2025

THE LEGISLATIVE ASSEMBLY FOR THE

AUSTRALIAN CAPITAL TERRITORY

ELEVENTH ASSEMBLY

Major Plan Amendment to the Territory Plan

Watson Section 95 Block 3

pursuant to the *Planning Act 2023, Section 77*

Presented by
Chris Steel MLA
Minister for Planning and Sustainable Development
April 2025

Australian Capital Territory

Planning (Watson) Major Plan Amendment 2025

Notifiable instrument NI2025-

made under the

Planning Act 2023, s 75 (Minister's powers in relation to draft plan amendments)

---

1 Name of instrument

This instrument is the *Planning (Watson) Major Plan Amendment 2025*.

2 Major plan amendment

(1) I approve under section 75 (2) (a) of the *Planning Act 2023* (the ***Act***) the Major Plan Amendment C to the Territory Plan.

(2) In accordance with the Act, section 75 (5) (c), a major plan amendment must be presented to the Legislative Assembly and may only commence by commencement notice under section 80 (2).

3 Dictionary

In this instrument:

Major Plan Amendment C to the Territory Plan means the Major Plan Amendment in schedule 1.

Chris Steel MLA
Minister for Planning and Sustainable Development
07 April 2025

ACT Government
Territory Planning Authority

MAJOR PLAN AMENDMENT to the TERRITORY PLAN C

Block 3 Section 95 Watson

April 2025

This major plan amendment was prepared under division 5.2.7 of the *Planning Act 2023*

Contents

1.0 Introduction 1

1.1 Purpose 1

1.2 Outline of process 1

2.0 Summary of MPA-C 2

2.1 Site description 2

2.2 Summary of amendments to the Territory Plan 4

2.3 Summary of consequential amendments to other documents 5

3.0 NEED FOR THE MAJOR PLAN AMENDMENT 6

3.1 Application 2023-01 6

4.0 CONSULTATION 7

4.1 Consultation with agencies 7

4.2 Consultation with the public 7

5.0 MAJOR PLAN AMENDMENT C 8

5.1 Amendments to the Territory Plan Map 8

INTERPRETATION SERVICE 9

1.0 Introduction

1.1 Purpose

This document is major plan amendment C – Block 3 Section 95 Watson (MPA-C) to the Territory Plan.

Key parts of this document are:

- section 2 – summarises the MPA, including amendments to the Territory Plan and associated documents
- section 3 – why this MPA was undertaken
- section 5 – detailed amendment instructions to the Territory plan proposed by this MPA.

1.2 Outline of process

A major plan amendment (MPA) is statutory process under the Planning Act that enables the Territory Plan to be amended. MPAs can be enabled in one of three ways:

- Proponent-initiated
- Authority-initiated
- Minister-initiated

MPA-C was a proponent-initiated amendment.

After considering and accepting the proponent-initiated amendment application (2023-01), the Territory Planning Authority (the Authority) prepared a draft plan amendment for the proposed changes (DPA-C). DPA-C was subject to consultation with entities and the public.

After consultation concluded, the Authority considered the comments and made and relevant revisions to DPA-C before giving it to the Minister for referral to the relevant Legislative Assembly Standing committee (the Standing Committee). The Standing Committee did not prepare a report in relation to DPA-C.

With the above complete, and in considering the background papers, the ACT Planning Strategy 2018 and the Inner North and City District Policy, the Minister for Planning and Sustainable Development approved MPA-C.

The Minister must now present MPA-C to the Legislative Assembly who may reject it completely or partly. If passed by the Legislative Assembly, the MPA may commence and become part of the Territory Plan.

A commencement notice or rejection notice will be published on the major plan amendment webpage.

For more information about the content of the Territory Plan and the major plan amendment processes please refer to the Environment, Planning and Sustainable Development (EPSDD) website.

2.0 Summary of MPA-C

This section summarises:

- the amendments MPA-C made to the Territory Plan and supporting documents
- outlines the relevant subject area

Amendments to the Territory Plan by this MPA are summarised in section 2.2 and shown in detail at section 5 of this document.

2.1 Site description

MPA-C relates to the subject area shown in Figure 1. The subject area consists of Block 3 Section 95 Watson. The Territory Plan zoning for the subject area prior to MPA-C can also be seen in Figure 1.

The subject site is located at Block 3 Section 95 Watson in Canberra's Inner North and City District. The site was previously zoned CZ6 – Accommodation and Leisure zone, with a Future Urban Area overlay and is not subject to any provisions under the National Capital Plan.

The site is situated on the corner of Aspinall Street and Antill Street on the eastern edge of North Watson. The Canberra Carotel Motel occupies the western portion of the site, and the remainder of the site is currently unused. The surrounding land uses vary with low to medium-rise residential developments located to the south and north of the site. There are a range of community uses located to the west of the site, such as the C3 Church Watson, Youth with a Mission and Canberra Potters Society. Located east of the site is the Mount Majura Nature Reserve, which is connected to the Mount Majura Special Purpose Reserve.

The site is well connected to public transport. There is a bus stop directly north of the site on Aspinall Street and another bus stop within 100m of the site along Antill Street. Located within 2km (a 4 minute drive or 25 minute walk) of the site is the Watson local centre with a post office, pharmacy, small supermarket, café and food takeaway. Also located less than 2km from the site is the Majura Primary School. There are many parks and recreational spaces in the surrounding area.

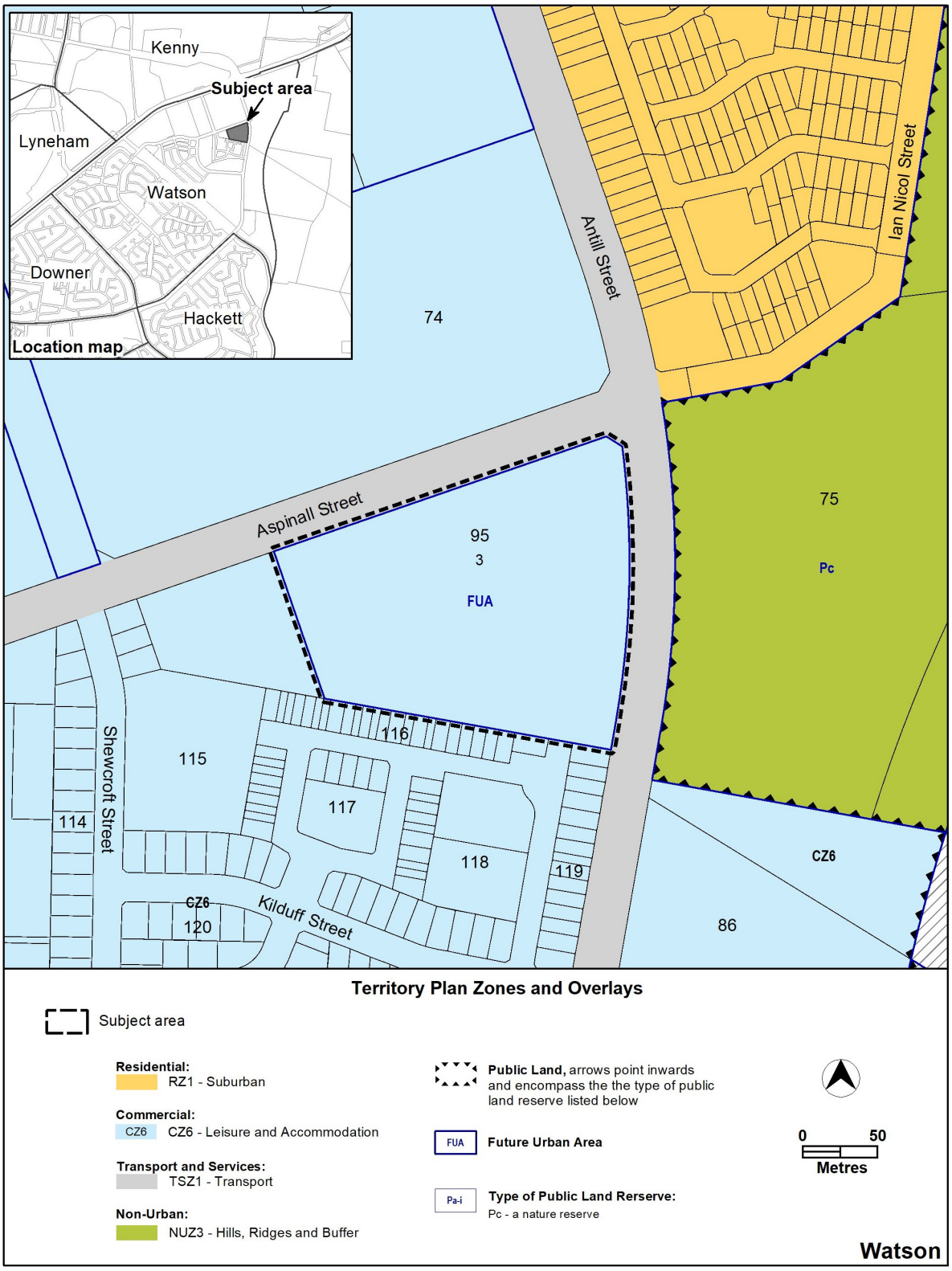

Figure 1 Locality map and previous Territory Plan zoning

2.2 Summary of amendments to the Territory Plan

MPA-C amends the Territory Plan to permit appropriate development on the site, as outlined in the supporting report, DPA-C proposes to amend the Territory Plan by rezoning Block 3 Section 95 Watson from CZ6 – Leisure and Accommodation Zone to RZ4 – Medium Density Residential Zone (Figure 2).

Further detail of the amendments being made to the Territory Plan by this MPA can be found in section 5 of this document.

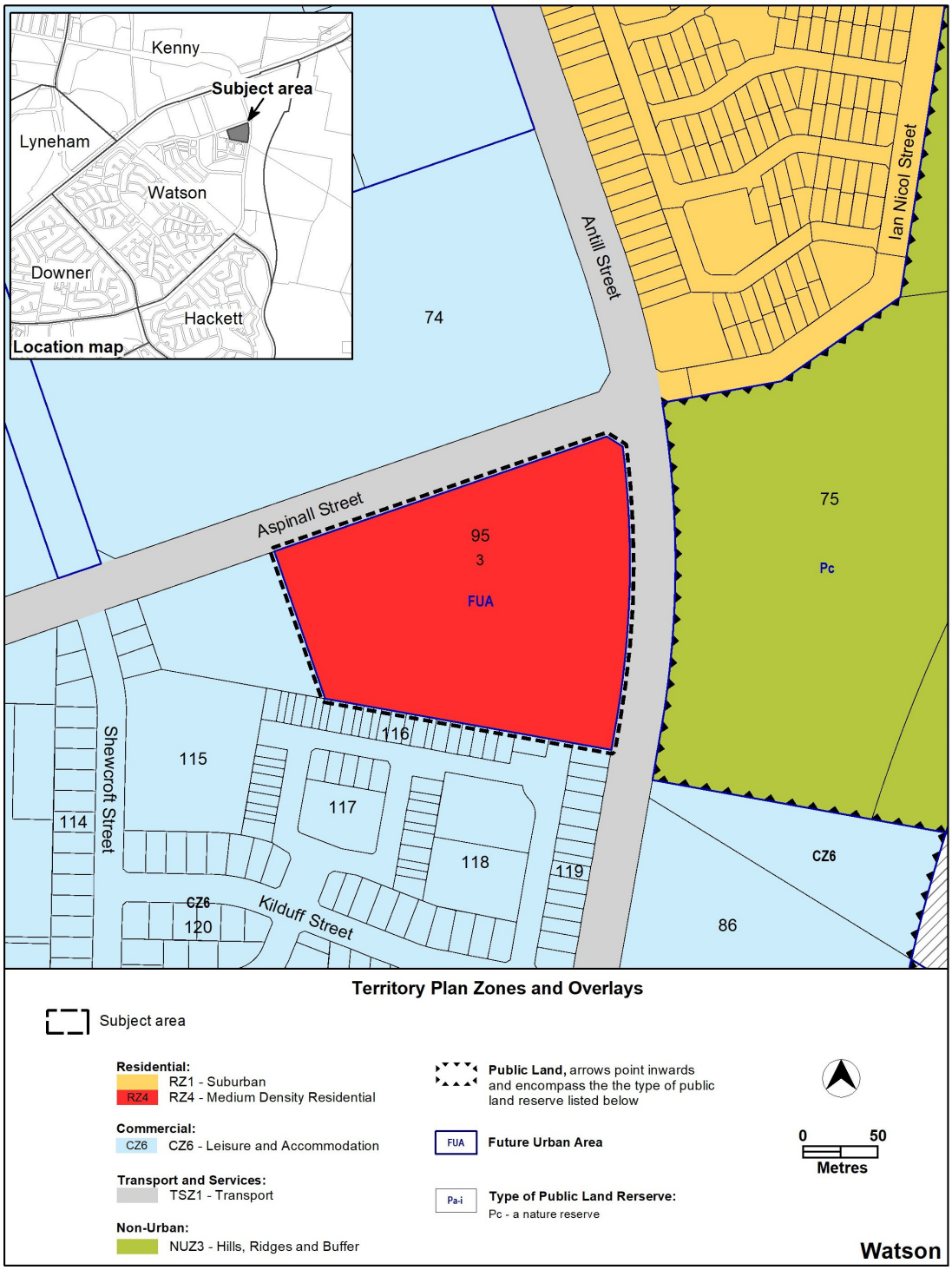

Figure 2 –Territory Plan zoning as amended by MPA-C

2.3 Summary of consequential amendments to other documents

Documents, such as the technical specifications and development controls are not part of the Territory Plan. Therefore, they cannot be amended as part of an MPA and must be amended separately when/if the DPA commences.

MPA-C does not propose to consequentially amend any other documents.

.

3.0 NEED FOR THE MAJOR PLAN AMENDMENT

Canberra's population is growing quickly, and the ACT only has a limited amount of available land for new suburbs. To manage future growth in a sustainable way, the majority of new housing is required to be provided within existing suburbs through urban infill and increased density. This provides the opportunity to make sure that current and future residents will have improved walkability to transport, high-quality services, employment, health, education and open space.

Located within the Inner North and City District, Block 3 Section 95 Watson has been identified as a category 1 change area in the Inner North and City District Strategy, where change could happen in the next 0-5 years. MPA-C aims to facilitate this change by rezoning the site to RZ4 and allowing medium density residential development, which looks to provide approx. 134 residential dwellings.

It is intended to provide dwellings of various densities, as shown in the masterplan provided and detailed further in the supporting report, including a mix of single residential blocks and multi unit blocks (containing townhouses and apartments). The range of low to medium density residential typologies are consistent with those in the surrounding North Watson area.

Providing this density of residential development is highly appropriate given the need for additional housing to achieve the ACT Government's target of at least 70% urban infill and increased densities in existing urban areas. While increasing density, MPA-C considers the existing qualities of the suburb of Watson, particularly by making sure green spaces and trees are preserved, and that streetscapes are enhanced with careful consideration regarding the interface with the surrounding sites.

The supporting report provides further reasoning for the amendment proposed by this MPA. The supporting report is available on the EPSDD website.

3.1 Application 2023-01

Prior to the preparation of a proponent-initiated amendment, the proponent must lodge an application to be considered and accepted by the Authority. The application must be accompanied by a supporting report.

The supporting report must include how the proposal gives effect to the following 'key documents':

- the Planning Strategy
- the relevant District Strategy
- any current or proposed amendments to the Territory Plan
- the Statement of Planning Priorities
- anything else the Authority considers relevant.

In accordance with section 59 of the Planning Act, the Authority accepted application 2023-01 on 13 March 2024 as it was satisfied the intended development outlined in the supporting report gave effect to the 'key documents'.

The Authority's reasoning for this MPA can be found in section 3 of this document.

4.0 CONSULTATION

4.1 Consultation with agencies

In accordance with section 62 of the Planning Act the Authority consulted with the following in relation to this MPA:

- the National Capital Authority
- the Conservator of Flora and Fauna
- the Environment Protection Authority
- the Heritage Council
- each referral entity
- if unleased or leased public land, each custodian of the land likely to be affected.

Comments received from these and other agencies were considered in the preparation of and by the Minister in approving this MPA.

4.2 Consultation with the public

Written comments were invited from the public on this MPA from 6 September 2024 until 21 October 2024.

Five comments were received during the public consultation period. The main matters raised were:

- objection to rezoning to RZ4 from CZ6
- need for more compact blocks
- concerns about building heights (amenity, solar access, overshadowing and overlooking
- concerns about traffic, access and parking, particularly on Antill Street
- need for a dog park and a men's shed on the site

Changes were not made to MPA-C because of the above comments. This is because the matters raised have either been addressed or are more appropriately dealt with at the detailed design stage as part of a future development application for the site.

Comments received from the public during the consultation period were considered by the Minister in approving this MPA.

5.0 MAJOR PLAN AMENDMENT C

This section details how MPA-C proposes to amend the Territory Plan.

5.1 Amendments to the Territory Plan Map

The relevant part of the Territory Plan map is varied in accordance with Figure 3

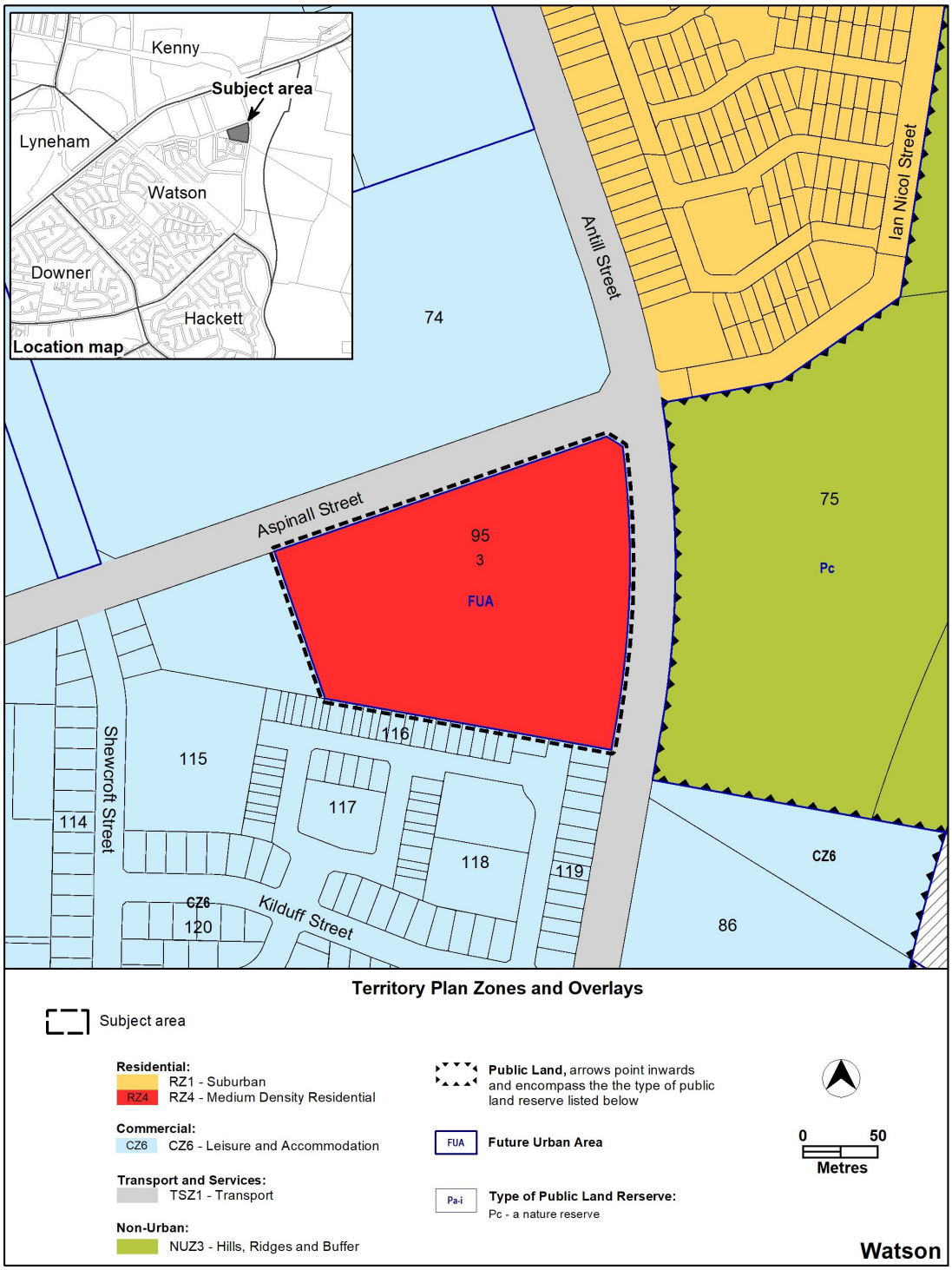

Figure 3 –Territory Plan Map as amended by MPA-3

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ACT Government

Environment, Planning and Sustainable Development

APPLICATION OUTCOME NOTICE

Made under Part 5.2, Division 5.2.2 of the *Planning Act 2023*

Application Number: 2023-01

Applicant Name: Purdon Planning

Applicant Address: Suite 5, Level 1/243 Northbourne Ave, Lyneham ACT 2602

The Territory Planning Authority, pursuant to section 56 of the *Planning Act 2023*, **accepts** the application for the proponent-initiated major plan amendment mentioned in Part A. of this document, with conditions (mentioned in Part B).

This decision contains the following information:

Part A – Proposal

Part B – Conditions of acceptance

Part C – Reasons for the decision

Part D – Entity Advice

Part E – Administrative information

Alix Kaucz
Territory Planning Authority
13 March 2024

Part A – Proposal

This application outcome notice relates to application 2023-01 which is set out in the relevant supporting report and any additional information provided by the applicant during the application process.

The key parts of the application are set out below.

Site Details

Location: Section 95 Block 3

- The site is zoned CZ6 – Accommodation and Leisure.
- The site has an FUA: Future Urban Area overlay.
- The site is currently used by Canberra Carotel Motel, which occupies the western portion of the site, the remainder of the site is presently unused.

Lessee/Custodian: Maryalicec Pty Limited

Scope of Application

The application seeks to amend the Territory Plan in the following ways:

- Rezone the site to Medium Density Residential Zone (RZ4)
- Enable a range of building heights, from 9.5m to 12.5m.
- The proponent's intention for the site is to offer a range of low and medium residential typologies, consistent with the surrounding area.

Additional Information

The following additional information was requested by the Territory Planning Authority during the application process:

- The major plan amendment application for Watson Section 96 Block 3 be amended to reflect a RZ4 Medium Density Residential zoning, rather than retaining CZ6 and adding residential as a permissible use.
- The major plan amendment application for Watson Section 95 Block 3 be amended to include an environmental assessment, in accordance with the Environment Protection Authority (EPA) guidelines.

Part B – Conditions of Acceptance

This section contains any conditions of Acceptance set by the Authority. These will generally include minor updates requested by the Authority or information which supersede the information provided by the proponent.

The conditions of acceptance for this application are as follows in the table below.

Environment Protection Authority
The Environment Protection Authority (EPA) has reviewed the provided Preliminary Site Investigation (PSI) and has concluded that the PSI is inadequate to draw a conclusion regarding the site's suitability. The EPA requests that a phase 2 (intrusive) environmental assessment be undertaken by a suitably qualified environmental consultant to determine whether past activities have impacted the site from a contamination perspective and to determine whether the site is suitable for the proposed and permitted uses. The consultant's phase 2 assessment report must be submitted to the EPA (contaminatedsites@act.gov.au) for review and endorsement prior to the commencement of a major plan amendment process.

Part C – Reasons for the decision

In deciding this application, pursuant to section 56 of the *Planning Act 2023*, the Territory Planning Authority must have regard to:

(a) the planning strategy;
(b) the relevant district strategy;
(c) any current or proposed amendments of, or of policies in, the Territory Plan;
(d) the statement of planning priorities;
(e) anything else the Territory Planning Authority considered relevant to the amendment.

As the application has been accepted, subject to the conditions of approval being met, a MPA document will be drafted. The MPA document, along with this application, will be released to the public for consultation under section 61 of the *Planning Act 2023*.

The planning strategy

The ACT Planning Strategy builds off the original vision of Walter and Marion Mahoney Griffin of a city with a landscape that celebrates its bushland setting. ACT Planning Strategy seeks to manage the growth and change of Canberra to not only retain this original vision but to also ensure a city that is compact and efficient, diverse, sustainable and resilient, liveable and accessible.

Reasons for the decision

- The proposal is consistent with the planning strategy.

The relevant district strategy

The district strategies seek to capture and protect the valued character and attributes of the nine districts of Canberra. The district strategies deliver the ACT Planning Strategy by providing more specific and targeted directions for each district. The districts strategies guide the strategic management of growth and change on a district scale in the context of green and blue spaces, good travel connections, housing, employment growth and support commercial areas.

The relevant district strategies for this application are Inner North and City.

Reasons for the decision

- The proposal is consistent with the Inner North and City district strategy.
- The site is marked as a change area where detailed planning can proceed, consultation needs to occur, and change could happen within 0–5 years.

Any current or proposed amendments of, or of policies in, the Territory Plan

Policies within the Territory Plan are key to shaping places and communities in the ACT, implementing strategic planning objectives, protecting and minimising the impacts on our environment, and establishing future urban form and development

patterns. The policies outline the desired policy outcomes that are important to a district or zone and include assessment outcomes and key assessment requirements that must be met by proposed development. Therefore, an application to amend these existing or proposed policies should be carefully considered.

Reasons for the decision

- The Territory Plan Authority has considered all relevant legislation and has consulted all relevant agencies regarding this proposal.

The statement of planning priorities

The relevant minister responsible for planning can set a statement of planning priorities. These planning priorities must arise from the planning strategy and contain actions to be taken in the short to medium term to achieve the priorities.

There is currently no relevant statement of planning priorities issued.

Reasons for the decision

There is no relevant statement of planning priorities, therefore this application has not been assessed against it.

Anything else the territory planning authority considers relevant to the amendment

Planning is a complex and ever-changing environment with many stakeholders. Policy or requirements from other areas of the ACT Government or Federal Government, particularly the National Capital Authority, utility providers and interest groups must also be considered when deciding an application to amend the Territory Plan.

Reasons for the decision

- The Territory Plan Authority has considered all relevant legislation and has consulted all relevant agencies regarding this proposal.

Part D – Entity Advice

The following entity advice is provided below for information purposes.

Conservator of Flora and Fauna
Priority should be given to retaining and protecting any significant trees on the block when future development is considered.
Land Management (Jemena)
It is noted that the nearest high-pressure pipeline is located 450m from site and as such, Jemena does not anticipate that the proposed development will impact Jemena's high pressure natural gas pipeline.

Part E – Administrative information

This section is general information for the proponent outlining the relevant questions and next steps that result in deciding this application.

What happens if my application is accepted?

If the proposal is accepted the Territory Planning Authority will undertake a MPA to the Territory Plan following the process set out under the *Planning Act 2023*.

The next major step in the process is preparing the MPA for release to the public for consultation. After consultation the territory planning authority may decide to continue with, revise or withdraw the MPA.

In accepting an application, the Territory Planning Authority:

- is not taken to support the application by preparing the draft MPA;
- must continue to assess the merits of the application; and
- is not bound to proceed with the amendment.

Payment of fees

If your application was accepted '*Final administrative charges for major territory plan amendments and supporting report*' fees must now be paid. This fee can be paid online via the Access Canberra website. The MPA will not be progressed until the territory planning authority receives receipt of payment. Receipt of payment should be emailed to the Territory Plan & Coordination Section of the Environment, Planning and Sustainable Development Directorate (EPSDD).

What happens if my application is refused?

If the proposal is refused, you may contact EPSDD to discuss the decision. A new application will be required to consider an amended proposal.

Will the application be made publicly available?

If this application is accepted, pursuant to Section 57 of the *Planning Act 2023*, a copy of this decision, supporting report and any additional information will be published on the Territory Planning Authority's website when the draft amendment is published for public consultation (section 61).

Further information about the MPA process?

Further information about the MPA process, including statutory and non-statutory steps, please see the EPSDD website:
https://www.planning.act.gov.au/professionals/our-planning-system/the-territory-plan/amendments-to-the-territory-plan

Contact

The Territory Plan and Coordination Section can be contacted by:
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Email: terrplan@act.gov.au

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PLANNING REPORT

MAJOR TERRITORY PLAN AMENDMENT

BLOCK 3 SECTION 95 WATSON

17 NOVEMBER 2023

PURDON

Prepared By:

Purdon Planning Pty Ltd
Suite 5, Level 1,
243 Northbourne Avenue,
Lyneham ACT 2602
ABN 63 653 124 442
Tel 02 6257 1511
Email purdons@purdon.com.au

Web www.purdon.com.au

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Table of Contents

1.0 EXECUTIVE SUMMARY 4

2.0 DESCRIPTION OF THE PROPOSED MAJOR TERRITORY PLAN AMENDMENT 6
2.1 Introduction 6
2.2 The Site 7
2.3 Background Information 9
2.4 Statutory planning assessment 9

3.0 JUSTIFICATION FOR THE PLANNING POLICY CHANGES 17
3.2 Metropolitan Implications (CZ6 Zoning) 19
3.3 Surrounding commercial and other uses 26
3.4 Alternative zones - Residential Zones 28

4.0 STRATEGIC PLANNING POLICY CONTEXT 33
4.1 ACT Planning Strategy 2018 33
4.2 Planning (Inner North and City) District Strategy 2023 36
4.3 ACT Housing Strategy 2018 38
4.4 Statement of Good Planning (2023) 38
4.5 ACT Climate Change Strategy 42
4.6 Canberra's Living Infrastructure Plan: Cooling the City 42
4.7 ACT Transport Strategy 43
4.8 ACT Preventive Health Plan 44
4.9 Urban Forest Strategy 2021–2045 45

5.0 PRELIMINARY CONSULTATION 46

6.0 POTENTIAL IMPACTS 47
6.1 Physical features and built form 47
6.2 Social infrastructure 50
6.3 Existing character and of the site and surrounds 51
6.4 Physical Infrastructure and Transport 52
6.5 Environment assessment 56
6.6 Ecological Value 58
6.7 Noise 60
6.8 Cultural and Heritage Environment 61

7.0 RECOMMENDED MAJOR TERRITORY PLAN AMENDMENT 62

8.0 CONCLUSION 68

APPENDIX 1 - COMMUNITY CONSULTATION REPORT 69

1.0 INTRODUCTION & PURPOSE 70
1.1 ACT Community Engagement Guideline 70

2.0 CONSULTATION APPROACH 72

2.1 Stakeholders Identified 72
2.2 Consultation Activities....72
2.3 Community Feedback....75

3.0 CONCLUSION 78

Figures

Figure 1: Site Plan 5
Figure 2: Site Plan 8
Figure 3: Territory Plan Zoning 10
Figure 4: Watson Division Map from 15
Figure 5 Watson - ongoing Provisions 16
Figure 6: Medium density housing change (2016 – 21) 18
Figure 7: Existing Areas of CZ6 Zoned Land with permitted Residential uses– North Watson 24
Figure 8: CZ6 zones within ACT (in blue) 25
Figure 9: Commercial land use zones (CZ1 – CZ5) within North Canberra (excluding CZ6) 27
Figure 10: Commercial uses within 2kms from the site 28
Figure 11: Adjacent Residential Density 30
Figure 12: Surrounding built forms 30
Figure 13: ACT Planning Strategy 34
Figure 14: Extract from ACT Transport Strategy 44
Figure 15: Proposed Master Plan 48
Figure 16: Conceptual visual analysis of the proposed development – corner of Antill Street and Aspinall Street 49
Figure 17: Conceptual visual analysis of the proposed development – along Antill Street 50
Figure 18: Social Infrastructures 51
Figure 19: Estimated Traffic Distribution 53
Figure 20: Bushfire Prone Area 58
Figure 21: Site Inspection Results 60
Figure 22: Proposed Watson Ongoing Provisions 65
Figure 23: Proposed Watson Division Map 66
Figure 25: Proposed District Policy and Specification figure 67
Figure 26: Notification/Invitation Flyer 74
Figure 27: meeting notice delivery area 74

1.0 Executive Summary

This Planning Report has been prepared by Purdon on behalf of Maryalicec Pty Limited in support of an application to vary the Territory Plan for Block 3 Section 95 Watson located on the corner of Aspinall Street and Antill Street. The site is currently zoned CZ6: Leisure and Accommodation under the Territory Plan and is subject to a Future Urban Area Overlay (FUA). The Major Territory Plan Amendment (MTP Amendment) is proposed to allow for a residential development on the site. This report addresses the items identified to be addressed as part of the Scoping Document that was issued by Territory Planning Authority (TPA) in July 2022. Our team has further addressed key items associated with the *Territory Plan 2023*.

The proposal suggests an amendment to the Inner North and City District Policy to permit Residential use on the subject site, and additional specification in the Inner North and City District Specifications.

The subject site is currently used by Canberra Carotel Motel, which occupies the western portion of the site, the remainder of the site is presently unused. It is considered that a mixed density residential development is the most appropriate use of the site representing the best outcome for the area and is compatible with adjacent land uses. The site is well situated with its eastern edge facing the Mount Majura Nature Reserve, offering the potential for high amenity living within one of the last remaining blocks in the North Watson residential area. The intention of the site is to offer a range of low and medium residential typologies, consistent with the surrounding area. Recommended provisions are listed in Section 7.0 of the report.

The North Watson Structure Plan 2008, of which the subject site is a part, identifies several sites that, combined, can have up to 1,300 dwellings. Blocks 10,11 & 12 Section 74 and Block 3 Section 95 Watson are the only remaining blocks within the structure plan area not yet developed. It should be noted that the Structure Plan is no longer a relevant statutory planning instrument.

The ACT Planning Strategy sets out nine strategies supporting key actions required to ensure long-term sustainable growth in the ACT. The proposal for a mixture of low and medium density housing in North Watson supports these strategies by contributing to a 'Compact and Efficient City', and a 'Liveable Canberra' as set out in the Strategy.

District strategies state the long-term planning policy and goals for districts, consistent with the Planning Strategy (Section 38 of the *Planning Act 2023*) in the Territory Plan 2023. These new district strategies provide a new and more local look at strategies planning and guidance. The Inner North and City district strategy supports the continued transformation of North Watson to predominantly residential uses.

Preliminary Community consultation was undertaken in October 2022 with the local community and adjacent lessees prior to the finalisation of concept plans and to inform the planning proposal. Feedback from residents relating to the proposed development were sought and have informed the concept plans included in this submission. A separate report on the Preliminary Consultation is submitted as part of this application.

An impact assessment of the proposed MTP Amendment has been undertaken and is addressed in this report. Impacts considered for this analysis include:

- Physical features and built form (height and density), Visual impact and overshadowing
- Physical infrastructure and Transport

- Environment Assessment - bushfire, flooding, site contamination
- Ecological values including flora and fauna - vegetation/tree survey and significance in terms of aesthetics, conservation, and landscape Management and Protection
- Noise
- Social infrastructure either - including community, shopping, and recreation facilities
- Existing character and of the site and surrounds - urban design streetscape character
- Cultural & heritage environment – natural, Aboriginal, and European

An assessment of appropriate uses for the site has been undertaken as part of preparation of this planning report. Residential purposes have been assessed as highly appropriate given existing development in the local area, and the desirability of additional residential development to achieve urban infill and increased densities within existing urban areas. The current use is assessed as being of lower suitability given issues with viability of listed uses, and many of the possible uses within the current zone being seen as possibly inappropriate with the residential uses in the area.

The investigations have concluded that the proposed policy amendment to allow for range of low and medium density residential uses is appropriate and will deliver wider community benefits. It is also concluded that the site is appropriately located for this type of development and that there are no known physical constraints to the site that would hinder the proposed use. It is therefore recommended that TPA support the recommended MTP Amendment.

Figure 1: Site Plan

Source: Nearmaps

2.0 Description of the proposed Major Territory Plan Amendment

2.1 Introduction

This report has been prepared by Purdon on behalf of Maryalicec Pty in support of an application for a MTP Amendment for Block 3 Section 95 Watson. An amendment to the Inner North and City District Policy and Technical Specifications is recommended to permit *residential use* on the site and add additional specifications. This report responds to the Scoping Document that was issued by the Environment, Planning and Sustainable Development Directorate (EPSDD) 14 July 2022 to support the proposed MTP Amendment of Block 3 Section 95 Watson. Preliminary architectural drawings detailing the anticipated development of the site have been provided as part of this proposal. Since issuance of the Scoping Document, the Territory Plan 2023 has taken effect (effective 27 November 2023). The report and scoping elements have been updated to reflect the new legislation and requirements.

The subject site is located on the eastern edge of North Watson along Aspinall Street and Antill Street and presents the surrounding context with a unique character for a potential residential development.

This report identifies and responds to potential impacts of the proposal and is intended to provide stakeholders, including local residents and the ACT Government details of the proposed variation, possible impacts and how those perceived impacts may be ameliorated. The report also explains the rationale for the proposed amendment and outlines the preliminary consultation process undertaken on behalf of the proponent.

2.2 The Site

The site is part Block 3 Section 95 Watson.

Other site characteristics include:

Site Area	Block 3 Section 95 has an area of 34,487m^2
Current Use	The subject site is currently used by Canberra Carotel Motel, which occupies the western portion of the site, the remainder of the site is presently unused.
National Capital Plan	The site is not subject to any provisions of the National Capital Plan
Territory Plan Zoning	The site is zoned CZ6 – Accommodation and Leisure. The site also has an FUA: Future Urban Area overlay.
Existing Access	There are two existing access egress crossings on Antill Street and Aspinall Street.
Existing Parking	the existing parking is along the Antill Street and Aspinall Street.
Public Transport	There are two bus stops adjoining the subject area from north along Aspinall Street.
Vegetation	Part of the site is developed as a motel and the remainder has some ground vegetation with some trees. However, vegetation and habitat has been highly degraded by the land use history and associated vegetation modification. The site does not contain any endangered native vegetation or remnant vegetation. It is not considered that vegetation will be a constraint for any future development.
Registered/regulated trees	There are two protected trees on the east part of the subject area.
Adjacent Uses	Adjacent land uses are varied with low to medium-rise residential developments to the south and immediately north. To the west of the site there are a range of community uses among residential uses, such as a Church, Youth with a Mission, and the Canberra Potters Society Inc located further west. To the east is a Nature Reserve that adjoins the Mount Majura Special Purpose Reserve.
Topography & Drainage	The site slopes from the west to the east approximately 9-10m.The site drains to the surrounding street network.
Heritage	The site is not protected under the ACT Heritage Act 2004.
Easements	An electricity easement exists along the eastern boundary to Antill Street (ACTMAPi, 2022).
Site Servicing	Part of the site is fully serviced as it is currently used as a motel. The remainder site will be serviced as part of future works following a successful variation.

Bushfire	Eastern part of the subject area is within a declared 'Bushfire Prone Area'.
Contamination & Hazardous materials	The subject area is not listed under registered within the ACT Contamination Register.

Figure 2: Site Plan

Source: Nearmaps

2.3 Background Information

The subject site is currently used by Canberra Carotel Motel, which occupies the western portion of the site, the remainder of the site is presently unused.

A DA for Lease Variation to consolidate the leases for Block 1 Section 94 Watson, Block 1 Section 113 Watson and Block 3 Section 95 Watson and permanent installation of four transportable buildings for caretakers' residence, two halls and shed, new driveway and associated works was approved on 12 April 2018.

A DA for the Placement of 26 transportable buildings including 23 Cabins, 2 lodges and a multi-purpose hall, new electricity sub-station, and associated landscaping, civil works, driveway, street trees, and services, was approved 1 September 2017.

A DA for Sewer main extension in Aspinall Street verge plus minor stormwater and driveway works was approved on 11 March 2011.

2.4 Statutory planning assessment

2.4.1 CROWN LEASE

The Crown Lease for Block 3 Section 95 was issued to Maryalicec Pty Limited on 17 October 2018 for a period of 99 years.

The Crown Lease purpose clause states the use of the subject site is to be used only for the purpose of commercial accommodation use LIMITED to a group of commercial accommodation units to cater for school groups, sporting groups and the like together with ancillary facilities for use by the occupants of the premises such as dining, laundry and recreation facilities (as defined in the Territory Plan).

Any development on the subject site that is inconsistent with the above will require a lease variation and will be subject to a Lease Variation Charge (LVC). This can be resolved at DA stage concurrently with the assessment for Design and Siting of the development.

2.4.2 NATIONAL CAPITAL PLAN

The subject site is not within a designated area of the National Capital Plan (NCP), nor is it subject to any special requirements.

2.4.3 TERRITORY PLAN

The site is zoned CZ6 under the Territory Plan.

Figure 3: Territory Plan Zoning

- Designated Areas
- Residential - RZ1 – Suburban
- Residential - RZ4 - Medium Density Residential
- Residential - RZ5 - High Density Residential
- Community Facilities
- Commercial - CZ1 – Core
- Commercial - CZ2 – Business
- Commercial - CZ3 – Services
- Commercial - CZ5 - Mixed Use
- Commercial - CZ6 - Leisure and Accommodation
- Urban Parks and Recreation - PRZ1 - Urban Open Spaces
- Urban Parks and Recreation - PRZ2 - Restricted Access Recreation
- Transport and Services - TSZ1 – Transport
- Non Urban - NUZ3 - Hills, Ridges and Buffers

Source: Purdon (ACTMAPi, 2023)

The subject is also marked with a FUA – Future Urban Area overlay with the site identified for future urban development.)

2.4.3.1 Commercial Zones Policy

Commercial zones are primarily for commercial development providing a strong economic focus for the zone and land for the supply of commercial services. In areas not zoned mixed use, other complementary uses are permitted however these should not detract from the primary commercial nature of the zone.

Development should be of a scale and nature that recognises and responds to the zone hierarchy.CZ6 Land Use Table

The following uses are permitted within the zone subject to DA assessment by EPSDD:

CZ6	
ancillary use	light rail
aquatic recreation facility	minor road
café	minor use
car park	outdoor recreation facility
caravan/camping ground	overnight camping area
caretakers 'residence	parkland
club	pedestrian plaza
commercial accommodation use	personal service
community USE	place of assembly
community activity centre	place of worship
community theatre	religious associated use
complementary use	restaurant
cultural facility	retail plant nursery
consolidation	shop
craft workshop	sign
demolition	subdivision
drink establishment	supermarket
drive-in cinema	take-away food shop
early childhood education and care	temporary use
educational establishment	tourist facility
group or organised camp	tourist resort
guest house	transport facility
health facility	varying a lease
hotel/motel	veterinary clinic
hospital	zoological facility
indoor entertainment facility	indoor recreation facility

2.4.3.1.1 CZ6 – Leisure and Accommodation Zone Policy Outcomes

The land is currently zoned CZ6. The Zone Policy outcome for CZ6 under the New Territory (*Figure 3*) Plan are below:

> *1) Provide for the development of entertainment, accommodation and leisure facilities for residents of and visitors to the ACT and surrounding region*

It is suggested that the original intention for CZ6 zoning in this location, close to the Federal Highway and at the entrance to the Territory has not been realised. With the development of the North Watson residential area the subject site is quite removed from the Federal Highway and its location is unlikely to attract interstate visitors 'passing by' on their way into Canberra.

To this end it is deemed unlikely that developing the site for CZ6 permissible land uses will reasonably achieve this objective.

> *2) Protect leisure and accommodation uses from competition from higher order commercial uses, and encourage activities that enhance the region's economic diversity and employment prospects*

An investigation into the available uses under CZ6 zoning shows that the vast majority would not be appropriate for this location, given the proximity to nearby residential uses and the sites separation from other potential, complimentary uses that may deem these uses economically viable.

It is also noted that CZ6 land, more appropriately situated along Antill Street remains available, and although is only a short distance from the subject site, is far more suitable for the uses permitted under CZ6 zoning as they are located along the Federal Highway.

> *3) Ensure leisure and accommodation facilities have convenient access to public transport*

The site has limited access to public transport for leisure and accommodation purposes. This is with consideration of the frequency of public transport to the area throughout the day. The public transport services available are deemed appropriate to cater for residential development.

CZ6 zoning on the site does not achieve this objective.

> *4) Protect the amenity of nearby residential areas, with regard to noise, traffic, parking and privacy*

As stated above, the proximity of the subject site to existing residential areas means that the majority of available uses under the CZ6 zoning are unlikely to be compatible. Noise, light spill and traffic would likely have adverse impacts on existing residents quiet enjoyment.

This objective is unlikely to be achieved on the subject site.

> *5) Ensure the location of facilities, and their design and landscaping is compatible with environmental values*

The proposal will be compatible with environmental values and nature reserve around, retaining and improving urban tree canopy and

As noted above, development of the site under CZ6 – Leisure and Accommodation is unlikely to achieve the majority of the objectives of the zone. Further, the subject site is predominantly vacant

with a small, 23 room motel. The motel is consistent with the current zoning, however, is currently financially unviable given its location has a competitive disadvantage to other, similar offerings closer to the centre of Canberra or more conveniently located along the Federal Highway and Northbourne Avenue.

2.4.3.2 Inner North and City District Policy

The Inner North and City District Policy regulates development across the Inner North and City District with additional, site-specific assessment outcomes and requirements. The Inner North and City District Policy also defines a set of outcomes for the entire district, following the Inner North and City District Strategy.

2.4.3.2.1 Inner North and City Policy Outcomes

The proposal responds to the greater Inner North and City District Policy outcomes as follows:

Policy Outcome	Response
1. Protect, enhance and restore habitat values in key blue-green corridors including re-naturalisation of Sullivans Creek and its tributary waterways where possible, connections to Banksia Street and Dickson Wetlands and linkages between reserves, urban open space and Garden City precincts and application of water sensitive urban design.	The proposal retains and improves the tree canopy on site to provide linkages and buffers to woodlands adjacent to the site.
2. Protect and enhance woodland connectivity between Black Mountain and Lyneham Ridge, and from Lake Burley Griffin through Mount Ainslie, Mount Majura and to Kenny, including through the installation of fauna-friendly road crossings where required.	The proposal retains and improves the tree canopy on site to provide linkages across from Nadjung Mada (Kenny) to Mount Majura.
3. Protect floorspace and development opportunities for future economic activities and employment to make sure the City Centre maintains its pre-eminent economic role.	The proposal removes the wholly commercial nature of the site by proposing residential use as an additional use, increasing the economic role of centres.
4. Develop innovation precincts around economic assets in the City Centre (ANU/CSIRO and UNSW), Watson (ACU and AIE) and Campbell (ADFA).	Residential use will provide accommodation and workforce for the users and workers in the Watson innovation precinct.

Policy Outcome	Response
5. Develop the City Centre as a multimodal transport hub including accommodating future light rail corridors, bus interchange functions and improved active travel infrastructure.	The proposal will allow future residents to take advantage of the light rail system and the city as a multimodal interchange.
6. Plan in long term for future faster or high-speed rail connection to the City Centre via East Canberra District and potential support infrastructure.	NA
7. Pursue innovative models for future community and recreational facilities to support expected population growth, given constrained land supply.	The proposed MTP Amendment pursues innovation adding residential use to an underutilised site in the Inner North.
8. Revise City Plan to guide high quality future development of the City Centre and reflect the City Centre entertainment precinct.	NA

Figure 5 shows the subject site adjacent to CZ6 zoned blocks with additional assessable development (AD2) that permit Residential use.

No other existing provision are relevant to the subject site.

Figure 4: Watson Division Map from

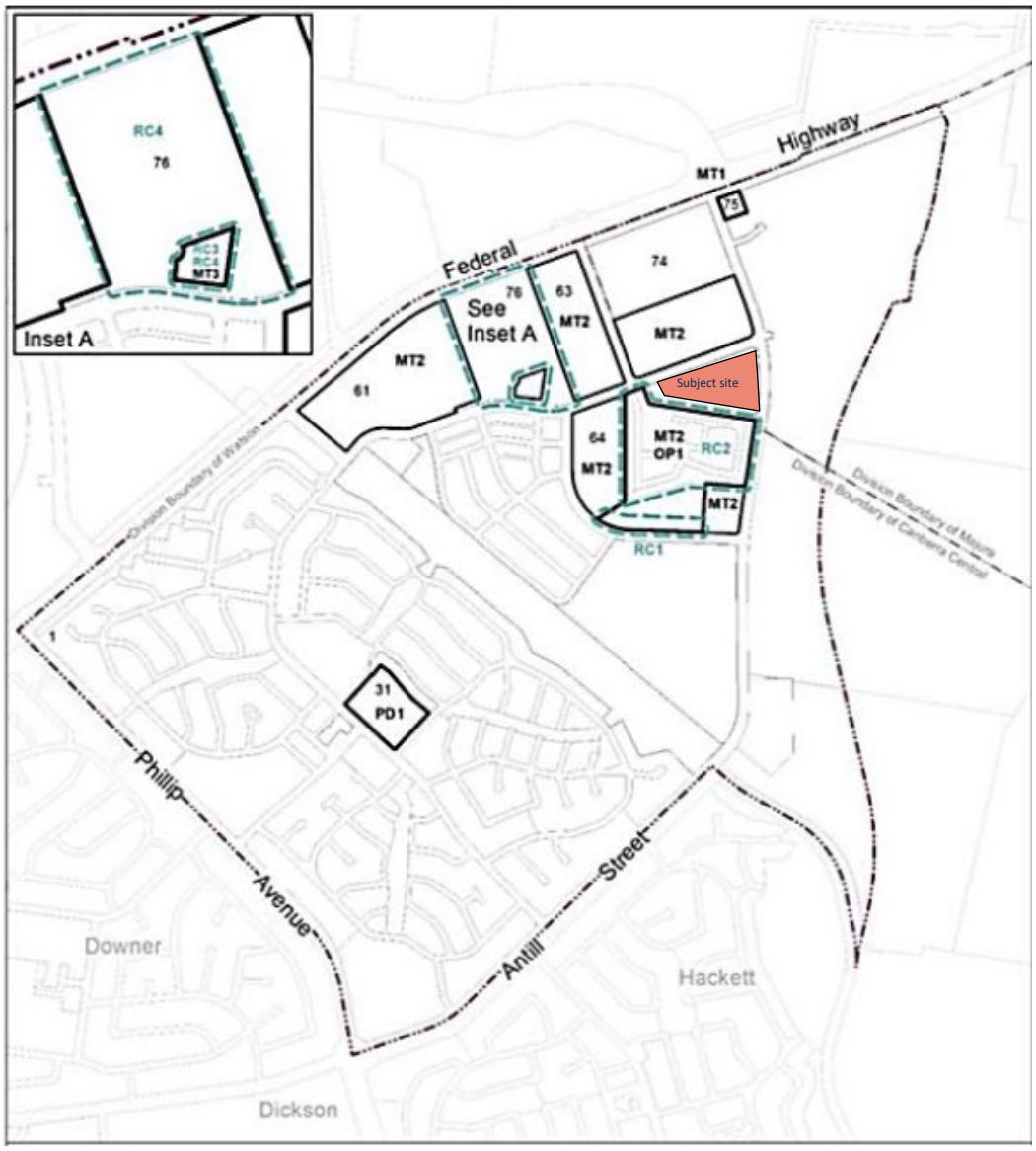
Source: Territory Plan 2023

2.4.3.3 Planning (Inner North and City) District Technical specifications

Figure 6 shows development complies with the specification identified (i.e. RC2, RC3, and RC 4).

No other existing provision are relevant to the subject site (Section 95).

Figure 5 Watson - ongoing Provisions



Source: Territory Plan 2023

3.0 Justification for the planning policy changes

The subject site is currently used by Canberra Carotel Motel, which occupies the western portion of the site, the remainder of the site is presently unused. It is considered that low and medium density residential development is the most appropriate use for the site, representing the best outcome for the area due to the site's compatibility and consistency with adjacent land uses.

The site is well situated with its eastern edge facing the Mount Majura Nature Reserve, offering the potential for high amenity living within one of the last remaining blocks in the North Watson residential area. The intention of the site is to offer a range of low and medium residential typologies, consistent with the surrounding area.

The subject site could potentially accommodate a variety of land uses, however development for residential purposes is seen as highly appropriate given existing development in the local area, and the desirability of additional residential development to achieve urban infill and increased densities within existing urban areas.

The ACT Planning Strategy sets out nine strategies supporting key actions required to ensure long-term sustainable growth in the ACT. The proposal for medium density housing in North Watson supports these strategies by contributing to a 'Compact and Efficient City', and a 'Liveable Canberra' as set out in the Strategy. In addition, the proposal helps the district strategy to achieve what is needed in Inner north and city district.

The Territory Plan prohibits residential development in a CZ6 zone. As such, a MTP Amendment is required to allow development of the subject site for residential purposes. It is recommended that an amendment to the existing Inner North and City District Policy be made to permit the suggested residential use. The approach is consistent with the North Watson structure plan as well as the site being zoned with FUA overlay layer within the Territory Plan. Redevelopment of the site for a mixture of low and medium density housing will be consistent with the existing and desired character of the area.

The proposed amendment will inject additional housing options within North Watson and support the objectives of 2018 ACT Planning Strategy by creating a more compact and sustainable city and by encouraging further urban intensification. In addition, the proposal supports the Inner north and city district strategy that providing a more sustainable city and offering more housing choices and affordability to meet community needs in Watson.

As well as the proposal will inject investment in the territory by the lease variation charge for the eventual change of use of the block.

With consideration of the above, a MTP Amendment via a change to either the District Policy or the zoning of the site (or both) is recommended to develop the site for residential purposes.

Indicative concept development plans have been prepared by the consultant team to facilitate impact assessment and community consultation on the anticipated development outcome. However, these plans are at an early design stage and further designs with different densities, yields and residential typologies will be explored prior to DA documentation stage.

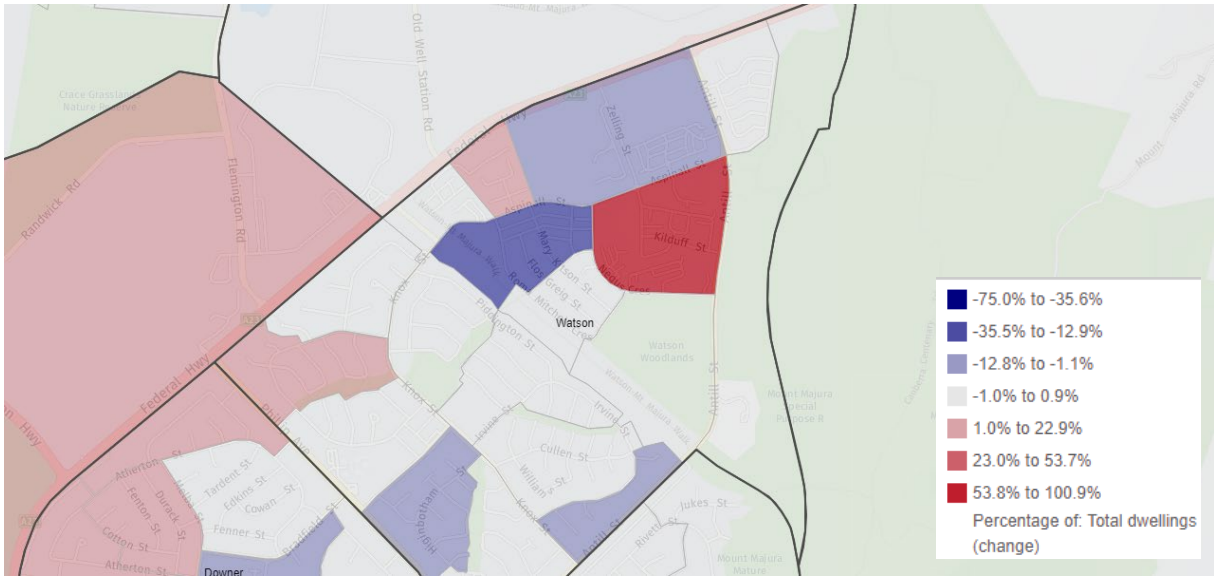
3.1.1 NEED FOR THE MAJOR TERRITORY PLAN AMENDMENT

There is a growing demand for housing choices and new accommodation to meet demands of local residents as well as new residents of ACT. This has been well documented in the ACT's Housing Choices paper (2018) and is still an ongoing issue for Canberra a growing city.

The estimated resident population of Canberra has increased from 403,104 in 2016 to 453,558 in 2021 (*Australian Bureau of Statistic*), that is an increase of 50,454 in 5 years (average annual growth rate of 2.4% over the five years). In 2022, the ABS released Census data and, in response, in 2023 ACT Treasury released population projection indicating a need for 100,000 new homes by 2020. As a result, there has been pressure on the housing market to provide for the increasing population within the ACT.

The suburb of Watson has accommodated for approximately 766 persons of the influx between 2016 – 21, which has resulted in an increase of medium density housing within parts of Watson, specifically within North Watson. Figure 7 shows a positive increase in medium density housing within the North Watson area. Approximately 177 new houses were provided within the surroundings of the subject site to accommodate for the influx.

Figure 6: Medium density housing change (2016 – 21)



Source: atlas.id (informed decisions)

The above trend could be considered as a clear indicator for demand for new homes in the area as part of Canberra's broader housing demand. As the site is located within the Inner North district, new housing in the area could be accommodated if the trend was to be extrapolated.

It is considered that the subject site is located in a good location considering its position along Federal Highway which connects the suburb to the main employment areas like Canberra City, Dickson and Barton. Hence, the site would be an appropriate location to provide new housing choices without significant impacts to the surroundings.

The housing typologies and mix will be dependent on further market analysis and will be detailed during the Development Application stage following a successful MTP Amendment.

3.1.2 PROJECT OBJECTIVES

The following Objectives have been developed to set a benchmark for future development outcomes on the subject site. This is to guide future detailed development designs towards an appropriate and site responsive outcome. The key urban design objectives for the project are as follows:

- To respond to strategic planning directions for the overall plan for Canberra's future
- To connect the proposal with the existing active travel routes
- To provide an appropriate and high-quality built form
- To mitigate potential impacts on adjacent areas
- To create a strong sense of place and identity
- To provide useable and high quality communal open spaces

3.2 Metropolitan Implications (CZ6 Zoning)

A District Policy amendment would not reduce the land area allocated to CZ6, however the amendment will permit the use of residential use and will reduce the permissibility of CZ6 uses on the site.

Table 1 - Permissible Land Uses and compatibility with the surrounding uses

Permissible uses within CZ6	Compatibility with the surrounding uses	Reasons
caravan/camping ground	Not compatible	Noise, traffic, footfall and potential outdoor disturbance will not be compliant with the neighbourhood character
club	Not compatible	Most of the clubs are located within or in proximity to local centres and offer community services which attract off hours traffic/noise which is not compatible with the neighbourhood character
commercial accommodation use	Compatible	Commercial accommodation use is considered to be a compatible use with the surroundings. However, the economic feasibility of commercial accommodation use is not considered a good outcome for the site. This is mostly due to the isolated location of the site, which is also not well connected to the centres by public transport for the guests.

Permissible uses within CZ6	Compatibility with the surrounding uses	Reasons
craft workshop	Compatible	Craft workshops could be considered to be compatible with the surrounding uses, however, as the site is isolated from well-connected public transport facilities, a development may not be supported by the market forces and would also result in large number of weekend traffic on the quiet streets.
drink establishment	Not compatible	Noise, traffic, footfall and potential outdoor disturbance will not be compatible with the neighbourhood character
drive-in cinema	Not compatible	Noise, traffic, footfall and potential outdoor disturbance will not be compatible with the neighbourhood character
group or organised camp	Not compatible	Noise, traffic, footfall and potential outdoor disturbance will not be compatible with the neighbourhood character
indoor entertainment facility	Not compatible	Noise, traffic, footfall and potential outdoor disturbance will not be compliant with the neighbourhood character
indoor recreation facility	Not compatible	Noise, traffic, footfall and potential outdoor disturbance will not be compatible with the neighbourhood character
parkland	Not compatible	The subject site is located adjacent to the Mount Majura Nature Reserve. A parkland will not be an economic option for the private land.
place of assembly	Not compatible	The site is not large enough to propose a unique place of assembly use on the site.
restaurant	Potentially compatible	Part of the site could be used for a restaurant, however a noise management plan would be required to support the use.
SHOP	Potentially compatible	Part of the site could be used for a Shop, however, other uses need to be proposed to ensure feasibility of a new development on the site.

Permissible uses within CZ6	Compatibility with the surrounding uses	Reasons
tourist facility	Not compatible	Noise, traffic, footfall and potential outdoor disturbance will not be compatible with the neighbourhood character
zoological facility	Not compatible	Noise, traffic, footfall and potential outdoor disturbance will not be compatible with the neighbourhood character.

The above table details uses within CZ6 that are not considered to be compatible with the surrounding residential use due to the potential noise, traffic or other elements.

TPA has undertaken an internal policy review of CZ6 zoned land across the ACT. As a result of this policy review, TPA has developed criteria to apply to MTP Amendments for CZ6 zone land as a first test threshold to determine a proposal's appropriateness and whether it should be considered further.

The criteria (refer Table 3) specifies the minimum requirements a proposal would have to meet for a request to vary the Territory Plan to be considered and are the first step in the consideration of a proposal.

Table 2 - TPA CZ6 Amendment Assessment Criteria

CZ6 Leisure and Accommodation	
A rezoning proposal on CZ6 – Leisure and Accommodation lands may be supported if it is consistent with the criteria set out below. Exceptions to this, where rezoning proposals may not be supported are where the area is providing leisure and accommodation facilities, such as a tourist precinct, or the area is providing sport and recreational facilities, club or community uses.	
Criteria	**Considerations**
Consistent with adopted strategic planning documents, such as • ACT Planning Strategy • District policy • District specification	Consideration of the ACT Planning Strategy - Direction 1.1 'Support sustainable urban growth…by concentrating development in areas located close to the city centre, town and group centres and along key transit corridors'.
Response The proposed variation is consistent with adopted strategic planning documents, including Direction 1.1 of the ACT Planning Strategy. Further details are provided in Section 4.0 below. The site is part of an overall precinct that provides leisure and accommodation facilities, such as a tourist precinct. However, the broader CZ6 precinct of which the subject site is a part, was not realised and has subsequently been varied to allow residential development to occur. The structure plan for North Watson (Figure 4) denotes the area to accommodate 1,300 dwellings, however the number has not been realised and it is considered that the subject site is able to provide additional dwellings to assist in realising the vision of the structure plan.	

Criteria	Considerations
Sustainability	Sustainable in terms of economic, environmental and social factors.

Response

Redevelopment of the site for residential use can be undertaken in such a manner to achieve high levels of sustainability in terms of economic, environmental and social factors.

The redevelopment will contribute to the ACT economy by creating jobs during the planning and construction phase and will increase housing availability and choice in the inner north of Canberra.

The detailed design of future dwellings can be designed to meet all environmental sustainability requirements of the Territory Plan including WSUD and Living Infrastructure provisions.

Criteria	Considerations
Accessibility	Equality of access and geographic distribution of services/facilities within a district.

Response

Watson is well provisioned with diverse range of land uses for both day-to-day uses and weekend recreation.

Norrebro, located west of the site proposes a range of public spaces and amenities. Watson shops are 2kms from the site, and the site is in close proximity to the Yowani Golf course and amenities provided by EPIC Exhibition Park. With the subject site located on the foothills of Mount Majura, ample opportunities for outdoor recreation are open to the site.

The site is largely vacant with only a small portion developed as a motel that provides 23 rooms to the community. With three similar commercial accommodation providers within 500 metres of the subject site, further expansion of the existing offering is not financially feasible. Nor is it considered that the size of the block is capable of providing sport and recreational facilities that would benefit the surrounding neighbourhood and compliment surrounding residential uses.

The 23-room hotel is not profitable, making it difficult to continue to operate on the site.

Criteria	Considerations
Holistic	Where there are several rezoning requests in the same section or contiguous geographical area, rezoning will be considered holistically.

Response

The proposal is for variation to the district policy and district specification to allow residential use on Block 3 Section 95 Watson. This proposed variation is cognisant of the recently approved variation for Block 2 Section 76 Watson and the existing residential development within the area. No other blocks form part of this application.

Criteria	Considerations
Size	For large CZ6 blocks outside city centre, town or group centres, such as on the approach routes to Canberra, rezoning will consider the contiguous geographical area holistically.

Response The subject site is 34,487m^2 and is surrounded by residential use (permitted in the Watson Division Map). The site is removed from the Federal Highway Approach Route, with the broader precinct no longer serving a leisure and accommodation purpose, rather providing much needed residential land.	
Criteria	**Considerations**
Context / Compatibility	The appropriateness of the proposal with surrounding land uses and uses within the District in terms of: height distance to and affects upon existing land uses and services surrounding densities
Response A low to medium density residential development in this location is considered to be consistent with existing and likely future development within the local area. The site is close to the Federal Highway and the Majura Parkway, providing good vehicular connections to the rest of Canberra. However the site is considered to be isolated for uses which may attract younger demographics as there is limited public transport available to the site. The proposed variation is consistent with surrounding land uses in terms of height and density as well as potential impacts on land uses.	

The proposed variation is assessed as being consistent with the Rezoning Assessment Criteria issued by EPSDD for consideration of rezoning requests applying to CZ6 zoned land.

Table 3 - Area of Land Zoned CZ6 within ACT

District	Total area of CZ6 Land (ha)	District CZ6 as a % of Total CZ6	Reduced Area after site variation	District CZ6 as a % of Total reduced CZ6	Total CZ6 blocks before	Total CZ6 blocks after
Belconnen	9.7	5.2%	9.7	5.3%	22	22
Canberra Central	103.0	54.8%	99.5	54.0%	246	245
Gungahlin	20.2	10.8%	20.2	11.0%	19	19
Majura	16.5	8.8%	16.5	9.0%	7	7
Tuggeranong	35.5	18.9%	35.5	19.3%	15	15
Weston Creek	2.9	1.5%	2.9	1.6%	5	5
Total Urban Zoned	167.3	89.0%	163.9	88.8%	307	306
Total in Zone	187.9	100.0%	184.4	100.0%	314	313
All Urban zoned Blocks	29,418	0.57%	29,418	0.56%	11,599	11,599
All zoned blocks	229,754	0.08%	229,754	0.08%	137,553	137,553

Source: Purdon (supporting data from ACT GeoHub)

Notes: Total zoned is the sum of all derived block areas (in sqm)

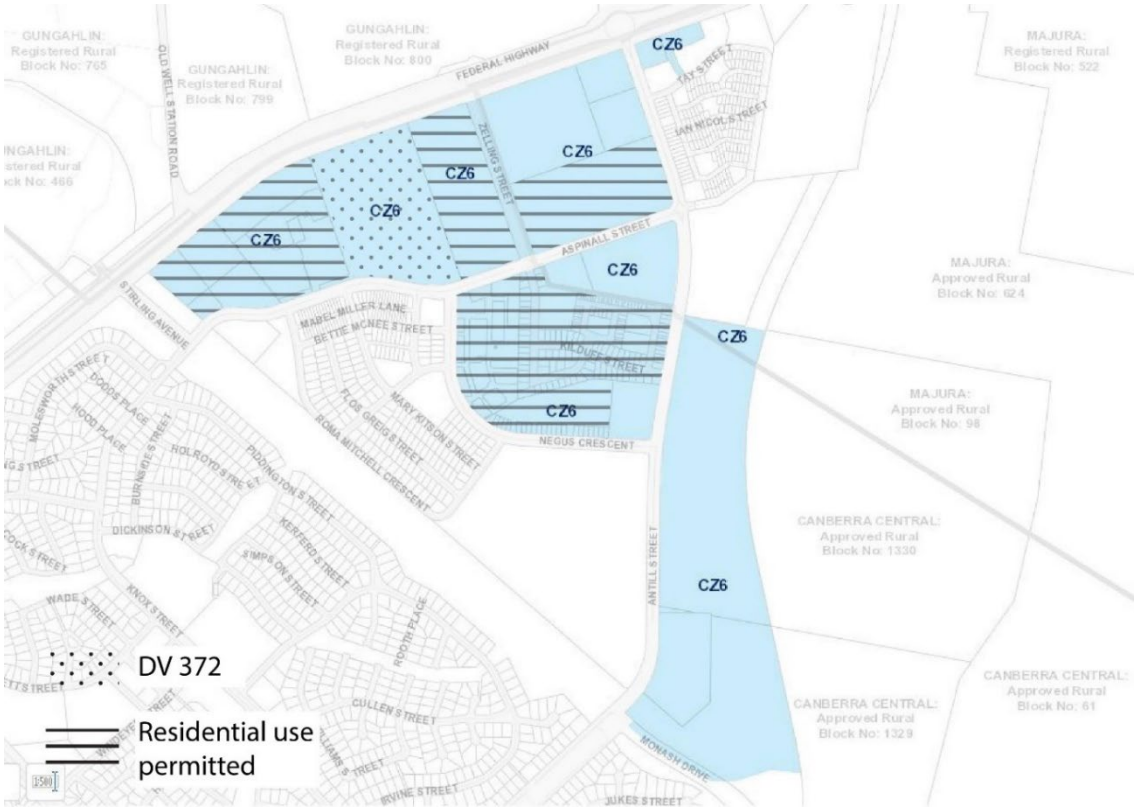
Unit records were filtered for 'Urban Type', this produced 'All Urban', and 'Total Urban Zoned'.

CZ6 only is land classified under LAND_USE_POLICY_ZONES as 'CZ6: LEISURE AND ACCOMMODATION'. This list includes urban and rural by district, and separate total for both.

0.97% of the land is zoned CZ6 across the ACT (ACT GeoHub).

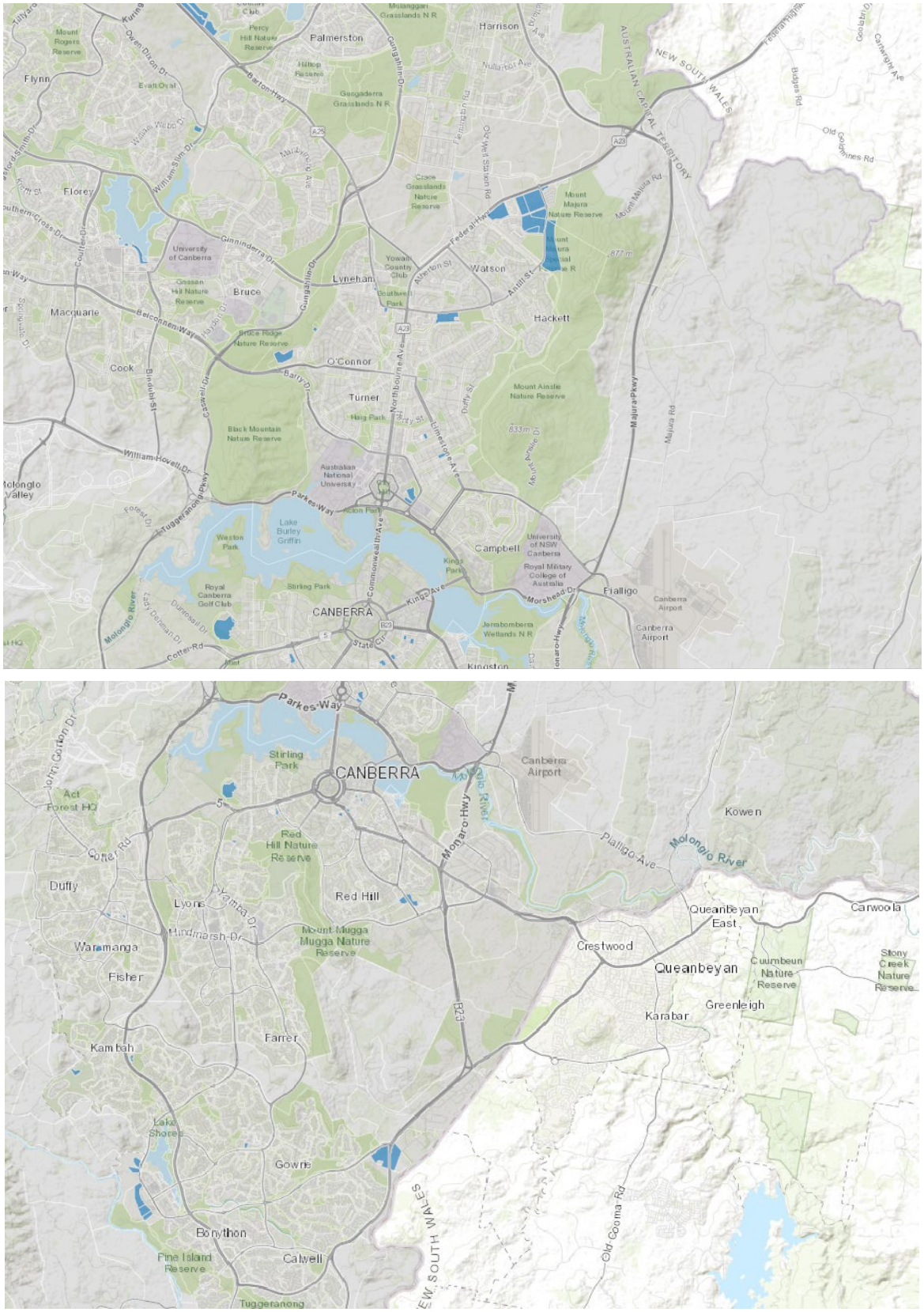
The proposed amendment will reduce the land available for CZ6 uses by approximately 3ha.

Figure 7: Existing Areas of CZ6 Zoned Land with permitted Residential uses– North Watson



Source: Territory Plan

Figure 8: CZ6 zones within ACT (in blue)



Source: ACT GeoHub

It is understood that CZ6 zonings are rarely introduced in new suburbs, given the limited range of land uses permissible and due to these uses being accommodated in other, more flexible zones. A variation would technically reduce the land area allocated to CZ6, however the subject site has been vacant for a considerable period of time with only part of the site being used as a motel.

A large number of possible CZ6 uses permissible on the site are considered either incompatible or unrealistic. There are land lots available in the vicinity of the site that are zoned CZ6 that provide the opportunity to host large scale leisure and accommodation uses without the use of the subject site. These alternate sites are situated along the Federal Highway and are more accessible to the community of Canberra rather than the subject site. The proposed variation is also consistent with the TPA CZ6 Rezoning Assessment Criteria.

3.3 Surrounding commercial and other uses

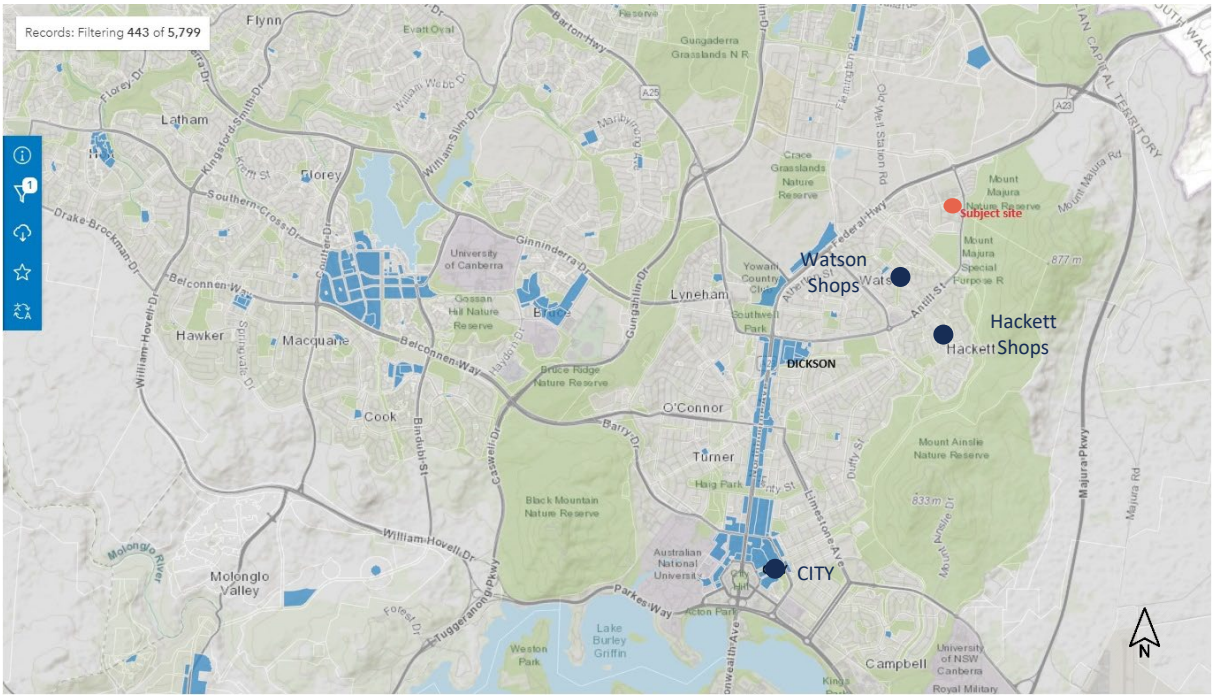
North Watson is part of the suburb Watson which is within Inner North Canberra. Inner Canberra offers a range of activities and destination spots to the community of Canberra. Some of the main employment and commercial zones are located within the city centre.

City Centre is approximately 8.5kms from the subject site (15 min drive) and presents a range of commercial uses to the community of Canberra.

Dickson Group centre is the next closest commercial hub from the subject site. Group centres are larger shopping centres which cater to the needs of nearby suburbs. They incorporate a wide range of shopping, community, recreation and business facilities. Dickson is approximately 4.5kms from the subject site (7 mins drive).

The closest shopping centre is Watson Local Centre, which serves the community of Watson by providing a small-scale supermarket, café, food takeaway, Australia Post, and personal services. The Watson local centre is approximately 2kms from the subject site – 4 mins drive and a 25 mins walk.

Figure 9: Commercial land use zones (CZ1 – CZ5) within North Canberra (excluding CZ6)

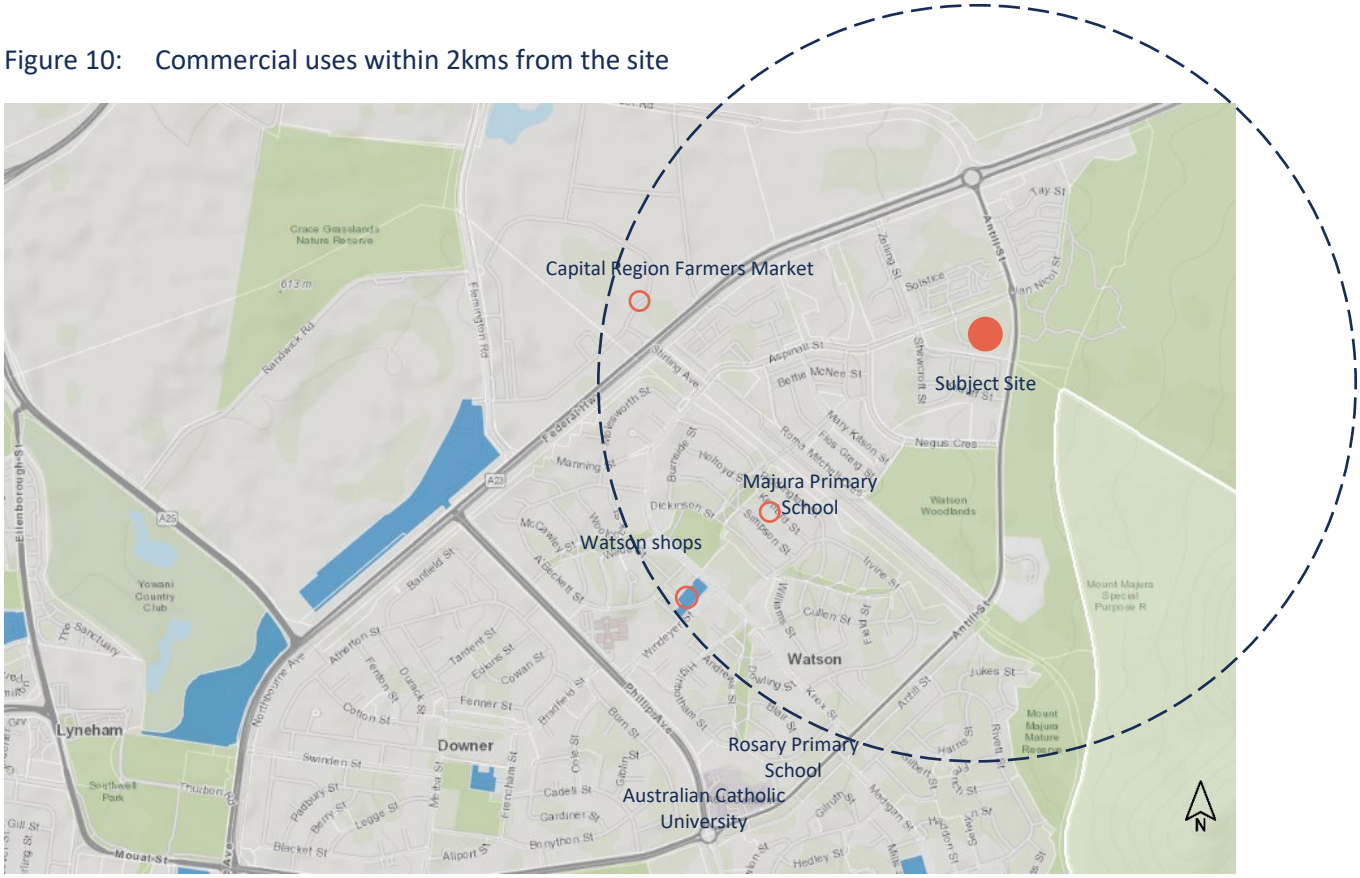


Source: ACT Government GeoHub

The subject site is also in proximity to the weekly Capital Region Farmers Market (held every Saturday). The markets provide the community of Canberra with a range of fresh picked, grown and hand-crafted produce. The markets are accessible by vehicles, foot and cycle, and are located about 2kms from the site.

Proposed potential development on the site is able to achieve approximately 134 dwellings (mix of single blocks and apartments), which would be an addition of about 333 persons within the suburb based on an average of 2.4 people per household (ABS, 2021). It is thought that the surrounding commercial uses will be able to accommodate for the increased demand by the potential increase in population.

Figure 10: Commercial uses within 2kms from the site



Source: ACT Government GeoHub

3.4 Alternative zones - Residential Zones

The site is considered suitable for any form of residential development. The current Territory Plan residential zonings include:

- RZ1 – Suburban
- RZ2 – Suburban Core
- RZ3 – Urban Residential
- RZ4 – Medium Density Residential
- RZ5 – High Density Residential

The residential zones vary in relation to the desired outcomes through different zone requirements and technical specifications applying to development within each zone. Table 5 summarises some of the key planning controls applying to development in the various residential zones.

Table 4 - Key Planning Controls – Residential Zones

Zone	Max Storeys	Building Height*
RZ1	2	8.5m
RZ2	2	8.5m
RZ3	(2)	9.5m
RZ4	(3)	12.5m
RZ5	(3-6**)	21.5m

**above datum ground level for height of buildings*

*** for that part of the building within 50m of the boundaries of blocks in RZ1, RZ2 or RZ3: 3 storeys; for that part of the building within 40m of the boundaries of blocks in CFZ, PRZ1 or PRZ2: 3 storeys; for that part of the building within 30m of the boundaries of blocks in RZ4: 4 storeys; in all other cases: 6 storeys.*

Bracketed numbers are specified in the Residential Zones Technical Specification.

The low density RZ1 or RZ2 zones also have limits on the number of dwellings over land area, which generally equates to 1 dwelling per 250m^2 of site area. This limit would result in site yield of approximately 100 blocks if the land was zoned for only low-density residential use, with no open spaces within the site for recreational uses. Also, RZ1 does not provide a high degree of choice in housing typology and would subsequently restrict possible delivery of open space as the yield would not support parkland to be included on the site. RZ1 could result in a higher intensity of roofed areas given the propensity to build larger houses over smaller blocks.

It is considered that applying principles of a low-density residential zone to the site would not be appropriate and contradict the current urban infill strategies and policies, as the resultant development would lack a mix of character by proposing a repeated built form.

It is considered that utilising the policy outcomes of RZ3/RZ4 residential zones would be the most appropriate outcome for the site. This is thought as a mixture of densities, with controls employed to restrict building footprints, will provide for a wider variety of built-form typologies, and will afford the development to cater for a higher degree of green space and deep root planting. This style of typology may also mean a broader demographic with a mix of young and old, families, couples and single people to have an opportunity to live within the area.

Medium density is in keeping with existing and future planned development for the North Watson Area and does not preclude a mixture of medium and lower density options over the site.

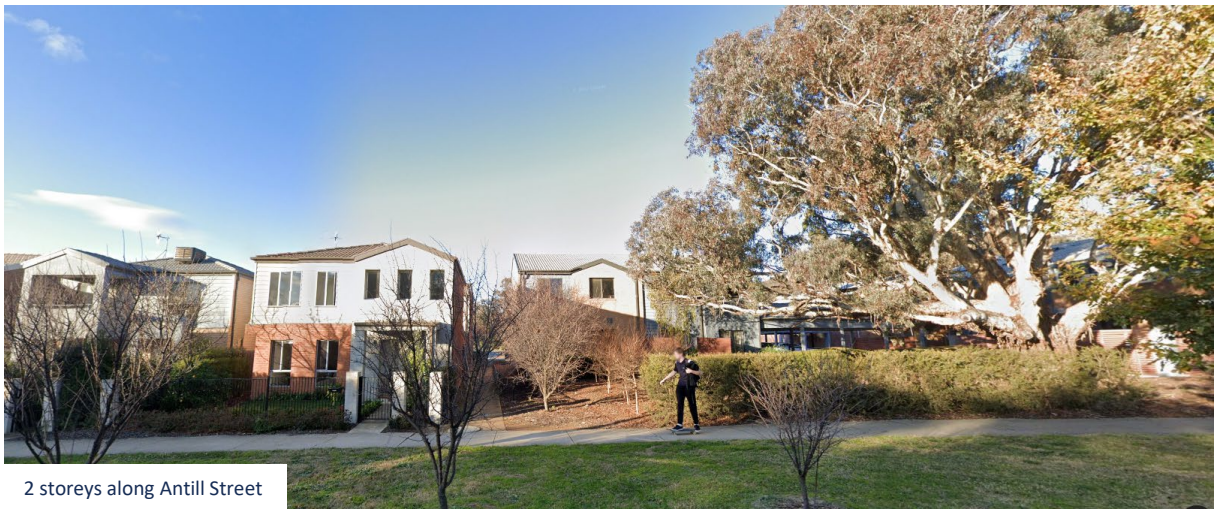
Figure 11: Adjacent Residential Density

Source: ACTmapi, 2022

Surrounding developments are a mix of low and medium density housing. Figure 12 below represents the various built forms which surround the subject site.

Figure 12: Surrounding built forms

Solstice Apartments – 4 storeys along Antill Street



2 storeys along Antill Street

Solstice Development – 2 storeys along Aspinall Street

2 storeys along Antill Street

2 storeys along Ehrlich Circuit

Source: Google Maps 2022

4.0 Strategic planning policy context

This section describes the strategic planning context for the development site and proposal.

4.1 ACT Planning Strategy 2018

The ACT Planning Strategy 2018 was released on 5 December 2018 and is a refresh of the 2012 Strategy. The Strategy reflects and integrates the vision and directions of the community and other ACT Government strategies, particularly housing, transport, and climate change.

The vision of the strategy is to be a sustainable, competitive, and equitable city that respects Canberra as a city in the landscape and the national capital, while being responsive to the future and resilient to change.

The subject site is partially within the area identified in the Planning Strategy as 'Urban Intensification Localities' (refer Figure 9). The proposed Major Territory plan Amendment of the subject site will allow for higher density of residential and commercial accommodation; which is considered to be directly consistent with the intentions of the 2018 Planning Strategy.

The Strategy has five related themes:

THEME 1 - COMPACT AND EFFICIENT CITY

- Support sustainable urban growth by working towards delivering up to 70% of new housing within our existing urban footprint, and by concentrating development in areas located close to the city centre, town and group centres and along key transit corridors.
- Use infrastructure efficiently to support our growing community.

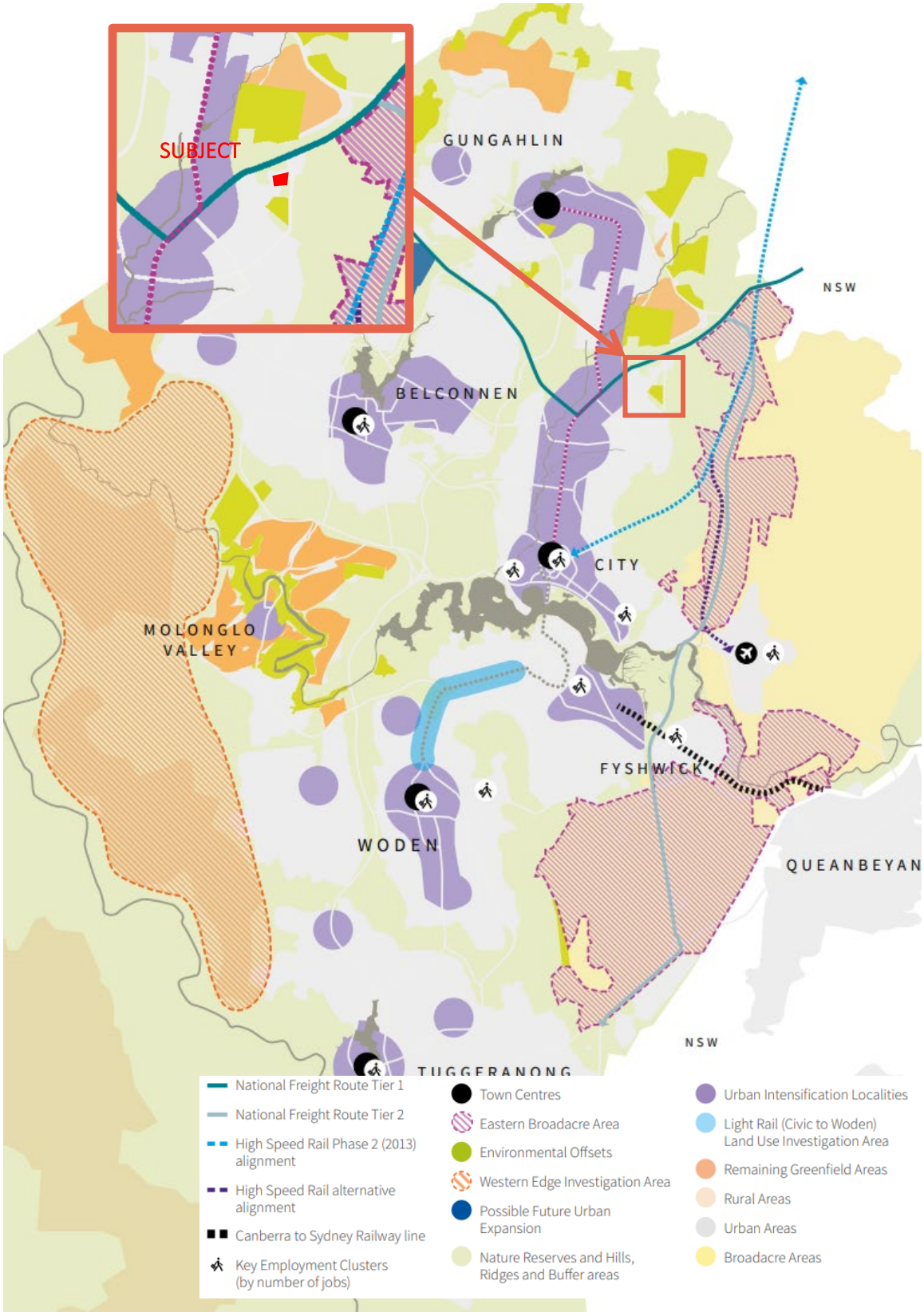
THEME 2 - DIVERSE CANBERRA

- Enhance the diversity and resilience of our centres to meet the needs of the community, support economic viability and improved liveability.
- Protect and enhance infrastructure that supports the economic development of Canberra and the region.

THEME 3 - SUSTAINABLE AND RESILIENT TERRITORY

- Transitioning to net zero emissions city through the uptake of renewable energy, improved building design and transport initiatives.
- Plan for integrated water cycle management to support healthy waterways and a liveable city.

Figure 13: ACT Planning Strategy



Source: ACT Planning Strategy 2018

THEME 4 - LIVEABLE CANBERRA

- Deliver social infrastructure that meets community needs and supports strong communities.
- Deliver recreation, open (green) space and public spaces that support social interaction, physical and mental health, and engagement in public life.
- Strengthen neighbourhoods and support their diverse character by creating strong local activity hubs.
- Deliver housing that is diverse and affordable to support a liveable city.
- Encourage high quality design, built form and places for a changing climate.

THEME 5 - ACCESSIBLE CANBERRA

- Enhance accessibility by better integrating transport and land use.
- Deliver well designed, safe and sustainable streets and public spaces to create walkable neighbourhoods that are inclusive and fair.
- create a better experience for walking and cycling into and within the city centre and our town centres

The ACT Planning Strategy sets out nine strategies supporting key actions required to ensure long-term sustainable growth in the ACT. The proposal for medium density housing in North Watson supports these strategies by contributing to a 'Compact and Efficient City', and a 'Liveable Canberra' as set out in the Strategy.

The proposed change of land use for residential development supports the above strategies by contributing to the range of available housing stock and providing a location for high amenity housing that is close to shops as part of the upcoming mixed-use development close to the site, public transport, open space and other urban facilities and services. In particular, the proposed variation would support the strategy by delivering on the desire for a Liveable and Compact and Efficient City. Overall, the proposal responds strongly to the Strategy by contributing directly to the following themes:

Theme 1 - compact and efficient city: The proposal to vary the planning provisions for the site, supports sustainable growth and will contribute to the delivery of up to 70% of new housing being provided within the Territory's existing urban footprint. The site is situated close to existing amenity and services and is serviced by existing public transport serving peak morning and afternoon. This means an efficient use of existing infrastructure.

Theme2- Diverse Canberra: The proposal will contribute to a diversity of housing choices and will have a net positive result to the Watson Local Centre and surrounding areas. The project team will engage with the community to inform designs and the provision of housing choices. The proposal is expected to have a net positive impact on the economic development of our city.

Theme 3 – Sustainable and resilient Territory: Development in already built-up areas takes advantage of existing infrastructure and will limit the need to build further on the undeveloped greenfield areas on the urban fringe.

Utilising existing roads, services and the like will mean less infrastructure being built to directly support up to 133 dwellings over the site. The project team will further investigate sustainability measures in the overall design of the precinct during the design stage.

Theme 4 – Liveable Canberra: The proposal will contribute to housing stock and choice in the Territory. High quality design will be encouraged throughout the design process. The proposal will leverage the benefits of the existing North Watson residential area and its infrastructure and recreational amenity.

Theme 5 – Accessible Canberra: The proposal will integrate with the North Watson residential area, making the most of existing infrastructure and public transport. The design will include communal areas and will promote walking and cycling.

4.2 Planning (Inner North and City) District Strategy 2023

DRIVER 1 - BLUE-GREEN NETWORK

- Plan and design with country
- Restore, protect and expand the blue network.
- Build on the urban structure, heritage and the green network.
- Expand opportunities for human movement through the blue-green network where compatible with natural and cultural conservation and biodiversity values.

- Maintain and expand urban tree canopy cover.

DRIVER 2 – ECONOMIC ACCESS AND OPPORTUNITY ACROSS THE CITY

- Reinforce the pre-eminent city centre.
- Provide jobs close to home in town and group centres.
- Integrate future employment floorspace to meet job aspirations.
- Support public and active transport and public domain with amenity in centres.
- Protect and expand vital industrial and service trades precincts.
- Develop selected innovation precincts.
- Develop visitor attractions as economic assets.

DRIVER 3 – STRATEGIC MOVEMENT TO SUPPORT GROWTH

- Provide transport connections to employment and economic opportunities.
- Develop movement corridors for all modes of transport.
- Dedicate heavy vehicle movement corridors.
- Support housing renewal and connection to centres.
- Provide repaid connections to key group and local centres.
- Provide local bus services with access to local community services and connections with rapid transit corridors by
- Accelerate decarbonisation of the transport sector

DRIVER 4 – INCLUSIVE CENTRES AND COMMUNITIES

- Support the long-term viability and social role of group and local centres.
- Provide social and affordable housing.
- Align community facilities with planned growth in infill areas.
- Co-locate community facilities for efficiency and accessibility.
- Provide community facilities as new communities are developed in greenfield areas.

DRIVER 5 – SUSTAINABLE NEIGHBOURHOODS

- Locate density with amenity in and around centres.
- Strive for mixed-use precincts and centres.
- Improve the urban environment.
- Address urban heat.
- Water sensitive urban design.
- Require better design quality.
- Provide infrastructure to support net zero emissions transition.
- Require focus on risk mitigation of natural hazards.
- Affordable housing.
- Align community facilities with sustainability.

Planning (inner north and city) District Strategy is one of the District Strategies that set out how to achieve the vision of the ACT Planning Strategy 2018. This vision is for Canberra to be a sustainable, competitive, and equitable city.

Driver 1 - Bule-green network: The proposal supports building on the urban structure of Canberra's future and expands opportunities for human movement through the blue-green network, as the proposed change of land use for residential development provides medium-density housing in Noth Watson.

Driver 2 - Economic access and opportunity across the city: The proposal will offer housing choice in North Watson, and the proposal will make use of the advantages of the current North Watson residential neighbourhood, including its facilities for recreation and infrastructure. High-quality design will be encouraged throughout the subject site.

Driver 3 - Strategic movement to support growth: the proposal will expand on the North Watson residential area, providing more transport connections to the existing public transport system and travel modes in the city's growth.

Driver 4 - Inclusive centres and communities: The proposal will support the local centres for the long term and contribute to housing choices. In addition, the proposal aligns with community development for residential use on the subject site and surrounding residential areas**.**

Driver 5 -Utilizing the infrastructure that already exists, development in already developed areas will reduce the need to build more in the undeveloped greenfield areas on the outskirts of cities.

4.3 ACT Housing Strategy 2018

The ACT Housing Strategy was released in October 2018 it builds on the considerable achievements of the 2007 Affordable Housing Action Plan. The strategy provides a framework for government and the community to address the multiple factors that influence the supply and demand of housing.

The strategy has 6 key objectives:

1) provide land and housing development opportunities to meet demand
2) set a 15% target for social and affordable housing
3) maintain a healthy land and housing development pipeline
4) provide a diverse mix of housing types and choice
5) facilitate innovative design and delivery mechanisms
6) encourage well designed, environmentally sustainable and accessible housing

The variation and development of the subject site is considered to be directly consistent with the above key objectives.

4.4 Statement of Good Planning (2023)

2.1 Activation and liveability principles means the following:

(a) Planning and design should support diverse economic and social activities, including through promoting different but compatible uses for buildings and other areas.

(b) Urban areas should include a range of high-quality housing options with an emphasis on living affordability.

(c) Urban areas should be designed to promote active travel and convenient and efficient use of public transport.

(d) Districts should be planned, designed and developed to support active and healthy lifestyles and to cater for a diverse range of cultural and social activities.

(e) Policies should support and enhance the quality of life and wellbeing of residents.

The proposal will contribute the range of available housing options and providing a location with high design of amenity.

2.2 Cultural heritage conservation principles means the following:

(a) Planning and design should promote the unique cultural heritage of the ACT by acknowledging established heritage significance in design and placemaking.

(b) Development should:

(i) respect local heritage; and

(ii) avoid direct impacts on heritage or, if a direct impact is unavoidable, ensure the impact is justifiable and proportionate.

Not applicable for this proposal.

2.3 High-quality design principles means the following:

(a) Development should be focussed on people and designed to:

(i) reflect local setting and context; and

(ii) have a distinctive identity that responds to the existing character of its locality; and

(iii) effectively integrate built form, infrastructure and public spaces; and

(iv) provide appropriate solar access;

(b) Public spaces should be designed to be used, appropriately landscaped and vegetated, and should be designed to contribute to the urban forest.

(c) Built form and public spaces should be designed to be inclusive and accessible to people with differing needs and capabilities, including through the serious consideration of universal design practices.

(d) Developments should be planned and designed to be well connected and integrated with surrounding development in ways that facilitate the safe, secure and effective movement of people within and through them.

The high quality of built form and public spaces will be designed to reflect local setting and context. In addition, the subject site will be designed to be well connected with surrounding development as residential use development.

2.4 housing affordability principles means the following:

(a) planning strategies, plans and policies should support the delivery of reforms that improve housing access, affordability and choice;

(b) planning strategies, plans and policies should support more housing options for people who have a low income;

(c) planning strategies, plans and policies should ensure affordable housing is close to essential services, amenities and affordable transport options, including public and active transport.

The proposed change of land use for residential development supports this principles by contributing to available housing in North Watson.

2.5 Integrated delivery principles means the following:

(a) Policies relating to planning, including those arising outside the planning system, should be coordinated to efficiently and effectively achieve planning outcomes.

(b) Planning, design and development should promote integrated transport connections and equitable access to services and amenities.

(c) Infrastructure, public spaces and facilities should be planned to meet future needs and designed to be integrated with related development.

(d) Built form should be durable, designed to be adaptive (including in relation to the reuse of buildings or parts of buildings) and compatible with surrounding public spaces.

The proposal supports building on the urban structure of Canberra's future and expands opportunities for human movement through integrated transport connection.

2.6 Investment facilitation principles means the following:

(a) Planning and design should be undertaken with a view to strengthening the economic prosperity of the Territory and contributing to diversification of the economy, economic security and growth.

(b) Planning outcomes should be achieved by facilitating coordinated approaches that promote public and private investment towards common goals.

Not applicable for this proposal.

2.7 Long-term focus principles means the following:

(a) Policy frameworks should be based around long-term priorities, be ecologically sound and seek to promote equity between present and future generations.

(b) Policy frameworks should be able to respond to emerging challenges and cumulative impacts identified by monitoring, benchmarking and evaluation programs.

The proposal will benefit the Watson Local Centre and its environs overall by increasing the variety of housing options available. It is anticipated that the initiative will positively affect our city's economic growth overall.

2.8 Natural environmental conservation principles means the following:

(a) Planning and design should promote healthy and resilient ecosystems, by -

(i) avoiding or minimising loss of habitat and other key threatening processes for biodiversity; and

(ii) considering cumulative and incremental environmental impacts;

(b) Planning outcomes should support the operation of environmental laws applying in the ACT;

(c) Policies, planning and design should integrate and promote -

(i) nature-based solutions to climate change and water security; and

(ii) the valuation and maintenance of the ecosystem services and amenity provided by a healthy natural environment.

(d) Biodiversity connectivity and habitat values should be integrated across urban areas, including through appropriate planning for, and landscaping of, urban open space and travel corridors.

The proposal will integrate nature-based solutions to improve tree canopy, retain and improving green links from Majura special purpose reserve across to the Nadjung Mada nature reserve (Kenny).

2.9 Sustainability and resilience principles means the following:

(a) Places should be planned, designed and developed to be sustainable and resilient;

(b) Effort should be focussed on adapting to the effects of climate change, including through mitigating the effects of urban heat, managing water supplies and achieving energy efficient urban environments;

(c) Policies and practices should promote the use, reuse and renewal of sustainable resources, and minimise use of resources.

The development in already built-up areas takes advantage of existing infrastructure and will limit the need to build further on the undeveloped greenfield areas on the urban fringe.

3.0 Urban regeneration principles means the following:

(a) Growth should be mostly within the existing urban footprint, or in areas close to the existing urban footprint, while maintaining environmental values;

(b) Urban regeneration should seek to make the best use (as appropriate) of underlying or latent potential associated with land, buildings and infrastructure.

The site is situated close to existing amenity and services and is serviced by existing public transport serving peak morning and afternoon. This means an efficient use of existing infrastructure. By utilising the current infrastructure in populated areas, the concept will reduce the need for additional construction in undeveloped greenfield areas on the outskirts of cities.

4.5 ACT Climate Change Strategy

The Climate Change Strategy came into action in 2019, when ACT joined many other cities, states and territories around the world in declaring a state of climate emergency. The strategy identifies key priority areas with actions; Energy, Buildings and Urban Development is a key priority area that would support achieving the strategies vision.

> *By 2045, the ACT will be a leading net zero emissions territory that demonstrates that a healthier, smarter future is possible.*

Through the indicative development proposal, it is demonstrated that variation of the TP for the site will ensure that the Key actions for buildings as identified in the strategy, can be met on this site through the provision of:

- At least 30% canopy cover
- 24% deep root planting zones
- Statutory WSUD compliance
- Natural ventilation to units
- Strong solar access to existing and proposed residents

4.6 Canberra's Living Infrastructure Plan: Cooling the City

Canberra's Living Infrastructure Plan (LIP) was prepared in 2019 as a tool to provide strategic direction to help our expanding and densifying metropolitan areas become better prepared for and more resilient to climate change. LIP's aim is to maintain and improve the green infrastructure in Canberra. The LIP intends to identify the challenges climate change brings to the Canberra environment and proposing mitigation and adaptation measures for the public and private sector to introduce.

The LIP aims to address the challenges and to enhance Canberra's urban environment by:

- Reducing urban heat island effects and increasing access to shade
- Retaining water in the landscape and using rainfall better
- Improving water penetration to sustain vegetation and allow ground water recharge
- Improving access to and amenity of nature in the city
- Maintaining ecosystem services and biodiversity in the city's landscape

The indicative development proposal shows these measures are possible on the site if the TP is varied through the provision of:

- At least 30% canopy cover
- 24% deep root planting zones

- Statutory WSUD compliance
- Natural ventilation to units
- Strong solar access to existing and proposed residents

Further the redevelopment of the site will lower the need to expand the urban footprint and develop housing on the edge of the metropolitan area, which will:

- Prevent valuable environmental loss
- Ensure more people will have access to nearby nature in the city
- Maintain ecosystem services and biodiversity in the city's landscape

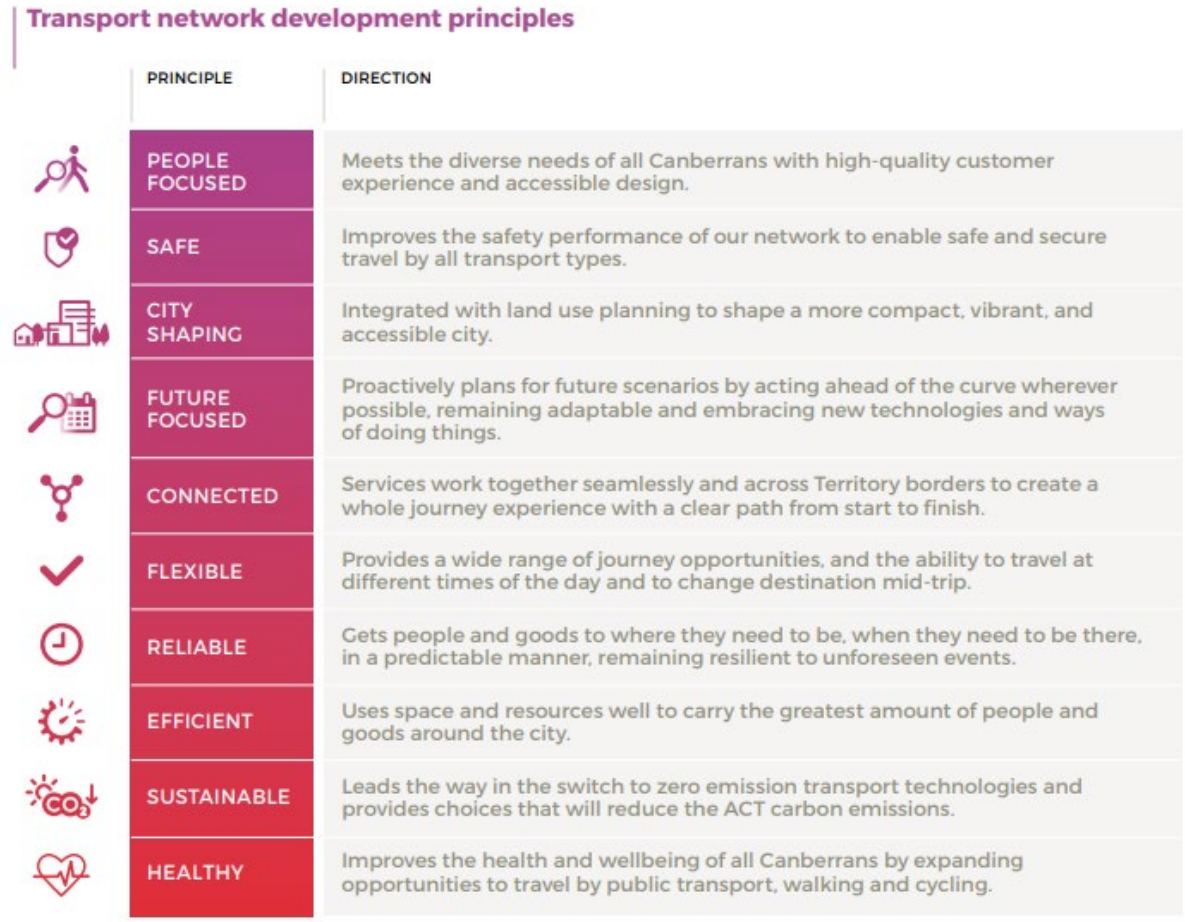
4.7 ACT Transport Strategy

The ACT Transport Strategy 2020 sets out the Government's approach to achieving the vision of providing Canberra with flexible, reliable and sustainable options and provides a framework for planning the transport for the next 20 years.

