trunk Circumference:	>2 metres
Useful Life Expectancy:	>20 years
Tree Protection Zone:	5.96 metres

Observations

This tree is considered to be in fair condition as indicated by the reduced overall structural rating.

Legislative Status	Regulated

This tree has a trunk circumference greater than two metres and is not subject to any exemption from regulation and therefore it is identified as a Regulated Tree as defined in the Planning, Development and Infrastructure Act 2016.

Retention Rating	Low

This tree has a Low Retention Rating and should not form a material constraint to the redevelopment of this site.

Recommendation	Could be Retained

This tree has a Moderate Retention Rating and is worthy of consideration for retention if suitable design and protection opportunities are available.

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Eucalyptus camaldulensis

Tree No: 17

River Red Gum

Inspected:	20 July 2021
Height:	5-10 metres
Spread:	10-15 metres
Health:	Fair
Structure:	Good
Form:	Good
Trunk Circumference:	>2 metres
Useful Life Expectancy:	>10 years
Tree Protection Zone:	7.68 metres

Observations

This tree is considered to be in fair overall condition due to its moderately reduced health rating.

Legislative Status	Regulated

This tree has a trunk circumference greater than two metres and is not subject to any exemption from regulation and therefore it is identified as a Regulated Tree as defined in the Planning, Development and Infrastructure Act 2016.

Retention Rating	Low

This tree has a Low Retention Rating and should not form a material constraint to the redevelopment of this site.

Recommendation	Could be Retained

This tree has a Moderate Retention Rating and is worthy of consideration for retention if suitable design and protection opportunities are available.

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Eucalyptus microcarpa

Tree No: 18

Grey Box

Inspected:	20 July 2021
Height:	5-10 metres
Spread:	5-10 metres
Health:	Good
Structure:	Good
Form:	Good
Trunk Circumference:	>3 metres
Useful Life Expectancy:	>20 years
Tree Protection Zone:	5.72 metres

Observations

The health and structure of this tree indicate it is in good overall condition and has adapted to its local environment.

Legislative Status	Significant

This tree has a trunk circumference greater than three metres and is not subject to any exemption from regulation and therefore it is identified as a Significant Tree as defined in the Planning, Development and Infrastructure Act 2016.

Retention Rating	Low

This tree has a Low Retention Rating and should not form a material constraint to the redevelopment of this site.

Recommendation	Could be Retained

This tree has a Moderate Retention Rating and is worthy of consideration for retention if suitable design and protection opportunities are available.

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Eucalyptus microcarpa

Tree No: 19

Grey Box

Inspected:	20 July 2021
Height:	5-10 metres
Spread:	10-15 metres
Health:	Good
Structure:	Good
Form:	Good
Trunk Circumference:	>2 metres
Useful Life Expectancy:	>20 years
Tree Protection Zone:	6.50 metres

Observations

The health and structure of this tree indicate it is in good overall condition and has adapted to its local environment.

Legislative Status	Regulated

This tree has a trunk circumference greater than two metres and is not subject to any exemption from regulation and therefore it is identified as a Regulated Tree as defined in the Planning, Development and Infrastructure Act 2016.

Retention Rating	Moderate

This tree has a Moderate Retention Rating and could be considered for retention in any future development.

Recommendation	Could be Retained

This tree has a Moderate Retention Rating and is worthy of consideration for retention if suitable design and protection opportunities are available.

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Eucalyptus microcarpa

Tree No: 20

Grey Box

Inspected:	20 July 2021
Height:	5-10 metres
Spread:	15-20 metres
Health:	Good
Structure:	Good
Form:	Good
Trunk Circumference:	>2 metres
Useful Life Expectancy:	>20 years
Tree Protection Zone:	5.20 metres

Observations

The health and structure of this tree indicate it is in good overall condition and has adapted to its local environment.

Legislative Status	Regulated

This tree has a trunk circumference greater than two metres and is not subject to any exemption from regulation and therefore it is identified as a Regulated Tree as defined in the Planning, Development and Infrastructure Act 2016.

Retention Rating	Moderate

This tree has a Moderate Retention Rating and could be considered for retention in any future development.

Recommendation	Could be Retained

This tree has a Moderate Retention Rating and is worthy of consideration for retention if suitable design and protection opportunities are available.

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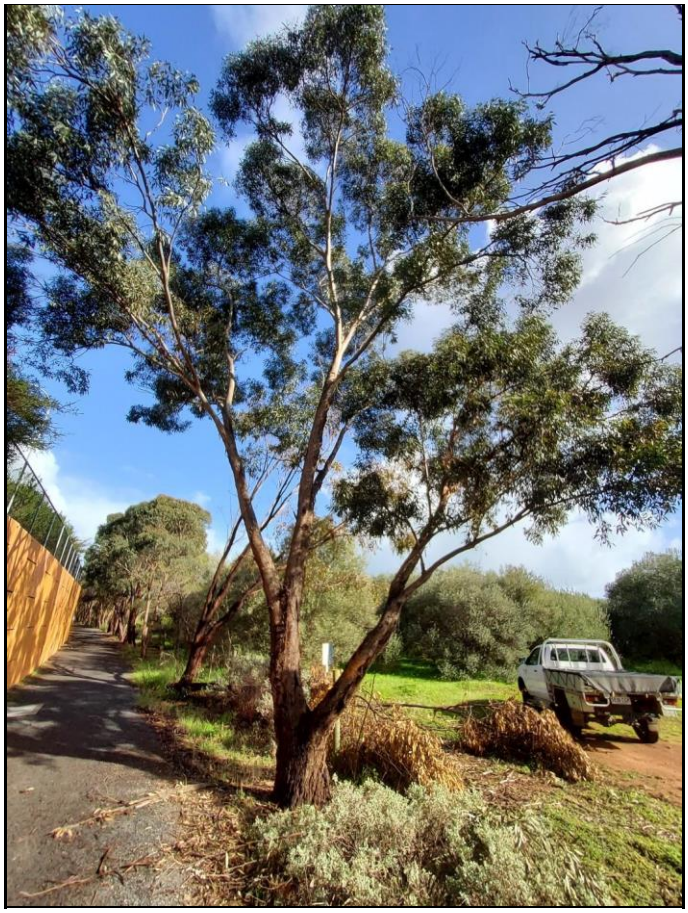
Eucalyptus microcarpa

Tree No: 21

Grey Box

Inspected:	20 July 2021
Height:	5-10 metres
Spread:	5-10 metres
Health:	Good
Structure:	Good
Form:	Good
Trunk Circumference:	>2 metres
Useful Life Expectancy:	>20 years
Tree Protection Zone:	5.69 metres



Observations

The health and structure of this tree indicate it is in good overall condition and has adapted to its local environment.

Legislative Status	Regulated

This tree has a trunk circumference greater than two metres and is not subject to any exemption from regulation and therefore it is identified as a Regulated Tree as defined in the Planning, Development and Infrastructure Act 2016.

Retention Rating	Moderate

This tree has a Moderate Retention Rating and could be considered for retention in any future development.

Recommendation	Could be Retained

This tree has a Moderate Retention Rating and is worthy of consideration for retention if suitable design and protection opportunities are available.

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Eucalyptus microcarpa

Tree No: 22

Grey Box

Inspected:	20 July 2021
Height:	5-10 metres
Spread:	10-15 metres
Health:	Good
Structure:	Good
Form:	Good
Trunk Circumference:	>2 metres
Useful Life Expectancy:	>20 years
Tree Protection Zone:	5.32 metres

Observations

The health and structure of this tree indicate it is in good overall condition and has adapted to its local environment.

Legislative Status	Regulated

This tree has a trunk circumference greater than two metres and is not subject to any exemption from regulation and therefore it is identified as a Regulated Tree as defined in the Planning, Development and Infrastructure Act 2016.

Retention Rating	Moderate

This tree has a Moderate Retention Rating and could be considered for retention in any future development.

Recommendation	Could be Retained

This tree has a Moderate Retention Rating and is worthy of consideration for retention if suitable design and protection opportunities are available.

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Eucalyptus camaldulensis

Tree No: 23

River Red Gum

Inspected:	20 July 2021
Height:	5-10 metres
Spread:	5-10 metres
Health:	Good
Structure:	Good
Form:	Good
Trunk Circumference:	>2 metres
Useful Life Expectancy:	>20 years
Tree Protection Zone:	8.52 metres

Observations

The health and structure of this tree indicate it is in good overall condition and has adapted to its local environment.

Legislative Status	Regulated

This tree has a trunk circumference greater than two metres and is not subject to any exemption from regulation and therefore it is identified as a Regulated Tree as defined in the Planning, Development and Infrastructure Act 2016.

Retention Rating	Moderate

This tree has a Moderate Retention Rating and could be considered for retention in any future development.

Recommendation	Could be Retained

This tree has a Moderate Retention Rating and is worthy of consideration for retention if suitable design and protection opportunities are available.

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Appendix C - Mapping

N

Legislative Status

S	Significant
R	Regulated
E	Exempt
U	Unregulated

Retention Rating

- Important
- High
- Moderate
- Low

Date: 28/07/2021
Ref: ATS6458-707MarRdPTA

Arborman Tree Solutions
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Port Adelaide SA 5015
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Preliminary Tree Assessment

Lot 707 Marion Road, Bedford Park

0 80 160 m

1:2000 @ A3

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Appendix D – Tree Assessment Summary

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Tree Assessment Summary

Tree Number	Botanic Name	Legislative Status	Retention Rating	TPZ Radius	Observations	Recommendation
1	*Eucalyptus microcarpa*	Regulated	Moderate	5.69 metres	The health and structure of this tree indicate it is in good overall condition and has adapted to its local environment.	Could be Retained
2	*Eucalyptus microcarpa*	Regulated	Low	5.35 metres	This tree is considered to be in fair condition as indicated by the reduced overall structural rating.	Could be Retained
3	*Eucalyptus microcarpa*	Significant	Moderate	5.75 metres	The health and structure of this tree indicate it is in good overall condition and has adapted to its local environment.	Could be Retained
4	*Eucalyptus microcarpa*	Significant	Moderate	5.95 metres	The health and structure of this tree indicate it is in good overall condition and has adapted to its local environment.	Could be Retained
5	*Eucalyptus microcarpa*	Regulated	Low	5.10 metres	This tree is considered to be in fair overall condition as indicated by the health of the foliage and branches and the structural condition of the trunk, branches and crown.	Could be Retained
6	*Acacia linearifolia*	Significant	Low	6.15 metres	This tree is considered to be in fair condition as indicated by the reduced overall structural rating.	Could be Retained
7	*Acacia linearifolia*	Significant	Low	6.19 metres	This tree is considered to be in fair condition as indicated by the reduced overall structural rating.	Could be Retained
8	*Eucalyptus populnea*	Regulated	Moderate	5.97 metres	The health and structure of this tree indicate it is in good overall condition and has adapted to its local environment.	Could be Retained

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Tree Assessment Summary

Tree Number	Botanic Name	Legislative Status	Retention Rating	TPZ Radius	Observations	Recommendation
9	*Eucalyptus camaldulensis*	Significant	Moderate	9.40 metres	This tree is considered to be in fair overall condition due to its moderately reduced health rating.	Could be Retained
10	*Eucalyptus populnea*	Unregulated	Low	4.51 metres	This tree is considered to be in poor overall conditon due to its poor health and reduced structure rating. This tree has a codominant form with included bark in the primary structure, there is is also a moderate level of decay in the trunk.	Consider Removal
11	*Eucalyptus camaldulensis*	Regulated	Moderate	7.73 metres	The health and structure of this tree indicate it is in good overall condition and has adapted to its local environment.	Could be Retained
12	*Eucalyptus leucoxylon*	Regulated	Low	7.24 metres	This tree is considered to be in fair condition as indicated by the reduced overall structural rating.	Could be Retained
13	*Eucalyptus camaldulensis*	Regulated	Moderate	6.39 metres	The health and structure of this tree indicate it is in good overall condition and has adapted to its local environment.	Could be Retained
14	*Eucalyptus camaldulensis*	Regulated	Low	8.40 metres	This tree is considered to be in fair condition as indicated by the reduced overall structural rating.	Could be Retained
15	*Eucalyptus leucoxylon*	Significant	Low	6.98 metres	The health and structure of this tree indicate it is in good overall condition and has adapted to its local environment.	Could be Retained
16	*Eucalyptus leucoxylon*	Regulated	Low	5.96 metres	This tree is considered to be in fair condition as indicated by the reduced overall structural rating.	Could be Retained

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Tree Assessment Summary

Tree Number	Botanic Name	Legislative Status	Retention Rating	TPZ Radius	Observations	Recommendation
17	*Eucalyptus camaldulensis*	Regulated	Low	7.68 metres	This tree is considered to be in fair overall condition due to its moderately reduced health rating.	Could be Retained
18	*Eucalyptus microcarpa*	Significant	Low	5.72 metres	The health and structure of this tree indicate it is in good overall condition and has adapted to its local environment.	Could be Retained
19	*Eucalyptus microcarpa*	Regulated	Moderate	6.50 metres	The health and structure of this tree indicate it is in good overall condition and has adapted to its local environment.	Could be Retained
20	*Eucalyptus microcarpa*	Regulated	Moderate	5.20 metres	The health and structure of this tree indicate it is in good overall condition and has adapted to its local environment.	Could be Retained
21	*Eucalyptus microcarpa*	Regulated	Moderate	5.69 metres	The health and structure of this tree indicate it is in good overall condition and has adapted to its local environment.	Could be Retained
22	*Eucalyptus microcarpa*	Regulated	Moderate	5.32 metres	The health and structure of this tree indicate it is in good overall condition and has adapted to its local environment.	Could be Retained
23	*Eucalyptus camaldulensis*	Regulated	Moderate	8.52 metres	The health and structure of this tree indicate it is in good overall condition and has adapted to its local environment.	Could be Retained

APPENDIX 7. RETAIL FLOORSPACE CAPACITY ANALYSIS

deep end services

Lot 707 Marion Road, Bedford Park

Retail floorspace capacity analysis

Prepared for Troon Group
5 July 2021

Deep End Services
Deep End Services is an economic research and property consulting firm based in Melbourne. It provides a range of services to local and international retailers, property owners and developers including due diligence and market scoping studies, store benchmarking and network planning, site analysis and sales forecasting, market assessments for a variety of land uses, and highest and best use studies.

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Document Name
Troon Group report - Bedford Park retail floorspace capacity - 5 Jul 21

Assumptions and data sources
All data sources and assumptions are documented in the relevant sections of this report.

All spending data includes GST and is expressed in future dollars. All data is for the year ending 30 June unless otherwise specified.

Data sources:
Australian Bureau of Statistics:
- 2016 Census
- Estimated resident population updates, 2016-2020

Deloitte Access Economics
- Spend per capita estimates and forecasts by category, 2012-2030

Government of SA
- Population Projections for SA, 2019

Market Data Systems
- MarketInfo retail spending propensity by category

PlanSA
- Planning & Design Code (Phase 3)

Property Council of Australia
- Shopping Centre Directory

Shopping Centre News
- Big Guns and Little Guns publications 2020

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Introduction

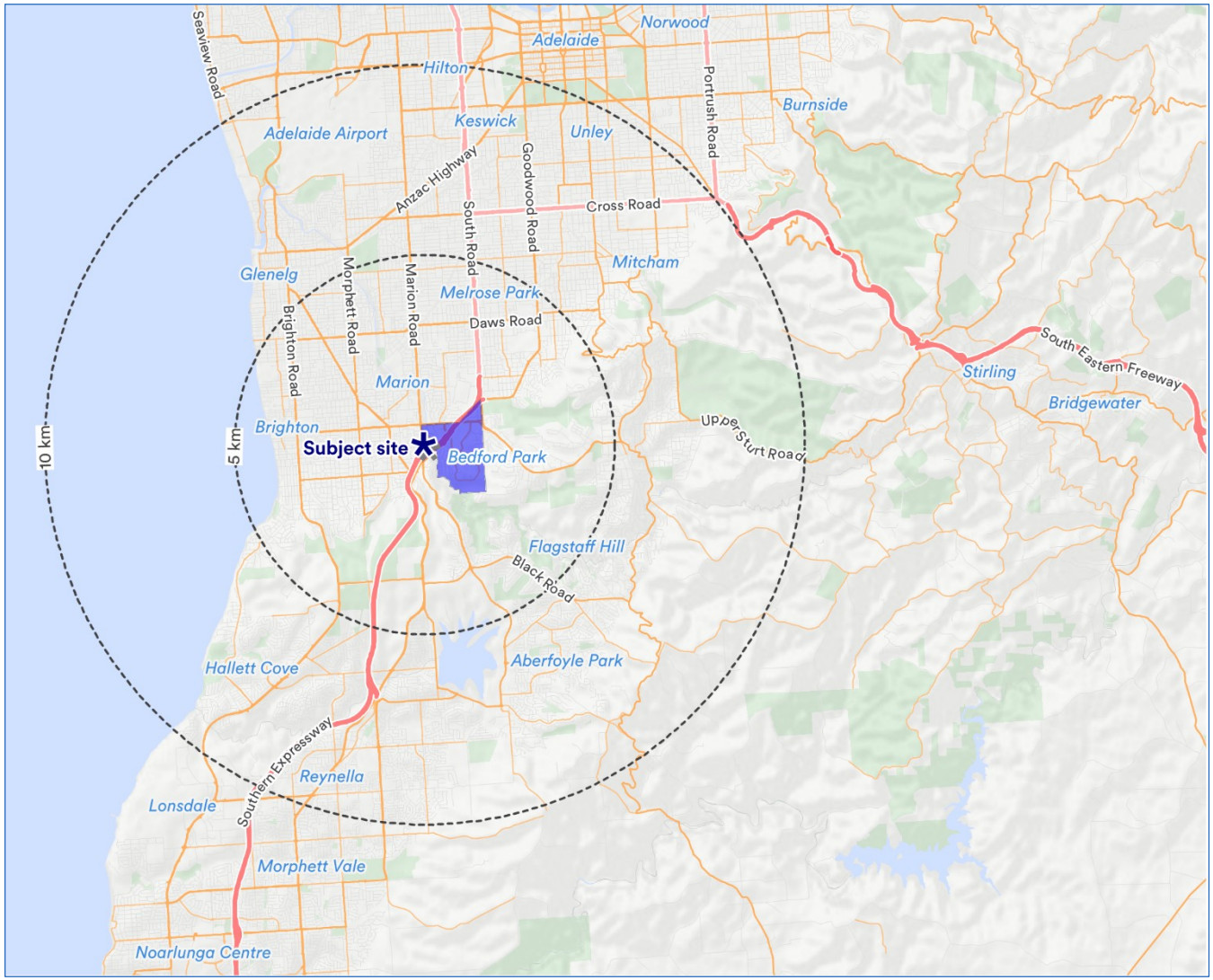
1.1 Background

This report has been prepared on behalf of Troon Group to provide a retail floorspace capacity analysis for a proposed development at Lot 707 Marion Road, Bedford Park.

The primary objective of this report is to determine the sustainable amount of bulky goods of Large Format Retail floorspace that could be accommodated on the site.

Bedford Park is a middle ring suburb of Adelaide, around 12 km south-west of the CBD. The suburb is split by the Southern Expressway. Flinders University, Flinders Private Hospital and medical precinct are on the southern side of the Expressway. The smaller north-west portion of the suburb on the northern side of the Expressway bounded by Marion Road (west) and Sturt Road (north) is commonly referred to as Laffer's triangle.

The site is strategically located just north of the Southern Expressway and its interchanges with Marion Road and Main South Road. The Southern Expressway provides excellent access through the outer southern suburbs of Adelaide and connects with South Road which is a north-south arterial through to the CBD. Marion Road is also an important north-south corridor through the south-west suburbs.



Source: Deep End Services; MapInfo

1.2 Site

Lot 707 extends along the eastern side of Marion Road and is bounded by the Southern Expressway to the south. The site lies adjacent to the Warriparinga Wetlands (north) and the Sturt River is along the eastern border. To the east of the Sturt River is the Living Kaurna Cultural Centre, Westpac offices and call centre and part of Flinders University. Residential uses are opposite the site on the western side of Marion Road. Marion Road is a key north-south route, carrying in excess of 40,000 vehicles past the site each day.

Lot 707 falls within the Urban Neighbourhood Zone under the new Planning & Design Code (P&D Code) and is proposed to be subdivided as follows:

- The southern section which is the subject site within this report, with an area of 3.5 hectares
- The northern part of the site along Sturt River is to include an Elders Village, which will provide 40 individual homes for Aboriginal Elders.
- The balance of the northern part of the site along Marion Road has an as-of-right use for up to 2,000 sqm (GLA) of 'Shop' floorspace.

Source: Deep End Services; Nearmap image 29 May 2021

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Proposal

2.1 Potential uses

We have been instructed to consider at a range of potential uses on the subject site, which includes the following:

- Shop – a large retailer such as a supermarket and other retail shops and services
- Hardware – includes hardware stores such as Bunnings, Mitre 10, Stratco
- Other Large Format Retailer (LFR) – examples of category items and tenant types are provided in the table at right.
- Fast food outlets
- Fuel outlets

The assessment largely focusses on large floor plate retailing, namely Hardware stores and Other Large Format Retailers (Other LFR)

Spending category	Category item examples	Tenant examples
Hardware & Garden	Tools, lawnmowers, nails/screws, plants, building materials	Bunnings, Mitre 10, Stratco, Total Tools
Other Large Format Retailers		
Automotive Parts & Accessories	oils lubricants, batteries, car parts, car accessories	Supercheap Auto, Autobarn, Repco
Coverings		
Floorcoverings	Carpet, wooden floorings, rugs	Carpet Call, Carpet Court, Solomon's Flooring, Beaumont Tiles, Curtain Wonderland, Kresta
Curtains & blinds	Curtains, blinds	
Electrical		
Appliances	Refrigerators, ovens, dishwashers, toasters, irons	The Good Guys, JB Hi-Fi Home, Godfreys, Harvey Norman
Communications	Mobile phones, handsets	
Entertainment	Software, DVDs	
Media	TVs, DVD players, computers, sound systems	
Furniture		
Bedroom furniture	Beds, mattresses	Harvey Norman, Freedom, Amart, Fantastic Furniture, Plush, Forty Winks, Snooze
Other furniture	Tables, chairs, lounges, outdoor furniture	
Homewares		
Home décor	Lighting, ornamental furnishings	Beacon Lighting, Spotlight, Adairs, Pillow Talk, Bed Bath n Table
Manchester	Linen, towels	
Kitchen & Tableware	Crockery, glassware, cooking implements	
Balance LFR	Toys, bikes, camping, sporting, office, pet & baby supplies, party goods, swimming pools	BCF, Petbarn, BBQs Galore, Officeworks, Anaconda, Baby Bunting, Rebel

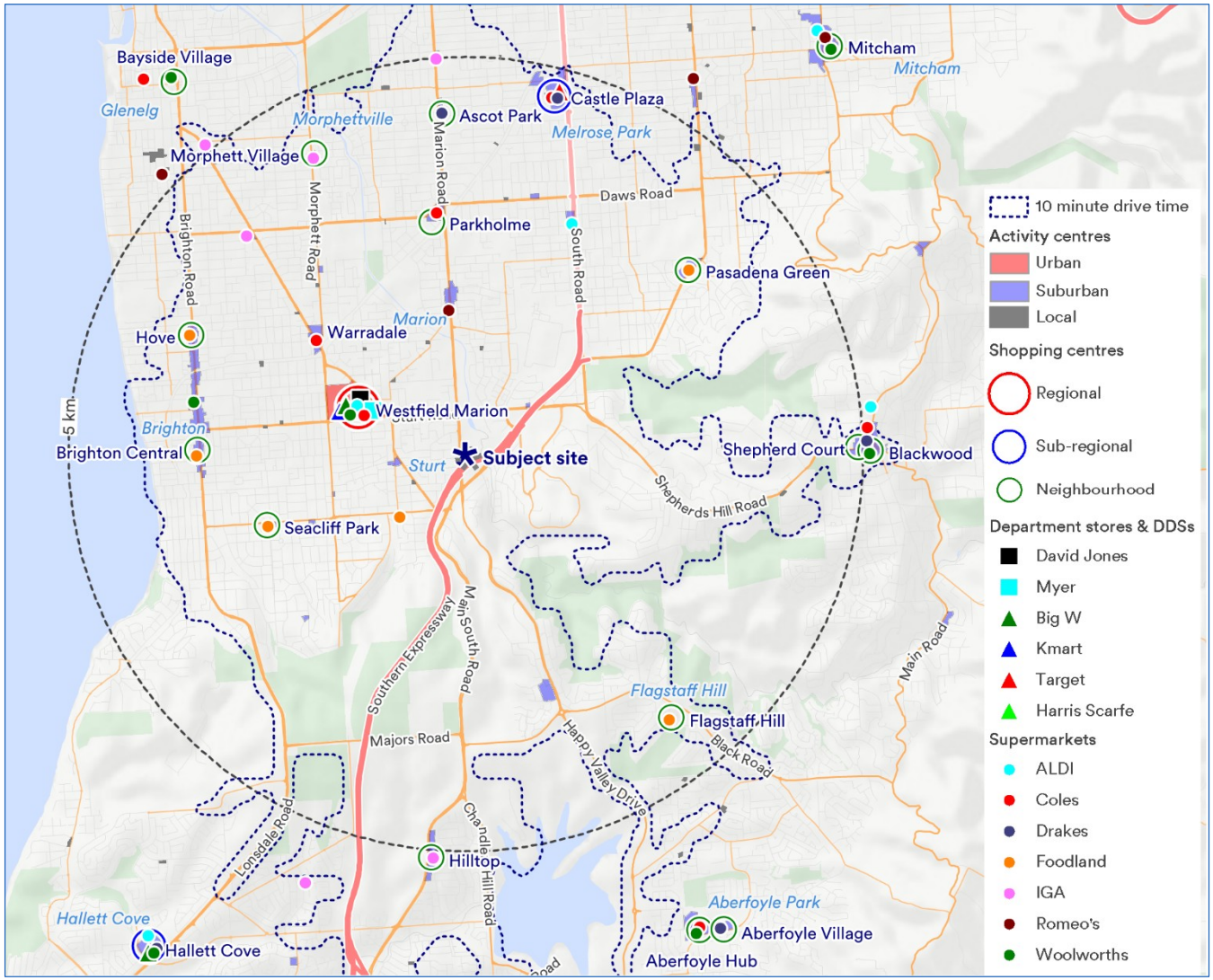
Source: Deep End Services

2.2 Shop

As shown on the map at the right, the subject site is located 1.5 km south-east of Westfield Marion which is designated an Urban Activity Centre and is the largest shopping centre and precinct in the region.

The next level centres are Suburban Activity Centres. These include the larger sub-regional centres such as Castle Plaza and Hallett Cove which are anchored by Discount Department Stores (DDSs) as well as the smaller supermarket-based centres which are dispersed throughout the area.

With close proximity to the Marion Urban Activity Centre and a number of other lower order centres, there is no apparent need for further Shop floorspace beyond the as-of-right 2,000 sqm which could be accommodated on the site to the north of the subject site.



Source: Deep End Services; PlanSA, Planning & Design Code (Phase 3); MapInfo

2.3 Hardware and Other LFR

There are three Bunnings Warehouse stores within a 10-minute drive of the site as shown on the map at right as follows:

- Marion (1.5 km west),
- Edwardstown (4.3 km north) and
- Reynella (8.5 km south).

However, the Marion store is relatively small and the Edwardstown and Reynella stores are close to the 10-minute boundary.

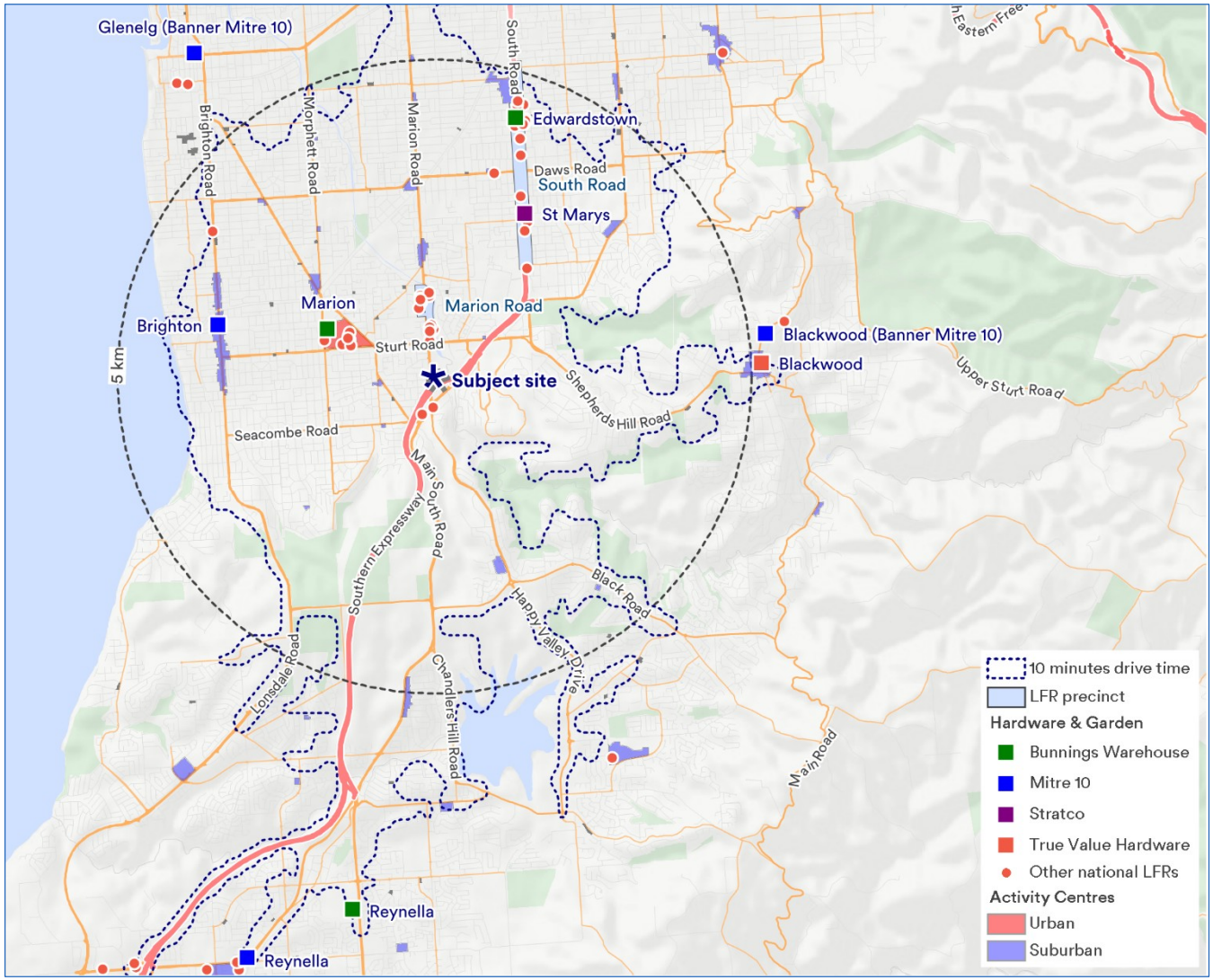
Other hardware stores include Stratco at St Marys and smaller Mitre 10 and True Value Hardware stores at Blackwood and Brighton.

Two LFR major precincts are located within the region, comprising:

- South Road (Edwardstown-Melrose Park) which is situated 2 km+ north-east from the subject site, and
- Marion Road which is generally within 1 km to the north.

The precincts include both LFR operations within centres as well as freestanding stores dispersed along the main roads.

The location of large Hardware stores and LFR precincts will inform the catchment area defined for the subject site in the next section.



Source: Deep End Services; PlanSA, Planning & Design Code (Phase 3); MapInfo

3

Catchment analysis

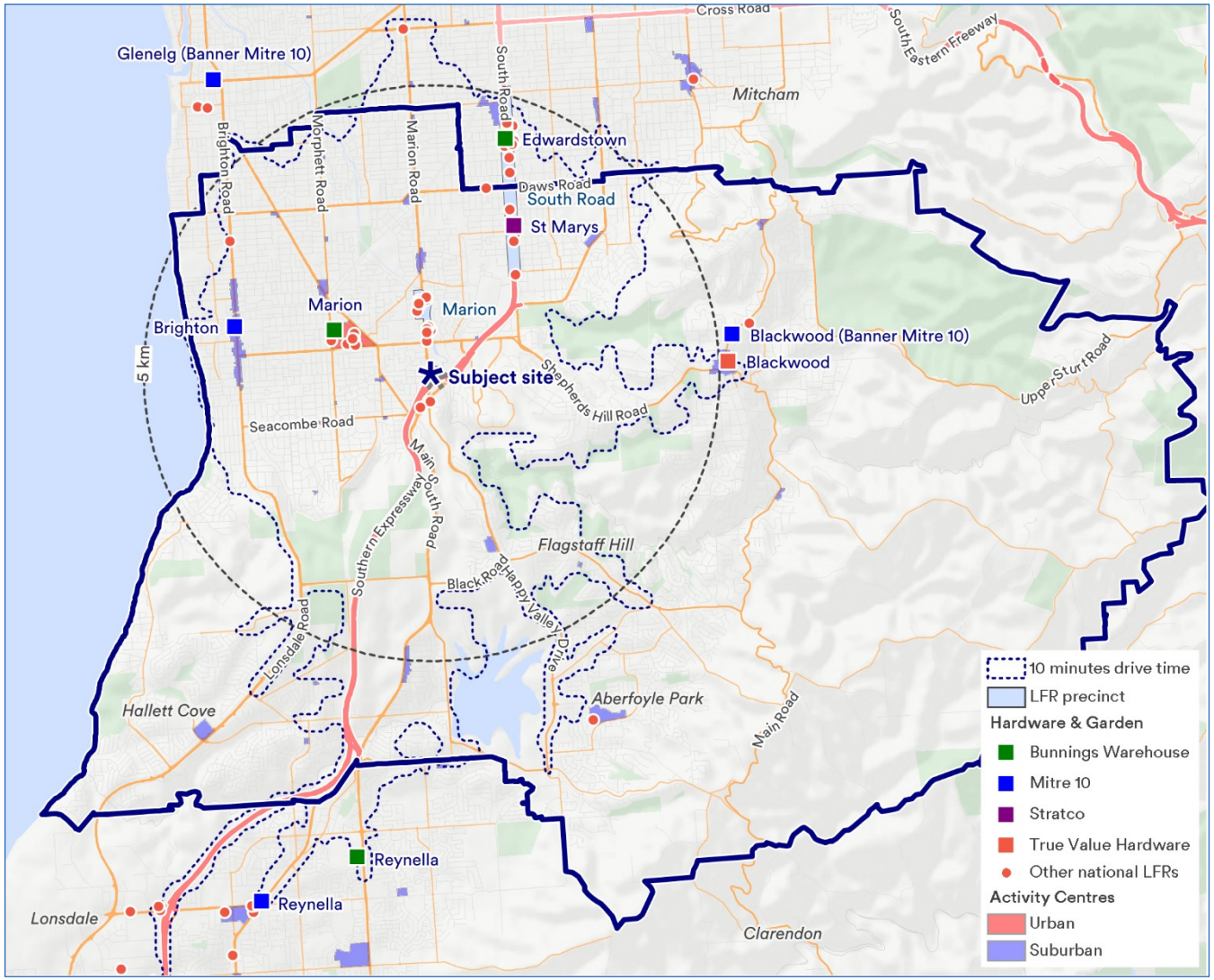
3.1 Catchment area definition

The catchment area for a potential Bunnings or other Large Format Retailers at Bedford Park reflects access to the site from the surrounding road network as well as the location of other Bunnings stores and LFR precincts.

A catchment has been defined which extends:

- 5 km north along Marion Road, Morphett Road and Brighton Road,
- up to 8 km south through to Hallett Cove along the coast and Aberfoyle Park inland,
- over 10 km east past Blackwood and into the hills, and
- around 4 km north-east along South Road to Daws Road.

The extent of the catchment is limited by the location of a large Bunnings of 17,000 sqm on South Road in Edwardstown and a 14,000 sqm Bunnings to the south in Reynella. Smaller hardware stores are within the catchment including Bunnings Marion (10,200 sqm) and Stratco St Marys (7,200 sqm). Other smaller stores at Brighton and Blackwood serve very localised markets.



Source: Deep End Services; PlanSA, Planning & Design Code (Phase 3); MapInfo

3.2 Demographic profile

The key demographic indicators for the catchment area, compared to Adelaide averages, are as follows:

- Similar average household size, with marginally higher proportion of couples with and without children
- A slightly older age profile, with average age of 41.1 years compared to 39.8 years for Adelaide
- Higher household and individual incomes
- Less ethnically diverse, with a higher proportion of Australian-born residents
- Strong home ownership across the catchment with a very low proportion of renters
- Higher proportion of detached dwellings
- Higher levels of car ownership

Demographic characteristic (2016 Census)	Bedford Park	Adelaide
Persons and dwellings		
Usual resident population	166,791	1,295,714
Total private dwellings	71,280	562,089
- % unoccupied	7%	8%
Average household size	2.45	2.46
Economic indicators		
Participation rate	61%	59%
Unemployment rate	6.3%	7.7%
White collar workers	52%	49%
Bachelor degree or higher	25%	21%
Age group		
0-9	11%	12%
10-19	12%	12%
20-34	19%	21%
35-49	20%	20%
50-64	20%	19%
65+	19%	17%
Average age	41.1	39.8
Annual individual income		
Average individual income	$45,936	$44,252
Variation from Adelaide average	3.8%	
Annual household income		
Average household income	$89,702	$83,748
Variation from Adelaide average	7.1%	
Motor vehicle ownership per dwelling		
None	6%	8%
One	35%	38%
Two or more	58%	54%

Source: Deep End Services; ABS

Demographic characteristic (2016 Census)	Bedford Park	Adelaide
Country of birth		
Australia	75%	72%
England	8%	7%
China	2%	2%
India	1%	2%
Other	14%	17%
Top 4 regions of ancestry		
North-West European	78%	68%
Oceanian	36%	34%
Southern and Eastern European	11%	16%
North-East Asian	4%	5%
Southern and Central Asian	3%	5%
Occupied private dwelling tenure		
Fully owned	35%	32%
Being purchased	41%	38%
Rented	23%	30%
Dwelling type		
Separate house	79%	75%
Townhouse/semi-detached	17%	17%
Apartment	4%	8%
Household composition		
Couples with children	32%	30%
Couples without children	29%	26%
One parent family	10%	12%
Lone person	26%	28%
Group	4%	4%

3.3 Population

The catchment is estimated to have a population of 176,677 people at June 2021. The catchment population has increased by an average of 1,226 people, or 0.7%, per annum since 2016. Population growth has been marginally lower than the average across Adelaide over the same period (i.e. 0.8% per annum).

Future growth is expected to continue in line with recent trends, with new housing provided within small subdivisions throughout the area.

Over the short term, growth will slow slightly, reflecting low overseas migration across Australia as a result of the COVID-19 pandemic. Over the next three years, the population is forecast to increase by 1,000 people per annum, reaching almost 180,000 people by 2024.

Post-2024, growth is expected to increase to over 1,200 people per annum. By 2030, the catchment area population is therefore forecast to reach 187,077.

Catchment area sector	2011	2016	2021	2024	2027	2030
Population	165,712	170,548	176,677	179,677	183,477	187,077
Population growth (no. per annum)	-	967	1,226	1,000	1,267	1,200
Population growth (% per annum)	-	0.6%	0.7%	0.6%	0.7%	0.6%

Source: Deep End Services; ABS; Government of SA, Population Projections for SA, 2019

3.4 Retail spending per capita

The current (2021) average per capita spending rate by catchment area residents is shown in the table at right.

Catchment area residents spent an average of $890 per capita on Hardware & Garden products (H&G), which was 13.9% above the Adelaide average. Average spending on Other LFR, at $3,205 per capita, was 6.7% above the Adelaide average.

Spending on all other retail, which includes food and groceries, takeaway and dine in, apparel, and other non-LFR goods was 3.9% above the Adelaide average.

Spending category	Primary	Adelaide	Comparison to Adelaide average
Hardware & Garden	$890	$781	+13.9%
Other Large Format Retail	$3,205	$3,003	+6.7%
Total LFR	$4,095	$3,784	+8.2%
Other retail	$11,528	$11,096	+3.9%
Total retail	**$15,623**	**$14,880**	+5.0%

Source: Deep End Services

3.5 Retail market size

The total LFR spending market is estimated at $723.5m in 2021, having grown from $527.0m over the last 5 years. The H&G spending market accounts for 22% of total LFR and is estimated at $157.2m in 2021. H&G grew from $106.7m since 2016, reflecting strong growth of 8.1% per annum.

The forecast change in the spending market is based on future consumption spending forecasts prepared by Deloitte Access Economics, combined with population growth.

The per annum decline in the H&G and Other LFR markets over the next three years reflects average per capita spending forecasts which take into account the effects of the COVID-19 pandemic on spending levels. Spending was artificially inflated in 2021, as people directed their spending to home improvements during the COVID-19 lockdowns and due to travel restrictions. This is expected to be offset by a slowdown in spending over the 2021-2023 period as travel is expected to resume and spending habits return to pre-COVID levels.

Overall, however, LFR market spending growth from 2016 to 2024 is forecast to average 2.7% per annum. Post 2024, growth in this spending market is then forecast to be 3.9% per annum.

	Spending market ($m)						Average change (%pa)			
Spending category	**2011**	**2016**	**2021**	**2024**	**2027**	**2030**	**2016-21**	**2021-24**	**2024-27**	**2027-30**
Hardware & Garden	113.4	106.7	157.2	143.1	161.0	181.3	8.1%	-3.1%	4.0%	4.0%
Other Large Format Retail	471.9	420.3	566.2	507.4	565.7	634.6	6.1%	-3.6%	3.7%	3.9%
Total LFR	**585.2**	**527.0**	**723.5**	**650.5**	**726.7**	**815.9**	**6.5%**	**-3.5%**	**3.8%**	**3.9%**
Other retail	1,621.3	1,831.7	2,036.8	2,205.3	2,469.3	2,777.9	2.1%	2.7%	3.8%	4.0%
Total	**2,206.5**	**2,358.7**	**2,760.2**	**2,855.8**	**3,196.1**	**3,593.7**	**3.2%**	**1.1%**	**3.8%**	**4.0%**

Source: Deep End Services; ABS; Market Data Systems; Deloitte Access Economics

4

Floorspace supply and demand

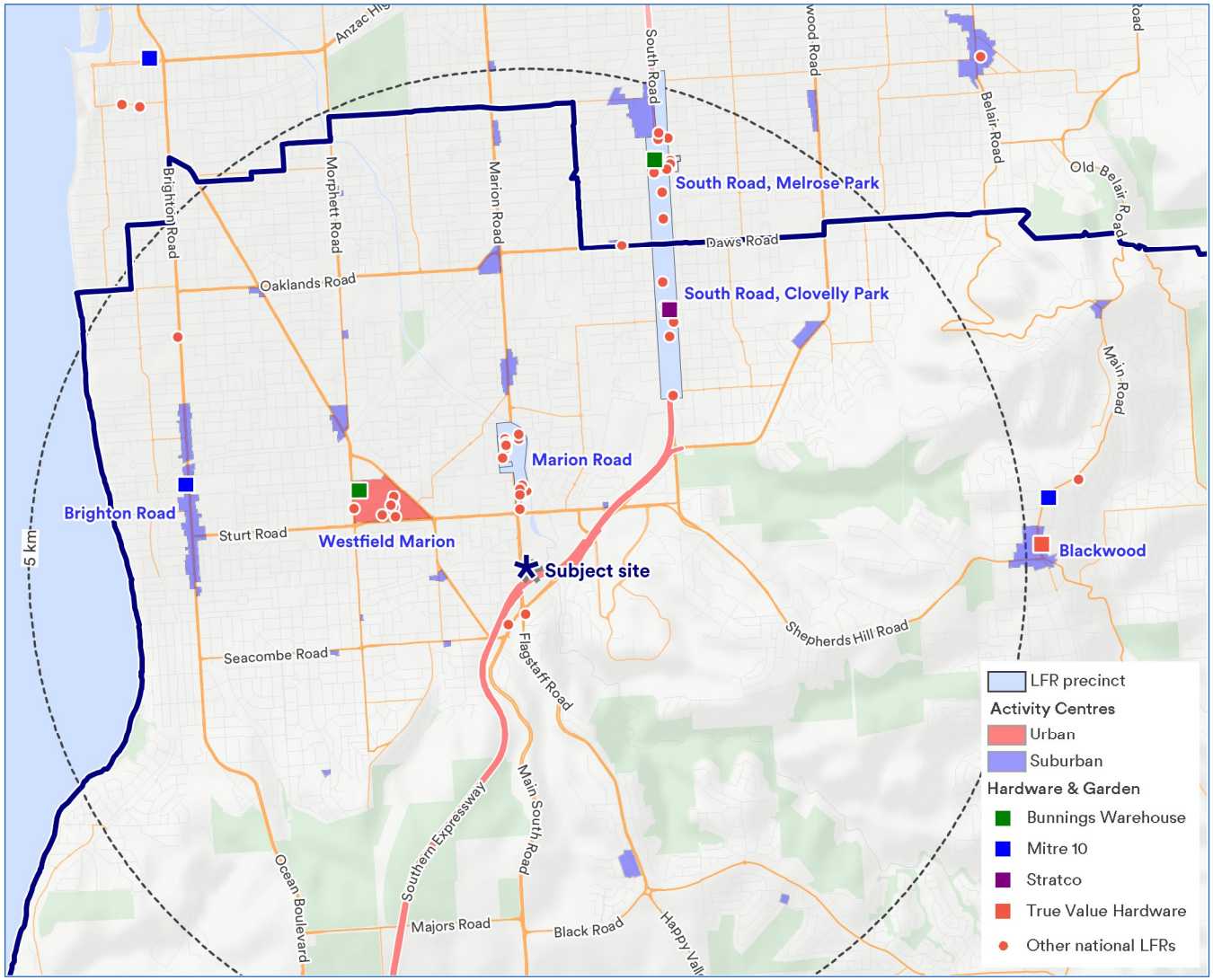
4.1 Overview of LFR precincts

The key precincts and centres within the area with Hardware stores and LFR uses are identified in the map at right with the table on the following page providing a summary of floorspace within each. A brief discussion of the main precincts is provided over the next few pages.

Westfield Marion

The Marion Urban Activity Centre includes Westfield Marion, the largest shopping centre in Adelaide, with retail floorspace of approximately 114,000 sqm (total floorspace of 137,000 sqm). The centre is anchored by Myer, David Jones, Target, Kmart, Big W, Coles, Woolworths, ALDI and includes over 250 specialty shops. The centre includes a number of LFRs such as JB Hi-Fi, Supercheap Auto, Godfreys and Rebel as well as smaller homewares, sporting, mobile phone and gaming retailers.

Bunnings (10,102 sqm) is an external tenancy at the centre and is the closest Bunnings to the subject site. Smaller than a typical modern Bunnings of at least 15,000 sqm, the store is on Morphett Road on the northern side of the centre. The store is surrounded by a large carpark.



Source: Deep End Services; PlanSA, Planning & Design Code (Phase 3); MapInfo

Marion Road

The closest LFR precinct is Marion Road, which has approximately 41,100 sqm of LFR floorspace. Marion Road is a compact precinct split into a number of different components as follows:

- 804-820 Marion Road, 1.2 km north of the subject site, is the largest homemaker centre in the precinct, with 10,649 sqm of LFR floorspace. The centre includes Snooze, The Good Guys, Freedom, Nick Scali, That's Furniture and Barbeques Galore. All tenants are oriented to the large carpark fronting Marion Road.
- 919 Marion Road is opposite 804-820 Marion Road and includes a large Harvey Norman Clearance Centre (6,311 sqm) and Plush furniture (911 sqm).
- Marion Homemaker Centre – situated approximately 700 metres north of the subject site, all tenancies in the U-shaped centre face the central carpark. The largest tenancies are BCF, Fantastic Furniture, Dreamland and Solomons Flooring. In addition to smaller LFRs, the centre also includes a gym, Subway and nutrition supplies tenancy.
- 838-842 Marion Road is a smaller U-shaped centre with leisure based LFRs – golf, scooters, bikes and sound. The upper level is occupied by a large office tenancy.
- Other national brands along the balance of Marion Road include Harvey Norman (9,350 sqm), Oz Design (2,300 sqm) and Officeworks (1,900 sqm).

Precinct	LFR floorspace (sqm)
Within catchment	
Marion Road	
804-820 Marion Road	10,649
919 Marion Road	7,221
Marion Homemaker Centre	5,606
838-842 Marion Road	3,020
Balance Marion Road	32,476
Total Marion Road	**41,102**
Westfield Marion	9,513
Bunnings Warehouse	10,102
Other LFR Marion	4,855
Total Westfield Marion	**14,367**
South Road, Clovelly Park	
Stratco	7,200
Other LFR	6,352
Total South Road, Clovelly Park	**13,552**
Brighton Road	
Mitre 10	1,060
Other LFR	2,280
Total Brighton Road	**3,340**
Blackwood	
Banner Mitre 10 & True Value Hardware	2,700
Other LFR	3,757
Total Blackwood	**6,457**
Beyond catchment	
South Road, Melrose Park	
Melrose Plaza	11,614
Bunnings Warehouse	17,008
Balance Melrose Park	11,107
Total South Road, Melrose Park	**39,729**

Source: Deep End Services

South Road

South Road is a significant large format precinct which extends over 3 km along South Road from Edward Street in the suburbs of Edwardstown and Melrose Park, south to Quinlan Avenue in St Marys and Clovelly Park. The precinct includes a mix of homemaker uses, trade supplies, auto repairs, retail uses and light industrial. Combined LFR floorspace in the precinct is 53,300 sqm.

For the purpose of this assessment, South Road has been split north and south of Daws Road, which is the trade area boundary – with South Road, Clovelly Park in the trade area and South Road, Melrose Park outside the trade area.

- The main retailer in **South Road, Clovelly Park** is a Stratco hardware store of 7,200 sqm. Other smaller tenancies along South Road in this precinct include Adelaide Tools, Repco, Godfreys, Clark Rubber.
- **South Road, Melrose Park** includes 39,700 sqm of LFR floorspace across a number of separate components:
  - Bunnings Warehouse of 17,000 sqm
  - Melrose Plaza (11,600 sqm) which includes Amart Furniture, Baby Bunting, JB Hi-Fi Home, Supercheap Auto, Beacon Lighting, Petbarn and Sportspower
  - Other freestanding LFRs along South Road including Spotlight, Mitchells Adventure, Autobarn, furniture, tiling and flooring.

Whilst significant in scale, LFRs are dispersed across a broad area along South Road.

Brighton Road

The Brighton Road Suburban Activity Centre extends up to 2 km along Brighton Road through the coastal suburbs of Hove and Brighton. There is only a small amount of LFR within the precinct with the main tenant being a Mitre 10 of 1,060 sqm. Other relevant tenants include sporting goods, flooring, mowers, garden and computing.

Blackwood

The outer suburb of Blackwood is 6 km east of the subject site. On the edge of the urban area, Blackwood is a discrete local area with a dedicated retail precinct.

The Blackwood Suburban Activity Centre includes two small hardware stores – Banner Mitre 10 (2,200 sqm) and True Value Hardware (500 sqm). Other LFR across the activity centre amounts to 3,757 sqm, including fabrics, lighting, pets, sporting goods and homewares. A large garden centre of 1,770 sqm is along Main Road. The only national LFR is a Choices Flooring store.

4.2 Floorspace demand

The demand for Hardware & Garden and Other LFR floorspace within the catchment area has been derived by applying the average Adelaide floorspace provision rate for each category to the population within the catchment.

The Adelaide average has been estimated using databases available to our office, combined with growth in LFR floorspace over time. This takes into account the continued expansion of Bunnings into both more and bigger stores and known floorspace of Other LFR operators within Adelaide as at June 2021. Post-2021, we have assumed lower growth rates in floorspace per capita for H&G (1.0% per annum) and Other LFR (0.5% per annum).

The current average provision rate for **H&G** across Adelaide is 196 sqm per 1,000 people. With a population of 176,680 people in the catchment, there is therefore underlying demand for 34,595 sqm of Hardware store floorspace for this population.

The average provision of **Other LFR** is higher, at 637 sqm per 1,000 people, which translates into demand for 112,558 sqm of Other LFR floorspace for this population.

Overall, there is therefore demand for 147,150 sqm of **total LFR** floorspace for the catchment area population.

Catchment area	Unit	2021	2024	2027	2030
Population	no.	176,680	179,680	183,480	187,080
Hardware & Garden floorspace demand					
Adelaide average provision rate	sqm/1000 person	196	202	208	214
Total H&G floorspace demand	**sqm**	**34,595**	**36,249**	**38,137**	**40,063**
Other LFR floorspace demand					
Adelaide average provision rate	sqm/1000 person	637	647	656	666
Total Other LFR floorspace demand	**sqm**	**112,558**	**116,195**	**120,441**	**124,655**
Total LFR floorspace demand					
Adelaide average provision rate	sqm/1000 person	833	848	864	880
Total LFR floorspace demand	**sqm**	**147,153**	**152,443**	**158,578**	**164,719**

Source: Deep End Services; Retail Census 2007

4.3 Hardware floorspace analysis

The floorspace demand in the previous table is compared to the supply in the catchment to determine the overall floorspace provision within the catchment as set out in the table at right.

There are currently 5 hardware stores in the catchment, amounting to total floorspace of 21,062 sqm. With a catchment population of 176,680, this equates to an existing provision rate of 119 sqm per 1,000 people, 39% below the Adelaide benchmark of 196 sqm per 1,000 people. This corresponds to an undersupply of 13,533 sqm of Hardware store floorspace in 2021.

This undersupply is forecast to increase gradually over time, in line with population growth and a minor increase (1.0% per annum) in the average provision rate across Adelaide. By 2024, the undersupply of floorspace will equate to 15,187 sqm and will increase further to 19,001 sqm by 2030.

The undersupply of floorspace is more than sufficient to justify an additional major Hardware store in the catchment area.

Catchment area	Unit	2021	2024	2027	2030
Population	no.	176,680	179,680	183,480	187,080
Hardware & Garden floorspace demand					
Adelaide average provision rate	sqm/1000 person	196	202	208	214
Total floorspace demand	sqm	34,595	36,249	38,137	40,063
Hardware & Garden supply					
Bunnings Warehouse Marion	sqm	10,102	10,102	10,102	10,102
Stratco St Marys	sqm	7,200	7,200	7,200	7,200
Banner Mitre 10 Blackwood	sqm	2,200	2,200	2,200	2,200
Brighton Mitre 10	sqm	1,060	1,060	1,060	1,060
True Value Hardware Blackwood	sqm	500	500	500	500
Total existing	sqm	21,062	21,062	21,062	21,062
Existing H&G provision rate	sqm/1000 person	119	117	115	113
Undersupply(-ve)/oversupply(+ve)		**-13,533**	**-15,187**	**-17,075**	**-19,001**

Source: Deep End Services

4.4 Other LFR floorspace analysis

The analysis of floorspace demand for Other LFR in the table on page 18 demonstrates 112,558 sqm of such floorspace should be provided for catchment area residents.

It is estimated that there is currently slightly more than 65,000 sqm of Other LFR floorspace in the catchment. This is approximately 60% of the current level of demand and means that the calculated undersupply of Other LFR floorspace is 47,500 sqm.

Even with approximately 22,700 sqm of Other LFR floorspace being located within the South Road precinct in Melrose Park, it is apparent that a significant amount of such floorspace could be supported on the subject site (i.e. a minimum of 25,000 sqm).

However, the site dimensions and parking requirements mean that the maximum amount of Other LFR floorspace that could be delivered on the subject site would be of the order of 13,000 sqm.

Catchment area	Unit	2021	2024	2027	2030
Population	no.	176,680	179,680	183,480	187,080
Other LFR floorspace demand					
Adelaide average provision rate	sqm/1000 person	637	647	656	666
Total floorspace demand	sqm	112,558	116,195	120,441	124,655
Other LFR floorspace supply					
Marion Road	sqm	41,102	41,102	41,102	41,102
South Road, Clovelly Park	sqm	6,352	6,352	6,352	6,352
Westfield Marion	sqm	4,855	4,855	4,855	4,855
Brighton Road, Brighton	sqm	1,046	1,046	1,046	1,046
Brighton Road, Hove	sqm	1,234	1,234	1,234	1,234
Blackwood	sqm	3,757	3,757	3,757	3,757
Balance	sqm	3,589	3,589	3,589	3,589
Allow Other (@5% total)	sqm	3,097	3,097	3,097	3,097
Total existing	sqm	65,031	65,031	65,031	65,031
Existing Other LFR provision rate	sqm/1000 person	368	362	354	348
Undersupply(-ve)/oversupply(+ve)		**-47,527**	**-51,164**	**-55,410**	**-59,624**

Source: Deep End Services

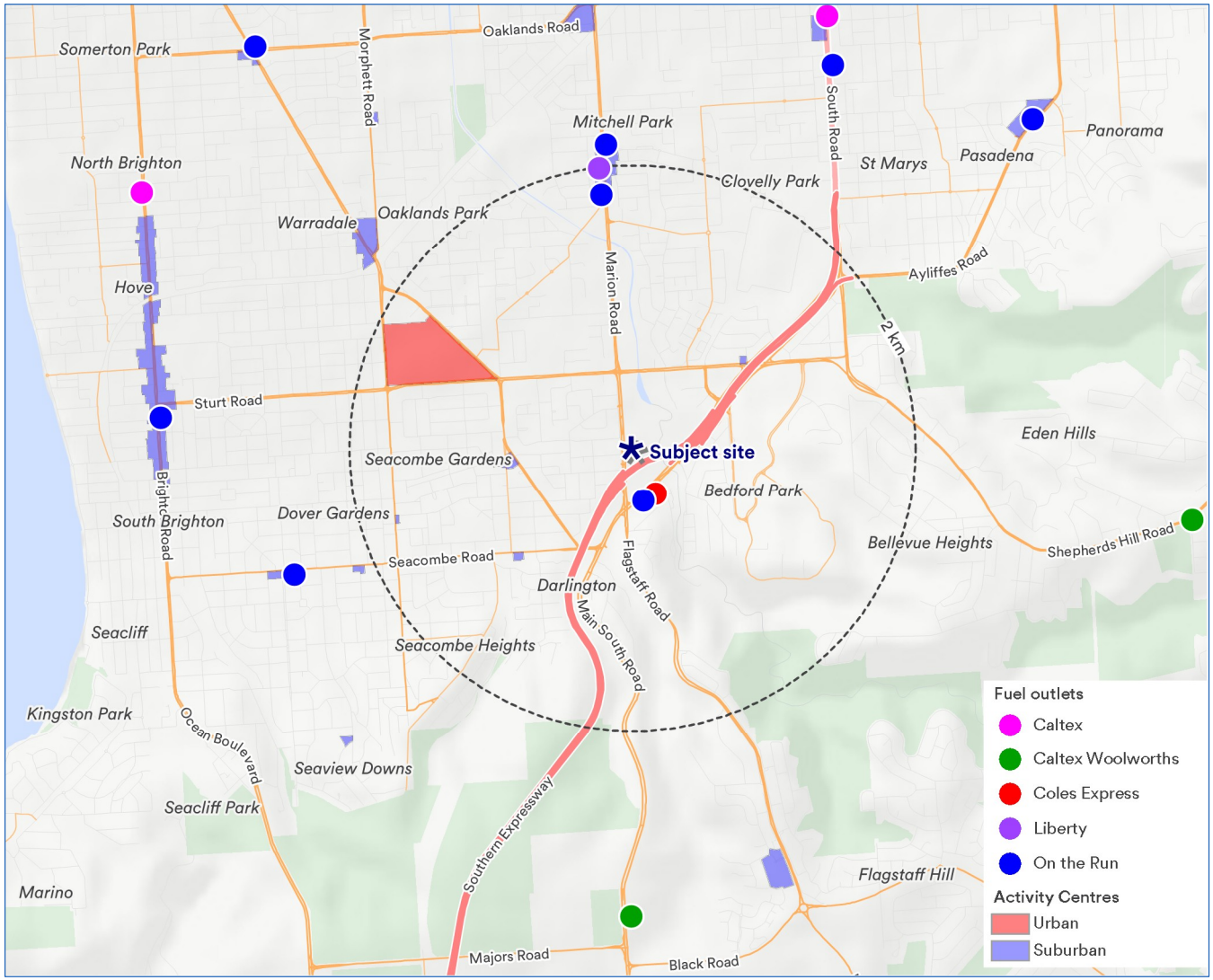
4.5 Other potential uses

Fuel

As shown on the map, fuel retailers are dispersed throughout the area, but are generally located on main roads with strong volumes of passing traffic.

The closest fuel sites are south of the Expressway along Main South Road – On the Run and Coles Express. There are also three fuel outlets approximately 2 km north along Marion Road.

However, with more than 40,000 vehicles passing the subject site daily, there is a clear need for an additional service station in this area. The 'going home' nature of the subject site makes it an ideal candidate.



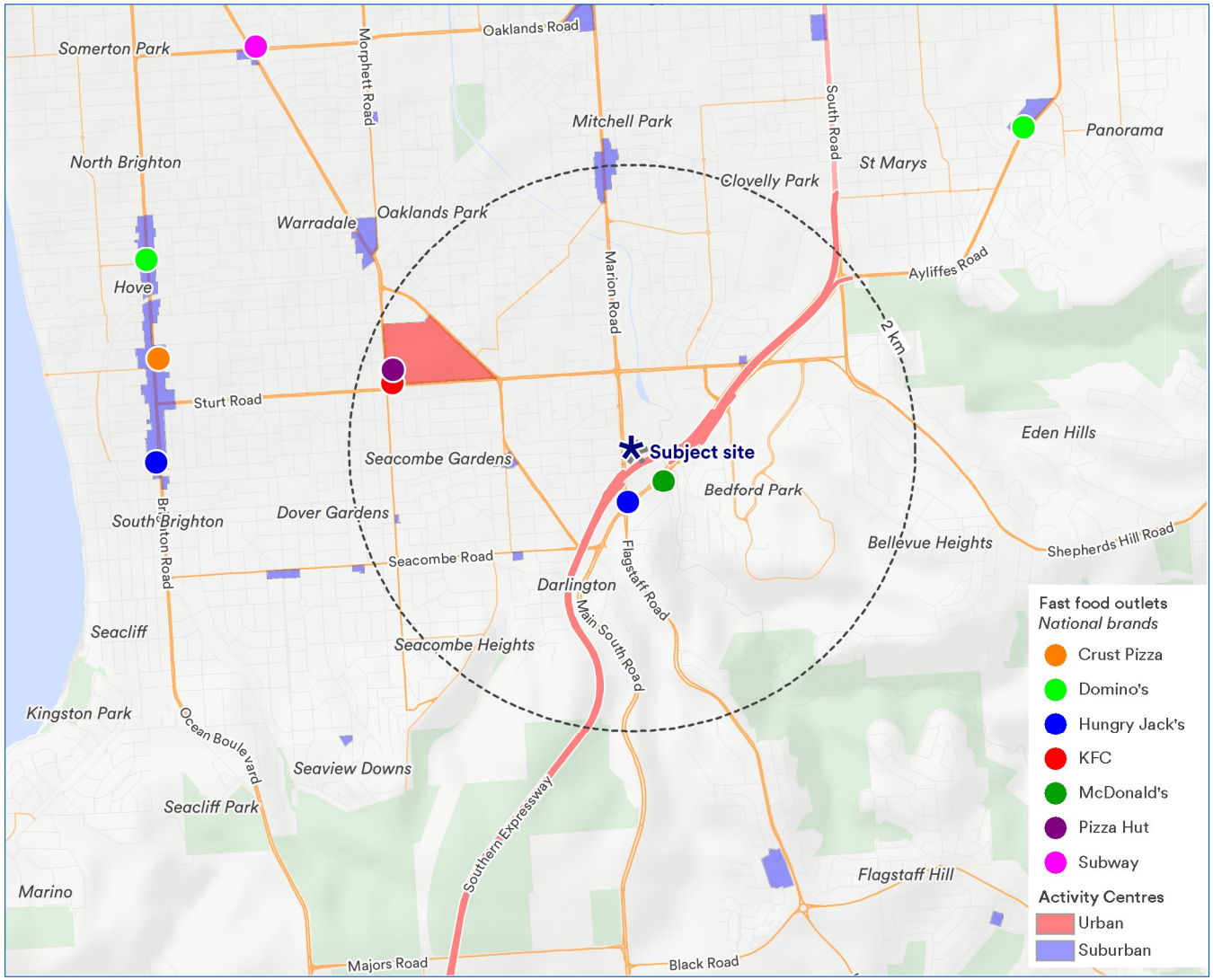
Source: Deep End Services; PlanSA, Planning & Design Code (Phase 3); MapInfo

Fast food

There are only a small number of major fast food brands within close proximity to the subject site. These comprise McDonald's and Hungry Jack's just south of the Expressway and freestanding KFC and Pizza Hut stores at Westfield Marion. A number of national brands are also situated within the foodcourt at Westfield Marion however only shop front and freestanding tenancies are shown in the map and are relevant for the analysis in this report.

There is a clear gap in fast food retailing in the area, with major brands not represented nearby including Red Rooster, Domino's, Carl's Jr., Taco Bell, Oporto, Nando's and Guzman y Gomez.

The subject site presents as an ideal opportunity to address the need for more fast food tenancies in the region, with the high volume of passing traffic and outbound site location again being favourable drivers.



Source: Deep End Services; PlanSA, Planning & Design Code (Phase 3); MapInfo

5

Impact assessment

5.1 Methodology

Development options

Given the size of the site and the identified undersupply of floorspace in the catchment area, we have assessed two scenarios:

1. Bunnings of 15,000 sqm
   a. With Bunnings Marion remaining open
   b. With Bunnings Marion closing
2. Showroom development of 13,000 sqm

Both options also assume a pad site with fuel and fast food, however the sales and impacts of these are not incorporated within this report as they will be small scale.

Impact methodology

This section presents an assessment of the potential competitive trading effects that may arise due to the establishment of either a Bunnings Warehouse or showroom development.

The analysis uses the following recognised approach to conducting retail impact assessments:

1. Sales performance at existing relevant LFR centres and precincts has been estimated based on a variety of sources including benchmarks regarding typical retail performance by store type (from industry averages and other sources), our own industry knowledge, and drawing on a desktop review of the precincts in June 2021.
2. Existing precinct turnover is then projected forward to 2024 assuming sales growth in line with trends in the underlying spending market and expected performance of retailers in the precincts.
3. There are no changes to the competitive environment in the area.
4. Sales for the two scenarios are forecast for 2024 as the first year of trading and adopt industry averages for Bunnings and LFRs.
5. The sales generated by the potential new development in both scenarios are assumed to be drawn from other LFR precincts and centres in the surrounding region, with these impacts based on their estimated share of the market but reflecting the likelihood that impacts will be focussed on existing centres with hardware stores and LFRs.
6. The sales redistributed from the surrounding precincts are then measured against 'base case' sales to identify the nominal ($m) and relative (%) impacts likely to be experienced by the competing precincts. Sales are also compared against current (2021) performance to show what growth will eventuate over the next 3 years for competing centres.

Sales are generally expressed at the centre level as it is acknowledged that business on business impacts are not a valid planning concern unless they lead to an overall reduction in service levels. The only impact expressed at the retailer level is on Bunnings Marion, to take into consideration the store's closure in Option 1B.

5.2 Sales forecasts

The sales forecasts for each option, presented in the table at right, are summarised as follows:

- With Marion Bunnings remaining open (Option 1A), the proposed Bedford Park Bunnings is estimated to achieve sales in the order of $41 million.
- Bunnings Bedford Park sales will be higher if Bunnings Marion closes (Option 1B), with a portion of the existing store sales likely to be diverted to the new store on the subject site. The projected sales for Bedford Park Bunnings is therefore higher in this scenario, at $50 million.
- If the site was to be developed with showroom uses, we assume that the development would achieve an average trading level of $3,250 per sqm, which is similar to the Australian average. This would equate to sales of $42.3 million for the 13,000 sqm development.

Sales growth post-2024 is expected to generally be in line with catchment area market growth rates.

Projected sales, subject site, 2024

Tenancy	Floorspace (sqm GLA)	Sales ($m)	Trading level ($/sqm)
Option 1: Bunnings			
1A Marion Bunnings remains open	15,000	41.0	$2,733
1B Marion Bunnings closes	15,000	50.0	$3,333
Option 2: Showrooms	13,000	42.3	$3,250

Source: Deep End Services

5.3 Option 1A: trading impacts

As shown in the table at right, if Bunnings Marion remains open, the store would absorb the highest impact in dollar terms, with a $10.0m reduction in turnover, or -26.7% impact when compared against the base case (i.e. 2024 with no development). It is expected that the impact of Bunnings will, otherwise, be experienced by other Hardware stores in the area and particularly those situated closer to the subject site.

The largest dollar impacts are expected at South Road, Melrose Park which also includes a large Bunnings Warehouse ($7.8m or -2.5%) and South Road, Clovelly Park which includes Stratco ($4.3m or -10.5%).

Other precincts with no hardware store (i.e. Westfield Marion) will also experience a small impact as other stores in these precincts sell items commonly stocked in Bunnings. Examples of other stores include discount variety stores such as Kmart, Target, Big W and smaller retailers including homewares, sporting goods, paint stores, etc.

In percentage terms, with the exception of Bunnings Marion, the impacts are within the bounds of normal competition, and would not have an unreasonable detrimental impact on the commercial viability of any of these centres or precincts.

Projected trading impacts, Scenario 1A, 2024

		Sales ($m)*			Impacts - change in sales			
Centre	Floorspace (sqm)	2021	2024 - no devt.	2024 - post devt.	cf. 2024 ($m)	cf. 2024 (%)	cf. 2021 ($m)	cf. 2021 (%)
Bedford Park Bunnings	15,000	-	-	41.0	41.0	-	-	-
Within catchment								
Marion Road	41,102	133.6	140.9	139.3	-1.6	-1.2%	5.7	4.3%
Westfield Marion	103,879	804.6	871.2	867.3	-3.9	-0.4%	62.7	7.8%
Bunnings Marion	10,102	35.4	37.6	27.6	-10.0	-26.7%	-7.8	-22.1%
South Road, Clovelly Park	13,552	38.6	40.8	36.5	-4.3	-10.5%	-2.1	-5.5%
Brighton Road	3,340	14.8	15.7	14.9	-0.8	-5.2%	0.0	0.1%
Blackwood	6,457	19.4	20.5	19.2	-1.2	-6.0%	-0.1	-0.7%
Total catchment	**178,432**	**1,046.4**	**1,126.7**	**1,104.8**	**-21.9**	**-1.9%**	**58.4**	**5.6%**
Beyond catchment								
South Road, Melrose Park	58,278	289.4	305.8	298.0	-7.8	-2.5%	8.6	3.0%
Mile End	59,476	229.0	242.0	241.1	-0.8	-0.3%	12.2	5.3%
Total beyond catchment	**117,754**	**518.3**	**547.8**	**539.2**	**-8.6**	**-1.6%**	**20.8**	**4.0%**
Total selected centres	**296,185**	**1,564.8**	**1,674.5**	**1,644.0**	**-30.5**	**-1.8%**	**79.2**	**5.1%**
Other centres					-10.5			

*Sales and floorspace are LFR only except the following centre for which retail sales and floorspace are provided:
- Westfield Marion
- Castle Plaza within South Road, Melrose Park

Source: Deep End Services

5.4 Option 1B: trading impacts

Under Option 1B, Bedford Park would open concurrent with the closure of Bunnings Marion. In this option, the sales for the Marion store would be redirected to other Hardware stores and retailers throughout the area whilst these centres would also be impacted by the larger store and higher sales forecast for the new Bunnings Bedford Park.

In this scenario, the impact from Bunnings Bedford Park is therefore largely offset by the redirected sales from the Marion store across most centres, with none of the impacts of a level to threaten the viability of a centre or precinct.

Projected trading impacts, Scenario 1B, 2024

		Sales ($m)*			Impacts - change in sales			
Centre	Floorspace (sqm)	2021	2024 - no devt.	2024 - post devt.	cf. 2024 ($m)	cf. 2024 (%)	cf. 2021 ($m)	cf. 2021 (%)
Bedford Park Bunnings	15,000	-	-	50.0	50.0	-	-	-
Within catchment								
Marion Road	41,102	133.6	140.9	140.5	-0.4	-0.3%	7.0	5.2%
Westfield Marion	103,879	804.6	871.2	871.1	-0.1	0.0%	66.5	8.3%
Bunnings Marion (closes)	-	35.4	37.6	-	-37.6	-	-	-
South Road, Clovelly Park	13,552	38.6	40.8	38.3	-2.5	-6.1%	-0.3	-0.8%
Brighton Road	3,340	14.8	15.7	16.6	0.9	5.6%	1.7	11.6%
Blackwood	6,457	19.4	20.5	19.2	-1.2	-6.0%	-0.1	-0.7%
Total catchment	**168,330**	**1,046.4**	**1,126.7**	**1,085.8**	**-40.9**	**-3.6%**	**74.7**	**3.8%**
Beyond catchment								
South Road, Melrose Park	58,278	289.4	305.8	300.7	-5.1	-1.7%	11.3	3.9%
Mile End	59,476	229.0	242.0	241.2	-0.8	-0.3%	12.3	5.4%
Total beyond catchment	**117,754**	**518.3**	**547.8**	**541.9**	**-5.9**	**-1.1%**	**23.6**	**4.5%**
Total selected centres	**286,083**	**1,564.8**	**1,674.5**	**1,627.7**	**-46.8**	**-2.8%**	**98.3**	**4.0%**
Other centres					-3.2			

*Sales and floorspace are LFR only except the following centre for which retail sales and floorspace are provided:
- Westfield Marion
- Castle Plaza within South Road, Melrose Park

Source: Deep End Services

5.5 Option 2: trading impacts

In this scenario, total sales recorder by Other LFR showrooms are forecast as $42.3 million.

Impacts would be highest on the nearby Marion Road and South Road precincts but all below -10% and not of a level that would threaten the viability of any of these precincts.

Other centres such as Westfield Marion would experience even smaller impacts in percentage terms as would be expected in an environment where these centres focus mainly on non LFR uses.

Projected trading impacts, Scenario 2, 2024

		Sales ($m)*			Impacts - change in sales			
Centre	Floorspace (sqm)	2021	2024 - no devt.	2024 - post devt.	cf. 2024 ($m)	cf. 2024 (%)	cf. 2021 ($m)	cf. 2021 (%)
Bedford Park Showrooms	13,000	-	-	42.3	42.3	-	-	-
Within catchment								
Marion Road	41,102	133.6	140.9	128.2	-12.7	-9.0%	-5.3	-4.0%
Westfield Marion	103,879	804.6	871.2	867.0	-4.2	-0.5%	62.4	7.7%
Bunnings Marion	10,102	35.4	37.6	37.2	-0.4	-1.1%	1.8	5.1%
South Road, Clovelly Park	13,552	38.6	40.8	38.7	-2.1	-5.2%	0.1	0.2%
Brighton Road	3,340	14.8	15.7	15.2	-0.4	-2.7%	0.4	2.8%
Blackwood	6,457	19.4	20.5	20.0	-0.4	-2.1%	0.7	3.5%
Total catchment	**178,432**	**1,046.4**	**1,126.7**	**1,106.4**	**-20.3**	**-1.8%**	**60.0**	**5.7%**
Beyond catchment								
South Road, Melrose Park	58,278	289.4	305.8	298.2	-7.6	-2.5%	8.8	3.1%
Mile End	59,476	229.0	242.0	239.9	-2.1	-0.9%	10.9	4.8%
Total beyond catchment	**117,754**	**518.3**	**547.8**	**538.1**	**-9.7**	**-1.8%**	**19.7**	**3.8%**
Total selected centres	**296,185**	**1,564.8**	**1,674.5**	**1,644.5**	**-30.0**	**-1.8%**	**79.7**	**5.1%**
Other centres					-12.3	-		

*Sales and floorspace are LFR only except the following centre for which retail sales and floorspace are provided:

- Westfield Marion
- Castle Plaza within South Road, Melrose Park

Source: Deep End Services

5.6 Other economic effects

The total cost of construction for the potential developments (Scenario 1 and Scenario 2) is approximately $15.7 million, with a construction timeframe of 12 months. Applying typical labour cost ratios, this would generate a total of 90 direct full-time equivalent (FTE) jobs during the construction phase as shown in the table at top right. Using standard ABS multipliers, an additional 90 FTE positions would be supported indirectly through inputs to construction and expenditure of wages.

Once complete, the development would generate ongoing jobs (refer table bottom right) as follows:

- Option 1A will generate an estimated 150 FTE jobs, and a further 186 FTE jobs would be generated through multiplier effects.
- If Bunnings Marion closed (Option 1B), there would be some transfer of employment to the new store. The net number of direct FTE jobs would equate to 49, with a further 61 ongoing FTE jobs generated through multiplier effects.
- The Showroom development (Option 2) would generate 130 FTE direct jobs and 161 ongoing jobs through the multiplier effect.

Estimated construction related employment

Item	Measure
Estimated construction cost	$15.7 million
Labour component	55%
Labour cost	$9.0 million
Average construction wage (FTE)	$95,000
Direct employment (FTE – total)	90
Indirect employment (FTE – total)	90

Net employment creation

Tenancy type	Floorspace (sqm)	Direct FTE jobs	Indirect FTE jobs
Option 1a: Bunnings Warehouse; Marion Bunnings remains open	15,000	150	186
Option 1b: Bunnings Warehouse; Marion Bunnings closes	15,000	49	61
Option 2: Showrooms	13,000	130	161

Source: Deep End Services; ABS

6

Conclusions

6.1 Summary of analysis

The subject site is well located on a busy north-south arterial road and carries a high volume of traffic.

Whilst additional Shop use on the subject site would be limited to 2,000 sqm, Hardware and Other LFR tenants would serve an extensive catchment with a population over 170,000.

Based on industry averages, the population of the catchment could support up to 34,595 sqm of Hardware store floorspace and 112,558 sqm of Other LFR floorspace. Total LFR demand therefore equates to 147,150 sqm.

There are currently 5 hardware stores in the catchment, amounting to total floorspace of 21,062 sqm. With demand for 34,595 sqm, there is an undersupply of Hardware floorspace of 13,533 sqm in 2021.

There is currently approximately 65,000 sqm of Other LFR in the catchment area. Based on demand for Other LFR of 112,558 sqm there is currently an undersupply of 47,500 sqm of Other LFR in the catchment area.

Based on these broad floorspace provision estimates, there is currently sufficient demand to support either a large hardware store (15,000 sqm) or a showroom development with 13,000 sqm of LFR.

Analysis of potential trading impacts shows that all assessed scenarios would not result in other centres or precincts experiencing unreasonable reductions in sales levels. The smallest impacts would occur if Bunnings was to relocate from its small Marion store (i.e. Scenario 1B).

The proposed development would generate positive economic benefits associated with employment generation during construction and operation. A new Bunnings or showroom development would also provide better access, wider choice and increased competition.

APPENDIX 8. PRELIMINARY TRAFFIC ADVICE

MLM/21-0127

2 September 2021

Traffic • Parking • Transport

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FULLARTON SA 5063

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MFY Pty Ltd
ABN 79 102 630 759

Mr Michael Osborn
Future Urban
Level 1, 74 Pirie Street
ADELAIDE SA 5000

Dear Michael,

PROPOSED CODE AMENDMENT – MARION ROAD BEDFORD PARK

I refer to your request for traffic engineering advice relating to the potential rezoning of land on the corner of Marion Road and the Southern Expressway in Bedford Park. The southern portion of the subject site, which was previously used as a construction site during the Southern Connector and Tonsley interchange projects, would be amended to be in an Employment Zone, with the balance retained in the Urban Neighbourhood Zone.

The subject land has frontage to Marion Road which is an arterial road within the care and control of the Commissioner of Highways. The road is a four lane divided road and has a daily traffic volume in the order of 47,000 vehicles. Marion Road intersects with the Southern Expressway (on and off) ramps to the south of the site and Sturt Road to the north of the site. These three intersections are all signalised.

The primary issue, as it relates to traffic engineering requirements, will be to provide safe and convenient access for the site which does not compromise the functionality of the adjacent road network.

Access to the site has been previously negotiated with the Department of Infrastructure and Transport (DIT) in relation to earlier development proposals for the site. Such access arrangements included a median opening to provide for a right turn into the site and a separate left-in/left-out access. However, these earlier proposals would not have resulted in such a high traffic generation.

Accordingly, we have reviewed potential access options for a potential Bulky Goods development on the southern portion of the site. There are two components that are critical to delivering safe and convenient access for such a development, namely:

- Capacity of the access to cater for the forecast volume; and

- Adequate merge length for drivers to safely merge to access existing turning facilities on the road.

The result of the access assessment for the bulky goods site identified the following*:*

- Drivers will not be able to turn right out of the site if the access is not signalised;
- While drivers could potentially turn right into the site, there will be inadequate capacity to cater for all right turn movements if the access is not signalised;
- Drivers could turn left out of the site to the kerbside lane and then weave across to execute a U-turn (in lieu of turning right out) but the distance required to weave across three lanes is longer than the frontage of the site;
- Drivers could potentially wait for a gap in two lanes and then weave across one lane to execute the U-turn. There would be enough frontage (just) to accommodate such a manoeuvre but the delay waiting for the gap needed would result in a queue on the site of approximately 60m; and
- There would not be capacity for drivers to wait for three lanes of traffic to be clear to turn left and access the U-turn facilities directly.

The above assessment identified that it is desirable to develop a signalised access solution for a bulky goods development on the subject site. Consideration was also given to the potential to divert drivers using alternative routes to a left-in/left-out access but the significant distance required for such a diversion is unlikely to be tolerated by customers and this would compromise the accessibility for the site (and likely result in less desirable traffic movements rather than drivers detouring along the alternative route).

Further to this assessment, we have liaised with DIT in relation to identifying a potential signalised access solution for the site which would need to be funded by the future developer of the land. In order to adequately assess the potential location for a signal (and indeed that such a device can be provided without significantly impacting the operation of the road network), DIT requested traffic modelling (SIDRA) at the following locations:

- Marion Road/Sturt Road;
- Marion Road/Southern Expressway on and off ramps; and
- Marion Road/Main South Road/Flagstaff Road.

The modelling for the base case has been completed and is currently being reviewed by DIT. Following endorsement of these models, supplementary models of forecast data associated with a development on the subject land will inform changes to the existing function at intersections, albeit given the relative low volumes and distribution this would not be expected to be significant.

The most significant issue to consider in respect to impact is the introduction of a signal. At this stage the output currently identifies that there would be an opportunity to provide a signalised intersection to service the subject site with minimal impact on the adjacent road network. This intersection would be located approximately 250m north of the Southern Expressway on-ramp

intersection, albeit the final location would also require resolution of the interface with access to the service road on the western side of Marion Road.

Other minor access to the bulky goods site, such as an entry only to provide for service vehicles, may also need to be considered but this could be readily accommodated with minimal impact given the considerable road frontage and the low frequency of such movements.

In regard to the balance land, access can be provided at the northern end of the site. This access would provide for left-in/left-out movements for the development within the Urban Neighbourhood Zone. While a previous design had identified a right turn in at this location, the provision of the signal would limit the ability for additional right turn movements to be provided.

The site is serviced by public transport, with stops in close proximity and bicycle lanes are provided on Marion Road. The signal will also facilitate safe crossing movements for pedestrians to and from the site. Accordingly, the site will appropriately cater for users of various modes of transport.

Accordingly, subject to resolution of the access with DIT, the site would be well suited to cater for traffic associated with a bulky goods facility. Importantly, the traffic will be well distributed to and from the site, thus minimising impact on the broader road network, and the site is well serviced by other transport modes. The current status of the assessment would indicate a signal will be able to be provided and this will be resolved through liaison with DIT throughout the Code Amendment process.

Yours sincerely,
MFY PTY LTD

MELISSA MELLEN
Director

APPENDIX 9. LIMITED SOIL ASSESSMENT

Level 2, 124 South Terrace
Adelaide SA 5000

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Adelaide SA 5001
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Fyfe Pty Ltd
ABN 57 008 116 130
fyfe.com.au

80975-1

25 March 2021

Tom McInerney
Managing Director
Toon Group
Suite 1.03, 163 Eastern Road,
South Melbourne, VIC 3205

Dear Tom,

BEDFORD PARK - LIMITED SOIL ASSESSMENT
LOT 707 MARION ROAD, BEDFORD PARK, SOUTH AUSTRALIA

INTRODUCTION

Fyfe in conjunction with CMW Geosciences (CMW) undertook a joint environmental and geotechnical site investigation at Lot 707 Marion Road, Bedford Park (the site), as shown in the Figure in Attachment 1 .

This letter outlines the project objective, scope and methodology utilised during the field investigations, provides discussion of the analytical results in comparison to the relevant classification criteria and provides conclusions regarding the chemical and physical suitability of the material to be disposed to landfill[1] or re-used at a third-party site[2].

Based upon the information provided to Fyfe we understand the following:

- The proposed redevelopment footprint is defined as the southern portion of CT Volume 5658 Title 449;
- This soil contamination assessment will inform the purchaser of the property by identifying any human health, environmental and/or project risks associated with the proposed development;
- The site is currently vacant and was previously used as a laydown area. Previous environmental works onsite conducted by Fyfe are summarised in the 2015 report *Allotment 707 Marion Road, Bedford Park Preliminary Site Investigation* (Fyfe, 2015). The report found no evidence of contamination in 12 soil bores up to 0.5 m depth. There was no unacceptable risk to human health and/or the environment in terms of the proposed development. The site comprises part of the nature

[1] In accordance with the criteria defined in the South Australian Environment Protection Authority (SA EPA) 'Waste Disposal Information Sheet, Current criteria for the classification of waste – including Industrial and Commercial Waste (Listed) and Waste Soil' (2010);
[2] In accordance with the requirements of the EPA (2013) Standard for the production and use of Waste Derived Fill.

reserve (Warriparinga) that has historical, cultural and environmental significance for the Kaurna people;

- The soils may require excavation as part of construction activities, with some of the generated spoil likely to be surplus to future needs and as such may require offsite disposal;
- The soil sampling and logging was undertaken by CMW; and
- The soils subject to the assessment reported remain in-situ.

1.1 Objectives

The objectives of this project were to:

- classify in-situ soils for re-use on-site and/or off-site disposal;
- identify any potential contamination matters that may affect the proposed development, particularly waste disposal/re-use considerations and potential human health risks; and
- provide recommendation for the appropriate management of soil at the site if warranted.

2. Scope of works

2.1 Field work guidance

The field works were based on our understanding of the project and the guidance provided in the following documents:

- *National Environment Protection (Assessment of Site Contamination) Measure 1999* (amended in 2013) (ASC NEPM);
- Australian Standard (1999), *Guide to the sampling and investigation of sites with potentially contaminated soil – part 2: Volatile substances*. AS4482.2-1999;
- Australian Standard (2005), *Guide to the investigation and sampling of sites with potentially contaminated soil – part 1: non-volatile and semi-volatile compounds*. AS4482.1-2005;
- Australian Standard (2017) *Geotechnical site investigations*. AS1726-2017;
- EPA Victoria (2009) *Industrial Waste Resource Guidelines*, Publication IWRG 702 - Soil Sampling.
- South Australia Environment Protection Authority (SA EPA) (2010), *Waste Disposal Information Sheet, Current criteria for the classification of waste – including Industrial and Commercial Waste (Listed) and Waste Soil*;
- SA EPA (2013) *Standard for the production and use of Waste Derived Fill* (the WDF Guideline); and
- SA EPA (2019) *Guidelines for the Assessment and Remediation of Site Contamination*.

2.2 Field work

Sampling was undertaken by appropriately trained CMW field engineers under direction from a Fyfe environmental scientist on 1 and 2 March 2021 and included the following:

- Progressing 16 soil bores across the site within the footprint of the proposed redevelopment works to various depths, up to a maximum of 6 metres below ground level (m BGL). Collection of 84 primary soil samples and 8 field duplicates for contaminant analysis to determine the material's waste classification and any potential human health risk. Borehole locations are presented in Attachment 1;
- Describing the soil in accordance with *Australian Standard 1726 – Geotechnical Site Investigations*, which included noting the physical characteristics, evidence of contamination (staining, odour) and the presence of waste (if any). Borehole logs are presented in Attachment 2;
- Collecting samples from clean core trays directly into laboratory-supplied jars, using a fresh nitrile glove for each sample; and
- Freighting the samples on ice in an insulated chilled chest to Australian Laboratory Services (ALS) under Fyfe standard Chain of Custody protocols.

2.3 Chemical analysis

The soil samples were analysed by ALS, who are NATA accredited for the analytical testing undertaken. The analytical results are summarised in Attachment 3, while the laboratory certificates of analysis, which include identification of the analytical methods used, laboratory reporting limits and chemical concentrations detected, are provided in Attachment 4.

2.3.1 Analysis

The analytical testing undertaken on the collected samples is outlined below:

- At least one sample from each borehole was submitted for analysis – typically the sample uppermost in the soil profile, plus one deeper sample, with 30 samples (including three duplicate samples) in total selected for laboratory analysis;
- Three samples were analysed for the SA Waste Screen suite, which includes a broad suite of analytes, including 13 metals, total recoverable hydrocarbons (TRH), benzene, toluene, ethylbenzene, xylenes, naphthalene (BTEXN), polycyclic aromatic hydrocarbons (PAHs), phenols, organochlorine pesticides (OCP), polychlorinated biphenyls (PCBs) and total cyanide;
- Ten samples (including two duplicates) were analysed for OCP and organophosphorous pesticides (OPP);
- Seven samples (including one duplicate) were analysed for a suite of potential contaminant of concern comprising TRH, BTEXN, PAHs, phenols and a suite of eight metals;
- Seven samples were analysed for a suite of eight metals; and
- One duplicate sample was analysed for TRH/BTEXN.
- Two rinsate samples and two trip blank samples were analysed for potential contaminants of concern comprising TRH, BTEXN, PAHs and a suite of eight metals.

2.4 Data management

The data was tabulated and compared against the assessment criteria presented in Section 3, below. The resulting analytical summary tables are provided in Attachment 3. To arrive at a final waste classification of the material, consideration was also given to the physical characteristics of the soil observed during the field work component of the project.

3. Soil disposal criteria

3.1 Chemical criteria

Soil analytical data were compared against the waste soil disposal guidelines published in the EPA SA Waste Disposal Information Sheet entitled *Current Criteria for the Classification of Waste – Including Industrial and Commercial Waste (Listed) and Waste Soil* (2010), which describes the physical and chemical requirements regarding the offsite disposal of surplus soils to landfill, and the EPA SA *Standard for the production and use of Waste Derived Fill* (2013) (the WDF Guideline), which outlines the requirements for re-use of waste soil at a third party site.

Chemical concentrations were compared against the following chemical criteria:

- Waste Fill (WF);
- Intermediate Waste (IW);
- Low-level Contaminated Waste (LLCW) – landfill disposal only.

3.2 Physical criteria

3.2.1 Disposal

In addition to the chemical criteria, waste soils are also required to meet the physical requirements for WF. The physical WF definition (as defined in Part 1 of the *Environment Protection Regulations 2009*) defines a suitable waste as consisting of clay, concrete, rock, sand, soil or other inert mineralogical matter in pieces not exceeding 100 millimetres in length, but does not include waste consisting of or containing asbestos or bitumen.

3.2.2 Re-use

The WDF Guideline outlines the requirements for assessing the suitability of waste soils to be used as waste derived fill (WDF). Key guidance associated with the physical requirements for use of waste soil as WDF is quoted below:

- Section 1.1 states: “the scope of waste materials potentially suitable for use as fill is intentionally narrow as the WDF must be similar to solid mineralogical materials naturally present in the soil profile (such as inert soil, rock, sand and silt). Deposition to land of mixed wastes or other wastes not demonstrated as suitable fill does not constitute a use of a WDF as intended by this standard, it is a deposition of waste.”

- Section 5.1 states: “Waste soil consists of soil, clay, rock, sand or other natural mineralogical matter and must not contain other wastes (minor amounts of naturally occurring inclusions such as wood or other vegetative matter are acceptable).”

3.3 Human health & risk screening criteria

The ASC NEPM sets out the basis for assessing the significance of soil contamination. Given that the proposed future use of the site is as a retail outlet (commercial/industrial), the following ASC NEPM soil criteria have been adopted to assess the suitability of the site for this particular land use:

- ASC NEPM Health Investigation Levels (Commercial/industrial - HIL D) – site workers;
- ASC NEPM Health Screening Levels (Commercial/industrial – HSL D) for vapour intrusion in sand at relevant depths (adopted as a conservative measure for risk assessment purposes); and
- ASC NEPM Ecological Screening Levels for (Commercial/Industrial – ESL D) for coarse soil (ASC NEPM Table 1B(6)).

4. Results

4.1 Field observations

Shallow fill material (0.3 m) was encountered across most of the site and consisted of sandy gravel, grey/white, fine to coarse grained, angular gravels, with trace brick fragments at BH02 and BH03. Natural soils consisted primarily of pale red/brown medium to high plasticity clays and calcareous clays. Deeper silty sand layers were encountered at sample locations in the east of the site.

No odours, staining, oversize or foreign inclusions were noted at any of the locations (with the exception of trace brick fragments in shallow fill at BH02 and BH03).

Sample locations and logs are presented in Attachment 1 and 2, respectively.

4.2 Analytical results

The laboratory certificates of analysis are presented in Attachment 4. The analytical results are summarised below and in Table 1 in Attachment 3.

4.2.1 Waste disposal criteria

With respect to the indicative dry weight disposal classification of soils, exceedances of ‘Waste Fill’ criteria were reported as indicated in the table below.

Table 1 Exceedances of ‘Waste Fill’ criteria

Sample ID	Analyte concentration exceeding criteria (mg/kg)	Waste classification
	Lead (300 mg/kg)	
BH02_0.0-0.1	580	Intermediate Waste*

* = pending leachate analysis confirmation

However, subsequent statistical assessment of the lead data set using the statistical software program ProUCL indicates that the 95% Upper Confidence Limit (UCL) lead concentration does not exceed the 'Waste Fill' criteria, as shown in the statistical assessment summary table below.

Statistical analysis results are presented in Attachment 3.

