2025

THE LEGISLATIVE ASSEMBLY FOR THE

AUSTRALIAN CAPITAL TERRITORY

ELEVENTH ASSEMBLY

Major Plan Amendment to the Territory Plan
Block 6 Section 64 Fraser

pursuant to the *Planning Act 2023, Section 77*

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

Australian Capital Territory

Planning (Fraser) Major Plan Amendment 2025*

Notifiable instrument NI2025-286

made under the

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

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1 Name of instrument

This instrument is the *Planning (Fraser) 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 01 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 01 to the Territory Plan means the Major Plan Amendment in schedule 1.

Chris Steel MLA
Minister for Planning and Sustainable Development
3 June 2025

*Name amended under Legislation Act, s 60

ACT Government

Territory Planning Authority

MAJOR PLAN AMENDMENT to the TERRITORY PLAN 01

Fraser School

Change of zoning from NUZ3 to CFZ

for

Part Block 6 Section 64 Fraser

May 2025

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

Authorised by the ACT Parliamentary Counsel—also accessible at www.legislation.act.gov.au

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1.0 Introduction

1.1 Purpose

This document is major plan amendment 01 – Fraser School (MPA-01) 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 a statutory process under the Planning Act that enables the Territory Plan to be amended. The three types of MPAs are:

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

MPA-01 was an authority-initiated MPA.

Under section 63 of the Planning Act, the Authority made MPA-01 available for public comment from 9 December 2024 to 21 February 2025. Following consultation, the Authority considered whether to revise or withdraw a DPA.

After consultation concluded, the Authority considered the comments and gave DPA-01 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-01.

With the above complete, and in considering the background papers, the ACT Planning Strategy 2018 and the Belconnen District Policy, the Minister for Planning and Sustainable Development approved MPA-01.

The Minister must now present MPA-01 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.

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2.0 Summary of MPA-01

This section summarises:

- the amendments MPA-01 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

The subject site is located at part Block 6 Section 64 Fraser in the Belconnen District (figure 1). The site is currently zoned NUZ3 Hills, Ridges and Buffer (figure 2).

The site adjoins the Fraser Primary School and comprises part Block 2 Section 40 Fraser (see figure 1). The block is a large open space (64.29 hectares) which extends across the northern parts of Fraser and Dunlop and includes peripheral open space, near Tillyard Drive and Shakespeare Crescent, and parts of the Dunlop Grasslands Nature Reserve, to the northwest of Fraser.

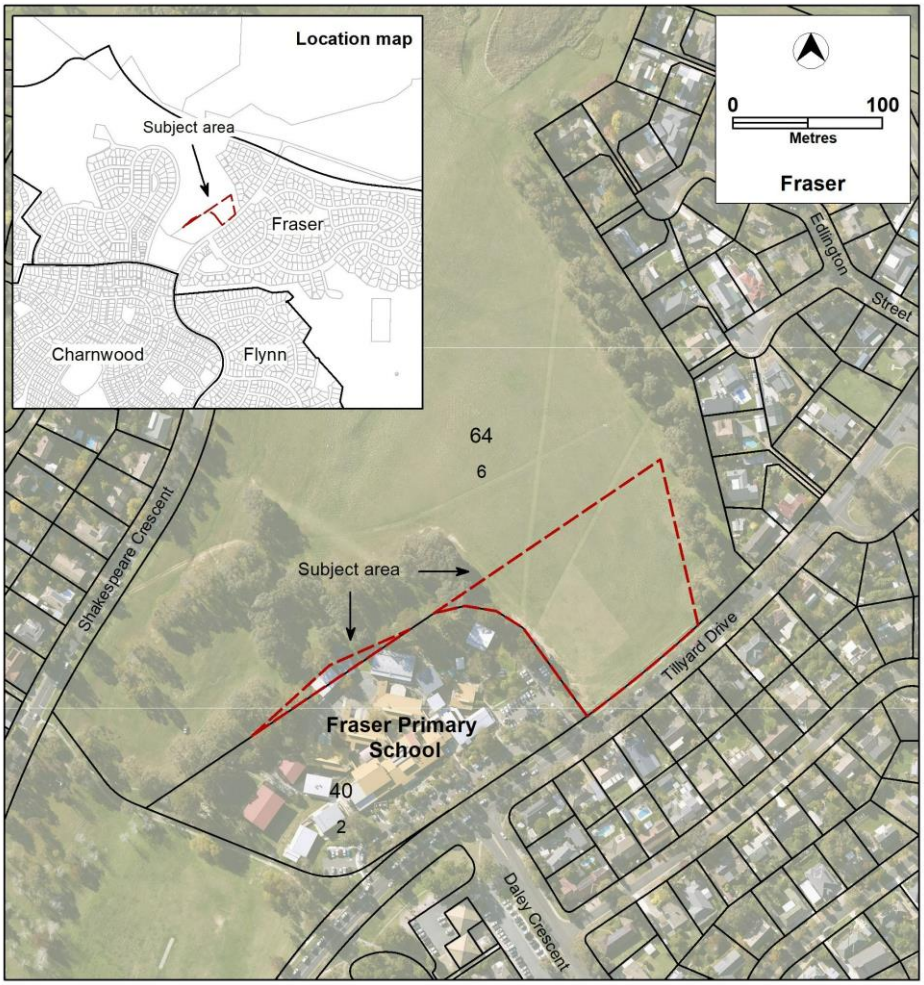


Figure 1 – Location Map

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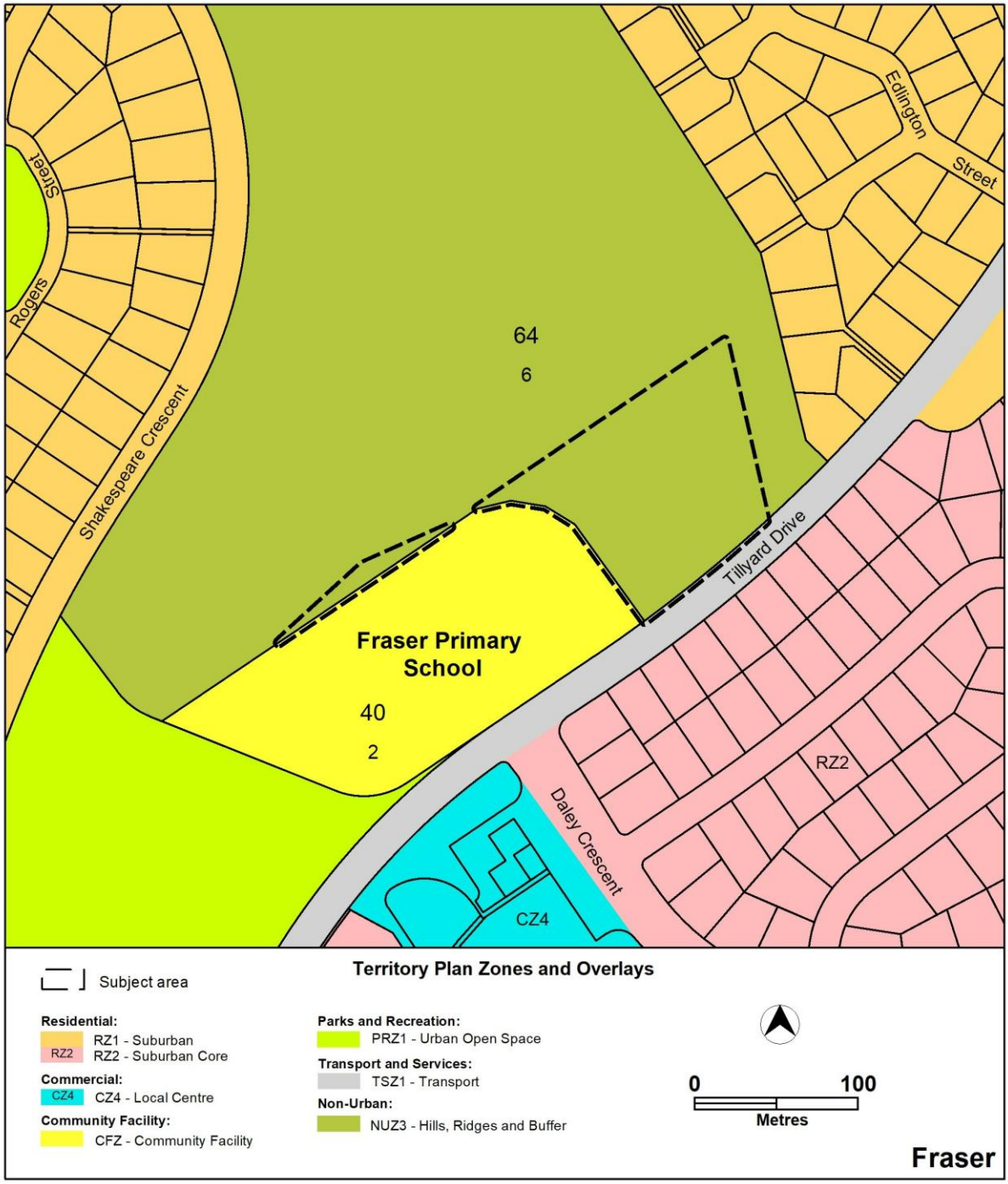