Transport network development principles set out in the strategy are:

- People focused
- City shaping
- Connected
- Reliable
- Sustainable
- Safe
- Future focused
- Flexible
- Efficient
- Healthy

Figure 14: Extract from ACT Transport Strategy



Transport network development principles

PRINCIPLE	DIRECTION
PEOPLE FOCUSED	Meets the diverse needs of all Canberrans with high-quality customer experience and accessible design.
SAFE	Improves the safety performance of our network to enable safe and secure travel by all transport types.
CITY SHAPING	Integrated with land use planning to shape a more compact, vibrant, and accessible city.
FUTURE FOCUSED	Proactively plans for future scenarios by acting ahead of the curve wherever possible, remaining adaptable and embracing new technologies and ways of doing things.
CONNECTED	Services work together seamlessly and across Territory borders to create a whole journey experience with a clear path from start to finish.
FLEXIBLE	Provides a wide range of journey opportunities, and the ability to travel at different times of the day and to change destination mid-trip.
RELIABLE	Gets people and goods to where they need to be, when they need to be there, in a predictable manner, remaining resilient to unforeseen events.
EFFICIENT	Uses space and resources well to carry the greatest amount of people and goods around the city.
SUSTAINABLE	Leads the way in the switch to zero emission transport technologies and provides choices that will reduce the ACT carbon emissions.
HEALTHY	Improves the health and wellbeing of all Canberrans by expanding opportunities to travel by public transport, walking and cycling.

The proposed development supports the ACT Transport Strategy by providing medium density housing options in an existing, central brownfield area.

4.8 ACT Preventive Health Plan

The ACT Preventive Health Plan 2020 - 2025, also referred to as Healthy Canberra Plan sets out the foundations for reducing and prevalence of chronic disease within Canberra. The plan outlines five areas which are key to achieve the goals set out in the plan, they are:

- Supporting children and families
- Enabling active living
- Increasing healthy eating
- Reducing risky behaviours
- Promoting healthy ageing

The proposed variation will enable people to live within walking distance of public transport, schools, employment centres, retail centres and recreational facilities to encourage active living.

4.9 Urban Forest Strategy 2021–2045

The Urban Forest Strategy 2021–45 sets out the ACT Government's vision for a resilient and sustainable urban forest that supports a liveable city and the natural environment and contributes to the wellbeing of the community in a changing climate.

The vision of the strategy is for all Canberrans to enjoy the benefits of streets lined with healthy trees. An urban forest that is resilient and sustainable and contributes to the wellbeing of the community in a changing climate.

The strategy sets out six objectives and the actions needed to overcome these challenges and achieve the vision. These are:

- Protect the urban forest.
- Grow a resilient forest.
- Balance and diversify the urban forest.
- Take an ecological approach and support biodiversity.
- Develop infrastructure to support the urban forest and liveability.
- Partner with the community.

As shown in the indicative concept masterplan (Figure 14), significant retention of existing trees is possible across the sites. The indicative masterplan shows the site can increase canopy cover to at least 30% without intruding on required open spaces on common areas. Currently canopy coverage across the site is at about less than 5%. It is considered the particular species chosen for the future site will be suitable to the local ecological conditions and provide suitable diversity to compliment the retained on-site trees. Supporting stormwater infrastructure can be provided as part of the overall indicative masterplan for the site, to reduce the chance of any future tree species being destroyed via flooding.

In providing these opportunities to increase the urban forest in Watson, it is considered this MTP Amendment will positively respond to the strategy.

5.0 Preliminary Consultation

As advised in the scoping document:

Community consultation with affected communities and interested members of the public on the proposal is required to be conducted in accordance with the ACT Community Engagement Guideline at: https://www.yoursay.act.gov.au/about/community-engagement.

At a minimum, consultation should include holding at least one (1) public engagement session that is widely advertised in print and electronic media. This part is to include a report on consultation that:

- provide details of consultation undertaken e.g. notifications, formal presentations, sessions, number of attendees and copies of relevant correspondence;
- list of all issues raised in consultation, outcomes, etc; and
- responds to issues raised, including any changes to the proposal as a result of consultation

A two-week consultation period was undertaken from 17 October 2022 to 1 November 2022, a period of 14 days.

Purdon hosted one online information session:

- Online Session: 26th October 2022 at 5:30pm

The Pre-DA Community Consultation involved the following.

- Publication on the Purdon Website https://www.purdon.com.au/2022/10/17/block-3-section-95-watson-territory-plan-variation/, on 17th October with details of the proposal. The website detailed how interested persons could provide feedback directly to Purdon via the online response form or telephone. The information available on the website endeavoured to make all details available in plain English, and included:
- Site/locality details
- Details of the Indicative Site Layout
- Explanation of the Major Territory Plan Amendment Process
- Explanation of the specific variation proposal
- Postcard format notice outlining the proposal and inviting comment was circulated to 750 mailboxes within the Block 3 Section 95 Watson Area on Monday 17th October 2022.
- Emails to the above listed Community Groups and stakeholders on 28th October 2022.
- Online Community Information Session, hosted by Purdon. Numbers of attendees, basic demographic questions and their comments were recorded by Purdon at the session.

A full Consultation Report and Community Consultation Written Notice have been included as part of this TPV (now MTP Amendment) (Appendix 1), detailing the consultation process complies with the Planning and Development (Community Consultation) Guidelines 2020 (effective: 1 January 2021). Please refer to Table 2 of the Appendix 1 for concerns raised by the community on the proposed development.

6.0 Potential Impacts

The below section of the report discusses both the suitability and capability of the land for the proposed zone. It includes discussion of potential (positive and negative) impacts on the social, physical and natural environment if the land is developed to its full capacity as permitted within the zone.

This assessment often refers to the Indicative Masterplan design as if it were to be built. However, the intention of that plan is to show what is possible, not necessarily what will be built.

An assessment of impacts should include, but not necessarily be limited to, the following:

1) Physical features, infrastructure and built form

    - Topography – include a contour map at an appropriate scale
    - Soils and geology
    - Hydrology
    - Physical infrastructure - roads and traffic conditions, car parking, other modes of transport, sewerage, water, gas, electricity, stormwater, telecommunications
    - Relevant hazards - bushfire, flooding, site contamination
    - Built form
    - Amenity of the area - noise, odour, light spill impacts, safety

2) Natural features and values

    - Ecological values including flora and fauna - vegetation/tree survey and significance in terms of aesthetics, conservation, and environmental values
    - Air, soil, and water quality (as relevant)

3) Social and cultural context

    - Communities of interest
    - Social infrastructure either - including community, shopping, and recreation facilities
    - Existing character and of the site and surrounds - urban design streetscape character
    - Cultural & heritage environment – natural, Aboriginal, and European
    - Economic environment, where relevant

6.1 Physical features and built form

As this planning report is required to assess the potential impacts of any future use of the site, an Indicative concept masterplan has been prepared by the proponent team to assist the Major Territory Plan Amendment proposal.

At this stage, it is intended that the development will predominately be a mix of single (townhouses) and multi-unit housing dwellings. The proposal suggests the site be developed under an Estate Development Plan (EDP) which would see the block subdivided to provide approximately 46 blocks comprising 43 single residential blocks and three multi-unit blocks providing 39 apartments, 10

townhouses and 42 apartments respectively (134 dwellings). Refer to the masterplan prepared by Stewart Architects included with this submission.

The development contemplates a mix of 1, 2 and 3- bedroom dwellings. Further details will be designed as part of a Development Application process.

Figure 15: Proposed Master Plan

Source: Stewart Architecture, 2022

6.1.1 VISUAL IMPACT, OVERSHADOWING AND BUILDING HEIGHT

The proposed variation is considered to be consistent with surrounding land uses in terms of height and density. The locations of the multi-unit buildings are proposed to ensure they compliment developments nearby, and do not detract from the amenity of the area.

Amending the TP for higher residential development can allow for future designs to minimise any adverse impact on overshadowing of adjacent land uses. The southern edge of the site will need to be designed to ensure that the existing development is not impacted by any future works.

Consideration of overshadowing and similar impacts to adjacent developments is a key factor in the broader approach to a MTP Amendment. The concept plan has been development with the intention to not have an adverse impact on the surrounding developments including overshadowing and traffic. The detailed design stage of any residential development on the site will further consider impacts of overshadowing, solar access and impacts to private open space on adjacent land uses.

The block orientations and potential built forms of each apartment building are able to be designed to reduce the overall scale of the proposal when viewed from Antill Street. It also optimises morning or afternoon solar access for future residents. These design elements will ensure appropriate solar amenity is maintained to the proposed single dwellings within the subject area and will reduce the bulk and scale of the development when viewed from the street.

Figure 16: Conceptual visual analysis of the proposed development – corner of Antill Street and Aspinall Street

Source: Purdon

Figure 17: Conceptual visual analysis of the proposed development – along Antill Street

Source: Purdon

6.2 Social infrastructure

To the west of the site there are a range of community uses among residential uses, such as a Church, Youth with a Mission, and the Canberra Potters Society Inc. located further west. To the east is a Nature Reserve that adjoins the Mount Majura Special Purpose Reserve.

As the report suggests, the uses permitted within CZ6 are not considered to be complimentary to the surrounding uses due to potential impacts of increased noise, traffic, pedestrian footfall and economic disadvantages. The suggested variation will allow for a use which is consistent with the local character without negatively impacting the neighbourhood. The proposed residential use better aligns with the uses directly adjacent and will have less of a social impact than other uses available in CZ6.

Figure 18: Social Infrastructures

Source: Purdon (ACTmapi, 2022)

6.3 Existing character and of the site and surrounds

Adjacent land uses are mixed, with low to medium density residential developments around the site. Section 76 Watson is located near the subject site and is subject to recently approved (Variation no 372 approved 1st April 2022) MTP Amendment which proposes RZ4 and PRZ1 zoning. As mentioned above, east of the site is a nature reserve, with residential on either side. It is not considered that an injection of more residential within North Watson will conflict with the existing land uses. Notwithstanding, any potential land use conflicts can be addressed as part of the Planning Study required for the Amendment.

It is considered that proposed residential use of the site will not generate any land use conflicts with surrounding development and the development is able to achieve the density which is financially viable without negatively impacting the neighbourhood's character. Refer to the concept masterplan for potential density and Figure 15 & Figure 16 for building bulk analysis.

6.4 Physical Infrastructure and Transport

6.4.1 INFRASTRUCTURE

Icon have advised that an initial hydraulic assessment shows the existing sewer has sufficient capacity to deliver the additional flow although the system is almost at capacity.

The ground terrain shows the development may split to two sewer ties. Detailed EP distribution will be required to have further detailed hydraulic assessment during the acceptance in principle or detailed design phase.

The initial Icon assessment shows the existing water has sufficient capacity to deliver the additional flow. There are no known Icon Water assets within the block.

Evoenergy have advised that site planning will need to allow for a new substation within the block boundary as part of proposed development. At present a pad-mount substation exists within the Dominion Circuit verge about half-way along the frontage of the block. Further communication will be undertaken with Evoenergy prior to any design development activities for mixed use development and lodge an application will be lodged for preliminary network advice as part of the preparation of DA documentation.

6.4.2 TRANSPORT

SALT[3] were engaged to prepare a Transport Impact Assessment (TIA) for the proposed development in Watson Section 3 Block 95. The report, submitted as an attachment to this Planning Report, sets out an assessment of the anticipated transport implications of the planning proposal, including consideration of the:

- access and regress to the site
- impacts on traffic flow in the area and on site.
- walking and cycling connection to nearby shops and the main community route.
- traffic capacity of the surrounding road network,
- public transport services and
- active travel connectivity for the area.

6.4.2.1 Traffic Impact

The network is expected to operate satisfactorily with the additional traffic associated with the proposal. This is true for both the AM and PM peak hours post development and in the 10-year scenario.

All the legs of each intersection in the network operate at a level of service A, with a Degree of Saturation values well below for all the movements. Delays and queues across the network are minimal in each scenario.

Table 5 - Traffic Generation

Type of Residence	No. Residence	Daily Vehicle Reip Rate	Daily Vehicle Trips	Peak Hour Vehicle Trip Rate	Peak Hour Vehicle Trips
Dwelling Houses	43 Dwellings	9 per dwelling	387	0.85 per dwelling	49
Apartment 1	39 Apartments	5 per dwelling	195	0.5 per dwelling	20
Apartment 2	42 Apartments		210		21
Apartment 3	10 Apartments		50		
Total			842		83

Source: SALT[3], 2022

The proposal is for a residential development incorporating 134 dwellings and is expected to generate 842 trips in AM and PM peak hour.

Figure 19: Estimated Traffic Distribution

Source: SALT[3], 2022

The level of traffic generated by the proposal is not anticipated to have any major adverse impact on the road network and intersections. The site access arrangements and adjacent roundabouts are expected to operate to a satisfactory and efficient level in the AM and PM peak hour post development.

Please refer to the Traffic Impact Assessment Report prepared by SALT[3] which is submitted as part of this application.

6.4.2.2 Parking

The concept masterplan would generate a maximum car park requirement of 278 spaces for residents plus 35 spaces for visitors. Residents' car park spaces should be provided on-site whilst visitor parking can be supplied either on-street or in surrounding carparks within a 100m distance to the site.

However, given the parking restrictions on Antill Street and Aspinall Street and adjacent developments, there is no available parking spaces for allocating to visitors parking external of the site. It is recommended to provide all visitor parking on site. The site has capacity to accommodate both resident and visitor parking.

A minimum of two motorcycle parking spaces is required for the development, which is to be provided onsite. This can be accommodated at the development level either in driveways, basements or as on-street parking. Also, the proposed rezoning has a bicycle parking requirement of 81 spaces for the residents, plus 12 spaces for visitors. These requirements will be detail further following a successful amendment.

Table 6 - Number of Parking Spaces Required

Development	Parking Provision rates for residential zones	Parking Required
Apartment	One (1) parking space per single bedroom dwelling; and A minimum average provision of 1.5 spaces per two bedroom dwelling, provided that each two bedroom dwelling is allocated a minimum of one (1) parking space and each two (2) bedroom dwelling is allocated no more than two (2) parking spaces; or Two (2) parking spaces per two bedroom dwelling; and Two (2) parking spaces for each dwelling with three or more bedrooms; plus One (1) visitor space per four (4) dwellings or part thereof where a complex comprises four (4) or more dwellings	162 Parking spaces 20 Visitor Parking 81 Bicycle parking 6 Visitor Bicycle parking

Development	Parking Provision rates for residential zones	Parking Required
Attached house	One (1) parking space per single bedroom dwelling; and A minimum average provision of 1.5 spaces per two bedroom dwelling, provided that each two bedroom dwelling is allocated a minimum of one (1) parking space and each two (2) bedroom dwelling is allocated no more than two (2) parking spaces; or Two (2) parking spaces per two bedroom dwelling; and Two (2) parking spaces for each dwelling with three or more bedrooms; plus One (1) visitor space per four (4) dwellings or part thereof where a complex comprises four (4) or more dwellings	116 Parking Spaces 15 Visitor Parking
Total		278 Parking Spaces 35 Visitor Parking

All residents and visitor parking can be accommodated on-site.

6.4.2.3 Walking

The subject site has good walking facilities in place with footpaths provided along both site frontages and the majority of the surrounding road network. The adjacent roundabouts are provided with pram ramps and refuges, allowing pedestrian crossing opportunities.

The site is within a convenient walking distance to Mount Majura Nature Reserve, C3 Church, bus stops and other residential precincts.

Walking paths are proposed to be provided as part of detailed design to support the future EDP.

6.4.2.4 Public Transport

The subject site is accessible on public transport, with bus stops located at the site frontage on Aspinall Street as well as nearby on Antill street.

Bus stops are serviced by bus route 50 between Watson and the City via Downer, Dickson, Lyneham, and O'Connor. This route provides access to key destinations and the greater public transport network including Watson Terminal, Watson Shops, Dickson Interchange, Dickson Shops, City Interchange and Lyneham Primary School.

6.5 Environment assessment

6.5.1 ENVIRONMENT PROTECTION AND BIODIVERSITY CONSERVATION ACT 1999 (COMMONWEALTH)

Capital Ecology consultants were engaged to undertake an ecological study which summarises as below:

Two EPBC Act listed threatened ecological communities (TEC's) have been identified on the site, both listed as critically endangered under the EPBC Act: '*Natural Temperate Grassland of the Southeastern Highlands*' (NTG-SEH), and '*White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland*' (EPBC Act Box-Gum Woodland, BGW).

> *With regard to the above, the study area does not support any EPBC Act listed threatened ecological community or habitat for any EPBC Act listed threatened flora species. However, the study area is likely to support habitat which is potentially of limited value for EPBC Act threatened fauna species (refer to Section 2.6 and Appendix C). Notwithstanding this, with reference to the EPBC Act Significant Impact Guidelines, impacts to or the removal of vegetation from the study area is unlikely to result in a 'significant impact' on any identified EPBC Act listed fauna species. Finally, whilst there is the potential for a few migratory species to periodically forage within the study area, the study area is unlikely to provide important habitat for any migratory species.*
>
> *In light of the above, development within the study area is unlikely to significantly impact any MNES, and therefore referral to the Minister for such development would not be warranted.*

The following are the key conclusions or the report's assessment:

1. The study area's vegetation and habitat has been highly degraded by the land use history and associated vegetation modification.

2. The extent of the NC Act native vegetation present in the study area is defined by the canopy cover of the two remnant Yellow Box trees.

3. The study area does not contain any threatened ecological community or potentially important habitat for any threatened species listed under the EPBC Act or the NC Act.

4. The study area contains two large remnant Yellow Box Eucalyptus melliodora trees, which are classified as protected under the ACT Tree Protection Act 2015.

5. Development within the study area:

> *a. would be unlikely to significantly impact any MNES, and therefore referral under the Commonwealth EPBC Act for such development would not be warranted; and*
>
> *b. will not result in the clearance of greater than 0.5 ha of native vegetation clearance, and as such, the development will not trigger the requirement to prepare an EIS under the ACT P&D Act.*

Overall, with consideration of the study area's land use history and current ecological values, development of the study area is a reasonable proposition, and it is unlikely that the study area's limited remaining ecological values would pose a substantial constraint to development.

6.5.2 CLIMATE CHANGE INITIATIVES

In 2019, the ACT Government declared a state of climate emergency, acknowledging the need for urgent action across all levels of Government. In response to this the ACT Climate Change Strategy outlines steps to reduce emissions by 50–60% (below 1990 levels) by 2025 and establish a pathway for achieving net zero emissions by 2045. The Strategy identifies urban infill development as an area that can contribute to meeting these targets.

The principal opportunity for site planning controls to mitigate impacts of new development in relation to climate change is to identify the urban heat risk factors that apply to the site and incorporate appropriate urban heat mitigation measures. This is achieved through a micro-climate assessment.

As the concept plans provided for analysis as part of this Major Territory Plan Amendment are indicative plans at the early stage of design development it is not possible to undertake a full micro-climate assessment to identify urban heat island effects at this time. It is more appropriate that such activities are undertaken as part of the DA documentation. However, the indicative plans do ensure that the following measures can be readily achieved:

- Zero emissions buildings, such as all-electric buildings,
- Provision of electric vehicle charging infrastructure capacity
- Achieving high energy efficiency and water use efficiency performance.
- At least 30% of the site area is permeable
- 30% canopy cover
- Statutory WSUD compliance with on-site stormwater detention and re-use
- Natural ventilation to units
- Good solar access for residents

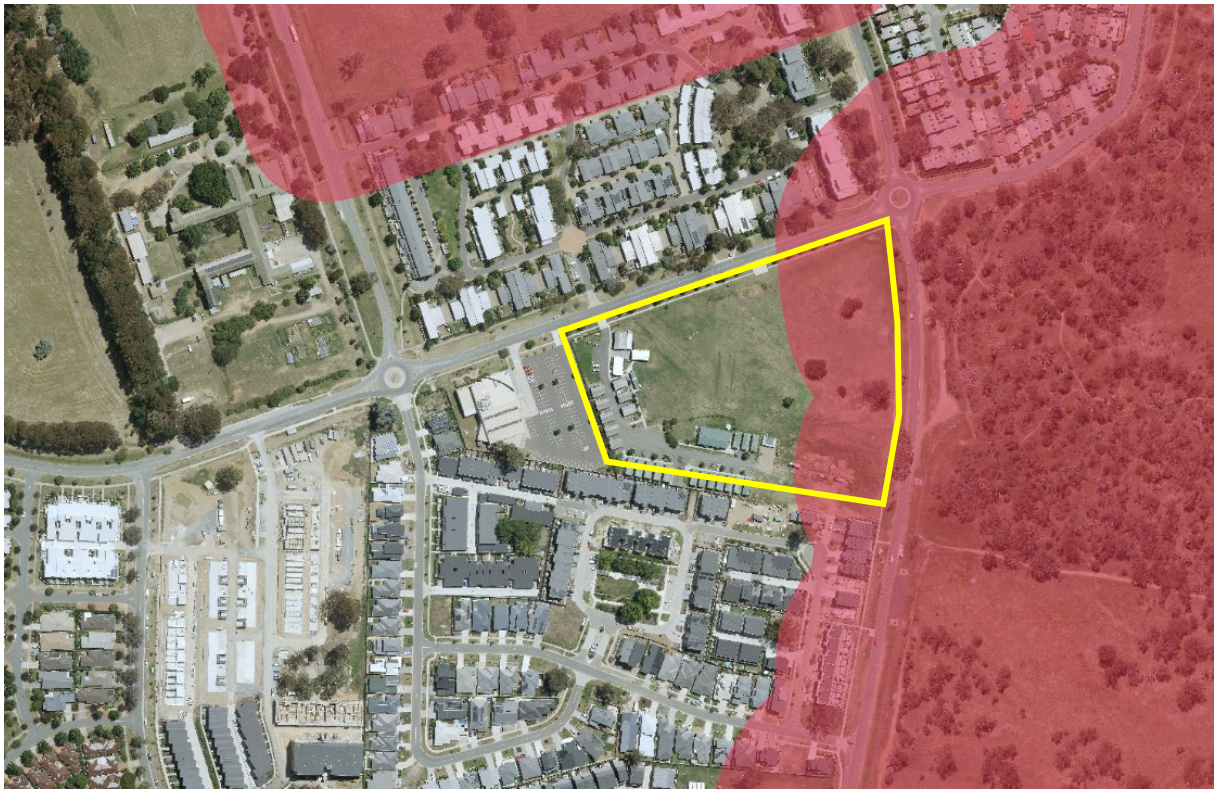
6.5.3 LAND CONTAMINATION

The site is not listed on the ACT Contaminated Register. It is considered that contamination does not present a potential risk or impact for development of the site. Further analysis can be undertaken if required.

6.5.4 BUSHFIRE AND EMERGENCY SERVICES

The site is mapped as being within a Bushfire Prone Area. Any development within this area will be subject to construction compliant with BAL rating requirements. The concept masterplan has been designed keeping in mind the requirements of emergency vehicles, however, will be detailed further following a successful variation. Further, Antill street is considered to act as a buffer to the potential bushfire impacts.

Figure 20: Bushfire Prone Area



Source: ACTmapi, 2022

6.6 Ecological Value

Capital Ecology were engaged to prepare an Ecological Values and Constraints assessment report, the report summarises the following:

- The two remnant Yellow Box trees in the study area may provide limited habitat value to woodland birds, including several rare and threatened bird species that have been observed in the locality.
- The Gang-gang Cockatoo Callocephalon fimbriatum (EPBC Act and NC Act Endangered) was recorded during the field survey. The Superb Parrot Polytelis swainonii (EPBC Act and NC Act Vulnerable) has also been recorded previously (Appendix C of the report).
- The study area does not support any EPBC Act or NC Act listed threatened ecological communities, and the extent of the NC Act native vegetation present in the study area is defined by the canopy cover of the two remnant Yellow Box trees.

Please refer to the Ecological Values and Constraints Assessment prepared by Capital Ecology for further details.

The concept masterplan has been designed to ensure the two remnant trees are retained as part of the development.

6.6.1 FAUNA/FLORA ASSESSMENT

Pursuant to the NC Act, 'native vegetation' is defined as present if:

- trees or shrubs indigenous to the area have a canopy cover of 10% or greater in any stratum; or
- native plants indigenous to the area comprise 50% or more of the cover of the ground storey (grasses, small shrubs, forbs, sedges etc.).

According to this definition, the extent of the NC Act native vegetation present in the study area is defined by the canopy cover of the two remnant Yellow Box trees. The concept masterplan ensures the trees are protected.

Please refer to the Ecological Values and Constraints Assessment prepared by Capital Ecology included in this submission for further details.

6.6.1.1 Threatened Flora Occurrence

Several threatened flora species have been recorded within the remnant woodland directly adjacent to the study area, including Hoary Sunray Leucochrysum albicans var. tricolor. However, given the very high degree of historical land modification, none of the threatened flora species with the potential to occur in the locality are considered to have a moderate or higher likelihood of occurrence in the study area.

No threatened flora species were recorded in the study area during the field survey.

6.6.1.2 Fauna Habitat and Threatened Fauna Occurrence

The database searches, literature review, and field surveys identified the following potential fauna habitat:

- **Mature remnant trees**. These trees would provide foraging, nesting and refuge resources for the native and exotic birds likely to occur in the subject land and surrounds.
- **Threatened bird habitat.** The remnant native and planted exotic trees are likely to provide limited habitat for woodland birds, potentially including several EPBC Act and/or NC Act listed birds (refer to Appendix C). The Gang-gang Cockatoo Callocephalon fimbriatum, Superb Parrot Polytelis swainsonii, and several other regionally declining woodland birds have been recorded in the remnant woodland adjacent to the study area. The two remnant Yellow Box contain large hollows and may provide foraging and/or nesting habitat for these species. However, given the high degree of historic disturbance throughout the study area, the highly modified vegetation in the study area is likely to be of limited habitat value for these species.

Please refer to the Ecological Values and Constraints Assessment prepared by Capital Ecology included in this submission.

6.6.2 TREE ASSESSMENT AND MANAGEMENT PLAN

Gold Leaf Tree Services assessed six trees on site, three trees are classified as 'Regulated' under the Tree Protection Act 2005, and two trees are classified as 'Not Regulated' under the Tree Protection Act 2005, and one tree classified as a 'Pest Plant'.

The six subject trees sit within a currently vacant block which is predominantly grass and open lawn.

The two Eucalyptus melliodora (Yellow Box) are very old large specimens with signs of cavities and decay. Because of their age and the presence of potential cavities they have a very high value for a

range of species that rely on this sort of habitat. Acer negundo (Boxelder) is considered a pest plant in the Act and removal is recommended.

Figure 21: Site Inspection Results

Source: Gold Leaf, 2022

The report suggests tree protection zone's and structural root zones for purposes of tree protection. Any future development will be required to adhere to these protection zones.

Please refer to the Preliminary Tree Assessment Report prepared by Gold Leaf included this submission.

6.6.3 LANDSCAPE MANAGEMENT & PROTECTION

A detailed landscape management and protection plan will be prepared as part of documentation for a future development application.

6.7 Noise

Except for temporary construction noise which will be managed via a Construction Noise Management Plan, residential development on the site will not generate adverse noise impacts in the locality.

The proposed housing will not be impacted by noise from the adjoining or nearby land uses including traffic on Antill Street. A full noise assessment will be undertaken as part of the future development application.

6.8 Cultural and Heritage Environment

The proposed residential redevelopment covers approximately 3.5ha located with Block 3 Section 95 Watson. The surface and subsurface impacts from the project are thus extensive and will impact all areas within the project area.

Review of previous reports identified no sites or areas of PAD within the project area. Field survey undertaken for this assessment identified no heritage sites or areas of PAD within the project area. Further the survey identified numerous building remnants and a high degree of impact across all of the project area.

As a result, there are no identified heritage impacts from the proposed variation and future construction works.

Please refer to the Heritage Assessment report prepared by Past Traces which is included in this submission.

7.0 Recommended Major Territory Plan Amendment

This report for a MTP Amendment for Block 3 Section 95 proposes to:

- Allow the redevelopment of the site for residential purposes
- Introduce site specific controls for building heights, density and other relevant planning controls in the Inner North and City District Policy and relevant Planning Technical Specification.

To permit this change in use on site, it is considered that an amendment to the District Policy and District Specification is a feasible approach by introducing new provisions to guide future development. These provisions could include restrictions on building heights and the scale of residential uses to align with the proposed concept plan, together with provisions to meet the Climate Change Strategy and Living Infrastructure Plan.

The Watson Division Map of the District Policy is proposed to be varied to include an area identified as AD2 covering the subject site, which permits Residential Use (refer to Figure 22).

The site is proposed to have additional provisions (possibly assessment requirements and specifications). This will include adding Figure 24 to the Policy to limit heights across the site. Changes to the Policy and Specification will require any future development proposal to address the additional provisions as part of documentation to support a Development Application as well as allowing TPA assessment officers to consider such Assessment Requirements and Technical Specifications as part of the decision on a DA.

DISTRICT POLICIES D3 – INNER NORTH AND CITY DISTRICT POLICY

Land Use Table

(Unchanged – AD2 overlay added to site through figure 7 (of the Policy))

The following table specifies additional types of development and land use that are assessable in this district.

Locality	Zone	Additional assessable development	Additional prohibited development	Relevant parcel or Figure
Watson	CZ6	Residential use	Nil	AD2, Figure 7

ASSESSMENT OUTCOMES

Development proposals in the Inner North and City District will be assessed having regard to the key characteristics of the district and the policy outcomes to be achieved for the district.

ASSESSMENT REQUIREMENTS

Consistent with the district policy outcomes, development proposal in the Inner North and City District must demonstrate that they are consistent with any area specific assessment outcomes that may apply, as well as the relevant zone assessment outcomes.

The additional Assessment outcomes, requirements and technical specifications to be added to the Watson Division are outlined below.

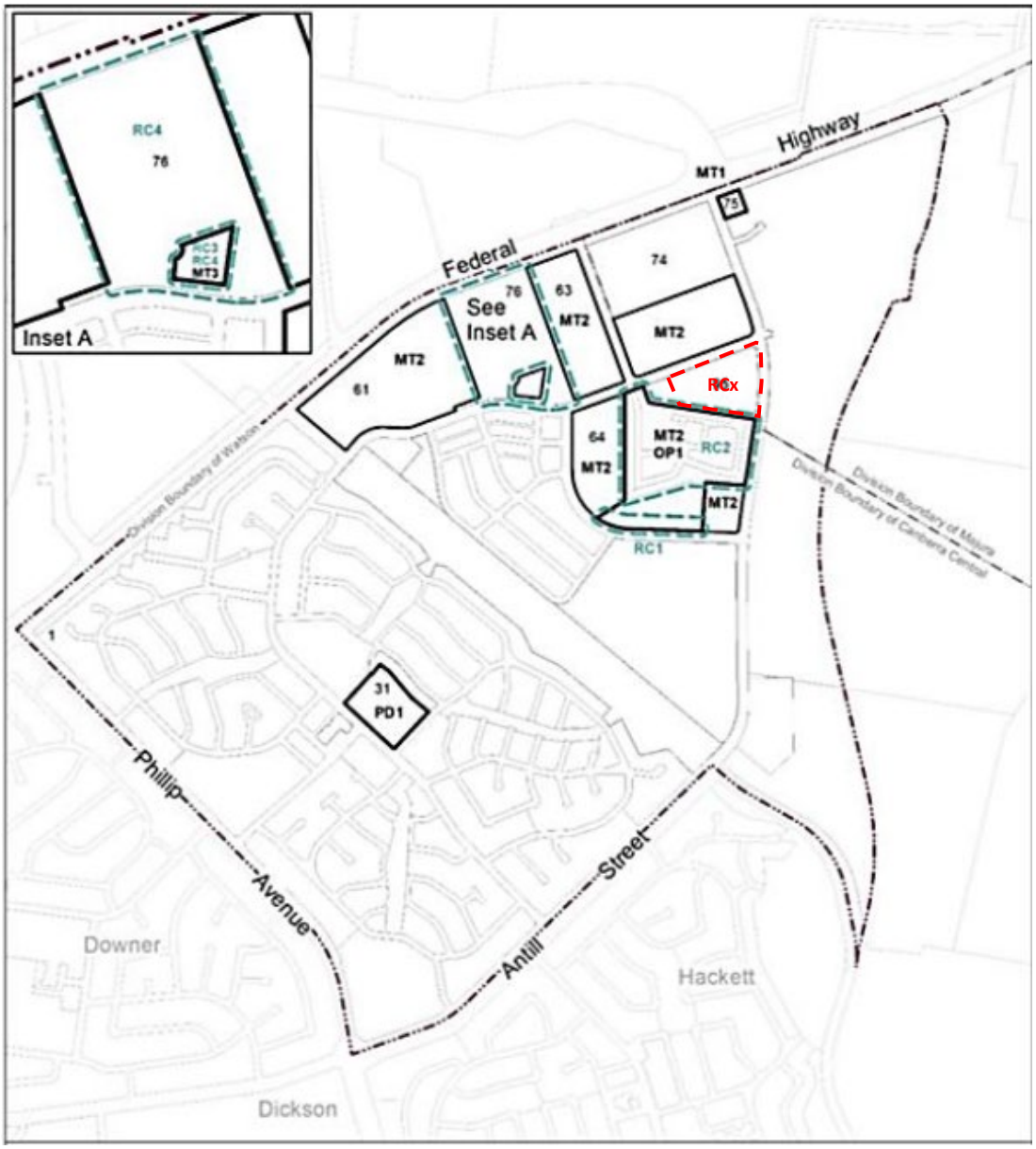
D3 Inner North and City District Policy		
Locality	**Assessment requirement**	**Reference**
Watson	##. On part Section 95, development complies with the following: a) maximum height of buildings is 12.5m or 9.5m as identified in Figure X [Figure 24 of this report]. i)Minor building elements may exceed the maximum height of building where they do not increase the scale of the building when viewed from a public street. Minor building elements include but are not limited to: • rooftop plant, • photo-voltaic panels, • antennas, • pergolas and • rooftop garden structures. ii)habitable rooms, or part thereof, and fully enclosed pergolas are not minor building elements. b) Plot ratios for the site is to be consistent with Figure X c) All regulated trees as identified in Figure X must be retained as part of any redevelopment. d) No vehicular access permitted from Antill Street.	Figure X [Figure 24 of this report]

The additional requirement to be added to the Inner North and City District Technical specifications are outlined in Table below.

Planning (Inner North and City District) Technical Specifications 2023	
10. Watson	
Development Provisions – RCx	10.# a) In Area 'RCx' (Section 95), a transition of building heights is to be achieved with: i) Higher buildings predominantly located along the corner of Antill Street and Aspinall St ii) Higher buildings do not drastically overshadow the neighbouring buildings b) Development achieves all of the following: i) has or will achieve a minimum of 30% canopy tree cover measured at a mature height ii) inclusion of irrigation and maintenance systems to support canopy trees and ensure they remain a part of the development Note: existing street trees contribute towards the minimum 30% canopy tree cover

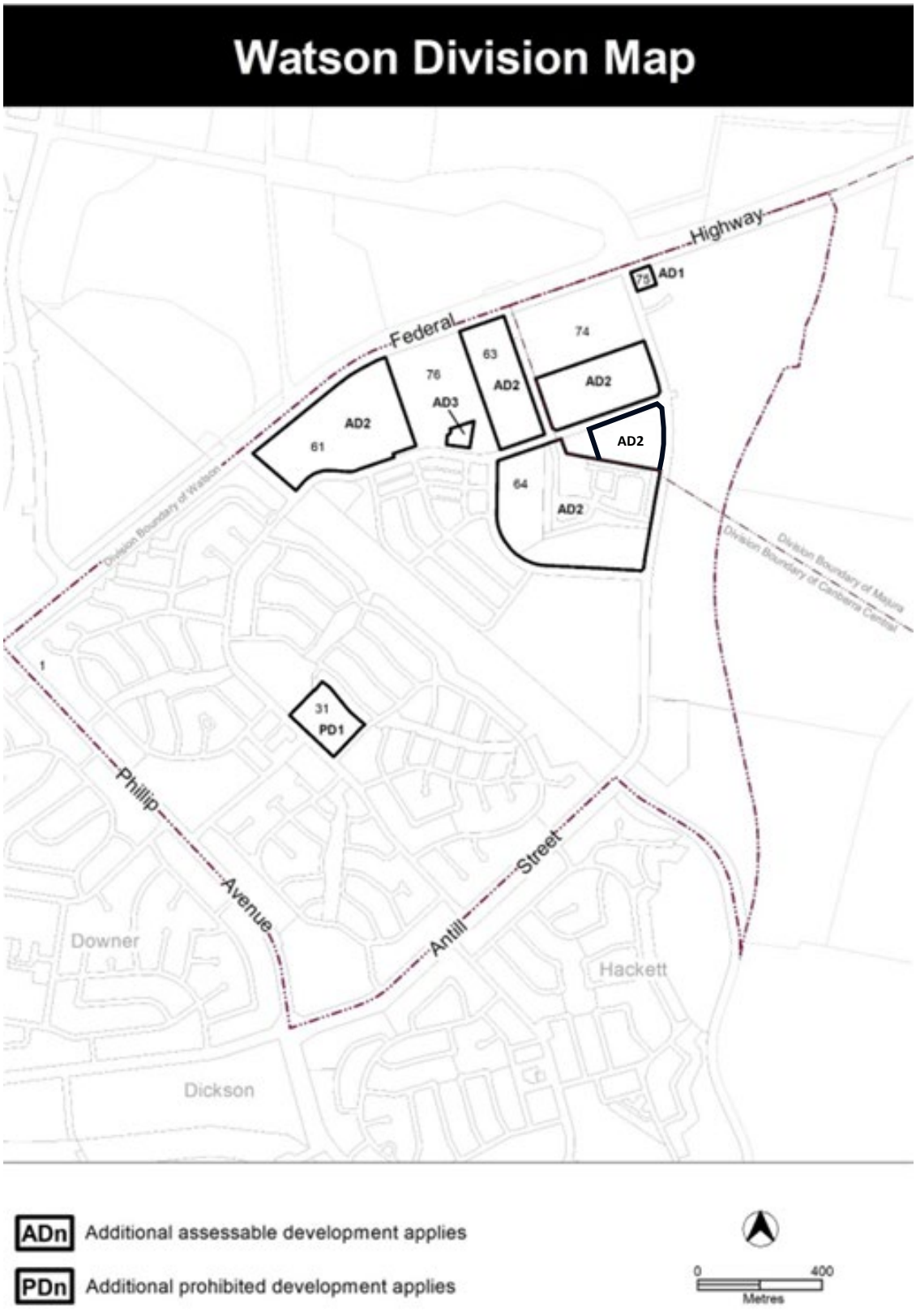
Watson – Ongoing Provisions figure is updated to include label RCx over the site to denote additional controls specific to the subject site.

Figure 22: Proposed Watson Ongoing Provisions



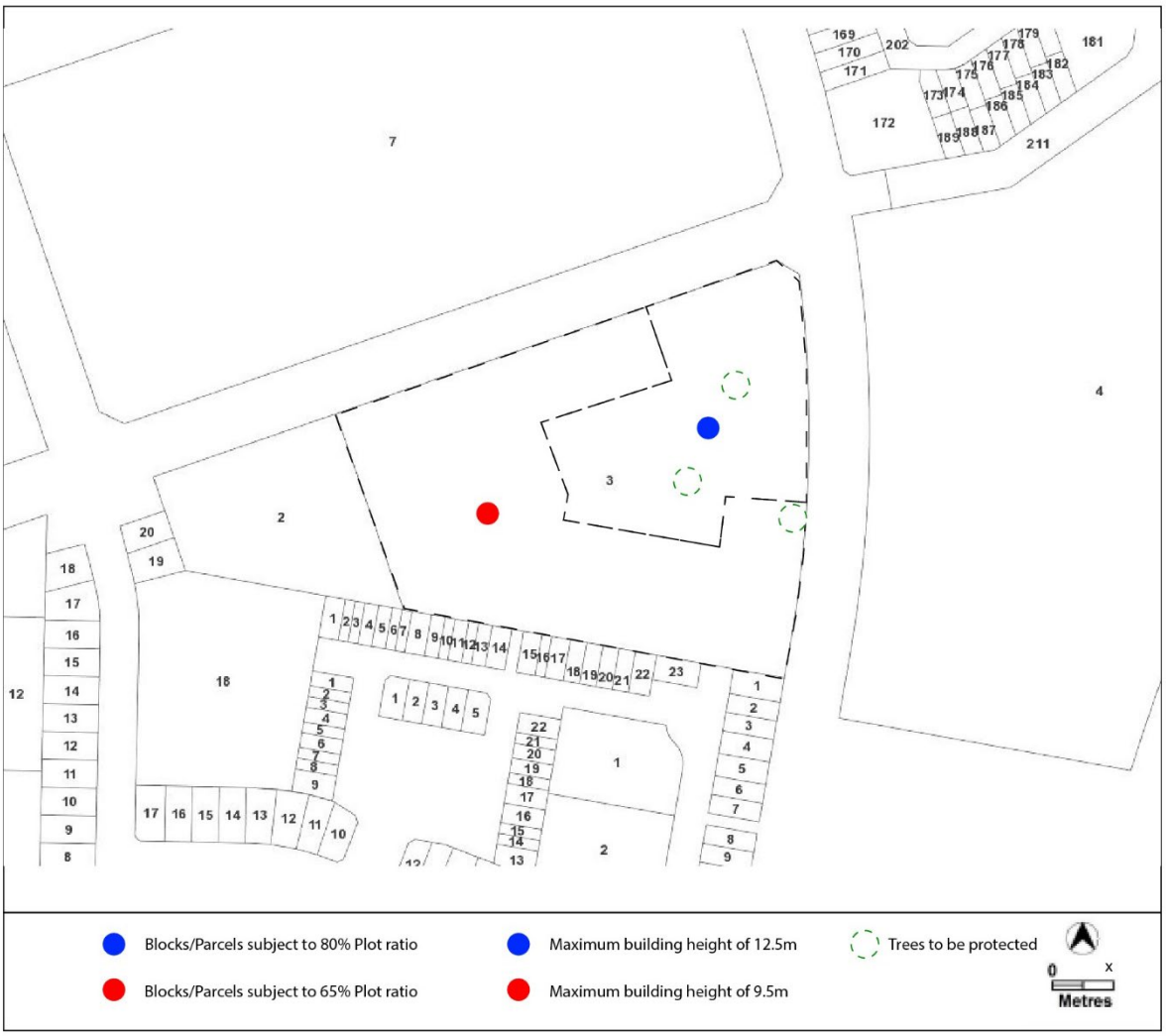
AD2 area in the Watson Division Map (Figure 7 of the D3 District Policy) is amended to add Residential use as an additional assessable development to CZ6 on Section 95.

Figure 23: Proposed Watson Division Map



Source: Purdon

Figure 24: Proposed District Policy and Specification figure



Source: Purdon

8.0 Conclusion

This submission has been prepared by Purdon on behalf of the proponent (Maryalice Pty) to respond to a Scoping Document issued by the Territory Planning Authority (TPA) for the preparation of a Planning Report to support a Major Territory Plan Amendment of Block 3 Section 95 Watson.

As a result of this investigation, it is considered that the most appropriate use of the site is a low and medium density residential development, which will align with the ACT Government objectives for urban infill in established North Canberra suburbs. To achieve this outcome a variation to the Territory Plan is required and this report recommends varying the Inner North and City District Policy provisions to permit residential use on the site.

The proposed amendment will benefit the local community in terms of increasing housing choice in North Canberra and opportunities for increased support to the local commercial and recreational facilities, as well as other land uses in the Watson area.

Investigations have concluded that the proposed amendment of the site for residential use is appropriate for the area and will deliver community benefits.

It is also concluded that the site is appropriately located for this type of development and that there are no known physical constraints to the proposed variation. The proposal is consistent with the district strategy and the assessable outcomes established by TPA for rezoning of CZ6 land.

It is therefore **recommended** that TPA support the proposed Major Territory Plan Amendment.

Purdon
November 2023

Appendix 1 - Community Consultation Report

1.0 Introduction & Purpose

Purdon Planning Pty Ltd has prepared this Consultation Report to support an application to vary the Territory Plan (TPV) at Block 3 Section 95 Watson, on behalf of the Cusack.

The proposed variation is to amend the Territory Plan to permit the residential use via an amendment to the Inner North and City District Policy. Indicative site layout designs have been prepared to show the desired outcome following the variation, these were presented to the community for their feedback, in addition to seeking their feedback in relation to the varying proposal more generally.

This report should be read in conjunction with architectural concept plans and reports prepared by the Stewart Architecture lodged as part of the TPV.

Purdon Planning ran a preliminary consultation on the proposed rezoning for Block 3 Section 95 Watson, from 17th October 2022 until 1st November 2022. One online consultation session was held on Microsoft Teams Meeting. The consultation period started with the publication of the Purdon webpage and initial delivery of online session details flyer. The consultation period concluded when this report was written.

This report details the requirements for consultation, the activities undertaken, and the feedback received.

1.1 ACT Community Engagement Guideline

The Scope for a planning report in support of a proposed Major Territory Plan Amendment to rezone block 3 section 95 Watson (scoping document) was provided to the Proponent in July 2022. This document provided guidance on how to consult the community to seek their input to the TPV submission. The guidance provided, required the proponent to undertake:

Community consultation with affected communities and interested members of the public on the proposal is required to be conducted in accordance with the ACT Community Engagement Guideline at: https://www.yoursay.act.gov.au/about/community-engagement.

At a minimum, consultation should include holding at least one (1) public engagement session that is widely advertised in print and electronic media. This part is to include a report on consultation that:

- provide details of consultation undertaken e.g. notifications, formal presentations, sessions, number of attendees and copies of relevant correspondence;
- list of all issues raised in consultation, outcomes, etc; and
- responds to issues raised, including any changes to the proposal as a result of consultation

It is understood the manual Engaging Canberrans: Community Engagement Manual (the manual) – found on the above website – is designed with Government led consultation activities in mind. However, the proponent team considered the guidance within the manual and webpage as linked

above, in addition to the advised minimum guidelines as provided in the scoping document, when undertaking the Preliminary Consultation.

As detailed in the manual, Effective Community Engagement consists of addressing the principles as detailed in Section 2.1 of the manual. These are summarised in the below table excerpt from the manual:

Table 7- Effective Engagement Principle (ACT Government 2011)

Effective engagement	What this means in practice
…is clearly scoped	Ensure that everyone (internally and externally) knows what the engagement is about and what it is not about.
….is transparent	Ensure people know what is happening and how their input is being used.
…is connected to decision-making	Gather the input, analyse it, and use it in decision-making where appropriate.
…is inclusive	Ensure all those who have an interest or may be affected have a genuine opportunity to participate.
…is informative	Ensure that people have access to the information they need to participate.
…is timely	Provide opportunities early in the process for people to generate ideas and express their views
…involves deliberation	Ensure there is sufficient time for all participants to think things through, weigh up alternatives and provide feedback.
…builds relationships	Get to know people and provide opportunities for participants to appreciate each other's perspectives.
…provides feedback	Let people know how their contribution has been used or has made a difference or why contributions may not figure in final decisions made.
…builds trust	Seek to build trust in all our interactions.
…is accessible	Provide a wide variety of engagement tools and methods. Ensure the venues and materials are accessible, particularly to people with disability and those who need to use public transport.

The below section of this report details how the proponent team has addressed the requirements within the scoping document and the guidance provided in the manual.

2.0 Consultation Approach

2.1 Stakeholders Identified

For the purpose of the consultations, stakeholders with a potential interest in the proposal are considered to comprise the following:

- Watson Residents Group
- North Canberra Community Council (ISCCC)
- Council on the Ageing (COTA) ACT
- ACT Council of Social Service Inc.
- Region Media (RIOTACT)
- Property Council of Australia ACT
- Office for Aboriginal and Torres Strait Islander Affairs
- Youth Council

It is considered that in identifying and then contacting the community stakeholders as noted above, this process satisfies the principle of being inclusive by providing the opportunity to all those who have an interest or may be affected to have a genuine opportunity to participate in this preliminary consultation

2.2 Consultation Activities

The following activities were undertaken to advise the relevant stakeholders about the proposal and to seek their input:

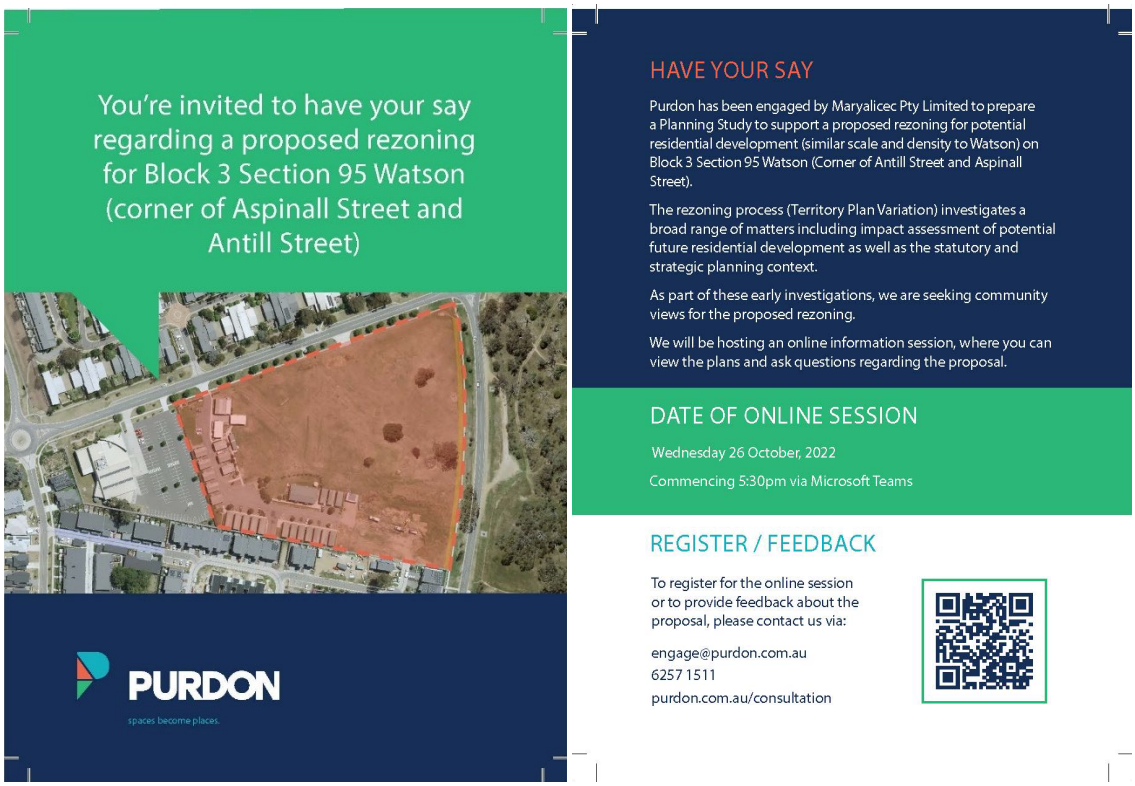
- Publication on the Purdon Website https://www.purdon.com.au/2022/10/17/block-3-section-95-watson-territory-plan-variation/, on 17th October with details of the proposal. The website detailed how interested persons could provide feedback directly to Purdon via the online response form or telephone. The information available on the website endeavoured to make all details available in plain English, and included:
- Site/locality details
- Details of the Indicative Site Layout
- Explanation of the Major Territory Plan Amendment Process
- Explanation of the specific variation proposal
- Postcard format notice outlining the proposal and inviting comment was circulated to 750 mailboxes within the Block 3 Section 95 Watson Area on Monday 17th October 2022 (please refer to Figure 1 and Figure 2 below).
- Emails to the above listed Community Groups and stakeholders on 28th October 2022.

- Online Community Information Session, hosted by Purdon. Numbers of attendees, basic demographic questions and their comments were recorded by Purdon at the session. A summary of these comments and any written feedback received is detailed in Section 2.3 below.

As detailed in the invitation/ notification flyer (provided in Figure 1) and the website (as linked above), the project team has satisfied the principles of engagement as detailed in Table 1 above. In undertaking these activities, it is considered the consultation was:

- Clearly scoped - all the information clearly stated what the proposal was for and what it was not (a TPV).
- Transparent – as discussed at the meetings and in correspondence, members of the public were clearly told how their feedback would be used.
- Connected to decision-making – via this report being provided to the authority for their consideration.
- Inclusive – as detailed at Section 2.1 of this report.
- Informative – as seen in the consultation materials provided.
- Timely – this is early in the development process, being the first of many separate opportunities to provide feedback prior to the Development Approval.
- Involves deliberation – the consultation period ran from the 17th of October 2022 (when the website went live) until the 1st of November 2022 (when this report was prepared).
- Builds relationships – through the Consultation online session differing views were afforded equal opportunity to be heard, and counterpoints were provided by other members of the community.
- Provides feedback – all persons in the online session were verbally told how their feedback would be used and those that provided written or verbal commentary were informed how their feedback would be used (incorporated into the submission documentation).
- Builds trust – in the clear and straightforward manner of consultation, the breadth of stakeholders contacted and the online meeting, it is considered the proponent-built trust with the community.
- Accessible – In providing multiple methods for feedback across different platforms it is considered the project team have made the TPV accessible to the community.

Figure 25: Notification/Invitation Flyer



Source: Purdon, 2022

Figure 26: meeting notice delivery area

Source: Purdon (ACTmapi, 2022)

2.3 Community Feedback

During the consultation period, there were multiple options for interested people to provide their opinion on the project. These included:

- Via post, phone or email directly to Purdon;
- Via an online form on the Purdon website; and
- directly to any member of the consultation team in attendance at the online consultation session.

The following sections provide details on the feedback received during the consultation period. Feedback was recorded at the virtual consultation session and was provided via email and phone to Purdon from members of the public.

2.3.1 WRITTEN FEEDBACK

A total of one (1) written submissions (via email) was received by Purdon up until 1st of November 2022. Also, one (1) written piece of feedback were provided at the consultation session. The submissions were from persons who had viewed the information available on the Purdon website and/or been in attendance at Online consultation session.

Electronic submissions were responded to via email to acknowledge their commentary. Members of the public were informed prior to their submission that their responses would be included in the submission to government.

The written feedback received was collated based on the issues raised. The number of times an issue was raised is also detailed below:

- One person suggested the space for an Educational Eco Local species garden within the subject area and consideration about pedestrian pathways, cycle use, adequate parking, speed limitation.
- One person had concerns about the height of the buildings and sufficient parking.

2.3.2 COMMUNITY CONSULTATION SESSION

There was one online session for this project on 26th October 2022. The session started at 5:30pm and ran for approximately 1:30 hours.

The presentation documents shown at this online session included a basic site layout plan from Stewart Architecture and a basic area plan by Purdon Planning (showing the approximately location of the zone change proposed). Richard Nash, Naina Agarwal and Negar Yazdi from Purdon were in attendance at the online session. The session had recorded 8 community members in attendance.

The below notes were collected during the Session and later summarised – please note this list is not exhaustive but is accurate to the conversations which were recorded.

Table 8- Response to Community Feedback

Comments	Response
Traffic Impact Has a traffic study been completed? Will it be made available?	A traffic and parking assessment will be completed and form part of the TPV submission. This information will be made available to the public during the public notification period on the EPSDD website.
Access Is there any access proposed from Antill Street?	The main access to the site proposed along the Aspinall street.
Existing Trees Are you going to remove the trees?	All regulated/protected trees are proposed to be retained. One tree is proposed to be removed as it is identified as a weed specie.
Timing When will the development start and when will it be completed?	Construction is programmed to commence in early 2024 subject to approvals.
Design Character The new buildings don't have a good design. Are we going to have same design for the proposed building as well?	The comment is taken on notice and referred to the client for future discussions.
Visitor Parking facilities The parking situation along Aspinall Street is only just adequate now. Any further development will probably put the situation in overload. Provision of Visitor parking facilities is considered essential.	It is considered that any future development proposed on the site will be designed to accommodate for the parking requirements generated by the development.
Pedestrian connections Is there pedestrian pathway from the subject area to the Majura Reserve?	There will be connectivity from the subject area to the Majura Reserve via existing pedestrian access.
Developers There will be one developer or multi-individual developers for this site?	Not yet confirmed, however most likely the site will be prepared under an EDP and have multiple developers on the resultant blocks.

Comments	Response
Height Concerns about the proposed building's height	The suggested building heights are considered to be consistent with the surrounding developments. The apartment blocks are proposed to be maximum of 12.5m and townhouses to be 9.5m.
Site Usage suggested the space for an Educational Eco local species garden	Noted.

3.0 Conclusion

This report has detailed how consultation was undertaken for the proposed Major Territory Plan Amendment to amend the Inner North and City District Policy and Planning Technical Specification to allow residential use on Block 3 Section 95 Watson. It has detailed the Consultation requirements provided as part of the scoping document and the manual. It is considered the consultation has been undertaken in accordance with the advised methods.

The consultations included:

- Letterbox deliveries to surrounding residents
- Information on the Purdon website
- Emails to community groups
- An online consultation session
- Opportunity for feedback via phone or email, or at the online session

The predominant issue that was raised in community feedback was in relation to traffic and parking. However, there were a range of issues discussed at the online session and noted in the feedback received. It is considered that through site design and the additional studies that will support the TPV proposal, the project team has used these comments to understand and address the issues that are important for the Watson community.

The planning report has considered traffic and tree assessment further following the feedback received, primarily so that the project can address this at the MPA stage rather than later in the development schedule.

Purdon Planning
November 2022

Suite 5, Level 1,
243 Northbourne Avenue
Lyneham ACT 2602

02 6257 1511
purdons@purdon.com.au

purdon.com.au

PURDON

Environmental Site Suitability Report

BLOCK 3, SECTION 95
WATSON, ACT

Prepared for:	Mary Alice Pty Ltd
Date:	18 June 2024
Reference:	JC1523
Version:	JC1523/01

Agon Environmental Pty Ltd

Address
Level 3, 95 Northbourne Avenue, Canberra, ACT 2612

Phone
+61 2 5104 2177

Email
enquiries@agonenviro.com.au

A.B.N.
29 167 746 063

TABLE OF CONTENTS

AGON DOCUMENT CONTROL iii
EXECUTIVE SUMMARY iv
1.0 INTRODUCTION 1
1.1 Background 1
1.2 Objective 1
1.3 Scope of Work 1
1.4 Legislative Framework 2
2.0 SITE DETAILS 3
2.1 Site Identification 3
2.2 Physical Setting 3
2.3 Site Zoning 3
2.4 Surrounding Land Use 3
2.5 Site Geology 4
2.6 Site Hydrology and Hydrogeology 4
2.7 Site Inspection 4
3.0 HISTORICAL INFORMATION 5
3.1 Historical Aerial Imagery 5
3.2 Historical Ownership 5
3.3 Public Records 5
3.4 ACT EPA Contaminated Land Search 6
3.5 Office of Regulatory Services – Dangerous Goods Search 6
3.6 Historical Building Plans and Heating Method 6
3.7 Leaseholder Interview 6
3.8 Previous Environmental Assessment Reports 7
3.9 Potentially Contaminating Activities 7
4.0 ASSESSMENT OF PCA 8
4.1 Data Quality Objectives 8
4.2 Sampling Plan and Rationale 9
4.3 Field Methodology 11
4.4 Results 12
4.4.1 Observations and Soil Conditions 12
4.4.2 Soil Analysis Results 12

4.4.3 Asbestos 12
4.5 Asbestos Removal Works 12
4.6 Revised CSM 13
5.0 CONCLUSION & RECOMMENDATIONS 14
6.0 LIMITATIONS OF THIS REPORT 12
7.0 REFERENCES 14
APPENDIX A: PHOTOGRAPHS ..... A
APPENDIX B: AERIAL IMAGERY ..... B
APPENDIX C: GOVERNMENT SEARCHES C
APPENDIX D: LOGS ..... D
APPENDIX E: ANALYTICAL TABLES ..... E
APPENDIX F: LABORATORY CERTIFICATES ..... F

TABLES

Table 1: Site Identification 3
Table 2: Surrounding Land Use 3
Table 3: Historical Aerial Imagery 5
Table 4: PCAs 7
Table 5: Data Quality Objectives 8
Table 6: Sampling and Analysis Plan 9
Table 7: Field Methodologies 11
Table 8: CSM 13

AGON DOCUMENT CONTROL

Report Title	Project Reference
Environmental Site Suitability Report Block 3 Section 95 Watson	JC1523_ESSR Watson
Written	**Approved**
Kurt Lockwood Environmental Scientist	 **John O'Brien** ACT Manager

Rev No	Status	Date	Author	Reviewer
01	Issue	18/06/2024	K.L	J.O

Rev No	Copies	Recipient
01	1 electronic	Mary Alice Pty Ltd ACT EPA

EXECUTIVE SUMMARY

Agon was engaged by Mary Alice Pty Ltd to prepare this Environmental Site Suitability Report (ESSR) for Block 3 Section 95 Watson (the site). A Preliminary Site Investigation (PSI) was prepared for the site in support of a major plan amendment (rezoning) to RZ4 Medium Density Residential Zone. The Environment Protection Authority (EPA) provided the following comment on the PSI:

> *The EPA requests that a phase 2 (intrusive) environmental assessment be undertaken by a suitably qualified environmental consultant to determine whether past activities have impacted the site from a contamination perspective and to determine whether the site is suitable for the proposed and permitted uses.*

In summary, the site had a small number of buildings by the early-mid 1950s (possibly sheds associated with grazing), these structures were progressively removed between the 1970s-1980s, later development at the site included accommodation buildings. The surrounding areas remained undeveloped up until the late 1960s when the early stages in the development of Watson commenced.

On the basis of the site history two PCAs have been identified (the historical buildings and general site areas). These PCAs have been qualitatively and quantitatively assessed through a CSM which found did not identify any complete contaminant source pathway receptor linkages. On this basis, Agon concludes the site to be suitable for the permitted land uses under the RZ4 Medium Density Residential Zone as per the Territory Plan 2023:

ancillary use
boarding house
co-housing
community activity centre
community garden
community housing
consolidation
demolition
early childhood education and care
guest house
health facility
home business
home occupation
minor road
minor use
multi-unit housing
parkland
residential care accommodation
retirement village
secondary residence
service reticulation
Sign
single dwelling housing
social enterprise
Subdivision
supportive housing
temporary use
varying a lease
veterinary clinic

This conclusion is subject to the following conditions:

- A site-specific Unexpected Finds Protocol (UFP) be prepared to support any excavation activities at the site. The UFP must consider the findings of this report.
- All soils proposed to be removed from the site must be assessed in accordance with ACT EPA (2019) Information Sheet 4 ‘Requirements for the Reuse and Disposal of Contaminated Soil in the ACT’ or the equivalent prevailing regulatory requirements. No soil is to be removed from the site without EPA approval.

A compliance checklist has been against the following guidance documents endorsed by the ACT EPA:

- ACT EPA Information Sheet 7 - Guidance for undertaking preliminary contamination investigations for development/lease variation purposes.
- ACT EPA Information Sheet 11 – Environment Protection Authority Report Submission Requirements.
- NSW EPA (2020) Consultants Reporting on Contaminated Land. Contaminated Land Guidelines.

Elements	Comment	Compliant
ACT EPA Information Sheet 7		
Review of Historical Aerial Imagery	Completed, refer **Section 3**	Yes
Contaminated Land Search	Completed, refer **Section 3**	Yes
Groundwater Bore Search	Completed, refer **Section 2**	Yes
Historic Plans/Records	Completed, refer **Section 3**	Yes
Current/Former Land Use	Completed, refer **Section 3**	Yes
Heating Method	Completed, refer **Section 3**	Yes
Dangerous Substance Search	Completed, refer **Section 3**	Yes
Leaseholder Interview	Completed, refer **Section 3**	Yes
Site Inspection	Completed, refer **Section 2**	Yes
Identification of Potentially Contaminating Activities	Completed, refer **Section 3**	Yes
Building Demolition	N/A, no demolition of permanent built structures proposed	Yes
Preliminary Sampling and Analysis	Yes, summary of sampling and analysis to support the ESSR included in **Section 4**	Yes
Clear Statement of Suitability	Yes, provided in **Executive Summary** and **Section 5**	Yes
ACT EPA Information Sheet 11		
Guidelines	Report prepared in accordance with the appropriate guidance documents, refer **Section 1.4**	Yes
Site Definition	Site defined in **Section 2**	Yes
Site Suitability Statement	Provided in **Section 5**	Yes
Site Management Plan	N/A	N/A
Site Suitability Reports	Submitted in both digital copy	Yes
NSW EPA (2020) PSI Checklist		
Document Control	Completed	Yes
Executive Summary	Completed	Yes
Objectives	Stated, refer **Section 1**	Yes
Scope of Work	Stated, refer **Section 1**	Yes
Site Identification	Completed, refer **Section 2**	Yes
Site History	Completed, refer **Section 3**	Yes
Site Condition Surrounding Environment	Completed, refer **Section 2**	Yes
Conceptual Site Model	Completed, refer **Section 4**	Yes
Data Quality Objectives	Completed, refer **Section 4**	Yes
Sampling, Analysis Plan + Sampling Methodology (If sampling is undertaken)	Completed, **Section 4**. In summary:	Yes

	• Tabulated analysis results compared against the appropriate assessment criteria. • Summary of results. • Description of all sampled media. • Site plan showing sample locations.	
QA/QC	Completed, refer **Section 4**	Yes
Field and Analytical Results	Completed, refer **Section 4**	Yes
Conclusions Recommendations	Completed, refer **Section 5**	Yes

1.0 INTRODUCTION

1.1 Background

Agon was engaged by Maralicec Pty Ltd to prepare this Environmental Site Suitability Report (ESSR) for Block 3 Section 95 Watson (the site). A Preliminary Site Investigation (PSI) was prepared for the site in support of a major plan amendment (rezoning) to RZ4 Medium Density Residential Zone. The Environment Protection Authority (EPA) provided the following comment on the PSI:

> *The EPA requests that a phase 2 (intrusive) environmental assessment be undertaken by a suitably qualified environmental consultant to determine whether past activities have impacted the site from a contamination perspective and to determine whether the site is suitable for the proposed and permitted uses.*

The ESSR has been completed in order to determine the suitability of the site, from a contaminated land perspective, for the proposed land use and to address EPAs request. In addition, the ESSR has been prepared to comply with ACT EPA (2017) Contaminated Sites Environment Protection Policy (CSEPP) which states "*A site assessment would normally be required where there is a change to the lease purpose or land use where the past use of the land may have caused contamination*".

1.2 Objective

The objective of this ESSR is to identify potentially contaminating activities (PCAs) which may have occurred at the site, provide an initial assessment of potential risks to human health and the environment and provide a conclusion as to the suitability of the site for the proposed land use.

1.3 Scope of Work

The scope of work for this investigation comprised:

- A review of property details and a description of the features of this site.
- A review of current zoning and land use on and surrounding the site.
- A review of regional geology and hydrogeology.
- An inspection of the site.
- A review of historical aerial photographs of the site and surrounding area.
- A review of historical land titles ownership.
- A review of publicly available information.
- A search of the Contaminated Sites Database and Geographic Information System maintained by ACT EPA.
- A search of the Dangerous Substances Register, Dangerous Goods Database and the Manifest Quantity Notifications maintained by Work Safe ACT.
- Completion of:
    - An in-situ soil assessment. This comprised the collection and analysis of natural soil and fill samples from a total of 19 test pits (TP01-TP19) and 7 surface samples (SS01-SS07) were advanced across the site area.
    - Limited asbestos removal works to address the presence of bonded asbestos fragments in proximity to TP13 and TP18/TP19 (refer Section 4.5).

- Comparison of all analytical test results with applicable guidelines to provide a preliminary indication of risks to human health and/or the environment.
- Compilation of this information presented in this ESSR report.

1.4 Legislative Framework

The ESSR has been prepared in general accordance with the guidelines endorsed by the ACT EPA (2017) CSEPP, including but not limited to:

- National Environment Management (Assessment of Site Contamination) Measure 1999 (amended 2013) (the NEPM).
- ACT EPA Information Sheet 7 - Guidance for undertaking preliminary contamination investigations for development/lease variation purposes.
- ACT EPA Information Sheet 11 – Environment Protection Authority Report Submission Requirements.

Figure 1: Site Location
Source: ACTmapi (2022)

2.0 SITE DETAILS

2.1 Site Identification

Table 1: Site Identification

Site Identification	Details
Site Address	170 Aspinall Street, Watson, Canberra ACT
Block and Section	Block 3, Section 95 Watson, Canberra ACT
Volume/Folio	N/A
Land Zoning	CZ6: LEISURE AND ACCOMMODATION ZONE; TSZ1: TRANSPORT
Current Land Use	Group Accommodation.
Proposed Land Use	RZ4 - Medium Density Residential Zone.
Total Area	3.447 Ha

2.2 Physical Setting

The site is situated in the division of Watson and is bound by Aspinall Street and residential buildings to the north, Antill Street and Nature Reserve to the east, residential properties to the south, and commercial buildings to the west.

2.3 Site Zoning

The proposed site zoning will be "RZ4: MEDIUM DENSITY RESIDENTIAL ZONE". The policy outcomes of are as follows:

> *1. Facilitate development or redevelopment of sites to achieve a distinctively medium density housing character in a manner that demonstrates design excellence.*
>
> *2. Provide for a range of housing choices where the housing contains a mix of single dwelling and multi-unit housing.*
>
> *3. Provide opportunities for redevelopment by enabling changes to residential density and the original pattern of subdivision.*
>
> *4. Provide opportunities for redevelopment by enabling change.*

2.4 Surrounding Land Use

The immediate surrounding land uses to the site are summarised below in and Table 2.

Table 2: Surrounding Land Use

Direction	Land Use
North	Aspinall Street followed by residential properties.
East	Antill Street followed by Mount Majura Nature Reserve.
South	Residential properties followed by Ehrlich Circuit and Phippard Court.
West	Commercial complexes primarily used for business/services, including Church Watson and C3 College, followed by residential properties.

2.5 Site Geology

The Canberra 1:100,000 Geological Map indicates that natural soil in the vicinity of the site is likely to comprise Palaeozoic (Early - Middle Silurian) Aged sediments of the Canberra Formation (Mudstone, siltstone, minor sandstone, limestone, hornfels, dacitic ignimbrite, and volcaniclastic sediments).

2.6 Site Hydrology and Hydrogeology

Surface water in the vicinity of the site is expected to infiltrate into the local soils or drain to local stormwater infrastructure prior to being discharged to the nearest surface water body, Sullivans Creek (located about 1850m to the west of the site). Some local infiltration may occur via leaks in concrete slab or stormwater infrastructure. Review of the 1:100,000 Hydrology of the Australian Capital Territory and Environs (Evans 1984) indicates that the groundwater beneath the site is present in fractured rock aquifers, and that wells in the area typically yield between 0.5 - 1.0 L/s. The quality of groundwater abstracted from these wells range between 500 - 100mg/L Total Dissolved Solids (TDS) indicating good to fair water quality. No ACT Government groundwater monitoring bores are located within 500m of the site.

2.7 Site Inspection

An inspection of the site was undertaken by Agon on 8th February 2024 with a photolog presented in **Appendix A.** The site was observed to be commercial complex used for group accommodation which comprised of a small office building, meeting room, care-takers residence, dining hall, laundry building, 23 small accommodation buildings and four shipping containers used for the storage of maintenance equipment used by the caretaker. The complex has a central asphalt driveway (approximately 170m in length) which leads to a large, grassed area covering most of the site. A grease trap was observed at the rear of the dining hall which was used to collect oils/grease from the kitchen. A medium rigid truck was observed to be parked on the grassed area to the east of the shipping containers. Refer Photographs 1-8, **Appendix A**.

Figure 2: Site Plan
Source: ACTmapi (2022)

3.0 HISTORICAL INFORMATION

3.1 Historical Aerial Imagery

Historical aerial imagery was reviewed from 1955 to 2022 to investigate the former land uses at the site. Selected aerial extracts are provided in **Appendix B**, with approximate site locations outlined in blue.

Table 3: Historical Aerial Imagery

Year	Description
1955	**Site:** The site appears to have six buildings in the northeast portion of the block. **Surrounds:** The surrounding areas appear to be undeveloped rural land used for agriculture.
1968	**Site**: No significant change. **Surrounds: Some** buildings and roads and a car park appear to have been developed to the southwest and northwest of the site in the surrounding area.
1978	**Site**: The site appears to have had four buildings removed/demolished. **Surrounds:** Two large building has been developed to the southwest of the site.
1987	**Site**: No significant change. **Surrounds:** No significant change.
1995	**Site**: The site appears to have had all buildings removed from the block. **Surrounds:** Continued development of the surrounds to the north and northeast is evident.
1997	**Site**: The site appears to have trees removed from the site. **Surrounds:** A large building has been developed to the south of the site.
2004	**Site**: No significant change. **Surrounds:** The surrounding area to the north appears to have had most of the buildings removed and is undergoing redevelopment.
2014	**Site**: No significant changes. **Surrounds:** Further development of the surrounding areas to the north, northeast and southwest and west is evident.
2015	**Site**: Buildings have been constructed in the southeast and southwest portion of the site. A stockpile of soil appears to be located, in the southeast portion of the block. **Surrounds:** Ongoing development of the surrounds is evident.
2022	**Site**: Buildings have been built in the south and southwest portion of the block. **Surrounds:** Continued development of the surrounds is evident.

In summary, the site had a small number of buildings by the early-mid 1950s (possibly sheds associated with grazing), these structures were progressively removed between the 1970s-1980s. The surrounding areas remained undeveloped up until the late 1960s when the early stages in the development of Watson commenced.

3.2 Historical Ownership

A search of historical titles was undertaken using the Australian Capital Territory Land Information System (ACTLIS) under the original title of Volume 2374 Folio 3. Historical titles are available from 1964 to 2018 and show several leases or subleases have been issued for the site. Details of these transactions are recorded in the Historical Titles search provided in **Appendix C**.

3.3 Public Records

National Library of Australia records (NLA) accessed via https://trove.nla.gov.au/ were reviewed by Agon as supplementary site history information. No information was located for the site.

3.4 ACT EPA Contaminated Land Search

A search of the Register of Contaminated Sites maintained by the ACT EPA (under the Environment Protection Act 1997) was undertaken to identify any site contamination notifications or reports. In summary, the site and nearby properties are not recorded on the Register of Contaminated Sites. A summary of the search is as follows:

> *The block is not recorded on the EPA's contaminated sites management database or geographic information system.*
>
> *The block is zoned as CZ6: LEISURE AND ACCOMMODATION*
>
> *The EPA has not issued any orders of assessment or remediation under sections 91C (1) or 91D (1) respectively, environment protection orders under sections 125 (2) or (3), requested an audit under section 76 (2) or received an audit notification under section 76A (1) of the Environment Protection Act 1997 (the Act) over the site and as a result the site is not recorded on the Register of contaminated sites under section 21A of the Act.*
>
> *The information detailed above only relates to records held by the EPA and may not represent the actual condition of the site.*
>
> *At present the EPA has no information on contamination of the above block(s) other than as detailed above. However, this does not absolutely rule out the possibility of contamination and should not be interpreted as a warranty that there is no contamination.*
>
> *I appreciate that this does not absolutely rule out the existence of contamination of the soils. If you or your clients wish to be completely sure you, or they, should arrange to conduct independent tests.*

The EPA has not issued any orders of assessment or remediation under sections 91C (1) or 91D (1) respectively, environment protection orders under sections 125 (2) or (3), requested an audit under section 76 (2) or received an audit notification under section 76A (1) of the Environment Protection Act 1997 over the site and as a result the site is not recorded on the Register of contaminated sites undersection 21A of the Act. A copy of the EPA's response to this request, in their letter dated 23/02/2024 is included as **Appendix D**.

3.5 Office of Regulatory Services – Dangerous Goods Search

The Dangerous Substances Register, Dangerous Goods Database and the Manifest Quantity Notifications search has been removed from the Worksafe ACT website.

3.6 Historical Building Plans and Heating Method

Agon have not been provided with any historical building plans for the site, however given the recent construction (2015) of the site buildings and presence of air conditioning there is no reason to suspect the presence of underground storage of fuel for heating purposes.

3.7 Leaseholder Interview

Agon undertook an interview with Stephen Cusack regarding the history of the site:

- The property was vacant undeveloped land prior to 2012 when the property was purchased.
- Since 2015 the eastern portion of the site was developed to include accommodation operated as Canberra Carotel Motel.
- An area in the southeastern portion of the site was used to temporarily stockpile surplus soils from the development works adjacent south to the site between 2014 - 2022. This stockpile was assessed

in a report titled Lanterra Consulting (2022) "P22104 – Excavated Natural Material Assessment, Block 3 Section 95, Watson, ACT" and the report concluded the stockpiled soil was considered suitable for use as Excavated Natural Material (ENM) in NSW. Stephen confirmed this stockpile has been completely removed from the site.

3.8 Previous Environmental Assessment Reports

Agon have not been provided with any previous environmental assessment reports. A stockpile was present and assessed (by Lanterra) for offsite disposal to NSW (refer Section 3.7), this stockpile is no longer present at the site.

3.9 Potentially Contaminating Activities

On the basis of the site history and site inspection the following PCAs have been identified as applicable to the site:

Table 4: PCAs

PCA	CoCs	Description
PCA01 Former Site Buildings	TRH BTEX PAHs PCBs OCP/OPPs Metals Asbestos	Former site buildings which were evident between the 1950s-1980s, the purpose and demolition practices associated with these buildings is unknown.
PCA02 General Site Areas	TRH BTEX PAHs PCBs OCP/OPPs Metals	The site has a history of agricultural land uses.

4.0 ASSESSMENT OF PCA

4.1 Data Quality Objectives

The Data Quality Objective (DQO) process is a seven-step process that assists in the development of sampling programs to optimise the relevance and quality of the data collected. The DQO process described in the ASC NEPM. The NEPM guidelines pertaining to the DQO process are used to establish field and laboratory quality control, assurance and methodologies and are used to measure the performance of field and laboratory data. Relevant DQO steps are summarised in Table 5.

Table 5: Data Quality Objectives

Step	Description
Step 1: State the Problem	
It is unknown if the site is suitable for its intended use from a contaminated land perspective. If contamination is present, as a result of the identified PCAs, what remedial or management measures are required to render the site suitable.	
Step 2: Identify the Decision	
The purpose of this step is to define the decision statement that the sampling undertaken in conjunction with the ESSR will attempt to resolve, based on the problem stated above in Step 1. The decision statement can be summarised as follows: *To assess whether the site is suitable for the proposed use from a contaminated land perspective.* *If unsuitable, to provide sufficient information to develop remediation or management strategies to render the site suitable for the current or proposed land uses, from a contamination perspective.*	
Step 3: Decision Inputs	
The primary inputs required to meet the Decision include: • Soil sampling to obtain samples representative of the relevant media. • Compare concentrations of contaminants in soil against the adopted site assessment criteria. • Assess, to the extent permitted by the limited soil sampling, the presence, nature and extent of contamination as a result of the identified PCA.	
Step 4: Define Boundaries	
The legal boundaries (Block and Section) have been identified by the Territory Plan. A summary of the target population, temporal and geographic boundaries including constraints is provided below: • **Target Populations**: The target population for this study comprises the environmental samples of site area. • **Temporal Boundaries**: The temporal boundaries included in the decision-making process are based on the current environmental condition of the site at the time of investigation.	
Step 5: Decision Rules	
The following outlines the key drivers and relevant decision rules that will be applied in the decision-making process: • Assess the need for further investigation, more detailed assessment of risk, management controls and/ or remediation if chemical concentrations are found to exceed adopted assessment criteria. • The safety of current and future users of the site. The analytical and field data generated through the assessment process will be compared to the adopted site assessment criteria, and the decision rules become: • If soil concentrations are greater than the adopted criteria (which will be the NEPM HILs and HSLs), further assessment may be required, comprising one or more of the following: • Further assessment of soils to determine nature and extent of detected contaminants. • Further consideration of potential for groundwater impacts. • Development of remediation plans; and/ or management plans. • If contaminant concentrations in soil are less than the adopted NEPM Tier 1 risk assessment criteria, then further characterisation is unlikely to be required.	
Step 6: Decision Errors	
The Tolerable Limits on Decision Errors are considered during the sampling and analysis planning stage of the project. Data Quality Indicators (DQIs) are used to establish the acceptance criteria of the field and laboratory components of the assessment. They are defined in terms of Precision, Accuracy, Representativeness,	

Step	Description
	Completeness and Comparability (PARCC). The assessment of the DQIs is a means to determine the useability of the data and includes an evaluation of the data's PARCC. The potential for significant decisions errors (sampling and/or measurement errors) is limited by: • The implementation of a sampling plan, field methods and laboratory methods (**Section 4**) that describe sampling density, sample collection, contaminants of concern and laboratory analysis. • The implementation of a Field and Laboratory QA/QC program. • Review of the Field and Laboratory QA/QC program.
Step 7: Optimisation	
	The sampling design has been developed to target the shallow soils at the site which may be impacted by the PCAs, Steps 1 to 6 of the DQO process were used to refine the sampling design and field/laboratory methodologies described in this section. The sampling design has therefore been developed to optimise the collection of data needed to meet the project objective and DQOs. It is noted that variability in site conditions and contaminant concentrations may have an effect on the sampling design. Field screening methodologies and observations will be used to assist in the collection of representative data.

4.2 Sampling Plan and Rationale

Agon's rationale for the sampling within the context of the PCAs identified in this ESSR is provided in Table 6.

Table 6: Sampling and Analysis Plan

Target	CoC	Extent	Rationale and Adequacy
PCA01 **Former Site Buildings**	TRH BTEX PAHs PCBs OCP/OPPs Metals Asbestos	**Area** -Former Building **Depth** – <1.0 mbgl	**Sample Locations** – A total of 10 sample locations (TP03-TP12) were advanced on a general grid basis in the area of the former buildings. **Sample Depths** – Soil samples typically targeted the fill profile in the PCA area. **Adequacy** – The degree of assessment is considered adequate to assess the soils in proximity to the former building.
PCA02 **General Site Areas**	TRH BTEX PAHs PCBs OCP/OPPs Metals Asbestos	**Area** -34,470m^2 **Depth** – N/A	**Sample Locations** – Collectively a total of 26 samples locations have been advanced across the site on a general grid basis targeting general site areas. **Sample Depths** – Soil samples typically targeted the fill profile at the site which is adequate to assess this PCA. Additional samples were collected from in-situ natural soils to verify the absence of contamination. **Adequacy** – Whilst the grid sampling density is less than the Table 2 NSW EPA (2022) Sample Design Guidelines (which specifies a minimum of 45 samples), Agon considers the adopted sampling program is adequate to verify the absence of widespread and or significant soil contamination at the site.

The sample locations are depicted in Figure 3.

Figure 3: Sample Location Plan
Source: ACTMapi (2022)

4.3 Field Methodology

The adopted soil assessment methodologies are summarised below:

Table 7: Field Methodologies

Task	Description
Test pits	Test pits were excavated by a 6.5 tonne backhoe. Surface samples were collected by hand using nitrile gloves, while deeper samples were collected from fresh soil material from the backhoe bucket, ensuring samples were collected from fresh soil that had not contacted the bucket surface. Upon completion, test pits were backfilled with the excavated soil and compacted (tyre rolled). A copy of the test pits logs is provided in **Appendix D**.
Soil Sample Collection	Samples were typically collected from the test pits at regular increments through the fill and natural soil profiles at the site targeting changes in lithology and/or at the presence of visual or olfactory indicators contamination. Samples were collected using disposable nitrile gloves and placed in clean laboratory provided jars. Samples were immediately placed on ice in a cooler prior to transport to the laboratory.
QA/QC	Agon adopted and reviewed the following QA/QC: • **Field Personnel** - The field sampling team included John O'Brien and Kurt Lockwood, who collectively have over 15 years' experience in the field of contaminated land assessment. • **Sample Handling** - Samples (soil) were kept in appropriate laboratory supplied containers. All samples were received by the analysing laboratory within holding time and under chain of custody documentation. • Field Duplicates - Relative Percent Difference (RPD) results are provided in Table 2 **Appendix E**. A total of 2 intra-laboratory and 1 inter-laboratory duplicates were assessed as part of the ESSR. RPDs were within the acceptable range of <50% with the exception of: ○ TP03-0.5: QC02 – Chromium (59%), the elevated RPDs were attributed to the heterogeneity of fill. ○ TP15-0.1: QC04 – Arsenic (57%), Chromium (45%) and Lead (88%) the elevated RPDs were attributed to the heterogeneity of fill. • **Laboratory QA/QC**: A review of the laboratory QA/QC including Method Blanks, Spike Recoveries and RPDs indicated these to be within the acceptable range. Laboratory QA/QC are included in the Laboratory Certificates, **Appendix F**. On the basis of the QA/QC employed during the assessment, the accuracy and precision of the soil analysis data is adequate to support the findings of this report.
Adopted Assessment Criteria	The site is to be developed to include residential, on this basis Agon has adopted the following assessment criteria: • ASC NEPM (2013) NEPM Schedule B1 – Health Screening Levels (HSLs, residential) HSL A/B land use setting for sand-based soils, for various depths. • ASC NEPM (2013) NEPM Schedule B1 – Health Investigation Levels (HILs, residential) HIL A land use setting. • ASC NEPM (2013) Schedule B1 - Generic Ecological Investigation Levels (EILs). Applies to soil at depths <2mbgl.
Laboratory Method	All primary and QA/QC samples were submitted to Eurofins Laboratories (NATA accreditation No. 1261). Laboratory analysis was conducted in accordance with the requirements of the ASC NEPM (2013) and are referenced to USEPA and APHA methods.

4.4 Results

4.4.1 Observations and Soil Conditions

In -situ conditions were logged as follows:

- Fill – Fill (i.e. reworked natural soils) was logged to comprise silty SANDS, gravelly, clayey silty SANDS to gravelly silty sandy CLAYS at 3 sample locations, refer Photographs 9-10, **Appendix A**. Fill was typically comprised of reworked natural soils, and it was often difficult to discern.
- In general, the fill at the site was free of anthropogenic inclusions with the exception of:
    - TP13 (0.0-0.3m) some fragments of tile were observed. One fragment of bonded asbestos was observed in proximity to TP13.
    - TP19 (0.0-0.15m) multiple fragments of bonded asbestos were observed, refer Photograph 11, **Appendix A**.
- Natural Soils - Logged to comprise gravelly, silty sandy CLAYS underlain by weathered rock, refer Photograph 12 **Appendix A**.

Test pit logs are provided in **Appendix D**.

4.4.2 Soil Analysis Results

Tabulated soil analysis results are provided in Table 1 **Appendix E** along with the corresponding laboratory certificates provided in **Appendix F**. In summary, all soil analysis results were less than the adopted assessment criteria with the exception of:

- TP13-0.1 – Arsenic concentrations were reported at 250 mg/kg exceeding the adopted EIL and HIL of 100 mg/kg. This exceedance was 250% of the assessment criterion. Agon note these soils were incidentally removed as a byproduct of asbestos removal works at the site (Section 4.5), this exceedance is no longer applicable to the site.

4.4.3 Asbestos

All fill samples were screened for bonded asbestos with 6 fill samples analysed for asbestos fibres. In summary, no asbestos impacts were observed with the exception of bonded asbestos fragments in proximity to sample locations TP13 and TP18/TP19.

4.5 Asbestos Removal Works

Mary Alice requested the identified asbestos fragments be removed from the site, to achieve this the following was undertaken:

- Shallow fill soils in proximity to TP13, TP18 and TP19 (where fragments of asbestos were located) were classified for offsite disposal to Hi-Quality Landfill.
- A total of 47.32 tonnes of soils containing bonded asbestos were removed under the supervision of asbestos removalist Capstone, upon completion of works all fill materials were removed and the area visually cleared by asbestos assessor Peter McDermott. A copy of the disposal receipts and visual clearance is provided in **Appendix G**.
- Verification samples (VS01-VS06) were collected across the base of the asbestos removal areas and were assessed for asbestos fibres and metals. No asbestos fibres were detected, these samples VS01-VS06 replace the data from sample locations TP13, TP18 and TP19.

4.6 Revised CSM

A Conceptual Site Model (CSM) provides the framework for evaluating contaminant source-pathway-receptor linkages as a result of PCAs which may have occurred at the site. Any linkages may be presented as complete or incomplete thereby establishing a potential exposure pathway that may, depending on the nature of the proposed land use, warrant further assessment.

On the basis of site history, previous investigations and the soil analysis data, Agon has evaluated the PCAs through a CSM to determine if there are any complete contaminant source-pathway-receptor linkages.

Table 8: CSM

PCA	Source/CoCs	Receptor	Pathway
PCA01 Former Site Buildings	The purpose and demolition practices of the former site buildings are unknown.	Soil Ecologies Workers Occupants	Migration and Exposure Pathway **incomplete**. Pathway negated by: • All analysis results were less than the adopted assessment criteria for soils within the former building footprint. • No evidence of widespread demolition wastes was observed in the sample locations.
PCA02 General Site Areas	The site has a history of agricultural land uses.		Migration and Exposure Pathway **incomplete**. Pathway negated by: • All analysis results were less than the adopted assessment criteria with the exception of elevate arsenic and bonded asbestos fragments in proximity to TP13, TP18 and TP19 – these soils were removed from site (refer Section 4.5) and replaced by samples VS01-VS06.

Overall, the site has been sufficiently assessed to confirm the absence of significant and/or widespread contamination that would preclude the suitability of the site for the proposed land use. Agon note the following uncertainties:

- Isolated fragments of bonded asbestos were identified in proximity to sample locations TP13, TP18 and TP19, these fragments were removed with a clearance certificate issued (refer Section 4.5). Whilst the widespread presence of demolition wastes (and/or bonded asbestos) was not identified by the assessment there remains uncertainty for further unassessed pockets of fill containing anthropogenic inclusions (including bonded asbestos) to be present at the site.

  It is Agon's opinion this residual uncertainty could be adequately managed through the implementation of an industry standard unexpected finds protocols, supplemented by relevant ACT EPA guidance documents (i.e. Contaminated Sites Information Sheets) during redevelopment of the site.

5.0 CONCLUSION & RECOMMENDATIONS

In summary, the site had a small number of buildings by the early-mid 1950s (possibly sheds associated with grazing), these structures were progressively removed between the 1970s-1980s, later development at the site included accommodation buildings. The surrounding areas remained undeveloped up until the late 1960s when the early stages in the development of Watson commenced.

On the basis of the site history two PCAs have been identified (the historical buildings and general site areas). These PCAs have been qualitatively and quantitatively assessed through a CSM which found did not identify any complete contaminant source pathway receptor linkages. On this basis, Agon concludes the site to be suitable for the permitted land uses under the RZ4 Medium Density Residential Zone as per the Territory Plan 2023:

ancillary use
boarding house
co-housing
community activity centre
community garden
community housing
consolidation
demolition
early childhood education and care
guest house
health facility
home business
home occupation
minor road
minor use
multi-unit housing
parkland
residential care accommodation
retirement village
secondary residence
service reticulation
Sign
single dwelling housing
social enterprise
Subdivision
supportive housing
temporary use
varying a lease
veterinary clinic

This conclusion is subject to the following conditions:

- A site-specific Unexpected Finds Protocol (UFP) be prepared to support any excavation activities at the site. The UFP must consider the findings of this report.
- All soils proposed to be removed from the site must be assessed in accordance with ACT EPA (2019) Information Sheet 4 'Requirements for the Reuse and Disposal of Contaminated Soil in the ACT' or the equivalent prevailing regulatory requirements. No soil is to be removed from the site without EPA approval.

6.0 LIMITATIONS OF THIS REPORT

All and any Services proposed by Agon to the Client were subject to the Terms and Conditions listed in Agon's **QFB-008 Consultancy Agreement** (accessible at https:/ / agonenviro.com.au/ documents/). Unless otherwise expressly agreed to in writing and signed by Agon, Agon does not agree to any alternative terms or variation of these terms if subsequently proposed by the Client. The Services were carried out in accordance with the current and relevant industry standards of testing, interpretation and analysis. The Services were carried out in accordance with Commonwealth, State, Territory or Government legislation, regulations and/ or guidelines. The Client was deemed to have accepted these Terms when the Client signed the Proposal (where indicated) or when the Company commenced the Services at the request (written or otherwise) of the Client.

The Services were carried out for the Specific Purpose, outlined in the body of the Proposal. To the fullest extent permitted by law, Agon, its related bodies corporate, its officers, consultants, employees and agents assume no liability, and will not be liable to any person, or in relation to, any losses, damages, costs or expenses, and whether arising in contract, tort including negligence, under statute, in equity or otherwise, arising out of, or in connection with, any matter outside the Specific Purpose.

The Client acknowledged and agreed that proposed investigations were to rely on information provided to Agon by the Client or other third parties. Agon made no representation or warranty regarding the completeness or accuracy of any descriptions or conclusions based on information supplied to it by the Client, its employees or other third parties during provision of the Services. Under no circumstances shall Agon have any liability for, or in relation to, any work, reports, information, plans, designs, or specifications supplied or prepared by any third party, including any third party recommended by Agon. The Client releases and indemnifies Agon from and against all Claims arising from errors, omissions or inaccuracies in documents or other information provided to Agon by the Client, its employees or other third parties.

The Client was to ensure that Agon had access to all information, sites and buildings as required by or necessary for Agon to undertake the Services. Notwithstanding any other provision in these Terms, Agon will have no liability to the Client or any third party to the extent that the performance of the Services was not able to be undertaken (in whole or in part) due to access to any relevant sites or buildings being prevented or delayed due to the Client or their respective employees or contractors expressing safety or health concerns associated with such access.

Unless otherwise expressly agreed to in writing and signed by Agon, Agon, its related bodies corporate, its officers, employees and agents assume no liability and will not be liable for lost profit, revenue, production, contract, opportunity, loss arising from business interruption or delay, indirect or consequential loss or loss to the extent caused or contributed to by the Client or third parties, suffered or incurred arising out of or in connection with our Proposals, Reports, Deliverables, the Project or the Agreement. In the event Agon is found by a Court or Tribunal to be liable to the Client for any loss or damage arising in connection with the Services, the Client's entitlement to recover damages from Agon shall be reduced by such amount as reflects the extent to which any act, default, omission or negligence of the Client, or any third party, caused or contributed to such loss or damage. Unless otherwise agreed in writing and signed by both parties, Agon's total aggregate liability will not exceed the total consulting fees paid by the client in relation to this Proposal. For further detail, see Agon's Terms and Conditions listed in Agon's **QFB-008 Consultancy Agreement** (accessible at https:/ / agonenviro.com.au/ documents/).

The Report/ Document/ Deliverables are provided for the exclusive use of the Client and for this Project only, in accordance with the Scope and Specific Purpose as outlined in the Agreement, and only those third parties who have been authorised in writing by Agon. It should not be used for other purposes, other projects or by a third party unless otherwise agreed and authorised in writing by Agon. Any person relying upon this Report/

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The conclusions, or data referred to in this Report/ Document/ Deliverable, should not be used as part of a specification for a project without review and written agreement by Agon. This Report/ Document/ Deliverable has been written as advice and opinion, rather than with the purpose of specifying instructions for design or redevelopment. Agon does not purport to recommend or induce a decision to make (or not make) any purchase, disposal, investment, divestment, financial commitment or otherwise in relation to the site(s) it investigated or general managememnt plan it proposed.

This Report/ Document/ Deliverable should be read in whole and should not be copied in part or altered. The Report/ Document/ Deliverable as a whole set outs the findings of the investigations. No responsibility is accepted by Agon for use of parts of the Report/ Document/ Deliverable in the absence (or out of context) of the balance of the Report/ Document/ Deliverable.

7.0 REFERENCES

ACT EPA. 2020. Information Sheet 7 - Guidance for undertaking preliminary contamination investigations for development/lease variation purposes. [Online] 2020.

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Evans, W, R. 1984. Hydrogeology of the Australian Capital Territory and Environs. Canberra : Bureau of Mineral Resources, Geology and Geophysics, 1984.

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Muller, R, et al. 2016. Hydrological Landscapes of the Australian Capital Territory. Wagga Wagga, NSW : Office of Environment and Heritage, 2016.

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APPENDIX A: PHOTOGRAPHS

Photograph 1: Site entry from Aspinall Street.

Photograph 2: Front of site from Aspinall Street facing northeast.

Photograph 3: Accommodation buildings.

Photograph 4: Dining hall.

Photograph 5: Grease trap at rear of dining hall.

Photograph 6: Shipping containers used for storage of caretaker equipment.

Photograph 7: Eastern side of Building.

Photograph 8: Grassed area facing north from shipping containers.

Photograph 9: In-situ soils, shallow fill underlain by weathered bedrock

Photograph 10: In-situ soils, shallow fill underlain by weathered bedrock

Photograph 11: Fragments of bonded asbestos at sample location TP19

Photograph 12: In-situ soils, weathered bedrock

APPENDIX B: AERIAL IMAGERY

Historical Aerial Photograph 1: 1955

Historical Aerial Photograph 2: 1968

Historical Aerial Photograph 3: 1978

Historical Aerial Photograph 4: 1987

Historical Aerial Photograph 5: 1997

Historical Aerial Photograph 6: 2004

Historical Aerial Photograph 7: 2014

Historical Aerial Photograph 8: 2015

Historical Aerial Photograph 8: 2022

APPENDIX C: GOVERNMENT SEARCHES

Product	Historical Search
Date/Time	09/02/2024 01:43PM
Customer Reference	JC1523
Order ID	20240209001070
Cost	$33.00

Volume 2374 **Folio** 3 **Edition** All

AUSTRALIAN CAPITAL TERRITORY

HISTORICAL TITLE SEARCH

LAND

Watson Section 95 Block 3 on Deposited Plan 10630

Watson Section 113 Block 1 on Deposited Plan 10125

Watson Section 94 Block 1 on Deposited Plan 9363

Area is 34506 square metres or thereabouts

Original title is **Volume** 2374 **Folio** 3

Registered Date	Dealing Number	Description
07/10/1964	45507	Mortgage to COMMONWEALTH BANK OF AUSTRALIA (Continued by S91A/91B/91C Land Titles Act 1925) - lodged on 07/10/1964
18/05/1999	1115281	Application for Deposited Plan - lodged on 17/05/1999
18/05/1999	1115282	Application to register a Crown Lease - lodged on 17/05/1999
05/05/2005	1419990	Production - lodged on 05/05/2005
18/05/2005	1421056	Determination of Crown Lease by Surrender - lodged on 17/05/2005
18/05/2005	1421532	Production Completed (PROD1419990) - lodged on 17/05/2005
19/05/2005	1421057	Application to Register Deposited Plan removing parcels WATS Section:64 Block:7 - lodged on 17/05/2005
20/05/2005	1421058	Application to Register a Crown Lease (DCL1421056) - lodged on 17/05/2005
20/05/2005	1422118	Correction to Register - Changed owner from (Name=Lakes Carotel Pty Limited) to (Name=Canberra Lakes Carotel Pty Limited) - lodged on 20/05/2005
20/05/2005	1422119	Correction to Register - Dealing 45507 updated from (Text=Mortgage to COMMONWEALTH BANK OF AUSTRALIA (Continued by S90A/91B/91C of the Land Titles Act 1925)) to (Text=Mortgage to COMMONWEALTH BANK OF AUSTRALIA (Continued by S91A/91B/91C Land Titles Act 1925)) - lodged on 20/05/2005
20/05/2005	1422144	Registrar's Dealing - lodged on 20/05/2005
07/12/2009	1661520	Application to Register Deposited Plan - lodged on 04/12/2009
08/05/2012	1798931	Application to Register a Crown Lease - lodged on 07/05/2012
08/05/2012	1798932	Mortgage to Westpac Banking Corporation - lodged on 08/05/2012
06/08/2012	1813771	Determination of Crown Lease by Surrender - lodged on 03/08/2012
08/08/2012	1813772	Application to Register a Crown Lease (DCL1813771) - lodged on 07/08/2012
20/01/2017	2071560	Discharge of Mortgage (M45507) - lodged on 20/01/2017
16/12/2017	2127886	Determination of Crown Lease by Surrender - lodged on 15/12/2017

This data (excluding administrative interests) is certified correct by the Registrar-General at 13:44:56 on 09/02/2024

Unregistered dealings have not been formally recorded in the register.

Registered Date	Dealing Number	Description
18/12/2017	2127887	Application to Register a Crown Lease (DCL2127886) - lodged on 15/12/2017
19/12/2017	2127888	Determination of Crown Lease by Surrender - lodged on 19/12/2017
21/12/2017	2127889	Application to Register Deposited Plan removing parcels WATS Section:64 Block:10 To Block:11 - lodged on 15/12/2017
08/01/2018	2127890	Application to Register a Crown Lease (DCL2127888) - lodged on 22/12/2017
08/01/2018	2127891	Caveat by National Australia Bank Limited - lodged on 08/01/2018
22/01/2018	2134238	Withdrawal of Caveat (X2127891) - lodged on 22/01/2018
24/01/2018	2134239	Determination of Crown Lease by Surrender - lodged on 22/01/2018
01/02/2018	2134240	Application to Register a Crown Lease (DCL2134239) - lodged on 30/01/2018
09/02/2018	2137696	Requisition - Transfer lodged on 19/01/2018 - instrument number of T2134242 - lodged on 09/02/2018
13/02/2018	2138169	Withdrawal Requisition of Lodged Dealings (REQ2137696) - lodged on 13/02/2018
13/02/2018	2134242	Transfer - lodged on 13/02/2018
27/06/2018	2162824	Registrar's Dealing to Add/Alter Restriction - Compliance Certificate Issued - lodged on 27/06/2018
28/09/2018	2176335	Discharge of Mortgage (M1798932) - lodged on 11/09/2018
28/09/2018	2176336	Mortgage to National Australia Bank Limited continued by S.91A/91B/91C Land Titles Act 1925 - lodged on 11/09/2018
04/10/2018	2180148	Production - ACL, DCL - lodged on 04/10/2018
17/10/2018	2182575	Determination of Crown Lease by Surrender - lodged on 17/10/2018
17/10/2018	2182605	Production Completed (PROD2180148) - lodged on 17/10/2018
17/10/2018	2182576	Application to Register a Crown Lease (DCL2182575) - lodged on 17/10/2018
22/03/2022	3149179	Title Repair by Registrar General - Refer Instrument - lodged on 22/03/2022

End of interests

ADMINISTRATIVE INTERESTS

Administrative interests information is **not** guaranteed by the Registrar-General, and the Registrar-General nor an authorised entity incurs liability for any omission, misstatement or inaccuracy in the information.

Territory Planning Authority - For further information concerning the following administrative interests, please refer to decided development application information available at https://www.planning.act.gov.au/ or on the DA Finder App, available for download on iOS and Android mobile devices. Alternatively, please contact Access Canberra Land, Planning and Building Services at ACEPDcustomerservices@act.gov.au or 6207 1923. The Territory Planning Authority's administrative interest information has been provided to the Registrar-General since 1 February 2010.

Reference Number	Type	Lodgement Date	Assessment Track	Status	Status Date

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Unregistered dealings have not been formally recorded in the register.

201119572	Development Application	10/02/2011	MERIT TRACK - MAJOR NOTIFICATION	APPROVAL CONDITIONAL	11/03/2011

Description
PUBLIC WORKS-SEWER MAIN-BLOCK IDENTIFIER ONLY. Sewer main extension in Aspinall Street verge plus minor stromwater and driveway works.

Territory Planning Authority - For further information concerning the following administrative interests, please refer to decided development application information available at https://www.planning.act.gov.au/ or on the DA Finder App, available for download on iOS and Android mobile devices. Alternatively, please contact Access Canberra Land, Planning and Building Services at ACEPDcustomerservices@act.gov.au or 6207 1923. The Territory Planning Authority's administrative interest information has been provided to the Registrar-General since 1 February 2010.

Reference Number	Type	Lodgement Date	Assessment Track	Status	Status Date
201018084	Development Application	24/11/2010	MERIT TRACK - MAJOR NOTIFICATION	APPROVAL CONDITIONAL	02/05/2011

Description
LEASE VARIATION. Vary the purpose clause of the Crown lease to use Block 10 Section 64 Watson only for one or more of the following purpose: (i) caravan park/camping ground; (ii) commercial accommodation use; (iii) group or organised camp; (iv) indoor recreation facility RESTRICTED TO gym or personal training; (v) residential use; (vi) restaurant; (vii) shop PROVIDED THAT shop (excluding for arts, crafts and souvenirs) is LIMITED TO a maximum of 250 square metres per shop; (viii) tourist facility.

Territory Planning Authority - For further information concerning the following administrative interests, please refer to decided development application information available at https://www.planning.act.gov.au/ or on the DA Finder App, available for download on iOS and Android mobile devices. Alternatively, please contact Access Canberra Land, Planning and Building Services at ACEPDcustomerservices@act.gov.au or 6207 1923. The Territory Planning Authority's administrative interest information has been provided to the Registrar-General since 1 February 2010.

Reference Number	Type	Lodgement Date	Assessment Track	Status	Status Date
201018084	Development Application	24/11/2010	MERIT TRACK - MAJOR NOTIFICATION	APPROVAL CONDITIONAL	02/05/2011

Description
LEASE VARIATION. Vary the purpose clause of the Crown lease to use Block 10 Section 64 Watson only for one or more of the following purpose: (i) caravan park/camping ground; (ii) commercial accommodation use; (iii) group or organised camp; (iv) indoor recreation facility RESTRICTED TO gym or personal training; (v) residential use; (vi) restaurant; (vii) shop PROVIDED THAT shop (excluding for arts, crafts and souvenirs) is LIMITED TO a maximum of 250 square metres per shop; (viii) tourist facility.

Territory Planning Authority - For further information concerning the following administrative interests, please refer to decided development application information available at https://www.planning.act.gov.au/ or on the DA Finder App, available for download on iOS and Android mobile devices. Alternatively, please contact Access Canberra Land, Planning and Building Services at ACEPDcustomerservices@act.gov.au or 6207 1923. The Territory Planning Authority's administrative interest information has been provided to the Registrar-General since 1 February 2010.

Reference Number	Type	Lodgement Date	Assessment Track	Status	Status Date
201324736	Development Application	07/01/2014	MERIT TRACK - MAJOR NOTIFICATION	APPROVAL CONDITIONAL	02/05/2014

Description
COMMERCIAL-26 TRANSPORTABLE BUILDINGS. Placement of 26 transportable buildings including 23 Cabins, 2 lodges and a multipurpose hall, new electricity sub-station, and associated landscaping, civil works, driveway, street trees, and services.

Territory Planning Authority - For further information concerning the following administrative interests, please refer to decided development application information available at https://www.planning.act.gov.au/ or on the DA Finder App,

This data (excluding administrative interests) is certified correct by the Registrar-General at 13:44:56 on 09/02/2024

Unregistered dealings have not been formally recorded in the register.

available for download on iOS and Android mobile devices. Alternatively, please contact Access Canberra Land, Planning and Building Services at ACEPDcustomerservices@act.gov.au or 6207 1923. The Territory Planning Authority's administrative interest information has been provided to the Registrar-General since 1 February 2010.

Reference Number	Type	Lodgement Date	Assessment Track	Status	Status Date
201731665	Development Application	30/05/2017	MERIT TRACK - MAJOR NOTIFICATION	APPROVAL CONDITIONAL	01/09/2017

Description
PROPOSAL FOR ADDITIONS - permanent installation of four transportable buildings for caretakers residence, two halls and shed, new driveway and associated works.

Territory Planning Authority - For further information concerning the following administrative interests, please refer to decided development application information available at https://www.planning.act.gov.au/ or on the DA Finder App, available for download on iOS and Android mobile devices. Alternatively, please contact Access Canberra Land, Planning and Building Services at ACEPDcustomerservices@act.gov.au or 6207 1923. The Territory Planning Authority's administrative interest information has been provided to the Registrar-General since 1 February 2010.

Reference Number	Type	Lodgement Date	Assessment Track	Status	Status Date
201833312	Development Application	08/03/2018	MERIT TRACK - MAJOR NOTIFICATION	APPROVAL CONDITIONAL	24/04/2018

Description
LEASE VARIATION to consolidate the leases for Block 1 Section 94 Watson, Block 1 Section 113 Watson and Block 3 Section 95 Watson

This data (excluding administrative interests) is certified correct by the Registrar-General at 13:44:56 on 09/02/2024
Unregistered dealings have not been formally recorded in the register.