Table 2 Statistical assessment summary

Contaminant of potential concern (COPC)	Guidance requirement			Summary
	Standard deviation <50% of the criterion	**Maximum concentration <250% of the criterion**	**95% UCL mean concentration less than the criterion**	
Lead	The SD of the data set was 132 which was less than 50% of the relevant WF criterion (i.e. 300 mg/kg).	The maximum concentration was 580 mg/kg, which was less than 250% of the relevant WF criterion (i.e. 750 mg/kg).	The 95% UCL mean concentration of 186 mg/kg is less than the relevant WF criterion of 300 mg/kg.	**Lead concentrations are compliant with the waste fill criterion.***

* = pending leachate analysis confirmation

All other analytes were reported at levels below the relevant 'Waste Fill' and human health screening criteria in all samples.

4.2.2 Human health criteria

All samples analysed reported concentrations below the laboratory LOR and/or below the applicable human health investigation and screening criteria.

4.2.3 Ecological screening criteria

All samples analysed reported concentrations below the laboratory LOR and/or below the applicable ecological screening and investigation criteria (where established).

5. Quality assurance/Quality control

5.1 General

QA/QC procedures were used by CMW and Fyfe personnel as part of the investigation. These QA/QC procedures were based on the requirements of AS 4482.1:2005, the ASC NEPM (1999) and Fyfe's standard procedures. QA/QC procedures adopted included the following:

- Using a new pair of nitrile gloves and a new washed laboratory jar (with a Teflon® lined lid) to collect each sample;
- Preserving and storing samples upon collection and during transport to the laboratory;
- Analysing samples at the laboratory within appropriate sample holding times;

- Tracking sample movements using appropriate COC documentation;
- Using NATA accredited laboratories for analysis;
- Checking the results reported for the internal QA/QC tests conducted by the laboratory; and
- Collecting field equipment rinsate samples;
- Collecting and analysing field duplicate QA/QC samples; and
- Calculating the relative percent differences (RPDs) between the primary samples and the corresponding duplicate.

5.2 Fyfe QC results

Results for all duplicate sample pairs differed by less than 30% and as such were within the acceptable range defined in Schedule B3 of the ASC NEPM, or one or both concentrations were reported to be less than the laboratory LOR.

The equipment blank rinsate samples (QC05 and QC10) were collected from decontaminated equipment on each day of the drilling. Neither rinsate sample contained any of the target analytes at concentrations exceeding the laboratory LOR, hence the potential for samples to be adversely impacted by cross-contamination from the sampling method was deemed to be negligible.

The trip blank sample (TB01 and TB02) did not contain any of the target analytes at concentrations exceeding the laboratory LOR, hence the potential for samples to be adversely impacted by cross-contamination during transport was deemed to be negligible.

5.3 Laboratory QC results

No outliers were reported for any of the internal QC laboratory duplicate, laboratory control or blank samples, with the exception of a frequency of quality control samples for total cyanide. All matrix surrogate recoveries were reported within the acceptable ranges. No hold time exceedances were reported for any samples.

5.4 QC results summary

Based on the information above, the analytical data is considered to be acceptable for this report.

6. Summary and conclusions

The waste soil assessment reported here indicates:

- All target analytes were reported below the laboratory LOR or at concentrations below the adopted human health and ecological screening/investigation criterion in all samples analysed;
- All target analytes were reported below the laboratory LOR or at concentrations below the applicable ‘Waste Fill’ criteria (where established) and the, with the exception of:
  - Lead at BH02_0.0-0.1;

- A subsequent statistical assessment of the lead data set using the statistical software program ProUCL indicated that the 95% Upper Confidence Limit (UCL) lead concentration does not exceed the 'Waste Fill' criteria.
- Based upon the above Fyfe concludes that the soils from across the site may be disposed offsite to a suitably licensed landfill as 'Waste Fill'[1] and/or re-used on a third-party site as a WDF (waste fill)[2].
- Soils across the site do not represent a risk to human health when considering the propose future land use .

The conclusions in this letter are subject to the limitations outlined below.

7. Limitations

Fyfe has used the degree of skill and care ordinarily exercised by reputable members of our profession practising in the same or similar locality. This letter has been prepared for Toon Group, for the specific purpose identified in the letter. Fyfe accepts no liability or responsibility to any third party for the accuracy of any information contained in the letter or any opinion or conclusion expressed in the letter. Neither the whole of the letter nor any part or reference thereto may be in any way used, relied upon or reproduced by any third party without Fyfe's prior written approval. This letter must be read in its entirety, including all tables and attachments.

8. Closure

If you require any further clarifications or information regarding this letter, please do not hesitate to contact Stuart Twiss on 0438 851 644.

Kind regards

Stuart Twiss
Environmental Scientist

Reviewed: Dr Brent Davey
Principal Environmental Scientist

Attachments:

1 Figures

2 Soil bore logs

3 Soil Data Summary Tables and Statistical Analysis

4 Laboratory Certificates of Analysis

ATTACHMENT 1

FIGURE

LEGEND:

BH01 BOREHOLE (BH) LOCATION

NOTES:

1. IMAGERY SOURCED FROM NEARMAP.

1:1000 0 10 20 30 40 50 m

CMW Geosciences

CLIENT: FYFE		DRAWN: CZ	PROJECT: ADL2021-0039
PROJECT: MARION ROAD BEDFORD PARK GI MARION RD, BEDFORD PARK SA 5042		CHECKED: JC	FIGURE: 01
		REVISION: 0	SCALE: 1:1000
TITLE: SITE INVESTIGATION PLAN		DATE: 04/03/2021	SHEET: A3 L

ATTACHMENT 2

SOIL BOREHOLE LOGS

BOREHOLE LOG - BH01

Client: Fyfe
Project: Lot 707 Marion Road, Bedford Park
Location: Lot 707 Marion Road, Bedford Park, SA
Project ID: ADL2021-0039
Date: 02/03/2021

CMW Geosciences

1:30 Sheet 1 of 1

Logged by: ZY Position: E.277365m N.6121702m Plant used: Rockmaster
Checked by: JSC Elevation: Angle from horizontal: 90° Contractor: SMS Geotechnical

Well	Groundwater	Samples & Insitu Tests: Depth	Samples & Insitu Tests: Type & Results	RL (m)	Depth (m)	Graphic Log	Material Description: Soil Type, Plasticity or Particle Characteristics, Colour, Secondary and Minor Components	Moisture Condition	Consistency/ Relative Density	Dynamic Cone Penetrometer (Blows/100mm)	Structure & other observations
		0.0-0.1	ES				FILL: SANDY GRAVEL: fine to medium grained, angular to subangular, pale grey, fine to coarse grained sand.	D			
		0.20	PP=500.0kPa								
		0.4-0.7	BLK				CH: CLAY: medium plasticity, pale brown to red brown, fine to coarse grained sand.			10	
		0.4-0.5	ES							10	
		0.40	PP=500.0kPa						VSt	9	
		0.60	PP=500.0kPa							10	
		0.75	PP=500.0kPa							11	
		0.9-1.0	ES							10	
		1.00	PP=500.0kPa		1		CH: CALCAREOUS CLAY: high plasticity, pale brown with white, trace sand, fine to coarse grained, trace root fibres.			14	
		1.35	PP=500.0kPa							13	
		1.4-1.5	ES							15	
								<PL		16	
							CH: CLAY: high plasticity, brown, trace sand, fine to coarse grained.		H	15	
		1.9-2.0	ES		2					14	
							CI: CLAY: medium plasticity, brown, trace sand, fine to coarse grained.			15	
		2.65	PP=500.0kPa								
					3		Borehole terminated at 3.00 m				
					4						
					5						
					6						

DCP/PSP Equipment Ref.: In Situ Vane Ref.: Pocket Penetrometer Equipment Ref.:

Termination Reason: Target depth reached

Remarks:

This report must be read in conjunction with accompanying notes and abbreviations.

BOREHOLE CORE PHOTO: BH01: 0 – 3.0m

Client:	Fyfe
Project:	Lot 707 Marion Road, Bedford Park
Location:	Marion Road, Bedford Park
Project No:	ADL2021-0039
Date:	02/03/2021

Logged by: ZY		Plant: Rockmaster
Checked by: JSC	Angle from Horizontal: 90°	Contractor: SMS Geotechnical

BOREHOLE LOG - BH02

Client: Fyfe
Project: Lot 707 Marion Road, Bedford Park
Location: Lot 707 Marion Road, Bedford Park, SA
Project ID: ADL2021-0039
Date: 02/03/2021

CMW Geosciences

1:30 Sheet 1 of 1

Logged by: ZY Position: E.277357m N.6121784m Plant used: Rockmaster
Checked by: JSC Elevation: Angle from horizontal: 90° Contractor: SMS Geotechnical

Well	Groundwater	Samples & Insitu Tests: Depth	Samples & Insitu Tests: Type & Results	RL (m)	Depth (m)	Graphic Log	Material Description (Soil Type, Plasticity or Particle Characteristics, Colour, Secondary and Minor Components)	Moisture Condition	Consistency/ Relative Density	Dynamic Cone Penetrometer (Blows/100mm)	Structure & other observations
		0.0-0.1	ES				FILL: SANDY GRAVEL: fine to medium grained, angular to subangular, grey, fine to coarse grained sand, trace brick fragments.	D			
		0.1-0.2	ES				CI: SANDY CLAY: medium plasticity, pale brown, fine to coarse grained sand.			12	
		0.4-0.5	ES				CH: CLAY: high plasticity, brown, with sand, fine to coarse grained, trace fine to medium grained gravel, angular to subangular.			9	
		0.50	PP=400.0kPa							7	
		0.60	PP=350.0kPa						VSt	8	
		0.75	PP=500.0kPa							9	
		0.85	PP=500.0kPa				CH: CALCAREOUS CLAY: high plasticity, pale brown streaked white, with sand, fine to coarse grained, trace fine to medium grained gravel, angular to subangular.			11	
		0.9-1.0	ES							10	
		1.05	PP=500.0kPa		1					11	
		1.25	PP=500.0kPa							17	
		1.4-1.5	ES							16	
		1.40	PP=500.0kPa							16	
							... at 1.60m, Pushtube refusal, changed to solid auger	<PL		15	
							CH: CLAY: high plasticity, pale brown to yellow bring, with sand, fine to coarse grained, trace fine grained gravel.			13	
		1.9-2.0	ES		2				H		
							CH: SANDY CLAY: low plasticity, pale brown, fine to coarse grained sand.				
					3		Borehole terminated at 3.00 m				
					4						
					5						
					6						

DCP/PSP Equipment Ref.: | In Situ Vane Ref.: | Pocket Penetrometer Equipment Ref.:

Termination Reason: Target depth reached

Remarks:

This report must be read in conjunction with accompanying notes and abbreviations.

BOREHOLE CORE PHOTO: BH02: 0 – 3.0m

Client:	Fyfe
Project:	Lot 707 Marion Road, Bedford Park
Location:	Marion Road, Bedford Park
Project No:	ADL2021-0039
Date:	02/03/2021

Logged by: ZY		Plant: Rockmaster
Checked by: JSC	Angle from Horizontal: 90°	Contractor: SMS Geotechnical

BOREHOLE LOG - BH03

Client: Fyfe
Project: Lot 707 Marion Road, Bedford Park
Location: Lot 707 Marion Road, Bedford Park, SA
Project ID: ADL2021-0039
Date: 02/03/2021

CMW Geosciences

1:30 Sheet 1 of 1

Logged by: ZY Position: E.277364m N.6121840m Plant used: Rockmaster
Checked by: JSC Elevation: Angle from horizontal: 90° Contractor: SMS Geotechnical

Well	Groundwater	Samples & Insitu Tests: Depth	Samples & Insitu Tests: Type & Results	RL (m)	Depth (m)	Graphic Log	Material Description (Soil Type, Plasticity or Particle Characteristics, Colour, Secondary and Minor Components)	Moisture Condition	Consistency/ Relative Density	Dynamic Cone Penetrometer (Blows/100mm)	Structure & other observations
		0.0-0.1	ES				FILL: SANDY GRAVEL: fine to medium grained, angular to subangular, grey, fine to coarse grained sand, trace brick fragments.	D		9	
		0.0-0.1	QC							8	
		0.30	PP=500.0kPa				FILL: SANDY CLAY: medium plasticity, pale brown, fine to coarse grained sand.			6	
		0.4-0.6	BLK							7	
		0.4-0.5	ES				CI: CLAY: medium plasticity; trace sand, fine to coarse grained; pale yellow brown.			7	
		0.50	PP=500.0kPa							5	
		0.75	PP=500.0kPa				CH: CLAY: high plasticity, pale red brown, with sand, fine to coarse grained.			4	
		0.9-1.0	ES				CH: CLAY: high plasticity; trace sand, fine to coarse grained; pale red brown.	≈PL	VSt	5	
		0.90	PP=450.0kPa		1		CH: CALCAREOUS CLAY: high plasticity, pale brown mottled white, with sand, fine to coarse grained.			7	
		1.30	PP=500.0kPa							8	
		1.4-1.5	ES							8	
		1.50	PP=500.0kPa							8	
		1.60	PP=500.0kPa				CH: CALCAREOUS CLAY: high plasticity, pale brown, with sand, fine to coarse grained.			10	
		1.9-2.0	ES								
		2.00	PP=500.0kPa		2						
		2.35	PP=500.0kPa					<PL	Vst to H		
					3		Borehole terminated at 3.00 m				
					4						
					5						
					6						

DCP/PSP Equipment Ref.: | In Situ Vane Ref.: | Pocket Penetrometer Equipment Ref.:

Termination Reason: Target depth reached

Remarks:

This report must be read in conjunction with accompanying notes and abbreviations.

BOREHOLE CORE PHOTO: BH03: 0 – 3.0m

Client:	Fyfe
Project:	Lot 707 Marion Road, Bedford Park
Location:	Marion Road, Bedford Park
Project No:	ADL2021-0039
Date:	02/03/2021

Logged by: ZY		Plant: Rockmaster
Checked by: JSC	Angle from Horizontal: 90°	Contractor: SMS Geotechnical

BOREHOLE LOG - BH04

Client: Fyfe
Project: Lot 707 Marion Road, Bedford Park
Location: Lot 707 Marion Road, Bedford Park, SA
Project ID: ADL2021-0039
Date: 01/03/2021

CMW Geosciences

1:30 Sheet 1 of 1

Logged by: ZY Position: E.277344m N.6121876m Plant used: Rockmaster
Checked by: JSC Elevation: Angle from horizontal: 90° Contractor: SMS Geotechnical

Well	Groundwater	Samples & Insitu Tests: Depth	Samples & Insitu Tests: Type & Results	RL (m)	Depth (m)	Graphic Log	Material Description	Moisture Condition	Consistency/ Relative Density	Dynamic Cone Penetrometer (Blows/100mm)	Structure & other observations
		0.0-0.1	ES				FILL: SANDY GRAVEL: fine to medium grained, angular to subangular, white to pale yellow, fine to coarse grained sand.	D			
		0.1-0.2	ES								
							CI: CLAY: medium plasticity, pale brown, fine to coarse grained sand.				
		0.4-0.5	ES							10	
										9	
										11	
		0.6-1.0	BLK				CH: CLAY: high plasticity, brown, with sand, fine to coarse grained.		VSt	8	
										10	
										11	
										11	
		0.9-1.0	ES							12	
		0.95	PP=500.0kPa		1		CI: CALCAREOUS CLAY: medium plasticity, pale red brown, with sand, fine to coarse grained, trace fine to medium grained gravel, angular to subangular.			15	
										16	
										14	
		1.35	PP=550.0kPa							14	
		1.4-1.5	ES					<PL		13	
		1.9-2.0	ES		2				H		
							CH: CALCAREOUS CLAY: medium plasticity, pale brown with white, with sand, fine to coarse grained, trace fine to medium grained gravel, angular to subangular.				
					3		Borehole terminated at 3.00 m				
					4						
					5						
					6						

DCP/PSP Equipment Ref.: | In Situ Vane Ref.: | Pocket Penetrometer Equipment Ref.:

Termination Reason: Target depth reached

Remarks:

This report must be read in conjunction with accompanying notes and abbreviations.

BOREHOLE CORE PHOTO: BH04: 0 – 3.0m

Client:	Fyfe
Project:	Lot 707 Marion Road, Bedford Park
Location:	Marion Road, Bedford Park
Project No:	ADL2021-0039
Date:	01/03/2021

Logged by: ZY		Plant: Rockmaster
Checked by: JSC	Angle from Horizontal: 90°	Contractor: SMS Geotechnical

BOREHOLE LOG - BH05

Client: Fyfe
Project: Lot 707 Marion Road, Bedford Park
Location: Lot 707 Marion Road, Bedford Park, SA
Project ID: ADL2021-0039
Date: 01/03/2021

CMW Geosciences

1:30 Sheet 1 of 1

Logged by: ZY Position: E.277424m N.6121912m Plant used: Rockmaster
Checked by: JSC Elevation: Angle from horizontal: 90° Contractor: SMS Geotechnical

Well	Groundwater	Samples & Insitu Tests: Depth	Samples & Insitu Tests: Type & Results	RL (m)	Depth (m)	Graphic Log	Material Description	Moisture Condition	Consistency/ Relative Density	Dynamic Cone Penetrometer (Blows/100mm)	Structure & other observations
		0.0-0.1	ES				FILL: SANDY GRAVEL: fine to medium grained, angular to subangular, white to grey, fine to coarse grained sand.	D			
		0.3-0.6	BLK				CI: CLAY: medium plasticity, pale brown, with sand, fine to coarse grained.		VSt	12	
		0.30	PP=500.0kPa				CH: CLAY: high plasticity, dark brown, with sand, fine to coarse grained.			13	
		0.4-0.5	ES						VSt	10	
		0.50	PP=500.0kPa							8	
		0.60	PP=550.0kPa				CI: CALCAREOUS SANDY CLAY: medium plasticity, pale orange brown with white, fine to coarse grained sand, trace gravel, fine to medium grained, angular to subangular.			7	
										10	
		0.9-1.0	ES		1					10	
										11	
										12	
										18	
										17	
		1.4-1.5	ES							18	
		1.4-1.5	QC					<PL		15	
									H		
		1.9-2.0	ES		2						
		2.35	PP=300.0kPa								
		2.45	PP=500.0kPa								
		2.90	PP=450.0kPa		3		Borehole terminated at 3.00 m				
					4						
					5						
					6						

DCP/PSP Equipment Ref.: In Situ Vane Ref.: Pocket Penetrometer Equipment Ref.:

Termination Reason: Target depth reached

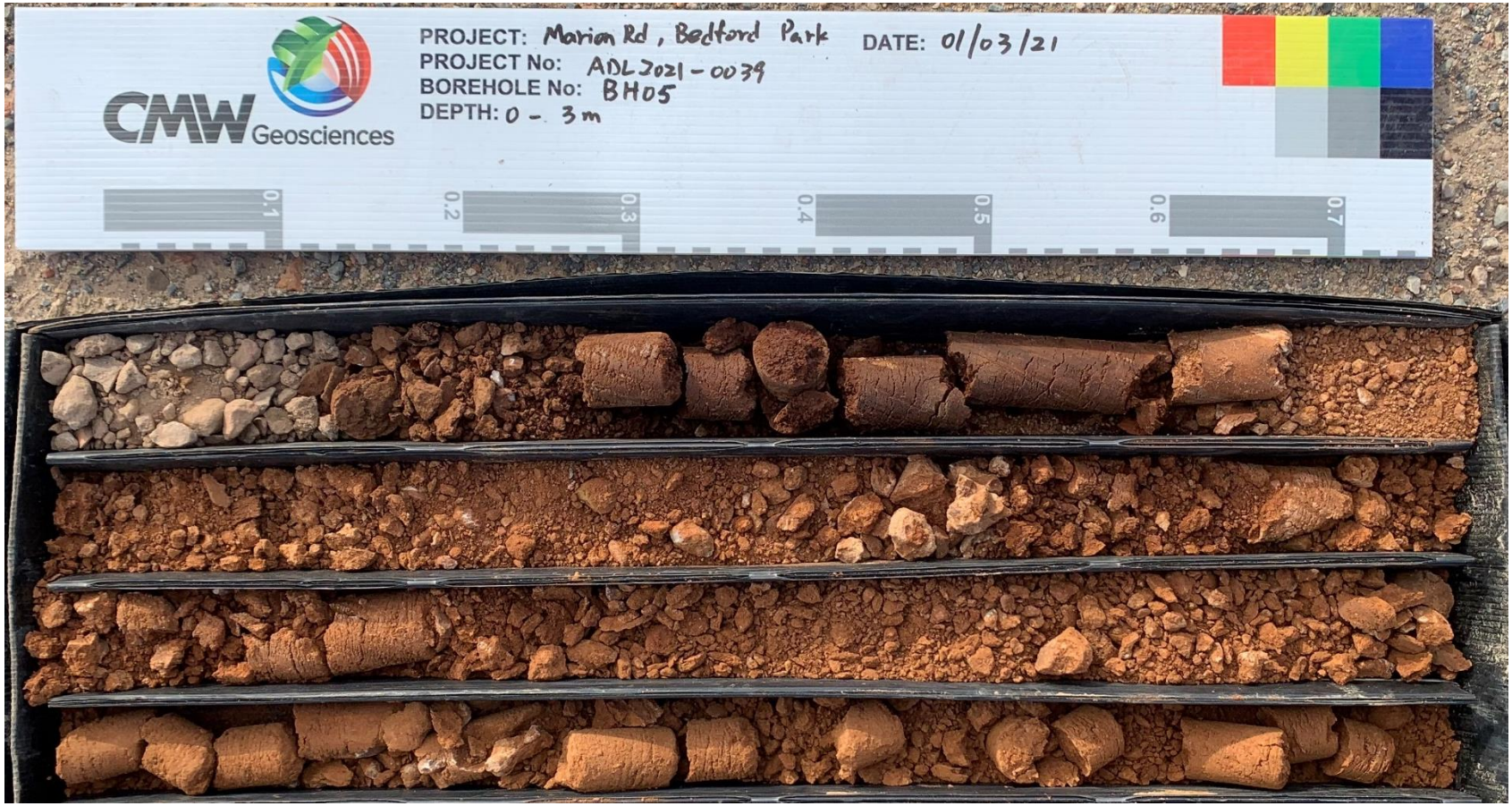
Remarks:

This report must be read in conjunction with accompanying notes and abbreviations.

BOREHOLE CORE PHOTO: BH05: 0 – 3.0m

Client:	Fyfe
Project:	Lot 707 Marion Road, Bedford Park
Location:	Marion Road, Bedford Park
Project No:	ADL2021-0039
Date:	01/03/2021

Logged by: ZY		Plant: Rockmaster
Checked by: JSC	Angle from Horizontal: 90°	Contractor: SMS Geotechnical



BOREHOLE LOG - BH06

Client: Fyfe
Project: Lot 707 Marion Road, Bedford Park
Location: Lot 707 Marion Road, Bedford Park, SA
Project ID: ADL2021-0039
Date: 01/03/2021

CMW Geosciences

1:30 Sheet 1 of 1

Logged by: ZY Position: E.277416m N.6121865m Plant used: Rockmaster
Checked by: JSC Elevation: Angle from horizontal: 90° Contractor: SMS Geotechnical

Well	Groundwater	Samples & Insitu Tests: Depth	Samples & Insitu Tests: Type & Results	RL (m)	Depth (m)	Graphic Log	Material Description (Soil Type, Plasticity or Particle Characteristics, Colour, Secondary and Minor Components)	Moisture Condition	Consistency/ Relative Density	Dynamic Cone Penetrometer (Blows/100mm)	Structure & other observations
		0.0-0.1	ES				FILL: SANDY GRAVEL: fine to medium grained, angular to subangular, white to grey, fine to coarse grained sand.	D			
		0.1-0.2	ES								
		0.30	PP=500.0kPa				CI: CALCAREOUS CLAY: high plasticity, pale brown, with sand, fine to coarse grained.			9	
		0.4-0.5	ES							9	
		0.50	PP=50.0kPa				CH: CALCAREOUS CLAY: high plasticity, pale brown with white, with sand, fine to coarse grained, trace fine to medium grained gravel, angular to subangular.			8	
		0.70	PP=500.0kPa							9	
		0.9-1.0	ES						VSt	10	
		0.90	PP=400.0kPa		1					7	
										7	
										6	
										8	
								<PL		10	
		1.4-1.5	ES				CI: CALCAREOUS CLAY: medium plasticity, pale brown with white, with sand, fine to coarse grained, trace fine to medium grained gravel, angular to subangular.			11	
		1.50	PP=500.0kPa							11	
										10	
		1.80	PP=500.0kPa								
		1.9-2.0	ES								
		1.90	PP=500.0kPa		2				Vst to H		
		2.50	PP=400.0kPa					≈PL			
					3		Borehole terminated at 3.00 m				
					4						
					5						
					6						

DCP/PSP Equipment Ref.: In Situ Vane Ref.: Pocket Penetrometer Equipment Ref.:

Termination Reason: Target depth reached

Remarks:

BOREHOLE CORE PHOTO: BH06: 0 – 3.0m

Client:	Fyfe
Project:	Lot 707 Marion Road, Bedford Park
Location:	Marion Road, Bedford Park
Project No:	ADL2021-0039
Date:	01/03/2021

Logged by: ZY		Plant: Rockmaster
Checked by: JSC	Angle from Horizontal: 90°	Contractor: SMS Geotechnical

BOREHOLE LOG - BH07

Client: Fyfe
Project: Lot 707 Marion Road, Bedford Park
Location: Lot 707 Marion Road, Bedford Park, SA
Project ID: ADL2021-0039
Date: 01/03/2021

CMW Geosciences

1:30 Sheet 1 of 1

Logged by: ZY Position: E.277505m N.6121904m Plant used: Rockmaster
Checked by: JSC Elevation: Angle from horizontal: 90° Contractor: SMS Geotechnical

Well	Groundwater	Samples & Insitu Tests: Depth	Samples & Insitu Tests: Type & Results	RL (m)	Depth (m)	Graphic Log	Material Description (Soil Type, Plasticity or Particle Characteristics, Colour, Secondary and Minor Components)	Moisture Condition	Consistency/ Relative Density	Dynamic Cone Penetrometer (Blows/100mm)	Structure & other observations
		0.0-0.1	ES		0		TOPSOIL: SILTY SAND: fine to coarse grained sand, pale brown, low plasticity fines, trace gravel, fine to medium grained, angular to subangular, trace root fibres.	D	MD	12 14 14	
		0.4-0.5	ES				SP: SILTY SAND: fine to coarse grained sand, pale brown, low plasticity fines, trace gravel, fine to medium grained, angular to subangular.			12	
		0.6-0.9	BLK				CH: CLAY: medium plasticity, pale brown to red brown, with sand, fine to coarse grained.	<PL	H	18 24 24 22	
		0.9-1.0	ES		1		SP: CALCAREOUS GRAVELLY SAND: fine to coarse grained, pale brown with white, fine to coarse grained gravel, angular to subangular, trace fines, low plasticity.			14 13	
		1.4-1.5	ES					D	MD	11 13 10 10 11	
		1.9-2.0	ES		2						
		2.40	PP=500.0kPa				CI: CALCAREOUS CLAY: medium plasticity, pale brown with white, with sand, fine to coarse grained.				
		2.60	PP=450.0kPa					<PL	Vst to H		
		2.80	PP=500.0kPa								
		3.00	PP=500.0kPa		3		Borehole terminated at 3.00 m				
					4						
					5						
					6						

DCP/PSP Equipment Ref.: In Situ Vane Ref.: Pocket Penetrometer Equipment Ref.:

Termination Reason: Target depth reached

Remarks:

This report must be read in conjunction with accompanying notes and abbreviations.

BOREHOLE CORE PHOTO: BH07: 0 – 3.0m

Client:	Fyfe
Project:	Lot 707 Marion Road, Bedford Park
Location:	Marion Road, Bedford Park
Project No:	ADL2021-0039
Date:	01/03/2021

Logged by: ZY		Plant: Rockmaster
Checked by: JSC	Angle from Horizontal: 90°	Contractor: SMS Geotechnical

BOREHOLE LOG - BH08

Client: Fyfe
Project: Lot 707 Marion Road, Bedford Park
Location: Lot 707 Marion Road, Bedford Park, SA
Project ID: ADL2021-0039
Date: 01/03/2021

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Logged by: ZY Position: E.277498m N.6121951m Plant used: Rockmaster
Checked by: JSC Elevation: Angle from horizontal: 90° Contractor: SMS Geotechnical

Well	Groundwater	Samples & Insitu Tests: Depth	Samples & Insitu Tests: Type & Results	RL (m)	Depth (m)	Graphic Log	Material Description (Soil Type, Plasticity or Particle Characteristics, Colour, Secondary and Minor Components)	Moisture Condition	Consistency/ Relative Density	Dynamic Cone Penetrometer (Blows/100mm)	Structure & other observations
		0.0-0.1	ES		0		FILL: SANDY GRAVEL: fine to medium grained, angular to subangular, brown to grey, fine to coarse grained sand.				
		0.4-0.5	ES				CI: CALCAREOUS CLAY: medium plasticity, pale brown with white, with sand, fine to coarse grained.		H	11, 13, 16, 17, 17	
		0.5-0.8	BLK								
		0.60	PP=400.0kPa								
		0.9-1.0	ES				CL: CALCAREOUS CLAY: low plasticity, pale brown to yellow broown, with sand, fine to coarse grained.			11, 15	
		0.9-1.0	QC		1					9, 7, 6, 6, 6	
		1.4-1.5	ES							12	
		1.50	PP=350.0kPa					<PL			
		1.9-2.0	ES		2				Vst to H		
					3		Borehole terminated at 3.00 m				
					4						
					5						
					6						

DCP/PSP Equipment Ref.: In Situ Vane Ref.: Pocket Penetrometer Equipment Ref.:

Termination Reason: Target depth reached

Remarks:

This report must be read in conjunction with accompanying notes and abbreviations.

BOREHOLE CORE PHOTO: BH08: 0 – 3.0m

Client:	Fyfe
Project:	Lot 707 Marion Road, Bedford Park
Location:	Marion Road, Bedford Park
Project No:	ADL2021-0039
Date:	01/03/2021

Logged by: ZY		Plant: Rockmaster
Checked by: JSC	Angle from Horizontal: 90°	Contractor: SMS Geotechnical

BOREHOLE LOG - BH09

Client: Fyfe
Project: Lot 707 Marion Road, Bedford Park
Location: Lot 707 Marion Road, Bedford Park, SA
Project ID: ADL2021-0039
Date: 01/03/2021

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Logged by: ZY Position: E.277484m N.6121831m Plant used: Rockmaster
Checked by: JSC Elevation: Angle from horizontal: 90° Contractor: SMS Geotechnical

Well	Groundwater	Samples & Insitu Tests: Depth	Samples & Insitu Tests: Type & Results	RL (m)	Depth (m)	Graphic Log	Material Description	Moisture Condition	Consistency/ Relative Density	Dynamic Cone Penetrometer (Blows/100mm)	Structure & other observations
		0.0-0.2	ES				TOPSOIL: SANDY CLAY: low plasticity, pale brown, fine to coarse grained sand, trace roots fibres.		F to St	3, 3	
		0.4-0.5	ES				CL: SANDY CLAY: low plasticity, pale brown, fine to coarse grained sand.			8, 15, 22, 20	
		0.9-1.0 0.9-1.0	ES QC		1		CL: CALCAREOUS SANDY CLAY: low plasticity, pale brown to white, fine to coarse grained sand, trace gravel, fine to medium grained, angular to subangular.	<PL	H	18, 24, 24, 24, 23, 21, 18, 15, 16	
		1.4-1.5	ES								
		1.9-2.0 2.00 2.10 2.25 2.30	ES PP=500.0kPa PP=400.0kPa PP=500.0kPa PP=500.0kPa		2		SP: CALCAREOUS SILTY SAND: fine to coarse grained, pale brown, low plasticity fines, trace gravel, fine to medium grained, angular to subangular.				
					3		SP: CALCAREOUS SILTY SAND: fine to coarse grained, orange brown, low plasticity fines, trace gravel, fine to medium grained, angular to subangular. *... at 2.75m, Pushtube refusal, changed to solid auger*				
					4			D	MD		
					5						
					6		Borehole terminated at 6.00 m				

DCP/PSP Equipment Ref.: In Situ Vane Ref.: Pocket Penetrometer Equipment Ref.:

Termination Reason: Target depth reached

Remarks:

This report must be read in conjunction with accompanying notes and abbreviations.

BOREHOLE CORE PHOTO: BH09: 0 – 6.0m

Client:	Fyfe
Project:	Lot 707 Marion Road, Bedford Park
Location:	Marion Road, Bedford Park
Project No:	ADL2021-0039
Date:	01/03/2021

Logged by: ZY
Checked by: JSC

Angle from Horizontal: 90°

Plant: Rockmaster
Contractor: SMS Geotechnical

BOREHOLE LOG - BH10

Client: Fyfe
Project: Lot 707 Marion Road, Bedford Park
Location: Lot 707 Marion Road, Bedford Park, SA
Project ID: ADL2021-0039
Date: 02/03/2021

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Logged by: ZY Position: E.277451m N.6121821m Plant used: Rockmaster
Checked by: JSC Elevation: Angle from horizontal: 90° Contractor: SMS Geotechnical

Well	Groundwater	Samples & Insitu Tests: Depth	Samples & Insitu Tests: Type & Results	RL (m)	Depth (m)	Graphic Log	Material Description	Moisture Condition	Consistency/ Relative Density	Dynamic Cone Penetrometer (Blows/100mm)	Structure & other observations
		0.0-0.1	ES				FILL: SANDY GRAVEL: fine to medium grained, angular to subangular, white to grey, fine to coarse grained sand.	D			
		0.0-0.1	QC								
		0.1-0.2	ES				CL: CALCAREOUS SANDY CLAY: low plasticity, pale brown, fine to coarse grained sand.			11	
		0.4-0.5	ES							14	
									H	10	
										11	
										12	
							CH: CLAY: high plasticity, pale brown with white, with sand, fine to coarse grained, trace fine to medium grained gravel, angular to subangular.			13	
		0.85	PP=500.0kPa					<PL		8	
		0.9-1.0	ES		1					9	
		1.10	PP=500.0kPa							10	
		1.30	PP=500.0kPa							11	
		1.4-1.5	ES							12	
		1.50	PP=500.0kPa							10	
		1.70	PP=500.0kPa							11	
		1.9-2.0	ES								
		1.90	PP=500.0kPa		2						
		2.25	PP=500.0kPa				CH: CLAY: medium plasticity, brown, with sand, fine to coarse grained.	≈PL			
		2.50	PP=500.0kPa				*... at 2.70m, Pushtube refusal, changed to solid auger*				
					3				Vst to H		
					4			>PL			
					5						
					6		Borehole terminated at 6.00 m				

DCP/PSP Equipment Ref.: | In Situ Vane Ref.: | Pocket Penetrometer Equipment Ref.:

Termination Reason: Target depth reached

Remarks:

This report must be read in conjunction with accompanying notes and abbreviations.

BOREHOLE CORE PHOTO: BH10: 0 – 6.0m

Client:	Fyfe
Project:	Lot 707 Marion Road, Bedford Park
Location:	Marion Road, Bedford Park
Project No:	ADL2021-0039
Date:	02/03/2021

Logged by: ZY
Checked by: JSC

Angle from Horizontal: 90°

Plant: Rockmaster
Contractor: SMS Geotechnical

BOREHOLE LOG - BH11

Client: Fyfe
Project: Lot 707 Marion Road, Bedford Park
Location: Lot 707 Marion Road, Bedford Park, SA
Project ID: ADL2021-0039
Date: 02/03/2021

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Logged by: ZY Position: E.277426m N.6121812m Plant used: Rockmaster
Checked by: JSC Elevation: Angle from horizontal: 90° Contractor: SMS Geotechnical

Well	Groundwater	Samples & Insitu Tests: Depth	Samples & Insitu Tests: Type & Results	RL (m)	Depth (m)	Graphic Log	Material Description	Moisture Condition	Consistency/ Relative Density	Dynamic Cone Penetrometer (Blows/100mm)	Structure & other observations
		0.0-0.1	ES				FILL: SANDY GRAVEL: fine to medium grained, angular to subangular, white to grey, fine to coarse grained sand.	D		9	
		0.4-0.5	ES				CL: CALCAREOUS SANDY CLAY: low plasticity, pale brown, fine to coarse grained sand, with gravel, fine to medium grained, angular to subangular.		VSt	10	
		0.40	PP=500.0kPa				CI: CLAY: medium plasticity, brown, with sand, fine to coarse grained, trace root fibres.			10	
		0.55	PP=500.0kPa							11	
		0.75	PP=500.0kPa							12	
		0.80	PP=500.0kPa							10	
		0.9-1.0	ES							13	
					1		CL: CALCAREOUS CLAY: low plasticity, pale red brown with white, fine to coarse grained sand, with gravel, fine to medium grained, angular to subangular.			18	
		1.4-1.5	ES							18	
										21	
										18	
										18	
							CI: CALCAREOUS CLAY: medium plasticity, pale brown with white, with sand, fine to coarse grained, trace fine to medium grained gravel, angular to subangular.			20	
		1.80	PP=500.0kPa								
		1.9-2.0	ES		2						
		2.25	PP=500.0kPa								
		2.50	PP=500.0kPa								
		2.70	PP=500.0kPa								
		2.80	PP=500.0kPa								
					3		CH: CLAY: high plasticity, pale brown with white, with sand, fine to coarse grained, trace fine to medium grained gravel, angular to subangular.	<PL			
							... at 3.00m, Limit of pushtube, changed to solid auger		Vst to H		
					4						
					5						
					6		Borehole terminated at 6.00 m				

DCP/PSP Equipment Ref.: | In Situ Vane Ref.: | Pocket Penetrometer Equipment Ref.:

Termination Reason: Target depth reached

Remarks:

This report must be read in conjunction with accompanying notes and abbreviations.

BOREHOLE CORE PHOTO: BH11: 0 – 4.5m

Client:	Fyfe
Project:	Lot 707 Marion Road, Bedford Park
Location:	Marion Road, Bedford Park
Project No:	ADL2021-0039
Date:	02/03/2021

Logged by: ZY		Plant: Rockmaster
Checked by: JSC	Angle from Horizontal: 90°	Contractor: SMS Geotechnical

BOREHOLE CORE PHOTO: BH11: 4.5 – 6.0m

Client:	Fyfe
Project:	Lot 707 Marion Road, Bedford Park
Location:	Marion Road, Bedford Park
Project No:	ADL2021-0039
Date:	02/03/2021

Logged by: ZY		Plant: Rockmaster
Checked by: JSC	Angle from Horizontal: 90°	Contractor: SMS Geotechnical

BOREHOLE LOG - BH12

Client: Fyfe
Project: Lot 707 Marion Road, Bedford Park
Location: Lot 707 Marion Road, Bedford Park, SA
Project ID: ADL2021-0039
Date: 02/03/2021

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Logged by: ZY Position: E.277471m N.6121781m Plant used: Rockmaster
Checked by: JSC Elevation: Angle from horizontal: 90° Contractor: SMS Geotechnical

Well	Groundwater	Samples & Insitu Tests: Depth	Samples & Insitu Tests: Type & Results	RL (m)	Depth (m)	Graphic Log	Material Description (Soil Type, Plasticity or Particle Characteristics, Colour, Secondary and Minor Components)	Moisture Condition	Consistency/ Relative Density	Dynamic Cone Penetrometer (Blows/100mm)	Structure & other observations
		0.0-0.1	ES				TOPSOIL: CALCAREOUS SANDY CLAY: low plasticity, pale brown, fine to coarse grained sand, with gravel, fine to medium grained, angular to subangular, trace root fibres.			17	
		0.4-0.5	ES				CL: CALCAREOUS CLAY: low plasticity, brown, with sand, fine to coarse grained, trace root fibres.		VSt	7, 6, 7, 8	
		0.9-1.0	ES		1		CL: CALCAREOUS CLAY: low plasticity, brown with white, with sand, fine to coarse grained.			10, 17, 18, 20, 25	
		1.4-1.5	ES				CH: CALCAREOUS CLAY: high plasticity; trace sand, fine to coarse grained; pale yellow brown, trace gravel. *... at 1.20m, Pushtube refusal, changed to solid auger*			25, 22, 20	
		1.9-2.0 1.9-2.0	ES QC		2		CI: CALCAREOUS SANDY CLAY: medium plasticity, pale brown, fine to coarse grained sand, with gravel, fine to medium grained, angular to subangular.				
					3			<PL	Vst to H		
					4						
					5						
					6		Borehole terminated at 6.00 m				

DCP/PSP Equipment Ref.: | In Situ Vane Ref.: | Pocket Penetrometer Equipment Ref.:

Termination Reason: Target depth reached

Remarks:

This report must be read in conjunction with accompanying notes and abbreviations.

BOREHOLE CORE PHOTO: BH12: 0 – 4.5m

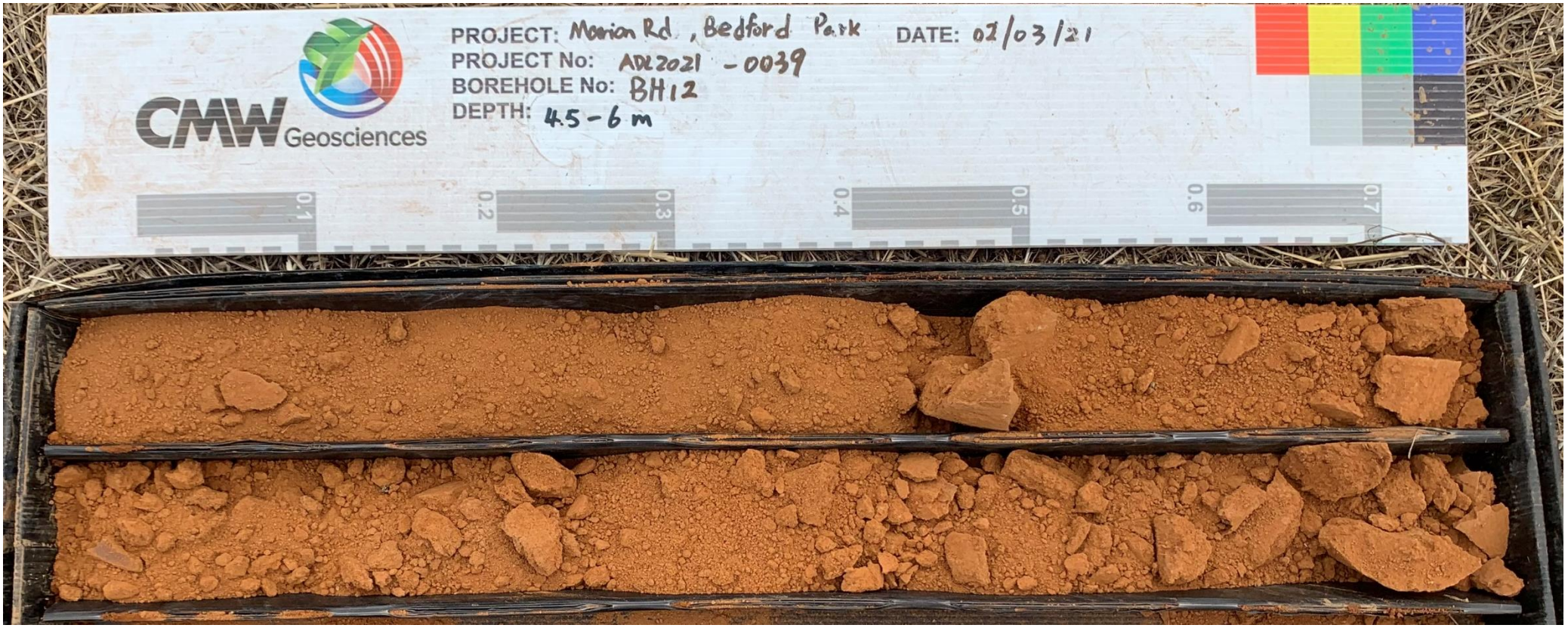
Client:	Fyfe
Project:	Lot 707 Marion Road, Bedford Park
Location:	Marion Road, Bedford Park
Project No:	ADL2021-0039
Date:	02/03/2021

Logged by: ZY		Plant: Rockmaster
Checked by: JSC	Angle from Horizontal: 90°	Contractor: SMS Geotechnical

BOREHOLE CORE PHOTO: BH12: 4.5 – 6.0m

Client:	Fyfe
Project:	Lot 707 Marion Road, Bedford Park
Location:	Marion Road, Bedford Park
Project No:	ADL2021-0039
Date:	02/03/2021

Logged by: ZY		Plant: Rockmaster
Checked by: JSC	Angle from Horizontal: 90°	Contractor: SMS Geotechnical



BOREHOLE LOG - BH13

Client: Fyfe
Project: Lot 707 Marion Road, Bedford Park
Location: Lot 707 Marion Road, Bedford Park, SA
Project ID: ADL2021-0039
Date: 01/03/2021

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Logged by: ZY Position: E.277498m N.6121957m Plant used: Rockmaster
Checked by: JSC Elevation: Angle from horizontal: 90° Contractor: SMS Geotechnical

Well	Groundwater	Samples & Insitu Tests: Depth	Samples & Insitu Tests: Type & Results	RL (m)	Depth (m)	Graphic Log	Material Description (Soil Type, Plasticity or Particle Characteristics, Colour, Secondary and Minor Components)	Moisture Condition	Consistency/ Relative Density	Dynamic Cone Penetrometer (Blows/100mm)	Structure & other observations
		0.0-0.1	ES				TOPSOIL: CALCAREOUS SANDY CLAY: low plasticity, pale brown, fine to coarse grained sand, with gravel, fine to medium grained, angular to subangular, trace root fibres.			10	
		0.4-0.5	ES				CI: CALCAREOUS CLAY: medium plasticity, brown, with sand, fine to coarse grained, trace root fibres.			6, 10, 11, 11, 12, 11, 11, 11, 13	
		0.9-1.0	ES		1					16, 14, 17, 13, 15	
		1.4-1.5	ES				CH: CLAY: high plasticity, pale brown with white, with sand, fine to coarse grained, trace fine to medium grained gravel, angular to subangular.	<PL			
		1.9-2.0	ES		2						
		2.25	PP=500.0kPa								
		2.45	PP=250.0kPa								
		2.65	PP=350.0kPa								
		3.00	PP=500.0kPa		3		CI: CLAY: medium plasticity, pale brown, with sand, fine to coarse grained, trace fine to medium grained gravel, angular to subangular. *... at 3.00m, Pushtube refusal, changed to solid anger*		Vst to H		
					4			≈PL			
					5			>PL			
					6		Borehole terminated at 6.00 m				

DCP/PSP Equipment Ref.: In Situ Vane Ref.: Pocket Penetrometer Equipment Ref.:

Termination Reason: Target depth reached

Remarks:

BOREHOLE CORE PHOTO: BH13: 0 – 6.0m

Client:	Fyfe
Project:	Lot 707 Marion Road, Bedford Park
Location:	Marion Road, Bedford Park
Project No:	ADL2021-0039
Date:	01/03/2021

Logged by: ZY		Plant: Rockmaster
Checked by: JSC	Angle from Horizontal: 90°	Contractor: SMS Geotechnical

BOREHOLE LOG - BH14

Client: Fyfe
Project: Lot 707 Marion Road, Bedford Park
Location: Lot 707 Marion Road, Bedford Park, SA
Project ID: ADL2021-0039
Date: 01/03/2021

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Logged by: ZY Position: E.277514m N.6121779m Plant used: Rockmaster
Checked by: JSC Elevation: Angle from horizontal: 90° Contractor: SMS Geotechnical

Well	Groundwater	Samples & Insitu Tests: Depth	Samples & Insitu Tests: Type & Results	RL (m)	Depth (m)	Graphic Log	Material Description (Soil Type, Plasticity or Particle Characteristics, Colour, Secondary and Minor Components)	Moisture Condition	Consistency/ Relative Density	Dynamic Cone Penetrometer (Blows/100mm)	Structure & other observations
		0.0-0.1	ES				TOPSOIL: CALCAREOUS SANDY CLAY: low plasticity, pale brown, fine to coarse grained sand, with gravel, fine to medium grained, angular to subangular, trace root fibres.		VSt	9, 13	
		0.4-0.5	ES				CL: CALCAREOUS CLAY: low plasticity, brown, with sand, fine to coarse grained, trace root fibres.			9, 12	
							CI: CLAY: medium plasticity, pale brown, with sand, fine to coarse grained, trace fine to medium grained gravel, angular to subangular.			15, 24, 25	
		0.9-1.0	ES						H		
		0.9-1.0	QC		1						
							... at 1.30m, Pushtube refusal, changed to solid auger				
		1.4-1.5	ES								
							SP: CALCAREOUS SILTY SAND: fine to coarse grained, pale brown, low plasticity fines, trace gravel, fine to medium grained, angular to subangular.				
		1.9-2.0	ES		2						
							SP: CALCAREOUS SILTY SAND: fine to coarse grained, orange brown, low plasticity fines, trace gravel, fine to medium grained, angular to subangular.				
					3			<PL			
									MD		
					4						
					5						
					6		Borehole terminated at 6.00 m				

DCP/PSP Equipment Ref.: | In Situ Vane Ref.: | Pocket Penetrometer Equipment Ref.:

Termination Reason: Target depth reached

Remarks:

This report must be read in conjunction with accompanying notes and abbreviations.

BOREHOLE CORE PHOTO: BH14: 0 – 6.0m

Client:	Fyfe
Project:	Lot 707 Marion Road, Bedford Park
Location:	Marion Road, Bedford Park
Project No:	ADL2021-0039
Date:	01/03/2021

Logged by: ZY
Checked by: JSC

Angle from Horizontal: 90°

Plant: Rockmaster
Contractor: SMS Geotechnical

BOREHOLE LOG - BH15

Client: Fyfe
Project: Lot 707 Marion Road, Bedford Park
Location: Lot 707 Marion Road, Bedford Park, SA
Project ID: ADL2021-0039
Date: 02/03/2021

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Logged by: ZY Position: E.277502m N.6121770m Plant used: Rockmaster
Checked by: JSC Elevation: Angle from horizontal: 90° Contractor: SMS Geotechnical

Well	Groundwater	Samples & Insitu Tests: Depth	Samples & Insitu Tests: Type & Results	RL (m)	Depth (m)	Graphic Log	Material Description	Moisture Condition	Consistency/ Relative Density	Dynamic Cone Penetrometer (Blows/100mm)	Structure & other observations
		0.0-0.1	ES				TOPSOIL: SILTY SAND: fine to coarse grained, pale brown, low plasticity fines, trace gravel, fine to medium grained, angular to subangular, trace root fibres.			2	
										4	
										4	
		0.4-0.5	ES				CI: CALCAREOUS CLAY: medium plasticity, brown, with sand, fine to coarse grained, trace fine to medium grained gravel, angular to subangular.		VSt	5	
		0.50	PP=450.0kPa							11	
		0.60	PP=500.0kPa							10	
							CI: CALCAREOUS CLAY: medium plasticity, pale red brown with white, with sand, fine to coarse grained, trace fine to medium grained gravel, angular to subangular.			11	
										11	
		0.9-1.0	ES							16	
		0.95	PP=500.0kPa		1					16	
										16	
										17	
										25	
		1.4-1.5	ES								
							CH: CALCAREOUS CLAY: high plasticity; trace sand, fine to coarse grained; pale yellow brown with white, trace gravel.				
		1.9-2.0	ES		2		*... at 2.00m, Pushtube refusal, changed to solid auger*				
							CI: CALCAREOUS SANDY CLAY: medium plasticity, pale brown, fine to coarse grained sand, with gravel, fine to medium grained, angular to subangular.				
					3			<PL	Vst to H		
					4						
					5						
					6		Borehole terminated at 6.00 m				

DCP/PSP Equipment Ref.: In Situ Vane Ref.: Pocket Penetrometer Equipment Ref.:

Termination Reason: Target depth reached

Remarks:

This report must be read in conjunction with accompanying notes and abbreviations.

BOREHOLE CORE PHOTO: BH15: 0 – 4.5m

Client:	Fyfe
Project:	Lot 707 Marion Road, Bedford Park
Location:	Marion Road, Bedford Park
Project No:	ADL2021-0039
Date:	02/03/2021

Logged by: ZY		Plant: Rockmaster
Checked by: JSC	Angle from Horizontal: 90°	Contractor: SMS Geotechnical

BOREHOLE CORE PHOTO: BH15: 4.5 – 6.0m

Client:	Fyfe
Project:	Lot 707 Marion Road, Bedford Park
Location:	Marion Road, Bedford Park
Project No:	ADL2021-0039
Date:	02/03/2021

Logged by: ZY		Plant: Rockmaster
Checked by: JSC	Angle from Horizontal: 90°	Contractor: SMS Geotechnical

BOREHOLE LOG - BH16

Client: Fyfe
Project: Lot 707 Marion Road, Bedford Park
Location: Lot 707 Marion Road, Bedford Park, SA
Project ID: ADL2021-0039
Date: 02/03/2021

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Logged by: ZY Position: E.277360m N.6121761m Plant used: Rockmaster
Checked by: JSC Elevation: Angle from horizontal: 90° Contractor: SMS Geotechnical

Well	Groundwater	Samples & Insitu Tests: Depth	Samples & Insitu Tests: Type & Results	RL (m)	Depth (m)	Graphic Log	Material Description	Moisture Condition	Consistency/ Relative Density	Dynamic Cone Penetrometer (Blows/100mm)	Structure & other observations
		0.0-0.1	ES				FILL: SANDY GRAVEL: fine to medium grained, angular to subangular, white to grey, fine to coarse grained sand.	D			
		0.1-0.2	ES				CL: CALCAREOUS CLAY: low plasticity, brown, with sand, fine to coarse grained, trace root fibres.			5	
		0.35	PP=400.0kPa				CH: CLAY: high plasticity, pale brown with white, with sand, fine to coarse grained.		St to VSt	5	
		0.4-0.5	ES							6	
		0.4-0.5	QC							7	
		0.50	PP=450.0kPa							8	
		0.75	PP=500.0kPa							7	
		0.9-1.0	ES						VSt	9	
		0.90	PP=500.0kPa		1					9	
		1.20	PP=500.0kPa				CI: CALCAREOUS CLAY: medium plasticity, brown with white, with sand, fine to coarse grained, trace fine to medium grained gravel, angular to subangular.			12	
		1.4-1.5	ES							13	
										15	
										18	
										22	
		1.9-2.0	ES		2		CI: CALCAREOUS SANDY CLAY: medium plasticity, pale brown, fine to coarse grained sand, with gravel, fine to medium grained, angular to subangular.				
							... at 2.35m, Pushtube refusal, changed to solid auger				
					3			<PL			
									H		
					4						
					5						
					6		Borehole terminated at 6.00 m				

DCP/PSP Equipment Ref.: | In Situ Vane Ref.: | Pocket Penetrometer Equipment Ref.:

Termination Reason: Target depth reached

Remarks:

BOREHOLE CORE PHOTO: BH16: 0 – 6.0m

Client:	Fyfe
Project:	Lot 707 Marion Road, Bedford Park
Location:	Marion Road, Bedford Park
Project No:	ADL2021-0039
Date:	02/03/2021

Logged by: ZY		Plant: Rockmaster
Checked by: JSC	Angle from Horizontal: 90°	Contractor: SMS Geotechnical

ATTACHMENT 3

SOIL DATA SUMMARY TABLES AND STATISTICAL ANALYSIS

80975-1
Toon Group - Bedford Park

Table 1
Summary of Analytical Results

		BTEXN								TRH												
		Benzene	Toluene	Ethylbenzene	Xylene (o)	Xylene (m & p)	Xylene Total	Total BTEX	Naphthalene	C6-C10	>C10-C16	>C16-C34	>C34-C40	>C10-C40 (Sum of total)	F1 (C6-C10 minus BTEX)	F2 (>C10-C16 minus Naphthalene)	C6-C9	C10-C14	C15-C28	C29-C36	C10-C36 (Sum of total)
		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL		0.2	0.5	0.5	0.5	0.5	0.5	0.2	0.5	10	50	100	100	50	10	50	10	50	100	100	50
ASC NEPM (1999) HSL Comm/Ind, Sand																					
0 to <1 m		3	NL	NL			230		NL						260	NL					
1 to <2 m		3	NL	NL			NL		NL						370	NL					
2 to <4 m		3	NL	NL			NL		NL						630	NL					
4 m+		3	NL	NL			NL		NL						NL	NL					
NEPM 2013 Table 1B(6) ESLs for Comm/Ind, Coarse Soil		75	135	165			180				170	1,700	3,300		215	170					
0-2m		75	135	165			180				170	1,700	3,300		215	170					
ASC NEPM (1999) HIL Comm/Ind D																					
SA EPA Waste Fill Criteria		1	1.4	3.1			14										65				1,000
SA EPA Intermediate Waste - Total Dry Weight Concentrations		5	50	100			180										100				1,000
SA EPA Low-level Contaminated - Total Dry Weight Concentrations		15	500	1,000			1,800										1,000				10,000
Sample No.	**Date**																				
BH01-0.0-0.1	**1/03/2021**																				
BH01-0.4-0.5	**1/03/2021**	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.5	<10	<50	<100	<100	<50	<10	<50	<10	<50	<100	<100	<50
BH02-0.0-0.1	**1/03/2021**	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.5	<10	<50	<100	<100	<50	<10	<50	<10	<50	<100	<100	<50
BH03-0.0-0.1	**1/03/2021**																				
BH04-0.0-0.1	**1/03/2021**																				
BH04-0.1-0.2	**1/03/2021**	<0.2	<0.5	<0.5	1.0	2.1	3.1	3.1	<0.5	<10	<50	<100	<100	<50	<10	<50	<10	<50	<100	<100	<50
BH05-0.0-0.1	**1/03/2021**	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.5	<10	<50	<100	<100	<50	<10	<50	<10	<50	<100	<100	<50
BH05-0.4-0.5	**1/03/2021**																				
BH06-0.0-0.1	**1/03/2021**																				
BH06-0.4-0.5	**1/03/2021**	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.5	<10	<50	<100	<100	<50	<10	<50	<10	<50	<100	<100	<50
BH07-0.0-0.1	**1/03/2021**																				
BH08-0.0-0.1	**1/03/2021**	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.5	<10	<50	<100	<100	<50	<10	<50	<10	<50	<100	<100	<50
BH08-0.4-0.5	**1/03/2021**																				
BH08-0.9-1.0	**1/03/2021**	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.5	<10	<50	<100	<100	<50	<10	<50	<10	<50	<100	<100	<50
BH09-0.4-0.5	**2/03/2021**																				
BH10-0-0.1	**2/03/2021**																				
BH10-0.9-1.0	**2/03/2021**																				
BH11-0-0.1	**2/03/2021**	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.5	<10	<50	<100	<100	<50	<10	<50	<10	<50	<100	<100	<50
BH11-0.4-0.5	**2/03/2021**																				
BH12-0.4-0.5	**2/03/2021**																				
BH13-0-0.1	**2/03/2021**	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.5	<10	<50	<100	<100	<50	<10	<50	<10	<50	<100	<100	<50
BH14-0-0.1	**2/03/2021**																				
BH15-0.4-0.5	**2/03/2021**																				
BH16-0-0.1	**2/03/2021**	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.5	<10	<50	<100	<100	<50	<10	<50	<10	<50	<100	<100	<50
BH16-0.1-0.2	**2/03/2021**																				
Duplicate																					
QC03	**1/03/2021**	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.5	<10	<50	<100	<100	<50	<10	<50	<10	<50	<100	<100	<50
BH08-0.9-1.0	**1/03/2021**	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.2	<0.5	<10	<50	<100	<100	<50	<10	<50	<10	<50	<100	<100	<50
RPD																					
QC07	**2/03/2021**																				
BH03-0.0-0.1	**1/03/2021**																				
RPD																					
QC08	**2/03/2021**																				
BH10-0-0.1	**2/03/2021**																				
RPD																					

Table 1
Summary of Analytical Results

		Metals															
		Arsenic	Barium	Beryllium	Cadmium	Chromium (hexavalent)	Chromium (III+VI)	Cobalt	Copper	Iron	Lead	Manganese	Mercury	Nickel	Silver	Zinc
		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL		5	10	1	1	0.5	2	2	5	50	5	5	0.1	2	2	5
ASC NEPM (1999) HSL Comm/Ind, Sand																
0 to <1 m																
1 to <2 m																
2 to <4 m																
4 m+																
NEPM 2013 Table 1B(6) ESLs for Comm/Ind, Coarse Soil																
0-2m																
ASC NEPM (1999) HIL Comm/Ind D		3,000		500	900	3,600		4,000	240,000		1,500	60,000	730	6,000		400,000
SA EPA Waste Fill Criteria		20	300	20	3	1		170	60		300	500	1	60		200
SA EPA Intermediate Waste - Total Dry Weight Concentrations		200		40	30	200		170	2,000		1,200	6,000	30	600		14,000
SA EPA Low-level Contaminated - Total Dry Weight Concentrations		750		150	60	750		1,000	7,500		5,000	10,000	110	3,000		50,000
Sample No.	**Date**															
BH01-0.0-0.1	**1/03/2021**															
BH01-0.4-0.5	**1/03/2021**	8			<1		63		23		17		<0.1	41		44
BH02-0.0-0.1	**1/03/2021**	12	120	<1	<1	<0.5	10	4	7	9,110	580	468	<0.1	6	<2	31
BH03-0.0-0.1	**1/03/2021**															
BH04-0.0-0.1	**1/03/2021**															
BH04-0.1-0.2	**1/03/2021**	10			<1		12		10		17		<0.1	7		48
BH05-0.0-0.1	**1/03/2021**	11			<1		13		10		16		<0.1	7		55
BH05-0.4-0.5	**1/03/2021**	10			<1		57		31		24		0.1	40		44
BH06-0.0-0.1	**1/03/2021**															
BH06-0.4-0.5	**1/03/2021**	7			<1		50		22		19		<0.1	28		38
BH07-0.0-0.1	**1/03/2021**	<5			<1		17		9		21		<0.1	7		50
BH08-0.0-0.1	**1/03/2021**	<5	40	<1	<1	<0.5	16	7	9	19,300	22	269	<0.1	7	<2	31
BH08-0.4-0.5	**1/03/2021**															
BH08-0.9-1.0	**1/03/2021**	6			<1		25		14		13		<0.1	13		33
BH09-0.4-0.5	**2/03/2021**	6			<1		41		18		21		<0.1	25		40
BH10-0-0.1	**2/03/2021**															
BH10-0.9-1.0	**2/03/2021**	7			<1		37		16		19		<0.1	26		39
BH11-0-0.1	**2/03/2021**	8			<1		12		10		22		<0.1	7		54
BH11-0.4-0.5	**2/03/2021**	8			<1		58		23		21		0.1	35		78
BH12-0.4-0.5	**2/03/2021**	7			<1		46		20		19		0.1	29		53
BH13-0-0.1	**2/03/2021**	<5			<1		20		10		24		<0.1	11		29
BH14-0-0.1	**2/03/2021**															
BH15-0.4-0.5	**2/03/2021**	10			<1		57		26		22		0.1	41		46
BH16-0-0.1	**2/03/2021**	10	120	<1	<1	<0.5	15	4	16	13,400	14	239	<0.1	9	<2	48
BH16-0.1-0.2	**2/03/2021**															
Duplicate																
QC03	**1/03/2021**	6			<1		20		13		12		<0.1	12		33
BH08-0.9-1.0	**1/03/2021**	6			<1		25		14		13		<0.1	13		33
RPD		0					22		7		8			8		0
QC07	**2/03/2021**															
BH03-0.0-0.1	**1/03/2021**															
RPD																
QC08	**2/03/2021**															
BH10-0-0.1	**2/03/2021**															
RPD																

Table 1
Summary of Analytical Results

		Phenols												
		3/4-Methylphenol (m/p-cresol)	2,4,5-Trichlorophenol	2,4,6-Trichlorophenol	2,4-Dichlorophenol	2,4-Dimethylphenol	2,6-Dichlorophenol	2-Chlorophenol	2-Methylphenol	2-Nitrophenol	4-chloro-3-methylphenol	Pentachlorophenol	Phenolics Total	Phenol
		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL		1	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	2	0.5	0.5
ASC NEPM (1999) HSL Comm/Ind, Sand														
0 to <1 m														
1 to <2 m														
2 to <4 m														
4 m+														
NEPM 2013 Table 1B(6) ESLs for Comm/Ind, Coarse Soil														
0-2m														
ASC NEPM (1999) HIL Comm/Ind D												660		240,000
SA EPA Waste Fill Criteria													0.5	
SA EPA Intermediate Waste - Total Dry Weight Concentrations													17,000	
SA EPA Low-level Contaminated - Total Dry Weight Concentrations													50,000	
Sample No.	**Date**													
BH01-0.0-0.1	**1/03/2021**													
BH01-0.4-0.5	**1/03/2021**													
BH02-0.0-0.1	**1/03/2021**	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<0.5	<0.5
BH03-0.0-0.1	**1/03/2021**													
BH04-0.0-0.1	**1/03/2021**													
BH04-0.1-0.2	**1/03/2021**													
BH05-0.0-0.1	**1/03/2021**													
BH05-0.4-0.5	**1/03/2021**													
BH06-0.0-0.1	**1/03/2021**													
BH06-0.4-0.5	**1/03/2021**													
BH07-0.0-0.1	**1/03/2021**													
BH08-0.0-0.1	**1/03/2021**	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<0.5	<0.5
BH08-0.4-0.5	**1/03/2021**													
BH08-0.9-1.0	**1/03/2021**													
BH09-0.4-0.5	**2/03/2021**													
BH10-0-0.1	**2/03/2021**													
BH10-0.9-1.0	**2/03/2021**													
BH11-0-0.1	**2/03/2021**													
BH11-0.4-0.5	**2/03/2021**													
BH12-0.4-0.5	**2/03/2021**													
BH13-0-0.1	**2/03/2021**													
BH14-0-0.1	**2/03/2021**													
BH15-0.4-0.5	**2/03/2021**													
BH16-0-0.1	**2/03/2021**	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<0.5	<0.5
BH16-0.1-0.2	**2/03/2021**													
Duplicate														
QC03	**1/03/2021**													
BH08-0.9-1.0	**1/03/2021**													
RPD														
QC07	**2/03/2021**													
BH03-0.0-0.1	**1/03/2021**													
RPD														
QC08	**2/03/2021**													
BH10-0-0.1	**2/03/2021**													
RPD														

Table 1
Summary of Analytical Results

		PAH																	
		Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a) pyrene	Benzo(b+j)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Phenanthrene	Pyrene	Benzo(a)pyrene TEQ (LOR)	Benzo(a)pyrene TEQ calc (Zero)	PAHs (Sum of total)
		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL		0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
ASC NEPM (1999) HSL Comm/Ind, Sand																			
0 to <1 m																			
1 to <2 m																			
2 to <4 m																			
4 m+																			
NEPM 2013 Table 1B(6) ESLs for Comm/Ind, Coarse Soil						1.4													
0-2m						1.4													
ASC NEPM (1999) HIL Comm/Ind D																	40	40	4,000
SA EPA Waste Fill Criteria						1													5
SA EPA Intermediate Waste - Total Dry Weight Concentrations						2													40
SA EPA Low-level Contaminated - Total Dry Weight Concentrations						5													200
Sample No.	**Date**																		
BH01-0.0-0.1	**1/03/2021**																		
BH01-0.4-0.5	**1/03/2021**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.2	<0.5	<0.5
BH02-0.0-0.1	**1/03/2021**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.2	<0.5	<0.5
BH03-0.0-0.1	**1/03/2021**																		
BH04-0.0-0.1	**1/03/2021**																		
BH04-0.1-0.2	**1/03/2021**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.2	<0.5	<0.5
BH05-0.0-0.1	**1/03/2021**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.2	<0.5	<0.5
BH05-0.4-0.5	**1/03/2021**																		
BH06-0.0-0.1	**1/03/2021**																		
BH06-0.4-0.5	**1/03/2021**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.2	<0.5	<0.5
BH07-0.0-0.1	**1/03/2021**																		
BH08-0.0-0.1	**1/03/2021**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.2	<0.5	<0.5
BH08-0.4-0.5	**1/03/2021**																		
BH08-0.9-1.0	**1/03/2021**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.2	<0.5	<0.5
BH09-0.4-0.5	**2/03/2021**																		
BH10-0-0.1	**2/03/2021**																		
BH10-0.9-1.0	**2/03/2021**																		
BH11-0-0.1	**2/03/2021**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.2	<0.5	<0.5
BH11-0.4-0.5	**2/03/2021**																		
BH12-0.4-0.5	**2/03/2021**																		
BH13-0-0.1	**2/03/2021**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.2	<0.5	<0.5
BH14-0-0.1	**2/03/2021**																		
BH15-0.4-0.5	**2/03/2021**																		
BH16-0-0.1	**2/03/2021**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.2	<0.5	<0.5
BH16-0.1-0.2	**2/03/2021**																		
	Duplicate																		
QC03	**1/03/2021**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.2	<0.5	<0.5
BH08-0.9-1.0	**1/03/2021**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.2	<0.5	<0.5
	RPD																0		
QC07	**2/03/2021**																		
BH03-0.0-0.1	**1/03/2021**																		
	RPD																		
QC08	**2/03/2021**																		
BH10-0-0.1	**2/03/2021**																		
	RPD																		

Table 1
Summary of Analytical Results

		Organochlorine Pesticides																								
		4,4-DDE	a-BHC	Aldrin	Aldrin + Dieldrin	b-BHC	Chlordane	Chlordane (cis)	Chlordane (trans)	d-BHC	DDD	DDT	DDT+DDE+DDD	Dieldrin	Endosulfan	Endosulfan I	Endosulfan II	Endosulfan sulphate	Endrin	Endrin aldehyde	Endrin ketone	g-BHC (Lindane)	Heptachlor	Heptachlor epoxide	Methoxychlor	Hexachlorobenzene
		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL		0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.2	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.2	0.05
ASC NEPM (1999) HSL Comm/Ind, Sand																										
0 to <1 m																										
1 to <2 m																										
2 to <4 m																										
4 m+																										
NEPM 2013 Table 1B(6) ESLs for Comm/Ind, Coarse Soil																										
0-2m																										
ASC NEPM (1999) HIL Comm/Ind D					45		530						3,600		2,000				100				50		2,500	80
SA EPA Waste Fill Criteria					2		2					2											2			
SA EPA Intermediate Waste - Total Dry Weight Concentrations					2		2					2											2			
SA EPA Low-level Contaminated - Total Dry Weight Concentrations					50		50					50											50			
Sample No.	**Date**																									
BH01-0.0-0.1	**1/03/2021**	<0.05	<0.05	<0.05	0.07	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	0.07	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05
BH01-0.4-0.5	**1/03/2021**																									
BH02-0.0-0.1	**1/03/2021**	<0.05	<0.05	<0.05	0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05
BH03-0.0-0.1	**1/03/2021**	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05
BH04-0.0-0.1	**1/03/2021**	<0.05	<0.05	<0.05	0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05
BH04-0.1-0.2	**1/03/2021**																									
BH05-0.0-0.1	**1/03/2021**																									
BH05-0.4-0.5	**1/03/2021**																									
BH06-0.0-0.1	**1/03/2021**	<0.05	<0.05	<0.05	0.07	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	0.07	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05
BH06-0.4-0.5	**1/03/2021**																									
BH07-0.0-0.1	**1/03/2021**																									
BH08-0.0-0.1	**1/03/2021**	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05
BH08-0.4-0.5	**1/03/2021**	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05
BH08-0.9-1.0	**1/03/2021**																									
BH09-0.4-0.5	**2/03/2021**																									
BH10-0-0.1	**2/03/2021**	<0.05	<0.05	<0.05	0.07	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	0.07	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05
BH10-0.9-1.0	**2/03/2021**																									
BH11-0-0.1	**2/03/2021**																									
BH11-0.4-0.5	**2/03/2021**																									
BH12-0.4-0.5	**2/03/2021**																									
BH13-0-0.1	**2/03/2021**																									
BH14-0-0.1	**2/03/2021**	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05
BH15-0.4-0.5	**2/03/2021**																									
BH16-0-0.1	**2/03/2021**	<0.05	<0.05	<0.05	0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05
BH16-0.1-0.2	**2/03/2021**	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05
Duplicate																										
QC03	**1/03/2021**																									
BH08-0.9-1.0	**1/03/2021**																									
RPD																										
QC07	**2/03/2021**	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05
BH03-0.0-0.1	**1/03/2021**	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05
RPD																										
QC08	**2/03/2021**	<0.05	<0.05	<0.05	0.06	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	0.06	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05
BH10-0-0.1	**2/03/2021**	<0.05	<0.05	<0.05	0.07	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05	0.07	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.05
RPD					15									15												

80975-1
Toon Group - Bedford Park

Table 1
Summary of Analytical Results

		Organophosphorous Pesticides															Pesticides				Other		
		Azinophos methyl	Bromophos-ethyl	Carbophenothion	Chlorfenvinphos	Chlorpyrifos	Chlorpyrifos-methyl	Diazinon	Dichlorvos	Dimethoate	Ethion	Fenthion	Malathion	Methyl parathion	Monocrotophos	Prothiofos	Demeton-S-methyl	Fenamiphos	Parathion	Pirimphos-ethyl	Moisture Content	Cyanide Total	PCBs (Sum of total)
		µg/kg	µg/kg	µg/kg	mg/kg	µg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	µg/kg	mg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	%	mg/kg	mg/kg
EQL		50	50	50	0.05	50	0.05	0.05	0.05	0.05	0.05	50	0.05	200	200	50	50	50	200	50	1	1	0.1
ASC NEPM (1999) HSL Comm/Ind, Sand																							
0 to <1 m																							
1 to <2 m																							
2 to <4 m																							
4 m+																							
NEPM 2013 Table 1B(6) ESLs for Comm/Ind, Coarse Soil																							
0-2m																							
ASC NEPM (1999) HIL Comm/Ind D						2,000,000																	7
SA EPA Waste Fill Criteria																						500	2
SA EPA Intermediate Waste - Total Dry Weight Concentrations																						1,000	2
SA EPA Low-level Contaminated - Total Dry Weight Concentrations																						3,500	50
Sample No.	**Date**																						
BH01-0.0-0.1	**1/03/2021**	<50	<50	<50	<0.05	<50	<0.05	<0.05	<0.05	<0.05	<0.05	<50	<0.05	<200	<200	<50	<50	<50	<200	<50	4.6		
BH01-0.4-0.5	**1/03/2021**																				21		
BH02-0.0-0.1	**1/03/2021**																				6.5	<1	<0.1
BH03-0.0-0.1	**1/03/2021**	<50	<50	<50	<0.05	<50	<0.05	<0.05	<0.05	<0.05	<0.05	<50	<0.05	<200	<200	<50	<50	<50	<200	<50	1.3		
BH04-0.0-0.1	**1/03/2021**	<50	<50	<50	<0.05	<50	<0.05	<0.05	<0.05	<0.05	<0.05	<50	<0.05	<200	<200	<50	<50	<50	<200	<50	7.0		
BH04-0.1-0.2	**1/03/2021**																				4.8		
BH05-0.0-0.1	**1/03/2021**																				5.6		
BH05-0.4-0.5	**1/03/2021**																				21		
BH06-0.0-0.1	**1/03/2021**	<50	<50	<50	<0.05	<50	<0.05	<0.05	<0.05	<0.05	<0.05	<50	<0.05	<200	<200	<50	<50	<50	<200	<50	3.2		
BH06-0.4-0.5	**1/03/2021**																				16		
BH07-0.0-0.1	**1/03/2021**																				3.8		
BH08-0.0-0.1	**1/03/2021**																				3.6	<1	<0.1
BH08-0.4-0.5	**1/03/2021**	<50	<50	<50	<0.05	<50	<0.05	<0.05	<0.05	<0.05	<0.05	<50	<0.05	<200	<200	<50	<50	<50	<200	<50	14		
BH08-0.9-1.0	**1/03/2021**																				8.3		
BH09-0.4-0.5	**2/03/2021**																				11		
BH10-0-0.1	**2/03/2021**	<50	<50	<50	<0.05	<50	<0.05	<0.05	<0.05	<0.05	<0.05	<50	<0.05	<200	<200	<50	<50	<50	<200	<50	2.5		
BH10-0.9-1.0	**2/03/2021**																				13		
BH11-0-0.1	**2/03/2021**																				6.1		
BH11-0.4-0.5	**2/03/2021**																				16		
BH12-0.4-0.5	**2/03/2021**																				14		
BH13-0-0.1	**2/03/2021**																				3.8		
BH14-0-0.1	**2/03/2021**	<50	<50	<50	<0.05	<50	<0.05	<0.05	<0.05	<0.05	<0.05	<50	<0.05	<200	<200	<50	<50	<50	<200	<50	4.8		
BH15-0.4-0.5	**2/03/2021**																				19		
BH16-0-0.1	**2/03/2021**																				4.0	<1	<0.1
BH16-0.1-0.2	**2/03/2021**	<50	<50	<50	<0.05	<50	<0.05	<0.05	<0.05	<0.05	<0.05	<50	<0.05	<200	<200	<50	<50	<50	<200	<50	5.2		
Duplicate																							
QC03	**1/03/2021**																				7.0		
BH08-0.9-1.0	**1/03/2021**																				8.3		
RPD																							
QC07	**2/03/2021**	<50	<50	<50	<0.05	<50	<0.05	<0.05	<0.05	<0.05	<0.05	<50	<0.05	<200	<200	<50	<50	<50	<200	<50	1.1		
BH03-0.0-0.1	**1/03/2021**	<50	<50	<50	<0.05	<50	<0.05	<0.05	<0.05	<0.05	<0.05	<50	<0.05	<200	<200	<50	<50	<50	<200	<50	1.3		
RPD																							
QC08	**2/03/2021**	<50	<50	<50	<0.05	<50	<0.05	<0.05	<0.05	<0.05	<0.05	<50	<0.05	<200	<200	<50	<50	<50	<200	<50	2.8		
BH10-0-0.1	**2/03/2021**	<50	<50	<50	<0.05	<50	<0.05	<0.05	<0.05	<0.05	<0.05	<50	<0.05	<200	<200	<50	<50	<50	<200	<50	2.5		
RPD																							

Table 2
Summary of QA/QC results

			Field ID	QC05	QC10	TB01	TB02
			Date	1/03/2021	2/03/2021	1/03/2021	2/03/2021
	Unit	EQL					
BTEXN - Fyfe							
Benzene	µg/L	1		<1	<1	<1	<1
Toluene	µg/L	2		<2	<2	<2	<2
Ethylbenzene	µg/L	2		<2	<2	<2	<2
Xylene (o)	µg/L	2		<2	<2	<2	<2
Xylene (m & p)	µg/L	2		<2	<2	<2	<2
Xylene Total	µg/L	2		<2	<2	<2	<2
Total BTEX	µg/L	1		<1	<1	<1	<1
Naphthalene	µg/L	5		<5	<5	<5	<5
TRH - Fyfe							
C6-C10	µg/L	20		<20	<20	<20	<20
>C10-C16	µg/L	100		<100	<100		
>C16-C34	µg/L	100		<100	<100		
>C34-C40	µg/L	100		<100	<100		
>C10-C40 (Sum of total)	µg/L	100		<100	<100		
F1 (C6-C10 minus BTEX)	µg/L	20		<20	<20	<20	<20
F2 (>C10-C16 minus Naphthalene)	µg/L	100		<100	<100		
TRH (TPH) - Fyfe							
C6-C9	µg/L	20		<20	<20	<20	<20
C10-C14	µg/L	50		<50	<50		
C15-C28	µg/L	100		<100	<100		
C29-C36	µg/L	50		<50	<50		
C10-C36 (Sum of total)	µg/L	50		<50	<50		

ATTACHMENT 4

LABORATORY CERTIFICATES OF ANALYSIS

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EM2103778**	Page	: 1 of 31
Client	: **FYFE PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: STUART TWISS	Contact	: Kieren Burns
Address	: LEVEL 1, 124 SOUTH TERRACE ADELAIDE SOUTH AUSTRALIA 5000	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61881625130
Project	: 80975-2	Date Samples Received	: 05-Mar-2021 10:45
Order number	: 11415	Date Analysis Commenced	: 05-Mar-2021
C-O-C number	: 80975-2	Issue Date	: 12-Mar-2021 15:22
Sampler	: SCT		
Site	:		
Quote number	: AD/025/20		
No. of samples received	: 97		
No. of samples analysed	: 32		

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

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

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

Signatories

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

Signatories	*Position*	*Accreditation Category*
Arenie Vijayaratnam	Non-Metals Team Leader	Melbourne Inorganics, Springvale, VIC
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Organics, Springvale, VIC
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, Springvale, VIC

General Comments

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

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

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

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

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

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

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

- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) per the NEPM (2013) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.
- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP068: Where reported, Total Chlordane (sum) is the sum of the reported concentrations of cis-Chlordane and trans-Chlordane at or above the LOR.
- EP068: Where reported, Total OCP is the sum of the reported concentrations of all Organochlorine Pesticides at or above LOR.
- EP075(SIM): Where reported, Total Cresol is the sum of the reported concentrations of 2-Methylphenol and 3- & 4-Methylphenol at or above the LOR.