Figure 2 – Existing Territory Plan Zoning

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2.2 Summary of amendments to the Territory Plan

MPA-01 amends the Territory Plan by rezoning part Block 6 Section 64 Fraser from NUZ3 Hills, Ridges and Buffer to Community Facility to enable the site to be used to expand the Fraser Primary School (see figure 3 below). The area being rezoned is mostly on the north-eastern side of the school, but also a small area on the north-western side to regularise the zoning of the buildings located on that boundary.

MPA-01 amends the Belconnen District Policy to prohibit retirement village and supportive housing on the area rezoned to Community Facility. These uses are prohibited on the current school site. The change incorporates the prohibition of these uses both for the existing school site and the areas to be rezoned into the school site into a map, rather than referring to block and section numbers (see figure 24A below).

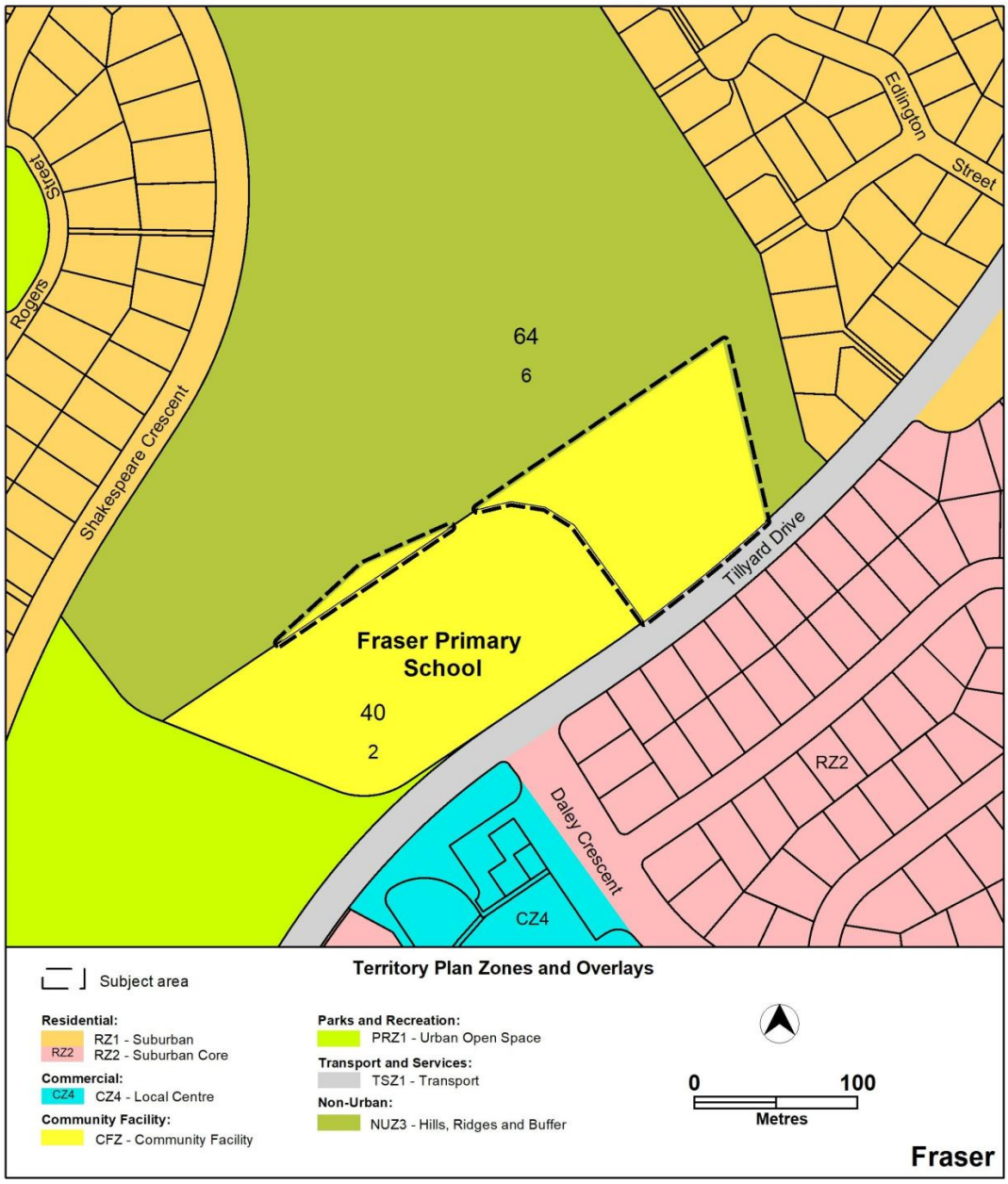


Figure 3 – Proposed Territory Plan zoning

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3.0 REASONS FOR THE MAJOR PLAN AMENDMENT

Fraser Primary School is situated within an existing block of approximately 2.6 ha. Responding to increases in enrolment demand from the local Priority Enrolment Area, school facilities have been expanded incrementally over several years. New teaching spaces have been accommodated within the existing block and this, in turn has reduced the available outdoor space.

The school reports an increase in requirements for teacher supervision during break times due to line-of-site issues related to disconnected available play spaces. There is also pressure on the existing outdoor spaces within the school grounds due to the number of children accessing and playing on the area daily. An increase in the area of available outdoor space will improve the ability for students and staff to access outdoor space for learning and play.

The rezoning will enable the required expansion of the school site within the Community Facility zone. The proposal also regularises the zoning of existing structures located to the north-west of Block 2 Section 40.