From: Jennings, RussellC
To: Kurt Lockwood
Cc: Contaminated Sites
Subject: RE: Contaminated Land Search - Application, GYYX9NTH, Kurt Lockwood [SEC=UNCLASSIFIED, DLM=Sensitive: Personal]
Date: Friday, 23 February 2024 2:14:22 PM

OFFICIAL

Dear Mr Lockwood

RE: CONTAMINATED LAND SEARCH

Thank you for your search form request of 09/02/2024 enquiring about:

Block 3 Section 95 Watson Canberra Central

Records held by the Environment Protection Authority (EPA) for the above block(s) indicate the following:

The block is not recorded on the EPA's contaminated sites management database or geographic information system.

The block is zoned as CZ6: LEISURE AND ACCOMMODATION

The EPA has not issued any orders of assessment or remediation under sections 91C (1) or 91D (1) respectively, environment protection orders under sections 125 (2) or (3), requested an audit under section 76 (2) or received an audit notification under section 76A (1) of the Environment Protection Act 1997 (the Act) over the site and as a result the site is not recorded on the Register of contaminated sites under section 21A of the Act.

The information detailed above only relates to records held by the EPA and may not represent the actual condition of the site.

At present the EPA has no information on contamination of the above block(s) other than as detailed above. However, this does not absolutely rule out the possibility of contamination and should not be interpreted as a warranty that there is no contamination.

I appreciate that this does not absolutely rule out the existence of contamination of the soils. If you or your clients wish to be completely sure you, or they, should arrange to conduct independent tests.

Yours sincerely

Russell C. Jennings | **Environment Protection Officer**
Phone: **02 6207 2157**| Email: russellc.jennings@act.gov.au
Access Canberra | Chief Minister, Treasury and Economic Development Directorate | ACT Government
Fourth Floor 480 Northbourne Ave. Dickson 2602 ACT | GPO Box 158 Canberra ACT 2601 | http://www.act.gov.au/accesscbr

We acknowledge the Traditional Custodians of the ACT, the Ngunnawal people. We acknowledge and respect their continuing culture and the contribution they make to the life of this city and this region.

From: smartforms@act.gov.au <smartforms@act.gov.au>
Sent: Friday, February 9, 2024 1:39 PM

To: Contaminated Sites <ContaminatedSites@act.gov.au>
Subject: Contaminated Land Search - Application, GYYX9NTH, Kurt Lockwood [SEC=UNCLASSIFIED, DLM=Sensitive: Personal]

Contaminated Land Search - Application

Form data summary

Customer details	Kurt Lockwood
Reference code	GYYX9NTH

For issues or questions relating to SmartForms please contact the Payment Services Integration Team on *5 4607 or email smartforms.admin@act.gov.au.

This email, and any attachments, may be confidential and also privileged. If you are not the intended recipient, please notify the sender and delete all copies of this transmission along with any attachments immediately. You should not copy or use it for any purpose, nor disclose its contents to any other person.

APPENDIX D: LOGS

agon ENVIRONMENTAL

ENVIRONMENTAL TEST PIT LOG

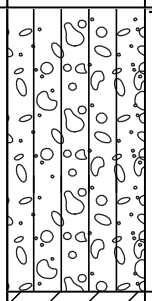
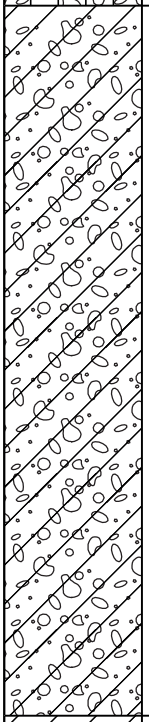
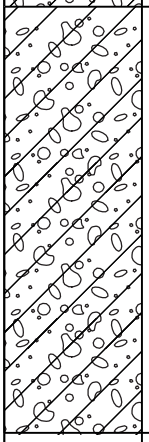
PROJECT NUMBER JC1523
PROJECT NAME B3S95 ESSR
CLIENT Maralicec Pty Ltd
ADDRESS 17 Aspinall Street Watson, ACT

DRILL MODEL JCB 3CX
DRILL METHOD 400 mm bucket
TOTAL DEPTH 1.0 m
DIAMETER 400 mm
DRILLING COMPANY Ground Control

BOREHOLE NUMBER TP01
DRILLING DATE 25/03/2024

COMMENTS

LOGGED BY KL
CHECKED BY JOB

Depth	Graphic Log	Material Description	Additional Observations
0.05		Gravelly, clayey, sandy, SILT, brown, moist to dry, small to large angular gravel.	Natural.
0.2		Gravelly, silty, sandy, CLAY, brown, orange-brown, moist to dry, soft to firm, low to moderate plasticity, small to large angular gravel.	
0.7		Gravelly, silty, sandy, CLAY, brown, orange-brown, moist to dry, soft to firm, low plasticity, small to large angular gravel.	Weathered rock.
1			

Disclaimer This bore log is intended for environmental not geotechnical purposes.

produced by ESlog.ESdat.net on 17 Jun 2024

ENVIRONMENTAL TEST PIT LOG

PROJECT NUMBER JC1523
PROJECT NAME B3S95 ESSR
CLIENT Maralicec Pty Ltd
ADDRESS 17 Aspinall Street Watson, ACT

DRILL MODEL JCB 3CX
DRILL METHOD 400 mm bucket
TOTAL DEPTH 1.0 m
DIAMETER 400 mm
DRILLING COMPANY Ground Control

BOREHOLE NUMBER TP02
DRILLING DATE 25/03/2024

COMMENTS

LOGGED BY KL
CHECKED BY JOB

Depth	Graphic Log	Material Description	Additional Observations
0.05		Sandy, SILT, brown, moist to dry.	Natural.
0.3		Gravelly, silty, sandy, CLAY, light brown, moist to dry, soft to firm, low plasticity, small to large angular gravel.	Weathered rock.
1			

ENVIRONMENTAL TEST PIT LOG

PROJECT NUMBER JC1523
PROJECT NAME B3S95 ESSR
CLIENT Maralicec Pty Ltd
ADDRESS 17 Aspinall Street Watson, ACT

DRILL MODEL JCB 3CX
DRILL METHOD 400 mm bucket
TOTAL DEPTH 1.5 m
DIAMETER 400 mm
DRILLING COMPANY Ground Control

BOREHOLE NUMBER TP03
DRILLING DATE 25/03/2024

COMMENTS

LOGGED BY KL
CHECKED BY JOB

Depth	Graphic Log	Material Description	Additional Observations
0.1		Sandy, SILT, brown, moist to dry, traces of tile.	Re-worked natural
0.2			
0.3		Gravelly, clayey, silty, SAND, brown, pale brown, moist, soft, small to medium angular gravel.	Natural.
0.4			
0.5		Gravelly, silty, sandy, CLAY, brown, orange-brown, dry, soft, medium plasticity, small rounded gravel.	
0.6			
0.7			
0.8			
0.9		Silty, Sandy, CLAY, red, orange-brown, moist, soft to firm, low to medium plasticity.	
1			
1.1			
1.2		Silty, Sandy, CLAY, orange, light brown, moist, hard, low plasticity. Traces of ferruginous nodules.	
1.3			
1.4			
1.5			

ENVIRONMENTAL TEST PIT LOG

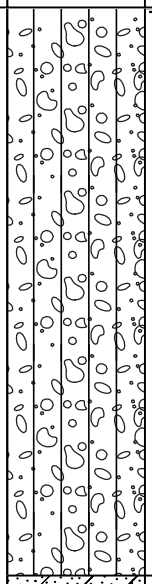
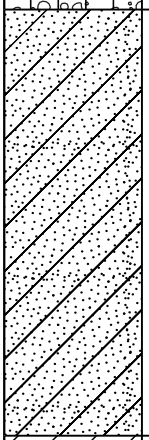
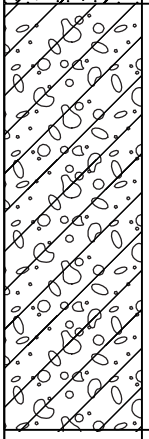
PROJECT NUMBER JC1523
PROJECT NAME B3S95 ESSR
CLIENT Maralicec Pty Ltd
ADDRESS 17 Aspinall Street Watson, ACT

DRILL MODEL JCB 3CX
DRILL METHOD 400 mm bucket
TOTAL DEPTH 1.0 m
DIAMETER 400 mm
DRILLING COMPANY Ground Control

BOREHOLE NUMBER TP04
DRILLING DATE 25/03/2024

COMMENTS

LOGGED BY KL
CHECKED BY JOB

Depth	Graphic Log	Material Description	Additional Observations
0.05		Gravelly, silty, sandy, CLAY, red brown, dry.	Re-worked natural.
0.4		Sandy, CLAY, brown, orange-brown, moist to dry, hard, low plasticity.	Natural.
0.7		Gravelly, silty, sandy, CLAY, orange, light-brown, moist to dry, soft to firm, low plasticity, small to large angular gravel.	Weathered rock.
1			

ENVIRONMENTAL TEST PIT LOG

PROJECT NUMBER JC1523
PROJECT NAME B3S95 ESSR
CLIENT Maralicec Pty Ltd
ADDRESS 17 Aspinall Street Watson, ACT

DRILL MODEL JCB 3CX
DRILL METHOD 400 mm bucket
TOTAL DEPTH 1.0 m
DIAMETER 400 mm
DRILLING COMPANY Ground Control

BOREHOLE NUMBER TP05
DRILLING DATE 25/03/2024

COMMENTS

LOGGED BY KL
CHECKED BY JOB

Depth	Graphic Log	Material Description	Additional Observations
0.05		Sandy, SILT, brown, moist to dry.	Natural.
0.3		Gravelly, silty, sandy, CLAY, red, orange-brown, moist to dry, firm, medium plasticity, small to large angular gravel.	
0.6		Gravelly, silty, sandy, CLAY, orange, light-brown, moist to dry, soft to firm, low plasticity, small to large angular gravel.	Weathered rock.
1			

ENVIRONMENTAL TEST PIT LOG

PROJECT NUMBER JC1523
PROJECT NAME B3S95 ESSR
CLIENT Maralicec Pty Ltd
ADDRESS 17 Aspinall Street Watson, ACT

DRILL MODEL JCB 3CX
DRILL METHOD 400 mm bucket
TOTAL DEPTH 1.0 m
DIAMETER 400 mm
DRILLING COMPANY Ground Control

BOREHOLE NUMBER TP06
DRILLING DATE 25/03/2024

COMMENTS

LOGGED BY KL
CHECKED BY JOB

Depth	Graphic Log	Material Description	Additional Observations
0.05		Sandy, SILT, brown, moist to dry.	Natural.
0.1			
0.15			
0.2			
0.25			
0.3			
0.35		Gravelly, silty, sandy, CLAY, brown, orange-brown, moist to dry, firm, medium plasticity, small to large angular gravel.	
0.4			
0.45			
0.5			
0.55			
0.6		Gravelly, silty, sandy, CLAY, orange, light-brown, moist to dry, soft to firm, low plasticity, small to large angular gravel.	Weathered rock.
0.65			
0.7			
0.75			
0.8			
0.85			
0.9			
0.95			
1			

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produced by ESlog.ESdat.net on 17 Jun 2024

ENVIRONMENTAL TEST PIT LOG

PROJECT NUMBER JC1523
PROJECT NAME B3S95 ESSR
CLIENT Maralicec Pty Ltd
ADDRESS 17 Aspinall Street Watson, ACT

DRILL MODEL JCB 3CX
DRILL METHOD 400 mm bucket
TOTAL DEPTH 1.0 m
DIAMETER 400 mm
DRILLING COMPANY Ground Control

BOREHOLE NUMBER TP07
DRILLING DATE 25/03/2024

COMMENTS

LOGGED BY KL
CHECKED BY JOB

Depth	Graphic Log	Material Description	Additional Observations
0		Sandy, SILT, brown, moist to dry.	Natural.
0.3		Gravelly, silty, sandy, CLAY, brown, orange-brown, moist to dry, firm, medium plasticity, small to large angular gravel.	
0.6		Gravelly, silty, sandy, CLAY, orange, light-brown, moist to dry, soft to firm, low plasticity, small to large angular gravel.	Weathered rock.
1			

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produced by ESlog.ESdat.net on 17 Jun 2024

ENVIRONMENTAL TEST PIT LOG

PROJECT NUMBER JC1523
PROJECT NAME B3S95 ESSR
CLIENT Maralicec Pty Ltd
ADDRESS 17 Aspinall Street Watson, ACT

DRILL MODEL JCB 3CX
DRILL METHOD 400 mm bucket
TOTAL DEPTH 1.5 m
DIAMETER 400 mm
DRILLING COMPANY Ground Control

BOREHOLE NUMBER TP08
DRILLING DATE 25/03/2024

COMMENTS

LOGGED BY KL
CHECKED BY JOB

Depth	Graphic Log	Material Description	Additional Observations
0.1		Sandy, SILT, brown, moist to dry.	Natural.
0.3		Gravelly, silty, sandy, CLAY, red, orange-brown, moist to dry, firm, medium plasticity, small to large angular gravel.	
0.9		Silty, Sandy, CLAY, orange, light brown, moist, soft to firm, low to medium plasticity.	
1.5			

ENVIRONMENTAL TEST PIT LOG

PROJECT NUMBER JC1523
PROJECT NAME B3S95 ESSR
CLIENT Maralicec Pty Ltd
ADDRESS 17 Aspinall Street Watson, ACT

DRILL MODEL JCB 3CX
DRILL METHOD 400 mm bucket
TOTAL DEPTH 1.0 m
DIAMETER 400 mm
DRILLING COMPANY Ground Control

BOREHOLE NUMBER TP09
DRILLING DATE 25/03/2024

COMMENTS

LOGGED BY KL
CHECKED BY JOB

Depth	Graphic Log	Material Description	Additional Observations
0.05		Gravelly, silty, sandy, CLAY, red, orange-brown, dry, small to medium gravel.	Possibly re-worked natural.
0.3		Gravelly, silty, sandy, CLAY, red, orange-brown, moist to dry, firm, medium plasticity, small to medium angular and rounded gravel.	
0.6		Gravelly, silty, sandy, CLAY, red, orange, light brown, moist to dry, firm, medium plasticity, small to large angular gravel.	Natural.
1			

ENVIRONMENTAL TEST PIT LOG

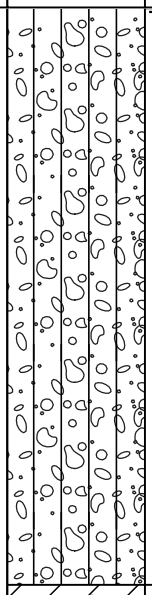
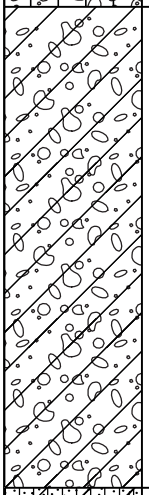
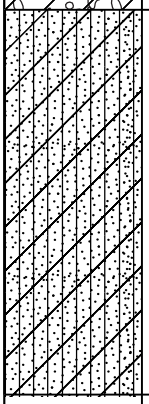
PROJECT NUMBER JC1523
PROJECT NAME B3S95 ESSR
CLIENT Maralicec Pty Ltd
ADDRESS 17 Aspinall Street Watson, ACT

DRILL MODEL JCB 3CX
DRILL METHOD 400 mm bucket
TOTAL DEPTH 1.5 m
DIAMETER 400 mm
DRILLING COMPANY Ground Control

BOREHOLE NUMBER TP10
DRILLING DATE 25/03/2024

COMMENTS

LOGGED BY KL
CHECKED BY JOB

Depth	Graphic Log	Material Description	Additional Observations
0.1		Gravelly, silty, sandy, CLAY, red, orange-brown, dry, small to medium gravel.	Natural.
0.2			
0.3			
0.4			
0.5			
0.6			
0.7		Gravelly, silty, sandy, CLAY, red, light-brown, moist to dry, firm, medium plasticity, small to medium angular gravel.	
0.8			
0.9			
1			
1.1		Silty, sandy, CLAY, red, orange, light brown, moist to dry, firm, medium plasticity, small to large angular gravel.	
1.2			
1.3			
1.4			
1.5			

ENVIRONMENTAL TEST PIT LOG

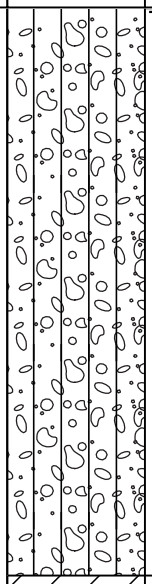
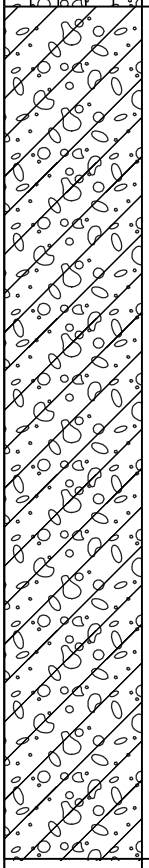
PROJECT NUMBER JC1523
PROJECT NAME B3S95 ESSR
CLIENT Maralicec Pty Ltd
ADDRESS 17 Aspinall Street Watson, ACT

DRILL MODEL JCB 3CX
DRILL METHOD 400 mm bucket
TOTAL DEPTH 1.0 m
DIAMETER 400 mm
DRILLING COMPANY Ground Control

BOREHOLE NUMBER TP11
DRILLING DATE 25/03/2024

COMMENTS

LOGGED BY KL
CHECKED BY JOB

Depth	Graphic Log	Material Description	Additional Observations
0.05		Gravelly, silty, sandy, CLAY, red, orange-brown, dry, small to medium gravel.	Natural.
0.1			
0.15			
0.2			
0.25			
0.3			
0.35			
0.4		Gravelly, silty, sandy, CLAY, orange, light-brown, moist to dry, firm, medium plasticity, small to medium angular gravel.	
0.45			
0.5			
0.55			
0.6			
0.65			
0.7			
0.75			
0.8			
0.85			
0.9			
0.95			
1			

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ENVIRONMENTAL TEST PIT LOG

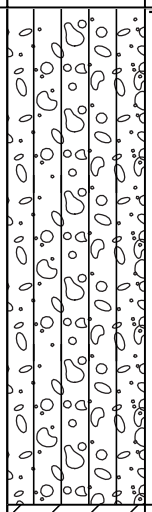
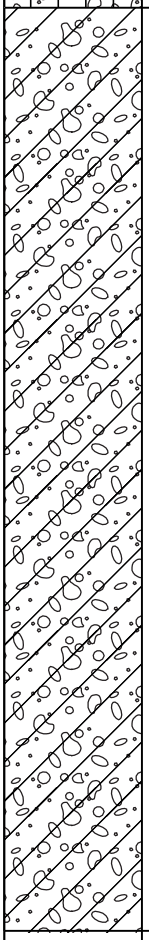
PROJECT NUMBER JC1523
PROJECT NAME B3S95 ESSR
CLIENT Maralicec Pty Ltd
ADDRESS 17 Aspinall Street Watson, ACT

DRILL MODEL JCB 3CX
DRILL METHOD 400 mm bucket
TOTAL DEPTH 1.0 m
DIAMETER 400 mm
DRILLING COMPANY Ground Control

BOREHOLE NUMBER TP12
DRILLING DATE 25/03/2024

COMMENTS

LOGGED BY KL
CHECKED BY JOB

Depth	Graphic Log	Material Description	Additional Observations
0.05		Gravelly, clayey, sandy, SILT, brown, moist to dry, small to medium angular gravel.	Natural.
0.35		Gravelly, silty, sandy, CLAY, red, orange, light-brown, moist to dry, soft to firm, low plasticity, small to large angular gravel.	Weathered rock.
1			

ENVIRONMENTAL TEST PIT LOG

PROJECT NUMBER JC1523
PROJECT NAME B3S95 ESSR
CLIENT Maralicec Pty Ltd
ADDRESS 17 Aspinall Street Watson, ACT

DRILL MODEL JCB 3CX
DRILL METHOD 400 mm bucket
TOTAL DEPTH 1.5 m
DIAMETER 400 mm
DRILLING COMPANY Ground Control

BOREHOLE NUMBER TP13
DRILLING DATE 25/03/2024

COMMENTS

LOGGED BY KL
CHECKED BY JOB

Depth	Graphic Log	Material Description	Additional Observations
0.1		Sandy, SILT, brown, moist to dry, traces of glass and brick.	Possibly re-worked natural.
0.3		Gravelly, silty, sandy, CLAY, red, orange-brown, moist to dry, firm, medium plasticity, small to medium angular and rounded gravel.	
0.7		Gravelly, silty, sandy, CLAY, orange, light brown, moist to dry, firm, medium plasticity, small to large angular gravel.	Natural.
1.5			

ENVIRONMENTAL TEST PIT LOG

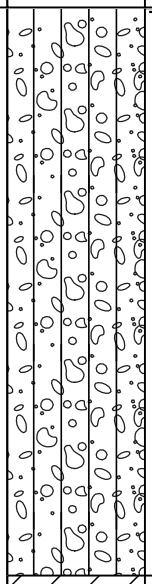
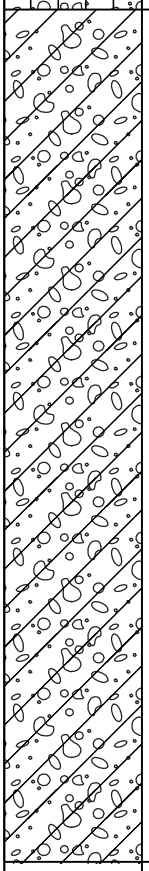
PROJECT NUMBER JC1523
PROJECT NAME B3S95 ESSR
CLIENT Maralicec Pty Ltd
ADDRESS 17 Aspinall Street Watson, ACT

DRILL MODEL JCB 3CX
DRILL METHOD 400 mm bucket
TOTAL DEPTH 1.0 m
DIAMETER 400 mm
DRILLING COMPANY Ground Control

BOREHOLE NUMBER TP14
DRILLING DATE 25/03/2024

COMMENTS

LOGGED BY KL
CHECKED BY JOB

Depth	Graphic Log	Material Description	Additional Observations
0.05		Gravelly, silty, sandy, CLAY, red, orange-brown, dry, small to medium gravel.	Natural.
0.1			
0.15			
0.2			
0.25			
0.3			
0.35			
0.4		Gravelly, silty, sandy, CLAY, orange, light-brown, moist to dry, firm, medium plasticity, small to medium angular gravel.	
0.45			
0.5			
0.55			
0.6			
0.65			
0.7			
0.75			
0.8			
0.85			
0.9			
0.95			
1			

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ENVIRONMENTAL TEST PIT LOG

PROJECT NUMBER JC1523
PROJECT NAME B3S95 ESSR
CLIENT Maralicec Pty Ltd
ADDRESS 17 Aspinall Street Watson, ACT

DRILL MODEL JCB 3CX
DRILL METHOD 400 mm bucket
TOTAL DEPTH 1.5 m
DIAMETER 400 mm
DRILLING COMPANY Ground Control

BOREHOLE NUMBER TP15
DRILLING DATE 26/03/2024

COMMENTS

LOGGED BY KL
CHECKED BY JOB

Depth	Graphic Log	Material Description	Additional Observations
0.1		Sandy, SILT, brown, moist to dry.	Natural.
0.2		Gravelly, silty, sandy, CLAY, light-brown, moist to dry, firm, medium plasticity, small to large angular gravel.	
0.3			
0.4		Gravelly, silty, sandy, CLAY, red, orange-brown, moist to dry, firm, medium plasticity, small to large angular gravel.	
0.5			
0.6			
0.7			
0.8			
0.9		Gravelly, silty, sandy, CLAY, orange, light-brown, moist to dry, firm, medium plasticity, small to large angular gravel.	
1			
1.1			
1.2			
1.3			
1.4			
1.5			

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produced by ESlog.ESdat.net on 17 Jun 2024

ENVIRONMENTAL TEST PIT LOG

PROJECT NUMBER JC1523
PROJECT NAME B3S95 ESSR
CLIENT Maralicec Pty Ltd
ADDRESS 17 Aspinall Street Watson, ACT

DRILL MODEL JCB 3CX
DRILL METHOD 400 mm bucket
TOTAL DEPTH 1.5 m
DIAMETER 400 mm
DRILLING COMPANY Ground Control

BOREHOLE NUMBER TP16
DRILLING DATE 26/03/2024

COMMENTS

LOGGED BY KL
CHECKED BY JOB

Depth	Graphic Log	Material Description	Additional Observations
0.1		Sandy, SILT, brown, moist to dry.	Possibly re-worked natural.
0.2			
0.3		Gravelly, silty, sandy, CLAY, light-brown, moist to dry, firm, medium plasticity, small to large angular gravel.	
0.4		Silty, Sandy, CLAY, brown, dark-brown, moist, soft to firm, low to medium plasticity.	
0.5			
0.6			
0.7			
0.8			
0.9		Gravelly, silty, sandy, CLAY, orange, grey, light-brown, moist to dry, firm, medium plasticity, small to large angular gravel.	Natural.
1			
1.1			
1.2			
1.3			
1.4			
1.5			

Disclaimer This bore log is intended for environmental not geotechnical purposes.

produced by ESlog.ESdat.net on 17 Jun 2024

ENVIRONMENTAL TEST PIT LOG

PROJECT NUMBER JC1523
PROJECT NAME B3S95 ESSR
CLIENT Maralicec Pty Ltd
ADDRESS 17 Aspinall Street Watson, ACT

DRILL MODEL JCB 3CX
DRILL METHOD 400 mm bucket
TOTAL DEPTH 0.5 m
DIAMETER 400 mm
DRILLING COMPANY Ground Control

BOREHOLE NUMBER TP17
DRILLING DATE 26/03/2024

COMMENTS

LOGGED BY KL
CHECKED BY JOB

Depth	Graphic Log	Material Description	Additional Observations
0.1		Sandy, SILT, brown, moist to dry.	Natural.
0.2		Gravelly, silty, sandy, CLAY, light brown, moist to dry, firm, medium plasticity, small to large angular gravel.	
0.9		Gravelly, silty, sandy, CLAY, light brown-brown, moist to dry, firm, medium plasticity, small to large angular gravel.	
1.5			

ENVIRONMENTAL TEST PIT LOG

PROJECT NUMBER JC1523
PROJECT NAME B3S95 ESSR
CLIENT Maralicec Pty Ltd
ADDRESS 17 Aspinall Street Watson, ACT

DRILL MODEL JCB 3CX
DRILL METHOD 400 mm bucket
TOTAL DEPTH 1.0 m
DIAMETER 400 mm
DRILLING COMPANY Ground Control

BOREHOLE NUMBER TP18
DRILLING DATE 26/03/2024

COMMENTS

LOGGED BY KL
CHECKED BY JOB

Depth	Graphic Log	Material Description	Additional Observations
0.02		Sandy, SILT, brown, moist to dry.	Natural.
0.04			
0.06			
0.08			
0.1			
0.12			
0.14			
0.16		Gravelly, silty, sandy, CLAY, orange, light-brown, moist to dry, soft to firm, low plasticity, small to large angular gravel.	Weathered rock.
0.18			
0.2			
0.22			
0.24			
0.26			
0.28			
0.3			
0.32			
0.34			
0.36			
0.38			
0.4			
0.42			
0.44			
0.46			
0.48			
0.5			
0.52			
0.54			

ENVIRONMENTAL TEST PIT LOG

PROJECT NUMBER JC1523
PROJECT NAME B3S95 ESSR
CLIENT Maralicec Pty Ltd
ADDRESS 17 Aspinall Street Watson, ACT

DRILL MODEL JCB 3CX
DRILL METHOD 400 mm bucket
TOTAL DEPTH 1.0 m
DIAMETER 400 mm
DRILLING COMPANY Ground Control

BOREHOLE NUMBER TP19
DRILLING DATE 26/03/2024

COMMENTS

LOGGED BY KL
CHECKED BY JOB

Depth	Graphic Log	Material Description	Additional Observations
0.02		Sandy, SILT, brown, moist to dry.	Fragments of possible ACM.
0.04			
0.06			
0.08			
0.1			
0.12			
0.14			
0.16		Gravelly, silty, sandy, CLAY, orange, light-brown, moist to dry, soft to firm, low plasticity, small to large angular gravel.	Weathered rock.
0.18			
0.2			
0.22			
0.24			
0.26			
0.28			
0.3			
0.32			
0.34			
0.36			
0.38			
0.4			
0.42			
0.44			
0.46			
0.48			
0.5			
0.52			
0.54			

Disclaimer This bore log is intended for environmental not geotechnical purposes.
produced by ESlog.ESdat.net on 17 Jun 2024

APPENDIX E: ANALYTICAL TABLES

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Table 1 - Soil Analysis Results

				Asbestos	Metals								PAH									
				Asbestos ID	Arsenic	Cadmium	Chromium (III+VI)	Copper	Lead	Mercury	Nickel	Zinc	PAHs (Sum of positives)	Benzo(b+j+k)fluoranthene	Benzo(b+j)fluoranthene	Benzo(k)fluoranthene	Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a) pyrene	Benzo(g,h,i)perylene
				-	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					2	0.4	1	1	1	0.1	1	1	0.05	0.2	0.5	0.5	0.1	0.1	0.1	0.1	0.05	0.1
NEPM 2013 Table 1A(1) HILs Res A Soil					100	20		6,000	300	40	400	7,400										
NEPM 2013 Table 1A(3) Res A/B Soil HSL for Vapour Intrusion, Sand																						
NEPM 2013 Table 1B(5) EIL urban residential public open space					100																	
Field ID	**Comment**	**Date**	**Lab Report Number**																			
QC01	-	**25 Mar 2024**	**1082462**		27	<0.4	54	23	37	<0.1	12	130			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
QC02	-	**25 Mar 2024**	**1082462**		29	<0.4	50	27	37	<0.1	22	32			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
QC04	-	**25 Mar 2024**	**347986**		25	<0.4	40	18	66	<0.1	12	170	<0.05	<0.2			<0.1	<0.1	<0.1	<0.1	<0.05	<0.1
SS01	-	**26 Mar 2024**	**1082462**		45	<0.4	73	30	95	<0.1	11	130			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
SS03	-	**26 Mar 2024**	**1082462**		38	<0.4	57	17	68	<0.1	12	170			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
SS06	-	**26 Mar 2024**	**1082462**		22	<0.4	31	11	30	<0.1	8.6	62			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TP01 - 0.1	-	**25 Mar 2024**	**1082462**		20	<0.4	38	17	31	<0.1	10	110			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TP01 - 0.5	-	**25 Mar 2024**	**1082462**		30	<0.4	48	46	35	0.1	50	180										
TP02 - 0.1	-	**25 Mar 2024**	**1082462**		28	<0.4	58	16	43	<0.1	13	95			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TP02 - 0.5	-	**25 Mar 2024**	**1082462**		27	<0.4	39	38	29	<0.1	50	140										
TP03 - 0.1	-	**25 Mar 2024**	**1082462**	<0.01%	39	<0.4	84	31	120	<0.1	11	360			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TP03 - 0.5	-	**25 Mar 2024**	**1082462**		40	<0.4	92	15	42	<0.1	9.5	29			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TP04 - 0.1	-	**25 Mar 2024**	**1082462**	<0.01%	54	<0.4	94	27	87	<0.1	18	59			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TP04 - 1.0	-	**25 Mar 2024**	**1082462**		26	<0.4	43	38	54	<0.1	34	120			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TP05 - 0.5	-	**25 Mar 2024**	**1082462**		62	<0.4	68	33	45	<0.1	26	45										
TP06 - 0.1	-	**25 Mar 2024**	**1082462**	<0.01%	23	<0.4	42	24	55	<0.1	27	170			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TP07 - 0.1	-	**25 Mar 2024**	**1082462**		19	<0.4	41	18	40	<0.1	14	86			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TP08 - 0.1	-	**25 Mar 2024**	**1082462**	<0.01%	58	<0.4	91	27	120	<0.1	15	250			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TP08 - 0.5	-	**25 Mar 2024**	**1082462**		49	<0.4	67	40	45	<0.1	35	43			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TP08 - 1.5	-	**25 Mar 2024**	**1082462**		23	<0.4	34	14	23	<0.1	9.1	30										
TP10 - 0.1	-	**25 Mar 2024**	**1082462**		36	<0.4	60	25	37	<0.1	23	98			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TP11 - 0.1	-	**25 Mar 2024**	**1082462**		26	<0.4	48	28	40	<0.1	20	66			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TP11 - 1.0	-	**25 Mar 2024**	**1082462**		33	<0.4	40	30	55	<0.1	26	69										
TP14 - 0.1	-	**25 Mar 2024**	**1082462**		49	<0.4	75	30	53	<0.1	24	63			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TP15 - 0.1	-	**26 Mar 2024**	**1082462**		45	<0.4	63	24	170	<0.1	13	180			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TP15 - 1.5	-	**26 Mar 2024**	**1082462**		47	<0.4	43	22	44	<0.1	16	54										
TP16 - 0.1	-	**26 Mar 2024**	**1082462**		32	<0.4	40	14	38	<0.1	12	66			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Frag - 1	**Fragment**	**26 Mar 2024**	**1082462**	Detected																		
Frag - 2	**Fragment**	**26 Mar 2024**	**1082462**	Detected																		
~~**TP13 - 0.1**~~	**Removed**	~~**25 Mar 2024**~~	~~**1082462**~~		~~250~~	~~<0.4~~	~~40~~	~~39~~	~~70~~	~~<0.1~~	~~12~~	~~200~~			~~<0.5~~	~~<0.5~~	~~<0.5~~	~~<0.5~~	~~<0.5~~	~~<0.5~~	~~<0.5~~	~~<0.5~~
~~**TP18 - 0.1**~~	**Removed**	~~**26 Mar 2024**~~	~~**1082462**~~	~~<0.01%~~																		
~~**TP19 - 0.1**~~	**Removed**	~~**26 Mar 2024**~~	~~**1082462**~~	~~0.26%~~	~~15~~	~~0.7~~	~~25~~	~~31~~	~~140~~	~~0.1~~	~~24~~	~~280~~			~~<0.5~~	~~<0.5~~	~~<0.5~~	~~<0.5~~	~~<0.5~~	~~<0.5~~	~~<0.5~~	~~<0.5~~
VS04	**Replaces TP13**	**22 May 2024**	**1102131**	<0.01%	46	<0.4	66	62	84	<0.1	14	210										
VS05	**Replaces TP13**	**22 May 2024**	**1102131**	<0.01%	57	<0.4	81	28	53	<0.1	20	61										
VS06	**Replaces TP13**	**22 May 2024**	**1102131**	<0.01%	30	<0.4	52	8.9	30	<0.1	6.0	31										
VS01	**Replaces TP18/TP19**	**22 May 2024**	**1102131**	<0.01%	49	<0.4	48	16	150	<0.1	7.3	130										
VS02	**Replaces TP18/TP19**	**22 May 2024**	**1102131**	<0.01%	13	0.7	24	28	56	<0.1	26	440										
VS03	**Replaces TP18/TP19**	**22 May 2024**	**1102131**	<0.01%	17	0.4	24	25	57	<0.1	23	190										
Statistics																						
Number of Results				**34**	**35**	**35**	**35**	**35**	**35**	**35**	**35**	**35**	**1**	**1**	**22**	**22**	**23**	**23**	**23**	**23**	**23**	**23**
Number of Detects				**34**	**35**	**3**	**35**	**35**	**35**	**2**	**35**	**35**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Minimum Concentration				**5**	**13**	**0.4**	**24**	**8.9**	**23**	**0.1**	**6**	**29**	**<0.05**	**<0.2**	**<0.5**	**<0.5**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.05**	**<0.1**
Minimum Detect				**5**	**13**	**0.4**	**24**	**8.9**	**23**	**0.1**	**6**	**29**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**
Maximum Concentration				**19**	**250**	**0.7**	**94**	**62**	**170**	**0.1**	**50**	**440**	**<0.05**	**<0.2**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**
Maximum Detect				**19**	**250**	**0.7**	**94**	**62**	**170**	**0.1**	**50**	**440**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**
Average Concentration *				**10**	**41**	**0.23**	**54**	**26**	**62**	**0.053**	**19**	**130**			**0.25**	**0.25**	**0.24**	**0.24**	**0.24**	**0.24**	**0.24**	**0.24**
Median Concentration *				**9.6**	**32**	**0.2**	**48**	**27**	**53**	**0.05**	**15**	**110**	**0.025**	**0.1**	**0.25**	**0.25**	**0.25**	**0.25**	**0.25**	**0.25**	**0.25**	**0.25**
Standard Deviation *				**3.4**	**39**	**0.12**	**20**	**11**	**37**	**0.012**	**11**	**95**			**0**	**0**	**0.042**	**0.042**	**0.042**	**0.042**	**0.047**	**0.042**
95% UCL (Student's-t) *				**11.01**	**51.89**	**0.269**	**59.1**	**29.4**	**72.81**	**0.0562**	**22.08**	**157.1**			**0.25**	**0.25**	**0.256**	**0.256**	**0.256**	**0.256**	**0.257**	**0.256**
% of Detects				**100**	**100**	**9**	**100**	**100**	**100**	**6**	**100**	**100**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
% of Non-Detects				**0**	**0**	**91**	**0**	**0**	**0**	**94**	**0**	**0**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**

* A Non Detect Multiplier of 0.5 has been applied.

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Table 1 - Soil Analysis Results

											BTEX				TRH					
			Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene	Phenanthrene	PAHs (Sum of total)	Pyrene	Benzene	Ethylbenzene	Toluene	Xylene Total	C6-C10 (F1 minus BTEX)	C10-C16 (F2 minus Naphthalene)	C10-C16	C16-C34	C34-C40	C10-C40 (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
EQL			0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.5	0.1	0.1	0.1	0.1	0.3	20	50	50	100	100	50
NEPM 2013 Table 1A(1) HILs Res A Soil										300											
NEPM 2013 Table 1A(3) Res A/B Soil HSL for Vapour Intrusion, Sand								3				0.5 | 0.5 | 0.5 | 0.5	55	160 | 220 | 310 | 540	40 | 60 | 95 | 170	45 | 70 | 110 | 200	110 | 240 | 440				
NEPM 2013 Table 1B(5) EIL urban residential public open space								170													
Field ID	**Comment**	**Date**																			
QC01	-	**25 Mar 2024**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.1	<0.3	<20	<50	<50	<100	<100	<100
QC02	-	**25 Mar 2024**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.1	<0.3	<20	<50	<50	<100	<100	<100
QC04	-	**25 Mar 2024**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		<0.1	<0.2	<1	<0.5	<1	<25	<50	<50	<100	<100	<50
SS01	-	**26 Mar 2024**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.1	<0.3	<20	<50	<50	<100	<100	<100
SS03	-	**26 Mar 2024**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.1	<0.3	<20	<50	<50	<100	<100	<100
SS06	-	**26 Mar 2024**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.1	<0.3	<20	<50	<50	<100	<100	<100
TP01 - 0.1	-	**25 Mar 2024**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.1	<0.3	<20	<50	<50	<100	<100	<100
TP01 - 0.5	-	**25 Mar 2024**																			
TP02 - 0.1	-	**25 Mar 2024**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.1	<0.3	<20	<50	<50	<100	<100	<100
TP02 - 0.5	-	**25 Mar 2024**																			
TP03 - 0.1	-	**25 Mar 2024**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.1	<0.3	<20	<50	<50	<100	<100	<100
TP03 - 0.5	-	**25 Mar 2024**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.1	<0.3	<20	<50	<50	<100	<100	<100
TP04 - 0.1	-	**25 Mar 2024**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.1	<0.3	<20	<50	<50	<100	<100	<100
TP04 - 1.0	-	**25 Mar 2024**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.1	<0.3	<20	<50	<50	<100	<100	<100
TP05 - 0.5	-	**25 Mar 2024**																			
TP06 - 0.1	-	**25 Mar 2024**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.1	<0.3	<20	<50	<50	<100	<100	<100
TP07 - 0.1	-	**25 Mar 2024**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.1	<0.3	<20	<50	<50	<100	<100	<100
TP08 - 0.1	-	**25 Mar 2024**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.1	<0.3	<20	<50	<50	<100	<100	<100
TP08 - 0.5	-	**25 Mar 2024**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.1	<0.3	<20	<50	<50	<100	<100	<100
TP08 - 1.5	-	**25 Mar 2024**																			
TP10 - 0.1	-	**25 Mar 2024**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.1	<0.3	<20	<50	<50	<100	<100	<100
TP11 - 0.1	-	**25 Mar 2024**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.1	<0.3	<20	<50	<50	<100	<100	<100
TP11 - 1.0	-	**25 Mar 2024**																			
TP14 - 0.1	-	**25 Mar 2024**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.1	<0.3	<20	<50	<50	<100	<100	<100
TP15 - 0.1	-	**26 Mar 2024**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.1	<0.3	<20	<50	<50	<100	<100	<100
TP15 - 1.5	-	**26 Mar 2024**																			
TP16 - 0.1	-	**26 Mar 2024**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.1	<0.1	<0.3	<20	<50	<50	<100	<100	<100
Frag - 1	**Fragment**	**26 Mar 2024**																			
Frag - 2	**Fragment**	**26 Mar 2024**																			
~~**TP13 - 0.1**~~	**Removed**	~~**25 Mar 2024**~~	~~<0.5~~	~~<0.5~~	~~<0.5~~	~~<0.5~~	~~<0.5~~	~~<0.5~~	~~<0.5~~	~~<0.5~~	~~<0.5~~	~~<0.1~~	~~<0.1~~	~~<0.1~~	~~<0.3~~	~~<20~~	~~<50~~	~~<50~~	~~<100~~	~~<100~~	~~<100~~
~~**TP18 - 0.1**~~	**Removed**	~~**26 Mar 2024**~~																			
~~**TP19 - 0.1**~~	**Removed**	~~**26 Mar 2024**~~	~~<0.5~~	~~<0.5~~	~~<0.5~~	~~<0.5~~	~~<0.5~~	~~<0.5~~	~~<0.5~~	~~<0.5~~	~~<0.5~~	~~<0.1~~	~~<0.1~~	~~<0.1~~	~~<0.3~~	~~<20~~	~~<50~~	~~<50~~	~~<100~~	~~<100~~	~~<100~~
VS04	**Replaces TP13**	**22 May 2024**																			
VS05	**Replaces TP13**	**22 May 2024**																			
VS06	**Replaces TP13**	**22 May 2024**																			
VS01	**Replaces TP18/TP19**	**22 May 2024**																			
VS02	**Replaces TP18/TP19**	**22 May 2024**																			
VS03	**Replaces TP18/TP19**	**22 May 2024**																			
Statistics																					
Number of Results			**23**	**23**	**23**	**23**	**23**	**23**	**23**	**22**	**23**	**23**	**23**	**23**	**23**	**23**	**23**	**23**	**23**	**23**	**23**
Number of Detects			**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Minimum Concentration			**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.5**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.3**	**<20**	**<50**	**<50**	**<100**	**<100**	**<50**
Minimum Detect			**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**
Maximum Concentration			**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.2**	**<1**	**<0.5**	**<1**	**<25**	**<50**	**<50**	**<100**	**<100**	**<100**
Maximum Detect			**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**
Average Concentration *			**0.24**	**0.24**	**0.24**	**0.24**	**0.24**	**0.24**	**0.24**	**0.25**	**0.24**	**0.052**	**0.07**	**0.059**	**0.17**	**10**	**25**	**25**	**50**	**50**	**49**
Median Concentration *			**0.25**	**0.25**	**0.25**	**0.25**	**0.25**	**0.25**	**0.25**	**0.25**	**0.25**	**0.05**	**0.05**	**0.05**	**0.15**	**10**	**25**	**25**	**50**	**50**	**50**
Standard Deviation *			**0.042**	**0.042**	**0.042**	**0.042**	**0.042**	**0.042**	**0.042**	**0**	**0.042**	**0.01**	**0.094**	**0.042**	**0.073**	**0.52**	**0**	**0**	**0**	**0**	**5.2**
95% UCL (Student's-t) *			**0.256**	**0.256**	**0.256**	**0.256**	**0.256**	**0.256**	**0.256**	**0.25**	**0.256**	**0.0559**	**0.103**	**0.0736**	**0.191**	**10.3**	**25**	**25**	**50**	**50**	**50.78**
% of Detects			**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
% of Non-Detects			**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**

* A Non Detect Multiplier of 0.5 has been applied.

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Table 1 - Soil Analysis Results

			TPH						Asbestos														
			C6-C10	C6-C9	C10-C14	C15-C28	C29-C36	+C10-C36 (Sum of total)	Asbestos Sample Dimensions	ACM - Comment	AF - Comment	Asbestos from ACM in Soil	Asbestos from FA & AF in Soil	Asbestos Reported Result	Mass ACM	Mass AF	Mass Asbestos in ACM	Mass asbestos in AF	Mass Asbestos in FA	Mass Asbestos in FA & AF	Mass FA	Naphthalene (VOC)	Approximate Sample Mass
			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	Comment	Comment	Comment	%w/w	%w/w	Comment	g	g	g	g	g	g	g	mg/kg	g
EQL			20	20	20	50	50	50														0.5	
NEPM 2013 Table 1A(1) HILs Res A Soil																							
NEPM 2013 Table 1A(3) Res A/B Soil HSL for Vapour Intrusion, Sand																							
NEPM 2013 Table 1B(5) EIL urban residential public open space																							
Field ID	**Comment**	**Date**																					
QC01	-	**25 Mar 2024**	<20	<20	<20	<50	<50	<50														<0.5	
QC02	-	**25 Mar 2024**	<20	<20	<20	<50	<50	<50														<0.5	
QC04	-	**25 Mar 2024**	<25	<25	<50	<100	<100	<50														<1	
SS01	-	**26 Mar 2024**	<20	<20	<20	<50	<50	<50														<0.5	
SS03	-	**26 Mar 2024**	<20	<20	<20	<50	<50	<50														<0.5	
SS06	-	**26 Mar 2024**	<20	<20	<20	<50	<50	<50														<0.5	
TP01 - 0.1	-	**25 Mar 2024**	<20	<20	<20	<50	<50	<50														<0.5	
TP01 - 0.5	-	**25 Mar 2024**																					
TP02 - 0.1	-	**25 Mar 2024**	<20	<20	<20	<50	<50	<50														<0.5	
TP02 - 0.5	-	**25 Mar 2024**																					
TP03 - 0.1	-	**25 Mar 2024**	<20	<20	<20	<50	<50	<50		1	1	0	0	1	0.0000	0.0000	0	0	0	0	0.0000	<0.5	59
TP03 - 0.5	-	**25 Mar 2024**	<20	<20	<20	<50	<50	<50														<0.5	
TP04 - 0.1	-	**25 Mar 2024**	<20	<20	<20	<50	<50	<50		1	1	0	0	1	0.0000	0.0000	0	0	0	0	0.0000	<0.5	36
TP04 - 1.0	-	**25 Mar 2024**	<20	<20	<20	<50	<50	<50														<0.5	
TP05 - 0.5	-	**25 Mar 2024**																					
TP06 - 0.1	-	**25 Mar 2024**	<20	<20	<20	<50	<50	<50		1	1	0	0	1	0.0000	0.0000	0	0	0	0	0.0000	<0.5	36
TP07 - 0.1	-	**25 Mar 2024**	<20	<20	<20	<50	<50	<50														<0.5	
TP08 - 0.1	-	**25 Mar 2024**	<20	<20	<20	<50	79	79		1	1	0	0	1	0.0000	0.0000	0	0	0	0	0.0000	<0.5	61
TP08 - 0.5	-	**25 Mar 2024**	<20	<20	<20	<50	<50	<50														<0.5	
TP08 - 1.5	-	**25 Mar 2024**																					
TP10 - 0.1	-	**25 Mar 2024**	<20	<20	<20	<50	<50	<50														<0.5	
TP11 - 0.1	-	**25 Mar 2024**	<20	<20	<20	<50	<50	<50														<0.5	
TP11 - 1.0	-	**25 Mar 2024**																					
TP14 - 0.1	-	**25 Mar 2024**	<20	<20	<20	<50	<50	<50														<0.5	
TP15 - 0.1	-	**26 Mar 2024**	<20	<20	<20	<50	65	65														<0.5	
TP15 - 1.5	-	**26 Mar 2024**																					
TP16 - 0.1	-	**26 Mar 2024**	<20	<20	<20	<50	<50	<50														<0.5	
Frag - 1	**Fragment**	**26 Mar 2024**							1	1	1	0	0	1	0.0000	0.0000	0	0	0	0	0.0000		46
Frag - 2	**Fragment**	**26 Mar 2024**							1	1	1	0	0	1	0.0000	0.0000	0	0	0	0	0.0000		17
~~**TP13 - 0.1**~~	**Removed**	~~**25 Mar 2024**~~	~~<20~~	~~<20~~	~~<20~~	~~<50~~	~~<50~~	~~<50~~														~~<0.5~~	
~~**TP18 - 0.1**~~	**Removed**	~~**26 Mar 2024**~~								~~1~~	~~1~~	~~0~~	~~0~~	~~1~~	~~0.0000~~	~~0.0000~~	~~0~~	~~0~~	~~0~~	~~0~~	~~0.0000~~		~~87~~
~~**TP19 - 0.1**~~	**Removed**	~~**26 Mar 2024**~~	~~<20~~	~~<20~~	~~<20~~	~~<50~~	~~<50~~	~~<50~~		~~1~~	~~1~~	~~0~~	~~0~~	~~1~~	~~0.0000~~	~~0.0000~~	~~0~~	~~0~~	~~0~~	~~0~~	~~0.0000~~	~~<0.5~~	~~305~~
VS04	**Replaces TP13**	**22 May 2024**								1	1	0	0	1	0.0000	0.0000	0	0	0	0	0.0000		60
VS05	**Replaces TP13**	**22 May 2024**								1	1	0	0	1	0.0000	0.0000	0	0	0	0	0.0000		57
VS06	**Replaces TP13**	**22 May 2024**								1	1	0	0	1	0.0000	0.0000	0	0	0	0	0.0000		27
VS01	**Replaces TP18/TP19**	**22 May 2024**								1	1	0	0	1	0.0000	0.0000	0	0	0	0	0.0000		31
VS02	**Replaces TP18/TP19**	**22 May 2024**								1	1	0	0	1	0.0000	0.0000	0	0	0	0	0.0000		60
VS03	**Replaces TP18/TP19**	**22 May 2024**								1	1	0	0	1	0.0000	0.0000	0	0	0	0	0.0000		74
Statistics																							
Number of Results			**23**	**23**	**23**	**23**	**23**	**23**	**2**	**14**	**14**	**14**	**14**	**14**	**14**	**14**	**14**	**14**	**14**	**14**	**14**	**23**	**14**
Number of Detects			**0**	**0**	**0**	**0**	**2**	**2**	**2**	**14**	**14**	**14**	**14**	**14**	**14**	**14**	**14**	**14**	**14**	**14**	**14**	**0**	**14**
Minimum Concentration			**<20**	**<20**	**<20**	**<50**	**<50**	**<50**	**1**	**1**	**1**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**<0.5**	**17**
Minimum Detect			**ND**	**ND**	**ND**	**ND**	**65**	**65**	**1**	**1**	**1**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**ND**	**17**
Maximum Concentration			**<25**	**<25**	**<50**	**<100**	**<100**	**79**	**1**	**1**	**1**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**<1**	**305**
Maximum Detect			**ND**	**ND**	**ND**	**ND**	**79**	**79**	**1**	**1**	**1**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**ND**	**305**
Average Concentration *			**10**	**10**	**11**	**26**	**30**	**29**	**1**	**1**	**1**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0.26**	**68**
Median Concentration *			**10**	**10**	**10**	**25**	**25**	**25**	**1**	**1**	**1**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0.25**	**58**
Standard Deviation *			**0.52**	**0.52**	**3.1**	**5.2**	**14**	**14**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0.052**	**71**
95% UCL (Student's-t) *			**10.3**	**10.3**	**11.77**	**27.95**	**35.31**	**33.99**	**1**	**1**	**1**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0.28**	**101.8**
% of Detects			**0**	**0**	**0**	**0**	**9**	**9**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**0**	**100**
% of Non-Detects			**100**	**100**	**100**	**100**	**91**	**91**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**100**	**0**

* A Non Detect Multiplier of 0.5 has been applied.

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Table 1 - Soil Analysis Results

	NA					Organochlorine Pesticides															
	FA- Comment	Organic Fibres - Comment	Respirable Fibres - Comment	Synthetic Fibres - Comment	Moisture Content	Aldrin + Dieldrin	Chlordane (cis)	Chlordane (trans)	Chlordane	Endrin ketone	Organochlorine pesticides EPAVic	Toxaphene	Other organochlorine pesticides EPAVic	4,4-DDE	a-BHC	Aldrin	d-BHC	b-BHC	DDD	DDT	DDT+DDE+DDD
	Comment	Comment	Comment	Comment	%	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					0.1	0.05	0.1	0.1	0.1	0.05	0.1	0.5	0.1	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
NEPM 2013 Table 1A(1) HILs Res A Soil						6			50			20									240
NEPM 2013 Table 1A(3) Res A/B Soil HSL for Vapour Intrusion, Sand																					
NEPM 2013 Table 1B(5) EIL urban residential public open space																				180	
Field ID	**Comment**	**Date**																			
QC01	-	**25 Mar 2024**					<0.05			<0.1	<0.05	0.17	<0.5	<0.1	0.17	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.17
QC02	-	**25 Mar 2024**					<0.05			<0.1	<0.05	<0.1	<0.5	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
QC04	-	**25 Mar 2024**				13		<0.1	<0.1						<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
SS01	-	**26 Mar 2024**					<0.05			<0.1	<0.05	<0.1	<0.5	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SS03	-	**26 Mar 2024**					<0.05			<0.1	<0.05	<0.1	<0.5	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SS06	-	**26 Mar 2024**					<0.05			<0.1	<0.05	<0.1	<0.5	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
TP01 - 0.1	-	**25 Mar 2024**					<0.05			<0.1	<0.05	0.15	<0.5	<0.1	0.15	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.15
TP01 - 0.5	-	**25 Mar 2024**																				
TP02 - 0.1	-	**25 Mar 2024**					<0.05			<0.1	<0.05	<0.1	<0.5	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
TP02 - 0.5	-	**25 Mar 2024**																				
TP03 - 0.1	-	**25 Mar 2024**	1	1	1	1	<0.05			<0.1	<0.05	<0.1	<0.5	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
TP03 - 0.5	-	**25 Mar 2024**					<0.05			<0.1	<0.05	<0.1	<0.5	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
TP04 - 0.1	-	**25 Mar 2024**	1	1	1	1	<0.05			<0.1	<0.05	<0.1	<0.5	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
TP04 - 1.0	-	**25 Mar 2024**					<0.05			<0.1	<0.05	<0.1	<0.5	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
TP05 - 0.5	-	**25 Mar 2024**																				
TP06 - 0.1	-	**25 Mar 2024**	1	1	1	1	<0.05			<0.1	<0.05	<0.1	<0.5	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
TP07 - 0.1	-	**25 Mar 2024**					<0.05			<0.1	<0.05	<0.1	<0.5	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
TP08 - 0.1	-	**25 Mar 2024**	1	1	1	1	<0.5			<1	<0.5	<1	<10	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TP08 - 0.5	-	**25 Mar 2024**					<0.05			<0.1	<0.05	<0.1	<0.5	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
TP08 - 1.5	-	**25 Mar 2024**																				
TP10 - 0.1	-	**25 Mar 2024**					<0.05			<0.1	<0.05	<0.1	<0.5	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
TP11 - 0.1	-	**25 Mar 2024**					<0.05			<0.1	<0.05	<0.1	<0.5	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
TP11 - 1.0	-	**25 Mar 2024**																				
TP14 - 0.1	-	**25 Mar 2024**					<0.05			<0.1	<0.05	<0.1	<0.5	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
TP15 - 0.1	-	**26 Mar 2024**					<0.05			<0.1	<0.05	<0.1	<0.5	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
TP15 - 1.5	-	**26 Mar 2024**																				
TP16 - 0.1	-	**26 Mar 2024**					<0.05			<0.1	<0.05	<0.1	<0.5	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Frag - 1	**Fragment**	**26 Mar 2024**	1	1	1	1																
Frag - 2	**Fragment**	**26 Mar 2024**	1	1	1	1																
~~**TP13 - 0.1**~~	~~**Removed**~~	~~**25 Mar 2024**~~					~~<0.5~~			~~<1~~	~~<0.5~~	~~<1~~	~~<10~~	~~<1~~	~~<0.5~~	~~<0.5~~	~~<0.5~~	~~<0.5~~	~~<0.5~~	~~<0.5~~	~~<0.5~~	~~<0.5~~
~~**TP18 - 0.1**~~	~~**Removed**~~	~~**26 Mar 2024**~~	~~1~~	~~1~~	~~1~~	~~1~~																
~~**TP19 - 0.1**~~	~~**Removed**~~	~~**26 Mar 2024**~~	~~1~~	~~1~~	~~1~~	~~1~~	~~<0.05~~			~~<0.1~~	~~<0.05~~	~~<0.1~~	~~<0.5~~	~~<0.1~~	~~<0.05~~	~~<0.05~~	~~<0.05~~	~~<0.05~~	~~<0.05~~	~~<0.05~~	~~<0.05~~	~~<0.05~~
VS04	**Replaces TP13**	**22 May 2024**	1	1	1	1																
VS05	**Replaces TP13**	**22 May 2024**	1	1	1	1																
VS06	**Replaces TP13**	**22 May 2024**	1	1	1	1																
VS01	**Replaces TP18/TP19**	**22 May 2024**	1	1	1	1																
VS02	**Replaces TP18/TP19**	**22 May 2024**	1	1	1	1																
VS03	**Replaces TP18/TP19**	**22 May 2024**	1	1	1	1																
Statistics																						
Number of Results			**14**	**14**	**14**	**14**	**1**	**22**	**1**	**1**	**22**	**22**	**22**	**22**	**22**	**23**	**23**	**23**	**23**	**23**	**23**	**23**	**23**
Number of Detects			**14**	**14**	**14**	**14**	**1**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**2**
Minimum Concentration			**1**	**1**	**1**	**1**	**13**	**<0.05**	**<0.1**	**<0.1**	**<0.1**	**<0.05**	**<0.1**	**<0.5**	**<0.1**	**<0.05**	**<0.05**	**<0.05**	**<0.05**	**<0.05**	**<0.05**	**<0.05**	**<0.05**
Minimum Detect			**1**	**1**	**1**	**1**	**13**	**ND**	**ND**	**ND**	**ND**	**ND**	**0.15**	**ND**	**ND**	**0.15**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**0.15**
Maximum Concentration			**1**	**1**	**1**	**1**	**13**	**<0.5**	**<0.1**	**<0.1**	**<1**	**<0.5**	**<1**	**<10**	**<1**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**
Maximum Detect			**1**	**1**	**1**	**1**	**13**	**ND**	**ND**	**ND**	**ND**	**ND**	**0.17**	**ND**	**ND**	**0.17**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**0.17**
Average Concentration *			**1**	**1**	**1**	**1**		**0.045**			**0.091**	**0.045**	**0.1**	**0.68**	**0.091**	**0.057**	**0.046**	**0.046**	**0.046**	**0.046**	**0.046**	**0.046**	**0.057**
Median Concentration *			**1**	**1**	**1**	**1**	**13**	**0.025**	**0.05**	**0.05**	**0.05**	**0.025**	**0.05**	**0.25**	**0.05**	**0.025**	**0.025**	**0.025**	**0.025**	**0.025**	**0.025**	**0.025**	**0.025**
Standard Deviation *			**0**	**0**	**0**	**0**		**0.066**			**0.13**	**0.066**	**0.13**	**1.4**	**0.13**	**0.072**	**0.065**	**0.065**	**0.065**	**0.065**	**0.065**	**0.065**	**0.072**
95% UCL (Student's-t) *			**1**	**1**	**1**	**1**		**0.0697**			**0.139**	**0.0697**	**0.15**	**1.195**	**0.139**	**0.0832**	**0.0688**	**0.0688**	**0.0688**	**0.0688**	**0.0688**	**0.0688**	**0.0832**
% of Detects			**100**	**100**	**100**	**100**	**100**	**0**	**0**	**0**	**0**	**0**	**9**	**0**	**0**	**9**	**0**	**0**	**0**	**0**	**0**	**0**	**9**
% of Non-Detects			**0**	**0**	**0**	**0**	**0**	**100**	**100**	**100**	**100**	**100**	**91**	**100**	**100**	**91**	**100**	**100**	**100**	**100**	**100**	**100**	**91**

* A Non Detect Multiplier of 0.5 has been applied.

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Table 1 - Soil Analysis Results

			Dieldrin	Endosulfan II	Endosulfan I	Endosulfan sulphate	Endrin	Endrin aldehyde	g-BHC (Lindane)	Heptachlor epoxide	Methoxychlor	Heptachlor	Azinophos methyl	Bolstar (Sulprofos)	Chlorfenvinphos	Chlorpyrifos-methyl	Coumaphos	Demeton-O	Demeton-S	Diazinon	Dichlorvos	Dimethoate	Disulfoton
			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	0.2	0.2	0.2	2	0.2	0.2	0.2	0.2	0.2	0.2
NEPM 2013 Table 1A(1) HILs Res A Soil							10				300	6											
NEPM 2013 Table 1A(3) Res A/B Soil HSL for Vapour Intrusion, Sand																							
NEPM 2013 Table 1B(5) EIL urban residential public open space																							
Field ID	**Comment**	**Date**																					
QC01	-	**25 Mar 2024**	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05											
QC02	-	**25 Mar 2024**	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05											
QC04	-	**25 Mar 2024**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1											
SS01	-	**26 Mar 2024**	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.2	<0.2	<0.2	<2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
SS03	-	**26 Mar 2024**	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.2	<0.2	<0.2	<2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
SS06	-	**26 Mar 2024**	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.2	<0.2	<0.2	<2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
TP01 - 0.1	-	**25 Mar 2024**	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05											
TP01 - 0.5	-	**25 Mar 2024**																					
TP02 - 0.1	-	**25 Mar 2024**	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05											
TP02 - 0.5	-	**25 Mar 2024**																					
TP03 - 0.1	-	**25 Mar 2024**	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05											
TP03 - 0.5	-	**25 Mar 2024**	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.2	<0.2	<0.2	<2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
TP04 - 0.1	-	**25 Mar 2024**	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05											
TP04 - 1.0	-	**25 Mar 2024**	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05											
TP05 - 0.5	-	**25 Mar 2024**																					
TP06 - 0.1	-	**25 Mar 2024**	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05											
TP07 - 0.1	-	**25 Mar 2024**	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05											
TP08 - 0.1	-	**25 Mar 2024**	<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	<5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TP08 - 0.5	-	**25 Mar 2024**	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05											
TP08 - 1.5	-	**25 Mar 2024**																					
TP10 - 0.1	-	**25 Mar 2024**	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.2	<0.2	<0.2	<2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
TP11 - 0.1	-	**25 Mar 2024**	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05											
TP11 - 1.0	-	**25 Mar 2024**																					
TP14 - 0.1	-	**25 Mar 2024**	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.2	<0.2	<0.2	<2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
TP15 - 0.1	-	**26 Mar 2024**	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05											
TP15 - 1.5	-	**26 Mar 2024**																					
TP16 - 0.1	-	**26 Mar 2024**	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05											
Frag - 1	**Fragment**	**26 Mar 2024**																					
Frag - 2	**Fragment**	**26 Mar 2024**																					
~~**TP13 - 0.1**~~	**Removed**	~~**25 Mar 2024**~~	~~<0.5~~	~~<0.5~~	~~<0.5~~	~~<0.5~~	~~<0.5~~	~~<0.5~~	~~<0.5~~	~~<0.5~~	~~<0.5~~	~~<0.5~~											
~~**TP18 - 0.1**~~	**Removed**	~~**26 Mar 2024**~~																					
~~**TP19 - 0.1**~~	**Removed**	~~**26 Mar 2024**~~	~~<0.05~~	~~<0.05~~	~~<0.05~~	~~<0.05~~	~~<0.05~~	~~<0.05~~	~~<0.05~~	~~<0.05~~	~~<0.05~~	~~<0.05~~											
VS04	**Replaces TP13**	**22 May 2024**																					
VS05	**Replaces TP13**	**22 May 2024**																					
VS06	**Replaces TP13**	**22 May 2024**																					
VS01	**Replaces TP18/TP19**	**22 May 2024**																					
VS02	**Replaces TP18/TP19**	**22 May 2024**																					
VS03	**Replaces TP18/TP19**	**22 May 2024**																					
Statistics																							
Number of Results			**23**	**23**	**23**	**23**	**23**	**23**	**23**	**23**	**23**	**23**	**7**	**7**	**7**	**7**	**7**	**7**	**7**	**7**	**7**	**7**	**7**
Number of Detects			**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Minimum Concentration			**<0.05**	**<0.05**	**<0.05**	**<0.05**	**<0.05**	**<0.05**	**<0.05**	**<0.05**	**<0.05**	**<0.05**	**<0.2**	**<0.2**	**<0.2**	**<0.2**	**<2**	**<0.2**	**<0.2**	**<0.2**	**<0.2**	**<0.2**	**<0.2**
Minimum Detect			**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**
Maximum Concentration			**<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**	**<5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**
Maximum Detect			**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**
Average Concentration *			**0.046**	**0.046**	**0.046**	**0.046**	**0.046**	**0.046**	**0.046**	**0.046**	**0.046**	**0.046**	**0.12**	**0.12**	**0.12**	**0.12**	**1.2**	**0.12**	**0.12**	**0.12**	**0.12**	**0.12**	**0.12**
Median Concentration *			**0.025**	**0.025**	**0.025**	**0.025**	**0.025**	**0.025**	**0.025**	**0.025**	**0.025**	**0.025**	**0.1**	**0.1**	**0.1**	**0.1**	**1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**
Standard Deviation *			**0.065**	**0.065**	**0.065**	**0.065**	**0.065**	**0.065**	**0.065**	**0.065**	**0.065**	**0.065**	**0.057**	**0.057**	**0.057**	**0.057**	**0.57**	**0.057**	**0.057**	**0.057**	**0.057**	**0.057**	**0.057**
95% UCL (Student's-t) *			**0.0688**	**0.0688**	**0.0688**	**0.0688**	**0.0688**	**0.0688**	**0.0688**	**0.0688**	**0.0688**	**0.0688**	**0.163**	**0.163**	**0.163**	**0.163**	**1.631**	**0.163**	**0.163**	**0.163**	**0.163**	**0.163**	**0.163**
% of Detects			**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
% of Non-Detects			**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**

* A Non Detect Multiplier of 0.5 has been applied.

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Table 1 - Soil Analysis Results

			Organophosphorous Pesticides																			
			EPN	Ethion	Ethoprop	Fenitrothion	Fensulfothion	Fenthion	Malathion	Merphos	Methyl parathion	Mevinphos (Phosdrin)	Monocrotophos	Naled (Dibrom)	Omethoate	Phorate	Pyrazophos	Ronnel	Terbufos	Tetrachlorvinphos	Tokuthion	Trichloronate	Chlorpyrifos
			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			0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	2	0.2	2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
NEPM 2013 Table 1A(1) HILs Res A Soil																							160
NEPM 2013 Table 1A(3) Res A/B Soil HSL for Vapour Intrusion, Sand																							
NEPM 2013 Table 1B(5) EIL urban residential public open space																							
Field ID	**Comment**	**Date**																					
QC01	-	**25 Mar 2024**																					
QC02	-	**25 Mar 2024**																					
QC04	-	**25 Mar 2024**																					
SS01	-	**26 Mar 2024**	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<2	<0.2	<2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
SS03	-	**26 Mar 2024**	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<2	<0.2	<2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
SS06	-	**26 Mar 2024**	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<2	<0.2	<2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
TP01 - 0.1	-	**25 Mar 2024**																					
TP01 - 0.5	-	**25 Mar 2024**																					
TP02 - 0.1	-	**25 Mar 2024**																					
TP02 - 0.5	-	**25 Mar 2024**																					
TP03 - 0.1	-	**25 Mar 2024**																					
TP03 - 0.5	-	**25 Mar 2024**	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<2	<0.2	<2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
TP04 - 0.1	-	**25 Mar 2024**																					
TP04 - 1.0	-	**25 Mar 2024**																					
TP05 - 0.5	-	**25 Mar 2024**																					
TP06 - 0.1	-	**25 Mar 2024**																					
TP07 - 0.1	-	**25 Mar 2024**																					
TP08 - 0.1	-	**25 Mar 2024**	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
TP08 - 0.5	-	**25 Mar 2024**																					
TP08 - 1.5	-	**25 Mar 2024**																					
TP10 - 0.1	-	**25 Mar 2024**	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<2	<0.2	<2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
TP11 - 0.1	-	**25 Mar 2024**																					
TP11 - 1.0	-	**25 Mar 2024**																					
TP14 - 0.1	-	**25 Mar 2024**	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<2	<0.2	<2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
TP15 - 0.1	-	**26 Mar 2024**																					
TP15 - 1.5	-	**26 Mar 2024**																					
TP16 - 0.1	-	**26 Mar 2024**																					
Frag - 1	**Fragment**	**26 Mar 2024**																					
Frag - 2	**Fragment**	**26 Mar 2024**																					
~~**TP13 - 0.1**~~	**Removed**	~~**25 Mar 2024**~~																					
~~**TP18 - 0.1**~~	**Removed**	~~**26 Mar 2024**~~																					
~~**TP19 - 0.1**~~	**Removed**	~~**26 Mar 2024**~~																					
VS04	**Replaces TP13**	**22 May 2024**																					
VS05	**Replaces TP13**	**22 May 2024**																					
VS06	**Replaces TP13**	**22 May 2024**																					
VS01	**Replaces TP18/TP19**	**22 May 2024**																					
VS02	**Replaces TP18/TP19**	**22 May 2024**																					
VS03	**Replaces TP18/TP19**	**22 May 2024**																					

Statistics

Number of Results	**7**	**7**	**7**	**7**	**7**	**7**	**7**	**7**	**7**	**7**	**7**	**7**	**7**	**7**	**7**	**7**	**7**	**7**	**7**	**7**	**7**
Number of Detects	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Minimum Concentration	**<0.2**	**<0.2**	**<0.2**	**<0.2**	**<0.2**	**<0.2**	**<0.2**	**<0.2**	**<0.2**	**<0.2**	**<2**	**<0.2**	**<2**	**<0.2**	**<0.2**	**<0.2**	**<0.2**	**<0.2**	**<0.2**	**<0.2**	**<0.2**
Minimum Detect	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**
Maximum Concentration	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<5**	**<0.5**	**<5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**	**<0.5**
Maximum Detect	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**
Average Concentration *	**0.12**	**0.12**	**0.12**	**0.12**	**0.12**	**0.12**	**0.12**	**0.12**	**0.12**	**0.12**	**1.2**	**0.12**	**1.2**	**0.12**	**0.12**	**0.12**	**0.12**	**0.12**	**0.12**	**0.12**	**0.12**
Median Concentration *	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**1**	**0.1**	**1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**
Standard Deviation *	**0.057**	**0.057**	**0.057**	**0.057**	**0.057**	**0.057**	**0.057**	**0.057**	**0.057**	**0.057**	**0.57**	**0.057**	**0.57**	**0.057**	**0.057**	**0.057**	**0.057**	**0.057**	**0.057**	**0.057**	**0.057**
95% UCL (Student's-t) *	**0.163**	**0.163**	**0.163**	**0.163**	**0.163**	**0.163**	**0.163**	**0.163**	**0.163**	**0.163**	**1.631**	**0.163**	**1.631**	**0.163**	**0.163**	**0.163**	**0.163**	**0.163**	**0.163**	**0.163**	**0.163**
% of Detects	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
% of Non-Detects	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**

* A Non Detect Multiplier of 0.5 has been applied.

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Table 1 - Soil Analysis Results

			Phenols																			
			2,4,5-Trichlorophenol	3&4-Methylphenol (m&p-cresol)	2,4,6-Trichlorophenol	Phenols (Total Non Halogenated)	Cresol Total	Phenols (Total Halogenated)	Phenolics Total	2,4-Dichlorophenol	2,4-Dinitrophenol	2,4-Dimethylphenol	2,6-Dichlorophenol	Tetrachlorophenols	2-Chlorophenol	2-Methylphenol	4,6-Dinitro-2-methylphenol	4,6-Dinitro-o-cyclohexyl phenol	2-Nitrophenol	4-chloro-3-methylphenol	4-Nitrophenol	Pentachlorophenol	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	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL			1	0.4	1	20	0.5	1	5	0.5	5	0.5	0.5	10	0.5	0.2	5	20	1	1	5	1	0.5
NEPM 2013 Table 1A(1) HILs Res A Soil							400															100	3,000
NEPM 2013 Table 1A(3) Res A/B Soil HSL for Vapour Intrusion, Sand																							
NEPM 2013 Table 1B(5) EIL urban residential public open space																							
Field ID	**Comment**	**Date**																					
QC01	-	**25 Mar 2024**	<1	<0.4	<1	<20	<0.5	<1		<0.5	<5	<0.5	<0.5	<10	<0.5	<0.2	<5	<20	<1	<1	<5	<1	<0.5
QC02	-	**25 Mar 2024**	<1	<0.4	<1	<20	<0.5	<1		<0.5	<5	<0.5	<0.5	<10	<0.5	<0.2	<5	<20	<1	<1	<5	<1	<0.5
QC04	-	**25 Mar 2024**							<5														
SS01	-	**26 Mar 2024**	<1	<0.4	<1	<20	<0.5	<1		<0.5	<5	<0.5	<0.5	<10	<0.5	<0.2	<5	<20	<1	<1	<5	<1	<0.5
SS03	-	**26 Mar 2024**	<1	<0.4	<1	<20	<0.5	<1		<0.5	<5	<0.5	<0.5	<10	<0.5	<0.2	<5	<20	<1	<1	<5	<1	<0.5
SS06	-	**26 Mar 2024**	<1	<0.4	<1	<20	<0.5	<1		<0.5	<5	<0.5	<0.5	<10	<0.5	<0.2	<5	<20	<1	<1	<5	<1	<0.5
TP01 - 0.1	-	**25 Mar 2024**	<1	<0.4	<1	<20	<0.5	<1		<0.5	<5	<0.5	<0.5	<10	<0.5	<0.2	<5	<20	<1	<1	<5	<1	<0.5
TP01 - 0.5	-	**25 Mar 2024**																					
TP02 - 0.1	-	**25 Mar 2024**	<1	<0.4	<1	<20	<0.5	<1		<0.5	<5	<0.5	<0.5	<10	<0.5	<0.2	<5	<20	<1	<1	<5	<1	<0.5
TP02 - 0.5	-	**25 Mar 2024**																					
TP03 - 0.1	-	**25 Mar 2024**	<1	<0.4	<1	<20	<0.5	<1		<0.5	<5	<0.5	<0.5	<10	<0.5	<0.2	<5	<20	<1	<1	<5	<1	<0.5
TP03 - 0.5	-	**25 Mar 2024**	<1	<0.4	<1	<20	<0.5	<1		<0.5	<5	<0.5	<0.5	<10	<0.5	<0.2	<5	<20	<1	<1	<5	<1	<0.5
TP04 - 0.1	-	**25 Mar 2024**	<1	<0.4	<1	<20	<0.5	<1		<0.5	<5	<0.5	<0.5	<10	<0.5	<0.2	<5	<20	<1	<1	<5	<1	<0.5
TP04 - 1.0	-	**25 Mar 2024**	<1	<0.4	<1	<20	<0.5	<1		<0.5	<5	<0.5	<0.5	<10	<0.5	<0.2	<5	<20	<1	<1	<5	<1	<0.5
TP05 - 0.5	-	**25 Mar 2024**																					
TP06 - 0.1	-	**25 Mar 2024**	<1	<0.4	<1	<20	<0.5	<1		<0.5	<5	<0.5	<0.5	<10	<0.5	<0.2	<5	<20	<1	<1	<5	<1	<0.5
TP07 - 0.1	-	**25 Mar 2024**	<1	<0.4	<1	<20	<0.5	<1		<0.5	<5	<0.5	<0.5	<10	<0.5	<0.2	<5	<20	<1	<1	<5	<1	<0.5
TP08 - 0.1	-	**25 Mar 2024**	<1	<1	<1	<20	<1	<1		<0.5	<5	<0.5	<0.5	<10	<0.5	<0.5	<5	<20	<1	<1	<5	<1	<0.5
TP08 - 0.5	-	**25 Mar 2024**	<1	<0.4	<1	<20	<0.5	<1		<0.5	<5	<0.5	<0.5	<10	<0.5	<0.2	<5	<20	<1	<1	<5	<1	<0.5
TP08 - 1.5	-	**25 Mar 2024**																					
TP10 - 0.1	-	**25 Mar 2024**	<1	<0.4	<1	<20	<0.5	<1		<0.5	<5	<0.5	<0.5	<10	<0.5	<0.2	<5	<20	<1	<1	<5	<1	<0.5
TP11 - 0.1	-	**25 Mar 2024**	<1	<0.4	<1	<20	<0.5	<1		<0.5	<5	<0.5	<0.5	<10	<0.5	<0.2	<5	<20	<1	<1	<5	<1	<0.5
TP11 - 1.0	-	**25 Mar 2024**																					
TP14 - 0.1	-	**25 Mar 2024**	<1	<0.4	<1	<20	<0.5	<1		<0.5	<5	<0.5	<0.5	<10	<0.5	<0.2	<5	<20	<1	<1	<5	<1	<0.5
TP15 - 0.1	-	**26 Mar 2024**	<1	<0.4	<1	<20	<0.5	<1		<0.5	<5	<0.5	<0.5	<10	<0.5	<0.2	<5	<20	<1	<1	<5	<1	<0.5
TP15 - 1.5	-	**26 Mar 2024**																					
TP16 - 0.1	-	**26 Mar 2024**	<1	<0.4	<1	<20	<0.5	<1		<0.5	<5	<0.5	<0.5	<10	<0.5	<0.2	<5	<20	<1	<1	<5	<1	<0.5
Frag - 1	**Fragment**	**26 Mar 2024**																					
Frag - 2	**Fragment**	**26 Mar 2024**																					
~~**TP13 - 0.1**~~	**Removed**	~~**25 Mar 2024**~~	~~<1~~	~~<1~~	~~<1~~	~~<20~~	~~<1~~	~~<1~~		~~<0.5~~	~~<5~~	~~<0.5~~	~~<0.5~~	~~<10~~	~~<0.5~~	~~<0.5~~	~~<5~~	~~<20~~	~~<1~~	~~<1~~	~~<5~~	~~<1~~	~~<0.5~~
~~**TP18 - 0.1**~~	**Removed**	~~**26 Mar 2024**~~																					
~~**TP19 - 0.1**~~	**Removed**	~~**26 Mar 2024**~~	~~<1~~	~~<0.4~~	~~<1~~	~~<20~~	~~<0.5~~	~~<1~~		~~<0.5~~	~~<5~~	~~<0.5~~	~~<0.5~~	~~<10~~	~~<0.5~~	~~<0.2~~	~~<5~~	~~<20~~	~~<1~~	~~<1~~	~~<5~~	~~<1~~	~~<0.5~~
VS04	**Replaces TP13**	**22 May 2024**																					
VS05	**Replaces TP13**	**22 May 2024**																					
VS06	**Replaces TP13**	**22 May 2024**																					
VS01	**Replaces TP18/TP19**	**22 May 2024**																					
VS02	**Replaces TP18/TP19**	**22 May 2024**																					
VS03	**Replaces TP18/TP19**	**22 May 2024**																					
Statistics																							
Number of Results			**22**	**22**	**22**	**22**	**22**	**22**	**1**	**22**	**22**	**22**	**22**	**22**	**22**	**22**	**22**	**22**	**22**	**22**	**22**	**22**	**22**
Number of Detects			**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Minimum Concentration			**<1**	**<0.4**	**<1**	**<20**	**<0.5**	**<1**	**<5**	**<0.5**	**<5**	**<0.5**	**<0.5**	**<10**	**<0.5**	**<0.2**	**<5**	**<20**	**<1**	**<1**	**<5**	**<1**	**<0.5**
Minimum Detect			**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**
Maximum Concentration			**<1**	**<1**	**<1**	**<20**	**<1**	**<1**	**<5**	**<0.5**	**<5**	**<0.5**	**<0.5**	**<10**	**<0.5**	**<0.5**	**<5**	**<20**	**<1**	**<1**	**<5**	**<1**	**<0.5**
Maximum Detect			**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**
Average Concentration *			**0.5**	**0.23**	**0.5**	**10**	**0.27**	**0.5**		**0.25**	**2.5**	**0.25**	**0.25**	**5**	**0.25**	**0.11**	**2.5**	**10**	**0.5**	**0.5**	**2.5**	**0.5**	**0.25**
Median Concentration *			**0.5**	**0.2**	**0.5**	**10**	**0.25**	**0.5**	**2.5**	**0.25**	**2.5**	**0.25**	**0.25**	**5**	**0.25**	**0.1**	**2.5**	**10**	**0.5**	**0.5**	**2.5**	**0.5**	**0.25**
Standard Deviation *			**0**	**0.088**	**0**	**0**	**0.074**	**0**		**0**	**0**	**0**	**0**	**0**	**0**	**0.044**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
95% UCL (Student's-t) *			**0.5**	**0.26**	**0.5**	**10**	**0.3**	**0.5**		**0.25**	**2.5**	**0.25**	**0.25**	**5**	**0.25**	**0.13**	**2.5**	**10**	**0.5**	**0.5**	**2.5**	**0.5**	**0.25**
% of Detects			**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
% of Non-Detects			**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**

* A Non Detect Multiplier of 0.5 has been applied.

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Table 1 - Soil Analysis Results

			Halogenated Benzenes	Herbicides	PCBs	Pesticides			Inorganics
			Hexachlorobenzene	Dinoseb	PCBs (Sum of total)	Parathion	Pirimiphos-methyl	Mirex	Moisture Content (dried @ 103°C)
			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	%
EQL			0.05	20	0.1	0.2	0.2	0.1	1
NEPM 2013 Table 1A(1) HILs Res A Soil			10		1			10	
NEPM 2013 Table 1A(3) Res A/B Soil HSL for Vapour Intrusion, Sand									
NEPM 2013 Table 1B(5) EIL urban residential public open space									
Field ID	**Comment**	**Date**							
QC01	-	**25 Mar 2024**	<0.05	<20	<0.1				10
QC02	-	**25 Mar 2024**	<0.05	<20	<0.1				19
QC04	-	**25 Mar 2024**	<0.1		<0.1			<0.1	
SS01	-	**26 Mar 2024**	<0.05	<20	<0.1	<0.2	<0.2		5.0
SS03	-	**26 Mar 2024**	<0.05	<20	<0.1	<0.2	<0.2		15
SS06	-	**26 Mar 2024**	<0.05	<20	<0.1	<0.2	<0.2		7.9
TP01 - 0.1	-	**25 Mar 2024**	<0.05	<20	<0.1				8.9
TP01 - 0.5	-	**25 Mar 2024**							9.3
TP02 - 0.1	-	**25 Mar 2024**	<0.05	<20	<0.1				8.5
TP02 - 0.5	-	**25 Mar 2024**							13
TP03 - 0.1	-	**25 Mar 2024**	<0.05	<20	<0.1				9.4
TP03 - 0.5	-	**25 Mar 2024**	<0.05	<20	<0.1	<0.2	<0.2		6.3
TP04 - 0.1	-	**25 Mar 2024**	<0.05	<20	<0.1				9.9
TP04 - 1.0	-	**25 Mar 2024**	<0.05	<20	<0.1				12
TP05 - 0.5	-	**25 Mar 2024**							15
TP06 - 0.1	-	**25 Mar 2024**	<0.05	<20	<0.1				10
TP07 - 0.1	-	**25 Mar 2024**	<0.05	<20	<0.1				6.0
TP08 - 0.1	-	**25 Mar 2024**	<0.5	<20	<1	<0.5	<0.5		6.5
TP08 - 0.5	-	**25 Mar 2024**	<0.05	<20	<0.1				17
TP08 - 1.5	-	**25 Mar 2024**							12
TP10 - 0.1	-	**25 Mar 2024**	<0.05	<20	<0.1	<0.2	<0.2		12
TP11 - 0.1	-	**25 Mar 2024**	<0.05	<20	<0.1				13
TP11 - 1.0	-	**25 Mar 2024**							8.3
TP14 - 0.1	-	**25 Mar 2024**	<0.05	<20	<0.1	<0.2	<0.2		14
TP15 - 0.1	-	**26 Mar 2024**	<0.05	<20	<0.1				7.4
TP15 - 1.5	-	**26 Mar 2024**							11
TP16 - 0.1	-	**26 Mar 2024**	<0.05	<20	<0.1				6.6
Frag - 1	**Fragment**	**26 Mar 2024**							
Frag - 2	**Fragment**	**26 Mar 2024**							
~~**TP13 - 0.1**~~	**Removed**	~~**25 Mar 2024**~~	~~<0.5~~	~~<20~~	~~<1~~				~~10~~
~~**TP18 - 0.1**~~	**Removed**	~~**26 Mar 2024**~~							
~~**TP19 - 0.1**~~	**Removed**	~~**26 Mar 2024**~~	~~<0.05~~	~~<20~~	~~<0.1~~				~~7.8~~
VS04	**Replaces TP13**	**22 May 2024**							5.7
VS05	**Replaces TP13**	**22 May 2024**							12
VS06	**Replaces TP13**	**22 May 2024**							9.8
VS01	**Replaces TP18/TP19**	**22 May 2024**							6.0
VS02	**Replaces TP18/TP19**	**22 May 2024**							8.7
VS03	**Replaces TP18/TP19**	**22 May 2024**							8.1
Statistics									
Number of Results			**23**	**22**	**23**	**7**	**7**	**1**	**34**
Number of Detects			**0**	**0**	**0**	**0**	**0**	**0**	**34**
Minimum Concentration			**<0.05**	**<20**	**<0.1**	**<0.2**	**<0.2**	**<0.1**	**5**
Minimum Detect			**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**5**
Maximum Concentration			**<0.5**	**<20**	**<1**	**<0.5**	**<0.5**	**<0.1**	**19**
Maximum Detect			**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**19**
Average Concentration *			**0.046**	**10**	**0.089**	**0.12**	**0.12**		**10**
Median Concentration *			**0.025**	**10**	**0.05**	**0.1**	**0.1**	**0.05**	**9.6**
Standard Deviation *			**0.065**	**0**	**0.13**	**0.057**	**0.057**		**3.4**
95% UCL (Student's-t) *			**0.0688**	**10**	**0.136**	**0.163**	**0.163**		**11.01**
% of Detects			**0**	**0**	**0**	**0**	**0**	**0**	**100**
% of Non-Detects			**100**	**100**	**100**	**100**	**100**	**100**	**0**

* A Non Detect Multiplier of 0.5 has been applied.

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Table 2 - RPDs

					Metals								PAH																		BTE	
					Arsenic	Cadmium	Chromium (III+VI)	Copper	Lead	Mercury	Nickel	Zinc	PAHs (Sum of positives)	Benzo(b+j+k)fluoranthene	Benzo(b+j)fluoranthene	Benzo(k)fluoranthene	Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a) pyrene	Benzo(g,h,i)perylene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene	Phenanthrene	PAHs (Sum of total)	Pyrene	Benzene	Ethylbenzene
					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	mg/kg	mg/kg	mg/kg	mg/kg
EQL					2	0.4	1	1	1	0.1	1	1	0.05	0.2	0.5	0.5	0.1	0.1	0.1	0.1	0.05	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.5	0.1	0.1	0.1
Field ID	**Date**	**Lab Report Number**	**Lab Name**	**Sample Type**																													
TP01 - 0.1	**25 Mar 2024**	**1082462**	**Eurofins Environment ANZ**	**Normal**	20	<0.4	38	17	31	<0.1	10	110			<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	<0.1	<0.1
QC01	**25 Mar 2024**	**1082462**	**Eurofins Environment ANZ**	**Field_D**	27	<0.4	54	23	37	<0.1	12	130			<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	<0.1	<0.1
RPD					30	0	35	30	18	0	18	17			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TP03 - 0.5	**25 Mar 2024**	**1082462**	**Eurofins Environment ANZ**	**Normal**	40	<0.4	92	15	42	<0.1	9.5	29			<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	<0.1	<0.1
QC02	**25 Mar 2024**	**1082462**	**Eurofins Environment ANZ**	**Field_D**	29	<0.4	50	27	37	<0.1	22	32			<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	<0.1	<0.1
RPD					32	0	**59**	57	13	0	79	10			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TP15 - 0.1	**26 Mar 2024**	**1082462**	**Eurofins Environment ANZ**	**Normal**	45	<0.4	63	24	170	<0.1	13	180			<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	<0.1	<0.1
QC04	**25 Mar 2024**	**347986**	**ENVIROLAB**	**Interlab_D**	25	<0.4	40	18	66	<0.1	12	170	<0.05	<0.2			<0.1	<0.1	<0.1	<0.1	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		<0.1	<0.2	<1
RPD					**57**	0	**45**	29	**88**	0	8	6					0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0

***RPDs have only been considered where a concentration is greater than 1 times the EQL.**

****Elevated RPDs are highlighted as per QAQC Profile settings (Acceptable RPDs for each EQL multiplier range are: 81 (1 - 10 x EQL); 50 (10 - 30 x EQL); 30 (> 30 x EQL))**

*****Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any methods in the row header relate to those used in the primary laboratory**

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Table 2 - RPDs

					EX		TRH							Organochlorine Pesticides																				
					Toluene	Xylene Total	C6-C10 (F1 minus BTEX)	C10-C16 (F2 minus Naphthalene)	C10-C16	C16-C34	C34-C40	C10-C40 (Sum of total)	C6-C10	Aldrin + Dieldrin	Chlordane (cis)	Chlordane (trans)	Chlordane	Endrin ketone	Organochlorine pesticides EPAVic	Toxaphene	Other organochlorine pesticides EPAVic	4,4-DDE	a-BHC	Aldrin	d-BHC	b-BHC	DDD	DDT	DDT+DDE+DDD	Dieldrin	Endosulfan II	Endosulfan I
					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	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL					0.1	0.3	20	50	50	100	100	50	20	0.05	0.1	0.1	0.1	0.05	0.1	0.5	0.1	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Field ID	**Date**	**Lab Report Number**	**Lab Name**	**Sample Type**																														
TP01 - 0.1	**25 Mar 2024**	**1082462**	**Eurofins Environment ANZ**	**Normal**	<0.1	<0.3	<20	<50	<50	<100	<100	<100	<20	<0.05			<0.1	<0.05	0.15	<0.5	<0.1	0.15	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.15	<0.05	<0.05	<0.05
QC01	**25 Mar 2024**	**1082462**	**Eurofins Environment ANZ**	**Field_D**	<0.1	<0.3	<20	<50	<50	<100	<100	<100	<20	<0.05			<0.1	<0.05	0.17	<0.5	<0.1	0.17	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.17	<0.05	<0.05	<0.05
RPD					0	0	0	0	0	0	0	0	0	0			0	0	13	0	0	13	0	0	0	0	0	0	13	0	0	0
TP03 - 0.5	**25 Mar 2024**	**1082462**	**Eurofins Environment ANZ**	**Normal**	<0.1	<0.3	<20	<50	<50	<100	<100	<100	<20	<0.05			<0.1	<0.05	<0.1	<0.5	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
QC02	**25 Mar 2024**	**1082462**	**Eurofins Environment ANZ**	**Field_D**	<0.1	<0.3	<20	<50	<50	<100	<100	<100	<20	<0.05			<0.1	<0.05	<0.1	<0.5	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
RPD					0	0	0	0	0	0	0	0	0	0			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TP15 - 0.1	**26 Mar 2024**	**1082462**	**Eurofins Environment ANZ**	**Normal**	<0.1	<0.3	<20	<50	<50	<100	<100	<100	<20	<0.05			<0.1	<0.05	<0.1	<0.5	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
QC04	**25 Mar 2024**	**347986**	**ENVIROLAB**	**Interlab_D**	<0.5	<1	<25	<50	<50	<100	<100	<50	<25		<0.1	<0.1						<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
RPD					0	0	0	0	0	0	0	0	0									0	0	0	0	0	0	0	0	0	0	0

**RPDs have only been considered where a concentration is greater than 1 times the EQL.

**Elevated RPDs are highlighted as per QAQC Profile settings (Acceptable RPDs for each EQL multiplier range are: 81 (1 - 10

***Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any methods in the r

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Table 2 - RPDs

									Phenols																					
									Endosulfan sulphate	Endrin	Endrin aldehyde	g-BHC (Lindane)	Heptachlor epoxide	Methoxychlor	Heptachlor	2,4,5-Trichlorophenol	3&4-Methylphenol (m&p-cresol)	2,4,6-Trichlorophenol	Phenols (Total Non Halogenated)	Cresol Total	Phenols (Total Halogenated)	Phenolics Total	2,4-Dichlorophenol	2,4-Dinitrophenol	2,4-Dimethylphenol	2,6-Dichlorophenol	Tetrachlorophenols	2-Chlorophenol	2-Methylphenol	4,6-Dinitro-2-methylphenol	4,6-Dinitro-o-cyclohexyl phenol	2-Nitrophenol	4-chloro-3-methylphenol	4-Nitrophenol	Pentachlorophenol	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	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	1	0.4	1	20	0.5	1	5	0.5	5	0.5	0.5	10	0.5	0.2	5	20	1	1	5	1	0.5
Field ID	**Date**	**Lab Report Number**	**Lab Name**	**Sample Type**																																
TP01 - 0.1	**25 Mar 2024**	**1082462**	**Eurofins Environment ANZ**	**Normal**	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1	<0.4	<1	<20	<0.5	<1		<0.5	<5	<0.5	<0.5	<10	<0.5	<0.2	<5	<20	<1	<1	<5	<1	<0.5
QC01	**25 Mar 2024**	**1082462**	**Eurofins Environment ANZ**	**Field_D**	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1	<0.4	<1	<20	<0.5	<1		<0.5	<5	<0.5	<0.5	<10	<0.5	<0.2	<5	<20	<1	<1	<5	<1	<0.5
RPD					0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TP03 - 0.5	**25 Mar 2024**	**1082462**	**Eurofins Environment ANZ**	**Normal**	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1	<0.4	<1	<20	<0.5	<1		<0.5	<5	<0.5	<0.5	<10	<0.5	<0.2	<5	<20	<1	<1	<5	<1	<0.5
QC02	**25 Mar 2024**	**1082462**	**Eurofins Environment ANZ**	**Field_D**	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1	<0.4	<1	<20	<0.5	<1		<0.5	<5	<0.5	<0.5	<10	<0.5	<0.2	<5	<20	<1	<1	<5	<1	<0.5
RPD					0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TP15 - 0.1	**26 Mar 2024**	**1082462**	**Eurofins Environment ANZ**	**Normal**	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<1	<0.4	<1	<20	<0.5	<1		<0.5	<5	<0.5	<0.5	<10	<0.5	<0.2	<5	<20	<1	<1	<5	<1	<0.5
QC04	**25 Mar 2024**	**347986**	**ENVIROLAB**	**Interlab_D**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1							<5																			
RPD					0	0	0	0	0	0	0																										

***RPDs have only been considered where a concentration is greater than 1 times the EQL.**

****Elevated RPDs are highlighted as per QAQC Profile settings (Acceptable RPDs for each EQL multiplier range are: 81 (1 - 10**

*****Interlab Duplicates are matched on a per compound basis as methods vary between laboratories. Any methods in the r**

APPENDIX F: LABORATORY CERTIFICATES

CHAIN OF CUSTODY RECORD

Sydney Laboratory
Unit F3 Bldg F 16 Mars Rd, Lane Cove West, NSW 2066
02 9900 8400 EnviroSampleNSW@eurofins.com

Brisbane Laboratory
Smallwood Pl, Murarrie, QLD 4172
07 3902 4600 EnviroSampleQLD@eurofins.com

Perth Laboratory
Unit 7 91 Leach Highway, Kewdale WA 6105
08 9251 9600 EnviroSampleWA@eurofins.com

Melbourne Laboratory
2 Kingston Town Close, Oakleigh, VIC 3166
03 8564 5000 EnviroSampleVic@eurofins.com

| | | |

CHAIN OF CUSTODY RECORD

ABN 50 005 085 521

☑ Sydney Laboratory
Unit F3 Bld F, 16 Mars Rd, Lane Cove West, NSW 2066
02 9900 8400 EnviroSampleNSW@eurofins.com

☐ Brisbane Laboratory
Unit 1, 21 Smallwood Pl, Murarrie, QLD 4172
07 3902 4600 EnviroSampleQLD@eurofins.com

☐ Perth Laboratory
Unit 2, 91 Leach Highway, Kewdale WA 6105
08 9251 9600 EnviroSampleWA@eurofins.com

☐ Melbourne Laboratory
2 Kingston Town Close, Oakleigh VIC 3166
03 8564 5000 EnviroSampleVic@eurofins.com

| | | |

NATA Accredited
Accreditation Number 1261
Site Number 18217

Accredited for compliance with ISO/IEC 17025–Testing
NATA is a signatory to the ILAC Mutual Recognition Arrangement for the mutual recognition of the equivalence of testing, medical testing, calibration, inspection, proficiency testing scheme providers and reference materials producers reports and certificates.

Agon Environmental Pty Ltd - ACT
68 Northbourne Ave
Canberra
ACT 2060

Attention:	-John O Brien - ACT Manager
Report	1082462-AID
Project Name	JC1523
Received Date	Mar 27, 2024
Date Reported	Apr 08, 2024

Methodology:

Asbestos Fibre Identification	Conducted in accordance with the Australian Standard AS 4964 – 2004: Method for the Qualitative Identification of Asbestos in Bulk Samples and in-house Method LTM-ASB-8020 by polarised light microscopy (PLM) and dispersion staining (DS) techniques. *NOTE: Positive Trace Analysis results indicate the sample contains detectable respirable fibres.*
Unknown Mineral Fibres	Mineral fibres of unknown type, as determined by PLM with DS, may require another analytical technique, such as Electron Microscopy, to confirm unequivocal identity. *NOTE: While Actinolite, Anthophyllite and Tremolite asbestos may be detected by PLM with DS, due to variability in the optical properties of these materials, AS4964 requires that these are reported as UMF unless confirmed by an independent technique.*
Subsampling Soil Samples	The whole sample submitted is first dried and then passed through a 10mm sieve followed by a 2mm sieve. All fibrous matter greater than 10mm, greater than 2mm as well as the material passing through the 2mm sieve are retained and analysed for the presence of asbestos. If the sub 2mm fraction is greater than approximately 30 to 60g then a sub-sampling routine based on ISO 3082:2009(E) is employed. *NOTE: Depending on the nature and size of the soil sample, the sub-2 mm residue material may need to be sub-sampled for trace analysis, in accordance with AS 4964-2004.*
Bonded asbestos-containing material (ACM)	The material is first examined and any fibres isolated for identification by PLM and DS. Where required, interfering matrices may be removed by disintegration using a range of heat, chemical or physical treatments, possibly in combination.The resultant material is then further examined in accordance with AS 4964 - 2004. *NOTE: Even after disintegration it may be difficult to detect the presence of asbestos in some asbestos-containing bulk materials using PLM and DS. This is due to the low grade or small length or diameter of the asbestos fibres present in the material, or to the fact that very fine fibres have been distributed intimately throughout the materials. Vinyl/asbestos floor tiles, some asbestos-containing sealants and mastics, asbestos-containing epoxy resins and some ore samples are examples of these types of material, which are difficult to analyse.*
Limit of Reporting	The performance limitation of the AS 4964 (2004) method for non-homogeneous samples is around 0.1 g/kg (equivalent to 0.01% (w/w)). Where no asbestos is found by PLM and DS, including Trace Analysis, this is considered to be at the nominal reporting limit of 0.01% (w/w). The NEPM screening level of 0.001% (w/w) is intended as an on-site determination, not a laboratory Limit of Reporting (LOR), per se. Examination of a large sample size (e.g. 500 mL) may improve the likelihood of detecting asbestos, particularly AF, to aid assessment against the NEPM criteria. Gravimetric determinations to this level of accuracy are outside of AS 4964 and hence NATA Accreditation does not cover the performance of this service (non-NATA results shown with an asterisk). *NOTE: NATA News March 2014, p.7, states in relation to AS 4964: "This is a qualitative method with a nominal reporting limit of 0.01 % " and that currently in Australia "there is no validated method available for the quantification of asbestos".This report is consistent with the analytical procedures and reporting recommendations in the NEPM and the WA DoH.*

Project Name JC1523
Project ID
Date Sampled Mar 25, 2024 to Mar 26, 2024
Report 1082462-AID

Client Sample ID	Eurofins Sample No.	Date Sampled	Sample Description	Result
TP03 - 0.1	24-Ma0067437	Mar 25, 2024	Approximate Sample 59g Sample consisted of: Brown fine-grained clayey soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
TP04 - 0.1	24-Ma0067439	Mar 25, 2024	Approximate Sample 36g Sample consisted of: Brown fine-grained clayey soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
TP06 - 0.1	24-Ma0067442	Mar 25, 2024	Approximate Sample 36g Sample consisted of: Brown fine-grained clayey soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
TP08 - 0.1	24-Ma0067444	Mar 25, 2024	Approximate Sample 61g Sample consisted of: Brown fine-grained clayey soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
TP18 - 0.1	24-Ma0067455	Mar 26, 2024	Approximate Sample 87g Sample consisted of: Brown fine-grained clayey soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
TP19 - 0.1	24-Ma0067456	Mar 26, 2024	Approximate Sample 305g Sample consisted of: Brown fine-grained clayey soil, glass, cement, plant residue and rocks	Chrysotile, amosite and crocidolite asbestos detected in fibre cement material and Chrysotile and crocidolite asbestos detected in the form of loose fibre bundles. Approximate raw weight of asbestos containing material = 5.3g* Total estimated asbestos content in the sample = 0.79g* Total estimated asbestos concentration = 0.26% w/w* Organic fibre detected. No trace asbestos detected.

Client Sample ID	Eurofins Sample No.	Date Sampled	Sample Description	Result
Frag - 1	24-Ma0067460	Mar 26, 2024	Approximate Sample 46g / 100x70x5mm Sample consisted of: Grey fibre cement material	Chrysotile, amosite and crocidolite asbestos detected.
Frag - 2	24-Ma0067461	Mar 26, 2024	Approximate Sample 17g / 40x30x35mm Sample consisted of: Grey fibre cement material	Chrysotile asbestos detected.

Sample History

Where samples are submitted/analysed over several days, the last date of extraction is reported.