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	BH01-0.0-0.1	BH01-0.4-0.5	BH02-0.0-0.1	BH03-0.0-0.1	BH04-0.0-0.1
			Sampling date / time	01-Mar-2021 00:00	01-Mar-2021 00:00	01-Mar-2021 00:00	01-Mar-2021 00:00	01-Mar-2021 00:00
Compound	CAS Number	LOR	Unit	EM2103778-001	EM2103778-002	EM2103778-006	EM2103778-011	EM2103778-016
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	4.6	21.1	6.5	1.3	7.0
EG005(ED093)T: Total Metals by ICP-AES								
Barium	7440-39-3	10	mg/kg	----	----	120	----	----
Beryllium	7440-41-7	1	mg/kg	----	----	<1	----	----
Cobalt	7440-48-4	2	mg/kg	----	----	4	----	----
Iron	7439-89-6	50	mg/kg	----	----	9110	----	----
Manganese	7439-96-5	5	mg/kg	----	----	468	----	----
Silver	7440-22-4	2	mg/kg	----	----	<2	----	----
Arsenic	7440-38-2	5	mg/kg	----	8	12	----	----
Cadmium	7440-43-9	1	mg/kg	----	<1	<1	----	----
Chromium	7440-47-3	2	mg/kg	----	63	10	----	----
Copper	7440-50-8	5	mg/kg	----	23	7	----	----
Lead	7439-92-1	5	mg/kg	----	17	580	----	----
Nickel	7440-02-0	2	mg/kg	----	41	6	----	----
Zinc	7440-66-6	5	mg/kg	----	44	31	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	<0.1	<0.1	----	----
EG048: Hexavalent Chromium (Alkaline Digest)								
Hexavalent Chromium	18540-29-9	0.5	mg/kg	----	----	<0.5	----	----
EK026SF: Total CN by Segmented Flow Analyser								
Total Cyanide	57-12-5	1	mg/kg	----	----	<1	----	----
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.1	mg/kg	----	----	<0.1	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	<0.05	----	<0.05	<0.05	<0.05
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	----	<0.05	<0.05	<0.05
beta-BHC	319-85-7	0.05	mg/kg	<0.05	----	<0.05	<0.05	<0.05
gamma-BHC	58-89-9	0.05	mg/kg	<0.05	----	<0.05	<0.05	<0.05
delta-BHC	319-86-8	0.05	mg/kg	<0.05	----	<0.05	<0.05	<0.05
Heptachlor	76-44-8	0.05	mg/kg	<0.05	----	<0.05	<0.05	<0.05
Aldrin	309-00-2	0.05	mg/kg	<0.05	----	<0.05	<0.05	<0.05
Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	----	<0.05	<0.05	<0.05
^ Total Chlordane (sum)	----	0.05	mg/kg	<0.05	----	<0.05	<0.05	<0.05
trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	----	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BH01-0.0-0.1	BH01-0.4-0.5	BH02-0.0-0.1	BH03-0.0-0.1	BH04-0.0-0.1
				Sampling date / time	01-Mar-2021 00:00	01-Mar-2021 00:00	01-Mar-2021 00:00	01-Mar-2021 00:00	01-Mar-2021 00:00
Compound	CAS Number	LOR	Unit		EM2103778-001	EM2103778-002	EM2103778-006	EM2103778-011	EM2103778-016
					Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued									
alpha-Endosulfan	959-98-8	0.05	mg/kg		<0.05	----	<0.05	<0.05	<0.05
cis-Chlordane	5103-71-9	0.05	mg/kg		<0.05	----	<0.05	<0.05	<0.05
Dieldrin	60-57-1	0.05	mg/kg		**0.07**	----	**0.10**	<0.05	**0.10**
4.4`-DDE	72-55-9	0.05	mg/kg		<0.05	----	<0.05	<0.05	<0.05
Endrin	72-20-8	0.05	mg/kg		<0.05	----	<0.05	<0.05	<0.05
beta-Endosulfan	33213-65-9	0.05	mg/kg		<0.05	----	<0.05	<0.05	<0.05
^ **Endosulfan (sum)**	115-29-7	0.05	mg/kg		<0.05	----	<0.05	<0.05	<0.05
4.4`-DDD	72-54-8	0.05	mg/kg		<0.05	----	<0.05	<0.05	<0.05
Endrin aldehyde	7421-93-4	0.05	mg/kg		<0.05	----	<0.05	<0.05	<0.05
Endosulfan sulfate	1031-07-8	0.05	mg/kg		<0.05	----	<0.05	<0.05	<0.05
4.4`-DDT	50-29-3	0.2	mg/kg		<0.2	----	<0.2	<0.2	<0.2
Endrin ketone	53494-70-5	0.05	mg/kg		<0.05	----	<0.05	<0.05	<0.05
Methoxychlor	72-43-5	0.2	mg/kg		<0.2	----	<0.2	<0.2	<0.2
^ **Sum of Aldrin + Dieldrin**	309-00-2/60-57-1	0.05	mg/kg		**0.07**	----	**0.10**	<0.05	**0.10**
^ **Sum of DDD + DDE + DDT**	72-54-8/72-55-9/50-2	0.05	mg/kg		<0.05	----	<0.05	<0.05	<0.05
EP068B: Organophosphorus Pesticides (OP)									
Dichlorvos	62-73-7	0.05	mg/kg		<0.05	----	----	<0.05	<0.05
Demeton-S-methyl	919-86-8	0.05	mg/kg		<0.05	----	----	<0.05	<0.05
Monocrotophos	6923-22-4	0.2	mg/kg		<0.2	----	----	<0.2	<0.2
Dimethoate	60-51-5	0.05	mg/kg		<0.05	----	----	<0.05	<0.05
Diazinon	333-41-5	0.05	mg/kg		<0.05	----	----	<0.05	<0.05
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg		<0.05	----	----	<0.05	<0.05
Parathion-methyl	298-00-0	0.2	mg/kg		<0.2	----	----	<0.2	<0.2
Malathion	121-75-5	0.05	mg/kg		<0.05	----	----	<0.05	<0.05
Fenthion	55-38-9	0.05	mg/kg		<0.05	----	----	<0.05	<0.05
Chlorpyrifos	2921-88-2	0.05	mg/kg		<0.05	----	----	<0.05	<0.05
Parathion	56-38-2	0.2	mg/kg		<0.2	----	----	<0.2	<0.2
Pirimphos-ethyl	23505-41-1	0.05	mg/kg		<0.05	----	----	<0.05	<0.05
Chlorfenvinphos	470-90-6	0.05	mg/kg		<0.05	----	----	<0.05	<0.05
Bromophos-ethyl	4824-78-6	0.05	mg/kg		<0.05	----	----	<0.05	<0.05
Fenamiphos	22224-92-6	0.05	mg/kg		<0.05	----	----	<0.05	<0.05
Prothiofos	34643-46-4	0.05	mg/kg		<0.05	----	----	<0.05	<0.05
Ethion	563-12-2	0.05	mg/kg		<0.05	----	----	<0.05	<0.05
Carbophenothion	786-19-6	0.05	mg/kg		<0.05	----	----	<0.05	<0.05

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	BH01-0.0-0.1	BH01-0.4-0.5	BH02-0.0-0.1	BH03-0.0-0.1	BH04-0.0-0.1
			Sampling date / time	01-Mar-2021 00:00	01-Mar-2021 00:00	01-Mar-2021 00:00	01-Mar-2021 00:00	01-Mar-2021 00:00
Compound	CAS Number	LOR	Unit	EM2103778-001	EM2103778-002	EM2103778-006	EM2103778-011	EM2103778-016
				Result	Result	Result	Result	Result
EP068B: Organophosphorus Pesticides (OP) - Continued								
Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	----	----	<0.05	<0.05
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	0.5	mg/kg	----	----	<0.5	----	----
2-Chlorophenol	95-57-8	0.5	mg/kg	----	----	<0.5	----	----
2-Methylphenol	95-48-7	0.5	mg/kg	----	----	<0.5	----	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg	----	----	<1	----	----
2-Nitrophenol	88-75-5	0.5	mg/kg	----	----	<0.5	----	----
2.4-Dimethylphenol	105-67-9	0.5	mg/kg	----	----	<0.5	----	----
2.4-Dichlorophenol	120-83-2	0.5	mg/kg	----	----	<0.5	----	----
2.6-Dichlorophenol	87-65-0	0.5	mg/kg	----	----	<0.5	----	----
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	----	----	<0.5	----	----
2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	----	----	<0.5	----	----
2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	----	----	<0.5	----	----
Pentachlorophenol	87-86-5	2	mg/kg	----	----	<2	----	----
^ Sum of Phenols	----	0.5	mg/kg	----	----	<0.5	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	<0.5	<0.5	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	<0.5	<0.5	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	<0.5	<0.5	----	----
Fluorene	86-73-7	0.5	mg/kg	----	<0.5	<0.5	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	<0.5	<0.5	----	----
Anthracene	120-12-7	0.5	mg/kg	----	<0.5	<0.5	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	<0.5	<0.5	----	----
Pyrene	129-00-0	0.5	mg/kg	----	<0.5	<0.5	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	<0.5	<0.5	----	----
Chrysene	218-01-9	0.5	mg/kg	----	<0.5	<0.5	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	<0.5	<0.5	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	<0.5	<0.5	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	<0.5	<0.5	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	<0.5	<0.5	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	<0.5	<0.5	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	<0.5	<0.5	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	<0.5	<0.5	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	<0.5	<0.5	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BH01-0.0-0.1	BH01-0.4-0.5	BH02-0.0-0.1	BH03-0.0-0.1	BH04-0.0-0.1
				Sampling date / time	01-Mar-2021 00:00	01-Mar-2021 00:00	01-Mar-2021 00:00	01-Mar-2021 00:00	01-Mar-2021 00:00
Compound	CAS Number	LOR	Unit		EM2103778-001	EM2103778-002	EM2103778-006	EM2103778-011	EM2103778-016
					Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		----	**0.6**	**0.6**	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		----	**1.2**	**1.2**	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		----	<10	<10	----	----
C10 - C14 Fraction	----	50	mg/kg		----	<50	<50	----	----
C15 - C28 Fraction	----	100	mg/kg		----	<100	<100	----	----
C29 - C36 Fraction	----	100	mg/kg		----	<100	<100	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg		----	<50	<50	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg		----	<10	<10	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		----	<10	<10	----	----
>C10 - C16 Fraction	----	50	mg/kg		----	<50	<50	----	----
>C16 - C34 Fraction	----	100	mg/kg		----	<100	<100	----	----
>C34 - C40 Fraction	----	100	mg/kg		----	<100	<100	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		----	<50	<50	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		----	<50	<50	----	----
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		----	<0.2	<0.2	----	----
Toluene	108-88-3	0.5	mg/kg		----	<0.5	<0.5	----	----
Ethylbenzene	100-41-4	0.5	mg/kg		----	<0.5	<0.5	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		----	<0.5	<0.5	----	----
ortho-Xylene	95-47-6	0.5	mg/kg		----	<0.5	<0.5	----	----
^ Sum of BTEX	----	0.2	mg/kg		----	<0.2	<0.2	----	----
^ Total Xylenes	----	0.5	mg/kg		----	<0.5	<0.5	----	----
Naphthalene	91-20-3	1	mg/kg		----	<1	<1	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		----	----	**99.9**	----	----
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.05	%		**87.1**	----	**93.1**	**90.7**	**90.6**
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.05	%		**66.9**	----	**77.0**	**86.3**	**81.2**
EP075(SIM)S: Phenolic Compound Surrogates									

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BH01-0.0-0.1	BH01-0.4-0.5	BH02-0.0-0.1	BH03-0.0-0.1	BH04-0.0-0.1
				Sampling date / time	01-Mar-2021 00:00	01-Mar-2021 00:00	01-Mar-2021 00:00	01-Mar-2021 00:00	01-Mar-2021 00:00
Compound	CAS Number	LOR	Unit		EM2103778-001	EM2103778-002	EM2103778-006	EM2103778-011	EM2103778-016
					Result	Result	Result	Result	Result
EP075(SIM)S: Phenolic Compound Surrogates - Continued									
Phenol-d6	13127-88-3	0.5	%		----	**81.8**	**80.3**	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%		----	**80.5**	**79.5**	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%		----	**58.3**	**52.5**	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		----	**95.5**	**95.6**	----	----
Anthracene-d10	1719-06-8	0.5	%		----	**94.0**	**96.1**	----	----
4-Terphenyl-d14	1718-51-0	0.5	%		----	**100**	**100**	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		----	**94.6**	**91.3**	----	----
Toluene-D8	2037-26-5	0.2	%		----	**91.5**	**89.0**	----	----
4-Bromofluorobenzene	460-00-4	0.2	%		----	**98.1**	**94.2**	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	BH04-0.1-0.2	BH05-0.0-0.1	BH05-0.4-0.5	BH06-0.0-0.1	BH06-0.4-0.5
			Sampling date / time	01-Mar-2021 00:00	01-Mar-2021 00:00	01-Mar-2021 00:00	01-Mar-2021 00:00	01-Mar-2021 00:00
Compound	CAS Number	LOR	Unit	EM2103778-017	EM2103778-022	EM2103778-023	EM2103778-027	EM2103778-029
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	4.8	5.6	20.7	3.2	15.9
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	10	11	10	----	7
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	----	<1
Chromium	7440-47-3	2	mg/kg	12	13	57	----	50
Copper	7440-50-8	5	mg/kg	10	10	31	----	22
Lead	7439-92-1	5	mg/kg	17	16	24	----	19
Nickel	7440-02-0	2	mg/kg	7	7	40	----	28
Zinc	7440-66-6	5	mg/kg	48	55	44	----	38
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.1	----	<0.1
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	<0.05	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	<0.05	----
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	<0.05	----
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	<0.05	----
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	<0.05	----
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	<0.05	----
Aldrin	309-00-2	0.05	mg/kg	----	----	----	<0.05	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	<0.05	----
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	----	<0.05	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	<0.05	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	<0.05	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	<0.05	----
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	0.07	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	----	----	<0.05	----
Endrin	72-20-8	0.05	mg/kg	----	----	----	<0.05	----
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	----	<0.05	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	----	----	<0.05	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	----	----	<0.05	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	----	<0.05	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	----	<0.05	----
4.4`-DDT	50-29-3	0.2	mg/kg	----	----	----	<0.2	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	----	<0.05	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BH04-0.1-0.2	BH05-0.0-0.1	BH05-0.4-0.5	BH06-0.0-0.1	BH06-0.4-0.5
				Sampling date / time	01-Mar-2021 00:00	01-Mar-2021 00:00	01-Mar-2021 00:00	01-Mar-2021 00:00	01-Mar-2021 00:00
Compound	CAS Number	LOR	Unit		EM2103778-017	EM2103778-022	EM2103778-023	EM2103778-027	EM2103778-029
					Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued									
Methoxychlor	72-43-5	0.2	mg/kg		----	----	----	<0.2	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg		----	----	----	**0.07**	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg		----	----	----	<0.05	----
EP068B: Organophosphorus Pesticides (OP)									
Dichlorvos	62-73-7	0.05	mg/kg		----	----	----	<0.05	----
Demeton-S-methyl	919-86-8	0.05	mg/kg		----	----	----	<0.05	----
Monocrotophos	6923-22-4	0.2	mg/kg		----	----	----	<0.2	----
Dimethoate	60-51-5	0.05	mg/kg		----	----	----	<0.05	----
Diazinon	333-41-5	0.05	mg/kg		----	----	----	<0.05	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg		----	----	----	<0.05	----
Parathion-methyl	298-00-0	0.2	mg/kg		----	----	----	<0.2	----
Malathion	121-75-5	0.05	mg/kg		----	----	----	<0.05	----
Fenthion	55-38-9	0.05	mg/kg		----	----	----	<0.05	----
Chlorpyrifos	2921-88-2	0.05	mg/kg		----	----	----	<0.05	----
Parathion	56-38-2	0.2	mg/kg		----	----	----	<0.2	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg		----	----	----	<0.05	----
Chlorfenvinphos	470-90-6	0.05	mg/kg		----	----	----	<0.05	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg		----	----	----	<0.05	----
Fenamiphos	22224-92-6	0.05	mg/kg		----	----	----	<0.05	----
Prothiofos	34643-46-4	0.05	mg/kg		----	----	----	<0.05	----
Ethion	563-12-2	0.05	mg/kg		----	----	----	<0.05	----
Carbophenothion	786-19-6	0.05	mg/kg		----	----	----	<0.05	----
Azinphos Methyl	86-50-0	0.05	mg/kg		----	----	----	<0.05	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	<0.5	----	----	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	<0.5	----	----	<0.5
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	<0.5	----	----	<0.5
Fluorene	86-73-7	0.5	mg/kg		<0.5	<0.5	----	----	<0.5
Phenanthrene	85-01-8	0.5	mg/kg		<0.5	<0.5	----	----	<0.5
Anthracene	120-12-7	0.5	mg/kg		<0.5	<0.5	----	----	<0.5
Fluoranthene	206-44-0	0.5	mg/kg		<0.5	<0.5	----	----	<0.5
Pyrene	129-00-0	0.5	mg/kg		<0.5	<0.5	----	----	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg		<0.5	<0.5	----	----	<0.5
Chrysene	218-01-9	0.5	mg/kg		<0.5	<0.5	----	----	<0.5

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BH04-0.1-0.2	BH05-0.0-0.1	BH05-0.4-0.5	BH06-0.0-0.1	BH06-0.4-0.5
				Sampling date / time	01-Mar-2021 00:00	01-Mar-2021 00:00	01-Mar-2021 00:00	01-Mar-2021 00:00	01-Mar-2021 00:00
Compound	CAS Number	LOR	Unit		EM2103778-017	EM2103778-022	EM2103778-023	EM2103778-027	EM2103778-029
					Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg		<0.5	<0.5	----	----	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		<0.5	<0.5	----	----	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg		<0.5	<0.5	----	----	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		<0.5	<0.5	----	----	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		<0.5	<0.5	----	----	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		<0.5	<0.5	----	----	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		<0.5	<0.5	----	----	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		<0.5	<0.5	----	----	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		**0.6**	**0.6**	----	----	**0.6**
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		**1.2**	**1.2**	----	----	**1.2**
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	<10	----	----	<10
C10 - C14 Fraction	----	50	mg/kg		<50	<50	----	----	<50
C15 - C28 Fraction	----	100	mg/kg		<100	<100	----	----	<100
C29 - C36 Fraction	----	100	mg/kg		<100	<100	----	----	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	<50	----	----	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	<10	----	----	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	----	----	<10
>C10 - C16 Fraction	----	50	mg/kg		<50	<50	----	----	<50
>C16 - C34 Fraction	----	100	mg/kg		<100	<100	----	----	<100
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	----	----	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	<50	----	----	<50
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	----	----	<50
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	----	----	<0.2
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	----	----	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	----	----	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		**2.1**	<0.5	----	----	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg		**1.0**	<0.5	----	----	<0.5
^ Sum of BTEX	----	0.2	mg/kg		**3.1**	<0.2	----	----	<0.2
^ Total Xylenes	----	0.5	mg/kg		**3.1**	<0.5	----	----	<0.5

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	BH04-0.1-0.2	BH05-0.0-0.1	BH05-0.4-0.5	BH06-0.0-0.1	BH06-0.4-0.5
			Sampling date / time	01-Mar-2021 00:00	01-Mar-2021 00:00	01-Mar-2021 00:00	01-Mar-2021 00:00	01-Mar-2021 00:00
Compound	CAS Number	LOR	Unit	EM2103778-017	EM2103778-022	EM2103778-023	EM2103778-027	EM2103778-029
				Result	Result	Result	Result	Result
EP080: BTEXN - Continued								
Naphthalene	91-20-3	1	mg/kg	<1	<1	----	----	<1
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	----	----	88.1	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	----	----	79.4	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	88.8	76.9	----	----	85.1
2-Chlorophenol-D4	93951-73-6	0.5	%	85.6	75.8	----	----	82.5
2.4.6-Tribromophenol	118-79-6	0.5	%	69.3	53.3	----	----	61.1
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	101	90.7	----	----	97.8
Anthracene-d10	1719-06-8	0.5	%	105	94.6	----	----	98.3
4-Terphenyl-d14	1718-51-0	0.5	%	108	95.0	----	----	103
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	89.1	89.7	----	----	92.1
Toluene-D8	2037-26-5	0.2	%	84.6	84.2	----	----	87.3
4-Bromofluorobenzene	460-00-4	0.2	%	97.8	92.7	----	----	95.6

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BH07-0.0-0.1	BH08-0.0-0.1	BH08-0.4-0.5	BH08-0.9-1.0	BH09-0.4-0.5
				Sampling date / time	01-Mar-2021 00:00	01-Mar-2021 00:00	01-Mar-2021 00:00	01-Mar-2021 00:00	02-Mar-2021 00:00
Compound	CAS Number	LOR	Unit		EM2103778-033	EM2103778-038	EM2103778-039	EM2103778-040	EM2103778-044
					Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		3.8	3.6	13.7	8.3	10.9
EG005(ED093)T: Total Metals by ICP-AES									
Barium	7440-39-3	10	mg/kg		----	40	----	----	----
Beryllium	7440-41-7	1	mg/kg		----	<1	----	----	----
Cobalt	7440-48-4	2	mg/kg		----	7	----	----	----
Iron	7439-89-6	50	mg/kg		----	19300	----	----	----
Manganese	7439-96-5	5	mg/kg		----	269	----	----	----
Silver	7440-22-4	2	mg/kg		----	<2	----	----	----
Arsenic	7440-38-2	5	mg/kg		<5	<5	----	6	6
Cadmium	7440-43-9	1	mg/kg		<1	<1	----	<1	<1
Chromium	7440-47-3	2	mg/kg		17	16	----	25	41
Copper	7440-50-8	5	mg/kg		9	9	----	14	18
Lead	7439-92-1	5	mg/kg		21	22	----	13	21
Nickel	7440-02-0	2	mg/kg		7	7	----	13	25
Zinc	7440-66-6	5	mg/kg		50	31	----	33	40
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	----	<0.1	<0.1
EG048: Hexavalent Chromium (Alkaline Digest)									
Hexavalent Chromium	18540-29-9	0.5	mg/kg		----	<0.5	----	----	----
EK026SF: Total CN by Segmented Flow Analyser									
Total Cyanide	57-12-5	1	mg/kg		----	<1	----	----	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		----	<0.1	----	----	----
EP068A: Organochlorine Pesticides (OC)									
alpha-BHC	319-84-6	0.05	mg/kg		----	<0.05	<0.05	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg		----	<0.05	<0.05	----	----
beta-BHC	319-85-7	0.05	mg/kg		----	<0.05	<0.05	----	----
gamma-BHC	58-89-9	0.05	mg/kg		----	<0.05	<0.05	----	----
delta-BHC	319-86-8	0.05	mg/kg		----	<0.05	<0.05	----	----
Heptachlor	76-44-8	0.05	mg/kg		----	<0.05	<0.05	----	----
Aldrin	309-00-2	0.05	mg/kg		----	<0.05	<0.05	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg		----	<0.05	<0.05	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg		----	<0.05	<0.05	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg		----	<0.05	<0.05	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BH07-0.0-0.1	BH08-0.0-0.1	BH08-0.4-0.5	BH08-0.9-1.0	BH09-0.4-0.5
				Sampling date / time	01-Mar-2021 00:00	01-Mar-2021 00:00	01-Mar-2021 00:00	01-Mar-2021 00:00	02-Mar-2021 00:00
Compound	CAS Number	LOR	Unit		EM2103778-033	EM2103778-038	EM2103778-039	EM2103778-040	EM2103778-044
					Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued									
alpha-Endosulfan	959-98-8	0.05	mg/kg		----	<0.05	<0.05	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg		----	<0.05	<0.05	----	----
Dieldrin	60-57-1	0.05	mg/kg		----	<0.05	<0.05	----	----
4.4`-DDE	72-55-9	0.05	mg/kg		----	<0.05	<0.05	----	----
Endrin	72-20-8	0.05	mg/kg		----	<0.05	<0.05	----	----
beta-Endosulfan	33213-65-9	0.05	mg/kg		----	<0.05	<0.05	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg		----	<0.05	<0.05	----	----
4.4`-DDD	72-54-8	0.05	mg/kg		----	<0.05	<0.05	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg		----	<0.05	<0.05	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg		----	<0.05	<0.05	----	----
4.4`-DDT	50-29-3	0.2	mg/kg		----	<0.2	<0.2	----	----
Endrin ketone	53494-70-5	0.05	mg/kg		----	<0.05	<0.05	----	----
Methoxychlor	72-43-5	0.2	mg/kg		----	<0.2	<0.2	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg		----	<0.05	<0.05	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg		----	<0.05	<0.05	----	----
EP068B: Organophosphorus Pesticides (OP)									
Dichlorvos	62-73-7	0.05	mg/kg		----	----	<0.05	----	----
Demeton-S-methyl	919-86-8	0.05	mg/kg		----	----	<0.05	----	----
Monocrotophos	6923-22-4	0.2	mg/kg		----	----	<0.2	----	----
Dimethoate	60-51-5	0.05	mg/kg		----	----	<0.05	----	----
Diazinon	333-41-5	0.05	mg/kg		----	----	<0.05	----	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg		----	----	<0.05	----	----
Parathion-methyl	298-00-0	0.2	mg/kg		----	----	<0.2	----	----
Malathion	121-75-5	0.05	mg/kg		----	----	<0.05	----	----
Fenthion	55-38-9	0.05	mg/kg		----	----	<0.05	----	----
Chlorpyrifos	2921-88-2	0.05	mg/kg		----	----	<0.05	----	----
Parathion	56-38-2	0.2	mg/kg		----	----	<0.2	----	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg		----	----	<0.05	----	----
Chlorfenvinphos	470-90-6	0.05	mg/kg		----	----	<0.05	----	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg		----	----	<0.05	----	----
Fenamiphos	22224-92-6	0.05	mg/kg		----	----	<0.05	----	----
Prothiofos	34643-46-4	0.05	mg/kg		----	----	<0.05	----	----
Ethion	563-12-2	0.05	mg/kg		----	----	<0.05	----	----
Carbophenothion	786-19-6	0.05	mg/kg		----	----	<0.05	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	BH07-0.0-0.1	BH08-0.0-0.1	BH08-0.4-0.5	BH08-0.9-1.0	BH09-0.4-0.5
			Sampling date / time	01-Mar-2021 00:00	01-Mar-2021 00:00	01-Mar-2021 00:00	01-Mar-2021 00:00	02-Mar-2021 00:00
Compound	CAS Number	LOR	Unit	EM2103778-033	EM2103778-038	EM2103778-039	EM2103778-040	EM2103778-044
				Result	Result	Result	Result	Result
EP068B: Organophosphorus Pesticides (OP) - Continued								
Azinphos Methyl	86-50-0	0.05	mg/kg	----	----	<0.05	----	----
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	0.5	mg/kg	----	<0.5	----	----	----
2-Chlorophenol	95-57-8	0.5	mg/kg	----	<0.5	----	----	----
2-Methylphenol	95-48-7	0.5	mg/kg	----	<0.5	----	----	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg	----	<1	----	----	----
2-Nitrophenol	88-75-5	0.5	mg/kg	----	<0.5	----	----	----
2.4-Dimethylphenol	105-67-9	0.5	mg/kg	----	<0.5	----	----	----
2.4-Dichlorophenol	120-83-2	0.5	mg/kg	----	<0.5	----	----	----
2.6-Dichlorophenol	87-65-0	0.5	mg/kg	----	<0.5	----	----	----
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	----	<0.5	----	----	----
2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	----	<0.5	----	----	----
2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	----	<0.5	----	----	----
Pentachlorophenol	87-86-5	2	mg/kg	----	<2	----	----	----
^ Sum of Phenols	----	0.5	mg/kg	----	<0.5	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	<0.5	----	<0.5	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	<0.5	----	<0.5	----
Acenaphthene	83-32-9	0.5	mg/kg	----	<0.5	----	<0.5	----
Fluorene	86-73-7	0.5	mg/kg	----	<0.5	----	<0.5	----
Phenanthrene	85-01-8	0.5	mg/kg	----	<0.5	----	<0.5	----
Anthracene	120-12-7	0.5	mg/kg	----	<0.5	----	<0.5	----
Fluoranthene	206-44-0	0.5	mg/kg	----	<0.5	----	<0.5	----
Pyrene	129-00-0	0.5	mg/kg	----	<0.5	----	<0.5	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	<0.5	----	<0.5	----
Chrysene	218-01-9	0.5	mg/kg	----	<0.5	----	<0.5	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	<0.5	----	<0.5	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	<0.5	----	<0.5	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	<0.5	----	<0.5	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	<0.5	----	<0.5	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	<0.5	----	<0.5	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	<0.5	----	<0.5	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	<0.5	----	<0.5	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	<0.5	----	<0.5	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BH07-0.0-0.1	BH08-0.0-0.1	BH08-0.4-0.5	BH08-0.9-1.0	BH09-0.4-0.5
				Sampling date / time	01-Mar-2021 00:00	01-Mar-2021 00:00	01-Mar-2021 00:00	01-Mar-2021 00:00	02-Mar-2021 00:00
Compound	CAS Number	LOR	Unit		EM2103778-033	EM2103778-038	EM2103778-039	EM2103778-040	EM2103778-044
					Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		----	**0.6**	----	**0.6**	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		----	**1.2**	----	**1.2**	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		----	<10	----	<10	----
C10 - C14 Fraction	----	50	mg/kg		----	<50	----	<50	----
C15 - C28 Fraction	----	100	mg/kg		----	<100	----	<100	----
C29 - C36 Fraction	----	100	mg/kg		----	<100	----	<100	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg		----	<50	----	<50	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg		----	<10	----	<10	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		----	<10	----	<10	----
>C10 - C16 Fraction	----	50	mg/kg		----	<50	----	<50	----
>C16 - C34 Fraction	----	100	mg/kg		----	<100	----	<100	----
>C34 - C40 Fraction	----	100	mg/kg		----	<100	----	<100	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		----	<50	----	<50	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		----	<50	----	<50	----
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		----	<0.2	----	<0.2	----
Toluene	108-88-3	0.5	mg/kg		----	<0.5	----	<0.5	----
Ethylbenzene	100-41-4	0.5	mg/kg		----	<0.5	----	<0.5	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		----	<0.5	----	<0.5	----
ortho-Xylene	95-47-6	0.5	mg/kg		----	<0.5	----	<0.5	----
^ Sum of BTEX	----	0.2	mg/kg		----	<0.2	----	<0.2	----
^ Total Xylenes	----	0.5	mg/kg		----	<0.5	----	<0.5	----
Naphthalene	91-20-3	1	mg/kg		----	<1	----	<1	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		----	**95.1**	----	----	----
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.05	%		----	**92.8**	**93.4**	----	----
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.05	%		----	**76.6**	**88.6**	----	----
EP075(SIM)S: Phenolic Compound Surrogates									

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BH07-0.0-0.1	BH08-0.0-0.1	BH08-0.4-0.5	BH08-0.9-1.0	BH09-0.4-0.5
				Sampling date / time	01-Mar-2021 00:00	01-Mar-2021 00:00	01-Mar-2021 00:00	01-Mar-2021 00:00	02-Mar-2021 00:00
Compound	CAS Number	LOR	Unit		EM2103778-033	EM2103778-038	EM2103778-039	EM2103778-040	EM2103778-044
					Result	Result	Result	Result	Result
EP075(SIM)S: Phenolic Compound Surrogates - Continued									
Phenol-d6	13127-88-3	0.5	%		----	**85.4**	----	**83.8**	----
2-Chlorophenol-D4	93951-73-6	0.5	%		----	**82.7**	----	**81.5**	----
2.4.6-Tribromophenol	118-79-6	0.5	%		----	**60.2**	----	**69.0**	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		----	**97.1**	----	**95.5**	----
Anthracene-d10	1719-06-8	0.5	%		----	**97.4**	----	**96.2**	----
4-Terphenyl-d14	1718-51-0	0.5	%		----	**102**	----	**101**	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		----	**89.4**	----	**86.8**	----
Toluene-D8	2037-26-5	0.2	%		----	**85.1**	----	**83.7**	----
4-Bromofluorobenzene	460-00-4	0.2	%		----	**92.6**	----	**91.5**	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	BH10-0-0.1	BH10-0.9-1.0	BH11-0-0.1	BH11-0.4-0.5	BH12-0.4-0.5
			Sampling date / time	02-Mar-2021 00:00	02-Mar-2021 00:00	02-Mar-2021 00:00	02-Mar-2021 00:00	02-Mar-2021 00:00
Compound	CAS Number	LOR	Unit	EM2103778-048	EM2103778-051	EM2103778-054	EM2103778-055	EM2103778-060
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	2.5	13.3	6.1	15.5	14.1
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	7	8	8	7
Cadmium	7440-43-9	1	mg/kg	----	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	----	37	12	58	46
Copper	7440-50-8	5	mg/kg	----	16	10	23	20
Lead	7439-92-1	5	mg/kg	----	19	22	21	19
Nickel	7440-02-0	2	mg/kg	----	26	7	35	29
Zinc	7440-66-6	5	mg/kg	----	39	54	78	53
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	<0.1	<0.1	0.1	0.1
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	<0.05	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	<0.05	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	<0.05	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	<0.05	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	<0.05	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg	<0.05	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	----	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	<0.05	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	0.07	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	----	----	----	----
Endrin	72-20-8	0.05	mg/kg	<0.05	----	----	----	----
beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	----	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	<0.05	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	----	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	BH10-0-0.1	BH10-0.9-1.0	BH11-0-0.1	BH11-0.4-0.5	BH12-0.4-0.5
			Sampling date / time	02-Mar-2021 00:00	02-Mar-2021 00:00	02-Mar-2021 00:00	02-Mar-2021 00:00	02-Mar-2021 00:00
Compound	CAS Number	LOR	Unit	EM2103778-048	EM2103778-051	EM2103778-054	EM2103778-055	EM2103778-060
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
Methoxychlor	72-43-5	0.2	mg/kg	<0.2	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	**0.07**	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	<0.05	----	----	----	----
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	<0.05	----	----	----	----
Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	----	----	----	----
Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	----	----	----	----
Dimethoate	60-51-5	0.05	mg/kg	<0.05	----	----	----	----
Diazinon	333-41-5	0.05	mg/kg	<0.05	----	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	----	----	----	----
Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	----	----	----	----
Malathion	121-75-5	0.05	mg/kg	<0.05	----	----	----	----
Fenthion	55-38-9	0.05	mg/kg	<0.05	----	----	----	----
Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	----	----	----	----
Parathion	56-38-2	0.2	mg/kg	<0.2	----	----	----	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	----	----	----	----
Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	----	----	----	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	----	----	----	----
Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	----	----	----	----
Prothiofos	34643-46-4	0.05	mg/kg	<0.05	----	----	----	----
Ethion	563-12-2	0.05	mg/kg	<0.05	----	----	----	----
Carbophenothion	786-19-6	0.05	mg/kg	<0.05	----	----	----	----
Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	<0.5	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	<0.5	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	<0.5	----	----
Fluorene	86-73-7	0.5	mg/kg	----	----	<0.5	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	<0.5	----	----
Anthracene	120-12-7	0.5	mg/kg	----	----	<0.5	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	<0.5	----	----
Pyrene	129-00-0	0.5	mg/kg	----	----	<0.5	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	<0.5	----	----
Chrysene	218-01-9	0.5	mg/kg	----	----	<0.5	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BH10-0-0.1	BH10-0.9-1.0	BH11-0-0.1	BH11-0.4-0.5	BH12-0.4-0.5
				Sampling date / time	02-Mar-2021 00:00	02-Mar-2021 00:00	02-Mar-2021 00:00	02-Mar-2021 00:00	02-Mar-2021 00:00
Compound	CAS Number	LOR	Unit		EM2103778-048	EM2103778-051	EM2103778-054	EM2103778-055	EM2103778-060
					Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg		----	----	<0.5	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		----	----	<0.5	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg		----	----	<0.5	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		----	----	<0.5	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		----	----	<0.5	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		----	----	<0.5	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		----	----	<0.5	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		----	----	<0.5	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		----	----	**0.6**	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		----	----	**1.2**	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		----	----	<10	----	----
C10 - C14 Fraction	----	50	mg/kg		----	----	<50	----	----
C15 - C28 Fraction	----	100	mg/kg		----	----	<100	----	----
C29 - C36 Fraction	----	100	mg/kg		----	----	<100	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg		----	----	<50	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg		----	----	<10	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		----	----	<10	----	----
>C10 - C16 Fraction	----	50	mg/kg		----	----	<50	----	----
>C16 - C34 Fraction	----	100	mg/kg		----	----	<100	----	----
>C34 - C40 Fraction	----	100	mg/kg		----	----	<100	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		----	----	<50	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		----	----	<50	----	----
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		----	----	<0.2	----	----
Toluene	108-88-3	0.5	mg/kg		----	----	<0.5	----	----
Ethylbenzene	100-41-4	0.5	mg/kg		----	----	<0.5	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		----	----	<0.5	----	----
ortho-Xylene	95-47-6	0.5	mg/kg		----	----	<0.5	----	----
^ Sum of BTEX	----	0.2	mg/kg		----	----	<0.2	----	----
^ Total Xylenes	----	0.5	mg/kg		----	----	<0.5	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	BH10-0-0.1	BH10-0.9-1.0	BH11-0-0.1	BH11-0.4-0.5	BH12-0.4-0.5
			Sampling date / time	02-Mar-2021 00:00	02-Mar-2021 00:00	02-Mar-2021 00:00	02-Mar-2021 00:00	02-Mar-2021 00:00
Compound	CAS Number	LOR	Unit	EM2103778-048	EM2103778-051	EM2103778-054	EM2103778-055	EM2103778-060
				Result	Result	Result	Result	Result
EP080: BTEXN - Continued								
Naphthalene	91-20-3	1	mg/kg	----	----	<1	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	**89.1**	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	**84.7**	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	**72.8**	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	**72.0**	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	**52.1**	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	**86.7**	----	----
Anthracene-d10	1719-06-8	0.5	%	----	----	**93.1**	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	**91.9**	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	**86.6**	----	----
Toluene-D8	2037-26-5	0.2	%	----	----	**83.4**	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	**89.0**	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	BH13-0-0.1	BH14-0-0.1	BH15-0.4-0.5	BH16-0-0.1	BH16-0.1-0.2
			Sampling date / time	02-Mar-2021 00:00	02-Mar-2021 00:00	02-Mar-2021 00:00	02-Mar-2021 00:00	02-Mar-2021 00:00
Compound	CAS Number	LOR	Unit	EM2103778-064	EM2103778-069	EM2103778-075	EM2103778-079	EM2103778-080
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	3.8	4.8	19.3	4.0	5.2
EG005(ED093)T: Total Metals by ICP-AES								
Barium	7440-39-3	10	mg/kg	----	----	----	120	----
Beryllium	7440-41-7	1	mg/kg	----	----	----	<1	----
Cobalt	7440-48-4	2	mg/kg	----	----	----	4	----
Iron	7439-89-6	50	mg/kg	----	----	----	13400	----
Manganese	7439-96-5	5	mg/kg	----	----	----	239	----
Silver	7440-22-4	2	mg/kg	----	----	----	<2	----
Arsenic	7440-38-2	5	mg/kg	<5	----	10	10	----
Cadmium	7440-43-9	1	mg/kg	<1	----	<1	<1	----
Chromium	7440-47-3	2	mg/kg	20	----	57	15	----
Copper	7440-50-8	5	mg/kg	10	----	26	16	----
Lead	7439-92-1	5	mg/kg	24	----	22	14	----
Nickel	7440-02-0	2	mg/kg	11	----	41	9	----
Zinc	7440-66-6	5	mg/kg	29	----	46	48	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	----	0.1	<0.1	----
EG048: Hexavalent Chromium (Alkaline Digest)								
Hexavalent Chromium	18540-29-9	0.5	mg/kg	----	----	----	<0.5	----
EK026SF: Total CN by Segmented Flow Analyser								
Total Cyanide	57-12-5	1	mg/kg	----	----	----	<1	----
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.1	mg/kg	----	----	----	<0.1	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	<0.05	----	<0.05	<0.05
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	<0.05	----	<0.05	<0.05
beta-BHC	319-85-7	0.05	mg/kg	----	<0.05	----	<0.05	<0.05
gamma-BHC	58-89-9	0.05	mg/kg	----	<0.05	----	<0.05	<0.05
delta-BHC	319-86-8	0.05	mg/kg	----	<0.05	----	<0.05	<0.05
Heptachlor	76-44-8	0.05	mg/kg	----	<0.05	----	<0.05	<0.05
Aldrin	309-00-2	0.05	mg/kg	----	<0.05	----	<0.05	<0.05
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	<0.05	----	<0.05	<0.05
^ Total Chlordane (sum)	----	0.05	mg/kg	----	<0.05	----	<0.05	<0.05
trans-Chlordane	5103-74-2	0.05	mg/kg	----	<0.05	----	<0.05	<0.05

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BH13-0-0.1	BH14-0-0.1	BH15-0.4-0.5	BH16-0-0.1	BH16-0.1-0.2
				Sampling date / time	02-Mar-2021 00:00	02-Mar-2021 00:00	02-Mar-2021 00:00	02-Mar-2021 00:00	02-Mar-2021 00:00
Compound	CAS Number	LOR	Unit		EM2103778-064	EM2103778-069	EM2103778-075	EM2103778-079	EM2103778-080
					Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued									
alpha-Endosulfan	959-98-8	0.05	mg/kg		----	<0.05	----	<0.05	<0.05
cis-Chlordane	5103-71-9	0.05	mg/kg		----	<0.05	----	<0.05	<0.05
Dieldrin	60-57-1	0.05	mg/kg		----	<0.05	----	**0.10**	<0.05
4.4`-DDE	72-55-9	0.05	mg/kg		----	<0.05	----	<0.05	<0.05
Endrin	72-20-8	0.05	mg/kg		----	<0.05	----	<0.05	<0.05
beta-Endosulfan	33213-65-9	0.05	mg/kg		----	<0.05	----	<0.05	<0.05
^ Endosulfan (sum)	115-29-7	0.05	mg/kg		----	<0.05	----	<0.05	<0.05
4.4`-DDD	72-54-8	0.05	mg/kg		----	<0.05	----	<0.05	<0.05
Endrin aldehyde	7421-93-4	0.05	mg/kg		----	<0.05	----	<0.05	<0.05
Endosulfan sulfate	1031-07-8	0.05	mg/kg		----	<0.05	----	<0.05	<0.05
4.4`-DDT	50-29-3	0.2	mg/kg		----	<0.2	----	<0.2	<0.2
Endrin ketone	53494-70-5	0.05	mg/kg		----	<0.05	----	<0.05	<0.05
Methoxychlor	72-43-5	0.2	mg/kg		----	<0.2	----	<0.2	<0.2
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg		----	<0.05	----	**0.10**	<0.05
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg		----	<0.05	----	<0.05	<0.05
EP068B: Organophosphorus Pesticides (OP)									
Dichlorvos	62-73-7	0.05	mg/kg		----	<0.05	----	----	<0.05
Demeton-S-methyl	919-86-8	0.05	mg/kg		----	<0.05	----	----	<0.05
Monocrotophos	6923-22-4	0.2	mg/kg		----	<0.2	----	----	<0.2
Dimethoate	60-51-5	0.05	mg/kg		----	<0.05	----	----	<0.05
Diazinon	333-41-5	0.05	mg/kg		----	<0.05	----	----	<0.05
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg		----	<0.05	----	----	<0.05
Parathion-methyl	298-00-0	0.2	mg/kg		----	<0.2	----	----	<0.2
Malathion	121-75-5	0.05	mg/kg		----	<0.05	----	----	<0.05
Fenthion	55-38-9	0.05	mg/kg		----	<0.05	----	----	<0.05
Chlorpyrifos	2921-88-2	0.05	mg/kg		----	<0.05	----	----	<0.05
Parathion	56-38-2	0.2	mg/kg		----	<0.2	----	----	<0.2
Pirimphos-ethyl	23505-41-1	0.05	mg/kg		----	<0.05	----	----	<0.05
Chlorfenvinphos	470-90-6	0.05	mg/kg		----	<0.05	----	----	<0.05
Bromophos-ethyl	4824-78-6	0.05	mg/kg		----	<0.05	----	----	<0.05
Fenamiphos	22224-92-6	0.05	mg/kg		----	<0.05	----	----	<0.05
Prothiofos	34643-46-4	0.05	mg/kg		----	<0.05	----	----	<0.05
Ethion	563-12-2	0.05	mg/kg		----	<0.05	----	----	<0.05
Carbophenothion	786-19-6	0.05	mg/kg		----	<0.05	----	----	<0.05

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BH13-0-0.1	BH14-0-0.1	BH15-0.4-0.5	BH16-0-0.1	BH16-0.1-0.2
				Sampling date / time	02-Mar-2021 00:00	02-Mar-2021 00:00	02-Mar-2021 00:00	02-Mar-2021 00:00	02-Mar-2021 00:00
Compound	CAS Number	LOR	Unit		EM2103778-064	EM2103778-069	EM2103778-075	EM2103778-079	EM2103778-080
					Result	Result	Result	Result	Result
EP068B: Organophosphorus Pesticides (OP) - Continued									
Azinphos Methyl	86-50-0	0.05	mg/kg		----	<0.05	----	----	<0.05
EP075(SIM)A: Phenolic Compounds									
Phenol	108-95-2	0.5	mg/kg		----	----	----	<0.5	----
2-Chlorophenol	95-57-8	0.5	mg/kg		----	----	----	<0.5	----
2-Methylphenol	95-48-7	0.5	mg/kg		----	----	----	<0.5	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg		----	----	----	<1	----
2-Nitrophenol	88-75-5	0.5	mg/kg		----	----	----	<0.5	----
2.4-Dimethylphenol	105-67-9	0.5	mg/kg		----	----	----	<0.5	----
2.4-Dichlorophenol	120-83-2	0.5	mg/kg		----	----	----	<0.5	----
2.6-Dichlorophenol	87-65-0	0.5	mg/kg		----	----	----	<0.5	----
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg		----	----	----	<0.5	----
2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg		----	----	----	<0.5	----
2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg		----	----	----	<0.5	----
Pentachlorophenol	87-86-5	2	mg/kg		----	----	----	<2	----
^ Sum of Phenols	----	0.5	mg/kg		----	----	----	<0.5	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	----	----	<0.5	----
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	----	----	<0.5	----
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	----	----	<0.5	----
Fluorene	86-73-7	0.5	mg/kg		<0.5	----	----	<0.5	----
Phenanthrene	85-01-8	0.5	mg/kg		<0.5	----	----	<0.5	----
Anthracene	120-12-7	0.5	mg/kg		<0.5	----	----	<0.5	----
Fluoranthene	206-44-0	0.5	mg/kg		<0.5	----	----	<0.5	----
Pyrene	129-00-0	0.5	mg/kg		<0.5	----	----	<0.5	----
Benz(a)anthracene	56-55-3	0.5	mg/kg		<0.5	----	----	<0.5	----
Chrysene	218-01-9	0.5	mg/kg		<0.5	----	----	<0.5	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg		<0.5	----	----	<0.5	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		<0.5	----	----	<0.5	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg		<0.5	----	----	<0.5	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		<0.5	----	----	<0.5	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		<0.5	----	----	<0.5	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		<0.5	----	----	<0.5	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		<0.5	----	----	<0.5	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		<0.5	----	----	<0.5	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	BH13-0-0.1	BH14-0-0.1	BH15-0.4-0.5	BH16-0-0.1	BH16-0.1-0.2
			Sampling date / time	02-Mar-2021 00:00	02-Mar-2021 00:00	02-Mar-2021 00:00	02-Mar-2021 00:00	02-Mar-2021 00:00
Compound	CAS Number	LOR	Unit	EM2103778-064	EM2103778-069	EM2103778-075	EM2103778-079	EM2103778-080
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	**0.6**	----	----	**0.6**	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	**1.2**	----	----	**1.2**	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	----	----	<10	----
C10 - C14 Fraction	----	50	mg/kg	<50	----	----	<50	----
C15 - C28 Fraction	----	100	mg/kg	<100	----	----	<100	----
C29 - C36 Fraction	----	100	mg/kg	<100	----	----	<100	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	----	----	<50	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	----	----	<10	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	----	----	<10	----
>C10 - C16 Fraction	----	50	mg/kg	<50	----	----	<50	----
>C16 - C34 Fraction	----	100	mg/kg	<100	----	----	<100	----
>C34 - C40 Fraction	----	100	mg/kg	<100	----	----	<100	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	----	----	<50	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	----	----	<50	----
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	----	----	<0.2	----
Toluene	108-88-3	0.5	mg/kg	<0.5	----	----	<0.5	----
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	----	----	<0.5	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	----	----	<0.5	----
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	----	----	<0.5	----
^ Sum of BTEX	----	0.2	mg/kg	<0.2	----	----	<0.2	----
^ Total Xylenes	----	0.5	mg/kg	<0.5	----	----	<0.5	----
Naphthalene	91-20-3	1	mg/kg	<1	----	----	<1	----
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	----	----	----	**44.7**	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	**89.4**	----	**94.3**	**83.9**
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	**89.1**	----	**91.5**	**107**
EP075(SIM)S: Phenolic Compound Surrogates								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BH13-0-0.1	BH14-0-0.1	BH15-0.4-0.5	BH16-0-0.1	BH16-0.1-0.2
				Sampling date / time	02-Mar-2021 00:00	02-Mar-2021 00:00	02-Mar-2021 00:00	02-Mar-2021 00:00	02-Mar-2021 00:00
Compound	CAS Number	LOR	Unit		EM2103778-064	EM2103778-069	EM2103778-075	EM2103778-079	EM2103778-080
					Result	Result	Result	Result	Result
EP075(SIM)S: Phenolic Compound Surrogates - Continued									
Phenol-d6	13127-88-3	0.5	%		**84.2**	----	----	**79.7**	----
2-Chlorophenol-D4	93951-73-6	0.5	%		**80.6**	----	----	**77.5**	----
2.4.6-Tribromophenol	118-79-6	0.5	%		**57.4**	----	----	**57.2**	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		**96.2**	----	----	**93.2**	----
Anthracene-d10	1719-06-8	0.5	%		**96.2**	----	----	**98.4**	----
4-Terphenyl-d14	1718-51-0	0.5	%		**103**	----	----	**97.2**	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		**97.5**	----	----	**92.4**	----
Toluene-D8	2037-26-5	0.2	%		**92.3**	----	----	**86.7**	----
4-Bromofluorobenzene	460-00-4	0.2	%		**97.2**	----	----	**93.6**	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	QC03	QC07	QC08	----	----
			Sampling date / time	01-Mar-2021 00:00	02-Mar-2021 00:00	02-Mar-2021 00:00	----	----
Compound	CAS Number	LOR	Unit	EM2103778-087	EM2103778-091	EM2103778-092	--------	--------
				Result	Result	Result	----	----
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	**7.0**	**1.1**	**2.8**	----	----
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	**6**	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	<1	----	----	----	----
Chromium	7440-47-3	2	mg/kg	**20**	----	----	----	----
Copper	7440-50-8	5	mg/kg	**13**	----	----	----	----
Lead	7439-92-1	5	mg/kg	**12**	----	----	----	----
Nickel	7440-02-0	2	mg/kg	**12**	----	----	----	----
Zinc	7440-66-6	5	mg/kg	**33**	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	<0.05	<0.05	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	<0.05	<0.05	----	----
beta-BHC	319-85-7	0.05	mg/kg	----	<0.05	<0.05	----	----
gamma-BHC	58-89-9	0.05	mg/kg	----	<0.05	<0.05	----	----
delta-BHC	319-86-8	0.05	mg/kg	----	<0.05	<0.05	----	----
Heptachlor	76-44-8	0.05	mg/kg	----	<0.05	<0.05	----	----
Aldrin	309-00-2	0.05	mg/kg	----	<0.05	<0.05	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	<0.05	<0.05	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	----	<0.05	<0.05	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	<0.05	<0.05	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	<0.05	<0.05	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	<0.05	<0.05	----	----
Dieldrin	60-57-1	0.05	mg/kg	----	<0.05	**0.06**	----	----
4.4`-DDE	72-55-9	0.05	mg/kg	----	<0.05	<0.05	----	----
Endrin	72-20-8	0.05	mg/kg	----	<0.05	<0.05	----	----
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	<0.05	<0.05	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	<0.05	<0.05	----	----
4.4`-DDD	72-54-8	0.05	mg/kg	----	<0.05	<0.05	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	<0.05	<0.05	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	<0.05	<0.05	----	----
4.4`-DDT	50-29-3	0.2	mg/kg	----	<0.2	<0.2	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	----	<0.05	<0.05	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	QC03	QC07	QC08	----	----
				Sampling date / time	01-Mar-2021 00:00	02-Mar-2021 00:00	02-Mar-2021 00:00	----	----
Compound	CAS Number	LOR	Unit		EM2103778-087	EM2103778-091	EM2103778-092	--------	--------
					Result	Result	Result	----	----
EP068A: Organochlorine Pesticides (OC) - Continued									
Methoxychlor	72-43-5	0.2	mg/kg	----	<0.2	<0.2	----	----	
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	<0.05	**0.06**	----	----	
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	----	<0.05	<0.05	----	----	
EP068B: Organophosphorus Pesticides (OP)									
Dichlorvos	62-73-7	0.05	mg/kg	----	<0.05	<0.05	----	----	
Demeton-S-methyl	919-86-8	0.05	mg/kg	----	<0.05	<0.05	----	----	
Monocrotophos	6923-22-4	0.2	mg/kg	----	<0.2	<0.2	----	----	
Dimethoate	60-51-5	0.05	mg/kg	----	<0.05	<0.05	----	----	
Diazinon	333-41-5	0.05	mg/kg	----	<0.05	<0.05	----	----	
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	----	<0.05	<0.05	----	----	
Parathion-methyl	298-00-0	0.2	mg/kg	----	<0.2	<0.2	----	----	
Malathion	121-75-5	0.05	mg/kg	----	<0.05	<0.05	----	----	
Fenthion	55-38-9	0.05	mg/kg	----	<0.05	<0.05	----	----	
Chlorpyrifos	2921-88-2	0.05	mg/kg	----	<0.05	<0.05	----	----	
Parathion	56-38-2	0.2	mg/kg	----	<0.2	<0.2	----	----	
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	----	<0.05	<0.05	----	----	
Chlorfenvinphos	470-90-6	0.05	mg/kg	----	<0.05	<0.05	----	----	
Bromophos-ethyl	4824-78-6	0.05	mg/kg	----	<0.05	<0.05	----	----	
Fenamiphos	22224-92-6	0.05	mg/kg	----	<0.05	<0.05	----	----	
Prothiofos	34643-46-4	0.05	mg/kg	----	<0.05	<0.05	----	----	
Ethion	563-12-2	0.05	mg/kg	----	<0.05	<0.05	----	----	
Carbophenothion	786-19-6	0.05	mg/kg	----	<0.05	<0.05	----	----	
Azinphos Methyl	86-50-0	0.05	mg/kg	----	<0.05	<0.05	----	----	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg	<0.5	----	----	----	----	
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	----	----	----	----	
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	----	----	----	----	
Fluorene	86-73-7	0.5	mg/kg	<0.5	----	----	----	----	
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	----	----	----	----	
Anthracene	120-12-7	0.5	mg/kg	<0.5	----	----	----	----	
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	----	----	----	----	
Pyrene	129-00-0	0.5	mg/kg	<0.5	----	----	----	----	
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	----	----	----	----	
Chrysene	218-01-9	0.5	mg/kg	<0.5	----	----	----	----	

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	QC03	QC07	QC08	----	----
				Sampling date / time	01-Mar-2021 00:00	02-Mar-2021 00:00	02-Mar-2021 00:00	----	----
Compound	CAS Number	LOR	Unit		EM2103778-087	EM2103778-091	EM2103778-092	--------	--------
					Result	Result	Result	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg		<0.5	----	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		<0.5	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg		<0.5	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		<0.5	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		<0.5	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		<0.5	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		**0.6**	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		**1.2**	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	----	----	----	----
C10 - C14 Fraction	----	50	mg/kg		<50	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg		<100	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg		<100	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	----	----	----	----
>C10 - C16 Fraction	----	50	mg/kg		<50	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg		<100	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg		<100	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	----	----	----	----
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	----	----	----	----
Toluene	108-88-3	0.5	mg/kg		<0.5	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg		<0.2	----	----	----	----
^ Total Xylenes	----	0.5	mg/kg		<0.5	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	QC03	QC07	QC08	----	----
				Sampling date / time	01-Mar-2021 00:00	02-Mar-2021 00:00	02-Mar-2021 00:00	----	----
Compound	CAS Number	LOR	Unit		EM2103778-087	EM2103778-091	EM2103778-092	--------	--------
					Result	Result	Result	----	----
EP080: BTEXN - Continued									
Naphthalene	91-20-3	1	mg/kg		<1	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.05	%		----	103	94.6	----	----
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.05	%		----	73.8	66.9	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		82.9	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%		81.0	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%		63.5	----	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		95.2	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%		95.8	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%		100	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		89.9	----	----	----	----
Toluene-D8	2037-26-5	0.2	%		82.8	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%		95.3	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	QC05	QC10	TB01	TB02	----
				Sampling date / time	01-Mar-2021 00:00	02-Mar-2021 00:00	01-Mar-2021 00:00	02-Mar-2021 00:00	----
Compound	CAS Number	LOR	Unit		EM2103778-089	EM2103778-094	EM2103778-095	EM2103778-096	--------
					Result	Result	Result	Result	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		<20	<20	<20	<20	----
C10 - C14 Fraction	----	50	µg/L		<50	<50	----	----	----
C15 - C28 Fraction	----	100	µg/L		<100	<100	----	----	----
C29 - C36 Fraction	----	50	µg/L		<50	<50	----	----	----
^ **C10 - C36 Fraction (sum)**	----	50	µg/L		<50	<50	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	<20	<20	<20	----
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	20	µg/L		<20	<20	<20	<20	----
>C10 - C16 Fraction	----	100	µg/L		<100	<100	----	----	----
>C16 - C34 Fraction	----	100	µg/L		<100	<100	----	----	----
>C34 - C40 Fraction	----	100	µg/L		<100	<100	----	----	----
^ **>C10 - C40 Fraction (sum)**	----	100	µg/L		<100	<100	----	----	----
^ **>C10 - C16 Fraction minus Naphthalene (F2)**	----	100	µg/L		<100	<100	----	----	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	<1	<1	<1	----
Toluene	108-88-3	2	µg/L		<2	<2	<2	<2	----
Ethylbenzene	100-41-4	2	µg/L		<2	<2	<2	<2	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	<2	<2	----
ortho-Xylene	95-47-6	2	µg/L		<2	<2	<2	<2	----
^ **Total Xylenes**	----	2	µg/L		<2	<2	<2	<2	----
^ **Sum of BTEX**	----	1	µg/L		<1	<1	<1	<1	----
Naphthalene	91-20-3	5	µg/L		<5	<5	<5	<5	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	2	%		**87.4**	**90.7**	**86.6**	**88.9**	----
Toluene-D8	2037-26-5	2	%		**96.0**	**94.0**	**95.1**	**93.6**	----
4-Bromofluorobenzene	460-00-4	2	%		**106**	**110**	**105**	**109**	----

Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	36	140
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	62	128
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	40	139
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	54	125
2-Chlorophenol-D4	93951-73-6	65	123
2.4.6-Tribromophenol	118-79-6	34	122
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	61	125
Anthracene-d10	1719-06-8	62	130
4-Terphenyl-d14	1718-51-0	67	133
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	51	125
Toluene-D8	2037-26-5	55	125
4-Bromofluorobenzene	460-00-4	56	124

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	73	129
Toluene-D8	2037-26-5	70	125
4-Bromofluorobenzene	460-00-4	71	129

ALS Environmental

Automated Guideline Comparison Report

SA EPA Waste Disposal Criteria – Table 1&2 Classification of Waste

Work Order	: **EM2103778**	Page	: 1 of 38
Client	: **FYFE PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: STUART TWISS		
Address	: LEVEL 1, 124 SOUTH TERRACE ADELAIDE SOUTH AUSTRALIA 5000	Address	: 4 Westall Rd Springvale VIC Australia 3171
E-mail	: stuart.twiss@fyfe.com.au	E-mail	: Kieren.Burns@alsglobal.com
Telephone	: ----	Telephone	: +61881625130
Facsimile	: ----	Facsimile	: +61-3-8549 9626
Project	: 80975-2	Date Received	: 05-Mar-2021 10:45
Order number	: 11415	Date Analysed	: 05-Mar-2021
C-O-C number	: 80975-2	Date Issued	: 12-Mar-2021 15:22
No. of samples received	: 97		
No. of samples analysed	: 32	Quote number	: AD/025/20

General Comments

This guideline comparison report **only** provides comparison of reported result against limit thresholds for the 'Waste Derived Fill', 'Intermediate Waste', and 'Low Level Contaminated Waste' Categories in Tables 1&2 of SA EPA Publication '4771346 Current Waste Criteria 2010 '.
This guideline comparison report is **NOT** a compliance report. Classification of soils as Waste Derived Fill, Intermediate Contaminated, or Low Level Contaminated requires consideration of a number of other factors including the source of the waste and its risk based assessment, as set out in SA EPA Publication 'Standard for the Production and use of Waste Derived Fill' and measurement uncertainty.
This guideline comparison report only provides comparison data for parameters, specifically listed within the SA EPA WDF guideline, that are analysed by ALS.
Only results in the 'Analytical Results' section have been compared to the guideline.

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

Summary of Thresholds Reached or Exceeded

SA EPA Waste Derived Fill Criteria

Waste Fill Criteria

Client Sample ID	ALS Sample ID	Compound	Method	LOR	Limits	Result
BH02-0.0-0.1	**EM2103778-006**	Lead	EG005T	5	*< 300 mg/kg*	**580 mg/kg**

Analytical Results

Standard for the production and use of waste derived fill
Criteria for the Classification of Waste: Intermediate Contaminated Waste Criteria

Sub-Matrix: **SOIL**

Compound	Method	LOR	Unit	Guideline Lower Limit	Guideline Upper Limit	BH01-0.0-0.1 01-Mar-2021 14:30 EM2103778-001 MU	BH01-0.4-0.5 01-Mar-2021 14:30 EM2103778-002 MU	BH02-0.0-0.1 01-Mar-2021 14:30 EM2103778-006 MU	BH03-0.0-0.1 01-Mar-2021 14:30 EM2103778-011 MU	BH04-0.0-0.1 01-Mar-2021 14:30 EM2103778-016 MU
EG005(ED093)T: Total Metals by ICP-AES										
Arsenic	EG005T	5	mg/kg	----	200	----	----	**12** ± 2	----	----
Beryllium	EG005T	1	mg/kg	----	40	----	----	<1 --	----	----
Cadmium	EG005T	1	mg/kg	----	30	----	----	<1 --	----	----
Cobalt	EG005T	2	mg/kg	----	170	----	----	**4** ± 0.5	----	----
Copper	EG005T	5	mg/kg	----	2000	----	----	**7** ± 1	----	----
Lead	EG005T	5	mg/kg	----	1200	----	----	**580** ± 61	----	----
Manganese	EG005T	5	mg/kg	----	6000	----	----	**468** ± 46	----	----
Nickel	EG005T	2	mg/kg	----	600	----	----	**6** ± 0.7	----	----
Zinc	EG005T	5	mg/kg	----	14000	----	----	**31** ± 4	----	----
EG035T: Total Recoverable Mercury by FIMS										
Mercury	EG035T	0.1	mg/kg	----	30	----	----	<0.1 --	----	----
EG048: Hexavalent Chromium (Alkaline Digest)										
Hexavalent Chromium	EG048G	0.5	mg/kg	----	200	----	----	<0.5 --	----	----
EK026SF: Total CN by Segmented Flow Analyser										
Total Cyanide	EK026SF	1	mg/kg	----	1000	----	----	<1 --	----	----
EP066: Polychlorinated Biphenyls (PCB)										
Total Polychlorinated biphenyls	EP066	0.1	mg/kg	----	2	----	----	<0.1	----	----
EP068A: Organochlorine Pesticides (OC)										
Heptachlor	EP068	0.05	mg/kg	----	2	----	----	<0.05	----	----
Total Chlordane (sum)	EP068	0.05	mg/kg	----	2	----	----	<0.05	----	----
4.4`-DDT	EP068	0.2	mg/kg	----	2	----	----	<0.2	----	----
Sum of Aldrin + Dieldrin	EP068	0.05	mg/kg	----	2	----	----	**0.10**	----	----
EP075(SIM)A: Phenolic Compounds										
Sum of Phenols	EP075(SIM)	0.5	mg/kg	----	17000	----	----	<0.5	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons										
Benzo(a)pyrene	EP075(SIM)	0.5	mg/kg	----	2	----	----	<0.5	----	----
Sum of polycyclic aromatic hydrocarbons	EP075(SIM)	0.5	mg/kg	----	40	----	----	<0.5	----	----
EP080/071: Total Petroleum Hydrocarbons										
C6 - C9 Fraction	EP080	10	mg/kg	----	100	----	----	<10 --	----	----
C10 - C36 Fraction (sum)	EP071	50	mg/kg	----	1000	----	----	<50	----	----
EP080: BTEXN										
Benzene	EP080	0.2	mg/kg	----	5	----	----	<0.2 --	----	----
Toluene	EP080	0.5	mg/kg	----	50	----	----	<0.5 --	----	----

Standard for the production and use of waste derived fill
Criteria for the Classification of Waste: Intermediate Contaminated Waste Criteria

Sub-Matrix: **SOIL**

Compound	*Method*	*LOR*	*Unit*	Guideline Lower Limit	Guideline Upper Limit	*Sample ID* / *Sampling date/time*	**BH01-0.0-0.1** 01-Mar-2021 14:30	**BH01-0.4-0.5** 01-Mar-2021 14:30	**BH02-0.0-0.1** 01-Mar-2021 14:30	**BH03-0.0-0.1** 01-Mar-2021 14:30	**BH04-0.0-0.1** 01-Mar-2021 14:30
							EM2103778-001 MU	**EM2103778-002** MU	**EM2103778-006** MU	**EM2103778-011** MU	**EM2103778-016** MU
EP080: BTEXN - Continued											
Ethylbenzene	EP080	0.5	mg/kg	----	100		**----**	**----**	<0.5 --	**----**	**----**
Total Xylenes	EP080	0.5	mg/kg	----	180		**----**	**----**	<0.5 --	**----**	**----**

Standard for the production and use of waste derived fill
Criteria for the Classification of Waste: Low-Level Contaminated Waste Criteria

Sub-Matrix: **SOIL**

Compound	*Method*	*LOR*	*Unit*	Guideline Lower Limit	Guideline Upper Limit	**BH01-0.0-0.1** 01-Mar-2021 14:30 **EM2103778-001** MU	**BH01-0.4-0.5** 01-Mar-2021 14:30 **EM2103778-002** MU	**BH02-0.0-0.1** 01-Mar-2021 14:30 **EM2103778-006** MU	**BH03-0.0-0.1** 01-Mar-2021 14:30 **EM2103778-011** MU	**BH04-0.0-0.1** 01-Mar-2021 14:30 **EM2103778-016** MU
EG005(ED093)T: Total Metals by ICP-AES										
Arsenic	EG005T	5	mg/kg	----	750	----	----	**12** ± 2	----	----
Beryllium	EG005T	1	mg/kg	----	150	----	----	<1 --	----	----
Cadmium	EG005T	1	mg/kg	----	60	----	----	<1 --	----	----
Cobalt	EG005T	2	mg/kg	----	1000	----	----	**4** ± 0.5	----	----
Copper	EG005T	5	mg/kg	----	7500	----	----	**7** ± 1	----	----
Lead	EG005T	5	mg/kg	----	5000	----	----	**580** ± 61	----	----
Manganese	EG005T	5	mg/kg	----	10000	----	----	**468** ± 46	----	----
Nickel	EG005T	2	mg/kg	----	3000	----	----	**6** ± 0.7	----	----
Zinc	EG005T	5	mg/kg	----	50000	----	----	**31** ± 4	----	----
EG035T: Total Recoverable Mercury by FIMS										
Mercury	EG035T	0.1	mg/kg	----	110	----	----	<0.1 --	----	----
EG048: Hexavalent Chromium (Alkaline Digest)										
Hexavalent Chromium	EG048G	0.5	mg/kg	----	750	----	----	<0.5 --	----	----
EK026SF: Total CN by Segmented Flow Analyser										
Total Cyanide	EK026SF	1	mg/kg	----	3500	----	----	<1 --	----	----
EP066: Polychlorinated Biphenyls (PCB)										
Total Polychlorinated biphenyls	EP066	0.1	mg/kg	----	50	----	----	<0.1	----	----
EP068A: Organochlorine Pesticides (OC)										
Heptachlor	EP068	0.05	mg/kg	----	50	----	----	<0.05	----	----
Total Chlordane (sum)	EP068	0.05	mg/kg	----	50	----	----	<0.05	----	----
4.4`-DDT	EP068	0.2	mg/kg	----	50	----	----	<0.2	----	----
Sum of Aldrin + Dieldrin	EP068	0.05	mg/kg	----	50	----	----	**0.10**	----	----
EP075(SIM)A: Phenolic Compounds										
Sum of Phenols	EP075(SIM)	0.5	mg/kg	----	50000	----	----	<0.5	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons										
Benzo(a)pyrene	EP075(SIM)	0.5	mg/kg	----	5	----	----	<0.5	----	----
Sum of polycyclic aromatic hydrocarbons	EP075(SIM)	0.5	mg/kg	----	200	----	----	<0.5	----	----
EP080/071: Total Petroleum Hydrocarbons										
C6 - C9 Fraction	EP080	10	mg/kg	----	1000	----	----	<10 --	----	----
C10 - C36 Fraction (sum)	EP071	50	mg/kg	----	10000	----	----	<50	----	----
EP080: BTEXN										
Benzene	EP080	0.2	mg/kg	----	15	----	----	<0.2 --	----	----
Toluene	EP080	0.5	mg/kg	----	500	----	----	<0.5 --	----	----
Ethylbenzene	EP080	0.5	mg/kg	----	1000	----	----	<0.5 --	----	----

Standard for the production and use of waste derived fill
Criteria for the Classification of Waste: Low-Level Contaminated Waste Criteria

Sub-Matrix: **SOIL**

Compound	*Method*	*LOR*	*Unit*	Guideline Lower Limit	Guideline Upper Limit	*Sample ID* / *Sampling date/time*	**BH01-0.0-0.1** 01-Mar-2021 14:30	**BH01-0.4-0.5** 01-Mar-2021 14:30	**BH02-0.0-0.1** 01-Mar-2021 14:30	**BH03-0.0-0.1** 01-Mar-2021 14:30	**BH04-0.0-0.1** 01-Mar-2021 14:30
							EM2103778-001 MU	**EM2103778-002** MU	**EM2103778-006** MU	**EM2103778-011** MU	**EM2103778-016** MU
EP080: BTEXN - Continued											
Total Xylenes	EP080	0.5	mg/kg	----	1800		**----**	**----**	<0.5	**----**	**----**

Standard for the production and use of waste derived fill
Criteria for the Classification of Waste: Waste Fill Criteria

Sub-Matrix: **SOIL**

Compound	Method	LOR	Unit	Guideline Lower Limit	Guideline Upper Limit	BH01-0.0-0.1 01-Mar-2021 14:30 EM2103778-001 MU	BH01-0.4-0.5 01-Mar-2021 14:30 EM2103778-002 MU	BH02-0.0-0.1 01-Mar-2021 14:30 EM2103778-006 MU	BH03-0.0-0.1 01-Mar-2021 14:30 EM2103778-011 MU	BH04-0.0-0.1 01-Mar-2021 14:30 EM2103778-016 MU
EG005(ED093)T: Total Metals by ICP-AES										
Arsenic	EG005T	5	mg/kg	----	20	----	----	**12** ± 2	----	----
Barium	EG005T	10	mg/kg	----	300	----	----	**120** ± 10	----	----
Beryllium	EG005T	1	mg/kg	----	20	----	----	<1 --	----	----
Cadmium	EG005T	1	mg/kg	----	3	----	----	<1 --	----	----
Cobalt	EG005T	2	mg/kg	----	170	----	----	**4** ± 0.5	----	----
Copper	EG005T	5	mg/kg	----	60	----	----	**7** ± 1	----	----
Lead	EG005T	5	mg/kg	----	300	----	----	**580** ± 61	----	----
Manganese	EG005T	5	mg/kg	----	500	----	----	**468** ± 46	----	----
Nickel	EG005T	2	mg/kg	----	60	----	----	**6** ± 0.7	----	----
Zinc	EG005T	5	mg/kg	----	200	----	----	**31** ± 4	----	----
EG035T: Total Recoverable Mercury by FIMS										
Mercury	EG035T	0.1	mg/kg	----	1	----	----	<0.1 --	----	----
EG048: Hexavalent Chromium (Alkaline Digest)										
Hexavalent Chromium	EG048G	0.5	mg/kg	----	1	----	----	<0.5 --	----	----
EK026SF: Total CN by Segmented Flow Analyser										
Total Cyanide	EK026SF	1	mg/kg	----	500	----	----	<1 --	----	----
EP066: Polychlorinated Biphenyls (PCB)										
Total Polychlorinated biphenyls	EP066	0.1	mg/kg	----	2	----	----	<0.1	----	----
EP068A: Organochlorine Pesticides (OC)										
Heptachlor	EP068	0.05	mg/kg	----	2	----	----	<0.05	----	----
Total Chlordane (sum)	EP068	0.05	mg/kg	----	2	----	----	<0.05	----	----
4.4`-DDT	EP068	0.2	mg/kg	----	2	----	----	<0.2	----	----
Sum of Aldrin + Dieldrin	EP068	0.05	mg/kg	----	2	----	----	**0.10**	----	----
EP075(SIM)A: Phenolic Compounds										
Sum of Phenols	EP075(SIM)	0.5	mg/kg	----	0.5	----	----	<0.5	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons										
Benzo(a)pyrene	EP075(SIM)	0.5	mg/kg	----	1	----	----	<0.5	----	----
Sum of polycyclic aromatic hydrocarbons	EP075(SIM)	0.5	mg/kg	----	5	----	----	<0.5	----	----
EP080/071: Total Petroleum Hydrocarbons										
C6 - C9 Fraction	EP080	10	mg/kg	----	65	----	----	<10 --	----	----
C10 - C36 Fraction (sum)	EP071	50	mg/kg	----	1000	----	----	<50	----	----
EP080: BTEXN										
Benzene	EP080	0.2	mg/kg	----	1	----	----	<0.2 --	----	----
Toluene	EP080	0.5	mg/kg	----	1.4	----	----	<0.5 --	----	----

Standard for the production and use of waste derived fill
Criteria for the Classification of Waste: Waste Fill Criteria

Sub-Matrix: **SOIL**

Compound	*Method*	*LOR*	*Unit*	Guideline Lower Limit	Guideline Upper Limit	*Sample ID* / *Sampling date/time*	**BH01-0.0-0.1** 01-Mar-2021 14:30	**BH01-0.4-0.5** 01-Mar-2021 14:30	**BH02-0.0-0.1** 01-Mar-2021 14:30	**BH03-0.0-0.1** 01-Mar-2021 14:30	**BH04-0.0-0.1** 01-Mar-2021 14:30
							EM2103778-001 MU	**EM2103778-002** MU	**EM2103778-006** MU	**EM2103778-011** MU	**EM2103778-016** MU
EP080: BTEXN - Continued											
Ethylbenzene	EP080	0.5	mg/kg	----	3.1		**----**	**----**	<0.5	**----**	**----**
Total Xylenes	EP080	0.5	mg/kg	----	14		**----**	**----**	<0.5	**----**	**----**

Standard for the production and use of waste derived fill
Criteria for the Classification of Waste: Intermediate Contaminated Waste Criteria

Sub-Matrix: **SOIL**

Compound	*Method*	*LOR*	*Unit*	Guideline Lower Limit	Guideline Upper Limit	*Sample ID* / *Sampling date/time* BH04-0.1-0.2 01-Mar-2021 14:30 EM2103778-017 MU	BH05-0.0-0.1 01-Mar-2021 14:30 EM2103778-022 MU	BH05-0.4-0.5 01-Mar-2021 14:30 EM2103778-023 MU	BH06-0.0-0.1 01-Mar-2021 14:30 EM2103778-027 MU	BH06-0.4-0.5 01-Mar-2021 14:30 EM2103778-029 MU
EG005(ED093)T: Total Metals by ICP-AES										
Arsenic	EG005T	5	mg/kg	----	----	----	----	----	----	----
Beryllium	EG005T	1	mg/kg	----	----	----	----	----	----	----
Cadmium	EG005T	1	mg/kg	----	----	----	----	----	----	----
Cobalt	EG005T	2	mg/kg	----	----	----	----	----	----	----
Copper	EG005T	5	mg/kg	----	----	----	----	----	----	----
Lead	EG005T	5	mg/kg	----	----	----	----	----	----	----
Manganese	EG005T	5	mg/kg	----	----	----	----	----	----	----
Nickel	EG005T	2	mg/kg	----	----	----	----	----	----	----
Zinc	EG005T	5	mg/kg	----	----	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS										
Mercury	EG035T	0.1	mg/kg	----	----	----	----	----	----	----
EG048: Hexavalent Chromium (Alkaline Digest)										
Hexavalent Chromium	EG048G	0.5	mg/kg	----	----	----	----	----	----	----
EK026SF: Total CN by Segmented Flow Analyser										
Total Cyanide	EK026SF	1	mg/kg	----	----	----	----	----	----	----
EP066: Polychlorinated Biphenyls (PCB)										
Total Polychlorinated biphenyls	EP066	0.1	mg/kg	----	----	----	----	----	----	----
EP068A: Organochlorine Pesticides (OC)										
4.4`-DDT	EP068	0.2	mg/kg	----	----	----	----	----	----	----
Heptachlor	EP068	0.05	mg/kg	----	----	----	----	----	----	----
Sum of Aldrin + Dieldrin	EP068	0.05	mg/kg	----	----	----	----	----	----	----
Total Chlordane (sum)	EP068	0.05	mg/kg	----	----	----	----	----	----	----
EP075(SIM)A: Phenolic Compounds										
Sum of Phenols	EP075(SIM)	0.5	mg/kg	----	----	----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons										
Benzo(a)pyrene	EP075(SIM)	0.5	mg/kg	----	----	----	----	----	----	----
Sum of polycyclic aromatic hydrocarbons	EP075(SIM)	0.5	mg/kg	----	----	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons										
C10 - C36 Fraction (sum)	EP071	50	mg/kg	----	----	----	----	----	----	----
C6 - C9 Fraction	EP080	10	mg/kg	----	----	----	----	----	----	----
EP080: BTEXN										
Benzene	EP080	0.2	mg/kg	----	----	----	----	----	----	----
Ethylbenzene	EP080	0.5	mg/kg	----	----	----	----	----	----	----
Toluene	EP080	0.5	mg/kg	----	----	----	----	----	----	----

Standard for the production and use of waste derived fill
Criteria for the Classification of Waste: Intermediate Contaminated Waste Criteria

Sub-Matrix: **SOIL**

Compound	*Method*	*LOR*	*Unit*	Guideline Lower Limit	Guideline Upper Limit	*Sample ID* / *Sampling date/time*	**BH04-0.1-0.2** 01-Mar-2021 14:30	**BH05-0.0-0.1** 01-Mar-2021 14:30	**BH05-0.4-0.5** 01-Mar-2021 14:30	**BH06-0.0-0.1** 01-Mar-2021 14:30	**BH06-0.4-0.5** 01-Mar-2021 14:30
							EM2103778-017 MU	**EM2103778-022** MU	**EM2103778-023** MU	**EM2103778-027** MU	**EM2103778-029** MU
EP080: BTEXN - Continued											
Total Xylenes	EP080	0.5	mg/kg	----	----		**----**	**----**	**----**	**----**	**----**

Standard for the production and use of waste derived fill
Criteria for the Classification of Waste: Low-Level Contaminated Waste Criteria

Sub-Matrix: **SOIL**

Compound	*Method*	*LOR*	*Unit*	Guideline Lower Limit	Guideline Upper Limit	BH04-0.1-0.2	BH05-0.0-0.1	BH05-0.4-0.5	BH06-0.0-0.1	BH06-0.4-0.5
Sample ID										
Sampling date/time						01-Mar-2021 14:30	01-Mar-2021 14:30	01-Mar-2021 14:30	01-Mar-2021 14:30	01-Mar-2021 14:30
						EM2103778-017 MU	EM2103778-022 MU	EM2103778-023 MU	EM2103778-027 MU	EM2103778-029 MU
EG005(ED093)T: Total Metals by ICP-AES										
Arsenic	EG005T	5	mg/kg	----	----	----	----	----	----	----
Beryllium	EG005T	1	mg/kg	----	----	----	----	----	----	----
Cadmium	EG005T	1	mg/kg	----	----	----	----	----	----	----
Cobalt	EG005T	2	mg/kg	----	----	----	----	----	----	----
Copper	EG005T	5	mg/kg	----	----	----	----	----	----	----
Lead	EG005T	5	mg/kg	----	----	----	----	----	----	----
Manganese	EG005T	5	mg/kg	----	----	----	----	----	----	----
Nickel	EG005T	2	mg/kg	----	----	----	----	----	----	----
Zinc	EG005T	5	mg/kg	----	----	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS										
Mercury	EG035T	0.1	mg/kg	----	----	----	----	----	----	----
EG048: Hexavalent Chromium (Alkaline Digest)										
Hexavalent Chromium	EG048G	0.5	mg/kg	----	----	----	----	----	----	----
EK026SF: Total CN by Segmented Flow Analyser										
Total Cyanide	EK026SF	1	mg/kg	----	----	----	----	----	----	----
EP066: Polychlorinated Biphenyls (PCB)										
Total Polychlorinated biphenyls	EP066	0.1	mg/kg	----	----	----	----	----	----	----
EP068A: Organochlorine Pesticides (OC)										
4.4`-DDT	EP068	0.2	mg/kg	----	----	----	----	----	----	----
Heptachlor	EP068	0.05	mg/kg	----	----	----	----	----	----	----
Sum of Aldrin + Dieldrin	EP068	0.05	mg/kg	----	----	----	----	----	----	----
Total Chlordane (sum)	EP068	0.05	mg/kg	----	----	----	----	----	----	----
EP075(SIM)A: Phenolic Compounds										
Sum of Phenols	EP075(SIM)	0.5	mg/kg	----	----	----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons										
Benzo(a)pyrene	EP075(SIM)	0.5	mg/kg	----	----	----	----	----	----	----
Sum of polycyclic aromatic hydrocarbons	EP075(SIM)	0.5	mg/kg	----	----	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons										
C10 - C36 Fraction (sum)	EP071	50	mg/kg	----	----	----	----	----	----	----
C6 - C9 Fraction	EP080	10	mg/kg	----	----	----	----	----	----	----
EP080: BTEXN										
Benzene	EP080	0.2	mg/kg	----	----	----	----	----	----	----
Ethylbenzene	EP080	0.5	mg/kg	----	----	----	----	----	----	----
Toluene	EP080	0.5	mg/kg	----	----	----	----	----	----	----

Standard for the production and use of waste derived fill
Criteria for the Classification of Waste: Low-Level Contaminated Waste Criteria

Sub-Matrix: **SOIL**

Compound	*Method*	*LOR*	*Unit*	Guideline Lower Limit	Guideline Upper Limit	**BH04-0.1-0.2** 01-Mar-2021 14:30 **EM2103778-017** MU	**BH05-0.0-0.1** 01-Mar-2021 14:30 **EM2103778-022** MU	**BH05-0.4-0.5** 01-Mar-2021 14:30 **EM2103778-023** MU	**BH06-0.0-0.1** 01-Mar-2021 14:30 **EM2103778-027** MU	**BH06-0.4-0.5** 01-Mar-2021 14:30 **EM2103778-029** MU
EP080: BTEXN - Continued										
Total Xylenes	EP080	0.5	mg/kg	----	----	**----**	**----**	**----**	**----**	**----**

Standard for the production and use of waste derived fill
Criteria for the Classification of Waste: Waste Fill Criteria

Sub-Matrix: **SOIL**

Compound	Method	LOR	Unit	Guideline Lower Limit	Guideline Upper Limit	BH04-0.1-0.2	BH05-0.0-0.1	BH05-0.4-0.5	BH06-0.0-0.1	BH06-0.4-0.5
Sample ID										
Sampling date/time						01-Mar-2021 14:30	01-Mar-2021 14:30	01-Mar-2021 14:30	01-Mar-2021 14:30	01-Mar-2021 14:30
						EM2103778-017 MU	EM2103778-022 MU	EM2103778-023 MU	EM2103778-027 MU	EM2103778-029 MU
EG005(ED093)T: Total Metals by ICP-AES										
Arsenic	EG005T	5	mg/kg	----	----	----	----	----	----	----
Barium	EG005T	10	mg/kg	----	----	----	----	----	----	----
Beryllium	EG005T	1	mg/kg	----	----	----	----	----	----	----
Cadmium	EG005T	1	mg/kg	----	----	----	----	----	----	----
Cobalt	EG005T	2	mg/kg	----	----	----	----	----	----	----
Copper	EG005T	5	mg/kg	----	----	----	----	----	----	----
Lead	EG005T	5	mg/kg	----	----	----	----	----	----	----
Manganese	EG005T	5	mg/kg	----	----	----	----	----	----	----
Nickel	EG005T	2	mg/kg	----	----	----	----	----	----	----
Zinc	EG005T	5	mg/kg	----	----	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS										
Mercury	EG035T	0.1	mg/kg	----	----	----	----	----	----	----
EG048: Hexavalent Chromium (Alkaline Digest)										
Hexavalent Chromium	EG048G	0.5	mg/kg	----	----	----	----	----	----	----
EK026SF: Total CN by Segmented Flow Analyser										
Total Cyanide	EK026SF	1	mg/kg	----	----	----	----	----	----	----
EP066: Polychlorinated Biphenyls (PCB)										
Total Polychlorinated biphenyls	EP066	0.1	mg/kg	----	----	----	----	----	----	----
EP068A: Organochlorine Pesticides (OC)										
4.4`-DDT	EP068	0.2	mg/kg	----	----	----	----	----	----	----
Heptachlor	EP068	0.05	mg/kg	----	----	----	----	----	----	----
Sum of Aldrin + Dieldrin	EP068	0.05	mg/kg	----	----	----	----	----	----	----
Total Chlordane (sum)	EP068	0.05	mg/kg	----	----	----	----	----	----	----
EP075(SIM)A: Phenolic Compounds										
Sum of Phenols	EP075(SIM)	0.5	mg/kg	----	----	----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons										
Benzo(a)pyrene	EP075(SIM)	0.5	mg/kg	----	----	----	----	----	----	----
Sum of polycyclic aromatic hydrocarbons	EP075(SIM)	0.5	mg/kg	----	----	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons										
C10 - C36 Fraction (sum)	EP071	50	mg/kg	----	----	----	----	----	----	----
C6 - C9 Fraction	EP080	10	mg/kg	----	----	----	----	----	----	----
EP080: BTEXN										
Benzene	EP080	0.2	mg/kg	----	----	----	----	----	----	----
Ethylbenzene	EP080	0.5	mg/kg	----	----	----	----	----	----	----

Standard for the production and use of waste derived fill
Criteria for the Classification of Waste: Waste Fill Criteria

Sub-Matrix: **SOIL**

Compound	*Method*	*LOR*	*Unit*	Guideline Lower Limit	Guideline Upper Limit	**BH04-0.1-0.2** 01-Mar-2021 14:30 **EM2103778-017** MU	**BH05-0.0-0.1** 01-Mar-2021 14:30 **EM2103778-022** MU	**BH05-0.4-0.5** 01-Mar-2021 14:30 **EM2103778-023** MU	**BH06-0.0-0.1** 01-Mar-2021 14:30 **EM2103778-027** MU	**BH06-0.4-0.5** 01-Mar-2021 14:30 **EM2103778-029** MU
EP080: BTEXN - Continued										
Toluene	EP080	0.5	mg/kg	----	----	**----**	**----**	**----**	**----**	**----**
Total Xylenes	EP080	0.5	mg/kg	----	----	**----**	**----**	**----**	**----**	**----**

Standard for the production and use of waste derived fill
Criteria for the Classification of Waste: Intermediate Contaminated Waste Criteria

Sub-Matrix: **SOIL**

Compound	*Method*	*LOR*	*Unit*	Guideline Lower Limit	Guideline Upper Limit	*Sample ID* / *Sampling date/time* BH07-0.0-0.1 01-Mar-2021 14:30 EM2103778-033 MU	BH08-0.0-0.1 01-Mar-2021 14:30 EM2103778-038 MU	BH08-0.4-0.5 01-Mar-2021 14:30 EM2103778-039 MU	BH08-0.9-1.0 01-Mar-2021 14:30 EM2103778-040 MU	BH09-0.4-0.5 02-Mar-2021 14:30 EM2103778-044 MU
EG005(ED093)T: Total Metals by ICP-AES										
Arsenic	EG005T	5	mg/kg	----	200	----	<5 --	----	----	----
Beryllium	EG005T	1	mg/kg	----	40	----	<1 --	----	----	----
Cadmium	EG005T	1	mg/kg	----	30	----	<1 --	----	----	----
Cobalt	EG005T	2	mg/kg	----	170	----	**7** ± 0.8	----	----	----
Copper	EG005T	5	mg/kg	----	2000	----	**9** ± 1	----	----	----
Lead	EG005T	5	mg/kg	----	1200	----	**22** ± 2	----	----	----
Manganese	EG005T	5	mg/kg	----	6000	----	**269** ± 27	----	----	----
Nickel	EG005T	2	mg/kg	----	600	----	**7** ± 0.7	----	----	----
Zinc	EG005T	5	mg/kg	----	14000	----	**31** ± 4	----	----	----
EG035T: Total Recoverable Mercury by FIMS										
Mercury	EG035T	0.1	mg/kg	----	30	----	<0.1 --	----	----	----
EG048: Hexavalent Chromium (Alkaline Digest)										
Hexavalent Chromium	EG048G	0.5	mg/kg	----	200	----	<0.5 --	----	----	----
EK026SF: Total CN by Segmented Flow Analyser										
Total Cyanide	EK026SF	1	mg/kg	----	1000	----	<1 --	----	----	----
EP066: Polychlorinated Biphenyls (PCB)										
Total Polychlorinated biphenyls	EP066	0.1	mg/kg	----	2	----	<0.1	----	----	----
EP068A: Organochlorine Pesticides (OC)										
Heptachlor	EP068	0.05	mg/kg	----	2	----	<0.05	----	----	----
Total Chlordane (sum)	EP068	0.05	mg/kg	----	2	----	<0.05	----	----	----
4.4`-DDT	EP068	0.2	mg/kg	----	2	----	<0.2	----	----	----
Sum of Aldrin + Dieldrin	EP068	0.05	mg/kg	----	2	----	<0.05	----	----	----
EP075(SIM)A: Phenolic Compounds										
Sum of Phenols	EP075(SIM)	0.5	mg/kg	----	17000	----	<0.5	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons										
Benzo(a)pyrene	EP075(SIM)	0.5	mg/kg	----	2	----	<0.5	----	----	----
Sum of polycyclic aromatic hydrocarbons	EP075(SIM)	0.5	mg/kg	----	40	----	<0.5	----	----	----
EP080/071: Total Petroleum Hydrocarbons										
C6 - C9 Fraction	EP080	10	mg/kg	----	100	----	<10 --	----	----	----
C10 - C36 Fraction (sum)	EP071	50	mg/kg	----	1000	----	<50	----	----	----
EP080: BTEXN										
Benzene	EP080	0.2	mg/kg	----	5	----	<0.2 --	----	----	----
Toluene	EP080	0.5	mg/kg	----	50	----	<0.5 --	----	----	----
Ethylbenzene	EP080	0.5	mg/kg	----	100	----	<0.5 --	----	----	----

Standard for the production and use of waste derived fill
Criteria for the Classification of Waste: Intermediate Contaminated Waste Criteria

Sub-Matrix: **SOIL**

Compound	Method	LOR	Unit	Guideline Lower Limit	Guideline Upper Limit	Sample ID	BH07-0.0-0.1	BH08-0.0-0.1	BH08-0.4-0.5	BH08-0.9-1.0	BH09-0.4-0.5
						Sampling date/time	01-Mar-2021 14:30	01-Mar-2021 14:30	01-Mar-2021 14:30	01-Mar-2021 14:30	02-Mar-2021 14:30
							EM2103778-033 MU	EM2103778-038 MU	EM2103778-039 MU	EM2103778-040 MU	EM2103778-044 MU
EP080: BTEXN - Continued											
Total Xylenes	EP080	0.5	mg/kg	----	180		----	<0.5	----	----	----

Standard for the production and use of waste derived fill
Criteria for the Classification of Waste: Low-Level Contaminated Waste Criteria

Sub-Matrix: **SOIL**

Compound	Method	LOR	Unit	Guideline Lower Limit	Guideline Upper Limit	BH07-0.0-0.1 (Sample ID) 01-Mar-2021 14:30 EM2103778-033	MU	BH08-0.0-0.1 (Sample ID) 01-Mar-2021 14:30 EM2103778-038	MU	BH08-0.4-0.5 (Sample ID) 01-Mar-2021 14:30 EM2103778-039	MU	BH08-0.9-1.0 (Sample ID) 01-Mar-2021 14:30 EM2103778-040	MU	BH09-0.4-0.5 (Sample ID) 02-Mar-2021 14:30 EM2103778-044	MU
EG005(ED093)T: Total Metals by ICP-AES															
Arsenic	EG005T	5	mg/kg	----	750	----		<5	- -	----		----		----	
Beryllium	EG005T	1	mg/kg	----	150	----		<1	- -	----		----		----	
Cadmium	EG005T	1	mg/kg	----	60	----		<1	- -	----		----		----	
Cobalt	EG005T	2	mg/kg	----	1000	----		**7**	± 0.8	----		----		----	
Copper	EG005T	5	mg/kg	----	7500	----		**9**	± 1	----		----		----	
Lead	EG005T	5	mg/kg	----	5000	----		**22**	± 2	----		----		----	
Manganese	EG005T	5	mg/kg	----	10000	----		**269**	± 27	----		----		----	
Nickel	EG005T	2	mg/kg	----	3000	----		**7**	± 0.7	----		----		----	
Zinc	EG005T	5	mg/kg	----	50000	----		**31**	± 4	----		----		----	
EG035T: Total Recoverable Mercury by FIMS															
Mercury	EG035T	0.1	mg/kg	----	110	----		<0.1	- -	----		----		----	
EG048: Hexavalent Chromium (Alkaline Digest)															
Hexavalent Chromium	EG048G	0.5	mg/kg	----	750	----		<0.5	- -	----		----		----	
EK026SF: Total CN by Segmented Flow Analyser															
Total Cyanide	EK026SF	1	mg/kg	----	3500	----		<1	- -	----		----		----	
EP066: Polychlorinated Biphenyls (PCB)															
Total Polychlorinated biphenyls	EP066	0.1	mg/kg	----	50	----		<0.1		----		----		----	
EP068A: Organochlorine Pesticides (OC)															
Heptachlor	EP068	0.05	mg/kg	----	50	----		<0.05		----		----		----	
Total Chlordane (sum)	EP068	0.05	mg/kg	----	50	----		<0.05		----		----		----	
4.4`-DDT	EP068	0.2	mg/kg	----	50	----		<0.2		----		----		----	
Sum of Aldrin + Dieldrin	EP068	0.05	mg/kg	----	50	----		<0.05		----		----		----	
EP075(SIM)A: Phenolic Compounds															
Sum of Phenols	EP075(SIM)	0.5	mg/kg	----	50000	----		<0.5		----		----		----	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons															
Benzo(a)pyrene	EP075(SIM)	0.5	mg/kg	----	5	----		<0.5		----		----		----	
Sum of polycyclic aromatic hydrocarbons	EP075(SIM)	0.5	mg/kg	----	200	----		<0.5		----		----		----	
EP080/071: Total Petroleum Hydrocarbons															
C6 - C9 Fraction	EP080	10	mg/kg	----	1000	----		<10	- -	----		----		----	
C10 - C36 Fraction (sum)	EP071	50	mg/kg	----	10000	----		<50		----		----		----	
EP080: BTEXN															
Benzene	EP080	0.2	mg/kg	----	15	----		<0.2	- -	----		----		----	
Toluene	EP080	0.5	mg/kg	----	500	----		<0.5	- -	----		----		----	
Ethylbenzene	EP080	0.5	mg/kg	----	1000	----		<0.5	- -	----		----		----	

Standard for the production and use of waste derived fill
Criteria for the Classification of Waste: Low-Level Contaminated Waste Criteria

Sub-Matrix: **SOIL**

Compound	*Method*	*LOR*	*Unit*	Guideline Lower Limit	Guideline Upper Limit	*Sample ID* / *Sampling date/time*	**BH07-0.0-0.1** 01-Mar-2021 14:30 **EM2103778-033** MU	**BH08-0.0-0.1** 01-Mar-2021 14:30 **EM2103778-038** MU	**BH08-0.4-0.5** 01-Mar-2021 14:30 **EM2103778-039** MU	**BH08-0.9-1.0** 01-Mar-2021 14:30 **EM2103778-040** MU	**BH09-0.4-0.5** 02-Mar-2021 14:30 **EM2103778-044** MU
EP080: BTEXN - Continued											
Total Xylenes	EP080	0.5	mg/kg	----	1800		**----**	<0.5 --	**----**	**----**	**----**

Standard for the production and use of waste derived fill
Criteria for the Classification of Waste: Waste Fill Criteria

Sub-Matrix: **SOIL**

Compound	Method	LOR	Unit	Guideline Lower Limit	Guideline Upper Limit	BH07-0.0-0.1 01-Mar-2021 14:30 EM2103778-033 MU	BH08-0.0-0.1 01-Mar-2021 14:30 EM2103778-038 MU	BH08-0.4-0.5 01-Mar-2021 14:30 EM2103778-039 MU	BH08-0.9-1.0 01-Mar-2021 14:30 EM2103778-040 MU	BH09-0.4-0.5 02-Mar-2021 14:30 EM2103778-044 MU
EG005(ED093)T: Total Metals by ICP-AES										
Arsenic	EG005T	5	mg/kg	----	20	----	<5 --	----	----	----
Barium	EG005T	10	mg/kg	----	300	----	**40** ± 5	----	----	----
Beryllium	EG005T	1	mg/kg	----	20	----	<1 --	----	----	----
Cadmium	EG005T	1	mg/kg	----	3	----	<1 --	----	----	----
Cobalt	EG005T	2	mg/kg	----	170	----	**7** ± 0.8	----	----	----
Copper	EG005T	5	mg/kg	----	60	----	**9** ± 1	----	----	----
Lead	EG005T	5	mg/kg	----	300	----	**22** ± 2	----	----	----
Manganese	EG005T	5	mg/kg	----	500	----	**269** ± 27	----	----	----
Nickel	EG005T	2	mg/kg	----	60	----	**7** ± 0.7	----	----	----
Zinc	EG005T	5	mg/kg	----	200	----	**31** ± 4	----	----	----
EG035T: Total Recoverable Mercury by FIMS										
Mercury	EG035T	0.1	mg/kg	----	1	----	<0.1 --	----	----	----
EG048: Hexavalent Chromium (Alkaline Digest)										
Hexavalent Chromium	EG048G	0.5	mg/kg	----	1	----	<0.5 --	----	----	----
EK026SF: Total CN by Segmented Flow Analyser										
Total Cyanide	EK026SF	1	mg/kg	----	500	----	<1 --	----	----	----
EP066: Polychlorinated Biphenyls (PCB)										
Total Polychlorinated biphenyls	EP066	0.1	mg/kg	----	2	----	<0.1	----	----	----
EP068A: Organochlorine Pesticides (OC)										
Heptachlor	EP068	0.05	mg/kg	----	2	----	<0.05	----	----	----
Total Chlordane (sum)	EP068	0.05	mg/kg	----	2	----	<0.05	----	----	----
4.4`-DDT	EP068	0.2	mg/kg	----	2	----	<0.2	----	----	----
Sum of Aldrin + Dieldrin	EP068	0.05	mg/kg	----	2	----	<0.05	----	----	----
EP075(SIM)A: Phenolic Compounds										
Sum of Phenols	EP075(SIM)	0.5	mg/kg	----	0.5	----	<0.5	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons										
Benzo(a)pyrene	EP075(SIM)	0.5	mg/kg	----	1	----	<0.5	----	----	----
Sum of polycyclic aromatic hydrocarbons	EP075(SIM)	0.5	mg/kg	----	5	----	<0.5	----	----	----
EP080/071: Total Petroleum Hydrocarbons										
C6 - C9 Fraction	EP080	10	mg/kg	----	65	----	<10 --	----	----	----
C10 - C36 Fraction (sum)	EP071	50	mg/kg	----	1000	----	<50	----	----	----
EP080: BTEXN										
Benzene	EP080	0.2	mg/kg	----	1	----	<0.2 --	----	----	----
Toluene	EP080	0.5	mg/kg	----	1.4	----	<0.5 --	----	----	----

Standard for the production and use of waste derived fill
Criteria for the Classification of Waste: Waste Fill Criteria

Sub-Matrix: **SOIL**

Compound	*Method*	*LOR*	*Unit*	Guideline Lower Limit	Guideline Upper Limit	*Sample ID* / *Sampling date/time*	**BH07-0.0-0.1** 01-Mar-2021 14:30	**BH08-0.0-0.1** 01-Mar-2021 14:30	**BH08-0.4-0.5** 01-Mar-2021 14:30	**BH08-0.9-1.0** 01-Mar-2021 14:30	**BH09-0.4-0.5** 02-Mar-2021 14:30
							EM2103778-033 MU	**EM2103778-038** MU	**EM2103778-039** MU	**EM2103778-040** MU	**EM2103778-044** MU
EP080: BTEXN - Continued											
Ethylbenzene	EP080	0.5	mg/kg	----	3.1		**----**	<0.5	**----**	**----**	**----**
Total Xylenes	EP080	0.5	mg/kg	----	14		**----**	<0.5	**----**	**----**	**----**

Standard for the production and use of waste derived fill
Criteria for the Classification of Waste: Intermediate Contaminated Waste Criteria

Sub-Matrix: **SOIL**

Compound	Method	LOR	Unit	Guideline Lower Limit	Guideline Upper Limit	BH10-0-0.1 (Sample ID) 02-Mar-2021 14:30 (Sampling date/time) EM2103778-048 MU	BH10-0.9-1.0 02-Mar-2021 14:30 EM2103778-051 MU	BH11-0-0.1 02-Mar-2021 14:30 EM2103778-054 MU	BH11-0.4-0.5 02-Mar-2021 14:30 EM2103778-055 MU	BH12-0.4-0.5 02-Mar-2021 14:30 EM2103778-060 MU
EG005(ED093)T: Total Metals by ICP-AES										
Arsenic	EG005T	5	mg/kg	----	----	----	----	----	----	----
Beryllium	EG005T	1	mg/kg	----	----	----	----	----	----	----
Cadmium	EG005T	1	mg/kg	----	----	----	----	----	----	----
Cobalt	EG005T	2	mg/kg	----	----	----	----	----	----	----
Copper	EG005T	5	mg/kg	----	----	----	----	----	----	----
Lead	EG005T	5	mg/kg	----	----	----	----	----	----	----
Manganese	EG005T	5	mg/kg	----	----	----	----	----	----	----
Nickel	EG005T	2	mg/kg	----	----	----	----	----	----	----
Zinc	EG005T	5	mg/kg	----	----	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS										
Mercury	EG035T	0.1	mg/kg	----	----	----	----	----	----	----
EG048: Hexavalent Chromium (Alkaline Digest)										
Hexavalent Chromium	EG048G	0.5	mg/kg	----	----	----	----	----	----	----
EK026SF: Total CN by Segmented Flow Analyser										
Total Cyanide	EK026SF	1	mg/kg	----	----	----	----	----	----	----
EP066: Polychlorinated Biphenyls (PCB)										
Total Polychlorinated biphenyls	EP066	0.1	mg/kg	----	----	----	----	----	----	----
EP068A: Organochlorine Pesticides (OC)										
4.4`-DDT	EP068	0.2	mg/kg	----	----	----	----	----	----	----
Heptachlor	EP068	0.05	mg/kg	----	----	----	----	----	----	----
Sum of Aldrin + Dieldrin	EP068	0.05	mg/kg	----	----	----	----	----	----	----
Total Chlordane (sum)	EP068	0.05	mg/kg	----	----	----	----	----	----	----
EP075(SIM)A: Phenolic Compounds										
Sum of Phenols	EP075(SIM)	0.5	mg/kg	----	----	----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons										
Benzo(a)pyrene	EP075(SIM)	0.5	mg/kg	----	----	----	----	----	----	----
Sum of polycyclic aromatic hydrocarbons	EP075(SIM)	0.5	mg/kg	----	----	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons										
C10 - C36 Fraction (sum)	EP071	50	mg/kg	----	----	----	----	----	----	----
C6 - C9 Fraction	EP080	10	mg/kg	----	----	----	----	----	----	----
EP080: BTEXN										
Benzene	EP080	0.2	mg/kg	----	----	----	----	----	----	----
Ethylbenzene	EP080	0.5	mg/kg	----	----	----	----	----	----	----
Toluene	EP080	0.5	mg/kg	----	----	----	----	----	----	----

Standard for the production and use of waste derived fill
Criteria for the Classification of Waste: Intermediate Contaminated Waste Criteria

Sub-Matrix: **SOIL**

Compound	*Method*	*LOR*	*Unit*	Guideline Lower Limit	Guideline Upper Limit	*Sample ID* / *Sampling date/time*	**BH10-0-0.1** 02-Mar-2021 14:30	**BH10-0.9-1.0** 02-Mar-2021 14:30	**BH11-0-0.1** 02-Mar-2021 14:30	**BH11-0.4-0.5** 02-Mar-2021 14:30	**BH12-0.4-0.5** 02-Mar-2021 14:30
							EM2103778-048 MU	**EM2103778-051** MU	**EM2103778-054** MU	**EM2103778-055** MU	**EM2103778-060** MU
EP080: BTEXN - Continued											
Total Xylenes	EP080	0.5	mg/kg	----	----		**----**	**----**	**----**	**----**	**----**

Standard for the production and use of waste derived fill
Criteria for the Classification of Waste: Low-Level Contaminated Waste Criteria

Sub-Matrix: **SOIL**

Compound	*Method*	*LOR*	*Unit*	Guideline Lower Limit	Guideline Upper Limit	*Sample ID* / *Sampling date/time* BH10-0-0.1 02-Mar-2021 14:30 EM2103778-048 MU	BH10-0.9-1.0 02-Mar-2021 14:30 EM2103778-051 MU	BH11-0-0.1 02-Mar-2021 14:30 EM2103778-054 MU	BH11-0.4-0.5 02-Mar-2021 14:30 EM2103778-055 MU	BH12-0.4-0.5 02-Mar-2021 14:30 EM2103778-060 MU
EG005(ED093)T: Total Metals by ICP-AES										
Arsenic	EG005T	5	mg/kg	----	----	----	----	----	----	----
Beryllium	EG005T	1	mg/kg	----	----	----	----	----	----	----
Cadmium	EG005T	1	mg/kg	----	----	----	----	----	----	----
Cobalt	EG005T	2	mg/kg	----	----	----	----	----	----	----
Copper	EG005T	5	mg/kg	----	----	----	----	----	----	----
Lead	EG005T	5	mg/kg	----	----	----	----	----	----	----
Manganese	EG005T	5	mg/kg	----	----	----	----	----	----	----
Nickel	EG005T	2	mg/kg	----	----	----	----	----	----	----
Zinc	EG005T	5	mg/kg	----	----	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS										
Mercury	EG035T	0.1	mg/kg	----	----	----	----	----	----	----
EG048: Hexavalent Chromium (Alkaline Digest)										
Hexavalent Chromium	EG048G	0.5	mg/kg	----	----	----	----	----	----	----
EK026SF: Total CN by Segmented Flow Analyser										
Total Cyanide	EK026SF	1	mg/kg	----	----	----	----	----	----	----
EP066: Polychlorinated Biphenyls (PCB)										
Total Polychlorinated biphenyls	EP066	0.1	mg/kg	----	----	----	----	----	----	----
EP068A: Organochlorine Pesticides (OC)										
4.4`-DDT	EP068	0.2	mg/kg	----	----	----	----	----	----	----
Heptachlor	EP068	0.05	mg/kg	----	----	----	----	----	----	----
Sum of Aldrin + Dieldrin	EP068	0.05	mg/kg	----	----	----	----	----	----	----
Total Chlordane (sum)	EP068	0.05	mg/kg	----	----	----	----	----	----	----
EP075(SIM)A: Phenolic Compounds										
Sum of Phenols	EP075(SIM)	0.5	mg/kg	----	----	----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons										
Benzo(a)pyrene	EP075(SIM)	0.5	mg/kg	----	----	----	----	----	----	----
Sum of polycyclic aromatic hydrocarbons	EP075(SIM)	0.5	mg/kg	----	----	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons										
C10 - C36 Fraction (sum)	EP071	50	mg/kg	----	----	----	----	----	----	----
C6 - C9 Fraction	EP080	10	mg/kg	----	----	----	----	----	----	----
EP080: BTEXN										
Benzene	EP080	0.2	mg/kg	----	----	----	----	----	----	----
Ethylbenzene	EP080	0.5	mg/kg	----	----	----	----	----	----	----
Toluene	EP080	0.5	mg/kg	----	----	----	----	----	----	----