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4.0 CONSULTATION

4.1 Consultation with entities

In accordance with section 62 of the Planning Act the Authority must consult with each of 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.

4.2 Consultation with the public

Written comments were invited from the public on this MPA from 9 December 2024 to 21 February 2025.

One comment was received during the public consultation period which supported the proposed rezoning, traffic recommendations and made suggestions for safer streetside parking.

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

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5.0 MAJOR PLAN AMENDMENT 01

This section details how MPA-01 proposes to amend the Territory Plan.

5.1 Amendment to the Territory Plan Map

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

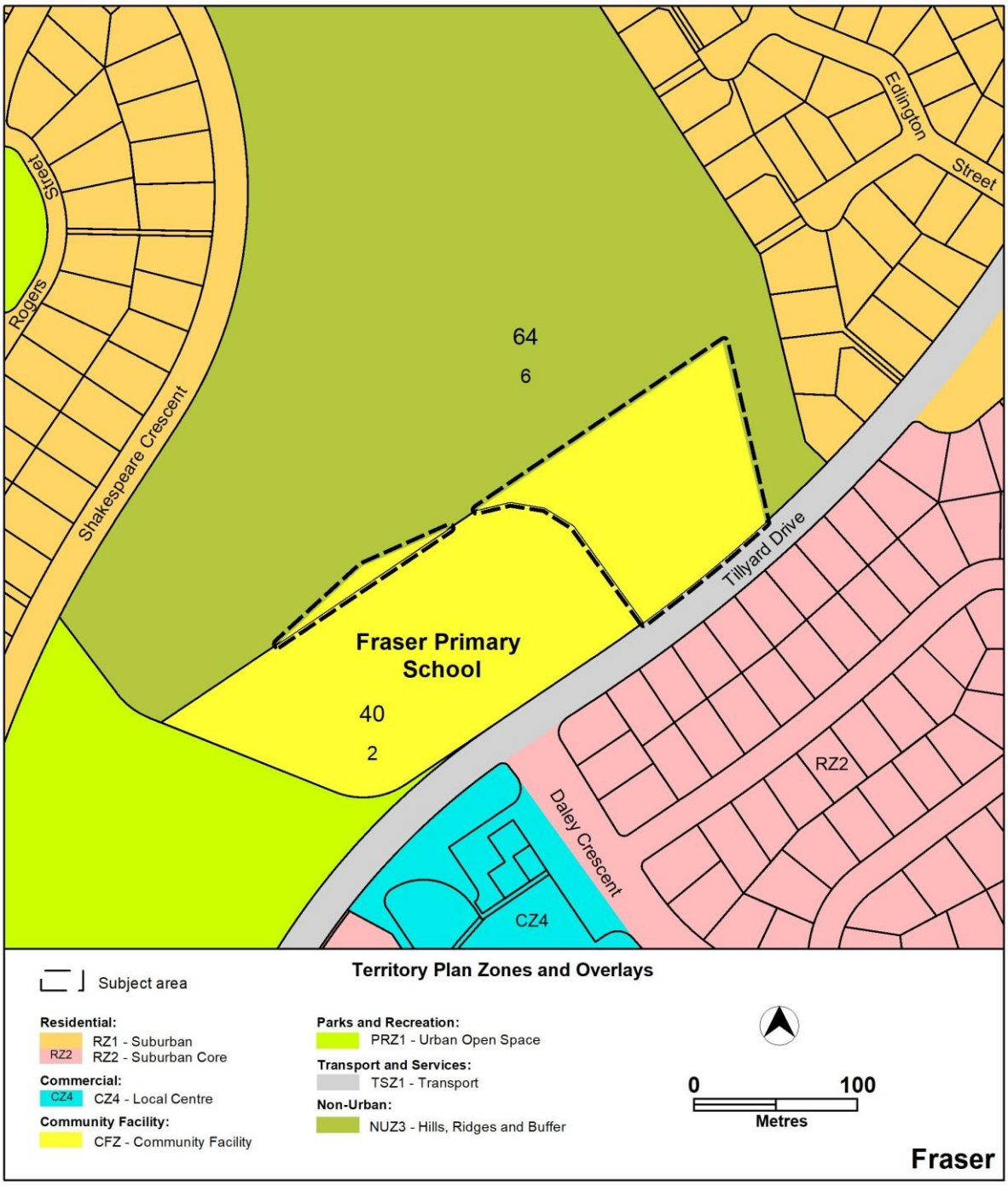


Figure 3 –Territory Plan Map

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5.2 Amendment to the Belconnen District Policy

A. Land Use Table; Locality; Fraser; Relevant parcel or Figure

Omit

Block 2 Section 40

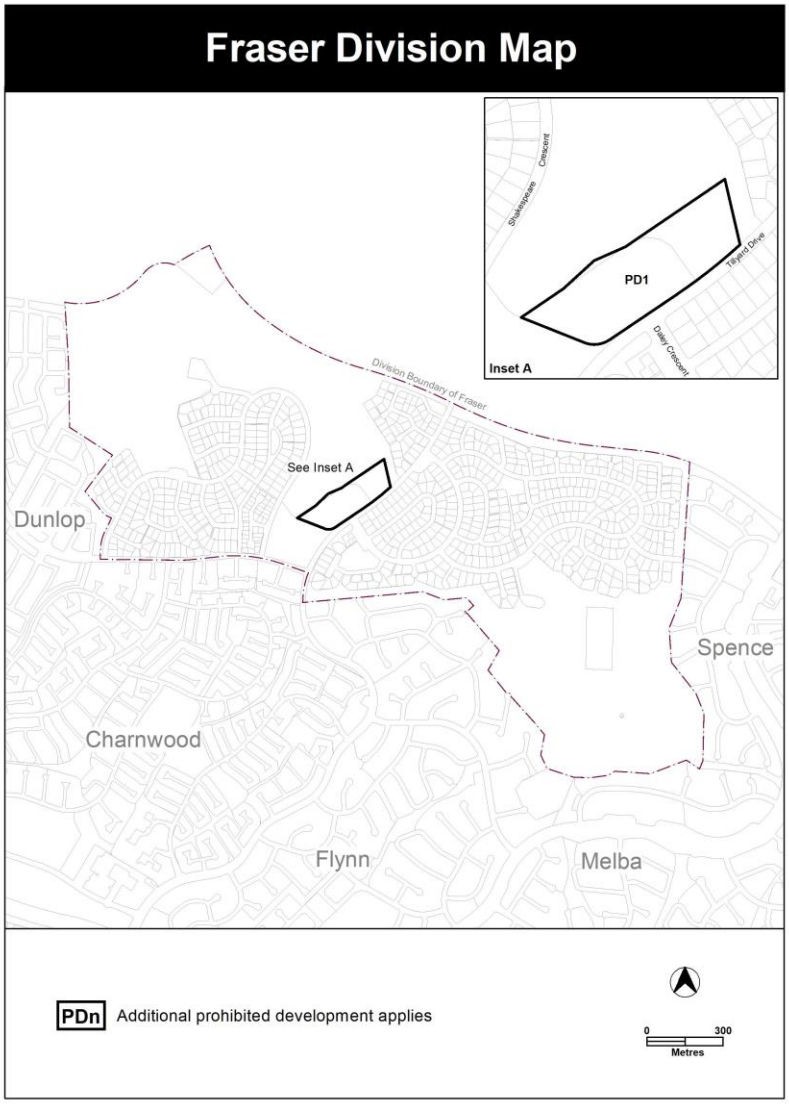
Insert with hyperlink to Figure 24A

PD1 Figure 24A

B. Figures – Assessable and Prohibited Development; Figure 24

Insert with hyperlink to Land Use Table

Figure 24A Fraser
Link back to Land Use Table



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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
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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	ဖဲနမ့ၢ်လိဉ်ဘဉ်ပှၤကတိၤကျိးထံတၢ်တဂၤအခါဝံသးစူၤကိးဘဉ်-၁၃၁ ၄၅၀ တကွၢ်.