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Asbestos - LTM-ASB-8020	Sydney	Apr 08, 2024	Indefinite
Asbestos - LTM-ASB-8020	Sydney	Apr 08, 2024	Indefinite

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web: www.eurofins.com.au
email: EnviroSales@eurofins.com

Eurofins Environment Testing Australia Pty Ltd
ABN: 50 005 085 521

Melbourne	Geelong	Sydney	Canberra	Brisbane	Newcastle
6 Monterey Road	19/8 Lewalan Street	179 Magowar Road	Unit 1,2 Dacre Street	1/21 Smallwood Place	1/2 Frost Drive
Dandenong South	Grovedale	Girraween	Mitchell	Murarrie	Mayfield West
VIC 3175	VIC 3216	NSW 2145	ACT 2911	QLD 4172	NSW 2304
+61 3 8564 5000	+61 3 8564 5000	+61 2 9900 8400	+61 2 6113 8091	T: +61 7 3902 4600	+61 2 4968 8448
NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261
Site# 1254	Site# 25403	Site# 18217	Site# 25466	Site# 20794	Site# 25079 & 25289

Eurofins ARL Pty Ltd
ABN: 91 05 0159 898

Perth
46-48 Banksia Road
Welshpool
WA 6106
+61 8 6253 4444
NATA# 2377
Site# 2370

Eurofins Environment Testing NZ Ltd
NZBN: 9429046024954

Auckland	Auckland (Asb)	Christchurch	Tauranga
35 O'Rorke Road	Unit C1/4 Pacific Rise,	43 Detroit Drive	1277 Cameron Road,
Penrose,	Mount Wellington,	Rolleston,	Gate Pa,
Auckland 1061	Auckland 1061	Christchurch 7675	Tauranga 3112
+64 9 526 4551	+64 9 525 0568	+64 3 343 5201	+64 9 525 0568
IANZ# 1327	IANZ# 1308	IANZ# 1290	IANZ# 1402

Company Name: Agon Environmental Pty Ltd - ACT
Address: 68 Northbourne Ave
Canberra
ACT 2060

Project Name: JC1523

Order No.:
Report #: 1082462
Phone: 0419 170 791
Fax:

Received: Mar 27, 2024 3:48 PM
Due: Apr 5, 2024
Priority: 5 Day
Contact Name: -John O Brien - ACT Manager

Eurofins Analytical Services Manager : Bonnie Pu

Sample Detail						Asbestos - AS4964	Asbestos Absence /Presence	HOLD	Organophosphorus Pesticides	Metals M8	Suite B13: OCP/PCB	Moisture Set	Eurofins Suite B7A
Sydney Laboratory - NATA # 1261 Site # 18217						X	X	X	X	X	X	X	X
External Laboratory													
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**								
1	TP01 - 0.1	Mar 25, 2024		Soil	R24-Ma0067433						X	X	X
2	TP01 - 0.5	Mar 25, 2024		Soil	R24-Ma0067434					X		X	
3	TP02 - 0.1	Mar 25, 2024		Soil	R24-Ma0067435						X	X	X
4	TP02 - 0.5	Mar 25, 2024		Soil	R24-Ma0067436					X		X	
5	TP03 - 0.1	Mar 25, 2024		Soil	R24-Ma0067437	X					X	X	X
6	TP03 - 0.5	Mar 25, 2024		Soil	R24-Ma0067438				X		X	X	X
7	TP04 - 0.1	Mar 25, 2024		Soil	R24-Ma0067439	X					X	X	X
8	TP04 - 1.0	Mar 25, 2024		Soil	R24-Ma0067440						X	X	X
9	TP05 - 0.5	Mar 25, 2024		Soil	R24-Ma0067441					X		X	
10	TP06 - 0.1	Mar 25, 2024		Soil	R24-Ma0067442	X					X	X	X
11	TP07 - 0.1	Mar 25, 2024		Soil	R24-Ma0067443						X	X	X
12	TP08 - 0.1	Mar 25, 2024		Soil	R24-Ma0067444	X			X		X	X	X
13	TP08 - 0.5	Mar 25, 2024		Soil	R24-Ma0067445						X	X	X
14	TP08 - 1.5	Mar 25, 2024		Soil	R24-Ma0067446					X		X	

eurofins

web: www.eurofins.com.au
email: EnviroSales@eurofins.com

Eurofins Environment Testing Australia Pty Ltd
ABN: 50 005 085 521

Melbourne
6 Monterey Road
Dandenong South
VIC 3175
+61 3 8564 5000
NATA# 1261
Site# 1254

Geelong
19/8 Lewalan Street
Grovedale
VIC 3216
+61 3 8564 5000
NATA# 1261
Site# 25403

Sydney
179 Magowar Road
Girraween
NSW 2145
+61 2 9900 8400
NATA# 1261
Site# 18217

Canberra
Unit 1,2 Dacre Street
Mitchell
ACT 2911
+61 2 6113 8091
NATA# 1261
Site# 25466

Brisbane
1/21 Smallwood Place
Murarrie
QLD 4172
T: +61 7 3902 4600
NATA# 1261
Site# 20794

Newcastle
1/2 Frost Drive
Mayfield West
NSW 2304
+61 2 4968 8448
NATA# 1261
Site# 25079 & 25289

Eurofins ARL Pty Ltd
ABN: 91 05 0159 898

Perth
46-48 Banksia Road
Welshpool
WA 6106
+61 8 6253 4444
NATA# 2377
Site# 2370

Eurofins Environment Testing NZ Ltd
NZBN: 9429046024954

Auckland
35 O'Rorke Road
Penrose,
Auckland 1061
+64 9 526 4551
IANZ# 1327

Auckland (Asb)
Unit C1/4 Pacific Rise,
Mount Wellington,
Auckland 1061
+64 9 525 0568
IANZ# 1308

Christchurch
43 Detroit Drive
Rolleston,
Christchurch 7675
+64 3 343 5201
IANZ# 1290

Tauranga
1277 Cameron Road,
Gate Pa,
Tauranga 3112
+64 9 525 0568
IANZ# 1402

Company Name: Agon Environmental Pty Ltd - ACT
Address: 68 Northbourne Ave
Canberra
ACT 2060

Project Name: JC1523

Order No.:
Report #: 1082462
Phone: 0419 170 791
Fax:

Received: Mar 27, 2024 3:48 PM
Due: Apr 5, 2024
Priority: 5 Day
Contact Name: -John O Brien - ACT Manager

Eurofins Analytical Services Manager : Bonnie Pu

Sample Detail						Asbestos - AS4964	Asbestos Absence /Presence	HOLD	Organophosphorus Pesticides	Metals M8	Suite B13: OCP/PCB	Moisture Set	Eurofins Suite B7A
Sydney Laboratory - NATA # 1261 Site # 18217						X	X	X	X	X	X	X	X
15	TP10 - 0.1	Mar 25, 2024		Soil	R24-Ma0067447				X		X	X	X
16	TP11 - 0.1	Mar 25, 2024		Soil	R24-Ma0067448						X	X	X
17	TP11 - 1.0	Mar 25, 2024		Soil	R24-Ma0067449					X		X	
18	TP13 - 0.1	Mar 25, 2024		Soil	R24-Ma0067450						X	X	X
19	TP14 - 0.1	Mar 25, 2024		Soil	R24-Ma0067451				X		X	X	X
20	TP15 - 0.1	Mar 26, 2024		Soil	R24-Ma0067452						X	X	X
21	TP15 - 1.5	Mar 26, 2024		Soil	R24-Ma0067453					X		X	
22	TP16 - 0.1	Mar 26, 2024		Soil	R24-Ma0067454						X	X	X
23	TP18 - 0.1	Mar 26, 2024		Soil	R24-Ma0067455	X							
24	TP19 - 0.1	Mar 26, 2024		Soil	R24-Ma0067456	X					X	X	X
25	SS01	Mar 26, 2024		Soil	R24-Ma0067457				X		X	X	X
26	SS03	Mar 26, 2024		Soil	R24-Ma0067458				X		X	X	X
27	SS06	Mar 26, 2024		Soil	R24-Ma0067459				X		X	X	X
28	Frag - 1	Mar 26, 2024		Building Materials	R24-Ma0067460		X						
29	Frag - 2	Mar 26, 2024		Building Materials	R24-Ma0067461		X						

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web: www.eurofins.com.au
email: EnviroSales@eurofins.com

Eurofins Environment Testing Australia Pty Ltd
ABN: 50 005 085 521

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6 Monterey Road	19/8 Lewalan Street	179 Magowar Road	Unit 1,2 Dacre Street	1/21 Smallwood Place	1/2 Frost Drive
Dandenong South	Grovedale	Girraween	Mitchell	Murarrie	Mayfield West
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NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261
Site# 1254	Site# 25403	Site# 18217	Site# 25466	Site# 20794	Site# 25079 & 25289

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ABN: 91 05 0159 898

Perth
46-48 Banksia Road
Welshpool
WA 6106
+61 8 6253 4444
NATA# 2377
Site# 2370

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NZBN: 9429046024954

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Sydney Laboratory - NATA # 1261 Site # 18217						X	X	X	X	X	X	X	X
30	QC01	Mar 25, 2024		Soil	R24-Ma0067462						X	X	X
31	QC02	Mar 25, 2024		Soil	R24-Ma0067463						X	X	X
32	TP01 - 1.0	Mar 25, 2024		Soil	R24-Ma0067464			X					
33	TP02 - 1.0	Mar 25, 2024		Soil	R24-Ma0067465			X					
34	TP03 - 1.0	Mar 25, 2024		Soil	R24-Ma0067466			X					
35	TP03 - 1.5	Mar 25, 2024		Soil	R24-Ma0067467			X					
36	TP04 - 0.5	Mar 25, 2024		Soil	R24-Ma0067468			X					
37	TP05 - 0.1	Mar 25, 2024		Soil	R24-Ma0067469			X					
38	TP05 - 1.0	Mar 25, 2024		Soil	R24-Ma0067470			X					
39	TP06 - 0.5	Mar 25, 2024		Soil	R24-Ma0067471			X					
40	TP06 - 1.0	Mar 25, 2024		Soil	R24-Ma0067472			X					
41	TP07 - 0.5	Mar 25, 2024		Soil	R24-Ma0067473			X					
42	TP07 - 1.0	Mar 25, 2024		Soil	R24-Ma0067474			X					
43	TP08 - 1.0	Mar 25, 2024		Soil	R24-Ma0067475			X					
44	TP09 - 0.1	Mar 25, 2024		Soil	R24-Ma0067476			X					
45	TP09 - 0.5	Mar 25, 2024		Soil	R24-Ma0067477			X					

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Sydney Laboratory - NATA # 1261 Site # 18217						X	X	X	X	X	X	X	X
46	TP09 - 1.0	Mar 25, 2024		Soil	R24-Ma0067478			X					
47	TP10 - 0.5	Mar 25, 2024		Soil	R24-Ma0067479			X					
48	TP10 - 1.0	Mar 25, 2024		Soil	R24-Ma0067480			X					
49	TP10 - 1.5	Mar 25, 2024		Soil	R24-Ma0067481			X					
50	TP11 - 0.5	Mar 25, 2024		Soil	R24-Ma0067482			X					
51	TP12 - 0.1	Mar 25, 2024		Soil	R24-Ma0067483			X					
52	TP12 - 0.5	Mar 25, 2024		Soil	R24-Ma0067484			X					
53	TP12 - 1.0	Mar 25, 2024		Soil	R24-Ma0067485			X					
54	TP13 - 0.5	Mar 25, 2024		Soil	R24-Ma0067486			X					
55	TP13 - 1.0	Mar 25, 2024		Soil	R24-Ma0067487			X					
56	TP13 - 1.5	Mar 25, 2024		Soil	R24-Ma0067488			X					
57	TP14 - 0.5	Mar 25, 2024		Soil	R24-Ma0067489			X					
58	TP14 - 1.0	Mar 25, 2024		Soil	R24-Ma0067490			X					
59	TP15 - 0.5	Mar 26, 2024		Soil	R24-Ma0067491			X					
60	TP15 - 1.0	Mar 26, 2024		Soil	R24-Ma0067492			X					
61	TP16 - 0.5	Mar 26, 2024		Soil	R24-Ma0067493			X					

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Sydney Laboratory - NATA # 1261 Site # 18217						X	X	X	X	X	X	X	X
62	TP16 - 1.0	Mar 26, 2024		Soil	R24-Ma0067494			X					
63	TP16 - 1.5	Mar 26, 2024		Soil	R24-Ma0067495			X					
64	TP17 - 0.1	Mar 26, 2024		Soil	R24-Ma0067496			X					
65	TP17 - 0.5	Mar 26, 2024		Soil	R24-Ma0067497			X					
66	TP17 - 1.0	Mar 26, 2024		Soil	R24-Ma0067498			X					
67	TP17 - 1.5	Mar 26, 2024		Soil	R24-Ma0067499			X					
68	TP18 - 0.5	Mar 26, 2024		Soil	R24-Ma0067500			X					
69	TP19 - 0.5	Mar 26, 2024		Soil	R24-Ma0067501			X					
70	SS02	Mar 26, 2024		Soil	R24-Ma0067502			X					
71	SS04	Mar 26, 2024		Soil	R24-Ma0067503			X					
72	SS05	Mar 26, 2024		Soil	R24-Ma0067504			X					
73	SS07	Mar 26, 2024		Soil	R24-Ma0067505			X					
74	QC03	Mar 25, 2024		Soil	R24-Ma0067506			X					
75	QC05	Mar 26, 2024		Soil	R24-Ma0067507			X					
76	QC06	Mar 26, 2024		Soil	R24-Ma0067508			X					
Test Counts						6	2	45	7	6	22	28	22

Internal Quality Control Review and Glossary General

1. QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Samples were analysed on an 'as received' basis.
4. Information identified on this report with the colour **blue** indicates data provided by customer that may have an impact on the results.
5. This report replaces any interim results previously issued.

Holding Times

Please refer to the most recent version of the 'Sample Preservation and Container Guide' for holding times (QS3001).
If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported. Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

Units

% w/w:	Percentage weight-for-weight basis, e.g. of asbestos in asbestos-containing finds in soil samples (**% w/w**)
F/fld	Airborne fibre filter loading as Fibres (**N**) per Fields counted (**n**)
F/mL	Airborne fibre reported concentration as Fibres per millilitre of air drawn over the sampler membrane (**C**)
g, kg	Mass, e.g. of whole sample (**M**) or asbestos-containing find within the sample (**m**)
g/kg	Concentration in grams per kilogram
L, mL	Volume, e.g. of air as measured in AFM (**V** = **r** x **t**)
L/min	Airborne fibre sampling Flowrate as litres per minute of air drawn over the sampler membrane (**r**)
min	Time (**t**), e.g. of air sample collection period

Calculations

Airborne Fibre Concentration: $C = \left(\frac{A}{a}\right) \times \left(\frac{N}{n}\right) \times \left(\frac{1}{r}\right) \times \left(\frac{1}{t}\right) = K \times \left(\frac{N}{n}\right) \times \left(\frac{1}{V}\right)$

Asbestos Content (as asbestos): $\%\, w/w = \frac{(m \times P_A)}{M}$

Weighted Average (of asbestos): $\%_{WA} = \sum \frac{(m \times P_A)_x}{x}$

Terms

%asbestos	Estimated percentage of asbestos in a given matrix may be derived from knowledge or experience of the material, informed by HSG264 *Appendix 2*, else assumed to be 15% in accordance with WA DOH *Appendix 2* (**P_A**). This estimate is not NATA-accredited.
ACM	Asbestos Containing Materials. Asbestos contained within a non-asbestos matrix, typically presented in bonded (non-friable) condition. For the purposes of the NEPM and WA DOH, ACM corresponds to material larger than 7 mm x 7 mm.
AF	Asbestos Fines. Asbestos contamination within a soil sample, as defined by WA DOH. Includes loose fibre bundles and small pieces of friable and non-friable material such as asbestos cement fragments mixed with soil. Considered under the NEPM as equivalent to “non-bonded / friable”.
AFM	Airborne Fibre Monitoring, e.g., by the MFM.
Amosite	Amosite Asbestos Detected. Amosite may also refer to Fibrous Grunerite or Brown Asbestos. Identified in accordance with AS 4964-2004.
AS	Australian Standard.
Asbestos Content (as asbestos)	Total %w/w asbestos content in asbestos-containing finds in a soil sample (**% w/w**).
Chrysotile	Chrysotile Asbestos Detected. Chrysotile may also refer to Fibrous Serpentine or White Asbestos. Identified in accordance with AS 4964-2004.
COC	Chain of Custody.
Crocidolite	Crocidolite Asbestos Detected. Crocidolite may also refer to Fibrous Riebeckite or Blue Asbestos. Identified in accordance with AS 4964-2004.
Dry	Sample is dried by heating prior to analysis.
DS	Dispersion Staining. Technique required for Unequivocal Identification of asbestos fibres by PLM.
FA	Fibrous Asbestos. Asbestos containing material that is wholly or in part friable, including materials with higher asbestos content with a propensity to become friable with handling, and any material that was previously non-friable and in a severely degraded condition. For the purposes of the NEPM and WA DOH, FA generally corresponds to material larger than 7 mm x 7 mm, although FA may be more difficult to visibly distinguish and may be assessed as AF.
Fibre Count	Total of all fibres (whether asbestos or not) meeting the counting criteria set out in the NOHSC:3003
Fibre ID	Fibre Identification. Unequivocal identification of asbestos fibres according to AS 4964-2004. Includes Chrysotile, Amosite (Grunerite) or Crocidolite asbestos.
Friable	Asbestos-containing materials of any size that may be broken or crumbled by hand pressure. For the purposes of the NEPM, this includes both AF and FA. It is outside of the laboratory’s remit to assess degree of friability.
HSG248	UK HSE HSG248, *Asbestos: The Analysts Guide*, 2nd Edition (2021).
HSG264	UK HSE HSG264, *Asbestos: The Survey Guide* (2012).
ISO (also ISO/IEC)	International Organization for Standardization / International Electrotechnical Commission.
K Factor	Microscope constant (**K**) as derived from the effective filter area of the given AFM membrane used for collecting the sample (**A**) and the projected eyepiece graticule area of the specific microscope used for the analysis (**a**).
LOR	Limit of Reporting.
MFM (also NOHSC:3003)	Membrane Filter Method. As described by the Australian Government National Occupational Health and Safety Commission, *Guidance Note on the Membrane Filter Method for Estimating Airborne Asbestos Fibres*, 2nd Edition [NOHSC:3003(2005)].
NEPM (also ASC NEPM)	National Environment Protection (Assessment of Site Contamination) Measure, (2013, as amended).
Organic	Organic Fibres Detected. Organic may refer to Natural or Man-Made Polymeric Fibres. Identified in accordance with AS 4964-2004.
PCM	Phase Contrast Microscopy. As used for Fibre Counting according to the MFM.
PLM	Polarised Light Microscopy. As used for Fibre Identification and Trace Analysis according to AS 4964-2004.
Sampling	Unless otherwise stated Eurofins are not responsible for sampling equipment or the sampling process.
SMF	Synthetic Mineral Fibre Detected. SMF may also refer to Man Made Vitreous Fibres. Identified in accordance with AS 4964-2004.
SRA	Sample Receipt Advice.
Trace Analysis	Analytical procedure used to detect the presence of respirable fibres (particularly asbestos) in a given sample matrix.
UK HSE HSG	United Kingdom, Health and Safety Executive, Health and Safety Guidance, publication.
UMF	Unidentified Mineral Fibre Detected. Fibrous minerals that are detected but have not been unequivocally identified by PLM with DS according the AS 4964-2004. May include (but not limited to) Actinolite, Anthophyllite or Tremolite asbestos.
WA DOH	Reference document for the NEPM. Government of Western Australia, *Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia* (updated 2021), including Appendix Four: *Laboratory analysis*
Weighted Average	Combined average %w/w asbestos content of all asbestos-containing finds in the given aliquot or total soil sample (**$\%_{WA}$**).

Comments

24-Ma0067437 to 24-Ma0067455: The samples received were not collected in an approved asbestos bags and was therefore sub-sampled from the 250mL glass jar. Valid sub-sampling procedures were applied so as to ensure that the sub-sample to be analysed accurately represented the sample received.

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Asbestos Counter/Identifier:

Chamath JHM Annakkage	Senior Analyst-Asbestos

Authorised by:

Laxman Dias	Senior Analyst-Asbestos

Glenn Jackson
Managing Director

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please click here.

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Agon Environmental Pty Ltd - ACT
68 Northbourne Ave
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NATA Accredited
Accreditation Number 1261
Site Number 18217

Accredited for compliance with ISO/IEC 17025 – Testing
NATA is a signatory to the ILAC Mutual Recognition Arrangement for the mutual recognition of the equivalence of testing, medical testing, calibration, inspection, proficiency testing scheme providers and reference materials producers reports and certificates.

Attention: **-John O Brien - ACT Manager**

Report **1082462-S**
Project name JC1523
Received Date Mar 27, 2024

Client Sample ID			**TP01 - 0.1**	**TP01 - 0.5**	**TP02 - 0.1**	**TP02 - 0.5**
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins Sample No.			**R24-Ma0067433**	**R24-Ma0067434**	**R24-Ma0067435**	**R24-Ma0067436**
Date Sampled			**Mar 25, 2024**	**Mar 25, 2024**	**Mar 25, 2024**	**Mar 25, 2024**
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	-	< 20	-
TRH C10-C14	20	mg/kg	< 20	-	< 20	-
TRH C15-C28	50	mg/kg	< 50	-	< 50	-
TRH C29-C36	50	mg/kg	< 50	-	< 50	-
TRH C10-C36 (Total)	50	mg/kg	< 50	-	< 50	-
BTEX						
Benzene	0.1	mg/kg	< 0.1	-	< 0.1	-
Toluene	0.1	mg/kg	< 0.1	-	< 0.1	-
Ethylbenzene	0.1	mg/kg	< 0.1	-	< 0.1	-
m&p-Xylenes	0.2	mg/kg	< 0.2	-	< 0.2	-
o-Xylene	0.1	mg/kg	< 0.1	-	< 0.1	-
Xylenes - Total*	0.3	mg/kg	< 0.3	-	< 0.3	-
4-Bromofluorobenzene (surr.)	1	%	108	-	94	-
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	-	< 0.5	-
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	-	< 50	-
TRH C6-C10	20	mg/kg	< 20	-	< 20	-
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	-	< 20	-
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	-	< 0.5	-
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	-	0.6	-
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	-	1.2	-
Acenaphthene	0.5	mg/kg	< 0.5	-	< 0.5	-
Acenaphthylene	0.5	mg/kg	< 0.5	-	< 0.5	-
Anthracene	0.5	mg/kg	< 0.5	-	< 0.5	-
Benz(a)anthracene	0.5	mg/kg	< 0.5	-	< 0.5	-
Benzo(a)pyrene	0.5	mg/kg	< 0.5	-	< 0.5	-
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	-	< 0.5	-
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	-	< 0.5	-
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	-	< 0.5	-
Chrysene	0.5	mg/kg	< 0.5	-	< 0.5	-
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	-	< 0.5	-
Fluoranthene	0.5	mg/kg	< 0.5	-	< 0.5	-
Fluorene	0.5	mg/kg	< 0.5	-	< 0.5	-
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	-	< 0.5	-
Naphthalene	0.5	mg/kg	< 0.5	-	< 0.5	-

Client Sample ID			TP01 - 0.1	TP01 - 0.5	TP02 - 0.1	TP02 - 0.5
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			R24-Ma0067433	R24-Ma0067434	R24-Ma0067435	R24-Ma0067436
Date Sampled			Mar 25, 2024	Mar 25, 2024	Mar 25, 2024	Mar 25, 2024
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Phenanthrene	0.5	mg/kg	< 0.5	-	< 0.5	-
Pyrene	0.5	mg/kg	< 0.5	-	< 0.5	-
Total PAH*	0.5	mg/kg	< 0.5	-	< 0.5	-
2-Fluorobiphenyl (surr.)	1	%	65	-	96	-
p-Terphenyl-d14 (surr.)	1	%	67	-	89	-
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	< 0.1	-	< 0.1	-
4.4'-DDD	0.05	mg/kg	< 0.05	-	< 0.05	-
4.4'-DDE	0.05	mg/kg	0.15	-	< 0.05	-
4.4'-DDT	0.05	mg/kg	< 0.05	-	< 0.05	-
a-HCH	0.05	mg/kg	< 0.05	-	< 0.05	-
Aldrin	0.05	mg/kg	< 0.05	-	< 0.05	-
b-HCH	0.05	mg/kg	< 0.05	-	< 0.05	-
d-HCH	0.05	mg/kg	< 0.05	-	< 0.05	-
Dieldrin	0.05	mg/kg	< 0.05	-	< 0.05	-
Endosulfan I	0.05	mg/kg	< 0.05	-	< 0.05	-
Endosulfan II	0.05	mg/kg	< 0.05	-	< 0.05	-
Endosulfan sulphate	0.05	mg/kg	< 0.05	-	< 0.05	-
Endrin	0.05	mg/kg	< 0.05	-	< 0.05	-
Endrin aldehyde	0.05	mg/kg	< 0.05	-	< 0.05	-
Endrin ketone	0.05	mg/kg	< 0.05	-	< 0.05	-
g-HCH (Lindane)	0.05	mg/kg	< 0.05	-	< 0.05	-
Heptachlor	0.05	mg/kg	< 0.05	-	< 0.05	-
Heptachlor epoxide	0.05	mg/kg	< 0.05	-	< 0.05	-
Hexachlorobenzene	0.05	mg/kg	< 0.05	-	< 0.05	-
Methoxychlor	0.05	mg/kg	< 0.05	-	< 0.05	-
Toxaphene	0.5	mg/kg	< 0.5	-	< 0.5	-
Aldrin and Dieldrin (Total)*	0.05	mg/kg	< 0.05	-	< 0.05	-
DDT + DDE + DDD (Total)*	0.05	mg/kg	0.15	-	< 0.05	-
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	0.15	-	< 0.1	-
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	< 0.1	-	< 0.1	-
Dibutylchlorendate (surr.)	1	%	87	-	71	-
Tetrachloro-m-xylene (surr.)	1	%	84	-	89	-
Polychlorinated Biphenyls						
Aroclor-1016	0.1	mg/kg	< 0.1	-	< 0.1	-
Aroclor-1221	0.1	mg/kg	< 0.1	-	< 0.1	-
Aroclor-1232	0.1	mg/kg	< 0.1	-	< 0.1	-
Aroclor-1242	0.1	mg/kg	< 0.1	-	< 0.1	-
Aroclor-1248	0.1	mg/kg	< 0.1	-	< 0.1	-
Aroclor-1254	0.1	mg/kg	< 0.1	-	< 0.1	-
Aroclor-1260	0.1	mg/kg	< 0.1	-	< 0.1	-
Total PCB*	0.1	mg/kg	< 0.1	-	< 0.1	-
Dibutylchlorendate (surr.)	1	%	87	-	71	-
Tetrachloro-m-xylene (surr.)	1	%	84	-	89	-
Phenols (Halogenated)						
2-Chlorophenol	0.5	mg/kg	< 0.5	-	< 0.5	-
2.4-Dichlorophenol	0.5	mg/kg	< 0.5	-	< 0.5	-
2.4.5-Trichlorophenol	1	mg/kg	< 1	-	< 1	-
2.4.6-Trichlorophenol	1	mg/kg	< 1	-	< 1	-

Client Sample ID			TP01 - 0.1	TP01 - 0.5	TP02 - 0.1	TP02 - 0.5
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			R24-Ma0067433	R24-Ma0067434	R24-Ma0067435	R24-Ma0067436
Date Sampled			Mar 25, 2024	Mar 25, 2024	Mar 25, 2024	Mar 25, 2024
Test/Reference	LOR	Unit				
Phenols (Halogenated)						
2.6-Dichlorophenol	0.5	mg/kg	< 0.5	-	< 0.5	-
4-Chloro-3-methylphenol	1	mg/kg	< 1	-	< 1	-
Pentachlorophenol	1	mg/kg	< 1	-	< 1	-
Tetrachlorophenols - Total	10	mg/kg	< 10	-	< 10	-
Total Halogenated Phenol*	1	mg/kg	< 1	-	< 1	-
Phenols (non-Halogenated)						
2-Cyclohexyl-4.6-dinitrophenol	20	mg/kg	< 20	-	< 20	-
2-Methyl-4.6-dinitrophenol	5	mg/kg	< 5	-	< 5	-
2-Nitrophenol	1	mg/kg	< 1	-	< 1	-
2.4-Dimethylphenol	0.5	mg/kg	< 0.5	-	< 0.5	-
2.4-Dinitrophenol	5	mg/kg	< 5	-	< 5	-
2-Methylphenol (o-Cresol)	0.2	mg/kg	< 0.2	-	< 0.2	-
3&4-Methylphenol (m&p-Cresol)	0.4	mg/kg	< 0.4	-	< 0.4	-
Total cresols*	0.5	mg/kg	< 0.5	-	< 0.5	-
4-Nitrophenol	5	mg/kg	< 5	-	< 5	-
Dinoseb	20	mg/kg	< 20	-	< 20	-
Phenol	0.5	mg/kg	< 0.5	-	< 0.5	-
Phenol-d6 (surr.)	1	%	INT	-	82	-
Total Non-Halogenated Phenol*	20	mg/kg	< 20	-	< 20	-
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	50	mg/kg	< 50	-	< 50	-
TRH >C16-C34	100	mg/kg	< 100	-	< 100	-
TRH >C34-C40	100	mg/kg	< 100	-	< 100	-
TRH >C10-C40 (total)*	100	mg/kg	< 100	-	< 100	-
Metals M8						
Arsenic	2	mg/kg	20	30	28	27
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	38	48	58	39
Copper	5	mg/kg	17	46	16	38
Lead	5	mg/kg	31	35	43	29
Mercury	0.1	mg/kg	< 0.1	0.1	< 0.1	< 0.1
Nickel	5	mg/kg	10	50	13	50
Zinc	5	mg/kg	110	180	95	140
Sample Properties						
% Moisture	1	%	8.9	9.3	8.5	13

Client Sample ID			TP03 - 0.1	TP03 - 0.5	TP04 - 0.1	TP04 - 1.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			R24-Ma0067437	R24-Ma0067438	R24-Ma0067439	R24-Ma0067440
Date Sampled			Mar 25, 2024	Mar 25, 2024	Mar 25, 2024	Mar 25, 2024
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	< 50
TRH C10-C36 (Total)	50	mg/kg	< 50	< 50	< 50	< 50

Client Sample ID			TP03 - 0.1	TP03 - 0.5	TP04 - 0.1	TP04 - 1.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			R24-Ma0067437	R24-Ma0067438	R24-Ma0067439	R24-Ma0067440
Date Sampled			Mar 25, 2024	Mar 25, 2024	Mar 25, 2024	Mar 25, 2024
Test/Reference	LOR	Unit				
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total*	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	110	87	79	92
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50	< 50	< 50
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20	< 20
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	60	62	71	73
p-Terphenyl-d14 (surr.)	1	%	57	61	78	80
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
4.4'-DDD	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
4.4'-DDE	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
4.4'-DDT	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
a-HCH	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Aldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
b-HCH	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
d-HCH	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Dieldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan I	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan II	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan sulphate	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05

Client Sample ID			TP03 - 0.1	TP03 - 0.5	TP04 - 0.1	TP04 - 1.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			R24-Ma0067437	R24-Ma0067438	R24-Ma0067439	R24-Ma0067440
Date Sampled			Mar 25, 2024	Mar 25, 2024	Mar 25, 2024	Mar 25, 2024
Test/Reference	LOR	Unit				
Organochlorine Pesticides						
Endrin aldehyde	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin ketone	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
g-HCH (Lindane)	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Heptachlor	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Heptachlor epoxide	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Hexachlorobenzene	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Methoxychlor	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Toxaphene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aldrin and Dieldrin (Total)*	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
DDT + DDE + DDD (Total)*	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Dibutylchlorendate (surr.)	1	%	69	54	85	80
Tetrachloro-m-xylene (surr.)	1	%	73	65	77	80
Polychlorinated Biphenyls						
Aroclor-1016	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Aroclor-1221	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Aroclor-1232	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Aroclor-1242	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Aroclor-1248	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Aroclor-1254	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Aroclor-1260	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Total PCB*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Dibutylchlorendate (surr.)	1	%	69	54	85	80
Tetrachloro-m-xylene (surr.)	1	%	73	65	77	80
Phenols (Halogenated)						
2-Chlorophenol	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2.4-Dichlorophenol	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2.4.5-Trichlorophenol	1	mg/kg	< 1	< 1	< 1	< 1
2.4.6-Trichlorophenol	1	mg/kg	< 1	< 1	< 1	< 1
2.6-Dichlorophenol	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
4-Chloro-3-methylphenol	1	mg/kg	< 1	< 1	< 1	< 1
Pentachlorophenol	1	mg/kg	< 1	< 1	< 1	< 1
Tetrachlorophenols - Total	10	mg/kg	< 10	< 10	< 10	< 10
Total Halogenated Phenol*	1	mg/kg	< 1	< 1	< 1	< 1
Phenols (non-Halogenated)						
2-Cyclohexyl-4.6-dinitrophenol	20	mg/kg	< 20	< 20	< 20	< 20
2-Methyl-4.6-dinitrophenol	5	mg/kg	< 5	< 5	< 5	< 5
2-Nitrophenol	1	mg/kg	< 1	< 1	< 1	< 1
2.4-Dimethylphenol	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2.4-Dinitrophenol	5	mg/kg	< 5	< 5	< 5	< 5
2-Methylphenol (o-Cresol)	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
3&4-Methylphenol (m&p-Cresol)	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Total cresols*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
4-Nitrophenol	5	mg/kg	< 5	< 5	< 5	< 5
Dinoseb	20	mg/kg	< 20	< 20	< 20	< 20
Phenol	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenol-d6 (surr.)	1	%	55	62	68	72
Total Non-Halogenated Phenol*	20	mg/kg	< 20	< 20	< 20	< 20

Client Sample ID			TP03 - 0.1	TP03 - 0.5	TP04 - 0.1	TP04 - 1.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			R24-Ma0067437	R24-Ma0067438	R24-Ma0067439	R24-Ma0067440
Date Sampled			Mar 25, 2024	Mar 25, 2024	Mar 25, 2024	Mar 25, 2024
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C10-C40 (total)*	100	mg/kg	< 100	< 100	< 100	< 100
Metals M8						
Arsenic	2	mg/kg	39	40	54	26
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	84	92	94	43
Copper	5	mg/kg	31	15	27	38
Lead	5	mg/kg	120	42	87	54
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	11	9.5	18	34
Zinc	5	mg/kg	360	29	59	120
Sample Properties						
% Moisture	1	%	9.4	6.3	9.9	12
Organophosphorus Pesticides						
Azinphos-methyl	0.2	mg/kg	-	< 0.2	-	-
Bolstar	0.2	mg/kg	-	< 0.2	-	-
Chlorfenvinphos	0.2	mg/kg	-	< 0.2	-	-
Chlorpyrifos	0.2	mg/kg	-	< 0.2	-	-
Chlorpyrifos-methyl	0.2	mg/kg	-	< 0.2	-	-
Coumaphos	2	mg/kg	-	< 2	-	-
Demeton-S	0.2	mg/kg	-	< 0.2	-	-
Demeton-O	0.2	mg/kg	-	< 0.2	-	-
Diazinon	0.2	mg/kg	-	< 0.2	-	-
Dichlorvos	0.2	mg/kg	-	< 0.2	-	-
Dimethoate	0.2	mg/kg	-	< 0.2	-	-
Disulfoton	0.2	mg/kg	-	< 0.2	-	-
EPN	0.2	mg/kg	-	< 0.2	-	-
Ethion	0.2	mg/kg	-	< 0.2	-	-
Ethoprop	0.2	mg/kg	-	< 0.2	-	-
Ethyl parathion	0.2	mg/kg	-	< 0.2	-	-
Fenitrothion	0.2	mg/kg	-	< 0.2	-	-
Fensulfothion	0.2	mg/kg	-	< 0.2	-	-
Fenthion	0.2	mg/kg	-	< 0.2	-	-
Malathion	0.2	mg/kg	-	< 0.2	-	-
Merphos	0.2	mg/kg	-	< 0.2	-	-
Methyl parathion	0.2	mg/kg	-	< 0.2	-	-
Mevinphos	0.2	mg/kg	-	< 0.2	-	-
Monocrotophos	2	mg/kg	-	< 2	-	-
Naled	0.2	mg/kg	-	< 0.2	-	-
Omethoate	2	mg/kg	-	< 2	-	-
Phorate	0.2	mg/kg	-	< 0.2	-	-
Pirimiphos-methyl	0.2	mg/kg	-	< 0.2	-	-
Pyrazophos	0.2	mg/kg	-	< 0.2	-	-
Ronnel	0.2	mg/kg	-	< 0.2	-	-
Terbufos	0.2	mg/kg	-	< 0.2	-	-
Tetrachlorvinphos	0.2	mg/kg	-	< 0.2	-	-
Tokuthion	0.2	mg/kg	-	< 0.2	-	-

Client Sample ID			TP03 - 0.1	TP03 - 0.5	TP04 - 0.1	TP04 - 1.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			R24-Ma0067437	R24-Ma0067438	R24-Ma0067439	R24-Ma0067440
Date Sampled			Mar 25, 2024	Mar 25, 2024	Mar 25, 2024	Mar 25, 2024
Test/Reference	LOR	Unit				
Organophosphorus Pesticides						
Trichloronate	0.2	mg/kg	-	< 0.2	-	-
Triphenylphosphate (surr.)	1	%	-	67	-	-

Client Sample ID			TP05 - 0.5	TP06 - 0.1	TP07 - 0.1	[G01]TP08 - 0.1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			R24-Ma0067441	R24-Ma0067442	R24-Ma0067443	R24-Ma0067444
Date Sampled			Mar 25, 2024	Mar 25, 2024	Mar 25, 2024	Mar 25, 2024
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	-	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	-	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	-	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	-	< 50	< 50	79
TRH C10-C36 (Total)	50	mg/kg	-	< 50	< 50	79
BTEX						
Benzene	0.1	mg/kg	-	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	-	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	-	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	-	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	-	< 0.1	< 0.1	< 0.1
Xylenes - Total*	0.3	mg/kg	-	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	-	95	113	71
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	-	< 50	< 50	< 50
TRH C6-C10	20	mg/kg	-	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	-	< 20	< 20	< 20
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	-	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	-	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5

Client Sample ID			TP05 - 0.5	TP06 - 0.1	TP07 - 0.1	[G01]TP08 - 0.1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			R24-Ma0067441	R24-Ma0067442	R24-Ma0067443	R24-Ma0067444
Date Sampled			Mar 25, 2024	Mar 25, 2024	Mar 25, 2024	Mar 25, 2024
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Total PAH*	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	-	77	50	65
p-Terphenyl-d14 (surr.)	1	%	-	76	INT	62
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	-	< 0.1	< 0.1	< 1
4.4'-DDD	0.05	mg/kg	-	< 0.05	< 0.05	< 0.5
4.4'-DDE	0.05	mg/kg	-	< 0.05	< 0.05	< 0.5
4.4'-DDT	0.05	mg/kg	-	< 0.05	< 0.05	< 0.5
a-HCH	0.05	mg/kg	-	< 0.05	< 0.05	< 0.5
Aldrin	0.05	mg/kg	-	< 0.05	< 0.05	< 0.5
b-HCH	0.05	mg/kg	-	< 0.05	< 0.05	< 0.5
d-HCH	0.05	mg/kg	-	< 0.05	< 0.05	< 0.5
Dieldrin	0.05	mg/kg	-	< 0.05	< 0.05	< 0.5
Endosulfan I	0.05	mg/kg	-	< 0.05	< 0.05	< 0.5
Endosulfan II	0.05	mg/kg	-	< 0.05	< 0.05	< 0.5
Endosulfan sulphate	0.05	mg/kg	-	< 0.05	< 0.05	< 0.5
Endrin	0.05	mg/kg	-	< 0.05	< 0.05	< 0.5
Endrin aldehyde	0.05	mg/kg	-	< 0.05	< 0.05	< 0.5
Endrin ketone	0.05	mg/kg	-	< 0.05	< 0.05	< 0.5
g-HCH (Lindane)	0.05	mg/kg	-	< 0.05	< 0.05	< 0.5
Heptachlor	0.05	mg/kg	-	< 0.05	< 0.05	< 0.5
Heptachlor epoxide	0.05	mg/kg	-	< 0.05	< 0.05	< 0.5
Hexachlorobenzene	0.05	mg/kg	-	< 0.05	< 0.05	< 0.5
Methoxychlor	0.05	mg/kg	-	< 0.05	< 0.05	< 0.5
Toxaphene	0.5	mg/kg	-	< 0.5	< 0.5	< 10
Aldrin and Dieldrin (Total)*	0.05	mg/kg	-	< 0.05	< 0.05	< 0.5
DDT + DDE + DDD (Total)*	0.05	mg/kg	-	< 0.05	< 0.05	< 0.5
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	-	< 0.1	< 0.1	< 1
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	-	< 0.1	< 0.1	< 1
Dibutylchlorendate (surr.)	1	%	-	89	56	117
Tetrachloro-m-xylene (surr.)	1	%	-	79	52	59
Polychlorinated Biphenyls						
Aroclor-1016	0.1	mg/kg	-	< 0.1	< 0.1	< 1
Aroclor-1221	0.1	mg/kg	-	< 0.1	< 0.1	< 1
Aroclor-1232	0.1	mg/kg	-	< 0.1	< 0.1	< 1
Aroclor-1242	0.1	mg/kg	-	< 0.1	< 0.1	< 1
Aroclor-1248	0.1	mg/kg	-	< 0.1	< 0.1	< 1
Aroclor-1254	0.1	mg/kg	-	< 0.1	< 0.1	< 1
Aroclor-1260	0.1	mg/kg	-	< 0.1	< 0.1	< 1
Total PCB*	0.1	mg/kg	-	< 0.1	< 0.1	< 1
Dibutylchlorendate (surr.)	1	%	-	89	56	117
Tetrachloro-m-xylene (surr.)	1	%	-	79	52	59
Phenols (Halogenated)						
2-Chlorophenol	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
2.4-Dichlorophenol	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
2.4.5-Trichlorophenol	1	mg/kg	-	< 1	< 1	< 1
2.4.6-Trichlorophenol	1	mg/kg	-	< 1	< 1	< 1
2.6-Dichlorophenol	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
4-Chloro-3-methylphenol	1	mg/kg	-	< 1	< 1	< 1

Client Sample ID			TP05 - 0.5	TP06 - 0.1	TP07 - 0.1	[G01]TP08 - 0.1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			R24-Ma0067441	R24-Ma0067442	R24-Ma0067443	R24-Ma0067444
Date Sampled			Mar 25, 2024	Mar 25, 2024	Mar 25, 2024	Mar 25, 2024
Test/Reference	LOR	Unit				
Phenols (Halogenated)						
Pentachlorophenol	1	mg/kg	-	< 1	< 1	< 1
Tetrachlorophenols - Total	10	mg/kg	-	< 10	< 10	< 10
Total Halogenated Phenol*	1	mg/kg	-	< 1	< 1	< 1
Phenols (non-Halogenated)						
2-Cyclohexyl-4.6-dinitrophenol	20	mg/kg	-	< 20	< 20	< 20
2-Methyl-4.6-dinitrophenol	5	mg/kg	-	< 5	< 5	< 5
2-Nitrophenol	1	mg/kg	-	< 1	< 1	< 1
2.4-Dimethylphenol	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
2.4-Dinitrophenol	5	mg/kg	-	< 5	< 5	< 5
2-Methylphenol (o-Cresol)	0.2	mg/kg	-	< 0.2	< 0.2	< 0.5
3&4-Methylphenol (m&p-Cresol)	0.4	mg/kg	-	< 0.4	< 0.4	< 1
Total cresols*	0.5	mg/kg	-	< 0.5	< 0.5	< 1
4-Nitrophenol	5	mg/kg	-	< 5	< 5	< 5
Dinoseb	20	mg/kg	-	< 20	< 20	< 20
Phenol	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
Phenol-d6 (surr.)	1	%	-	72	INT	INT
Total Non-Halogenated Phenol*	20	mg/kg	-	< 20	< 20	< 20
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	50	mg/kg	-	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	-	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	-	< 100	< 100	< 100
TRH >C10-C40 (total)*	100	mg/kg	-	< 100	< 100	< 100
Metals M8						
Arsenic	2	mg/kg	62	23	19	58
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	68	42	41	91
Copper	5	mg/kg	33	24	18	27
Lead	5	mg/kg	45	55	40	120
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	26	27	14	15
Zinc	5	mg/kg	45	170	86	250
Sample Properties						
% Moisture	1	%	15	10	6.0	6.5
Organophosphorus Pesticides						
Azinphos-methyl	0.2	mg/kg	-	-	-	< 0.5
Bolstar	0.2	mg/kg	-	-	-	< 0.5
Chlorfenvinphos	0.2	mg/kg	-	-	-	< 0.5
Chlorpyrifos	0.2	mg/kg	-	-	-	< 0.5
Chlorpyrifos-methyl	0.2	mg/kg	-	-	-	< 0.5
Coumaphos	2	mg/kg	-	-	-	< 5
Demeton-S	0.2	mg/kg	-	-	-	< 0.5
Demeton-O	0.2	mg/kg	-	-	-	< 0.5
Diazinon	0.2	mg/kg	-	-	-	< 0.5
Dichlorvos	0.2	mg/kg	-	-	-	< 0.5
Dimethoate	0.2	mg/kg	-	-	-	< 0.5
Disulfoton	0.2	mg/kg	-	-	-	< 0.5
EPN	0.2	mg/kg	-	-	-	< 0.5
Ethion	0.2	mg/kg	-	-	-	< 0.5

Client Sample ID			TP05 - 0.5	TP06 - 0.1	TP07 - 0.1	[G01]TP08 - 0.1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			R24-Ma0067441	R24-Ma0067442	R24-Ma0067443	R24-Ma0067444
Date Sampled			Mar 25, 2024	Mar 25, 2024	Mar 25, 2024	Mar 25, 2024
Test/Reference	LOR	Unit				
Organophosphorus Pesticides						
Ethoprop	0.2	mg/kg	-	-	-	< 0.5
Ethyl parathion	0.2	mg/kg	-	-	-	< 0.5
Fenitrothion	0.2	mg/kg	-	-	-	< 0.5
Fensulfothion	0.2	mg/kg	-	-	-	< 0.5
Fenthion	0.2	mg/kg	-	-	-	< 0.5
Malathion	0.2	mg/kg	-	-	-	< 0.5
Merphos	0.2	mg/kg	-	-	-	< 0.5
Methyl parathion	0.2	mg/kg	-	-	-	< 0.5
Mevinphos	0.2	mg/kg	-	-	-	< 0.5
Monocrotophos	2	mg/kg	-	-	-	< 5
Naled	0.2	mg/kg	-	-	-	< 0.5
Omethoate	2	mg/kg	-	-	-	< 5
Phorate	0.2	mg/kg	-	-	-	< 0.5
Pirimiphos-methyl	0.2	mg/kg	-	-	-	< 0.5
Pyrazophos	0.2	mg/kg	-	-	-	< 0.5
Ronnel	0.2	mg/kg	-	-	-	< 0.5
Terbufos	0.2	mg/kg	-	-	-	< 0.5
Tetrachlorvinphos	0.2	mg/kg	-	-	-	< 0.5
Tokuthion	0.2	mg/kg	-	-	-	< 0.5
Trichloronate	0.2	mg/kg	-	-	-	< 0.5
Triphenylphosphate (surr.)	1	%	-	-	-	62

Client Sample ID			TP08 - 0.5	TP08 - 1.5	TP10 - 0.1	TP11 - 0.1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			R24-Ma0067445	R24-Ma0067446	R24-Ma0067447	R24-Ma0067448
Date Sampled			Mar 25, 2024	Mar 25, 2024	Mar 25, 2024	Mar 25, 2024
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	-	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	-	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	-	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	-	< 50	< 50
TRH C10-C36 (Total)	50	mg/kg	< 50	-	< 50	< 50
BTEX						
Benzene	0.1	mg/kg	< 0.1	-	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	-	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	-	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	-	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	-	< 0.1	< 0.1
Xylenes - Total*	0.3	mg/kg	< 0.3	-	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	80	-	87	121
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	-	< 0.5	< 0.5
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	-	< 50	< 50
TRH C6-C10	20	mg/kg	< 20	-	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	-	< 20	< 20

Client Sample ID			TP08 - 0.5	TP08 - 1.5	TP10 - 0.1	TP11 - 0.1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			R24-Ma0067445	R24-Ma0067446	R24-Ma0067447	R24-Ma0067448
Date Sampled			Mar 25, 2024	Mar 25, 2024	Mar 25, 2024	Mar 25, 2024
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	-	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	-	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	-	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	-	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	-	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	-	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	-	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	-	< 0.5	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	-	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	-	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	-	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	-	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	-	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	-	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	-	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	-	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	-	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	-	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	-	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	-	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	63	-	66	73
p-Terphenyl-d14 (surr.)	1	%	63	-	72	78
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	< 0.1	-	< 0.1	< 0.1
4.4'-DDD	0.05	mg/kg	< 0.05	-	< 0.05	< 0.05
4.4'-DDE	0.05	mg/kg	< 0.05	-	< 0.05	< 0.05
4.4'-DDT	0.05	mg/kg	< 0.05	-	< 0.05	< 0.05
a-HCH	0.05	mg/kg	< 0.05	-	< 0.05	< 0.05
Aldrin	0.05	mg/kg	< 0.05	-	< 0.05	< 0.05
b-HCH	0.05	mg/kg	< 0.05	-	< 0.05	< 0.05
d-HCH	0.05	mg/kg	< 0.05	-	< 0.05	< 0.05
Dieldrin	0.05	mg/kg	< 0.05	-	< 0.05	< 0.05
Endosulfan I	0.05	mg/kg	< 0.05	-	< 0.05	< 0.05
Endosulfan II	0.05	mg/kg	< 0.05	-	< 0.05	< 0.05
Endosulfan sulphate	0.05	mg/kg	< 0.05	-	< 0.05	< 0.05
Endrin	0.05	mg/kg	< 0.05	-	< 0.05	< 0.05
Endrin aldehyde	0.05	mg/kg	< 0.05	-	< 0.05	< 0.05
Endrin ketone	0.05	mg/kg	< 0.05	-	< 0.05	< 0.05
g-HCH (Lindane)	0.05	mg/kg	< 0.05	-	< 0.05	< 0.05
Heptachlor	0.05	mg/kg	< 0.05	-	< 0.05	< 0.05
Heptachlor epoxide	0.05	mg/kg	< 0.05	-	< 0.05	< 0.05
Hexachlorobenzene	0.05	mg/kg	< 0.05	-	< 0.05	< 0.05
Methoxychlor	0.05	mg/kg	< 0.05	-	< 0.05	< 0.05
Toxaphene	0.5	mg/kg	< 0.5	-	< 0.5	< 0.5
Aldrin and Dieldrin (Total)*	0.05	mg/kg	< 0.05	-	< 0.05	< 0.05
DDT + DDE + DDD (Total)*	0.05	mg/kg	< 0.05	-	< 0.05	< 0.05
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	< 0.1	-	< 0.1	< 0.1
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	< 0.1	-	< 0.1	< 0.1
Dibutylchlorendate (surr.)	1	%	67	-	74	72
Tetrachloro-m-xylene (surr.)	1	%	67	-	73	77

Client Sample ID			TP08 - 0.5	TP08 - 1.5	TP10 - 0.1	TP11 - 0.1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			R24-Ma0067445	R24-Ma0067446	R24-Ma0067447	R24-Ma0067448
Date Sampled			Mar 25, 2024	Mar 25, 2024	Mar 25, 2024	Mar 25, 2024
Test/Reference	LOR	Unit				
Polychlorinated Biphenyls						
Aroclor-1016	0.1	mg/kg	< 0.1	-	< 0.1	< 0.1
Aroclor-1221	0.1	mg/kg	< 0.1	-	< 0.1	< 0.1
Aroclor-1232	0.1	mg/kg	< 0.1	-	< 0.1	< 0.1
Aroclor-1242	0.1	mg/kg	< 0.1	-	< 0.1	< 0.1
Aroclor-1248	0.1	mg/kg	< 0.1	-	< 0.1	< 0.1
Aroclor-1254	0.1	mg/kg	< 0.1	-	< 0.1	< 0.1
Aroclor-1260	0.1	mg/kg	< 0.1	-	< 0.1	< 0.1
Total PCB*	0.1	mg/kg	< 0.1	-	< 0.1	< 0.1
Dibutylchlorendate (surr.)	1	%	67	-	74	72
Tetrachloro-m-xylene (surr.)	1	%	67	-	73	77
Phenols (Halogenated)						
2-Chlorophenol	0.5	mg/kg	< 0.5	-	< 0.5	< 0.5
2.4-Dichlorophenol	0.5	mg/kg	< 0.5	-	< 0.5	< 0.5
2.4.5-Trichlorophenol	1	mg/kg	< 1	-	< 1	< 1
2.4.6-Trichlorophenol	1	mg/kg	< 1	-	< 1	< 1
2.6-Dichlorophenol	0.5	mg/kg	< 0.5	-	< 0.5	< 0.5
4-Chloro-3-methylphenol	1	mg/kg	< 1	-	< 1	< 1
Pentachlorophenol	1	mg/kg	< 1	-	< 1	< 1
Tetrachlorophenols - Total	10	mg/kg	< 10	-	< 10	< 10
Total Halogenated Phenol*	1	mg/kg	< 1	-	< 1	< 1
Phenols (non-Halogenated)						
2-Cyclohexyl-4.6-dinitrophenol	20	mg/kg	< 20	-	< 20	< 20
2-Methyl-4.6-dinitrophenol	5	mg/kg	< 5	-	< 5	< 5
2-Nitrophenol	1	mg/kg	< 1	-	< 1	< 1
2.4-Dimethylphenol	0.5	mg/kg	< 0.5	-	< 0.5	< 0.5
2.4-Dinitrophenol	5	mg/kg	< 5	-	< 5	< 5
2-Methylphenol (o-Cresol)	0.2	mg/kg	< 0.2	-	< 0.2	< 0.2
3&4-Methylphenol (m&p-Cresol)	0.4	mg/kg	< 0.4	-	< 0.4	< 0.4
Total cresols*	0.5	mg/kg	< 0.5	-	< 0.5	< 0.5
4-Nitrophenol	5	mg/kg	< 5	-	< 5	< 5
Dinoseb	20	mg/kg	< 20	-	< 20	< 20
Phenol	0.5	mg/kg	< 0.5	-	< 0.5	< 0.5
Phenol-d6 (surr.)	1	%	63	-	68	67
Total Non-Halogenated Phenol*	20	mg/kg	< 20	-	< 20	< 20
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	50	mg/kg	< 50	-	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	-	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	-	< 100	< 100
TRH >C10-C40 (total)*	100	mg/kg	< 100	-	< 100	< 100
Metals M8						
Arsenic	2	mg/kg	49	23	36	26
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	67	34	60	48
Copper	5	mg/kg	40	14	25	28
Lead	5	mg/kg	45	23	37	40
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	35	9.1	23	20
Zinc	5	mg/kg	43	30	98	66

Client Sample ID			TP08 - 0.5	TP08 - 1.5	TP10 - 0.1	TP11 - 0.1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			R24-Ma0067445	R24-Ma0067446	R24-Ma0067447	R24-Ma0067448
Date Sampled			Mar 25, 2024	Mar 25, 2024	Mar 25, 2024	Mar 25, 2024
Test/Reference	LOR	Unit				
Sample Properties						
% Moisture	1	%	17	12	12	13
Organophosphorus Pesticides						
Azinphos-methyl	0.2	mg/kg	-	-	< 0.2	-
Bolstar	0.2	mg/kg	-	-	< 0.2	-
Chlorfenvinphos	0.2	mg/kg	-	-	< 0.2	-
Chlorpyrifos	0.2	mg/kg	-	-	< 0.2	-
Chlorpyrifos-methyl	0.2	mg/kg	-	-	< 0.2	-
Coumaphos	2	mg/kg	-	-	< 2	-
Demeton-S	0.2	mg/kg	-	-	< 0.2	-
Demeton-O	0.2	mg/kg	-	-	< 0.2	-
Diazinon	0.2	mg/kg	-	-	< 0.2	-
Dichlorvos	0.2	mg/kg	-	-	< 0.2	-
Dimethoate	0.2	mg/kg	-	-	< 0.2	-
Disulfoton	0.2	mg/kg	-	-	< 0.2	-
EPN	0.2	mg/kg	-	-	< 0.2	-
Ethion	0.2	mg/kg	-	-	< 0.2	-
Ethoprop	0.2	mg/kg	-	-	< 0.2	-
Ethyl parathion	0.2	mg/kg	-	-	< 0.2	-
Fenitrothion	0.2	mg/kg	-	-	< 0.2	-
Fensulfothion	0.2	mg/kg	-	-	< 0.2	-
Fenthion	0.2	mg/kg	-	-	< 0.2	-
Malathion	0.2	mg/kg	-	-	< 0.2	-
Merphos	0.2	mg/kg	-	-	< 0.2	-
Methyl parathion	0.2	mg/kg	-	-	< 0.2	-
Mevinphos	0.2	mg/kg	-	-	< 0.2	-
Monocrotophos	2	mg/kg	-	-	< 2	-
Naled	0.2	mg/kg	-	-	< 0.2	-
Omethoate	2	mg/kg	-	-	< 2	-
Phorate	0.2	mg/kg	-	-	< 0.2	-
Pirimiphos-methyl	0.2	mg/kg	-	-	< 0.2	-
Pyrazophos	0.2	mg/kg	-	-	< 0.2	-
Ronnel	0.2	mg/kg	-	-	< 0.2	-
Terbufos	0.2	mg/kg	-	-	< 0.2	-
Tetrachlorvinphos	0.2	mg/kg	-	-	< 0.2	-
Tokuthion	0.2	mg/kg	-	-	< 0.2	-
Trichloronate	0.2	mg/kg	-	-	< 0.2	-
Triphenylphosphate (surr.)	1	%	-	-	80	-

Client Sample ID			TP11 - 1.0	[G01]TP13 - 0.1	TP14 - 0.1	TP15 - 0.1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			R24-Ma0067449	R24-Ma0067450	R24-Ma0067451	R24-Ma0067452
Date Sampled			Mar 25, 2024	Mar 25, 2024	Mar 25, 2024	Mar 26, 2024
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	-	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	-	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	-	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	-	< 50	< 50	65
TRH C10-C36 (Total)	50	mg/kg	-	< 50	< 50	65
BTEX						
Benzene	0.1	mg/kg	-	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	-	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	-	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	-	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	-	< 0.1	< 0.1	< 0.1
Xylenes - Total*	0.3	mg/kg	-	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	-	85	106	88
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	-	< 50	< 50	< 50
TRH C6-C10	20	mg/kg	-	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	-	< 20	< 20	< 20
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	-	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	-	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	-	86	60	84
p-Terphenyl-d14 (surr.)	1	%	-	93	58	84
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	-	< 1	< 0.1	< 0.1
4.4'-DDD	0.05	mg/kg	-	< 0.5	< 0.05	< 0.05
4.4'-DDE	0.05	mg/kg	-	< 0.5	< 0.05	< 0.05
4.4'-DDT	0.05	mg/kg	-	< 0.5	< 0.05	< 0.05
a-HCH	0.05	mg/kg	-	< 0.5	< 0.05	< 0.05
Aldrin	0.05	mg/kg	-	< 0.5	< 0.05	< 0.05

Client Sample ID			TP11 - 1.0	[G01]TP13 - 0.1	TP14 - 0.1	TP15 - 0.1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			R24-Ma0067449	R24-Ma0067450	R24-Ma0067451	R24-Ma0067452
Date Sampled			Mar 25, 2024	Mar 25, 2024	Mar 25, 2024	Mar 26, 2024
Test/Reference	LOR	Unit				
Organochlorine Pesticides						
b-HCH	0.05	mg/kg	-	< 0.5	< 0.05	< 0.05
d-HCH	0.05	mg/kg	-	< 0.5	< 0.05	< 0.05
Dieldrin	0.05	mg/kg	-	< 0.5	< 0.05	< 0.05
Endosulfan I	0.05	mg/kg	-	< 0.5	< 0.05	< 0.05
Endosulfan II	0.05	mg/kg	-	< 0.5	< 0.05	< 0.05
Endosulfan sulphate	0.05	mg/kg	-	< 0.5	< 0.05	< 0.05
Endrin	0.05	mg/kg	-	< 0.5	< 0.05	< 0.05
Endrin aldehyde	0.05	mg/kg	-	< 0.5	< 0.05	< 0.05
Endrin ketone	0.05	mg/kg	-	< 0.5	< 0.05	< 0.05
g-HCH (Lindane)	0.05	mg/kg	-	< 0.5	< 0.05	< 0.05
Heptachlor	0.05	mg/kg	-	< 0.5	< 0.05	< 0.05
Heptachlor epoxide	0.05	mg/kg	-	< 0.5	< 0.05	< 0.05
Hexachlorobenzene	0.05	mg/kg	-	< 0.5	< 0.05	< 0.05
Methoxychlor	0.05	mg/kg	-	< 0.5	< 0.05	< 0.05
Toxaphene	0.5	mg/kg	-	< 10	< 0.5	< 0.5
Aldrin and Dieldrin (Total)*	0.05	mg/kg	-	< 0.5	< 0.05	< 0.05
DDT + DDE + DDD (Total)*	0.05	mg/kg	-	< 0.5	< 0.05	< 0.05
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	-	< 1	< 0.1	< 0.1
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	-	< 1	< 0.1	< 0.1
Dibutylchlorendate (surr.)	1	%	-	106	74	91
Tetrachloro-m-xylene (surr.)	1	%	-	70	65	88
Polychlorinated Biphenyls						
Aroclor-1016	0.1	mg/kg	-	< 1	< 0.1	< 0.1
Aroclor-1221	0.1	mg/kg	-	< 1	< 0.1	< 0.1
Aroclor-1232	0.1	mg/kg	-	< 1	< 0.1	< 0.1
Aroclor-1242	0.1	mg/kg	-	< 1	< 0.1	< 0.1
Aroclor-1248	0.1	mg/kg	-	< 1	< 0.1	< 0.1
Aroclor-1254	0.1	mg/kg	-	< 1	< 0.1	< 0.1
Aroclor-1260	0.1	mg/kg	-	< 1	< 0.1	< 0.1
Total PCB*	0.1	mg/kg	-	< 1	< 0.1	< 0.1
Dibutylchlorendate (surr.)	1	%	-	106	74	91
Tetrachloro-m-xylene (surr.)	1	%	-	70	65	88
Phenols (Halogenated)						
2-Chlorophenol	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
2.4-Dichlorophenol	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
2.4.5-Trichlorophenol	1	mg/kg	-	< 1	< 1	< 1
2.4.6-Trichlorophenol	1	mg/kg	-	< 1	< 1	< 1
2.6-Dichlorophenol	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
4-Chloro-3-methylphenol	1	mg/kg	-	< 1	< 1	< 1
Pentachlorophenol	1	mg/kg	-	< 1	< 1	< 1
Tetrachlorophenols - Total	10	mg/kg	-	< 10	< 10	< 10
Total Halogenated Phenol*	1	mg/kg	-	< 1	< 1	< 1
Phenols (non-Halogenated)						
2-Cyclohexyl-4.6-dinitrophenol	20	mg/kg	-	< 20	< 20	< 20
2-Methyl-4.6-dinitrophenol	5	mg/kg	-	< 5	< 5	< 5
2-Nitrophenol	1	mg/kg	-	< 1	< 1	< 1
2.4-Dimethylphenol	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
2.4-Dinitrophenol	5	mg/kg	-	< 5	< 5	< 5
2-Methylphenol (o-Cresol)	0.2	mg/kg	-	< 0.5	< 0.2	< 0.2

Client Sample ID			TP11 - 1.0	[G01]TP13 - 0.1	TP14 - 0.1	TP15 - 0.1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			R24-Ma0067449	R24-Ma0067450	R24-Ma0067451	R24-Ma0067452
Date Sampled			Mar 25, 2024	Mar 25, 2024	Mar 25, 2024	Mar 26, 2024
Test/Reference	LOR	Unit				
Phenols (non-Halogenated)						
3&4-Methylphenol (m&p-Cresol)	0.4	mg/kg	-	< 1	< 0.4	< 0.4
Total cresols*	0.5	mg/kg	-	< 1	< 0.5	< 0.5
4-Nitrophenol	5	mg/kg	-	< 5	< 5	< 5
Dinoseb	20	mg/kg	-	< 20	< 20	< 20
Phenol	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
Phenol-d6 (surr.)	1	%	-	INT	58	65
Total Non-Halogenated Phenol*	20	mg/kg	-	< 20	< 20	< 20
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	50	mg/kg	-	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	-	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	-	< 100	< 100	< 100
TRH >C10-C40 (total)*	100	mg/kg	-	< 100	< 100	< 100
Metals M8						
Arsenic	2	mg/kg	33	250	49	45
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	40	40	75	63
Copper	5	mg/kg	30	39	30	24
Lead	5	mg/kg	55	70	53	170
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	26	12	24	13
Zinc	5	mg/kg	69	200	63	180
Sample Properties						
% Moisture	1	%	8.3	10	14	7.4
Organophosphorus Pesticides						
Azinphos-methyl	0.2	mg/kg	-	-	< 0.2	-
Bolstar	0.2	mg/kg	-	-	< 0.2	-
Chlorfenvinphos	0.2	mg/kg	-	-	< 0.2	-
Chlorpyrifos	0.2	mg/kg	-	-	< 0.2	-
Chlorpyrifos-methyl	0.2	mg/kg	-	-	< 0.2	-
Coumaphos	2	mg/kg	-	-	< 2	-
Demeton-S	0.2	mg/kg	-	-	< 0.2	-
Demeton-O	0.2	mg/kg	-	-	< 0.2	-
Diazinon	0.2	mg/kg	-	-	< 0.2	-
Dichlorvos	0.2	mg/kg	-	-	< 0.2	-
Dimethoate	0.2	mg/kg	-	-	< 0.2	-
Disulfoton	0.2	mg/kg	-	-	< 0.2	-
EPN	0.2	mg/kg	-	-	< 0.2	-
Ethion	0.2	mg/kg	-	-	< 0.2	-
Ethoprop	0.2	mg/kg	-	-	< 0.2	-
Ethyl parathion	0.2	mg/kg	-	-	< 0.2	-
Fenitrothion	0.2	mg/kg	-	-	< 0.2	-
Fensulfothion	0.2	mg/kg	-	-	< 0.2	-
Fenthion	0.2	mg/kg	-	-	< 0.2	-
Malathion	0.2	mg/kg	-	-	< 0.2	-
Merphos	0.2	mg/kg	-	-	< 0.2	-
Methyl parathion	0.2	mg/kg	-	-	< 0.2	-
Mevinphos	0.2	mg/kg	-	-	< 0.2	-
Monocrotophos	2	mg/kg	-	-	< 2	-

Client Sample ID			TP11 - 1.0	[G01]TP13 - 0.1	TP14 - 0.1	TP15 - 0.1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			R24-Ma0067449	R24-Ma0067450	R24-Ma0067451	R24-Ma0067452
Date Sampled			Mar 25, 2024	Mar 25, 2024	Mar 25, 2024	Mar 26, 2024
Test/Reference	LOR	Unit				
Organophosphorus Pesticides						
Naled	0.2	mg/kg	-	-	< 0.2	-
Omethoate	2	mg/kg	-	-	< 2	-
Phorate	0.2	mg/kg	-	-	< 0.2	-
Pirimiphos-methyl	0.2	mg/kg	-	-	< 0.2	-
Pyrazophos	0.2	mg/kg	-	-	< 0.2	-
Ronnel	0.2	mg/kg	-	-	< 0.2	-
Terbufos	0.2	mg/kg	-	-	< 0.2	-
Tetrachlorvinphos	0.2	mg/kg	-	-	< 0.2	-
Tokuthion	0.2	mg/kg	-	-	< 0.2	-
Trichloronate	0.2	mg/kg	-	-	< 0.2	-
Triphenylphosphate (surr.)	1	%	-	-	71	-

Client Sample ID			TP15 - 1.5	TP16 - 0.1	TP19 - 0.1	SS01
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			R24-Ma0067453	R24-Ma0067454	R24-Ma0067456	R24-Ma0067457
Date Sampled			Mar 26, 2024	Mar 26, 2024	Mar 26, 2024	Mar 26, 2024
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	-	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	-	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	-	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	-	< 50	< 50	< 50
TRH C10-C36 (Total)	50	mg/kg	-	< 50	< 50	< 50
BTEX						
Benzene	0.1	mg/kg	-	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	-	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	-	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	-	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	-	< 0.1	< 0.1	< 0.1
Xylenes - Total*	0.3	mg/kg	-	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	-	111	104	82
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	-	< 50	< 50	< 50
TRH C6-C10	20	mg/kg	-	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	-	< 20	< 20	< 20
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	-	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	-	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5

Client Sample ID			TP15 - 1.5	TP16 - 0.1	TP19 - 0.1	SS01
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			R24-Ma0067453	R24-Ma0067454	R24-Ma0067456	R24-Ma0067457
Date Sampled			Mar 26, 2024	Mar 26, 2024	Mar 26, 2024	Mar 26, 2024
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Benzo(k)fluoranthene	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	-	73	65	85
p-Terphenyl-d14 (surr.)	1	%	-	79	59	84
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	-	< 0.1	< 0.1	< 0.1
4.4'-DDD	0.05	mg/kg	-	< 0.05	< 0.05	< 0.05
4.4'-DDE	0.05	mg/kg	-	< 0.05	< 0.05	< 0.05
4.4'-DDT	0.05	mg/kg	-	< 0.05	< 0.05	< 0.05
a-HCH	0.05	mg/kg	-	< 0.05	< 0.05	< 0.05
Aldrin	0.05	mg/kg	-	< 0.05	< 0.05	< 0.05
b-HCH	0.05	mg/kg	-	< 0.05	< 0.05	< 0.05
d-HCH	0.05	mg/kg	-	< 0.05	< 0.05	< 0.05
Dieldrin	0.05	mg/kg	-	< 0.05	< 0.05	< 0.05
Endosulfan I	0.05	mg/kg	-	< 0.05	< 0.05	< 0.05
Endosulfan II	0.05	mg/kg	-	< 0.05	< 0.05	< 0.05
Endosulfan sulphate	0.05	mg/kg	-	< 0.05	< 0.05	< 0.05
Endrin	0.05	mg/kg	-	< 0.05	< 0.05	< 0.05
Endrin aldehyde	0.05	mg/kg	-	< 0.05	< 0.05	< 0.05
Endrin ketone	0.05	mg/kg	-	< 0.05	< 0.05	< 0.05
g-HCH (Lindane)	0.05	mg/kg	-	< 0.05	< 0.05	< 0.05
Heptachlor	0.05	mg/kg	-	< 0.05	< 0.05	< 0.05
Heptachlor epoxide	0.05	mg/kg	-	< 0.05	< 0.05	< 0.05
Hexachlorobenzene	0.05	mg/kg	-	< 0.05	< 0.05	< 0.05
Methoxychlor	0.05	mg/kg	-	< 0.05	< 0.05	< 0.05
Toxaphene	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
Aldrin and Dieldrin (Total)*	0.05	mg/kg	-	< 0.05	< 0.05	< 0.05
DDT + DDE + DDD (Total)*	0.05	mg/kg	-	< 0.05	< 0.05	< 0.05
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	-	< 0.1	< 0.1	< 0.1
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	-	< 0.1	< 0.1	< 0.1
Dibutylchlorendate (surr.)	1	%	-	72	56	86
Tetrachloro-m-xylene (surr.)	1	%	-	79	64	88
Polychlorinated Biphenyls						
Aroclor-1016	0.1	mg/kg	-	< 0.1	< 0.1	< 0.1
Aroclor-1221	0.1	mg/kg	-	< 0.1	< 0.1	< 0.1
Aroclor-1232	0.1	mg/kg	-	< 0.1	< 0.1	< 0.1
Aroclor-1242	0.1	mg/kg	-	< 0.1	< 0.1	< 0.1
Aroclor-1248	0.1	mg/kg	-	< 0.1	< 0.1	< 0.1
Aroclor-1254	0.1	mg/kg	-	< 0.1	< 0.1	< 0.1
Aroclor-1260	0.1	mg/kg	-	< 0.1	< 0.1	< 0.1
Total PCB*	0.1	mg/kg	-	< 0.1	< 0.1	< 0.1

Client Sample ID			TP15 - 1.5	TP16 - 0.1	TP19 - 0.1	SS01
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			R24-Ma0067453	R24-Ma0067454	R24-Ma0067456	R24-Ma0067457
Date Sampled			Mar 26, 2024	Mar 26, 2024	Mar 26, 2024	Mar 26, 2024
Test/Reference	LOR	Unit				
Polychlorinated Biphenyls						
Dibutylchlorendate (surr.)	1	%	-	72	56	86
Tetrachloro-m-xylene (surr.)	1	%	-	79	64	88
Phenols (Halogenated)						
2-Chlorophenol	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
2.4-Dichlorophenol	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
2.4.5-Trichlorophenol	1	mg/kg	-	< 1	< 1	< 1
2.4.6-Trichlorophenol	1	mg/kg	-	< 1	< 1	< 1
2.6-Dichlorophenol	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
4-Chloro-3-methylphenol	1	mg/kg	-	< 1	< 1	< 1
Pentachlorophenol	1	mg/kg	-	< 1	< 1	< 1
Tetrachlorophenols - Total	10	mg/kg	-	< 10	< 10	< 10
Total Halogenated Phenol*	1	mg/kg	-	< 1	< 1	< 1
Phenols (non-Halogenated)						
2-Cyclohexyl-4.6-dinitrophenol	20	mg/kg	-	< 20	< 20	< 20
2-Methyl-4.6-dinitrophenol	5	mg/kg	-	< 5	< 5	< 5
2-Nitrophenol	1	mg/kg	-	< 1	< 1	< 1
2.4-Dimethylphenol	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
2.4-Dinitrophenol	5	mg/kg	-	< 5	< 5	< 5
2-Methylphenol (o-Cresol)	0.2	mg/kg	-	< 0.2	< 0.2	< 0.2
3&4-Methylphenol (m&p-Cresol)	0.4	mg/kg	-	< 0.4	< 0.4	< 0.4
Total cresols*	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
4-Nitrophenol	5	mg/kg	-	< 5	< 5	< 5
Dinoseb	20	mg/kg	-	< 20	< 20	< 20
Phenol	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5
Phenol-d6 (surr.)	1	%	-	70	50	68
Total Non-Halogenated Phenol*	20	mg/kg	-	< 20	< 20	< 20
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	50	mg/kg	-	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	-	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	-	< 100	< 100	< 100
TRH >C10-C40 (total)*	100	mg/kg	-	< 100	< 100	< 100
Metals M8						
Arsenic	2	mg/kg	47	32	15	45
Cadmium	0.4	mg/kg	< 0.4	< 0.4	0.7	< 0.4
Chromium	5	mg/kg	43	40	25	73
Copper	5	mg/kg	22	14	31	30
Lead	5	mg/kg	44	38	140	95
Mercury	0.1	mg/kg	< 0.1	< 0.1	0.1	< 0.1
Nickel	5	mg/kg	16	12	24	11
Zinc	5	mg/kg	54	66	280	130
Sample Properties						
% Moisture	1	%	11	6.6	7.8	5.0
Organophosphorus Pesticides						
Azinphos-methyl	0.2	mg/kg	-	-	-	< 0.2
Bolstar	0.2	mg/kg	-	-	-	< 0.2
Chlorfenvinphos	0.2	mg/kg	-	-	-	< 0.2
Chlorpyrifos	0.2	mg/kg	-	-	-	< 0.2
Chlorpyrifos-methyl	0.2	mg/kg	-	-	-	< 0.2

Client Sample ID			TP15 - 1.5	TP16 - 0.1	TP19 - 0.1	SS01
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			R24-Ma0067453	R24-Ma0067454	R24-Ma0067456	R24-Ma0067457
Date Sampled			Mar 26, 2024	Mar 26, 2024	Mar 26, 2024	Mar 26, 2024
Test/Reference	LOR	Unit				
Organophosphorus Pesticides						
Coumaphos	2	mg/kg	-	-	-	< 2
Demeton-S	0.2	mg/kg	-	-	-	< 0.2
Demeton-O	0.2	mg/kg	-	-	-	< 0.2
Diazinon	0.2	mg/kg	-	-	-	< 0.2
Dichlorvos	0.2	mg/kg	-	-	-	< 0.2
Dimethoate	0.2	mg/kg	-	-	-	< 0.2
Disulfoton	0.2	mg/kg	-	-	-	< 0.2
EPN	0.2	mg/kg	-	-	-	< 0.2
Ethion	0.2	mg/kg	-	-	-	< 0.2
Ethoprop	0.2	mg/kg	-	-	-	< 0.2
Ethyl parathion	0.2	mg/kg	-	-	-	< 0.2
Fenitrothion	0.2	mg/kg	-	-	-	< 0.2
Fensulfothion	0.2	mg/kg	-	-	-	< 0.2
Fenthion	0.2	mg/kg	-	-	-	< 0.2
Malathion	0.2	mg/kg	-	-	-	< 0.2
Merphos	0.2	mg/kg	-	-	-	< 0.2
Methyl parathion	0.2	mg/kg	-	-	-	< 0.2
Mevinphos	0.2	mg/kg	-	-	-	< 0.2
Monocrotophos	2	mg/kg	-	-	-	< 2
Naled	0.2	mg/kg	-	-	-	< 0.2
Omethoate	2	mg/kg	-	-	-	< 2
Phorate	0.2	mg/kg	-	-	-	< 0.2
Pirimiphos-methyl	0.2	mg/kg	-	-	-	< 0.2
Pyrazophos	0.2	mg/kg	-	-	-	< 0.2
Ronnel	0.2	mg/kg	-	-	-	< 0.2
Terbufos	0.2	mg/kg	-	-	-	< 0.2
Tetrachlorvinphos	0.2	mg/kg	-	-	-	< 0.2
Tokuthion	0.2	mg/kg	-	-	-	< 0.2
Trichloronate	0.2	mg/kg	-	-	-	< 0.2
Triphenylphosphate (surr.)	1	%	-	-	-	91

Client Sample ID			SS03	SS06	QC01	QC02
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			R24-Ma0067458	R24-Ma0067459	R24-Ma0067462	R24-Ma0067463
Date Sampled			Mar 26, 2024	Mar 26, 2024	Mar 25, 2024	Mar 25, 2024
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	< 50
TRH C10-C36 (Total)	50	mg/kg	< 50	< 50	< 50	< 50
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2

Client Sample ID			SS03	SS06	QC01	QC02
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			R24-Ma0067458	R24-Ma0067459	R24-Ma0067462	R24-Ma0067463
Date Sampled			Mar 26, 2024	Mar 26, 2024	Mar 25, 2024	Mar 25, 2024
Test/Reference	LOR	Unit				
BTEX						
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total*	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	84	105	121	105
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50	< 50	< 50
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20	< 20
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	80	87	64	51
p-Terphenyl-d14 (surr.)	1	%	84	94	60	51
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
4.4'-DDD	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
4.4'-DDE	0.05	mg/kg	< 0.05	< 0.05	0.17	< 0.05
4.4'-DDT	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
a-HCH	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Aldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
b-HCH	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
d-HCH	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Dieldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan I	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan II	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan sulphate	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin aldehyde	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin ketone	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
g-HCH (Lindane)	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Heptachlor	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05

Client Sample ID			SS03	SS06	QC01	QC02
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			R24-Ma0067458	R24-Ma0067459	R24-Ma0067462	R24-Ma0067463
Date Sampled			Mar 26, 2024	Mar 26, 2024	Mar 25, 2024	Mar 25, 2024
Test/Reference	LOR	Unit				
Organochlorine Pesticides						
Heptachlor epoxide	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Hexachlorobenzene	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Methoxychlor	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Toxaphene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aldrin and Dieldrin (Total)*	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
DDT + DDE + DDD (Total)*	0.05	mg/kg	< 0.05	< 0.05	0.17	< 0.05
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	< 0.1	< 0.1	0.17	< 0.1
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Dibutylchlorendate (surr.)	1	%	81	91	58	50
Tetrachloro-m-xylene (surr.)	1	%	89	94	63	56
Polychlorinated Biphenyls						
Aroclor-1016	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Aroclor-1221	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Aroclor-1232	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Aroclor-1242	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Aroclor-1248	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Aroclor-1254	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Aroclor-1260	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Total PCB*	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Dibutylchlorendate (surr.)	1	%	81	91	58	50
Tetrachloro-m-xylene (surr.)	1	%	89	94	63	56
Phenols (Halogenated)						
2-Chlorophenol	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2.4-Dichlorophenol	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2.4.5-Trichlorophenol	1	mg/kg	< 1	< 1	< 1	< 1
2.4.6-Trichlorophenol	1	mg/kg	< 1	< 1	< 1	< 1
2.6-Dichlorophenol	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
4-Chloro-3-methylphenol	1	mg/kg	< 1	< 1	< 1	< 1
Pentachlorophenol	1	mg/kg	< 1	< 1	< 1	< 1
Tetrachlorophenols - Total	10	mg/kg	< 10	< 10	< 10	< 10
Total Halogenated Phenol*	1	mg/kg	< 1	< 1	< 1	< 1
Phenols (non-Halogenated)						
2-Cyclohexyl-4.6-dinitrophenol	20	mg/kg	< 20	< 20	< 20	< 20
2-Methyl-4.6-dinitrophenol	5	mg/kg	< 5	< 5	< 5	< 5
2-Nitrophenol	1	mg/kg	< 1	< 1	< 1	< 1
2.4-Dimethylphenol	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2.4-Dinitrophenol	5	mg/kg	< 5	< 5	< 5	< 5
2-Methylphenol (o-Cresol)	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
3&4-Methylphenol (m&p-Cresol)	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Total cresols*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
4-Nitrophenol	5	mg/kg	< 5	< 5	< 5	< 5
Dinoseb	20	mg/kg	< 20	< 20	< 20	< 20
Phenol	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenol-d6 (surr.)	1	%	69	85	52	50
Total Non-Halogenated Phenol*	20	mg/kg	< 20	< 20	< 20	< 20

Client Sample ID			SS03	SS06	QC01	QC02
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			R24-Ma0067458	R24-Ma0067459	R24-Ma0067462	R24-Ma0067463
Date Sampled			Mar 26, 2024	Mar 26, 2024	Mar 25, 2024	Mar 25, 2024
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C10-C40 (total)*	100	mg/kg	< 100	< 100	< 100	< 100
Metals M8						
Arsenic	2	mg/kg	38	22	27	29
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	57	31	54	50
Copper	5	mg/kg	17	11	23	27
Lead	5	mg/kg	68	30	37	37
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	12	8.6	12	22
Zinc	5	mg/kg	170	62	130	32
Sample Properties						
% Moisture	1	%	15	7.9	10	19
Organophosphorus Pesticides						
Azinphos-methyl	0.2	mg/kg	< 0.2	< 0.2	-	-
Bolstar	0.2	mg/kg	< 0.2	< 0.2	-	-
Chlorfenvinphos	0.2	mg/kg	< 0.2	< 0.2	-	-
Chlorpyrifos	0.2	mg/kg	< 0.2	< 0.2	-	-
Chlorpyrifos-methyl	0.2	mg/kg	< 0.2	< 0.2	-	-
Coumaphos	2	mg/kg	< 2	< 2	-	-
Demeton-S	0.2	mg/kg	< 0.2	< 0.2	-	-
Demeton-O	0.2	mg/kg	< 0.2	< 0.2	-	-
Diazinon	0.2	mg/kg	< 0.2	< 0.2	-	-
Dichlorvos	0.2	mg/kg	< 0.2	< 0.2	-	-
Dimethoate	0.2	mg/kg	< 0.2	< 0.2	-	-
Disulfoton	0.2	mg/kg	< 0.2	< 0.2	-	-
EPN	0.2	mg/kg	< 0.2	< 0.2	-	-
Ethion	0.2	mg/kg	< 0.2	< 0.2	-	-
Ethoprop	0.2	mg/kg	< 0.2	< 0.2	-	-
Ethyl parathion	0.2	mg/kg	< 0.2	< 0.2	-	-
Fenitrothion	0.2	mg/kg	< 0.2	< 0.2	-	-
Fensulfothion	0.2	mg/kg	< 0.2	< 0.2	-	-
Fenthion	0.2	mg/kg	< 0.2	< 0.2	-	-
Malathion	0.2	mg/kg	< 0.2	< 0.2	-	-
Merphos	0.2	mg/kg	< 0.2	< 0.2	-	-
Methyl parathion	0.2	mg/kg	< 0.2	< 0.2	-	-
Mevinphos	0.2	mg/kg	< 0.2	< 0.2	-	-
Monocrotophos	2	mg/kg	< 2	< 2	-	-
Naled	0.2	mg/kg	< 0.2	< 0.2	-	-
Omethoate	2	mg/kg	< 2	< 2	-	-
Phorate	0.2	mg/kg	< 0.2	< 0.2	-	-
Pirimiphos-methyl	0.2	mg/kg	< 0.2	< 0.2	-	-
Pyrazophos	0.2	mg/kg	< 0.2	< 0.2	-	-
Ronnel	0.2	mg/kg	< 0.2	< 0.2	-	-
Terbufos	0.2	mg/kg	< 0.2	< 0.2	-	-
Tetrachlorvinphos	0.2	mg/kg	< 0.2	< 0.2	-	-
Tokuthion	0.2	mg/kg	< 0.2	< 0.2	-	-

Client Sample ID			SS03	SS06	QC01	QC02
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			R24-Ma0067458	R24-Ma0067459	R24-Ma0067462	R24-Ma0067463
Date Sampled			Mar 26, 2024	Mar 26, 2024	Mar 25, 2024	Mar 25, 2024
Test/Reference	LOR	Unit				
Organophosphorus Pesticides						
Trichloronate	0.2	mg/kg	< 0.2	< 0.2	-	-
Triphenylphosphate (surr.)	1	%	97	82	-	-

Sample History

Where samples are submitted/analysed over several days, the last date of extraction is reported.

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Total Recoverable Hydrocarbons - 1999 NEPM Fractions	Sydney	Apr 04, 2024	14 Days
- Method: LTM-ORG-2010 TRH C6-C40			
BTEX	Sydney	Apr 04, 2024	14 Days
- Method: LTM-ORG-2010 BTEX and Volatile TRH			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Sydney	Apr 04, 2024	14 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Polycyclic Aromatic Hydrocarbons	Sydney	Apr 04, 2024	14 Days
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
Phenols (Halogenated)	Sydney	Apr 04, 2024	14 Days
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
Phenols (non-Halogenated)	Sydney	Apr 04, 2024	14 Days
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Sydney	Apr 04, 2024	14 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Metals M8	Sydney	Apr 04, 2024	28 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
Organochlorine Pesticides	Sydney	Apr 04, 2024	14 Days
- Method: LTM-ORG-2220 OCP & PCB in Soil and Water			
Polychlorinated Biphenyls	Sydney	Apr 04, 2024	28 Days
- Method: LTM-ORG-2220 OCP & PCB in Soil and Water			
% Moisture	Sydney	Mar 28, 2024	14 Days
- Method: LTM-GEN-7080 Moisture			
Organophosphorus Pesticides	Sydney	Apr 04, 2024	14 Days
- Method: LTM-ORG-2200 Organophosphorus Pesticides by GC-MS			

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web: www.eurofins.com.au
email: EnviroSales@eurofins.com

Eurofins Environment Testing Australia Pty Ltd
ABN: 50 005 085 521

Melbourne	Geelong	Sydney	Canberra	Brisbane	Newcastle
6 Monterey Road	19/8 Lewalan Street	179 Magowar Road	Unit 1,2 Dacre Street	1/21 Smallwood Place	1/2 Frost Drive
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ABN: 91 05 0159 898

Perth
46-48 Banksia Road
Welshpool
WA 6106
+61 8 6253 4444
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Company Name: Agon Environmental Pty Ltd - ACT
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ACT 2060

Project Name: JC1523

Order No.:
Report #: 1082462
Phone: 0419 170 791
Fax:

Received: Mar 27, 2024 3:48 PM
Due: Apr 5, 2024
Priority: 5 Day
Contact Name: -John O Brien - ACT Manager

Eurofins Analytical Services Manager : Bonnie Pu

Sample Detail						Asbestos - AS4964	HOLD	Organophosphorus Pesticides	Metals M8	Suite B13: OCP/PCB	Moisture Set	Eurofins Suite B7A
Sydney Laboratory - NATA # 1261 Site # 18217						X	X	X	X	X	X	X
External Laboratory												
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**							
1	TP01 - 0.1	Mar 25, 2024		Soil	R24-Ma0067433					X	X	X
2	TP01 - 0.5	Mar 25, 2024		Soil	R24-Ma0067434				X		X	
3	TP02 - 0.1	Mar 25, 2024		Soil	R24-Ma0067435					X	X	X
4	TP02 - 0.5	Mar 25, 2024		Soil	R24-Ma0067436				X		X	
5	TP03 - 0.1	Mar 25, 2024		Soil	R24-Ma0067437	X				X	X	X
6	TP03 - 0.5	Mar 25, 2024		Soil	R24-Ma0067438			X		X	X	X
7	TP04 - 0.1	Mar 25, 2024		Soil	R24-Ma0067439	X				X	X	X
8	TP04 - 1.0	Mar 25, 2024		Soil	R24-Ma0067440					X	X	X
9	TP05 - 0.5	Mar 25, 2024		Soil	R24-Ma0067441				X		X	
10	TP06 - 0.1	Mar 25, 2024		Soil	R24-Ma0067442	X				X	X	X
11	TP07 - 0.1	Mar 25, 2024		Soil	R24-Ma0067443					X	X	X
12	TP08 - 0.1	Mar 25, 2024		Soil	R24-Ma0067444	X		X		X	X	X
13	TP08 - 0.5	Mar 25, 2024		Soil	R24-Ma0067445					X	X	X
14	TP08 - 1.5	Mar 25, 2024		Soil	R24-Ma0067446				X		X	

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web: www.eurofins.com.au
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Welshpool
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Sydney Laboratory - NATA # 1261 Site # 18217						X	X	X	X	X	X	X
15	TP10 - 0.1	Mar 25, 2024		Soil	R24-Ma0067447			X		X	X	X
16	TP11 - 0.1	Mar 25, 2024		Soil	R24-Ma0067448					X	X	X
17	TP11 - 1.0	Mar 25, 2024		Soil	R24-Ma0067449				X		X	
18	TP13 - 0.1	Mar 25, 2024		Soil	R24-Ma0067450					X	X	X
19	TP14 - 0.1	Mar 25, 2024		Soil	R24-Ma0067451			X		X	X	X
20	TP15 - 0.1	Mar 26, 2024		Soil	R24-Ma0067452					X	X	X
21	TP15 - 1.5	Mar 26, 2024		Soil	R24-Ma0067453				X		X	
22	TP16 - 0.1	Mar 26, 2024		Soil	R24-Ma0067454					X	X	X
23	TP18 - 0.1	Mar 26, 2024		Soil	R24-Ma0067455	X						
24	TP19 - 0.1	Mar 26, 2024		Soil	R24-Ma0067456	X				X	X	X
25	SS01	Mar 26, 2024		Soil	R24-Ma0067457			X		X	X	X
26	SS03	Mar 26, 2024		Soil	R24-Ma0067458			X		X	X	X
27	SS06	Mar 26, 2024		Soil	R24-Ma0067459			X		X	X	X
28	Frag - 1	Mar 26, 2024		Building Materials	R24-Ma0067460	X						
29	Frag - 2	Mar 26, 2024		Building Materials	R24-Ma0067461	X						

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web: www.eurofins.com.au
email: EnviroSales@eurofins.com

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Welshpool
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Sydney Laboratory - NATA # 1261 Site # 18217						X	X	X	X	X	X	X
30	QC01	Mar 25, 2024		Soil	R24-Ma0067462					X	X	X
31	QC02	Mar 25, 2024		Soil	R24-Ma0067463					X	X	X
32	TP01 - 1.0	Mar 25, 2024		Soil	R24-Ma0067464		X					
33	TP02 - 1.0	Mar 25, 2024		Soil	R24-Ma0067465		X					
34	TP03 - 1.0	Mar 25, 2024		Soil	R24-Ma0067466		X					
35	TP03 - 1.5	Mar 25, 2024		Soil	R24-Ma0067467		X					
36	TP04 - 0.5	Mar 25, 2024		Soil	R24-Ma0067468		X					
37	TP05 - 0.1	Mar 25, 2024		Soil	R24-Ma0067469		X					
38	TP05 - 1.0	Mar 25, 2024		Soil	R24-Ma0067470		X					
39	TP06 - 0.5	Mar 25, 2024		Soil	R24-Ma0067471		X					
40	TP06 - 1.0	Mar 25, 2024		Soil	R24-Ma0067472		X					
41	TP07 - 0.5	Mar 25, 2024		Soil	R24-Ma0067473		X					
42	TP07 - 1.0	Mar 25, 2024		Soil	R24-Ma0067474		X					
43	TP08 - 1.0	Mar 25, 2024		Soil	R24-Ma0067475		X					
44	TP09 - 0.1	Mar 25, 2024		Soil	R24-Ma0067476		X					
45	TP09 - 0.5	Mar 25, 2024		Soil	R24-Ma0067477		X					

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web: www.eurofins.com.au
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Sydney Laboratory - NATA # 1261 Site # 18217						X	X	X	X	X	X	X
46	TP09 - 1.0	Mar 25, 2024		Soil	R24-Ma0067478		X					
47	TP10 - 0.5	Mar 25, 2024		Soil	R24-Ma0067479		X					
48	TP10 - 1.0	Mar 25, 2024		Soil	R24-Ma0067480		X					
49	TP10 - 1.5	Mar 25, 2024		Soil	R24-Ma0067481		X					
50	TP11 - 0.5	Mar 25, 2024		Soil	R24-Ma0067482		X					
51	TP12 - 0.1	Mar 25, 2024		Soil	R24-Ma0067483		X					
52	TP12 - 0.5	Mar 25, 2024		Soil	R24-Ma0067484		X					
53	TP12 - 1.0	Mar 25, 2024		Soil	R24-Ma0067485		X					
54	TP13 - 0.5	Mar 25, 2024		Soil	R24-Ma0067486		X					
55	TP13 - 1.0	Mar 25, 2024		Soil	R24-Ma0067487		X					
56	TP13 - 1.5	Mar 25, 2024		Soil	R24-Ma0067488		X					
57	TP14 - 0.5	Mar 25, 2024		Soil	R24-Ma0067489		X					
58	TP14 - 1.0	Mar 25, 2024		Soil	R24-Ma0067490		X					
59	TP15 - 0.5	Mar 26, 2024		Soil	R24-Ma0067491		X					
60	TP15 - 1.0	Mar 26, 2024		Soil	R24-Ma0067492		X					
61	TP16 - 0.5	Mar 26, 2024		Soil	R24-Ma0067493		X					

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Sydney Laboratory - NATA # 1261 Site # 18217						X	X	X	X	X	X	X
62	TP16 - 1.0	Mar 26, 2024		Soil	R24-Ma0067494		X					
63	TP16 - 1.5	Mar 26, 2024		Soil	R24-Ma0067495		X					
64	TP17 - 0.1	Mar 26, 2024		Soil	R24-Ma0067496		X					
65	TP17 - 0.5	Mar 26, 2024		Soil	R24-Ma0067497		X					
66	TP17 - 1.0	Mar 26, 2024		Soil	R24-Ma0067498		X					
67	TP17 - 1.5	Mar 26, 2024		Soil	R24-Ma0067499		X					
68	TP18 - 0.5	Mar 26, 2024		Soil	R24-Ma0067500		X					
69	TP19 - 0.5	Mar 26, 2024		Soil	R24-Ma0067501		X					
70	SS02	Mar 26, 2024		Soil	R24-Ma0067502		X					
71	SS04	Mar 26, 2024		Soil	R24-Ma0067503		X					
72	SS05	Mar 26, 2024		Soil	R24-Ma0067504		X					
73	SS07	Mar 26, 2024		Soil	R24-Ma0067505		X					
74	QC03	Mar 25, 2024		Soil	R24-Ma0067506		X					
75	QC05	Mar 26, 2024		Soil	R24-Ma0067507		X					
76	QC06	Mar 26, 2024		Soil	R24-Ma0067508		X					
Test Counts						8	45	7	6	22	28	22

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples follow guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended May 2013. They are included in this QC report where applicable. Additional QC data may be available on request.
2. Unless otherwise stated, all soil/sediment/solid results are reported on a dry weight basis.
3. Unless otherwise stated, all biota/food results are reported on a wet weight basis on the edible portion.
4. For CEC results where the sample's origin is unknown or environmentally contaminated, the results should be used advisedly.
5. Actual LORs are matrix dependent. Quoted LORs may be raised where sample extracts are diluted due to interferences.
6. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds where annotated.
7. SVOC analysis on waters is performed on homogenised, unfiltered samples unless noted otherwise.
8. Samples were analysed on an 'as received' basis.
9. Information identified in this report with **blue** colour indicates data provided by customers that may have an impact on the results.
10. This report replaces any interim results previously issued.

Holding Times

Please refer to the 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours before sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and despite any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the sampling date; therefore, compliance with these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether, the holding time is seven days; however, for all other VOCs, such as BTEX or C6-10 TRH, the holding time is 14 days.

Units

mg/kg: milligrams per kilogram	**mg/L:** milligrams per litre	**ppm:** parts per million
µg/L: micrograms per litre	**ppb:** parts per billion	**%:** Percentage
org/100 mL: Organisms per 100 millilitres	**NTU:** Nephelometric Turbidity Units	**MPN/100 mL:** Most Probable Number of organisms per 100 millilitres
CFU: Colony Forming Unit	**Colour:** Pt-Co Units (CU)	

Terms

APHA	American Public Health Association
CEC	Cation Exchange Capacity
COC	Chain of Custody
CP	Client Parent - QC was performed on samples pertaining to this report
CRM	Certified Reference Material (ISO17034) - reported as percent recovery.
Dry	Where moisture has been determined on a solid sample, the result is expressed on a dry weight basis.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
LOR	Limit of Reporting.
LCS	Laboratory Control Sample - reported as percent recovery.
Method Blank	In the case of solid samples, these are performed on laboratory-certified clean sands and in the case of water samples, these are performed on de-ionised water.
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC represents the sequence or batch that client samples were analysed within.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
SRA	Sample Receipt Advice
Surr - Surrogate	The addition of a similar compound to the analyte target is reported as percentage recovery. See below for acceptance criteria.
TBTO	Tributyltin oxide (*bis*-tributyltin oxide) - individual tributyltin compounds cannot be identified separately in the environment; however, free tributyltin was measured, and its values were converted stoichiometrically into tributyltin oxide for comparison with regulatory limits.
TCLP	Toxicity Characteristic Leaching Procedure
TEQ	Toxic Equivalency Quotient or Total Equivalence
QSM	US Department of Defense Quality Systems Manual Version 6.0
US EPA	United States Environmental Protection Agency
WA DWER	Sum of PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC - Acceptance Criteria

The acceptance criteria should only be used as a guide and may be different when site-specific Sampling Analysis and Quality Plan (SAQP) have been implemented.

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is ≤30%; however, the following acceptance guidelines are equally applicable:

Results <10 times the LOR:	No Limit
Results between 10-20 times the LOR:	RPD must lie between 0-50%
Results >20 times the LOR:	RPD must lie between 0-30%

NOTE: pH duplicates are reported as a range, not as RPD

Surrogate Recoveries: Recoveries must lie between 20-130% for Speciated Phenols & 50-150% for PFAS. SVOCs recoveries 20 – 150%, VOC recoveries 50 – 150%

PFAS field samples containing surrogate recoveries above the QC limit designated in QSM 6.0, where no positive PFAS results have been reported or reviewed, and no data was affected.