Standard for the production and use of waste derived fill
Criteria for the Classification of Waste: Low-Level Contaminated Waste Criteria

Sub-Matrix: **SOIL**

Compound	*Method*	*LOR*	*Unit*	Guideline Lower Limit	Guideline Upper Limit	**BH10-0-0.1** 02-Mar-2021 14:30 **EM2103778-048** MU	**BH10-0.9-1.0** 02-Mar-2021 14:30 **EM2103778-051** MU	**BH11-0-0.1** 02-Mar-2021 14:30 **EM2103778-054** MU	**BH11-0.4-0.5** 02-Mar-2021 14:30 **EM2103778-055** MU	**BH12-0.4-0.5** 02-Mar-2021 14:30 **EM2103778-060** MU
EP080: BTEXN - Continued										
Total Xylenes	EP080	0.5	mg/kg	----	----	**----**	**----**	**----**	**----**	**----**

Standard for the production and use of waste derived fill
Criteria for the Classification of Waste: Waste Fill Criteria

Sub-Matrix: **SOIL**

Compound	Method	LOR	Unit	Guideline Lower Limit	Guideline Upper Limit	BH10-0-0.1 02-Mar-2021 14:30 EM2103778-048 MU	BH10-0.9-1.0 02-Mar-2021 14:30 EM2103778-051 MU	BH11-0-0.1 02-Mar-2021 14:30 EM2103778-054 MU	BH11-0.4-0.5 02-Mar-2021 14:30 EM2103778-055 MU	BH12-0.4-0.5 02-Mar-2021 14:30 EM2103778-060 MU
EG005(ED093)T: Total Metals by ICP-AES										
Arsenic	EG005T	5	mg/kg	----	----	----	----	----	----	----
Barium	EG005T	10	mg/kg	----	----	----	----	----	----	----
Beryllium	EG005T	1	mg/kg	----	----	----	----	----	----	----
Cadmium	EG005T	1	mg/kg	----	----	----	----	----	----	----
Cobalt	EG005T	2	mg/kg	----	----	----	----	----	----	----
Copper	EG005T	5	mg/kg	----	----	----	----	----	----	----
Lead	EG005T	5	mg/kg	----	----	----	----	----	----	----
Manganese	EG005T	5	mg/kg	----	----	----	----	----	----	----
Nickel	EG005T	2	mg/kg	----	----	----	----	----	----	----
Zinc	EG005T	5	mg/kg	----	----	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS										
Mercury	EG035T	0.1	mg/kg	----	----	----	----	----	----	----
EG048: Hexavalent Chromium (Alkaline Digest)										
Hexavalent Chromium	EG048G	0.5	mg/kg	----	----	----	----	----	----	----
EK026SF: Total CN by Segmented Flow Analyser										
Total Cyanide	EK026SF	1	mg/kg	----	----	----	----	----	----	----
EP066: Polychlorinated Biphenyls (PCB)										
Total Polychlorinated biphenyls	EP066	0.1	mg/kg	----	----	----	----	----	----	----
EP068A: Organochlorine Pesticides (OC)										
4.4`-DDT	EP068	0.2	mg/kg	----	----	----	----	----	----	----
Heptachlor	EP068	0.05	mg/kg	----	----	----	----	----	----	----
Sum of Aldrin + Dieldrin	EP068	0.05	mg/kg	----	----	----	----	----	----	----
Total Chlordane (sum)	EP068	0.05	mg/kg	----	----	----	----	----	----	----
EP075(SIM)A: Phenolic Compounds										
Sum of Phenols	EP075(SIM)	0.5	mg/kg	----	----	----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons										
Benzo(a)pyrene	EP075(SIM)	0.5	mg/kg	----	----	----	----	----	----	----
Sum of polycyclic aromatic hydrocarbons	EP075(SIM)	0.5	mg/kg	----	----	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons										
C10 - C36 Fraction (sum)	EP071	50	mg/kg	----	----	----	----	----	----	----
C6 - C9 Fraction	EP080	10	mg/kg	----	----	----	----	----	----	----
EP080: BTEXN										
Benzene	EP080	0.2	mg/kg	----	----	----	----	----	----	----
Ethylbenzene	EP080	0.5	mg/kg	----	----	----	----	----	----	----

Standard for the production and use of waste derived fill
Criteria for the Classification of Waste: Waste Fill Criteria

Sub-Matrix: **SOIL**

Compound	*Method*	*LOR*	*Unit*	Guideline Lower Limit	Guideline Upper Limit	*Sample ID* / *Sampling date/time*	**BH10-0-0.1** 02-Mar-2021 14:30	**BH10-0.9-1.0** 02-Mar-2021 14:30	**BH11-0-0.1** 02-Mar-2021 14:30	**BH11-0.4-0.5** 02-Mar-2021 14:30	**BH12-0.4-0.5** 02-Mar-2021 14:30
							EM2103778-048 MU	**EM2103778-051** MU	**EM2103778-054** MU	**EM2103778-055** MU	**EM2103778-060** MU
EP080: BTEXN - Continued											
Toluene	EP080	0.5	mg/kg	----	----		**----**	**----**	**----**	**----**	**----**
Total Xylenes	EP080	0.5	mg/kg	----	----		**----**	**----**	**----**	**----**	**----**

Standard for the production and use of waste derived fill
Criteria for the Classification of Waste: Intermediate Contaminated Waste Criteria

Sub-Matrix: **SOIL**

Compound	Method	LOR	Unit	Guideline Lower Limit	Guideline Upper Limit	BH13-0-0.1 (Sample ID) 02-Mar-2021 14:30 (Sampling date/time) EM2103778-064 MU	BH14-0-0.1 02-Mar-2021 14:30 EM2103778-069 MU	BH15-0.4-0.5 02-Mar-2021 14:30 EM2103778-075 MU	BH16-0-0.1 02-Mar-2021 14:30 EM2103778-079 MU	BH16-0.1-0.2 02-Mar-2021 14:30 EM2103778-080 MU
EG005(ED093)T: Total Metals by ICP-AES										
Arsenic	EG005T	5	mg/kg	----	200	----	----	----	**10** ± 2	----
Beryllium	EG005T	1	mg/kg	----	40	----	----	----	<1 - -	----
Cadmium	EG005T	1	mg/kg	----	30	----	----	----	<1 - -	----
Cobalt	EG005T	2	mg/kg	----	170	----	----	----	**4** ± 0.5	----
Copper	EG005T	5	mg/kg	----	2000	----	----	----	**16** ± 2	----
Lead	EG005T	5	mg/kg	----	1200	----	----	----	**14** ± 2	----
Manganese	EG005T	5	mg/kg	----	6000	----	----	----	**239** ± 24	----
Nickel	EG005T	2	mg/kg	----	600	----	----	----	**9** ± 1.0	----
Zinc	EG005T	5	mg/kg	----	14000	----	----	----	**48** ± 6	----
EG035T: Total Recoverable Mercury by FIMS										
Mercury	EG035T	0.1	mg/kg	----	30	----	----	----	<0.1 - -	----
EG048: Hexavalent Chromium (Alkaline Digest)										
Hexavalent Chromium	EG048G	0.5	mg/kg	----	200	----	----	----	<0.5 - -	----
EK026SF: Total CN by Segmented Flow Analyser										
Total Cyanide	EK026SF	1	mg/kg	----	1000	----	----	----	<1 - -	----
EP066: Polychlorinated Biphenyls (PCB)										
Total Polychlorinated biphenyls	EP066	0.1	mg/kg	----	2	----	----	----	<0.1	----
EP068A: Organochlorine Pesticides (OC)										
Heptachlor	EP068	0.05	mg/kg	----	2	----	----	----	<0.05	----
Total Chlordane (sum)	EP068	0.05	mg/kg	----	2	----	----	----	<0.05	----
4.4`-DDT	EP068	0.2	mg/kg	----	2	----	----	----	<0.2	----
Sum of Aldrin + Dieldrin	EP068	0.05	mg/kg	----	2	----	----	----	**0.10**	----
EP075(SIM)A: Phenolic Compounds										
Sum of Phenols	EP075(SIM)	0.5	mg/kg	----	17000	----	----	----	<0.5	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons										
Benzo(a)pyrene	EP075(SIM)	0.5	mg/kg	----	2	----	----	----	<0.5	----
Sum of polycyclic aromatic hydrocarbons	EP075(SIM)	0.5	mg/kg	----	40	----	----	----	<0.5	----
EP080/071: Total Petroleum Hydrocarbons										
C6 - C9 Fraction	EP080	10	mg/kg	----	100	----	----	----	<10 - -	----
C10 - C36 Fraction (sum)	EP071	50	mg/kg	----	1000	----	----	----	<50	----
EP080: BTEXN										
Benzene	EP080	0.2	mg/kg	----	5	----	----	----	<0.2 - -	----
Toluene	EP080	0.5	mg/kg	----	50	----	----	----	<0.5 - -	----

Standard for the production and use of waste derived fill
Criteria for the Classification of Waste: Intermediate Contaminated Waste Criteria

Sub-Matrix: **SOIL**

Compound	*Method*	*LOR*	*Unit*	Guideline Lower Limit	Guideline Upper Limit	*Sample ID* / *Sampling date/time*	**BH13-0-0.1** 02-Mar-2021 14:30	**BH14-0-0.1** 02-Mar-2021 14:30	**BH15-0.4-0.5** 02-Mar-2021 14:30	**BH16-0-0.1** 02-Mar-2021 14:30	**BH16-0.1-0.2** 02-Mar-2021 14:30
							EM2103778-064 MU	**EM2103778-069** MU	**EM2103778-075** MU	**EM2103778-079** MU	**EM2103778-080** MU
EP080: BTEXN - Continued											
Ethylbenzene	EP080	0.5	mg/kg	----	100		**----**	**----**	**----**	<0.5 - -	**----**
Total Xylenes	EP080	0.5	mg/kg	----	180		**----**	**----**	**----**	<0.5 - -	**----**

Standard for the production and use of waste derived fill
Criteria for the Classification of Waste: Low-Level Contaminated Waste Criteria

Sub-Matrix: **SOIL**

Compound	*Method*	*LOR*	*Unit*	Guideline Lower Limit	Guideline Upper Limit	**BH13-0-0.1** 02-Mar-2021 14:30 **EM2103778-064** MU	**BH14-0-0.1** 02-Mar-2021 14:30 **EM2103778-069** MU	**BH15-0.4-0.5** 02-Mar-2021 14:30 **EM2103778-075** MU	**BH16-0-0.1** 02-Mar-2021 14:30 **EM2103778-079** MU	**BH16-0.1-0.2** 02-Mar-2021 14:30 **EM2103778-080** MU
EG005(ED093)T: Total Metals by ICP-AES										
Arsenic	EG005T	5	mg/kg	----	750	----	----	----	**10** ± 2	----
Beryllium	EG005T	1	mg/kg	----	150	----	----	----	<1 - -	----
Cadmium	EG005T	1	mg/kg	----	60	----	----	----	<1 - -	----
Cobalt	EG005T	2	mg/kg	----	1000	----	----	----	**4** ± 0.5	----
Copper	EG005T	5	mg/kg	----	7500	----	----	----	**16** ± 2	----
Lead	EG005T	5	mg/kg	----	5000	----	----	----	**14** ± 2	----
Manganese	EG005T	5	mg/kg	----	10000	----	----	----	**239** ± 24	----
Nickel	EG005T	2	mg/kg	----	3000	----	----	----	**9** ± 1.0	----
Zinc	EG005T	5	mg/kg	----	50000	----	----	----	**48** ± 6	----
EG035T: Total Recoverable Mercury by FIMS										
Mercury	EG035T	0.1	mg/kg	----	110	----	----	----	<0.1 - -	----
EG048: Hexavalent Chromium (Alkaline Digest)										
Hexavalent Chromium	EG048G	0.5	mg/kg	----	750	----	----	----	<0.5 - -	----
EK026SF: Total CN by Segmented Flow Analyser										
Total Cyanide	EK026SF	1	mg/kg	----	3500	----	----	----	<1 - -	----
EP066: Polychlorinated Biphenyls (PCB)										
Total Polychlorinated biphenyls	EP066	0.1	mg/kg	----	50	----	----	----	<0.1	----
EP068A: Organochlorine Pesticides (OC)										
Heptachlor	EP068	0.05	mg/kg	----	50	----	----	----	<0.05	----
Total Chlordane (sum)	EP068	0.05	mg/kg	----	50	----	----	----	<0.05	----
4.4`-DDT	EP068	0.2	mg/kg	----	50	----	----	----	<0.2	----
Sum of Aldrin + Dieldrin	EP068	0.05	mg/kg	----	50	----	----	----	**0.10**	----
EP075(SIM)A: Phenolic Compounds										
Sum of Phenols	EP075(SIM)	0.5	mg/kg	----	50000	----	----	----	<0.5	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons										
Benzo(a)pyrene	EP075(SIM)	0.5	mg/kg	----	5	----	----	----	<0.5	----
Sum of polycyclic aromatic hydrocarbons	EP075(SIM)	0.5	mg/kg	----	200	----	----	----	<0.5	----
EP080/071: Total Petroleum Hydrocarbons										
C6 - C9 Fraction	EP080	10	mg/kg	----	1000	----	----	----	<10 - -	----
C10 - C36 Fraction (sum)	EP071	50	mg/kg	----	10000	----	----	----	<50	----
EP080: BTEXN										
Benzene	EP080	0.2	mg/kg	----	15	----	----	----	<0.2 - -	----
Toluene	EP080	0.5	mg/kg	----	500	----	----	----	<0.5 - -	----

Standard for the production and use of waste derived fill
Criteria for the Classification of Waste: Low-Level Contaminated Waste Criteria

Sub-Matrix: **SOIL**

Compound	*Method*	*LOR*	*Unit*	Guideline Lower Limit	Guideline Upper Limit	**BH13-0-0.1** 02-Mar-2021 14:30 **EM2103778-064** MU	**BH14-0-0.1** 02-Mar-2021 14:30 **EM2103778-069** MU	**BH15-0.4-0.5** 02-Mar-2021 14:30 **EM2103778-075** MU	**BH16-0-0.1** 02-Mar-2021 14:30 **EM2103778-079** MU	**BH16-0.1-0.2** 02-Mar-2021 14:30 **EM2103778-080** MU
EP080: BTEXN - Continued										
Ethylbenzene	EP080	0.5	mg/kg	----	1000	**----**	**----**	**----**	<0.5 - -	**----**
Total Xylenes	EP080	0.5	mg/kg	----	1800	**----**	**----**	**----**	<0.5 - -	**----**

Standard for the production and use of waste derived fill
Criteria for the Classification of Waste: Waste Fill Criteria

Sub-Matrix: **SOIL**

Compound	*Method*	*LOR*	*Unit*	Guideline Lower Limit	Guideline Upper Limit	**BH13-0-0.1** 02-Mar-2021 14:30 **EM2103778-064** MU	**BH14-0-0.1** 02-Mar-2021 14:30 **EM2103778-069** MU	**BH15-0.4-0.5** 02-Mar-2021 14:30 **EM2103778-075** MU	**BH16-0-0.1** 02-Mar-2021 14:30 **EM2103778-079** MU	**BH16-0.1-0.2** 02-Mar-2021 14:30 **EM2103778-080** MU
EG005(ED093)T: Total Metals by ICP-AES										
Arsenic	EG005T	5	mg/kg	----	20	----	----	----	**10** ± 2	----
Barium	EG005T	10	mg/kg	----	300	----	----	----	**120** ± 10	----
Beryllium	EG005T	1	mg/kg	----	20	----	----	----	<1 - -	----
Cadmium	EG005T	1	mg/kg	----	3	----	----	----	<1 - -	----
Cobalt	EG005T	2	mg/kg	----	170	----	----	----	**4** ± 0.5	----
Copper	EG005T	5	mg/kg	----	60	----	----	----	**16** ± 2	----
Lead	EG005T	5	mg/kg	----	300	----	----	----	**14** ± 2	----
Manganese	EG005T	5	mg/kg	----	500	----	----	----	**239** ± 24	----
Nickel	EG005T	2	mg/kg	----	60	----	----	----	**9** ± 1.0	----
Zinc	EG005T	5	mg/kg	----	200	----	----	----	**48** ± 6	----
EG035T: Total Recoverable Mercury by FIMS										
Mercury	EG035T	0.1	mg/kg	----	1	----	----	----	<0.1 - -	----
EG048: Hexavalent Chromium (Alkaline Digest)										
Hexavalent Chromium	EG048G	0.5	mg/kg	----	1	----	----	----	<0.5 - -	----
EK026SF: Total CN by Segmented Flow Analyser										
Total Cyanide	EK026SF	1	mg/kg	----	500	----	----	----	<1 - -	----
EP066: Polychlorinated Biphenyls (PCB)										
Total Polychlorinated biphenyls	EP066	0.1	mg/kg	----	2	----	----	----	<0.1	----
EP068A: Organochlorine Pesticides (OC)										
Heptachlor	EP068	0.05	mg/kg	----	2	----	----	----	<0.05	----
Total Chlordane (sum)	EP068	0.05	mg/kg	----	2	----	----	----	<0.05	----
4.4`-DDT	EP068	0.2	mg/kg	----	2	----	----	----	<0.2	----
Sum of Aldrin + Dieldrin	EP068	0.05	mg/kg	----	2	----	----	----	**0.10**	----
EP075(SIM)A: Phenolic Compounds										
Sum of Phenols	EP075(SIM)	0.5	mg/kg	----	0.5	----	----	----	<0.5	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons										
Benzo(a)pyrene	EP075(SIM)	0.5	mg/kg	----	1	----	----	----	<0.5	----
Sum of polycyclic aromatic hydrocarbons	EP075(SIM)	0.5	mg/kg	----	5	----	----	----	<0.5	----
EP080/071: Total Petroleum Hydrocarbons										
C6 - C9 Fraction	EP080	10	mg/kg	----	65	----	----	----	<10 - -	----
C10 - C36 Fraction (sum)	EP071	50	mg/kg	----	1000	----	----	----	<50	----
EP080: BTEXN										
Benzene	EP080	0.2	mg/kg	----	1	----	----	----	<0.2 - -	----

Standard for the production and use of waste derived fill
Criteria for the Classification of Waste: Waste Fill Criteria

Sub-Matrix: **SOIL**

Compound	*Method*	*LOR*	*Unit*	Guideline Lower Limit	Guideline Upper Limit	*Sample ID* / *Sampling date/time*	**BH13-0-0.1** 02-Mar-2021 14:30	**BH14-0-0.1** 02-Mar-2021 14:30	**BH15-0.4-0.5** 02-Mar-2021 14:30	**BH16-0-0.1** 02-Mar-2021 14:30	**BH16-0.1-0.2** 02-Mar-2021 14:30
							EM2103778-064 MU	**EM2103778-069** MU	**EM2103778-075** MU	**EM2103778-079** MU	**EM2103778-080** MU
EP080: BTEXN - Continued											
Toluene	EP080	0.5	mg/kg	----	1.4		**----**	**----**	**----**	<0.5 - -	**----**
Ethylbenzene	EP080	0.5	mg/kg	----	3.1		**----**	**----**	**----**	<0.5 - -	**----**
Total Xylenes	EP080	0.5	mg/kg	----	14		**----**	**----**	**----**	<0.5 - -	**----**

Standard for the production and use of waste derived fill
Criteria for the Classification of Waste: Intermediate Contaminated Waste Criteria

Sub-Matrix: **SOIL**

Compound	*Method*	*LOR*	*Unit*	Guideline Lower Limit	Guideline Upper Limit	**QC03** 01-Mar-2021 14:30 **EM2103778-087** MU	**QC07** 02-Mar-2021 14:30 **EM2103778-091** MU	**QC08** 02-Mar-2021 14:30 **EM2103778-092** MU	---- ----	---- ----
EG005(ED093)T: Total Metals by ICP-AES										
Arsenic	EG005T	5	mg/kg	----	----	**----**	**----**	**----**	**----**	**----**
Beryllium	EG005T	1	mg/kg	----	----	**----**	**----**	**----**	**----**	**----**
Cadmium	EG005T	1	mg/kg	----	----	**----**	**----**	**----**	**----**	**----**
Cobalt	EG005T	2	mg/kg	----	----	**----**	**----**	**----**	**----**	**----**
Copper	EG005T	5	mg/kg	----	----	**----**	**----**	**----**	**----**	**----**
Lead	EG005T	5	mg/kg	----	----	**----**	**----**	**----**	**----**	**----**
Manganese	EG005T	5	mg/kg	----	----	**----**	**----**	**----**	**----**	**----**
Nickel	EG005T	2	mg/kg	----	----	**----**	**----**	**----**	**----**	**----**
Zinc	EG005T	5	mg/kg	----	----	**----**	**----**	**----**	**----**	**----**
EG035T: Total Recoverable Mercury by FIMS										
Mercury	EG035T	0.1	mg/kg	----	----	**----**	**----**	**----**	**----**	**----**
EG048: Hexavalent Chromium (Alkaline Digest)										
Hexavalent Chromium	EG048G	0.5	mg/kg	----	----	**----**	**----**	**----**	**----**	**----**
EK026SF: Total CN by Segmented Flow Analyser										
Total Cyanide	EK026SF	1	mg/kg	----	----	**----**	**----**	**----**	**----**	**----**
EP066: Polychlorinated Biphenyls (PCB)										
Total Polychlorinated biphenyls	EP066	0.1	mg/kg	----	----	**----**	**----**	**----**	**----**	**----**
EP068A: Organochlorine Pesticides (OC)										
4.4`-DDT	EP068	0.2	mg/kg	----	----	**----**	**----**	**----**	**----**	**----**
Heptachlor	EP068	0.05	mg/kg	----	----	**----**	**----**	**----**	**----**	**----**
Sum of Aldrin + Dieldrin	EP068	0.05	mg/kg	----	----	**----**	**----**	**----**	**----**	**----**
Total Chlordane (sum)	EP068	0.05	mg/kg	----	----	**----**	**----**	**----**	**----**	**----**
EP075(SIM)A: Phenolic Compounds										
Sum of Phenols	EP075(SIM)	0.5	mg/kg	----	----	**----**	**----**	**----**	**----**	**----**
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons										
Benzo(a)pyrene	EP075(SIM)	0.5	mg/kg	----	----	**----**	**----**	**----**	**----**	**----**
Sum of polycyclic aromatic hydrocarbons	EP075(SIM)	0.5	mg/kg	----	----	**----**	**----**	**----**	**----**	**----**
EP080/071: Total Petroleum Hydrocarbons										
C10 - C36 Fraction (sum)	EP071	50	mg/kg	----	----	**----**	**----**	**----**	**----**	**----**
C6 - C9 Fraction	EP080	10	mg/kg	----	----	**----**	**----**	**----**	**----**	**----**
EP080: BTEXN										
Benzene	EP080	0.2	mg/kg	----	----	**----**	**----**	**----**	**----**	**----**
Ethylbenzene	EP080	0.5	mg/kg	----	----	**----**	**----**	**----**	**----**	**----**
Toluene	EP080	0.5	mg/kg	----	----	**----**	**----**	**----**	**----**	**----**

Standard for the production and use of waste derived fill
Criteria for the Classification of Waste: Intermediate Contaminated Waste Criteria

Sub-Matrix: **SOIL**

Compound	*Method*	*LOR*	*Unit*	*Sample ID* / *Sampling date/time*	Guideline Lower Limit	Guideline Upper Limit	**QC03** 01-Mar-2021 14:30 **EM2103778-087** MU	**QC07** 02-Mar-2021 14:30 **EM2103778-091** MU	**QC08** 02-Mar-2021 14:30 **EM2103778-092** MU	**----** ----	**----** ----
EP080: BTEXN - Continued											
Total Xylenes	EP080	0.5	mg/kg		----	----	**----**	**----**	**----**	**----**	**----**

Standard for the production and use of waste derived fill
Criteria for the Classification of Waste: Low-Level Contaminated Waste Criteria

Sub-Matrix: **SOIL**

Compound	*Method*	*LOR*	*Unit*	Guideline Lower Limit	Guideline Upper Limit	*Sample ID* / *Sampling date/time* QC03 01-Mar-2021 14:30 EM2103778-087 MU	QC07 02-Mar-2021 14:30 EM2103778-091 MU	QC08 02-Mar-2021 14:30 EM2103778-092 MU	---- ----	---- ----
EG005(ED093)T: Total Metals by ICP-AES										
Arsenic	EG005T	5	mg/kg	----	----	----	----	----	----	----
Beryllium	EG005T	1	mg/kg	----	----	----	----	----	----	----
Cadmium	EG005T	1	mg/kg	----	----	----	----	----	----	----
Cobalt	EG005T	2	mg/kg	----	----	----	----	----	----	----
Copper	EG005T	5	mg/kg	----	----	----	----	----	----	----
Lead	EG005T	5	mg/kg	----	----	----	----	----	----	----
Manganese	EG005T	5	mg/kg	----	----	----	----	----	----	----
Nickel	EG005T	2	mg/kg	----	----	----	----	----	----	----
Zinc	EG005T	5	mg/kg	----	----	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS										
Mercury	EG035T	0.1	mg/kg	----	----	----	----	----	----	----
EG048: Hexavalent Chromium (Alkaline Digest)										
Hexavalent Chromium	EG048G	0.5	mg/kg	----	----	----	----	----	----	----
EK026SF: Total CN by Segmented Flow Analyser										
Total Cyanide	EK026SF	1	mg/kg	----	----	----	----	----	----	----
EP066: Polychlorinated Biphenyls (PCB)										
Total Polychlorinated biphenyls	EP066	0.1	mg/kg	----	----	----	----	----	----	----
EP068A: Organochlorine Pesticides (OC)										
4.4`-DDT	EP068	0.2	mg/kg	----	----	----	----	----	----	----
Heptachlor	EP068	0.05	mg/kg	----	----	----	----	----	----	----
Sum of Aldrin + Dieldrin	EP068	0.05	mg/kg	----	----	----	----	----	----	----
Total Chlordane (sum)	EP068	0.05	mg/kg	----	----	----	----	----	----	----
EP075(SIM)A: Phenolic Compounds										
Sum of Phenols	EP075(SIM)	0.5	mg/kg	----	----	----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons										
Benzo(a)pyrene	EP075(SIM)	0.5	mg/kg	----	----	----	----	----	----	----
Sum of polycyclic aromatic hydrocarbons	EP075(SIM)	0.5	mg/kg	----	----	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons										
C10 - C36 Fraction (sum)	EP071	50	mg/kg	----	----	----	----	----	----	----
C6 - C9 Fraction	EP080	10	mg/kg	----	----	----	----	----	----	----
EP080: BTEXN										
Benzene	EP080	0.2	mg/kg	----	----	----	----	----	----	----
Ethylbenzene	EP080	0.5	mg/kg	----	----	----	----	----	----	----
Toluene	EP080	0.5	mg/kg	----	----	----	----	----	----	----

Standard for the production and use of waste derived fill
Criteria for the Classification of Waste: Low-Level Contaminated Waste Criteria

Sub-Matrix: **SOIL**

Compound	*Method*	*LOR*	*Unit*	*Sample ID* / *Sampling date/time*	Guideline Lower Limit	Guideline Upper Limit	**QC03** 01-Mar-2021 14:30 **EM2103778-087** MU	**QC07** 02-Mar-2021 14:30 **EM2103778-091** MU	**QC08** 02-Mar-2021 14:30 **EM2103778-092** MU	**----** ----	**----** ----
EP080: BTEXN - Continued											
Total Xylenes	EP080	0.5	mg/kg		----	----	**----**	**----**	**----**	**----**	**----**

Standard for the production and use of waste derived fill
Criteria for the Classification of Waste: Waste Fill Criteria

Sub-Matrix: **SOIL**

Compound	*Method*	*LOR*	*Unit*	*Sample ID* / *Sampling date/time*	Guideline Lower Limit	Guideline Upper Limit	QC03 01-Mar-2021 14:30 EM2103778-087 MU	QC07 02-Mar-2021 14:30 EM2103778-091 MU	QC08 02-Mar-2021 14:30 EM2103778-092 MU	---- ----	---- ----
EG005(ED093)T: Total Metals by ICP-AES											
Arsenic	EG005T	5	mg/kg		----	----	----	----	----	----	----
Barium	EG005T	10	mg/kg		----	----	----	----	----	----	----
Beryllium	EG005T	1	mg/kg		----	----	----	----	----	----	----
Cadmium	EG005T	1	mg/kg		----	----	----	----	----	----	----
Cobalt	EG005T	2	mg/kg		----	----	----	----	----	----	----
Copper	EG005T	5	mg/kg		----	----	----	----	----	----	----
Lead	EG005T	5	mg/kg		----	----	----	----	----	----	----
Manganese	EG005T	5	mg/kg		----	----	----	----	----	----	----
Nickel	EG005T	2	mg/kg		----	----	----	----	----	----	----
Zinc	EG005T	5	mg/kg		----	----	----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS											
Mercury	EG035T	0.1	mg/kg		----	----	----	----	----	----	----
EG048: Hexavalent Chromium (Alkaline Digest)											
Hexavalent Chromium	EG048G	0.5	mg/kg		----	----	----	----	----	----	----
EK026SF: Total CN by Segmented Flow Analyser											
Total Cyanide	EK026SF	1	mg/kg		----	----	----	----	----	----	----
EP066: Polychlorinated Biphenyls (PCB)											
Total Polychlorinated biphenyls	EP066	0.1	mg/kg		----	----	----	----	----	----	----
EP068A: Organochlorine Pesticides (OC)											
4.4`-DDT	EP068	0.2	mg/kg		----	----	----	----	----	----	----
Heptachlor	EP068	0.05	mg/kg		----	----	----	----	----	----	----
Sum of Aldrin + Dieldrin	EP068	0.05	mg/kg		----	----	----	----	----	----	----
Total Chlordane (sum)	EP068	0.05	mg/kg		----	----	----	----	----	----	----
EP075(SIM)A: Phenolic Compounds											
Sum of Phenols	EP075(SIM)	0.5	mg/kg		----	----	----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons											
Benzo(a)pyrene	EP075(SIM)	0.5	mg/kg		----	----	----	----	----	----	----
Sum of polycyclic aromatic hydrocarbons	EP075(SIM)	0.5	mg/kg		----	----	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons											
C10 - C36 Fraction (sum)	EP071	50	mg/kg		----	----	----	----	----	----	----
C6 - C9 Fraction	EP080	10	mg/kg		----	----	----	----	----	----	----
EP080: BTEXN											
Benzene	EP080	0.2	mg/kg		----	----	----	----	----	----	----
Ethylbenzene	EP080	0.5	mg/kg		----	----	----	----	----	----	----

Standard for the production and use of waste derived fill
Criteria for the Classification of Waste: Waste Fill Criteria

Sub-Matrix: **SOIL**

Compound	*Method*	*LOR*	*Unit*	*Sample ID* / *Sampling date/time*	Guideline Lower Limit	Guideline Upper Limit	**QC03** 01-Mar-2021 14:30 **EM2103778-087** MU	**QC07** 02-Mar-2021 14:30 **EM2103778-091** MU	**QC08** 02-Mar-2021 14:30 **EM2103778-092** MU	**----** ----	**----** ----
EP080: BTEXN - Continued											
Toluene	EP080	0.5	mg/kg		----	----	**----**	**----**	**----**	**----**	**----**
Total Xylenes	EP080	0.5	mg/kg		----	----	**----**	**----**	**----**	**----**	**----**

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **EM2103778**	Page	: 1 of 18
Client	: **FYFE PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: STUART TWISS	Contact	: Kieren Burns
Address	: LEVEL 1, 124 SOUTH TERRACE ADELAIDE SOUTH AUSTRALIA 5000	Address	: 4 Westall Rd Springvale VIC Australia 3171
Telephone	: ----	Telephone	: +61881625130
Project	: 80975-2	Date Samples Received	: 05-Mar-2021
Order number	: 11415	Date Analysis Commenced	: 05-Mar-2021
C-O-C number	: 80975-2	Issue Date	: 12-Mar-2021
Sampler	: SCT		
Site	:		
Quote number	: AD/025/20		
No. of samples received	: 97		
No. of samples analysed	: 32		

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

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

This Quality Control Report contains the following information:

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

Signatories

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

Signatories	*Position*	*Accreditation Category*
Arenie Vijayaratnam	Non-Metals Team Leader	Melbourne Inorganics, Springvale, VIC
Dilani Fernando	Senior Inorganic Chemist	Melbourne Inorganics, Springvale, VIC
Nancy Wang	2IC Organic Chemist	Melbourne Organics, Springvale, VIC
Nikki Stepniewski	Senior Inorganic Instrument Chemist	Melbourne Inorganics, Springvale, VIC

General Comments

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

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

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

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 3553292)									
EM2103733-032	Anonymous	EG005T: Beryllium	7440-41-7	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Barium	7440-39-3	10	mg/kg	80	90	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	5	6	0.00	No Limit
		EG005T: Cobalt	7440-48-4	2	mg/kg	3	3	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	22	21	7.57	0% - 50%
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	12	8	40.6	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	13	13	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	15	14	8.05	No Limit
		EG005T: Manganese	7439-96-5	5	mg/kg	80	72	11.0	0% - 50%
		EG005T: Zinc	7440-66-6	5	mg/kg	36	31	16.2	No Limit
		EG005T: Iron	7439-89-6	50	mg/kg	8160	7060	14.6	0% - 20%
EM2103778-040	BH08-0.9-1.0	EG005T: Beryllium	7440-41-7	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Barium	7440-39-3	10	mg/kg	90	90	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	25	22	15.8	0% - 50%
		EG005T: Cobalt	7440-48-4	2	mg/kg	6	6	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	13	15	17.2	No Limit
		EG005T: Silver	7440-22-4	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	6	7	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	14	14	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	13	15	15.6	No Limit
		EG005T: Manganese	7439-96-5	5	mg/kg	159	175	9.92	0% - 20%
		EG005T: Zinc	7440-66-6	5	mg/kg	33	42	24.6	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 3553292) - continued									
EM2103778-040	BH08-0.9-1.0	EG005T: Iron	7439-89-6	50	mg/kg	28400	32900	14.6	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 3552021)									
EM2103682-002	Anonymous	EA055: Moisture Content	----	0.1	%	6.0	6.3	5.76	0% - 20%
EM2103778-017	BH04-0.1-0.2	EA055: Moisture Content	----	0.1	%	4.8	5.2	7.89	No Limit
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 3552022)									
EM2103778-048	BH10-0-0.1	EA055: Moisture Content	----	0.1	%	2.5	2.5	0.00	No Limit
EM2103778-091	QC07	EA055: Moisture Content	----	0.1	%	1.1	<1.0	0.00	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3553291)									
EM2103733-032	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	0.1	0.1	0.00	No Limit
EM2103778-040	BH08-0.9-1.0	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EG048: Hexavalent Chromium (Alkaline Digest) (QC Lot: 3554505)									
EM2103778-006	BH02-0.0-0.1	EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EK026SF: Total CN by Segmented Flow Analyser (QC Lot: 3555715)									
EM2103684-003	Anonymous	EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	<1	0.00	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 3554414)									
EM2103778-006	BH02-0.0-0.1	EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP068A: Organochlorine Pesticides (OC) (QC Lot: 3554411)									
EM2103778-079	BH16-0-0.1	EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Dieldrin	60-57-1	0.05	mg/kg	0.10	0.09	10.7	No Limit
		EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EM2103778-006	BH02-0.0-0.1	EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP068A: Organochlorine Pesticides (OC) (QC Lot: 3554411) - continued									
EM2103778-006	BH02-0.0-0.1	EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Dieldrin	60-57-1	0.05	mg/kg	0.10	0.12	15.6	No Limit
		EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP068A: Organochlorine Pesticides (OC) (QC Lot: 3554487)									
EM2103733-016	Anonymous	EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.09	53.5	No Limit
		EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.09	53.5	No Limit
		EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.09	53.5	No Limit
		EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.09	53.5	No Limit
		EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.09	53.5	No Limit
		EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.09	53.5	No Limit
		EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.09	53.5	No Limit
		EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.09	53.5	No Limit
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.09	53.5	No Limit
		EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.09	53.5	No Limit
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.09	53.5	No Limit
		EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.09	53.5	No Limit
		EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.09	53.5	No Limit
		EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	<0.09	53.5	No Limit
		EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.09	53.5	No Limit
		EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.09	53.5	No Limit
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.09	53.5	No Limit
		EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.09	53.5	No Limit
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.09	53.5	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP068A: Organochlorine Pesticides (OC) (QC Lot: 3554487) - continued									
EM2103733-016	Anonymous	EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EM2103697-001	Anonymous	EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP068B: Organophosphorus Pesticides (OP) (QC Lot: 3554411)									
EM2103778-079	BH16-0-0.1	EP068: Dichlorvos	62-73-7	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Dimethoate	60-51-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Diazinon	333-41-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Malathion	121-75-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Fenthion	55-38-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Prothiofos	34643-46-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Ethion	563-12-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Carbophenothion	786-19-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	<0.05	0.00	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP068B: Organophosphorus Pesticides (OP) (QC Lot: 3554411) - continued									
EM2103778-079	BH16-0-0.1	EP068: Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP068: Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP068: Parathion	56-38-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EM2103778-006	BH02-0.0-0.1	EP068: Dichlorvos	62-73-7	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Dimethoate	60-51-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Diazinon	333-41-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Malathion	121-75-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Fenthion	55-38-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Prothiofos	34643-46-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Ethion	563-12-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Carbophenothion	786-19-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP068: Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP068: Parathion	56-38-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP068B: Organophosphorus Pesticides (OP) (QC Lot: 3554487)									
EM2103733-016	Anonymous	EP068: Dichlorvos	62-73-7	0.05	mg/kg	<0.05	<0.09	53.5	No Limit
		EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	<0.09	53.5	No Limit
		EP068: Dimethoate	60-51-5	0.05	mg/kg	<0.05	<0.09	53.5	No Limit
		EP068: Diazinon	333-41-5	0.05	mg/kg	<0.05	<0.09	53.5	No Limit
		EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	<0.09	53.5	No Limit
		EP068: Malathion	121-75-5	0.05	mg/kg	<0.05	<0.09	53.5	No Limit
		EP068: Fenthion	55-38-9	0.05	mg/kg	<0.05	<0.09	53.5	No Limit
		EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	<0.09	53.5	No Limit
		EP068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	<0.09	53.5	No Limit
		EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	<0.09	53.5	No Limit
		EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	<0.09	53.5	No Limit
		EP068: Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	<0.09	53.5	No Limit
		EP068: Prothiofos	34643-46-4	0.05	mg/kg	<0.05	<0.09	53.5	No Limit
		EP068: Ethion	563-12-2	0.05	mg/kg	<0.05	<0.09	53.5	No Limit
		EP068: Carbophenothion	786-19-6	0.05	mg/kg	<0.05	<0.09	53.5	No Limit
		EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	<0.09	53.5	No Limit
		EP068: Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	<0.2	0.00	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP068B: Organophosphorus Pesticides (OP) (QC Lot: 3554487) - continued									
EM2103733-016	Anonymous	EP068: Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP068: Parathion	56-38-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EM2103697-001	Anonymous	EP068: Dichlorvos	62-73-7	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Dimethoate	60-51-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Diazinon	333-41-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Malathion	121-75-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Fenthion	55-38-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Prothiofos	34643-46-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Ethion	563-12-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Carbophenothion	786-19-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP068: Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP068: Parathion	56-38-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP075(SIM)A: Phenolic Compounds (QC Lot: 3554412)									
EM2103778-079	BH16-0-0.1	EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): 2.4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): 2.4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): 2.6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075(SIM): Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	0.00	No Limit
EM2103778-006	BH02-0.0-0.1	EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): 2.4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): 2.4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP075(SIM)A: Phenolic Compounds (QC Lot: 3554412) - continued									
EM2103778-006	BH02-0.0-0.1	EP075(SIM): 2.6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.00	No Limit
		EP075(SIM): Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	0.00	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3554412)									
EM2103778-079	BH16-0-0.1	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EM2103778-006	BH02-0.0-0.1	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Acceptable RPD (%)*
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3554412) - continued									
EM2103778-006	BH02-0.0-0.1	EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3551906)									
EM2103417-006	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	65	69	5.50	No Limit
EM2103778-006	BH02-0.0-0.1	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3554413)									
EM2103778-079	BH16-0-0.1	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
		EP071: C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	0.00	No Limit
EM2103778-006	BH02-0.0-0.1	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
		EP071: C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 3551906)									
EM2103417-006	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	177	176	0.830	0% - 50%
EM2103778-006	BH02-0.0-0.1	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 3554413)									
EM2103778-079	BH16-0-0.1	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
		EP071: >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	0.00	No Limit
EM2103778-006	BH02-0.0-0.1	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
		EP071: >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	0.00	No Limit
EP080: BTEXN (QC Lot: 3551906)									
EM2103417-006	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	0.7	0.8	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	3.2	3.3	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	9.7	9.8	0.00	0% - 50%
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	6.5	6.5	0.00	0% - 50%
		EP080: Naphthalene	91-20-3	1	mg/kg	2	2	0.00	No Limit
EM2103778-006	BH02-0.0-0.1	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report					
				LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP080: BTEXN (QC Lot: 3551906) - continued									
EM2103778-006	BH02-0.0-0.1	EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report					
				LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3549568)									
EM2103793-003	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EM2103756-001	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3551669)									
EM2103723-005	Anonymous	EP071: C15 - C28 Fraction	----	100	µg/L	1900	1730	9.71	0% - 50%
		EP071: C10 - C14 Fraction	----	50	µg/L	1870	1730	7.64	0% - 20%
		EP071: C29 - C36 Fraction	----	50	µg/L	60	<50	0.00	No Limit
EM2103723-001	Anonymous	EP071: C15 - C28 Fraction	----	100	µg/L	230	260	12.7	No Limit
		EP071: C10 - C14 Fraction	----	50	µg/L	170	220	24.7	No Limit
		EP071: C29 - C36 Fraction	----	50	µg/L	<50	<50	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 3549568)									
EM2103793-003	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EM2103756-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 3551669)									
EM2103723-005	Anonymous	EP071: >C10 - C16 Fraction	----	100	µg/L	2870	2660	7.50	0% - 20%
		EP071: >C16 - C34 Fraction	----	100	µg/L	810	710	13.8	No Limit
		EP071: >C34 - C40 Fraction	----	100	µg/L	<100	<100	0.00	No Limit
EM2103723-001	Anonymous	EP071: >C10 - C16 Fraction	----	100	µg/L	230	300	24.6	No Limit
		EP071: >C16 - C34 Fraction	----	100	µg/L	170	180	6.00	No Limit
		EP071: >C34 - C40 Fraction	----	100	µg/L	<100	<100	0.00	No Limit
EP080: BTEXN (QC Lot: 3549568)									
EM2103793-003	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit
EM2103756-001	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit

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

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

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 3553292)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	123 mg/kg	98.8	70.0	130
EG005T: Barium	7440-39-3	10	mg/kg	<10	99.3 mg/kg	96.1	70.0	130
EG005T: Beryllium	7440-41-7	1	mg/kg	<1	0.67 mg/kg	106	70.0	130
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	1.23 mg/kg	57.9	50.0	130
EG005T: Chromium	7440-47-3	2	mg/kg	<2	20.2 mg/kg	98.3	70.0	130
EG005T: Cobalt	7440-48-4	2	mg/kg	<2	11.2 mg/kg	87.6	70.0	130
EG005T: Copper	7440-50-8	5	mg/kg	<5	55.9 mg/kg	90.5	70.0	130
EG005T: Iron	7439-89-6	50	mg/kg	<50	33227 mg/kg	109	70.0	130
EG005T: Lead	7439-92-1	5	mg/kg	<5	62.4 mg/kg	93.4	70.0	130
EG005T: Manganese	7439-96-5	5	mg/kg	<5	590 mg/kg	92.1	70.0	130
EG005T: Nickel	7440-02-0	2	mg/kg	<2	15.4 mg/kg	94.0	70.0	130
EG005T: Silver	7440-22-4	2	mg/kg	<2	2.9 mg/kg	70.6	70.0	130
EG005T: Zinc	7440-66-6	5	mg/kg	<5	162 mg/kg	77.0	70.0	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3553291)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	0.64 mg/kg	102	70.0	130
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 3554505)								
EG048G: Hexavalent Chromium	18540-29-9	0.5	mg/kg	<0.5	20 mg/kg	80.5	70.0	130
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 3555715)								
EK026SF: Total Cyanide	57-12-5	1	mg/kg	<1	20 mg/kg	83.8	70.0	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 3554414)								
EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1 mg/kg	122	68.0	133
EP068A: Organochlorine Pesticides (OC) (QCLot: 3554411)								
EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	0.5 mg/kg	84.9	71.8	126
EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	0.5 mg/kg	83.0	72.2	125
EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	0.5 mg/kg	83.6	70.0	124
EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	0.5 mg/kg	83.6	69.1	124
EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	81.4	69.2	125
EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	0.5 mg/kg	76.8	66.6	122
EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	0.5 mg/kg	80.9	68.8	123
EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	0.5 mg/kg	75.9	67.2	124
EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	0.5 mg/kg	78.1	66.0	126
EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	0.5 mg/kg	80.7	70.2	126
EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	0.5 mg/kg	77.9	72.1	124
EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	0.5 mg/kg	84.0	68.0	122

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
				Result	Concentration	LCS	Low	High
EP068A: Organochlorine Pesticides (OC) (QCLot: 3554411) - continued								
EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	0.5 mg/kg	79.5	68.9	124
EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	0.5 mg/kg	71.1	55.8	130
EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	0.5 mg/kg	115	67.9	124
EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	0.5 mg/kg	79.4	72.0	127
EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	0.5 mg/kg	67.6	66.3	131
EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	0.5 mg/kg	63.6	62.4	131
EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	0.5 mg/kg	70.7	55.4	130
EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	0.5 mg/kg	92.3	68.8	128
EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	0.5 mg/kg	76.7	55.5	132
EP068A: Organochlorine Pesticides (OC) (QCLot: 3554487)								
EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	0.5 mg/kg	96.3	71.8	126
EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	0.5 mg/kg	96.1	72.2	125
EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	0.5 mg/kg	97.9	70.0	124
EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	0.5 mg/kg	96.0	69.1	124
EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	93.9	69.2	125
EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	0.5 mg/kg	95.0	66.6	122
EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	0.5 mg/kg	96.1	68.8	123
EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	0.5 mg/kg	95.6	67.2	124
EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	0.5 mg/kg	90.0	66.0	126
EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	0.5 mg/kg	93.4	70.2	126
EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	0.5 mg/kg	92.4	72.1	124
EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	0.5 mg/kg	93.8	68.0	122
EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	0.5 mg/kg	92.5	68.9	124
EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	0.5 mg/kg	113	55.8	130
EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	0.5 mg/kg	89.6	67.9	124
EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	0.5 mg/kg	91.7	72.0	127
EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	0.5 mg/kg	82.5	66.3	131
EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	0.5 mg/kg	94.6	62.4	131
EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	0.5 mg/kg	94.9	55.4	130
EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	0.5 mg/kg	104	68.8	128
EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	0.5 mg/kg	98.4	55.5	132
EP068B: Organophosphorus Pesticides (OP) (QCLot: 3554411)								
EP068: Dichlorvos	62-73-7	0.05	mg/kg	<0.05	0.5 mg/kg	84.6	65.6	127
EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	71.4	63.0	129
EP068: Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	0.5 mg/kg	35.0	10.0	136
EP068: Dimethoate	60-51-5	0.05	mg/kg	<0.05	0.5 mg/kg	67.3	58.3	128
EP068: Diazinon	333-41-5	0.05	mg/kg	<0.05	0.5 mg/kg	73.9	69.0	122
EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	0.5 mg/kg	77.8	68.0	122
EP068: Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	0.5 mg/kg	66.2	59.6	124

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
				Result	Concentration	LCS	Low	High
EP068B: Organophosphorus Pesticides (OP) (QCLot: 3554411) - continued								
EP068: Malathion	121-75-5	0.05	mg/kg	<0.05	0.5 mg/kg	67.3	63.8	128
EP068: Fenthion	55-38-9	0.05	mg/kg	<0.05	0.5 mg/kg	74.7	71.1	124
EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	0.5 mg/kg	77.8	67.4	126
EP068: Parathion	56-38-2	0.2	mg/kg	<0.2	0.5 mg/kg	61.9	57.9	122
EP068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	0.5 mg/kg	72.0	66.2	123
EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	0.5 mg/kg	64.6	59.8	123
EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	0.5 mg/kg	72.0	65.4	127
EP068: Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	0.5 mg/kg	69.7	52.1	128
EP068: Prothiofos	34643-46-4	0.05	mg/kg	<0.05	0.5 mg/kg	75.6	65.2	122
EP068: Ethion	563-12-2	0.05	mg/kg	<0.05	0.5 mg/kg	70.8	63.2	124
EP068: Carbophenothion	786-19-6	0.05	mg/kg	<0.05	0.5 mg/kg	72.0	65.9	127
EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	0.5 mg/kg	63.4	43.1	131
EP068B: Organophosphorus Pesticides (OP) (QCLot: 3554487)								
EP068: Dichlorvos	62-73-7	0.05	mg/kg	<0.05	0.5 mg/kg	114	65.6	127
EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	114	63.0	129
EP068: Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	0.5 mg/kg	113	10.0	136
EP068: Dimethoate	60-51-5	0.05	mg/kg	<0.05	0.5 mg/kg	108	58.3	128
EP068: Diazinon	333-41-5	0.05	mg/kg	<0.05	0.5 mg/kg	90.8	69.0	122
EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	0.5 mg/kg	92.7	68.0	122
EP068: Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	0.5 mg/kg	97.0	59.6	124
EP068: Malathion	121-75-5	0.05	mg/kg	<0.05	0.5 mg/kg	92.5	63.8	128
EP068: Fenthion	55-38-9	0.05	mg/kg	<0.05	0.5 mg/kg	91.4	71.1	124
EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	0.5 mg/kg	91.1	67.4	126
EP068: Parathion	56-38-2	0.2	mg/kg	<0.2	0.5 mg/kg	91.3	57.9	122
EP068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	0.5 mg/kg	90.9	66.2	123
EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	0.5 mg/kg	91.3	59.8	123
EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	0.5 mg/kg	89.2	65.4	127
EP068: Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	0.5 mg/kg	88.6	52.1	128
EP068: Prothiofos	34643-46-4	0.05	mg/kg	<0.05	0.5 mg/kg	89.6	65.2	122
EP068: Ethion	563-12-2	0.05	mg/kg	<0.05	0.5 mg/kg	86.4	63.2	124
EP068: Carbophenothion	786-19-6	0.05	mg/kg	<0.05	0.5 mg/kg	91.4	65.9	127
EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	0.5 mg/kg	97.8	43.1	131
EP075(SIM)A: Phenolic Compounds (QCLot: 3554412)								
EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	3 mg/kg	95.7	81.2	121
EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	3 mg/kg	95.8	83.2	120
EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	3 mg/kg	92.6	81.6	123
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	6 mg/kg	94.9	79.7	129
EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	3 mg/kg	85.5	49.8	129
EP075(SIM): 2.4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	3 mg/kg	98.4	81.5	127

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
				Result	Concentration	LCS	Low	High
EP075(SIM)A: Phenolic Compounds (QCLot: 3554412) - continued								
EP075(SIM): 2.4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	3 mg/kg	94.3	74.2	125
EP075(SIM): 2.6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	3 mg/kg	93.0	79.8	121
EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	3 mg/kg	88.8	71.5	121
EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	3 mg/kg	85.9	67.8	119
EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	3 mg/kg	92.4	64.5	126
EP075(SIM): Pentachlorophenol	87-86-5	2	mg/kg	<2	6 mg/kg	75.3	9.68	118
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3554412)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	3 mg/kg	94.3	85.7	123
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	3 mg/kg	89.1	81.0	123
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	3 mg/kg	93.9	83.6	120
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	3 mg/kg	91.2	81.3	126
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	3 mg/kg	94.3	79.4	123
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	3 mg/kg	96.6	81.7	127
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	3 mg/kg	97.6	78.3	124
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	3 mg/kg	98.9	79.9	128
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	3 mg/kg	95.6	76.9	123
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	3 mg/kg	97.6	80.9	130
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	3 mg/kg	85.4	70.0	121
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	3 mg/kg	93.4	80.4	130
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	3 mg/kg	83.0	70.2	123
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	3 mg/kg	91.4	67.9	122
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	3 mg/kg	92.8	65.8	123
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	3 mg/kg	93.0	65.8	127
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3551906)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	36 mg/kg	99.7	58.6	131
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3554413)								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	900 mg/kg	87.4	75.0	128
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	3030 mg/kg	92.8	82.0	123
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	1520 mg/kg	92.5	82.4	121
EP071: C10 - C36 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3551906)								
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	45 mg/kg	99.6	59.3	128
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3554413)								
EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	1160 mg/kg	89.6	77.0	130
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	4020 mg/kg	93.6	81.5	120
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	280 mg/kg	89.8	73.3	137
EP071: >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP080: BTEXN (QCLot: 3551906)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	2 mg/kg	100	61.6	117
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	2 mg/kg	102	65.8	125
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	2 mg/kg	101	65.8	124
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	4 mg/kg	104	64.8	134
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	2 mg/kg	102	68.7	132
EP080: Naphthalene	91-20-3	1	mg/kg	<1	0.5 mg/kg	97.5	61.8	123

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3549568)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	360 µg/L	104	66.2	134
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3551669)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	4600 µg/L	111	44.2	140
EP071: C15 - C28 Fraction	----	100	µg/L	<100	16100 µg/L	114	46.9	127
EP071: C29 - C36 Fraction	----	50	µg/L	<50	8130 µg/L	109	47.4	128
EP071: C10 - C36 Fraction (sum)	----	----	µg/L	----	28830 µg/L	112	70.0	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3549568)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	450 µg/L	102	66.2	132
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3551669)								
EP071: >C10 - C16 Fraction	----	100	µg/L	<100	6070 µg/L	113	43.0	127
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	21200 µg/L	111	48.6	129
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	1500 µg/L	115	42.2	133
EP071: >C10 - C40 Fraction (sum)	----	----	µg/L	----	28770 µg/L	112	70.0	130
EP080: BTEXN (QCLot: 3549568)								
EP080: Benzene	71-43-2	1	µg/L	<1	20 µg/L	94.6	68.8	127
EP080: Toluene	108-88-3	2	µg/L	<2	20 µg/L	102	72.9	129
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	20 µg/L	99.3	71.7	130
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	40 µg/L	104	72.3	136
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	20 µg/L	100	75.9	134
EP080: Naphthalene	91-20-3	5	µg/L	<5	5 µg/L	97.9	68.3	131

Matrix Spike (MS) Report

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

Sub-Matrix: **SOIL**

Matrix Spike (MS) Report

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 3553292)							
EM2103778-002	BH01-0.4-0.5	EG005T: Arsenic	7440-38-2	50 mg/kg	90.2	78.0	124
		EG005T: Cadmium	7440-43-9	50 mg/kg	90.7	79.7	116
		EG005T: Chromium	7440-47-3	50 mg/kg	87.3	79.0	121
		EG005T: Copper	7440-50-8	250 mg/kg	96.5	80.0	120
		EG005T: Lead	7439-92-1	250 mg/kg	90.8	80.0	120
		EG005T: Nickel	7440-02-0	50 mg/kg	86.4	78.0	120
		EG005T: Zinc	7440-66-6	250 mg/kg	88.6	80.0	120
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3553291)							
EM2103778-002	BH01-0.4-0.5	EG035T: Mercury	7439-97-6	0.5 mg/kg	81.7	76.0	116
EG048: Hexavalent Chromium (Alkaline Digest) (QCLot: 3554505)							
EM2103778-038	BH08-0.0-0.1	EG048G: Hexavalent Chromium	18540-29-9	20 mg/kg	74.0	58.0	114
EM2103778-038	BH08-0.0-0.1	EG048G: Hexavalent Chromium	18540-29-9	20 mg/kg	64.5	58.0	114
EK026SF: Total CN by Segmented Flow Analyser (QCLot: 3555715)							
EM2103686-001	Anonymous	EK026SF: Total Cyanide	57-12-5	20 mg/kg	71.8	70.0	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 3554414)							
EM2103778-038	BH08-0.0-0.1	EP066: Total Polychlorinated biphenyls	----	1 mg/kg	110	63.2	144
EP068A: Organochlorine Pesticides (OC) (QCLot: 3554411)							
EM2103778-011	BH03-0.0-0.1	EP068: gamma-BHC	58-89-9	0.5 mg/kg	86.8	51.4	139
		EP068: Heptachlor	76-44-8	0.5 mg/kg	81.8	49.1	130
		EP068: Aldrin	309-00-2	0.5 mg/kg	85.8	38.4	135
		EP068: Dieldrin	60-57-1	0.5 mg/kg	70.6	58.4	136
		EP068: Endrin	72-20-8	0.5 mg/kg	86.2	33.0	146
		EP068: 4.4`-DDT	50-29-3	0.5 mg/kg	74.2	20.0	133
EP068A: Organochlorine Pesticides (OC) (QCLot: 3554487)							
EM2103669-003	Anonymous	EP068: gamma-BHC	58-89-9	0.5 mg/kg	98.8	51.4	139
		EP068: Heptachlor	76-44-8	0.5 mg/kg	90.8	49.1	130
		EP068: Aldrin	309-00-2	0.5 mg/kg	91.4	38.4	135
		EP068: Dieldrin	60-57-1	0.5 mg/kg	97.2	58.4	136
		EP068: Endrin	72-20-8	0.5 mg/kg	119	33.0	146
		EP068: 4.4`-DDT	50-29-3	0.5 mg/kg	84.1	20.0	133
EP068B: Organophosphorus Pesticides (OP) (QCLot: 3554411)							
EM2103778-011	BH03-0.0-0.1	EP068: Diazinon	333-41-5	0.5 mg/kg	91.4	65.1	135
		EP068: Chlorpyrifos-methyl	5598-13-0	0.5 mg/kg	87.1	56.3	127
		EP068: Pirimphos-ethyl	23505-41-1	0.5 mg/kg	70.5	55.0	133
		EP068: Bromophos-ethyl	4824-78-6	0.5 mg/kg	70.7	55.1	133
		EP068: Prothiofos	34643-46-4	0.5 mg/kg	63.8	43.8	128

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP068B: Organophosphorus Pesticides (OP) (QCLot: 3554487)							
EM2103669-003	Anonymous	EP068: Diazinon	333-41-5	0.5 mg/kg	115	65.1	135
		EP068: Chlorpyrifos-methyl	5598-13-0	0.5 mg/kg	93.6	56.3	127
		EP068: Pirimphos-ethyl	23505-41-1	0.5 mg/kg	86.3	55.0	133
		EP068: Bromophos-ethyl	4824-78-6	0.5 mg/kg	89.0	55.1	133
		EP068: Prothiofos	34643-46-4	0.5 mg/kg	78.2	43.8	128
EP075(SIM)A: Phenolic Compounds (QCLot: 3554412)							
EM2103778-017	BH04-0.1-0.2	EP075(SIM): Phenol	108-95-2	3 mg/kg	86.6	77.1	119
		EP075(SIM): 2-Chlorophenol	95-57-8	3 mg/kg	90.0	78.9	123
		EP075(SIM): 2-Nitrophenol	88-75-5	3 mg/kg	68.7	43.8	136
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	3 mg/kg	72.8	61.5	120
		EP075(SIM): Pentachlorophenol	87-86-5	3 mg/kg	25.6	15.3	139
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3554412)							
EM2103778-017	BH04-0.1-0.2	EP075(SIM): Acenaphthene	83-32-9	3 mg/kg	91.1	77.2	116
		EP075(SIM): Pyrene	129-00-0	3 mg/kg	96.0	65.5	136
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3551906)							
EM2103417-011	Anonymous	EP080: C6 - C9 Fraction	----	28 mg/kg	89.9	33.4	124
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3554413)							
EM2103778-006	BH02-0.0-0.1	EP071: C10 - C14 Fraction	----	900 mg/kg	98.9	71.2	125
		EP071: C15 - C28 Fraction	----	3030 mg/kg	102	75.6	122
		EP071: C29 - C36 Fraction	----	1520 mg/kg	102	78.0	120
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3551906)							
EM2103417-011	Anonymous	EP080: C6 - C10 Fraction	C6_C10	33 mg/kg	75.1	30.8	120
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3554413)							
EM2103778-006	BH02-0.0-0.1	EP071: >C10 - C16 Fraction	----	1160 mg/kg	100.0	72.2	128
		EP071: >C16 - C34 Fraction	----	4020 mg/kg	103	76.5	119
		EP071: >C34 - C40 Fraction	----	280 mg/kg	106	66.8	138
EP080: BTEXN (QCLot: 3551906)							
EM2103417-011	Anonymous	EP080: Benzene	71-43-2	2 mg/kg	89.0	54.4	127
		EP080: Toluene	108-88-3	2 mg/kg	88.7	57.1	131

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3549568)							
EM2103793-001	Anonymous	EP080: C6 - C9 Fraction	----	280 µg/L	82.3	33.9	126
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3551669)							
EM2103723-007	Anonymous	EP071: C10 - C14 Fraction	----	4600 µg/L	101	41.2	149

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3551669) - continued							
EM2103723-007	Anonymous	EP071: C15 - C28 Fraction	----	16100 µg/L	108	41.8	131
		EP071: C29 - C36 Fraction	----	8130 µg/L	104	43.5	130
		EP071: C10 - C36 Fraction (sum)	----	28830 µg/L	106	70.0	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3549568)							
EM2103793-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	330 µg/L	78.3	34.0	122
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3551669)							
EM2103723-007	Anonymous	EP071: >C10 - C16 Fraction	----	6070 µg/L	105	38.4	133
		EP071: >C16 - C34 Fraction	----	21200 µg/L	105	43.1	132
		EP071: >C34 - C40 Fraction	----	1500 µg/L	109	38.4	135
		EP071: >C10 - C40 Fraction (sum)	----	28770 µg/L	106	70.0	130
EP080: BTEXN (QCLot: 3549568)							
EM2103793-001	Anonymous	EP080: Benzene	71-43-2	20 µg/L	93.8	56.3	133
		EP080: Toluene	108-88-3	20 µg/L	93.8	60.4	132

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EM2103778**	Page	: 1 of 10
Client	: **FYFE PTY LTD**	Laboratory	: Environmental Division Melbourne
Contact	: STUART TWISS	Telephone	: +61881625130
Project	: 80975-2	Date Samples Received	: 05-Mar-2021
Site	:	Issue Date	: 12-Mar-2021
Sampler	: SCT	No. of samples received	: 97
Order number	: 11415	No. of samples analysed	: 32

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

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

Summary of Outliers

Outliers : Quality Control Samples

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

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

Outliers : Analysis Holding Time Compliance

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

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

Matrix: **SOIL**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
Total Cyanide by Segmented Flow Analyser	1	19	5.26	10.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

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

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

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

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

Matrix: **SOIL**

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

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA055: Moisture Content (Dried @ 105-110°C)							
Soil Glass Jar - Unpreserved (EA055)							
BH01-0.0-0.1, BH01-0.4-0.5, BH02-0.0-0.1, BH03-0.0-0.1, BH04-0.0-0.1, BH04-0.1-0.2, BH05-0.0-0.1, BH05-0.4-0.5, BH06-0.0-0.1, BH06-0.4-0.5, BH07-0.0-0.1, BH08-0.0-0.1, BH08-0.4-0.5, BH08-0.9-1.0, QC03	**01-Mar-2021**	**----**	----	----	**09-Mar-2021**	15-Mar-2021	✓
Soil Glass Jar - Unpreserved (EA055)							
BH09-0.4-0.5, BH10-0-0.1, BH10-0.9-1.0, BH11-0-0.1, BH11-0.4-0.5, BH12-0.4-0.5, BH13-0-0.1, BH14-0-0.1, BH15-0.4-0.5, BH16-0-0.1, BH16-0.1-0.2, QC07, QC08	**02-Mar-2021**	**----**	----	----	**09-Mar-2021**	16-Mar-2021	✓

Matrix: **SOIL**

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

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG005(ED093)T: Total Metals by ICP-AES							
Soil Glass Jar - Unpreserved (EG005T)							
BH01-0.4-0.5, BH02-0.0-0.1, BH04-0.1-0.2, BH05-0.0-0.1, BH05-0.4-0.5, BH06-0.4-0.5, BH07-0.0-0.1, BH08-0.0-0.1, BH08-0.9-1.0, QC03	**01-Mar-2021**	**10-Mar-2021**	28-Aug-2021	✓	**10-Mar-2021**	28-Aug-2021	✓
Soil Glass Jar - Unpreserved (EG005T)							
BH09-0.4-0.5, BH10-0.9-1.0, BH11-0-0.1, BH11-0.4-0.5, BH12-0.4-0.5, BH13-0-0.1, BH15-0.4-0.5, BH16-0-0.1	**02-Mar-2021**	**10-Mar-2021**	29-Aug-2021	✓	**10-Mar-2021**	29-Aug-2021	✓
EG035T: Total Recoverable Mercury by FIMS							
Soil Glass Jar - Unpreserved (EG035T)							
BH01-0.4-0.5, BH02-0.0-0.1, BH04-0.1-0.2, BH05-0.0-0.1, BH05-0.4-0.5, BH06-0.4-0.5, BH07-0.0-0.1, BH08-0.0-0.1, BH08-0.9-1.0, QC03	**01-Mar-2021**	**10-Mar-2021**	29-Mar-2021	✓	**11-Mar-2021**	29-Mar-2021	✓
Soil Glass Jar - Unpreserved (EG035T)							
BH09-0.4-0.5, BH10-0.9-1.0, BH11-0-0.1, BH11-0.4-0.5, BH12-0.4-0.5, BH13-0-0.1, BH15-0.4-0.5, BH16-0-0.1	**02-Mar-2021**	**10-Mar-2021**	30-Mar-2021	✓	**11-Mar-2021**	30-Mar-2021	✓
EG048: Hexavalent Chromium (Alkaline Digest)							
Soil Glass Jar - Unpreserved (EG048G)							
BH02-0.0-0.1, BH08-0.0-0.1	**01-Mar-2021**	**10-Mar-2021**	29-Mar-2021	✓	**11-Mar-2021**	17-Mar-2021	✓
Soil Glass Jar - Unpreserved (EG048G)							
BH16-0-0.1	**02-Mar-2021**	**10-Mar-2021**	30-Mar-2021	✓	**11-Mar-2021**	17-Mar-2021	✓
EK026SF: Total CN by Segmented Flow Analyser							
Soil Glass Jar - Unpreserved (EK026SF)							
BH02-0.0-0.1, BH08-0.0-0.1	**01-Mar-2021**	**10-Mar-2021**	15-Mar-2021	✓	**11-Mar-2021**	24-Mar-2021	✓
Soil Glass Jar - Unpreserved (EK026SF)							
BH16-0-0.1	**02-Mar-2021**	**10-Mar-2021**	16-Mar-2021	✓	**11-Mar-2021**	24-Mar-2021	✓
EP066: Polychlorinated Biphenyls (PCB)							
Soil Glass Jar - Unpreserved (EP066)							
BH02-0.0-0.1, BH08-0.0-0.1	**01-Mar-2021**	**10-Mar-2021**	15-Mar-2021	✓	**11-Mar-2021**	19-Apr-2021	✓
Soil Glass Jar - Unpreserved (EP066)							
BH16-0-0.1	**02-Mar-2021**	**10-Mar-2021**	16-Mar-2021	✓	**11-Mar-2021**	19-Apr-2021	✓

Matrix: **SOIL**

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

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP068A: Organochlorine Pesticides (OC)							
Soil Glass Jar - Unpreserved (EP068)							
BH01-0.0-0.1, BH02-0.0-0.1, BH03-0.0-0.1, BH04-0.0-0.1, BH06-0.0-0.1, BH08-0.0-0.1, BH08-0.4-0.5	**01-Mar-2021**	**10-Mar-2021**	15-Mar-2021	✓	**11-Mar-2021**	19-Apr-2021	✓
Soil Glass Jar - Unpreserved (EP068)							
BH10-0-0.1, BH14-0-0.1, BH16-0-0.1, BH16-0.1-0.2, QC07, QC08	**02-Mar-2021**	**10-Mar-2021**	16-Mar-2021	✓	**11-Mar-2021**	19-Apr-2021	✓
EP068B: Organophosphorus Pesticides (OP)							
Soil Glass Jar - Unpreserved (EP068)							
BH01-0.0-0.1, BH03-0.0-0.1, BH04-0.0-0.1, BH06-0.0-0.1, BH08-0.4-0.5	**01-Mar-2021**	**10-Mar-2021**	15-Mar-2021	✓	**11-Mar-2021**	19-Apr-2021	✓
Soil Glass Jar - Unpreserved (EP068)							
BH10-0-0.1, BH14-0-0.1, BH16-0.1-0.2, QC07, QC08	**02-Mar-2021**	**10-Mar-2021**	16-Mar-2021	✓	**11-Mar-2021**	19-Apr-2021	✓
EP075(SIM)A: Phenolic Compounds							
Soil Glass Jar - Unpreserved (EP075(SIM))							
BH02-0.0-0.1, BH08-0.0-0.1	**01-Mar-2021**	**10-Mar-2021**	15-Mar-2021	✓	**11-Mar-2021**	19-Apr-2021	✓
Soil Glass Jar - Unpreserved (EP075(SIM))							
BH16-0-0.1	**02-Mar-2021**	**10-Mar-2021**	16-Mar-2021	✓	**11-Mar-2021**	19-Apr-2021	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved (EP075(SIM))							
BH01-0.4-0.5, BH02-0.0-0.1, BH04-0.1-0.2, BH05-0.0-0.1, BH06-0.4-0.5, BH08-0.0-0.1, BH08-0.9-1.0, QC03	**01-Mar-2021**	**10-Mar-2021**	15-Mar-2021	✓	**11-Mar-2021**	19-Apr-2021	✓
Soil Glass Jar - Unpreserved (EP075(SIM))							
BH11-0-0.1, BH13-0-0.1, BH16-0-0.1	**02-Mar-2021**	**10-Mar-2021**	16-Mar-2021	✓	**11-Mar-2021**	19-Apr-2021	✓

Matrix: **SOIL**

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

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Petroleum Hydrocarbons							
Soil Glass Jar - Unpreserved (EP080)							
BH01-0.4-0.5, BH02-0.0-0.1, BH04-0.1-0.2, BH05-0.0-0.1, BH06-0.4-0.5, BH08-0.0-0.1, BH08-0.9-1.0, QC03	**01-Mar-2021**	**09-Mar-2021**	15-Mar-2021	✓	**10-Mar-2021**	15-Mar-2021	✓
Soil Glass Jar - Unpreserved (EP071)							
BH01-0.4-0.5, BH02-0.0-0.1, BH04-0.1-0.2, BH05-0.0-0.1, BH06-0.4-0.5, BH08-0.0-0.1, BH08-0.9-1.0, QC03	**01-Mar-2021**	**10-Mar-2021**	15-Mar-2021	✓	**11-Mar-2021**	19-Apr-2021	✓
Soil Glass Jar - Unpreserved (EP080)							
BH11-0-0.1, BH13-0-0.1, BH16-0-0.1	**02-Mar-2021**	**09-Mar-2021**	16-Mar-2021	✓	**10-Mar-2021**	16-Mar-2021	✓
Soil Glass Jar - Unpreserved (EP071)							
BH11-0-0.1, BH13-0-0.1, BH16-0-0.1	**02-Mar-2021**	**10-Mar-2021**	16-Mar-2021	✓	**11-Mar-2021**	19-Apr-2021	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Soil Glass Jar - Unpreserved (EP080)							
BH01-0.4-0.5, BH02-0.0-0.1, BH04-0.1-0.2, BH05-0.0-0.1, BH06-0.4-0.5, BH08-0.0-0.1, BH08-0.9-1.0, QC03	**01-Mar-2021**	**09-Mar-2021**	15-Mar-2021	✓	**10-Mar-2021**	15-Mar-2021	✓
Soil Glass Jar - Unpreserved (EP071)							
BH01-0.4-0.5, BH02-0.0-0.1, BH04-0.1-0.2, BH05-0.0-0.1, BH06-0.4-0.5, BH08-0.0-0.1, BH08-0.9-1.0, QC03	**01-Mar-2021**	**10-Mar-2021**	15-Mar-2021	✓	**11-Mar-2021**	19-Apr-2021	✓
Soil Glass Jar - Unpreserved (EP080)							
BH11-0-0.1, BH13-0-0.1, BH16-0-0.1	**02-Mar-2021**	**09-Mar-2021**	16-Mar-2021	✓	**10-Mar-2021**	16-Mar-2021	✓
Soil Glass Jar - Unpreserved (EP071)							
BH11-0-0.1, BH13-0-0.1, BH16-0-0.1	**02-Mar-2021**	**10-Mar-2021**	16-Mar-2021	✓	**11-Mar-2021**	19-Apr-2021	✓
EP080: BTEXN							
Soil Glass Jar - Unpreserved (EP080)							
BH01-0.4-0.5, BH02-0.0-0.1, BH04-0.1-0.2, BH05-0.0-0.1, BH06-0.4-0.5, BH08-0.0-0.1, BH08-0.9-1.0, QC03	**01-Mar-2021**	**09-Mar-2021**	15-Mar-2021	✓	**10-Mar-2021**	15-Mar-2021	✓
Soil Glass Jar - Unpreserved (EP080)							
BH11-0-0.1, BH13-0-0.1, BH16-0-0.1	**02-Mar-2021**	**09-Mar-2021**	16-Mar-2021	✓	**10-Mar-2021**	16-Mar-2021	✓

Matrix: **WATER**

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

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Petroleum Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP071)								
QC05		**01-Mar-2021**	**05-Mar-2021**	08-Mar-2021	✓	**10-Mar-2021**	14-Apr-2021	✓
Amber Glass Bottle - Unpreserved (EP071)								
QC10		**02-Mar-2021**	**09-Mar-2021**	09-Mar-2021	✓	**10-Mar-2021**	18-Apr-2021	✓
Amber VOC Vial - Sulfuric Acid (EP080)								
QC05,	TB01	**01-Mar-2021**	**09-Mar-2021**	15-Mar-2021	✓	**09-Mar-2021**	15-Mar-2021	✓
Amber VOC Vial - Sulfuric Acid (EP080)								
QC10,	TB02	**02-Mar-2021**	**09-Mar-2021**	16-Mar-2021	✓	**09-Mar-2021**	16-Mar-2021	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Amber Glass Bottle - Unpreserved (EP071)								
QC05		**01-Mar-2021**	**05-Mar-2021**	08-Mar-2021	✓	**10-Mar-2021**	14-Apr-2021	✓
Amber Glass Bottle - Unpreserved (EP071)								
QC10		**02-Mar-2021**	**09-Mar-2021**	09-Mar-2021	✓	**10-Mar-2021**	18-Apr-2021	✓
Amber VOC Vial - Sulfuric Acid (EP080)								
QC05,	TB01	**01-Mar-2021**	**09-Mar-2021**	15-Mar-2021	✓	**09-Mar-2021**	15-Mar-2021	✓
Amber VOC Vial - Sulfuric Acid (EP080)								
QC10,	TB02	**02-Mar-2021**	**09-Mar-2021**	16-Mar-2021	✓	**09-Mar-2021**	16-Mar-2021	✓
EP080: BTEXN								
Amber VOC Vial - Sulfuric Acid (EP080)								
QC05,	TB01	**01-Mar-2021**	**09-Mar-2021**	15-Mar-2021	✓	**09-Mar-2021**	15-Mar-2021	✓
Amber VOC Vial - Sulfuric Acid (EP080)								
QC10,	TB02	**02-Mar-2021**	**09-Mar-2021**	16-Mar-2021	✓	**09-Mar-2021**	16-Mar-2021	✓

Quality Control Parameter Frequency Compliance

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

Matrix: **SOIL**

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

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	7	**14.29**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Moisture Content	EA055	4	29	**13.79**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	2	11	**18.18**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	4	25	**16.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	3	**33.33**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	19	**5.26**	**10.00**	×	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	2	11	**18.18**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	7	**28.57**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	1	11	**9.09**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	2	25	**8.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	3	**33.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	11	**9.09**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	1	7	**14.29**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	1	11	**9.09**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	2	25	**8.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	3	**33.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	11	**9.09**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	2	7	**28.57**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	1	11	**9.09**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	2	25	**8.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	3	**33.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Cyanide by Segmented Flow Analyser	EK026SF	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **SOIL**

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

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Matrix Spikes (MS) - Continued							
Total Mercury by FIMS	EG035T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	11	**9.09**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER**

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

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Duplicates (DUP)							
TRH - Semivolatile Fraction	EP071	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	19	**10.53**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
TRH - Semivolatile Fraction	EP071	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
TRH - Semivolatile Fraction	EP071	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
TRH - Semivolatile Fraction	EP071	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM Schedule B(3).
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl2) (Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM Schedule B(3)
Hexavalent Chromium by Alkaline Digestion and DA Finish	EG048G	SOIL	In house: Referenced to USEPA SW846, Method 3060. Hexavalent chromium is extracted by alkaline digestion. The digest is determined by photometrically by automatic discrete analyser, following pH adjustment. The instrument uses colour development using dephenylcarbazide. Each run of samples is measured against a five-point calibration curve. This method is compliant with NEPM Schedule B(3)
Total Cyanide by Segmented Flow Analyser	EK026SF	SOIL	In house: Referenced to APHA 4500-CN C / ASTM D7511 / ISO 14403. Caustic leachates of soil samples are introduced into an automated segmented flow analyser. Complex bound cyanide is decomposed in a continuously flowing stream, at a pH of 3.8, by the effect of UV light. A UV-B lamp (312 nm) and a decomposition spiral of borosilicate glass are used to filter out UV light with a wavelength of less than 290 nm thus preventing the conversion of thiocyanate into cyanide. The hydrogen cyanide present at a pH of 3.8 is separated by gas dialysis. The hydrogen cyanide is then determined photometrically, based on the reaction of cyanide with chloramine-T to form cyanogen chloride. This then reacts with 4-pyridine carboxylic acid and 1,3-dimethylbarbituric acid to give a red colour which is measured at 600 nm. This method is compliant with NEPM Schedule B(3).
Polychlorinated Biphenyls (PCB)	EP066	SOIL	In house: Referenced to USEPA SW 846 - 8270 Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM Schedule B(3).
Pesticides by GCMS	EP068	SOIL	In house: Referenced to USEPA SW 846 - 8270 Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM Schedule B(3).
TRH - Semivolatile Fraction	EP071	SOIL	In house: Referenced to USEPA SW 846 - 8015 Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40. Compliant with NEPM Schedule B(3).
PAH/Phenols (SIM)	EP075(SIM)	SOIL	In house: Referenced to USEPA SW 846 - 8270. Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM Schedule B(3)

Analytical Methods	Method	Matrix	Method Descriptions
TRH Volatiles/BTEX	EP080	SOIL	In house: Referenced to USEPA SW 846 - 8260. Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. Compliant with NEPM Schedule B(3) amended.
TRH - Semivolatile Fraction	EP071	WATER	In house: Referenced to USEPA SW 846 - 8015 The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM Schedule B(3)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260 Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM Schedule B(3)

Preparation Methods	Method	Matrix	Method Descriptions
NaOH leach for CN in Soils	CN-PR	SOIL	In house: APHA 4500 CN. Samples are extracted by end-over-end tumbling with NaOH.
Alkaline digestion for Hexavalent Chromium	EG048PR	SOIL	In house: Referenced to USEPA SW846, Method 3060A.
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM Schedule B(3).
Methanolic Extraction of Soils for Purge and Trap	ORG16	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids	ORG17	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for purging.

APPENDIX 10. PRELIMINARY INFRASTRUCTURE AND SERVICING REPORT

GREENHILL

GREENHILL ENGINEERS PTY LTD | ABN 39 061 222 964

Level 1, 178 Fullarton Road
Dulwich SA 5065

T 8406 1300
greenhillaustralia.com.au

Preliminary Infrastructure & Servicing Report

Lot 707 Marion Road, Bedford Park

Prepared for:

Troon Group

Prepared by:

GREENHILL

Level 1, 178 Fullarton Road,

Dulwich SA 5065

8406 1300

Contact Person:

Dean Mathews

DMathews@greenhillaustralia.com.au

21.2736

Revision B

August 2021

22679

Preliminary Infrastructure & Servicing Report

Reference No.: 22679

Prepared by: Georgia Wallage

Reviewed by: Dean Mathews

Revision History

Revision:	Date:	Details:	Approved by:	Signed:
A	25/08/2021	Draft Issue for Information	Dean Mathews Technical Director	
B	26/08/2021	Issue for Information	Dean Mathews Technical Director	

Contents

1 Introduction

GREENHILL has been engaged by Troon Group to undertake a preliminary assessment of the infrastructure services and stormwater management requirements to be considered in the initiation of a Code Amendment for Lot 707 Marion Road, Bedford Park.

The investigations and assessment undertaken is based upon a development that may create a mixture of allotments for residential, retail and commercial uses, such as that provided by the Troon Group (see concept plan reference '5052_SK001(P1) CONCEPT PLAN', dated 25 May 2021, included in Appendix A).

This report includes:

- A description of the existing services infrastructure; informed by a DBYD enquiry undertaken in June 2021 and other available information in relation to the site and services, as well as enquiries with the relevant authorities;
- A review of existing services adjacent to the site, including stormwater, sewer, potable water, electrical, telecommunications, and gas; and
- The likely infrastructure and servicing requirements of the proposed development, including further investigations that may be required.

In reading this report please note:

- This report does not include the following:
  - An assessment of the traffic management and road access requirements, or review of existing roads and road pavements;
  - Site history reporting for any environmental issues, although reference is made to limited geotechnical and environmental investigation by others;
  - Assessment of trees within the site; or consideration of landscape architectural design requirements; or
  - An assessment of social infrastructure requirements.

2 Background and Site Description

The proposed development site is approximately 5.8 hectares in area, proposed to create a mixture of allotments for residential, retail and commercial uses.

The site is located in the suburb of Bedford Park, South Australia, bordered by the Warriparinga Wetlands to the north, Sturt River to the east, the Southern Expressway to the south, and Marion Road to the west.

An aerial image of the site is shown below in Figure 1.

There are numerous trees on site, particularly in the southern, eastern and northernmost portions of the site.

Figure 1: Proposed Development Site

The available topographical information indicates that the site grades generally to the north or north-east towards the Warriparinga Wetland or Sturt River, with a gradient of approximately 2 to 2.5%.

The alignment of the Sturt River and location of the Warriparinga Wetland can be seen in the topographical plan shown below in Figure 2, extracted from Location SA. The plan also indicates site contours at 2 metre intervals, with the southern end being 42 metres AHD to 36 metres AHD at the northern end.

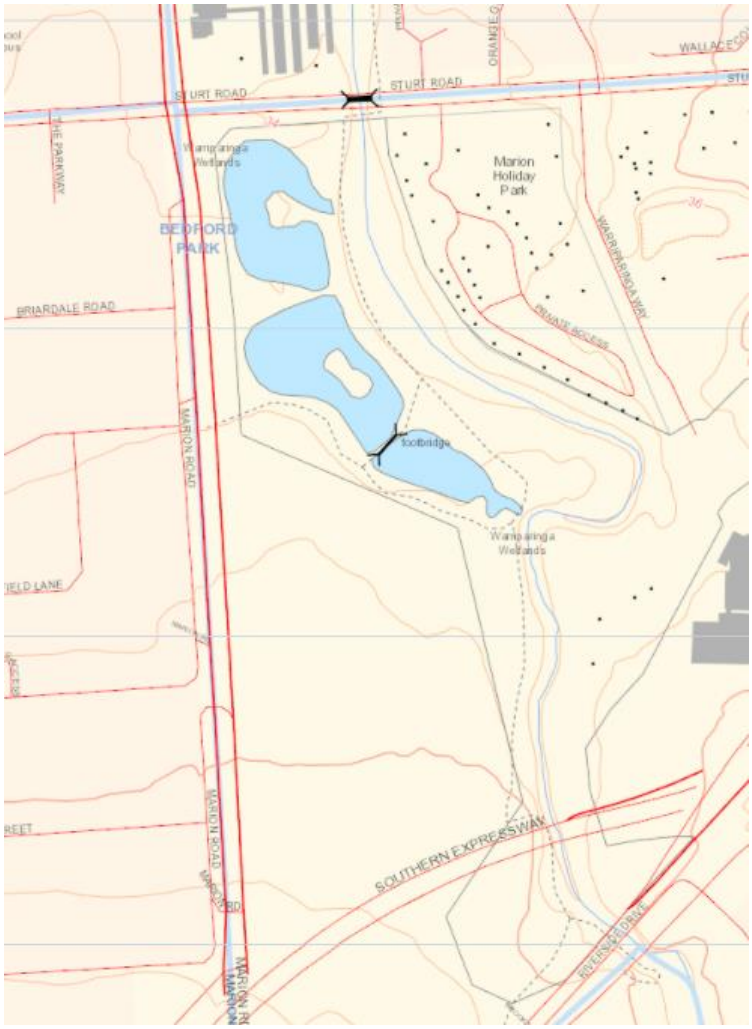


Figure 2: Topographical Site Plan

2.1 Existing Infrastructure and Services

The following provides a description of the site based upon readily available information, a summary of the existing infrastructure at the site, and consideration of additional infrastructure works that may be required for the purpose of servicing a proposed development.

The infrastructure located on, or adjacent to the site, as identified by a 'Dial Before You Dig' DBYD enquiry and the associated service authorities, includes the following:

- Road & Stormwater (City of Marion and City of Mitcham)
- Sewer (SA Water);
- Potable Water (SA Water);
- Electrical (SAPN);
- Telecommunications (Telstra and NBN Co.); and
- Gas (APA Group).

Each is described or outlined in the respective report sections.

Refer to Appendix B for the DBYD services information.

2.2 Geotechnical and Site Information

Limited geotechnical investigation and environmental investigation reports have been undertaken at the site (undertaken by FYFE in conjunction with CMW Geosciences, entitled 'Bedford Park - Limited Soil Assessment', dated 25 March 2021).

Shallow fill material (0.3 m) was encountered across much of the site and consisted of sandy gravel, grey/white in colour, with fine to coarse grained, angular gravels including traces of brick fragments at isolated locations. The natural soils encountered included primarily of pale red or brown, medium to high plasticity clays, and calcareous clays. At deeper levels silty sand layers of soil were found at sample locations in the east of the site.

Based on the limited sampling, the report concluded that soils from the site that are in excess to the site needs may be suitable for disposal off-site to a licensed landfill and classified as waste fill. The assessment also found that "all target analytes were reported below the laboratory LOR or at concentrations below the adopted human health and ecological screening/investigation criterion in all samples analysed".

However, we note that the assessment did not consider the proposed more sensitive residential use that is proposed for the residential component. While the sampled soils appear to be suitable for site earthworks, a review in relation to suitably for use with the residential component that is proposed is recommended.

There may also be uncontrolled fill or other materials remaining on site from previous land use. Further environmental and geotechnical investigations will be required to determine if any uncontrolled fill or unsuitable material is present on site.

2.3 Road Infrastructure

The site abuts Marion Road to the west, and the Southern Expressway corridor to the south. Marion Road is part of the arterial road network under the care control and management of the Department for Infrastructure and Transport (DIT), and the Southern Expressway is a National Land Transport, Network Road.

The Southern Expressway is a controlled access road, with the only road access available to the site from Marion Road. The concept layout plan proposed to create four new road accesses from Marion Road to the site.

A future public road providing access and serving the site is likely to be required with a carriageway width of at least 7.2 metres, within a road reserve to enable provision for a footpath (with a minimum width of 1.5 metres) and for underground services. Provision for on-street parking may impact on the public road carriageway or road reserve width.

No assessment of road access requirements, or traffic management impacts has been made, we understand this is being undertaken by MFY.

The road configuration and form are subject to the review and acceptance of the City of Marion and may vary from what we have assumed.

A geotechnical assessment of the underlying subgrade strength and a pavement design has not been undertaken and would be required in due course.

No acoustic assessment has been undertaken for the site.

2.4 Stormwater Drainage

2.4.1 Existing Infrastructure and Stormwater Management

As noted above, topographical information indicates that the site naturally grades from the southern to the north or north-eastern side of the site, towards the existing Warriparinga Wetlands and Sturt River / Warriparri.

There is an existing pit and pipe stormwater drainage system in Marion Road, the Warriparinga Wetlands to the north and Sturt River / Warriparri immediately to the west.

The City of Marion has advised that they have significant concerns regarding the management of stormwater for this site. They note that the Marion Road stormwater drainage system has limited capacity and overflows into the site are expected. They also indicated the capacity of the existing pit and pipe system on the east side of Marion Road is a matter for the consideration of DIT, suggesting the only flows to the system are from the main road network.

The City of Marion also notes the requirement to address the quality of stormwater runoff likely generated by the future development, and indicated an outlet to the Wetlands or Sturt River would either be unacceptable or require incorporation of considerable stormwater management measures to protect the environment.

They advised the stormwater system for the proposed development is to incorporate WSUD principles. For the proposed land division, that may require the inclusion of stormwater quality treatment measures to treat the quality of stormwater runoff, and will be in addition to measures that may be incorporated with the future dwelling and building developments.

Please refer to the attached correspondence in Appendix C from the City of Marion for further details, including a draft statement of requirements prepared last year in response to an earlier proposal for development of the site.

A connection of stormwater to the Sturt River would be assessed to be a water affecting activity and a proposal would need to be assessed by both the South Australian Environment Protection Authority as part of a development application, as well as considered by the relevant SA Landscape Board and / or SA Water. No enquiry has been made to date with any of these authorities.

2.4.2 Stormwater Drainage Assessment and Stormwater Management

There are two underground stormwater drainage systems within Marion Road. They include:

- A 375 mm / 450 mm diameter reinforced concrete pipe system located on the eastern side of Marion Road, extending from the Southern Expressway and connecting to the Sturt Road drainage system and the Sturt River (concrete lined open channel); and
- A larger underground stormwater pipe system varying from a 375 mm to 675 mm diameter reinforced concrete pipe, located within the Marion Road service road. This pipe system also extends from the Southern Expressway and connects into the Sturt Road drainage system and the Sturt River (concrete lined open channel).

Overflows from the existing underground pipe system flow downstream from the Southern Expressway corridor to Sturt Road within the Marion Road Carriageways and the Marion Road service road.

From review of available flood mapping information for the existing scenario, we note that stormwater overflows from the Marion Road stormwater system during the 100-Year Average Recurrence Interval (ARI) storm event, as shown below in Figure 3.

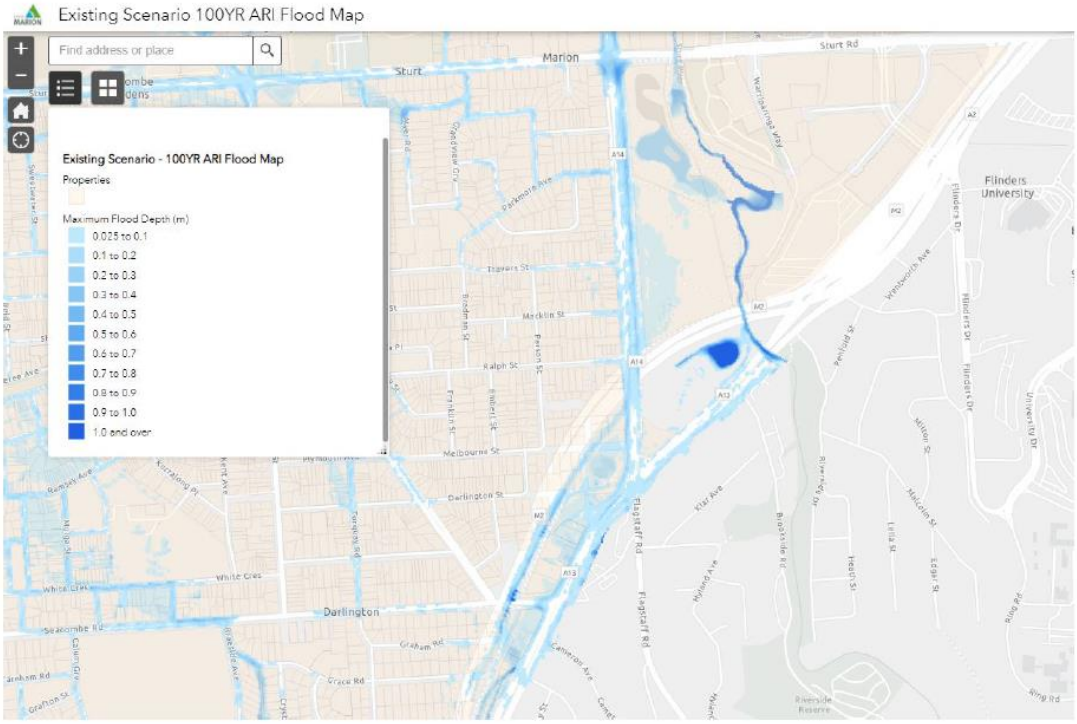


Figure 3: Flood Mapping for the Site from City of Marion

The flood mapping indicates that the 100-Year ARI flood flow in Sturt River is essentially contained within the Sturt River and the Warriparinga Wetland, adjacent to the site. That is flows from Sturt River don't appear to inundate the site.

A road drainage system for the new public road to manage road and allotment stormwater runoff will be required. The stormwater pit and pipe infrastructure would be constructed within the proposed public road to provide for road drainage and site stormwater runoff. Given the site topography, and that the Marion Road stormwater drainage system capacity is already exceeded, it is likely that a road drainage system with a stormwater outlet to the Sturt River will be required.