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Legislative Assembly for the
Australian Capital Territory
Standing Committee on Environment,
Planning, Transport and City Services

Mr Chris Steel MLA
Minister for Planning and Sustainable Development
Legislative Assembly for the ACT
196 London Circuit
CANBERRA ACT 2601

Dear Minister

Draft Major Amendment to the Territory Plan

I write on behalf of the Standing Committee on Environment, Planning, Transport and City Services to advise that the Committee has considered draft major plan amendment DPA–01 Block 6 Section 64 Fraser and decided not to be prepare a report in relation to the amendment.

Yours sincerely

Ms Jo Clay MLA
Chair

1 May 2025

Design
for a better
future /

ACT Government | Education Directorate

Fraser Primary School

Planning Report

November 2022

Question today
Imagine tomorrow
Create for the future

Fraser Primary School
Planning Report

ACT Government | Education Directorate

WSP
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Canberra ACT 2601
PO Box 1551
Canberra ACT 2600

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Rev	Date	Details
A	05 May 2021	Structure issue
B	16 June 2021	Draft report
C	24 August 2022	Draft report
D	29 November 2022	Final report (draft)
E	30 November 2022	Final report

	Name	Date	Signature
Prepared by:	Sarah Watts	30 November 2022	
Reviewed by:	Mark Maund	30 November 2022	
Approved by:	Sarah Watts	30 November 2022	

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Executive summary

Fraser Primary School (the School) is an ACT public school for Preschool to Year six students. At the time of the February 2022 Education Directorate Census, this included 56 Preschool and 542 kindergarten to Year 6 (K-6) enrolments.

The School is located in the northwest of Belconnen at Block 2, Section 40, Fraser. The Priority Enrolment Area (primary student catchment) comprises the suburbs of Fraser, Charnwood, Flynn (part) and Dunlop. The School currently has a compact site area of 2.6 hectares. Several Relocatable Learning Units (RLUs, or transportables) have been incrementally incorporated into the School to keep pace with population growth-led enrolment demand. This has significantly reduced the overall recreation and outdoor learning and play space on the School grounds. While the School does have an oval located immediately to the south, access to the oval traverses a public pedestrian footpath meaning that students can only use this space under supervision by one or more teachers.

As a result, it is proposed to rezone land to the northeast of the School which would be incorporated into the existing School grounds. This would significantly improve the ability for School students and staff to access outdoor play space within the School grounds and alleviate pressure on public resources. The proposal includes a minor boundary adjustment on the western edge of the school site to realign the site boundary with the fence boundary. No permanent infrastructure or construction activities are proposed and no change to enrolment numbers are proposed through this change.

The land affected by the proposed Territory Plan Variation (TPV) (referred to herein as the subject site) comprises a portion of Block 6, Section 64, Fraser. The portion of the Block is managed by Transport Canberra City Services (TCCS) and zoned NUZ3: Hills, ridges and buffer areas (NUZ3). The balance of the Block is zoned PRZ1: Urban Open Space. Land zoned PRZ1 does not form part of the proposed TPV. The portion of the subject site affected by the proposed TPV contains scattered vegetation and lawn. Under the current planning framework, use of land for a community facility (such as an education centre) is prohibited under the NUZ3. Alternative uses for the land in question under the current framework are therefore limited.

Strategically, the provision of land for community facilities within the ACT is a priority. This is articulated in the Future of Education Strategy (2018) ("the Strategy") and Strategic Plan 2018-2021 ("the Plan"). They outline the ACT Government's education strategy for 2018–2028 and Directorate's strategic framework in key areas. The Strategy establishes a policy direction that informs a range of future initiatives and projects. The Strategy has a principle of access:

> *"Supports for learning and wellbeing are available and provided to all students"*

Adequate school capacity and facilities in our communities are critical to ensuring all children have reasonable access to learning as the population grows. The subject site, which is proposed for an expansion of the area available for students at the School, would support the Government's and Directorate's strategic objectives. Building on the above, the Plan includes targeted recommendations to place students at the centre of their learning, empower education professionals, create stronger learning communities and strengthen equity and quality in education. The Plan includes a number of strategic goals, including ensuring schools are where students enjoy and thrive in learning. The Plan identifies delivering schools for growing communities as a key action that would be partly facilitated by expansion of the Fraser Primary School.

As a result of the above, the proposal to rezone the land from NUZ3 to CF: Community Facilities is proposed. The effect of the proposed TPV would:

- rezone part of Block 6 Section 64 Fraser from NUZ3: Hills, ridges and buffer areas to CF: Community Facilities; and
- amend the Fraser Precinct Code by extending the PD1 Map to include the subject site.

Custodianship of the land affected by the proposed TPV would also be transferred from TCCS to the Education Directorate.

A request to rezone the land is required in order to facilitate the use of land for a community facility (including education centre and/or health facility) as the use of land for a community facility is prohibited on land zoned NUZ3. Therefore, an expansion of the existing Fraser Primary School beyond its physical boundaries is not feasible under the existing planning framework.

As part of the due diligence phase, consultation with identified stakeholders has been undertaken by the Education Directorate with consultants WSP Australia in September and October 2022. Where relevant, stakeholder views and feedback have been incorporated into the findings and recommendations of this report.

This report has been prepared in accordance with the *Scope for Planning Report* issued on the 18th of December 2020 by the Environment, Planning and Sustainable Development Directorate (EPSDD), who approved an extension of the due date for this planning report to 18 December 2022. It includes a detailed assessment of the subject site's physical features, natural features and values, and social and cultural impacts. No buildings and/or works are proposed as part of this request to rezone the subject site. Therefore, any urban design, master planning and built form considerations that may follow this rezoning would be determined via a separate development application process.

It is considered that the proposed change to the Territory Plan would result in a net positive outcome for the ACT. Further, that the subject site is both suitable and capable of supporting the use of land for an education facility. It is considered that the proposal is well resolved and would assist with the School's accommodation of the existing student population. It would also assist with the accommodation of potential future growth of the School in response to population and/or demographic change (if this is required), as well as provide flexibility to the school in using its outdoor spaces in a way that suits the needs of the school and its students.

1 Description of the proposed plan variation

1.1 Proponent and lessee details

The ACT Government Education Directorate (Education) is seeking to rezone part of Block 6 Section 64 Fraser (herein referred to as the subject site) to enable the expansion of the Fraser Primary School (herein referred to as the School). The existing School is located to the south-west of the portion of Block 6, Section 64 Fraser detailed in Figure 1.1.



Figure 1.1 Existing Fraser Primary School and part of Block 6, Section 64, Fraser subject to proposed TPV (Source: WSP)

Land forming part of the subject site is currently under the custodianship of Transport Canberra and City Services (TCCS) and comprises unleased Territory land (see Figure 1.2).