QC Data General Comments

1. Where a result is reported as less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown are not data from your samples.
3. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore, laboratory analysis is unlikely to be completed within holding time.Analysis will begin as soon as possible after sample receipt.
4. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of recovery, the term "INT" appears against that analyte.
5. For Matrix Spikes and LCS results, a dash "-" in the report means that the specific analyte was not added to the QC sample.
6. Duplicate RPDs are calculated from raw analytical data; thus, it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Phenols (non-Halogenated)							
Total Non-Halogenated Phenol*	mg/kg	-			20	N/A	
Method Blank							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	mg/kg	< 0.5			0.5	Pass	
Acenaphthylene	mg/kg	< 0.5			0.5	Pass	
Anthracene	mg/kg	< 0.5			0.5	Pass	
Benz(a)anthracene	mg/kg	< 0.5			0.5	Pass	
Benzo(a)pyrene	mg/kg	< 0.5			0.5	Pass	
Benzo(b&j)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Benzo(g.h.i)perylene	mg/kg	< 0.5			0.5	Pass	
Benzo(k)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Chrysene	mg/kg	< 0.5			0.5	Pass	
Dibenz(a.h)anthracene	mg/kg	< 0.5			0.5	Pass	
Fluoranthene	mg/kg	< 0.5			0.5	Pass	
Fluorene	mg/kg	< 0.5			0.5	Pass	
Indeno(1.2.3-cd)pyrene	mg/kg	< 0.5			0.5	Pass	
Naphthalene	mg/kg	< 0.5			0.5	Pass	
Phenanthrene	mg/kg	< 0.5			0.5	Pass	
Pyrene	mg/kg	< 0.5			0.5	Pass	
Method Blank							
Organochlorine Pesticides							
Chlordanes - Total	mg/kg	< 0.1			0.1	Pass	
4.4'-DDD	mg/kg	< 0.05			0.05	Pass	
4.4'-DDE	mg/kg	< 0.05			0.05	Pass	
4.4'-DDT	mg/kg	< 0.05			0.05	Pass	
a-HCH	mg/kg	< 0.05			0.05	Pass	
Aldrin	mg/kg	< 0.05			0.05	Pass	
b-HCH	mg/kg	< 0.05			0.05	Pass	
d-HCH	mg/kg	< 0.05			0.05	Pass	
Dieldrin	mg/kg	< 0.05			0.05	Pass	
Endosulfan I	mg/kg	< 0.05			0.05	Pass	
Endosulfan II	mg/kg	< 0.05			0.05	Pass	
Endosulfan sulphate	mg/kg	< 0.05			0.05	Pass	
Endrin	mg/kg	< 0.05			0.05	Pass	
Endrin aldehyde	mg/kg	< 0.05			0.05	Pass	
Endrin ketone	mg/kg	< 0.05			0.05	Pass	
g-HCH (Lindane)	mg/kg	< 0.05			0.05	Pass	
Heptachlor	mg/kg	< 0.05			0.05	Pass	
Heptachlor epoxide	mg/kg	< 0.05			0.05	Pass	
Hexachlorobenzene	mg/kg	< 0.05			0.05	Pass	
Methoxychlor	mg/kg	< 0.05			0.05	Pass	
Toxaphene	mg/kg	< 0.5			0.5	Pass	
Method Blank							
Polychlorinated Biphenyls							
Aroclor-1016	mg/kg	< 0.1			0.1	Pass	
Aroclor-1221	mg/kg	< 0.1			0.1	Pass	
Aroclor-1232	mg/kg	< 0.1			0.1	Pass	
Aroclor-1242	mg/kg	< 0.1			0.1	Pass	
Aroclor-1248	mg/kg	< 0.1			0.1	Pass	
Aroclor-1254	mg/kg	< 0.1			0.1	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Aroclor-1260	mg/kg	< 0.1			0.1	Pass	
Total PCB*	mg/kg	< 0.1			0.1	Pass	
Method Blank							
Phenols (Halogenated)							
2-Chlorophenol	mg/kg	< 0.5			0.5	Pass	
2.4-Dichlorophenol	mg/kg	< 0.5			0.5	Pass	
2.4.5-Trichlorophenol	mg/kg	< 1			1	Pass	
2.4.6-Trichlorophenol	mg/kg	< 1			1	Pass	
2.6-Dichlorophenol	mg/kg	< 0.5			0.5	Pass	
4-Chloro-3-methylphenol	mg/kg	< 1			1	Pass	
Pentachlorophenol	mg/kg	< 1			1	Pass	
Tetrachlorophenols - Total	mg/kg	< 10			10	Pass	
Method Blank							
Phenols (non-Halogenated)							
2-Cyclohexyl-4.6-dinitrophenol	mg/kg	< 20			20	Pass	
2-Methyl-4.6-dinitrophenol	mg/kg	< 5			5	Pass	
2-Nitrophenol	mg/kg	< 1			1	Pass	
2.4-Dimethylphenol	mg/kg	< 0.5			0.5	Pass	
2.4-Dinitrophenol	mg/kg	< 5			5	Pass	
2-Methylphenol (o-Cresol)	mg/kg	< 0.2			0.2	Pass	
3&4-Methylphenol (m&p-Cresol)	mg/kg	< 0.4			0.4	Pass	
4-Nitrophenol	mg/kg	< 5			5	Pass	
Dinoseb	mg/kg	< 20			20	Pass	
Phenol	mg/kg	< 0.5			0.5	Pass	
Method Blank							
Organophosphorus Pesticides							
Azinphos-methyl	mg/kg	< 0.2			0.2	Pass	
Bolstar	mg/kg	< 0.2			0.2	Pass	
Chlorfenvinphos	mg/kg	< 0.2			0.2	Pass	
Chlorpyrifos	mg/kg	< 0.2			0.2	Pass	
Chlorpyrifos-methyl	mg/kg	< 0.2			0.2	Pass	
Coumaphos	mg/kg	< 2			2	Pass	
Demeton-S	mg/kg	< 0.2			0.2	Pass	
Demeton-O	mg/kg	< 0.2			0.2	Pass	
Diazinon	mg/kg	< 0.2			0.2	Pass	
Dichlorvos	mg/kg	< 0.2			0.2	Pass	
Dimethoate	mg/kg	< 0.2			0.2	Pass	
Disulfoton	mg/kg	< 0.2			0.2	Pass	
EPN	mg/kg	< 0.2			0.2	Pass	
Ethion	mg/kg	< 0.2			0.2	Pass	
Ethoprop	mg/kg	< 0.2			0.2	Pass	
Ethyl parathion	mg/kg	< 0.2			0.2	Pass	
Fenitrothion	mg/kg	< 0.2			0.2	Pass	
Fensulfothion	mg/kg	< 0.2			0.2	Pass	
Fenthion	mg/kg	< 0.2			0.2	Pass	
Malathion	mg/kg	< 0.2			0.2	Pass	
Merphos	mg/kg	< 0.2			0.2	Pass	
Methyl parathion	mg/kg	< 0.2			0.2	Pass	
Mevinphos	mg/kg	< 0.2			0.2	Pass	
Monocrotophos	mg/kg	< 2			2	Pass	
Naled	mg/kg	< 0.2			0.2	Pass	
Omethoate	mg/kg	< 2			2	Pass	
Phorate	mg/kg	< 0.2			0.2	Pass	
Pirimiphos-methyl	mg/kg	< 0.2			0.2	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Pyrazophos	mg/kg	< 0.2			0.2	Pass	
Ronnel	mg/kg	< 0.2			0.2	Pass	
Terbufos	mg/kg	< 0.2			0.2	Pass	
Tetrachlorvinphos	mg/kg	< 0.2			0.2	Pass	
Tokuthion	mg/kg	< 0.2			0.2	Pass	
Trichloronate	mg/kg	< 0.2			0.2	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	mg/kg	< 20			20	Pass	
Method Blank							
BTEX							
Benzene	mg/kg	< 0.1			0.1	Pass	
Toluene	mg/kg	< 0.1			0.1	Pass	
Ethylbenzene	mg/kg	< 0.1			0.1	Pass	
m&p-Xylenes	mg/kg	< 0.2			0.2	Pass	
o-Xylene	mg/kg	< 0.1			0.1	Pass	
Xylenes - Total*	mg/kg	< 0.3			0.3	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	mg/kg	< 0.5			0.5	Pass	
TRH C6-C10	mg/kg	< 20			20	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	mg/kg	< 20			20	Pass	
Method Blank							
BTEX							
Benzene	mg/kg	< 0.1			0.1	Pass	
Toluene	mg/kg	< 0.1			0.1	Pass	
Ethylbenzene	mg/kg	< 0.1			0.1	Pass	
m&p-Xylenes	mg/kg	< 0.2			0.2	Pass	
o-Xylene	mg/kg	< 0.1			0.1	Pass	
Xylenes - Total*	mg/kg	< 0.3			0.3	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	mg/kg	< 0.5			0.5	Pass	
TRH C6-C10	mg/kg	< 20			20	Pass	
Method Blank							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	mg/kg	< 0.5			0.5	Pass	
Acenaphthylene	mg/kg	< 0.5			0.5	Pass	
Anthracene	mg/kg	< 0.5			0.5	Pass	
Benz(a)anthracene	mg/kg	< 0.5			0.5	Pass	
Benzo(a)pyrene	mg/kg	< 0.5			0.5	Pass	
Benzo(b&j)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Benzo(g.h.i)perylene	mg/kg	< 0.5			0.5	Pass	
Benzo(k)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Chrysene	mg/kg	< 0.5			0.5	Pass	
Dibenz(a.h)anthracene	mg/kg	< 0.5			0.5	Pass	
Fluoranthene	mg/kg	< 0.5			0.5	Pass	
Fluorene	mg/kg	< 0.5			0.5	Pass	
Indeno(1.2.3-cd)pyrene	mg/kg	< 0.5			0.5	Pass	
Naphthalene	mg/kg	< 0.5			0.5	Pass	
Phenanthrene	mg/kg	< 0.5			0.5	Pass	
Pyrene	mg/kg	< 0.5			0.5	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Organochlorine Pesticides							
Chlordanes - Total	mg/kg	< 0.1			0.1	Pass	
4.4'-DDD	mg/kg	< 0.05			0.05	Pass	
4.4'-DDE	mg/kg	< 0.05			0.05	Pass	
4.4'-DDT	mg/kg	< 0.05			0.05	Pass	
a-HCH	mg/kg	< 0.05			0.05	Pass	
Aldrin	mg/kg	< 0.05			0.05	Pass	
b-HCH	mg/kg	< 0.05			0.05	Pass	
d-HCH	mg/kg	< 0.05			0.05	Pass	
Dieldrin	mg/kg	< 0.05			0.05	Pass	
Endosulfan I	mg/kg	< 0.05			0.05	Pass	
Endosulfan II	mg/kg	< 0.05			0.05	Pass	
Endosulfan sulphate	mg/kg	< 0.05			0.05	Pass	
Endrin	mg/kg	< 0.05			0.05	Pass	
Endrin aldehyde	mg/kg	< 0.05			0.05	Pass	
Endrin ketone	mg/kg	< 0.05			0.05	Pass	
g-HCH (Lindane)	mg/kg	< 0.05			0.05	Pass	
Heptachlor	mg/kg	< 0.05			0.05	Pass	
Heptachlor epoxide	mg/kg	< 0.05			0.05	Pass	
Hexachlorobenzene	mg/kg	< 0.05			0.05	Pass	
Methoxychlor	mg/kg	< 0.05			0.05	Pass	
Toxaphene	mg/kg	< 0.5			0.5	Pass	
Method Blank							
Polychlorinated Biphenyls							
Aroclor-1016	mg/kg	< 0.1			0.1	Pass	
Aroclor-1221	mg/kg	< 0.1			0.1	Pass	
Aroclor-1232	mg/kg	< 0.1			0.1	Pass	
Aroclor-1242	mg/kg	< 0.1			0.1	Pass	
Aroclor-1248	mg/kg	< 0.1			0.1	Pass	
Aroclor-1254	mg/kg	< 0.1			0.1	Pass	
Aroclor-1260	mg/kg	< 0.1			0.1	Pass	
Total PCB*	mg/kg	< 0.1			0.1	Pass	
Method Blank							
Phenols (Halogenated)							
2-Chlorophenol	mg/kg	< 0.5			0.5	Pass	
2.4-Dichlorophenol	mg/kg	< 0.5			0.5	Pass	
2.4.5-Trichlorophenol	mg/kg	< 1			1	Pass	
2.4.6-Trichlorophenol	mg/kg	< 1			1	Pass	
2.6-Dichlorophenol	mg/kg	< 0.5			0.5	Pass	
4-Chloro-3-methylphenol	mg/kg	< 1			1	Pass	
Pentachlorophenol	mg/kg	< 1			1	Pass	
Tetrachlorophenols - Total	mg/kg	< 10			10	Pass	
Method Blank							
Phenols (non-Halogenated)							
2-Cyclohexyl-4.6-dinitrophenol	mg/kg	< 20			20	Pass	
2-Methyl-4.6-dinitrophenol	mg/kg	< 5			5	Pass	
2-Nitrophenol	mg/kg	< 1			1	Pass	
2.4-Dimethylphenol	mg/kg	< 0.5			0.5	Pass	
2.4-Dinitrophenol	mg/kg	< 5			5	Pass	
2-Methylphenol (o-Cresol)	mg/kg	< 0.2			0.2	Pass	
3&4-Methylphenol (m&p-Cresol)	mg/kg	< 0.4			0.4	Pass	
4-Nitrophenol	mg/kg	< 5			5	Pass	
Dinoseb	mg/kg	< 20			20	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Phenol	mg/kg	< 0.5			0.5	Pass	
Method Blank							
Organophosphorus Pesticides							
Azinphos-methyl	mg/kg	< 0.2			0.2	Pass	
Bolstar	mg/kg	< 0.2			0.2	Pass	
Chlorfenvinphos	mg/kg	< 0.2			0.2	Pass	
Chlorpyrifos	mg/kg	< 0.2			0.2	Pass	
Chlorpyrifos-methyl	mg/kg	< 0.2			0.2	Pass	
Coumaphos	mg/kg	< 2			2	Pass	
Demeton-S	mg/kg	< 0.2			0.2	Pass	
Demeton-O	mg/kg	< 0.2			0.2	Pass	
Diazinon	mg/kg	< 0.2			0.2	Pass	
Dichlorvos	mg/kg	< 0.2			0.2	Pass	
Dimethoate	mg/kg	< 0.2			0.2	Pass	
Disulfoton	mg/kg	< 0.2			0.2	Pass	
EPN	mg/kg	< 0.2			0.2	Pass	
Ethion	mg/kg	< 0.2			0.2	Pass	
Ethoprop	mg/kg	< 0.2			0.2	Pass	
Ethyl parathion	mg/kg	< 0.2			0.2	Pass	
Fenitrothion	mg/kg	< 0.2			0.2	Pass	
Fensulfothion	mg/kg	< 0.2			0.2	Pass	
Fenthion	mg/kg	< 0.2			0.2	Pass	
Malathion	mg/kg	< 0.2			0.2	Pass	
Merphos	mg/kg	< 0.2			0.2	Pass	
Methyl parathion	mg/kg	< 0.2			0.2	Pass	
Mevinphos	mg/kg	< 0.2			0.2	Pass	
Monocrotophos	mg/kg	< 2			2	Pass	
Naled	mg/kg	< 0.2			0.2	Pass	
Omethoate	mg/kg	< 2			2	Pass	
Phorate	mg/kg	< 0.2			0.2	Pass	
Pirimiphos-methyl	mg/kg	< 0.2			0.2	Pass	
Pyrazophos	mg/kg	< 0.2			0.2	Pass	
Ronnel	mg/kg	< 0.2			0.2	Pass	
Terbufos	mg/kg	< 0.2			0.2	Pass	
Tetrachlorvinphos	mg/kg	< 0.2			0.2	Pass	
Tokuthion	mg/kg	< 0.2			0.2	Pass	
Trichloronate	mg/kg	< 0.2			0.2	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C10-C14	mg/kg	< 20			20	Pass	
TRH C15-C28	mg/kg	< 50			50	Pass	
TRH C29-C36	mg/kg	< 50			50	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
TRH >C10-C16	mg/kg	< 50			50	Pass	
TRH >C16-C34	mg/kg	< 100			100	Pass	
TRH >C34-C40	mg/kg	< 100			100	Pass	
Method Blank							
Metals M8							
Arsenic	mg/kg	< 2			2	Pass	
Cadmium	mg/kg	< 0.4			0.4	Pass	
Chromium	mg/kg	< 5			5	Pass	
Copper	mg/kg	< 5			5	Pass	
Lead	mg/kg	< 5			5	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Mercury	mg/kg	< 0.1			0.1	Pass	
Nickel	mg/kg	< 5			5	Pass	
Zinc	mg/kg	< 5			5	Pass	
Method Blank							
Phenols (non-Halogenated)							
Total Non-Halogenated Phenol*	mg/kg	-			20	N/A	
LCS - % Recovery							
Phenols (non-Halogenated)							
4-Nitrophenol	%	70			25-140	Pass	
LCS - % Recovery							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	%	82			70-130	Pass	
Acenaphthylene	%	84			70-130	Pass	
Anthracene	%	86			70-130	Pass	
Benz(a)anthracene	%	78			70-130	Pass	
Benzo(a)pyrene	%	81			70-130	Pass	
Benzo(b&j)fluoranthene	%	72			70-130	Pass	
Benzo(k)fluoranthene	%	84			70-130	Pass	
Chrysene	%	82			70-130	Pass	
Fluoranthene	%	89			70-130	Pass	
Fluorene	%	84			70-130	Pass	
Naphthalene	%	84			70-130	Pass	
Phenanthrene	%	81			70-130	Pass	
Pyrene	%	90			70-130	Pass	
LCS - % Recovery							
Organochlorine Pesticides							
Chlordanes - Total	%	85			70-130	Pass	
4.4'-DDD	%	94			70-130	Pass	
4.4'-DDE	%	84			70-130	Pass	
4.4'-DDT	%	98			70-130	Pass	
a-HCH	%	78			70-130	Pass	
Aldrin	%	77			70-130	Pass	
b-HCH	%	82			70-130	Pass	
d-HCH	%	79			70-130	Pass	
Dieldrin	%	82			70-130	Pass	
Endosulfan I	%	86			70-130	Pass	
Endosulfan II	%	83			70-130	Pass	
Endosulfan sulphate	%	99			70-130	Pass	
Endrin	%	95			70-130	Pass	
Endrin aldehyde	%	86			70-130	Pass	
Endrin ketone	%	97			70-130	Pass	
g-HCH (Lindane)	%	79			70-130	Pass	
Heptachlor	%	87			70-130	Pass	
Heptachlor epoxide	%	82			70-130	Pass	
Hexachlorobenzene	%	76			70-130	Pass	
Methoxychlor	%	90			70-130	Pass	
LCS - % Recovery							
Polychlorinated Biphenyls							
Aroclor-1260	%	96			70-130	Pass	
LCS - % Recovery							
Phenols (Halogenated)							
2-Chlorophenol	%	78			25-140	Pass	
2.4-Dichlorophenol	%	85			25-140	Pass	
2.4.5-Trichlorophenol	%	74			25-140	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
2.4.6-Trichlorophenol	%	75			25-140	Pass	
2.6-Dichlorophenol	%	86			25-140	Pass	
4-Chloro-3-methylphenol	%	86			25-140	Pass	
Pentachlorophenol	%	83			25-140	Pass	
Tetrachlorophenols - Total	%	79			25-140	Pass	
LCS - % Recovery							
Phenols (non-Halogenated)							
2-Cyclohexyl-4.6-dinitrophenol	%	82			25-140	Pass	
2-Methyl-4.6-dinitrophenol	%	77			25-140	Pass	
2-Nitrophenol	%	86			25-140	Pass	
2.4-Dimethylphenol	%	84			25-140	Pass	
2.4-Dinitrophenol	%	74			25-140	Pass	
2-Methylphenol (o-Cresol)	%	80			25-140	Pass	
3&4-Methylphenol (m&p-Cresol)	%	80			25-140	Pass	
Dinoseb	%	78			25-140	Pass	
Phenol	%	80			25-140	Pass	
LCS - % Recovery							
Organophosphorus Pesticides							
Diazinon	%	88			70-130	Pass	
Dimethoate	%	70			70-130	Pass	
Ethion	%	99			70-130	Pass	
Methyl parathion	%	93			70-130	Pass	
Mevinphos	%	76			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	%	109			70-130	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	113			70-130	Pass	
Toluene	%	108			70-130	Pass	
Ethylbenzene	%	108			70-130	Pass	
m&p-Xylenes	%	112			70-130	Pass	
o-Xylene	%	105			70-130	Pass	
Xylenes - Total*	%	110			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	109			70-130	Pass	
TRH C6-C10	%	109			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	%	93			70-130	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	100			70-130	Pass	
Toluene	%	93			70-130	Pass	
Ethylbenzene	%	90			70-130	Pass	
m&p-Xylenes	%	100			70-130	Pass	
o-Xylene	%	97			70-130	Pass	
Xylenes - Total*	%	99			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	89			70-130	Pass	
TRH C6-C10	%	92			70-130	Pass	
LCS - % Recovery							

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	%	98			70-130	Pass	
Acenaphthylene	%	98			70-130	Pass	
Anthracene	%	95			70-130	Pass	
Benz(a)anthracene	%	81			70-130	Pass	
Benzo(a)pyrene	%	94			70-130	Pass	
Benzo(b&j)fluoranthene	%	92			70-130	Pass	
Benzo(g.h.i)perylene	%	100			70-130	Pass	
Benzo(k)fluoranthene	%	94			70-130	Pass	
Chrysene	%	90			70-130	Pass	
Dibenz(a.h)anthracene	%	85			70-130	Pass	
Fluoranthene	%	114			70-130	Pass	
Fluorene	%	102			70-130	Pass	
Indeno(1.2.3-cd)pyrene	%	85			70-130	Pass	
Naphthalene	%	101			70-130	Pass	
Phenanthrene	%	94			70-130	Pass	
Pyrene	%	126			70-130	Pass	
LCS - % Recovery							
Organochlorine Pesticides							
Chlordanes - Total	%	110			70-130	Pass	
4.4'-DDD	%	97			70-130	Pass	
4.4'-DDE	%	99			70-130	Pass	
4.4'-DDT	%	124			70-130	Pass	
a-HCH	%	109			70-130	Pass	
Aldrin	%	96			70-130	Pass	
b-HCH	%	92			70-130	Pass	
d-HCH	%	98			70-130	Pass	
Dieldrin	%	96			70-130	Pass	
Endosulfan I	%	113			70-130	Pass	
Endosulfan II	%	92			70-130	Pass	
Endosulfan sulphate	%	106			70-130	Pass	
Endrin	%	127			70-130	Pass	
Endrin aldehyde	%	84			70-130	Pass	
Endrin ketone	%	103			70-130	Pass	
g-HCH (Lindane)	%	90			70-130	Pass	
Heptachlor	%	107			70-130	Pass	
Heptachlor epoxide	%	105			70-130	Pass	
Hexachlorobenzene	%	107			70-130	Pass	
Methoxychlor	%	109			70-130	Pass	
LCS - % Recovery							
Polychlorinated Biphenyls							
Aroclor-1016	%	105			70-130	Pass	
Aroclor-1260	%	104			70-130	Pass	
LCS - % Recovery							
Phenols (Halogenated)							
2-Chlorophenol	%	93			25-140	Pass	
2.4-Dichlorophenol	%	95			25-140	Pass	
2.4.5-Trichlorophenol	%	72			25-140	Pass	
2.4.6-Trichlorophenol	%	86			25-140	Pass	
2.6-Dichlorophenol	%	91			25-140	Pass	
4-Chloro-3-methylphenol	%	80			25-140	Pass	
Pentachlorophenol	%	79			25-140	Pass	
Tetrachlorophenols - Total	%	87			25-140	Pass	
LCS - % Recovery							

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Phenols (non-Halogenated)							
2-Nitrophenol	%	96			25-140	Pass	
2.4-Dimethylphenol	%	97			25-140	Pass	
2-Methylphenol (o-Cresol)	%	92			25-140	Pass	
3&4-Methylphenol (m&p-Cresol)	%	89			25-140	Pass	
Phenol	%	111			25-140	Pass	
LCS - % Recovery							
Organophosphorus Pesticides							
Diazinon	%	92			70-130	Pass	
Dimethoate	%	81			70-130	Pass	
Fenitrothion	%	98			70-130	Pass	
Methyl parathion	%	117			70-130	Pass	
Mevinphos	%	92			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C10-C14	%	73			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
TRH >C10-C16	%	72			70-130	Pass	
LCS - % Recovery							
Metals M8							
Arsenic	%	99			80-120	Pass	
Cadmium	%	100			80-120	Pass	
Chromium	%	103			80-120	Pass	
Copper	%	105			80-120	Pass	
Lead	%	104			80-120	Pass	
Mercury	%	105			80-120	Pass	
Nickel	%	104			80-120	Pass	
Zinc	%	104			80-120	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
TRH C6-C10	S24-Ap0004935	NCP	%	89			70-130	Pass	
Spike - % Recovery									
Organochlorine Pesticides				Result 1					
4.4'-DDD	N24-Ap0006857	NCP	%	76			70-130	Pass	
4.4'-DDT	N24-Ap0006857	NCP	%	107			70-130	Pass	
b-HCH	S24-Ap0002057	NCP	%	80			70-130	Pass	
Endosulfan II	N24-Ap0006857	NCP	%	99			70-130	Pass	
Endrin aldehyde	S24-Ap0003814	NCP	%	101			70-130	Pass	
Methoxychlor	N24-Ap0006926	NCP	%	79			70-130	Pass	
Spike - % Recovery									
Phenols (Halogenated)				Result 1					
2-Chlorophenol	S24-Ap0001855	NCP	%	72			30-130	Pass	
2.4-Dichlorophenol	S24-Ap0001855	NCP	%	74			30-130	Pass	
2.4.5-Trichlorophenol	S24-Ap0001855	NCP	%	83			30-130	Pass	
2.4.6-Trichlorophenol	S24-Ap0001855	NCP	%	83			30-130	Pass	
2.6-Dichlorophenol	S24-Ap0001855	NCP	%	73			30-130	Pass	
Tetrachlorophenols - Total	S24-Ap0001855	NCP	%	80			30-130	Pass	
Spike - % Recovery									
Phenols (non-Halogenated)				Result 1					
2-Cyclohexyl-4.6-dinitrophenol	S24-Ap0001855	NCP	%	82			30-130	Pass	
2-Methyl-4.6-dinitrophenol	S24-Ap0001855	NCP	%	75			30-130	Pass	
2-Nitrophenol	S24-Ap0001855	NCP	%	75			30-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
2.4-Dimethylphenol	S24-Ap0001855	NCP	%	71			30-130	Pass	
2.4-Dinitrophenol	S24-Ap0001855	NCP	%	72			70-130	Pass	
Dinoseb	S24-Ap0001855	NCP	%	82			30-130	Pass	
Spike - % Recovery									
Phenols (Halogenated)				Result 1					
4-Chloro-3-methylphenol	S24-Ma0066710	NCP	%	89			30-130	Pass	
Spike - % Recovery									
Phenols (non-Halogenated)				Result 1					
2-Methylphenol (o-Cresol)	S24-Ma0066710	NCP	%	98			30-130	Pass	
3&4-Methylphenol (m&p-Cresol)	S24-Ma0066710	NCP	%	93			30-130	Pass	
Spike - % Recovery									
Organophosphorus Pesticides				Result 1					
Diazinon	S24-Ap0004941	NCP	%	116			70-130	Pass	
Ethion	S24-Ap0004941	NCP	%	116			70-130	Pass	
Fenitrothion	S24-Ap0004941	NCP	%	74			70-130	Pass	
Methyl parathion	S24-Ap0004941	NCP	%	87			70-130	Pass	
Mevinphos	S24-Ap0004941	NCP	%	99			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C10-C14	R24-Ma0067442	CP	%	126			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
TRH >C10-C16	R24-Ma0067442	CP	%	124			70-130	Pass	
Spike - % Recovery									
Organochlorine Pesticides				Result 1					
Chlordanes - Total	R24-Ma0067444	CP	%	79			70-130	Pass	
4.4'-DDE	R24-Ma0067444	CP	%	73			70-130	Pass	
a-HCH	R24-Ma0067444	CP	%	75			70-130	Pass	
Aldrin	R24-Ma0067444	CP	%	79			70-130	Pass	
d-HCH	R24-Ma0067444	CP	%	73			70-130	Pass	
Dieldrin	R24-Ma0067444	CP	%	82			70-130	Pass	
Endosulfan I	R24-Ma0067444	CP	%	79			70-130	Pass	
Endosulfan sulphate	R24-Ma0067444	CP	%	71			70-130	Pass	
Endrin	R24-Ma0067444	CP	%	91			70-130	Pass	
Endrin ketone	R24-Ma0067444	CP	%	70			70-130	Pass	
g-HCH (Lindane)	R24-Ma0067444	CP	%	81			70-130	Pass	
Heptachlor	R24-Ma0067444	CP	%	70			70-130	Pass	
Heptachlor epoxide	R24-Ma0067444	CP	%	76			70-130	Pass	
Hexachlorobenzene	R24-Ma0067444	CP	%	78			70-130	Pass	
Spike - % Recovery									
Polychlorinated Biphenyls				Result 1					
Aroclor-1016	R24-Ma0067444	CP	%	83			70-130	Pass	
Aroclor-1260	R24-Ma0067444	CP	%	104			70-130	Pass	
Spike - % Recovery									
Metals M8				Result 1					
Arsenic	R24-Ma0067449	CP	%	123			75-125	Pass	
Cadmium	R24-Ma0067449	CP	%	106			75-125	Pass	
Chromium	R24-Ma0067449	CP	%	120			75-125	Pass	
Copper	R24-Ma0067449	CP	%	109			75-125	Pass	
Lead	R24-Ma0067449	CP	%	97			75-125	Pass	
Mercury	R24-Ma0067449	CP	%	106			75-125	Pass	
Nickel	R24-Ma0067449	CP	%	100			75-125	Pass	
Zinc	R24-Ma0067449	CP	%	107			75-125	Pass	
Spike - % Recovery									

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C6-C9	R24-Ma0067452	CP	%	76			70-130	Pass	
Spike - % Recovery									
BTEX				Result 1					
Benzene	R24-Ma0067452	CP	%	87			70-130	Pass	
Toluene	R24-Ma0067452	CP	%	85			70-130	Pass	
Ethylbenzene	R24-Ma0067452	CP	%	82			70-130	Pass	
m&p-Xylenes	R24-Ma0067452	CP	%	87			70-130	Pass	
o-Xylene	R24-Ma0067452	CP	%	84			70-130	Pass	
Xylenes - Total*	R24-Ma0067452	CP	%	86			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
Naphthalene	R24-Ma0067452	CP	%	80			70-130	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
Sample Properties				Result 1	Result 2	RPD			
% Moisture	R24-Ma0067435	CP	%	8.5	9.1	6.7	30%	Pass	
Duplicate									
Metals M8				Result 1	Result 2	RPD			
Arsenic	R24-Ma0067437	CP	mg/kg	39	41	5.9	30%	Pass	
Cadmium	R24-Ma0067437	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	R24-Ma0067437	CP	mg/kg	84	77	8.3	30%	Pass	
Copper	R24-Ma0067437	CP	mg/kg	31	26	19	30%	Pass	
Mercury	R24-Ma0067437	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Nickel	R24-Ma0067437	CP	mg/kg	11	13	11	30%	Pass	
Zinc	R24-Ma0067437	CP	mg/kg	360	330	10	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C6-C9	R24-Ma0067438	CP	mg/kg	< 20	< 20	<1	30%	Pass	
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	R24-Ma0067438	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Toluene	R24-Ma0067438	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Ethylbenzene	R24-Ma0067438	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
m&p-Xylenes	R24-Ma0067438	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
o-Xylene	R24-Ma0067438	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Xylenes - Total*	R24-Ma0067438	CP	mg/kg	< 0.3	< 0.3	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	R24-Ma0067438	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
TRH C6-C10	R24-Ma0067438	CP	mg/kg	< 20	< 20	<1	30%	Pass	
Duplicate									
Metals M8				Result 1	Result 2	RPD			
Arsenic	R24-Ma0067438	CP	mg/kg	40	40	<1	30%	Pass	
Cadmium	R24-Ma0067438	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	R24-Ma0067438	CP	mg/kg	92	86	7.2	30%	Pass	
Copper	R24-Ma0067438	CP	mg/kg	15	15	<1	30%	Pass	
Lead	R24-Ma0067438	CP	mg/kg	42	39	7.9	30%	Pass	
Mercury	R24-Ma0067438	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Nickel	R24-Ma0067438	CP	mg/kg	9.5	9.5	<1	30%	Pass	
Zinc	R24-Ma0067438	CP	mg/kg	29	30	3.2	30%	Pass	

Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C10-C14	R24-Ma0067440	CP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C15-C28	R24-Ma0067440	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH C29-C36	R24-Ma0067440	CP	mg/kg	< 50	< 50	<1	30%	Pass	
Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Acenaphthene	R24-Ma0067440	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Acenaphthylene	R24-Ma0067440	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Anthracene	R24-Ma0067440	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benz(a)anthracene	R24-Ma0067440	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(a)pyrene	R24-Ma0067440	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(b&j)fluoranthene	R24-Ma0067440	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(g.h.i)perylene	R24-Ma0067440	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(k)fluoranthene	R24-Ma0067440	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chrysene	R24-Ma0067440	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dibenz(a.h)anthracene	R24-Ma0067440	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluoranthene	R24-Ma0067440	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluorene	R24-Ma0067440	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Indeno(1.2.3-cd)pyrene	R24-Ma0067440	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Naphthalene	R24-Ma0067440	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Phenanthrene	R24-Ma0067440	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Pyrene	R24-Ma0067440	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Organochlorine Pesticides				Result 1	Result 2	RPD			
Chlordanes - Total	R24-Ma0067440	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
4.4'-DDD	R24-Ma0067440	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
4.4'-DDE	R24-Ma0067440	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
4.4'-DDT	R24-Ma0067440	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
a-HCH	R24-Ma0067440	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Aldrin	R24-Ma0067440	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
b-HCH	R24-Ma0067440	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
d-HCH	R24-Ma0067440	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Dieldrin	R24-Ma0067440	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan I	R24-Ma0067440	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan II	R24-Ma0067440	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan sulphate	R24-Ma0067440	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin	R24-Ma0067440	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin aldehyde	R24-Ma0067440	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin ketone	R24-Ma0067440	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
g-HCH (Lindane)	R24-Ma0067440	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Heptachlor	R24-Ma0067440	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Heptachlor epoxide	R24-Ma0067440	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Hexachlorobenzene	R24-Ma0067440	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Methoxychlor	R24-Ma0067440	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Toxaphene	R24-Ma0067440	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Polychlorinated Biphenyls				Result 1	Result 2	RPD			
Aroclor-1016	R24-Ma0067440	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1221	R24-Ma0067440	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1232	R24-Ma0067440	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1242	R24-Ma0067440	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1248	R24-Ma0067440	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1254	R24-Ma0067440	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1260	R24-Ma0067440	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Total PCB*	R24-Ma0067440	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	

Duplicate									
Phenols (Halogenated)				Result 1	Result 2	RPD			
2-Chlorophenol	R24-Ma0067440	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
2.4-Dichlorophenol	R24-Ma0067440	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
2.4.5-Trichlorophenol	R24-Ma0067440	CP	mg/kg	< 1	< 1	<1	30%	Pass	
2.4.6-Trichlorophenol	R24-Ma0067440	CP	mg/kg	< 1	< 1	<1	30%	Pass	
2.6-Dichlorophenol	R24-Ma0067440	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
4-Chloro-3-methylphenol	R24-Ma0067440	CP	mg/kg	< 1	< 1	<1	30%	Pass	
Pentachlorophenol	R24-Ma0067440	CP	mg/kg	< 1	< 1	<1	30%	Pass	
Tetrachlorophenols - Total	R24-Ma0067440	CP	mg/kg	< 10	< 10	<1	30%	Pass	
Duplicate									
Phenols (non-Halogenated)				Result 1	Result 2	RPD			
2-Cyclohexyl-4.6-dinitrophenol	R24-Ma0067440	CP	mg/kg	< 20	< 20	<1	30%	Pass	
2-Methyl-4.6-dinitrophenol	R24-Ma0067440	CP	mg/kg	< 5	< 5	<1	30%	Pass	
2-Nitrophenol	R24-Ma0067440	CP	mg/kg	< 1	< 1	<1	30%	Pass	
2.4-Dimethylphenol	R24-Ma0067440	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
2.4-Dinitrophenol	R24-Ma0067440	CP	mg/kg	< 5	< 5	<1	30%	Pass	
2-Methylphenol (o-Cresol)	R24-Ma0067440	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
3&4-Methylphenol (m&p-Cresol)	R24-Ma0067440	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
4-Nitrophenol	R24-Ma0067440	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Dinoseb	R24-Ma0067440	CP	mg/kg	< 20	< 20	<1	30%	Pass	
Phenol	R24-Ma0067440	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
TRH >C10-C16	R24-Ma0067440	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH >C16-C34	R24-Ma0067440	CP	mg/kg	< 100	< 100	<1	30%	Pass	
TRH >C34-C40	R24-Ma0067440	CP	mg/kg	< 100	< 100	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C10-C14	R24-Ma0067443	CP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C15-C28	R24-Ma0067443	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH C29-C36	R24-Ma0067443	CP	mg/kg	< 50	< 50	<1	30%	Pass	
Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Acenaphthene	R24-Ma0067443	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Acenaphthylene	R24-Ma0067443	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Anthracene	R24-Ma0067443	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benz(a)anthracene	R24-Ma0067443	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(a)pyrene	R24-Ma0067443	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(b&j)fluoranthene	R24-Ma0067443	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(g.h.i)perylene	R24-Ma0067443	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(k)fluoranthene	R24-Ma0067443	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chrysene	R24-Ma0067443	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dibenz(a.h)anthracene	R24-Ma0067443	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluoranthene	R24-Ma0067443	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluorene	R24-Ma0067443	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Indeno(1.2.3-cd)pyrene	R24-Ma0067443	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Naphthalene	R24-Ma0067443	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Phenanthrene	R24-Ma0067443	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Pyrene	R24-Ma0067443	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Organochlorine Pesticides				Result 1	Result 2	RPD			
Chlordanes - Total	R24-Ma0067443	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
4.4'-DDD	R24-Ma0067443	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
4.4'-DDE	R24-Ma0067443	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
4.4'-DDT	R24-Ma0067443	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	

Duplicate									
Organochlorine Pesticides				Result 1	Result 2	RPD			
a-HCH	R24-Ma0067443	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Aldrin	R24-Ma0067443	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
b-HCH	R24-Ma0067443	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
d-HCH	R24-Ma0067443	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Dieldrin	R24-Ma0067443	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan I	R24-Ma0067443	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan II	R24-Ma0067443	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan sulphate	R24-Ma0067443	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin	R24-Ma0067443	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin aldehyde	R24-Ma0067443	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin ketone	R24-Ma0067443	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
g-HCH (Lindane)	R24-Ma0067443	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Heptachlor	R24-Ma0067443	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Heptachlor epoxide	R24-Ma0067443	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Hexachlorobenzene	R24-Ma0067443	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Methoxychlor	R24-Ma0067443	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Toxaphene	R24-Ma0067443	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Polychlorinated Biphenyls				Result 1	Result 2	RPD			
Aroclor-1016	R24-Ma0067443	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1221	R24-Ma0067443	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1232	R24-Ma0067443	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1242	R24-Ma0067443	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1248	R24-Ma0067443	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1254	R24-Ma0067443	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1260	R24-Ma0067443	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Total PCB*	R24-Ma0067443	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Duplicate									
Phenols (Halogenated)				Result 1	Result 2	RPD			
2-Chlorophenol	R24-Ma0067443	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
2.4-Dichlorophenol	R24-Ma0067443	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
2.4.5-Trichlorophenol	R24-Ma0067443	CP	mg/kg	< 1	< 1	<1	30%	Pass	
2.4.6-Trichlorophenol	R24-Ma0067443	CP	mg/kg	< 1	< 1	<1	30%	Pass	
2.6-Dichlorophenol	R24-Ma0067443	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
4-Chloro-3-methylphenol	R24-Ma0067443	CP	mg/kg	< 1	< 1	<1	30%	Pass	
Pentachlorophenol	R24-Ma0067443	CP	mg/kg	< 1	< 1	<1	30%	Pass	
Tetrachlorophenols - Total	R24-Ma0067443	CP	mg/kg	< 10	< 10	<1	30%	Pass	
Duplicate									
Phenols (non-Halogenated)				Result 1	Result 2	RPD			
2-Cyclohexyl-4.6-dinitrophenol	R24-Ma0067443	CP	mg/kg	< 20	< 20	<1	30%	Pass	
2-Methyl-4.6-dinitrophenol	R24-Ma0067443	CP	mg/kg	< 5	< 5	<1	30%	Pass	
2-Nitrophenol	R24-Ma0067443	CP	mg/kg	< 1	< 1	<1	30%	Pass	
2.4-Dimethylphenol	R24-Ma0067443	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
2.4-Dinitrophenol	R24-Ma0067443	CP	mg/kg	< 5	< 5	<1	30%	Pass	
2-Methylphenol (o-Cresol)	R24-Ma0067443	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
3&4-Methylphenol (m&p-Cresol)	R24-Ma0067443	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
4-Nitrophenol	R24-Ma0067443	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Dinoseb	R24-Ma0067443	CP	mg/kg	< 20	< 20	<1	30%	Pass	
Phenol	R24-Ma0067443	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
TRH >C10-C16	R24-Ma0067443	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH >C16-C34	R24-Ma0067443	CP	mg/kg	< 100	< 100	<1	30%	Pass	
TRH >C34-C40	R24-Ma0067443	CP	mg/kg	< 100	< 100	<1	30%	Pass	

Duplicate									
Organophosphorus Pesticides				Result 1	Result 2	RPD			
Azinphos-methyl	S24-Ap0001854	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Bolstar	S24-Ap0001854	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Chlorfenvinphos	S24-Ap0001854	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Chlorpyrifos	S24-Ap0001854	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Chlorpyrifos-methyl	S24-Ap0001854	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Coumaphos	S24-Ap0001854	NCP	mg/kg	< 2	< 2	<1	30%	Pass	
Demeton-S	S24-Ap0001854	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Demeton-O	S24-Ap0001854	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Diazinon	S24-Ap0001854	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Dichlorvos	S24-Ap0001854	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Dimethoate	S24-Ap0001854	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Disulfoton	S24-Ap0001854	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
EPN	S24-Ap0001854	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Ethion	S24-Ap0001854	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Ethoprop	S24-Ap0001854	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Ethyl parathion	S24-Ap0001854	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Fenitrothion	S24-Ap0001854	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Fensulfothion	S24-Ap0001854	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Fenthion	S24-Ap0001854	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Malathion	S24-Ap0001854	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Merphos	S24-Ap0001854	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Methyl parathion	S24-Ap0001854	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Mevinphos	S24-Ap0001854	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Monocrotophos	S24-Ap0001854	NCP	mg/kg	< 2	< 2	<1	30%	Pass	
Naled	S24-Ap0001854	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Omethoate	S24-Ap0001854	NCP	mg/kg	< 2	< 2	<1	30%	Pass	
Phorate	S24-Ap0001854	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Pirimiphos-methyl	S24-Ap0001854	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Pyrazophos	S24-Ap0001854	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Ronnel	S24-Ap0001854	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Terbufos	S24-Ap0001854	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Tetrachlorvinphos	S24-Ap0001854	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Tokuthion	S24-Ap0001854	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Trichloronate	S24-Ap0001854	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Duplicate									
Sample Properties				Result 1	Result 2	RPD			
% Moisture	R24-Ma0067445	CP	%	17	16	4.8	30%	Pass	
Duplicate									
Metals M8				Result 1	Result 2	RPD			
Arsenic	R24-Ma0067448	CP	mg/kg	26	26	1.9	30%	Pass	
Cadmium	R24-Ma0067448	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	R24-Ma0067448	CP	mg/kg	48	43	10	30%	Pass	
Copper	R24-Ma0067448	CP	mg/kg	28	30	8.9	30%	Pass	
Lead	R24-Ma0067448	CP	mg/kg	40	39	3.1	30%	Pass	
Mercury	R24-Ma0067448	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Nickel	R24-Ma0067448	CP	mg/kg	20	21	6.3	30%	Pass	
Zinc	R24-Ma0067448	CP	mg/kg	66	64	2.8	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C6-C9	R24-Ma0067451	CP	mg/kg	< 20	< 20	<1	30%	Pass	

Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	R24-Ma0067451	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Toluene	R24-Ma0067451	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Ethylbenzene	R24-Ma0067451	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
m&p-Xylenes	R24-Ma0067451	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
o-Xylene	R24-Ma0067451	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Xylenes - Total*	R24-Ma0067451	CP	mg/kg	< 0.3	< 0.3	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	R24-Ma0067451	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
TRH C6-C10	R24-Ma0067451	CP	mg/kg	< 20	< 20	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C10-C14	R24-Ma0067454	CP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C15-C28	R24-Ma0067454	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH C29-C36	R24-Ma0067454	CP	mg/kg	< 50	< 50	<1	30%	Pass	
Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Acenaphthene	R24-Ma0067454	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Acenaphthylene	R24-Ma0067454	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Anthracene	R24-Ma0067454	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benz(a)anthracene	R24-Ma0067454	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(a)pyrene	R24-Ma0067454	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(b&j)fluoranthene	R24-Ma0067454	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(g.h.i)perylene	R24-Ma0067454	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(k)fluoranthene	R24-Ma0067454	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chrysene	R24-Ma0067454	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dibenz(a.h)anthracene	R24-Ma0067454	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluoranthene	R24-Ma0067454	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluorene	R24-Ma0067454	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Indeno(1.2.3-cd)pyrene	R24-Ma0067454	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Naphthalene	R24-Ma0067454	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Phenanthrene	R24-Ma0067454	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Pyrene	R24-Ma0067454	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Organochlorine Pesticides				Result 1	Result 2	RPD			
Chlordanes - Total	R24-Ma0067454	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
4.4'-DDD	R24-Ma0067454	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
4.4'-DDE	R24-Ma0067454	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
4.4'-DDT	R24-Ma0067454	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
a-HCH	R24-Ma0067454	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Aldrin	R24-Ma0067454	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
b-HCH	R24-Ma0067454	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
d-HCH	R24-Ma0067454	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Dieldrin	R24-Ma0067454	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan I	R24-Ma0067454	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan II	R24-Ma0067454	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan sulphate	R24-Ma0067454	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin	R24-Ma0067454	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin aldehyde	R24-Ma0067454	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin ketone	R24-Ma0067454	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
g-HCH (Lindane)	R24-Ma0067454	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Heptachlor	R24-Ma0067454	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Heptachlor epoxide	R24-Ma0067454	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Hexachlorobenzene	R24-Ma0067454	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	

Duplicate									
Organochlorine Pesticides				Result 1	Result 2	RPD			
Methoxychlor	R24-Ma0067454	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Toxaphene	R24-Ma0067454	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Polychlorinated Biphenyls				Result 1	Result 2	RPD			
Aroclor-1016	R24-Ma0067454	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1221	R24-Ma0067454	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1232	R24-Ma0067454	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1242	R24-Ma0067454	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1248	R24-Ma0067454	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1254	R24-Ma0067454	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1260	R24-Ma0067454	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Total PCB*	R24-Ma0067454	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Duplicate									
Phenols (Halogenated)				Result 1	Result 2	RPD			
2-Chlorophenol	R24-Ma0067454	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
2.4-Dichlorophenol	R24-Ma0067454	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
2.4.5-Trichlorophenol	R24-Ma0067454	CP	mg/kg	< 1	< 1	<1	30%	Pass	
2.4.6-Trichlorophenol	R24-Ma0067454	CP	mg/kg	< 1	< 1	<1	30%	Pass	
2.6-Dichlorophenol	R24-Ma0067454	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
4-Chloro-3-methylphenol	R24-Ma0067454	CP	mg/kg	< 1	< 1	<1	30%	Pass	
Pentachlorophenol	R24-Ma0067454	CP	mg/kg	< 1	< 1	<1	30%	Pass	
Tetrachlorophenols - Total	R24-Ma0067454	CP	mg/kg	< 10	< 10	<1	30%	Pass	
Duplicate									
Phenols (non-Halogenated)				Result 1	Result 2	RPD			
2-Cyclohexyl-4.6-dinitrophenol	R24-Ma0067454	CP	mg/kg	< 20	< 20	<1	30%	Pass	
2-Methyl-4.6-dinitrophenol	R24-Ma0067454	CP	mg/kg	< 5	< 5	<1	30%	Pass	
2-Nitrophenol	R24-Ma0067454	CP	mg/kg	< 1	< 1	<1	30%	Pass	
2.4-Dimethylphenol	R24-Ma0067454	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
2.4-Dinitrophenol	R24-Ma0067454	CP	mg/kg	< 5	< 5	<1	30%	Pass	
2-Methylphenol (o-Cresol)	R24-Ma0067454	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
3&4-Methylphenol (m&p-Cresol)	R24-Ma0067454	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
4-Nitrophenol	R24-Ma0067454	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Dinoseb	R24-Ma0067454	CP	mg/kg	< 20	< 20	<1	30%	Pass	
Phenol	R24-Ma0067454	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
TRH >C10-C16	R24-Ma0067454	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH >C16-C34	R24-Ma0067454	CP	mg/kg	< 100	< 100	<1	30%	Pass	
TRH >C34-C40	R24-Ma0067454	CP	mg/kg	< 100	< 100	<1	30%	Pass	
Duplicate									
Sample Properties				Result 1	Result 2	RPD			
% Moisture	R24-Ma0067456	CP	%	7.8	7.4	4.6	30%	Pass	
Duplicate									
Metals M8				Result 1	Result 2	RPD			
Arsenic	R24-Ma0067459	CP	mg/kg	22	17	22	30%	Pass	
Cadmium	R24-Ma0067459	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	R24-Ma0067459	CP	mg/kg	31	26	18	30%	Pass	
Copper	R24-Ma0067459	CP	mg/kg	11	11	4.2	30%	Pass	
Lead	R24-Ma0067459	CP	mg/kg	30	25	19	30%	Pass	
Mercury	R24-Ma0067459	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Nickel	R24-Ma0067459	CP	mg/kg	8.6	7.5	14	30%	Pass	
Zinc	R24-Ma0067459	CP	mg/kg	62	60	4.3	30%	Pass	

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
G01	The LORs have been raised due to matrix interference
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
N07	Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to the total of the two co-eluting PAHs

Authorised by:

Nileshni Goundar	Analytical Services Manager
Fang Yee Tan	Senior Analyst-Metal
Laxman Dias	Senior Analyst-Asbestos
Mickael Ros	Senior Analyst-Metal
Raymond Siu	Senior Analyst-Volatile
Roopesh Rangarajan	Senior Analyst-Organic

Glenn Jackson
Managing Director

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please click here.

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Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

CERTIFICATE OF ANALYSIS 347986

Client Details

Client	Agon Environmental Pty Ltd
Attention	John O'Brien
Address	Unit 3, 224 Glen Osmond Rd, FULLARTON, SA, 5063

Sample Details

Your Reference	**JC1523**
Number of Samples	1 Soil
Date samples received	03/04/2024
Date completed instructions received	03/04/2024

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.

Samples were analysed as received from the client. Results relate specifically to the samples as received.

Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

Report Details

Date results requested by	10/04/2024
Date of Issue	10/04/2024

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Results Approved By
Diego Bigolin, Inorganics Supervisor
Loren Bardwell, Development Chemist
Steven Luong, Senior Chemist
Timothy Toll, Senior Chemist

Authorised By
Nancy Zhang, Laboratory Manager

vTRH(C6-C10)/BTEXN in Soil		
Our Reference		347986-1
Your Reference	UNITS	QC04
Date Sampled		25/03/2024
Type of sample		Soil
Date extracted	-	05/04/2024
Date analysed	-	08/04/2024
TRH C_6 - C_9	mg/kg	<25
TRH C_6 - C_{10}	mg/kg	<25
vTRH C_6 - C_{10} less BTEX (F1)	mg/kg	<25
Benzene	mg/kg	<0.2
Toluene	mg/kg	<0.5
Ethylbenzene	mg/kg	<1
m+p-xylene	mg/kg	<2
o-Xylene	mg/kg	<1
Naphthalene	mg/kg	<1
Total +ve Xylenes	mg/kg	<1
Surrogate aaa-Trifluorotoluene	%	108

svTRH (C10-C40) in Soil		
Our Reference		347986-1
Your Reference	UNITS	QC04
Date Sampled		25/03/2024
Type of sample		Soil
Date extracted	-	05/04/2024
Date analysed	-	06/04/2024
TRH C_{10} - C_{14}	mg/kg	<50
TRH C_{15} - C_{28}	mg/kg	<100
TRH C_{29} - C_{36}	mg/kg	<100
Total +ve TRH (C10-C36)	mg/kg	<50
TRH >C_{10} -C_{16}	mg/kg	<50
TRH >C_{10} -C_{16} less Naphthalene (F2)	mg/kg	<50
TRH >C_{16} -C_{34}	mg/kg	<100
TRH >C_{34} -C_{40}	mg/kg	<100
Total +ve TRH (>C10-C40)	mg/kg	<50
Surrogate o-Terphenyl	%	85

PAHs in Soil		
Our Reference		347986-1
Your Reference	UNITS	QC04
Date Sampled		25/03/2024
Type of sample		Soil
Date extracted	-	05/04/2024
Date analysed	-	05/04/2024
Naphthalene	mg/kg	<0.1
Acenaphthylene	mg/kg	<0.1
Acenaphthene	mg/kg	<0.1
Fluorene	mg/kg	<0.1
Phenanthrene	mg/kg	<0.1
Anthracene	mg/kg	<0.1
Fluoranthene	mg/kg	<0.1
Pyrene	mg/kg	<0.1
Benzo(a)anthracene	mg/kg	<0.1
Chrysene	mg/kg	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2
Benzo(a)pyrene	mg/kg	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1
Total +ve PAH's	mg/kg	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5
Surrogate p-Terphenyl-d14	%	87

Organochlorine Pesticides in soil		
Our Reference		347986-1
Your Reference	UNITS	QC04
Date Sampled		25/03/2024
Type of sample		Soil
Date extracted	-	05/04/2024
Date analysed	-	05/04/2024
alpha-BHC	mg/kg	<0.1
HCB	mg/kg	<0.1
beta-BHC	mg/kg	<0.1
gamma-BHC	mg/kg	<0.1
Heptachlor	mg/kg	<0.1
delta-BHC	mg/kg	<0.1
Aldrin	mg/kg	<0.1
Heptachlor Epoxide	mg/kg	<0.1
gamma-Chlordane	mg/kg	<0.1
alpha-chlordane	mg/kg	<0.1
Endosulfan I	mg/kg	<0.1
pp-DDE	mg/kg	<0.1
Dieldrin	mg/kg	<0.1
Endrin	mg/kg	<0.1
Endosulfan II	mg/kg	<0.1
pp-DDD	mg/kg	<0.1
Endrin Aldehyde	mg/kg	<0.1
pp-DDT	mg/kg	<0.1
Endosulfan Sulphate	mg/kg	<0.1
Methoxychlor	mg/kg	<0.1
Mirex	mg/kg	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1
Surrogate 4-Chloro-3-NBTF	%	91

PCBs in Soil		
Our Reference		347986-1
Your Reference	UNITS	QC04
Date Sampled		25/03/2024
Type of sample		Soil
Date extracted	-	05/04/2024
Date analysed	-	05/04/2024
Aroclor 1016	mg/kg	<0.1
Aroclor 1221	mg/kg	<0.1
Aroclor 1232	mg/kg	<0.1
Aroclor 1242	mg/kg	<0.1
Aroclor 1248	mg/kg	<0.1
Aroclor 1254	mg/kg	<0.1
Aroclor 1260	mg/kg	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1
Surrogate 2-Fluorobiphenyl	%	92

Acid Extractable metals in soil		
Our Reference		347986-1
Your Reference	UNITS	QC04
Date Sampled		25/03/2024
Type of sample		Soil
Date prepared	-	08/04/2024
Date analysed	-	10/04/2024
Arsenic	mg/kg	25
Cadmium	mg/kg	<0.4
Chromium	mg/kg	40
Copper	mg/kg	18
Lead	mg/kg	66
Mercury	mg/kg	<0.1
Nickel	mg/kg	12
Zinc	mg/kg	170

Misc Soil - Inorg		
Our Reference		347986-1
Your Reference	UNITS	QC04
Date Sampled		25/03/2024
Type of sample		Soil
Date prepared	-	05/04/2024
Date analysed	-	05/04/2024
Total Phenolics (as Phenol)	mg/kg	<5

Moisture		
Our Reference		347986-1
Your Reference	UNITS	QC04
Date Sampled		25/03/2024
Type of sample		Soil
Date prepared	-	05/04/2024
Date analysed	-	08/04/2024
Moisture	%	13

Method ID	Methodology Summary
Inorg-008	Moisture content determined by heating at 105+/-5 °C for a minimum of 12 hours.
Inorg-031	Total Phenolics by segmented flow analyser (in line distillation with colourimetric finish). Solids are extracted in a caustic media prior to analysis.
Metals-020	Determination of various metals by ICP-AES.
Metals-021	Determination of Mercury by Cold Vapour AAS.
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis. Note, the Total +ve TRH PQL is reflective of the lowest individual PQL and is therefore "Total +ve TRH" is simply a sum of the positive individual TRH fractions (>C10-C40).
Org-021/022/025	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD and/or GC-MS/GC-MSMS. Note, the Total +ve PCBs PQL is reflective of the lowest individual PQL and is therefore" Total +ve PCBs" is simply a sum of the positive individual PCBs.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS.
Org-022/025	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-MS/GC-MSMS. Note, the Total +ve reported DDD+DDE+DDT PQL is reflective of the lowest individual PQL and is therefore simply a sum of the positive individually report DDD+DDE+DDT.

Method ID	Methodology Summary
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS and/or GC-MS/MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013. For soil results:- 1. 'EQ PQL'values are assuming all contributing PAHs reported as <PQL are actually at the PQL. This is the most conservative approach and can give false positive TEQs given that PAHs that contribute to the TEQ calculation may not be present. 2. 'EQ zero'values are assuming all contributing PAHs reported as <PQL are zero. This is the least conservative approach and is more susceptible to false negative TEQs when PAHs that contribute to the TEQ calculation are present but below PQL. 3. 'EQ half PQL'values are assuming all contributing PAHs reported as <PQL are half the stipulated PQL. Hence a mid-point between the most and least conservative approaches above. Note, the Total +ve PAHs PQL is reflective of the lowest individual PQL and is therefore "Total +ve PAHs" is simply a sum of the positive individual PAHs.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater. Note, the Total +ve Xylene PQL is reflective of the lowest individual PQL and is therefore "Total +ve Xylenes" is simply a sum of the positive individual Xylenes.

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-4	[NT]
Date extracted	-			05/04/2024	[NT]	[NT]	[NT]	[NT]	05/04/2024	[NT]
Date analysed	-			08/04/2024	[NT]	[NT]	[NT]	[NT]	08/04/2024	[NT]
TRH C_6 - C_9	mg/kg	25	Org-023	<25	[NT]	[NT]	[NT]	[NT]	118	[NT]
TRH C_6 - C_{10}	mg/kg	25	Org-023	<25	[NT]	[NT]	[NT]	[NT]	118	[NT]
Benzene	mg/kg	0.2	Org-023	<0.2	[NT]	[NT]	[NT]	[NT]	112	[NT]
Toluene	mg/kg	0.5	Org-023	<0.5	[NT]	[NT]	[NT]	[NT]	109	[NT]
Ethylbenzene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	123	[NT]
m+p-xylene	mg/kg	2	Org-023	<2	[NT]	[NT]	[NT]	[NT]	124	[NT]
o-Xylene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	128	[NT]
Naphthalene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	115	[NT]	[NT]	[NT]	[NT]	117	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-4	[NT]
Date extracted	-			05/04/2024	[NT]	[NT]	[NT]	[NT]	05/04/2024	[NT]
Date analysed	-			06/04/2024	[NT]	[NT]	[NT]	[NT]	06/04/2024	[NT]
TRH C_{10} - C_{14}	mg/kg	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	105	[NT]
TRH C_{15} - C_{28}	mg/kg	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	98	[NT]
TRH C_{29} - C_{36}	mg/kg	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	114	[NT]
TRH >C_{10} -C_{16}	mg/kg	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	105	[NT]
TRH >C_{16} -C_{34}	mg/kg	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	98	[NT]
TRH >C_{34} -C_{40}	mg/kg	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	114	[NT]
Surrogate o-Terphenyl	%		Org-020	87	[NT]	[NT]	[NT]	[NT]	90	[NT]

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-4	[NT]
Date extracted	-			05/04/2024	[NT]	[NT]	[NT]	[NT]	05/04/2024	[NT]
Date analysed	-			05/04/2024	[NT]	[NT]	[NT]	[NT]	05/04/2024	[NT]
Naphthalene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	88	[NT]
Acenaphthylene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	90	[NT]
Fluorene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	88	[NT]
Phenanthrene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	90	[NT]
Anthracene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	94	[NT]
Pyrene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	90	[NT]
Benzo(a)anthracene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	78	[NT]
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-022/025	<0.05	[NT]	[NT]	[NT]	[NT]	98	[NT]
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	94	[NT]	[NT]	[NT]	[NT]	89	[NT]

QUALITY CONTROL: Organochlorine Pesticides in soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-4	[NT]
Date extracted	-			05/04/2024	[NT]	[NT]	[NT]	[NT]	05/04/2024	[NT]
Date analysed	-			05/04/2024	[NT]	[NT]	[NT]	[NT]	05/04/2024	[NT]
alpha-BHC	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	84	[NT]
HCB	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	102	[NT]
gamma-BHC	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Heptachlor	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	78	[NT]
delta-BHC	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	68	[NT]
Heptachlor Epoxide	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	96	[NT]
gamma-Chlordane	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	84	[NT]
Dieldrin	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	106	[NT]
Endrin	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	94	[NT]
Endosulfan II	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDD	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	94	[NT]
Endrin Aldehyde	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	80	[NT]
Methoxychlor	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Mirex	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate 4-Chloro-3-NBTF	%		Org-022/025	94	[NT]	[NT]	[NT]	[NT]	92	[NT]

QUALITY CONTROL: PCBs in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-4	[NT]
Date extracted	-			05/04/2024	[NT]	[NT]	[NT]	[NT]	05/04/2024	[NT]
Date analysed	-			05/04/2024	[NT]	[NT]	[NT]	[NT]	05/04/2024	[NT]
Aroclor 1016	mg/kg	0.1	Org-021/022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-021/022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-021/022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-021/022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-021/022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-021/022/025	<0.1	[NT]	[NT]	[NT]	[NT]	85	[NT]
Aroclor 1260	mg/kg	0.1	Org-021/022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate 2-Fluorobiphenyl	%		Org-021/022/025	93	[NT]	[NT]	[NT]	[NT]	91	[NT]

QUALITY CONTROL: Acid Extractable metals in soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-4	[NT]
Date prepared	-			08/04/2024	[NT]	[NT]	[NT]	[NT]	08/04/2024	[NT]
Date analysed	-			10/04/2024	[NT]	[NT]	[NT]	[NT]	10/04/2024	[NT]
Arsenic	mg/kg	4	Metals-020	<4	[NT]	[NT]	[NT]	[NT]	115	[NT]
Cadmium	mg/kg	0.4	Metals-020	<0.4	[NT]	[NT]	[NT]	[NT]	112	[NT]
Chromium	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	110	[NT]
Copper	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	114	[NT]
Lead	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	113	[NT]
Mercury	mg/kg	0.1	Metals-021	<0.1	[NT]	[NT]	[NT]	[NT]	96	[NT]
Nickel	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	113	[NT]
Zinc	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	110	[NT]

QUALITY CONTROL: Misc Soil - Inorg					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-4	[NT]
Date prepared	-			05/04/2024	[NT]	[NT]	[NT]	[NT]	05/04/2024	[NT]
Date analysed	-			05/04/2024	[NT]	[NT]	[NT]	[NT]	05/04/2024	[NT]
Total Phenolics (as Phenol)	mg/kg	5	Inorg-031	<5	[NT]	[NT]	[NT]	[NT]	98	[NT]

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Where matrix spike recoveries fall below the lower limit of the acceptance criteria (e.g. for non-labile or standard Organics <60%), positive result(s) in the parent sample will subsequently have a higher than typical estimated uncertainty (MU estimates supplied on request) and in these circumstances the sample result is likely biased significantly low.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

CHAIN OF CUSTODY RECORD

ABN 50 005 085 521

Sydney Laboratory: Unit F3 Bld F, 16 Mars Rd, Lane Cove West, NSW 2066 | 02 9900 8400 | EnviroSampleNSW@eurofins.com

Brisbane Laboratory: Unit 1, 21 Smallwood Pl, Murarrie, QLD 4172 | 07 3902 4600 | EnviroSampleQLD@eurofins.com

Perth Laboratory: Unit 2, 91 Leach Highway, Kewdale WA 6105 | 08 9251 9600 | EnviroSampleWA@eurofins.com

Melbourne Laboratory: 2 Kingston Town Close, Oakleigh, VIC 3166 | 03 8564 5000 | EnviroSampleVic@eurofins.com

Company	Agon	Project No	JO
Address	95 Northbourne Ave, Canberra ACT 2600	Project Name	JC1523
Contact Name	John O'Brien	EDD Format (ESdat, EQuIS, Custom)	ESDAT
Phone No	0451582323	Sampler(s)	KL
Special Directions	5 Day TAT	Handed over by	K.L
Purchase Order		Email for Invoice	john.o'brien@agonenviro.com.au; finance@agonenviro.com.au;
Quote ID No	Quotation # 180129AEGA	Email for Results	john.o'brien@agonenviro.com.au

Analytes (Please tick the analytes required below and indicate the filtered containers)

Containers

Turnaround Time (TAT) Requirements (please allow 2 days if overnight)

☐ Overnight (0am)* ☐ 1 Day* ☐ 2 Day* ☐ 3 Day* ☑ 5 Day * Surcharges apply ☐ Other ( )

Rl	Client Sample ID	Sampled Date/Time (dd/mm/yy hh:mm)	Matrix (Solid (S) Water (W))	B7A	S15A	OPP	Asbestos Fibre ID	8 Metals	Sample Comments / Dangerous Goods Hazard Warning
81	TP16 - 0.1	26/03/24	S	X	X				
82	TP16 - 0.5	26/03/24	S						
83	TP16 - 1.0	26/03/24	S						
84	TP16 - 1.5	26/03/24	S						
85	TP17 - 0.1	26/03/24	S						
86	TP17 - 0.5	26/03/24	S						
87	TP17 - 1.0	26/03/24	S						
88	TP17 - 1.5	26/03/24	S						
89	TP18 - 0.1	26/03/24	S				X		
90	TP18 - 0.5	26/03/24	S						
91	TP19 - 0.1	26/03/24	S	X	X		X		
92	TP19 - 0.5	26/03/24	S						
93	SS01	26/03/24	S	X	X	X			
94	SS02	26/03/24	S						
95	SS03	26/03/24	S	X	X	X			
96	SS04	26/03/24	S						
97	SS05	26/03/24	S						
98	SS06	26/03/24	S	X	X	X			
99	SS07	26/03/24	S						
100	Frag - 1	26/03/24	S				X		
101	Frag - 2	26/03/24	S				X		
102	QC01	26/03/24	S	X	X				
103	QC02	26/03/24	S	X	X				
104	QC03	26/03/24	S						
105	QC04	26/03/24	S	X	X				Please FWD to Envirolab
106	QC05	26/03/24	S						
107	QC06	26/03/24	S						
	Total Counts			-	-	-			

Method of Shipment: ☐ Courier (#) ☐ Hand Delivered ☐ Postal Name Date / / Time

Eurofins | mgt Laboratory Use Only: Received By SYD | BNE | MEL | PER | ADL | NTL | DRW Date Time Temperature

Received By SYD | BNE | MEL | PER | ADL | NTL | DRW Date Time Report No

Submission of samples to the laboratory will be deemed as acceptance of Eurofins | mgt Standard Terms and Conditions unless agreed otherwise. A copy of Eurofins | mgt Standard Terms and Conditions is available on request

Eurofins Environment Testing Australia Pty Ltd trading as Eurofins | mgt

COPY

ENVIROLAB GROUP

Envirolab Services
12 Ashley St
Chatswood NSW 2067
Ph: (02) 9910 6200

Job No: 347986

Date Received: 3/4/24
Time Received: 1830
Received By: KW
Temp: Cool/Ambient 10°C
Cooling: Ice/Icepack
Security: Intact/Broken/None

NATA Accredited
Accreditation Number 1261
Site Number 18217

Accredited for compliance with ISO/IEC 17025–Testing
NATA is a signatory to the ILAC Mutual Recognition Arrangement for the mutual recognition of the equivalence of testing, medical testing, calibration, inspection, proficiency testing scheme providers and reference materials producers reports and certificates.

Agon Environmental Pty Ltd - ACT
68 Northbourne Ave
Canberra
ACT 2060

Attention:	-John O Brien - ACT Manager
Report	1102131-AID
Project Name	JC1523
Received Date	May 28, 2024
Date Reported	Jun 05, 2024

Methodology:

Asbestos Fibre Identification

Conducted in accordance with the Australian Standard AS 4964 – 2004: Method for the Qualitative Identification of Asbestos in Bulk Samples and in-house Method LTM-ASB-8020 by polarised light microscopy (PLM) and dispersion staining (DS) techniques.
NOTE: Positive Trace Analysis results indicate the sample contains detectable respirable fibres.

Unknown Mineral Fibres

Mineral fibres of unknown type, as determined by PLM with DS, may require another analytical technique, such as Electron Microscopy, to confirm unequivocal identity.
NOTE: While Actinolite, Anthophyllite and Tremolite asbestos may be detected by PLM with DS, due to variability in the optical properties of these materials, AS4964 requires that these are reported as UMF unless confirmed by an independent technique.

Subsampling Soil Samples

The whole sample submitted is first dried and then passed through a 10mm sieve followed by a 2mm sieve. All fibrous matter greater than 10mm, greater than 2mm as well as the material passing through the 2mm sieve are retained and analysed for the presence of asbestos. If the sub 2mm fraction is greater than approximately 30 to 60g then a sub-sampling routine based on ISO 3082:2009(E) is employed.
NOTE: Depending on the nature and size of the soil sample, the sub-2 mm residue material may need to be sub-sampled for trace analysis, in accordance with AS 4964-2004.

Bonded asbestos-containing material (ACM)

The material is first examined and any fibres isolated for identification by PLM and DS. Where required, interfering matrices may be removed by disintegration using a range of heat, chemical or physical treatments, possibly in combination.The resultant material is then further examined in accordance with AS 4964 - 2004.
NOTE: Even after disintegration it may be difficult to detect the presence of asbestos in some asbestos-containing bulk materials using PLM and DS. This is due to the low grade or small length or diameter of the asbestos fibres present in the material, or to the fact that very fine fibres have been distributed intimately throughout the materials. Vinyl/asbestos floor tiles, some asbestos-containing sealants and mastics, asbestos-containing epoxy resins and some ore samples are examples of these types of material, which are difficult to analyse.

Limit of Reporting

The performance limitation of the AS 4964 (2004) method for non-homogeneous samples is around 0.1 g/kg (equivalent to 0.01% (w/w)). Where no asbestos is found by PLM and DS, including Trace Analysis, this is considered to be at the nominal reporting limit of 0.01% (w/w).
The NEPM screening level of 0.001% (w/w) is intended as an on-site determination, not a laboratory Limit of Reporting (LOR), per se. Examination of a large sample size (e.g. 500 mL) may improve the likelihood of detecting asbestos, particularly AF, to aid assessment against the NEPM criteria. Gravimetric determinations to this level of accuracy are outside of AS 4964 and hence NATA Accreditation does not cover the performance of this service (non-NATA results shown with an asterisk).
NOTE: NATA News March 2014, p.7, states in relation to AS 4964: "This is a qualitative method with a nominal reporting limit of 0.01 % " and that currently in Australia "there is no validated method available for the quantification of asbestos".This report is consistent with the analytical procedures and reporting recommendations in the NEPM and the WA DoH.

Project Name JC1523
Project ID
Date Sampled May 22, 2024
Report 1102131-AID

Client Sample ID	Eurofins Sample No.	Date Sampled	Sample Description	Result
VS01	24-My0080691	May 22, 2024	Approximate Sample 31g Sample consisted of: Brown fine-grained clayey sandy soil, organic debris and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
VS02	24-My0080692	May 22, 2024	Approximate Sample 60g Sample consisted of: Brown fine-grained clayey sandy soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
VS03	24-My0080693	May 22, 2024	Approximate Sample 74g Sample consisted of: Brown fine-grained clayey sandy soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
VS04	24-My0080694	May 22, 2024	Approximate Sample 60g Sample consisted of: Red-brown coarse-grained clayey sandy soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
VS05	24-My0080695	May 22, 2024	Approximate Sample 57g Sample consisted of: Red-brown coarse-grained clayey sandy soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
VS06	24-My0080696	May 22, 2024	Approximate Sample 27g Sample consisted of: Brown fine-grained clayey sandy soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.

Sample History

Where samples are submitted/analysed over several days, the last date of extraction is reported.

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Asbestos - LTM-ASB-8020	Sydney	May 29, 2024	Indefinite

eurofins

web: www.eurofins.com.au
email: EnviroSales@eurofins.com

Eurofins Environment Testing Australia Pty Ltd
ABN: 50 005 085 521

Melbourne	Geelong	Sydney	Canberra	Brisbane	Newcastle
6 Monterey Road	19/8 Lewalan Street	179 Magowar Road	Unit 1,2 Dacre Street	1/21 Smallwood Place	1/2 Frost Drive
Dandenong South	Grovedale	Girraween	Mitchell	Murarrie	Mayfield West
VIC 3175	VIC 3216	NSW 2145	ACT 2911	QLD 4172	NSW 2304
+61 3 8564 5000	+61 3 8564 5000	+61 2 9900 8400	+61 2 6113 8091	T: +61 7 3902 4600	+61 2 4968 8448
NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261
Site# 1254	Site# 25403	Site# 18217	Site# 25466	Site# 20794	Site# 25079 & 25289

Eurofins ARL Pty Ltd
ABN: 91 05 0159 898

Perth
46-48 Banksia Road
Welshpool
WA 6106
+61 8 6253 4444
NATA# 2377
Site# 2370

Eurofins ProMicro Pty Ltd
ABN: 47 009 120 549

Perth ProMicro
46-48 Banksia Road
Welshpool
WA 6106
+61 8 6253 4444
NATA# 2561
Site# 2554

Eurofins Environment Testing NZ Ltd
NZBN: 9429046024954

Auckland	Auckland (Focus)	Christchurch	Tauranga
35 O'Rorke Road	Unit C1/4 Pacific Rise,	43 Detroit Drive	1277 Cameron Road,
Penrose,	Mount Wellington,	Rolleston,	Gate Pa,
Auckland 1061	Auckland 1061	Christchurch 7675	Tauranga 3112
+64 9 526 4551	+64 9 525 0568	+64 3 343 5201	+64 9 525 0568
IANZ# 1327	IANZ# 1308	IANZ# 1290	IANZ# 1402

Company Name: Agon Environmental Pty Ltd - ACT
Address: 68 Northbourne Ave
Canberra
ACT 2060

Project Name: JC1523

Order No.:
Report #: 1102131
Phone: 0419 170 791
Fax:

Received: May 28, 2024 1:05 PM
Due: Jun 4, 2024
Priority: 5 Day
Contact Name: -John O Brien - ACT Manager

Eurofins Analytical Services Manager : Bonnie Pu

Sample Detail						Asbestos - AS4964	Metals M8	Moisture Set
Sydney Laboratory - NATA # 1261 Site # 18217						X	X	X
External Laboratory								
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**			
1	VS01	May 22, 2024		Soil	R24-My0080691	X	X	X
2	VS02	May 22, 2024		Soil	R24-My0080692	X	X	X
3	VS03	May 22, 2024		Soil	R24-My0080693	X	X	X
4	VS04	May 22, 2024		Soil	R24-My0080694	X	X	X
5	VS05	May 22, 2024		Soil	R24-My0080695	X	X	X
6	VS06	May 22, 2024		Soil	R24-My0080696	X	X	X
Test Counts						6	6	6

Internal Quality Control Review and Glossary General

1. QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Samples were analysed on an 'as received' basis.
4. Information identified on this report with the colour **blue** indicates data provided by customer that may have an impact on the results.
5. This report replaces any interim results previously issued.

Holding Times

Please refer to the most recent version of the 'Sample Preservation and Container Guide' for holding times (QS3001).
If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported. Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

Units

% w/w:	Percentage weight-for-weight basis, e.g. of asbestos in asbestos-containing finds in soil samples (**% w/w**)
F/fld	Airborne fibre filter loading as Fibres (**N**) per Fields counted (**n**)
F/mL	Airborne fibre reported concentration as Fibres per millilitre of air drawn over the sampler membrane (**C**)
g, kg	Mass, e.g. of whole sample (**M**) or asbestos-containing find within the sample (**m**)
g/kg	Concentration in grams per kilogram
L, mL	Volume, e.g. of air as measured in AFM (**V** = **r** x **t**)
L/min	Airborne fibre sampling Flowrate as litres per minute of air drawn over the sampler membrane (**r**)
min	Time (**t**), e.g. of air sample collection period

Calculations

Airborne Fibre Concentration: $C = \left(\frac{A}{a}\right) \times \left(\frac{N}{n}\right) \times \left(\frac{1}{r}\right) \times \left(\frac{1}{t}\right) = K \times \left(\frac{N}{n}\right) \times \left(\frac{1}{V}\right)$

Asbestos Content (as asbestos): $\%\, w/w = \frac{(m \times P_A)}{M}$

Weighted Average (of asbestos): $\%_{WA} = \sum \frac{(m \times P_A)_x}{x}$

Terms

%asbestos	Estimated percentage of asbestos in a given matrix may be derived from knowledge or experience of the material, informed by HSG264 *Appendix 2*, else assumed to be 15% in accordance with WA DOH *Appendix 2* (**P_A**). This estimate is not NATA-accredited.
ACM	Asbestos Containing Materials. Asbestos contained within a non-asbestos matrix, typically presented in bonded (non-friable) condition. For the purposes of the NEPM and WA DOH, ACM corresponds to material larger than 7 mm x 7 mm.
AF	Asbestos Fines. Asbestos contamination within a soil sample, as defined by WA DOH. Includes loose fibre bundles and small pieces of friable and non-friable material such as asbestos cement fragments mixed with soil. Considered under the NEPM as equivalent to “non-bonded / friable”.
AFM	Airborne Fibre Monitoring, e.g., by the MFM.
Amosite	Amosite Asbestos Detected. Amosite may also refer to Fibrous Grunerite or Brown Asbestos. Identified in accordance with AS 4964-2004.
AS	Australian Standard.
Asbestos Content (as asbestos)	Total %w/w asbestos content in asbestos-containing finds in a soil sample (**% w/w**).
Chrysotile	Chrysotile Asbestos Detected. Chrysotile may also refer to Fibrous Serpentine or White Asbestos. Identified in accordance with AS 4964-2004.
COC	Chain of Custody.
Crocidolite	Crocidolite Asbestos Detected. Crocidolite may also refer to Fibrous Riebeckite or Blue Asbestos. Identified in accordance with AS 4964-2004.
Dry	Sample is dried by heating prior to analysis.
DS	Dispersion Staining. Technique required for Unequivocal Identification of asbestos fibres by PLM.
FA	Fibrous Asbestos. Asbestos containing material that is wholly or in part friable, including materials with higher asbestos content with a propensity to become friable with handling, and any material that was previously non-friable and in a severely degraded condition. For the purposes of the NEPM and WA DOH, FA generally corresponds to material larger than 7 mm x 7 mm, although FA may be more difficult to visibly distinguish and may be assessed as AF.
Fibre Count	Total of all fibres (whether asbestos or not) meeting the counting criteria set out in the NOHSC:3003
Fibre ID	Fibre Identification. Unequivocal identification of asbestos fibres according to AS 4964-2004. Includes Chrysotile, Amosite (Grunerite) or Crocidolite asbestos.
Friable	Asbestos-containing materials of any size that may be broken or crumbled by hand pressure. For the purposes of the NEPM, this includes both AF and FA. It is outside of the laboratory’s remit to assess degree of friability.
HSG248	UK HSE HSG248, *Asbestos: The Analysts Guide*, 2nd Edition (2021).
HSG264	UK HSE HSG264, *Asbestos: The Survey Guide* (2012).
ISO (also ISO/IEC)	International Organization for Standardization / International Electrotechnical Commission.
K Factor	Microscope constant (**K**) as derived from the effective filter area of the given AFM membrane used for collecting the sample (**A**) and the projected eyepiece graticule area of the specific microscope used for the analysis (**a**).
LOR	Limit of Reporting.
MFM (also NOHSC:3003)	Membrane Filter Method. As described by the Australian Government National Occupational Health and Safety Commission, *Guidance Note on the Membrane Filter Method for Estimating Airborne Asbestos Fibres*, 2nd Edition [NOHSC:3003(2005)].
NEPM (also ASC NEPM)	National Environment Protection (Assessment of Site Contamination) Measure, (2013, as amended).
Organic	Organic Fibres Detected. Organic may refer to Natural or Man-Made Polymeric Fibres. Identified in accordance with AS 4964-2004.
PCM	Phase Contrast Microscopy. As used for Fibre Counting according to the MFM.
PLM	Polarised Light Microscopy. As used for Fibre Identification and Trace Analysis according to AS 4964-2004.
Sampling	Unless otherwise stated Eurofins are not responsible for sampling equipment or the sampling process.
SMF	Synthetic Mineral Fibre Detected. SMF may also refer to Man Made Vitreous Fibres. Identified in accordance with AS 4964-2004.
SRA	Sample Receipt Advice.
Trace Analysis	Analytical procedure used to detect the presence of respirable fibres (particularly asbestos) in a given sample matrix.
UK HSE HSG	United Kingdom, Health and Safety Executive, Health and Safety Guidance, publication.
UMF	Unidentified Mineral Fibre Detected. Fibrous minerals that are detected but have not been unequivocally identified by PLM with DS according the AS 4964-2004. May include (but not limited to) Actinolite, Anthophyllite or Tremolite asbestos.
WA DOH	Reference document for the NEPM. Government of Western Australia, *Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia* (updated 2021), including Appendix Four: *Laboratory analysis*
Weighted Average	Combined average %w/w asbestos content of all asbestos-containing finds in the given aliquot or total soil sample (**$\%_{WA}$**).

Comments

The samples received were not collected in an approved asbestos bags and was therefore sub-sampled from the 250mL glass jar. Valid sub-sampling procedures were applied so as to ensure that the sub-sample to be analysed accurately represented the sample received.

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	No
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Asbestos Counter/Identifier:

Sayeed Abu	Senior Analyst-Asbestos

Authorised by:

Laxman Dias	Senior Analyst-Asbestos

Glenn Jackson
Managing Director

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please click here.

Eurofins shall not be liable for loss, cost, damages or expenses incurred by the client, or any other person or company, resulting from the use of any information or interpretation given in this report. In no case shall Eurofins be liable for consequential damages including, but not limited to, lost profits, damages for failure to meet deadlines and lost production arising from this report. This document shall not be reproduced except in full and relates only to the items tested. Unless indicated otherwise, the tests were performed on the samples as received.

eurofins | Environment Testing

Certificate of Analysis

Agon Environmental Pty Ltd - ACT
68 Northbourne Ave
Canberra
ACT 2060

NATA Accredited
Accreditation Number 1261
Site Number 18217

Accredited for compliance with ISO/IEC 17025 – Testing
NATA is a signatory to the ILAC Mutual Recognition Arrangement for the mutual recognition of the equivalence of testing, medical testing, calibration, inspection, proficiency testing scheme providers and reference materials producers reports and certificates.

Attention: **-John O Brien - ACT Manager**

Report **1102131-S**
Project name JC1523
Received Date May 28, 2024

Client Sample ID			**VS01**	**VS02**	**VS03**	**VS04**
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins Sample No.			**R24-My0080691**	**R24-My0080692**	**R24-My0080693**	**R24-My0080694**
Date Sampled			**May 22, 2024**	**May 22, 2024**	**May 22, 2024**	**May 22, 2024**
Test/Reference	LOR	Unit				
Metals M8						
Arsenic	2	mg/kg	49	13	17	46
Cadmium	0.4	mg/kg	< 0.4	0.7	0.4	< 0.4
Chromium	5	mg/kg	48	24	24	66
Copper	5	mg/kg	16	28	25	62
Lead	5	mg/kg	150	56	57	84
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	7.3	26	23	14
Zinc	5	mg/kg	130	440	190	210
Sample Properties						
% Moisture	1	%	6.0	8.7	8.1	5.7

Client Sample ID			**VS05**	**VS06**
Sample Matrix			**Soil**	**Soil**
Eurofins Sample No.			**R24-My0080695**	**R24-My0080696**
Date Sampled			**May 22, 2024**	**May 22, 2024**
Test/Reference	LOR	Unit		
Metals M8				
Arsenic	2	mg/kg	57	30
Cadmium	0.4	mg/kg	< 0.4	< 0.4
Chromium	5	mg/kg	81	52
Copper	5	mg/kg	28	8.9
Lead	5	mg/kg	53	30
Mercury	0.1	mg/kg	< 0.1	< 0.1
Nickel	5	mg/kg	20	6.0
Zinc	5	mg/kg	61	31
Sample Properties				
% Moisture	1	%	12	9.8

Sample History

Where samples are submitted/analysed over several days, the last date of extraction is reported.

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Metals M8	Sydney	Jun 03, 2024	28 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
% Moisture	Sydney	May 29, 2024	14 Days
- Method: LTM-GEN-7080 Moisture			

eurofins

web: www.eurofins.com.au
email: EnviroSales@eurofins.com

Eurofins Environment Testing Australia Pty Ltd
ABN: 50 005 085 521

Melbourne	Geelong	Sydney	Canberra	Brisbane	Newcastle
6 Monterey Road	19/8 Lewalan Street	179 Magowar Road	Unit 1,2 Dacre Street	1/21 Smallwood Place	1/2 Frost Drive
Dandenong South	Grovedale	Girraween	Mitchell	Murarrie	Mayfield West
VIC 3175	VIC 3216	NSW 2145	ACT 2911	QLD 4172	NSW 2304
+61 3 8564 5000	+61 3 8564 5000	+61 2 9900 8400	+61 2 6113 8091	T: +61 7 3902 4600	+61 2 4968 8448
NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261	NATA# 1261
Site# 1254	Site# 25403	Site# 18217	Site# 25466	Site# 20794	Site# 25079 & 25289

Eurofins ARL Pty Ltd
ABN: 91 05 0159 898

Perth
46-48 Banksia Road
Welshpool
WA 6106
+61 8 6253 4444
NATA# 2377
Site# 2370

Eurofins ProMicro Pty Ltd
ABN: 47 009 120 549

Perth ProMicro
46-48 Banksia Road
Welshpool
WA 6106
+61 8 6253 4444
NATA# 2561
Site# 2554

Eurofins Environment Testing NZ Ltd
NZBN: 9429046024954

Auckland	Auckland (Focus)	Christchurch	Tauranga
35 O'Rorke Road	Unit C1/4 Pacific Rise,	43 Detroit Drive	1277 Cameron Road,
Penrose,	Mount Wellington,	Rolleston,	Gate Pa,
Auckland 1061	Auckland 1061	Christchurch 7675	Tauranga 3112
+64 9 526 4551	+64 9 525 0568	+64 3 343 5201	+64 9 525 0568
IANZ# 1327	IANZ# 1308	IANZ# 1290	IANZ# 1402

Company Name: Agon Environmental Pty Ltd - ACT
Address: 68 Northbourne Ave
Canberra
ACT 2060

Project Name: JC1523

Order No.:
Report #: 1102131
Phone: 0419 170 791
Fax:

Received: May 28, 2024 1:05 PM
Due: Jun 4, 2024
Priority: 5 Day
Contact Name: -John O Brien - ACT Manager

Eurofins Analytical Services Manager : Bonnie Pu

Sample Detail						Asbestos - AS4964	Metals M8	Moisture Set
Sydney Laboratory - NATA # 1261 Site # 18217						X	X	X
External Laboratory								
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**			
1	VS01	May 22, 2024		Soil	R24-My0080691	X	X	X
2	VS02	May 22, 2024		Soil	R24-My0080692	X	X	X
3	VS03	May 22, 2024		Soil	R24-My0080693	X	X	X
4	VS04	May 22, 2024		Soil	R24-My0080694	X	X	X
5	VS05	May 22, 2024		Soil	R24-My0080695	X	X	X
6	VS06	May 22, 2024		Soil	R24-My0080696	X	X	X
Test Counts						6	6	6

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Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples follow guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended May 2013. They are included in this QC report where applicable. Additional QC data may be available on request.
2. Unless otherwise stated, all soil/sediment/solid results are reported on a dry weight basis.
3. Unless otherwise stated, all biota/food results are reported on a wet weight basis on the edible portion.
4. For CEC results where the sample's origin is unknown or environmentally contaminated, the results should be used advisedly.
5. Actual LORs are matrix dependent. Quoted LORs may be raised where sample extracts are diluted due to interferences.
6. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds where annotated.
7. SVOC analysis on waters is performed on homogenised, unfiltered samples unless noted otherwise.
8. Samples were analysed on an 'as received' basis.
9. Information identified in this report with **blue** colour indicates data provided by customers that may have an impact on the results.
10. This report replaces any interim results previously issued.

Holding Times

Please refer to the 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours before sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and despite any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the sampling date; therefore, compliance with these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether, the holding time is seven days; however, for all other VOCs, such as BTEX or C6-10 TRH, the holding time is 14 days.

Units

mg/kg: milligrams per kilogram	**mg/L:** milligrams per litre	**ppm:** parts per million
µg/L: micrograms per litre	**ppb:** parts per billion	**%:** Percentage
org/100 mL: Organisms per 100 millilitres	**NTU:** Nephelometric Turbidity Units	**MPN/100 mL:** Most Probable Number of organisms per 100 millilitres
CFU: Colony Forming Unit	**Colour:** Pt-Co Units (CU)	

Terms

APHA	American Public Health Association
CEC	Cation Exchange Capacity
COC	Chain of Custody
CP	Client Parent - QC was performed on samples pertaining to this report
CRM	Certified Reference Material (ISO17034) - reported as percent recovery.
Dry	Where moisture has been determined on a solid sample, the result is expressed on a dry weight basis.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
LOR	Limit of Reporting.
LCS	Laboratory Control Sample - reported as percent recovery.
Method Blank	In the case of solid samples, these are performed on laboratory-certified clean sands and in the case of water samples, these are performed on de-ionised water.
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC represents the sequence or batch that client samples were analysed within.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
SRA	Sample Receipt Advice
Surr - Surrogate	The addition of a similar compound to the analyte target is reported as percentage recovery. See below for acceptance criteria.
TBTO	Tributyltin oxide (*bis*-tributyltin oxide) - individual tributyltin compounds cannot be identified separately in the environment; however, free tributyltin was measured, and its values were converted stoichiometrically into tributyltin oxide for comparison with regulatory limits.
TCLP	Toxicity Characteristic Leaching Procedure
TEQ	Toxic Equivalency Quotient or Total Equivalence
QSM	US Department of Defense Quality Systems Manual Version 6.0
US EPA	United States Environmental Protection Agency
WA DWER	Sum of PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC - Acceptance Criteria

The acceptance criteria should only be used as a guide and may be different when site-specific Sampling Analysis and Quality Plan (SAQP) have been implemented.

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is ≤30%; however, the following acceptance guidelines are equally applicable:

Results <10 times the LOR:	No Limit
Results between 10-20 times the LOR:	RPD must lie between 0-50%
Results >20 times the LOR:	RPD must lie between 0-30%

NOTE: pH duplicates are reported as a range, not as RPD

Surrogate Recoveries: Recoveries must lie between 20-130% for Speciated Phenols & 50-150% for PFAS. SVOCs recoveries 20 – 150%, VOC recoveries 50 – 150%

PFAS field samples containing surrogate recoveries above the QC limit designated in QSM 6.0, where no positive PFAS results have been reported or reviewed, and no data was affected.

QC Data General Comments

1. Where a result is reported as less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown are not data from your samples.
3. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore, laboratory analysis is unlikely to be completed within holding time.Analysis will begin as soon as possible after sample receipt.
4. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of recovery, the term "INT" appears against that analyte.
5. For Matrix Spikes and LCS results, a dash "-" in the report means that the specific analyte was not added to the QC sample.
6. Duplicate RPDs are calculated from raw analytical data; thus, it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Metals M8							
Arsenic	mg/kg	< 2			2	Pass	
Cadmium	mg/kg	< 0.4			0.4	Pass	
Chromium	mg/kg	< 5			5	Pass	
Copper	mg/kg	< 5			5	Pass	
Lead	mg/kg	< 5			5	Pass	
Mercury	mg/kg	< 0.1			0.1	Pass	
Nickel	mg/kg	< 5			5	Pass	
Zinc	mg/kg	< 5			5	Pass	
LCS - % Recovery							
Metals M8							
Arsenic	%	108			80-120	Pass	
Cadmium	%	109			80-120	Pass	
Chromium	%	110			80-120	Pass	
Copper	%	109			80-120	Pass	
Lead	%	96			80-120	Pass	
Mercury	%	107			80-120	Pass	
Nickel	%	109			80-120	Pass	
Zinc	%	107			80-120	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Metals M8				Result 1					
Arsenic	R24-My0080759	NCP	%	114			75-125	Pass	
Cadmium	R24-My0080759	NCP	%	110			75-125	Pass	
Chromium	R24-My0080759	NCP	%	92			75-125	Pass	
Copper	R24-My0080759	NCP	%	108			75-125	Pass	
Lead	R24-My0080759	NCP	%	88			75-125	Pass	
Mercury	R24-My0080759	NCP	%	110			75-125	Pass	
Nickel	R24-My0080759	NCP	%	105			75-125	Pass	
Zinc	R24-My0080759	NCP	%	109			75-125	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1	Result 2	RPD	Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Metals M8				Result 1	Result 2	RPD			
Arsenic	R24-My0080778	NCP	mg/kg	6.2	5.1	20	30%	Pass	
Cadmium	R24-My0080778	NCP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	R24-My0080778	NCP	mg/kg	17	19	6.8	30%	Pass	
Copper	R24-My0080778	NCP	mg/kg	11	12	3.6	30%	Pass	
Lead	R24-My0080778	NCP	mg/kg	16	13	21	30%	Pass	
Mercury	R24-My0080778	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Nickel	R24-My0080778	NCP	mg/kg	11	12	12	30%	Pass	
Zinc	R24-My0080778	NCP	mg/kg	39	44	12	30%	Pass	
Duplicate									
Sample Properties				Result 1	Result 2	RPD			
% Moisture	R24-My0080667	NCP	%	15	14	7.0	30%	Pass	

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	No
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Authorised by:

Nileshni Goundar	Analytical Services Manager
Fang Yee Tan	Senior Analyst-Metal
Laxman Dias	Senior Analyst-Asbestos
Roopesh Rangarajan	Senior Analyst-Sample Properties

Glenn Jackson
Managing Director

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please click here.

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APPENDIX G: SUPPORTING DOCUMENTS

PROJECT DETAILS

JOB NUMBER	KEC1742	CLEARANCE DATE	22 May 2024
CLIENT	Capstone	REPORT DATE	22 May 2024
CONTACT NAME & NUMBER	Brock Illingworth - 0423 346 435		
SITE ADDRESS	Corner of Antill & Aspinall Street, Watson ACT 2602		
SCOPE OF CLEARANCE	Removal of non friable asbestos sheet debris from x2 areas, 100mm soil scrape & clean of excavator bucket and tracks		
ASBESTOS CONTRACTOR	Capstone	SUPERVISOR	Brock Illingworth
ASBESTOS ASSESOR	Peter McDermott	LICENSE NUMBER	AA00069
LEGISLATION	Asbestos removal clearance certificate issued under regulations 473 & 474 of the Work Health Safety Regulation 2011		

VISUAL CLEARANCE

	YES	NO	N/A
Did inspection of the removal area detailed above find no visible asbestos remaining as a result of the asbestos removal work carried out?	☑	☐	☐
Has all accessible non friable asbestos containing material been removed?	☑	☐	☐
Are photographs attached for all phases of the clearance inspection?	☑	☐	☐

CONCLUSION

A thorough a visual inspection after completion of the above scope of works at the site location stated above and found no visible asbestos residue from asbestos removal work in the area, or in the vicinity of the area, where the work was carried out.

The asbestos removal work area can now be dismantled and the area safely reoccupied.

Photographs from the site inspection are attached at Appendix A.

Kind Regards,
Peter McDermott

Consultant

Keane Environmental Pty Ltd
M:0418289182 E: ged@keaneenviro.com.au
301 Canberra Avenue Fyshwick ACT 2609
ABN: 24 607 178 389

APPENDIX A - PHOTOS

Removal Area

Removal Area

Removal Area

Removal Area

Removal Area

Removal Area

Delivery Docket

Hi Quality Waste Management
O'Allen Ford Road
Windellama NSW 2556
Phone: 02 4844 5168

ABN: 25 003 105 379

Ticket No: 60023449-NMIN

Time In: 22/05/2024 3:18:54 PM
Time Out: 22/05/2024 3:18:54 PM

Vehicle Rego: 009PBC

Client: PACBLUE PTY LTD

Order Number:
Job: PACBLUE CM Q-07324 Aspinall St
Watson ACT WAN-2024-00924
Job Add: 170 Aspinall St
Watson

Weighed Items		Price
ASBESTOS SOIL		

Each Items	Qty	Price

GROSS Weight:	21.52t
TARE Weight:	7.82t(M)
NET Weight:	13.70t

TARE	1	7.82t(M)
GROSS	1	21.52t

Each Item Weight: 0.00t
Unit Cost:

Chargeable Fee:
Each Items:
GST :

Total Price:

Payments:

Driver: BRENDAN
MANUAL TICKET
Operator: ahedges
Comments

Contract Qty at 22/05/2024 15:18

Product	Ordered	Delivered
ASBESTOS SOIL	75t	39.

Delivery Docket

Hi Quality Waste Management
O'Allen Ford Road
Windellama NSW 2556
Phone: 02 4844 5168

ABN: 25 003 105 379

Ticket No: 60023433-NMIN

Time In: 22/05/2024 10:50:18 AM
Time Out: 22/05/2024 10:50:18 AM

Vehicle Rego: 009PBC

Client: PACBLUE PTY LTD

Order Number:
Job: PACBLUE CM Q-07324 Aspinall St
Watson ACT WAN-2024-00924
Job Add: 170 Aspinall St
Watson

Weighed Items		Price
ASBESTOS SOIL		
Each Items	**Qty**	**Price**
GROSS Weight:		44.04t
TARE Weight:		18.24t
NET Weight:		25.80t
TARE	1	18.24t
GROSS	1	44.04t

Each Item Weight: 0.00t
Unit Cost:

Chargeable Fee:
Each Items:
GST :

Total Price:

Payments:

Driver: BRENDAN

Operator: ahedges
Comments

.....

Contract Qty at 22/05/2024 10:50

Product	Ordered	Delivered
ASBESTOS SOIL	75t	25.

DEVELOPMENT SUMMARY

MULTI-UNIT BLOCK A:

SITE AREA = 4368.0m²
RZ4 80% PLOT RATIO = 3494.5m² GFA
= 39 APARTMENTS @ 89.5m² GFA

MULTI-UNIT BLOCK B:

SITE AREA = 4805.0m²
RZ4 80% PLOT RATIO = 3844.0m² GFA
= 42 APARTMENTS @ 91.5m² GFA

MULTI-UNIT BLOCK C:

SITE AREA = 1117.0m²
RZ3 65% PLOT RATIO = 726.0m² GFA
= 10 APARTMENTS @ 72.5m² GFA

SINGLE RESIDENTIAL BLOCKS:

COMPACT BLOCKS = 15
MID SIZE BLOCKS = 38
TOTAL = 43

KEY

COMPACT BLOCK
MID SIZE BLOCK
MULTI-UNIT
NON-COMPLIANT BLOCK ✳

STEWART ARCHITECTURE

CANBERRA: P: 61 2 6228 1200 | SYDNEY: P: 61 2 9061 4760
STEWARTARCHITECTURE.COM.AU
PRIMARY NOMINEE MARCUS GRAHAM ACT 1090, NSW 10921

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PROJECT NAME
BLOCK 3 SECTION 95 WATSON

PROJECT NUMBER
2223

LOCATION
170 ASPINALL ST WATSON, ACT

DRAWING TITLE
MASTER PLAN

SCALE
1 : 500 @ A1

DRAWING NUMBER
A0110

REVISION
C

7 November 2022

Richard Nash
Managing Director
Purdon Planning Pty Ltd
Suite 5, Level 1, 243 Northbourne Ave Lyneham ACT 2602
P: 02 6257 1511
E: richard.nash@purdon.com.au

Ecological Values and Constraints Assessment of Block 3 Section 95, Watson, ACT.

Capital Ecology project no. 3173

Dear Mr Nash,

This letter-report provides an Ecological Values and Constraints Assessment (EVCA) for Block 3 Section 95, Watson, ACT (the 'study area' = 3.45 ha). We understand that Purdon Planning is proposing to lodge a Territory Plan Variation application to rezone the study area from CZ6 – Leisure and Accommodation Zone to RZ3 – Urban Residential Zone, with the potential for future residential development on the site.

This EVCA identifies and assesses the values of recognised biodiversity conservation significance occurring in the study area, specifically those currently listed pursuant to the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and/or the ACT *Nature Conservation Act 2014* (NC Act).

This EVCA has been prepared based on:

- the results of database searches for the study area, including the EPBC Act Protected Matters Search Tool (PMST), ACTmapi, the Atlas of Living Australia, and Canberra Nature Map;
- a review of relevant studies and other background information, including the surveys and sources referenced herein;
- a field survey on 7 September 2022, completed to record and assess the ecological values of the study area; and
- the knowledge of the authors regarding the biota of the locality, specifically the threatened ecological communities, flora, and fauna (and associated habitat) with the potential to occur in the lowland ecosystems of the ACT and region.

1. Methods

1.1 Database and Literature Review

Capital Ecology completed a desktop review, involving the following.

- A list of threatened species (flora and fauna), threatened populations, and threatened ecological communities (TECs) listed pursuant to the EPBC Act with the potential to occur in the study area was obtained using the Department of Climate Change, Energy, the Environment and Water (DCCEEW) online EPBC Act Protected Matters Search Tool (PMST) on 8 September 2022.
- A review of the ACT Government ACTmapi mapping tool, Atlas of Living Australia, and Canberra Nature Map to obtain the most current layers and point data for the significant ecological values of the locality. These values include species listed as threatened pursuant to the EPBC Act and/or the NC Act, together with flora species considered 'rare or uncommon in the ACT' and fauna species which are otherwise of a conservation focus.
- A review of previous and current studies undertaken by Capital Ecology and others in the locality.

1.2 Vegetation Survey and Mapping

The vegetation survey and mapping involved the following.

- Mapping of the on-ground boundaries of the Plant Community Types (PCTs).
- Division and delineation of PCTs into vegetation zones based on condition.
- An assessment of the habitat potential for threatened flora and fauna species which may occur in the locality.
- Identification and mapping of any other ecological values and constraints.

The results of the vegetation survey have been accurately mapped using GIS, allowing the total area of each vegetation zone to be calculated.

1.2.1 Plant Community Type (PCT) mapping

The on-ground boundaries of each of the Plant Community Types (PCTs) (as provided in ACT Government 2015[1]) present in the study area were accurately mapped. Mapping of the PCTs (i.e. the climax vegetation communities) was undertaken by walking the boundaries and marking them directly on to high resolution orthorectified aerial photograph field maps.

The PCT boundaries were defined based on:

- the presence, species, growth form and density of remnant canopy trees and/or stags or stumps;
- the presence and species of midstorey shrubs and trees;
- the floristic composition of the groundstorey; and
- the landscape position and other geographical features (elevation, aspect, soils, apparent hydrology etc.).

[1] ACT Government (2015). *ACT Vegetation Types Database – Attachment to the ACT Environmental Offsets Calculator Assessment Methodology.* 18 May 2015.

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1.2.2 Vegetation Zone definition and mapping

Each of the mapped PCTs was divided into vegetation zones based on the structure, floristic composition, and overall condition ('intactness') of the vegetation. Mapping of the vegetation zones was undertaken by walking the boundaries and marking them directly onto high resolution orthorectified aerial photograph field maps.

1.3 Likelihood of Occurrence Assessment

The Likelihood of Occurrence Assessment for threatened flora and fauna species is a categorisation used to determine the likelihood that the subject species occurs within a study area. The results are based on the findings of completed desktop studies and field surveys, expert opinion, and consideration of the species' currently recognised distribution and preferred habitat.

Threatened species and populations identified in the Likelihood of Occurrence Assessment include all of those identified during the database and literature review as potentially occurring within five kilometres of the study area. Included are threatened species listed pursuant to the EPBC Act and/or the NC Act and considered by Capital Ecology to have some potential to occur within the study area.

The likelihood of a species occurring within the study area is categorised as either negligible, low, moderate, or high. A species that has been identified within the study area during the surveys for this EVCA or by other confirmed records is expressed as confirmed.

The completed Likelihood of Occurrence Assessment is provided as Appendix C. Species assigned a moderate or higher likelihood of occurrence within the study area, other than if this is limited to transient visitation, are considered in more detail in Section 2.5 (threatened flora) and Section 2.6 (threatened fauna) of this EVCA.

2. Results

2.1 Study Area Description

2.1.1 Descriptive Overview

The study area encompasses approximately 3.45 ha. The Territory Plan Land Use Zone for the study area is 'CZ6 – Leisure and Accommodation' and the Territory Plan Overlay Zone is 'FUA – Future Urban Area' (ACTmapi 2022). As shown in Figure 1, the study area is bordered by:

- Aspinall St and residential development to the north;
- residential development to the south and west; and
- Antill St and Mt Majura Nature Reserve to the east.

The south-western part of the study area is currently used as the Carotel motel, which consists of cabin-style accommodation (Figure 2, Plate 1). As shown in the 1955 aerial imagery (Figure 3), the study area historically contained a small dairy, piggery, and other buildings. Remnants of these remain visible across the site, including concrete and brick building foundations, and several mounds which are now overgrown with weeds (Plate 1).

The 1955 image also shows that the site historically supported a grassy woodland community which extended across the lower slopes of Mt Majura and connected with areas of Natural Temperate Grassland lower in the landscape to the west. However, the entire study area has undergone past

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vegetation clearance and intensive modification, such that the only remnants of the original vegetation are two large Yellow Box *Eucalyptus melliodora* trees.

The groundstorey across most of the study area is dominated by exotic grasses and herbaceous weeds, with a very low cover and diversity of disturbance tolerant native species. Parts of the study area contain landscape plantings of non-local native and exotic trees and shrubs, such as Cherry Plum *Prunus cerasifera* and bottlebrushes *Melaleuca sp.*

Plate 1. Left = The Carotel Motel. Right = Remnants of historical building foundations

2.2 Vegetation

2.2.1 Plant Community Type (PCT) and Zone mapping

Due to the substantial modification to the study area, the only remnant element of the historical PCT is the two remnant Yellow Box *Eucalyptus melliodora* trees. The study area is also directly opposite the base of Mt Majura, which is characterised by the Box-Gum Grassy Woodland community. Accordingly, for the purposes of this EVCA, the study area has been determined to contain one PCT, being *PCT-ACT16 - Yellow Box-Red Gum Tableland Grassy Woodland* (Figure 4, Table 1).

The entire study area was classified as a single vegetation zone (Figure 4). A list of the flora species recorded is provided in Appendix A.

- **Zone 1 – Exotic Pasture – Low Diversity.** This zone is characterised by disturbed open pasture dominated by exotic grasses and herbaceous weeds. There are two remnant Yellow Box and scattered exotic trees (e.g. *Ulmus sp., Prunus sp.*).

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Table 1. PCTs recorded in the study area.

PCT	PCT name	PCT description	Occurrence in the study area
ACT16	PCT-ACT16 - Yellow Box-Red Gum Tableland Grassy Woodland	PCT-ACT16 occurs on soils of moderate to high fertility and generally moderate depth. In its climax form, this community would have been characterised by an open canopy of Yellow Box *Eucalyptus melliodora* and Blakely's Red Gum *E. blakelyi,* a sparse or absent midstorey and shrubstorey, and a defined grassy groundstorey supporting a high diversity of native forbs.	This PCT was mapped across the entire study area.

2.2.2 Remnant Trees

The study area contains two large remnant Yellow Box trees (see Figure 4, plate 2).

- Tree 1 – Yellow Box, 110 DBH, two large hollows, small stick nest
- Tree 2 – Yellow Box, 120 DBH, top broken off, trunk hollow (chimney)

Plate 2. Remnant Yellow Box trees (Left = Tree #1, Right = Tree #2).

2.3 Threatened Ecological Communities

2.3.1 *Environment Protection and Biodiversity Conservation Act 1999* (Commonwealth)

Two EPBC Act listed threatened ecological communities (TEC's) have the potential to occur in the study area, both listed as critically endangered under the EPBC Act: 'Natural Temperate Grassland of the South Eastern Highlands' (NTG-SEH), and 'White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland' (EPBC Act Box-Gum Woodland, BGW).

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As discussed previously, the remnant trees and nearby vegetation in a similar landscape position indicate that the entire study area supports a woodland PCT (ACT16). As such, it is unlikely that the NTG-SEH TEC occurs in the study area. Accordingly, only EPBC Act Box-Gum Woodland is considered to have the potential to occur in the study area.

White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland

Description – The White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland TEC is characterised by a species-rich understorey of native tussock grasses, herbs and scattered shrubs (where shrub cover comprises less than 30% cover), and a dominance or prior dominance of White Box and/or Yellow Box and/or Blakely's Red Gum trees. This TEC occurs along the western slopes and tablelands of the Great Dividing Range from southern Queensland through New South Wales and the Australian Capital Territory to Victoria.

To determine whether a patch meets the criteria for the community, the vegetation must be assessed against the flowchart provided in *Policy Statement 3.5: White Box – Yellow Box – Blakely's Red Gum grassy woodlands and derived native grasslands* (Commonwealth of Australia 2006[2]). An assessment of the vegetation in the study area against this flowchart is provided below.

1. *Criterion 1. Is, or was previously, at least one of the most common overstorey species White Box, Yellow Box or Blakely's Red Gum?*

   Yes – There are two remnant Yellow Box in the study area and the surrounding remnant woodland is dominated by Yellow Box and Blakely's Red Gum.

2. *Does the patch have a predominantly native understorey?*

   No – the understorey is dominated by exotic grasses and herbaceous weeds.

3. *Is the patch 0.1 ha (1000 m^2) or greater is size with 12 or more native understorey species present (excluding grasses)? There must be at least one important species.*

   Or

   Is the patch 2 ha or greater in size with an average of 20 or more mature trees per hectare, or is there natural regeneration of the dominant overstorey eucalypts?

   N/A – refer to point 2.

   In addition, while the patch is greater than 2 ha in size, the vegetation has been modified to the extent that it now lacks the required canopy cover, natural regeneration, and native understorey diversity to meet the definition of EPBC Act Box-Gum Woodland.

Presence in the study area – Absent – as demonstrated by the above assessment, the study area does not support EPBC Act listed Box-Gum Woodland.

2.3.2 *Nature Conservation Act 2014* (ACT)

Two NC Act listed threatened ecological communities (TEC's) have the potential to occur in the study area, both listed as endangered under the NC Act: 'Natural Temperate Grassland' (NTG), and 'Yellow Box – Blakely's Red Gum Grassy Woodland' (NC Act Box-Gum Woodland, BGW).

[2] Commonwealth of Australia (2006). *Policy Statement 3.5: White Box – Yellow Box – Blakely's Red Gum grassy woodlands and derived native grasslands. Environment Protection and Biodiversity Conservation Act 1999*. Commonwealth Department of Environment and Heritage.

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As discussed previously, the remnant trees and nearby vegetation in a similar landscape position indicate that the entire study area supports a woodland PCT (ACT16). As such, it is unlikely that the NTG-SEH TEC occurs in the study area. As such, it is unlikely that the NTG TEC occurs in the study area.

Yellow Box – Blakely's Red Gum Grassy Woodland

Woodland meeting the NC Act listed community is defined in the ACT Native Woodland Conservation Strategy and Action Plans (ACT Government 2019[3]). The key defining characteristics of Yellow Box – Blakely's Red Gum Grassy Woodland are:

- a discontinuous stratum of trees of medium height (10-35 m) with canopies that are separated and with 4-30% foliage cover;
- dominated by Yellow Box (*Eucalyptus melliodora*) and/or Blakely's Red Gum (*Eucalyptus blakelyi*). Apple Box (*Eucalyptus bridgesiana*) and Candlebark (*Eucalyptus rubida*) are the most common co-dominant trees;
- remnants of the community in good condition have a ground cover dominated (50% or more of the perennial species) by native grasses and forbs;
- the ground cover of remnants in lower condition may not be dominated by native species, yet retain a canopy of mature trees (20 or more per hectare on average) and/or support natural regeneration;
- a patch size of at least 0.1 ha.

Polygons within which most or all of the trees have been cleared (described as secondary grassland) also constitute the NC Act listed community, provided:

- Yellow Box and/or Blakely's Red Gum are estimated to have previously been the dominant or co-dominant species;
- a relatively diverse native understorey is present; and
- the patch size is at least 0.1 ha.

Presence in the study area – Absent – As discussed above, the study area would have historically supported the Box-Gum Woodland TEC. However, the vegetation has been modified to the extent that it now lacks the required canopy cover, natural regeneration, and native understorey diversity to meet NC Act Box-Gum Woodland. As such, the study area does not support NC Act listed Box-Gum Woodland.

2.4 Native Vegetation

Pursuant to the NC Act, 'native vegetation' is defined as present if:

- *trees or shrubs indigenous to the area have a canopy cover of 10% or greater in any stratum; or*
- *native plants indigenous to the area comprise 50% or more of the cover of the groundstorey (grasses, small shrubs, forbs, sedges etc.).*

According to this definition, the extent of the NC Act native vegetation present in the study area is defined by the canopy cover of the two remnant Yellow Box trees.

[3] ACT Government (2019). *ACT Native Woodland Conservation Strategy and Action Plans*. Environment, Planning and Sustainable Development, Canberra.

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2.5 Threatened Flora Occurrence

Several threatened flora species have been recorded within the remnant woodland directly adjacent to the study area, including Hoary Sunray *Leucochrysum albicans* var. *tricolor.* However, given the very high degree of historical land modification, none of the threatened flora species with the potential to occur in the locality are considered to have a moderate or higher likelihood of occurrence in the study area. No threatened flora species were recorded in the study area during the field survey.

2.6 Fauna Habitat and Threatened Fauna Occurrence

2.6.1 Threatened fauna habitat

The database searches, literature review, and field surveys identified the following potential fauna habitat.

- **Mature remnant trees.** These trees would provide foraging, nesting and refuge resources for the native and exotic birds likely to occur in the subject land and surrounds.
- **Threatened bird habitat**. The remnant native and planted exotic trees are likely to provide limited habitat for woodland birds, potentially including several EPBC Act and/or NC Act listed birds (refer to Appendix C). The Gang-gang Cockatoo *Callocephalon fimbriatum*, Superb Parrot *Polytelis swainsonii*, and several other regionally declining woodland birds have been recorded in the remnant woodland adjacent to the study area. The two remnant Yellow Box contain large hollows and may provide foraging and/or nesting habitat for these species. However, given the high degree of historic disturbance throughout the study area, the highly modified vegetation in the study area is likely to be of limited habitat value for these species.

2.7 Pest Animals

Two exotic pest species, Indian Myna *Acridotheres tristis* and Common Starling *Sturnus vulgaris* were recorded in the study area during the field surveys (Appendix B). It can also be assumed that the exotic pest species European Rabbit *Oryctolagus cuniculus*, Red Fox *Vulpes vulpes*, and House Sparrow *Passer domesticus* will likely be present or visit the study area. Each of these species is commonly encountered in such suburban sites.

2.8 Pest Plants

Twenty-nine (29) exotic plant species were recorded in the study area (Appendix A). Whilst the majority of these are common weeds across urban land throughout the region, the species in Table 3 are listed as declared pest plant species in the ACT.

Table 3. ACT Pest Plants

Name	Growth Form	Status	Description of Occurrence
Acer negundo **Box Elder**	Tree	Prohibited	One tree in the centre of the study area.
Echium plantagineum **Paterson's Curse**	Forb	Must be contained	This species occurs at low density across the study area.
Onopordum acanthium **Scotch Thistle**	Forb	Must be contained	This species occurs at moderate density across the study area.
Pyracantha sp. **Firethorn**	Shrub	Prohibited	One plant on the northern boundary fence.

Key for table. WoNS - (Commonwealth) Weed of National Significance. Declared pest plant species in the ACT listed under the *Pest Plants and Animals (Pest Plants) Declaration 2005*: Notifiable; Must be suppressed; Must be contained; Prohibited.

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2.9 Summary of Significant Ecological Values

This EVCA has identified the following ecological values as occurring in the study area.

- The two remnant Yellow Box trees in the study area may provide limited habitat value to woodland birds, including several rare and threatened bird species that have been observed in the locality.
- The Gang-gang Cockatoo *Callocephalon fimbriatum* (EPBC Act and NC Act Endangered) was recorded during the field survey. The Superb Parrot *Polytelis swainonii* (EPBC Act and NC Act Vulnerable) has also been recorded previously (Appendix C).
- The study area does not support any EPBC Act or NC Act listed threatened ecological communities, and the extent of the NC Act native vegetation present in the study area is defined by the canopy cover of the two remnant Yellow Box trees.

3. Assessment of Potential for Impacts

3.1 *Environment Protection and Biodiversity Conservation Act 1999* (Commonwealth)

The EPBC Act is the key Commonwealth Government legislation for the protection and conservation of Australia's environment and biodiversity. The EPBC Act provides the legislative framework for the assessment and approval mechanism requiring that proposed 'actions' to be assessed in terms of their potential to impact upon 'Matters of National Environmental Significance' (MNES). MNES currently listed under the EPBC Act of relevance to the study area are:

- threatened species and ecological communities; and
- migratory species (protected under international agreements).

Where a potential impact on a MNES may occur as a result of a proposed action, the significance of that impact must be assessed. Should it be determined that a proposed action may have a significant impact on one or more listed matters, referral of the action to the Commonwealth Minister for the Environment is required for consideration, and potentially assessment, under the EPBC Act. If impacts to MNES cannot be avoided or substantially minimised/mitigated, the Minister is likely to declare the action a 'controlled action'. In such a case a formal offset would likely be required to offset the residual significant impact/s, the specifics of which would be determined in accordance with the EPBC Act Environmental Offsets Policy (Commonwealth of Australia 2012[4]).

Matters of National Environmental Significance

As detailed in the EPBC Act Significant Impact Guidelines (Commonwealth of Australia 2013[5]), whilst there are several criteria against which to assess the likelihood that a proposed action will significantly impact an EPBC Act listed ecological threatened species or community, it is important to note that the first states that –

[4] Commonwealth of Australia (2012). *EPBC Act Environmental Offsets Policy.* Australian Government Department of Sustainability, Environment, Water, Population and Communities.
[5] Commonwealth of Australia (2013). *Matters of National Environmental Significance - Significant Impact Guidelines 1.1. Environment Protection and Biodiversity Conservation Act 1999*. Commonwealth Department of the Environment.

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An action will require approval if the action has, will have, or is likely to have a significant impact on a species listed in any of the following categories:

- *extinct in the wild*
- *critically endangered*
- *endangered, or*
- *vulnerable.*

With regard to the above, the study area does not support any EPBC Act listed threatened ecological community or habitat for any EPBC Act listed threatened flora species. However, the study area is likely to support habitat which is potentially of limited value for EPBC Act threatened fauna species (refer to Section 2.6 and Appendix C). Notwithstanding this, with reference to the EPBC Act Significant Impact Guidelines, impacts to or the removal of vegetation from the study area is unlikely to result in a 'significant impact' on any identified EPBC Act listed fauna species. Finally, whilst there is the potential for a few migratory species to periodically forage within the study area, the study area is unlikely to provide important habitat for any migratory species.

In light of the above, development within the study area is unlikely to significantly impact any MNES, and therefore referral to the Minister for such development would not be warranted.

3.2 ACT *Nature Conservation Act 2014*

In 2018, the ACT Government listed the *'The loss of mature native trees (including hollow-bearing trees) and a lack of recruitment'* as a key threatening process under the NC Act. The aim of this listing is to recognise the significant biodiversity values that mature native trees possess, and to encourage their preservation. Actions suggested in the associated Conservation Advice[6] to mitigate against the loss of mature native trees include the following.

- *Restrict as far as possible, clearing of:*
    - *mature eucalypts over 50 cm diameter at breast height; and*
    - *mature native trees that contain nest hollows.*
- *Promote retention of standing dead trees wherever possible.*
- *Encourage retention of non-mature native trees across urban and rural landscapes to ensure a future supply of mature trees and avoid lag times.*

The two remnant Yellow Box trees in the study area support large hollows and may provide habitat for a range of species. It is recommended that these trees are retained in the development design, and for future landscaping to include planting of native trees.

3.3 ACT *Planning and Development Act 2007*

Pursuant to the ACT *Planning and Development Act 2007* (P&D Act), a development proposal will be assessed via the 'impact track' and require the preparation of an Environmental Impact Statement (EIS) if the development will have any of the impacts listed under Parts 4.2 and 4.3 of Schedule 4 of the Act.

[6] ACT Government (2018). *Nature Conservation (Loss of Mature Native Trees) Conservation Advice 2018*. ACT Government, Canberra.

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The ecological impacts that trigger the requirement to prepare an EIS of relevance to potential development in the study area are detailed below.

> ***Item 1.*** *Proposal that is likely to have a significant adverse environmental impact on 1 or more of the following, unless the conservator of flora and fauna provides an environmental significance opinion indicating that the proposal is not likely to have a significant adverse environmental impact:*
>
> *(a) a critically endangered species;*
>
> *(b) an endangered species;*
>
> *(c) a vulnerable species;*
>
> *(d) a conservation dependent species;*
>
> *(e) a regionally threatened species;*
>
> *(f) a regionally conservation dependent species;*
>
> *(g) a provisionally listed threatened species;*
>
> *(h) a listed migratory species;*
>
> *(i) a threatened ecological community;*
>
> *(j) a protected native species;*
>
> *(k) a Ramsar wetland;*
>
> *(l) any other protected matter*

Regarding Item 1, whilst several NC Act listed birds may visit the study area to forage, the highly modified vegetation is only likely to be of very limited habitat value for such species. Therefore, development within the study area is considered unlikely to have a significant adverse environmental impact on any NC Act listed entities.

> ***Item 2.*** *Proposal involving—*
>
> *(a) the clearing of more than 0.5ha of native vegetation in a native vegetation area, other than on land that is designated as a future urban area under the territory plan, unless the conservator of flora and fauna produces an environmental significance opinion that the clearing is not likely to have a significant adverse environmental impact*

Regarding Item 2, the extent of the NC Act native vegetation present in the study area is defined by the canopy cover of the two remnant Yellow Box trees. Therefore, the requirement to prepare an EIS would not be triggered as the proposed clearance of native vegetation cannot exceed 0.5 ha.