An underground stormwater system that caters for the minor storm event (5-Year ARI) and that protects properties from inundation during the major storm event (100-Year ARI) will be required and designed to accommodate surface overflows arriving from Marion Road. Localised filling of allotments may also be required to provide protection from inundation by stormwater from the Marion Road drainage system overflows, and to meet with the City of Marion requirements for a land development.

An outlet to the Sturt River will require stormwater quality measures that are likely to include:

- Pipe system, end-of-line gross pollutant trap or traps;
- Stormwater detention measures to restrict the peak flows to the pre-development flow rates. A stormwater detention basin or basins with a detention storage volume in the order of 1,500 cubic metres, and a footprint of approximately 2,000 square metres may be required for the 100-Year ARI design storm event; and

- Stormwater quality measures to meet with the recommendations of the South Australian EPA, Water Sensitive Urban Design Policy Objectives for pollutant reduction will be required. That may be achieved by the provision measures such as a constructed wetland or a biofiltration basin, or a combination of both. A wetland (of approximately 1,200 square metres in area) or a biofiltration basin system (in the order of 450 square metres) within public open space may be required to provide an effective treatment of the stormwater runoff quality. An enlargement or augmentation of the Warriparinga wetland may be a suitable option to achieve the stormwater quality control objectives.

Apart from the space requirements for stormwater management, the requirements of the City of Marion, the SA Environment Protection Authority, and the Landscape Board will need to be addressed and met.

Our assessment is preliminary and subject to detailed design and modelling. We have not undertaken detailed stormwater modelling of existing or proposed stormwater flows.

2.5 Sewer

There is an existing 375 mm diameter sewer main running north to south through the western edge of the proposed development site, and continues north-west and then north towards Sturt Road. There is also an existing 150 mm diameter sewer main on the western side of Marion Road.

There are no existing sewer connections identified that serve the existing site.

SA Water have been contacted and their advice sought in relation to the existing network capacity to service a proposed development of the site but have not provided a considered response at the time of this report.

Nevertheless, based upon the existing site topography and sewer network, it would appear that a new 225 mm gravity sewer main will be required within the proposed new public road, connecting to the existing 375 mm gravity sewer main located on the east side of the proposed development site. A 225 mm sewer main is typically the minimum size required to cater for non-residential use. Additional sewer connections, or gravity sewer main within an easement, may also be required to serve the northern and north-eastern portions of the site.

SA Water review and assessment of the requirements for connection to their network, including the consideration of any augmentation works will be required.

2.6 Potable Water Supply

The proposed development abuts an existing 300 mm potable water main, located on the western side of Marion Road.

SA Water have been contacted and their advice sought in relation to the existing network capacity to service a proposed development of the site but have not provided a considered response at the time of this report.

Nevertheless, based upon the existing water main network it would appear the provision of a water main extension from the existing 300 mm water main in Marion Road will be required. Subject to SA Water assessment, a 150 mm or 200 mm water main should be adequate to provide for the residential and non-residential uses including provision of 100 mm diameter fire service connections for allotments.

SA Water review and assessment of the requirements for connection to their network, including the consideration of any augmentation works will be required.

2.7 Recycled Water Supply

There is no existing recycled water infrastructure within the vicinity of the site.

We have assumed that a recycled water system is not required for this development.

2.8 Electrical Supply

There is existing overhead high voltage electrical infrastructure on both sides of Marion Road adjacent the proposed development site.

There is also existing underground high voltage electrical infrastructure on the west side of Marion Road continuing south and west through Ralph Street.

An electrical reticulation network, which includes lighting, and low voltage cables for the access road will be required. This network may connect into the existing power supply lines located on the west side of Marion Road via under-boring. (Note: the existing overhead lines adjacent the proposed development site, on the east side of Marion Road are 66 kV and a connection cannot be made. Connection points are to be to the 11 kV line). A high voltage loop tie-in, to the existing 11 kV high voltage line on the west side of Marion Road is required for the site.

Transformers will be required for the residential, retail and commercial uses but may be provided or installed as part of the individual allotment development.

We also note it has been assumed all vehicles required to access the site will have sufficient clearance to the cables on Marion Road, with no requirement to underground. This assumption will need to be confirmed via an accredited electrical consultant in due course.

SAPN have advised the following, based on assumed loads for the site.

- Assuming the total site load is over 1,000 kVA a dual feed in would be required to supply the site. The existing 11 kV overhead mains are on the other side of Marion Road requiring the installation of underground 11 kV under Marion Road from two different poles to a new switching cubical located somewhere near the entrance to the proposed development, and then installation of underground 11 kV cable to supply the three transformers within the development if it was undertaken as one development. Noting from the concept plan it appears this parcel will be separated into three separate lots requiring separate assessment when applications are submitted for supply of each stage;
- There would be capacity in the existing overhead infrastructure to supply the proposed development, noting a formal assessment can't be made until the proposed loads are known, however it is expected this will not be an issue;
- Augmentation charges will apply, and would be charged at a $ per kVA at the yearly published rate for the year when the proposed load would be installed on the existing network, and as there is the possibility that there could be three different stages which may request supply at different times this rate may change; and
- There are no foreseeable headworks required.

2.9 Telecommunication Supply

The Dial Before You Dig information provided has indicated that there is existing Telstra / NBN infrastructure located on Marion Road adjacent the proposed development site.

NBN have advised that the site is within the NBN fixed line network footprint and there will be no backhaul charges, with pit and pipe infrastructure only required. NBN will need to confirm if any existing infrastructure is to be relocated as part of the works.

NBN have advised “A standard capped per premises contribution would apply to service the development (invoiced on a stage-by-stage basis). We will review this contribution charge subject to further discussions on the developer’s requirements as well as other current and future developments with NBN”.

2.10 Gas Supply

There is existing APA Group gas infrastructure adjacent the development site.

APA Group do not typically charge fees for installation of a new gas reticulation network. It has been assumed this is to be the case for this development. It has also been assumed the new gas infrastructure will be installed within a common services trench in public road and serving the site.

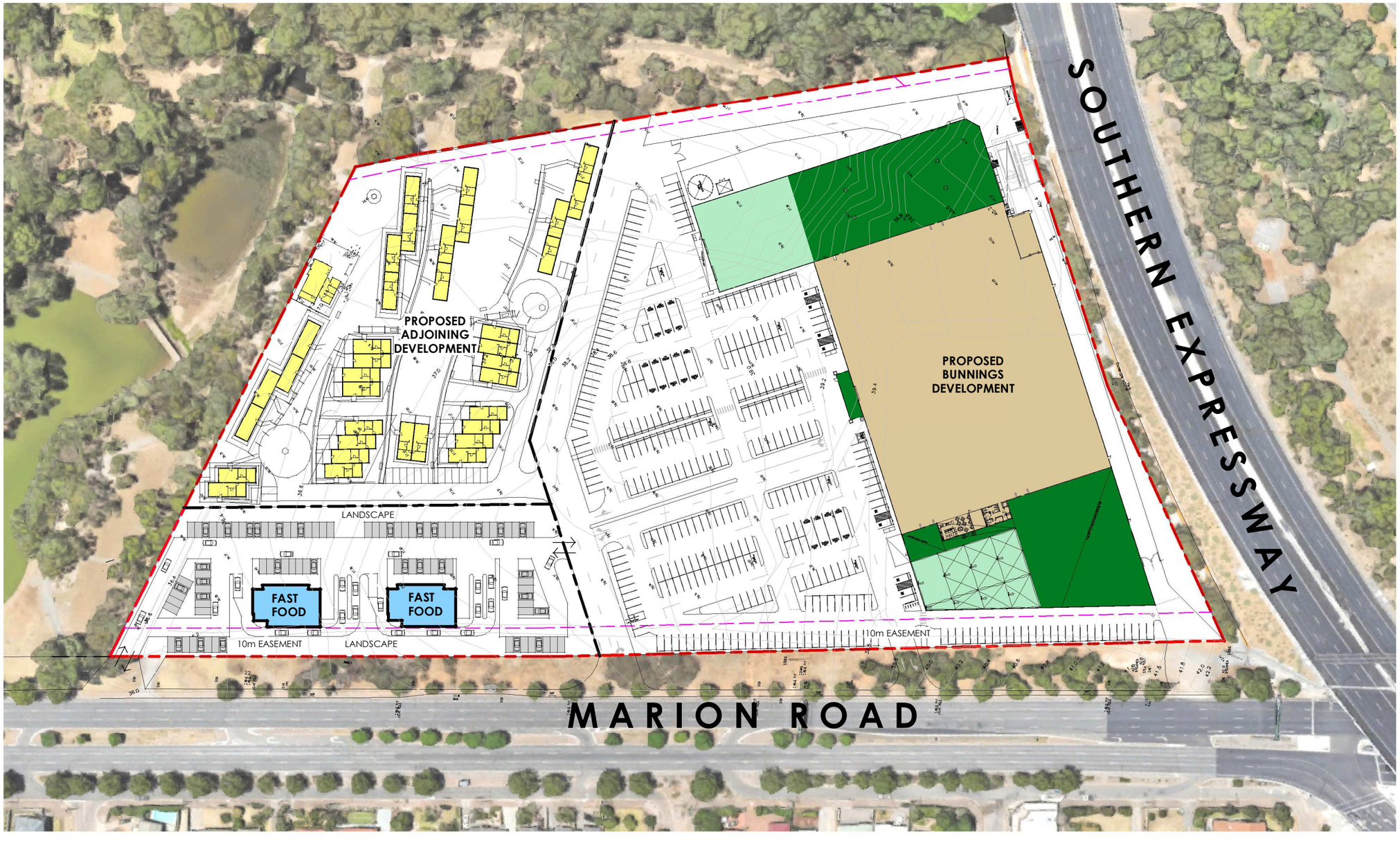
APA will need to review and confirm the assumptions made, and if any augmentation works are required. APA have been contacted, however have not provided any advice at the time of this report.

Appendix A – Concept Plan

Green Building Council Australia Member

Member Australian Institute of Architects

ISSUE	AMENDMENT	DATE	CHK'D
P 1	ISSUE FOR INFORMATION	25.05.21	SJE



NOTE:

ENTRIES, EXITS & CARPARKING LAYOUTS ARE PRELIMINARY ONLY & SUBJECT TO TRAFFIC ENGINEERS DESIGN

SITE BOUNDARIES & SITE AREAS ARE INDICATIVE ONLY AND SUBJECT TO CONFIRMATION BY LICENSED SURVEYOR

NOTE:

NO PLANNING ADVICE HAS BEEN SOURCED FROM COUNCIL & LOCAL AUTHORITIES IN THE PREPERATION OF THIS SITE SKETCH PLAN.

ALL SETBACKS, PLOT RATIOS, LANDSCAPE AREAS & CAPRARKING NUMBERS ARE SUBJECT TO COUNCIL/LOCAL AUTHORITY/ FIRE BRIGADE APPROVAL

SIZE AND LOCATION OF ALL SERVICES TO BE CONFIRMED BY ENGINEER, ALL AREAS NOTED ARE APPROXIMATE ONLY

AREA SCHEDULE	
FAST FOOD SITE AREA approx.	8,020m²
FAST FOOD GLA TOTAL	600m²
FAST FOOD CAR PARKING CAR RATIO 15/100m²	90 CARS

NOTE:
ALL AREAS ARE APPROXIMATE ONLY

PRELIMINARY CONCEPT PLAN

LEFFLER SIMES PTY LTD
ABN 39 001 043 992
WEB: www.lefflersimes.com.au

SYDNEY 7 YOUNG ST, NEUTRAL BAY, NSW 2089 T:+61 2 99093344
MELBOURNE LEVEL 2 - 370 LT BOURKE ST, VIC 3000 T:+61 3 96546344
BRISBANE L5 U39 131 LEICHHARDT ST, SPRING HILL, QLD 4000 T:+61 7 31235544

0 15 30 45 60 75M SCALE @A3 1:1500

PROPOSED DEVELOPMENT
SOUTHERN EXPY & MARION RD, BEDFORD PARK, SA

JOB NO: 5052 DWG NO. REV.
DATE: MAY '21 SK001 P 1
DRAWN: ASH

LEFFLER SIMES ARCHITECTS

Appendix B – Dial Before You Dig Information

APA Group
PO Box 6014 Halifax Street
South Australia 5000

04/06/2021

Greenhill
Miss Georgia Wallage
PO Box 134 Rundle Mall
Adelaide
SA 5000

gwallage@greenhillaustralia.com.au

Dear Miss Georgia Wallage

Sequence Number: 110505524
Worksite Address: Marion Road
Bedford Park
SA 5042

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

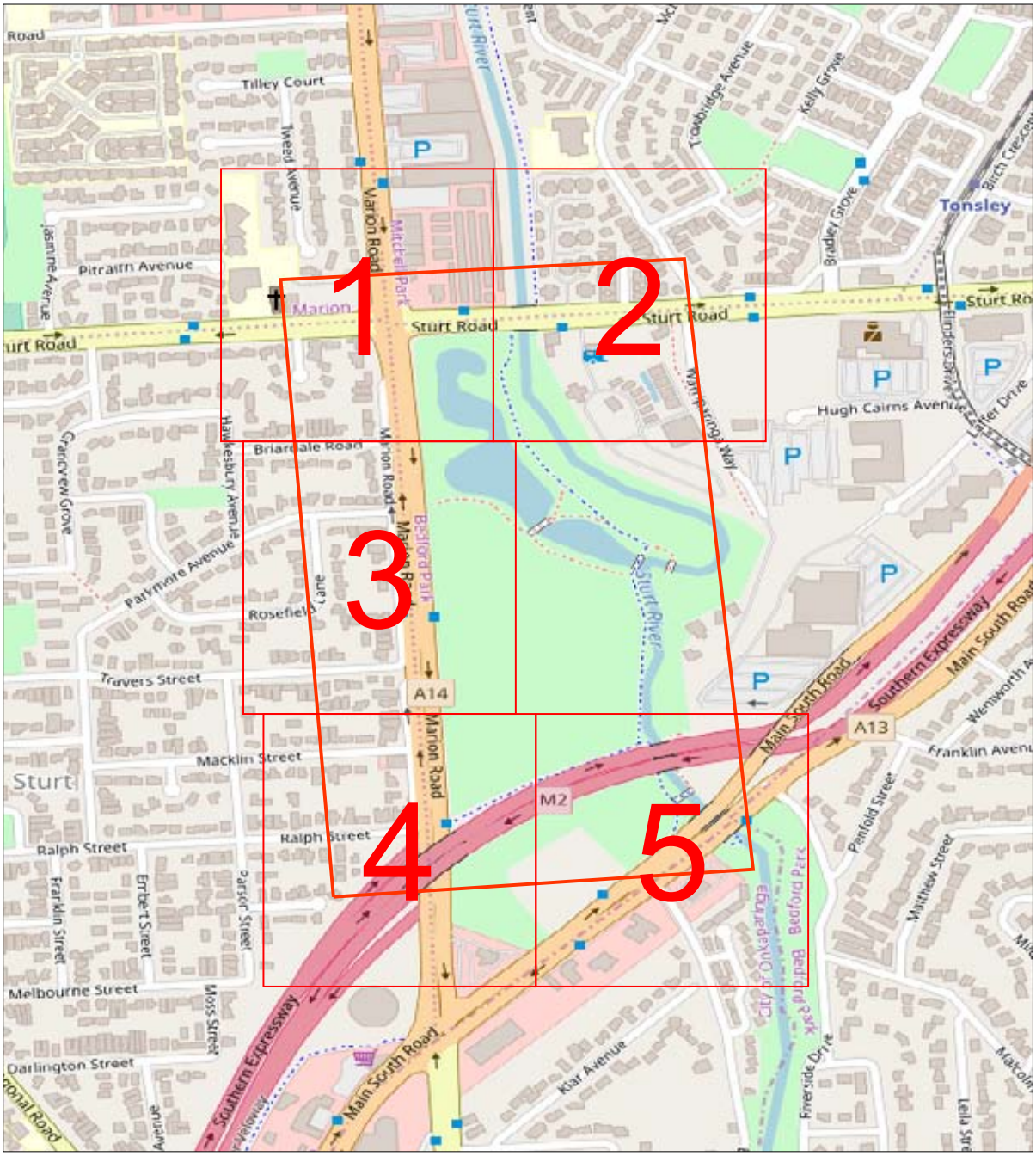
- This location enquiry is valid for 30 days from the date of this response
- Expired locations, i.e., over 30 days from the date of this response, require a new Dial Before You Dig request to validate location information
- The location information supplied in this document shall be used as a guide 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'**

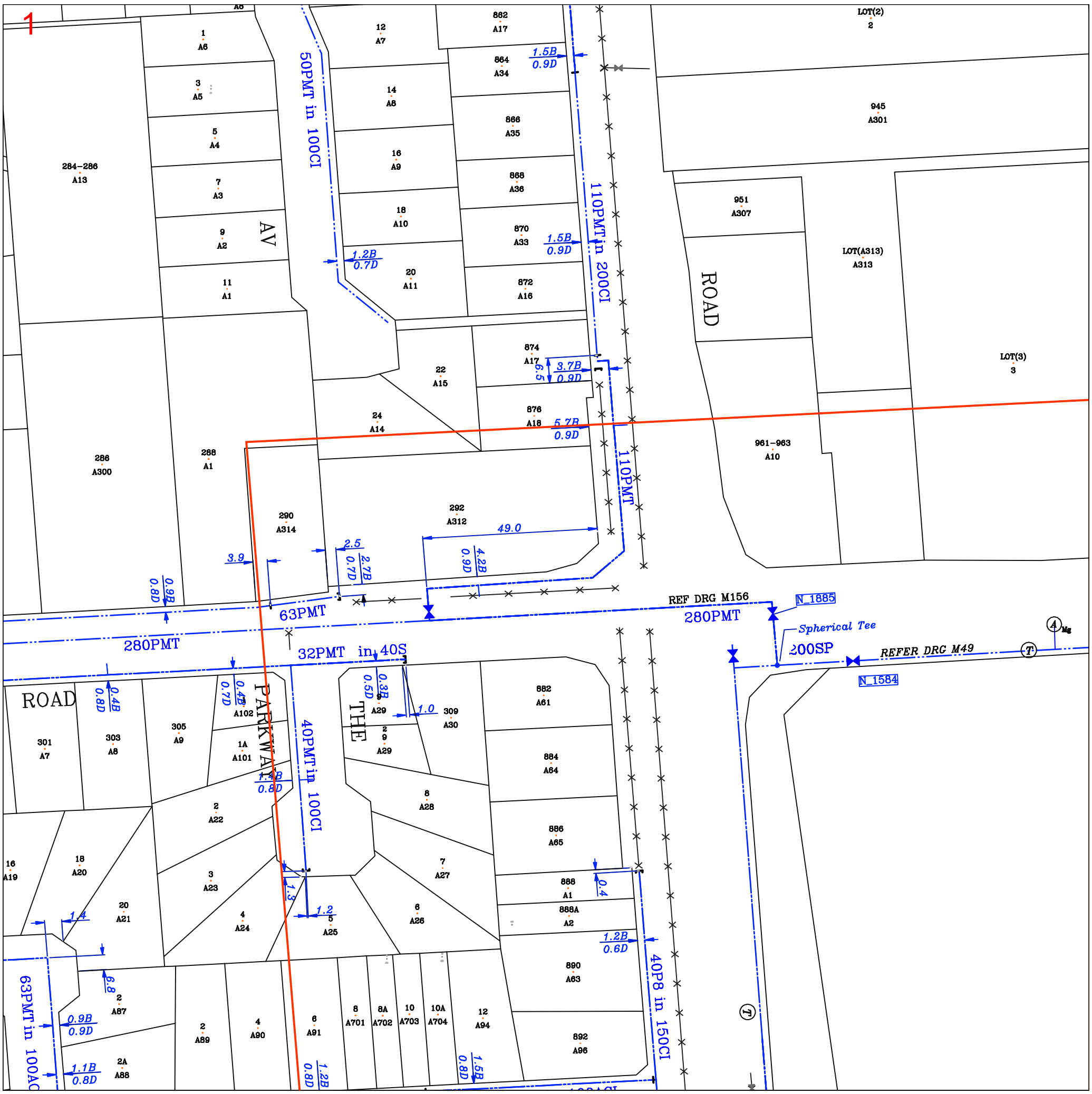
Site Address	Marion Road Bedford Park 5042	**Sequence No**	110505524
Name	Miss Georgia Wallage		
Email	gwallage@greenhillaustralia.com.au		



Scale 1: 6500	NORTH	Enquiry Area Map Key Area

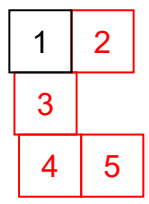
Site Address	Marion Road Bedford Park 5042	**Sequence No**	110505524
Email	gwallage@greenhillaustralia.com.au	**Map Reference**	UbdAde 153G4,153G5,153G6,153G7,153H4,153H5,153H6,153H7,153J4

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

NORTH

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The Essential First Step

operated by apa

Site Address	Marion Road Bedford Park 5042	**Sequence No**	110505524
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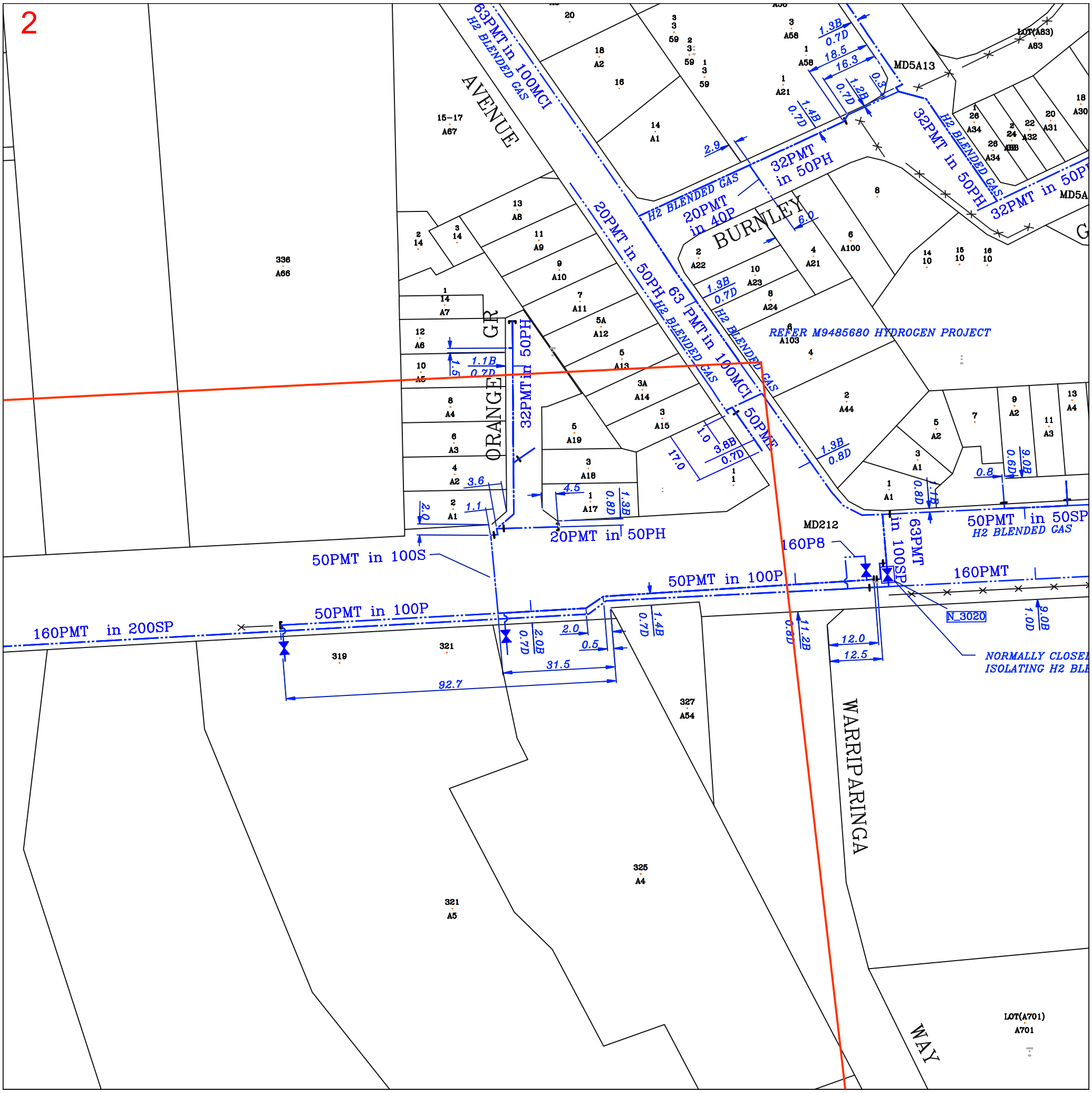

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Map Key

1 2
3
4 5

Scale 1:1000

0 0.01km

NORTH

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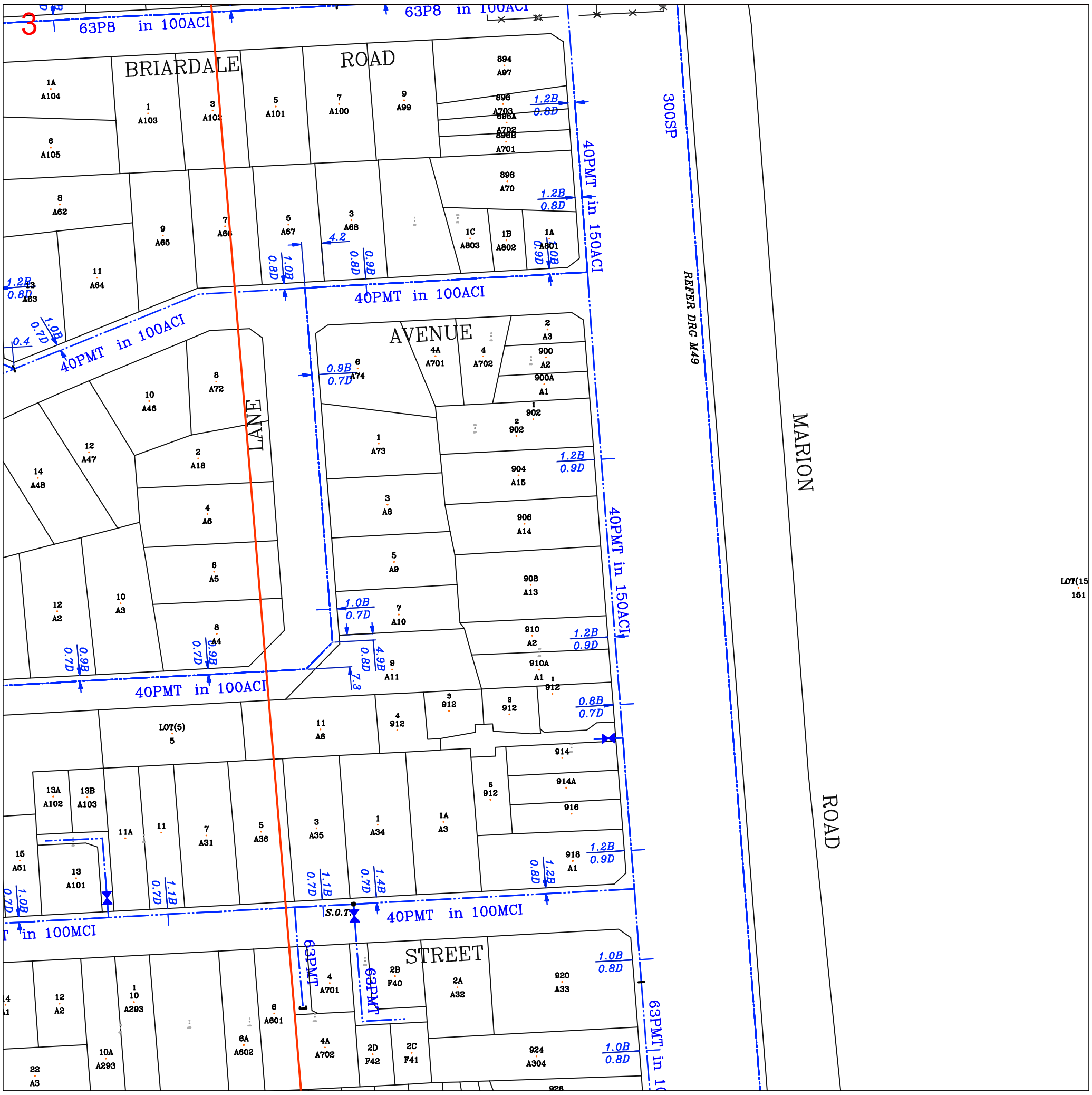

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Map Key

1 2
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Scale 1:1000

0 0.01km

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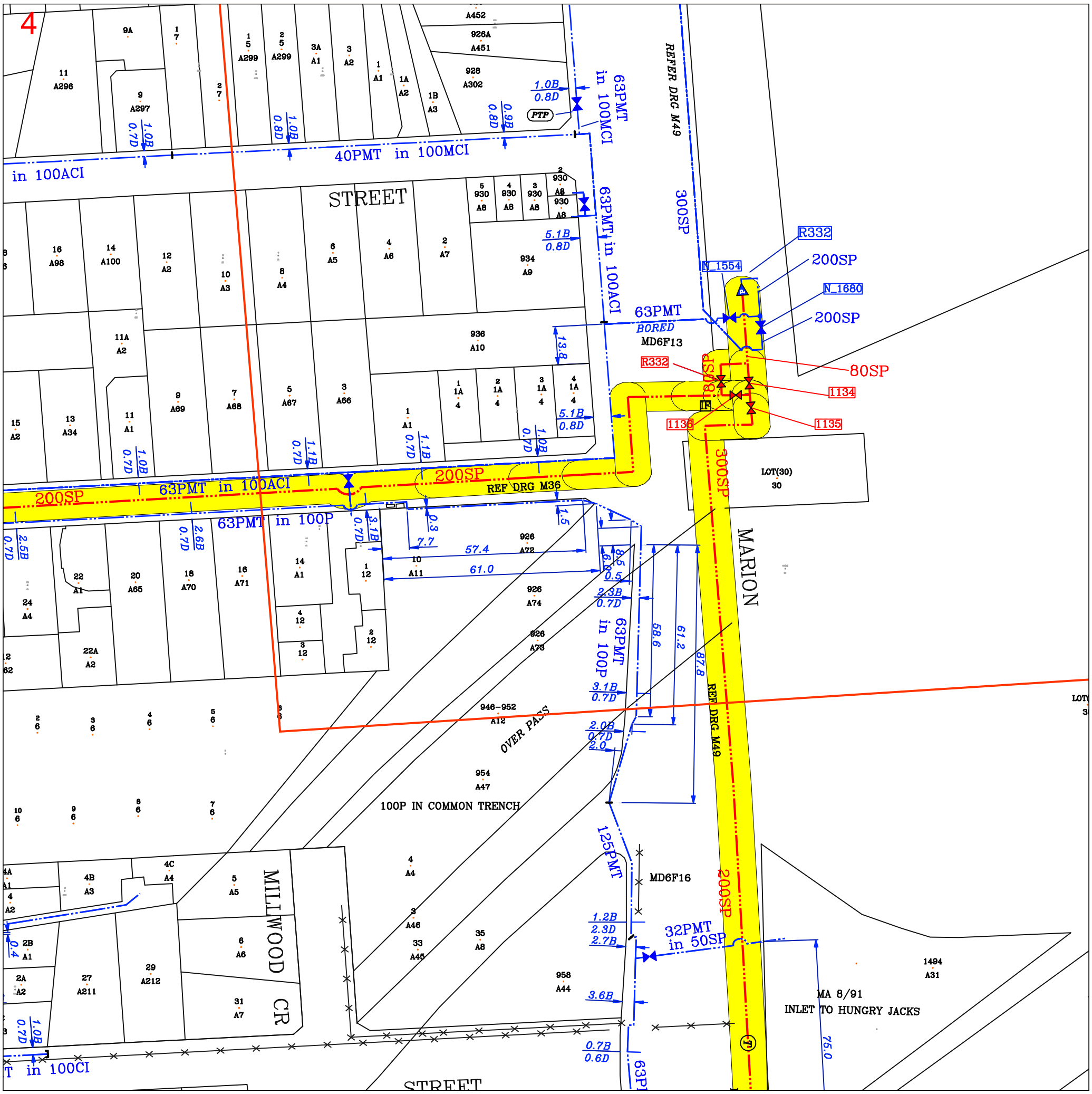

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Map Key

1 2
3
4 5

Scale 1:1000

0 0.01km

NORTH

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operated by apa

Site Address	Marion Road Bedford Park 5042	**Sequence No**	110505524
Email	gwallage@greenhillaustralia.com.au	**Map Reference**	UbdAde 153G4,153G5,153G6,153G7,153H4,153H5,153H6,153H7,153J4

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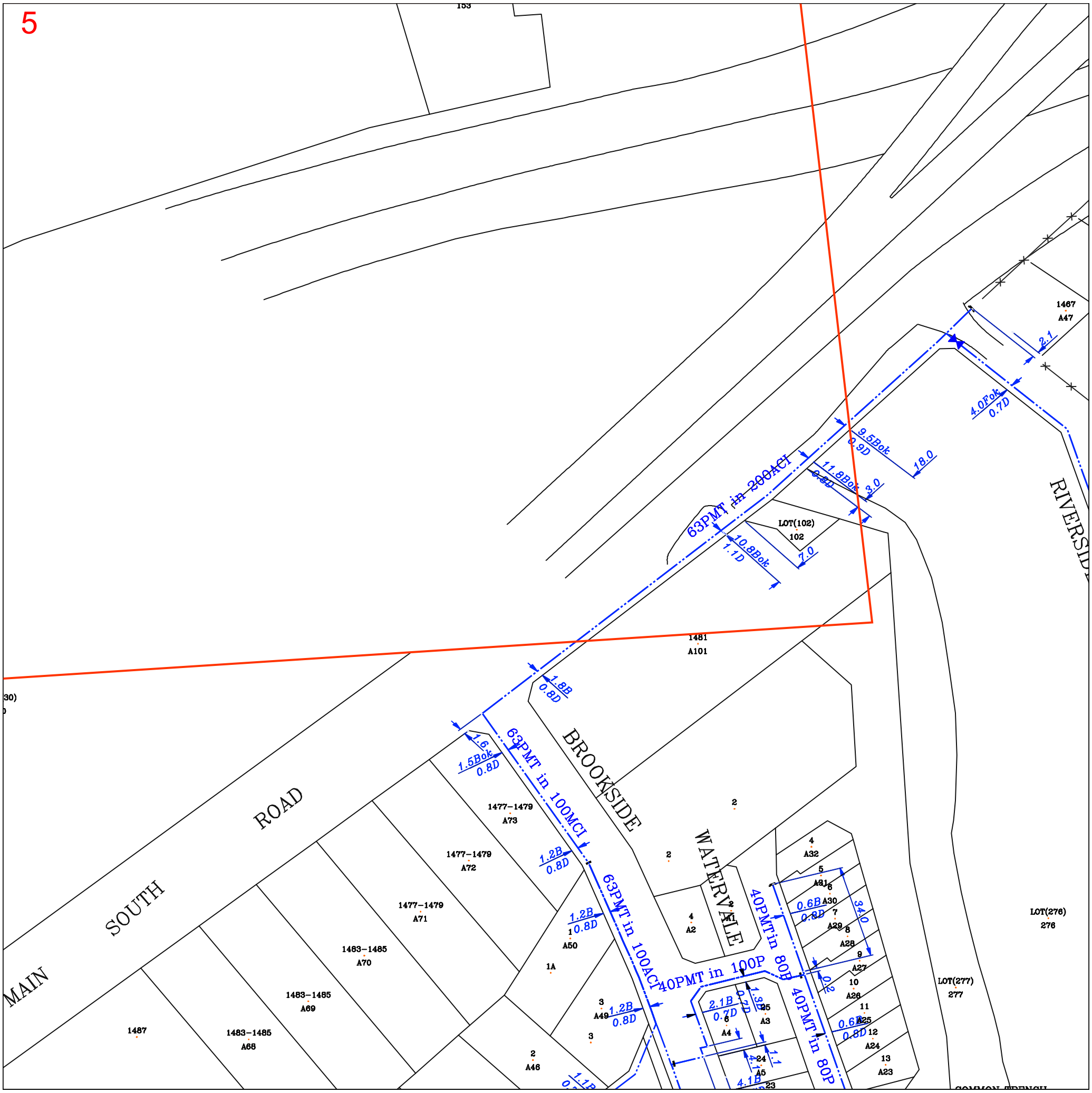

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ABANDONED MAIN				

Map Key

1 2
3
4 5

Scale 1:1000

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: 110505524	
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			

131 Belair Rd
Torrens Park
SA
5062

Important Information

The City of Mitcham outlines the following important conditions:

- The actual location of City of Mitcham's assets may differ significantly from the position shown on the attached plans and these should be used as a guide only;
- All City of Mitcham assets, including underground stormwater pipes, must be confirmed (physically sighted and identified), prior to commencing any activity;
- Where required for your project, we further recommend that the accurate position of assets be confirmed (physically sighted and identified), prior to finalising your design;
- The City of Mitcham typically do NOT have detailed design plans for the underground stormwater network (much of which was installed in the 1960s);
- Please communicate any errors or incorrect locations shown on the Plans to City of Mitcham;
- **Any damage to City of Mitcham owned infrastructure or property must be reported immediately**

Further Information

- For works being undertaken within the City of Mitcham's road reserve, information regarding permits and reinstatement details can be found at:

  https://www.mitchamcouncil.sa.gov.au/build-and-develop/works-on-public-land

- Where Section 221 approval is required under the Local Government Act 1999 prior to undertaking any works the link to the application can be found here:

  https://www.mitchamcouncil.sa.gov.au/__data/assets/pdf_file/0032/127949/Works-on-a-Public-Road-Application-Form.pdf

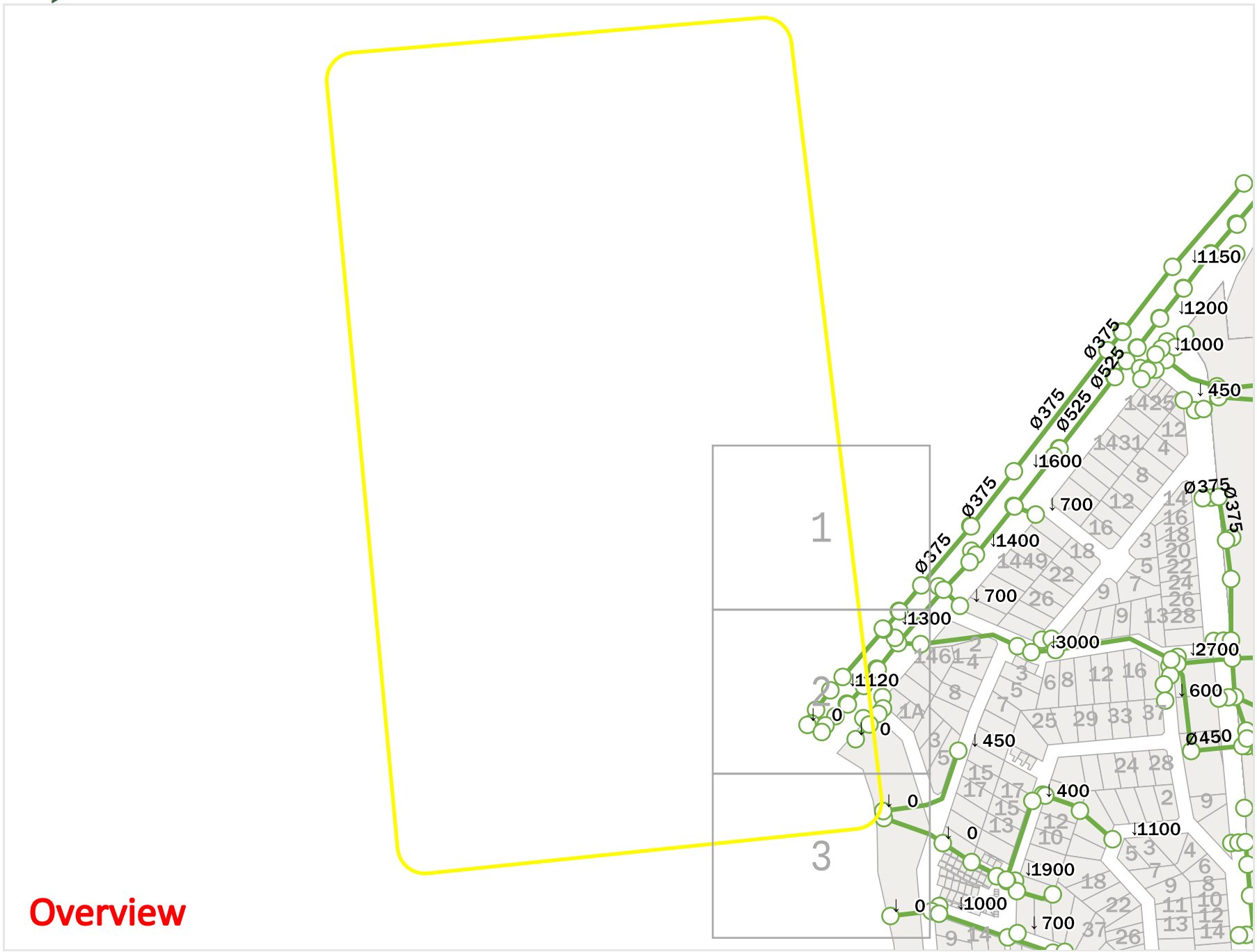
- A list of accredited asset locators can be found here:

  http://www.dbydlocator.com/certified-locators/

CITY OF MITCHAM

Sequence No: 110505519
Job No: 21756560
Location: Marion Road, Bedford Park, SA 5042

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



Overview

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

CITY OF MITCHAM

Sequence No: 110505519
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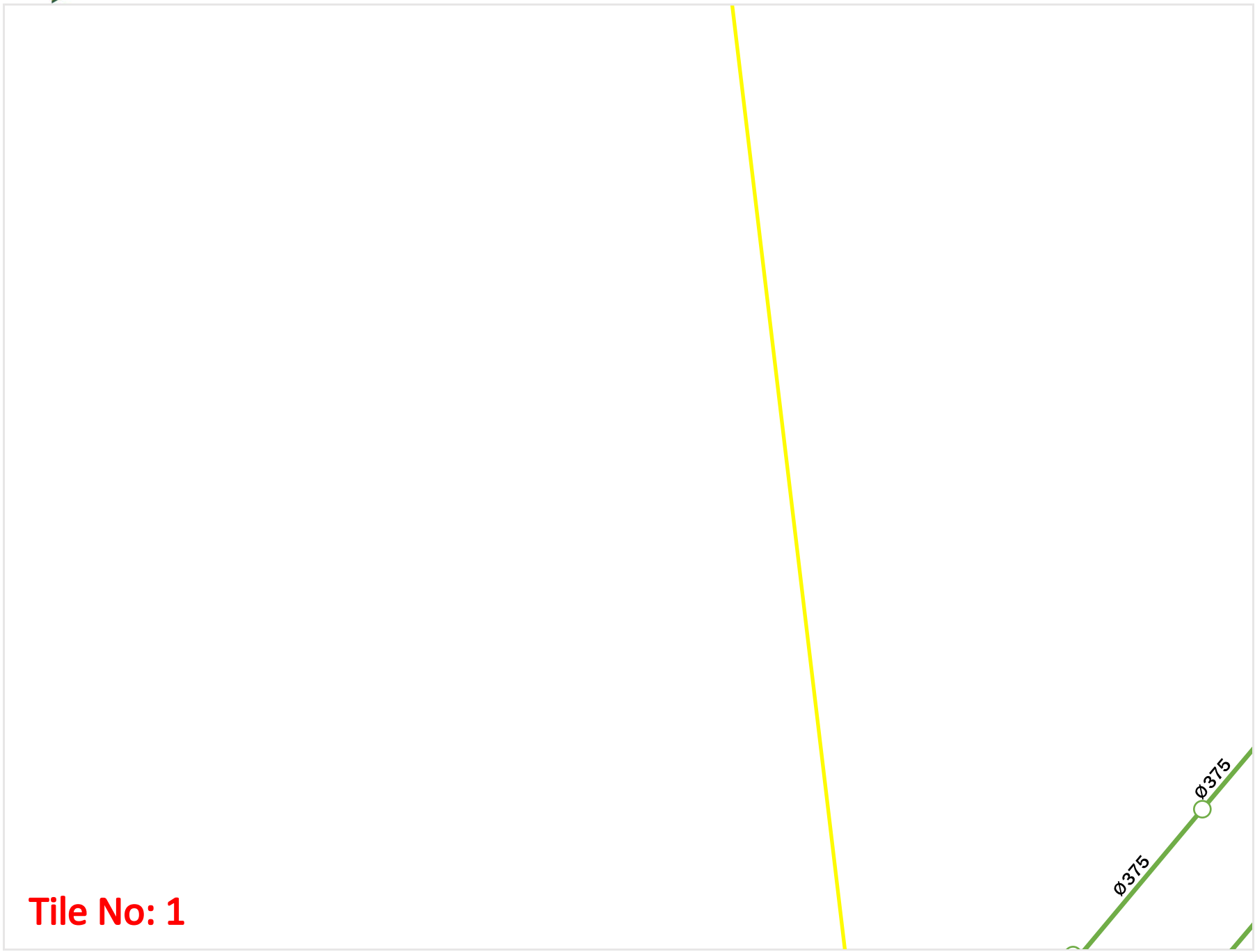

Legend

- Mitcham Stormwater Pits
- Mitcham Stormwater Pipes

N

Scale: 1:1000
Expires: 02 Jul 2021

Tile No: 1

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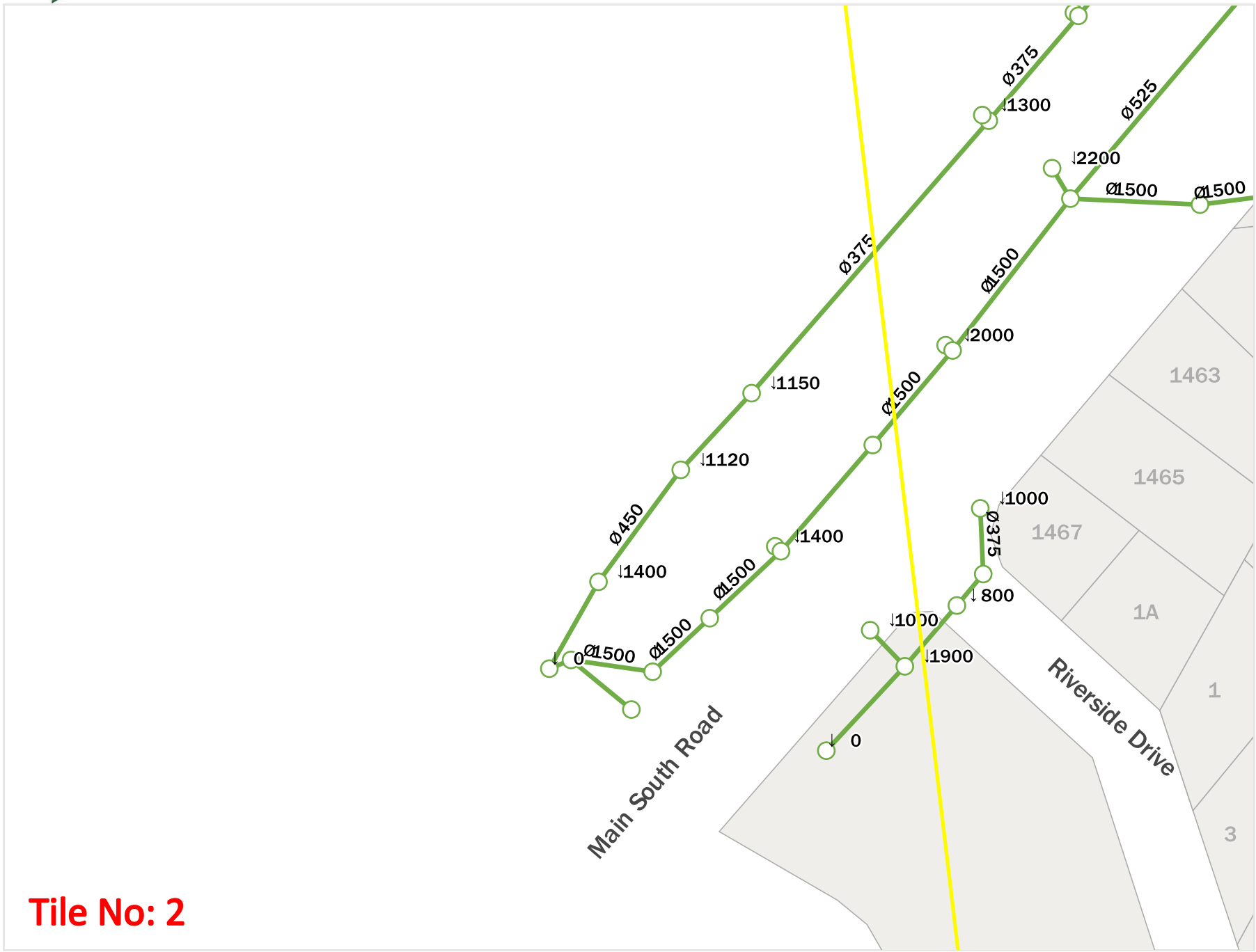

Legend

- Mitcham Stormwater Pits
- Mitcham Stormwater Pipes

N

Scale: 1:1000
Expires: 02 Jul 2021

Tile No: 2

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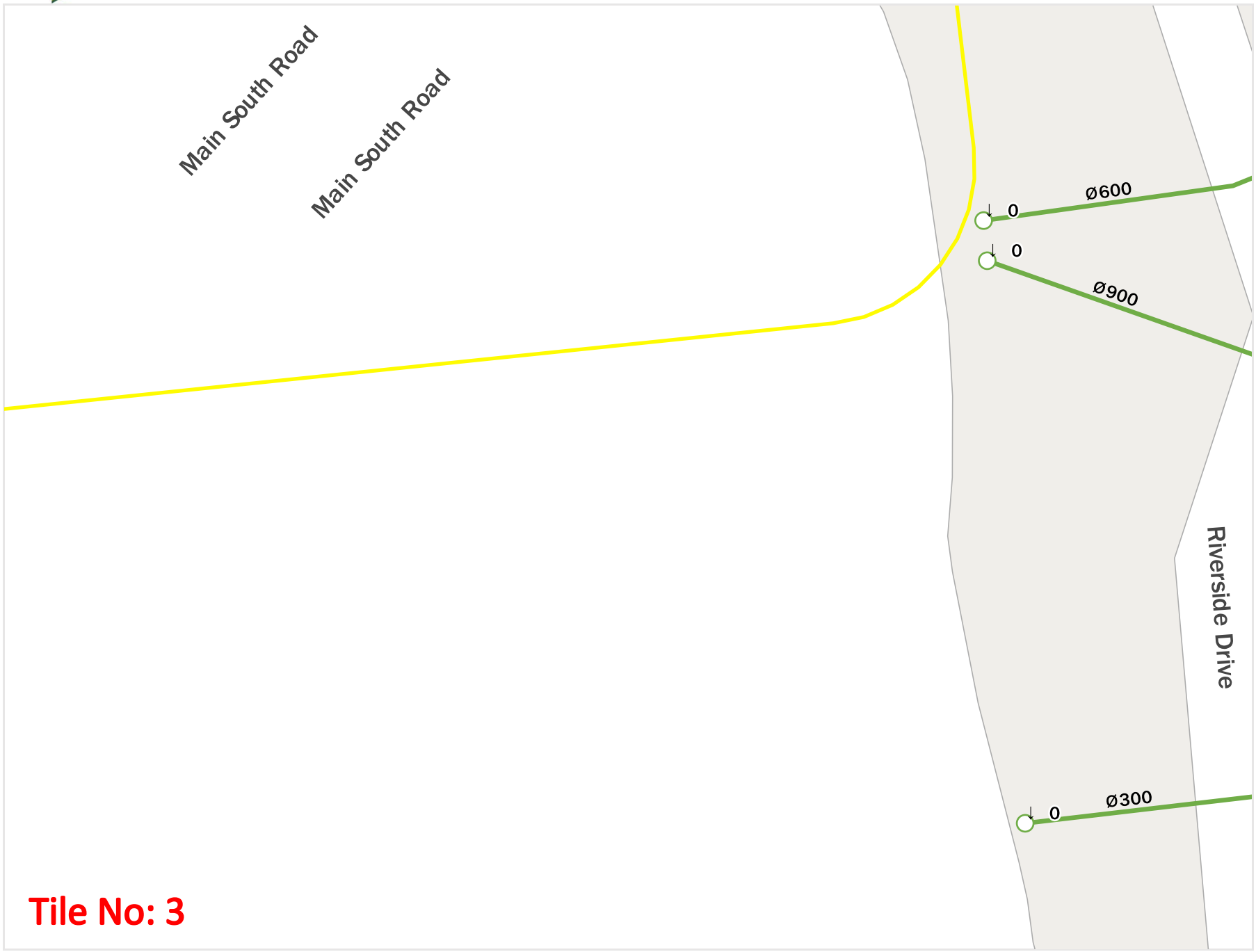

Legend

- Mitcham Stormwater Pits
- Mitcham Stormwater Pipes

N

Scale: 1:1000
Expires: 02 Jul 2021

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Tile No: 3

Working near nbn™ cables

nbn has partnered with Dial Before You Dig to give you a single point of contact to get information about **nbn** underground services owned by **nbn** and other utility/service providers in your area including communications, electricity, gas and other services. Contact with underground power cables and gas services can result in serious injury to the worker, and damage and costly repairs. You must familiarise yourself with all of the Referral Conditions (meaning the referral conditions referred to in the DBYD Notice provided by **nbn**).

Practice safe work habits

Once the DBYD plans are reviewed, the Five P's of Excavation should be adopted in conjunction with your safe work practices (which must be compliant with the relevant state Electrical Safety Act and Safe Work Australia "Excavation Work Code of Practice", as a minimum) to ensure the risk of any contact with underground **nbn** assets are minimised.

Plan: Plan your job by ensuring the plans received are current and apply to the work to be performed. Also check for any visual cues that may indicate the presence of services not covered in the DBYD plans.

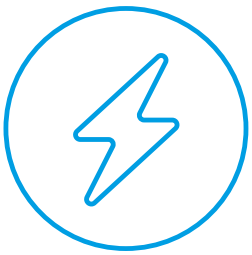
Prepare: Prepare for your job by engaging a DBYD Certified Plant Locator to help interpret plans and identify on-site assets. Contact **nbn** should you require further assistance.

Pothole: Non-destructive potholing (i.e. hand digging or hydro excavation) should be used to positively locate **nbn** underground assets with minimal risk of contact and service damage.

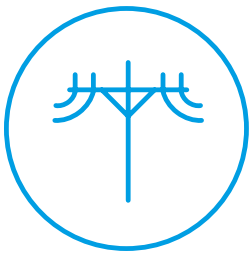
Protect: Protecting and supporting the exposed **nbn** underground asset is the responsibility of the worker. Exclusion zones for **nbn** assets are clearly stated in the plan and appropriate controls must be implemented to ensure that encroachment into the exclusion zone by machinery or activities with the potential to damage the asset is prevented.

Proceed: Proceed only when the appropriate planning, preparation, potholing and protective measures are in place.

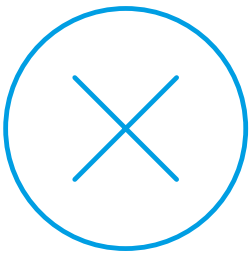
Working near **nbn**™ cables



Identify all electrical hazards, assess the risks and establish control measures.



When using excavators and other machinery, also check the location of overhead power lines.



Workers and equipment must maintain safety exclusion zones around power lines.

Once all work is completed, the excavation should be re-instated with the same type of excavated material unless specified by **nbn**. Please note:

- Construction Partners of **nbn** may require additional controls to be in place when performing excavation activities.
- The information contained within this pamphlet must be used in conjunction with other material supplied as part of this request for information to adequately control the risk of potential asset damage.

Contact

All **nbn**™ network facility damages must be reported online here.
For enquiries related to your DBYD request please call 1800 626 329.

DIAL BEFORE YOU DIG
www.1100.com.au

To:	Miss Georgia Wallage
Phone:	Not Supplied
Fax:	Not Supplied
Email:	gwallage@greenhillaustralia.com.au

Dial before you dig Job #:	21756560
Sequence #	110505526
Issue Date:	04/06/2021
Location:	Marion Road , Bedford Park , SA , 5042

Information

The area of interest requested by you contains one or more assets.

nbn™ Assets	Search Results
Communications	Asset identified
Electricity	Asset identified

In this notice **nbn™ Facilities** means *underground fibre optic, telecommunications and/or power facilities, including but not limited to cables, owned and controlled by **nbn™***

Location of **nbn™** Underground Assets

We thank you for your enquiry. In relation to your enquiry at the above address:

- **nbn's** records indicate that there **ARE** **nbn™** Facilities in the vicinity of the location identified above ("Location").
- **nbn** indicative plan/s are attached with this notice ("Indicative Plans").
- The Indicative Plan/s show general depth and alignment information only and are not an exact, scale or accurate depiction of the location, depth and alignment of **nbn™** Facilities shown on the Plan/s.
- In particular, the fact that the Indicative Plans show that a facility is installed in a straight line, or at uniform depth along its length cannot be relied upon as evidence that the facility is, in fact, installed in a straight line or at uniform depth.
- You should read the Indicative Plans in conjunction with this notice and in particular, the notes below.
- You should note that, at the present time, the Indicative Plans are likely to be more accurate in showing location of fibre optics and telecommunications cables than power cables. There may be a variation between the line depicted on the Indicative Plans and the location of any power cables. As such, consistent with the notes below, particular care must be taken by you to make your own enquiries and investigations to precisely locate any power cables and manage the risk arising from such cables accordingly.
- The information contained in the Indicative Plan/s is valid for 28 days from the date of issue set out above.You are expected to make your own inquiries and perform your own investigations (including engaging appropriately qualified plant locators, e.g DBYD Certified Locators, at your cost to locate **nbn™**

Facilities during any activities you carry out on site).

We thank you for your enquiry and appreciate your continued use of the Dial Before You Dig Service. For any enquiries related to moving assets or Planning and Design activities, please visit the **nbn** Commercial Works website to complete the online application form. If you are planning to excavate and require further information, please email dbyd@nbnco.com.au or call 1800 626 329.

Notes:

1. You are now aware that there are **nbn™** Facilities in the vicinity of the above property that could be damaged as a result activities carried out (or proposed to be carried out) by you in the vicinity of the Location.
2. You should have regard to section 474.6 and 474.7 of the *Criminal Code Act 1995* (CoA) which deals with the consequences of interfering or tampering with a telecommunications facility. Only persons authorised by **nbn** can interact with **nbn's** network facilities.
3. Any information provided is valid only for **28 days** from the date of issue set out above.

Referral Conditions

The following are conditions on which **nbn** provides you with the Indicative Plans. By accepting the plans,you are agreeing to these conditions. These conditions are in addition, and not in replacement of, any duties and obligations you have under applicable law.

1. **nbn** does not accept any responsibility for any inaccuracies of its plans including the Indicative Plans. You are expected to make your own inquiries and perform your own investigations (including engaging appropriately qualified plant locators, e.g DBYD Certified Locators, at your cost to locate **nbn™** Facilities during any activities you carry out on site).
2. You acknowledge that **nbn** has specifically notified you above that the Indicative Plans are likely to be more accurate in showing location of fibre optics and telecommunications cables than power cables. There may be a variation between the line depicted on the Indicative Plans and the location of any power cables.
3. You should not assume that **nbn™** Facilities follow straight lines or are installed at uniformed depths along their lengths, even if they are indicated on plans provided to you. Careful onsite investigations are essential to locate the exact position of cables.
4. In carrying out any works in the vicinity of **nbn™** Facilities, you must maintain the following minimum clearances:
    - 300mm when laying assets inline, horizontally or vertically.
    - 500mm when operating vibrating equipment, for example: jackhammers or vibrating plates.
    - 1000mm when operating mechanical excavators.
    - Adherence to clearances as directed by other asset owner's instructions and take into account any uncertainty for power cables.
5. You are aware that there are inherent risks and dangers associated with carrying out work in the vicinity of underground facilities (such as **nbn™** fibre optic,copper and coaxial cables,and power cable feed to **nbn™** assets).Damage to underground electric cables may result in:
    - Injury from electric shock or severe burns, with the possibility of death.
    - Interruption of the electricity supply to wide areas of the city.
    - Damage to your excavating plant.
    - Responsibility for the cost of repairs.
6. You must take all reasonable precautions to avoid damaging **nbn™** Facilities. These precautions may include but not limited to the following:
    - All excavation sites should be examined for underground cables by careful hand excavation. Cable cover slabs if present must not be disturbed. Hand excavation needs to be undertaken with extreme care to minimise the likelihood of damage to the cable, for example: the blades of hand equipment should be aligned parallel to the line of the cable rather than digging across the cable.
    - If any undisclosed underground cables are located, notify **nbn** immediately.

- All personnel must be properly briefed, particularly those associated with the use of earth-moving equipment, trenching, boring and pneumatic equipment.
- The safety of the public and other workers must be ensured.
- All excavations must be undertaken in accordance with all relevant legislation and regulations.

7. You will be responsible for all damage to **nbn™** Facilities that are connected whether directly, or indirectly with work you carry out (or work that is carried out for you or on your behalf) at the Location. This will include, without limitation, all losses expenses incurred by **nbn** as a result of any such damage.
8. You must immediately report any damage to the **nbn™** network that you are/become aware of. Notification may be by telephone - 1800 626 329.
9. Except to the extent that liability may not be capable of lawful exclusion, **nbn** and its servants and agents and the related bodies corporate of **nbn** and their servants and agents shall be under no liability whatsoever to any person for any loss or damage (including indirect or consequential loss or damage) however caused (including, without limitation, breach of contract negligence and/or breach of statute) which may be suffered or incurred from or in connection with this information sheet or any plans(including Indicative Plans) attached hereto. Except as expressly provided to the contrary in this information sheet or the attached plans(including Indicative Plans), all terms, conditions, warranties, undertakings or representations (whether expressed or implied) are excluded to the fullest extent permitted by law.

All works undertaken shall be in accordance with all relevant legislations, acts and regulations applicable to the particular state or territory of the Location. The following table lists all relevant documents that shall be considered and adhered to.

State/Territory	Documents
National	Work Health and Safety Act 2011
	Work Health and Safety Regulations 2011
	Safe Work Australia - Working in the Vicinity of Overhead and Underground Electric Lines (Draft)
	Occupational Health and Safety Act 1991
NSW	Electricity Supply Act 1995
	Work Cover NSW - Work Near Underground Assets Guide
	Work Cover NSW - Excavation Work: Code of Practice
VIC	Electricity Safety Act 1998
	Electricity Safety (Network Asset) Regulations 1999
QLD	Electrical Safety Act 2002
	Code of Practice for Working Near Exposed Live Parts
SA	Electricity Act 1996
TAS	Tasmanian Electricity Supply Industry Act 1995
WA	Electricity Act 1945
	Electricity Regulations 1947
NT	Electricity Reform Act 2005
	Electricity Reform (Safety and Technical) Regulations 2005
ACT	Electricity Act 1971

Thank You,

nbn DBYD

Date: 04/06/2021

To:	Miss Georgia Wallage
Phone:	Not Supplied
Fax:	Not Supplied
Email:	gwallage@greenhillaustralia.com.au

Dial before you dig Job #:	21756560
Sequence #	110505526
Issue Date:	04/06/2021
Location:	Marion Road , Bedford Park , SA , 5042

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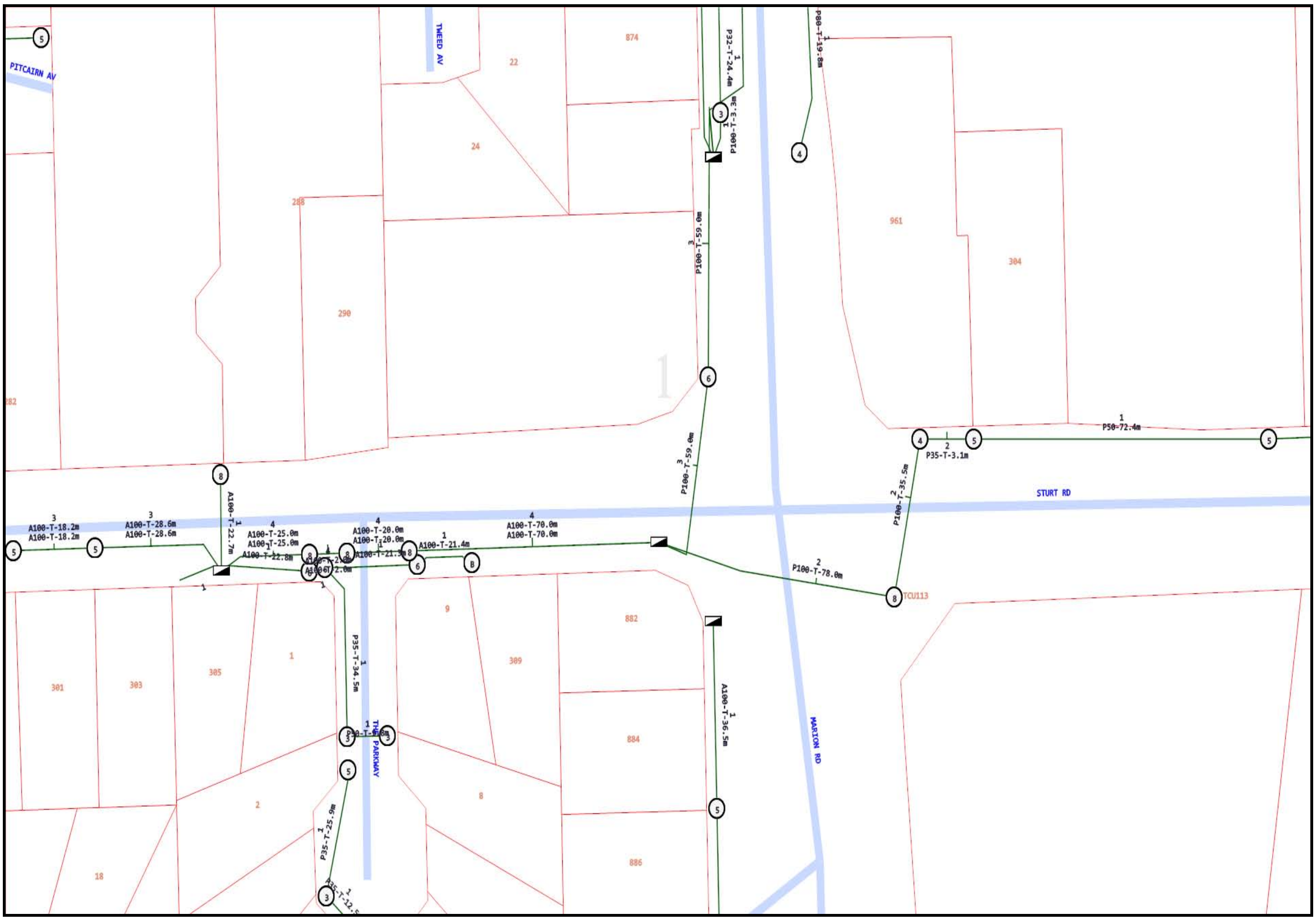
Indicative Plans

1	6
2	7
3	8
4	9
5	10

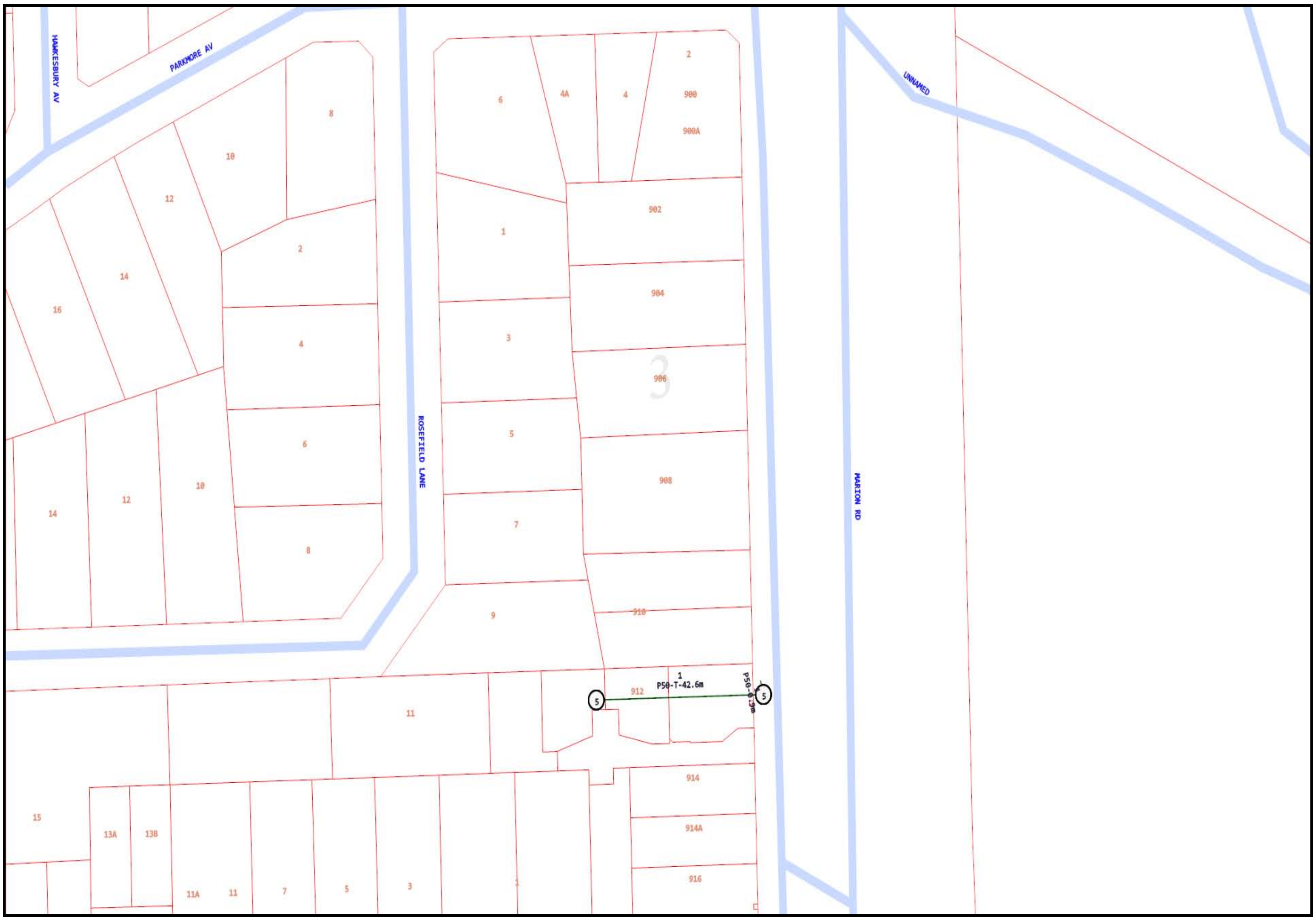
LEGEND

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

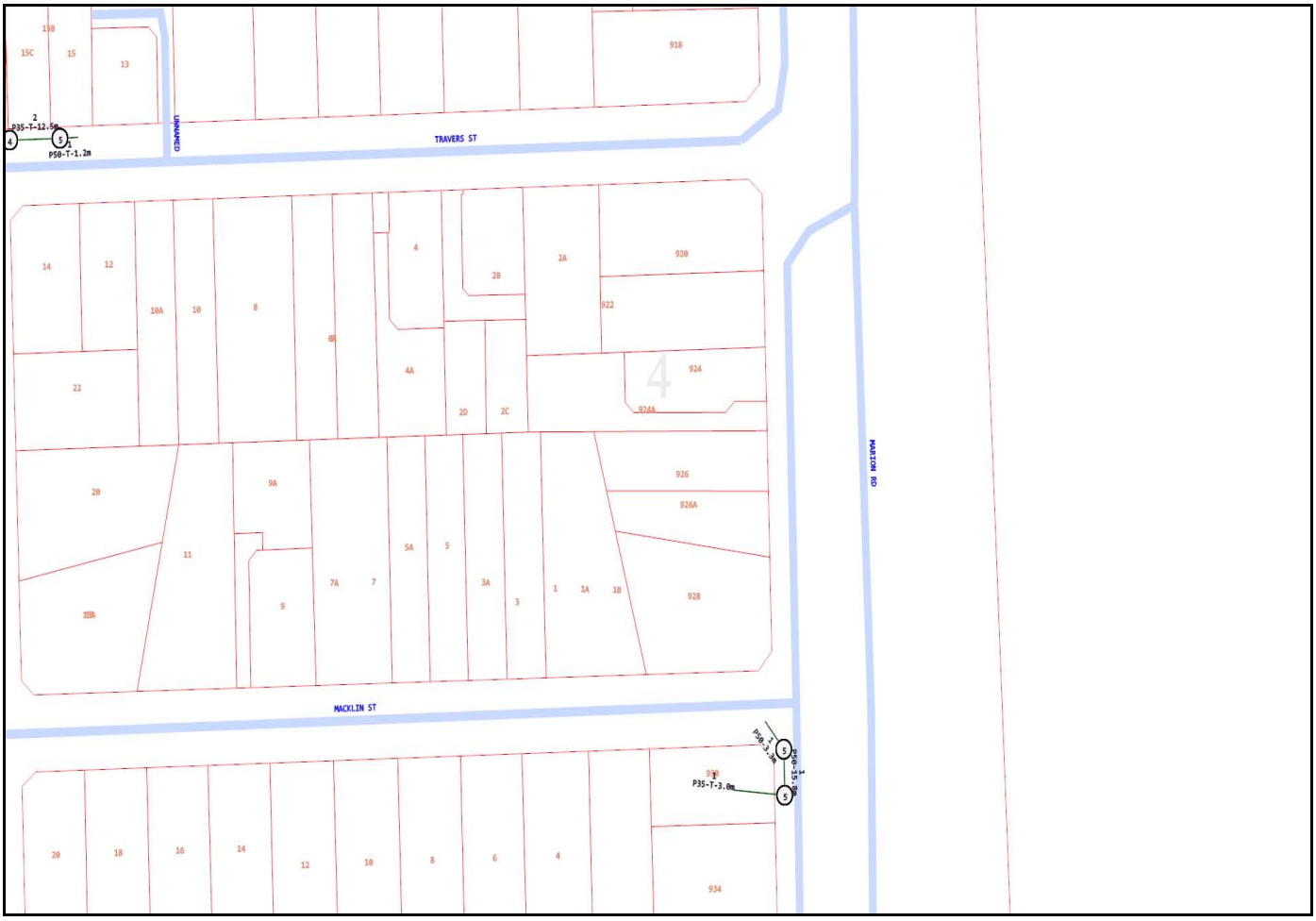


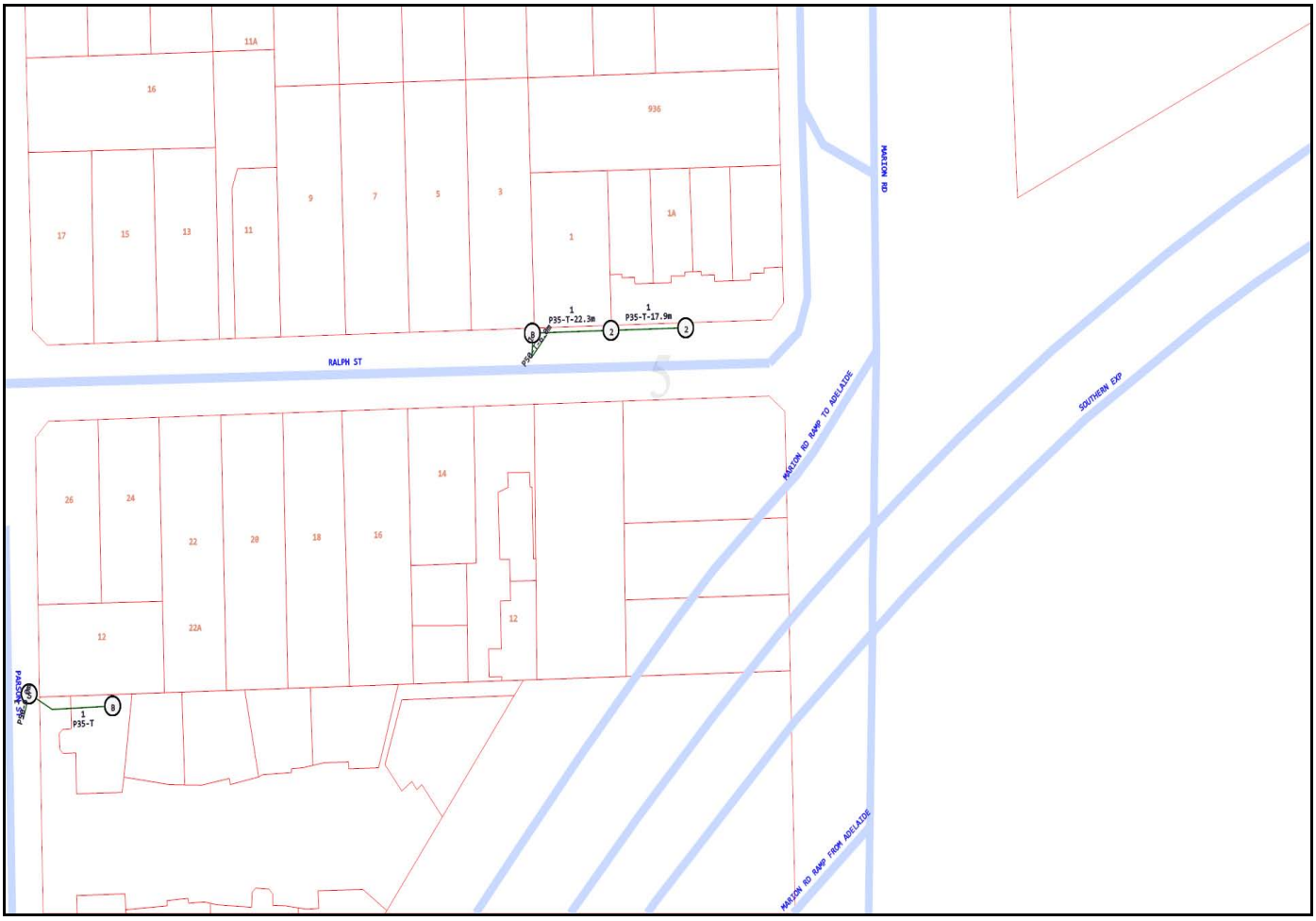
PITCAIRN AV
TWEED AV
STURT RD
MARION RD
THE PARKWAY
TCU113
P100-T-59.0m
P100-T-78.0m
P100-T-35.5m
P50-72.4m
P35-T-3.1m
A100-T-70.0m
A100-T-36.5m
P35-T-34.5m
P35-T-25.9m

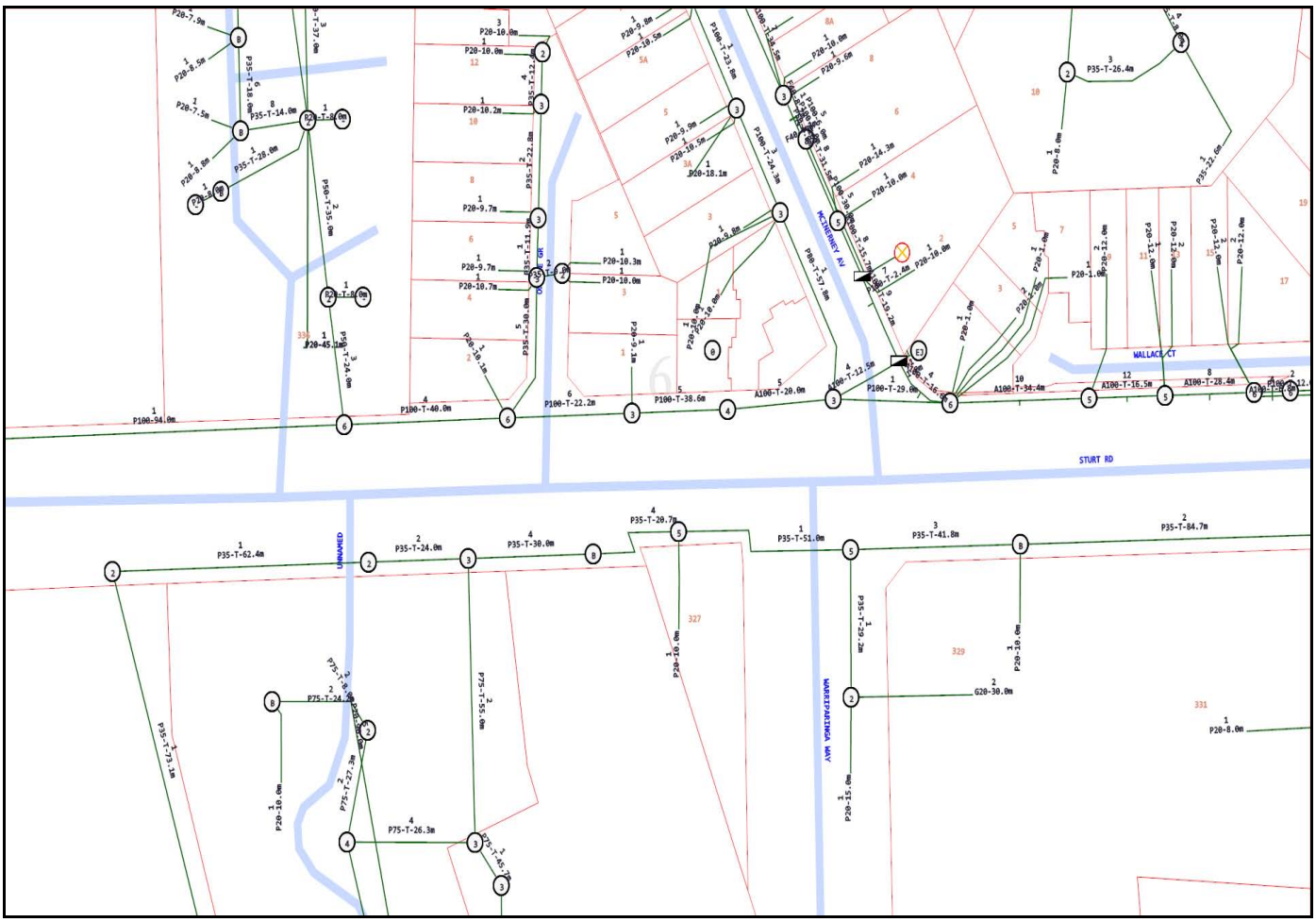
BRIARDALE RD
MARION RD
HAWKESBURY AV
PARKMORE AV
UNNAMED
888
888A
890
892
894
896
898

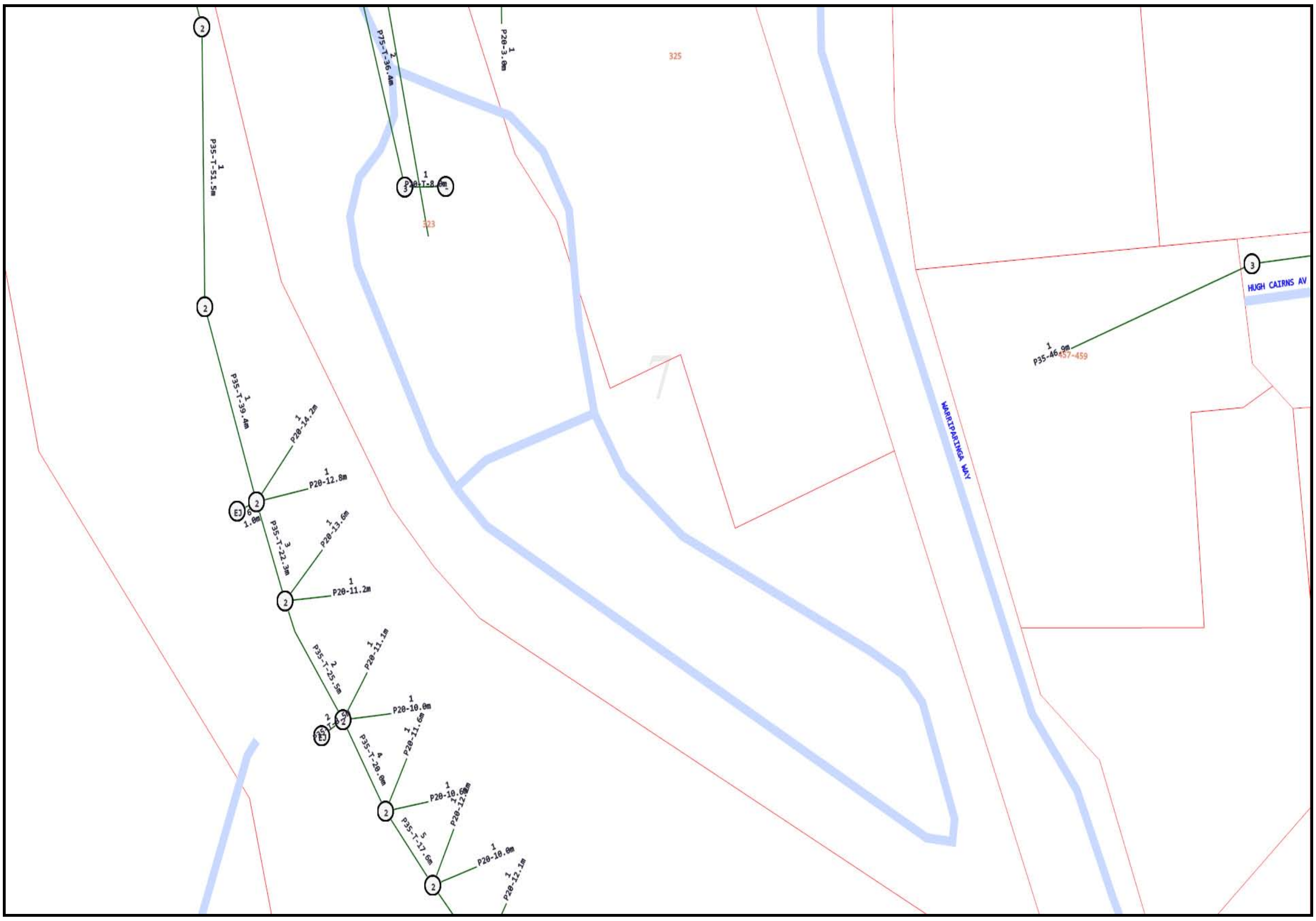


HAWKESBURY AV
PARKMORE AV
ROSEFIELD LANE
MARION RD
UNNAMED
1
P50-T-42.6m
912

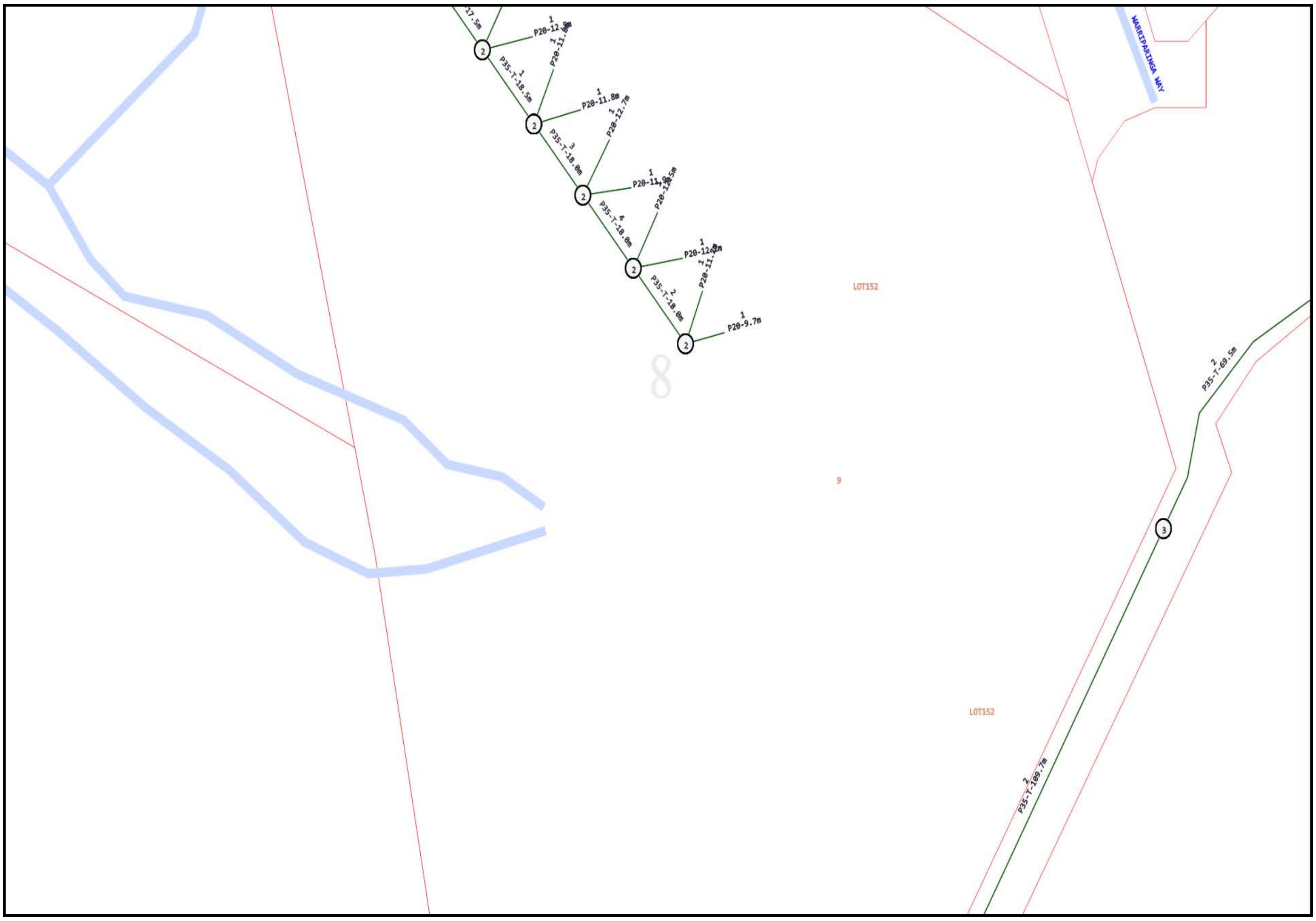

15B
15C
15
13
918
TRAVERS ST
UNNAMED
P35-T-12.5m
P50-T-1.2m
14
12
10A
10
8
6B
4
2B
2A
920
922
4A
2D
2C
924
924A
22
20
9A
926
926A
11
5A
5
7A
7
3A
3
1
1A
1B
928
10A
9
MACLIN ST
MARTIN RD
P50-T-1.3m
P50-T-15.9m
P35-T-3.0m
930
934
20
18
16
14
12
10
8
6
4

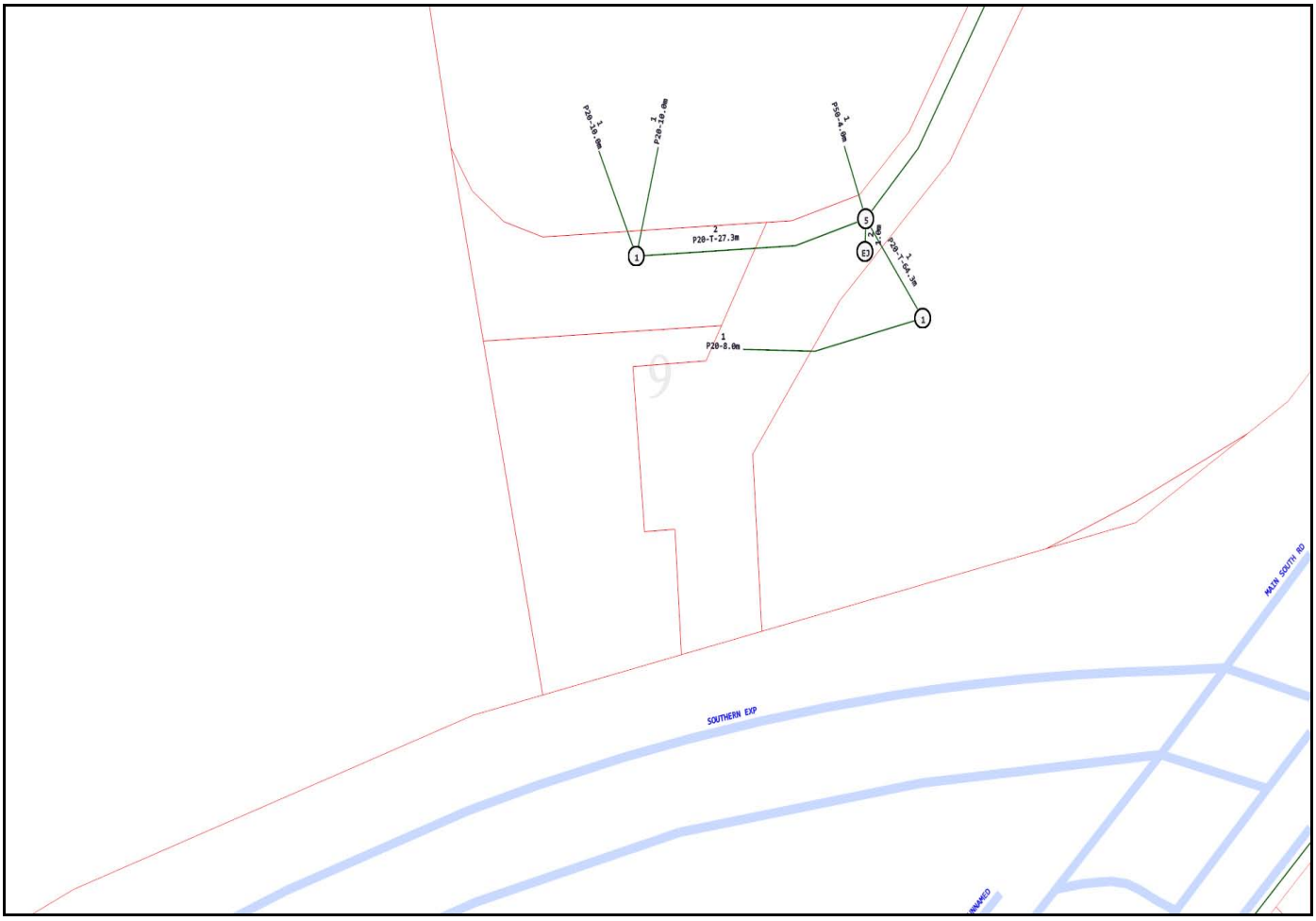

11A
16
936
17
15
13
11
9
7
5
3
1
1A
1
P35-T-22.3m
1
P35-T-17.9m
RALPH ST
MARION RD
MARION RD RAMP TO ADELAIDE
SOUTHERN EXP
26
24
22
20
18
16
14
12
22A
12
1
P35-T
MARION RD RAMP FROM ADELAIDE