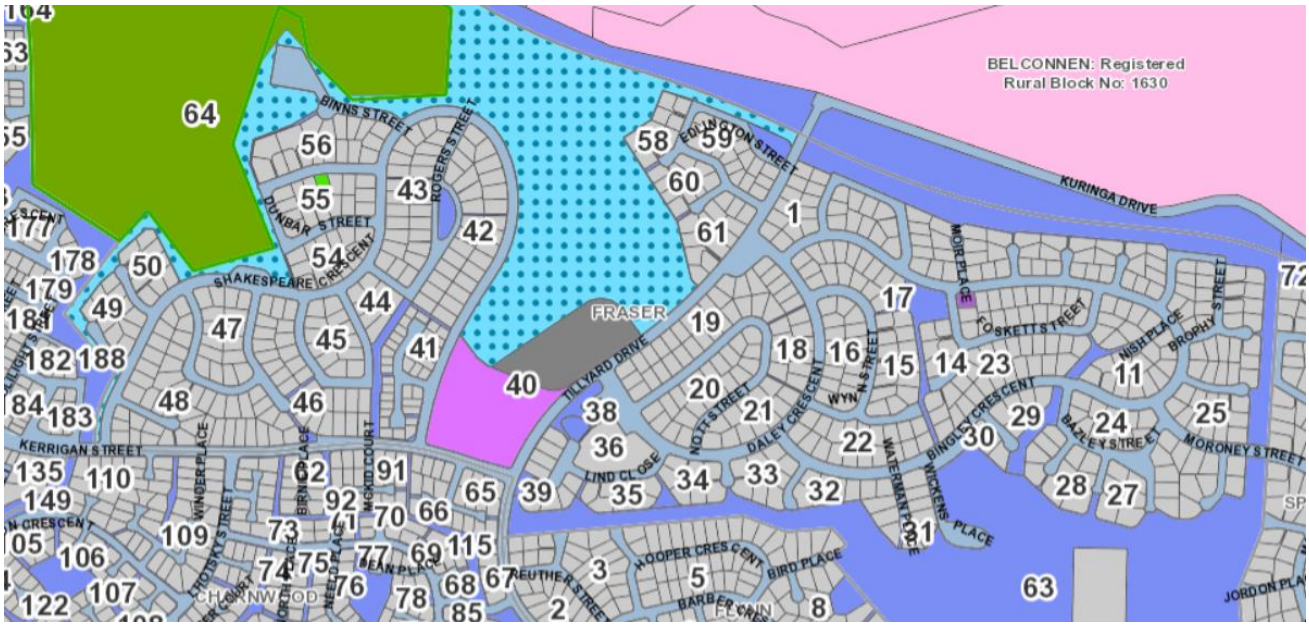


Figure 1.2 Custodianship map (Source: ACTMapi) Block 64, Section 6, Fraser under custodianship of TCCS

1.2 Site location and characteristics

The proposed Territory Plan Variation (TPV) affects a portion of the subject site identified at Figure 1.1.

The subject site contains grasslands and is located to the north-east of the existing School.

Topographically, the land is gently sloping to the north-west.

Beyond the subject site to the east there are patches of significant vegetation and the residential hinterland of Fraser. The vegetation is located within a 35 metre buffer to the established residential hinterland.

To the west of the subject site, the surface is undulating due to stockpiled material from when Fraser was established in the 1970's. This portion of the site also contains some significant trees, none of which are remnant. The west of the School also contains an overland stormwater flow grassed swale draining to Halls Creek in the north, and major sewer infrastructure below ground.

To the south-west of the subject site is the Fraser Oval and a walking/cycling trail.

The School has been developed with a series of educational buildings, outdoor play spaces (including sports courts and gardens/seating areas), maintenance outbuildings, landscaping and car parking. Built form is typically single/double storey construction. Buildings are set amongst mature vegetation (including trees) and low scale garden beds/planting.

Car parking on site consists of:

- 77 car park spaces
- Two (2) disabled car park spaces; and
- One (1) bus stop.

The School's bus stop is located within the School's main entrance driveway, parallel adjacent to Tillyard Drive.

Tillyard Drive provides a single carriageway and on-road cycling route and is bounded by kerb and channel. 'School Zone' speed restrictions are in place in proximity of the subject site (i.e. along Tillyard Drive and Shakespeare Crescent). Sixteen on-street 'pick up'/drop off' kerbside parking spaces are located on the western side of Tillyard Drive. There are two bus stops on Tillyard Drive within 200 metres of the Fraser Primary School.

Pedestrian connectivity to the existing School is provided via an underpass crossing on Tillyard Drive to the south of the subject site and a children's crossing on Shakespeare Crescent to the north of the subject site and nature reserve. The two pedestrian connections are joined by a share path (pedestrian and cycle facilities) that runs adjacent to the School's south-western boundary.

Existing access/egress and pedestrian connectivity is depicted at Figure 1.3 below.



Figure 1.3 Existing access/egress (Source: Indesco)

1.2.1 Community

Current enrolment for Fraser Primary School consists of a mix of Preschool to Year 6 enrolments. This report has been prepared on the advice of the Education Directorate that no significant changes to enrolment numbers are proposed at this time, based on 2022 population and enrolment projections.

The Priority Enrolment Area (PEA) of the Fraser Primary School encompasses the areas highlighted in Figure 1.4 below and captures the following:

- Charnwood – north of Yuille Place and Arietta Close, Bettington Circuit, north and Bloxham Street
- Dunlop – north of Kerrigan Street
- Flynn (part); and
- Fraser (see: education.act.gov.au/PEA 2022).

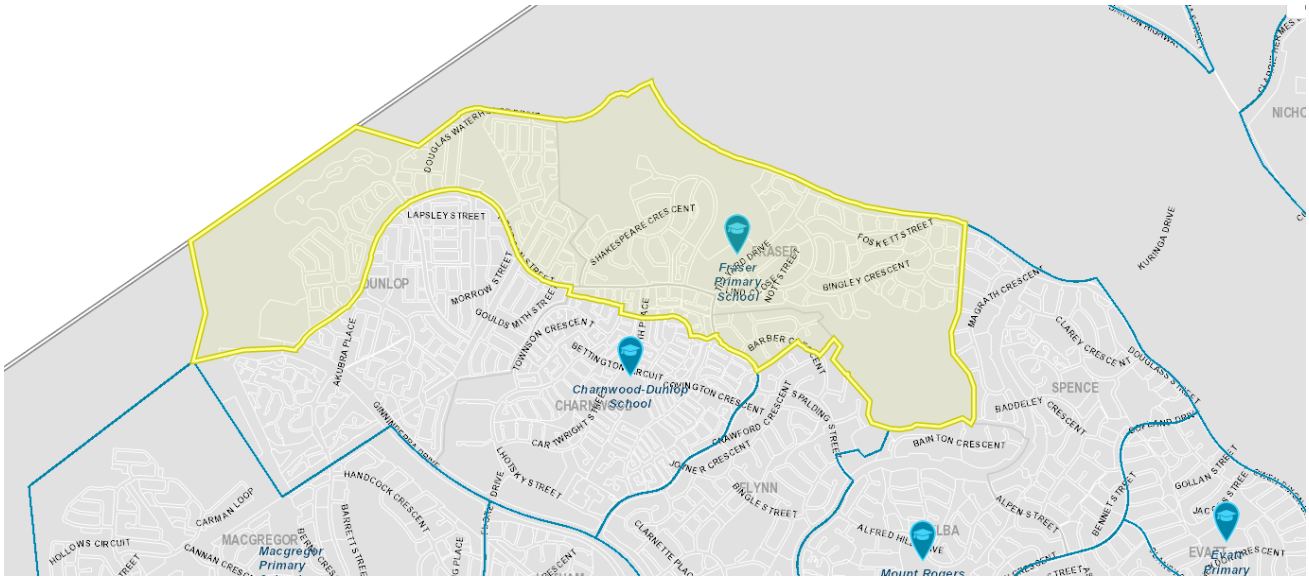


Figure 1.4 Priority enrolment areas (PEA) map (Source: ACTMapi)