3.4 ACT *Tree Protection Act 2005* requirements

In urban areas, all trees over 12 metres in height and/or 1.5 m in circumference (at 1.3 m above ground level) are classified as protected (Regulated) trees under the ACT *Tree Protection Act 2005* (TP Act). Approval from the ACT Tree Protection Unit must be obtained prior to removing or otherwise impacting regulated trees. As the study area is zoned as 'CZ6 – Leisure and Accommodation Zone' and will be rezoned to 'RZ3 – Urban Residential Zone', the TP Act applies. The two remnant Yellow Box trees are well over 1.5 m in circumference (110 and 130 cm diameter respectively) and are therefore classified as protected.

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3.5 ACT *Pest Plants and Animals Act 2005* requirements

Four plant species listed as 'pest plants' under the ACT *Pest Plants and Animals Act 2005* were recorded within the study area. The requirements from the explanatory statement accompanying the *Pest Plants and Animals (Pest Plants) Declaration 2015* for control of the different categories of weeds are detailed below.

(a) notifiable – in which case its presence must be notified to the Director General within 2 working days. The intention of declaring a pest plant as notifiable is to control new pest incursions; or

(b) must be suppressed – all infestations on a premises must be controlled; or

(c) must be contained – infestations must be prevented from spreading to neighbouring premises; or

(d) prohibited – supply and propagation is not allowed.

Control as per the above requirements is recommended for the weeds listed in Section 2.8.

3.6 Indirect impacts to Mt Majura Nature Reserve

The study area is located directly opposite Mt Majura Nature Reserve, which is separated by Antill St. There is therefore the potential for any development in the study area to have indirect impacts on Mt Majura Nature Reserve, such as increased light and noise pollution, recreational pressure, pest plants and animals, vehicle traffic, and bushfire requirements. However, as the study area is already surrounded by medium density residential development, any increase in the existing urban impacts is likely to be minimal. Measures to minimise these impacts should be considered in the design of the development (e.g. use of lights with shields to restrict light spill etc.).

4. Conclusions

The following are the key conclusions or our assessment.

1. The study area's vegetation and habitat has been highly degraded by the land use history and associated vegetation modification.
2. The extent of the NC Act native vegetation present in the study area is defined by the canopy cover of the two remnant Yellow Box trees.
3. The study area does not contain any threatened ecological community or potentially important habitat for any threatened species listed under the EPBC Act or the NC Act.
4. The study area contains two large remnant Yellow Box *Eucalyptus melliodora* trees, which are classified as protected under the ACT *Tree Protection Act 2015.*
5. Development within the study area:
    a. would be unlikely to significantly impact any MNES, and therefore referral under the Commonwealth EPBC Act for such development would not be warranted; and
    b. will not result in the clearance of greater than 0.5 ha of native vegetation clearance, and as such, the development will not trigger the requirement to prepare an EIS under the ACT P&D Act.

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Overall, with consideration of the study area's land use history and current ecological values, development of the study area is a reasonable proposition, and it is unlikely that the study area's limited remaining ecological values would pose a substantial constraint to development.

We trust that this EVCA provides the information and advice required. If, however, you should have any questions relating to this report, please do not hesitate to contact us.

Yours sincerely,

Robert Speirs

Director / Principal Ecologist

Dr. Catherine Ross

Consultant Ecologist

Attachments:

Figure 1. Locality Plan

Figure 2. Study Area on Aerial Imagery (2022)

Figure 3. Study Area on Historical Aerial Imagery (1955)

Figure 4. Vegetation Mapping

Appendix A. Vegetation Survey Results Tables

Appendix B. Recorded Fauna

Appendix C. Likelihood of Occurrence Assessment

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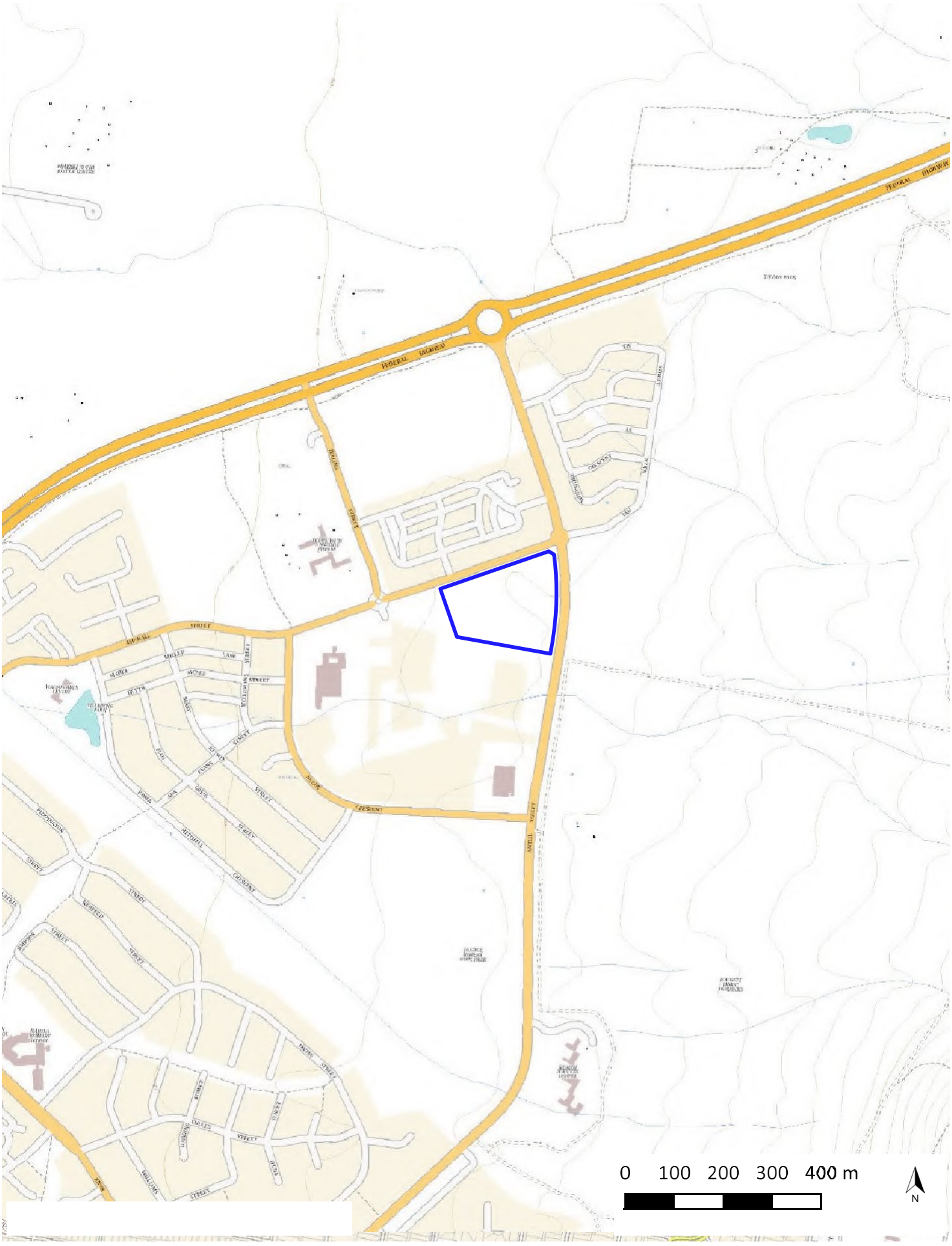

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Figure 2. The Subject Land on Aerial Imagery (2022)

Capital Ecology Project No: 3173
Drawn by: C. Ross
Date: 12 September 2022

Legend

Study Area - Block 3 Section 95

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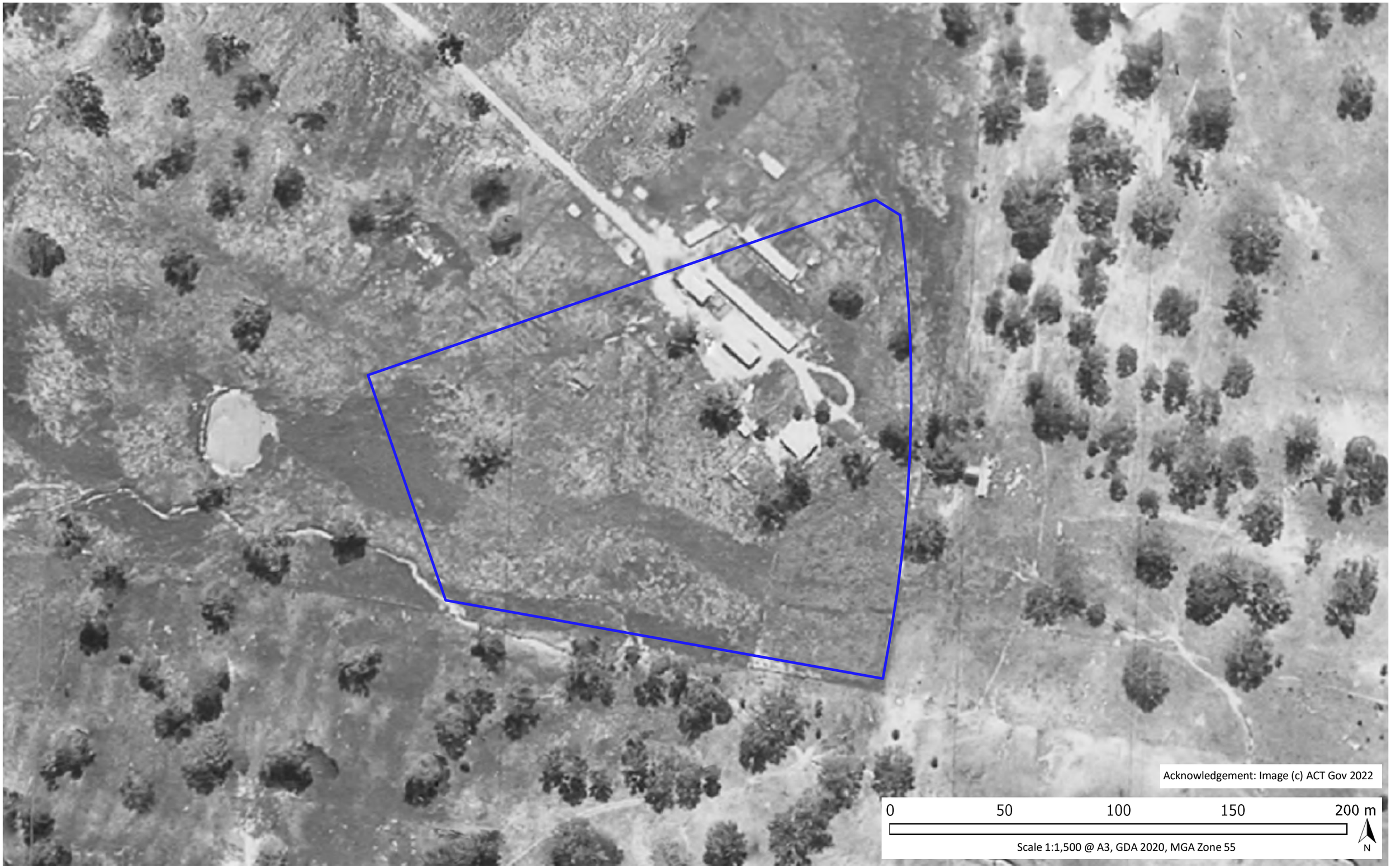

Figure 3. The Subject Land on Historical Aerial Imagery (1955)

Capital Ecology Project No: 3173
Drawn by: C. Ross
Date: 12 September 2022

Legend

Study Area - Block 3 Section 95

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Figure 4. Vegetation Mapping

Capital Ecology Project No: 3173
Drawn by: C. Ross
Date: 12 September 2022

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Appendix A. Vegetation Survey Results Tables

Species Name	Common Name	Notes
Native		
Eucalyptus melliodora	Yellow Box	
Geranium solanderi	Native Geranium	
Oxalis perennans	Wood Sorrel	
Rumex brownii	Slender Dock	
Exotic		
Acer negundo	Box Elder	ACT Pest Plant (prohibited)
Arctotheca calendula	Capeweed	
Avena sp.	Wild Oats	
Bromus sp.	Brome Grass	
Capsella busa-pastoris	Shepherd's Purse	
Cirsium vulgare	Spear Thistle	
Cynodon dactylon	Couch grass	
Echium plantagineum	Paterson's Curse	ACT Pest Plant (must be contained)
Eleusine tristachya	Goose Grass	
Erodium sp.	Stork's-bill	
Gamochaeta Americanum	Cudweed	
Hirschfeldia incana	Buchan Weed	
Hypochaeris radicata	Flatweed	
Malva sp.	Mallow / Marshmallow Weed	
Marrubium vulgare	Horehound	
Modiola caroliniana	Red-flowered Mallow	
Onopordum acanthium	Scotch Thistle	ACT Pest Plant (must be contained)
Paspalum dilatatum	Paspalum Grass	
Phalaris aquatica	Phalaris	
Plantago lanceolata	Plantain / Lamb's Tongue	
Polygonum aviculare	Wireweed	
Prunus cerasifera	Cherry Plum	
Pyracantha sp.	Firethorn	ACT Pest Plant (prohibited)
Rumex acetosella	Sheep's Sorrell	
Salvia verbenaca	Wild Sage	
Taraxacum officinale	Dandelion	
Trifolium sp.	Clover	
Ulmus procera	English Elm	
Vulpia sp.	Squirrel-tail Fescue	
	Number of Species	33
	Number of Native Species	4
	Number of Exotic Species	29
	Number of ACT Pest Plants	4
	Number of WoNS	0

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Appendix B. Fauna Species Recorded

Scientific Name	Common Name	Classification	Status
Acridotheres tristis	Indian Myna	Aves	Exotic
Acanthiza chrysorrhoa	Yellow-rumped Thornbill	Aves	Native
Anthochaera carunculata	Red Wattlebird	Aves	Native
Callocephalon fimbriatum	Gang-gang Cockatoo	Aves	Endangered (EPBC Act and NC Act)
Chenonetta jubata	Australian Wood Duck	Aves	Native
Cracticus torquatus	Grey Butcherbird	Aves	Native
Eolophus roseicapilla	Galah	Aves	Native
Gymnorhina tibicen	Australian Magpie	Aves	Native
Malurus cyaneus	Superb Fairywren	Aves	Native
Ocyphaps lophotes	Crested Pigeon	Aves	Native
Petrochelidon ariel	Fairy Marten	Aves	Native
Platycercus elegans	Crimson Rosella	Aves	Native
Platycercus eximius	Eastern Rosella	Aves	Native
Psephotus haematonotus	Red-rumped Parrot	Aves	Native
Strepera graculina	Pied Currawong	Aves	Native
Sturnus vulgaris	Common Starling	Aves	Exotic

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Appendix C. Likelihood of Occurrence Assessment

Key for the below table:

1) Listed pursuant to the EPBC Act as Critically Endangered (CE), Endangered (E), or Vulnerable (V)

2) Listed pursuant to the NC Act as Critically Endangered (CE), Endangered (E) or Vulnerable (V)

Note: The brief descriptions of species distribution and habitat are paraphrased from or based on information sourced from the threatened species profiles, recovery plans and listing determinations prepared for each species by the Commonwealth and ACT governments. These resources and their references can be found on the relevant government websites.

Species Name	EPBC Act Status	NC Act Status	Description (Distribution and Habitat)	Likelihood of Occurrence
Plants				
Amphibromus fluitans River Swamp Wallaby-grass	V	-	River Swamp Wallaby-grass has been recorded along the Lachlan River at sites at Laggan near Crookwell and the headwaters of the Wollondilly River. The species grows mostly in permanent swamps, as well as lagoons, billabongs, dams and roadside ditches. The species requires moderately fertile soils with some bare ground, such conditions being caused by seasonally-fluctuating water levels.	Negligible The species is not known to occur near the study area and was not recorded during the field survey.
Dodonaea procumbens Trailing Hop-bush	V	V	Trailing Hop-bush is found in the dry areas of the Monaro, between Michelago and Dalgety where it occurs mostly in Natural Temperate Grassland or Snow Gum *Eucalyptus pauciflora* Woodland. A single known population occurs at Lake Bathurst (the northern-most occurrence of the species) where it occurs adjacent to the lake bed in grassland dominated by Corkscrew Grass *Austrostipa scabra* and Curly Sedge *Carex bichenoviana*. The species grows on sandy-clay soils in open bare patches where there is little competition from other species. The species often occurs on roadside batters and does not persist in heavily grazed pastures.	Negligible The study area has been disturbed to the extent that the species is considered unlikely to occur.
Eucalyptus aggregata Black Gum	V	V	Black Gum occurs on the central and southern tablelands of NSW, and in a small disjunct population in Victoria. In NSW, it occurs predominantly in the South Eastern Highlands Bioregion. The species is a small to medium-sized woodland tree which grows in grassy woodlands on alluvial soils in moist sites along creeks on broad, cold and poorly-drained flats and hollows. It commonly occurs with Candlebark *Eucalyptus rubida*, Ribbon Gum *E. viminalis*, and Snow Gum *E. pauciflora*, with a grassy understorey of River Tussock *Poa labillardieri*. Most populations are located on private land or road verges and travelling stock routes.	Negligible The species is not present in the study area.

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Species Name	EPBC Act Status	NC Act Status	Description (Distribution and Habitat)	Likelihood of Occurrence
Lepidium aschersonii Spiny Peppercress	V	V	*Lepidium aschersonii* is distinguished from other Lepidium species by the presence of tiny spines which give the mature plants an intricate appearance. Not widespread, occurring in the marginal central-western slopes and north-western plains regions of NSW (and potentially the south western plains). Found on ridges of gilgai clays dominated by Brigalow *Acacia harpophylla*, Belah *Casuarina cristata*, Buloke *Allocasuarina luehmanii* and Grey Box *Eucalyptus microcarpa*. In the south has been recorded growing in Bull Mallee *Eucalyptus behriana*.	Negligible The study area has been disturbed to the extent that the species is considered unlikely to occur.
Lepidium hyssopifolium Basalt Peppercress	E	-	This species is known from a few populations in NSW, Victoria and Tasmania. The Basalt Pepper-cress is known to establish on open, bare ground with limited competition from other plants. It was previously recorded from Eucalypt woodland with a grassy ground cover, low open Casuarina woodland with a grassy ground cover and tussock grassland. Recently recorded localities have predominantly been in weed-infested areas of heavy modification, high degradation and high soil disturbance such as road and rail verges, on the fringes of developed agricultural land or within small reserves in agricultural land. Many populations are now generally found amongst exotic pasture grasses and beneath exotic trees.	Negligible The study area has been disturbed to the extent that the species is considered unlikely to occur.
Leucochrysum albicans var. *tricolor* Hoary Sunray	E	-	The Hoary Sunray occurs from Queensland to Victoria and in Tasmania. In the ACT the species can be seen in spring in abundance on the roadside along Fairbairn Avenue and into Mt Ainslie Nature Reserve, on the western slopes of Mt Majura and adjacent to the Federal Highway road easement. The species is usually found in ungrazed and lightly grazed areas, along roadsides in particular. It appears to be very sensitive to grazing but responds to disturbance as a coloniser and appears to tolerate mowing. Flowers spring to summer.	Low While present in the locality, this conspicuous species was not recorded during the field survey and is therefore considered unlikely to occur in the study area.
Pomaderris pallida Pale Pomaderris	V	-	A compact perennial shrub, growing to 1.5 m high. It is found in the ACT, southern NSW and eastern Victoria. In the ACT it is scattered along the Cotter, Paddy's and Murrumbidgee Rivers and through the Molonglo Gorge. It is found along the plateau edge and very steep upper slopes and cliffs of river valleys, in shallow, pale brown sandy loam soil over granite rock. It grows in shrubland, surrounded by *Eucalyptus* or *Callitris* woodland. In the ACT, it is only found on the eastern banks of the rivers.	Negligible This species is not known to occur in the locality and was not recorded during the field survey.

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Species Name	EPBC Act Status	NC Act Status	Description (Distribution and Habitat)	Likelihood of Occurrence
Prasophyllum petilum Tarengo Leek Orchid	E	E	When first described in 1991, the Tarengo Leek Orchid was known only from the Hall Cemetery in the ACT. It has since been found at four sites in New South Wales: Captains Flat Cemetery, Ilford Cemetery, Steves Travelling Stock Route (TSR) at Delegate and the Tarengo TSR near Boorowa. The Tarengo Leek Orchid occurs on relatively fertile soils in grassy woodland or natural grassland. The three cemetery sites originally contained grassy woodland, dominated by Snow Gum *Eucalyptus pauciflora* and Black Gum *E. aggregata* at Captains Flat, and Blakely's Red Gum *E. blakelyi* and Yellow Box *E. melliodora* at Hall and Ilford. Both Tarengo TSR and Steves TSR are natural grasslands. The species is intolerant of grazing and this is considered to be the key reason it has been found only within cemeteries and TSRs, land from which grazing has been restricted.	Negligible The study area has been disturbed to the extent that the species is considered unlikely to occur.
Rutidosis leptorrhynchoides Button Wrinklewort	E	E	In the ACT and NSW, Button Wrinklewort occurs in box-gum woodland, secondary grassland derived from box-gum woodland or in natural temperate grassland. It prefers open spaces where it does not have to compete for light. It is known from several sites in the ACT, NSW and Victoria, where it is threatened by habitat loss, grazing and weed encroachment.	Low While present in the locality, the study area has been disturbed to the extent that the species is considered unlikely to occur.
Senecio macrocarpus Large-fruit Groundsel	V	-	The Large-fruit Groundsel is a small perennial plant endemic to south-eastern Australia. While most known populations occur within Victoria and South Australia, the species has been recorded within the NSW southern tablelands. This species occurs in a variety of habitats, including grasslands, shrublands and woodlands. The species is known to grow in association with Teatree and Kangaroo Grass populations, as well as Yellow Box woodlands. The species appears to be intolerant of grazing and agricultural pressures. Main loss of habitat is thought to be due to sheep grazing and pasture improvement of relevant habitat.	Negligible The study area is unlikely to provide potential habitat to the species due to land use history and the degraded nature of the vegetation present. The species is also not known to occur in the locality.
Swainsona recta Small Purple-pea	E	E	The Small Purple-pea occurs in the grassy understorey of woodlands and open forests dominated by Blakely's Red Gum, Yellow Box, Candlebark and Bundy. The species grows in association with understorey dominants that include Kangaroo Grass, Poa tussocks and Spear-grasses. Plants die back in summer, surviving as rootstocks until they shoot again in autumn. The species is intolerant of grazing but generally tolerant of fire, which also enhances germination by breaking the seed coat and reducing competition from other species.	Negligible The study area has been disturbed to the extent that the species is considered unlikely to occur.

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Species Name	EPBC Act Status	NC Act Status	Description (Distribution and Habitat)	Likelihood of Occurrence
Thesium australe Austral Toadflax	V	V	Found in very small to large populations scattered across eastern NSW, along the coast, and from the Northern to Southern Tablelands. Austral Toadflax is a root parasite that takes water and some nutrients from other plants, especially Kangaroo Grass. It is often found in damp sites in association with Kangaroo Grass, but it is also found on other grass species at inland sites. Occurs on clay soils in grassy woodlands or coastal headlands.	Negligible The study area has been disturbed to the extent that the species is considered unlikely to occur.
Mammals				
Chalinolobus dwyeri Large-eared Pied Bat	V	-	The Large-eared Pied Bat is found mainly in areas with extensive cliffs and caves, from Rockhampton in Queensland south to Bungonia in the NSW Southern Highlands. It is generally rare with a very patchy distribution in NSW. The species roosts in caves, crevices in cliffs, old mine workings and in the disused, bottle-shaped mud nests of the Fairy Martin *Petrochelidon ariel*. The species frequents low to mid-elevation dry open forest and woodland close to roosts and is often found in well-timbered areas containing gullies.	Low No potential roosting habitat is present in the study area or nearby. As the species is known to forage close to roost sites, it is unlikely to forage in the study area.
Dasyurus maculatus maculatus Spot-tailed Quoll (SE mainland population)	E	V	The Spot-tailed Quoll occurs along the east coast of Australia and the Great Dividing Range. The species uses a range of habitats including sclerophyll forests and woodlands, coastal heathlands and rainforests. Occasional sightings have been made in open country, grazing lands, rocky outcrops and other treeless areas. Habitat requirements include suitable den sites, including hollow logs, rock crevices and caves, an abundance of food and an area of intact vegetation in which to forage. Seventy per cent of the diet is medium-sized mammals, and also feeds on invertebrates, reptiles and birds. Individuals require large areas of relatively intact vegetation through which to forage. The home range of a female is between 180 and 1000ha, while males have larger home ranges of between 2000 and 5000ha. Breeding occurs from May to August.	Low The species is not known to occur in the immediate locality and the study area is too heavily modified to constitute significant habitat for the species.
Phascolarctos cinereus Koala (combined populations of Qld, NSW and the ACT)	V	V	In NSW, the Koala mainly occurs on the central and north coasts with some populations in the western region. Koalas feed almost exclusively on eucalypt foliage, and their preferences vary regionally. They are solitary with varying home ranges. In high quality habitat home ranges may be 1 -2 ha and overlap, while in semi-arid country they are usually discrete and around 100 ha.	Negligible The species is not known to occur in the lowland/peri-urban areas of the ACT.

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Species Name	EPBC Act Status	NC Act Status	Description (Distribution and Habitat)	Likelihood of Occurrence
Pteropus poliocephalus Grey-headed Flying Fox	V	V	The Grey-headed Flying Fox occurs in the coastal belt from Rockhampton in central Queensland to Melbourne in Victoria. Whilst Brisbane, Newcastle, Sydney and Melbourne are occupied continuously, the species is widespread throughout their range during summer. In autumn the species occupies coastal lowlands and is uncommon inland. In winter the species congregates in coastal lowlands north of the Hunter Valley and is occasionally found on the south coast of NSW and on the northwest slopes (associated with flowering eucalypts of these areas). The Grey-headed Flying-fox requires foraging resources and roosting sites. It is a canopy-feeding frugivore and nectarivore, which utilises vegetation communities including rainforests, open forests, closed and open woodlands, Melaleuca swamps and Banksia woodlands. The Grey-headed Flying-fox roosts in aggregations of various sizes on exposed branches. Roost sites are typically located near water, such as lakes, rivers or the coast. The roost at Commonwealth Park in Canberra is the only known roost in the ACT region.	Low The species may periodically forage within the study area on flowering eucalypts. However, the study area is highly unlikely to contain habitat of significance to the species. Finally, the study area is not located near any known camps.
Birds				
Anthochaera phrygia Regent Honeyeater	CE	CE	A semi-nomadic species occurring in temperate eucalypt woodlands and open forests. Most records are from box-ironbark eucalypt forest associations and wet lowland coastal forests. Key eucalypt species include Mugga Ironbark, Yellow Box, Blakely's Red Gum, White Box and Swamp Mahogany. It also utilises a number of other eucalypt species. Nectar and fruit from the mistletoes *Amyema miquelii*, *A. pendula*, and *A. cambagei* are also eaten during the breeding season. Regent Honeyeaters usually nest in horizontal branches or forks in tall mature eucalypts and sheoaks as well as within mistletoe haustoria (section of the root which connects with the host tree). An open cup-shaped nest is constructed by the female of bark, grass, twigs and wool.	Low It is possible that the species may visit the study area to forage, however the study area is unlikely to contain nesting resources of potential significance to the species.
Botaurus poiciloptilus Australasian Bittern	E	E	Australasian Bitterns are widespread but uncommon over south-eastern Australia. In NSW they may be found over most of the state except for the far north-west. Favours permanent freshwater wetlands with tall, dense vegetation, particularly bullrushes (Typha spp.) and spikerushes (Eleocharis spp.). Hides during the day amongst dense reeds or rushes and feed mainly at night on frogs, fish, yabbies, spiders, insects and snails.	Negligible There is no potential habitat for this species in the study area and there are no records in the locality.

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Species Name	EPBC Act Status	NC Act Status	Description (Distribution and Habitat)	Likelihood of Occurrence
Calidris ferruginea Curlew Sandpiper	CE	-	The Curlew Sandpiper occurs around the coast of Australia, and are also widespread inland, albeit in smaller numbers. In the south-east they are occasionally recorded in the Tablelands and often in the Riverina. When inland, they are found around ephemeral and permanent lakes, dams, waterholes and bore drains. Curlew Sandpipers prey mainly on invertebrates, foraging on mudflats and at the edge of shallow pools, wading up to depths of 60 mm deep. They generally roost on dry shingle or sandy beaches, sandspits, and islets. Curlew Sandpipers are migratory, and adults are found in Australia from August to April, juveniles are found year-round. This species does not breed in Australia.	Negligible There is no potential habitat for this species in the study area and there are no records in the locality.
Callocephalon fimbriatus Gang-gang Cockatoo	E	-	In summer the Gang-gang Cockatoo occupies tall montane forests and woodlands, particularly in heavily timbered and mature wet sclerophyll forests. Also occur in subalpine Snow Gum woodland and occasionally in temperate or regenerating forest. In winter, the species occurs at lower altitudes in drier, more open eucalypt forests and woodlands, particularly in box-ironbark assemblages, or in dry forest in coastal areas. The Gang-gang Cockatoo usually breeds in tall forests in the ACT region, however they have been observed on occasion to breed in Box-Gum Woodland on Red Hill and other similar lowland habitat around Canberra (R. Speirs pers. obs., M. Mulvaney pers. comm.).	**Confirmed** The species was recorded in the study area during the field survey. The species may periodically visit the study area to forage, however the study area does not contain potentially significant foraging or breeding habitat for the species.
Calyptorhunchus lathami lathami South-eastern Glossy Black-cockatoo	V	V	The Glossy Black-cockatoo has a patchy distribution, having once been widespread across most of the south-east of Australia. The species is now distributed throughout an area which extends from the coast near Eungella in eastern Queensland to Mallacoota in Victoria. Glossy black-cockatoos feed on casuarina seeds, however they occasionally consume seeds from eucalypts, angophoras, acacias and hakeas, as well as insect larvae. In the ACT region the species feeds almost exclusively on Drooping Sheoak *Allocasuarina verticillata*. Pairs mate for life and nest in the hollows of large, old living or dead eucalypt trees. Breeding takes place between March and August.c	Negligible There is no potential habitat for this species in the study area.

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Species Name	EPBC Act Status	NC Act Status	Description (Distribution and Habitat)	Likelihood of Occurrence
Climacteris picumnus victoriae Brown Treecreeper (eastern subspecies)	-	V	In the ACT region, Brown Treecreepers occur in dry woodlands and open forest below 1,000 metres. The species is relatively common along the Clear Range and along the Lower Naas River. Other populations occur at Mulligans Flat Reserve, Campbell Park, Burbong and former quarries south of the airport in the northern part of the ACT, and at Castle Hill, north of Tharwa. Brown Treecreepers also frequent paddocks and grasslands where there are sufficient logs, stumps and dead trees nearby. The species prefers relatively undisturbed woodland and dry open forest where the native understorey, especially grasses, has been preserved. The species usually prefers predominantly rough-barked trees such as Stringybarks and rough barked Boxes.	Low The species may periodically visit the study area to forage, however the study area does not contain potentially significant foraging or breeding habitat for the species.
Daphoenositta chrysoptera Varied Sittella	-	V	In the ACT region, the Varied Sittella occurs in a wide variety of woodland and forest habitats, particularly in lowland areas. The species prefers areas with a dominance of rough barked trees, notably Red Stringybark at relatively high density. The species is rarely recorded in sparsely treed areas.	Low The species may periodically visit the study area to forage, however the study area does not contain potentially significant foraging or breeding habitat for the species.
Falco hypoleucos Grey Falcon	V	-	The Grey Falcon is sparsely distributed in NSW, chiefly throughout the Murray-Darling Basin, with the occasional vagrant east of the Great Dividing Range. The breeding range has contracted since the 1950s with most breeding now confined to arid parts of the range. There are possibly less than 5000 individuals left. Population trends are unclear, though it is believed to be extinct in areas with more than 500mm rainfall in NSW. It is usually restricted to shrubland, grassland and wooded watercourses of arid and semi-arid regions, although it is occasionally found in open woodlands near the coast. It also occurs near wetlands where surface water attracts prey.	Negligible There is no potential habitat for this species in the study area and there are no records in the locality.
Grantiella picta Painted Honeyeater	V	V	The Painted Honeyeater is found in Queensland and New South Wales west of the Great Dividing Range, through to northern Victoria. The species displays some migratory movement and is occasionally found in the Northern Territory and is a vagrant to South Australia and the ACT. The species frequents eucalypt forests and woodlands, particularly those that are infested heavily with mistletoes. In the ACT, the species' primary habitat is River Oak *Casuarina cunninghamiana* along river systems, especially the Murrumbidgee River.	Low The species may periodically visit the study area to forage, however it is not known to nest in the locality.

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Species Name	EPBC Act Status	NC Act Status	Description (Distribution and Habitat)	Likelihood of Occurrence
Hieraaetus morphnoides Little Eagle	-	V	The Little Eagle is distributed throughout the Australian mainland excepting the most densely forested parts of the Dividing Range escarpment and occupies habitats rich in prey within open eucalypt forest, woodland or open woodland. The species is sensitive to human disturbance.	Low The study area may be part of the range of an individual or pair of Little Eagles, but the species is unlikely to forage or nest in the study area.
Hirundapus caudacutus White-throated Needletail	V	V	The White-throated Needletail is primarily distributed in eastern Australia and is most often recorded above forest or woodland areas. Swifts are aerial species, mainly occurring at heights of one to 300 metres to 1000 metres or more above the ground over plains, lakes, forests, coasts and towns.	Low The species may periodically visit the study area to forage. Records of the species exist in the locality, however the study area is unlikely to contain significant foraging or breeding habitat for the species.
Lathamus discolor Swift Parrot	CE	CE	The Swift Parrot occurs in woodlands and forests of NSW from May to August, where it feeds on eucalypt nectar, pollen and associated insects. The Swift Parrot is dependent on flowering resources across a wide range of habitats in its wintering grounds in NSW. This species is migratory, breeding in Tasmania and also nomadic, moving about in response to changing food availability.	Low The species may periodically visit the study area to forage, however the study area does not contain potentially significant foraging or breeding habitat for the species.
Melanodryas cucullata cucullata Hooded Robin (southeastern form)	-	V	The Hooded Robin occupies drier eucalypt forest, woodland and scrub, grasses and low shrubs, as well as cleared paddocks with regrowth or stumps. The species uses stumps, posts or fallen timber from which to locate prey on the ground. In the ACT region, the species is found in woodland, often with scattered Yellow Box and/or Blakely's Red Gum, with long grass and low shrubs, or fallen logs.	Low The species may periodically visit the study area to forage, however the study area does not contain potentially significant foraging or breeding habitat for the species.
Numenius madagascariensis Eastern Curlew	CE	-	The eastern curlew is Australia's largest shorebird and a long-haul flyer. The eastern curlew takes an annual migratory flight to Russia and north-eastern China to breed, arriving back home to Australia in August to feed on crabs and molluscs in intertidal mudflats. It is extremely shy and will take flight at the first sign of danger.	Negligible The study area does not support potential habitat for the species.

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Species Name	EPBC Act Status	NC Act Status	Description (Distribution and Habitat)	Likelihood of Occurrence
Petroica boodang Scarlet Robin	-	V	The Scarlet Robin is found in south-eastern Australia (extreme south-east Queensland to Tasmania, western Victoria and south-east South Australia) and south-west Western Australia. In NSW it occupies open forests and woodlands from the coast to the inland slopes, breeding in drier eucalypt forests and temperate woodlands.	Low There are several records of this species within 1 km of the study area. The species may periodically visit the study area to forage, however it is unlikely to nest in the study area and the potential foraging habitat is not of potential importance to the species.
Polytelis swainsonii Superb Parrot	V	V	Found mainly in open, tall riparian River Red Gum forest or woodland. Often found in farmland including grazing land with patches of remnant vegetation. Breeds in hollow branches of tall eucalypt trees within 9 km of feeding areas.	**Confirmed** This species has been previously recorded in the study area (ref. ALA, eBird). The species may forage in the study area. However, the study area does not support breeding habitat suitable for the species.
Rostratula australis Australian Painted Snipe	E	E	Usually found in shallow inland wetlands including farm dams, lakes, rice crops, swamps and waterlogged grassland. The species prefers freshwater wetlands, ephemeral or permanent, although it has been recorded in brackish waters.	Negligible The study area does not contain potential habitat for the species, and it is only rarely recorded at a few locations in the ACT region (i.e. Jerrabomberra Wetlands, upper Yerrabi Ponds etc.).

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Species Name	EPBC Act Status	NC Act Status	Description (Distribution and Habitat)	Likelihood of Occurrence
Amphibians				
Litoria aurea Green and Golden Bell Frog	V	V Locally Extinct	The species is found in marshes, dams and stream sides, particularly those containing bullrushes or spikerushes. Preferred habitat contains water bodies that are unshaded, are free of predatory fish, have a grassy area nearby and have diurnal sheltering sites nearby such as vegetation or rocks, although the species has also been recorded from highly disturbed areas including disused industrial sites, brick pits, landfill areas and cleared land.	Negligible There is no potential habitat in the study area for this species and the species is not known to occur in the locality.
Litoria castanea Yellow-spotted Tree Frog	CE	CE Locally Extinct	The Yellow-spotted Tree Frog previously had a disjunct distribution, being recorded on the New England Tablelands and on the Southern Tablelands from Lake George to Bombala. The species has only recently (2010) been rediscovered on the Southern Tablelands. Prior to this the species had not been recorded on the Southern Tablelands since the 1970s. Found in large permanent ponds, lakes and dams with an abundance of bulrushes and other emergent vegetation, it shelters during autumn and winter under fallen timber, rocks, other debris or thick vegetation.	Negligible There is no potential habitat in the study area for this species and the species is not known to occur in the locality.
Litoria raniformis Growling Grass Frog	V	-	In NSW, the species is known to exist only in isolated populations in the Coleambally Irrigation Area, the Lowbidgee floodplain and around Lake Victoria. Usually found in or around permanent or ephemeral swamps or billabongs with an abundance of bulrushes and other emergent vegetation along floodplains and river valleys. The species has also been found in irrigated rice crops. Outside the breeding season animals disperse away from water and take shelter beneath ground debris such as fallen timber and bark, rocks, grass clumps and in deep soil cracks. The species previously occurred on the Southern Tablelands at a number of sites within the Murrumbidgee River corridor, however it is now widely considered to have become extinct on the Southern Tablelands.	Negligible There is no potential habitat in the study area for this species and the species is not known to occur in the locality.

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Species Name	EPBC Act Status	NC Act Status	Description (Distribution and Habitat)	Likelihood of Occurrence
Reptiles				
Aprasia parapulchella Pink-tailed Worm-lizard	V	V	The Pink-tailed Worm-lizard is a fossorial species which lives beneath surface rocks and occupies ant burrows. It feed on ants, particularly their eggs and larvae. Thought to lay eggs within the ant nests under rocks that it uses as a source of food and shelter and for thermoregulation. Key habitat features are a cover of native grasses, particularly Kangaroo Grass, sparse or no tree cover, little or no leaf litter, and scattered small rock with shallow embedment in the soil surface.	Negligible The study area does not support potential habitat for this species as it lacks a cover of appropriate loose surface rock.
Delma impar Striped Legless Lizard	V	V	The Striped Legless Lizard is patchily distributed in grasslands of south-eastern NSW, the ACT, north-eastern, central and south-western Victoria, and south-eastern South Australia. In the ACT, the species is known to occur at four separate locations - in grassland areas of Gungahlin, Majura and Jerrabomberra Valleys, and Yarramundi. Unsuitable habitat, roads and urban development separate these sites. Most areas where the species persists are thought to have had low to moderate levels of agricultural disturbance in the past and it has been suggested that ploughing in particular may be incompatible with the survival of the species. Until recently, the species was thought to inhabit only native grasslands dominated by species such as Tall Speargrass and Kangaroo Grass. In recent years, surveys have revealed the Striped Legless Lizard in many sites dominated by exotic species such as Phalaris, Serrated Tussock and Flatweed (R. Speirs pers. obs.). They have also been found in several secondary grassland sites, generally within two kilometres of primary grassland.	Negligible The study area does not support potential habitat for this species.
Tympanocryptis lineata Canberra Grassland Earless Dragon	E	E	The only known extant populations of the Canberra Grassland Earless Dragon occur in Natural Temperate Grasslands in the Jerrabomberra Valley and Majura Valley (ACT and adjacent areas of NSW at Queanbeyan).	Negligible The study area does not support potential habitat for this species.
Fish and Crustacea				
Macquaria australasica Macquarie Perch	E	E	Macquarie Perch are found in the Murray-Darling Basin (particularly upstream reaches) of the Lachlan, Murrumbidgee and Murray rivers, and parts of south-eastern coastal NSW, including the Hawkesbury and Shoalhaven catchments. Macquarie perch are found in both river and lake habitats, especially the upper reaches of rivers and their substantial tributaries.	Negligible There is no potential habitat in the study area for this species.

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Species Name	EPBC Act Status	NC Act Status	Description (Distribution and Habitat)	Likelihood of Occurrence
Insects				
Perunga ochracea Perunga Grasshopper	-	V	The Perunga Grasshopper is usually recorded opportunistically by ecologists undertaking vegetation surveys or targeted surveys for other species. The species is generally a natural grassland specialist, and although some records occur in Box-Gum Woodland, such sites are usually nearby the historical ecotone between the two ecological communities.	Low Given the very high degree of historic disturbance and current high level of weed infestation, the species is considered unlikely to occur in the study area.
Synemon plana Golden Sun Moth	V	E	The Golden Sun Moth's NSW populations are found in the area between Queanbeyan, Gunning, Young and Tumut and the species has been recorded at many sites in the lowland areas of the ACT. The species occurs in Natural Temperate Grasslands and Box-Gum Grassy Woodland in which the groundcover is dominated by Wallaby Grasses *Rytidosperma* spp.. It is believed that the females lay up to 200 eggs at the base of the Wallaby Grass tussocks. After hatching, the larvae tunnel underground where they remain feeding on the roots of Wallaby Grass tussocks. The species is also known to feed on the introduced species (and Weed of National Significance), Chilean Needle Grass *Nassella neesiana*.	Low While the species is present in the locality, given the very high degree of historic disturbance and current high level of weed infestation, the species is considered unlikely to occur in the study area.

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GOLD LEAF
TREE SERVICES

Preliminary Tree Assessment Report

Block 3 Section 95, Watson

September 2022

By Charlie Elliott,

Consulting Arborist, Gold Leaf Tree Services

Introduction

Background

Purdon Planning engaged Gold Leaf Tree Services to conduct a tree assessment of the trees at Block 3 Section 95 Watson, ACT in relation to the rezoning of a vacant block and proposal of new development project on the land.

The assessment took place on the 19/09/22. The Assessment conforms to the requirements of 'Notifiable Instrument NI2007-422', and AS4970-2009'Protection of trees on development sites'.

Relevant standards and guidelines

In preparing this report, the author is aware of and considers the objectives of the

- Tree Protection Act 2005
- Australian Standard AS 4970 – 2009 Protection of Trees on Development Sites
- Australian Standard AS4373 – 2007 Pruning of Amenity Trees
- Tree Protection (Guidelines for Tree Management Plans) Determination 2007.

Aims

The aims of this report are to:

- Determine the health of the subject trees.
- Determine the structure of the subject trees.
- Determine the regulation status of the subject trees.
- Determine the 'Tree Protection Zone' (TPZ) and 'Structural Root Zone' (SRZ) of the subject trees.

There is no warranty or guarantee, expressed or implied that deficiencies regarding the subject trees or the subject site may not arise in the future. Information contained in this report covers only the subject trees that were assessed and reflects the condition of the subject trees at the time of inspection.

Method

Management of the tree's root system is critical during this project to make sure the proposed works do not have an adverse effect on the subject trees. As stated in Australian Standard AS 4970 – 2009 Protection of Trees on Development Sites, 'root damage is the most common cause of damage to trees on development sites' and this is especially true on projects like this when the work is being undertaken on below ground services.

A site visit was conducted on the 19th of September to confirm the trees' location, determine the health and size of the trees and record observations. Tree protection measures are in line with Guidelines from The Tree Protection Act 2005.

The assessment for each tree was a visual inspection from ground level using the Visual Tree Assessment (VTA) approach developed by Mattheck & Belier (1994).

The inspections were limited to an external visual and aerial inspections of the trees without dissection, probing, or coring and did not include any woody tissue testing or root investigation other than sounding hammer tapping.

Put simply, VTA is the technique of using external signals to identify potential weaknesses or defects in a tree. QTRA is the technique of assessing the land use under the tree, combined with the presence of any defects, to determine if any action is necessary. Trees with little or no land use underneath them (i.e. no targets) rarely require any attention. If there is no target, there is no risk. Similarly, a tree with no defects rarely requires attention.

No tree is 100 percent "safe", and any tree can fall over in a big enough storm event. What we aim to achieve is an acceptable level of risk comparable to the benefits it provides. Trees represent a very low risk to people.

Results

Gold Leaf Tree Services assessed 6 trees on site, 3 trees are classified as 'Regulated' under the Tree Protection Act 2005, and 2 trees are classified as 'Not Regulated' under the Tree Protection Act 2005, and 1 tree classified as a 'Pest Plant'.

Comments

The 6 subject trees sit within a currently vacant block which is predominantly grass and open lawn.

The 2 Eucalyptus melliodora (Yellow Box) are very old large specimens with signs of cavities and decay. Because of their age and the presence of potential cavities they have a very high habitat value for a range of species that rely on this sort of habitat. Acer negundo (Boxelder) is considered a pest plant in the Act and removal is recommended.

Site visit was conducted in winter months, identification of some species may vary due to deciduous species having no leaves at time of inspection.

Management

Tree Protection Zone's and Structural Root Zones have been recorded for purposes of tree protection. These zones must be protected as part of a trees designation as 'Regulated' under the Tree Protection Act 2005.

Appendix 1 – Definitions

Table 1 - Health definition (Australian Standard)

Term	Definition
Excellent	The tree is demonstrating excellent or exceptional growth. The tree should exhibit a full canopy of foliage and be free of pest and disease problems.
Good	The tree is demonstrating good or exceptional growth. The tree should exhibit a full canopy of foliage and have only minor pest and disease problems.
Fair	The tree is in reasonable condition and growing well. The tree should exhibit an adequate canopy of foliage. There may be some dead wood present in the crown. Some grazing by insects or possums may be evident.

Poor	The tree is not growing to its full capacity. The canopy may be thinning or sparse. Large amounts of dead wood may be evident throughout the crown. Significant pest and disease problems may be evident or symptoms of stress indicating tree decline.
Very Poor	The tree appears to be in a state of decline. The tree is not growing to its full capacity. The canopy may be very thin and sparse. A significant volume of dead wood may be present in the canopy or pest and disease problems may be causing a severe decline in tree health.
Dead	The tree is dead.
Wound wood	New wood developing in response to wounding.

Table 2 - Structure definition (Australian Standard)

Term	**Definition**
Good	The tree has a well-defined crown. Branch unions appear to be strong, with no defects evident in the trunk or the branches. Major limbs are well defined. The tree is considered a good example of the species.
Fair	The tree has some minor problems in the structure if the crown. The crown may be slightly out of balance, and some branch unions may be exhibiting minor structural faults. If the tree has a single trunk, it may be on slight lean or exhibiting minor defects.
Poor	The tree may have a poorly structured crown. The crown may be unbalanced or exhibit large gaps. Major limbs may not be well defined. Branches may be rubbing or crossing over. Branch unions may be poor or faulty at the point of attachment. The tree may have suffered root damage.
Very Poor	The tree has a poorly structured crown. The crown is unbalanced or exhibits large gaps with possibly large sections of dead wood. Major limbs may not be well defined. Branches may be rubbing or crossing over. Brach unions may be poor or faulty at the point of attachment. Branches may exhibit large cracks that are likely to fail in the future. The tree may have suffered major root damage.
Failed	The tree has a very poorly structured crown. A section of the tree has failed or is imminent danger of failure.

Table 3 - Tree Protection Status (Tree Protection Act 2005)

Term	**Definition**
Not Regulated	No protection required, can be retained or removed.
Regulated	A tree that, due to its size, is classified as a 'Regulated Tree' under 'The Tree Protection Act 2005' and therefore a permit would be required to: • Remove the tree; • Prune the tree, except where the pruning is done by a qualified arborist and is done to the 'Australian Standard for Pruning of Amenity Trees' AS 4373; • Carry out ground works within 2m of the 'drip line' of the tree.
Park Tree	Protected by legislation other than the Tree Protection Act 2005. To be protected by the LMPP (Landscape Management and Protection Plan), or otherwise negotiated with Urban treescapes section of TCCS.
Pest Plant	Is a weed: no protection required, maybe removed without permit (or retained:- depending on level of classification).
Schedule 2	A regulated tree that is of a species listed in Schedule 2 of Disallowable Instrument Tree Protection (Approval Criteria) Determination (No.2) DI2006-60. Schedule 2 lists problematic tree species for which the conservator may give approval for removal, if on a block of less than 1200m2Street Tree-protected by legislation other than the Tree Protection Act 2005. To be protected by the Landscape Management and Protection Plan (LMPP).8.

Registered Tree	A tree that has been nominated to the 'Significant Tree' Register. It may have more rigorous protection measures than a regulated tree (refer to its listing on the Tree Register.

Table 4 - Tree Quality Classification (Tree Protection Guidelines for Tree Management Plans Determination 2007)

Term	Definition
Poor	A poor-quality tree is of poor form, structure or health or is likely to represent a significant safety hazard.
Low	A tree that does not have significant amenity value. (The classification Low Quality has been added (by Canopy Tree Experts) to this classification to indicate a tree that has no formal reason for removal other than is lack of significance in the landscape. Some of these trees may have potential to become significant, in which case this is indicated in the 'comments' column.
Medium	A medium quality tree is one of reasonable form, structure and health and is not likely to represent a significant safety hazard.
High	A high-quality tree is one that is of good form and condition and without structural defect. It should not represent a significant hazard.
Very High	A tree may be considered exceptional on the basis that it is an important part of the landscape due to factors such as prominence of location, contribution to the surrounding landscape and its general appearance. An exceptional tree should be free of any defects that cannot be addressed by remedial treatment. A tree may also be assessed as being exceptional for its botanic/ scientific, cultural, and natural heritage values. Trees with significant botanic/scientific, cultural, and natural heritage values may not be ruled out of the exceptional classification due to health, structure, or safety concerns.

Appendix 2 – Site Inspection Results

Site Map

Aerial photo is not up to date so canopy structures may differ to what is shown in the above image.

Table 5

Tree Data

Tree Id	Tree Protection Zone (TPZ) [m]	Species	Health	Structural Root Zone (SRZ) [m]	Tree Height (Estimated) [m]	Canopy Spread [m]	DBH [cm]	Diameter at Root Flare (DRF) [cm]	Tree Age	Structure	Tree Quality Classification	Observations	Regulation Status
1	12.48	*Eucalyptus melliodora (Yellow Box)*	Fair	3.98	10	15	104	155	Over Mature	Poor	High	Old tree with large areas of dead wood and decay. Signs of hollows and cavities. Good habitat value.	Regulated
2	13.32	*Eucalyptus melliodora (Yellow Box)*	Fair	3.67	18	17	111	128	Mature	Fair	Medium	Dead wood in canopy. Signs of cavities in scaffold canopy branches. Close to HV power lines.	Regulated
3	3.54	*Prunus Spp*	Fair	2.37	4	6	29.48	45	Over Mature	Poor	Medium	Multi stem tree. Dead wood in canopy. Some stems falling over.	Not Regulated
4	2	*Prunus Spp*	Good	1.53	3	3	7.55	16	Semi Mature	Fair	Medium	Multi stem tree.	Not Regulated
5	7.2	*Ulmus procera (English Elm)*	Fair	3.12	10	13	60	87	Mature	Good	Medium	Dead wood and broken branches in canopy. Lots of root suckers around tree base. Decay on main stem 0.5m up.	Regulated
6	4.44	*Acer negundo (Boxelder)*	Poor	2.51	5	6	37	52	Over Mature	Poor	Low	Canopy dieback by 40%. Sucking front root base.	Pest Plant

Photos

T1.

T1 – Decay on main stem.

T2.

T3 & T4.

T5.	T6.		

Appendix 3 – Assessor Qualifications and Contact Details

Assessor Qualifications

Gold Leaf Tree Services' Consulting Arborist for this report holds the following qualifications:

Charlie Elliott (Consultant)

- Extended Diploma in Arboriculture and Forestry (Edexcel) - AQF Level 5 (Diploma) qualified Arborist (Arboriculture Australia, 2018) equivalent
- Professional Tree Inspection (Lantra)
- PDA Certificate in Forestry

Contact

Further enquiries regarding this report can be made to:

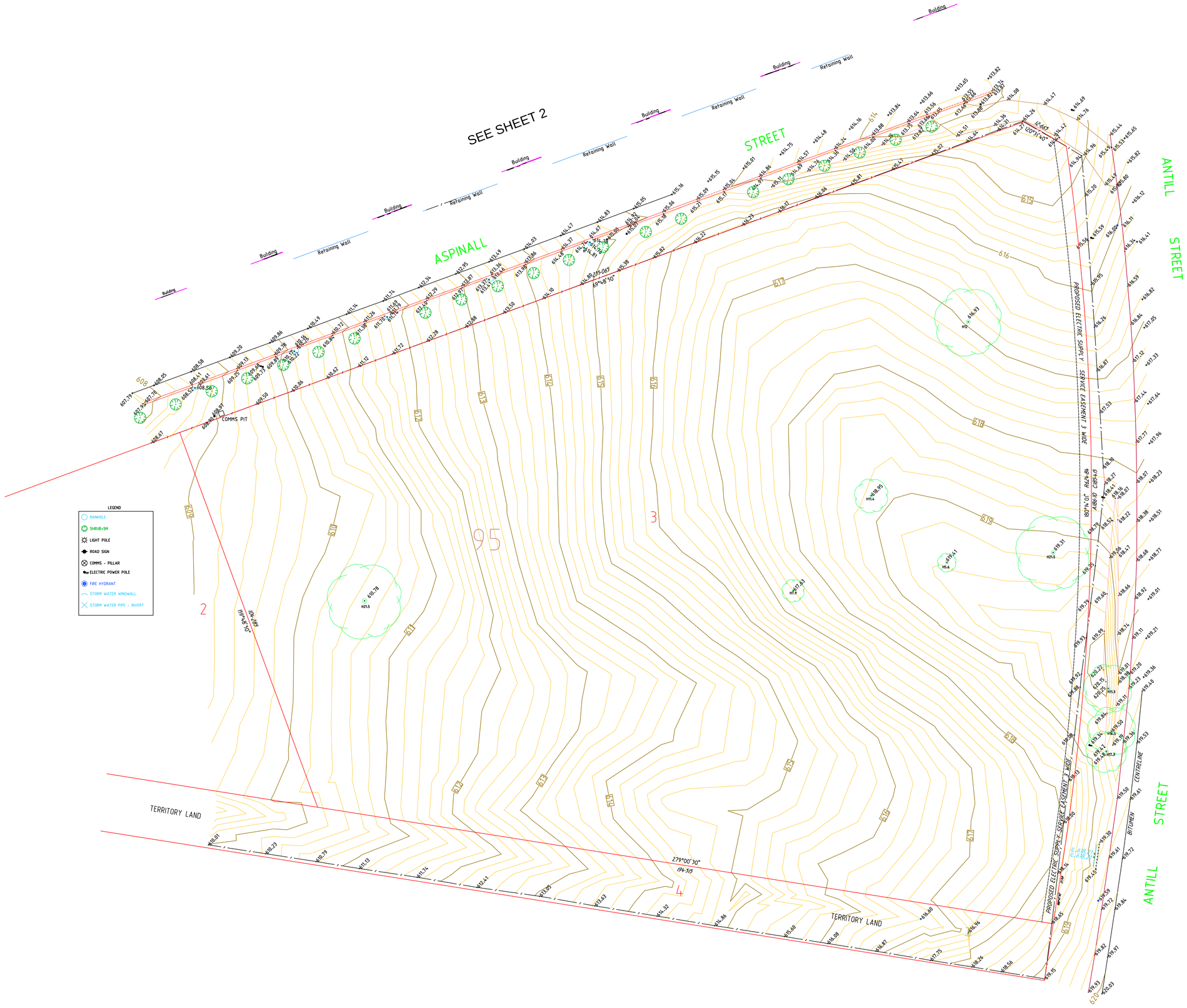
Charlie Elliott

Consulting Arborist

Gold Leaf Tree Services Pty Ltd

E| charlie@goldleaftreeservices.com.au

PH/ 0452141839



CLIENT

evri Group

DISCLAIMER:
This plan of survey and its associated digital data was prepared under instruction to meet specification as agreed. This information should not be used or relied upon by any other party.

REVISION		DATE

DISCLAIMERS:
Tree canopies are shown as a circular representation only and may not reflect irregular canopies.

The symbols used in this plan and associated digital data do not necessarily reflect the size and orientation of the object they represent.

The boundary information shown is from Actmap digital data base only. Boundaries have not been surveyed.

Boundary information is for the purpose of this plan. Further survey and marking of boundaries may be required.

Services shown hereon have been determined from visual evidence only. Prior to any demolition, excavation or construction on the site the relevant authority should be contacted to establish detailed location and depth.

Contour Interval 0.2m Datum A.H.D

BM CRM 11470 RL 615.009

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Scale 1:500

LANDdata SURVEYS
Unit 3
151 Newcastle Street,
FYSHWICK, ACT 2609
T 02 6239 3088 F 02 6239 3089

Surveyed	B McCARTHY	21/4/11
Drawn	R JALLAND	25/5/11
Checked		
Approved	D. SLOAN Surveyor, Registered under the Surveyors Act 2007.	

PLAN OF DETAIL SURVEY

BLOCK 3
SECTION 95
WATSON
ACT

Proj No. 11082 **Rev**

Sheet No. 1 of 2 11082_DT_001

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PastTraces
Heritage Consultants

Block 3 Section 95 Watson

Aboriginal Cultural Heritage Assessment

Report Prepared for Purdon

15/11/2022

www.pasttraces.com.au

email: office@pasttraces.com.au

Document Control

Revision	Date	Author	Reviewed
V1	15/11/2022	E. Scorsini	L. O'Brien

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Restricted Information

Under Part 9 of the Heritage Act 2004 information contained within this report is restricted and should not be made publically available. The information that is restricted includes (but is not limited to):

- Maps, Mapping Grid Reference Co-ordinates or images for Aboriginal heritage sites, places and objects.
- Location or detailed information regarding places of Aboriginal cultural significance, as expressed or directed by Representative Aboriginal Organisations, Aboriginal elders, or members of the wider Aboriginal community.
- Other culturally appropriate restricted information as advised by Aboriginal representatives and traditional knowledge holders.

Information in the report covered by the above categories should be redacted before being made available to the general public. This information should only be made available to those persons with a just and reasonable need for access.

Acknowledgements

This report would not have been possible without the assistance of the following people and organisations in the preparation of this report:

- Reuben House - Mirrabee
- Wally Bell – Buru Ngunawal Aboriginal Corporation
- James Mundy – Ngarigu Currawong Clan
- Adrian Brown – King Brown Tribal Group

Abbreviations

CHA – Cultural Heritage Assessment

RAO – Representative Aboriginal Organisation registered under *Heritage Act 2004*

PAD – Potential Archaeological Deposit

SHE – Statement of Heritage Effects

UDP – Unanticipated Discovery Plan

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CONTENTS

EXECUTIVE SUMMARY i

1 INTRODUCTION 1

1.1 PROJECT BACKGROUND 1

1.2 ABORIGINAL CONSULTATION 1

1.3 REPORT AIMS AND FORMAT 2

2 BACKGROUND INFORMATION 5

2.1 REVIEW OF LANDSCAPE CONTEXT 5

2.1.1 Geology and Topography 5

2.1.2 Flora and Fauna 5

2.2 REVIEW OF ABORIGINAL ARCHAEOLOGICAL CONTEXT 8

2.2.1 ACT Heritage Register Search 8

2.2.2 Ethnohistoric Setting 8

2.2.3 Previous archaeological studies 10

2.3 HISTORIC LANDUSE 11

2.4 ABORIGINAL LAND USE/PREDICTIVE MODEL 12

2.5 DESKTOP ASESSMENT SUMMARY 14

3 ARCHAEOLOGICAL FIELD SURVEY 15

3.1 ARCHAEOLOGICAL SURVEY AIMS 15

3.2 FIELD SURVEY METHODOLOGY 15

3.3 FIELD SURVEY CONDITIONS 16

3.4 SUMMARY OF SURVEY RESULTS 19

4 IMPACT ASSESSMENT AND MANAGEMENT RECOMMENDATIONS 20

4.1 IMPACT ASSESSMENT 20

4.2 MANAGEMENT RECOMMENDATIONS 20

5 REFERENCES 22

APPENDIX 1. ABORIGINAL CONSULTATION 24

APPENDIX 2. UNEXPECTED DISCOVERY PLAN 25

5.1 1. UNEXPECTED DISCOVERY OF ABORIGINAL CULTURAL HERITAGE 25

2. UNEXPECTED DISCOVERY OF HISTORICAL CULTURAL HERITAGE 25

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3. UNEXPECTED DISCOVERY OF HUMAN REMAINS 26

Figures

Figure 1. Regional context 3

Figure 2. project area 4

Figure 3. Geology of the Project Area 6

Figure 4. Soil Landscapes of the Project Area 7

Figure 5. Previously recorded heritage sites 9

Figure 6. 1955 Aerial photo with house and farming buildings 12

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EXECUTIVE SUMMARY

Purdon Planning have been engaged by Maryalicec Pty to deliver a Territory Plan Variation report for Block 3 Section 95 Watson. The proposal is to rezone the subject site from CZ6 – Leisure and Accommodation Zone to RZ3 – Urban Residential Zone. Past Traces Pty Ltd has been engaged by Purdons, to prepare an Aboriginal Cultural Heritage Assessment (CHA) which covers the area of the proposed rezoning for development.

The project area is shown in Figure 1 in a regional context and in detail in Figure 2.

A review of the information available on the ACT Heritage Register and in previous assessments was undertaken to determine if heritage sites were recorded in the vicinity. The CHA also reviewed previous work in the area to gain background information and to inform predictive modelling. No Aboriginal heritage sites and no areas of PAD were identified within the Project Area.

Field survey was undertaken across the project area on the 10 October 2022 which identified no heritage sites within the area of works. The field survey covered the entire block proposed for rezoning.

Consultation with the Aboriginal Representative Aboriginal Organisations (RAOs) has been undertaken in accordance with ACT Heritage guidelines and the *Heritage Act 2004*. The RAOs were provided with report details, participated in the 2022 field survey and provided guidance in regards to significance and appropriate management strategies. Details of consultation are provided in Appendix 1.

As a result of the assessment completed for the project the following findings and recommendations apply:

- The rezoning proposal should be able to proceed with no additional archaeological investigations. No areas of potential archaeological deposits or heritage sites have been identified within the development area and the potential for Aboriginal or historical heritage objects within the development area has been assessed as low.
- All Aboriginal objects are protected under the *Heritage Act 2004*. It is an offence to disturb an Aboriginal site without approval issued by the ACT Heritage Council. Should any Aboriginal objects be encountered during works then the process outlined in the Unanticipated Discovery Plan (Appendix 2) should be implemented.
- This CHA should be submitted to the ACT Heritage Council for endorsement. As no known heritage impact will occur as a result of the proposal, a formal Statement of Heritage Effect for approval by the ACT Heritage Council is not required.

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1 INTRODUCTION

1.1 PROJECT BACKGROUND

Purdon Planning have been engaged by Maryalicec Pty to deliver a Territory Plan Variation report for Block 3 Section 95 Watson. The proposal is to rezone the subject site from CZ6 – Leisure and Accommodation Zone to RZ3 – Urban Residential Zone. Past Traces Pty Ltd has been engaged by Purdons, to prepare an Aboriginal Cultural Heritage Assessment (CHA) which covers the area of the proposed rezoning for development.

The proposed development will involve ground disturbance that has the potential to impact on unidentified Aboriginal heritage sites (places and/or objects), which are protected under the ACT *Heritage Act 2004.* This CHA will review heritage registers, previous work in the area to gain background information, inform predictive modelling and complete a field survey across the project area to determine if any heritage constraints apply to the project area or the potential to impact on any heritage sites is present.

The project area covers approximately 3.5ha and is shown in Figure 1 in a regional context and in detail in Figure 2.

1.2 ABORIGINAL CONSULTATION

Consultation with the Aboriginal community has been undertaken in accordance with ACT Heritage guidelines and the *Heritage Act 2004*. The four Representative Aboriginal Organisations (RAOs) participated in the field survey of the project area and provided guidance in regards to significance and appropriate management strategies. The RAOs consulted are:

- Mirrabee
- King Brown Tribal Group
- Buru Ngunawal Aboriginal Corporation
- Ngarigu Currawong Clan

In addition to the discussions held on site with the RAOs, a draft of this report was supplied for comments and follow up phone calls made to each of the RAOs to determine if they had any concerns with the management outcomes. The process of consultation is provided in Appendix 1.

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1.3 REPORT AIMS AND FORMAT

The CHA consisted of the following steps:

- Review of location of previously recorded sites in relation to works
- Review of previous reports in area to develop predictive model of site location
- Consultation with Aboriginal RAOs
- Assess landforms present in project area against predictive model to determine potential for heritage sites
- Complete field survey across project area.
- Record and assess sites identified during the survey as well as areas of Potential Archaeological Deposits (PADs)
- Identify potential impacts to all identified Aboriginal heritage sites and places as a result of the proposed works
- Complete CHA report with management recommendations to avoid or minimise impacts within the project area.

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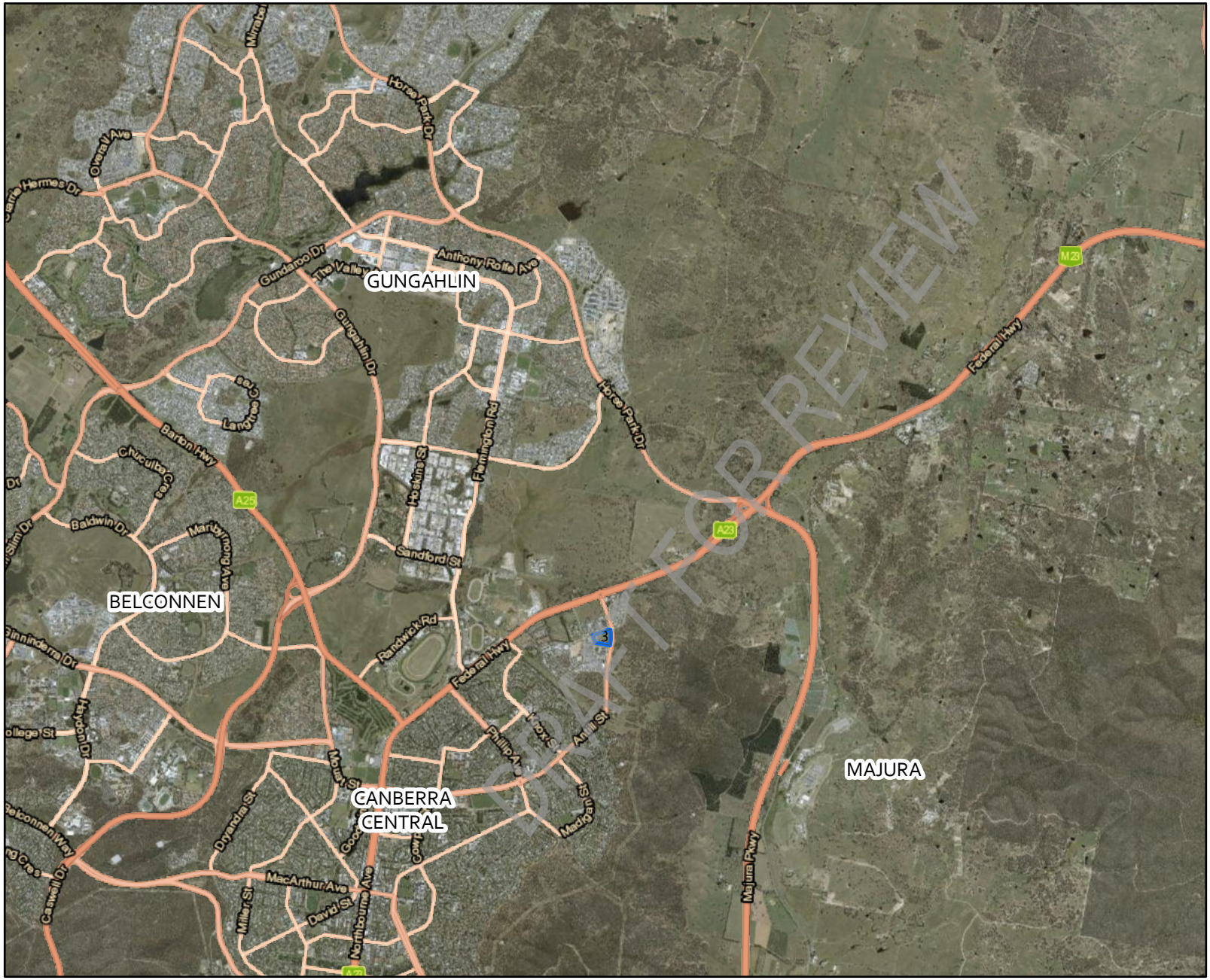

Figure 1: Regional Context

Legend

- Project Area
- Cadastre

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Kilometers
Coordinate System:
GDA 1994 MGA Zone 55

Imagery: ©Australian Capital Territory and MetroMap

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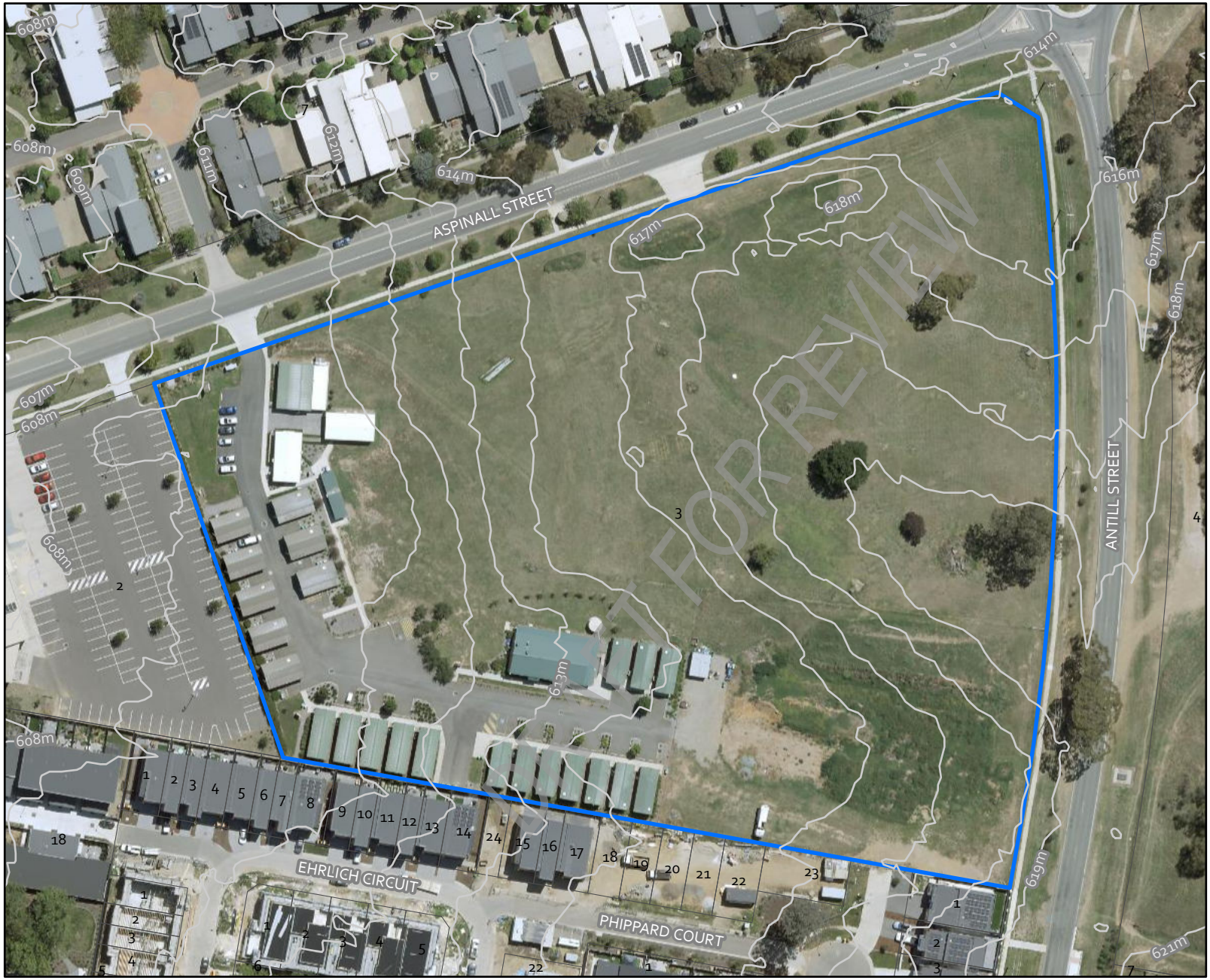

Figure 2: The Project Area

Legend

- Contour -1m
- roadsegment
- Project Area
- Cadastre

N

1:1,500

0 10 20 40

Meters

Coordinate System:
GDA 1994 MGA Zone 55

Imagery: ©Australian Capital Territory and MetroMap

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2 BACKGROUND INFORMATION

The following section briefly summarises the geology and landforms, flora and fauna of the project area. The discussion focuses on those elements of the natural environment that may have influenced past human behaviour and archaeological site formation processes.

2.1 REVIEW OF LANDSCAPE CONTEXT

2.1.1 Geology and Topography

The project area is underlain by Silurian Volcanics of the Canberra Lowlands. These late Silurian volcanic systems consists mainly of rhyolitic and dacitic tuffs. Quartz will be present naturally within this formations along with shales. A common geological feature of the area is highly weathered bedrock.

The Williamsdale soil landscape is present throughout the project area. The Williamsdale soil landscape contains moderately deep well drained Yellow Chromosols on Red and Brown Kandosols on upper rises and fan elements. Moderately to very deep Sodosols on lower rises and fan elements (Jenkins 2000: 132). These soils are hard setting and erodible and also part of a transferral landscape. The topsoils are typically acidic. Thin shallow soils characterise the area, highly acidic and easily erodible. A duplex soil system overlaying clay bedrock appears in profile across the area.

The topography of the area consists of gently sloping to level areas of lower slopes and plains (Jenkins 2000:132). No drainage lines or areas of water resource are in close proximity. To the north of the project area rise the footslopes of Mount Majura. The natural topography of the project area has been altered with removal of the low crest for the house location and outbuilding complex and drainage lines being excavated around the house site and outbuildings to divert water.

The geology of the project area is shown in Figure 3 with soil landscapes shown in Figure4.

2.1.2 Flora and Fauna

The natural vegetation across the project area has been historically cleared in the past for pastoral grazing. Prior to the clearance of the natural vegetation the area would have supported a mixed woodland. These communities supported a wide range of edible plant and fauna species. Fauna present would range from small marsupials (i.e. possums), to avian species and macropods. A range of lizards also inhabit this environment that would have been utilised by Aboriginal groups. The NSW OEH lists over 200 flora and fauna species as present within these woodlands, the majority of which had some utilisation in traditional Aboriginal lifeways.

The area has been used historically since the beginning of European settlement of the area with tree cover having been removed, and improved pasture species present across the block with a thick cover of clover.

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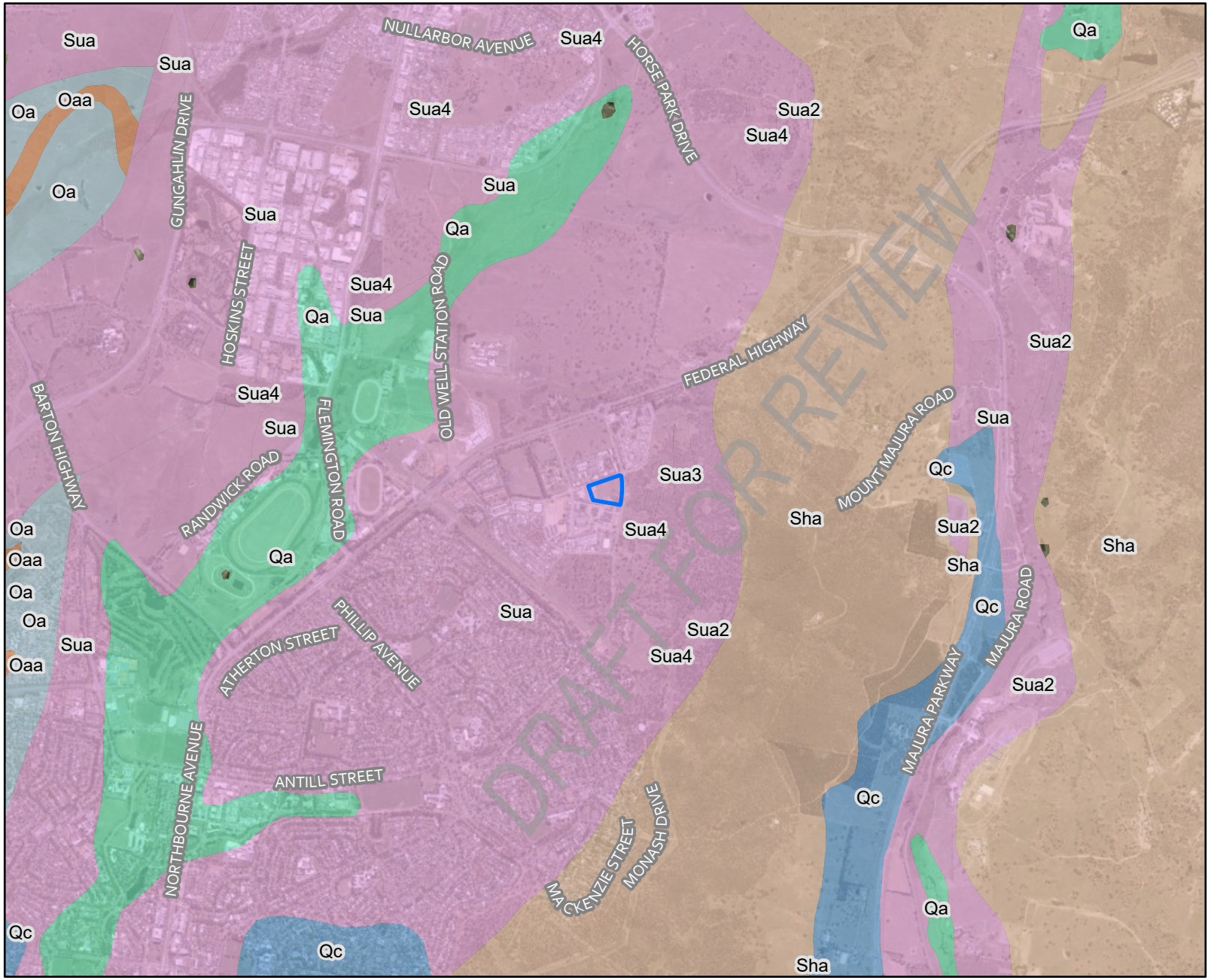

Figure 3: Geology

Legend

Project Area

Geology

- ADAMINABY GROUP undifferentiated
- ADAMINABY GROUP Acton Shale Member
- HAWKINS VOLCANIC SUITE Mount Ainslie Volcanics
- UNGROUPED QUATERNARY undifferentiated
- UNGROUPED QUATERNARY unnamed
- UNGROUPED SILURIAN Canberra Formation
- UNGROUPED SILURIAN State Circle Shale

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Kilometers
Coordinate System:
GDA 1994 MGA Zone 55

Imagery: ©Australian Capital Territory and MetroMap

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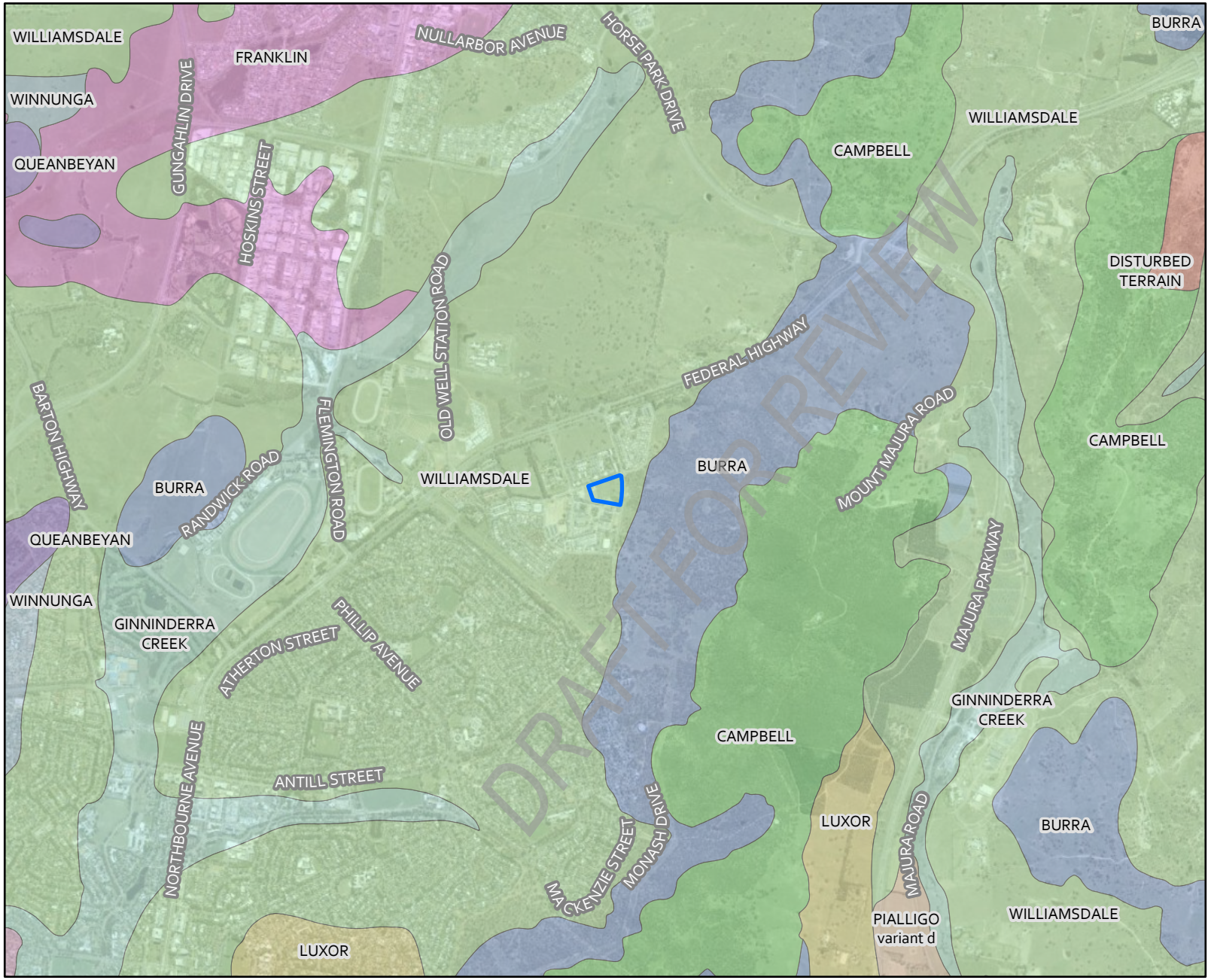

Figure 4: Soils

Legend

- Project Area

NAME

- BURRA
- CAMPBELL
- DISTURBED TERRAIN
- FRANKLIN
- GINNINDERRA CREEK
- LUXOR
- LUXOR variant b
- PIALLIGO variant d
- QUEANBEYAN
- WILLIAMSDALE
- WINNUNGA

N

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Kilometers
Coordinate System:
GDA 1994 MGA Zone 55

Imagery: ©Australian Capital Territory and MetroMap

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2.2 REVIEW OF ABORIGINAL ARCHAEOLOGICAL CONTEXT

2.2.1 *ACT Heritage Register Search*

A request for a search of the ACT Heritage Register and relevant reports was submitted to ACT Heritage on the 27/09/2022. When this information is supplied, any additional information will be updated into this report.

Locations of recorded heritage sites have been mapped based on a review of available reports on the area, but is not conclusive as the consultant does not have access to all previously completed reports, which has been requested from ACT Heritage. When additional reports are provided, the findings of the report will be checked against this information, and updated if required.

As a result of the review, there are no recorded sites and no areas of Potential Archaeological Deposits recorded within the project area. Details of the previously recorded sites in the vicinity are shown on Figure 5. As a result of the heritage register search there are no known Aboriginal heritage constraints on the project.

2.2.2 *Ethnohistoric Setting*

The major language group identified in the Canberra region by Norman Tindale in his seminal work on Aboriginal tribal boundaries are the Ngunnawal people. The Ngambri people hold affiliation with the central area of Canberra, where early accounts of settlers often refer to the group as the Ngambri or Ngamberry. Both groups hold cultural connections through the Canberra Region. The boundaries of the Ngunawal according to Tindale ran to the southeast where they met the Ngarigo at the Molonglo and the Gundungara to the north of Lake George (Tindale 1974). This distribution with minor amendments is still widely accepted and the review of tribal boundaries undertaken in the 1990s (Horton 1996) confirmed these earlier linguistic divisions. These findings are not accepted by all members of the Aboriginal community, and it is beyond the scope of this report to determine connection to country. Currently the ACT Government accepts the ACT to be Ngunnawal/Ngambri Country.

The traditional lifeways of the Aboriginal people were disrupted by the arrival of European settlers in the 1830's. The impact of new disease, displacement from traditional lands and disruption of hunting practices lead to a decline in the local population, with some remaining families finding employment on the large pastoral stations that had become established in the region. Blanket distribution lists from this period show a continuity of presence with recognised members of Ngambri and Ngunnawal families. How people identified during this period is difficult to know, but in the face of the European presence, the connections between Aboriginal people would have been strengthened into a picture of Aboriginal identity.

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ACTmapi

Figure 5. Heritage Registrations

Notes:

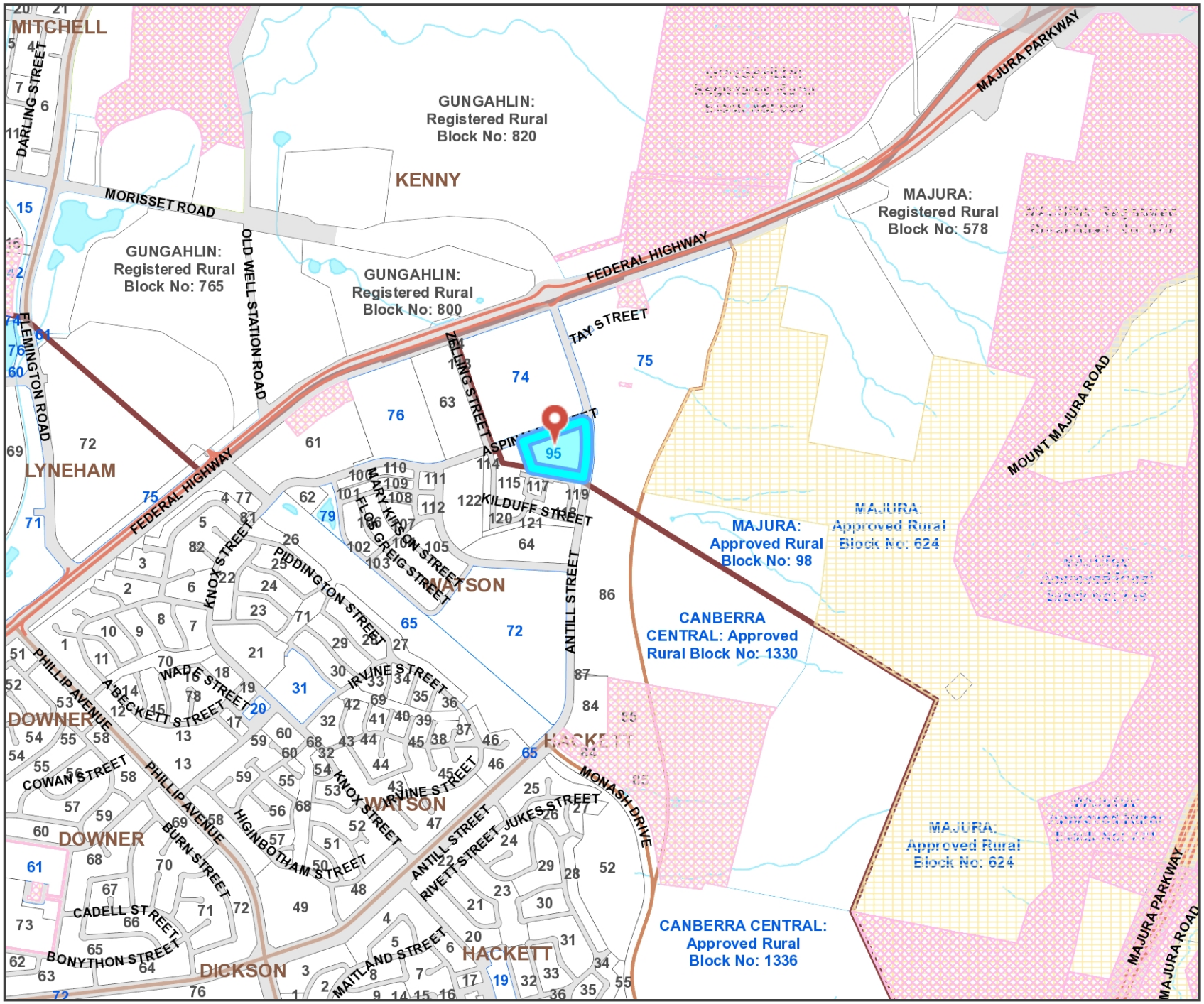
1: 20,000

DISCLAIMER

The map is a user generated static output from an Internet mapping site and is for reference only. Data layers that appear on this map may or may not be accurate, current or otherwise reliable.

16-Nov-2022 *Page 1 of 1*

ACT Government



2.2.3 *Previous archaeological studies*

Archaeological evidence has shown that Aboriginal people have occupied the Australian continent for at least 40,000 years and perhaps 60,000 years and beyond (Mulvaney and Kamminga 1999). Excavations at Birrigai Rock shelter show evidence of occupation of 32, 000 years (Flood et al 1987). No regional synthesis of archaeology for the North Canberra region has been undertaken with most assessments being small scale and development focused. The most relevant of these numerous studies for the project area are summarised below.

In 2010, NOHC completed a survey for the proposed area of Kenny, located to the north of the current project area. The survey resulted in the identification of 21 Aboriginal sites across a wider area on the verges of Sullivans Creek. During this survey a previously identified scarred tree (SCCST1) was re-assessed and deemed to have resulted from natural tree limb loss.

Following the completion of NOHC (2010) Cultural Heritage Assessment the Kenny development, Biosis in 2011 prepared a Conservation Management Plan for the collection of surface artefacts and the sub-surface testing of areas of PAD. As a result of implementing the strategies for the 21 Aboriginal artefact sites recorded within the study area, five sites featured associated areas of subsurface deposits. All 21 sites were salvaged, with surface artefacts collected and areas of potential subsurface tested yielding low deposits except for K7. An area of K7 was considered highly significant and a conservation area was demarcated for preservation of its cultural values.

Biosis in 2012 completed the assessment of the Canberra Centenary Trail which covered 25kms linking walking trails through Nature Parks include Mt Majura. The section of the trail running along Northbourne Avenue , to the north of the current project area was surveyed locating no heritage sites. The area was assessed as holding low potential based on the lack of water resources and known resource areas.

Biosis 2014 completed an assessment for ActewAGL to assess the impacts of the replacement of transmission line poles along the easement within the Majura Nature Park. The survey area is on the southwestern section of Mt Majura. The survey identified four small artefact scatters consisting of chert, tuff and silcrete artefacts which were then salvaged to allow works to proceed.

Also in 2014 Biosis completed the assessment of the Radar Facility for the Dept of Finance which included survey of the access road and facilities on Block 623. No heritage sites were identified in the vicinity and the high rate of disturbance was noted as a factor in site preservation. This area is located to the east of the current project area on the crest of Mount Majura.

NOHC in 2015 completed the assessment for the Kamberra Estate project, located due north of the Project area. No Aboriginal or historical sites have been identified in the Kamberra Estate study area with the high degree of impacts noted. Consequently, future development projects within the study area would not impact any known Aboriginal or historic archaeological material.

Past Traces in 2019 completed, for Optus, a cultural heritage assessment for the installation of cables at Majura and the Federal Highway. The field survey did not identify any new sites. The potential for works to impact on unrecorded heritage was assessed as low and works cold proceed without any further heritage investigations or constraints.

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Past Traces in 2022 completed an update of the CMP for the suburb of Kenny. The field survey identified seven new Heritage sites within the area of works, with three previously recorded sites containing surface artefacts despite previous collection. This pedestrian field survey covered the total area of the project in walked transects. As these sites had the potential to be impacted by the proposed works, surface collection (salvage) of these sites was recommended.

These assessments have shown that sites tend to consist of small artefact scatters on the verges of Sullivan's Creek or tributary creeklines. The high rate of disturbance in the inner north of Canberra has been a factor in all of the report findings.

2.3 HISTORIC LANDUSE

The Project Area was settled as part of the earliest settlement of the Canberra region being a section of the land granted to the Campbell family in 1825. Robert Campbell was granted 5000 acres along the Molonglo River frontage at Pialligo and the southern end of the Majura valley. The Campbell family were the largest landholders in the Majura Valley and within the larger Canberra District. At one time the Campbell family owned most of the Majura Valley (national Trust 1996:2). Originally the Campbell workforce consisted of convict labour, but Robert Campbell also assisted workers to migrate, with a focus on Scottish farmers and craftsmen, granting workers land in the Majura Valley. By the mid-1850s there was a growing community centred on Duntroon thriving in the Majura Valley consisting of approximately 50 people (NOHC 2007:15).

The 1911 Canberra Parish Map shows the Block as belonging to George Campbell and the 1915 Federal Territory Feature Map lists it as cleared paddocks with fences and a road to the east on the boundary.

The O'Sullivan family leased the property from the 1950s and engaged in a mix of pig and other livestock production on the block. A farmhouse was present with outbuildings including a toilet, laundry, cookhouse, and a large shed structure for the workers and family members. Orchard trees and ornamental trees were planted at the front and side of the house along with a vegetable garden and water tanks. A drainage line was constructed to the south of the house in which refuse was deposited (Frank O'Sullivan Pers Comms).

At the site of the house, remnant features such as the laundry concrete floor, corner points, a water pipe and old tank stand are present. The ornamental trees still stand in their positions.

To the north of the house was a dairy, of which the concrete floor is still partially visible, along with bricks. To the east of the dairy structure is a line of pens, visible by indentions in the ground where the pig pens were placed. Further yards/pens were present to the west as well as were additional machinery sheds.

The layout of the buildings during this period is visible in historical aerials photos which show the high rate of disturbance. The photo from 1955 is shown in Figure 6. At this time the property extended to the Federal Highway.

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Figure 6. 1955 Aerial photo with house and farming buildings

2.4 ABORIGINAL LAND USE/PREDICTIVE MODEL

The results of previous archaeological surveys in the region indicates that the potential for sites is present in a range of landforms. A pattern of site location that relates to the presence of potential resources for Aboriginal use appears to be present, based on site locations recorded from the studies described in the previous section. The recorded sites, mainly consisting of small artefact scatters tend to be present due to the occurrence of small drainage or creek lines with their access to water resources, an essential factor for Aboriginal people. This model is based on stream order (Strahler 1952) and is considered applicable to a wider area of NSW (White and McDonald 2010) based on the similarity of Aboriginal landscape use and the need for base resources.

Based on this body of previous heritage work, the landscape context and previous disturbance to the area a site prediction model has been developed for the project (Table 1). This site prediction model is based on:

- landscape features within the project area
- Probability of site type to be present within the project area
- Natural resources that may have been present and of use to Aboriginal people within the project area
- Opportunities for movement through the landscape

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Table 1 Site Prediction Model

Probability	Site Type	Definition	Landform
Low	Isolated finds and surface scatters of stone artefacts	Stone artefacts ranging from single artefact to high numbers	Creek lines and river flats. These features are not present within the study area.
Low	Potential Archaeological Deposits (PADS)	Area considered on landform to hold higher potential for unidentified subsurface deposits	Varies, but most frequent on elevated terraces along creek lines and river frontage – project areas are highly disturbed reducing potential.
Nil	Culturally Modified Trees (CMTs)	Trees which have been modified by scarring, marking or branch twining	Wherever old remnant trees remain - none remain within project area
Nil	Rock Engravings	Images engraved on flat rock surfaces	Escarpments, rock platforms or rock shelters - not present
Nil	Stone arrangements	Arrangements of stones by human intention, including circles lines or patterns.	All landforms have been impacted by forestry and pastoral activities – none would survive
Nil	Stone quarries/Ochre sources	Quarry sites where resources have been mined.	Any landform. – none previously recorded. Not present based on geology.
Nil	Axe grinding grooves	Grooves in stone caused by the grinding of stone axes	Usually in creek lines, as water is used as abrasive with sand - N/A to project areas
Nil	Burials	Burials of Aboriginal persons	Usually requiring deep sandy soils on eastern facing slopes – relevant soils not present and project area previously disturbed
Nil	Aboriginal places	A place that hold spiritual, traditional or historical significance to Aboriginal people	Any landform, identified through consultation with RAPs and historical sources - none previously identified

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2.5 DESKTOP ASESSMENT SUMMARY

The desktop assessment and review of previous studies has shown that no registered Aboriginal heritage sites or areas of PAD are present within the wider region. The recorded sites in the region consist of culturally modified trees, artefact scatters, and isolated finds of lithic artefacts. The majority of these artefact sites were allocated low significance by the report authors on both scientific and cultural values.

The review of previous studies and landforms present within the project area indicate low potential for the project area. Areas of disturbance are present throughout the project area, due to its past use for pastoral grazing.

An aim of the field survey will be to confirm the desktop findings and determine previous disturbance levels and proximity to proposed works.

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3 ARCHAEOLOGICAL FIELD SURVEY

Field survey over the project area was undertaken on the 10th October 2022 by Lyn O'Brien and three members of the RAPs – Wally Bell (BNAC), Adrian Brown (KBTG) and Reuben House (Mirrabee). A second site visit was undertaken with James Mundy on the 13 October 2022. Results of the survey, the impacts from works, cultural significance and appropriate mitigation strategies were discussed through the survey with the RAOs. Feedback and RAO comments have been incorporated into the management recommendations for the project.

3.1 ARCHAEOLOGICAL SURVEY AIMS

The principle aims of the survey were to:

- Provide the heritage team an opportunity to assess visually the Project Area and to identify landforms and levels of previous disturbance.
- Complete pedestrian survey of the Project Area visually inspecting areas and landforms with the potential for Aboriginal heritage.
- Identify and record any heritage sites visible on the ground surface.
- Identify and record areas of potential archaeological deposits (PADs).

3.2 FIELD SURVEY METHODOLOGY

Field survey consisted of pedestrian transects across the project area. With a team of four members, each transect covered an area of approximately 25-30m in width. The Project area was walked by all participants at an approximate spacing of 5 – 10m, depending on landforms and vegetation coverage. Any areas of exposure were closely examined for any cultural material. The spacing for the field survey is based on Burke and Smith (2004) who concluded that effective survey coverage extends 2m to the side of each field survey participant. Any areas of high exposure, were visually inspected for any signs of cultural material. Previously recorded site locations were also inspected to allow for a current condition assessment and potential for disturbance as a result of the proposed works to be determined.

Two main factors contribute to the effectiveness of a field survey, ground surface visibility and rate of exposures.

Ground Surface Visibility (GSV) is the proportion of ground surface visible during the field survey. GSV is affected by conditions of grass coverage, leaf litter, imported gravels and fallen timber. A percentage rating of GSV is applied to each survey area (Terry and Chillinger 1955) based on the proportion of bare soil visible through the surface conditions. Exposures are defined as areas where bare soil is present due to erosional or disturbance factors and is separate and distinctive from the background GSV of the surrounding area. Exposures show the potential subsurface as well as surface contexts as they represent disturbed areas of soils. As GSV is high within any area of exposure, most sites are located in these exposed contexts.

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3.3 FIELD SURVEY CONDITIONS

On the field survey days in October 2022 vegetation coverage (grass coverage,) was high with dense clover present across the project area. This resulted in a general rating of low GSV across the project area. Within the dense clover and other pasture improved grasses were placed mounds of concrete and building rubble. These were the remains from the many buildings which has been standing prior to their demolition on resumption of the land. Concrete floorings were present in several places and lines of submerged bricks or concrete drains showed amongst the grass. Walking across the open space through the grass, pedestrians encountered constructed swales and drainage lines leading to the south and moving water away from structures.

Three remnant old trees are still present within the project area. These were inspected for any cultural scarring with nil results. The area of the house site holds an ornamental plum, an old fruit tree, some woody weeds which are planted on the north and east sides of the house outline which can be traced from concrete edging in places. The outdoor laundry floor is present with the water tank and pipe and other areas of remnant building materials are scattered through the grass. Further piles of rubble are present throughout the project area.

The degree of impact has been extensive with the landforms presenting as levelled and compacted. Exposures are rare with improved pasture present throughout. The ploughing of the property and seeding with grasses would have occurred after the demolition of the buildings to prevent erosion. The demolition of the buildings, removal of concrete floorings for the majority of the site and pushing into mounded rubble piles would all have impacted on the subsoils and removed any remaining topsoils in the vicinity.

Lower slopes to the west (closer to the Carotel Park) are covered with long grass but appear smoothed and landscaped to blend in with the picnic/BBQ areas of the park. This was probably also undertaken as part of the clean up of the demolition works.

The conditions at the time of field survey are shown in the following plates.

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Plate 1. View south across levelled landform to house site rear fruit tree

Plate 2. Remant old tree in north east section

Plate 3. Concrete dairy flooring

Plate 4 Tank stand with underground water pipe

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Plate 5.Fruit tree on north side of house

Plate 6. Plum on east side of house

Plate 7. Southern boundry with Carotel

Plate 8. Concrete portion

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Plate 9. Mounded Rubble

Plate 10. Open paddock

3.4 SUMMARY OF SURVEY RESULTS

The desktop review over the project area identified no previously recorded sites in the vicinity of the project area The field survey identified no heritage site or areas of potential within the project area. The project area has been subject to a high degree of impact due to the number of previous buildings, landscaping and their demolition with heavy machinery and bulldozing of earth. Folloiwng demolition the entire area has been seeded with clover species. This action would have also resulted in further impacts to subsoils.

This high degree of impact will have removed all topsoils and impacted the subsoils removing all heritage potential.

The finding of low potential due to the impacts was discussed on site with RAOs. The location of farm house, stands, sheds and roads on the property were identified and discussed with RAOs. The numerous rubble piles attest to the size of the previous build infrastructure and the amount of equipment used to demolish and mound the remains.

Following this discussion the RAOs agreed that the probability of any site surviving the previous impacts was negligible. This opinion was also agreed to by James Mundy on his later site visit.

As a result of these discussion, the high degree of impacts and the lack of any identifiable heritage items within the project area the development should be able to proceed without any additional assessment.

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4 IMPACT ASSESSMENT AND MANAGEMENT RECOMMENDATIONS

4.1 IMPACT ASSESSMENT

The project area extends over the proposed rezoning for residential development which will include impacts for the building of houses and installation of infrastructure such as electricity, sewerage and connective roads. The proposed residential redevelopment covers approximately 3.5ha located with Block 3 Section 95 Watson

The surface and subsurface impacts from the project are thus extensive and will impact all areas within the project area.

Review of previous reports identified no sites or areas of PAD within the project area. Field survey undertaken for this assessment identified no heritage sites or areas of PAD within the project area. Further the survey identified numerous building remnants and a high degree of impact across all of the project area.

Asa result, there are no known heritage impacts from the proposed rezoning and future construction works.

4.2 MANAGEMENT RECOMMENDATIONS

The following management recommendations have been developed to minimise the potential heritage impacts from the project. The recommendations are based on the following information and considerations:

- Results of the ACT Heritage register search and locations of recorded sites in the vicinity of works
- Consideration of results from other local archaeological studies
- Results of the field survey
- Consultation with RAOs to ensure recommendations are culturally appropriate.

As a result of the assessment completed for the project the following findings and recommendations apply

- The rezoning proposal should be able to proceed with no additional archaeological investigations. No areas of potential archaeological deposits or heritage sites have been identified within the development area and the potential for Aboriginal or historical heritage objects within the development area has been assessed as low.
- All Aboriginal objects are protected under the *Heritage Act 2004*. It is an offence to disturb an Aboriginal site without approval issued by the ACT Heritage Council. Should any Aboriginal objects be encountered during works then the process outlined in the Unanticipated Discovery Plan (Appendix 2) should be implemented.

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- This CHA should be submitted to the ACT Heritage Council for endorsement. As no known heritage impact will occur as a result of the proposal, a formal Statement of Heritage Effect for approval by the ACT Heritage Council is not required. .

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Appendix 1. Aboriginal consultation

RAO	Date and type of contact	Response
All RAOs	Email and Phone call 28/9/2022 to arrange field work for the 10/10/22.	Can attend
All RAOs	10/10/22 – Field survey	The following attended the field survey Reuben House Adrian Brown Wally Bell Agree with recommendations and nil findings
Ngarigu	13/10/22 – Field Survey	Agrees with high degree of impacts and nil findings
ALL	16/11/22 - Draft report circulated	

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Appendix 2. Unexpected Discovery Plan

The possibility of Aboriginal artefacts (items/objects) being present within the area of works has been assessed as low. However, due to the long occupation of the country the possibility of Aboriginal items remaining within the work area is still present.

If any items are uncovered during the course of works, which are considered to possibly be of Aboriginal or historical significance the following unanticipated discovery plan should be activated. All Aboriginal and significant historical heritage places or objects are protected under the *Heritage Act 2004*. Offence provisions (Section 74 and Section 75) of the Act apply to impacting heritage sites. If any items are identified, then the following process outlined below should be followed to avoid breaching obligations under the Act.

5.1 1. UNEXPECTED DISCOVERY OF ABORIGINAL CULTURAL HERITAGE

If suspected Aboriginal Heritage items (including but not limited to isolated stone artefacts, artefact scatters, archaeological deposits or scarred trees) are found then the following management process must be implemented:

1. Work must immediately stop in the area within a buffer zone of 10 metres from the primary grid coordinate.
2. ACT Heritage (132281) must be informed of the suspected find asap and within 5 working days.
3. A suitably qualified heritage advisor and the Representative Aboriginal Organisation (RAOs) must be engaged to assess the potential site.
4. If the items are not considered to be Aboriginal, activity may recommence.
5. If the items are considered to be Aboriginal, all steps will be taken to avoid and minimise harm to the Aboriginal cultural heritage item, and the Proponent must avoid or minimise harm whenever possible.
6. If the items are considered to be Aboriginal, an assessment report will need to be prepared and submitted to the ACT Heritage Council. After approval from the ACT Heritage Council, the artefacts should be recorded and salvaged in accordance with the approved methodology.
7. After approval of the salvage report, works can recommence.

2. UNEXPECTED DISCOVERY OF HISTORICAL CULTURAL HERITAGE

If suspected historical items are found then the following management process must be followed:

1. Work must immediately stop in the area within a buffer zone of 10 metres from the primary grid coordinate.
2. ACT Heritage must be contacted on 13 22 81 for advice.
3. A suitably qualified heritage advisor needs to be engaged to assess the potential site.
4. If the items are not considered to be historically significant, activity may recommence.

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5. If the items are considered to be historically significant, a management recommendation should be given by the heritage advisor.
6. Following approval by ACT Heritage Council and completion of the management recommendation, the activity may then recommence.

3. UNEXPECTED DISCOVERY OF HUMAN REMAINS

The discovery of human remains is a rare event and has not occurred on an ACT worksite. If any suspected human remains are discovered during any works, all activity in the areas must cease immediately. The remains may be heritage items or the remains of current crime.

The following actions must be taken when human remains or suspected human remains are discovered.

1. If any suspected human remains are found during any activity, works in the vicinity must cease.
2. The Project Manger must be contacted immediately
3. The ACT Federal Police must be notified immediately. All details of the location and nature of the human remains must be provided to the relevant authorities.
4. All unnecessary personnel should leave the area immediately (as directed by Federal Police)
5. If there are reasonable grounds to believe that the remains are Aboriginal, ACT Heritage must be contacted immediately on 13 22 81.
6. The remains must be left in place, and protected from harm or damage (as directed by Federal Police).
7. If the remains are considered to be Aboriginal by the AFP control of the site will pass to ACT Heritage.
8. An assessment or salvage strategy will be implemented following consultation with the RAOs and ACT Heritage Council through ACT Heritage.