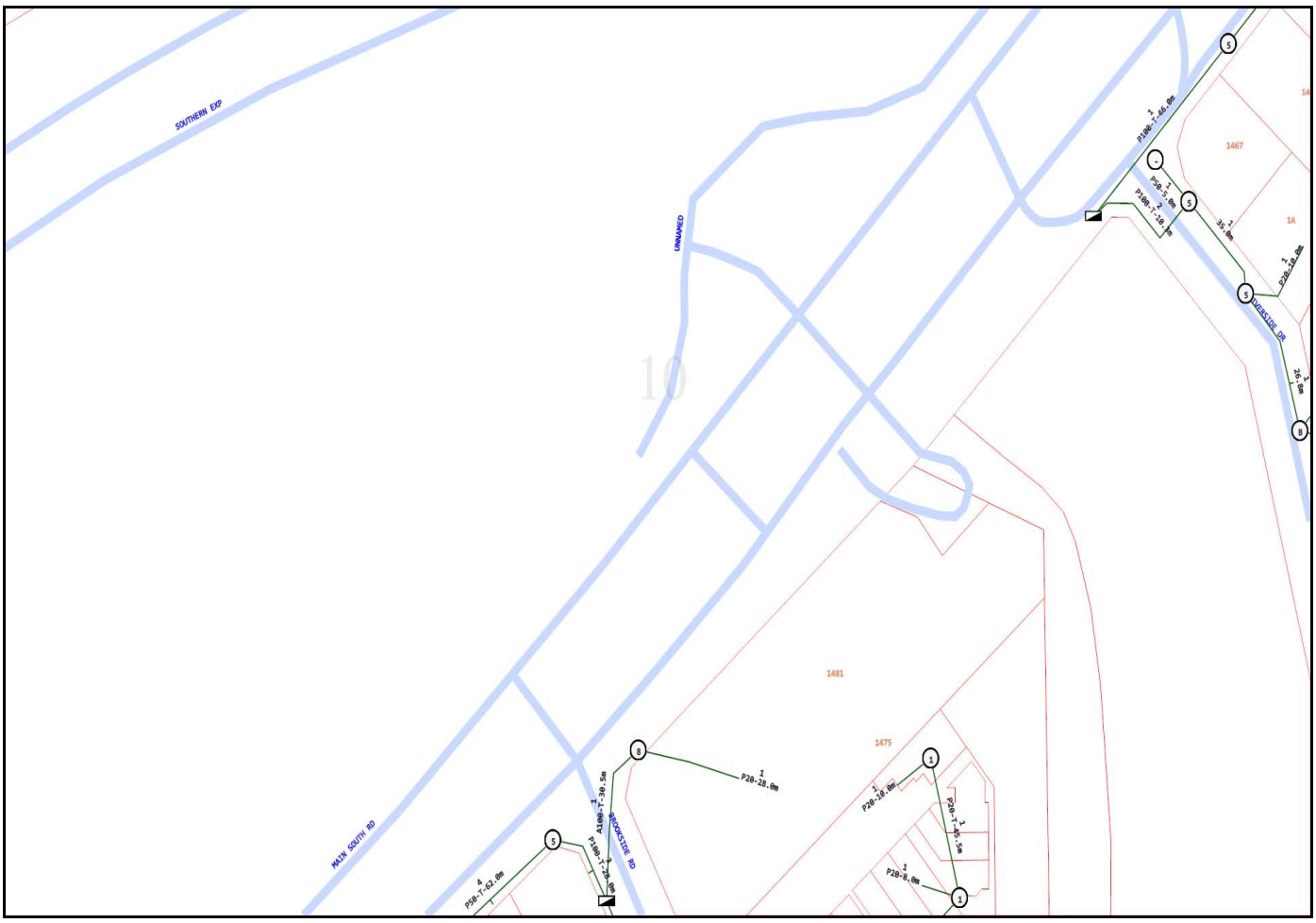

STURT RD
WALLACE CT
UNNAMED
WARRIPARINGA WAY



HUGH CAIRNS AV
WARRIPARINGA WAY
325
323
457-459
P35-T-51.5m
P35-T-39.4m
P20-14.2m
P20-12.8m
P35-T-22.3m
P20-13.6m
P20-11.2m
P35-T-25.5m
P20-11.1m
P20-10.0m
P35-T-20.0m
P20-11.6m
P20-10.6m
P35-T-17.6m
P20-10.0m
P20-12.1m
P75-T-36.4m
P20-3.0m
P35-46.9m


P20-12.8m
P20-11.8m
P20-12.7m
P20-9.7m
P35-T-18.0m
P35-T-69.5m
P35-T-100.7m
LOT152
LOT152
9
8
WARRIPARINGA WAY


1
P20-10.0m
1
P20-10.0m
1
P50-4.0m
2
P20-T-27.3m
1
P20-T-64.3m
1
P20-8.0m
SOUTHERN EXP
MAIN SOUTH RD



Emergency Contacts

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

To:	Miss Georgia Wallage
Phone:	Not Supplied
Fax:	Not Supplied
Email:	gwallage@greenhillaustralia.com.au

Dial before you dig Job #:	21756560
Sequence #	110505526
Issue Date:	04/06/2021
Location:	Marion Road , Bedford Park , SA , 5042

DIAL BEFORE YOU DIG www.1100.com.au

Indicative Plans

1	6
2	7
3	8
4	9
5	10

LEGEND

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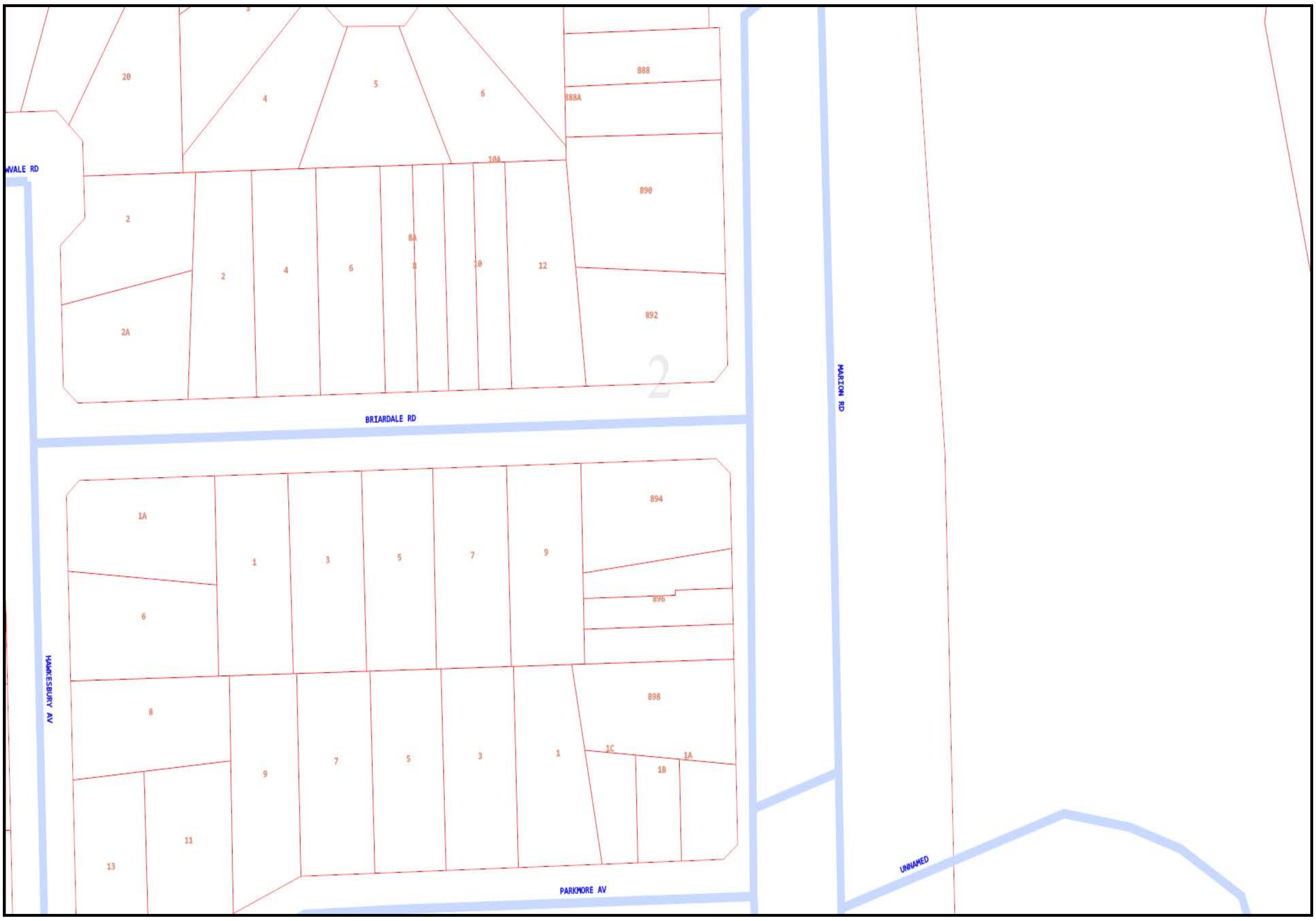
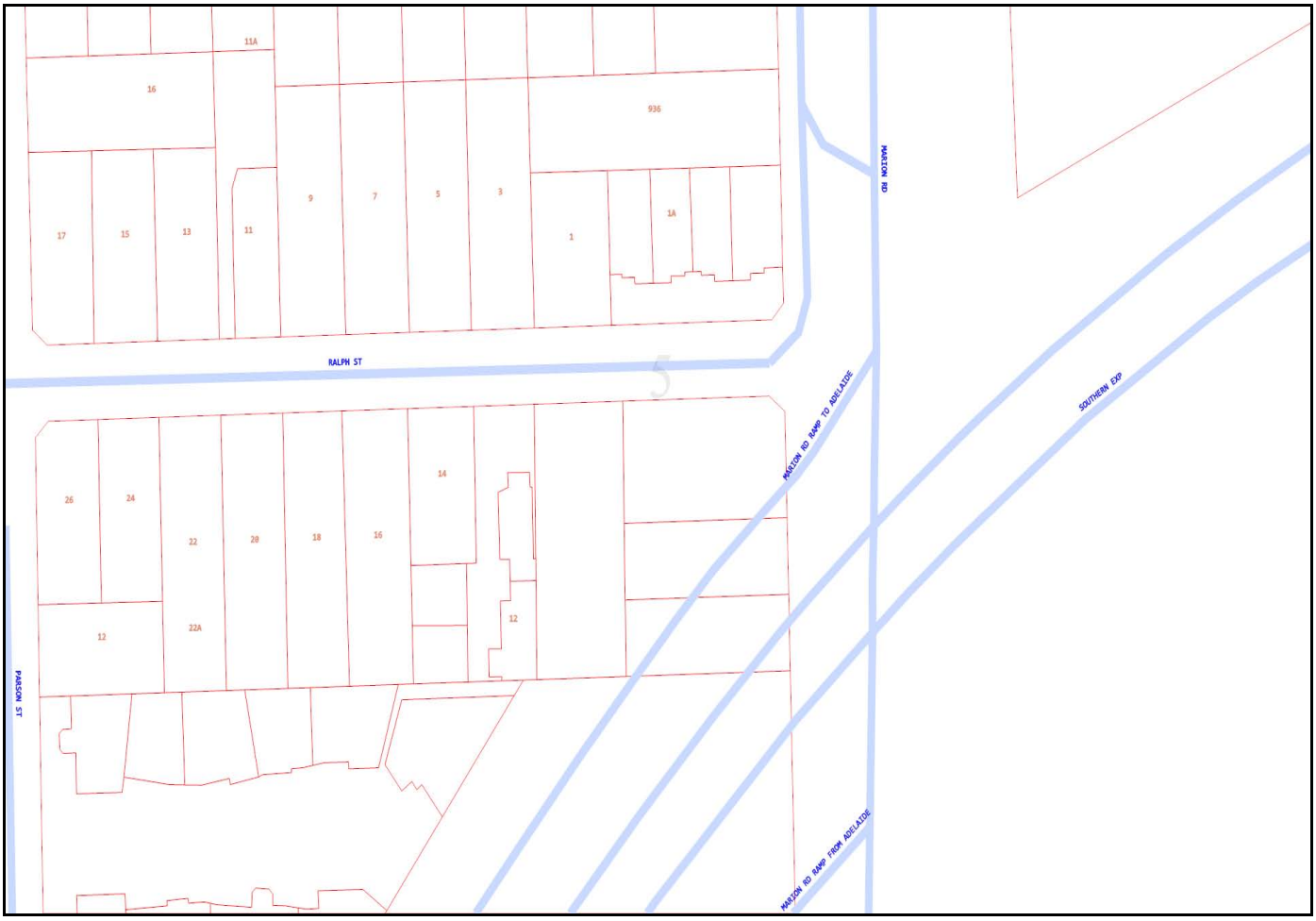
BROADWAY ST	Road and the street name "Broadway ST"
Scale	0 20 40 60 Meters 1:2000 1 cm equals 20 m

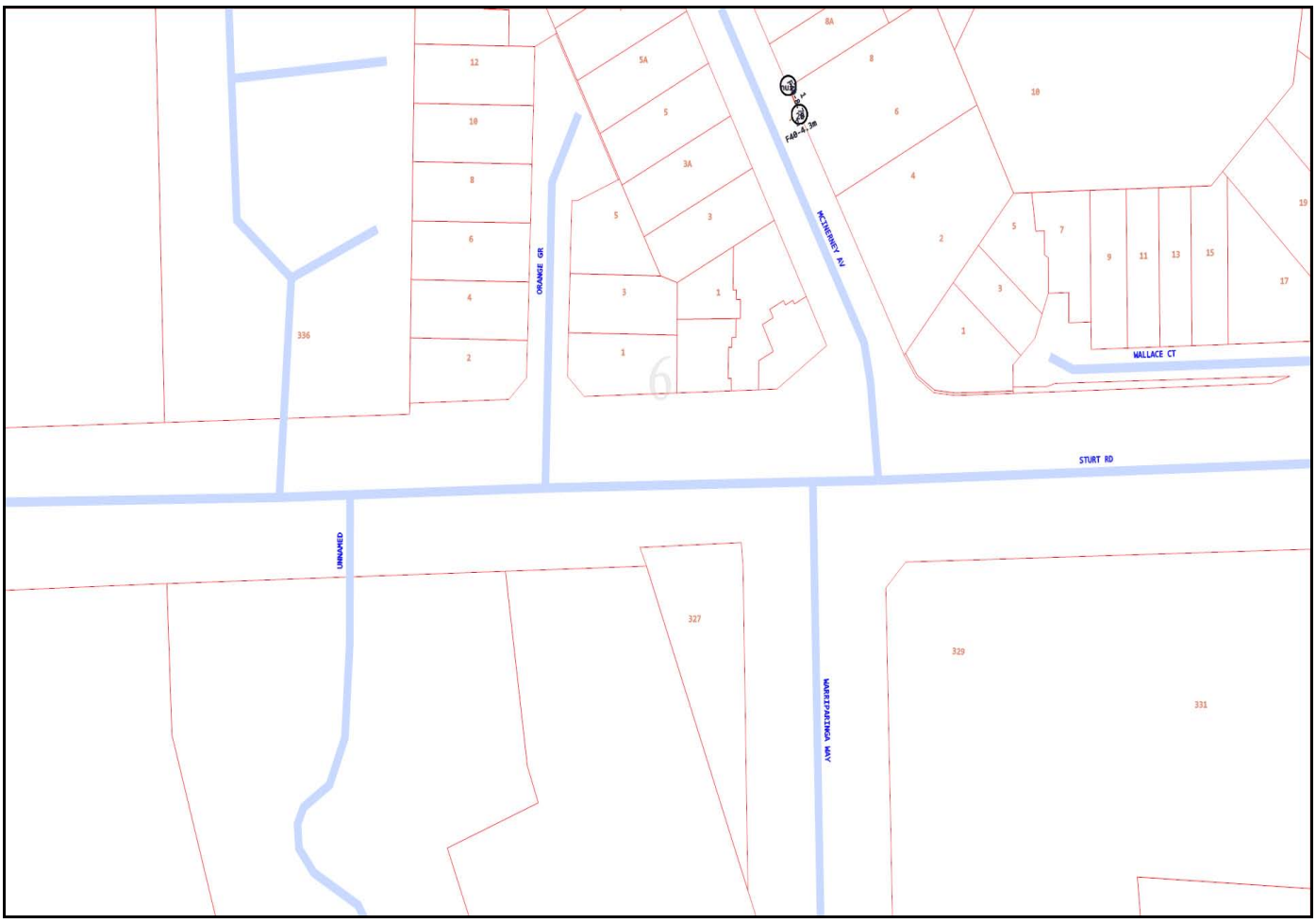

PITCAIRN AV
TWEED AV
22
874
24
288
290
282
961
304
STURT RD
TCU113
9
882
309
1
301
303
305
THE PARKWAY
884
MARION RD
2
8
886
18

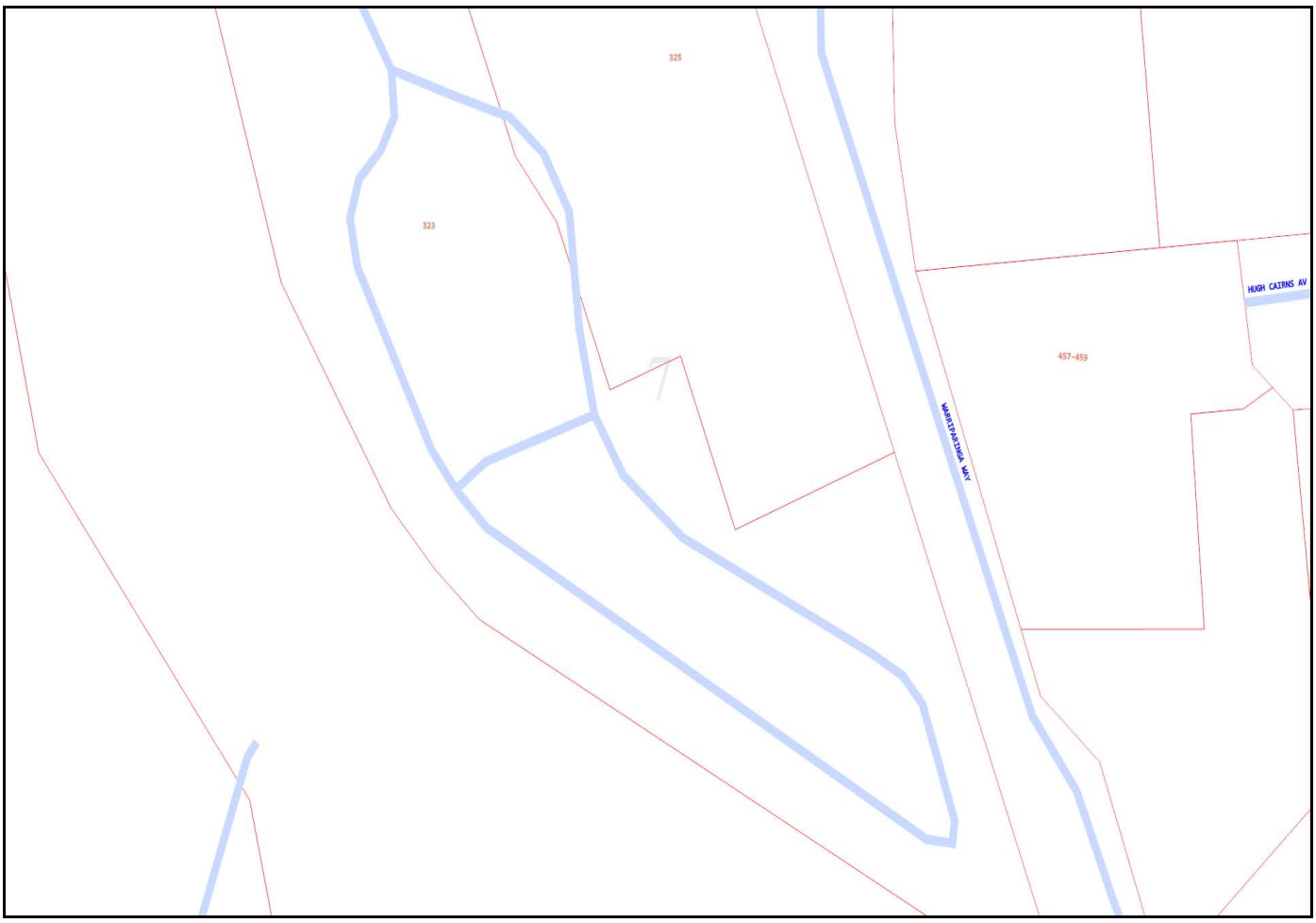

WALE RD
BRIARDALE RD
MARION RD
HAWKESBURY AV
PARKMORE AV
UNNAMED

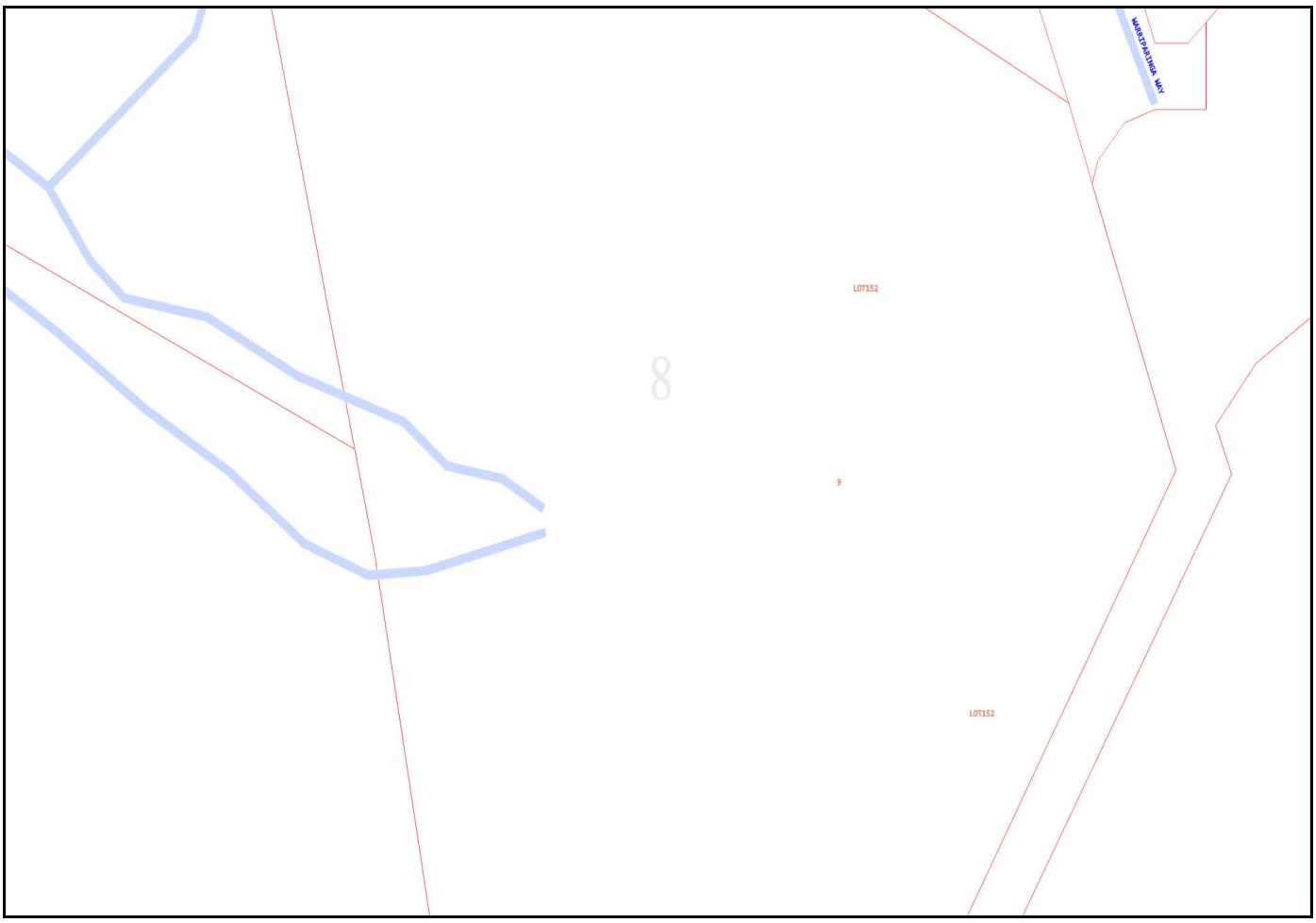

HAMPSHIRE AV
PARKMORE AV
ROSEFIELD LANE
MARION RD
UNNAMED
16
14
12
10
8
6
4
2
1
3
5
7
9
11
13A
13B
15
11A
902
904
906
908
910
912
914
914A
916
900
900A


15B
15C
15
13
UNNAMED
TRAVERS ST
918
14
12
10A
10
8
6B
4
2B
2A
920
922
4A
2D
2C
924
924A
22
20
9A
926
926A
11
5A
5
3A
3
1
1A
1B
928
10A
9
7A
7
MACKLIN ST
MARTIN RD
930
20
18
16
14
12
10
8
6
4
934

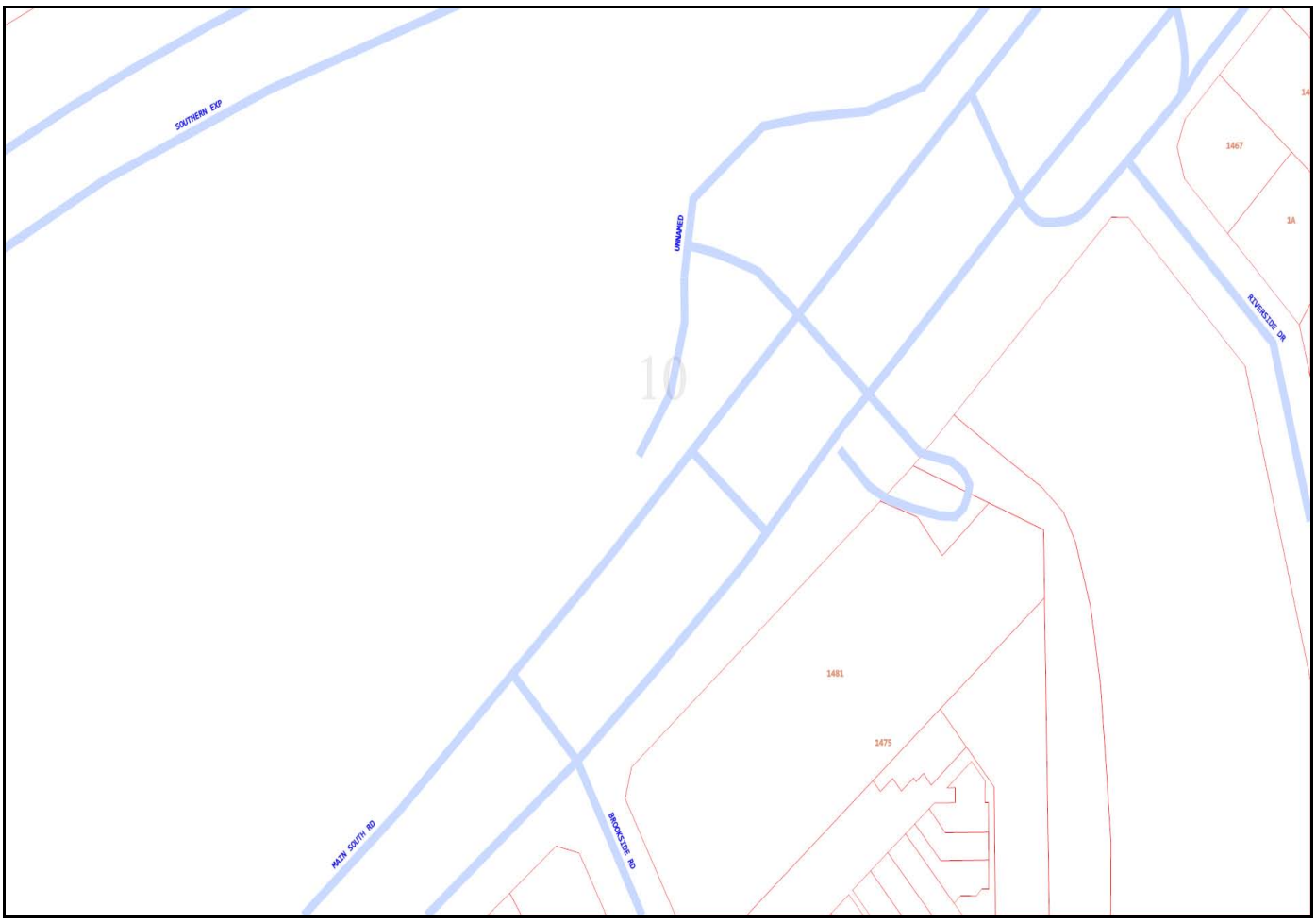

11A
16
936
17
15
13
11
9
7
5
3
1
1A
RALPH ST
MARION RD
MARION RD RAMP TO ADELAIDE
SOUTHERN EXP
26
24
22
20
18
16
14
12
22A
12
PARSON ST
MARION RD RAMP FROM ADELAIDE


12
10
8
6
4
2
336
5A
5
3A
3
5
3
1
1
ORANGE GR
8A
8
6
4
2
10
5
7
9
11
13
15
17
19
3
1
MCINERNEY AV
WALLACE CT
STURT RD
UNNAMED
327
329
331
WARREPARINGA WAY


325
323
457-459
HUGH CAIRNS AV
MANUKAU RD


LOT152
8
9
LOT152


9
SOUTHERN EXP
MAIN SOUTH RD



Emergency Contacts

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

Notification number: 21756560

Sequence number: 110505525

Enquiry date: 04/06/2021

Enquiry location: Marion Road, Bedford Park

Dial Before You Dig Response – SA Water Assets Identified

Dear Miss Georgia Wallage

Thank you for contacting Dial Before You Dig **(DBYD)** before starting any work or activities which may affect the water and sewerage infrastructure of SA Water.

Our records indicate there has been SA Water infrastructure identified within your nominated search area and has been shown on the attached plan.

Disclaimer

The information has been generated by an automated system based on the area highlighted. It is your responsibility to ensure that the dig site is properly defined when submitting your Dial Before You Dig enquiry. If the information does not match the dig site or you have received this message in error, please resubmit your enquiry.

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.

The information contained in this message may be confidential and may also be subject of legal, professional or public interest immunity. If you are not the intended recipient any use, disclosure or copying of this document is unauthorised. If you have received this message in error, please contact Dial Before You Dig.

For further enquiries or assistance with interpretation of plans and search content, or to report any obvious errors with the data provided, please contact our DBYD support team via email dialbefore.youdig@sawater.com.au

Thank you for contacting SA Water's DBYD section.

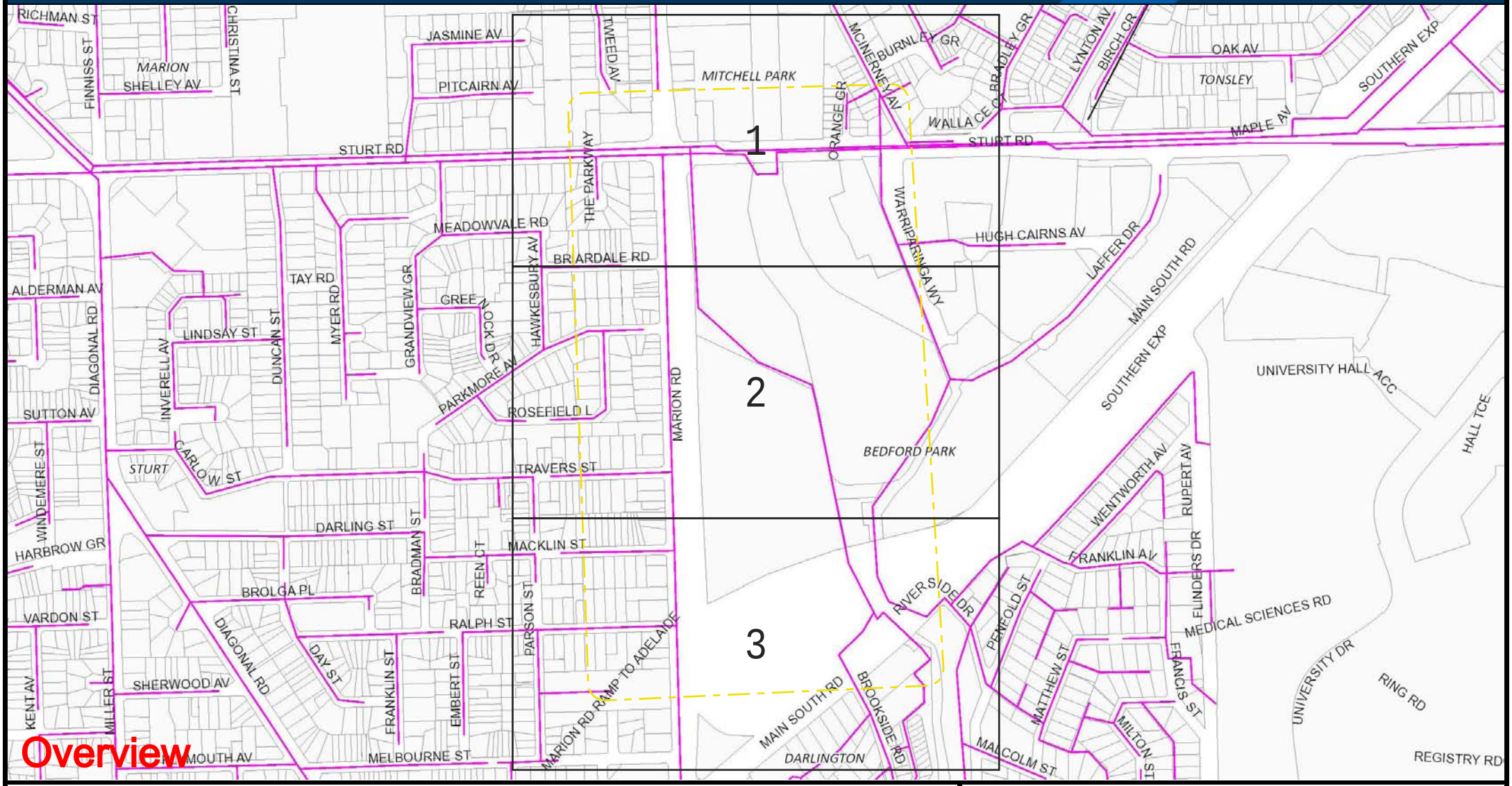
Kind regards,

Dial Before You Dig Support Team
SA Water DBYD

Please note: Any damage to SA Water infrastructure must be reported immediately to our Faults Team (24 hours, 7 days) on 1300 SA WATER (1300 729 283)

WASTEWATER RETICULATION

DBYD Sequence No: 110505525



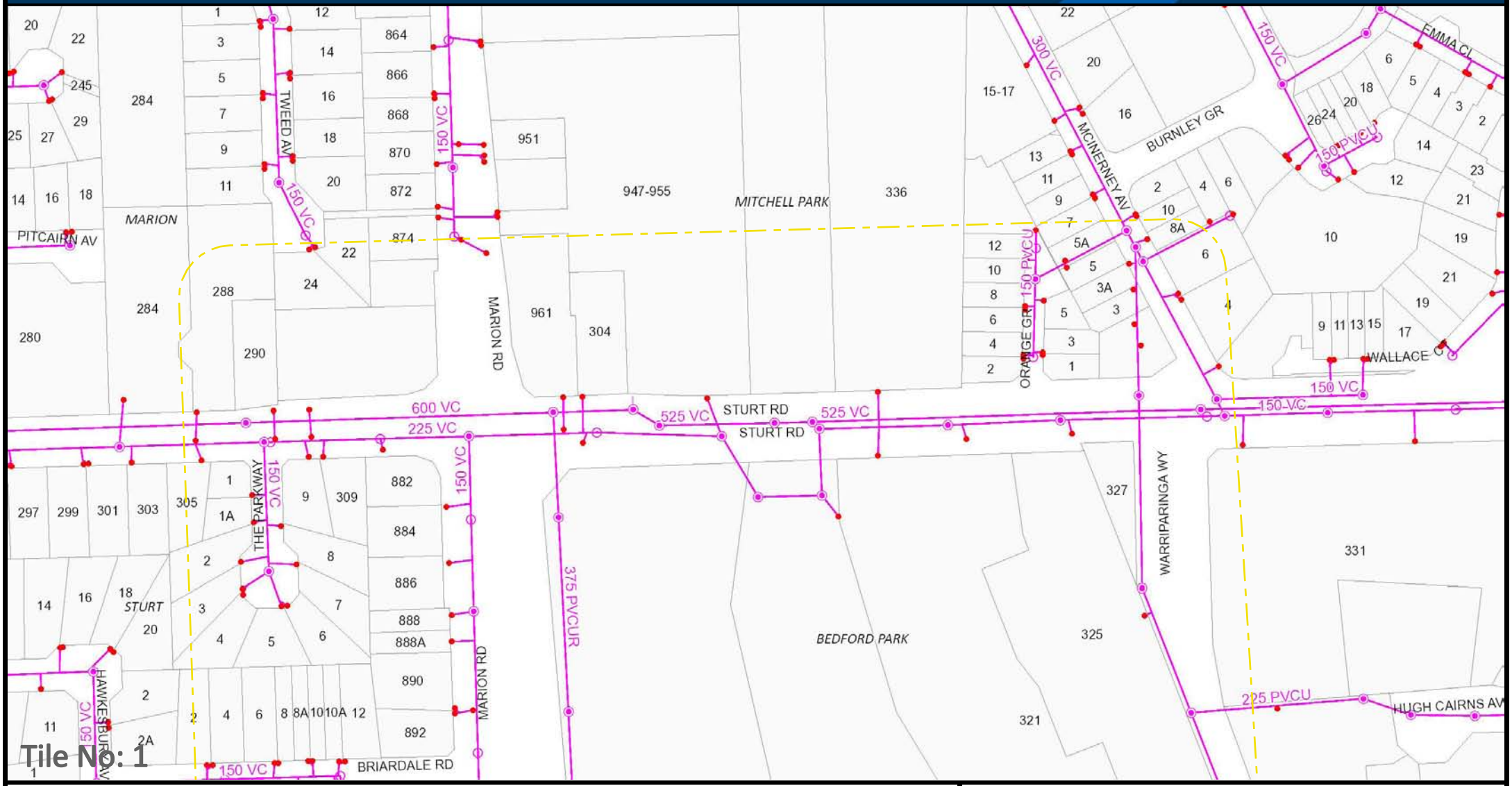
- GIP
- Valve
- Maintenance Hole
- Maintenance Shaft
- Inspection Opening
- Wastewater Connections
- Decommissioned Asbestos Mains
- Ancillary Pipes
- Gravity Mains
- Low Pressure
- Pumping Mains
- Vacuum Mains
- Railway
- Land Parcels
- CP Facility
- CP Anode/Cathode Cables
- CP Electricity Supply Cables
- CP Anode Bed Outlines

CP = Cathodic Protection

Scale @ A4: 1:7688

WASTEWATER RETICULATION

DBYD Sequence No: 110505525



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- Valve
- Maintenance Hole
- Maintenance Shaft
- Inspection Opening
- Wastewater Connections
- Decommissioned Asbestos Mains
- Ancillary Pipes
- Gravity Mains
- Low Pressure
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- Vacuum Mains
- Railway
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- CP Electricity Supply Cables
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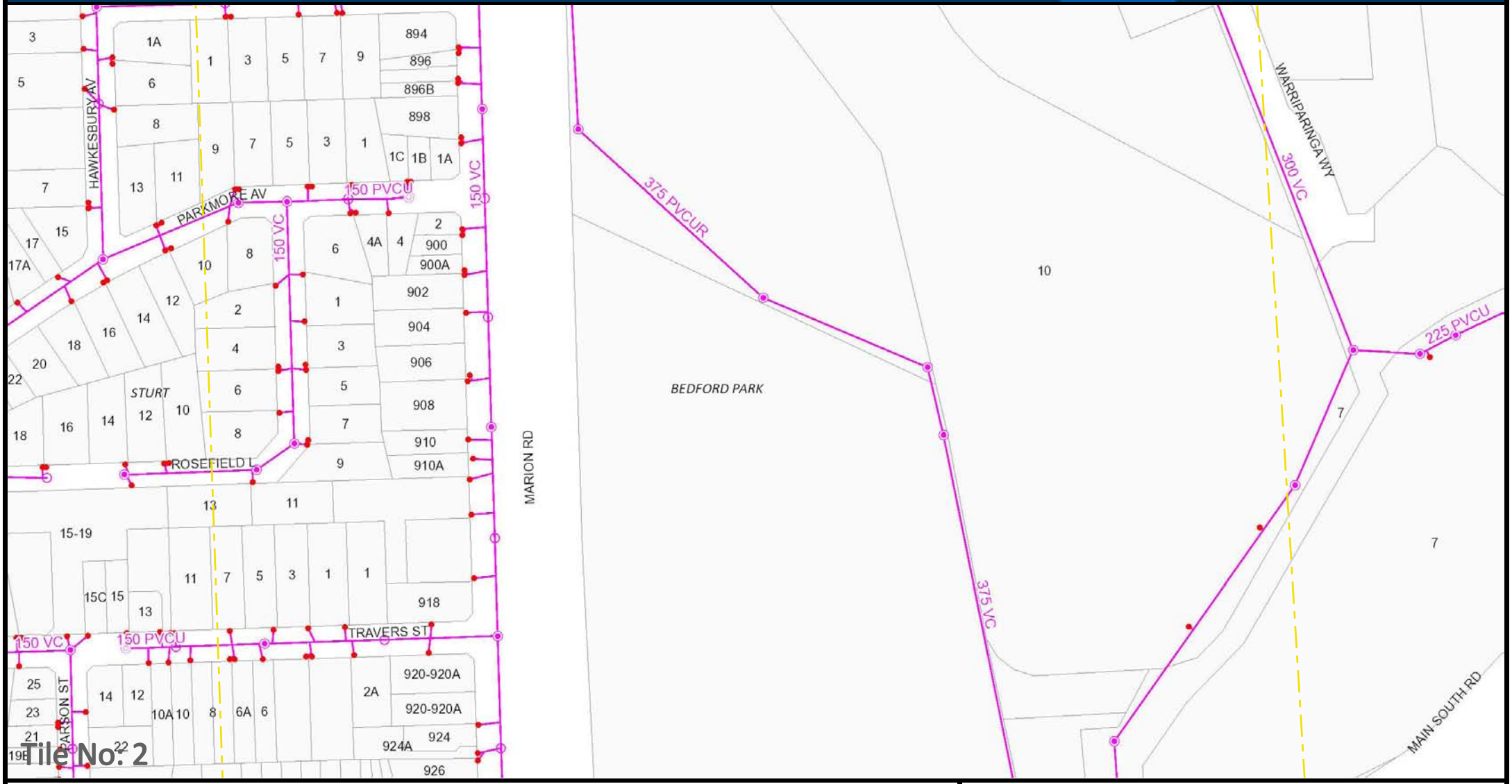
Scale @ A4: 1:2500

WASTEWATER RETICULATION

DBYD Sequence No: 110505525



- GIP
- Valve
- Maintenance Hole
- Maintenance Shaft
- Inspection Opening
- Wastewater Connections
- Decommissioned Asbestos Mains
- Ancillary Pipes
- Gravity Mains
- Low Pressure
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- Vacuum Mains
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CP = Cathodic Protection

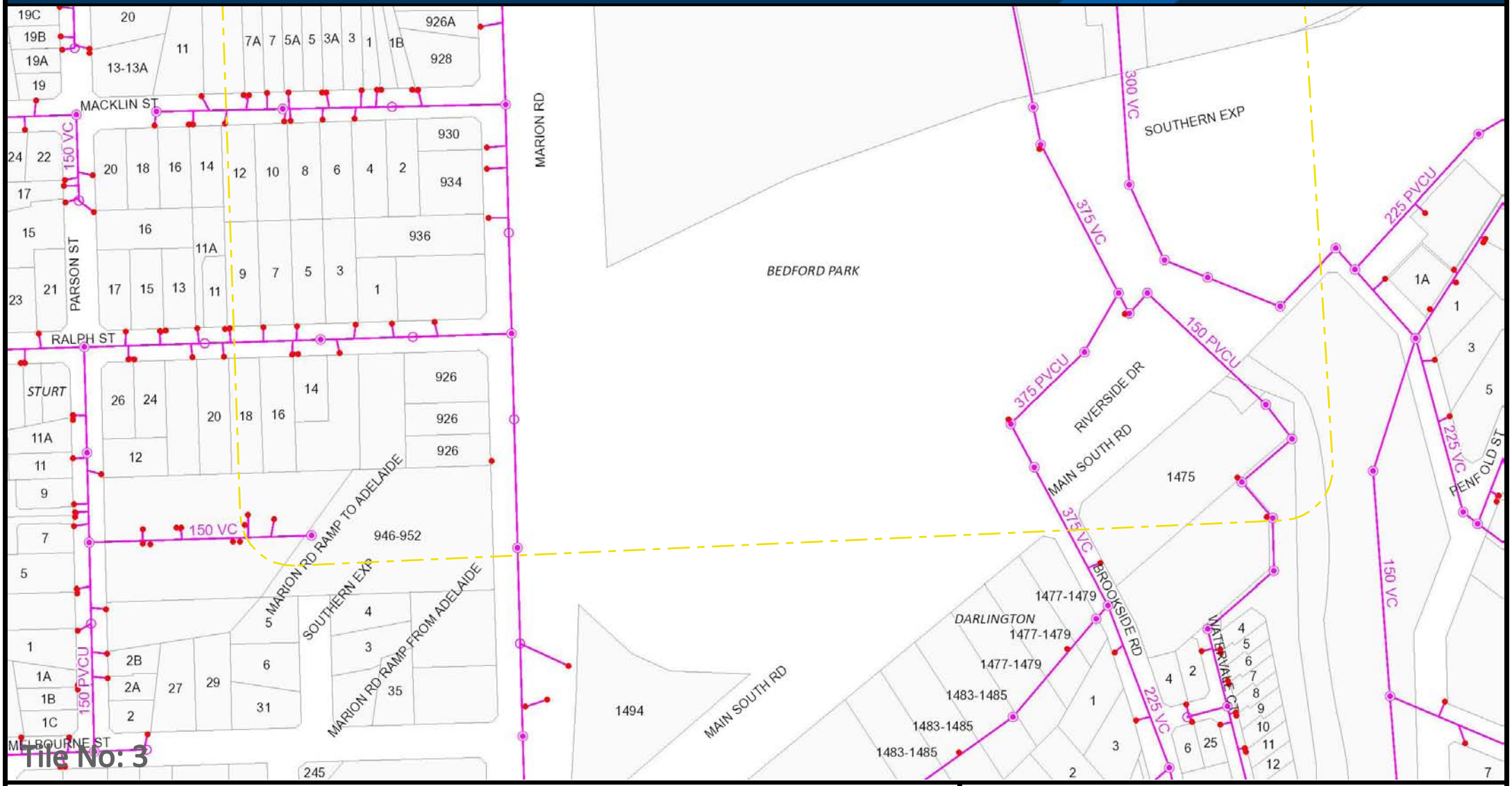
Scale @ A4: 1:2500

WASTEWATER RETICULATION

DBYD Sequence No: 110505525

DIAL BEFORE YOU DIG www.1100.com.au

SA Water



Tile No: 3

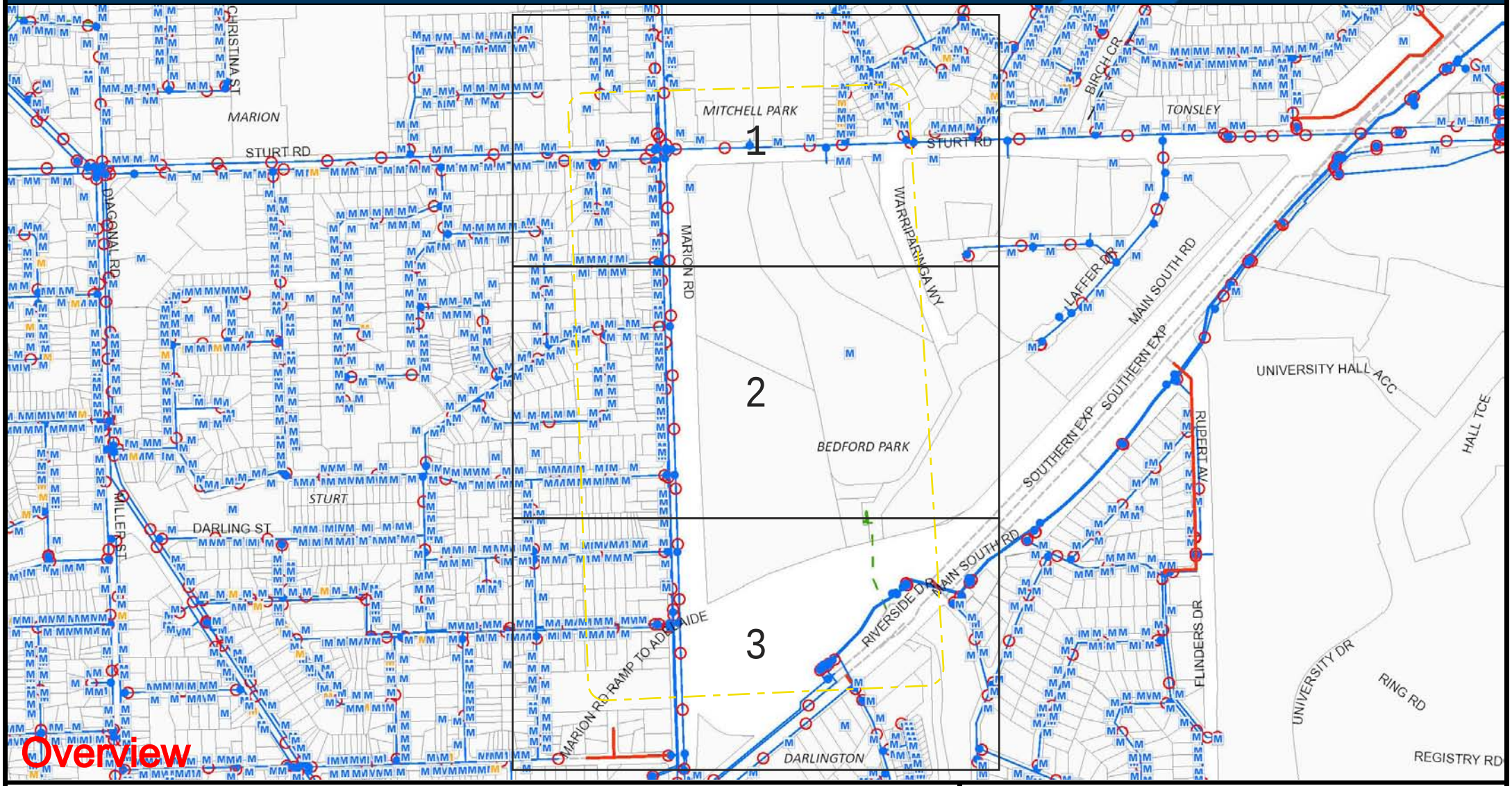
- GIP
- Valve
- Maintenance Hole
- Maintenance Shaft
- Inspection Opening
- Wastewater Connections
- Decommissioned Asbestos Mains
- Ancillary Pipes
- Gravity Mains
- Low Pressure
- Pumping Mains
- Vacuum Mains
- Railway
- Land Parcels
- CP Facility
- CP Anode/Cathode Cables
- CP Electricity Supply Cables
- CP Anode Bed Outlines

CP = Cathodic Protection

Scale @ A4: 1:2500

WATER RETICULATION

DBYD Sequence No: 110505525



- Water Valves
- Water Main
- Water Main (Decommissioned)
- Decommissioned Asbestos Mains
- Water Pillar Hydrant
- Water Hydrant
- CP Facility

CP = Cathodic Protection

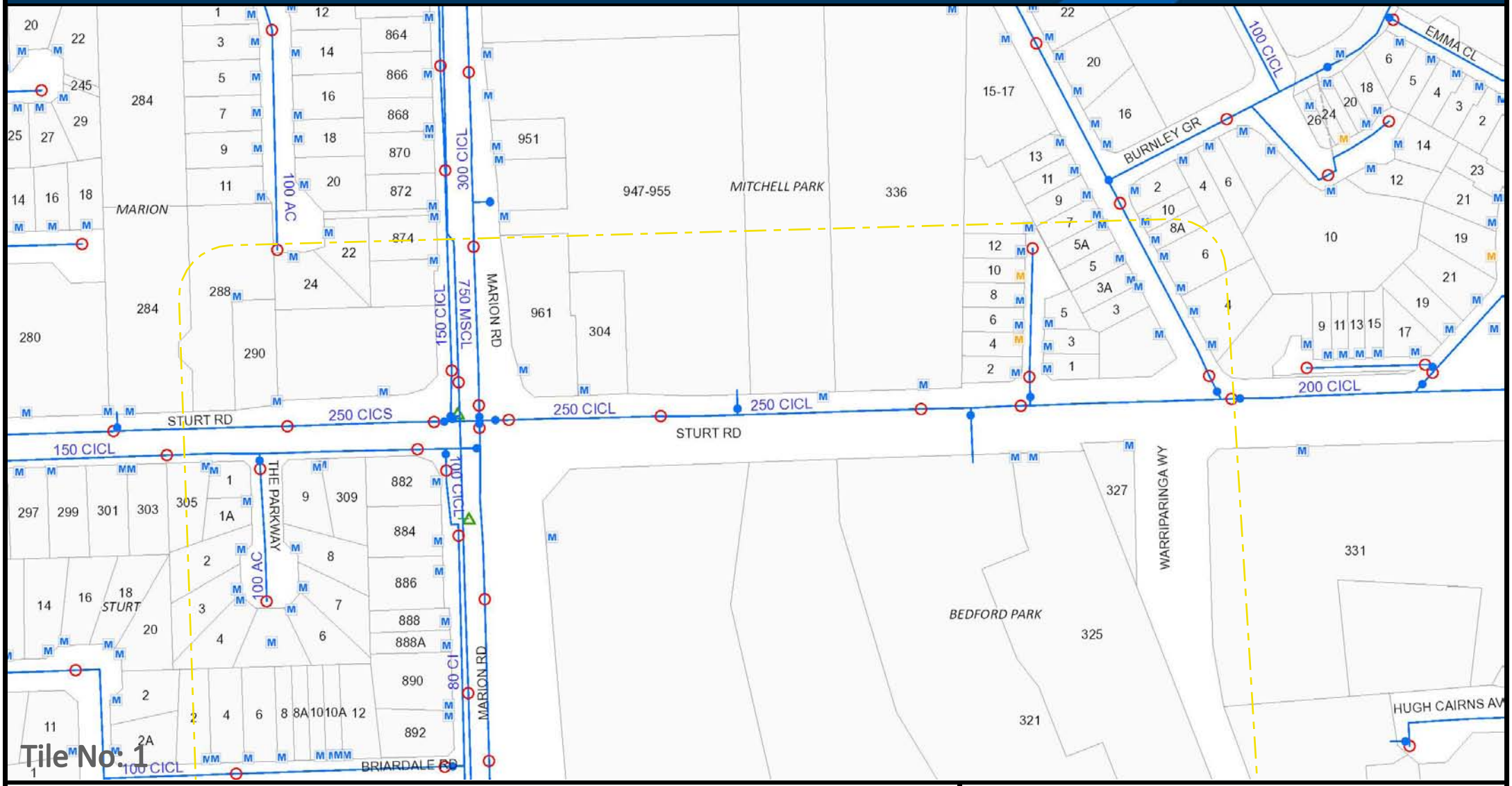
- CP Anode/Cathode Cables
- CP Electricity Supply Cables
- CP Anode Bed Outlines
- Railway
- Land Parcels
- Water Meter*
- Shifted Water Meter*

** Connection between water meter and pipe not shown*

Scale @ A4: 1:7688

WATER RETICULATION

DBYD Sequence No: 110505525



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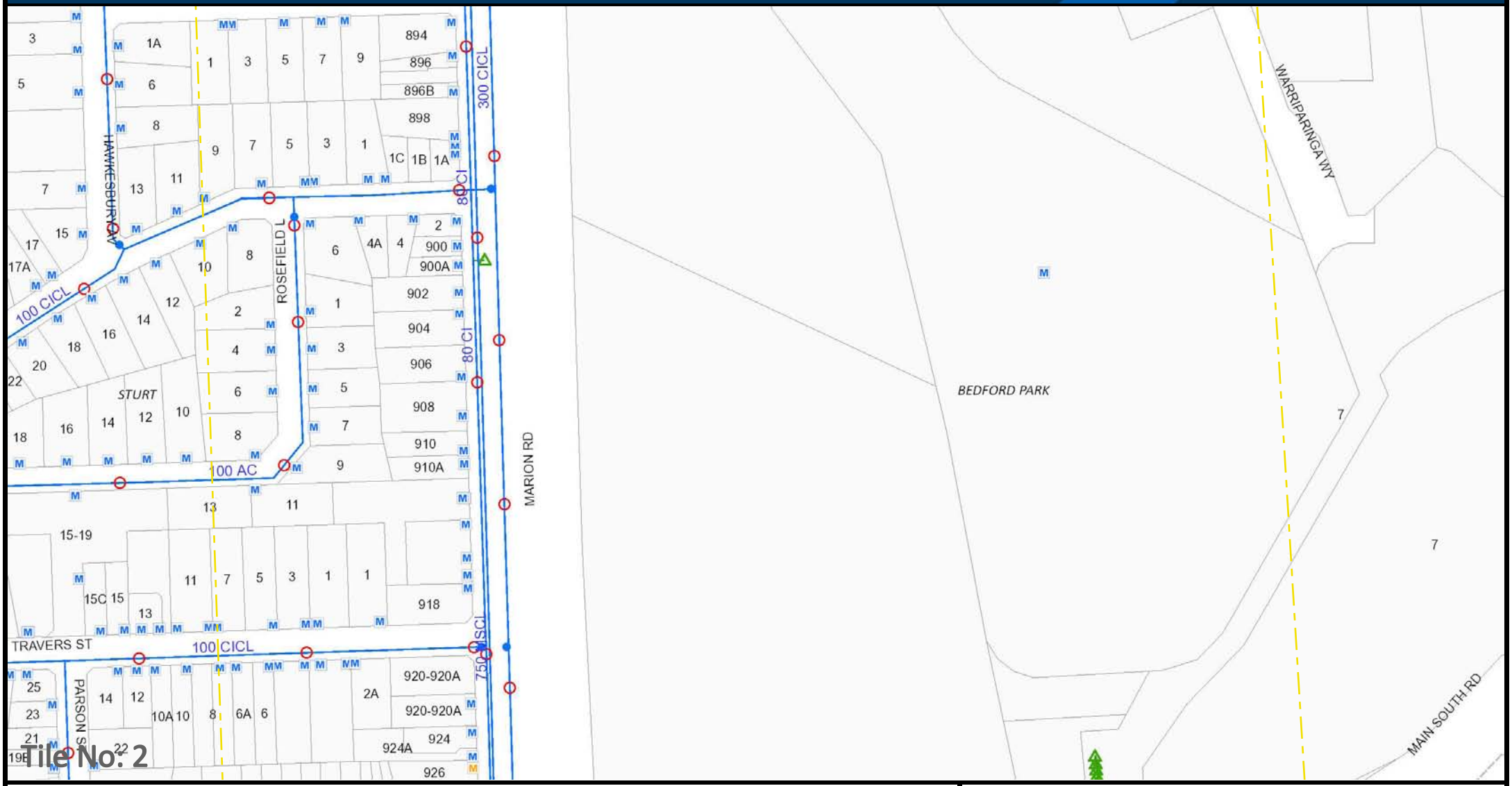
** Connection between water meter and pipe not shown*

Scale @ A4: 1:2500

WATER RETICULATION

DBYD Sequence No: 110505525



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** Connection between water meter and pipe not shown*

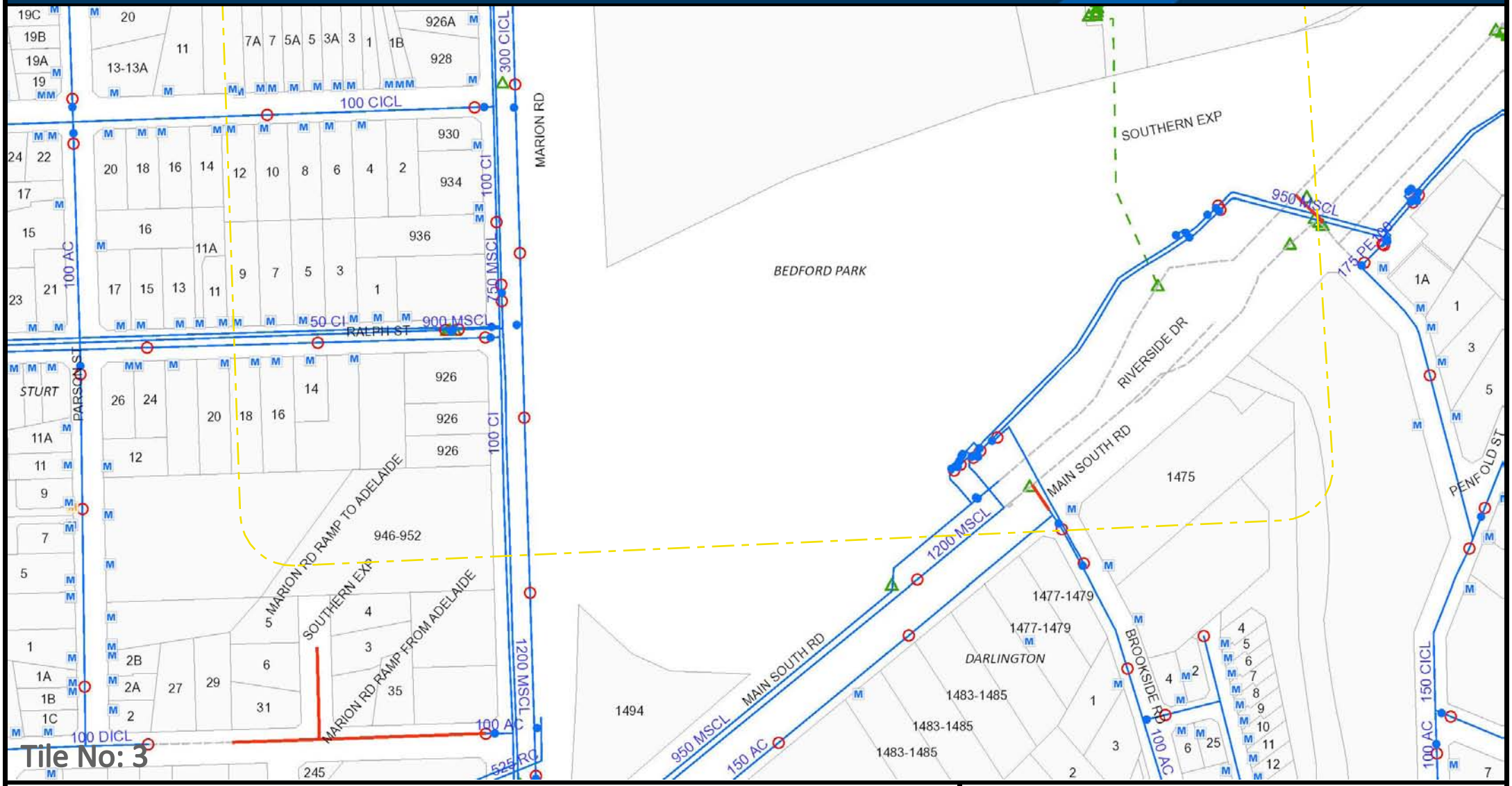
Scale @ A4: 1:2500

WATER RETICULATION

DBYD Sequence No: 110505525

DIAL BEFORE YOU DIG www.1100.com.au

SA Water



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- Water Main (Decommissioned)
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- Water Pillar Hydrant
- Water Hydrant
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- CP Anode/Cathode Cables
- CP Electricity Supply Cables
- CP Anode Bed Outlines
- Railway
- Land Parcels
- Water Meter*
- Shifted Water Meter*

** Connection between water meter and pipe not shown*

Scale @ A4: 1:2500

Dial Before You Dig (DBYD)
Location Information

To:
Greenhill - Miss Georgia Wallage
PO Box 134 Rundle Mall
Adelaide SA 5000

Enquiry Details	
Utility ID	50800
Sequence Number	110505521
Enquiry Date	04/06/2021 17:30
Response	**AFFECTED**
Address	Marion Road Bedford Park
Location in Road	CarriageWay,Footpath,Nature Strip
Activity	Planning & Design

Enquirer Details			
Customer ID	1906010		
Contact	Miss Georgia Wallage		
Company	Greenhill		
Email	gwallage@greenhillaustralia.com.au		
Phone	08 8406 1300	Mobile	Not Supplied

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. Please review the attached Asset Map(s) in regard to your excavation, as there may be some restrictions that apply if your excavation is greater than 300mm below ground level and less than 3.0m from an SA Power Networks Asset. Further explanation of restricted and 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 figure on page 10, 11 or 12.
5. An on-site assessment and/or technical drawings may also be necessary to ascertain the exact cable/asset location. This service can be provided by SA Power Networks and may incur a cost.
6. Please contact your local SA Power Networks Location Officer to schedule work or make further enquiries regarding this request either by return email or the contact number supplied. Other general enquiries can be made on (08) 8292 0218.
7. If you have damaged SA Power Networks Assets immediately notify Faults & Emergencies on (08) 8404 4496.

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.

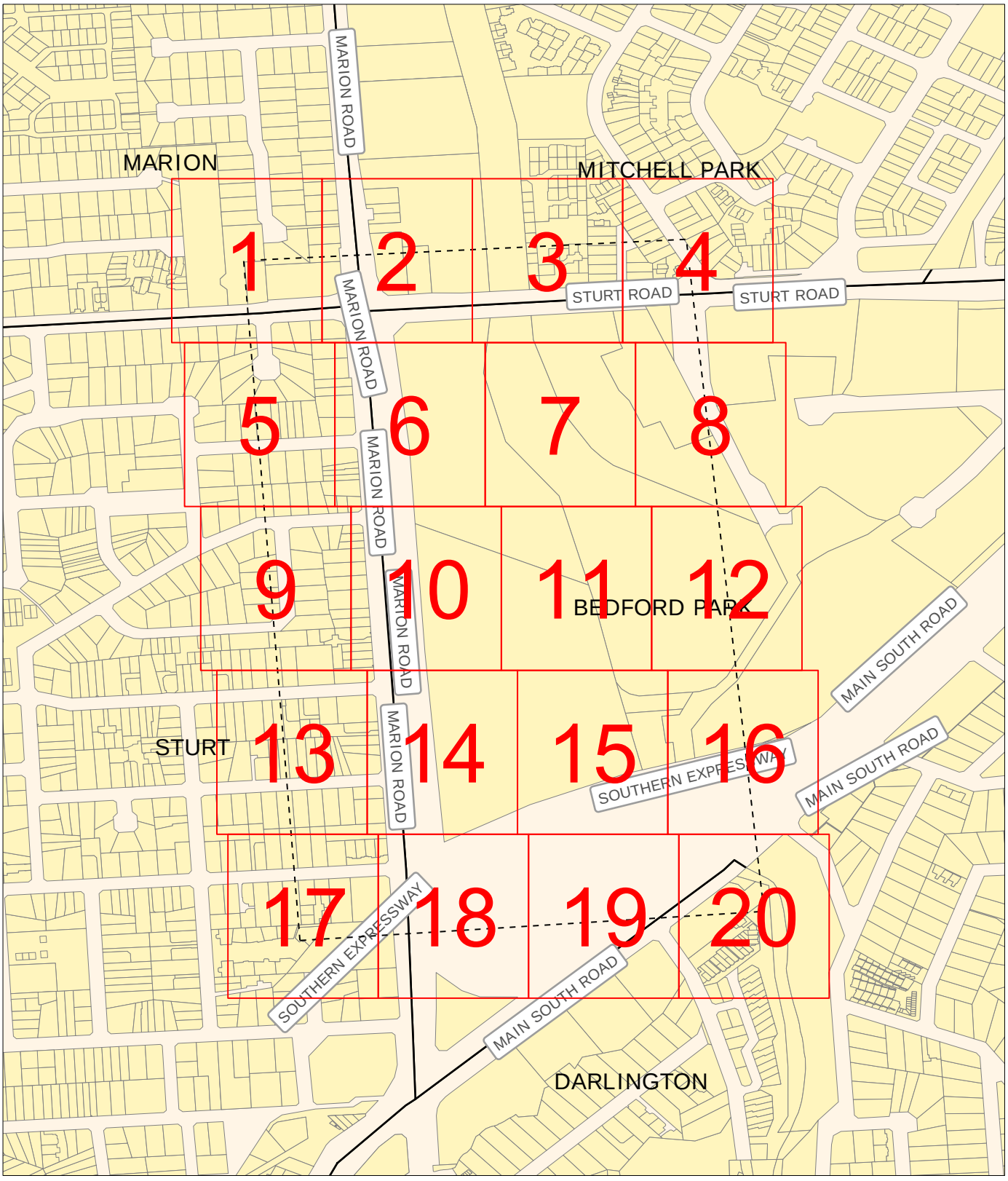
Important note: It is an offence under the Electricity Act 1996 (SA) to cause damage to or interfere with electrical infrastructure

Date: 04/06/2021

Overview Map

Sequence No: 110505521

Marion Road Bedford Park



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.

N

0 0.06km

LEGEND:

1 Detail Map

DBYD Requested Area

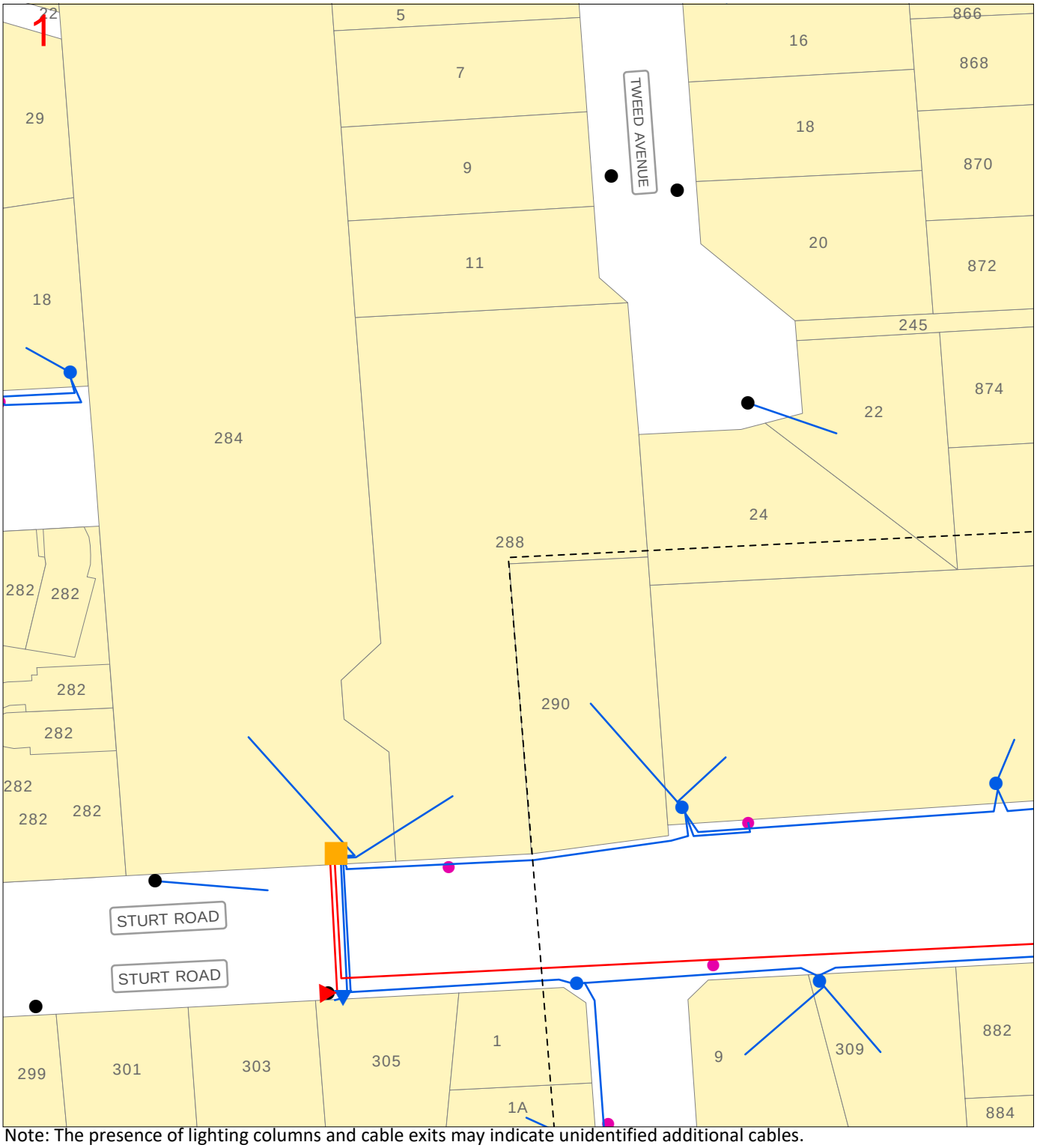
Date: 04/06/2021

SA Power Networks

Map 1

Sequence No: 110505521

Marion Road Bedford Park



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	Fibre Optic Cable/Duct
33kV	33kV	HV Switching Cubicle	Fibre Manhole/Pit
19kV	19kV	Transformer Cubicle	Pilot Cable
11kV	11kV	Cable Joint Bay	Pilot Manhole/Pit
7.6kV	7.6kV	LV Switching Cubicle/Pit	Substation
Not In Service	Not In Service	Service Pit/Pillar	Electricity Pole
Low Voltage	Low Voltage	Earthing Grid	Light Column

N

0 0.009km

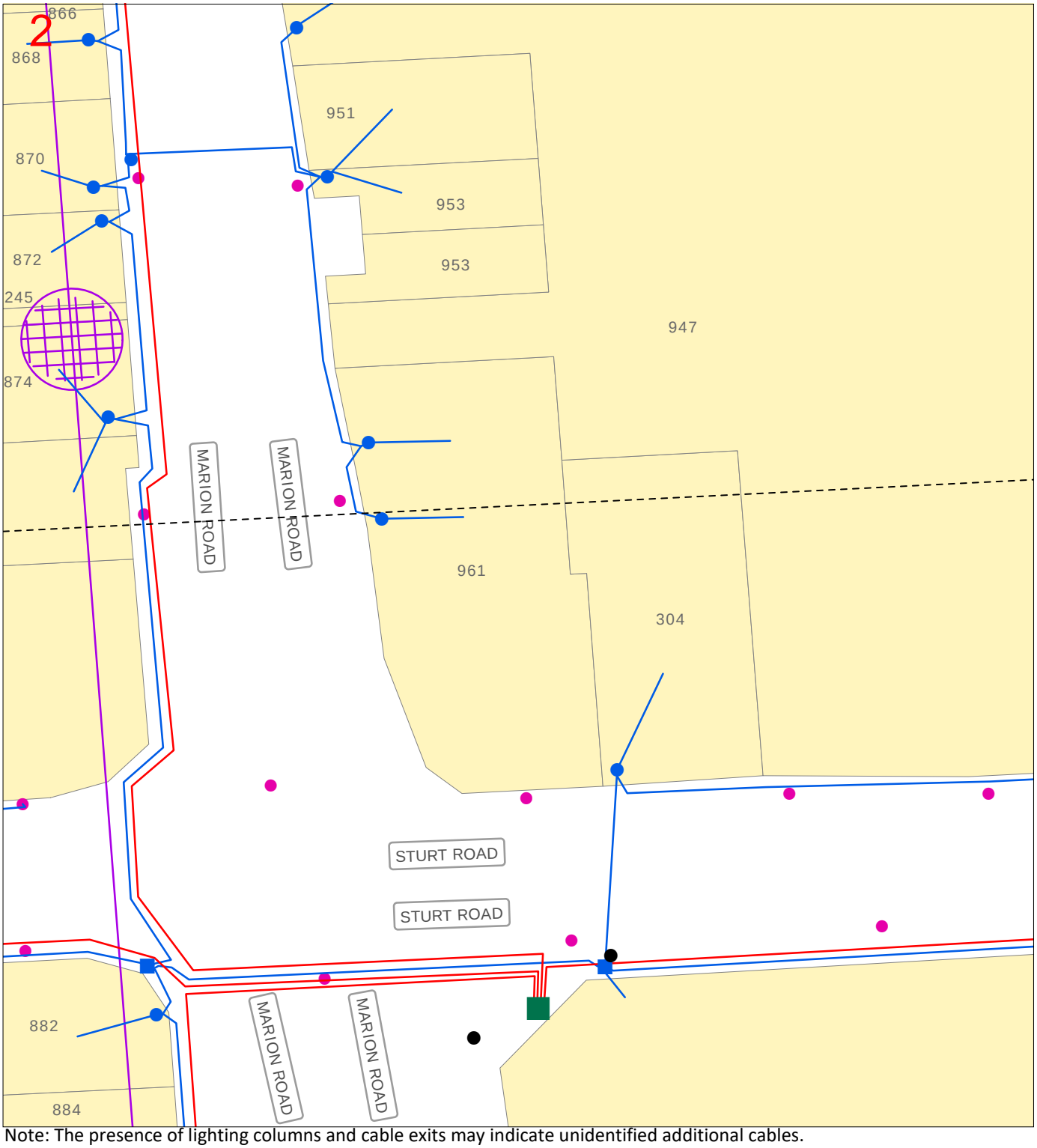
Date: 04/06/2021

SA Power Networks

Map 2

Sequence No: 110505521

Marion Road Bedford Park



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	Fibre Optic Cable/Duct
33kV	33kV	HV Switching Cubicle	Fibre Manhole/Pit
19kV	19kV	Transformer Cubicle	Pilot Cable
11kV	11kV	Cable Joint Bay	Pilot Manhole/Pit
7.6kV	7.6kV	LV Switching Cubicle/Pit	Substation
Not In Service	Not In Service	Service Pit/Pillar	Electricity Pole
Low Voltage	Low Voltage	Earthing Grid	Light Column

N

0 0.009km

Powered by dbyd

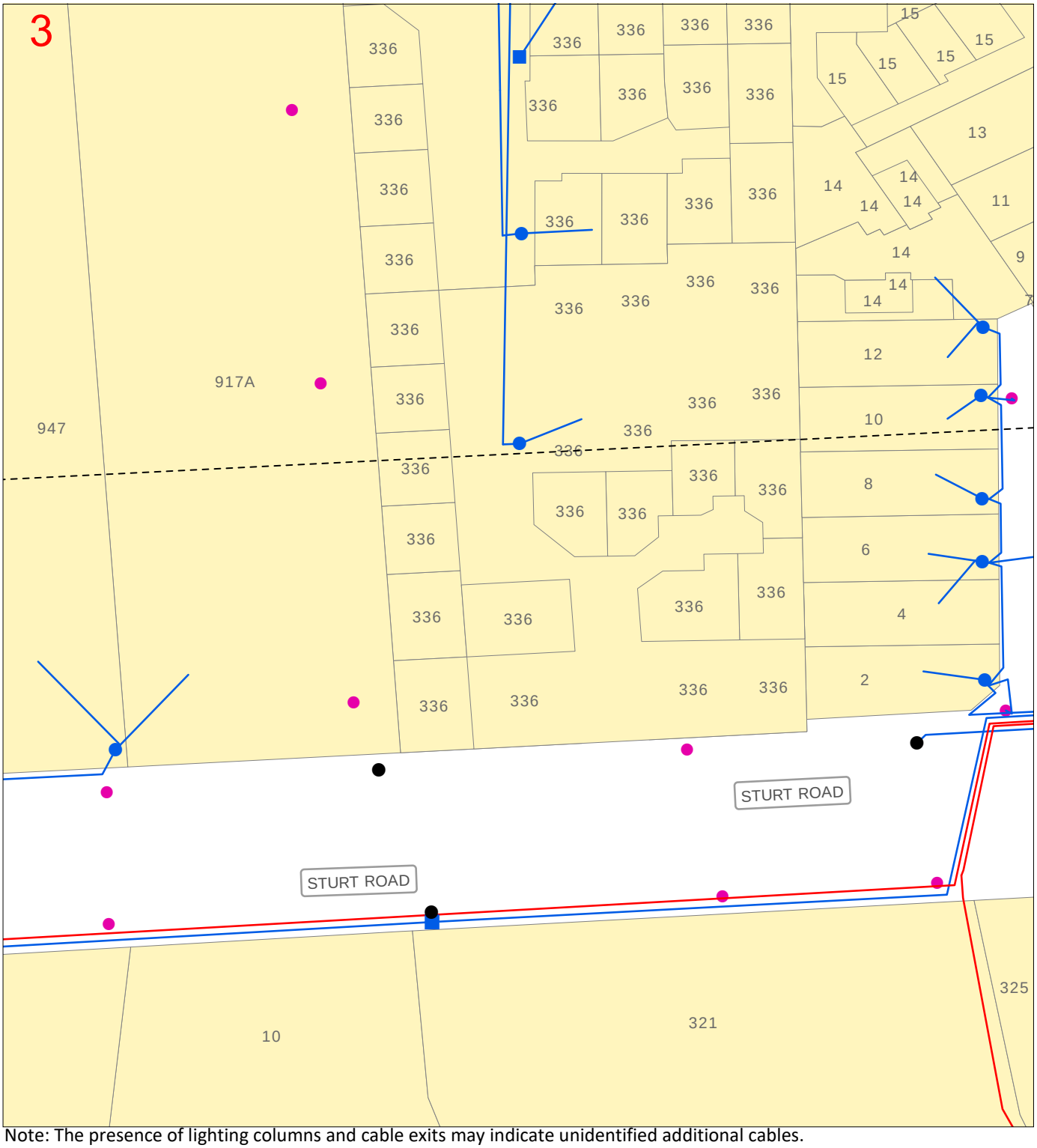
Date: 04/06/2021

SA Power Networks

Map 3

Sequence No: 110505521

Marion Road Bedford Park



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	Fibre Optic Cable/Duct
33kV	33kV	HV Switching Cubicle	Fibre Manhole/Pit
19kV	19kV	Transformer Cubicle	Pilot Cable
11kV	11kV	Cable Joint Bay	Pilot Manhole/Pit
7.6kV	7.6kV	LV Switching Cubicle/Pit	Substation
Not In Service	Not In Service	Service Pit/Pillar	Electricity Pole
Low Voltage	Low Voltage	Earthing Grid	Light Column

N

0 0.009km

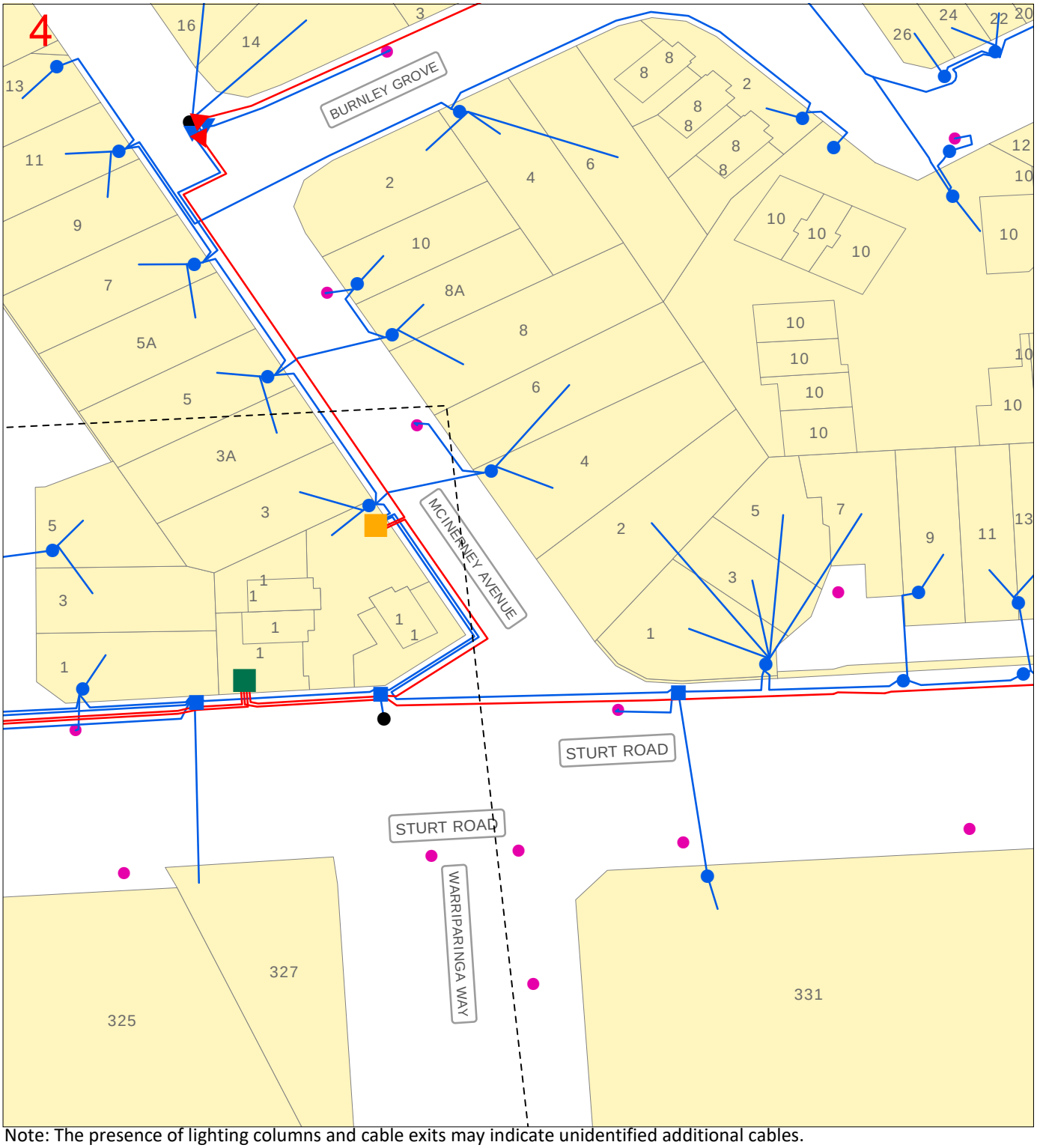
Date: 04/06/2021

SA Power Networks

Map 4

Sequence No: 110505521

Marion Road Bedford Park



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	Fibre Optic Cable/Duct
33kV	33kV	HV Switching Cubicle	Fibre Manhole/Pit
19kV	19kV	Transformer Cubicle	Pilot Cable
11kV	11kV	Cable Joint Bay	Pilot Manhole/Pit
7.6kV	7.6kV	LV Switching Cubicle/Pit	Substation
Not In Service	Not In Service	Service Pit/Pillar	Electricity Pole
Low Voltage	Low Voltage	Earthing Grid	Light Column

N

0 0.009km

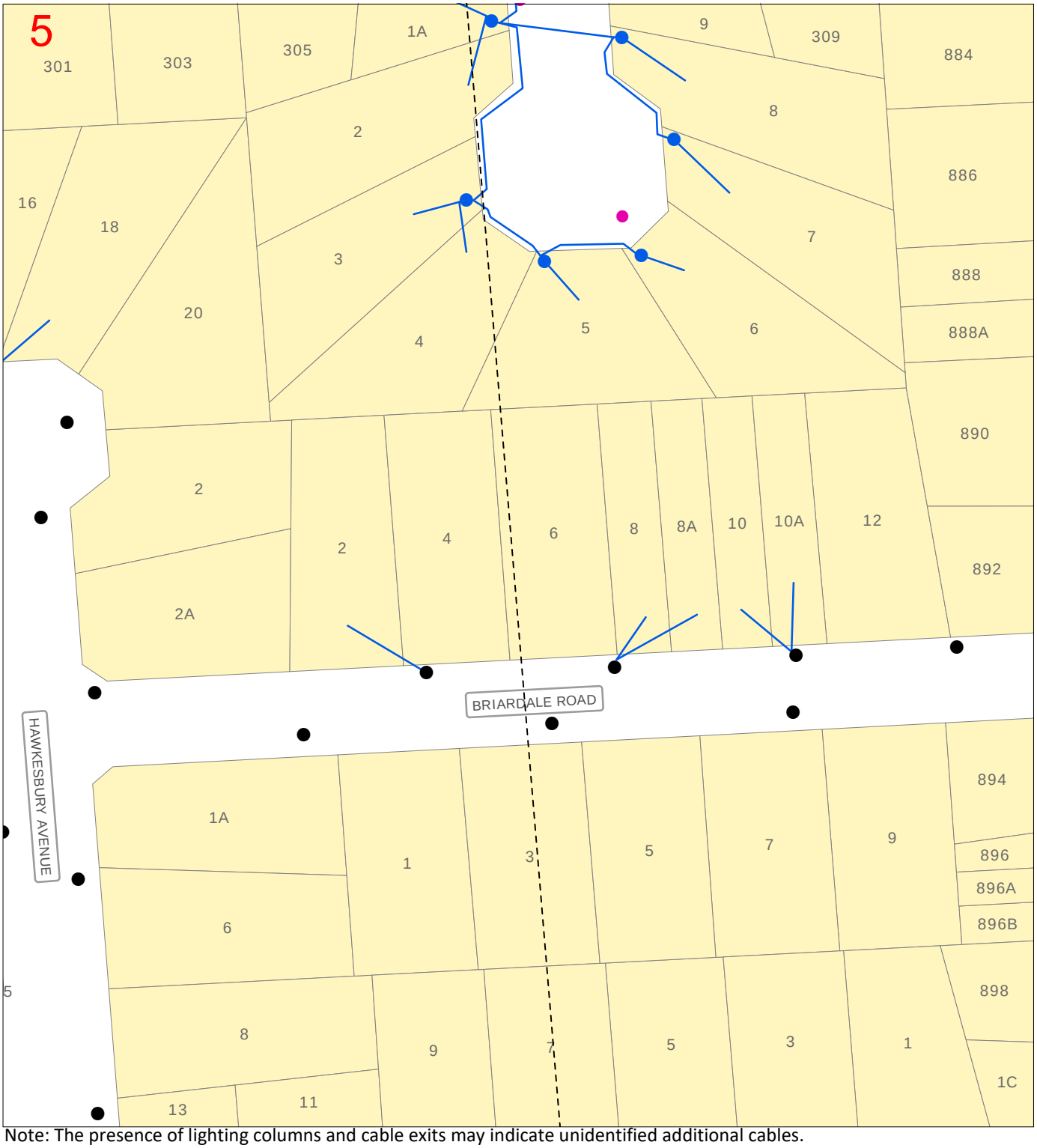
Date: 04/06/2021

SA Power Networks

Map 5

Sequence No: 110505521

Marion Road Bedford Park



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	Fibre Optic Cable/Duct
33kV	33kV	HV Switching Cubicle	Fibre Manhole/Pit
19kV	19kV	Transformer Cubicle	Pilot Cable
11kV	11kV	Cable Joint Bay	Pilot Manhole/Pit
7.6kV	7.6kV	LV Switching Cubicle/Pit	Substation
Not In Service	Not In Service	Service Pit/Pillar	Electricity Pole
Low Voltage	Low Voltage	Earthing Grid	Light Column

N

0 0.009km

Powered by dbyd

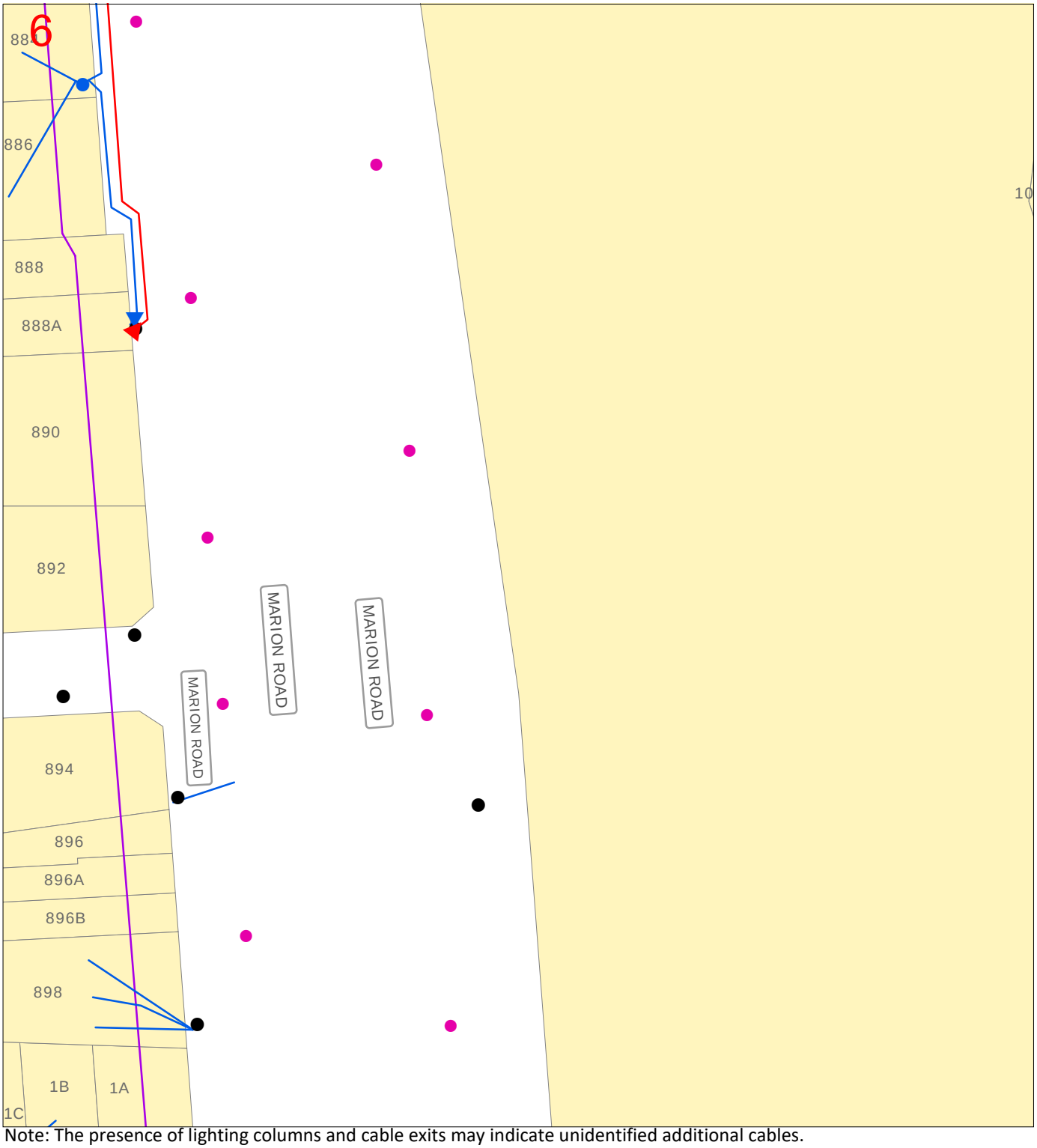
Date: 04/06/2021

SA Power Networks

Map 6

Sequence No: 110505521

Marion Road Bedford Park



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	Fibre Optic Cable/Duct
33kV	33kV	HV Switching Cubicle	Fibre Manhole/Pit
19kV	19kV	Transformer Cubicle	Pilot Cable
11kV	11kV	Cable Joint Bay	Pilot Manhole/Pit
7.6kV	7.6kV	LV Switching Cubicle/Pit	Substation
Not In Service	Not In Service	Service Pit/Pillar	Electricity Pole
Low Voltage	Low Voltage	Earthing Grid	Light Column