The 2021 Australian Bureau of Statistics (ABS) Fraser census results indicate that:

- 19.9 per cent of the Fraser population is within 0–14 years age
- 83.6 per cent of households comprise 'family households'

1.2.2 Community facilities

The Fraser Primary School is proximate to the following community facilities:

- bus services (R42, R41) that run along Tillyard Drive and Shakespeare Crescent (see Figure 1.5)
- Fraser Oval located to the south of the School
- Fraser Oval Playground located west of the School
- local retail/commercial facilities located to the south of the School along Daley Crescent
- Mount Rogers Reserve (and associated local trail network through Fraser and surrounds) located to the south-east of the School
- Mag Place Playground located to the west of the School
- North Dunlop Playground located to the west of the School
- Dunlop Grasslands Nature Reserve located to the north of the School
- Spence Oval and local shops/retail and commercial facilities located to the south-east of the School.

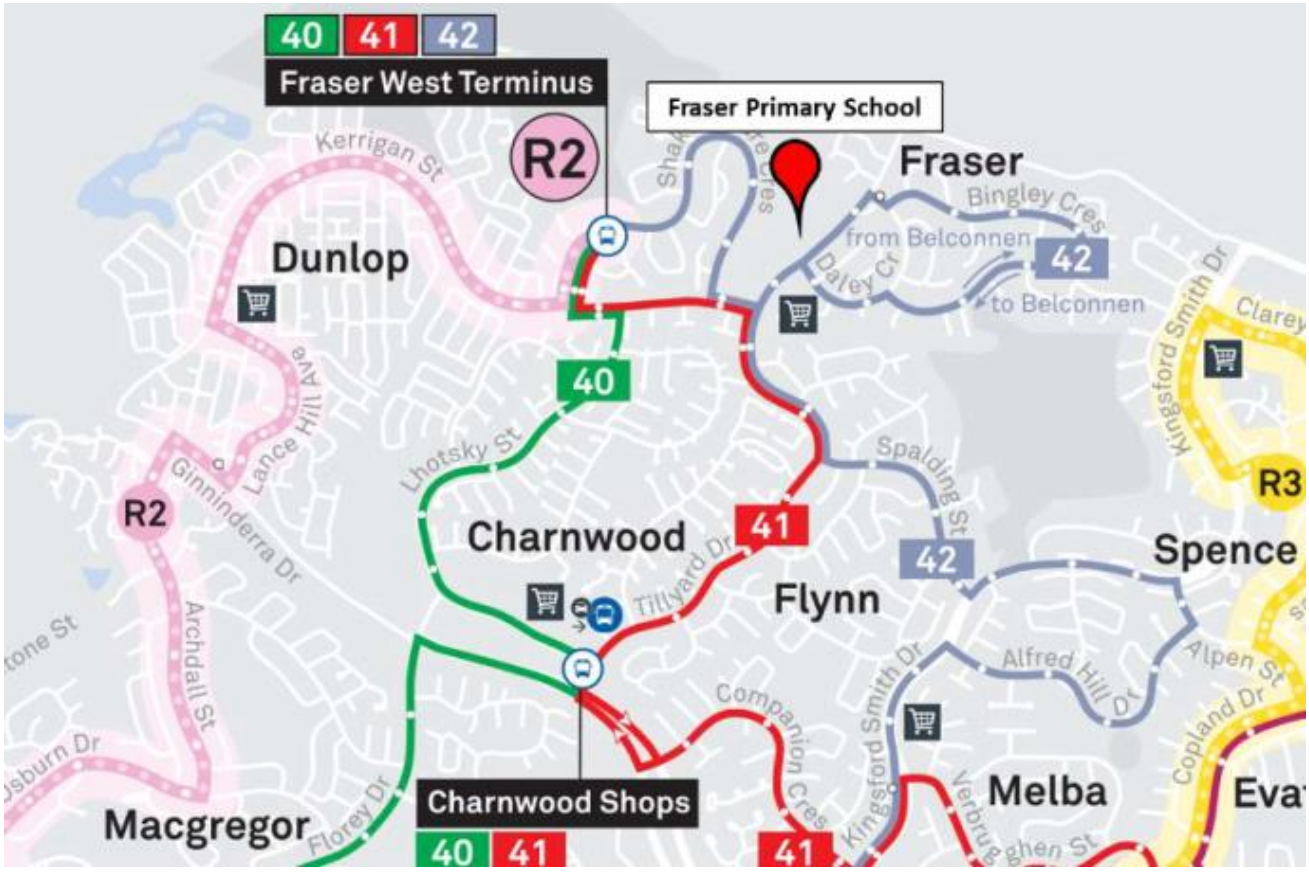


Figure 1.5 Public transport network relative to subject site and surrounding area (Source: Indesco)

1.3 Land tenure and administrative responsibilities

The *Australian Capital Territory (Planning and Land Management) Act 1988* creates two categories of land in the ACT – National Land (which is land directly required by or for the Commonwealth) and Territory Land. The subject site comprises Territory Land.

Territory Land may be further distinguished into Designated Areas and Non-designated Areas.

Designated Areas are those that have been identified as exhibiting the special characteristics of the National Capital. Designated areas are directly administered by the National Capital Authority (NCA) through the National Capital Plan (NCP), which clearly identifies the extent of Designated Areas.

Land that does not exhibit the special characteristics of the NCP is administered by the ACT Government through the Territory Plan (the TP).

The subject site is not Designated. Consequently, planning jurisdiction lies with the ACT Government. The NCA is not likely to have a role in the assessment of any future development application. Land forming part of the subject site is currently under the custodianship of TCCS and comprises unleased Territory Land.

1.4 Proposed development

No physical (or infrastructure) works are proposed as part of the TPV.

It is proposed to rezone the subject site to enable educational use. The transfer of custodianship of the land to the Education Directorate would be undertaken separately. Urban design, master planning, built form and landscaping (amongst other considerations) would be resolved via a Development Application process for future buildings and works, if proposed.

1.5 Proposed variation

The following section outlines the existing planning framework, and the proposed TPV.

The subject site is currently zoned NUZ3: Hills, Ridges and Buffer Areas. The balance of Block 6, Section 64 is zoned a combination of NUZ3 and PRZ1: Parks and Recreation: Urban Open Space. The existing Fraser School site (although it is noted that the zone boundary does not align with the fence boundary) is zoned CF: Community Facilities Zone.