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PROPOSED RESIDENTIAL SUBDIVISION
170 ASPINALL STREET, WATSON

TRAFFIC IMPACT ASSESSMENT REPORT

PROPOSED RESIDENTIAL SUBDIVISION 170 ASPINALL STREET, WATSON
Client: Maryalicec Pty Ltd
Report Reference: 22367TREP01D01
File Path: Y:\2022_Fee Submissions\Pending\22367T – 170 Aspinall Street, Watson\08 Reports\22367TREP01D01.docx

Friday, November 18, 2022

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MELBOURNE Level 3, 51 Queen Street, Melbourne VIC 3000
+61 3 9020 4225

SYDNEY Suite 303/61 Marlborough Street, Surry Hills NSW 2010
+61 2 9068 7995

HOBART Level 4, 116 Bathurst Street, Hobart TAS 7000
+61 400 535 634

CANBERRA 45 West Row, Canberra ACT 2601
+61 2 9068 7995

www.salt3.com.au

CONTENTS

1 INTRODUCTION 1
2 EXISTING CONDITIONS 1
2.1 Location and Land Use 1
2.2 Zoning and Policy 2
2.3 Road Network 2
2.3.1 Aspinall Street 2
2.3.2 Antill Street 2
2.4 Sustainable Transport 3
2.4.1 Public Transport 3
2.4.2 Walking 3
2.4.3 Cycling 3
2.5 Traffic Volumes 3
3 PROPOSAL 6
4 TRAFFIC CONSIDERATIONS 6
4.1 Traffic Generation 6
4.2 Traffic Distribution 7
4.3 SIDRA Analysis 8
4.3.1 Assumptions and Settings 8
4.3.2 AM Peak Hour SIDRA Results 9
4.3.3 PM Peak Hour SIDRA Results 11
4.4 Traffic Impacts 13
5 DESIGN CONSIDERATIONS 13
5.1 Access Arrangements 13
5.2 Road Layout 14
6 CONCLUSION 14
APPENDIX 1 SIDRA NETWORK LAYOUT 15

LIST OF FIGURES

Figure 1 Subject site locality 1
Figure 2 Aerial view of subject site 2
Figure 3 Aspinall / Shewcroft / Zelling – AM peak hour volumes 4
Figure 4 Aspinall / Shewcroft / Zelling – PM peak hour volumes 4
Figure 5 Aspinall / Antill / Ian Nichol – AM peak hour volumes 5
Figure 6 Aspinall / Antill / Ian Nichol – PM peak hour volumes 5
Figure 7 Traffic volumes at site frontage 6
Figure 8 Estimated traffic distribution 8

LIST OF TABLES

Table 1 Traffic generation 7
Table 2 Level of Service Ratings 9

1 INTRODUCTION

SALT has been engaged by Maryalicec Pty Ltd to undertake a traffic engineering assessment of the proposed residential subdivision to be located at 170 Aspinall Street in Watson.

In the course of preparing this report:

- The development plans and background information have been reviewed;
- A desktop inspection of the subject site and its environs has been undertaken;
- Traffic volume surveys have been commissioned at the two nearby roundabouts on Aspinall Street;
- SIDRA intersection analysis has been undertaken of the site access and the two nearby roundabouts on Aspinall Street; and
- The traffic and parking implications of the proposal have been assessed.

The following sets out SALT's finding with respect to the traffic engineering matters of the proposal.

2 EXISTING CONDITIONS

2.1 LOCATION AND LAND USE

The subject site is located at 170 Aspinall Street, on Block 3, Section 95 in Watson. It is situated on the south-western corner of Aspinall Street and Antill Street. The block is irregular in shape, with a total area of 34487m^2. The site is currently partially occupied by Canberra Carotel Motel in the western portion, with the remaining land being currently undeveloped.

To the west of the site is the C3 Church Watson. The remaining surrounding land use is largely residential in nature, with other residential subdivisions located to the north and south of the subject site. To the east of the site is Mount Majura Nature Reserve, including Clancy's Walking Track.

Figure 1 depicts the location of the subject site with respect to the surrounding road network and land uses. An aerial view of the site can be seen in Figure 2.

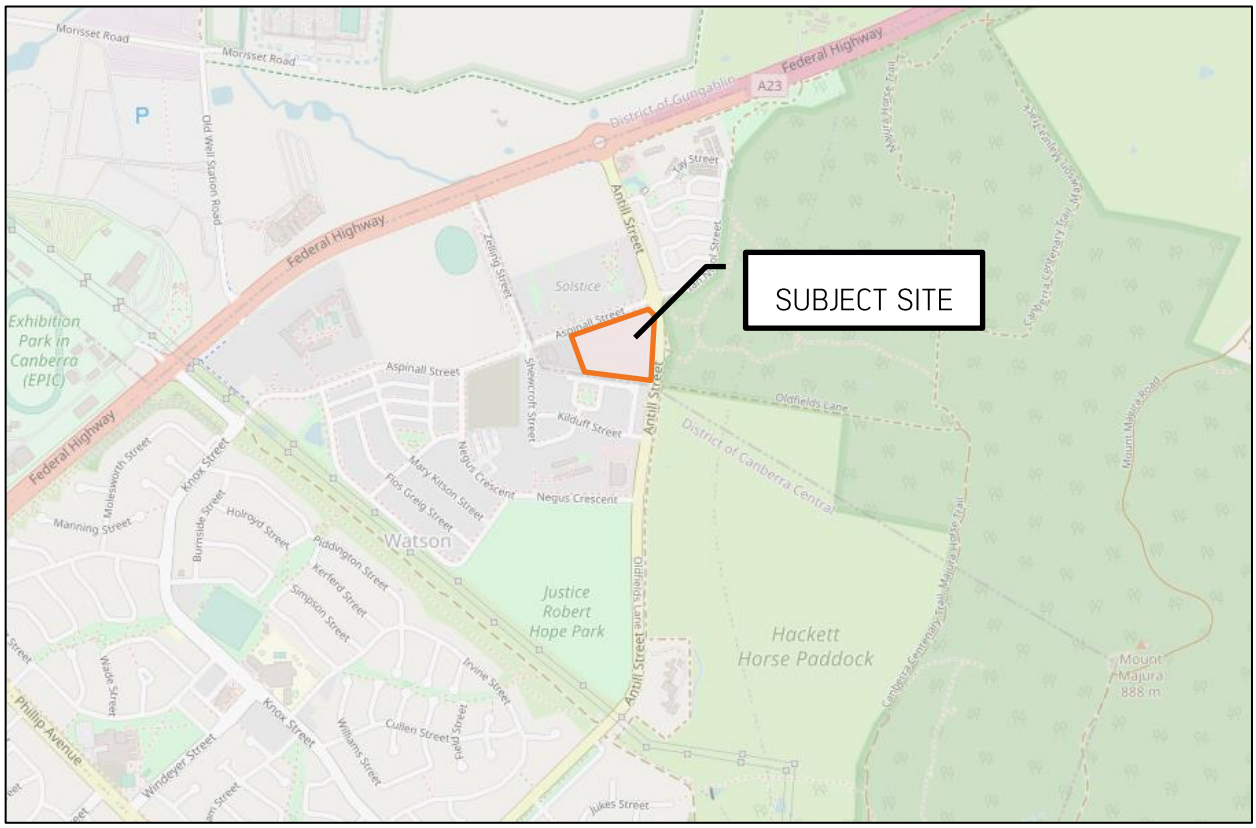


Figure 1 Subject site locality

Figure 2 Aerial view of subject site

2.2 ZONING AND POLICY

The subject site is zoned as Commercial Zone 6 (CZ6) Leisure and Accommodation, and Transport Zone 1 (TSZ1) in the Territory Plan. Therefore, the proposal involves a variation to the Territory Plan to allow for residential land use.

2.3 ROAD NETWORK

2.3.1 ASPINALL STREET

Aspinall Streets runs in a generally east-west alignment in the vicinity of the site. It has a carriageway width of approximately 7.3m and provides two-way vehicle access.

Indented parallel parking bays are provided on the northern side of Aspinall Street at the site frontage. No parking signs are provided to restrict parking on either side of the road.

Bus stops are situated on both sides of Aspinall Street at the site frontage.

A posted speed limit of 50km/hr applies.

2.3.2 ANTILL STREET

Antill Street runs in a generally north-south alignment in the vicinity of the site. It has a carriageway width of approximately 6.6m, providing two way vehicle access.

The intersection between Antill Street and Aspinall Street is in the form of a roundabout, and Antill Street provides access to Federal Highway to the north.

There are no signs to restrict parking on Antill Street, however on-street parking does not typically occur. This is likely due to the higher speed and volume nature of Antill Street and the connection it provides.

A posted speed limit of 60km/hr applies.

2.4 SUSTAINABLE TRANSPORT

2.4.1 PUBLIC TRANSPORT

The subject site is accessible by public transport, with bus stops located at the site frontage on Aspinall Street, as well as nearby on Antill Street.

These bus stops are serviced by bus route 50 between Watson and the City via Downer, Dickson, Lyneham and O'Connor. This route provides access to key destinations and the greater public transport network including Watson Terminal, Watson Shops, Dickson Interchange, Dickson Shops, City Interchange and Lyneham Primary School.

2.4.2 WALKING

The subject site has good walking facilities in place, with footpaths provided along both site frontages and the majority of the surrounding road network.

The adjacent roundabouts are provided with pram ramps ad refuges, allowing pedestrian crossing opportunities.

The site is within a convenient walking distance to Mount Majura Nature Reserve, C3 Church, bus stops and other residential precincts.

2.4.3 CYCLING

There are no on- or off-road bike paths in the vicinity of the site.

2.5 TRAFFIC VOLUMES

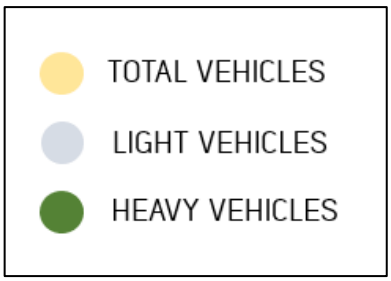
Traffic volumes in the vicinity of the site have been determined by the commission of traffic movement surveys at two nearby roundabouts. These were the intersections of:

- Aspinall Street / Antill Street / Ian Nichol Street; and
- Aspinall Street / Zelling Street / Shewcroft Street.

The surveys were undertaken on Tuesday 13 September 2022 between 6:30am–9:30am and 3:00pm–6:00pm. This represents a typical weekday during the school term and covers the typical road network AM and PM peak periods.

By analysis of the survey data, the AM peak hour was found to occur between 8:00am–9:00am and the PM peak hour was found to occur between 5:00pm–6:00pm. This was consistent between the two intersections.

The results of the traffic count surveys at each intersection in each peak hour are summarised diagrammatically in Figures 3–6, with the key provided below.



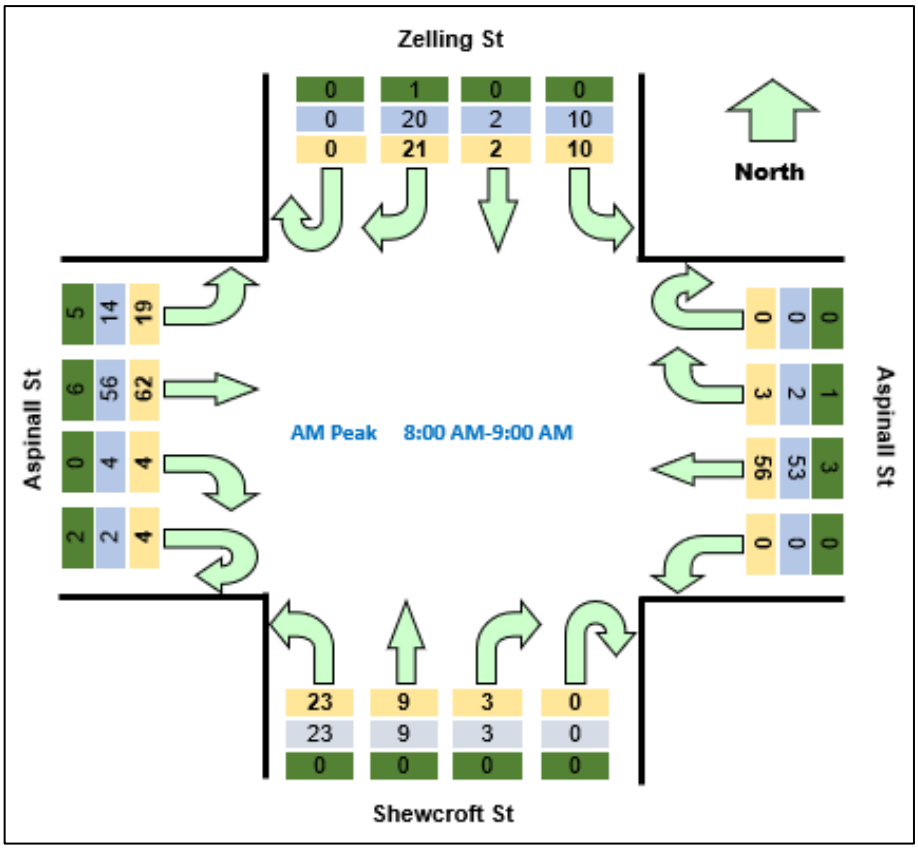


Figure 3 Aspinall / Shewcroft / Zelling – AM peak hour volumes

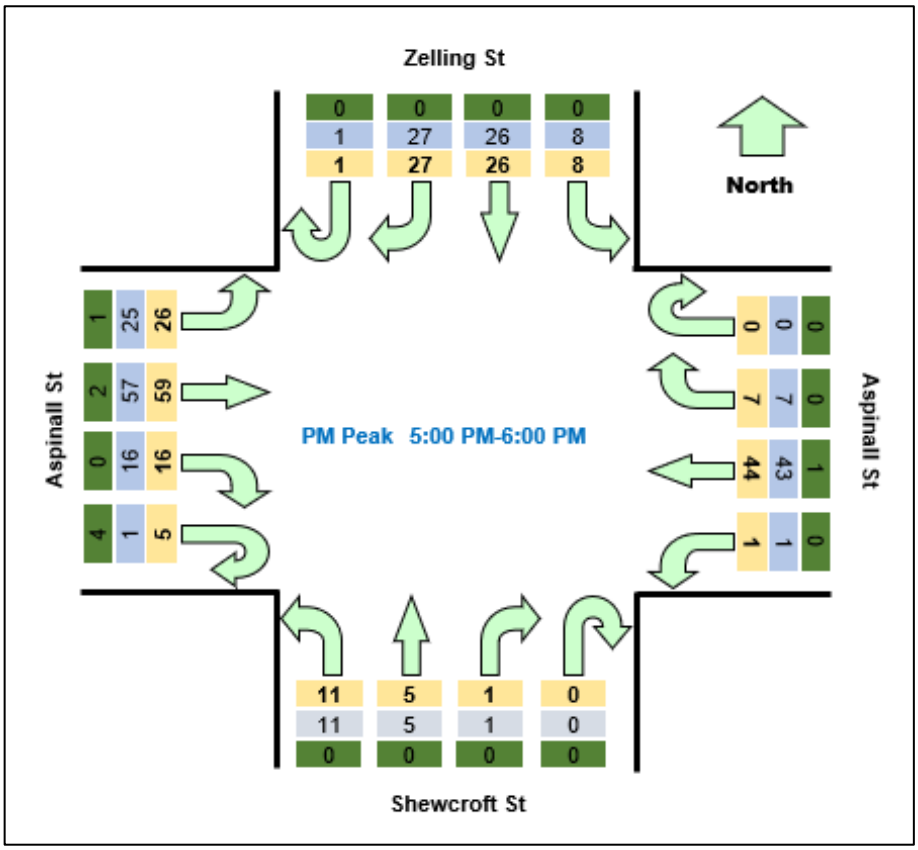


Figure 4 Aspinall / Shewcroft / Zelling – PM peak hour volumes

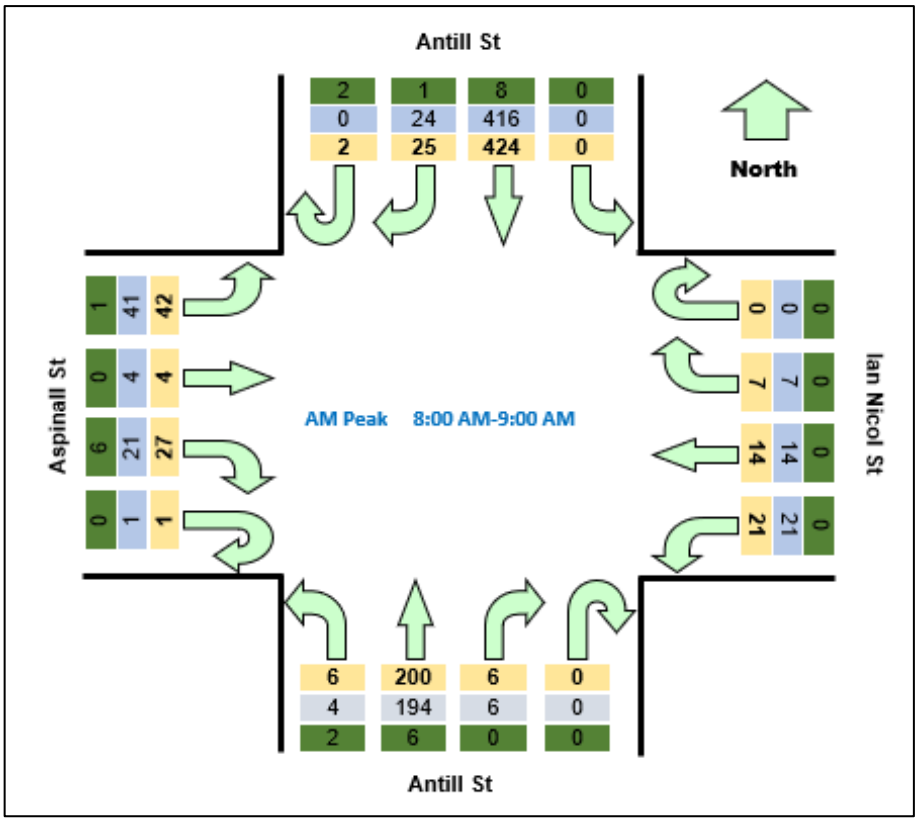


Figure 5 Aspinall / Antill / Ian Nichol – AM peak hour volumes

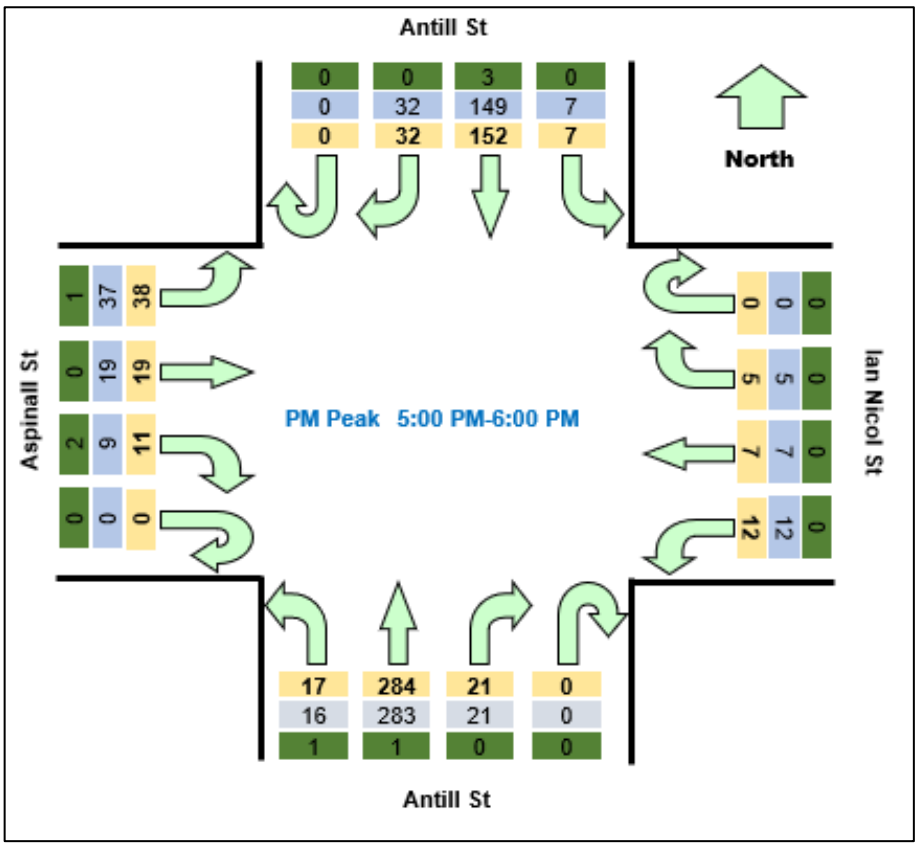


Figure 6 Aspinall / Antill / Ian Nichol – PM peak hour volumes

By analysis of the traffic count results, the traffic volume in each direction at the site access points on Aspinall Street can be estimated. This was done using the volumes from the Aspinall Street / Antill Street / Ian Nichol Street survey as this is closest to the site, with no other streets or vehicle access points in between, thus represents an accurate depiction of traffic volumes at the site frontage.

This is shown diagrammatically in **Figure 7**.

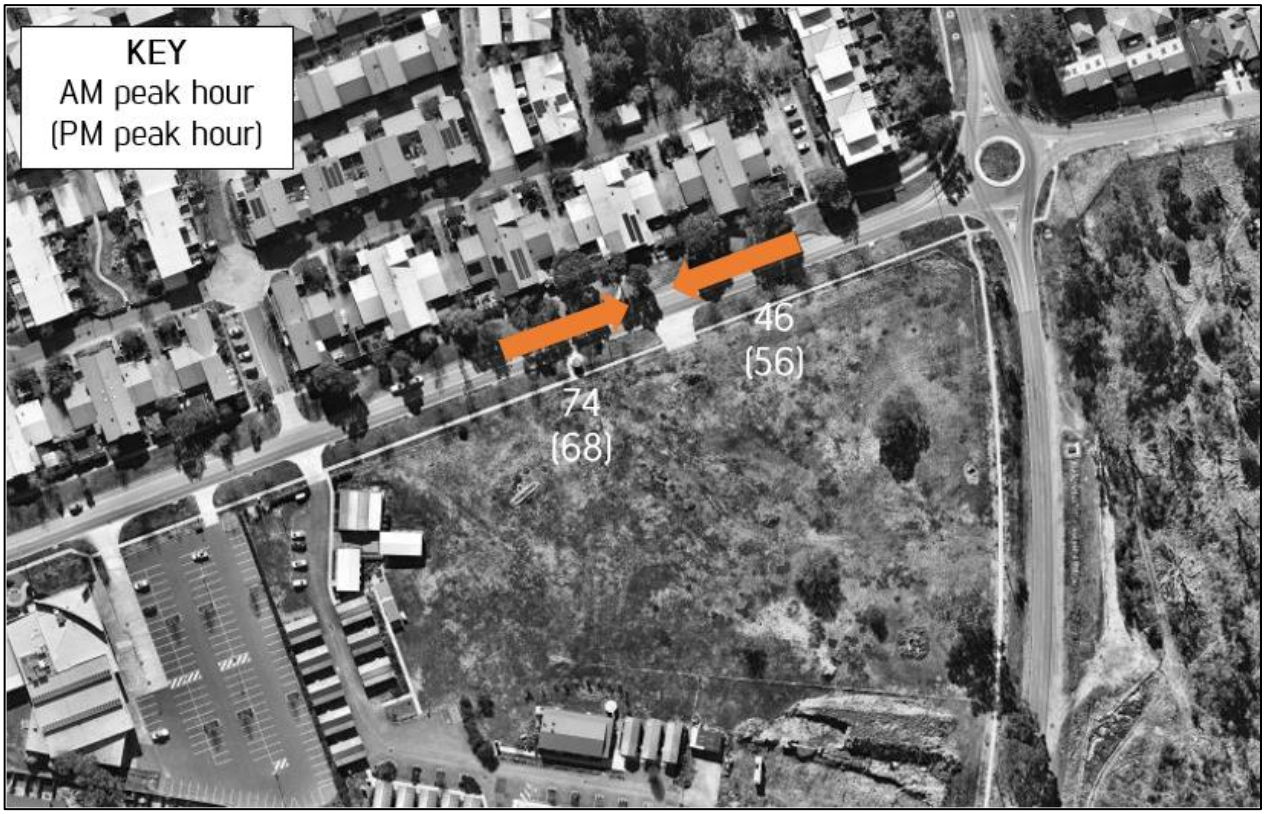


Figure 7 Traffic volumes at site frontage

3 PROPOSAL

It is proposed to remove the existing hotel land use and rezone the site from a C6Z to a residential zone. The proposed development is a residential subdivision to provide a total of 134 residences. This is to comprise of 43 single residential blocks as well as three multi-unit blocks providing 39 apartments, 42 apartments and 10 apartments.

The main vehicular access is proposed to occur via a new crossover to Aspinall Street. The easternmost existing crossover to Aspinall Street is to be removed and the westernmost existing crossover is to be reconfigured for emergency access only with the addition of a ranger gate or the like.

An internal road layout provides circulation around the subdivision and access to each dwelling. A road connection to Phippard Court to the south is proposed to provide emergency access only.

4 TRAFFIC CONSIDERATIONS

4.1 TRAFFIC GENERATION

The RTA Guide to Traffic Generating Developments specifies the daily and peak hour traffic generation rate that can be expected for residential developments.

The proposal consists of dwellings and apartments, each of which have different daily and peak hour traffic generation rates. In this case, it is assumed that the traffic generation rate for smaller units and flats (up to two bedrooms) will apply to the apartments.

The resulting traffic generation is summarised in **Table 1**.

Table 1 Traffic generation

Type of Residence	No. Residences	Daily Vehicle Trip Rate	Daily Vehicle Trips	Peak Hour Vehicle Trip Rate	Peak Hour Vehicle Trips
Dwelling houses	43 dwellings	9 per dwelling	387	0.85 per dwelling	37
Apartments (site 1)	39 apartments	5 per dwelling	195	0.5 per dwelling	20
Apartments (site 2)	42 apartments		210		21
Apartments (site 3)	10 apartments		50		5
TOTAL			842 trips		83 trips

The traffic generated will be directed to and from the site access point on Aspinall Road.

Traffic is expected to be split as 70% departures and 30% arrivals in the AM peak, hour, and 40% departures and 60% arrivals during the PM peak hour, as is typical for residential development.

Therefore, in each peak hour, the traffic generated to/from each site access point is as summarised in Error! R eference source not found..

- AM peak hour (30% arrivals / 70% departures)
  - 25 vehicles in; and
  - 58 vehicles out.
- PM peak hour (60% arrivals / 40% departures):
  - 50 vehicles in; and
  - 33 vehicles out.

4.2 TRAFFIC DISTRIBUTION

The distribution of traffic in each direction can be estimated by review of the existing traffic volumes on Aspinall Street. It is found that in both the AM and PM peak hours, traffic is distributed approximately 60% eastbound and 40% westbound. This can be applied to the traffic generation to determine the directional distribution of traffic into and out of the site.

The resulting estimated traffic distribution is shown diagrammatically in **Figure 8**.

Figure 8 Estimated traffic distribution

4.3 SIDRA ANALYSIS

4.3.1 ASSUMPTIONS AND SETTINGS

The level of traffic impact associated with the proposal in the critical weekday AM and PM peak hours has been determined using SIDRA Intersection v9.

A network has been created to assess the impacts on the surrounding road network. This including the intersections of each of the site access points and Aspinall Street, the intersection of Aspinall Street / Antill Street / Ian Nichol Street, and the intersection of Aspinall Street / Shewcroft Street / Zelling Street.

This was assessed in the AM and PM peak hours post development and 10-years post development to assess the long term impacts on the surrounding road network and intersections.

SIDRA is an advanced micro-analytical traffic evaluation tool that provides estimates of capacity and performance statistics (delay, queue lengths etc) on a lane-by-lane basis.

Key performance criteria include:

Degree of Saturation (DOS): This represents the ratio of traffic volume to capacity. Generally speaking, a DOS of below 0.9 indicates acceptable performance. A DOS of over 1.0 indicates that capacity has been exceeded.

Level of Service (LOS): An index of the operational performance of traffic based on service measures such as delay, degree of saturation, density and speed during a given flow period. A guide to LOS ratings is provided in **Table 2**.

Average Delay: The average delay time that can be expected for a given movement.

95th Percentile Queue: The maximum queue length that can be expected in 95% of all observed queue lengths during the hour.

Table 2 Level of Service Ratings

Level of Service	
A	Excellent
B	Very Good
C	Good
D	Acceptable
E	Poor
F	Very Poor

Default SIDRA settings have been adopted for this assessment. A compounding growth factor of 2%pa has been applied to the road network traffic volumes over 10 years.

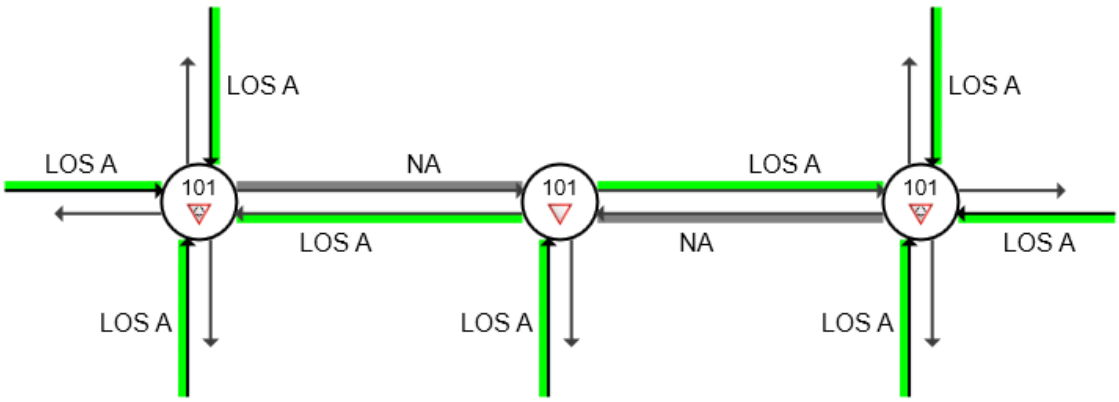
The SIDRA layout of the network is provided in **APPENDIX 1**.

4.3.2 AM PEAK HOUR SIDRA RESULTS

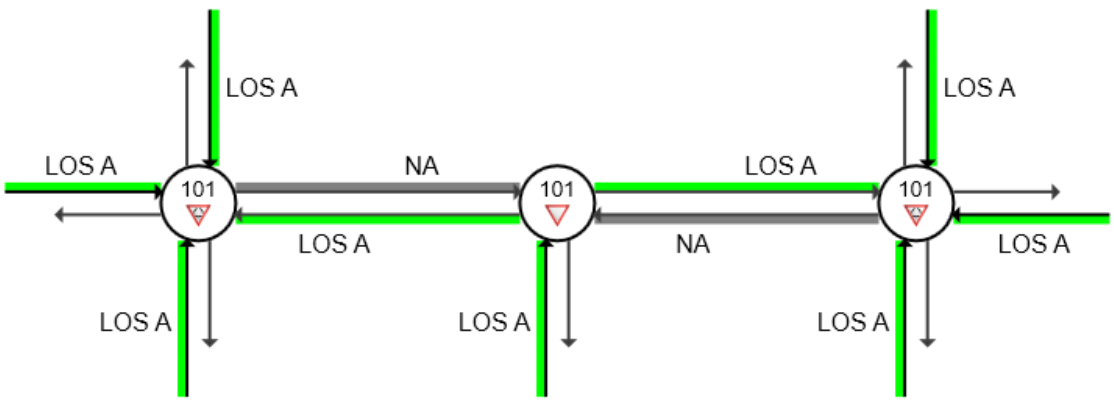
The key results for the AM peak hour (8:00am–9:00am) are summarised below in a series of displays showing the critical results for each approach within the network. This compares the results post development and 10-years post development.

Level of Service (LOS)

Post Development:

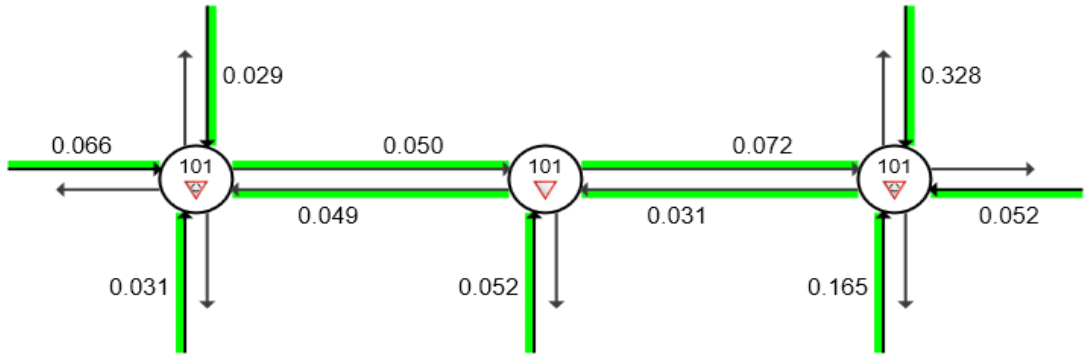


10-years Post Development:

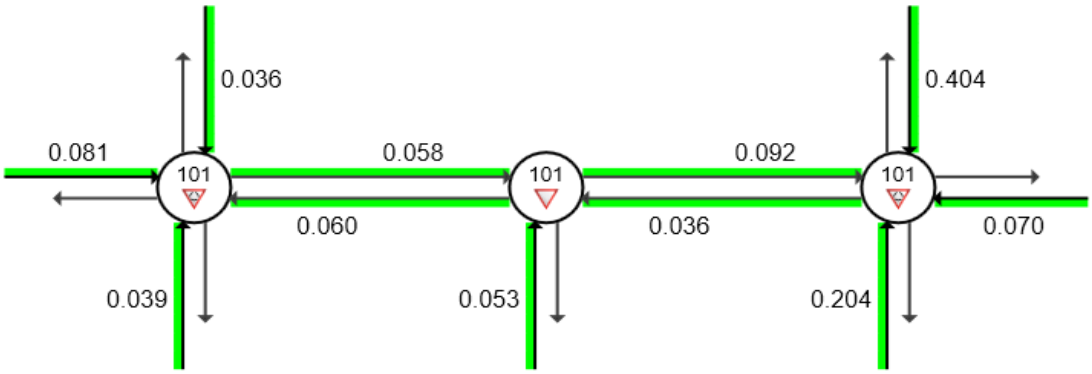


Degree of Saturation (DOS)

Post Development:

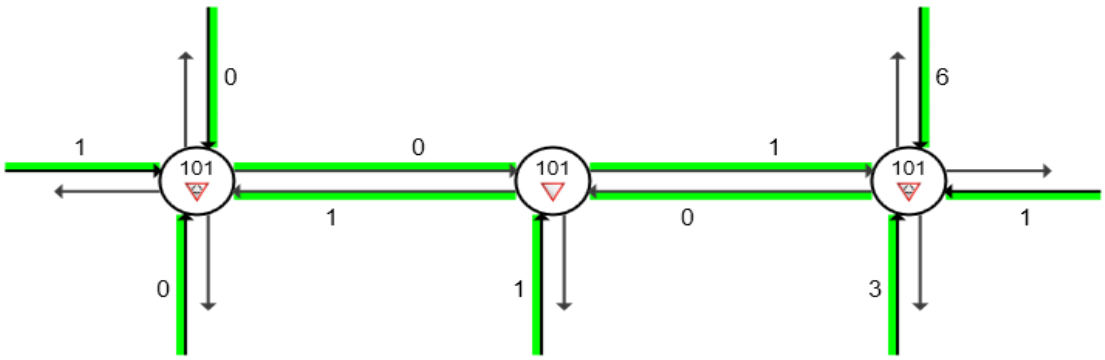


10-years Post Development:

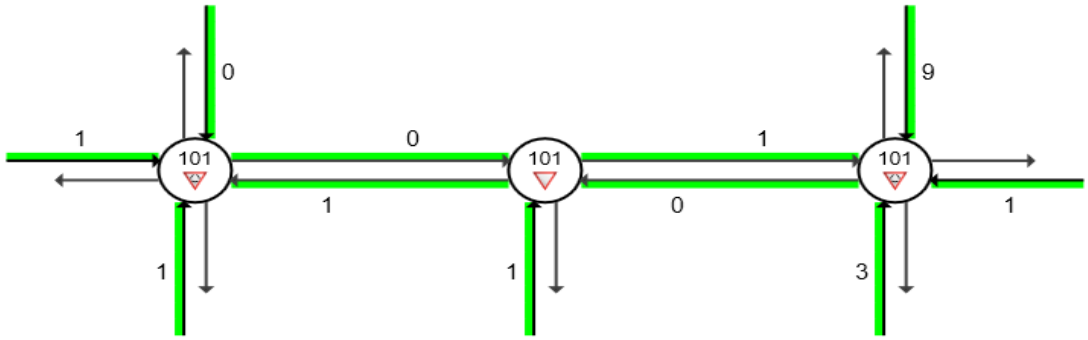


95th Percentile Queue Length (m)

Post Development:

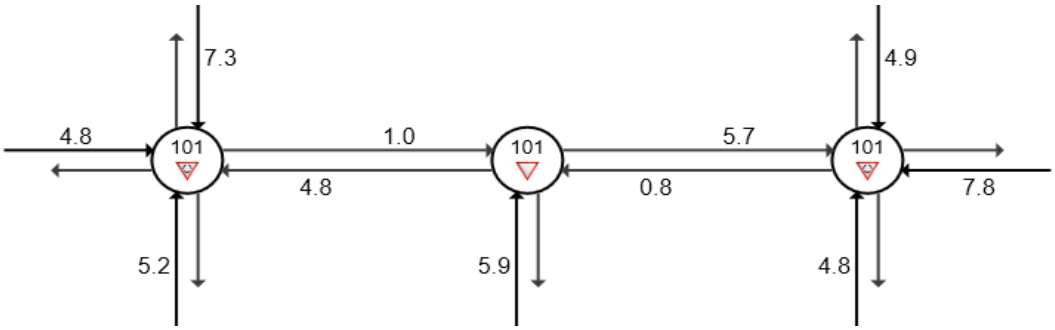


10-years Post Development:

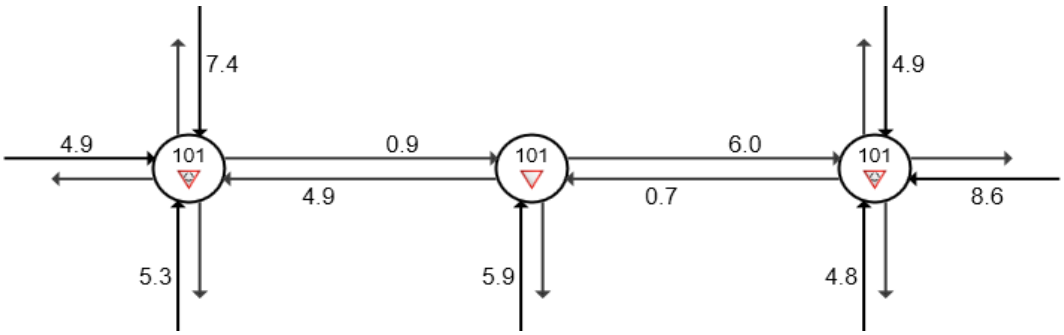


Average Delays (s)

Post Development:



10-years Post Development:

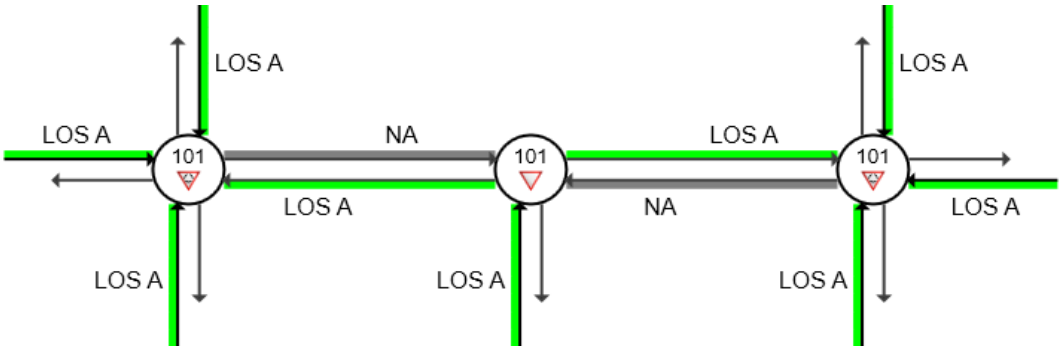


4.3.3 PM PEAK HOUR SIDRA RESULTS

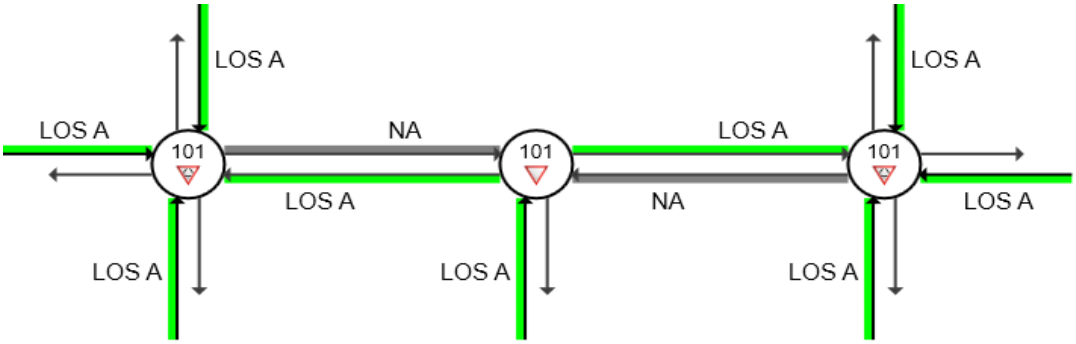
The key results for the PM peak hour (5:00pm-6:00pm) are summarised below in a series of displays showing the critical results for each approach within the network.

Level of Service (LOS)

Post Development:

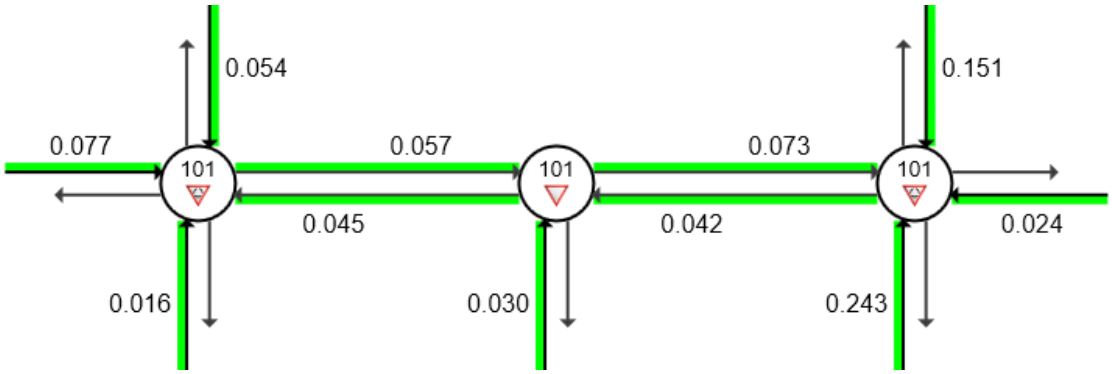


10-years Post Development:

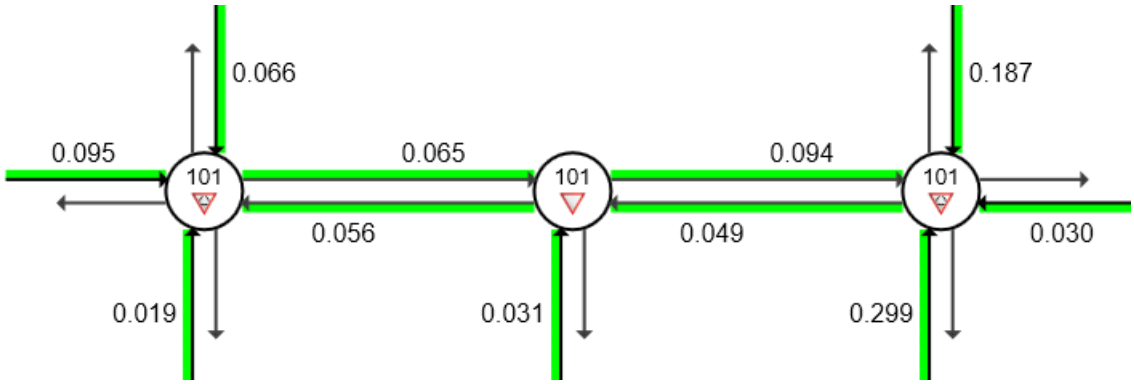


Degree of Saturation (DOS)

Post Development:

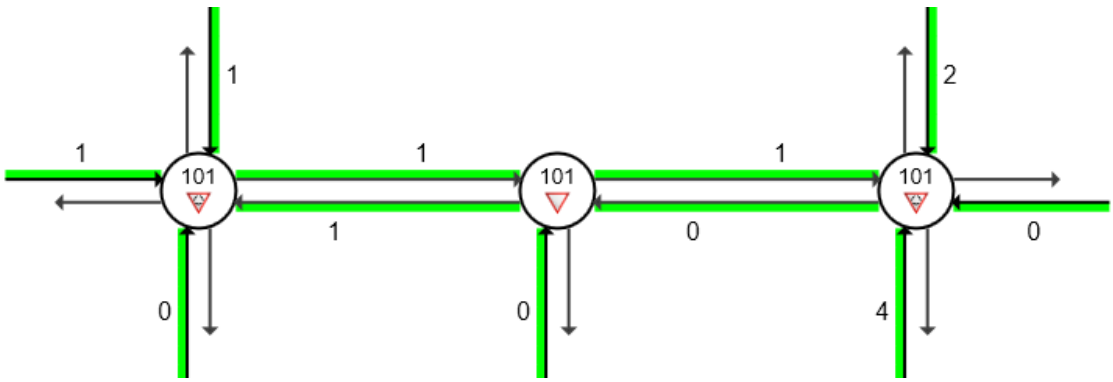


10-years Post Development:

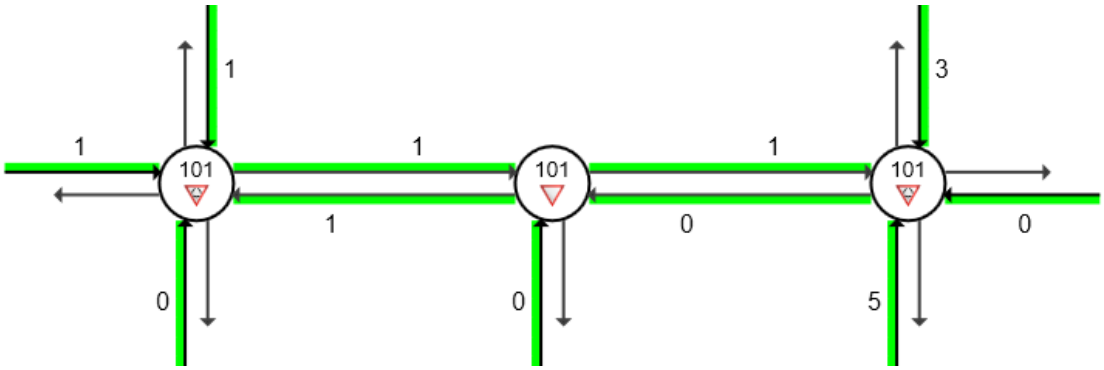


95th Percentile Queue Length (m)

Post Development:

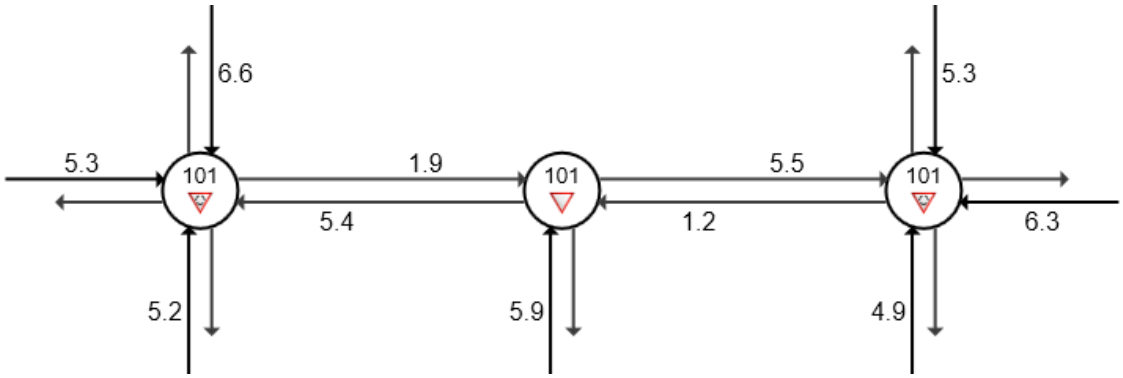


10-years Post Development:

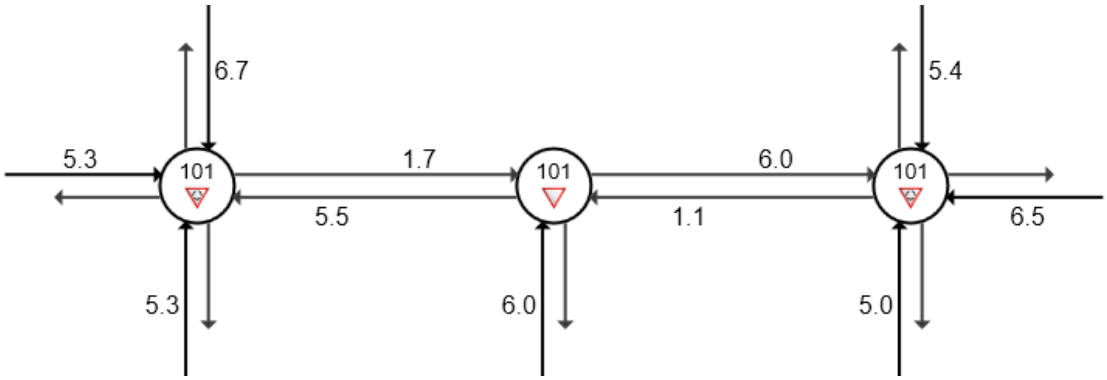


Average Delays (s)

Post Development:



10-years Post Development:



4.4 TRAFFIC IMPACTS

From the above results, it can be concluded that the network is expected to operate satisfactorily with the additional traffic associated with proposal. This is true for both the AM and PM peak hours post development and in the 10-year scenario.

All legs of each intersection in the network operate at a Level of Service A, with Degree of Saturation values well below 1.0 for all movements. The delays and queues across the network are minimal in each scenario.

The addition of a total of 90 vehicles to Aspinall Street in each peak hour is not anticipated to cause any major adverse impact on the surrounding road network or intersections. This equates to one vehicle arriving or departing the site every 1.5 minutes on average. This is minimal and can be accommodated by the site access points and nearby intersections, as shown by the SIDRA analysis above.

Overall, the proposal is not anticipated to have any major adverse impact on the operation of Aspinall Street nor the two nearby intersections.

5 DESIGN CONSIDERATIONS

5.1 ACCESS ARRANGEMENTS

The subject site is to be accessed by a new vehicular crossover to Aspinall Street approximately 5.5m wide. This will accommodate two-way movements for vehicles to enter and exit the site.

The crossover meets the requirements of the Parking and Vehicular Access General Code and Australian Standard AS2890.1 for access to a development of this size and nature.

It is also located at a suitable distance from the adjacent intersection of Aspinall Street and Antill Street (approximately 60m).

Sufficient space has been maintained to provide a pedestrian sight triangle along the exit lane of the site access. Landscaping in this area is to be kept below 900mm in height to ensure drivers exiting the site can observe any pedestrians on the footpath on Aspinall Street.

5.2 ROAD LAYOUT

An internal road layout is proposed to provide two-way vehicle access and circulation across the site. This allows vehicles to enter and exit via the single site access point without any need for U-turns or reversing movements.

Minimal intersections within the site are proposed, with three (3) T-junctions included. This reduces any risk of conflict between vehicles to maximise safety within the site.

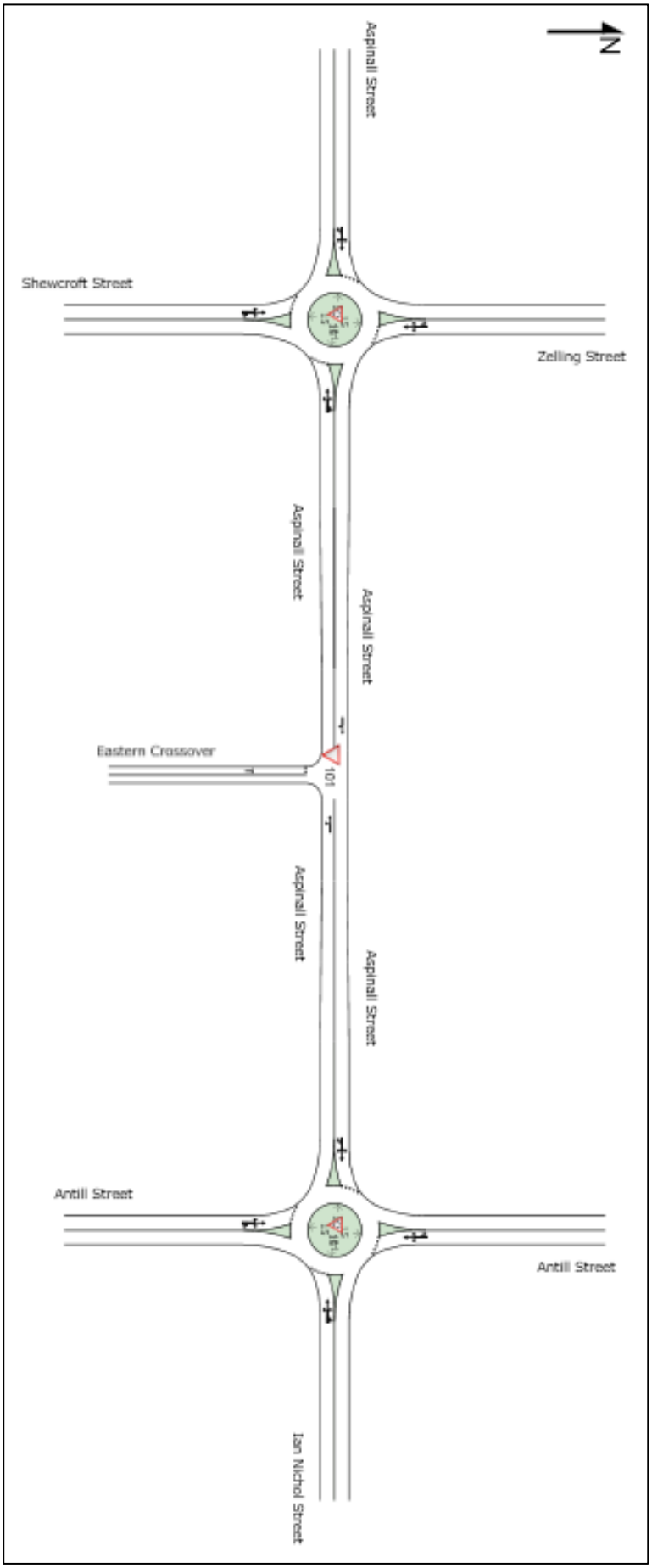
6 CONCLUSION

Based on the preceding analysis, the following can be concluded:

- It is proposed to rezone the site from a C6Z to a residential zone;
- The proposal involves a residential subdivision to provide a total of 134 residences. This is to comprise of 43 single residential blocks as well as three multi-unit blocks providing 39 apartments, 42 apartments and 10 apartments.
- The level of traffic generated by the proposal is not anticipated to have any major adverse impact on the road network and intersections. This site access arrangements and adjacent roundabouts are expected to operate satisfactorily and efficiently in the AM and PM peak hour post development and 10-years post development;
- The site is to be accessed via a new crossover on Aspinall Street;
- The site layout and road network has been designed to maximise efficiency and safety of vehicle circulation.

Therefore, the proposal is supported from a traffic engineering perspective.

APPENDIX 1 SIDRA NETWORK LAYOUT


N
Aspinall Street
Shewcroft Street
Zelling Street
Aspinall Street
Aspinall Street
Eastern Crossover
101
Aspinall Street
Aspinall Street
Antill Street
Antill Street
Ian Nichol Street

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+61 400 535 634

CANBERRA 45 West Row, Canberra ACT 2601
+61 2 9068 7995

www.salt3.com.au

sellick consultants
Est. 1965
canberra | sydney | brisbane

24 lonsdale street,
suite 122 mode 3,
braddon act 2612
po box 5005
braddon act 2612

p (02) 6201 0200
f (02) 6247 2203

Project Details

For the Attention of:

Purdon Planning Pty Ltd
Suite 5, Level1/243 Northbourne Ave
Lyneham
ACT 2602
Attn:

Project No: 210158

Sellick Consultants Reference: Territory Plan Variation
Watson Section 95 Block 3
Hydraulic Services Assessment

Sellick Consultants Contact Details

Canberra Office:

Unit 122, Level 1, Mode 3
24 Lonsdale Street
BRADDON ACT 2612
P: 02 6201 0200
E: sellick@sellickconsultants.com.au

Sydney Office:

Suite 1601, Level 16
99 Mount Street
North Sydney
NSW 2060
PH: 02 6201 0200
E: sellick@sellickconsultants.com.au

Revision	Issue	Prepared By	Approved By	Date
A	For Client review	Andrew Easey, Alex McLennan, Michael Wansink	Bernie Cusack	2022

structural civil hydraulic façade engineers

www.sellickconsultants.com.au • sellick@sellickconsultants.com.au

Contents

1.0 EXECUTIVE SUMMARY 3
2.0 INTRODUCTION 4
3.0 REPORT SCOPE 5
4.0 Service Assessment 5
4.1 Sewer 5
4.1.1 Existing Services 5
4.1.2 Sewer Loading 5
4.1.3 Proposed Sewer Works 6
4.1.4 Utility consultation 6
4.2 Water 6
4.2.1 Existing Services 6
4.2.2 Water Demand 6
4.2.3 Proposed Water Supply Works 7
4.2.4 Utility Consultation 7
4.3 Storm Water 7
4.3.1 Existing Services 7
4.3.2 Proposed Stormwater Works 7
4.3.3 Water Sensitive Urban Design (WSUD) 7
4.4 Gas 10
4.4.1 Existing Services 10
4.4.2 Gas Demand 10
4.4.3 Utility Consultation 10
APPENDIX A – Existing Services Plans
APPENDIX B – Utility Correspondence

1.0 EXECUTIVE SUMMARY

The subject site is Block 3 Section 95 Watson, ACT. The block is currently zoned CZ6, Restricted Access Recreation. The western and southern portions of the block are occupied by the Canberra Carotel Hotel. The remainder of the block is undeveloped.

A Territory Plan variation is proposed to enable the development of 62 single residential blocks and two multi-unit blocks containing 39 and 42 units.

The variation seeks to amend the land use to RZ4, Medium Density residential.

Sellick Consultants has been engaged to assess capacity of hydraulic infrastructure to support the proposed variation. Utility authorities have been liaised with to confirm that the surrounding infrastructure can support the development proposal as listed below.

- Water and Sewer – Icon Water has confirmed that there is capacity in the sewer and water network to cater for proposed development based upon an equivalent population (EP) of 317. Refer to sections 4.1 & 4.2.

- Gas – No consultation was required as gas services will not be provided.

- Storm Water – In accordance with the requirements of TCCS, any increase in peak stormwater discharge rate will be detained on site. The surrounding infrastructure has the capacity to service the development proposal. A new service tie is proposed as records indicate that none currently exists.

2.0 INTRODUCTION

Purdon Planning is seeking a Territory Plan variation to enable the development of 62 residential blocks and two blocks containing 81 units on Blocks 3 Section 95 Watson – refer Figure 1 below.

Figure 1 – Site Location

Block 3 is currently partially occupied by the Canberra Carotel Hotel. The total area to be developed is approximately 34,487 m^2.

The current permitted land use for Block 3 is CZ6, Restricted Access Recreation. The Territory Plan Variation seeks to amend the land use to RZ4, Medium Density Residential.

This report seeks to review surrounding hydraulic infrastructure to assess its capacity to service the Territory Plan variation. Where the existing infrastructure is inadequate, this report proposes the infrastructure upgrade requirements to support the proposal.

3.0 REPORT SCOPE

The scope of this report is limited to the assessment of surrounding hydraulic infrastructure to support the development yield of the Proposed Territory Plan variation. That is, whether the existing infrastructure can support the proposed development of 62 single residential dwellings and 81 residential units, and if not, what infrastructure augmentation might be required to support the proposal.

Services assessed are limited to those contained within the report.

This report does not consider the specific on-block design considerations for the proposed development yield.

4.0 Service Assessment

The following services have been assessed. No other services have been considered as part of this report.

4.1 Sewer

4.1.1 Existing Services

A 150mm diameter sewer main is located in the southern verge of Aspinall Street. This main terminates at a maintenance hole located adjacent to the north western corner of Block 3. The block is serviced by a 150mm diameter connection to this maintenance hole. There are no sewer assets located within Block 3. The block is generally graded from south east to north west.

4.1.2 Sewer Loading

Calculations based upon Icon Water Supplement to the Gravity Sewerage Code of Australia.

- EP = Equivalent Population
- PDWF = Peak Dry Weather Flow
- GWI = Ground Water Infiltration
- RDI – Rainfall Dependent Infiltration
- TPF = Total Pumped Flows
- NSA = Net Sewered Area

Existing Sewer Discharge Flow Calculations

Assumptions

- No pumped flow
- NSA is the developed portion of the block (1.00 Ha)

Equivalent Population

- 173 bed accommodation = 81.5 EP
- Two bedroom caretaker's cottage = 2.5 EP
- Three staff = 1.0 EP

Total = 85 EP

Design Flow = PDWF + GWI + RDI + TPF
= 0.66 + .0.015 + 0.91 + 0.00
= 1.59 l/s

Proposed Sewer Discharge Flow Calculations

Assumptions

- 62 single residential blocks (medium density)
- 81 high density apartments
- No pumped flow
- Entire site drained (3.50 Ha)

Equivalent Population

- 62 residential blocks = 155 EP
- 81 apartments = 162 EP

Total = 317 EP

Design Flow = PDWF + GWI + RDI + TPF
= 2.16 + 0.09 = 3.84 + 0.00
= 6.09 l/s

Increase in sewer flow discharge = 6.09 – 1.59
= 4.50 l/s

4.1.3 Proposed Sewer Works

No augmentation of the sewer network is required.
The sewer main in Aspinall Street will be extended throughout the site to service each of the new blocks within the development.

4.1.4 Utility consultation

Icon Water was consulted and have confirmed that there is sufficient capacity within the sewer network to support the development proposal. Refer to attached correspondence.

4.2 Water

4.2.1 Existing Services

A 150mm diameter water main is located in the northern verge of Aspinall Street. A 150mm diameter water main is located in Phippard Court adjacent to the south east corner of Block 3. There is an additional 375mm diameter water main in Antill Street. This is a distribution main to which connection is not permitted.
A 100mm diameter water service currently provides fire and domestic supply to the Carotel Hotel.

4.2.2 Water Demand

Domestic Supply

Water supply demands have been calculated in acccordance with Icon Water Standards.

Assumptions

- The 62 residential blocks are deemed to be high density.
- The 81 residential apartments are deemed to be super high density.
- High density Peak Hour Demand is 2375 litres/dwelling/day
- Super high density Peak Hour Demand is 2200 litres/dwelling/day

Peak Hour Demand for the development = (62 x 2375) + (81 x 2200)

= 325,450 litres/day

The 95th percentile Peak Demand
= 214,797 litres/day

Fire Risk Category
As an RZ4 development, the Fire Risk Type is determined as FRT2. This has been confirmed by ACT Fire & Rescue. Refer to attached correspondence.
The specification of Fire Risk Type FRT2 is reiterated due to the block being wihin a high bush fire risk area.
Under FRT2, all water mains within the development must be of minimum 150mm diameter.

4.2.3 Proposed Water Supply Works

Water mains of 150mm diameter shall be installed throughout the site. Fire hydrants on these mains shall be installed at a minimum spacing of 60m. Each of the resdiential blocks shall be provided with 20mm diameter water service. Each of the two apartment blocks shall be provided with a service connection sized to meet the fire and domestic demands of the bulding/s.

4.2.4 Utility Consultation

Icon Water was consulted in relation to the development proposal and have confirmed that the existing infrastructure network can support the development proposal. Refer to attached correspondence.

4.3 Storm Water

4.3.1 Existing Services

An existing 1650mm diameter stormwater main is located on the opposite side of Antill Street. It is not proposed to provide connection from the site into this main.
A 375mm diameter stormwater main is located in the southern verge of Antill Street. It is intended to connect the stormwater from the development blocks and roads into the upstream end of this main. This existing main has sufficient capacity to carry the flows from the developed site.

4.3.2 Proposed Stormwater Works

No works are proposed for the existing stormwater network.

4.3.3 Water Sensitive Urban Design (WSUD)

It is proposed to meet the WSUD requirements of the Waterways: Water Sensitive Urban Design General Code. Refer below summary against each criteria:

Rule 1 – Mains Water Use Reduction Target
This rule is not applicable as the development is subject to the Estate Development Code.

Rule 2 – Onsite Stormwater Retention (OSR)
The development site has been split into Single Residential, Multi-Unit, Public Open Space and Road Reserve. Each has been given a impervious area in accordance with preliminary design and TCCS Municipal Infrastructure Standards 08 – Stormwater Table 8-4. Refer below for summary.

	Lot Number	Utilised Impervious Percentage	Overall Area (m^2)
Single Residential	58	50%	14,423
Multi-Unit	3	70%	10,345
Public Open Space	3	10%	689
Road Reserve*	N/A	40%	9,000

* Road Reserve impervious percentage is based of preliminary design.

Using a site impervious area of 19,936m^2, the proposed developments Onsite Retention requirement is 279.1kL. To meet this target the development is proposing the installation of 405kL Onsite Retention volume between the single residential blocks (in accordance with the Single Dwelling Housing Development Code) and the multi-unit blocks (3.2kL per 100m^2). This volume will be reused on each individual site.

Rule 3 – Onsite Stormwater Detention (OSD)
As per Rule 2 above the development site has been split into Single Residential, Multi-Unit, Public Open Space and Road Reserve.

Using a site impervious area of 19,936m^2, the proposed developments Onsite Detention requirement is 199.4kL. As allowed by The Code the development is proposing to utilize 50% of the Onsite Retention volume towards our Onsite Detention requirement and hence the proposed developments net Onsite Detention requirement is zero.

Rule 4 – Stormwater Quantity Target for Major Roads
This rule is not applicable as the development does not involve the construction of major roads.

Rule 5 – Onsite Stormwater Detention for Estate Development Plans
The development is proposing the installation of 403kL of onsite retention as per Rule 2 which is proposed to be 50% utilised for onsite detention.
The proposed development when compared to a unmitigated (rural) site will require 600kL of onsite detention to restrict the flows leaving site during the minor (20% AEP) and major (1% AEP). Refer below for a summary of flows:

	Predevelopment (0% impervious)	Post Development (58% impervious, pre OSD)	Post Development (58% impervious, post OSD)
20% AEP	240L/s	532L/s	240L/s
1% AEP	834L/s	1,170L/s	698L/s

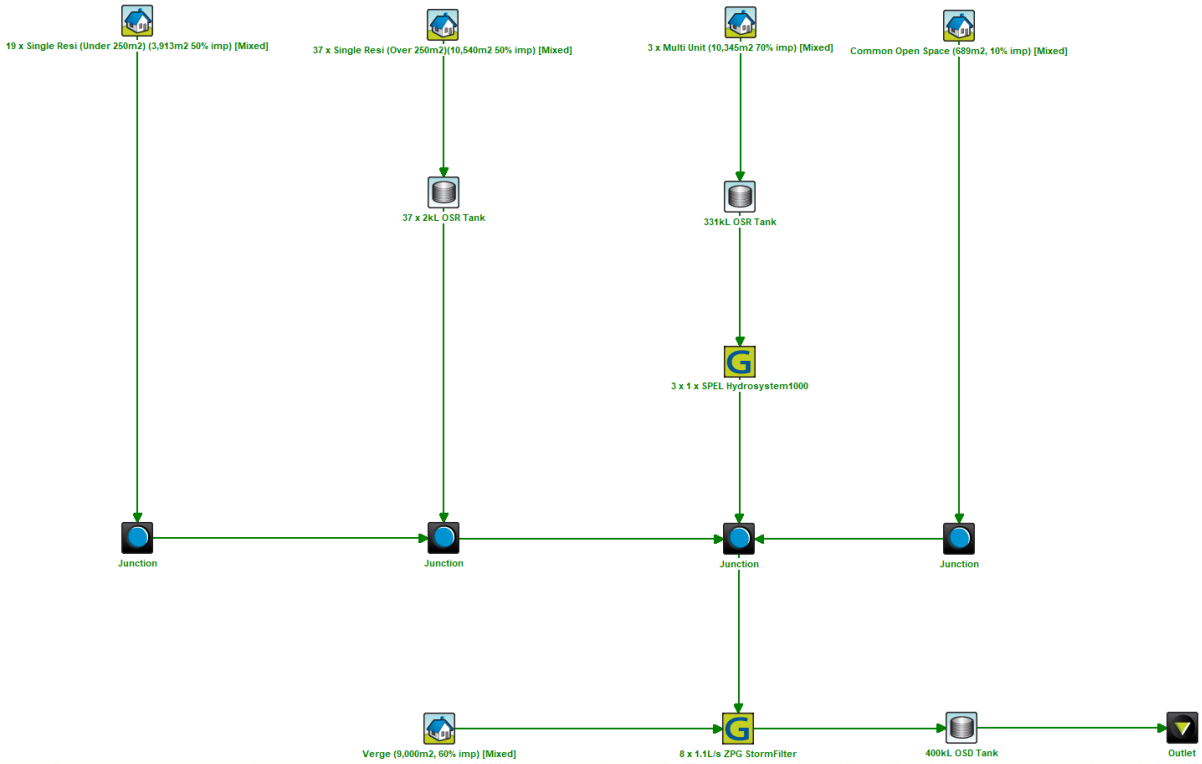
To meet this target the development is proposing the installation of 400kL Onsite Detention volume under the roadway prior to the discharge from site.

Rule 6 – Stormwater Quality Target

As per Rule 2 above the development site has been split into Single Residential, Multi-Unit, Public Open Space and Road Reserve.

To meet this target the development is proposing the installation measures on both the Multi Unit blocks (3 x SPEL Hydrosystem1000's, or equivalent) and the Road Reserve (58 x Ocean Protect 1.1L/s ZPG StormFilters). A MUSIC model has been utilised to show evidence of this, please refer to the results and node diagram below:

	Source (kg/yr)	Residual Load (kg/yr)	Reduction (%)	Target (%)
Flow (ML/yr)	12.3	10.8	12.2	-
TSS (kg/yr)	1,900	539	71.7	60.0
TP (kg/yr)	2.76	1.33	51.7	45.0
TN (kg/yr)	32.9	19.6	40.6	40.0
GP (kg/yr)	494	0	100.0	90.0



Rule 7 – Stormwater Quality Target for Major Roads

This rule is not applicable as the development does not involve the construction of major roads.

Rule 8 – Nuisance Flooding

The development is proposing that all Blocks will grade to the roadways will will be able to accommodate the overland stormwater flows uphe 1% AEP.

Rule 9 – Green/Living Infrastructure

Using a site area of 34,487m^2, the development requires approximately 6,898m^2 of permeable area. The proposed soft landscaping areas assumed explained in Rule 2 above obtains a 20% or greater permeable area percentage.

Rule 10 – Water Infrastructure
This rule is not applicable as the development does not propose to hand any WSUD infrastructure to the ACT Government.

4.4 Gas

4.4.1 Existing Services

A 50mm 210 kPa nylon gas main is located in the southern verge of Aspinall Street. Additional 32mm 210 kPa mains are located in Phippard Court to the south of the block. A gas service is provided to the Carotel Hotel.

4.4.2 Gas Demand

Gas mains and services will not be installed to the development. The existing supply to the Carotel will be disconnected.

4.4.3 Utility Consultation

No consultation is required.

APPENDIX A - Existing Services Plan

APPENDIX B – Correspondence

From: ACTF&R Risk & Planning <ACTF-RRisk-Planning@act.gov.au>
Sent: Friday, October 7, 2022 9:58 AM
To: Michael Wansink <michaelw@sellickconsultants.com.au>
Cc: ACTF&R Risk & Planning <ACTF-RRisk-Planning@act.gov.au>
Subject: RE: 210158 - Watson Section 95 Block 3 - Fire Risk Type

UNOFFICIAL

Hi Michael,

ACTF&R can advise fire risk type FRT2 is applicable to this development.

This advice is based upon information supplied in your email indicating potential 2-3 storey development involving multiple self-contained units.

Regards,

Station Officer Stuart Laing
Bushfire and Development Assessment Officer
ACT Fire & Rescue | Community Safety
9 Amberley Avenue, Majura ACT 2609
p. 62078472
e. ACTF-RRisk-Planning@act.gov.au

From: Dowling, Jeremy <Jeremy.Dowling@act.gov.au> **On Behalf Of** ACTF&R Fire Engineer
Sent: Tuesday, 4 October 2022 2:57 PM
To: ACTF&R Risk & Planning <ACTF-RRisk-Planning@act.gov.au>
Cc: ACTF&R Fire Engineer <ACTFBFireEngineer@act.gov.au>
Subject: FW: 210158 - Watson Section 95 Block 3 - Fire Risk Type

UNOFFICIAL

Hey Stu,

I think one is for you.

Cheers,
Jeremy

Jeremy Dowling
Station Officer
Fire Safety & Engineered Solutions
e. actfbfireengineer@act.gov.au
p. 6207 8372
www.esa.act.gov.au

From: Michael Wansink <michaelw@sellickconsultants.com.au>
Sent: Tuesday, 4 October 2022 2:34 PM
To: ACTF&R Fire Engineer <ACTFBFireEngineer@act.gov.au>
Cc: Bernie Cusack <Bernie@sellickconsultants.com.au>
Subject: 210158 - Watson Section 95 Block 3 - Fire Risk Type

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Good Afternoon,
Sellick Consultants has been engaged to prepare a services report for a Variation to the Territory Plan for this block. The current land use is accommodation. The intended land use will be residential comprising 62 compact single residential blocks and two multi-unit blocks with 39 and 42 apartments.
We have not been advised of the building height for the apartments, but it would be expected to be two to three floors.
We are aware that the block is within a bushfire risk zone.
Could be please assess and advise as the Fire Risk Type which would apply to this development?

Regards

Michael Wansink
Sellick Consultants Pty Ltd

sellick consultants
canberra | sydney | brisbane
Est. 1965
structural civil hydraulic façade engineers

P: **02 6201 0200**
Canberra: **24 Lonsdale Street, Suite 122 Mode 3, Braddon ACT 2612**
Sydney: **99 Mount St, Suite 1601, Level 16, North Sydney NSW 2060**
E: michaelw@sellickconsultants.com.au W: www.sellickconsultants.com.au

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From: Allen, Craig <Craig.Allen@iconwater.com.au>
Sent: Friday, October 21, 2022 8:20 AM
To: Bernie Cusack <Bernie@sellickconsultants.com.au>; Michael Wansink <michaelw@sellickconsultants.com.au>
Cc: Hydraulic Asset Acceptance <HydraulicAssetAcceptance@iconwater.com.au>; Andrew Easey <Andrew@sellickconsultants.com.au>
Subject: Re: 210158 Watson Section 95 Block 3 _ Water and Sewer Network Capacity

Thanks for the follow up Bernie,

Initial Icon Water analysis indicates the existing sewer and water networks will be able to cater for the respective proposed foul flow and fire/potable flows.

At this stage it has been determined as being unnecessary to open the normally closed valve to the north of the site to achieve water network capacity based on the connection locations proposed.

Detailed analysis will be undertaken once the masterplan is available.

Kind Regards,
Craig Allen
Icon Water
0436926032

I am experiencing issues with my emails for a few days now. Please call if you require urgent assistance.

From: Bernie Cusack <Bernie@sellickconsultants.com.au>
Sent: Thursday, 20 October 2022 3:16 PM
To: Allen, Craig <Craig.Allen@iconwater.com.au>; Michael Wansink <michaelw@sellickconsultants.com.au>
Cc: Hydraulic Asset Acceptance <HydraulicAssetAcceptance@iconwater.com.au>; Andrew Easey <Andrew@sellickconsultants.com.au>
Subject: RE: 210158 Watson Section 95 Block 3 _ Water and Sewer Network Capacity

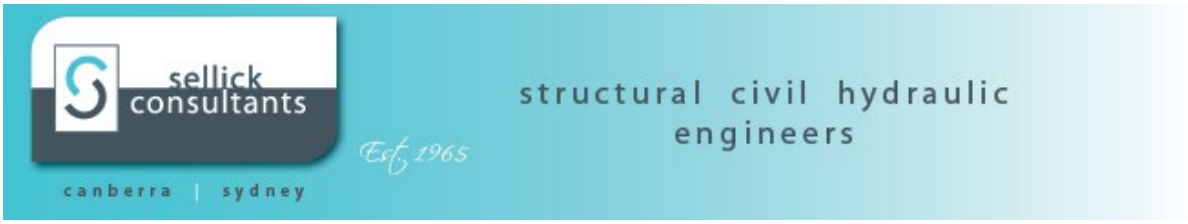
Hi Craig,

Just gently following this one up to see status when you get a chance please.

Thanks,

Bernie Cusack
MIEAust CPEng EngExec NER RPEQ APEC Engineer IntPE(Aus)
Civil Director

Sellick Consultants Pty Ltd



P: **02 6201 0200**
Canberra: **24 Lonsdale Street, Suite 122 Mode 3, Braddon ACT 2612**
Sydney: **99 Mount St, Suite 1601, Level 16, North Sydney NSW 2060**
E: bernie@sellickconsultants.com.au W: www.sellickconsultants.com.au

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From: Allen, Craig <Craig.Allen@iconwater.com.au>
Sent: Tuesday, 11 October 2022 11:30 AM
To: Michael Wansink <michaelw@sellickconsultants.com.au>
Cc: Hydraulic Asset Acceptance <HydraulicAssetAcceptance@iconwater.com.au>; Andrew Easey <Andrew@sellickconsultants.com.au>
Subject: RE: 210158 Watson Section 95 Block 3 _ Water and Sewer Network Capacity

Thanks Michael,

We will utilise this in our assessment, likely a response will come early next week now.

Kind Regards,

Craig Allen
Senior Technical Officer
Developer Services, Urban Development Services

icon WATER

Icon Water
GPO Box 366 Canberra ACT 2601
T 0436 926 032
iconwater.com.au | Twitter | YouTube | LinkedIn | Facebook

From: Michael Wansink <michaelw@sellickconsultants.com.au>
Sent: Tuesday, 11 October 2022 11:14 AM
To: Allen, Craig <Craig.Allen@iconwater.com.au>
Cc: Hydraulic Asset Acceptance <HydraulicAssetAcceptance@iconwater.com.au>; Andrew Easey <Andrew@sellickconsultants.com.au>
Subject: FW: 210158 Watson Section 95 Block 3 _ Water and Sewer Network Capacity

Craig,
Further to the information provided last week, attached is ACTF&R assessment of the Fire Risk Type. Could you please advise as to you may be able to respond? I would like to complete our report.

Regards

Michael Wansink

Sellick Consultants Pty Ltd

P: **02 6201 0200**
Canberra: **24 Lonsdale Street, Suite 122 Mode 3, Braddon ACT 2612**
Sydney: **99 Mount St, Suite 1601, Level 16, North Sydney NSW 2060**
E: michaelw@sellickconsultants.com.au W: www.sellickconsultants.com.au

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From: Michael Wansink
Sent: Tuesday, October 4, 2022 3:15 PM
To: Allen, Craig <Craig.Allen@iconwater.com.au>
Cc: Andrew Easey <Andrew@sellickconsultants.com.au>; Bernie Cusack <Bernie@sellickconsultants.com.au>
Subject: RE: 210158 Watson Section 95 Block 3 _ Water and Sewer Network Capacity [Filed 04 Oct 2022 15:15]

Craig,
Thank you for your response. I have embedded the requested further information below.

Regards

Michael Wansink
Sellick Consultants Pty Ltd

P: **02 6201 0200**
Canberra: **24 Lonsdale Street, Suite 122 Mode 3, Braddon ACT 2612**
Sydney: **99 Mount St, Suite 1601, Level 16, North Sydney NSW 2060**
E: michaelw@sellickconsultants.com.au W: www.sellickconsultants.com.au

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From: Allen, Craig <Craig.Allen@iconwater.com.au>
Sent: Friday, September 30, 2022 4:12 PM

To: Michael Wansink <michaelw@sellickconsultants.com.au>
Cc: Andrew Easey <Andrew@sellickconsultants.com.au>; Bernie Cusack <Bernie@sellickconsultants.com.au>
Subject: RE: 210158 Watson Section 95 Block 3 _ Water and Sewer Network Capacity

Hi Michael,

Thank you for the advice, a few queries initially.

1. Will this project become an EDP? Yes. At present, we have only been engaged to proceed with the Variation to The Territory Plan.
2. Do you have any concept plans to show proposed connection points and indicative water/sewer/block layouts? Attached is a copy of the architects concept plan noting that this is very early days. Services concept plans are under development. For sewer, the block drains naturally to the existing main at the north-west corner (in Aspinall Street). For water supply, three connections are proposed, two connections to the main in Aspinall Street and a further connection to the main in Phippard Court (to the south). All water mains will be located within road reserves.
3. Can you provide the advice from ACT Fire and Rescue on the fire type for the development? The ACTFB have been contacted and a response is imminent. We are working on the advice from the Architect that the determining factor in the Fire Risk Type will be the bushfire risk.
4. Will the roads be owned by TCCS? Yes
5. Are these going to be separate blocks under separate crown leases? Yes
6. Noting this site is currently fed by a dead end main, how will two supplies be achieved? I am investigating the normally closed valve requirement here. As per above, connections will be to mains to the north and south of the site. I too was also initially concerned about the dead end main in Aspinall Street but the road connection to Phippard Court alleviates this.
7. Can you provide an indicative GFA for the apartment blocks? The GFA for the apartment blocks are on the concept plan, They are 3,528m2 (39 apartments) and 4,580m2 (42 apartments).

Kind Regards,

Craig Allen
Senior Technical Officer
Developer Services, Urban Development Services

Icon Water
GPO Box 366 Canberra ACT 2601
T 0436 926 032
iconwater.com.au | Twitter | YouTube | LinkedIn | Facebook

From: Michael Wansink <michaelw@sellickconsultants.com.au>
Sent: Tuesday, 20 September 2022 3:06 PM
To: Allen, Craig <Craig.Allen@iconwater.com.au>
Cc: Andrew Easey <Andrew@sellickconsultants.com.au>; Bernie Cusack <Bernie@sellickconsultants.com.au>
Subject: 210158 Watson Section 95 Block 3 _ Water and Sewer Network Capacity

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Craig,
Sellick Consultants is involved in the preparation of a Territory Plan Variation for this block in Watson. As such, we require confirmation that the water and sewerage networks have the capacity to service the proposed development post variation

Details are…

Block Area = 34,487 m2

Proposed Development

- 62 compact residential blocks +
- Two apartment blocks of 39 and 42 units

Note that due to the compact size of the single residential blocks, they fall within the range of medium density housing for the purposes of calculating sewerage flows and water supply demand.

Calculated sewerage PWWF = 6.09 l/sec

Water Supply Fire Risk Type = FRT2
(the development lies within a bushfire risk area)

Could you please confirm?

- That there is adequate capacity in the sewerage network to accept the calculated flows.
- That the water supply network has the capability to provide the required domestic and fire flows.

Regards

Michael Wansink
Sellick Consultants Pty Ltd

P: **02 6201 0200**
Canberra: **24 Lonsdale Street, Suite 122 Mode 3, Braddon ACT 2612**
Sydney: **99 Mount St, Suite 1601, Level 16, North Sydney NSW 2060**
E: michaelw@sellickconsultants.com.au W: www.sellickconsultants.com.au

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ACT Geotechnical Engineers Pty Ltd
ACN 063 673 530

5/9 Beaconsfield Street, Fyshwick, ACT,2609
PO Box 9225, Deakin, ACT, 2600
Ph: (02) 6285 1547
Fax: (02) 6285 1861

5 October 2022
Our ref: KA/C13462

Mary Alice Pty Ltd
Via email: bernie@sellickconsultants.com.au

Attention: Bernie Cusack

Dear Sir

PROPOSED RESIDENTIAL SUBDIVISION
BLOCK 3, SECTION 95, WATSON, ACT

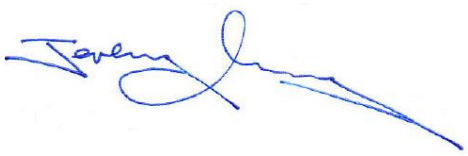
GEOTECHNICAL INVESTIGATION REPORT

We are pleased to present our geotechnical investigation report for the proposed residential subdivision located on Block 3, Section 95, in Watson, ACT.

The report outlines the methods and results of exploration, describes site subsurface conditions and provides recommendations for building footing design, excavation conditions, preparation of subgrades, stability of cut and fill batters, provides indicative design CBR values, and site drainage advice.

Should you require any further information regarding this report, please do not hesitate to contact our office.

Yours faithfully
ACT Geotechnical Engineers Pty Ltd



Jeremy Murray
Senior Geotechnical Engineer
Director

MARY ALICE PTY LTD

PROPOSED RESIDENTIAL SUBDIVISION
BLOCK 3, SECTION 95, WATSON, ACT

GEOTECHNICAL INVESTIGATION REPORT

OCTOBER 2022

MARY ALICE PTY LTD

PROPOSED RESIDENTIAL SUBDIVISION
BLOCK 3, SECTION 95, WATSON, ACT

GEOTECHNICAL INVESTIGATION REPORT

TABLE OF CONTENTS

1 INTRODUCTION 1

2 SITE DESCRIPTION & GEOLOGY 1

3 INVESTIGATION METHODS 2

4 INVESTIGATION RESULTS 2

4.1 Subsurface Conditions 2
4.2 Groundwater 3

5 DISCUSSION & RECOMMENDATIONS 3

5.1 Site Classification 3
5.2 Building Footings 3
5.3 Excavation Conditions & Use of Excavated Material 4
5.4 Stable Excavation Batters 4
5.5 Low Retaining Walls 5
5.6 Controlled Fill Construction 5
5.7 Design CBR Values 5
5.8 Earthquake Site Factor 6
5.9 Site Drainage 6

REFERENCES

FIGURE 1 - Site Locality
FIGURE 2 - Aerial Photograph and Borehole Locations

APPENDIX A - Test Pit Logs TP01 to TP10
APPENDIX B - Laboratory Test Results
APPENDIX C - Definitions of Geotechnical Engineering Terms

MARY ALICE PTY LTD

PROPOSED RESIDENTIAL SUBDIVISION
BLOCK 3, SECTION 95, WATSON, ACT

GEOTECHNICAL INVESTIGATION REPORT

1 INTRODUCTION

At the request of Mary Alice Pty Ltd, ACT Geotechnical Engineers Pty Ltd carried out a geotechnical investigation for a proposed residential subdivision at Block 3, Section 95, in Watson, ACT.

The project involves the subdivision of standard residential lots, plus new roads, and installation of services. The aim of the investigation was to:

(i) Identify subsurface conditions including the extent and nature of any fill materials, soil strata, bedrock type and depth, and groundwater presence.

(ii) Advise on excavation conditions and suitability of excavated material for use as structural fill.

(iii) Provide site classification to AS2870 "Residential Slabs & Footings".

(iv) Advise on suitable footings systems, founding depths, allowable bearing pressures and design parameters for ground slabs.

(v) Provide guidelines for construction of controlled fill platforms.

(vi) Advise on stable batter slopes and retaining wall design parameters.

(vii) Provide subgrade CBR value(s) for pavement design.

(viii) Drainage and other geotechnical advice.

2 SITE DESCRIPTION & GEOLOGY

The ~34,500m^2 site is located on Block 3, Section 95, in Watson, ACT, and is bounded by Aspinall Street to the north, Antill Street to the east, a carpark to the west, and residential blocks to the south. The site is presently undeveloped and covered in pasture grasses with some scattered trees. Figure 1 shows the site locality. Figure 2 is a recent aerial photo showing the existing site layout.

The 1:100,000 Canberra Geology map (Reference 1) documents the site to be underlain by Silurian age Canberra Formation bedrock, which includes mudstone, siltstone, minor sandstone, limestone, hornfels, dacitic ignimbrite, and volcaniclastic sediments.

3 INVESTIGATION METHODS

To establish the subsurface conditions, a JCB3CX backhoe with a 450mm bucket attachment was used to dig ten (10) test pits, designated TP01 to TP10, to a target depth of 2.5m. However, some test pits were terminated at bucket refusal in weak to medium strong bedrock at 1.0m/2.3m depth. The test pits were excavated on 6 September 2022. The subsurface profiles were logged in accordance with AS1726-2017. The locations of the test pits are shown on Figure 2, and the detailed logs are included in Appendix A.

Definitions of geotechnical engineering terms used in the report on the excavation logs, including a copy of the USCS chart, are provided in Appendix B.

4 INVESTIGATION RESULTS

4.1 Subsurface Conditions

The subsurface conditions of the proposed development were investigated by ten (10) test pits designated TP01 to TP10. The excavation logs in Appendix A can be referred to for more detail. Investigation boreholes found the subsurface profile to comprise:

Geological Profile	Typical Depth Interval	Description
TOPSOIL	0.0m to 0.1m/0.5m	Silty SAND, Silty Sandy CLAY; fine to medium grained sand, low to medium plasticity fines, dark brown, black, moist, with grass rootlets, loose.
ALLUVIAL AND RESIDUAL SOIL	0.1m/0.5m to 0.6m/>2.5m	Clayey SAND, Sandy CLAY; fine to coarse sand, low to medium plasticity clay, medium to high plasticity clay, orange-brown, orange-grey, grey, dry, dense, very stiff.
BEDROCK	0.6m/1.5m to 1.0m/>2.5m	Extremely Weathered (EW), Extremely to Highly Weathered (EW-HW), Moderately Weathered (MW) SILTSTONE; fine to medium grained, yellow-orange, yellow-grey, grey, dry to moist, extremely weak to medium strong.

Table 1 – Depth of Bedrock

Test Pit No.	Depth to Stiff/Medium Dense or better material (m)	Depth to EW/HW Bedrock (m)	Depth to Refusal (m)
TP01	0.5m	>2.5m	>2.5m
TP02	>2.5m	>2.5m	>2.5m
TP03	0.1m	0.8m	1.1m
TP04	0.3m	0.6m	1.0m
TP05	0.3m	0.9m	1.1m
TP06	0.3m	1.3m	2.3m
TP07	0.3m	1.0m	>2.5m
TP08	0.2m	1.1m	1.5m
TP09	0.4m	1.3m	>2.5m
TP10	0.3m	1.5m	>2.5m

4.2 Groundwater

Seepage was encountered in some of the test pits and the soils were mostly moist due to the recent rainfall. Permanent groundwater is not expected within at least 5m depth of existing ground surface levels. However, temporary, perched seepages could be encountered within the more pervious soils following rainfall.

5 DISCUSSION & RECOMMENDATIONS

5.1 Site Classification

The alluvial and residual soils at the site within the depth of suction change are moderately reactive in terms of potential shrink-swell movements that may occur due to soil moisture changes. The characteristic ground surface movement "ys", as defined by AS2870 for the range of normal soil moisture conditions is estimated to be between 20mm and 40mm for the encountered subsurface profile described in Section 2. The site is therefore Class "M" (moderately reactive). Site classifications for individual blocks must be conducted following completion of the subdivision earthworks.

Normal moisture conditions are those caused by seasonal and regular climatic effects.

Should earthworks (cut or fill) be undertaken on the site, or other activities which may cause abnormal moisture conditions to impact the soils within or near the building envelope beyond those addressed herein, the site classification shall be reassessed.

5.2 Building Footings

AS2870 provides "deemed-to-comply" footing/slab designs, which for a class "M" site includes stiffened rafts, stiffened footing slabs, waffle rafts, and strip and/or pad footings with above ground floors. Footings and slabs should be in accordance with the principles of AS2870 (Reference 2).

For structures founded at existing grade, footings, including thickened sections of slabs forming footings should be founded below any topsoil or uncontrolled fill soils. Shallow footings could be founded in newly placed or existing controlled fill following removal of any topsoil material (see Section 5.7). Alternatively, footings could be founded on piers extending to weathered bedrock.

If designing footings based on engineering principles, recommended allowable end-bearing pressures for various footing systems and likely foundation materials are provided in Table 2.

TABLE 2
Recommended Allowable End-Bearing Pressures for Footings

Foundation Material Type	Depth Below Existing Surface Level	Allowable End-Bearing Pressure			Allowable Shaft Adhesion on Bored Piers	
		Strips	Pads	Bored Piers	Downward Loading	Uplift
Stiff to Very Stiff & Dense to Very Dense Alluvial & Residual Soils	Below 0.1m/>2.5m	100kPa	150kPa	200kPa	20kPa	10kPa
EW/HW and HW Bedrock	Below 0.6m/>2.5m	300kPa	400kPa	600kPa	50kPa	25kPa

Foundation Material Type	Depth Below Existing Surface Level	Allowable End-Bearing Pressure			Allowable Shaft Adhesion on Bored Piers	
		Strips	Pads	Bored Piers	Downward Loading	Uplift
HW/MW and Less Weathered Bedrock	Below 1.0m/>2.5m	1200kPa	1500kPa	2000kPa	100kPa	50kPa

All footings should be inspected and approved by an experienced geotechnical engineer to confirm the foundation material and design values, and to ensure the excavations are clean and stable.

Ground slabs can be constructed on the natural soils or newly placed controlled fill, following the removal of any topsoil and uncontrolled fill material. Following excavation to required level, slab areas on soil should be proof-rolled by a pad foot roller to check for any weak, wet or deforming soils that may require replacement. Suitable replacement fill should be compacted in not thicker than 150mm layers to not less than 95%ModMDD.

5.3 Excavation Conditions & Use of Excavated Material

The soils and weak bedrock are readily diggable by backhoe and medium sized excavator to ~1.0m/>2.5m depth. However, excavation of the medium strong siltstone bedrock below 1.0m/>2.5m depth could require heavy excavator or dozer (D8 or large) ripping and rock hammering. The depth to refusal noted in Table 1 indicates the depth that ripping or rock hammering is expected to be required at each borehole location.

The low/medium plasticity alluvial/residual soils can be used in controlled fill construction of building platforms, although rock particles should be broken down to <75mm size. Any medium to high plasticity soil, and silty topsoil/alluvial material are not typically used in controlled fill construction but the topsoil could be used in non-structural applications such as landscaping, while high plasticity clays could be used as a clay capping/lining material.

If imported fill is required, a suitable select fill material would include a low or medium plasticity soil such as clayey sand or gravelly clayey sand, containing between 25% and 50% fines less than 0.075mm size (silt and clay), and no particles greater than 75mm size.

5.4 Stable Excavation Batters

Temporary site excavations to 1.5m depth can be formed near vertical, although loose fill should be cut back at 1(H):1(V). If required and space allows, deeper temporary cuts can be formed at 1(H):1(V) or benched at 1.5m intervals in soils, and 0.5(H):1(V) in weak rock. A geotechnical engineer should inspect all cut batters during construction to confirm stability. Exposed temporary batters should be protected from the weather by black plastic pinned to the face with link-wire mesh, or similar.

Permanent cut & fill batter slopes should be formed at no steeper than 2(H):1(V) in soil and EW bedrock and be protected against erosion by shotcreting, stone pitching or other suitable methods. Alternatively permanent excavations can be supported by structural retaining walls.

5.5 Low Retaining Walls

Retaining walls constructed in open excavation, with the gap between the excavation face and the wall backfilled later, can be designed for an earth pressure distribution given by:

$$\sigma_h = (K\gamma' h) + Kq$$

where,

σ_h is the horizontal earth pressure acting on the back of the wall, in kPa

K is the dimensionless coefficient of earth pressure; this can be assumed to be 0.4 when the top of the wall is unrestrained horizontally, and 0.6 when the top of the wall is restrained (i.e. by building slabs etc.)

γ' is the effective unit weight of the backfill, and can be assumed to be 20kN/m^3 for a lightly compacted soil backfill

h is the height of the backfill, in metres

q is any uniform distributed vertical surcharge acting on the top of the backfill, in kPa

Apart from structural restraints such as floor slabs, resistance to overturning and sliding of retaining walls is provided by frictional and adhesive resistance on the base, and by passive resistance at the toe of the wall. For a natural soil or controlled fill foundation, an ultimate base friction factor (tanδ) of 0.4, base adhesion (c) of 50kPa, and allowable passive earth pressure coefficient Kp=2.5 can be used for calculation of sliding resistance. For calculating sliding resistance of concrete on the weathered bedrock, an ultimate base friction factor (tanδ) of 0.6 can be used, with an ultimate base adhesion (c) value of 100kPa.

Free-draining granular backfill or synthetic fabric drains should be installed behind all walls. These should connect to weep holes and/or a collector drain, and ultimately to the stormwater system. Granular backfill should be wrapped in a suitable filter fabric to minimise infiltration of silt/clay fines

5.6 Controlled Fill Construction

For construction of any new fill foundation platforms and road subgrades, it is recommended that:

- Areas be fully stripped of all topsoil and uncontrolled fill material. A general stripping depth of up to 0.1m/0.5m is recommended (see Table 1). Stripped foundations should be proof-rolled by a vibratory pad-foot roller of not less than 9 tonne static mass to check for any weak or wet areas that would require replacement. No fill should be placed until a geotechnical engineer has confirmed the suitability of the foundation.

- Controlled fill comprising suitable site excavated or imported materials of not greater than 75mm maximum particle size, be compacted in not greater than 150mm layers to not less than 95%ModMDD at about OMC.

- Fill placement and control testing be overviewed and certified by a geotechnical engineer at Level 1 or 2 involvement of AS3798 – 2007 "Guidelines on Earthworks for Commercial & Residential Developments" (Reference 3).

5.7 Design CBR Values

On-grade carpark, and access ramp subgrades should be stripped of all topsoil and uncontrolled fill, and soil subgrades then proof-rolled by a pad-foot roller to check for any wet or otherwise weak spots which may require additional removal. Suitable replacement fill can be compacted in not thicker than 150mm layers, to not less than 95%ModMDD.

On-grade pavements are expected to comprise natural soils, and pavements can be designed for a subgrade CBR value of 5%, when compacted to 95%ModMDD. If high plasticity clays are exposed on the subgrade level, a CBR value of 3% should be used. Cut, in-situ bedrock subgrades would have a CBR value of 12%. A geotechnical engineer should inspect prepared subgrades to confirm design values, and preferably view a proof-roll to identify any soft spots or other weaknesses.

5.8 Earthquake Site Factor

Table 2.3 of AS1170.4 "Minimum Design Loads on Structures - Part 4: Earthquake Loads" (Reference 4) lists the earthquake acceleration coefficients for major centres to be considered in structural design. The Canberra area has an acceleration coefficient of 0.08.

Section 4.2 of AS1170.4 "Minimum Design Loads on Structures – Part 4: Earthquake Loads" lists the site sub-soil classes to be considered in structural design. The site is classified as a "Class C_e – Shallow Soil Site".

5.9 Site Drainage

Groundwater was not encountered in the test pits during the investigation. The permanent groundwater table is expected to be well below expected excavations, although temporary perched seepages will be present following rain, but should be readily controllable through the use of pumps during construction.

Suitable surface drainage should be provided to ensure rainfall run-off or other surface water cannot pond against buildings or pavements. Drainage should be provided behind all retaining walls, and subsoil drains should be installed along the upslope sides of access roads and carparks.

ACT Geotechnical Engineers Pty Ltd

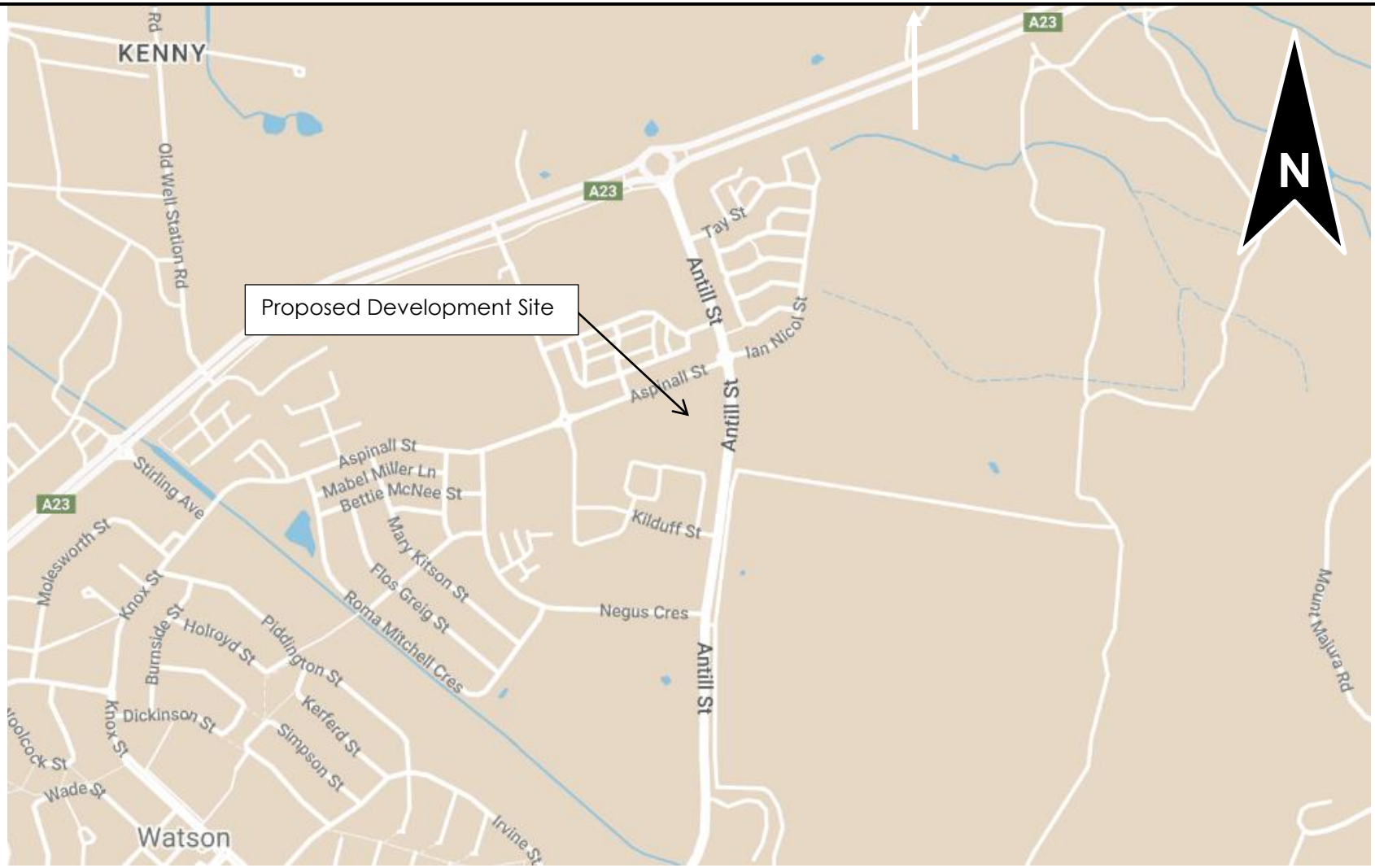
REFERENCES

1 Abell, R.S., 1992, Canberra (1:100 000 scale geology map), Bureau of Mineral Resources, Commonwealth of Australia.

2 Standards Australia, "AS2870 – Residential Slabs & Footings", 2011.

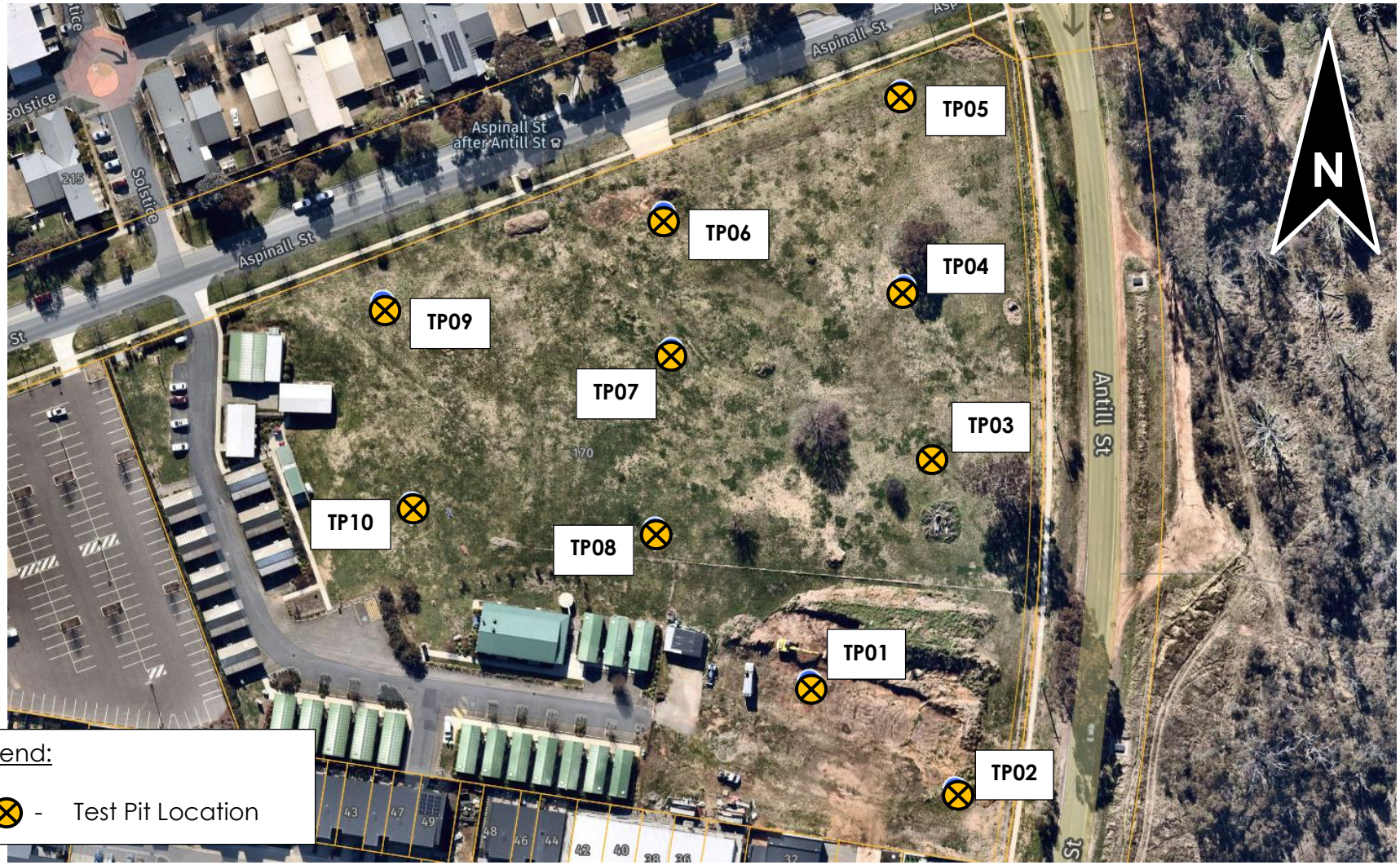
3 AS3798, "Guidelines on earthworks for commercial and residential developments".