N

0 0.009km

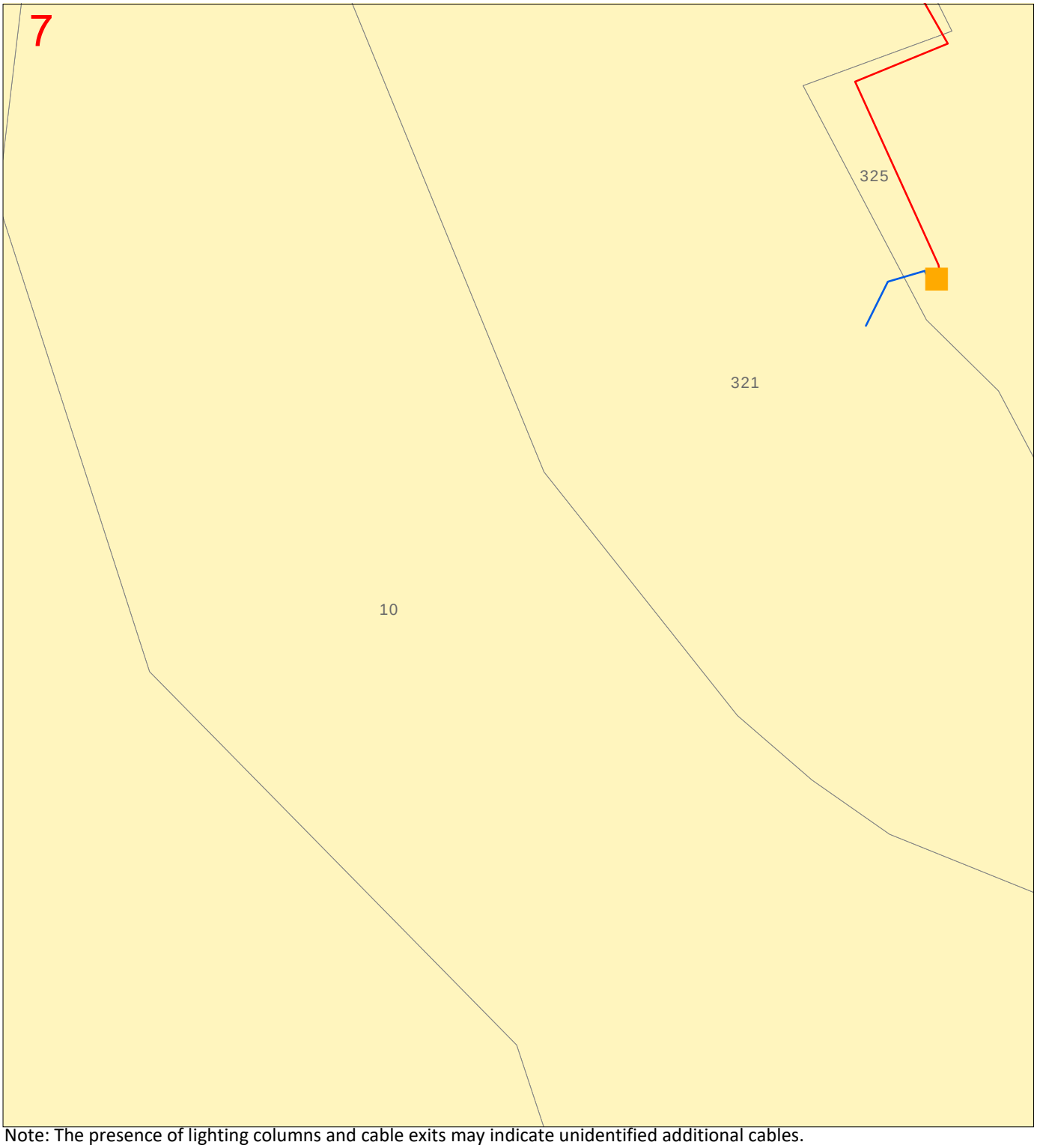
Date: 04/06/2021

SA Power Networks

Map 7

Sequence No: 110505521

Marion Road Bedford Park



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	Fibre Optic Cable/Duct
33kV	33kV	HV Switching Cubicle	Fibre Manhole/Pit
19kV	19kV	Transformer Cubicle	Pilot Cable
11kV	11kV	Cable Joint Bay	Pilot Manhole/Pit
7.6kV	7.6kV	LV Switching Cubicle/Pit	Substation
Not In Service	Not In Service	Service Pit/Pillar	Electricity Pole
Low Voltage	Low Voltage	Earthing Grid	Light Column

N

0 0.009km

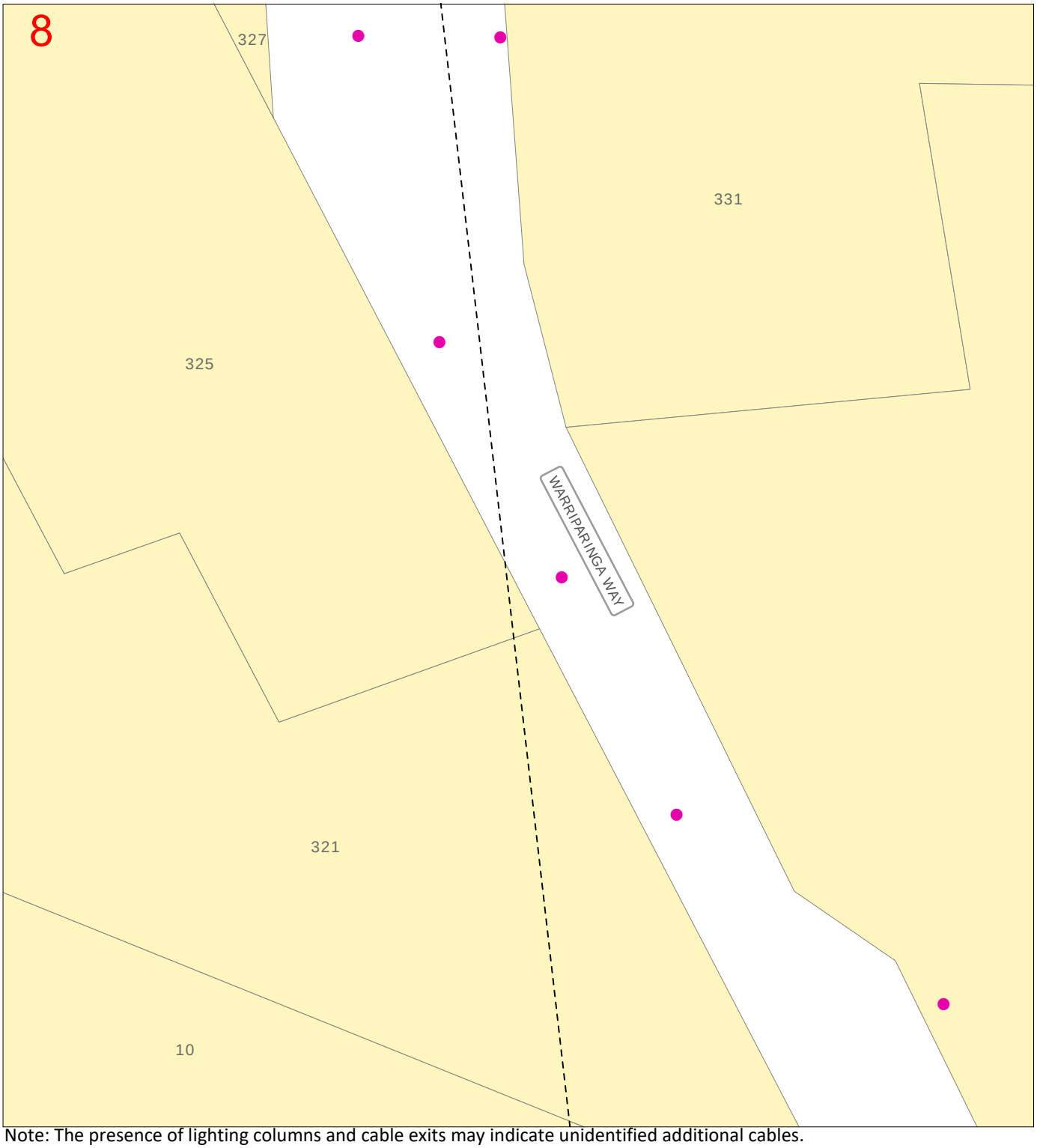
Date: 04/06/2021

SA Power Networks

Map 8

Sequence No: 110505521

Marion Road Bedford Park



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	Fibre Optic Cable/Duct
33kV	33kV	HV Switching Cubicle	Fibre Manhole/Pit
19kV	19kV	Transformer Cubicle	Pilot Cable
11kV	11kV	Cable Joint Bay	Pilot Manhole/Pit
7.6kV	7.6kV	LV Switching Cubicle/Pit	Substation
Not In Service	Not In Service	Service Pit/Pillar	Electricity Pole
Low Voltage	Low Voltage	Earthing Grid	Light Column

N

0 0.009km

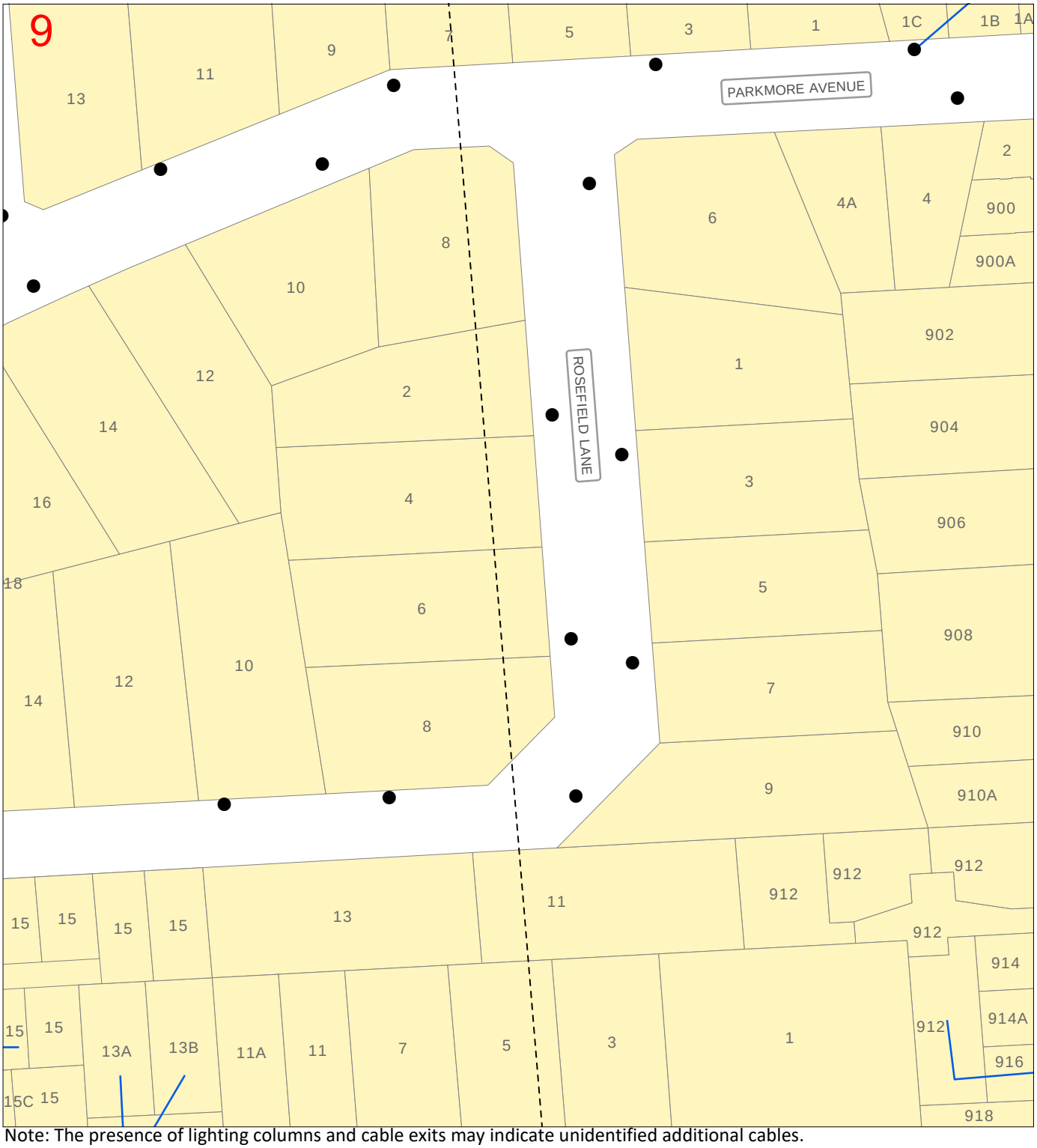
Date: 04/06/2021

SA Power Networks

Map 9

Sequence No: 110505521

Marion Road Bedford Park



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	Fibre Optic Cable/Duct
33kV	33kV	HV Switching Cubicle	Fibre Manhole/Pit
19kV	19kV	Transformer Cubicle	Pilot Cable
11kV	11kV	Cable Joint Bay	Pilot Manhole/Pit
7.6kV	7.6kV	LV Switching Cubicle/Pit	Substation
Not In Service	Not In Service	Service Pit/Pillar	Electricity Pole
Low Voltage	Low Voltage	Earthing Grid	Light Column

N

0 0.009km

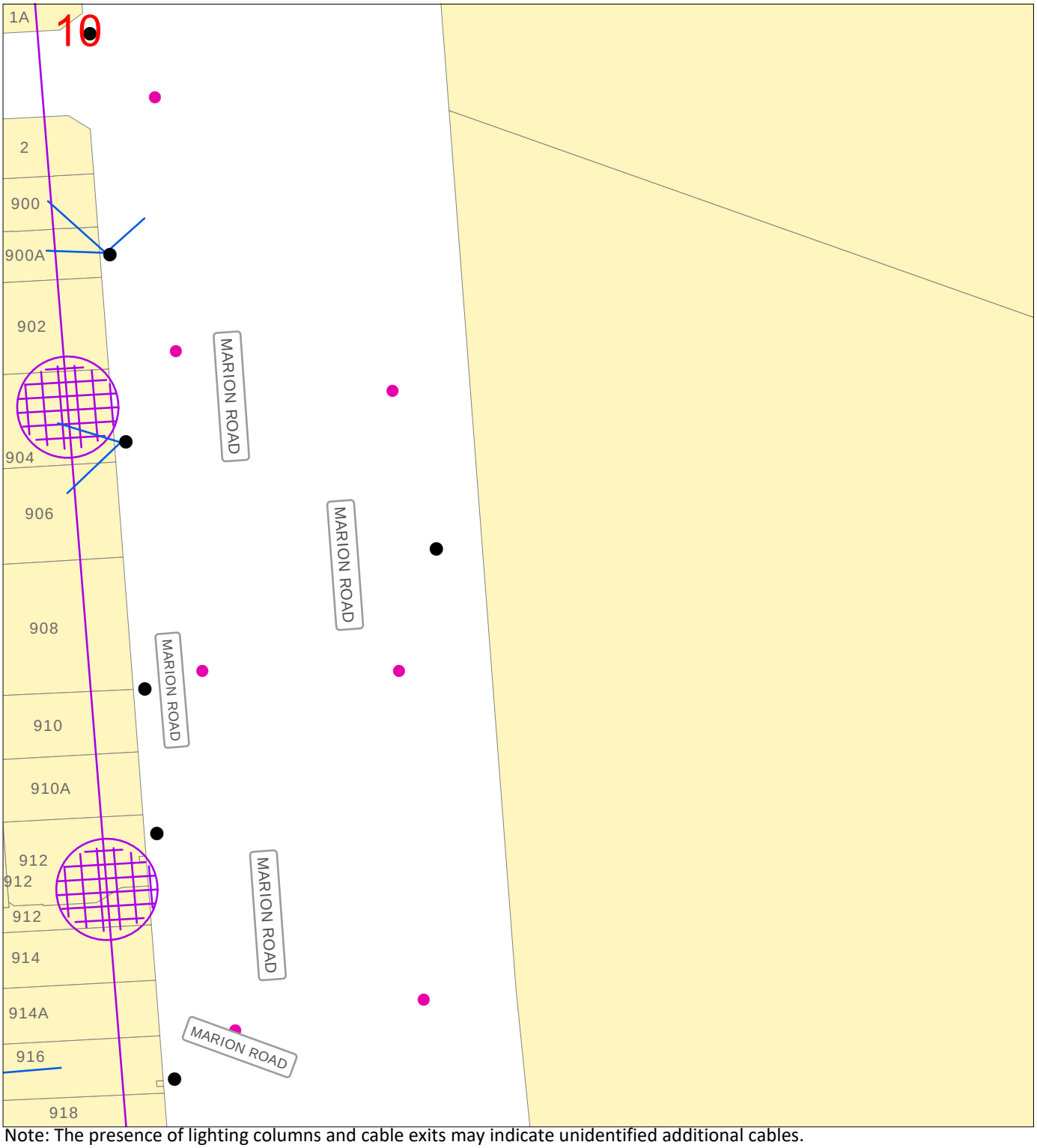
Date: 04/06/2021

SA Power Networks

Map 10

Sequence No: 110505521

Marion Road Bedford Park



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	Fibre Optic Cable/Duct
33kV	33kV	HV Switching Cubicle	Fibre Manhole/Pit
19kV	19kV	Transformer Cubicle	Pilot Cable
11kV	11kV	Cable Joint Bay	Pilot Manhole/Pit
7.6kV	7.6kV	LV Switching Cubicle/Pit	Substation
Not In Service	Not In Service	Service Pit/Pillar	Electricity Pole
Low Voltage	Low Voltage	Earthing Grid	Light Column

N

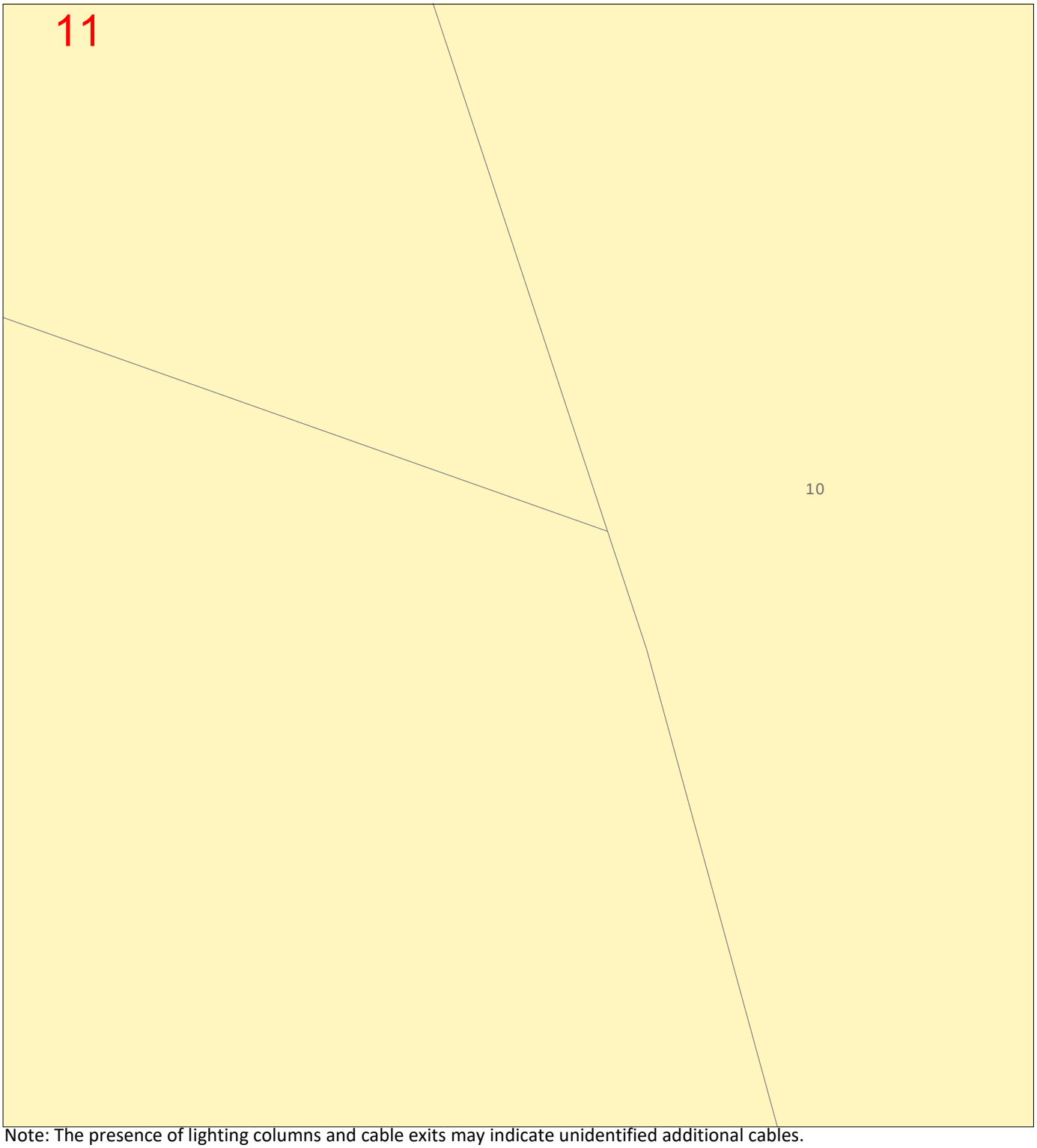
0 0.009km

SA Power Networks

Map 11

Sequence No: 110505521

Marion Road Bedford Park



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	Fibre Optic Cable/Duct
33kV	33kV	HV Switching Cubicle	Fibre Manhole/Pit
19kV	19kV	Transformer Cubicle	Pilot Cable
11kV	11kV	Cable Joint Bay	Pilot Manhole/Pit
7.6kV	7.6kV	LV Switching Cubicle/Pit	Substation
Not In Service	Not In Service	Service Pit/Pillar	Electricity Pole
Low Voltage	Low Voltage	Earthing Grid	Light Column

N

0 0.009km

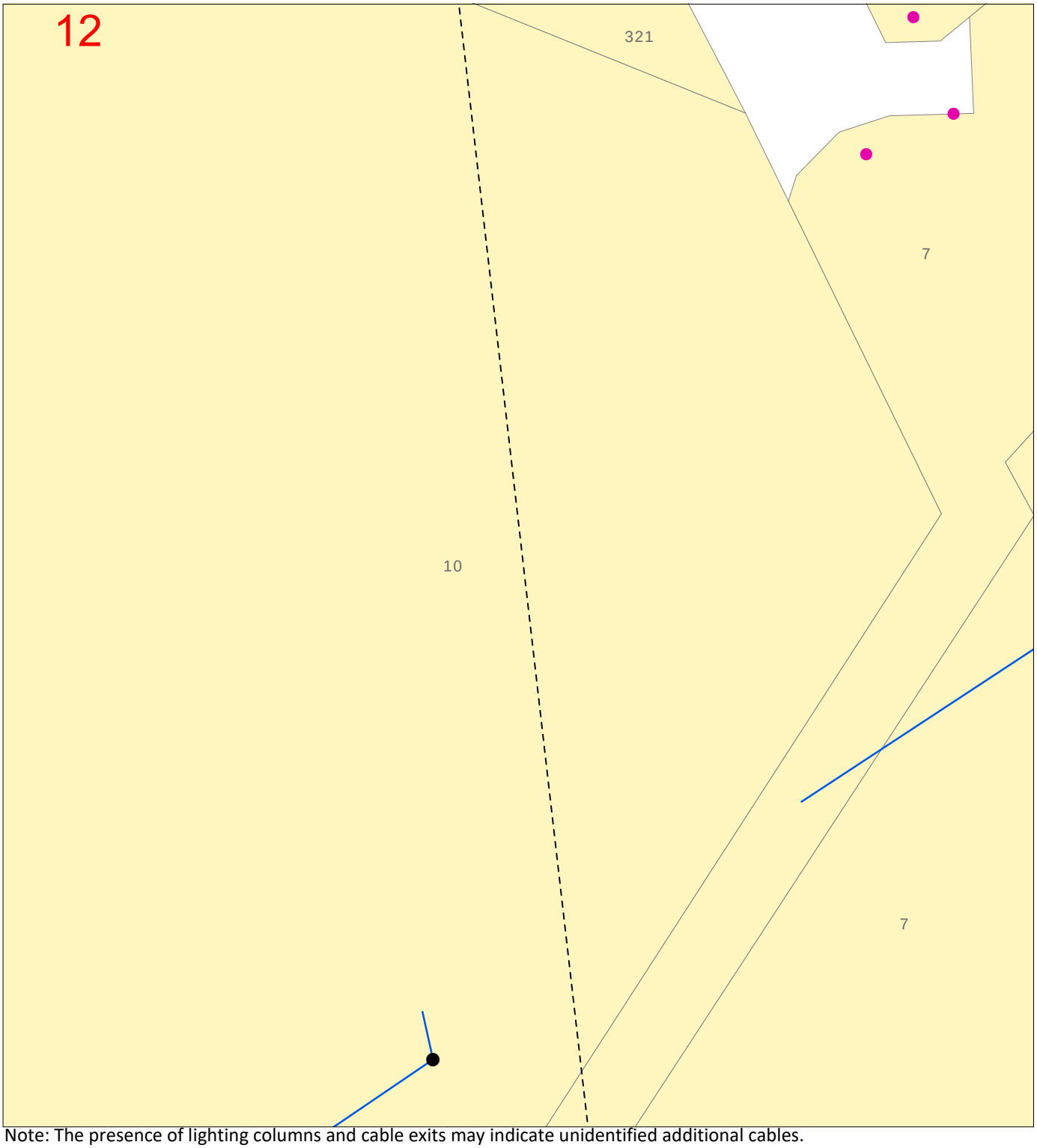
Date: 04/06/2021

SA Power Networks

Map 12

Sequence No: 110505521

Marion Road Bedford Park



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	Fibre Optic Cable/Duct
33kV	33kV	HV Switching Cubicle	Fibre Manhole/Pit
19kV	19kV	Transformer Cubicle	Pilot Cable
11kV	11kV	Cable Joint Bay	Pilot Manhole/Pit
7.6kV	7.6kV	LV Switching Cubicle/Pit	Substation
Not In Service	Not In Service	Service Pit/Pillar	Electricity Pole
Low Voltage	Low Voltage	Earthing Grid	Light Column

N

0 0.009km

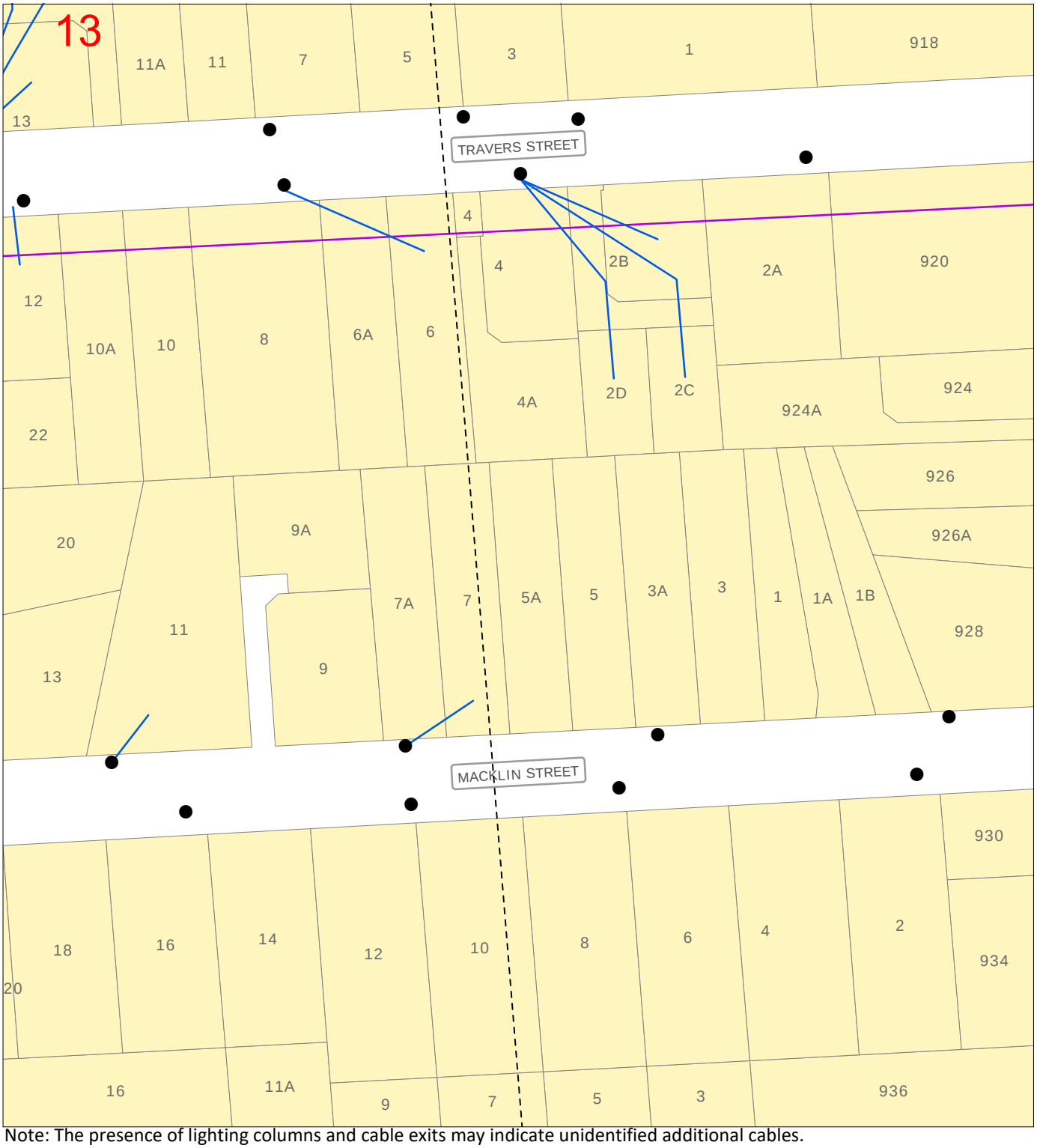
Date: 04/06/2021

SA Power Networks

Map 13

Sequence No: 110505521

Marion Road Bedford Park



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	Fibre Optic Cable/Duct
33kV	33kV	HV Switching Cubicle	Fibre Manhole/Pit
19kV	19kV	Transformer Cubicle	Pilot Cable
11kV	11kV	Cable Joint Bay	Pilot Manhole/Pit
7.6kV	7.6kV	LV Switching Cubicle/Pit	Substation
Not In Service	Not In Service	Service Pit/Pillar	Electricity Pole
Low Voltage	Low Voltage	Earthing Grid	Light Column

N

0 0.009km

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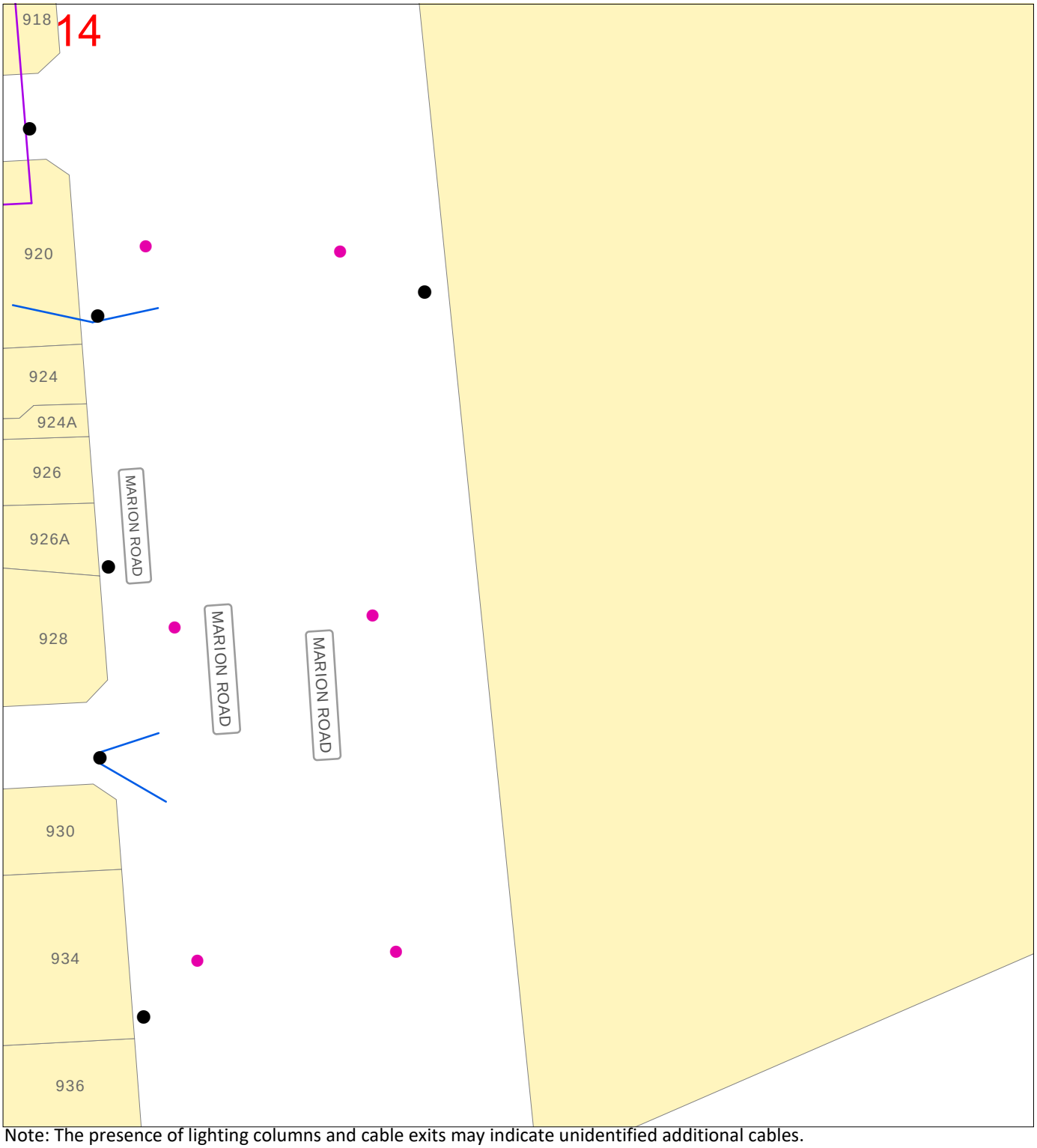
Date: 04/06/2021

SA Power Networks

Map 14

Sequence No: 110505521

Marion Road Bedford Park



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	Fibre Optic Cable/Duct
33kV	33kV	HV Switching Cubicle	Fibre Manhole/Pit
19kV	19kV	Transformer Cubicle	Pilot Cable
11kV	11kV	Cable Joint Bay	Pilot Manhole/Pit
7.6kV	7.6kV	LV Switching Cubicle/Pit	Substation
Not In Service	Not In Service	Service Pit/Pillar	Electricity Pole
Low Voltage	Low Voltage	Earthing Grid	Light Column

N

0 0.009km

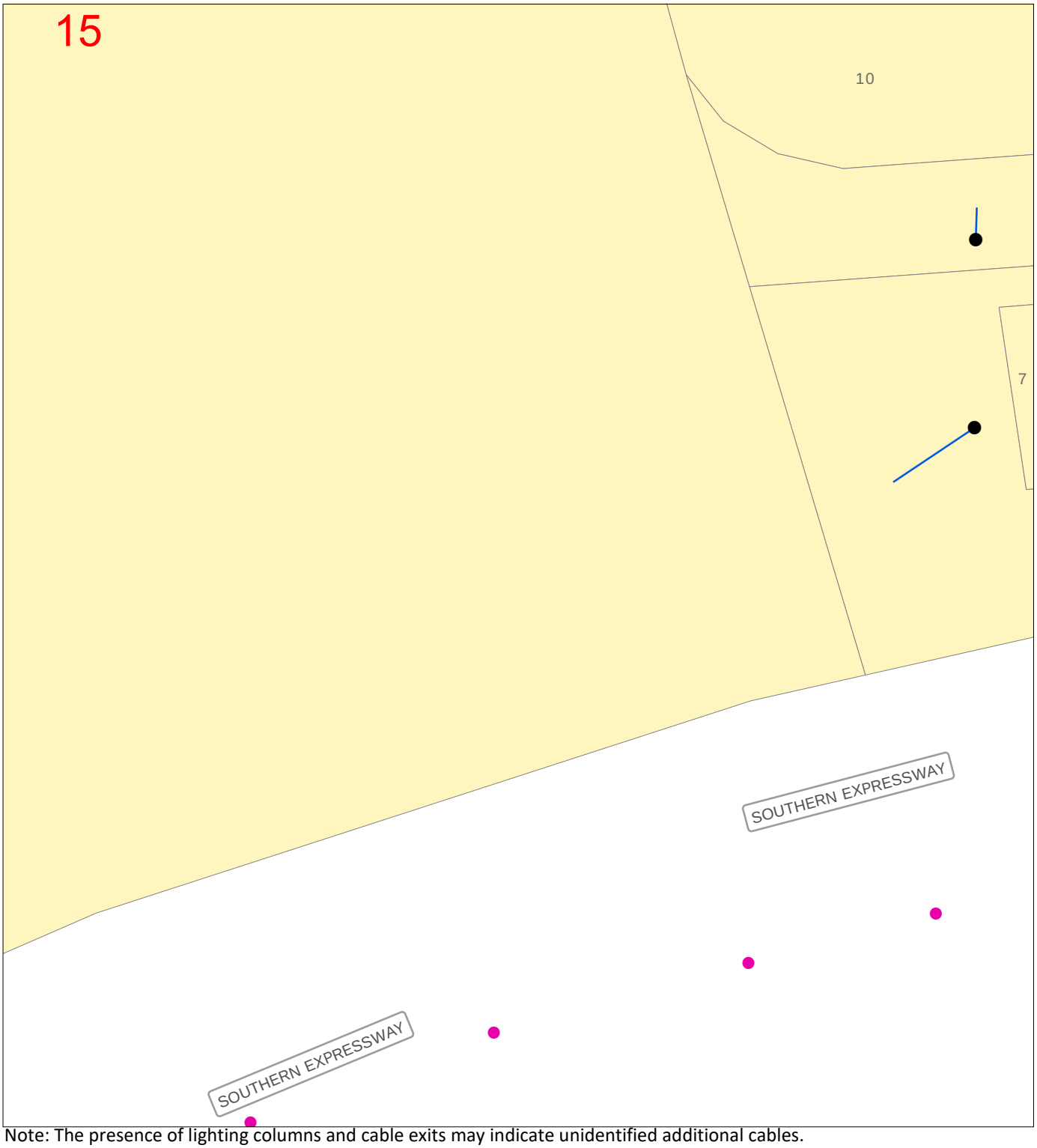
Date: 04/06/2021

SA Power Networks

Map 15

Sequence No: 110505521

Marion Road Bedford Park



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	Fibre Optic Cable/Duct
33kV	33kV	HV Switching Cubicle	Fibre Manhole/Pit
19kV	19kV	Transformer Cubicle	Pilot Cable
11kV	11kV	Cable Joint Bay	Pilot Manhole/Pit
7.6kV	7.6kV	LV Switching Cubicle/Pit	Substation
Not In Service	Not In Service	Service Pit/Pillar	Electricity Pole
Low Voltage	Low Voltage	Earthing Grid	Light Column

N

0 0.009km

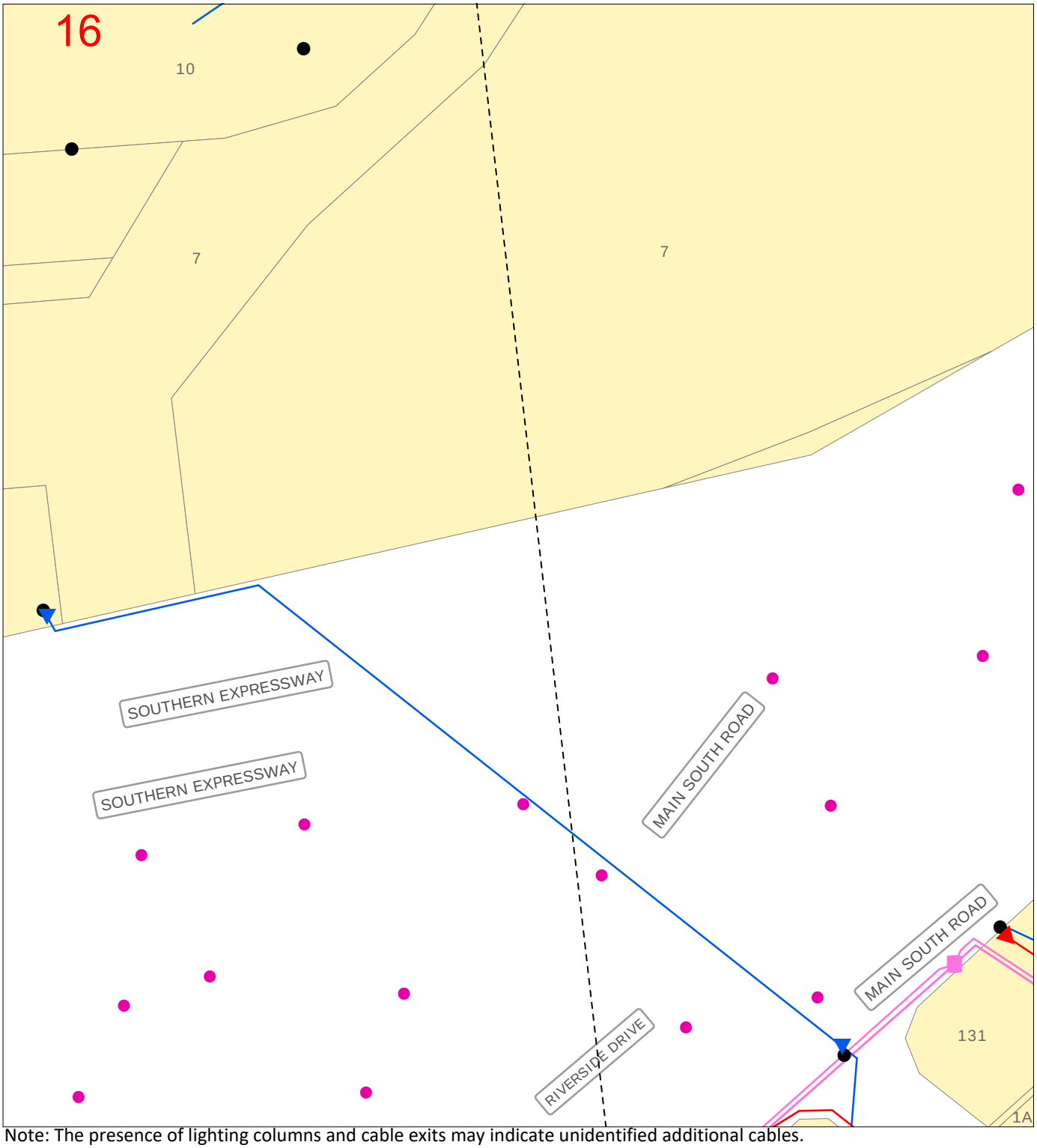
Date: 04/06/2021

SA Power Networks

Map 16

Sequence No: 110505521

Marion Road Bedford Park



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	Fibre Optic Cable/Duct
33kV	33kV	HV Switching Cubicle	Fibre Manhole/Pit
19kV	19kV	Transformer Cubicle	Pilot Cable
11kV	11kV	Cable Joint Bay	Pilot Manhole/Pit
7.6kV	7.6kV	LV Switching Cubicle/Pit	Substation
Not In Service	Not In Service	Service Pit/Pillar	Electricity Pole
Low Voltage	Low Voltage	Earthing Grid	Light Column

N

0 0.009km

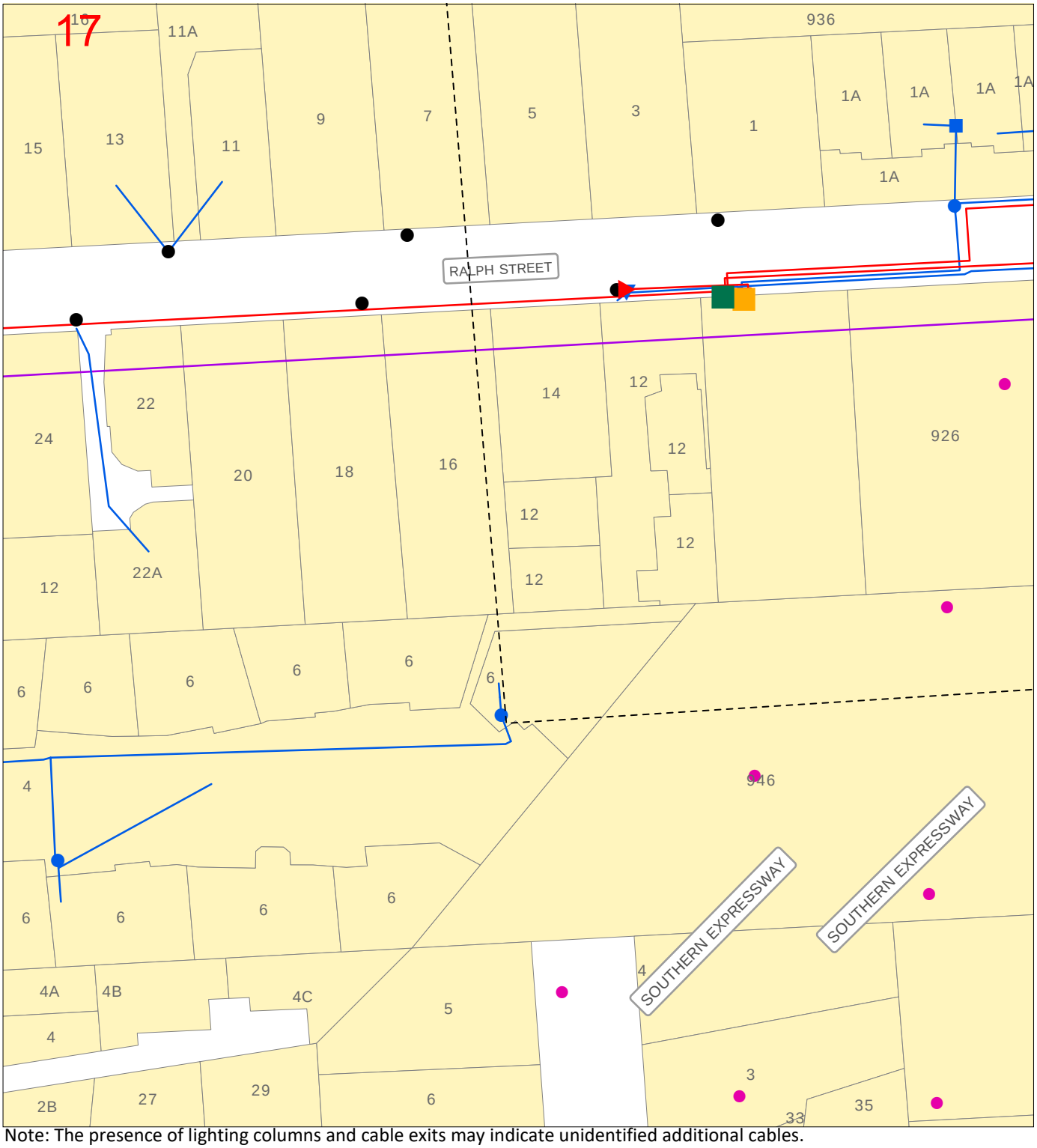
Date: 04/06/2021

SA Power Networks

Map 17

Sequence No: 110505521

Marion Road Bedford Park



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	Fibre Optic Cable/Duct
33kV	33kV	HV Switching Cubicle	Fibre Manhole/Pit
19kV	19kV	Transformer Cubicle	Pilot Cable
11kV	11kV	Cable Joint Bay	Pilot Manhole/Pit
7.6kV	7.6kV	LV Switching Cubicle/Pit	Substation
Not In Service	Not In Service	Service Pit/Pillar	Electricity Pole
Low Voltage	Low Voltage	Earthing Grid	Light Column

N

0 0.009km

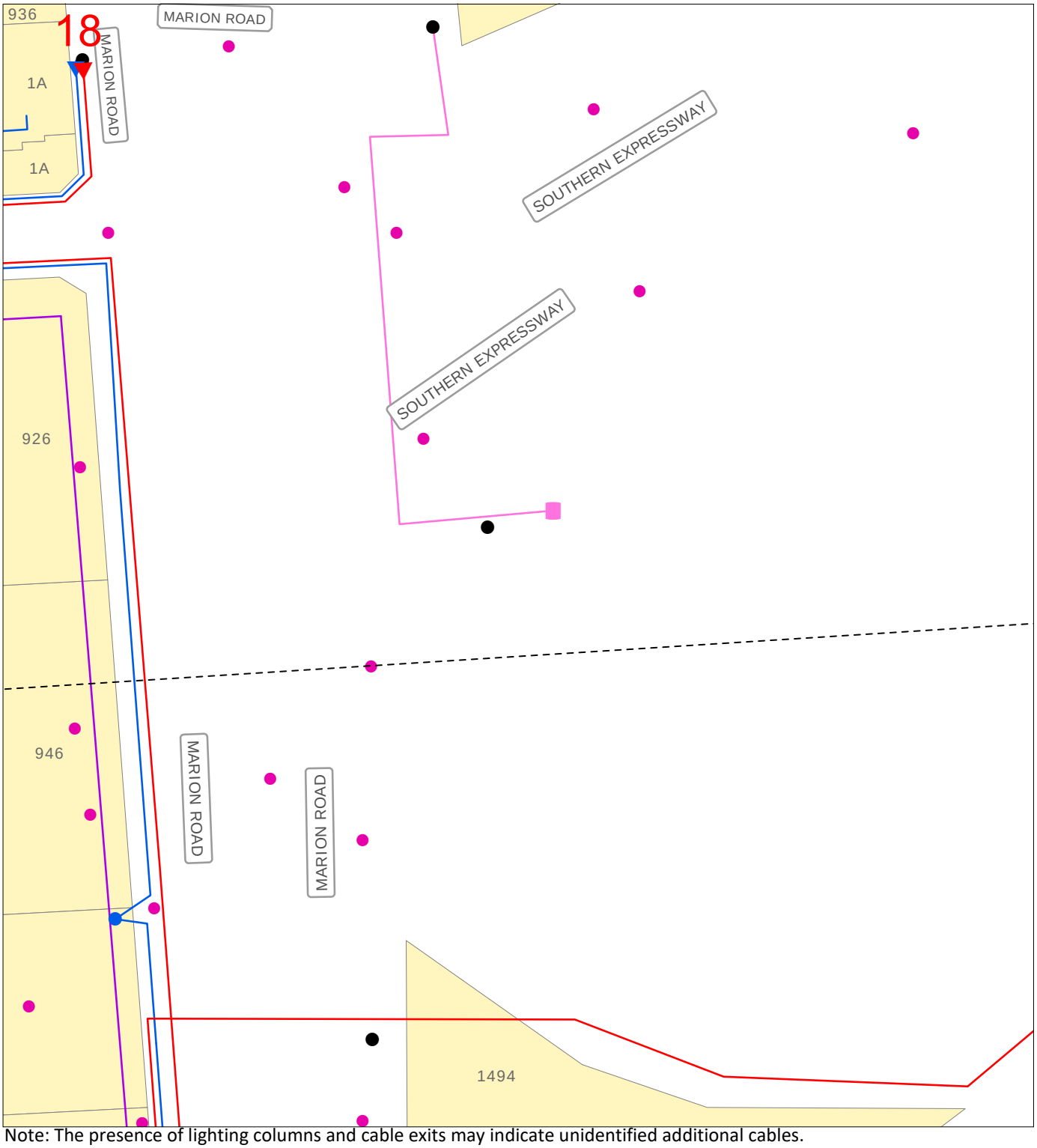
Date: 04/06/2021

SA Power Networks

Map 18

Sequence No: 110505521

Marion Road Bedford Park



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	Fibre Optic Cable/Duct
33kV	33kV	HV Switching Cubicle	Fibre Manhole/Pit
19kV	19kV	Transformer Cubicle	Pilot Cable
11kV	11kV	Cable Joint Bay	Pilot Manhole/Pit
7.6kV	7.6kV	LV Switching Cubicle/Pit	Substation
Not In Service	Not In Service	Service Pit/Pillar	Electricity Pole
Low Voltage	Low Voltage	Earthing Grid	Light Column

N

0 0.009km

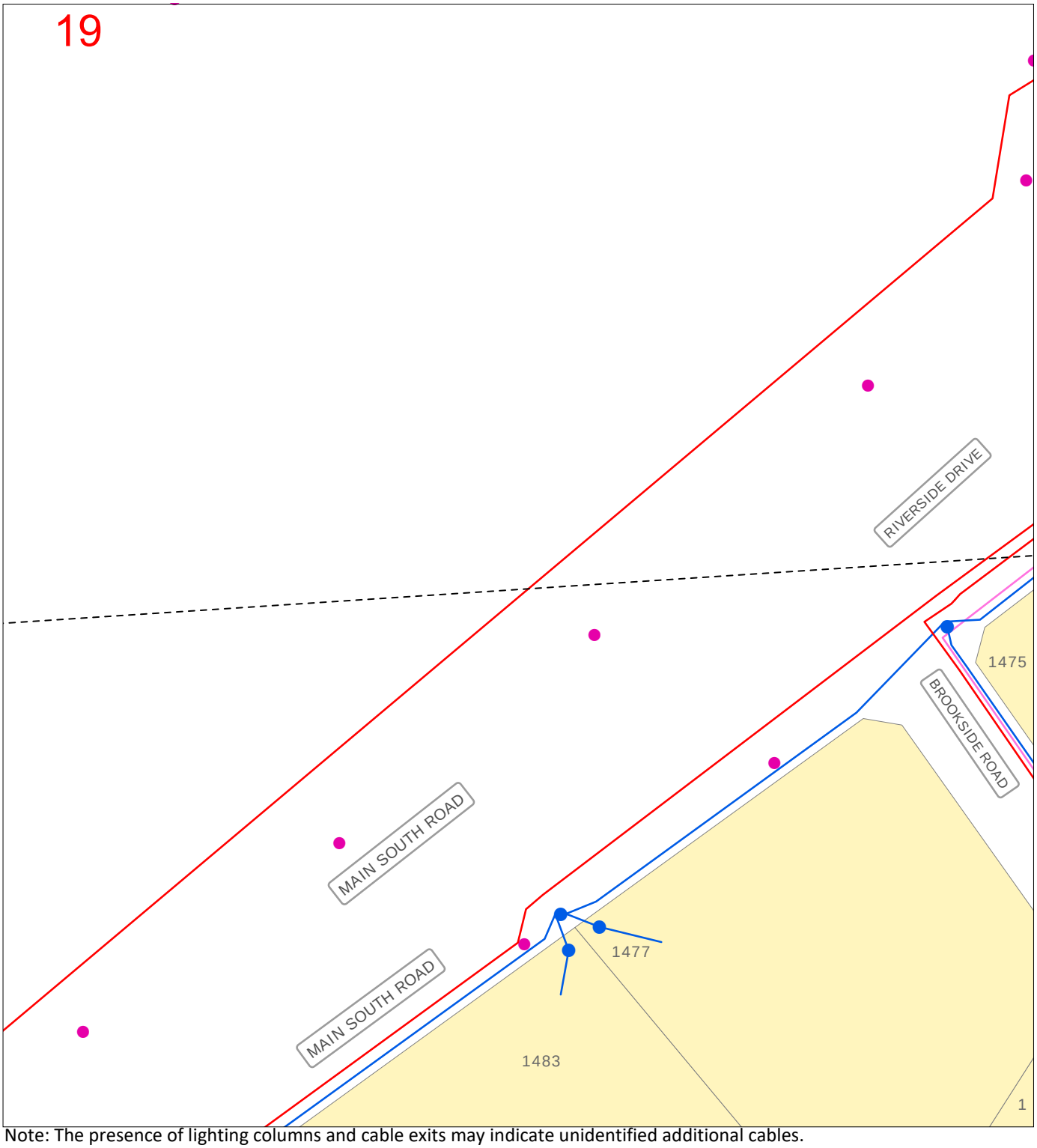
Date: 04/06/2021

SA Power Networks

Map 19

Sequence No: 110505521

Marion Road Bedford Park



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	Fibre Optic Cable/Duct
33kV	33kV	HV Switching Cubicle	Fibre Manhole/Pit
19kV	19kV	Transformer Cubicle	Pilot Cable
11kV	11kV	Cable Joint Bay	Pilot Manhole/Pit
7.6kV	7.6kV	LV Switching Cubicle/Pit	Substation
Not In Service	Not In Service	Service Pit/Pillar	Electricity Pole
Low Voltage	Low Voltage	Earthing Grid	Light Column

N

0 0.009km

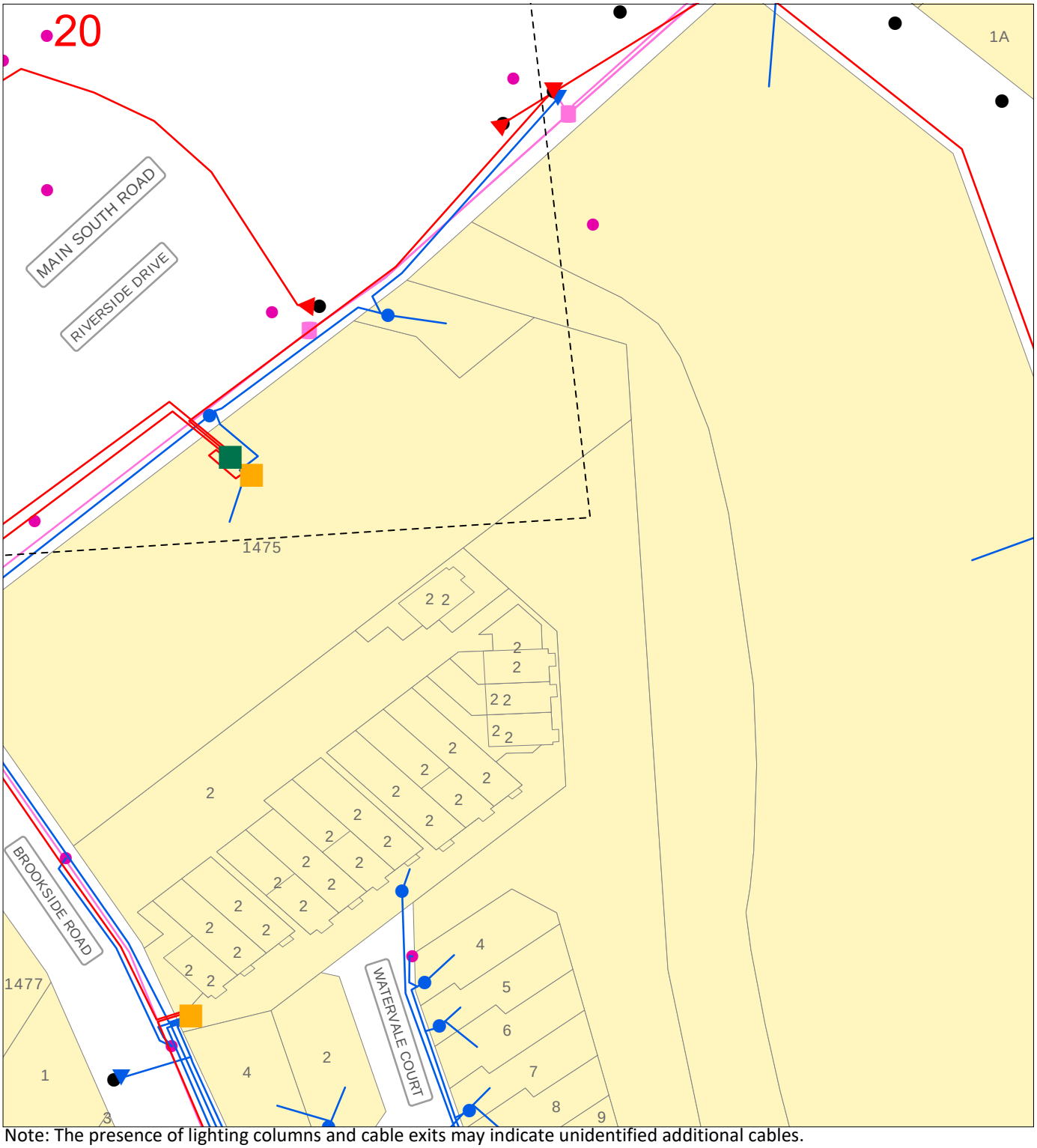
Date: 04/06/2021

SA Power Networks

Map 20

Sequence No: 110505521

Marion Road Bedford Park



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	Fibre Optic Cable/Duct
33kV	33kV	HV Switching Cubicle	Fibre Manhole/Pit
19kV	19kV	Transformer Cubicle	Pilot Cable
11kV	11kV	Cable Joint Bay	Pilot Manhole/Pit
7.6kV	7.6kV	LV Switching Cubicle/Pit	Substation
Not In Service	Not In Service	Service Pit/Pillar	Electricity Pole
Low Voltage	Low Voltage	Earthing Grid	Light Column

N

0 0.009km

Powered by dbyd

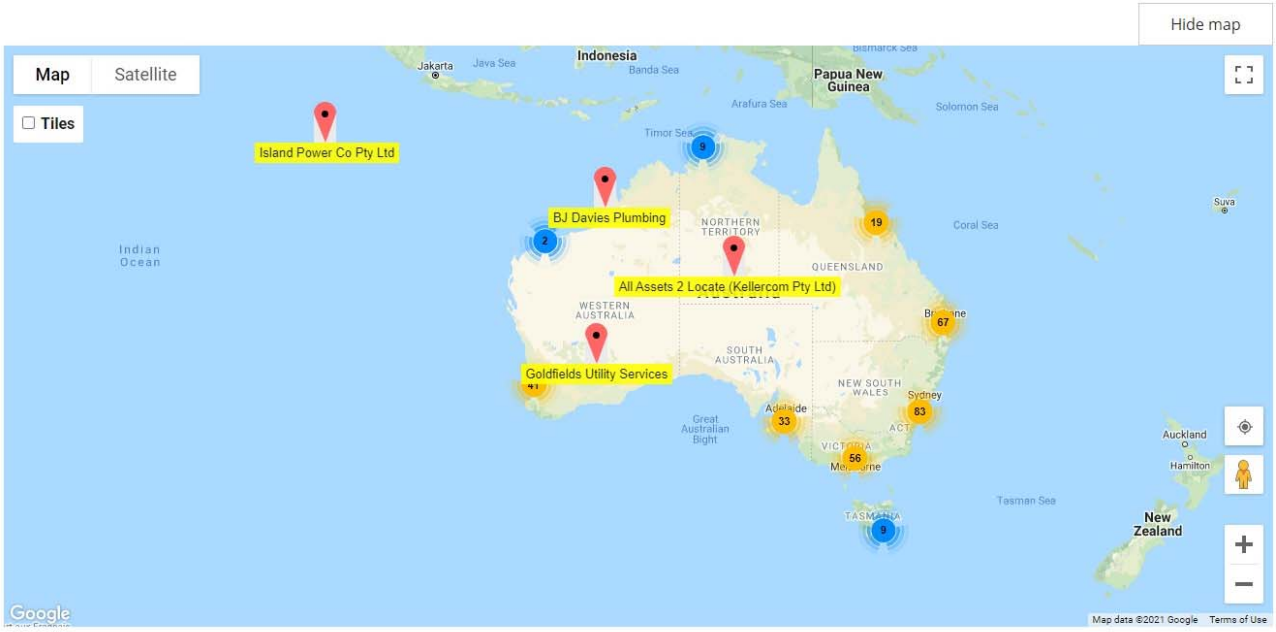
Search for the closest Certified Locating Organisation (CLO) to your work-site at the following website: https://dbydlocator.com/certified-locating-organisation/ Read the terms of use - Click accept.

A national map and an A-Z list of all Certified Locating Organisations is now available.

Use the map to zoom to your work area and then choose the closest Locator indicated.
OR SEARCH BY POSTCODE OF YOUR WORK AREA

1. Enter the postcode
2. Choose your search radius
3. Click Filter

   If there is no result, you may have to increase the search radius



Chose the closest Locator indicated OR scroll down to see all search results.

Telstra is aware of each Certified Locating Organisation **and** their employee locators.

Locator skills have been tested, and the Organisation has calibrated location and safety equipment.

Each Certified Locator working for a CLO is issued with a photo ID Card, authorising them to access Telstra pits and manholes for the purpose of cable and plant locations.

Please ask to see your Locators' CLO ID Card.

DUTY OF CARE

IT'S HOW WE CONNECT

TELSTRA CORPORATION ACN 051 775 556

IMPORTANT:

When working in the vicinity of telecommunications plant you have a "Duty of Care" that must be observed. Please read and understand all the information and disclaimers provided below.

Telstra network is complex and requires expert knowledge to interpret information, to identify and locate components, to pothole underground assets for validation and to safely work around assets without causing damage. If you are not an expert and/or qualified in these areas, then you must not attempt these activities. Telstra will seek compensation for damages caused to its property and losses caused to Telstra and its customers. The 5 P's to prevent damage to Telstra assets are listed below. Construction activities and/or any activities that potentially may impact on Telstra's assets must not commence without first undertaking these steps. Construction activities can include anything that involves breaking ground, potentially affecting Telstra assets.

If you are designing a project it is recommended that you also undertake these steps to validate underground assets prior to committing to your design.

All damages to Telstra Network must be reported immediately

- Call **13 22 03** Say "Damages" at the voice prompt, then press 1 to speak to an Operator
- Or report online https://service.telstra.com.au/customer/general/forms/report-damage-to-telstra-equipment

(The following pages contain more detail on each step below and the contact details to seek further advice. AS5488-2013 is the Australian Standard for the Classification of Subsurface Utility Information.)

1 PLAN:

The essential first step in preventing damage -
You must have current Telstra plans via the DBYD process. Telstra advises that the accuracy of the information provided by Telstra conforms to Quality Level D as defined in AS5488-2013. This means the information is indicative only, not a precise location. **The actual location may differ substantially from that shown on the plans** - refer to steps 2 & 3 to determine actual location prior to proceeding with construction.

2 PREPARE:

The essential second step in preventing damage -
Engage a Telstra Accredited Plant Locator. To be able to trace and identify individual subsurface cables and ducts requires access to Telstra pits and manholes. Only a Telstra Accredited Plant Locator (TAPL) is authorised to access Telstra network for locating purposes. A TAPL can interpret plans, validate visible assets and access pits and manholes to undertake electronic detection of underground assets prior to further validation. All Telstra assets must be located, validated and protected prior to commencing construction. If you are not authorised to do so by Telstra, you must not access Telstra network or locate Telstra network. All Telstra Accredited Plant Locators are required to have DBYD Locator Certification.

3 POTHOLE:

The essential third step in preventing damage -
All Telstra assets must be positively identified (i.e. validated), by physically sighting them. For underground assets this can be done by potholing by hand or using non-destructive vacuum extraction methods (Refer to 'validation' as defined in AS5488-2013 QL-A). **Underground assets located by electronic detection alone (step 2), are not deemed to be 'validated' and must not be used for construction purposes.** Some TAPL's can assist with non-destructive potholing for validation purposes. **If you cannot validate the Telstra network, you must not proceed with construction**. Telstra will seek compensation for damages caused to its property and losses caused to Telstra and its customers.

4 PROTECT:

The essential fourth step in preventing damage -
Telstra assets must be protected to avoid damage from construction activities. Minimum working distances around Telstra network must be maintained. These distances are provided in this document. Telstra can also provide advice and assistance in regards to protection – refer to the following pages.

5 PROCEED:

Only proceed when the above steps have been completed.

STEP 1 - PLAN
Dial Before You Dig / Telstra Plans

The actual location of Telstra assets may differ substantially from that shown on the plans. Telstra does not warrant or hold out that its plans are accurate and accepts no responsibility for the accuracy shown on the plans. Steps 2 and 3 must also be undertaken to determine actual location of network.

- Telstra DBYD plans are not suitable for displaying Telstra network within a Telstra exchange site. For advice on Telstra network within a Telstra exchange site contact Telstra Plan Service on 1800 653 935.
- Telstra owns and retains the copyright in all plans and details provided in conjunction with the applicant's request. The applicant is authorised to use the plans and details only for the purpose indicated in the applicant's request. The applicant must not use the plans or details for any other purpose.
- Telstra plans or other details are provided only for the use of the applicant, its servants, agents or Telstra Accredited Plant Locators. The applicant must not give the plans or details to any parties other than these, and must not generate profit from commercialising the plans or details.
- Please contact Telstra Plan Services immediately should you locate Telstra assets not indicated on these plans.
- Telstra, its servants or agents shall not be liable for any loss or damage caused or occasioned by the use of plans and or details so supplied to the applicant, its servants and agents, and the applicant agrees to indemnify Telstra against any claim or demand for any such loss or damage.
- Please ensure Telstra plans and information provided remains on-site at all times throughout the inspection, location and construction phase of any works.
- Telstra plans are valid for 60 days after issue and must be replaced if required after the 60 days.
- **Emergency situations - receiving Telstra plans** Telstra's automated mapping system (TAMS) will provide a fast response for emergency situations (faster than an operator can provide manually via a phone call - see below for fast response requirements). Automated responses are normally available 24/7.

  To receive a fast automated response from Telstra your request must **-**

  - Be a web request lodged at DBYD (**www.1100.com.au**). The request will be then forwarded to Telstra.
  - Contain your current email address so you can receive the automated email response.
  - Be for the purposes of 'mechanical excavation' or other ground breaking DBYD activity. (Requests with activity types such as conveyancing, planning & design or other non-digging activities may not be responded to until the next business day).
  - Be for an area less than 350 metres in size to obtain a PDF map (over 350 metres will default to DWF due to size) this does not include congested CBD areas where only DWF may be supplied.
  - Be for an area less than 2500 metres in size to obtain a DWF map (CBD's less)

- **Data Extraction Fees.** In some instances a data extraction fee may be applicable for the supply of Telstra information. Typically a data extraction fee may apply to large projects, planning and design requests or requests to be supplied in non-standard formats. For further details contact Telstra Plan Services.

- **Electronic plans - PDF and DWF maps** If you have received Telstra maps via email you will have received the maps as either a PDF file (for smaller areas) or DWF file (for larger area requests). All requests over approximately *350m or in congested CBD areas can only be supplied in DWF format. There are size limits on what can be provided. (* actual size depends on geographic location of requested area). If you are unable to launch any one of the softcopy files for viewing and printing, you may need to download and install one or more of the free viewing and printing products such as Adobe Acrobat Reader (for PDF files) or Autodesk Design Review (for DWF files) available from the internet

- **Pdf files -** PDF is the default softcopy format for all requests for areas up to approx *350m in length. (*depends on geographic location of request). The PDF file is nominally formatted to A3 portrait sheet however it can be printed on any size sheet that your printer supports, e.g. either as the full sheet or selected areas to suit needs and legibility. (to print a selected area zoom up and print 'current view') If there are multiple layers of Telstra network you may receive up to 2 sheets in the single PDF file attachment supplied. There are three types or layers of network normally recorded - local network, mains cables or a combined layer of local and mains (usually displayed for rural or semi-rural areas). If mains cable network is present in addition to local cables (i.e. as separate layer in a particular area), the mains will be shown on a separate sheet. The mains cable information should be read in conjunction with the local cable information.

- **DWF files** – DWF is the default softcopy format for all requests for areas that are over 350m in length. Maximum length for a DWF automated response is approx 2500m - depending on geographic location of request (manually-processed plans may provide larger coverage). The DWF files differ from PDF in that DWF are vector files made up of layers that can be turned on or off and are not formatted to a specific sheet size. This makes them ideal for larger areas and for transmitting electronically.
  - ***How to view Telstra DWF files –***
    Telstra DWF files come with all layers turned on. You may need to turn individual layers on or off for viewing and printing clarity. Individual layer names are CC (main cable/conduit), DA (distribution area network) and sometimes a combined layer - CAC. Layer details can be viewed by either picking off the side menu or by selecting 'window' then 'layers' off the top menu bar. Use 'layers' to turn individual layers off or on (double click or right click on layer icon).
  - ***How to print Telstra DWF files –***
    DWF files can be printed on any size sheet – either their entirety or by selected areas of interest. Some DWF coverage areas are large and are not suited to printing legibly on a single A4 sheet - you may need several prints if you only have an A4 printer. Alternatively, an A3, A1 or larger printer could be used. To print, zoom in or out and then, by changing the 'print range' settings, you can print what is displayed on your screen to suit your paper size. If you only have a small printer, e.g. A4, you may need to zoom until the text is legible for printing (which is why you may need several prints). To print what is displayed on your screen the 'view' setting should be changed from 'full page' to 'current view'. The 'current sheet' setting should also be selected. You may need to print layers separately for clarity and legibility. (Details above on how to turn layers on or off)
  - ***How to change the background colour from white to black (when viewing) Telstra DWF files –***
    If using Autodesk Design Review the background colour can be changed by selecting 'Tools' then 'options' then 'sheet'. Tick the box 'override published paper colours' and select the colour required using the tab provided.

STEP 2 – PREPARE
Telstra Accredited Plant Locator (TAPL):

Utilising a TAPL is an essential part of the process to identify network and to trace subsurface network prior to validating. A TAPL can provide plan interpretation, identification and electronic detection. This will assist in determining the position of subsurface assets prior to potholing (validating). Some TAPL's can also assist in validating underground detected network. Electronic detection is only an indication of the existence of underground network and can be subject to interference from other services and local conditions. Electronic detection must not be used solely to determine location for construction purposes. The electronic (indicative) subsurface measurements must be proven by physically sighting the asset (see step 3 – Pothole).

- All TAPL's locating Telstra network must be able to produce a current photo ID card issued by Telstra. A list of TAPL's is provided with the Telstra Dial Before You Dig plans.
- All TAPL's in addition to the Telstra photo ID card must also have current DBYD Locator Certification with ID card.

- Telstra does not permit external parties (non-Telstra) to access or conduct work on Telstra network. Only Telstra staff, Telstra contractors or locators whom are correctly accredited are authorised to work on or access Telstra manholes, pits, ducts, cables etc. This is for safety as well as for legal reasons.
- The details of any contract, agreement or retainer for site assistance to locate telecommunications plant shall be for you to decide and agree with the Telstra Accredited Plant Locator engaged. Telstra is not a party to any contract entered into between you and a Telstra Accredited Plant Locator.
- Payment for the site assistance will be your responsibility and payment details must be agreed before the engagement is confirmed.
- Telstra does not accept any liability or responsibility for the performance of or advice given by a Telstra Accredited Plant Locator. Accreditation is an initiative taken by Telstra towards the establishment and maintenance of competency standards. However, performance and the advice given will always depend on the nature of the individual engagement.
- Neither the Telstra Accredited Plant Locator nor any of its employees are an employee or agent for Telstra. Telstra is not liable for any damage or loss caused by the Telstra Accredited Plant Locator or its employees.

- **Electronically derived subsurface measurements (e.g. depths/alignments by locating devices)**

All locator provided measurements for Telstra assets must have the AS5488-2013 quality level specified - (e.g. QL-A, B, C or D). These quality levels define the accuracy of subsurface information and are critical for determining how the information is later used – for example if suitable for excavation purposes.

1) ***An example of a subsurface measurement with no quality level specified – (i.e. not to be used)***

Telstra cover - **0.9m**

*The measurement above has no AS5488-2013 quality level specified and **must not** be provided by a locator or used for design or construction. This is because it is not known whether the measurement is actual or derived (where 'actual' means validated and 'derived' means assumed and not validated, e.g. electronic or other). Typically damages occur by constructors incorrectly using unvalidated measurements as actual measurements.*

2) ***An example of a subsurface measurement with quality level B specified –***

Telstra cover - **0.9m** (QL-B)

Where (QL-B) complies with AS5488-2013 QL-B (for example an electronic location that complies with QL-B)

(Note QL-B means it has not been validated and must not be used for construction purposes around Telstra network, however it would assist further investigation to determine the actual location)

3) ***An example of a subsurface measurement with the quality level A specified –***

Telstra cover - **0.6m** (QL-A)

Where (QL-A) complies with AS5488-2013 QL-A (and is deemed suitable for excavation purposes). *In this example the asset has been electronically located first, (QL-B) and then physically exposed (QL-A).*

Note -Telstra will seek compensation for damages caused to it its property and losses caused to Telstra and its customers if unvalidated subsurface measurements are used for construction and subsequently result in damage to Telstra assets. Only measurements conforming to AS5488-2013 (QL-A) are deemed by Telstra to be validated measurements.

- **Rural landowners - Rural Locations Subsidy Scheme** Where Telstra-owned cable crosses agricultural land, Telstra may provide on-site assistance with cable location. **You must contact Telstra Plan Services to determine eligibility and to request the service**.

Please note the following –

- If eligible, the location assistance must be approved and organised by Telstra. Telstra will not pay for a location that has not been approved and facilitated by Telstra (Telstra is not responsible for payment assistance when a customer engages a locator directly).
- Telstra will only "subsidise" the location up to $330 (Incl. GST). This will cover one hour on-site location only, private lead-in locations are for lead-ins 100m or longer. Any time required in addition to Telstra-funded time can be purchased directly from the assigned Telstra Accredited Plant Locator.
- This service does NOT include the use Mechanical Aids or Hydro Excavation (Vac Trucks) to locate and should be discussed between the Accredited Plant Locator and the private rural landowner
- The exact location, including depth of cables, must be validated by potholing, which may not be covered by this service.

- This service is nominally only available to assist private rural land owners.
- This service nominally covers one hour on-site only, private lead-in locations are for lead-ins 100m or longer. Any time required in addition to Telstra-funded time can be purchased directly from the assigned Telstra Accredited Plant Locator.
- This service does not apply to previously located network at the same location (i.e. it is a once off).
- This service does not apply to other carriers' cables (marked as 'OC' on Telstra plans).

STEP 3 – POTHOLE

Validation as defined in AS5488-2013 (QL-A).

After utilising a Telstra Accredited Plant Locator and prior to commencing construction, any electronically detected underground network must be positively identified (validated) by physically sighting it. This can be done by careful hand digging or using non-destructive water jet methods to expose the network.

Manual potholing needs to be undertaken with extreme care and by employing techniques least likely to damage cables. For example, align shovel blades and trowels parallel to the cable rather than digging across the cable. Some Telstra Accredited Plant Locators are able to provide or assist with non-destructive potholing methods to enable validation of underground cables and ducts.

If you cannot validate the underground network then you must not proceed with construction. Telstra will seek compensation for damages caused to its property and losses caused to Telstra and its customers.

Important note: *The construction of Telstra's network dates back over many years. Some of Telstra's pits and ducts were manufactured from asbestos-containing cement. You must take care in conducting any works in the vicinity of Telstra's pits and ducts. You must refrain from in any way disturbing or damaging Telstra's network infrastructure when conducting your works. We recommend that before you conduct any works in the vicinity of Telstra infrastructure that you ensure your processes and procedures eliminate any possibility of disturbing, damaging or interfering in any way with Telstra's infrastructure. Your processes and procedures should incorporate appropriate measures having regard to the nature of this risk. For further information -*

https://www.telstra.com.au/consumer-advice/digging-construction/relocating-network-assets

STEP 4 – Protect:

You must maintain the following minimum clearance distances between construction activity and the validated position of Telstra plant.

Jackhammers/Pneumatic Breakers	*Not within 1.0m of **actual validated location.***
Vibrating Plate or Wacker Packer Compactor	*Not within 0.5m of **actual validated location** of Telstra ducts.* *300mm compact clearance cover before compactor can be used across Telstra ducts.*
Boring Equipment (in-line, horizontal and vertical)	*Not within 2.0m of **actual validated location**.* *Constructor to hand dig or use non-destructive water jet method (pothole) and expose plant.*
Heavy Vehicle Traffic (over 3 tonnes)	*Not to be driven across Telstra ducts (or plant) with less than 600mm cover.* *Constructor to check actual depth via hand digging.*
Mechanical Excavators, Farm ploughing and Tree Removal	*Not within 1.0m of **actual validated location.*** *Constructor to hand dig or use non-destructive water jet method (pot-hole) and expose plant.*

- For blasting or controlled fire burning please contact Telstra Plan Services.
- If conducting roadworks all existing Telstra pits and manholes must be a minimum of 1.2m in from the back of kerb after the completion of your work.
- After the completion of any ground work in footways or roadway whereby the existing levels are being changed the depth of cover of the existing Telstra asset at the completion of work must not be less than the existing level before work commenced.

  Regardless of whether the surface is being raised or lowered, any work impacting the depth of cover of Telstra underground assets should not commence before consultation with Telstra Network Integrity representatives, to discuss the possibility of '*protection*' or relocation (including lowering of the asset)".
- For clearance distances relating to Telstra pillars, cabinets and RIMs/RCMs please contact Telstra Plan Services.
- If Telstra plant is situated wholly or partly where you plan to work (i.e. in conflict, where a pit or manhole would be in a driveway or other vehicle thoroughfare), then Telstra's Network Integrity Group must be contacted to discuss possible engineering solutions to protect Telstra assets.
  Please phone **1800 810 443** or email NetworkIntegrity@team.telstra.com
- You are not permitted to relocate or alter or repair any Telstra assets or network under any circumstances.

  It is a criminal offence under the *Criminal Code Act 1995* (Cth) to tamper or interfere with communication facilities owned by a carrier. Heavy penalties may apply for breach of this prohibition, and any damages suffered, or costs incurred by Telstra as a result of any such unauthorised works may be claimed against you.

  Only Telstra and its contractors may access and conduct works on Telstra's network (including its plant and assets). This requirement is to ensure that Telstra can protect the integrity of its network, avoid disruption to services and ensure that the relocation meets Telstra's requirements.
- If Telstra relocation or protection works are part of the agreed solution, then payment to Telstra for the cost of this work shall be the responsibility of the principal developer, constructor or person for whom the work is performed. The principal developer or constructor will be required to provide Telstra with the details of their proposed work showing how Telstra's plant is to be accommodated and these details must be approved by the Regional Network Integrity Manager prior to the commencement of site works.
  Please phone 1800 810 443 or email NetworkIntegrity@team.telstra.com
  Further information -
  https://www.telstra.com.au/consumer-advice/digging-construction/relocating-network-assets

  Damage to Telstra's network must be reported immediately –
  132 203 Say "Damages" at the voice prompt, then press 1 to speak to an Operator

  Or report online:
  https://service.telstra.com.au/customer/general/forms/report-damage-to-telstra-equipment
- You will be held responsible for all plant damage that occurs or any impacts to Telstra's network as a result of your construction activities. This includes interfering with plant, conducting unauthorised modification works and interfering with Telstra's assets in a way that prevents Telstra from accessing or using its assets in the future.
- Telstra reserves all rights to recover compensation for loss or damage to its cable network or other property including consequential losses.

FURTHER INFORMATION - CONTACTS

NATURAL DISASTERS

Natural Disasters include (amongst other things) earthquakes, cyclones, floods and tsunamis.
In the case of such events, urgent requests for plans or information relating to the location of Telstra network can be made directly to Telstra Network Integrity Team Managers as follows:

NSW –	John McInerney	0419 485 795
NT/WA/QLD –	Glenn Swift	0419 660 147
SA/VIC/TAS -	David Povazan	0417 300 947

TELSTRA PLAN SERVICES - for all Telstra Dial Before You Dig related enquiries

Email - Telstra.Plans@team.telstra.com

Phone - 1800 653 935 (general enquiries, business hours only)

Accredited plant locator enquiries -	Glen	(07)34551011
Telstra easements -	Glen	(07)34551011

**Please note - to make a Telstra plan enquiry the plans must be current (within 60 days of issue). If your plans have expired you will need to submit a new request via DBYD prior to contacting Telstra Plan Services.*

Information for new developments (developers, builders, home owners)
Telstra Smart Communities - https://www.telstra.com.au/smart-community

Asset relocations
Please phone 1800 810 443 or email NetworkIntegrity@team.telstra.com

https://www.telstra.com.au/consumer-advice/digging-construction/relocating-network-assets

Telstra offers free Cable Awareness Presentations, if you believe you or your company would benefit from this offer please contact Network Integrity on 1800 810 443 or NetworkIntegrity@team.telstra.com

PRIVACY NOTE

Your information has been provided to Telstra by DBYD to enable Telstra to respond to your DBYD request. Telstra keeps your information in accordance with its privacy statement entitled "Protecting Your Privacy" which can be obtained from Telstra either by calling 1800 039 059 or visiting our website at www.telstra.com.au/privacy

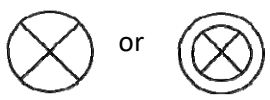
LEGEND

IT'S HOW WE CONNECT

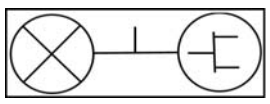
For more info contact a Certified Location Organisation or Telstra Plan Services 1800 653 935

Exchange
(Major Cable Present)

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



Pillar / Cabinet
(above ground / free standing)



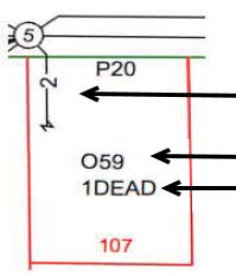
Above ground complex equipment housing (eg RIM)
Please Note: This equipment is powered by 240V Electricity

OC — Other Carrier

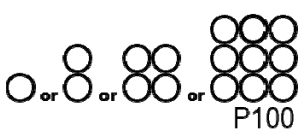
Dist — Distribution cables in Main Cable ducts

MC — Main Cable ducts on a Distribution plan

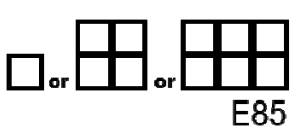
▲ — Blocked or damaged duct.



2 pair lead-in to property from pit in street
1 pair working (pair ID 059)
1 pair dead (i.e. spare, not connected)



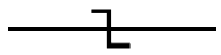
Single to multiple round conduit
Configurations 1,2,4,9 respectively
(attached text denotes conduit typr and size)



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

Cable Jointing Pit
(number indicating Pit Type)

Elevated Joint
(above ground joint on buried cable)

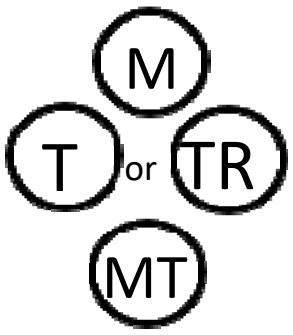


Telstra Plant in shared Utility trench

Aerial Cable

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

Direct Buried Cable



Marker Post Installed

Buried Transponder

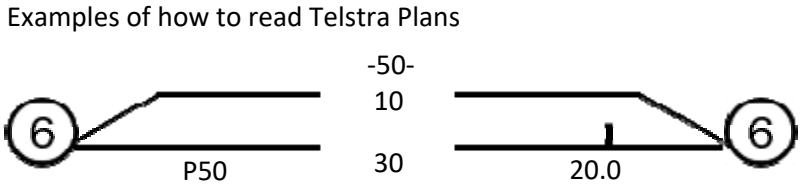
Marker Post, Transponder

Optical Fibre cable direct buried

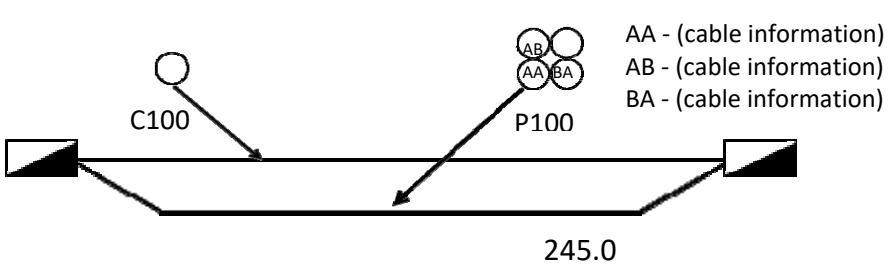
Some examples of conduit type and size:

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

Some Examples of how to read Telstra Plans



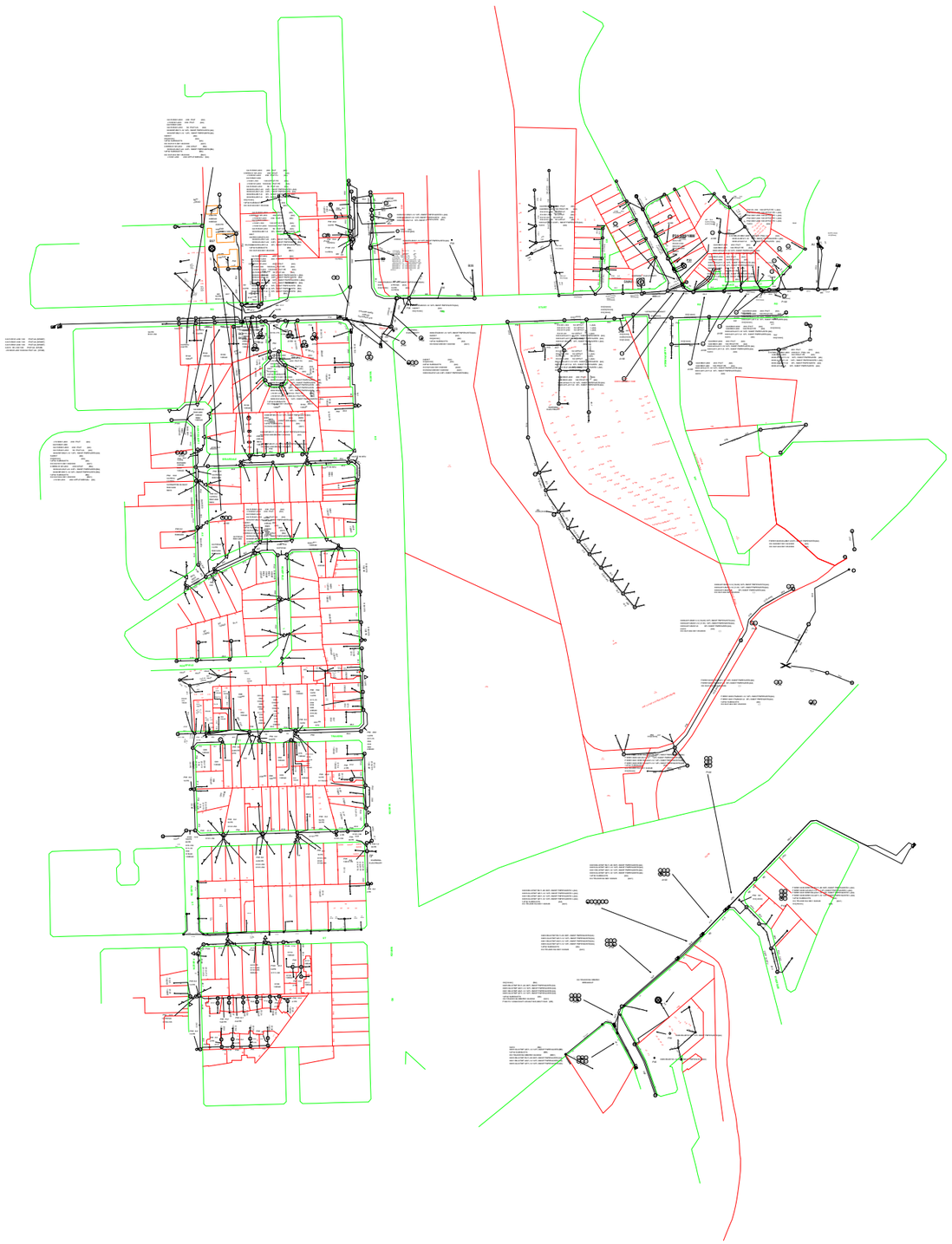
One 50mm PVC conduit (P50) containing a 50-pair and a 10-pair cable between two 6-pits. 20.0m apart, with a direct buried 30-pair cable along the same route



AA - (cable information)
AB - (cable information)
BA - (cable information)

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

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



Appendix C – City of Marion Correspondence

Georgia Wallage

From: Con Theodoroulakes <Con.Theodoroulakes@marion.sa.gov.au>
Sent: Friday, 11 June 2021 2:31 PM
To: Georgia Wallage
Subject: FW: 21.2736 Request for Preliminary Servicing Advice – Lot 707 Marion Road, Bedford Park – COMMERCIAL IN CONFIDENCE
Attachments: Lot 707 draft S of Requirements.docx

Hi Georgia,
Our Technical staff have some significant concerns and suggest that we meet on-site to discuss further.
Cheers
Con

Con Theodoroulakes
Development Engineer|City of Marion
M:+61 434 315 946
E:Con.Theodoroulakes@marion.sa.gov.au|**W:**www.marion.sa.gov.au
PO Box 21 Oaklands Park SA 5046
935 Marion RdMitchell ParkSA5043

We acknowledge we are part of Kaurna land and recognise the Kaurna people as the traditional and continuing custodians of the land.

Follow us on Facebook - Follow City of Marion on Facebook for the latest news, events and announcements.

E-talk newsletter - Subscribe to our email newsletter to receive regular news and updates straight to your inbox.