1.5.1 NUZ3: Hills, Ridge and Buffer Areas

The NUZ3 zone seeks to:

a) *Conserve the environmental integrity of the hill system as a visual backdrop and a unified landscape setting for Canberra*
b) *Provide opportunities for appropriate recreational uses*
c) *Conserve the significant cultural and natural heritage resources and a diversity of natural habitats and wildlife corridors*
d) *Provide predominantly open buffer spaces for the visual separation of towns and to provide residents with easy access to hills, ridges and buffer areas and associated recreation facilities*
e) *Provide opportunities for appropriate environmental education and scientific research activities.*



Figure 1.6 Zone map (Existing) (Existing School shown yellow) Source: ACTMapi Territory Plan

'Community Use' which includes an 'educational establishment' are listed as 'Prohibited Development' pursuant to the NUZ3. Therefore, it is not possible to pursue an expansion of the existing educational facility under the current zoning.

It is not necessary to assess the suitability of a proposal for an education facility against the Non-Urban Zones Development Code (NUZDC) as the use is prohibited under the NUZ3.

1.5.2 CFZ: Community Facility Zone

It is proposed to rezone the land to the Community Facility Zone (CFZ). The CFZ contains the following Zone Objectives:

a) *To facilitate social sustainability and inclusion through providing accessible sites for key government and non-government facilities and services for individuals, families, and communities*
b) *To provide accessible sites for civic life and allow community organisations to meet the needs of the Territory's various forms of community*
c) *To protect these social and community uses from competition from other uses*
d) *To enable the efficient use of land through facilitating the co-location, and multi-use of community facilities, generally near public transport routes and convenience services appropriate to the use*
e) *To encourage adaptable and affordable housing for persons in need of residential support or care*
f) *To safeguard the amenity of surrounding residential areas against unacceptable adverse impacts including from traffic, parking, noise or loss of privacy*
g) *Promote active living and active travel*
h) *Provide safe pedestrian and cycling access to community facilities to promote active living.*

Pursuant to the CFZ, an educational establishment would trigger the Assessment Track – Merit development application process.

1.5.3 Community Facilities Development Code

No amendments to the Community Facilities Development Code (CFDC) are proposed in relation to the proposed request to rezone part of Block 6 Section 64, Fraser.

1.5.4 Overlays

Block 6, Section 64, Fraser is affected in part by the PC: Nature Reserve and PUBLAN: Public Land overlay.

These overlays do not affect the subject site.

1.5.5 Precinct codes

The Fraser Precinct Code (and Map) applies to the existing School.

The Fraser Precinct Map identifies that additional prohibited development applies to Block 2 Section 40, Fraser (see Figure 1.7).

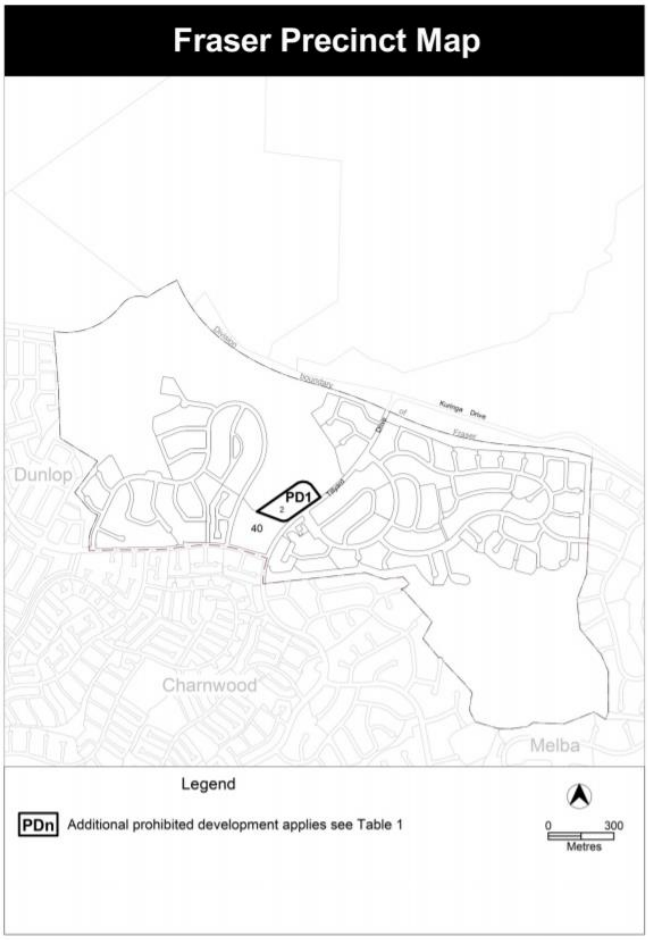


Figure 1.7 Fraser Precinct and TPV Subject Site Map (Source: Territory Plan 2008)

Table 1.1 Additional prohibited development

Suburb precinct map label	Zone	Development
PD1	CFZ	Retirement village supportive housing

As noted at Section 1.5.2, the CFZ enables a suite of other uses via the Merit Track development application process. In this case, the existing Fraser Precinct Map and Code prohibits development of a retirement village and supportive housing on the current School. Therefore, an amendment to the Fraser Precinct Map is required to ensure that the rezoned land is included. An amendment to the PD1 boundary would not alter the prohibited uses.

1.5.6 General codes

No change to any General Codes are proposed as part of this TPV.

1.5.7 National Capital Plan

The subject site is not affected by Special Requirements under the National Capital Plan (NCP). Therefore, no change to the NCP is required as part of the proposed TPV.

1.5.8 TPV summary

The effect of the proposed TPV is described below in Table 1.2.

Table 1.2 TPV summary for part Block 6 Section 64 Fraser

Current	Proposed
Zoning	
— NUZ3: Hills, ridges and buffer	CF: Community Facilities
Overlay	
— Pc: Nature Reserve — PUBLAN: Public land	No impact on Pc: Nature Reserve and PUBLAN: Public Land overlays
Use	
— Public open space/parkland	School
Precinct code	
Fraser Precinct Map	Extension of the PD1 Map to include Table 1 Prohibited Uses

2 Justification for the planning policy changes

2.1 Strategic need for the TPV

The ACT Government has identified the provision of community facilities (including education facilities) to meet existing and future demand, which is also a priority of the Future of Education Strategy, ACT Education Department Strategic Plan (2018–2021), ACT Wellbeing Framework and the ACT Planning Strategy. This driver is also filtered through other government policies and initiatives. The ACT Planning Strategy (the Strategy) outlines the strategic direction for the city.

In response to the identified strategic demand identified for additional community facilities, the proposed TPV seeks to expand the current community facility site into Block 6 Section 64 Fraser. The land would be incorporated into the existing School grounds.

The additional land would provide the potential for improvements to the flow of students throughout the subject site, and available outdoor area for student play/outdoor education. The boundary expansion would also align the site boundary with the fence boundary on the western edge of the site. As a consequence of the proposed rezoning, further mechanical changes are required to the Territory Plan and associated custodianship the:

- new site boundary would need to be established
- the land would need to be transferred into the custodianship of the Education Directorate
- Fraser Precinct Map would need to be amended to include that component of the subject site that is proposed for rezoning.

2.2 Community context

Ensuring every Canberran has good access to community facilities and opportunities for social interaction is a key feature of liveable, inclusive and resilient communities. Social infrastructure encompasses all the facilities, services and networks that help families, groups and communities to meet their social, health, education, cultural and community needs.