4 Standards Australia, "AS1170.4 – 2007 – Minimum Design Loads on Structures – Part 4 Earthquake Loads".



MARY ALICE PTY LTD
PROPOSED RESIDENTIAL SUBDIVISION – BLOCK 3, SECTION 95, WATSON
SITE LOCALITY

ACT Geotechnical Engineers Pty Ltd	**C13101**	**FIGURE 1**



MARY ALICE PTY LTD
PROPOSED RESIDENTIAL SUBDIVISION – BLOCK 3, SECTION 95, WATSON
SITE PLAN & TEST PIT LOCATIONS

ACT Geotechnical Engineers Pty Ltd	C13101	FIGURE 2

APPENDIX A
Borehole Logs TP01 to TP10

Excavation Log

Excavation No.	**TP01**
Sheet	1 of 1
Job No.	C13462
CLIENT:	Mary Alice Pty Ltd
PROJECT	Proposed Subdivision Block 3, Section 95, Watson
Location :	SEE REPORT
Surface Level :	Not Known

Equipment Type : JCB3CX BACKHOE
Excavation Dimensions : 600 x 2000

Samples	Casing	Depth Metres	Graphic Log	U.S.C.S.	Material Description, Structure Soil Type: Plasticity or Particle Characteristics, Colour, Secondary and Minor Components, Moisture, Structure	Consistency or Relative Density	Field Test Results	Geological Profile
				SC-SM	Sandy Silty CLAY; fine to coarse sand, low to medium plasticity clay, black, moist.	LOOSE TO MEDIUM DENSE		TOPSOIL
		0.5		SC / CL	Sandy CLAY / Clayey SAND; fine to medium grained sand, low to medium plasticity clay, black mottled yellow, moist. becomes wet at 1.0m	MEDIUM DENSE / STIFF		ALLUVIAL SOIL
		1.0						
		1.5		SC / CL	Sandy CLAY / Clayey SAND; fine to medium grained sand, low to medium plasticity clay, red-brown, some siltstone gravel to 40mm, moist.	MEDIUM DENSE / STIFF		
		1.8		CL	Sandy CLAY; low plasticity, fine to coarse sand, light brown, wet.	FIRM TO STIFF		
		2.0						
		2.5			EXCAVATION TERMINATED AT 2.5m refusal			
		3.0						

Logged By :	DE	Date : 6/9/22	Checked By : JM	Date : 6/9/22

BOREHOLE/EXCAVATION LOG C13462 - DILSHANI.GPJ ACT GEO.GDT 29/9/22

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Excavation Log

Excavation No.	**TP02**
Sheet	1 of 1
Job No.	C13462

CLIENT: Mary Alice Pty Ltd

PROJECT: Proposed Subdivision
Block 3, Section 95, Watson

Location : SEE REPORT

Surface Level : Not Known

Equipment Type : JCB3CX BACKHOE
Excavation Dimensions : 600 x 2000

Samples	Casing	Depth (Metres)	Graphic Log	U.S.C.S.	Material Description, Structure Soil Type: Plasticity or Particle Characteristics, Colour, Secondary and Minor Components, Moisture, Structure	Consistency or Relative Density	Field Test Results	Geological Profile
		0.2		SM	Silty SAND; fine to medium grained sand, low plasticity silt, dark brown, moist.	LOOSE		TOPSOIL
		0.6		CL	Sandy CLAY; low to medium plasticity clay, fine to coarse sand, black, with shale gravel, moist to wet.	FIRM		ALLUVIAL SOIL
		1.0		CL	Sandy CLAY; low plasticity clay, fine to coarse sand, brown, moist.	FIRM TO STIFF		
▶		1.5		SC-CL	Sandy CLAY; low plasticity, fine to coarse sand, light brown, wet.	FIRM TO STIFF		
		2.0						
		2.5			EXCAVATION TERMINATED AT 2.5m			
		3.0						

Logged By : DE Date : 6/9/22 | Checked By : JM Date : 6/9/22

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Excavation Log

Excavation No.	**TP03**
Sheet	1 of 1
Job No.	C13462

CLIENT: Mary Alice Pty Ltd

PROJECT: Proposed Subdivision
Block 3, Section 95, Watson

Location : SEE REPORT

Surface Level : Not Known

Equipment Type : JCB3CX BACKHOE
Excavation Dimensions : 600 x 2000

Samples	Casing	Depth (Metres)	Graphic Log	U.S.C.S.	Material Description, Structure Soil Type: Plasticity or Particle Characteristics, Colour, Secondary and Minor Components, Moisture, Structure	Consistency or Relative Density	Field Test Results	Geological Profile
		0.1		SM	Silty SAND; fine to medium grained sand, low plasticity silt, dark brown, with grass rootlets, moist.	LOOSE		TOPSOIL
				CL	Sandy CLAY; low plasticity clay, fine to medium grained sand, yellow-orange, with siltstone gravel.	STIFF		RESIDUAL SOIL
		0.8			Highly Weathered (HW) SILTSTONE; yellow-orange, fine to medium grained, dry.	WEAK TO MEDIUM STRONG		BEDROCK
		1.0						
		1.1			EXCAVATION TERMINATED AT 1.1m			
		2.0						
		3.0						

Logged By : DE Date : 6/9/22 | Checked By : JM Date : 6/9/22

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Excavation Log

Excavation No.	**TP04**
Sheet	1 of 1
Job No.	C13462
CLIENT:	Mary Alice Pty Ltd
PROJECT	Proposed Subdivision Block 3, Section 95, Watson
Location :	SEE REPORT
Surface Level :	Not Known

Equipment Type : JCB3CX BACKHOE
Excavation Dimensions : 600 x 2000

Samples	Casing	Depth (Metres)	Graphic Log	U.S.C.S.	Material Description, Structure Soil Type: Plasticity or Particle Characteristics, Colour, Secondary and Minor Components, Moisture, Structure	Consistency or Relative Density	Field Test Results	Geological Profile
		0.3		SM	Silty SAND; fine to medium grained sand, low plasticity silt, dark brown, with grass rootlets, moist.	LOOSE		TOPSOIL
		0.6		CL	Sandy CLAY; low plasticity clay, fine to medium grained sand, yellow-orange, with siltstone gravel.	STIFF		RESIDUAL SOIL
		0.7			Extremely to Highly Weathered (EW-HW) SILTSTONE; fine to medium grained, yellow & grey, dry to moist.	EXTREMELY WEAK		BEDROCK
		1.0			Moderately Weathered (MW) SILTSTONE; yellow and grey, fine to medium grained, dry.	WEAK TO MEDIUM STRONG		
					EXCAVATION TERMINATED AT 1m			
		2.0						
		3.0						

Logged By : DE Date : 6/9/22 | Checked By : JM Date : 6/9/22

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Excavation Log

Excavation No.	**TP05**
Sheet	1 of 1
Job No.	C13462

CLIENT: Mary Alice Pty Ltd

PROJECT: Proposed Subdivision
Block 3, Section 95, Watson

Location : SEE REPORT

Surface Level : Not Known

Equipment Type : JCB3CX BACKHOE
Excavation Dimensions : 600 x 2000

Samples	Casing	Depth (Metres)	Graphic Log	U.S.C.S.	Material Description, Structure Soil Type: Plasticity or Particle Characteristics, Colour, Secondary and Minor Components, Moisture, Structure	Consistency or Relative Density	Field Test Results	Geological Profile
				SM	Silty SAND; fine to medium grained sand, low plasticity silt, dark brown, with grass rootlets, moist.	LOOSE		TOPSOIL
		0.3		CH	Sandy CLAY; medium to high plasticity clay, fine to coarse sand, with angular siltstone gravel to yellow-orange, orange-brown, dry.	VERY STIFF		RESIDUAL
		0.9			Highly Weathered (HW) SILTSTONE; fine to medium grained, light brown/yellow-brown, dry.	WEAK		BEDROCK
		1.0 1.1			EXCAVATION TERMINATED AT 1.1m			
		2.0						
		3.0						

Logged By : DE Date : 6/9/22 | Checked By : JM Date : 6/9/22

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Excavation Log

Excavation No.	**TP06**
Sheet	1 of 1
Job No.	C13462
Location	SEE REPORT
Surface Level	Not Known

CLIENT: Mary Alice Pty Ltd

PROJECT: Proposed Subdivision
Block 3, Section 95, Watson

Equipment Type : JCB3CX BACKHOE
Excavation Dimensions : 600 x 2000

Samples	Casing	Depth (Metres)	Graphic Log	U.S.C.S.	Material Description, Structure Soil Type: Plasticity or Particle Characteristics, Colour, Secondary and Minor Components, Moisture, Structure	Consistency or Relative Density	Field Test Results	Geological Profile
		0.3		SM	Silty SAND; fine to medium grained sand, low plasticity silt, dark brown, moist, with grass rootlets.	LOOSE		TOPSOIL
		1.0		SC / CL	Sandy CLAY / Clayey SAND; fine to coarse sand, low plasticity clay, red brown, red mottled yellow, with shale gravel to 20mm, moist.	STIFF / DENSE		RESIDUAL SOIL
		1.3			Extremely Weathered (EW) SILTSTONE; excavates as Clayey SAND; fine to medium grained sand, low plasticity clay, yellow and grey, with HW Shale gravel to 200mm, dry.	EXTREMELY WEAK		BEDROCK
		2.0						
		2.3			EXCAVATION TERMINATED AT 2.3m			
		3.0						

Logged By : DE Date : 6/9/22 | Checked By : JM Date : 6/9/22

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Excavation Log

Excavation No.	**TP07**
Sheet	1 of 1
Job No.	C13462
CLIENT:	Mary Alice Pty Ltd
PROJECT	Proposed Subdivision Block 3, Section 95, Watson
Location :	SEE REPORT
Surface Level :	Not Known

Equipment Type : JCB3CX BACKHOE
Excavation Dimensions : 600 x 2000

Samples	Casing	Depth (Metres)	Graphic Log	U.S.C.S.	Material Description, Structure Soil Type: Plasticity or Particle Characteristics, Colour, Secondary and Minor Components, Moisture, Structure	Consistency or Relative Density	Field Test Results	Geological Profile
		0.3		SM	Silty SAND; fine to medium grained sand, low plasticity silt, dark brown, with grass rootlets, moist.	LOOSE		TOPSOIL
		1.0		CL	Sandy CLAY; low plasticity clay, fine to coarse sand, red-orange, moist, trace HW Siltstone gravel to 30mm.	VERY STIFF		RESIDUAL SOIL
		2.0			Extremely Weathered (EW) SILTSTONE; excavates as Sandy CLAY; low to medium plasticity clay, yellow-grey, dry to moist.	EXTREMELY WEAK		BEDROCK
		2.5			EXCAVATION TERMINATED AT 2.5m			
		3.0						

Logged By : DE Date : 6/9/22 | Checked By : JM Date : 6/9/22

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Excavation Log

Excavation No.	**TP08**
Sheet	1 of 1
Job No.	C13462
CLIENT:	Mary Alice Pty Ltd
PROJECT	Proposed Subdivision Block 3, Section 95, Watson
Location :	SEE REPORT
Surface Level :	Not Known

Equipment Type : JCB3CX BACKHOE
Excavation Dimensions : 600 x 2000

Samples	Casing	Depth (Metres)	Graphic Log	U.S.C.S.	Material Description, Structure Soil Type: Plasticity or Particle Characteristics, Colour, Secondary and Minor Components, Moisture, Structure	Consistency or Relative Density	Field Test Results	Geological Profile
		0.2		SM	Silty SAND; fine to medium grained sand, low plasticity silt, dark brown, moist.	LOOSE		TOPSOIL
		0.5		CL	Silty CLAY; low to medium plasticity fines, light brown, moist, trace gravel to 40mm.	STIFF		RESIDUAL SOIL
		1.0		CL	Sandy CLAY; low to medium plasticity clay, red-orange, brown mottled grey, dry.	STIFF		
		1.1			Highly to Moderately Weathered (HW-HW) SILTSTONE; grey/light brown, fine to medium grained, dry.	WEAK TO MEDIUM STRONG		BEDROCK
		1.5			EXCAVATION TERMINATED AT 1.5m			
		2.0						
		3.0						

Logged By : DE Date : 6/9/22 | Checked By : JM Date : 6/9/22

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Excavation Log

Excavation No.	**TP09**
Sheet	1 of 1
Job No.	C13462

CLIENT: Mary Alice Pty Ltd

PROJECT: Proposed Subdivision
Block 3, Section 95, Watson

Location : SEE REPORT

Surface Level : Not Known

Equipment Type : JCB3CX BACKHOE
Excavation Dimensions : 600 x 2000

Samples	Casing	Depth (Metres)	Graphic Log	U.S.C.S.	Material Description, Structure Soil Type: Plasticity or Particle Characteristics, Colour, Secondary and Minor Components, Moisture, Structure	Consistency or Relative Density	Field Test Results	Geological Profile
		0.2		SM	Silty SAND; fine to medium grained sand, low plasticity silt, dark brown, moist.	LOOSE		TOPSOIL
		0.4		CL	Sandy CLAY; low to medium plasticity clay, fine to coarse sand, some silt, trace subrounded gravel to 20mm, light brown, moist.	FIRM		ALLUVIAL SOIL
		1.0		CH	Sandy CLAY; medium to high plasticity clay, fine to coarse sand, orange mottled grey, moist.	VERY STIFF		RESIDUAL SOIL
		1.3			Extremely to Highly Weathered (EW-HW) SILTSTONE; fin to medium grained, yellow-brown, dry.	EXTREMELY WEAK TO WEAK		BEDROCK
		2.0						
		2.5			EXCAVATION TERMINATED AT 2.5m			
		3.0						

Logged By : DE Date : 6/9/22 | Checked By : JM Date : 6/9/22

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Excavation Log

Excavation No.	**TP10**
Sheet	1 of 1
Job No.	C13462

CLIENT: Mary Alice Pty Ltd

PROJECT: Proposed Subdivision
Block 3, Section 95, Watson

Location : SEE REPORT

Surface Level : Not Known

Equipment Type : JCB3CX BACKHOE
Excavation Dimensions : 600 x 2000

Samples		Casing	Depth (Metres)	Graphic Log	U.S.C.S.	Material Description, Structure Soil Type: Plasticity or Particle Characteristics, Colour, Secondary and Minor Components, Moisture, Structure	Consistency or Relative Density	Field Test Results	Geological Profile
			0.3		SM	Silty SAND; fine to medium grained sand, low plasticity silt, dark brown, moist, with grass rootlets.	LOOSE		TOPSOIL
			1.0		CL	Sandy CLAY; low to medium plasticity clay, fine to coarse sand, yellow-grey mottled, moist, trace ferruginous nodules.	STIFF		ALLUVIAL SOIL
	▶		1.5			Extremely Weathered (EW) SILTSTONE; red-brown / brown, excavates as Clayey Gravelly SAND; fine to coarse sand, fine to medium grained gravel, low plasticity clay, wet.	EXTREMELY WEAK		BEDROCK
			2.0						
			2.5			EXCAVATION TERMINATED AT 2.5m			
			3.0						

Logged By : DE Date : 6/9/22 | Checked By : JM Date : 6/9/22

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APPENDIX B
Laboratory Test Results

Excavation Log

Excavation No.	**TP01**
Sheet	1 of 1
Job No.	C13462
CLIENT:	Mary Alice Pty Ltd
PROJECT	Proposed Subdivision Block 3, Section 95, Watson
Location :	SEE REPORT
Surface Level :	Not Known

Equipment Type : JCB3CX BACKHOE
Excavation Dimensions : 600 x 2000

Samples	Casing	Depth Metres	Graphic Log	U.S.C.S.	Material Description, Structure Soil Type: Plasticity or Particle Characteristics, Colour, Secondary and Minor Components, Moisture, Structure	Consistency or Relative Density	Field Test Results	Geological Profile
				SC-SM	Sandy Silty CLAY; fine to coarse sand, low to medium plasticity clay, black, moist.	LOOSE TO MEDIUM DENSE		TOPSOIL
		0.5		SC / CL	Sandy CLAY / Clayey SAND; fine to medium grained sand, low to medium plasticity clay, black mottled yellow, moist. becomes wet at 1.0m	MEDIUM DENSE / STIFF		ALLUVIAL SOIL
		1.0						
		1.5		SC / CL	Sandy CLAY / Clayey SAND; fine to medium grained sand, low to medium plasticity clay, red-brown, some siltstone gravel to 40mm, moist.	MEDIUM DENSE / STIFF		
		1.8		CL	Sandy CLAY; low plasticity, fine to coarse sand, light brown, wet.	FIRM TO STIFF		
		2.0						
		2.5			EXCAVATION TERMINATED AT 2.5m refusal			
		3.0						

Logged By :	DE	Date : 6/9/22	Checked By : JM	Date : 6/9/22

BOREHOLE/EXCAVATION LOG C13462 - DILSHANI.GPJ ACT GEO.GDT 29/9/22

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Excavation Log

Excavation No.	**TP02**
Sheet	1 of 1
Job No.	C13462

CLIENT: Mary Alice Pty Ltd

PROJECT: Proposed Subdivision
Block 3, Section 95, Watson

Location : SEE REPORT

Surface Level : Not Known

Equipment Type : JCB3CX BACKHOE
Excavation Dimensions : 600 x 2000

Samples	Casing	Depth (Metres)	Graphic Log	U.S.C.S.	Material Description, Structure Soil Type: Plasticity or Particle Characteristics, Colour, Secondary and Minor Components, Moisture, Structure	Consistency or Relative Density	Field Test Results	Geological Profile
		0.2		SM	Silty SAND; fine to medium grained sand, low plasticity silt, dark brown, moist.	LOOSE		TOPSOIL
		0.6		CL	Sandy CLAY; low to medium plasticity clay, fine to coarse sand, black, with shale gravel, moist to wet.	FIRM		ALLUVIAL SOIL
		1.0		CL	Sandy CLAY; low plasticity clay, fine to coarse sand, brown, moist.	FIRM TO STIFF		
▶		1.5		SC-CL	Sandy CLAY; low plasticity, fine to coarse sand, light brown, wet.	FIRM TO STIFF		
		2.0						
		2.5			EXCAVATION TERMINATED AT 2.5m			
		3.0						

Logged By : DE Date : 6/9/22 | Checked By : JM Date : 6/9/22

BOREHOLE/EXCAVATION LOG C13462 - DILSHANI.GPJ ACT GEO.GDT 29/9/22

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Excavation Log

Excavation No.	**TP03**
Sheet	1 of 1
Job No.	C13462

CLIENT: Mary Alice Pty Ltd

PROJECT: Proposed Subdivision
Block 3, Section 95, Watson

Location : SEE REPORT

Surface Level : Not Known

Equipment Type : JCB3CX BACKHOE
Excavation Dimensions : 600 x 2000

Samples	Casing	Depth (Metres)	Graphic Log	U.S.C.S.	Material Description, Structure Soil Type: Plasticity or Particle Characteristics, Colour, Secondary and Minor Components, Moisture, Structure	Consistency or Relative Density	Field Test Results	Geological Profile
		0.1		SM	Silty SAND; fine to medium grained sand, low plasticity silt, dark brown, with grass rootlets, moist.	LOOSE		TOPSOIL
				CL	Sandy CLAY; low plasticity clay, fine to medium grained sand, yellow-orange, with siltstone gravel.	STIFF		RESIDUAL SOIL
		0.8			Highly Weathered (HW) SILTSTONE; yellow-orange, fine to medium grained, dry.	WEAK TO MEDIUM STRONG		BEDROCK
		1.0						
		1.1			EXCAVATION TERMINATED AT 1.1m			
		2.0						
		3.0						

Logged By : DE Date : 6/9/22 | Checked By : JM Date : 6/9/22

BOREHOLE/EXCAVATION LOG C13462 - DILSHANI.GPJ ACT GEO.GDT 29/9/22

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Excavation Log

Excavation No.	**TP04**
Sheet	1 of 1
Job No.	C13462
CLIENT:	Mary Alice Pty Ltd
PROJECT	Proposed Subdivision Block 3, Section 95, Watson
Location :	SEE REPORT
Surface Level :	Not Known

Equipment Type : JCB3CX BACKHOE
Excavation Dimensions : 600 x 2000

Samples	Casing	Depth (Metres)	Graphic Log	U.S.C.S.	Material Description, Structure Soil Type: Plasticity or Particle Characteristics, Colour, Secondary and Minor Components, Moisture, Structure	Consistency or Relative Density	Field Test Results	Geological Profile
		0.3		SM	Silty SAND; fine to medium grained sand, low plasticity silt, dark brown, with grass rootlets, moist.	LOOSE		TOPSOIL
		0.6		CL	Sandy CLAY; low plasticity clay, fine to medium grained sand, yellow-orange, with siltstone gravel.	STIFF		RESIDUAL SOIL
		0.7			Extremely to Highly Weathered (EW-HW) SILTSTONE; fine to medium grained, yellow & grey, dry to moist.	EXTREMELY WEAK		BEDROCK
		1.0			Moderately Weathered (MW) SILTSTONE; yellow and grey, fine to medium grained, dry.	WEAK TO MEDIUM STRONG		
					EXCAVATION TERMINATED AT 1m			
		2.0						
		3.0						

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Excavation Log

Excavation No.	**TP05**
Sheet	1 of 1
Job No.	C13462

CLIENT: Mary Alice Pty Ltd

PROJECT: Proposed Subdivision
Block 3, Section 95, Watson

Location : SEE REPORT

Surface Level : Not Known

Equipment Type : JCB3CX BACKHOE
Excavation Dimensions : 600 x 2000

Samples	Casing	Depth (Metres)	Graphic Log	U.S.C.S.	Material Description, Structure Soil Type: Plasticity or Particle Characteristics, Colour, Secondary and Minor Components, Moisture, Structure	Consistency or Relative Density	Field Test Results	Geological Profile
				SM	Silty SAND; fine to medium grained sand, low plasticity silt, dark brown, with grass rootlets, moist.	LOOSE		TOPSOIL
		0.3		CH	Sandy CLAY; medium to high plasticity clay, fine to coarse sand, with angular siltstone gravel to yellow-orange, orange-brown, dry.	VERY STIFF		RESIDUAL
		0.9			Highly Weathered (HW) SILTSTONE; fine to medium grained, light brown/yellow-brown, dry.	WEAK		BEDROCK
		1.0 1.1			EXCAVATION TERMINATED AT 1.1m			
		2.0						
		3.0						

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Excavation Log

Excavation No.	**TP06**
Sheet	1 of 1
Job No.	C13462
Location	SEE REPORT
Surface Level	Not Known

CLIENT: Mary Alice Pty Ltd

PROJECT: Proposed Subdivision
Block 3, Section 95, Watson

Equipment Type : JCB3CX BACKHOE
Excavation Dimensions : 600 x 2000

Samples	Casing	Depth (Metres)	Graphic Log	U.S.C.S.	Material Description, Structure Soil Type: Plasticity or Particle Characteristics, Colour, Secondary and Minor Components, Moisture, Structure	Consistency or Relative Density	Field Test Results	Geological Profile
		0.3		SM	Silty SAND; fine to medium grained sand, low plasticity silt, dark brown, moist, with grass rootlets.	LOOSE		TOPSOIL
		1.0		SC / CL	Sandy CLAY / Clayey SAND; fine to coarse sand, low plasticity clay, red brown, red mottled yellow, with shale gravel to 20mm, moist.	STIFF / DENSE		RESIDUAL SOIL
		1.3			Extremely Weathered (EW) SILTSTONE; excavates as Clayey SAND; fine to medium grained sand, low plasticity clay, yellow and grey, with HW Shale gravel to 200mm, dry.	EXTREMELY WEAK		BEDROCK
		2.0						
		2.3			EXCAVATION TERMINATED AT 2.3m			
		3.0						

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Excavation Log

Excavation No.	**TP07**
Sheet	1 of 1
Job No.	C13462
CLIENT:	Mary Alice Pty Ltd
PROJECT	Proposed Subdivision Block 3, Section 95, Watson
Location :	SEE REPORT
Surface Level :	Not Known

Equipment Type : JCB3CX BACKHOE
Excavation Dimensions : 600 x 2000

Samples	Casing	Depth (Metres)	Graphic Log	U.S.C.S.	Material Description, Structure Soil Type: Plasticity or Particle Characteristics, Colour, Secondary and Minor Components, Moisture, Structure	Consistency or Relative Density	Field Test Results	Geological Profile
		0.3		SM	Silty SAND; fine to medium grained sand, low plasticity silt, dark brown, with grass rootlets, moist.	LOOSE		TOPSOIL
		1.0		CL	Sandy CLAY; low plasticity clay, fine to coarse sand, red-orange, moist, trace HW Siltstone gravel to 30mm.	VERY STIFF		RESIDUAL SOIL
		2.0			Extremely Weathered (EW) SILTSTONE; excavates as Sandy CLAY; low to medium plasticity clay, yellow-grey, dry to moist.	EXTREMELY WEAK		BEDROCK
		2.5			EXCAVATION TERMINATED AT 2.5m			
		3.0						

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Excavation Log

Excavation No.	**TP08**
Sheet	1 of 1
Job No.	C13462
CLIENT:	Mary Alice Pty Ltd
PROJECT	Proposed Subdivision Block 3, Section 95, Watson
Location :	SEE REPORT
Surface Level :	Not Known

Equipment Type : JCB3CX BACKHOE
Excavation Dimensions : 600 x 2000

Samples	Casing	Depth (Metres)	Graphic Log	U.S.C.S.	Material Description, Structure Soil Type: Plasticity or Particle Characteristics, Colour, Secondary and Minor Components, Moisture, Structure	Consistency or Relative Density	Field Test Results	Geological Profile
		0.2		SM	Silty SAND; fine to medium grained sand, low plasticity silt, dark brown, moist.	LOOSE		TOPSOIL
		0.5		CL	Silty CLAY; low to medium plasticity fines, light brown, moist, trace gravel to 40mm.	STIFF		RESIDUAL SOIL
		1.0		CL	Sandy CLAY; low to medium plasticity clay, red-orange, brown mottled grey, dry.	STIFF		
		1.1			Highly to Moderately Weathered (HW-HW) SILTSTONE; grey/light brown, fine to medium grained, dry.	WEAK TO MEDIUM STRONG		BEDROCK
		1.5			EXCAVATION TERMINATED AT 1.5m			
		2.0						
		3.0						

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Excavation Log

Excavation No.	**TP09**
Sheet	1 of 1
Job No.	C13462

CLIENT: Mary Alice Pty Ltd

PROJECT: Proposed Subdivision
Block 3, Section 95, Watson

Location : SEE REPORT

Surface Level : Not Known

Equipment Type : JCB3CX BACKHOE
Excavation Dimensions : 600 x 2000

Samples	Casing	Depth (Metres)	Graphic Log	U.S.C.S.	Material Description, Structure Soil Type: Plasticity or Particle Characteristics, Colour, Secondary and Minor Components, Moisture, Structure	Consistency or Relative Density	Field Test Results	Geological Profile
		0.2		SM	Silty SAND; fine to medium grained sand, low plasticity silt, dark brown, moist.	LOOSE		TOPSOIL
		0.4		CL	Sandy CLAY; low to medium plasticity clay, fine to coarse sand, some silt, trace subrounded gravel to 20mm, light brown, moist.	FIRM		ALLUVIAL SOIL
		1.0		CH	Sandy CLAY; medium to high plasticity clay, fine to coarse sand, orange mottled grey, moist.	VERY STIFF		RESIDUAL SOIL
		1.3			Extremely to Highly Weathered (EW-HW) SILTSTONE; fin to medium grained, yellow-brown, dry.	EXTREMELY WEAK TO WEAK		BEDROCK
		2.0						
		2.5			EXCAVATION TERMINATED AT 2.5m			
		3.0						

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Excavation Log

Excavation No.	**TP10**
Sheet	1 of 1
Job No.	C13462

CLIENT: Mary Alice Pty Ltd

PROJECT: Proposed Subdivision
Block 3, Section 95, Watson

Location : SEE REPORT

Surface Level : Not Known

Equipment Type : JCB3CX BACKHOE
Excavation Dimensions : 600 x 2000

Samples		Casing	Depth (Metres)	Graphic Log	U.S.C.S.	Material Description, Structure Soil Type: Plasticity or Particle Characteristics, Colour, Secondary and Minor Components, Moisture, Structure	Consistency or Relative Density	Field Test Results	Geological Profile
			0.3		SM	Silty SAND; fine to medium grained sand, low plasticity silt, dark brown, moist, with grass rootlets.	LOOSE		TOPSOIL
			1.0		CL	Sandy CLAY; low to medium plasticity clay, fine to coarse sand, yellow-grey mottled, moist, trace ferruginous nodules.	STIFF		ALLUVIAL SOIL
	▶		1.5			Extremely Weathered (EW) SILTSTONE; red-brown / brown, excavates as Clayey Gravelly SAND; fine to coarse sand, fine to medium grained gravel, low plasticity clay, wet.	EXTREMELY WEAK		BEDROCK
			2.0						
			2.5			EXCAVATION TERMINATED AT 2.5m			
			3.0						

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APPENDIX C
Definitions of Geotechnical Engineering Terms

DESCRIPTION AND CLASSIFICATION OF SOILS

The methods of description and classification of soils used in this report are based on the Australian Standard 1726 – 1993, Geotechnical site investigations. In general, descriptions cover the following properties – soil type, colour, secondary grain size, structure, inclusions, strength or density and geological description.

Soil types are described according to the predominating particle size, qualified by the grading of other particles present (e.g. sandy clay) on the following basis:

Classification	**Particle Size**
Clay	Less than 0.002mm
Silt	0.002mm to 0.06mm
Sand	0.06mm to 2.00mm
Gravel	2.00mm to 60.00mm
Cobbles	60mm (63mm) to 200mm
Boulders	>200mm

Soils are also classified according to the Unified Soil Classifications System which is included in this Appendix. Rock types are classified by their geological names.

Cohesive soils are classified on the basis of strength either by laboratory testing or engineering examination. The terms are defined as follows:

Consistency	**Shear Strength su(kPa) (Representative Undrained Shear)**	
Very soft	< 12	<2 (~SPT "N")
Soft	12 - 25	2-4
Firm	25 - 50	4-8
Stiff	50 – 100	8-15
Very Stiff	100 – 200	15-30
Hard	> 200	>30

Non-cohesive soils are classified on the basis of relative density, generally from the results of in-situ standard penetration tests as below:

Term	**Relative Density (%)**	**SPT Blows/300mm 'N'**
Very loose	< 15	<4
Loose	15-35	4-10
Medium dense	35-65	10-30
Dense	65-85	30-50
Very Dense	>85	>50

SAMPLING

Sampling is carried out during drilling to allow engineering examination (and laboratory testing where required) of soil or rock.

Disturbed samples taken during drilling provide information on colour, type, inclusions and depending upon the degree of disturbance, some information on strength and structure.

Undisturbed samples are generally taken by one of two methods:

1. Driving or pushing a thin walled sample tube into the soil and withdrawing with a sample of soil in a relatively undisturbed state.

2. Core drilling using a retractable inner tube (R.I.T.) core barrel.

Such samples yield information on structure and strength in additions to that obtained from disturbed samples and are necessary for laboratory determination of shear strength and compressibility. Undisturbed sampling is generally effective only in cohesive soils.

Details of the type and method of sampling are given in the report.

PENETRATION TESTING

The relative density of non-cohesive soils is generally assessed by in-situ penetration tests, the most common of which is the standard penetration test. The test procedure is described in Australian Standard 1289 “Testing Soils for Engineering Purposes” Testing Soils for Engineering Purposes” – Test No. F3.1.

The standard penetration test is carried out by driving a 50mm diameter split tube penetrometer of standard dimensions under the impact of a 63 kg hammer having a free fall of 750mm.

The “N” value is determined as the number of blows to achieve 300mm of penetration (generally after disregarding the first 150mm penetration through possibly disturbed material). The results of these tests can be related empirically to the engineering properties of the soil.

The test is also used to provide useful information in cohesive soils under certain conditions, a good quality disturbed sample being recovered with each test. Other forms of in situ testing are used under certain conditions and where this occurs, details are given in the report.

DEFINITIONS OF ROCK, SOIL, AND DEGREES OF CHEMICAL WEATHERING

GENERAL DEFINITIONS – ROCK AND SOIL

ROCK In engineering usage, rock is a natural aggregate of minerals connected by strong and permanent cohesive forces.

Note: Since "strong" and "permanent" are subject to different interpretations, the boundary between rock and soil is necessarily an arbitrary one.

SOIL In engineering usage, soil is a natural aggregate of mineral grains which can be separated by such gentle mechanical means as agitation in water, can be remoulded and can be classified according to the Unified Soil Classification System. Three principal classes of soil recognized are:

Residual soils: soils which have been formed in-situ by the chemical weathering of parent rock. Residual soil may retain evidence of the original rock texture or fabric or, when mature, the original rock texture may be destroyed.

Transported soils: soils which have been moved from their places of origin and deposited elsewhere. The principal agents of erosion, transport and deposition are water, wind and gravity. Two important types of transported soil in engineering geology and materials investigations are:

Colluvium – a soil, often including angular rock fragments and boulders, which has been transported downslope predominantly under the action of gravity assisted by water. The principle forming process is that of soil creep in which the soil moves after it has been weakened by saturation. It may be water borne for short distances.

Alluvium – a soil which has been transported and deposited by running water. The larger particles (sand and gravel size) are water worn.

Lateritic soils: soils which have formed in situ under the effects of tropical weathering include all reddish residual and non residual soils which genetically form a chain of material ranging from decomposed rock through clay to sesqui-oxide rich crusts. The term does not necessarily imply any compositional, textural or morphological definition; all distinctions useful for engineering purposes are based on the differences in geotechnical characteristics.

ROCK WEATHERING DEFINITIONS

Extremely Weathered (EW)	Rock substance affected by weathering to the extent that the rock exhibits soil properties, i.e. it can be remoulded and can be classified according to the Unified Classification System, but the texture of the original rock is still evident.
Highly Weathered (HW)	Rock substance affected by weathering to the extent that limonite staining or bleaching affects the whole of the rock substance and other signs of the chemical or physical decomposition are evident. Porosity and strength may be increased or decreased compared to the fresh rock usually as a result of iron leaching or deposition. The colour and strength of the original fresh rock substance is no longer recognisable.
Moderately Weathered (MW)	Rock substance affected by weathering to the extent that staining extends throughout the whole of the rock substance and the original colour of the fresh rock is no longer recognisable.
Slightly Weathered (SW)	Rock substance affected by weathering to the extent that partial staining or discolouration of the rock substance, usually by limonite, has taken place. The colour and texture of the fresh rock is recognisable.
Fresh (Fr)	Rock substance unaffected by weathering.

The degrees of rock weathering may be gradational. Intermediate stages are described by dual symbols with the prominent degree of weathering first (e.g. EW-HW).

The various degrees of weathering do not necessarily define strength parameters as some rocks are weak, even when fresh, to the extent that they can be broken by hand across the fabric, and some rocks may increase in strength during the weathering process.

Fresh drill cores of some rock types, such as basalt and shale may disintegrate after exposure to the atmosphere due to slaking, desiccation, expansion or contraction, stress relief or a combination of any of these factors.

AN ENGINEERING CLASSIFICATION OF SEDIMENTARY ROCKS

This classification system provides a standardised terminology for the engineering description of the sandstone and shales in the Sydney area, but the terms and definitions may be used elsewhere when applicable. Where other rock types are encountered, such as in dykes, standard geological descriptions are used for rock types and the same descriptions as below are used for strength, fracturing and weathering.

Under this system rocks are classified by Rock Type, Strength, Stratification Spacing, Degree of Fracturing and Degree of Weathering. These terms do not cover the full range of engineering properties. Descriptions of rock may also need to refer to other properties (e.g. durability, abrasiveness, etc) where these are relevant.

ROCK TYPE DEFINITIONS

ROCK TYPE	DEFINITION
Conglomerate:	More than 50% of the rock consists of gravel sized (greater than 2mm) fragments.
Sandstone:	More than 50% of the rock consists of sand sized (0.06 to 2mm) grains.
Siltstone:	More than 50% of the rock consists of silt-sized (less than 0.06mm) granular particles and the rock is not laminated.
Claystone:	More than 50% of the rock consists of silt or clay sized particles and the rock is not laminated.
Shale:	More than 50% of the rock consists of silt or clay sized particles and the rock is laminated.

Rocks possessing characteristics of two groups are described by their predominant particle size with reference also to the minor constituents, e.g. clayey sandstone, sandy shale.

STRATIFICATION SPACING

Term	Separation of Stratification Planes
Thinly Laminated	< 6mm
Laminated	6mm to 20mm
Very thinly bedded	20mm to 60mm
Thinly bedded	60mm to 0.2m
Medium bedded	0.2m to 0.6m
Thickly bedded	0.6m to 2m
Very thickly bedded	> 2m

DEGREE OF FRACTURING

This classification applies to diamond drill cores and refers to the spacing of all types of natural fractures along which the core is discontinuous. These include bedding plane partings, joints and other rock defects, but exclude known artificial fractures such as drilling breaks.

Term	Description
Fragmented:	The core is comprised primarily of fragments of length less than 20mm, and mostly of width less than the core diameter
Highly Fractured:	Core lengths are generally less than 20mm – 40mm with occasional fragments.
Fractured:	Core lengths are mainly 30mm – 100mm with occasional shorter and longer section.
Slightly Fractured:	Core lengths are generally 300mm – 1000mm with occasional longer sections and occasional sections of 100mm – 300mm.
Unbroken:	The core does not contain any fracture.

ROCK STRENGTH

Rock strength is defined by the Point Load Strength Index (Is 50) and refers to the strength of the rock substance in the direction normal to the bedding. The test procedure is described by the International Society of Rock Mechanics.

Term	Point Load Index Is(50) MPa	Field Guide	Approx qu MPa*
Extremely Weak:	0.03	Easily remoulded by hand to a material with soil properties.	0.7
Very Weak:	0.1	May be crumbled in the hand. Sandstone is “sugary” and friable.	2.4
Weak:	0.3	A piece of core 150mm long x 50mm dia. May be broken by hand and easily scored with a knife. Sharp edges of core may be friable and break during handling.	7
Medium Strong:	1	A piece of core 150mm long x 50mm dia. can be broken by hand with considerable difficulty. Readily scored with knife.	24
Strong: (SW)	3	A piece of core 150mm long x 50mm dia. core cannot be broken by unaided hands, can be slightly scratched or scored with knife.	70
Very Strong (SW)	10	A piece of core 150mm long x 50mm dia. may be broken readily with hand held hammer. Cannot be scratched with pen knife.	240
Extremely Strong (Fr)	>10	A piece of core 150mm long x 50mm dia. is difficult to break with hand held hammer. Rings when struck with a hammer.	>240

The approximate unconfined compressive strength (qu) shown in the table is based on an assumed ration to the point load index of 24:1. This ratio may vary widely.

Unified Soil Classification System (Metricated)
Data for Description Indentification and Classification of Soils

MAJOR DIVISIONS				DESCRIPTION				FIELD IDENTIFICATION						LABORATORY CLASSIFICATION					
				Group Symbol	Graphic Symbol	TYPICAL NAME	DESCRIPTIVE DATA			GRAVELS AND SANDS			Group Symbol		% [2] < 0.06mm	PLASTICITY OF FINE FRACTION			NOTES
										GRADATIONS		NATURE OF FINES	DRY STRENGTH						
COARSE GRAINED SOILS	More than 50% by dry mass, less than 60mm is greater than 0.06mm.	GRAVELS	More than 50% of coarse grains are greater than 2.0mm	GW		Well graded gravels and gravel-sand mixtures, little or no fines	Give typical name, indicate approximate percentages of sand and gravel, maximum size, angularity, surface condition and hardness of the coarse grains, local or geological name and other perfinent descriptive information, symbols in parenthesis. For undisturbed soils add information on stratification, degree of compactness, cementation, moisture conditions and drainage characteristics. EXAMPLE: Silty Sand, gravelly, about 20% hard, angular gravel particles, 10mm maximum size, rounded and sub angular sand grains coarse to fine, about 15% non-plastic fines with low dry strength, well compacted and moist in place, light brown alluvial sand, (SM)			GOOD	Wide range in grain size	"Clean" materials (not enough fines to band coarse grains)	None	GW		0-5	-	>4	Between 1 and 3	1. Identify Fines by the method given for fine grained soils. 2. Borderline classifications occur when the percentage of fines (fraction smaller than 0.06mm size) is greater than 5% and less than 12%. Borderline classifications require the use of dual symbols eg SP-SM GW-GC
				GP		Poorly graded gravels and gravel-sand mixtures, little or no fines				POOR	Predominantly one size or range of sizes			GP		0-5	-	Fails to comply with above	
		GRAVELLY SOILS		GM		Silty gravels, gravel-sand-silt mixtures				GOOD TO FAIR	"Dirty" materials (Excess of fines)	Fines are non-plastic (1)	None to medium	GM		12-50	Below 'A' line and Ip >7	-	-
				GC		Clayey gravels gravel-sand-clay mixtures						Fines are plastic (1)		GC		12-50	Above 'A' line and Ip > 7	-	-
		SANDS	More than 50% of coarse grains are greater than 2.0mm	SW		Well graded sands and gravelly sands, little or no fines				GOOD	Wide range in grain size	"Clean" materials (not enough fines to band coarse grains)	None	SW		0-5	-	>6	between 1 and 3
				SP		Poorly graded sands and gravelly sands, little or no fines				POOR	Predominantly one size or range of sizes			SP		0-5	-	Fails to comply with above	
		SANDY SOILS		SM		Silty sand, sand-silt mixtures				GOOD TO FAIR	"Dirty" materials (Excess of fines)	Fines are non-plastic (1)	None to medium	SM		12-50	Below 'A' line or Ip < 4	-	-
				SC		Clayey sands, sand-clay mixtures						Fines are plastic (1)		SC		12-50	Above 'A' line and Ip > 7	-	-
FINE GRAINED SOILS	More than 50% by dry mass, less than 60mm is less than 0.06mm	Liquid Limit less than 50%		ML		Inorganic silts, very fine sands, rock flour, silty or clayey fine sands.	Give typical name, indicate degree and character of plasticity, amount and maximum size of coarse grains, colour in wet condition, odour if any, local or geological name and r pertinent descriptive information, symbols in parenthesis. For undisturbed soil add information on structure, stratification, consistancy in undisturbed and remoulded states, moisture and drainage conditions. EXAMPLE Clayey Silt, brown, low plasticity, small percentage of fine sand, numerous vertical root-holes, firm and dry in place, fill, (ML).			SILT AND CLAY FRACTION								
										Fraction smaller than 0 20mm AS sieve size									
										DRY STRENGTH	DILATANCY	TOUGHNESS							
				CL		Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays.				None to low	Quick to slow	None		ML		Below 'A' line			
				OL		Organic silts and organic silty clays of low plasticity				Medium to high	None to very slow	Medium		CL		Above 'A' line			
		Liquid Limit more than 50%		MH		Inorganic silts, micaceous or diatomaceous fine sands or silts, elastic silts.				Low to medium	Slow	Low		OL		Below 'A' line			
				CH		Inorganic clays of high plasticity, fat clays.				Low to medium	Slow to none	Low to medium		MH		Below 'A' line			
				OH		Organic clays of medium to high plasticity.				High to very high	None	High		CH		Above 'A' line			
										Medium to high	None to very slow	Low to medium		OH		Below 'A' line			
				Pt		Peat muck and other highly organic soils.				Readily identified by colour, odour, spongy feel and generally by fibrous texture				Pt*					

Determine approximate percentages of material over 60mm size, maximum size, shape, surface texture, hardness of material, geological description identify on estimated percentage mass of the various fractions.

COARSE GRAINED SOILS — More than half of the material less than 60mm is larger than 0.06mm

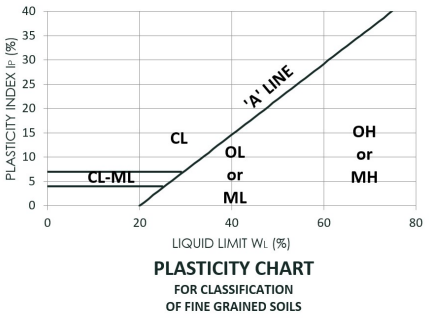
FINE GRAINED SOILS — More than half of the material less than 50mm is less than 0.06mm

0.06mm is about the smallest particle visible to the naked eye

Use the gradation curve of material passing 60mm for classification of fractions according to criteria given under 'Major Division'.

More than 50% passing 0.06mm

*Effervescence with H2O2



PLASTICITY CHART
FOR CLASSIFICATION OF FINE GRAINED SOILS

ACT Geotechnical Engineers

ACT Geotechnical Engineers Pty Lt
ACN 063 673 530

5/9 Beaconsfield Street, Fyshwick ACT 2609
PO Box 9225, Deakin ACT 2600
Ph: (02) 6285 1547

Limitations in the Use and Interpretation of this Geotechnical Report

Our Professional services were performed, our findings obtained, and our recommendations prepared in accordance with generally accepted engineering principles and practices. This warranty is in lieu of all other warranties, either expressed or implied.

The geotechnical report was prepared for the use of the Owner in the design of the subject development and should be made available to potential contractors and/or the Contractor for information on factual data only. This report should not be used for contractual purposes as a warranty of interpreted subsurface conditions such as those indicated by the interpretive borehole and test pit logs, cross- sections, or discussion of subsurface conditions contained herein.

The analyses, conclusions and recommendations contained in the report are based on site conditions as they presently exist and assume that the exploratory bore holes, test pits, and/or probes are representative of the subsurface conditions of the site. If, during construction, subsurface conditions are found which are significantly different from those observed in the exploratory bore holes and test pits, or assumed to exist in the excavations, we should be advised at once so that we can review these conditions and reconsider our recommendations where necessary. If there is a substantial lapse of time between conducting this investigation and the start of work at the site, or if conditions have changed due to natural causes or construction operations at or adjacent to the site, this report should be reviewed to determine the applicability of the conclusions and the recommendations considering the changed conditions and time lapse.

The summary bore hole and test pit logs are our opinion of the subsurface conditions revealed by periodic sampling of the ground as the test holes progressed. The soil descriptions and interfaces between strata are interpretive and actual changes may be gradual.

The bore hole and test pit logs and related information depict subsurface conditions only at the specific locations and at the particular time designated on the logs. Soil conditions at the other locations may differ from conditions occurring at these bore hole and test pit locations. Also, the passage of time may result in a change in the soil conditions at these test locations.

Groundwater levels often vary seasonally. Groundwater levels reported on the boring logs or in the body of the report are factual data only for the dates shown.

Unanticipated soil conditions are commonly encountered on construction sites and cannot be fully anticipated by merely taking soil samples, bore holes or test pits. Such unexpected conditions frequently require that additional expenditures be made to attain a properly constructed project. It is recommended that the Owner consider providing a contingency fund to accommodate such potential extra costs.

This firm cannot be responsible for any deviation from the intent of this report including, but not restricted to, any changes to the scheduled time of construction, the nature of the project or the specific construction methods or means indicated in this report: nor can our company be responsible for any construction activity on sites other than the specific site referred to in this report.

ACT Government

Territory Planning Authority

CONSULTATION REPORT

Draft Plan Amendment to the Territory Plan C

Block 3 Section 95 Watson

January 2025

This consultation report was prepared under division 5.2.5 of the *Planning Act 2023*

Contents

1.0 INTRODUCTION 1

1.1 Purpose 1

1.2 Outline of process 1

2.0 CONSULTATION WITH GOVERNMENT ENTITIES 1

3.0 CONSULTATION WITH THE PUBLIC 4

3.1 Consultation 4

3.2 Comments 4

3.3 Summary of issues raised 4

3.3.1 Support for the Rezoning 4

3.3.2 Objection to the Rezoning 4

3.3.3 Increase compact block supply 5

3.3.4 Building heights (amenity, solar access, overshadowing and overlooking) 5

3.3.5 Traffic, access and parking 5

4.0 CHANGES MADE TO DPA-C FROM CONSULTATION 7

4.1 Government entities 7

4.2 Public 7

INTERPRETATION SERVICE 8

APPENDIX 1 Comments from Government entities 9

APPENDIX 2 Comments from the public 10

APPENDIX 3 Public consultation version of DPA-C 11

1.0 INTRODUCTION

1.1 Purpose

This document, prepared under section 67 (3) of the *Planning Act 2023* (the Act), details the outcomes of government entity and public consultation the Territory Planning Authority (the Authority) has undertaken for Draft Plan Amendment C – Block 3 Section 95 Watson (DPA-C).

This document should be read in conjunction with the DPA-C – Block 3 Section 95 Watson document that has been given to the Minister which is available on the Planning website.

Key parts of this document are:

- section 2 – outlines summary of changes the Authority has made to DPA-C in response to government entity and public comments received during the consultation period
- section 3 – outlines comments received from government entities
- section 4 – outlines comments received from the public

1.2 Outline of process

DPA-C has been given to the Minister for determination. More information about the next steps for this DPA are provided in the DPA-C document that is available on the Planning website. General information about the major plan amendment process is also available on the Planning website here.

2.0 CONSULTATION WITH GOVERNMENT ENTITIES

In accordance with section 62 of the Planning Act the Authority has consulted with each of the following entities in relation to this DPA:

- the National Capital Authority
- the Conservator of Flora and Fauna
- the Environment Protection Authority
- the Heritage Council
- each referral entity
- if unleased or leased public land, each custodian of the land likely to be affected.

A copy of the comments received from the above-mentioned entities are provided in Appendix 1 of this document.

Below is a summary of each of the entity's comments and the Authority's response to any matters raised. There are no 'referral entities' prescribed by regulation for MPA-C. There are also no land custodians for the subject site (Block 3 Section 95 Watson).

Entity matter raised	Authority's response
National Capital Authority	
The site is zoned as 'Urban Areas' in the National Capital Plan (the Plan). The proposed Territory Plan amendment is not inconsistent with the Plan and the NCA has no objections.	Noted. No changes have been made prior to or after public consultation of DPA-C as a result of the comments from the National Capital Authority
Conservator of Flora and Fauna	
No concerns with the proposal.	Noted. No changes have been made prior to or after public consultation of DPA-C as a result of the comments from the Conservator of Flora and Fauna.
Environment Protection Authority	
The Environment Protection Authority (EPA) has reviewed the report titled "Environmental Site Suitability Report, Block 3, Section 95, Watson, ACT", dated 3 July 2024 by Agon Environmental Pty Ltd. The office of the EPA has assessed the report and supports the consultant's findings that the "site is suitable for the permitted land uses under the RZ4 Medium Density Residential Zone as per the Territory Plan 2023. The EPA approves of the proposed rezoning subject to the following conditions: • A site-specific Unexpected Finds Protocol (UFP) must be prepared by a suitably qualified environmental consultant to support any excavation activities at the site. The UFP must consider the findings of the above report. • All soils proposed to be removed from the site must be assessed in accordance with ACT EPA Information Sheet 4 "Requirements for the reuse and disposal of contaminated soil in the ACT" or	Noted. The approval and conditions from EPA are acknowledged and relevant assessment will be undertaken during the development application stage.

equivalent prevailing regulatory regimes. • No soil is to be removed from the site without EPA approval.	
Heritage Council	
Block 3 Section 95 Watson does not contain any registered, recorded or nominated heritage places or objects. A Cultural Heritage Assessment (CHA) has been conducted of the block, by Past Traces (2022) in consultation with Representative Aboriginal Organisations. This CHA did not identify any heritage places or objects, and assessed the potential for unrecorded heritage sites within the development area as low. In this context, Draft MPA-C and any subsequent development within Block 3 Section 95 Watson is unlikely to damage any heritage places or objects, and there are no Heritage Act 2004 considerations to the proposal. It is, however, noted that any future development of the place should include an Unanticipated Discovery Protocol, to ensure that any unexpected heritage finds during construction are managed in accordance with Heritage Act 2004 provisions.	Noted. No changes have been made prior to or after public consultation of DPA-C as a result of the comments from the Heritage Council due to the unlikely impacts on heritages places or objects

3.0 CONSULTATION WITH THE PUBLIC

3.1 Consultation

Written comments were invited from the public about DPA- C from 6 September 2024 to 21 October 2024.

3.2 Comments

Five (5) written comments were received during the public consultation. No additional late comments were received. Written comments received during the public consultation period included:

- 1 from a community organisation
- 4 from individuals

Copies of public submissions were made available after the completion of public consultation and have been provided at Appendix 2 of this document.

3.3 Summary of issues raised

Below is a summary of the issues raised in public comments during public consultation.

3.3.1 Support for the Rezoning

Two (2) comments conditionally support the rezoning of block 3 section 95 Watson to the RZ4 medium density residential zone.

The Territory Planning Authority notes the conditional support for the DPA – C with the additional matters detailed below.

3.3.2 Objection to the Rezoning

One (1) comment objected to the proposed rezoning, expressing a preference to retain the existing CZ6 leisure and accommodation zone.

The Territory Planning Authority notes the objection to the rezoning. The site is currently used by the Canberra Carotel Motel, which occupies the western portion of the site, and the remainder of the site is currently unused. Motel uses are permitted in a range of commercial zonings and are not limited to the CZ6 zoning. This means that the demand and supply of motels can be met in other more appropriate locations across the city in commercial zones. Further, rezoning the site to RZ4 will provide significant housing opportunities in Watson, at a range of low to medium density typologies which are consistent with those in the surrounding North Watson area.

No change has been made to DPA-C in response to this matter.

3.3.3 Increase compact block supply

One (1) comment which conditionally supported the MPA-C further recommends that the site be developed entirely for compact blocks rather than the current proposed mix of block sizes and multi-units.

The Territory Planning Authority advises that MPA-C does not stipulate the number or size of blocks to be developed on the site. It is not a requirement that is proposed or would ordinarily be imposed through an amendment to the Territory Plan. Ultimately, the mix of block sizes and extent of multi-unit developments on the site will be determined at the detailed design stage as part of the future development applications, where subdivision is able to be considered.

Future development applications would be assessed for compliance with the relevant polices of the Territory Plan, which may include the Subdivision Policy, the Residential Zones Policy and the Inner North and City District Policy. They would also be considered the relevant design guides, where applicable.

No change will be made to DPA-C in response to this matter.

3.3.4 Building heights (amenity, solar access, overshadowing and overlooking)

Two (2) comments have raised the following concerns with the proposed rezoning to the RZ4 medium density residential zone including:

- development across the site should be limited to the height of surrounding 'bungalows' (dwellings of 2 storeys);
- It is important for development to make use of the sun for solar access; and to
- prevent overshadowing and overlooking of adjoining dwellings on Ehrlich Street through provision of larger back gardens along the common boundary.

The Territory Planning Authority notes the predominate built height of surrounding development, including the existing 'bungalows'. However, these are located on land that is CZ6 Leisure and accommodation for which there is no existing zone level height limit.

The rezoning of Block 3 Section 95 does not seek to limit building heights across the site. In the RZ4 medium density residential zone, building heights up to 12.5m (approx. four (4) storeys) could be permitted. However, this would be considered at the detailed design stage as part of a future development application under the assessment outcomes and requirements of the Residential Zones Policy, the Inner North and City District Policy and the relevant design guides. This includes consideration of potential impacts on the character, amenity, overshadowing and overlooking of surrounding residential uses.

3.3.5 Traffic, access and parking

Two (2) comments indicated that traffic, access and parking, particularly on Antill Street are problematic and that action should be taken to improve traffic arrangements as part of DPA-C. The following concerns have been raised:

- Widen Antill Street to allow safe travel for cyclists;
- reduce the speed limit on Antill Street to 40km/hr;
- introduce traffic calming devices and zebra crossings to improve pedestrian and wildlife safety and crossings;
- limit times that trucks can use Antill Street (not before 8am);
- provide undercover parking, not underground parking;
- provide parking at the playground; and
- construct undercover bike parking at the bus terminus.

The Territory Planning Authority advises that the site-specific access, egress and parking arrangements for future development on Block 3 Section 95 are matters to be considered at the detailed design stage as part of a development application process.

Additionally, advice regarding any off-site traffic works would be provided by the Transport Canberra and City Services (TCCS) Directorate depending on the final population density and number of dwellings to be developed on the site. This would also occur at the development application stage. It is important to note, that off-site works would only be required if directly related to the individual development proposal.

4.3.6 Community uses (Dog Park and men's shed)

One (1) comment indicated that there is a need for a dog park and a men's shed on the site.

The Territory Planning Authority advises that parkland (Dog Park) and community activity centres (men's sheds) are both permitted uses in the proposed RZ4 medium density residential zone.

Dog parks are administered by TCCS and located on unleased Territory Land. As the land is leased it is unlikely that a dog park would be located within the proposed development of Block 3 Section 95 Watson. Notwithstanding this, it is noted that there are currently 8 dog parks in the ACT, including one at O'Conner in the Inner North.

The Majura Men's Shed is located at Dickson and is located such that it is unlikely an additional men's shed would be required in Watson at this point in time.

4.0 CHANGES MADE TO DPA-C FROM CONSULTATION

The version of DPA-C that was released for public consultation was not changed as a result of public consultation. The public consultation version is at Appendix 3.

4.1 Government entities

Government entities were consulted and the relevant comments considered in finalising DPA-C prior to public consultation. The written comments received from Government entities prior to the public consultation of DPA – C are included in Appendix 1 of this consultation report and summarised in section 2 of this report.

As all comments had been previously addressed, no further comments were sought or received from Government entities following the consultation of DPA-C.

4.2 Public

No changes have been made to DPA-C in response to the five (5) public comments received during public consultation of DPA-C. This is because the matters raised have either been addressed or are more appropriately dealt with at the detailed design stage as part of a future development application for the site.

Further information about comments received from the public can be found in section 3 and Appendix 2.

INTERPRETATION SERVICE

To speak to someone in a language other than English please telephone the Telephone Interpreter Service (TIS) 13 14 50

LANGUAGE	DETAILS
English	If you need an interpreter please call: 13 14 50
Mandarin (Simplified Chinese) / 简体中文	如果您需要翻译，请致电：13 14 50
Arabic / العربية	إذا كنت بحاجة إلى مترجم شفهي اتصل بالرقم: 13 14 50
Cantonese (Traditional Chinese) / 繁體中文	如果你需要傳譯員，請致電：13 14 50
Vietnamese / Tiếng Việt	Nếu bạn cần thông dịch viên, xin gọi**:** 13 14 50
Korean / 한국어	통역사가 필요할 경우 다음 번호로 전화하시기 바랍니다: 13 14 50
Spanish / Español	Si necesita un intérprete, llame al 13 14 50
Persian (Farsi) / فارسی	اگر به مترجم نیاز دارید، لطفاً به این شماره تلفن کنید: 13 14 50
Dari / دری	اگر به یک ترجمان شفاهی نیاز دارید لطفاً به شمارهٔ 131450 زنگ بزنید.
Punjabi / ਪੰਜਾਬੀ	ਜੇਕਰ ਤੁਹਾਨੂੰ ਕਿਸੇ ਦੁਭਾਸ਼ੀਏ ਦੀ ਲੋੜ ਹੈ ਤਾਂ ਕਿਰਪਾ ਕਰਕੇ ਫੋਨ ਕਰੋ: 13 14 50
Tamil / தமிழ்	உங்களுக்கு மொழிபெயர்த்துரைப்பாளர் ஒருவர் தேவைப்பட்டால் 13 14 50 என்ற எண்ணை அழைக்கவும்
Greek / Ελληνικά	Αν χρειάζεστε διερμηνέα, τηλεφωνήστε: 13 14 50
Italian / Italiano	Se hai bisogno di un interprete, chiama: 13 14 50
Hazaragi / هزاره گی	اگه ده ترجمان ضرورت ده رید، لطفاً ده شماره 13 14 50 تماس بگیرید.
Thai / ภาษาไทย	หากคุณต้องการล่าม กรุณาโทรไปที่ 13 14 50
Karen / ကညီကျိာ်	ဖဲနမ့ၢ်လိၣ်ဘၣ်ပ့ၤကတိၤကျိးထံတၢ်တဂၤအခါဝံသးစူၤကိးဘၣ်-၁၃၁ ၄၅၀ တက့ၢ်.

Telephone and Interpreter Service 13 14 50 - Canberra and District - 24 hours a day, seven days a week

APPENDIX 1 Comments from Government entities

Attachment E - Appendix 1 - Entity Comments

From: [redacted]
To: Terrplan
Cc: [redacted]
Subject: ACT Heritage Council advice - Draft Major Plan Amendment C - Block 3 Section 95 Watson
Date: Wednesday, 24 July 2024 3:28:55 PM

OFFICIAL

Hello [redacted],
Thank you for seeking ACT Heritage Council (Council) advice on the Draft Major Plan Amendment C (Draft MPA-C) for Block 3 Section 95 Watson.
Draft MPA-C proposes to rezone the block from CZ6 – Leisure and Accommodation Zone to RZ4 – Medium Density Residential Zone.
Block 3 Section 95 Watson does not contain any registered, recorded or nominated heritage places or objects.
A Cultural Heritage Assessment (CHA) has been conducted of the block, by Past Traces (2022) in consultation with Representative Aboriginal Organisations. This CHA did not identify any heritage places or objects, and assessed the potential for unrecorded heritage sites within the development area as low.

In this context, Draft MPA-C and any subsequent development within Block 3 Section 95 Watson is unlikely to damage any heritage places or objects, and there are no *Heritage Act 2004* considerations to the proposal.
It is, however, noted that any future development of the place should include an Unanticipated Discovery Protocol, to ensure that any unexpected heritage finds during construction are managed in accordance with *Heritage Act 2004* provisions.
Regards,

[redacted] | **Director, Approvals and Advice, ACT Heritage: as delegate for the ACT Heritage Council**
Phone: 13 22 81 I Email: [redacted]
Environment, Planning and Sustainable Development Directorate **I ACT Government**
480 Northbourne Avenue, Dickson I GPO Box 158 Canberra ACT 2601
www.environment.act.gov.au

From: [redacted] **On Behalf Of** Terrplan
Sent: Tuesday, July 16, 2024 7:04 AM
To: [redacted]
Subject: Mandatory Agency Circulation – Draft Major Plan Amendment C - Watson Section 95 Block 3

OFFICIAL

Dear NCA, Conservator of Flora and Fauna, EPA and Heritage Council,
Your comments are requested as a mandatory consultation agency, under section 62 of the *Planning Act 2023*, on the attached Draft Major Plan Amendment C (Draft MPA-C) for Watson Section 95 Block 3. A Draft Major Plan Amendment under the new system was formerly known

as a Draft Variation.
Draft MPA-C proposes to amend the Territory Plan to:
Make the following changes to the Territory Plan map:

- Rezone Watson Section 95 Block 3 to remove CZ6 – Leisure and Accommodation Zone.
- Rezone the site to RZ4 – Medium Density Residential Zone

The site is currently used by the Canberra Carotel Motel which occupies the western portion of the site, and the remainder of the site is currently unused. Draft MPA-C will assist in increasing housing supply across the Inner North and City District, close to existing services and facilities and public transport.
Supporting documents are available on **Objective Connect**. See separate invitation email (please advise Territory Plan & Coordination Section at terrplan@act.gov.au if you do not receive the email invitation).
The closing date for comments is **COB Tuesday 30 July 2024**.
Your comments (including nil comments) can be sent to the Territory Plan & Coordination Section by email at terrplan@act.gov.au.
Thank you,
[redacted] on behalf of
Territory Plan & Coordination | **General Enquiries Inbox**
Email: terrplan@act.gov.au
Planning and Sustainable Development | **Environment, Planning and Sustainable Development Directorate** | **ACT Government**
480 Northbourne Avenue Dickson ACT 2602 | GPO Box 158 Canberra ACT 2601 | www.act.gov.au

From: [redacted]
To: Terrplan
Cc: EPAPlanningLiaison
Subject: FW: Mandatory Agency Circulation – Draft Major Plan Amendment C - Watson Section 95 Block 3
Date: Tuesday, 30 July 2024 3:53:39 PM
Attachments: image001.png
image002.png

OFFICIAL

Dear [redacted], Territory Plan team.
Thank you for the opportunity to review and provide comments on the Draft Major Plan Amendment C for Watson S95 B3.
The Environment Protection Authority (EPA) has reviewed the report titled "Environmental Site Suitability Report, Block 3, Section 95, Watson, ACT", dated 3 July 2024 by Agon Environmental Pty Ltd.
The office of the EPA has assessed the report and supports the consultant's findings that the "site is suitable for the permitted land uses under the RZ4 Medium Density Residential Zone as per the Territory Plan 2023.
The EPA approves of the proposed rezoning subject to the following conditions:

- A site-specific Unexpected Finds Protocol (UFP) must be prepared by a suitably qualified environmental consultant to support any excavation activities at the site. The UFP must consider the findings of the above report.
- All soils proposed to be removed from the site must be assessed in accordance with ACT EPA Information Sheet 4 "Requirements for the reuse and disposal of contaminated soil in the ACT" or equivalent prevailing regulatory regimes.
- No soil is to be removed from the site without EPA approval.

For further information please contact the Environment Protection Authority Planning Liaison at EPAPlanningLiaison@act.gov.au.
Regards,

Access Canberra|Chief Minister,Treasury and Economic Development Directorate |ACT Government
Phone: [redacted]
480 Northbourne Avenue, Dickson | GPO Box 158 Canberra City ACT 2601 |
www.act.gov.au/accessCBR

From: [redacted] **On Behalf Of** Terrplan
Sent: Tuesday, July 16, 2024 7:04 AM
To: [redacted]

[redacted]

Terrplan <Terrplan@act.gov.au>

Subject: Mandatory Agency Circulation – Draft Major Plan Amendment C - Watson Section 95 Block 3

OFFICIAL

Dear NCA, Conservator of Flora and Fauna, EPA and Heritage Council,

Your comments are requested as a mandatory consultation agency, under section 62 of the *Planning Act 2023*, on the attached Draft Major Plan Amendment C (Draft MPA-C) for Watson Section 95 Block 3. A Draft Major Plan Amendment under the new system was formerly known as a Draft Variation.

Draft MPA-C proposes to amend the Territory Plan to:

Make the following changes to the Territory Plan map:

- Rezone Watson Section 95 Block 3 to remove CZ6 – Leisure and Accommodation Zone.
- Rezone the site to RZ4 – Medium Density Residential Zone

The site is currently used by the Canberra Carotel Motel which occupies the western portion of the site, and the remainder of the site is currently unused. Draft MPA-C will assist in increasing housing supply across the Inner North and City District, close to existing services and facilities and public transport.

Supporting documents are available on **Objective Connect**. See separate invitation email (please advise Territory Plan & Coordination Section at terrplan@act.gov.au if you do not receive the email invitation).

The closing date for comments is **COB Tuesday 30 July 2024**.

Your comments (including nil comments) can be sent to the Territory Plan & Coordination Section by email at terrplan@act.gov.au.

Thank you,

[redacted] on behalf of

Territory Plan & Coordination | **General Enquiries Inbox**

Email: terrplan@act.gov.au

Planning and Sustainable Development | **Environment, Planning and Sustainable Development Directorate** | **ACT Government**

480 Northbourne Avenue Dickson ACT 2602 | GPO Box 158 Canberra ACT 2601 | www.act.gov.au

From: [redacted]
To: Terrplan; C[redacted]a
Subject: RE: Mandatory Agency Circulation – Draft Major Plan Amendment C - Watson Section 95 Block 3
Date: Thursday, 1 August 2024 9:04:36 PM
Attachments: image001.jpg

OFFICIAL

Good afternoon,
Thank you for providing the Conservator of Flora and Fauna the opportunity to review this MPA and I apologise for the delay in providing our advice.
We have no concerns with the proposal.
Kind regards,

[redacted]
A/g Conservator Liaison
Conservator of Flora and Fauna | Environment, Planning and Sustainable Development Directorate
[redacted]
Environment, Planning and Sustainable Development Directorate I ACT Government
480 Northbourne Canberra ACT 2601 I GPO Box 158 Canberra ACT 2601 I www.environment.act.gov.au I www.planning.act.gov.au

I acknowledge the Ngunnawal people as traditional custodians of the ACT and recognise any other people or families with connection to the lands of the ACT and region. I acknowledge and respect their continuing culture and the contribution they make to the life of this city and this region.

This email, and any attachments, may contain confidential information. If you are not the intended recipient please notify the sender and delete all copies of this transmission along with any attachments immediately. You should not copy or use it for any purpose, nor disclose its contents to any other person.
Please consider the environment before printing this email

From: [redacted] **On Behalf Of** Terrplan
Sent: Wednesday, July 31, 2024 10:27 AM
To: ConservatorFloraFauna <ConservatorFloraFauna@act.gov.au>
Subject: RE: Mandatory Agency Circulation – Draft Major Plan Amendment C - Watson Section 95 Block 3

OFFICIAL

Dear Conservator of Flora and Fauna,
A friendly reminder that comments for Draft Major Plan Amendment C (DPA-C) were due yesterday 30 July 2024.
As a mandatory agency we require your comments regarding the proposal, under section 62 of the *Planning Act 2023.*
Could I please request your review of DPA-C and your comments to be sent to us as soon as possible, including nil comment.
Please let me know if you have an issues accessing the files or any other questions.
Thank you
Kind regards,

[redacted] **| Planning Officer | Territory Plan and Coordination**
[redacted]
Planning and Urban Policy | Environment, Planning and Sustainable Development Directorate | ACT Government
480 Northbourne Avenue, Dickson | GPO Box 1908 Canberra ACT 2601 | www.planning.act.gov.au

From: [redacted] **On Behalf Of** Terrplan
Sent: Tuesday, July 16, 2024 7:04 AM
To: [redacted]
Terrplan <Terrplan@act.gov.au>
Subject: Mandatory Agency Circulation – Draft Major Plan Amendment C - Watson Section 95 Block 3

OFFICIAL

Dear NCA, Conservator of Flora and Fauna, EPA and Heritage Council,
Your comments are requested as a mandatory consultation agency, under section 62 of the *Planning Act 2023*, on the attached Draft Major Plan Amendment C (Draft MPA-C) for Watson Section 95 Block 3. A Draft Major Plan Amendment under the new system was formerly known as a Draft Variation.
Draft MPA-C proposes to amend the Territory Plan to:
Make the following changes to the Territory Plan map:

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- Rezone the site to RZ4 – Medium Density Residential Zone

The site is currently used by the Canberra Carotel Motel which occupies the western portion of the site, and the remainder of the site is currently unused. Draft MPA-C will assist in increasing housing supply across the Inner North and City District, close to existing services and facilities and public transport.
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Thank you,
[redacted] on behalf of

Territory Plan & Coordination | General Enquiries Inbox
Email: terrplan@act.gov.au
Planning and Sustainable Development | Environment, Planning and Sustainable Development Directorate | ACT Government
480 Northbourne Avenue Dickson ACT 2602 | GPO Box 158 Canberra ACT 2601 | www.act.gov.au

From: [redacted]
To: Terrplan
Subject: RE: Mandatory Agency Circulation – Draft Major Plan Amendment C - Watson Section 95 Block 3 [SEC=OFFICIAL]
Date: Tuesday, 16 July 2024 2:48:22 PM

OFFICIAL

> **Caution:** This email originated from outside of the ACT Government. Do not click links or open attachments unless you recognise the sender and know the content is safe.

OFFICIAL

Dear Territory Plan
Thank you for the notification of Draft Major Plan Amendment C – Block 3 Section 95 Watson
The site is zoned as 'Urban Areas' in the National Capital Plan (the Plan). The proposed Territory Plan amendment is not inconsistent with the Plan and the NCA has no objections.
Kind Regards

[redacted] | Planning Officer
National Capital Authority
☎ [redacted]
National Capital Authority | Treasury Building, King Edward Terrace, PARKES ACT 2600
GPO Box 373, CANBERRA ACT 2601 | www.nca.gov.au | Twitter: @NCA_Media

OFFICIAL

From: [redacted] **On Behalf Of** Terrplan
Sent: Tuesday, July 16, 2024 7:04 AM
To: [redacted] <Terrplan@act.gov.au>
Subject: Mandatory Agency Circulation – Draft Major Plan Amendment C - Watson Section 95 Block 3

OFFICIAL

Dear NCA, Conservator of Flora and Fauna, EPA and Heritage Council,
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- Rezone the site to RZ4 – Medium Density Residential Zone

The site is currently used by the Canberra Carotel Motel which occupies the western portion of the site, and the remainder of the site is currently unused. Draft MPA-C will assist in increasing housing supply across the Inner North and City District, close to existing services and facilities and public transport.

Supporting documents are available on **Objective Connect**. See separate invitation email (please advise Territory Plan & Coordination Section at terrplan@act.gov.au if you do not receive the email invitation).

The closing date for comments is **COB Tuesday 30 July 2024**.

Your comments (including nil comments) can be sent to the Territory Plan & Coordination Section by email at terrplan@act.gov.au.

Thank you,

[redacted] on behalf of

Territory Plan & Coordination | **General Enquiries Inbox**

Email: terrplan@act.gov.au

Planning and Sustainable Development | **Environment, Planning and Sustainable Development Directorate** | **ACT Government**

480 Northbourne Avenue Dickson ACT 2602 | GPO Box 158 Canberra ACT 2601 | www.act.gov.au

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Attachment E - Appendix 2 - Public Comments

From: [redacted]
To: Terrplan
Subject: Territory Plan and Coordination, EPSDD.
Date: Tuesday, 24 September 2024 5:01:22 PM

You don't often get email from [redacted] Learn why this is important

Caution: This email originated from outside of the ACT Government. Do not click links or open attachments unless you recognise the sender and know the content is safe.

Good afternoon,

I am writing to support Draft Plan Amendment C - Watson section 95 block 3. However, I am very concerned that there will be no widening of Antill street. The street is currently significantly more narrow than most other roads and has no shoulder despite multiple blind crests. I have had to stop cycling and buy a car specifically for that 1.5km strip of road, as I was almost hit multiple times, or cars passing me veered into oncoming traffic causing near accidents.

The traffic assessment report notes that it is a busy 60km/h road but doesn't consider cyclists at all. Given the city is very close by, and there are cycle options starting just a km down at the base of majura, and there is a very rocky path worn by the number of people and bikes making their way (slowly) along the adjoining grassy area, I would suggest that a shoulder on the road would be absolutely essential to ensuring safety and sustainable transport midst multiple new developments in the area.

Kind regards

[redacted]

[redacted]

From: [redacted]
Sent: Thursday, 26 September 2024 12:56 PM
To: Terrplan
Cc: [redacted]
Subject: 95 3.watson.

Categories: [redacted]

You don't often get email from [redacted] Learn why this is important

Caution: This email originated from outside of the ACT Government. Do not click links or open attachments unless you recognise the sender and know the content is safe.

Before you start this project the speed limit must be reduced to 40 ks p hour from the lower end of Antill Street by Dickson college to the roundabout end of Antill Street where it intersects with the roundabout on the federal highway

Its dangerous as it is and it kills ducklings and sleepy lizards. People whizz round the roundabout and put their foot down

Put speed bumps in. And zebra crossings at the roundabout intersection Antill Street and Aspinal Street.

The road between The road between the bus terminus and George negus. Rroad must be widened .

There is no parking at the new playground.

An undercover bike station must be built at the terminus.

If you must build on the leisure zone do no build anything higher than bungalow height and site the buildings to make use of the sun.

Site them properly.

Build in a dog park and a ' men's shed' and undercover parking.. not underground parking.

no buildings over bungalow height.

Limit the time trucks can use Antill Street. Not before 8am.

[redacted]
Yahoo Mail: Search, organise, conquer

[redacted]

From: [redacted]
Sent: Monday, 14 October 2024 3:23 PM
To: Terrplan
Subject: Watson section 95 block 3

Categories: [redacted]

You don't often get email from [redacted] Learn why this is important

Caution: This email originated from outside of the ACT Government. Do not click links or open attachments unless you recognise the sender and know the content is safe.

Good afternoon

Im emailing you in regards to the 'Watson section 95 block 3'.

I am a resident of [redacted], I am raising concerns about the planning as I can see the new developments being built right on the [redacted] fence (north facing) [redacted].

I would like to know if there will be a back yard providing enough distance so it ensures this wont effect [redacted] living conditions.

It is also a privacy concern [redacted]

Thank you for your help

[redacted]

From: [redacted]
Sent: Thursday, 17 October 2024 6:13 PM
To: Terrplan
Subject: Watson section 95 block 3

You don't often get email from [redacted]. Learn why this is important

Caution: This email originated from outside of the ACT Government. Do not click links or open attachments unless you recognise the sender and know the content is safe.

Hello,
I support the original plan CZ6 leisure and accommodation.

Regards
[redacted]

Get Outlook for iOS

APPENDIX 2 Comments from the public

[redacted]

Building a more liveable,
sustainable, affordable Canberra.

ACT Planning and Land Authority
[By electronic submission]

21 October 2024

To whom it may concern

Submission on Draft Plan Amendment C - Watson Section 95 Block 3

[redacted] welcomes the opportunity to participate in this consultation process. We **strongly support** this draft amendment.

Canberra's inner north is currently among the most expensive areas to live in the ACT. High house prices and persistently high rents have priced many young and low-income Canberrans out of the area. Increasing local housing supply is crucial to provide a wide-range of housing options, and put downward pressure on rents. Rezoning this block from its existing CZ6 to RZ4 will allow for more than 100 homes to be located on this currently underutilised site, helping to achieve this goal.

We agree that this draft amendment is consistent with the *Planning Strategy, Inner North District Strategy*, and the *Statement of Planning Priorities*.

We additionally note that this Draft Territory Plan Amendment is aligned with the Principles of Good Planning articulated in the *Planning Act 2023*, particularly the activation and liveability principles, housing affordability principles, long term focus principles, and urban regeneration principles.

Recommendations for Master Plan

While we acknowledge that this consultation process concerns the rezoning of the site to RZ4, we also wish to provide some feedback to the proponent on their initial Master Plan.

In particular, we note that the current plan includes a mixture of both regular and compact blocks, in addition to multi-unit developments. We would encourage the proponent to consider shifting to all compact blocks, to enable more homes to be included without the need for wasteful side set-backs, which provide little usable space to owners. We point to the success of this kind of compact-block, terrace-house typology in the suburb of Crace, as one example of how this kind of development can provide significant amenity to residents.

About [redacted]

[redacted] is a community organisation that advocates for a more liveable, sustainable and affordable Canberra. We believe that forward-thinking urban planning and the encouragement of connected medium density communities is vital to ensure that future Canberrans can enjoy social and economic equality and a high quality of life.

Our members come from all over Canberra, and from a variety of backgrounds - both renters and homeowners, from different stages of life, different levels of wealth, and different occupational and professional backgrounds.

Questions on the submission can be sent to [redacted]

APPENDIX 3 Public consultation version of DPA-C

Attachment E - Appendix 3 - DPA-C
Consultation version

ACT Government

Environment, Planning and Sustainable Development

DRAFT
MAJOR PLAN AMENDMENT to the TERRITORY PLAN C

Block 3 Section 95 Watson

August 2024

This draft major plan amendment was prepared under division 5.2.3 of the *Planning Act 2023*

Contents

1.0 INTRODUCTION 3

1.1 Outline of the process 3

1.2 The National Capital Plan 3

1.3 Summary of the proposal 3

1.4 Site Description 3

2.0 REASONS FOR THE DRAFT PLAN AMENDMENT 5

2.1 Amendment to the Territory Plan Map 6

2.2 Amendment to Territory Plan policies, design guides and specifications 8

2.3 Consequential changes to the Design Guides and Technical Specifications 8

2.4 Justification against the Planning Act 8

3.0 CONSULTATION WITH GOVERNMENT AGENCIES 10

3.1 National Capital Authority 10

3.2 Conservator of Flora and Fauna 10

3.3 Environment Protection Authority 10

3.4 Heritage Council 11

3.5 Other referral entities 11

4.0 INTERIM EFFECT 11

5.0 CONSULTATION WITH THE PUBLIC 12

5.1 Consultation period 12

5.2 Written Comment Requirements 12

5.3 How to submit written comments 12

5.4 Public release of written comments 12

6.0 DRAFT MAJOR PLAN AMENDMENT C 13

6.1 Amendment to the Territory Plan map 13

INTERPRETATION SERVICE 14

1.0 INTRODUCTION

1.1 Outline of the process

Draft plan amendment C (DPA-C) is a proponent-initiated major plan amendment to the Territory Plan.

Under section 63 of the *Planning Act 2023* (the Planning Act) the Territory Planning Authority (the Authority) is making DPA-C available for public comment.

Proponent-initiated major plan amendments require an application to be lodged under section 57 of the Planning Act prior to the preparation of a draft amendment. The Authority accepted application 2023-01 on 13 March 2024 in accordance with section 59 of the Planning Act and the application is available on the Authority website.

For more information about the content of the Territory Plan and the major plan amendment processes please refer to the Environment, Planning and Sustainable Development (EPSDD) website https://www.planning.act.gov.au/professionals/our-planning-system/the-territory-plan/amendments-to-the-territory-plan.

1.2 The National Capital Plan

The Commonwealth Australian Capital Territory (Planning and Land Management) Act 1988 (ACT PALM Act) established the National Capital Authority, which is required to prepare and administer a National Capital Plan (NCP) and to keep it under constant review and propose amendments as necessary.

The NCP is required to make sure Canberra and the Territory are planned and developed in accordance with their national significance. Additionally, the ACT PALM Act requires that the Territory Plan is not inconsistent with the NCP.

1.3 Summary of the proposal

DPA-C proposes to rezone Watson Section 95 Block 3 from CZ6 – Leisure and Accommodation Zone to RZ4 – Medium Density Residential Zone.

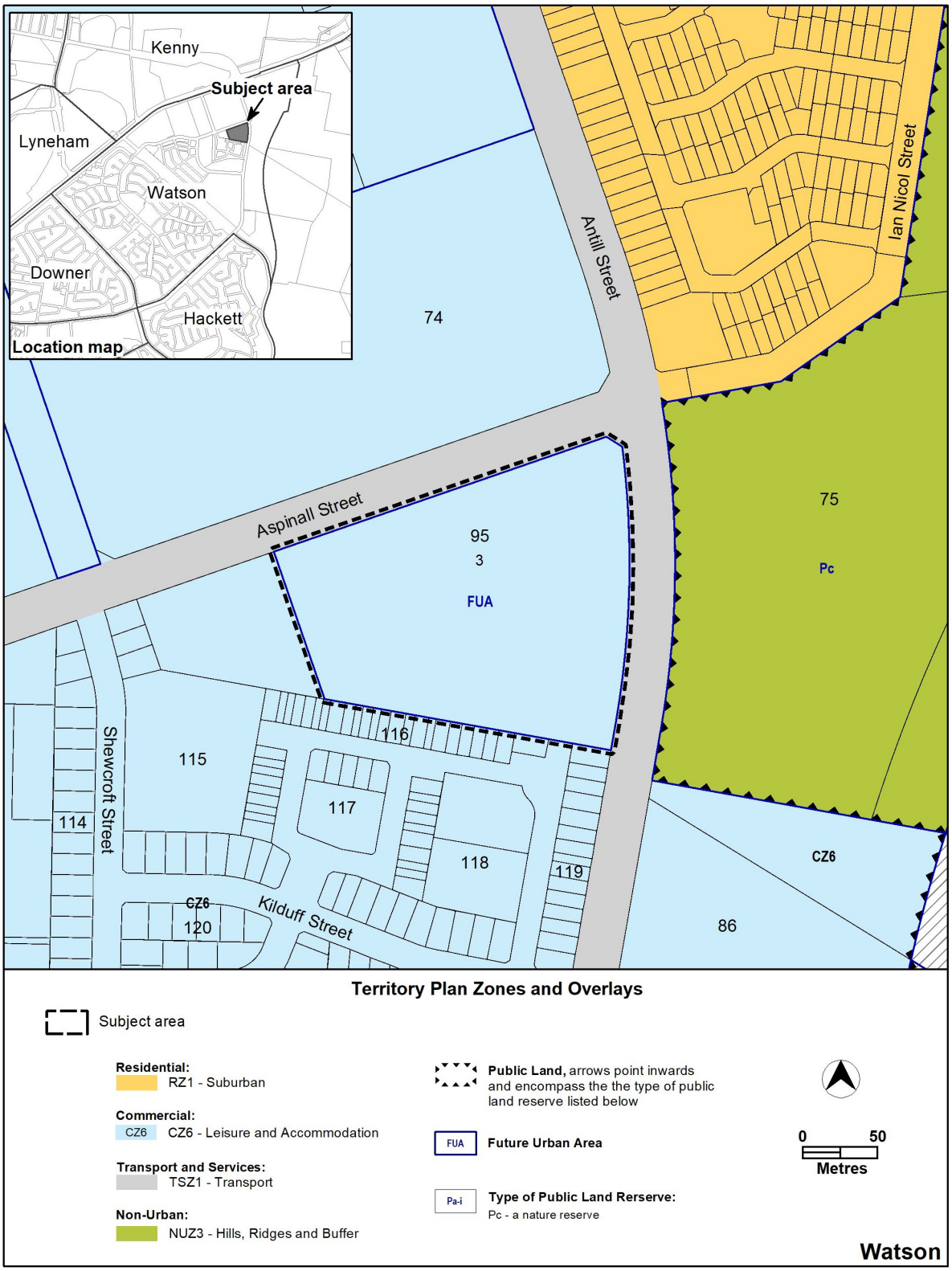
1.4 Site Description

The subject site is located at Watson Section 95 Block 3, in Canberra's Inner North and City District. The site is currently zoned CZ6 – Accommodation and Leisure zone, with a Future Urban Area overlay and is not subject to any provisions under the NCP.

The site is situated on the corner of Aspinall Street and Antill Street on the eastern edge of North Watson. It is currently used by the Canberra Carotel Motel, which occupies the western portion of the site, and the remainder of the site is currently unused. The surrounding land uses vary with low to medium-rise residential developments located to the south and north of the site. There are a range of community uses located to the west of the site, such as the C3 Church Watson, Youth with a Mission and Canberra Potters Society. Located east of the site is the Mount Majura Nature Reserve, which is connected to the Mouth Majura Special Purpose Reserve.

The site is well connected to public transport. There is a bus stop directly north of the site on Aspinall Street and another bus stop within 100m of the site along Antill Street. Located within 2km (4 minute drive or 25 minute walk) of the site is the Watson local centre with a post office, pharmacy, small supermarket, café and food takeaway. Also located less than 2km from the site is the Majura Primary School. There are many parks and recreational spaces in the surrounding area.

Figure 1 – Location Map



2.0 REASONS FOR THE DRAFT PLAN AMENDMENT

Canberra's population is growing quickly, and the ACT only has a limited amount of available land for new suburbs. To manage future growth in a sustainable way, the majority of new housing is required to be provided within existing suburbs through urban infill and increased density. This provides the opportunity to ensure that current and future residents will have improved walkability to transport, high-quality services, employment, health, education and open space.

Located within the Inner North and City District, Watson Section 95 Block 3 has been identified as a category 1 change area, where change could happen in the next 0-5 years. DPA-C aims to facilitate this change by rezoning the site to RZ4 and allowing medium density residential land use on the site, which will provide approximately 134 residential dwellings.

The dwellings will be of various densities, as shown in the masterplan provided and detailed further in the supporting report. The residential development will consist of a mix of single residential blocks and multiunit blocks (containing townhouses and apartments). The range of low to medium density residential typologies are consistent with those in the surrounding North Watson area.

Providing this density of residential development is highly appropriate given the need for additional housing to achieve the ACT Government's target of 70% urban infill and increased densities in existing urban areas. While increasing density, DPA-C will value the existing qualities of the suburb Watson, particularly by ensuring green spaces and trees are preserved, and that streetscapes are enhanced with careful consideration to the interface of the surrounding sites.

2.1 Amendment to the Territory Plan Map

The existing Territory Plan map for the area subject to this DPA-C is shown in Figure 2.

Figure 2 – Existing Territory Plan Map

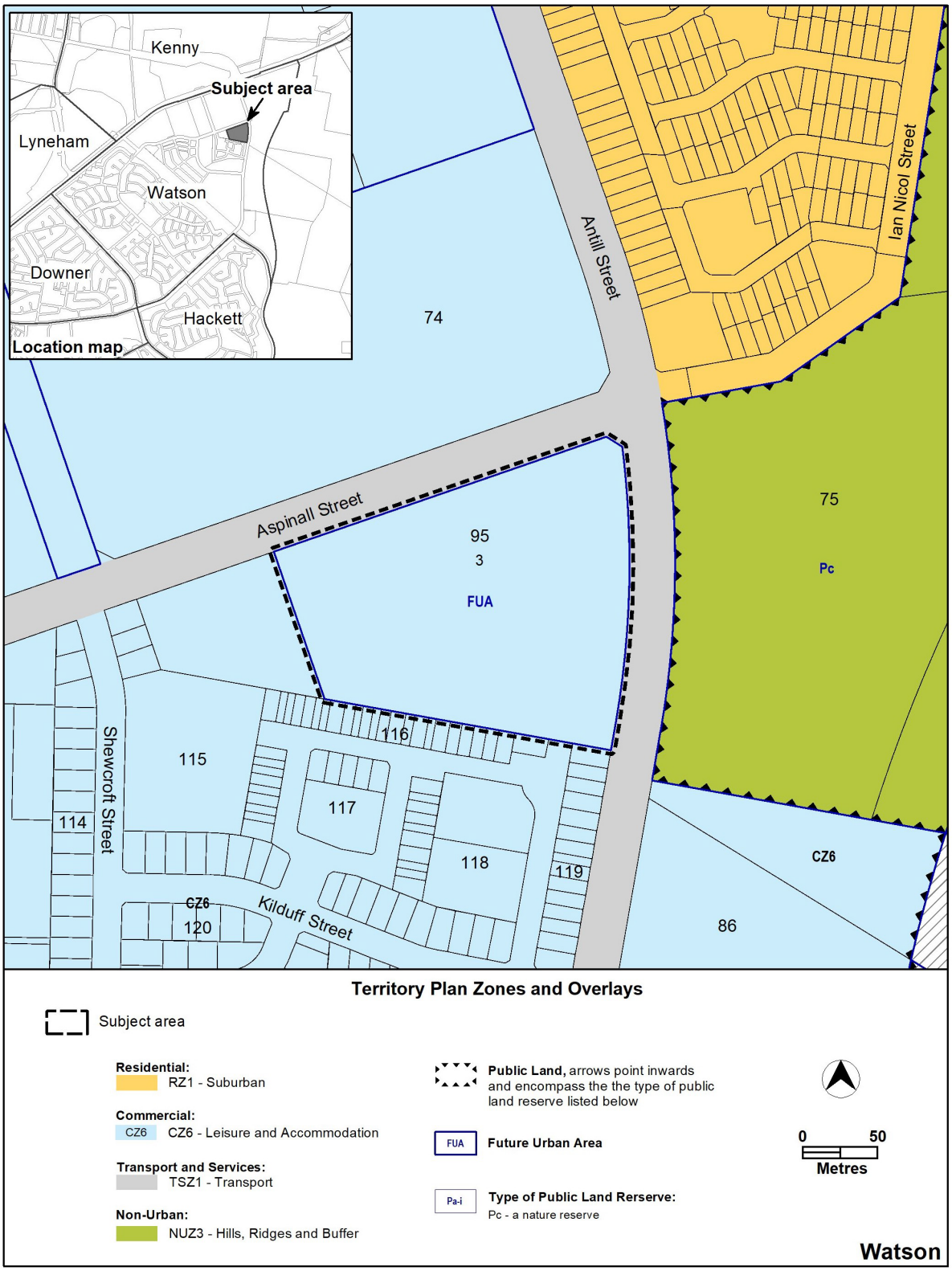
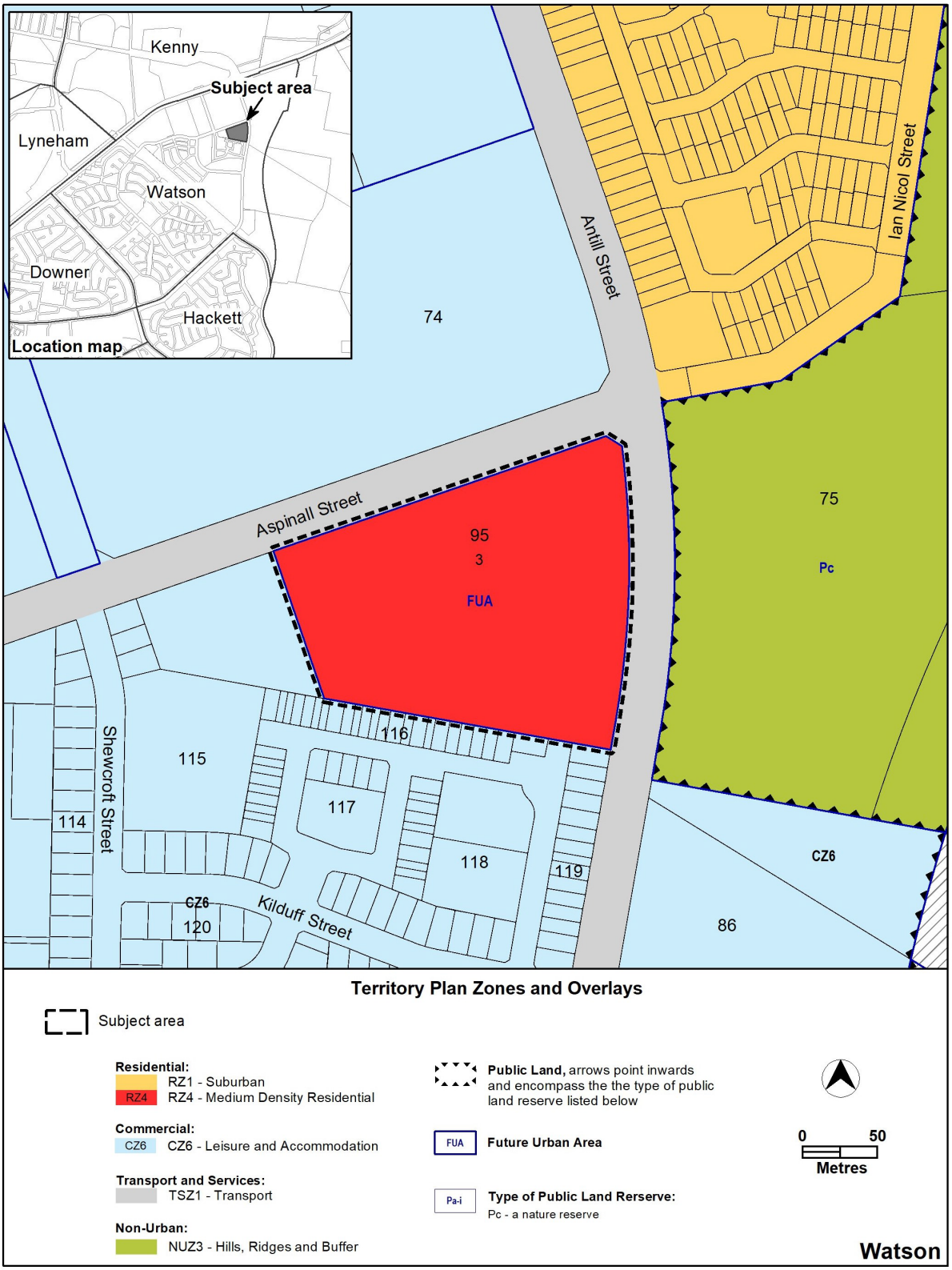


Figure 3 – Proposed Territory Plan Map



2.2 Amendment to Territory Plan policies, design guides and specifications

DPA-C proposes to amend the Territory Plan by rezoning Watson Section 95 Block 3 from CZ6 – Leisure and Accommodation Zone to RZ4 – Medium Density Residential Zone.

No changes are proposed to the Inner North and City District Policy.

2.3 Consequential changes to the Design Guides and Technical Specifications

No changes are required to the Design Guides and Technical Specifications.

2.4 Justification against the Planning Act

A supporting report has been prepared for DPA-C. The supporting report, which is available on the Authority website (https://www.planning.act.gov.au/professionals/our-planning-system/the-territory-plan/major-plan-amendments), outlines:

- the need for the proposed amendment.
- the positive and negative impacts of the proposed amendment.
- how the proposed amendment would give effect to the planning strategy and any relevant district strategy.
- how the proposed amendment would be consistent or inconsistent with relevant planning outcomes contained in other government strategies and policies.
- any consultation undertaken including with relevant entities who may have an interest in the proposed amendment.

DPA-C is a proponent-initiated amendment and how it meets the requirements of the *Planning Act 2023* (specifically section 56) is outlined below. The Application Outcome Notice for Application 2023-01 is also available on the Authority website.

The ACT Planning Strategy

The proposal as part of DPA-C aligns with the five (5) themes of the ACT Planning Strategy, which are:

- compact and efficient city
- diverse Canberra
- sustainable and resilient Territory
- liveable Canberra
- accessible Canberra.

The change of zoning to RZ4 Medium Density Residential Zone and the scale of the proposal, supports a sustainable urban growth, by delivering new housing within Canberra's existing urban footprint, in a prime inner north location. The site is ideally located in proximity to public transport routes, bus stops and local shops, which allows this urban footprint to sustain an increase in residential population. This aligns with the directions of the ACT Planning Strategy by providing housing close to public transport and infrastructure, and supports opportunities for delivering sustainable, high quality medium density housing that meet the needs of the community. As a result, DPA-C aligns with the directions set out in the ACT

Planning Strategy. The supporting report for DPA-C provides further details of how the amendment is consistent with the planning strategy.

The relevant district strategy

The district strategies seek to capture and protect the valued character and attributes of the nine districts of Canberra. The district strategies deliver the ACT Planning Strategy by providing more specific and targeted directions for each district. The district strategies guide the strategic management of growth and change on a district scale in the context of green and blue spaces, good travel connections, housing, employment growth and support commercial areas.

The proposal is consistent with the Inner North and City District Strategy.

Watson Section 95 Block 3 is identified as a category 1 change area, where change could happen in the next 0-5 years. The supporting report provided with the application for the amendment provides details of this further planning work.

Any current or proposed amendments of, or of policies in, the Territory Plan

Policies within the Territory Plan are key to shaping places and communities in the ACT, implementing strategic planning objectives, protecting and minimising the impacts on our environment, and establishing future urban form and development patterns. The policies outline the desired policy outcomes that are important to a district or zone and include assessment outcomes and key assessment requirements that must be met by proposed development. Therefore, an application to amend these existing or proposed policies should be carefully considered.

The proposal is consistent with the relevant policy outcomes in the Inner North and City District Policy and the Residential Zones Policy.

The statement of planning priorities

The relevant minister responsible for planning can set a statement of planning priorities. These planning priorities must arise from the planning strategy and contain actions to be taken in the short to medium term to achieve the priorities.

The proposal is not inconsistent with the 2024-2025 Statement of Planning Priorities.

Anything else the Territory Planning Authority considers relevant to the amendment

No further specific matters were considered to be relevant to the amendment.

3.0 CONSULTATION WITH GOVERNMENT AGENCIES

In accordance with section 62 of the Planning Act the Authority has consulted with each of the following in relation to DPA-C

- the National Capital Authority
- the Conservator of Flora and Fauna
- the Environment Protection Authority
- the Heritage Council
- each referral entity
- if unleased or leased public land, each custodian of the land likely to be affected.

Comments received from these agencies about DPA-C are below.

3.1 National Capital Authority

The National Capital Authority provided the following comments on 16 July 2024:

1. The site is zoned as 'Urban Areas' in the National Capital Plan (the Plan). The proposed Territory Plan amendment is not inconsistent with the Plan and the NCA has no objections.

Authority's Response

1. Noted.

3.2 Conservator of Flora and Fauna

The Conservator of Flora and Fauna provided the following comments on 01 August 2024:

1. We have no concerns with the proposal.

Authority's Response

1. Noted.

3.3 Environment Protection Authority

The Environment Protection Authority provided the following comments on 30 July 2024:

1. The Environment Protection Authority (EPA) has reviewed the report titled "Environmental Site Suitability Report, Block 3, Section 95, Watson, ACT", dated 3 July 2024 by Agon Environmental Pty Ltd.
2. The office of the EPA has assessed the report and supports the consultant's findings that the "site is suitable for the permitted land uses under the RZ4 Medium Density Residential Zone as per the Territory Plan 2023.
3. The EPA approves of the proposed rezoning subject to the following conditions:
    - A site-specific Unexpected Finds Protocol (UFP) must be prepared by a suitably qualified environmental consultant to support any excavation activities at the site. The UFP must consider the findings of the above report.

- All soils proposed to be removed from the site must be assessed in accordance with ACT EPA Information Sheet 4 "Requirements for the reuse and disposal of contaminated soil in the ACT" or equivalent prevailing regulatory regimes.
- No soil is to be removed from the site without EPA approval.

Authority's Response

1. Noted.
2. Noted and acknowledged.
3. The approval and conditions from EPA are acknowledged and relevant assessment will be undertaken during the development application stage.

3.4 Heritage Council

The Heritage Council provided the following comments on 24 July 2024:

1. Thank you for seeking ACT Heritage Council (Council) advice on the Draft Major Plan Amendment C (Draft MPA-C) for Block 3 Section 95 Watson. Draft MPA-C proposes to rezone the block from CZ6 – Leisure and Accommodation Zone to RZ4 – Medium Density Residential Zone. Block 3 Section 95 Watson does not contain any registered, recorded or nominated heritage places or objects.
2. A Cultural Heritage Assessment (CHA) has been conducted of the block, by Past Traces (2022) in consultation with Representative Aboriginal Organisations. This CHA did not identify any heritage places or objects, and assessed the potential for unrecorded heritage sites within the development area as low. In this context, Draft MPA-C and any subsequent development within Block 3 Section 95 Watson is unlikely to damage any heritage places or objects, and there are no Heritage Act 2004 considerations to the proposal.
3. It is, however, noted that any future development of the place should include an Unanticipated Discovery Protocol, to ensure that any unexpected heritage finds during construction are managed in accordance with Heritage Act 2004 provisions.

Authority's Response

1. Noted and acknowledged.
2. Noted and acknowledged.
3. Noted.

3.5 Other referral entities

No consultation was undertaken with other referral entities as there are no additional referral entities prescribed by the Planning (General) Regulation 2023.

4.0 INTERIM EFFECT

Section 64 of the Planning Act does not apply to DPA-C which means it does not have interim effect. This means that the provisions of the current Territory Plan continue to apply.

5.0 CONSULTATION WITH THE PUBLIC

5.1 Consultation period

Written comments are invited from the public on DPA-C by 21 October 2021.

5.2 Written Comment Requirements

Comments need to include your name and reference to the relevant DPA. The Authority may contact you in relation to your comments to request further information. If you wish to be contacted, include your contact details, including an email address and/or telephone number.

5.3 How to submit written comments

Written comments can be submitted by:

- email to terrplan@act.gov.au
- mail to: GPO Box 158, Canberra ACT 2601
- hand delivery to: Access Canberra Building Services Shopfront at 8 Darling Street, Mitchell ACT 2911

Where comments are mailed or hand delivered to the addresses above, envelope and documents should be attention to:
Territory Plan and Coordination Section, EPSDD

5.4 Public release of written comments

Written comments received on this major plan amendment will be published on the Authority's website for at least 30 working days, starting no later than 10 working days after the consultation period for the amendment finishes.

Your personal information will be managed in accordance with the *Information Privacy Act 2014* and the EPSDD Information Privacy Policy (the latter is viewable on EPSDD's website). Unless requested otherwise:

- names and contact details of individuals making written submissions will not be published.
- contact information of business or community, industry, political and interest groups making written submission may be published.

You may request part of your submission to be excluded from public release under section 502 of the Planning Act.

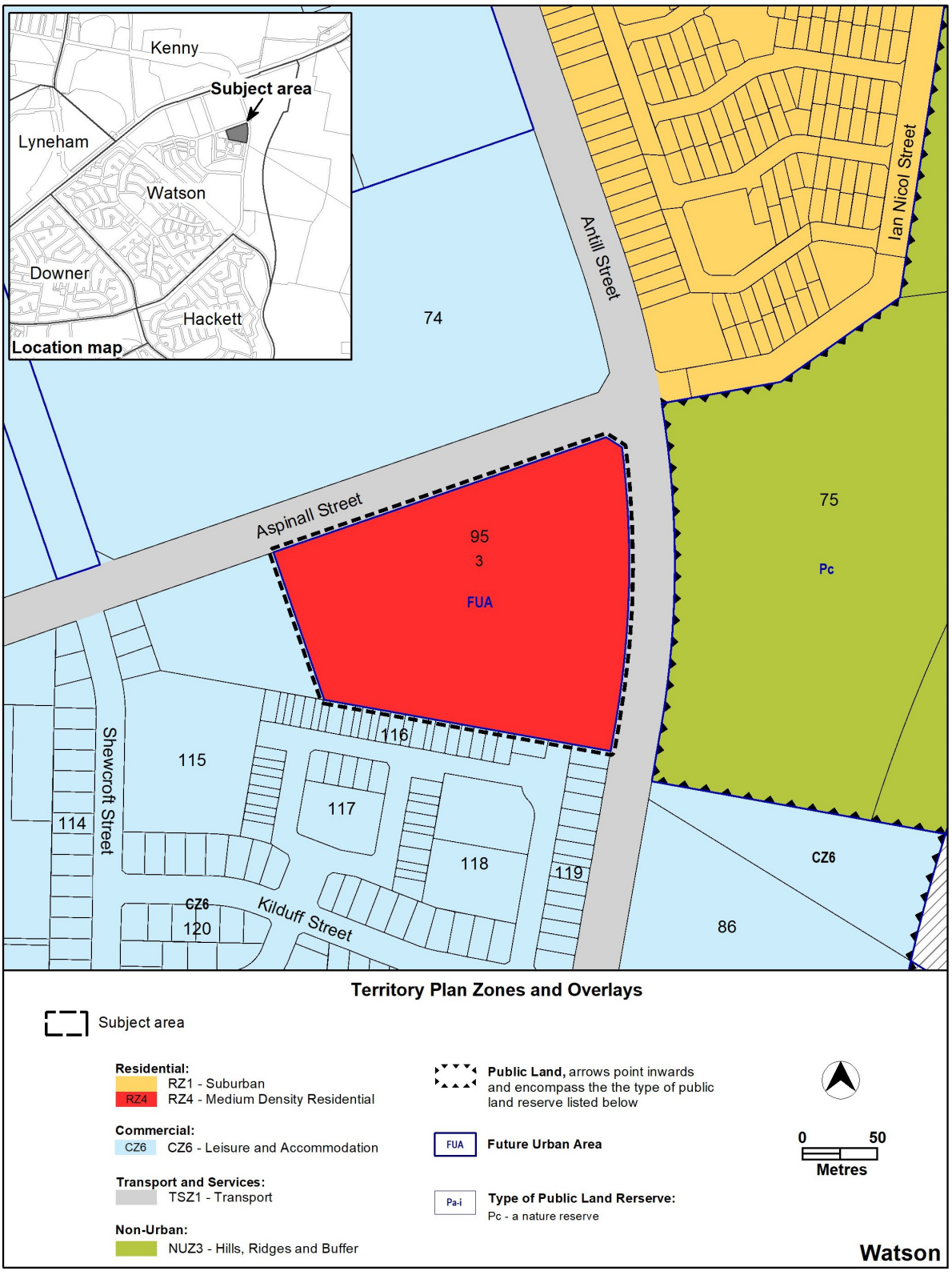
6.0 DRAFT MAJOR PLAN AMENDMENT C

This section details how DPA-C proposes to amend the Territory Plan.

6.1 Amendment to the Territory Plan map

The relevant part of the Territory Plan map is varied in accordance with Figure 4.

Figure 4 – Proposed Territory Plan Map



INTERPRETATION SERVICE

To speak to someone in a language other than English please telephone the Telephone Interpreter Service (TIS) 13 14 50

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English	If you need an interpreter please call: 13 14 50
Mandarin (Simplified Chinese) / 简体中文	如果您需要翻译，请致电：13 14 50
Arabic / العربية	إذا كنت بحاجة إلى مترجم شفهي اتصل بالرقم: 13 14 50
Cantonese (Traditional Chinese) / 繁體中文	如果你需要傳譯員，請致電：13 14 50
Vietnamese / Tiếng Việt	Nếu bạn cần thông dịch viên, xin gọi: 13 14 50
Korean / 한국어	통역사가 필요할 경우 다음 번호로 전화하시기 바랍니다: 13 14 50
Spanish / Español	Si necesita un intérprete, llame al 13 14 50
Persian (Farsi) / فارسی	اگر به مترجم نیاز دارید، لطفاً به این شماره تلفن کنید: 13 14 50
Dari / دری	اگر به یک ترجمان شفاهی نیاز دارید لطفاً به شمارهٔ 131450 زنگ بزنید.
Punjabi / ਪੰਜਾਬੀ	ਜੇਕਰ ਤੁਹਾਨੂੰ ਕਿਸੇ ਦੁਭਾਸ਼ੀਏ ਦੀ ਲੋੜ ਹੈ ਤਾਂ ਕਿਰਪਾ ਕਰਕੇ ਫੋਨ ਕਰੋ: 13 14 50
Tamil / தமிழ்	உங்களுக்கு மொழிபெயர்த்துரைப்பாளர் ஒருவர் தேவைப்பட்டால் 13 14 50 என்ற எண்ணை அழைக்கவும்
Greek / Ελληνικά	Αν χρειάζεστε διερμηνέα, τηλεφωνήστε: 13 14 50
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Thai / ภาษาไทย	หากคุณต้องการล่าม กรุณาโทรไปที่ 13 14 50
Karen / ကညီကျိာ်	ဖဲနမ့ၢ်လိာ်ဘာ်ပှၤကတိၤကျိးထံတၢ်တဂၤအခါဝံသးစူၤကိးဘာ်-၁၃၁ ၄၅၀ တကွၢ်.

Telephone and Interpreter Service 13 14 50 - Canberra and District - 24 hours a day, seven days a week