From: Glynn Ricketts
Sent: Friday, 11 June 2021 12:30 PM
To: Alex Dorn ; Con Theodoroulakes
Subject: RE: 21.2736 Request for Preliminary Servicing Advice – Lot 707 Marion Road, Bedford Park – COMMERCIAL IN CONFIDENCE

Wow

They need to meet us on site ASAP
I did a draft SoR for ILC a year or so ago
Some of the land is on a flood plain

They also need a wider buffer zone and no flow direct into the River at all

Cheers Glynn

Glynn Ricketts
Water Resources Coordinator|City of Marion
F:08 8375 6699|**M:**+61 478 487 473
E:Glynn.Ricketts@marion.sa.gov.au|**W:**www.marion.sa.gov.au

PO Box 21 Oaklands Park SA 5046
935 Marion RdMitchell ParkSA5043

From: Alex Dorn <Alex.Dorn@marion.sa.gov.au>
Sent: Friday, 11 June 2021 11:08 AM
To: Con Theodoroulakes <Con.Theodoroulakes@marion.sa.gov.au>
Cc: Glynn Ricketts <Glynn.Ricketts@marion.sa.gov.au>
Subject: RE: 21.2736 Request for Preliminary Servicing Advice – Lot 707 Marion Road, Bedford Park – COMMERCIAL IN CONFIDENCE

I think you will know what my concerns will be.

The stormwater pipe on the eastern side of Marion Road I believe belongs to DIT, as it only serves their road and nothing else.
If too much water is directed into this pipe, it will affect THEIR road.
DIT need to be a part of this from a stormwater management perspective if Marion Road and its infrastructure are planned to be used for this purpose.

If the stormwater is directed to the river, then there will need to be a lot of magic performed on the site prior to discharge.

Cheers
Alex

Alex Dorn
Coordinator - Survey & Design|City of Marion
T:08 7420 6401|F:08 8375 6699|M:+61 402 145 412
E:Alex.Dorn@marion.sa.gov.au|W:www.marion.sa.gov.au

PO Box 21 Oaklands Park SA 5046
935 Marion RdMitchell ParkSA5043

From: Con Theodoroulakes <Con.Theodoroulakes@marion.sa.gov.au>
Sent: Friday, 11 June 2021 10:49 AM
To: Glynn Ricketts <Glynn.Ricketts@marion.sa.gov.au>; Alex Dorn <Alex.Dorn@marion.sa.gov.au>
Subject: FW: 21.2736 Request for Preliminary Servicing Advice – Lot 707 Marion Road, Bedford Park – COMMERCIAL IN CONFIDENCE

Alex/Glynn,
Any comments or requirements would like to pass on.
Cheers
Con

Con Theodoroulakes
Development Engineer|City of Marion
M:+61 434 315 946
E:Con.Theodoroulakes@marion.sa.gov.au|W:www.marion.sa.gov.au

PO Box 21 Oaklands Park SA 5046
935 Marion RdMitchell ParkSA5043

From: Georgia Wallage <GWallage@greenhillaustralia.com.au>
Sent: Thursday, 10 June 2021 5:23 PM
To: Con Theodoroulakes <Con.Theodoroulakes@marion.sa.gov.au>
Subject: 21.2736 Request for Preliminary Servicing Advice – Lot 707 Marion Road, Bedford Park – COMMERCIAL IN CONFIDENCE

COMMERCIAL IN CONFIDENCE

Hi Con

We have been engaged by Troon Group to undertake a high-level investigation of the preliminary servicing requirements for the proposed development described above.

Refer to the attached layout plan and screenshot of the site area below.

The site is bound by the Warriparinga Wetlands to the north and east, Southern Expressway to the south, and Marion Road to the west, in the suburb of Bedford Park.

The parcel of land is approximately 5.8 hectares and is proposed to develop the land into approximately 40 Community Titled allotments, and various commercial allotments as shown on the attached concept plan.

We request preliminary advice for stormwater and road requirements, and any other information that may be relevant to the site.

If you have any queries, please contact me.

Regards,

Georgia Wallage
Graduate Engineer

GREENHILL
Engineers | Landscape Architects

T 08 8406 1300
E gwallage@greenhillaustralia.com.au

Level 1, 178 Fullarton Road
Dulwich SA 5065
www.greenhillaustralia.com.au

GENERAL MANAGEMENT PROVISIONS LOT 707

1. The Plan of Division is to be redrafted in accordance with Schedule 5 (3) of the Regulations under the Development Act 1993, showing any condition or requirement, which may have been imposed, prior to the issue of section 51 clearance.
2. A Specification and Quality Plan pertaining to design, inspection, testing and survey of all engineering works and open space public realm inclusive of horticulture shall be submitted and approved at the time of design approval. All engineering design and construction shall be in accordance with Australian Standards, Codes of Practice, approved Guidelines and recognised engineering standards, to the satisfaction of Council.
3. A Soil Erosion and Drainage Management Plan (SEDMP) prepared in accordance with the "Stormwater Pollution Prevention Code of Practice for local, State and Federal Government" issued by the EPA, shall be prepared and put in place prior to the commencement of any siteworks and shall include but not be restricted to a temporary construction exit and silt fences. The measures are to prevent material from being washed or otherwise transported from the site. These silt control measures shall be maintained in good working order during construction and be maintained until all disturbed surfaces are sealed, stabilised or suitably revegetated in a manner to prevent erosion. At practical completion a decision will be made by Council with regard to the sections of the silt control measures which need to be retained during the maintenance period to deal with on-going silt generated from the revegetation of the works. At final completion an agreement may be made between Council and Developer to retain some sections of the measures but these will then become the responsibility of Council.
4. If the project is to be staged, temporary turnaround areas and appropriate road and allotment drainage shall be provided to the satisfaction of Council. Temporary barriers shall conform to Australian Standards.
5. Council's standard details for road and drainage infrastructure shall be incorporated within the works wherever appropriate.
6. Discharge of Stormwater shall occur generally in accordance with the Approved Stormwater Management Plan submitted in support of the application, which includes but is not limited to preliminary investigations and design, overflow route, road network and road crossfall, and agreements with adjacent landowners.
7. Council's relevant policies and guidelines are to be referenced in the design development of Streetscapes and Open Space development.

STORMWATER DESIGN

8. The Stormwater system shall incorporate WSUD principles and be designed in accordance with the **"Technical Manual for Water-Sensitive Urban Design in Greater Adelaide"**.
9. The first flush 15mm of rainfall on all impervious surfaces is to be retained on site or within the development to limit additional stormwater volume discharges, unless off-set scheme arrangements can be agreed with Council.
10. Site retention facilities will be required for water conservation, details to be included in the required Stormwater Management Plan
11. Stormwater is not to be discharged into existing watercourses, to prevent erosion of the watercourse, additional flood risk and adverse impact to riparian vegetation. Preference is to discharge, treated stormwater, via WSUD systems, with required post/pre-development flow regimes, into existing stormwater drainage systems along Marion Road, subject to capacity modelling.
12. All Council owned underground drainage in land not owned by Council is required in easements. Where the drain services one allotment only, the easement is to be in

the name of the allotment it services. In other cases, the easements shall be in the name of Council and shall be a minimum of 3 metres wide with a minimum of 1.0 metre clearance from the edge of the pipe to the easement boundary, and at no cost to the Council.

13. Rear of allotment underground drainage is required where driveways, paved areas and houses will not drain to the street. Rear of allotment drainage is to accommodate a 5-year average recurrence interval storm from the potential impervious areas of the allotment. Minimum pipe size for rear of allotment drainage shall be 225mm diameter sewer class or as approved.
14. All culverts, underground drains and inlets necessary for the proposed road in accordance with recognised engineering design practice must be constructed to Council standards and to the satisfaction of the City of Marion.
15. Provide and construct the necessary drains, in accordance with recognised engineering practice for the safe and efficient drainage of the land, including the development of a stormwater management system where the drainage calculations and design shall ensure:
    - The design accommodates runoff from the fully developed upstream catchment
    - All properties are protected from a 100-year average recurrence interval storm, incorporating a minimum 150mm freeboard. Secondary protection drainage flow path shall be provided allowing a surcharge due to 50% blockage of the primary piped system. Flows are to be contained within road reserve boundaries. The product of flow velocity and depth is not to exceed 0.4.
    - Post development flows shall not exceed pre development flows for all events up to a 100 year ARI event in line with the stormwater report.
    - Proposed and existing dwelling finished floor levels demonstrate that they are a minimum of 0.5m above the 100 average recurrence interval flood level for watercourses to avoid building flooding.
    - Existing fences and structures are modified as needed to minimise the obstruction of water flow in watercourses, open drains and flow paths.
    - Prevents scour of downstream properties and will not inundate downstream allotments
    - Maintains existing open drainage lines and protects them from scour for the 1 in 100 year flow.
    - Local underground drainage accommodates a minimum of the flows resulting in a 5-year average recurrence interval storm with the hydraulic grade line being no closer than 150mm from pit openings.
    - At a sag point the underground drainage accommodates a minimum of flows resulting from a 20 year average recurrence interval storm (ARI), provided there is a defined overland path for the gap flow to flows from a 100-year ARI storm. If there is not a defined overland flowpath then the underground drainage accommodates the flows resulting from a 100-year ARI storm.
    - Stormwater drainage to be accommodated in roadways, walkways and drainage reserves where possible unless otherwise approved by Council (accommodated in allotments within drainage easements).
    - A minimum pipe size of 375mm for all road drainage.
    - Stormwater pipes are to be Reinforced Concrete (RCP) and Rubber Ring Jointed (RRJ) minimum Class 4 under roads and minimum Class 3 elsewhere unless otherwise approved by Council.
    - The minimum pipe grade is 0.5% unless otherwise approved by Council.
    - Roads to be designed as two-way crossfall.
    - Design calculations to be submitted shall include:
      5-year ARI

- A plot of the hydraulic grade line
- A check of flooded widths (< 1.0m at Kerb Ramps)
- A check of flow across junctions

100-year ARI

- A check of the minimum road/bypass flow capacity
- A check of the hydraulic grade line to ensure pits do not surcharge for the underground system

16. Side Entry Pits shall be provided at the upstream tangent points of all junctions and immediately upstream of pedestrian crossing locations. Side Entry Pits shall be double chamber units and shall be constructed with a concrete lintel frame in accordance with Council standard drawings.
17. A system to improve stormwater quality shall be constructed in a location and of a design to the reasonable satisfaction of Council to ensure that pollutants are trapped prior to exiting the site or entering the natural watercourse. The minimum standard of treatment shall be able to remove the following percentages of pollutants from the typical annual urban load:

Suspended solids	80% reduction
Total Phosphorous	60% reduction
Total Nitrogen	45% reduction
Litter	90% reduction

18. Open drains, modified watercourses, detention basins and retention basins shall be designed and constructed so that bed erosion and scour is prevented. They shall have a maximum longitudinal grade of 0.5 percent and be topsoiled and grassed and vegetated with species of local provenance. Erosion management shall be integrated into the design to cover both the permanent and establishment period. Gradients perpendicular to the flow alignment should have a maximum gradient of 20% where banks are to be grassed and planted with appropriate ephemeral and terrestrial species. Safety standards are to be applied to the embankment of permanent water bodies with maximum grades of 12.5% and safety barriers applied where necessary. A safety in design report is to be provided by the designers identifying any risks to public safety and design mitigation.
19. All centrally graded road carriageway to provide a centralised spoon drain engineered to withstand heavy vehicle traffic loads.

POST CONSTRUCTION REQUIREMENTS

20. At Practical and Final Completion the contractor shall remove all accumulated material from the permanent drainage infrastructure. At practical completion the contractor shall arrange for a DVD video survey of all stormwater pipes and make a copy of the DVD video plus associated written report to Council. A further DVD video survey shall be undertaken by the contractor if considered necessary by Council to demonstrate that identified defects in the pipe system have been satisfactorily repaired.
21. “As constructed” drawings (in accordance with Council’s Guidelines) in both paper and Bentley Microstation compatible digital forms, as well as pdf format, shall be provided to Council upon practical completion of works.

ROAD DESIGN

22. Unless otherwise depicted in the Precinct Master Plan and Precinct Implementation Plan, minimum road carriageway widths as measured from inside face of each kerb, shall be as per Council’s Road Hierarchy Plan. Road widths with indented parking bays are to be to the satisfaction of the City of Marion

23. Unless otherwise depicted in the Precinct Master Plan and Precinct Implementation Plan, the road verge on both sides of the carriageway shall be shaped to provide a minimum width of 3.0 metres measured from the face of kerb with a 2.5 percent fall towards the road.
24. Unless otherwise depicted in the Precinct Master Plan and Precinct Implementation Plan, road corner cut-offs shall be provided such that a fully fenced or vegetated boundary will not obstruct sight lines for road users. Road corner cut-offs are to be provided to allotments to achieve a minimum distance of 2.5 metres between the allotment boundary and the face of the kerb.
25. All roads shall be designed and constructed in a manner which allows safe and convenient property access via individual driveways considering horizontal and vertical sight distance and grade. Batter grades to allotments shall not be steeper than 1in 5 unless otherwise approved. Where batter grades and allotment grades are steeper than 1 in 5 or where sight distance is not adequate, a driveway location plan shall be provided demonstrating that safe and convenient property access can be provided. This shall comply with Council's Standard Driveway Drawing.
26. All roads shall be designed in accordance with Austroad Publications "Urban Road Design" handbook and "Guide to Traffic Engineering Practice Part 5 Intersections at Grade" to ensure safe stopping distance based on the most severe case of the following parameters:
    - Intersections and Crests – twice the stopping distance measured between eye heights 1.05 metres above the carriageway
    - Driveways – 1.05 metre eye height to 0.6 metre tail light height
    - Stopping Distance should be based on the estimated 85th percentile vehicle speeds. Note that it may be necessary to undertake substantial earthworks or provide traffic control devices to achieve the minimum requirements.
27. Turning circles in cul-de-sacs are to be not less than 20 metres in diameter and are to be designed to enable a 12.5 metre service vehicle, e.g. Council garbage compactor to undertake a U turn or three point turn. Parking shall be restricted within the cul-de-sac where it may affect the turning manoeuvre.
28. Sections of roads with direct property access shall have a maximum longitudinal grade of 12.5 percent and cul-de-sacs ends a maximum grade of 10 percent unless otherwise approved. Sections of road without direct property access may have a maximum longitudinal grade of 15 percent. Roads shall have a desirable minimum grade of 0.5 percent, with an absolute minimum grade of 0.3 percent.
29. All road bends shall be widened accordingly such that the total road width is increased to facilitate a minimum 12.5 metre service vehicle turning movements without straddling the opposing lane.
30. A minimum of one on-street car parking space shall be available for every two lots, unless varied by an approved Parking Strategy.
31. All road pavements shall be designed and constructed for the ultimate development capability of the land in the vicinity of the development. Design traffic shall allow for a 20 year design life including normal predicted road traffic, future road construction/house construction traffic, and future potential bus routes. Pavement design for local roads shall be based on Austroads Pavement Research Group 21 – "A guide for the design of new pavements for light traffic" and ARRB publication "Sealed Local Roads Manual". Notwithstanding this, a minimum pavement thickness of 335mm incorporating 35mm asphalt seal for local roads or a minimum pavement thickness of 350mm incorporating 50mm asphalt seal for collector roads shall be used, unless the design requires a greater depth.
32. Any filling of within the proposed road reserve is to be supervised and certified by a consulting engineer and shall be controlled structural fill in accordance with A.S. 3798.

33. Before the proposed roads are sealed, the applicant shall satisfy the City of Marion that all connections for water supply and sewerage services to any allotment delineated on the plans which, in the opinion of the SA Water Corporation are necessary and need to be laid under the surface of the proposed roads have been made.
34. All road batters shall be constructed and shall be revegetated and/or stabilised so that risk of soil erosion is minimised to the satisfaction of Council.
35. Adequate street name plates for all streets are to be erected with approved street names to the satisfaction of the City of Marion.
36. All street signs and posts shall be provided and installed by the developer to the requirements of AS 1742 Manual of Uniform Traffic Devices and to the satisfaction of Council.
37. All traffic control devices constructed within the land division that do not conform with the “Manual of legal responsibilities and technical requirements for traffic control device” are to be approved by Department of Planning Transport and Infrastructure.
38. All public spaces are to be designed and constructed in accordance with the principles contained in the “Streets for People Compendium for South Australia”.
39. Councils Streetscape Design guidelines are to be referenced in design development
40. A footpath location plan shall be provided to Council’s satisfaction showing the location of footpaths and common service trenching including footpath links to the existing network.
41. All footpaths shall be concrete/segmented block paving or a council approved surface, for a width of 1.5m along both sides of the road, unless otherwise agreed.
42. All paved footpaths are to be completed prior to issuing of Practical Completion for that stage.
43. All Kerbing to be mountable kerb and watertable unless barrier kerb is existing or as otherwise agreed with Council. Barrier Kerb inverts to be provided to all allotments in accordance with Council specification.
44. Redevelopment of existing road layouts is to include reinstatement of any disused driveway and crossover areas.

SERVICE AUTHORITIES

45. Council has declared the area an underground mains area and all the requirements of SAPN for easements and the installation of underground mains shall be met. The applicant shall give adequate security to the extent determined by and to the electricity authority for the making by the applicant of such contribution as the electricity authority determines towards the cost of installing prescribed mains underground in any underground mains area.
46. Public Lighting within the proposed division shall comply with Lighting Code AS1158 for P4 category roads, and shall use SAPN approved 17W LED3 PLC (Sylvania lighting). The lighting design shall incorporate upgrading of existing lighting at new junctions with existing roads.
47. Public lighting columns are to be located on the same side as proposed footpaths. Light poles shall be located 700 millimetres behind the kerb.
48. Shared path to be lit to Australian Standards using LED luminaires
49. Alternative lighting options such as catenary in laneways are to be consulted with SAPN for potential ownership and tariff applied. Property owner agreements to be considered and appropriate legal requirements administered.
50. All allotments are to be connected to SA Water sewer and water mains, including reclaimed stormwater reticulation system.
51. Development of the land division shall provide for all telecommunication services, utilities, and associated equipment, to be placed underground in accordance with the requirements of relevant authorities.

52. Easements for electricity, drainage and sewerage purposes shall be granted where required by SAPN, the City of Marion, Minister of Infrastructure or the Minister of Water Resources respectively and such modification shall be made to the plan of division as is required for such easements or for the installation of any transformers, pumping equipment or other equipment which may be necessary for the provision of services.
53. Demolish and remove any existing unrequired structures, services, and utilities to the satisfaction of City of Marion.
54. The beneficiary of this consent shall ensure that approval is sought from relevant authorities for works associated with the provision, relocation, or removal of services, utilities, and facilities, including any alteration or impact to existing and adjacent services, utilities, and facilities.

OPEN SPACE PROVISIONS AND IMPLEMENTATION

55. Verge widths shall be sufficient to allow for street tree plantings between the footpath and kerb (minimum planter bed width of 1 metre) to the satisfaction of the City of Marion. Tree root barriers to be installed along road edge to Council's arboriculture Coordinators approval.
56. All new road reserves are to be planted with Street trees in accordance with the City of Marion's Street tree Precinct Manual, or as varied by a tree species planting strategy with approval of Council's Arboriculture Coordinator
57. The use of WSUD treatments for watering Street Trees .ie stormwater diversion to tree wells and rain gardens is encouraged. Design should provide for minimum maintenance demands.
58. Soils are to be certified compliant with NEPM Open Space Recreation fit for purpose and best practice for horticulture growing medium.
59. Councils Open Space Strategy and Playground Policy to be adhered to.
60. Councils playground hierarchy service level to be adhered to for design and development.
61. All areas of open space and road reserve shall be developed and maintained to a minimum landscape standard and implemented to the satisfaction of the City of Marion. All landscaping plans and details shall be submitted for approval prior to works commencing onsite.
62. Potable source water meters shall be provided for the irrigation of reserves and traffic islands to the satisfaction of the Council with required backflow devices installed. Council to approve location. Irrigation systems to be designed to communicate remotely to the Council's Central Controlled Irrigation Scheme. Developer to provide drawings and specifications to Council's Water Resource Coordinator for approval. All meters to be installed to meet SA Water technical regulator requirements.
63. Adequate landscape planting shall be established to the reasonable satisfaction of the Council in accordance with accepted details and best practice horticulture. Plans to be submitted to Council's Open Space and Recreation Manager for Approval. A suitable buffer zone between the Development and the River corridor shall be negotiated with Council's Biodiversity Officer and Open Space Planners
64. Amenity lighting within public open space to be considered for Crime Prevention Through Environmental Design (CPTED) and be LED.
65. Upon final completion of works and certification subject to clause 69 Council will release bond bank guarantees proportionate to stages of works.

HANDOVER AND MAINTENANCE REQUIREMENTS

66. Indigenous Land Cooperation (ILC), or Developers and the City of Marion shall enter into a Management Agreement, which establishes responsibilities for ongoing maintenance of infrastructure developed on the site. The Agreement shall include, "*inter alia",* in-service maintenance standards, reinstatement obligations of ILC for damaged infrastructure resulting from road fronting building works, and infrastructure impacts of the Precinct Implementation Plan.
67. Upon approval of Practical Completion by Council, ILC shall handover to Council, road reserves, stormwater easements, and open space and drainage reserves.
68. To facilitate handover at Final Completion, Council shall inspect and provide an acceptance of all service infrastructure at hold points during construction and then at Practical Completion and defects liability period.
69. All infrastructure works undertaken as part of this development shall be subject to a 12 months maintenance period commencing upon Practical Completion by Council.
70. In addition to the requirements of clause 69, and subject to the requirements of the Management Agreement in clause 66, HRA shall be responsible for the maintenance of the public realm (including footpaths, walkways, streetscapes and plazas) and Open Space (including parks, recreation and drainage reserves, watercourses, wetlands and rain gardens) for a period of up to 8 years, commencing upon acceptance of Practical Completion.
71. Prior to Council advising the Precinct Authority that its requirements have been met, one of the following is required to have been undertaken;

    - Council approved Certificate of Final Completion has been issued to the Developer; or
    - Council approved Certificate of Practical Completion has been issued to the Developer and a bank guarantee to the value nominated by Council has been provided to Council for the specified maintenance period; or
    - The applicant has entered into an agreement with Council to secure the roadworks, footpaths, stormwater, and reserves pursuant to provisions of the Act.

    It is at the discretion of Council to enter into an agreement to secure the works.

APPENDIX 11. CORRESPONDENCE WITH CITY OF MARION

CITY OF MARION

~~27~~ 30 August 2021

PO Box 21, Oaklands Park
South Australia 5046

245 Sturt Road, Sturt
South Australia 5047

T (08) 8375 6600
F (08) 8375 6699
E council@marion.sa.gov.au

Tom McInerney
Managing Director
Troon Group
Suite 1.03, 163 Eastern Road
South Melbourne
VICTORIA 3205

Dear Tom

Re: Lot 707 Marion Road, Bedford Park - Proposed Code Amendment

I write in relation to your letter dated 10 August 2021 in which you provided additional information to assist Council in formalising a decision on whether it would support the Troon Group initiating a Code Amendment seeking the rezoning of the southern portion of Lot 707 to an 'Employment Zone' or similar, to facilitate the future development of a bulky goods outlet.

I can advise that Council considered the matter at a General Council meeting on 24 August 2021 where it was resolved that Council:

> *Advises the Troon Group that Council acknowledges their intention to lodge a 'Proposal to Initiate' a Code Amendment with the Minister, seeking to rezone the southern section of Lot 707 (3.5 ha) to 'Employment Zone', providing opportunity for the development of bulky goods type facilities whilst retaining the northern portion within the Urban Neighbourhood Zone.*
>
> *This acknowledgement relates to the lodgement of a 'Proposal to Initiate' only, with Council reserving the right to provide more definitive comment on the proposed rezoning once full details are made available as part of the Code Amendment process, and subject to:*
>
> - *The Troon Group entering into a Land Management Agreement or other legal agreement to exclude the use of the land for a retail fuel outlet.*
> - *The Troon Group granting a Council easement on the land to allow the formalisation of a shared use pedestrian and cycle path on the Western side of the river.*

It is understood that the Troon Group do not intend to include a retail fuel outlet as a future use on the site and is happy to undertake a contractual agreement confirming the creation of a Land Management Agreement (LMA) restricting such a use.

It is also understood that the Troon Group would grant an easement to Council over the eastern boundary of the site, adjacent the Sturt River alignment, enabling the ongoing use by the public as a shared pedestrian/cycle path.

I understand the current owner *Indigenous Land and Sea Corporation* (ILSC) is preparing a land division application and it may be prudent for an arrangement for an easement to be made at the time of the subdivision. I understand the ILSC are supportive and that it would require your support also.

We request formal discussions commence about the easement and suitable legal arrangement for all parties.

Council's main point of contact for this will be our Manager of Development and Regulatory Services, Mr Warwick Deller-Coombs. Warwick can be reached on 0468 595 682 or Warwick.Deller-Coombs@marion.sa.gov.au.

Yours sincerely

Tony Harrison
Chief Executive Officer

Emily Nankivell

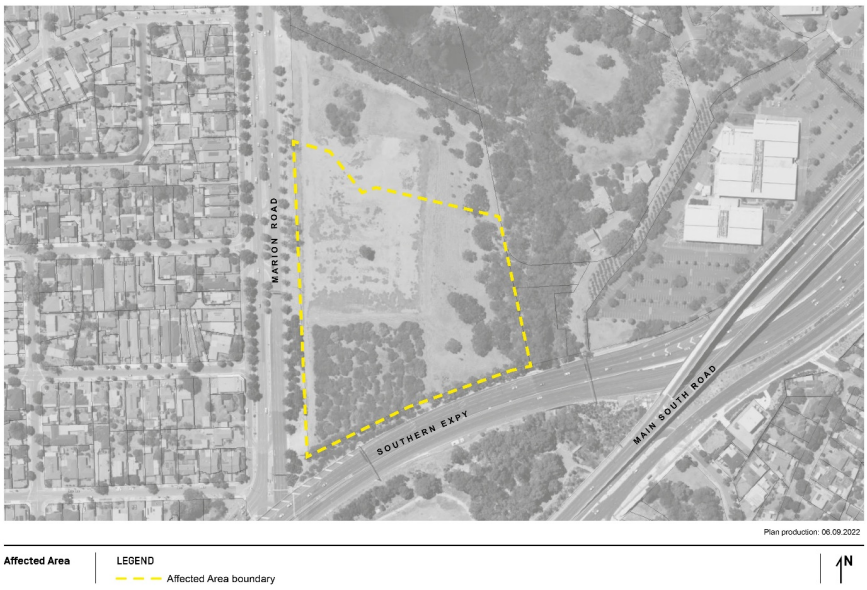
From: Michael Osborn
Sent: Thursday, 29 September 2022 8:22 AM
To: Warwick Deller-Coombs
Cc: Nadia Gencarelli; Emily Nankivell
Subject: Bedford Park Code Amendment

Hi Warwick

I refer to our recent discussion and confirm that some changes are proposed in relation to the Proposal to Initiate for the above Code Amendment.

These changes are as follows:

1. Minor change to the Affected Area, to reflect the boundary of the allotment recently approved by Council via a plan of division (revised Affected Area Map below);
2. Change to the Designated Entity from Troon Group to Bunnings Properties Limited. This change reflects contractual arrangements whereby Bunnings Properties Limited now have an interest in the Affected Area.



The above changes will be reflected in a revised Proposal to Initiate, which will be submitted shortly.

The purpose of this email is to formally advise you of these changes.

To assist the internal processes within PLUS, can you please confirm via return email that you (Council) have been advised of these changes.

Please let me know if you have any questions arising.

MICHAEL OSBORN
Director

M. 0408 808 143
E. michael@futureurban.com.au
W. www.futureurban.com.au
A. Level 1, 74 Pirie St, Adelaide

APPENDIX 12. COMMUNITY ENGAGEMENT PLAN

ENGAGEMENT PLAN

LOT 501 MARION ROAD BEDFORD PARK CODE AMENDMENT

BY BUNNINGS PROPERTIES PTY LTD

Date:
29.09.2022

Contact Details
Michael Osborn
Director
michael@futureurban.com.au
(08) 8221 5511

Proprietary Information Statement

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Document Control

Revision	Description	Author	Date
V1	Draft	EN	09.09.2022
V2	Draft	MO	09.09.2022
V3	Updated	EN	20.09.2022
V4	Updated	BL	21.09.2022

CONTENTS

APPENDICES

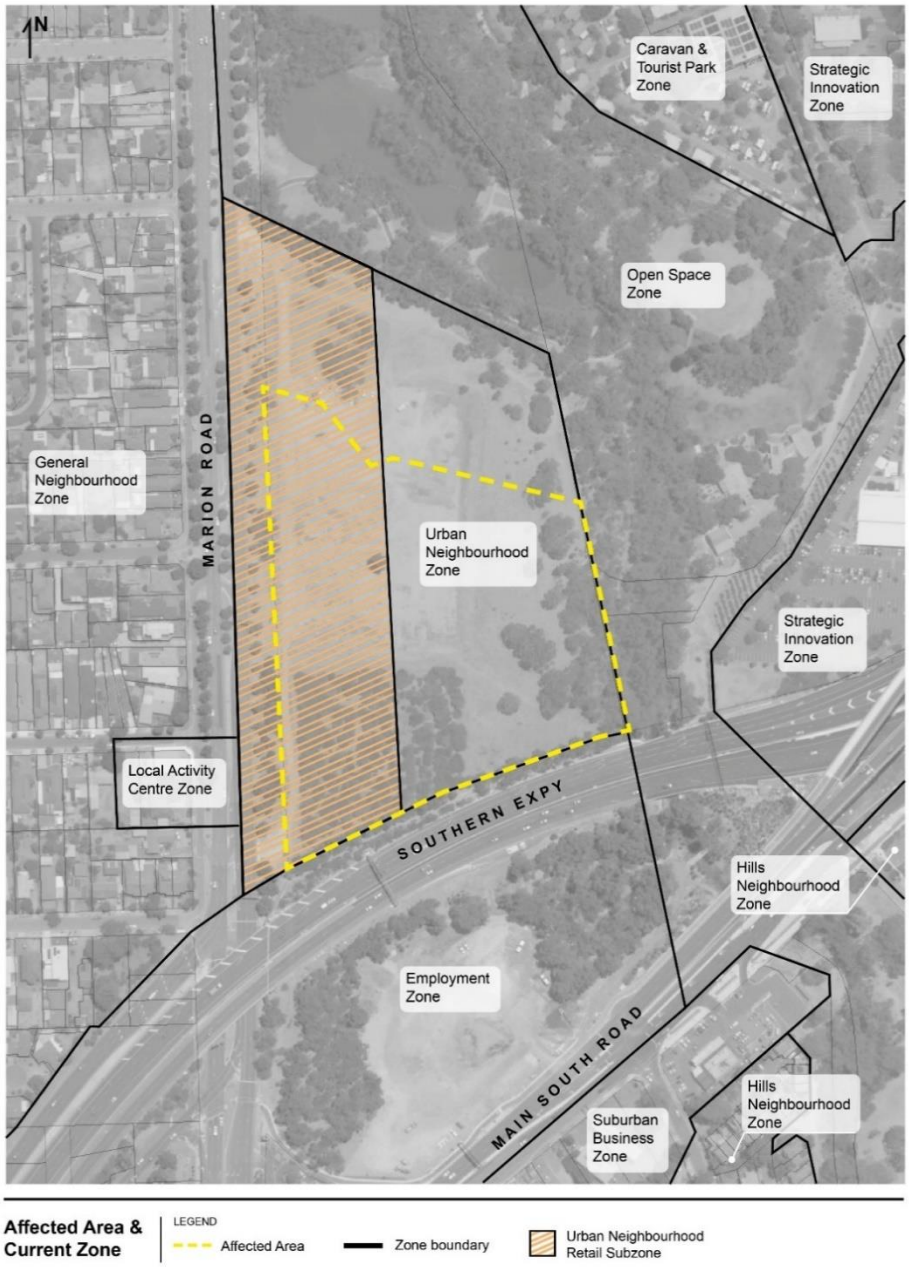
1. BACKGROUND INFORMATION

1.1 What is proposed?

Bunnings Properties Pty Ltd (the Designated Entity) is proposing an amendment (the Code Amendment) to the Planning and Design Code (the Code) as it relates to land identified as Lot 501 on the plan of division (contained in Appendix 2 of the Proposal to Initiate) being a portion of Lot 707 Marion Road, Bedford Park (the Affected Area), which is presently vacant and will be owned by Bunnings Properties Pty Ltd.

The Affected Area is located within the area locally known as Laffer's Triangle and is adjacent to the intersection of the Southern Expressway and Marion Road. Land to the north and east of the Affected Area is within the Open Space Zone, with the Employment Zone located to the immediate south of the Southern Expressway. A small Local Activity Centre Zone is located on the western side of Marion Road. The Affected Area and current Zoning or Urban Neighbourhood and Retail Subzone are shown by **Figure 1.1** below.

Figure 1.1 *Zoning and Affected Area*



1.2 Why is this project being initiated?

The overall intent of the Code Amendment is to enable the establishment of a low impact bulky goods/service trade premises on the Affected Area of a form and nature which does not compete with the core retail offering within the adjacent centres. The overall intent of the Code Amendment is to enable the Affected Area to accommodate a broader range of employment generating uses. To enable this the Affected Area is proposed to be rezoned from the Urban Neighbourhood Zone to the Employment Zone.

The proposed rezoning aligns with a number of State Planning Policies (SPPs) including in relation to employment lands, strategic transport infrastructure and emissions and hazardous activities. The proposed rezoning also aligns with many of policies within the 30 Year Plan for Greater Adelaide, as outlined within the Code Amendment Initiation document. In particular, the proposal correlates with the 30 Year Plan policies in respect to activity centres, the economy and jobs and infrastructure.

1.3 Investigations already completed

Investigations undertaken to date include:

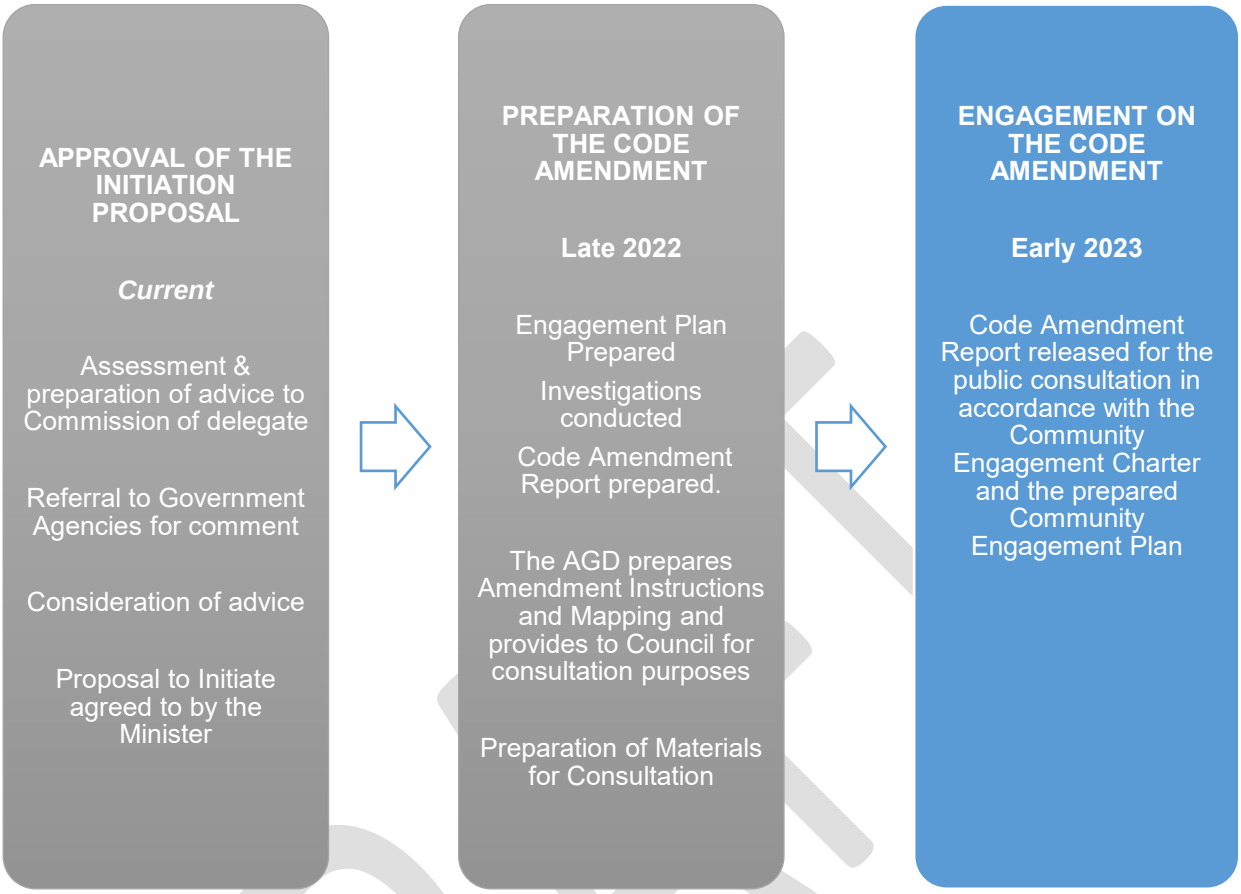
- Preliminary Traffic Advice (MFY), August 2021;
- Retail floorspace capacity analysis (Deep End Services), June 2021;
- Preliminary Tree Assessment (Arborman Tree Solutions), August 2021;
- Limited Soil Assessment (Fyfe), March 2021;
- Cultural Heritage Management Plan (Independent Heritage Consultants) (Confidential); and
- Preliminary Infrastructure and Servicing Report, August 2021.

The investigation reports, other than the Cultural Heritage Management Plan, can be found appended to the Code Amendment Proposal to Initiate available here: https://plan.sa.gov.au/have_your_say/code_amendments Prior to this Code Amendment, no known engagement processes have occurred seeking to rezone the Affected Area.

1.4 What is the status of the Code Amendment

The Code Amendment process follows steps which require specific actions at each milestone. The timeframes for each step are outlined within **Figure 1.2**. Engagement activities will occur both before and after the preparation of the Code Amendment, shown in blue below.

Figure 1.2 *Status of the Code Amendment*



2. ENGAGEMENT PURPOSE

The purpose of the engagement is to inform the rezoning of the Affected Area to enable the future development of the land for employment generating purposes. In particular, the engagement will inform:

- Whether the Employment Zone is the most appropriate Zone for the Affected Area;
- Whether the investigations undertaken as part of the Code Amendment are sufficient to consider the impact of the rezoning on the surrounding area; and
- Whether the Overlays and Technical and Numeric Variations (TNVs) applied address key matters stakeholders would like to see future development meet.

3. ENGAGEMENT OBJECTIVES

The key objectives of the engagement are to:

- Share information with the public about the Code Amendment;
- Create an understanding of the reasons for the Code Amendment;
- Understand the views of the stakeholders;
- Inform and improve the quality of the policy within the Code Amendment; and
- Comply with the Community Engagement Charter and the Planning, Development and Infrastructure Act 2016 (Act).
-

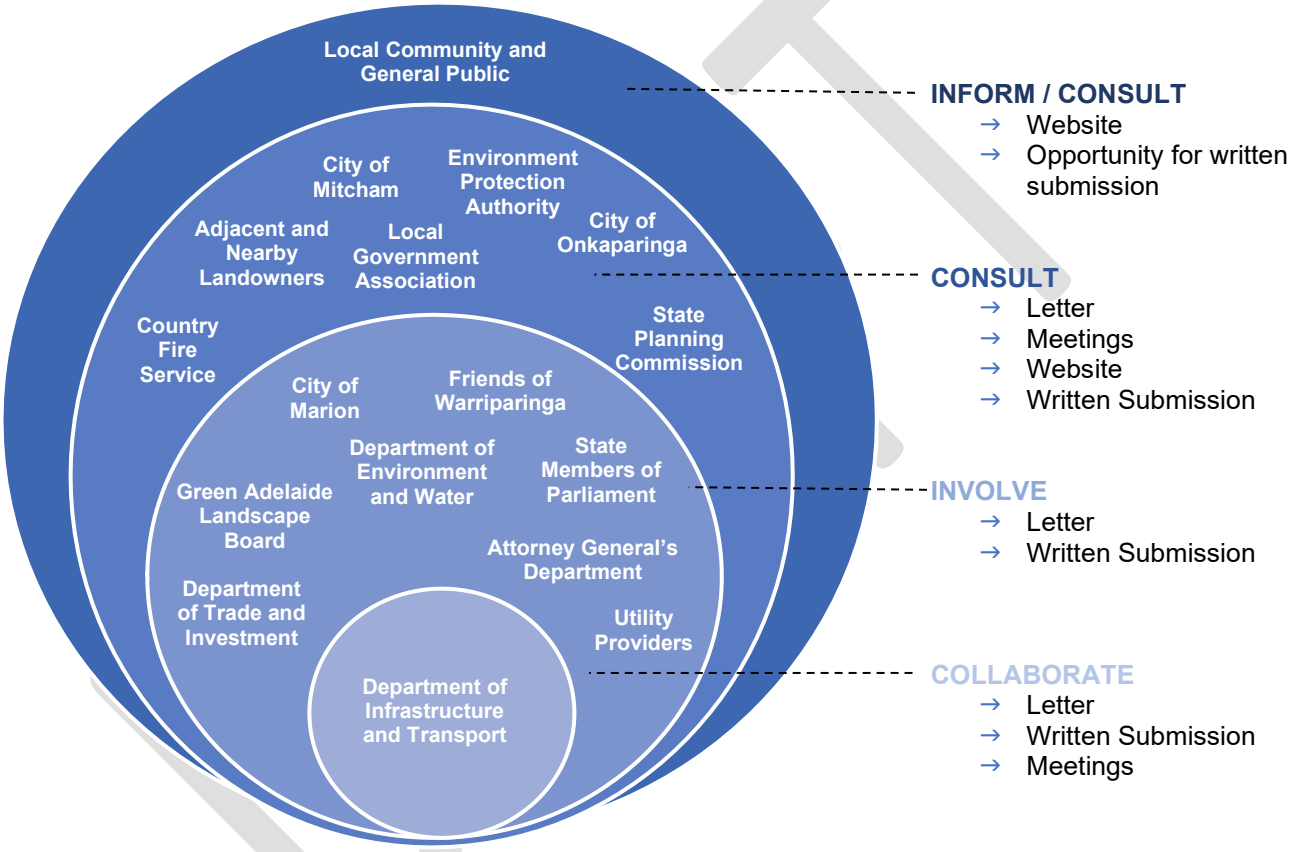
4. STAKEHOLDER IDENTIFICATION AND ANALYSIS

The Code Amendment has a group of stakeholders whose involvement, interest and influence vary, including the City of Marion, State Agencies and adjacent landowners.

Overall, the aim of the community engagement is to provide a level of influence which seeks to work directly with the relevant stakeholders throughout the process to ensure that public concerns and aspirations are understood, considered and reflected in the Code Amendment.

A stakeholder identification and analysis has been undertaken and the outcomes of this are provided in **Appendix 1**, with a summary of this analysis provided in **Figure 4.1** below.

Figure 4.1 *Stakeholder Analysis Summary (adapted from Lorenz Aggens, Orbits of Public Participation)*

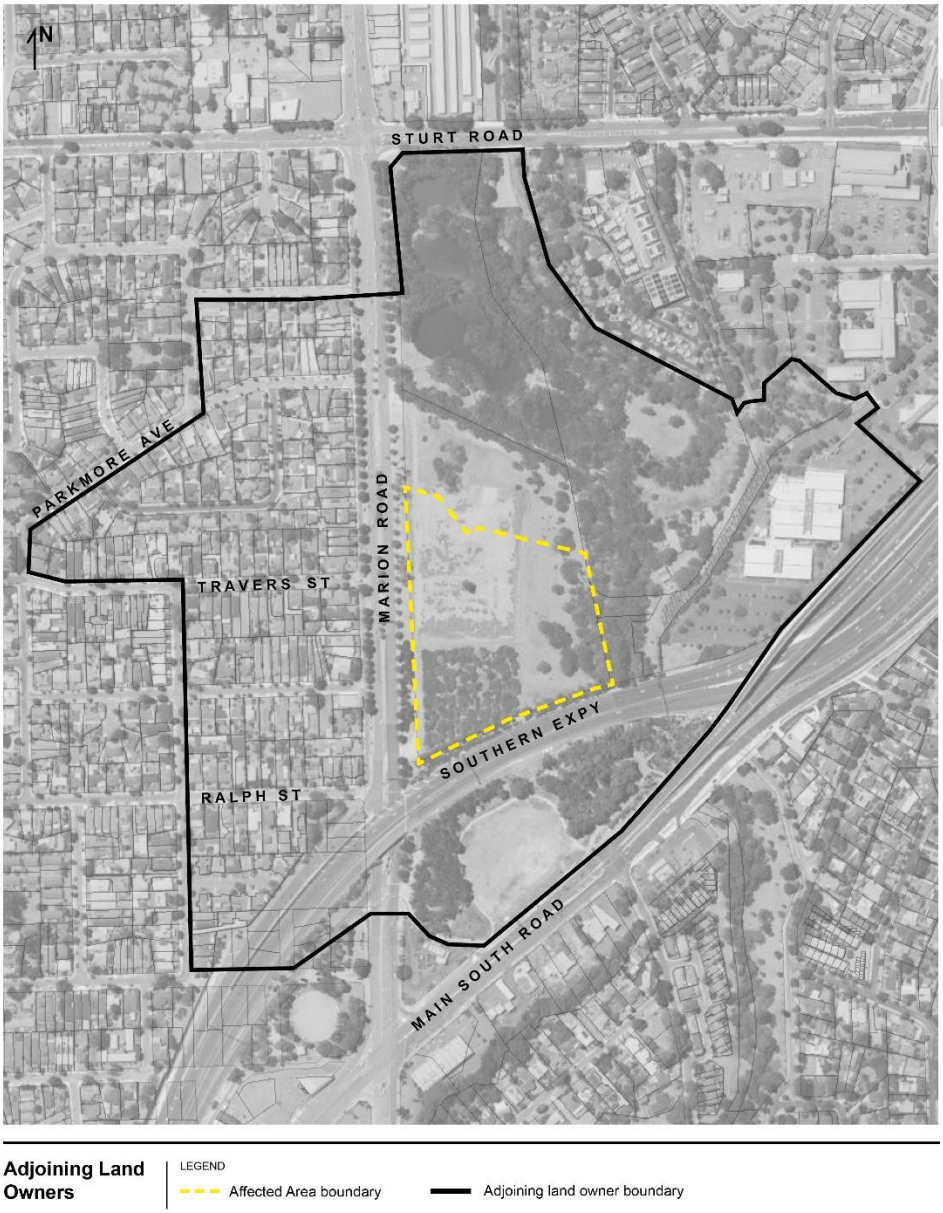


The stakeholders which have been identified are:

- Adjacent and nearby landowners shown in **Figure 4.2** below;
- City of Marion;
- City of Mitcham;
- City of Onkaparinga;
- Local Government Association (LGA);
- Department of Trade and Investment (DTI);
- Attorney General's Department (Aboriginal Affairs and Reconciliation);
- Green Adelaide Landscape Board;
- Department for Environment and Water (DEW);

- Friends of Warriparinga;
- Department for Infrastructure and Transport (DIT);
- State Planning Commission;
- State Members of Parliament;
- Utility Providers including SA Power Networks, ElectraNet Pty Ltd, APA Group, SA Water, EPIC Energy, NBN, and other telecommunication providers;
- Environment Protection Authority (EPA);
- Country Fire Service (CFS);
- Local Community; and
- General Public.

Figure 4.2 *Extent of adjoining land owners to be directly notified*



The level of each stakeholder interest (low, medium and high), the nature of their interests and their needs and expectations of the engagement process have been identified. Having regard to the level of interest, the potential impact of the project on each of the stakeholder interests and the potential impact of each stakeholder on the Code Amendment, the level of engagement has been established. The outcomes of this analysis are included in **Appendix 1**.

The levels of engagement are informed by the IAP2 Spectrum of Public Participation and are summarised in **Table 4.1**.

Table 4.1 *IAP2 Spectrum of Public Participation*

	Inform	Consult	Involve	Collaborate	Empower
Participation Goal	To provide the public with balanced and objective information to assist them in understanding the problem, alternatives, opportunities and/or solutions.	To obtain feedback on analysis, alternatives and/or decisions.	To work directly with the public throughout the process to ensure that public concerns and aspirations are consistently understood and considered.	To partner with the public in each aspect of the decision including the development of alternatives and the indentification of the prefered solution.	To place final decision making in the hands of the public.
Promise to Stakeholders	We will keep you informed.	We will keep you informed, listen to and acknolwedge concerns and aspirations, and provide feedback on how public input influenced the decision.	We will work with you to ensure that your concerns and aspirations are directly reflected in the alternatives developed and provide feedback on how public input influened the decision.	We will look to you for advice and innovation in formulating solutions and incorporate your advice and recommendations into the decisions to the maximum extent possible.	We will implement what you decide.

5. SCOPE OF INFLUENCE

The Planning and Design Code (the Code) is a statutory instrument under the Planning, Development and Infrastructure Act 2016, for the purposes of development assessment and related matters within South Australia.

The Code contains the planning rules and policies that guide what can be developed in South Australia. Planning authorities use these planning rules to assess development proposals.

This Code Amendment is led by a private proponent, Bunnings Property Group Pty Ltd. The scope of the Code Amendment is limited to the spatial application of existing policies within the Code. The Code Amendment cannot create additional policies/zones or make changes to existing policy/zone text.

Aspects of the project which stakeholders and the community can influence (i.e. are negotiable) are:

- Whether the Employment Zone is the most appropriate Zone for the Affected Area;
- Whether the investigations undertaken as part of the Code Amendment are sufficient to consider the impact of the rezoning on the surrounding area; and
- Whether the Overlays and Technical and Numeric Variations (TNVs) applied address key matters stakeholders would like to see future development meet.

Aspects of the project which stakeholders and the community cannot influence (i.e. are not negotiable) are:

- The geographic extent of the Code Amendment (i.e. the Affected Area);
- The employment expectations of the Employment Zone; and
- The existing policy wording within the Code.

6. IMPLEMENTATION PLAN

An implementation plan has been prepared which details the various engagement activities proposed for each engagement level and the timing of these activities. The implementation plan is contained as **Appendix 2**.

Engagement activities have been included to ensure that the method of engagement is appropriate for achieving the objectives and level of influence of the engagement. The engagement activities are summarised in **Table 6.1** below.

Table 6.1 *Engagement Activities*

Stage	Stakeholders/ target audience	Engagement activity	Levels of Engagement
Preliminary Engagement	• Department for Infrastructure and Transport	• Meeting(s) • Information sharing • Opportunity for written and verbal feedback	Collaborate
	• City of Marion (including Elected Members) • State Members of Parliament	• Initial communication advising of Code Amendment • Meetings and briefing sessions • Opportunity for written and verbal feedback	Involve
Early Engageme	• City of Marion (including Elected Members)	• Information sharing	Involve

		• Opportunity for written and verbal feedback • Meetings and briefing sessions	
	• Department for Trade and Investment (Code Amendment Team and/or Code Control Group) • Department of Environment and Water • Friends of Warriparinga • Green Adelaide Landscape Board	• Meeting • Information sharing • Opportunity for written and verbal feedback	Involve
	• Adjacent and Nearby Landowners	• Letter informing about Code Amendment process and timeframes • Personal briefings(?)	Consult
Code Amendment Engagement	• Department for Infrastructure and Transport	• Letter • Information provided on website • Written submissions	Collaborate
	• Adjacent landowners	• In person question, answer and feedback sessions offered to adjacent landowners • Letter • Information provided on website • Written submissions	Consult
	• State Planning Commission • City of Mitcham • City of Onkaparinga • Environment Protection Authority • Country Fire Service • Local Government Association	• Letter • Information provided on website • Written submissions	Consult
	• City of Marion • Department of Trade and Investment • Green Adelaide Landscape Board • Department for Environment and Water • Friends of Warriparinga • Environment Protection Authority • State Members of Parliament • Attorney General's Department (Aboriginal Affairs and Reconciliation) • Utility Providers	• Letter • Information provided on website • Written submissions • Deputation to relevant committees	Involve
	• Local Community • General Public	• Information provided on website • Any member of the public will be able to make a written submission	Inform / Consult

The overall engagement will consist of three stages, which include:

- Preliminary Engagement, undertaken prior to the drafting of the Code Amendment Report;

- Early Engagement, undertaken after the initial draft of the Code Amendment Report is prepared, but allowing for early input and sharing of information before the Code Amendment is publicly available; and
- Code Amendment Engagement, undertaken after the draft of the Code Amendment Report is completed and includes the Report being made available to the public and all stakeholders for review and input.

Within each stage of the engagement, the engagement activities generally include the following three milestones:

- Commencement of engagement;
- Engagement concludes; and
- Report back to the relevant stakeholders and/or the public on the outcomes and next steps.

7. APPLYING THE CHARTER PRINCIPLES IN PRACTISE

The stakeholders have been considered in respect to their needs and requirements to ensure that the design of the engagement allows all stakeholders to contribute equally. A number of stakeholders are government bodies or utility providers who have limited needs and are resourced with staff that have the technical expertise to review and respond to Code Amendments.

The adjacent land owners and local community include residents within the areas of Bedford Park, Mitchell Park, Marion, Sturt and Darlington and comprise a diverse round of people[1], which include:

- People over 70 years of age, who form on average 13% of the local community;
- People under 20 years of age, who form on average 21% of the local community;
- A small proportion of the local community who use a language other than English at home, including:
  - on average 4.92% of the population speak Mandarin;
  - on average 1.46% of the population speak Greek; and
  - on average 1.22% of the population speak Nepali.
- People with a profound of severe core activity limitation that may require asisstance in their day to day lives due to a long-term condition, disability or advanced age, who form on average 28.3% of the local community; and
- Households which do not have access to the internet at home[2], that form on average 15.7% of households in the local community.

The above groups all have varying needs. **Table 7.1** outlines the characteristics of the stakeholders relevant to this engagement and the needs and / or techniques which have been implemented to improve accessibility to engagement.

Table 7.1 *Applying the Charter Principles*

Stakeholder	Engagement need or technique

[1] Based on the Australian Bureau of Statistics 2021 Census Data and averaged over the suburbs of Bedford Park, Mitchell Park, Marion, Sturt and Darlington.
[2] Based on the Australian Bureau of Statistics 2016 Census Data and averaged over the suburbs of Bedford Park, Mitchell Park, Marion, Sturt and Darlington.

Government Bodies and Agencies and Utility Providers	• Time to review and respond to Code Amendment documents, particularly having regard to reporting cycles of local government
Majority of adjacent owners and local community	• Time to review and respond to Code Amendment documents • Explanatory information that explains the process and what they are being asked for feedback on in clear, plain English • Ability to ask questions during the engagement process about the Code Amendment (generally via phone or email)
People over 70	• Ability to access documents in hard copy at a convenient location (i.e., the local Council office) • Ability to provide feedback and/or communicate by post or via phone
English as a second language	• Hard copy and website materials that are easily translatable and details, in their language • Materials confirm how to access translated materials
People with a core need for assistance	• In person meetings are held at a location that meets accessibility needs for people with reduced mobility • Materials are accessible in a variety of mediums including website and hard copies, and websites include accessibility features
People who do not have access to the internet at home	• Ability to access documents in hard copy at a convenient location (i.e., the local Council office) • Ability to provide feedback and/or communicate by post or via phone

The engagement activities have been identified and the relevant charter principles have been addressed which is outlined within **Figure 7.2** below.

Table 7.2 *Charter Principles in Practice*

Charter Principles	**How does your engagement approach/activities reflect this principle in action?**
Engagement is genuine	• workshop and/or one-on-one meetings to be held on weekends or after work hours to maximise opportunity for people to attend, unless requested during business hours (i.e., with government agencies); • letterbox drop/direct email to those immediately affected; and

Charter Principles	How does your engagement approach/activities reflect this principle in action?
	• information provided online to be easily accessible.
Engagement is inclusive and respectful	• invitation only workshop(s) held for those most affected stakeholder group(s) and tailored to their needs. • all comments and feedback are recorded and considered.
Engagement is fit for purpose	• engagement includes a range of activities, both in-person and online, to involve the broader community and the following and target specific stakeholder ground.
Engagement is informed and transparent	• Information brochure (online and hard copy via letter-box drop) in basic language clearly articulates the proposal, potential impacts, engagement process and invites feedback/participation; • Engagement Report prepared at the end of the engagement summarising the feedback received and how it has been, or will be, used to inform the Code Amendment.
Engagement is reviewed and improved	• Measures of success are identified and measured at the conclusion of the engagement and reported on in the Engagement Report to the Department of Trade and Investment.

8. KEY MESSAGES

The following key messages will underpin the engagement regarding the Code Amendment:

- The Proponent is planning to re-zone the Affected Area from the Urban Neighbourhood Zone to the Employment Zone to enable the development of that land for employment generating purposes, in particular a large format bulky goods outlet.
- Policies for the consideration of key issues will be retained as part of the Code Amendment, this includes:
    - Building height and setbacks
    - Environmental considerations (for example, impact on background noise and damage to trees)
    - Infrastructure considerations (for example, traffic impact and stormwater provision)
- The reason for this is that there is demand for large format employment generating land uses with a lack of suitable alternate land within the broad locality of a suitable area and configuration which has access to a primary arterial road.
- A Code Amendment is required to enable this re-zoning.
- The Minister for Planning is the decision maker for approval or refusal of the proposed Code Amendment. The Minister will take into account the feedback received during the consultation period and whether the consultation was carried out in accordance with the Community

Engagement Charter. The Minister may also seek the advice of the State Planning Commission prior to making a decision.

9. EVALUATION

As part of the engagement process, feedback from stakeholders regarding the engagement will be noted to ensure that the project team can:

- Address any changes for the implementation of the Code Amendment;
- Alter the engagement process if needed to respond to feedback; and
- Maintain the quality of the engagement activities.

Appendix 3 includes a table which outlines a summary of measuring the success of the engagement process. Participants are invited to assess the success of the engagement against the criteria. The evaluation will be included in the Engagement Report required to be prepared by the Designated Entity under section 73(7) of PDI Act.

Following an evaluation of the success of the engagement, a summary of the engagement process will be provided to the participants. The methods for reporting back and closing the loop are outlined within **Appendix 4**.

APPENDIX 1. STAKEHOLDER AND COMMUNITY MAPPING

Stakeholder and community mapping

Stakeholder	Level of interest in the project (i.e. high, medium or low)	Nature of interest in the project and/or the potential impact of the project	Stakeholder needs/expectations for engagement in the project	Level of engagement (i.e. inform, consult, involve, collaborate)
Adjacent landowners	High	• High interest in the Code Amendment proposal and impact as the Zone change is located within their locality. • How the Zone change will affect the value of their property. • How the Zone change will affect the street and general locality.	That they will be kept informed, listened to, their concerns and aspirations acknowledged and feedback will be provided on how their input influenced the decision.	Consult
City of Marion	High	• High interest in the Code Amendment proposal as the land proposed to be rezoned is within the City of Marion Council area.	That we will work with them to ensure that their concerns and aspirations are reflected in the Code Amendment and feedback will be provided on how their input influenced the decision.	Involve
City of Mitcham	Low	• Low interest as the land is located within 150 metres of the boundary of the City of Mitcham.	That they will be kept informed, listened to, their concerns and aspirations acknowledged and feedback will be provided on how their input influenced the decision.	Consult
City of Onkaparinga	Low	• Low interest as the land is located within 250 metres of the boundary of the City of Onkaparinga.	That they will be kept informed, listened to, their concerns and aspirations acknowledged and feedback will be provided on how their input influenced the decision.	Consult

Local Government Association	Low	• Low level of interest as the Code Amendment is relevant to the City of Marion. • It is a mandatory requirement to notify the Local Government Association in writing and to be consulted, as per the *Planning Development and Infrastructure Act 2016*.	That they will be kept informed, listened to, their concerns and aspirations acknowledged and feedback will be provided on how their input influenced the decision.	Consult
Department of Trade and Investment	Medium	• Medium level of interest. • Identified as a required consultation. • Department will be providing advice to the Minister.	That we will work with them to ensure that their concerns and aspirations are reflected in the Code Amendment and feedback will be provided on how their input influenced the decision.	Involve
Department of the Premier and Cabinet	Medium	• Medium level of interest. • Identified as a required consultation.	That we will work with them to ensure that their concerns and aspirations are reflected in the Code Amendment and feedback will be provided on how their input influenced the decision.	Involve
Green Adelaide Landscape Board	Medium	• Medium level of interest. • Identified as a required consultation.	That we will work with them to ensure that their concerns and aspirations are reflected in the Code Amendment and feedback will be provided on how their input influenced the decision	Involve
State Members of Parliament	High	• High level of interest. • Any rezoning process is likely to engender interest within local communities.	That we will work with them to ensure that their concerns and aspirations are reflected in the Code Amendment and feedback will be provided on how their input influenced the decision.	Involve

State Planning Commission	Medium	• Medium level of interest. • State Planning Commission may provide advice to the Minister on the Code Amendment.	That they will be kept informed, listened to, their concerns and aspirations acknowledged and feedback will be provided on how their input influenced the decision.	Consult
Department for Infrastructure and Transport	High.	• High level of interest. • The land has frontage to a State Maintained Road and an expressway.	That we will seek their advice and innovation in formulating solutions and incorporate their advice and recommendations into the decisions to the maximum extent possible.	Collaborate
Friends of Warriparinga	Medium	• Medium level of interest. • Rezoning and future development of the land may impact on the adjacent Warriparinga Wetlands.	That we will work with them to ensure that their concerns and aspirations are reflected in the Code Amendment and feedback will be provided on how their input influenced the decision.	Involve
Utility Providers	Medium	• Medium level of interest. • The proposed rezoning may generate infrastructure demands which require assessment.	That we will work with them to ensure that their concerns and aspirations are reflected in the Code Amendment and feedback will be provided on how their input influenced the decision.	Involve.
Department of Environment and Water	Medium.	• Medium level of interest. • Proximity of land to Warriparinga Wetlands, Sturt River and adjacent a State Heritage Place.	That we will work with them to ensure that their concerns and aspirations are reflected in the Code Amendment and feedback will be provided on how their input influenced the decision.	Involve.

Environment Protection Authority	Medium	• Medium level of interest. • Suitability of Affected Area for future intended land uses.	That they will be kept informed, listened to, their concerns and aspirations acknowledged and feedback will be provided on how their input influenced the decision.	Consult
Country Fire Service	Low	• Low level of interest • Land is in a Hazards (Bushfire – Urban Interface) Overlay	That they will be kept informed, listened to, their concerns and aspirations acknowledged and feedback will be provided on how their input influenced the decision.	Consult
Local Community and General Public	Low	• To keep informed in the overall process of the Code Amendment and Zone change. • To provide feedback on the Code Amendment.	To be provided with balanced and objective information to assist them in understanding the problem, alternatives, opportunities and/or solutions.	Inform/Consult

APPENDIX 2. IMPLEMENTATION PLAN

Planning your engagement approach

Stage	Objective	Stakeholders/ target audience	Engagement level	Engagement activity	Timing
Preliminary Engagement	• Share information with the public about the Code Amendment • Create an understanding of the reasons for the Code Amendment • Understand the views of the stakeholders • Inform and improve the quality of the policy within the Code Amendment • Comply with the Community Engagement Charter and the Planning, Development and Infrastructure Act 2016 (Act).	• Department for Infrastructure and Transport	Collaborate	• Meeting • Information sharing • Opportunity for written and verbal feedback	• September 2022
		• City of Marion (including Elected Members) • State Members of Parliament	Involve	• Meetings and briefing sessions • Letter/email advising of proposed Code Amendment • Information sharing • Opportunity for written and verbal feedback	• September 2022
Early Engagement		• City of Marion (including Elected Members)	Involve	• Meeting with Council staff and Elected Members • Information sharing • Opportunity for written and verbal feedback	• Late 2022

Stage	Objective	Stakeholders/ target audience	Engagement level	Engagement activity	Timing
		• Department of Trade and Investment (Code Amendment Team and/or Code Control Group) • Department of Environment and Water • Friends of Warriparinga • Green Adelaide Landscape Board	Involve	• Meeting • Information sharing • Opportunity for written and verbal feedback	• September 2022
		• Adjacent and nearby landowners	Consult	• Letter informing about Code Amendment process and timeframes • Personal briefings(?)	•
Code Amendment Engagement.		• Department for Infrastructure and Transport	Collaborate	• Letter • Meeting • Written submission • Survey providing feedback on the engagement	• Expected to commence late 2022 (subject to change) Send letters to relevant stakeholders. Information available on the website.

Stage	Objective	Stakeholders/ target audience	Engagement level	Engagement activity	Timing
		• Adjacent Landowners	Consult	• In person questions, answer and feedback sessions • Letter • Information provided on website • Written submissions • Survey providing feedback on the engagement	Invitation to provide a written submission. Consultation open for 8 weeks. • Expected to conclude Early 2023 (subject to change) • Evaluation of engagement and opportunity to provide feedback on engagement activities • Feedback provided to Stakeholders on the consultation as soon as practical after consultation
		• State Planning Commission • City of Mitcham • City of Onkaparinga • Environment Protection Authority • Country Fire Service • Local Government Association	Consult	• Letter • Information provided on website • Written submissions • Survey providing feedback on the engagement	
		• City of Marion • Department of Trade and Investment	Involve	• Letter • Information provided on website	

Stage	Objective	Stakeholders/ target audience	Engagement level	Engagement activity	Timing
		• Department of the Premier and Cabinet • Green Adelaide Landscape Board • Department for Environment and Water • Utility Providers • State Members of Parliament • Friends of Warriparinga Wetlands		• Written submissions • Survey providing feedback on the engagement	
		• Local Community • General Public	Inform / Consult	• Information provided on website • Written submissions	

APPENDIX 3. MEASURING SUCCESS

Measuring success

At the completion of the engagement, all participants will be invited to assess the success of the engagement against performance criteria one to four, below. The project manager, with assistance from communications and engagement specialists, will assess the success of the engagement against criteria five to nine. This evaluation will be included in the statutory report (section 73(7) of PDI Act) that is sent to the State Planning Commission and the Minister for Planning and which details all engagement activities undertaken. It will also be referenced in the Commission Report (section 74 (3)(b) that is issued to the Governor of South Australia and the Environment Resources and Development Committee of Parliament. Any issues raised about the engagement during the engagement process will be considered and action will be taken if considered appropriate.

#	Charter criteria	Charter performance outcomes	Respondent	Indicator	Evaluation tool	Measuring success of project engagement
1	Principle 1: Engagement is genuine	▪ People had faith and confidence in the engagement process.	Community	I feel the engagement **genuinely sought** my input to help shape the proposal	Exit survey / follow-up survey with Likert scale - strongly disagree to strongly agree	Per cent from each response.
2	Principle 2: Engagement is inclusive and respectful	▪ Affected and interested people had the opportunity to participate and be heard.	Community	I am **confident my views were heard** during the engagement	Exit survey / follow-up survey with Likert scale - strongly disagree to strongly agree	Per cent from each response.
			Project Lead	The **engagement reached** those identified as community of interest.	▪ Representatives from most community groups participated in the engagement ▪ Representatives from some community groups participated in the engagement ▪ There was little representation of the community groups in engagement.	Evaluation by Project Lead
3	Principle 3: Engagement is fit for purpose	▪ People were effectively engaged and satisfied with the process. ▪ People were clear about the proposed change and how it would affect them.	Community	I was given sufficient **information** so that I could take an informed view.	Exit survey / follow-up survey with Likert scale - strongly disagree to strongly agree	Per cent from each response.
				I was given an **adequate opportunity to be heard**	Exit survey / follow-up survey with Likert scale - strongly disagree to strongly agree	Per cent from each response.

#	Charter criteria	Charter performance outcomes	Respondent	Indicator	Evaluation tool	Measuring success of project engagement
4	Principle 4: Engagement is informed and transparent	▪ All relevant information was made available and people could access it. ▪ People understood how their views were considered, the reasons for the outcomes and the final decision that was made.	Community	I felt **informed** about why I was being asked for my view, and the way it would be considered.	Exit survey / follow-up survey with Likert scale - strongly disagree to strongly agree	Per cent from each response.
5	Principle 5: Engagement processes are reviewed and improved	▪ The engagement was reviewed and improvements recommended.	Project Lead	**Engagement was reviewed** throughout the process and improvements put in place, or recommended for future engagement	▪ Reviewed and recommendations made ▪ Reviewed but no system for making recommendations ▪ Not reviewed	Evaluation by Project Lead
6	Engagement occurs early	▪ Engagement occurred before or during the drafting of the planning policy, strategy or scheme when there was an opportunity for influence.	Project Lead	Engagement **occurred early enough** for feedback to genuinely influence the planning policy, strategy or scheme	▪ Engaged when there was opportunity for input into scoping ▪ Engaged when there was opportunity for input into first draft ▪ Engaged when there was opportunity for minor edits to final draft ▪ Engaged when there was no real opportunity for input to be considered	Evaluation by Project Lead
7	Engagement feedback was considered in the development of planning	▪ Engagement contributed to the substance of a plan or resulted in changes to a draft.	Project Lead	Engagement **contributed to the substance of the final plan**	▪ In a significant way ▪ In a moderate way ▪ In a minor way ▪ Not at all	Evaluation by Project Lead

#	Charter criteria	Charter performance outcomes	Respondent	Indicator	Evaluation tool	Measuring success of project engagement
	policy, strategy or scheme					
8	Engagement includes 'closing the loop'	▪ Engagement included activities that 'closed the loop' by providing feedback to participants/ community about outcomes of engagement	Project Lead	Engagement **provided feedback to community about outcomes** of engagement	▪ Formally (report or public forum) ▪ Informally (closing summaries) ▪ No feedback provided	Evaluation by Project Lead
9	Charter is valued and useful	▪ Engagement is facilitated and valued by planners	Project Lead	Identify **key strength** of the Charter and Guide Identify **key challenge** of the charter and Guide		Evaluation by Project Lead

APPENDIX 4. CLOSING THE LOOP & REPORTING BACK

Closing the loop and reporting back

How will you respond to participants?	Who's responsible?	When will you report back?
Keep a contact register of all participants who made a submission during the engagement period to use to provide feedback on the process and outcomes	Future Urban on behalf of the Designated Entity	Ongoing across the engagement period
Prepare an Engagement Report in accordance with section 73 of the Act that includes summary of submissions, amendments to the Code Amendment and evaluation of engagement	Future Urban on behalf of the Designated Entity	As soon as practicable post-engagement
Publish the Engagement Report	Department of Trade and Investment	As soon as practicable post-engagement
Inform stakeholders on the outcome of the Code Amendment	Future Urban on behalf of the Designated Entity	As soon as practicable following a decision on the proposed Code Amendment
Publish the outcome of the Code Amendment	Department of Trade and Investment	As soon as practicable following a decision on the proposed Code Amendment

APPENDIX 13. TIMETABLE FOR CODE AMENDMENT BY PROPONENT

CODE AMENDMENTS TIMETABLE		
Steps	**Responsibility**	**Timeframes**
Approval of the Proposal to Initiate		
Review of Proposal to Initiate to confirm all mandatory requirements are met (timeframe will be put on hold if further information is required). Referral to the Minister to request advice from the Commission	DTI	2 weeks *(includes lodgement and allocation + referral to Government Agencies within the first week)*
Minister requests advice from the Commission.	Minister	2 weeks
Referral to Government Agencies for comment (where necessary)	DTI, Relevant Government Agencies	+ 2 weeks
Consideration of Proposal to Initiate and advice to the Minister.	Commission (Delegate)	3 weeks
	Commission	+ 3 weeks
Proposal to initiate agreed to by the Minister.	Minister	2 weeks
Preparation of the Code Amendment		
Engagement Plan prepared. Investigations conducted; **Code Amendment Report** prepared. The drafting instructions and draft mapping provided to the AGD.	Designated Entity	2 weeks
AGD prepares Amendment Instructions and Mapping and provides to Council for consultation purposes	DTI	1 week
Preparation of Materials for Consultation.	Designated Entity	2 weeks
Engagement on the Code Amendment		
Code Amendment Report released for public consultation in accordance with the Community Engagement Charter and the prepared **Community Engagement Plan.**	Designated Entity	TBA
Consideration of Engagement and Finalisation of Amendments		
Submissions summarised, amended drafting instructions provided, **Engagement Report** prepared and lodged with AGD.	Designated Entity	2 weeks
Assess the Amendment and engagement.	DTI	4 weeks

Prepare report to the Commission or delegate. *(Timeframe will be put on hold if further information is required, or if there are unresolved issues)*		
Consideration of Advice.	Commission (Delegate)	2 weeks *(includes 1 week to process through Minister's office)*
	Commission	+ 3 weeks
Decision Process		
Minister considers the **Code Amendment Report** and the **Engagement Report** and makes decision.	Minister	3 weeks
Implementing the Amendment (operation of the Code Amendment)		
Go-live / Publish on the PlanSA portal.	DTI	2-4 weeks
Parliamentary Scrutiny		
Referral of approved **Code Amendment** to ERDC.	DTI	8 weeks

STATE PLANNING COMMISSION

TO: MINISTER FOR PLANNING

RE: PROPOSAL TO INITIATE THE LOT 501 BEDFORD PARK CODE AMENDMENT BY BUNNINGS PROPERTIES PTY LTD – FOR INITIATION

PURPOSE

To recommend that you approve, with conditions, the Proposal to Initiate the Lot 501 Bedford Park Code Amendment (the Proposal).

BACKGROUND

Section 73(2)(b)(vii) of the *Planning, Development and Infrastructure Act 2016* (the Act) provides that a proposal to amend a designated instrument may be initiated by a person who has an interest in land with your approval, acting on the advice of the State Planning Commission (the Commission).

Bunnings Properties Pty Ltd (the Proponent), care of Future Urban, has lodged a Proposal to amend the Planning and Design Code (the Code) as it relates to the affected area (**Attachment 1**).

The Commission considered the Proposal at its meeting of 8 December 2022 and resolved to support the Code Amendment, subject to conditions.

DISCUSSION

The following sets out the strategic, policy and procedural considerations in relation to the Proposal to Initiate, including conditions that are recommended should you agree to initiate the Code Amendment.

Proposal

The Proposal seeks to rezone the affected area from the Urban Neighbourhood Zone and Urban Neighbourhood Retail Subzone to the Employment Zone.

The affected area comprises 4.029 hectares and is located over portion of Lot 707 Marion Road, Bedford Park within the City of Marion (the Council), on Kaurna Country.

On 10 January 2022, the existing Bedford Park Code Amendment was initiated by the former Minister for Planning and Local Government, Mr Josh Teague MP. The Designated Entity was Troon Group Pty Ltd (care of Future Urban), and the affected area comprised 3.76 hectares over portion of the same Lot 707.

A copy of the initiation letter to the Troon Group Pty Ltd is provided at **Appendix A**.

Troon Group Pty Ltd had executed a contract with the owners of the land, the Indigenous Land and Sea Corporation (ILSC), with a view to undertaking an integrated development comprising large format bulky goods/service trade premises over the affected area, and small-scale retail and medium density housing for Aboriginal people in the northern portion of the allotment (outside the affected area).

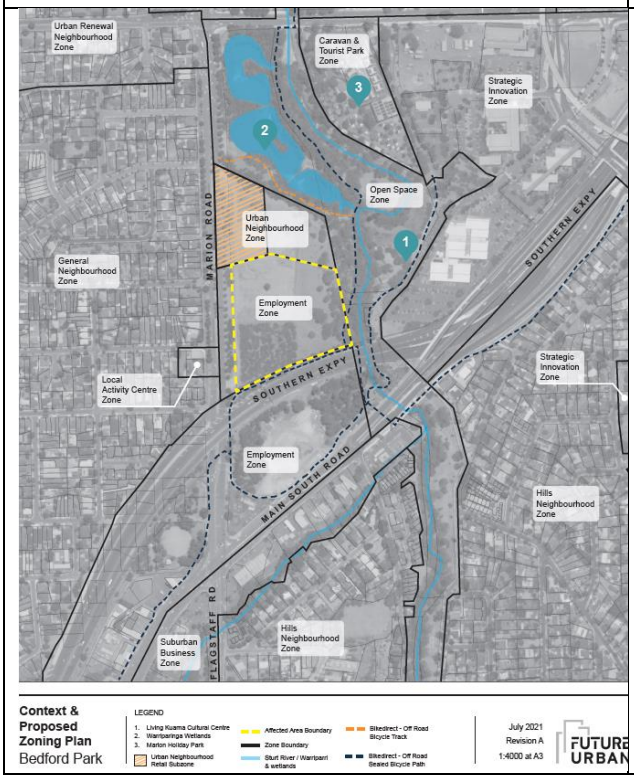
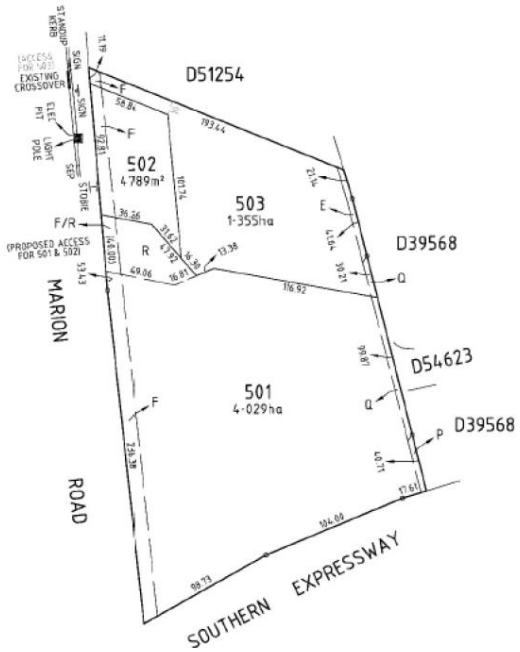
Since initiation, approval to divide Lot 707 into three allotments has been granted by Council. On deposit of the approved plan of division and creation of the new allotments, Bunnings Properties Pty Ltd will become the registered owner of allotments 501 and 502, with the ILSC retaining ownership of allotment 503.

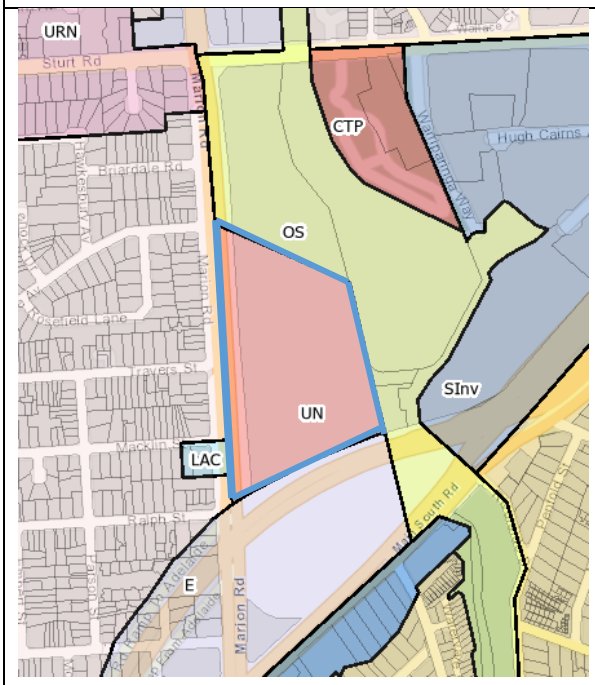
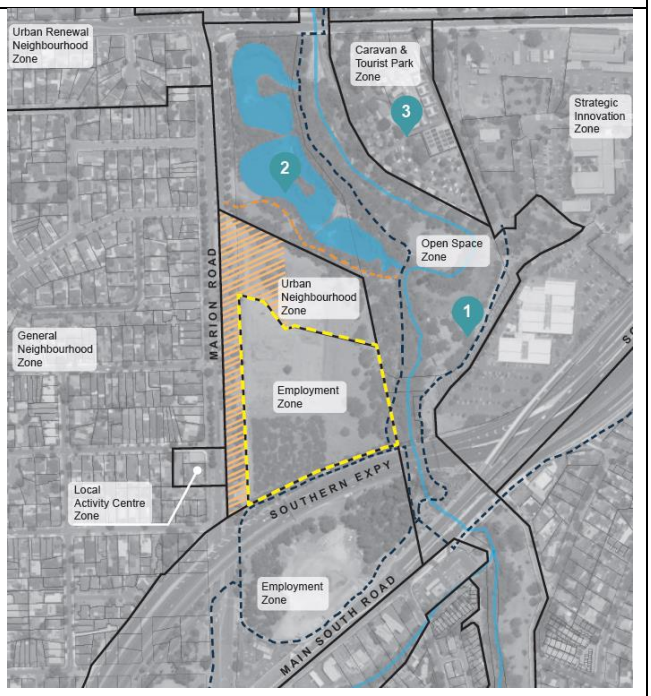
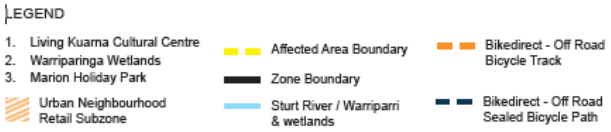
A new Proposal has therefore been submitted which seeks to identify the Designated Entity as Bunnings Properties Pty Ltd and amends the affected area to align with the new allotment boundary of Lot 501.

However, the basis for the Code Amendment remains the same, with the Proposal seeking to facilitate development of large format bulky goods/service trade premises.

It is proposed that, if initiated, Troon Group Pty Ltd will withdraw the initiated Bedford Park Code Amendment.

The former and current affected area, land division and current and proposed zoning are shown in the figures below.

Proposal to Initiate by Troon Group Pty Ltd – Initiated 10 January 2022	Approved division of Lot 707 into three allotments. On creation of the new allotments, Bunnings Properties Pty Ltd will become the registered owner of allotments 501 and 502, with the ILSC retaining ownership of allotment 503.
	

Current South Australian Property and Planning Atlas (SAPPA) Zoning	Proposed Zoning
	
The Affected Area is located within the: • Urban Neighbourhood Zone • Urban Neighbourhood Retail Subzone. The following Overlays apply to the land: • Airport Building Heights (Regulated) (All structures over 45 metres) • Advertising Near Signalised Intersections • Affordable Housing • Hazards (Bushfire - Urban Interface) • Heritage Adjacency • Hazards (Flooding General) • Major Urban Transport Routes • Noise and Air Emissions • Non-stop Corridor • Prescribed Wells Area • Regulated and Significant Tree • Traffic Generating Development • Water Resources.	 Proposed Zoning: • Employment Zone • No change to existing Overlays anticipated by proponent. Land surrounding the affected area is within the Employment Zone, Local Activity Centre Zone, Urban Neighbourhood Zone, General Neighbourhood Zone and Open Space Zone.

The Proponent has advised that no change to existing Overlays is likely. It is noted, however, that the existing Affordable Housing and Noise and Air Emissions Overlays are unlikely to be relevant to the proposed Employment Zone. The Proponent has advised that further investigation will be undertaken to determine the relevance of existing Overlays.

Strategic considerations

The following sets out the strategic considerations relating to this proposal and rationale for the Commission recommending support for the Code Amendment.

An assessment against the State Planning Policies (SPPs) and relevant Regional Plan are provided in **Appendix B**.

Strategic advice

The Proposal seeks to rezone land to facilitate increased employment opportunities through application of the Employment Zone over the affected area, facilitating investment and development of underutilised land. Further specific reasons for supporting the Code Amendment are provided below:

- The rezoning will address demand by increasing the supply of employment land within the Inner South region, which has the second lowest amount of vacant, zoned employment land in the Greater Adelaide region (behind the Inner Metro).
- The northern portion, contained within Lot 503, will be retained in the Urban Neighbourhood Zone, facilitating an integrated aboriginal housing development. This portion of the land has higher amenity, and is more suited to residential development, abutting the wetlands and separated from the Southern Expressway.
- The affected area is well positioned for employment activities, being adjacent arterial roads with high traffic volumes.

Land supply

The affected area is located within the Inner South region of the Greater Adelaide Planning Region (GAPR). The Land Supply Reports (LSRs) for Greater Adelaide estimate that:

- By 2030, the population in the Inner South region is projected to grow by 14,700 (medium) to 16,400 (high) persons.
- The Inner South region has a total of 250 hectares of zoned employment land, with much of this land located in Tonsley. Only eight hectares of land remains vacant.
- The Proposal will provide additional employment land supply to service projected population growth under both a medium- and high-scenario over the next 10-15 years.

Land use characteristics

The affected area adjoins the Sturt River and wetlands to the east and has frontage to Marion Road of approximately 236 metres and to the Southern Expressway of approximately 220 metres. The site is currently undeveloped with native vegetation present, including seven significant and 15 regulated trees together with an olive grove. Residential development is located to the west over Marion Road, and an Employment Zone south of the Southern Expressway. A limited soil assessment undertaken by Fyfe has identified that soils do not represent a risk to human health for commercial land use.

Retail analysis

The affected area is located 1.5km south-east of Westfield Marion (Urban Activity Centre), with other smaller centres located within a 10-minute drive time. A retail floor space capacity analysis was undertaken by Deep End Services to determine the sustainable amount of large format retail floor space that could be accommodated on the site. The analysis identified an undersupply of hardware and large format retail floor space, concluding that there is sufficient demand to support either a large hardware store or showroom development without significant impact on existing retail activities.

Cultural heritage

A heritage site – listed on the Attorney-General's Department (AGD) Register of Aboriginal Sites and Objects – extends across the affected area with a high likelihood of encountering cultural materials. Independent Heritage Consultants were engaged to prepare a Cultural Heritage Management Plan that considers the broader Warriparinga landscape. Several risk mitigation actions have been recommended in relation to future construction activity.

The Kaurna Nation Cultural Heritage Association has been identified as a stakeholder with a high-level of interest for engagement, and appointment of a Kaurna Heritage Coordinator forms part of the Cultural Heritage Management Plan recommendations for future construction activity. It is recommended that the Aboriginal Affairs and Reconciliation unit of AGD also be identified for engagement.

Transport and access

The affected area is serviced by public transport, and bicycle lanes are provided on Marion Road. Marion Road and the Southern Expressway are State-managed, and the Southern Expressway is a controlled access road (access not available). Preliminary investigations undertaken by MFY identified that the primary issue will be the provision of safe and convenient access, without compromising the functionality of the adjacent road network.

Investigations also recommended a signalised intersection as the preferred option. Modelling of signalised access has been reviewed by the Department for Infrastructure and Transport (DIT). It is recommended that a condition be included requiring formal engagement with DIT.

Services and infrastructure

A Preliminary Infrastructure and Servicing Report was undertaken by Greenhill. Augmentation will be required including connections to adjacent water and power mains, gas, and telecommunications infrastructure. There are no existing sewer connections to the site. Further investigation into infrastructure and service provision is proposed and is recommended as a condition of approval.

Stormwater management

The site naturally grades towards the Warriparinga Wetlands and Sturt River. Council has advised of concerns regarding stormwater management, with the Marion Road stormwater system having only limited capacity. Outlet to the sensitive Wetlands is unlikely to be supported, or will otherwise require significant quality management. Any stormwater outlet to the Sturt River will comprise a water affecting activity.

The Engagement Plan has identified the Environment Protection Authority (EPA) and Department for Environment and Water (DEW) for consultation. It is recommended that the Green Adelaide Landscape Boards also be consulted with regard to water affecting activities and management of surface water resources, pursuant to the *Landscape South Australia Act 2019*.

The Commission attached a condition to the previous Proposal by Troon Group Pty Ltd requiring further investigation into the potential impacts of future development and management measures to ensure protection of the Warriparinga Wetlands and Sturt River. This Proposal by Bunnings Properties Pty Ltd, consistent with the previous approval, proposes a new investigation into the potential impacts on the Warriparinga Wetlands and Sturt River.

Procedural considerations

The following sets out the key procedural considerations that satisfy the legislative requirements. Pursuant to section 73(5) of the Act, approval for a Proposal to Initiate may be given on conditions prescribed by the regulations (there are none at this time) or as specified by you, as Minister for Planning. As such, a number of conditions are recommended by the Commission as set out below.

Information requirements

In accordance with *Practice Direction 2 – Preparation of Amendment of Designated Instruments*, the mandatory information requirements have been met, and therefore, the Proposal is of a suitable form to be considered by you.

Consistent with the State Planning Policies and Regional Plan

The Code must be consistent with the principles of the SPPs and should be consistent with the directions of the relevant Regional Plan, which, in this instance, is *The 30-Year Plan for Greater Adelaide: 2017 Update*.

This assessment is provided in **Appendix B**. A more detailed analysis is also located in the Proposal. In summary, the Proposal is considered to be consistent with the SPPs and Regional Plan.

Designated Entity

As this proposal is by a private proponent, under section 73(4) of the Act, you may decide to enable the Proponent to be the Designated Entity and conduct the Code Amendment processes, or alternatively, you can give the Chief Executive of the Department for Trade and Investment the responsibility for undertaking the processes.

The documentation should, however, be prepared by a suitably qualified person to ensure statutory procedures and good planning outcomes are addressed. It is recommended that Bunnings Properties Pty Ltd be the Designated Entity responsible for undertaking the Code Amendment process.

Investigations to support the Amendment

The investigations undertaken to date are outlined in the Proposal (**Attachment 1**).

The Proponent has identified further investigations to support the Code Amendment, including:

- Final Infrastructure and Servicing Report – the Commission recommends that a condition be placed on this Code Amendment, under section 73(5) of the Act, to ensure that appropriate funding agreements for delivery of infrastructure are in place prior to approval.
- Environmental Noise Assessment to consider the future interface between residential and non-residential uses.
- Final Traffic Advice, including engagement with DIT.
- Potential impacts on the Warriparinga Wetlands and Sturt River.
- Relevance of existing Overlays to the proposed Employment Zone.

The Commission has resolved that these investigations are suitable and no other investigations are specified under section 73(6)(f) of the Act.

Application of the Code

The Proposal seeks to rezone land from the Urban Neighbourhood Zone to the Employment Zone to support retail development, including bulky goods. The Proposal does not seek to amend Code policy and is therefore considered appropriate.

Engagement

The Proponent has undertaken preliminary consultation with Council who have acknowledged the Proposal, reserving the right to provide more definitive comment as part of the Code Amendment process, and subject to Bunnings Properties Pty Ltd:

- Entering into a Land Management Agreement (LMA) or other legal agreement to exclude the use of the land for a retail fuel outlet.
- Granting a Council easement on the land to allow the formalisation of a shared use pedestrian and cycle path on the western side of the river.

Council Administration provided further advice by way of email dated 12 October 2022, advising that it had been made aware of the proposed minor changes to the Code Amendment (**Appendix C**).

In accordance with the Community Engagement Charter, the Designated Entity is required to prepare an Engagement Plan that will outline how, when and with whom it engages with regarding the proposed Code Amendment. Consultation is scheduled to commence in January 2023.

The Commission has determined to specify the following further persons or bodies that the Designated Entity must consult with in relation to the proposed Code Amendment, as permitted under section 73(6)(e) of the Act:

- Department for Infrastructure and Transport
- Attorney-General's Department, Aboriginal Affairs and Reconciliation
- Green Adelaide Landscape Boards
- Utility providers including SA Power Networks, ElectraNet Pty Ltd, APA Group, SA Water, EPIC Energy, NBN, and other telecommunications providers
- State Members of Parliament for the electorates in which the proposed Code Amendment applies.

In addition, in accordance with sections 44(6) and 73(6)(d) of the Act, consultation must be undertaken with:

- City of Marion
- Owners or occupiers of the land and adjacent land in accordance with the *Planning Development and Infrastructure (General) Regulations 2017.*

RECOMMENDATIONS

It is recommended that you:

1. Note the advice of the State Planning Commission provided to you as required under section 73(2)(b) of the Act. NOTED / NOT NOTED

2. Note that the State Planning Commission has, under section 73(6)(e) of the Act, specified that the Designated Entity must consult with the following nominated individuals and entities, and advise the Designated Entity accordingly: NOTED / NOT NOTED

   - Department for Infrastructure and Transport
   - Attorney General's Department, Aboriginal Affairs and Reconciliation
   - Kaurna Nation Cultural Heritage Association
   - Green Adelaide Landscape Boards

- Utility providers, including SA Power Networks, ElectraNet Pty Ltd, APA Group, SA Water, EPIC Energy, NBN, and other telecommunications providers
- State Members of Parliament for the electorates in which the proposed Code Amendment applies.

3. Note that the State Planning Commission has, under section 73(6)(f) of the Act, resolved not to specify further investigations or information requirements in addition to that outlined in the Proposal to Initiate, and advise the Designated Entity accordingly.

NOTED / NOT NOTED

4. Approve initiation under section 73(2)(b) of the Act, subject to the following conditions, under section 73(5) of the Act:

APPROVED / NOT APPROVED

a) Prior to approval of the Code Amendment, the Designated Entity must demonstrate to the satisfaction of the Minister for Planning that all necessary agreements or deeds are fully executed as required to secure the funding and/or delivery of all infrastructure required to accommodate the development of the affected area, as proposed by the Code Amendment, to the satisfaction of all relevant infrastructure providers.

b) The scope of the proposed Code Amendment does not include the creation of new planning rules, and is limited to the spatial application of zones, subzones, overlays, or technical and numerical variations provided for under the published Planning and Design Code (on the date the Amendment is released for consultation).

c) The Code Amendment is prepared by a person with qualifications and experience that is equivalent to an Accredited Professional—Planning Level 1 under the Act.

d) Troon Group Pty Ltd must withdraw the previously initiated Bedford Park Code Amendment.

5. Under section 73(4)(a) of the Act, approve the initiation of the Code Amendment on the basis that Bunnings Properties Pty Ltd will undertake the Code Amendment processes (as the Designated Entity) required under the Act.

APPROVED / NOT APPROVED

6. Agree to sign the Proposal to Initiate the Lot 501 Bedford Park Code Amendment (**Attachment 1**). AGREED / NOT AGREED

7. Agree to sign the attached letters to the Proponent (**Attachment 2**) and the City of Marion (**Attachment 3**) advising of your approval and conditions. AGREED / NOT AGREED

_____
NICK CHAMPION MP
/ / 2022

CRAIG HOLDEN
Chair, State Planning Commission
15 / 12 / 2022

Attachments:

1. Proposal to Initiate the Lot 501 Bedford Park Code Amendment (#19367394).
2. Suggested letter to the Proponent (#19468541).
3. Suggested letter to the City of Marion (#19468388).

Appendices:

A. Letter from the Minister for Planning and Local Government to Troon Group Pty Ltd, 10 January 2022 – Initiation of the Bedford Park Code Amendment (#18218447).

B. Assessment against the State Planning Policies and Regional Plan (#17791047).

C. Email from City of Marion, 12 October 2022 (#19378512).

Contact: Nadia Gencarelli
Tel No: 08 7109 7036