Every child in Canberra has access to a great public school close to home. The ACT Government is continuing to invest in ACT public schools to meet current and future education needs, and so that all students can take full advantage of educational opportunities

In the case of Fraser Primary School, the School requires additional land for play areas and open space for students. In 2022 this includes for enrolments of 598Pre-school and Kindergarten to Year 6 (K-6) students that are accommodated within an area of 2.6 hectares. The School is looking to expand its site to better accommodate the current school population. No physical works are proposed as part of this rezoning process.

No changes to the School's existing off-street parking or access/egress is proposed as part of this TPV. No changes to the surrounding street network are proposed as part of this TPV. No change to pedestrian connectivity to the School grounds from the public realm is proposed as part of this TPV process.

2.3 Alternatives considered

Prior to resolution of the proposed new boundary depicted at Figure 1.1, alternatives were considered. The outcomes of preliminary investigations into alternatives are provided below.

2.3.1 Expansion to the west and north-west

To the west of the existing School is habitat for the Superb Parrot (refer WSP Preliminary Biodiversity Assessment, 2022). The habitat appears to be in a reasonable condition. It also contains scattered trees (primarily Eucalyptus) and understorey. There are also School buildings to the northwest of the subject site (including service infrastructure) and other School facilities which are orientated away from the vegetated area.

Given the presence of habitat for the Superb Parrot and existing School layout it was determined not to pursue a boundary expansion to the north and north-west. A small adjustment to the boundary on the western side would align the site boundary with the fence boundary. There would be no impact on vegetation or habitat.

2.3.2 Expansion to the south

To the south of the existing School is the Fraser Oval, Fraser Oval Playground and a public pedestrian/cyclist pathway under the custodianship of the Education Directorate. The existing facilities to the south of the School are recognised as regionally significant. The trail provides a connection to the Dunlop Grasslands Reserve to the far north. Rezoning land to the south of the School for educational purposes would likely result in a need to relocate significant community infrastructure (such as play equipment, oval, walking/cycling trail).

On this basis, it was determined that rezoning land to the south of Fraser School would not be pursued.

2.3.3 Alternative uses within CFZ

Section 1.5.2 describes the suite of uses available pursuant to the CFZ which would attract a Merit Track DA process. It also describes the requirements of the CFDC which apply to uses under the CFZ. Some of the uses permitted via the Merit Track DA process are provided below:

- cultural facility, emergency services facility, indoor recreation facility, parkland and residential care accommodation.

Such uses are aligned with the purpose of the zone, namely to provide community uses. The use of land for educational purposes is consistent with the existing use of the Fraser School site which is zoned CFZ. It is considered that an expansion of the CF zoning to the land described in this TPV is consistent with the objectives of the CFZ.

Any application for an alternative use would be assessed on its merits. This would include consideration of the subject site's physical and strategic context.

The CFDC provides the framework for consideration of built form which would support uses under the CFZ. Any development proposed would be required to be consistent with the CFDC.

2.3.4 Alternative use of area proposed for rezoning

Should the proposed TPV not be pursued, the land would remain in NUZ3 (Hills, Ridges and Buffer Zone). This zone seeks to, amongst other things *"Provide opportunities for appropriate recreational uses"* and *"provide predominantly open buffer spaces for the visual separation of towns…".*

Community uses (including health facilities and educational facilities) are prohibited under this zone.

In this case, the entirety of the subject site appears to provide a 'buffer' between the residential hinterland to the north and north-east and the existing School. The subject site has been developed with grassed area (and some native grasses) and scattered trees (Eucalyptus) that is separated from the existing School. It is considered that on balance, it is reasonable to rezone the portion of the subject site in question for a community use as:

- a 'buffer' between the existing residential hinterland of Fraser and the School would be retained in light of the proposed TPV given that a 35 metre zone setback from the nearest residentially zoned land would be retained
- the portion of the subject site proposed for rezoning is generally devoid of significant vegetation (two small groups of trees were identified at its periphery – and they are proposed for retention as they would sit outside the land to be rezoned)
- the area of Block 6, Section 64 affected by this TPV represents a negligible amount of the total block area
- the land proposed for rezoning does not sit adjacent to the Dunlop Grasslands Reserve. It is located south of the reserve
- the area of Block 6 Section 64 proposed for rezoning does not affect the Fraser Oval, formalised walking/cycling infrastructure or Fraser Oval Playground
- the proposed rezoning would not require the removal of or any impact to, existing trees/vegetation
- the area of Block 6, Section 64 proposed for rezoning would not impact on the Superb Parrot habitat located to the north and northwest of the subject site.

3 Strategic planning policy context

3.1 ACT strategic planning context

3.1.1 ACT Planning Strategy 2018

The ACT Planning Strategy 2018 provides the medium-term vision for the growth and development of Canberra with a particular emphasis on Canberra being a sustainable, competitive and equitable city. To achieve this, it outlines five key themes for the development of Canberra:

- compact and efficient
- diverse
- sustainable and resilient
- liveable
- accessible.

These themes include a focus on making Canberra a great place to live and work, including from the development of social infrastructure, open spaces and public places to meet community needs and support strong communities.

Several of the strategic directions under the Strategy are relevant to consideration of this proposal and are outlined below:

- *1.3 Use infrastructure efficiently to support our growing community.*
- *2.2 Enhance the diversity and resilience of our centres to meet the needs of the community, support economic viability and improved liveability.*
- *2.6 Protect and enhance infrastructure that supports the economic development of Canberra and the region.*
- *3.5 Protect biodiversity and enhance connectivity to improve landscape resilience.*
- *4.1 Deliver social infrastructure that meets community needs and supports strong communities.*
- *4.3. Strengthen neighbourhoods and support their diverse character by creating strong local activity hubs.*
- *5.1 Enhance accessibility by better integrating transport and land use.*

The proposed amendment to the TPV responds to these objectives as it facilitates the provision of further zoned for purpose land which would deliver additional educational services the local community.

3.1.2 ACT Climate Change Strategy 2019–25

The ACT Climate Change Strategy 2019–25 outlines actions to meet the 2025 emission reduction target of 50–60 per cent and establishes a pathway for net zero emissions by 2045. Over the next 30 years there is likely to be major changes to support a shift to net zero emissions, however significant change is still a way off therefore in the short-term stronger emphasis needs to be placed on our choices (e.g. active travel and/or public transportation).

Key initiatives under this Strategy include:

- 3.6 Expand and promote the Active Travel Office and schools-based active travel initiatives
- 5.12 Establish a pathway to zero emissions ACT Government schools supported by an interim emissions reduction plan to 2025.

It is considered that the proposal to rezone part of Block 6, Section 64 to CFZ responds appropriately to this Strategy as:

- increased local school capacity has been found to reduce private vehicle use (as it reduces the likelihood/need for car travel to/from schools)
- an increase in capacity of the existing school network would encourage increased local enrolment and ease pressures on surrounding education facilities.

3.1.3 Canberra's Living Infrastructure Plan – Planning for the Future 2019

ACT Government Infrastructure Plan 2019 outlines the Government's blueprint for a $14 billion infrastructure investment in the growing needs of the community. Since 2010, the number of students attending public schools has grown from around 39,000 to around 49,000 students (an increase of more than 26 per cent) and consequently the infrastructure plan includes $2.1 billion of expenditure on new schools and expansion of existing schools. The proposal to rezone land to accommodate an expansion to the School directly responds to a priority of the Infrastructure Plan – that is to monitor and manage the capacity of existing schools.

Undertaking planning for new and expanded schools would also progress other elements of the Infrastructure Plan, including an objective of a 30 per cent tree canopy cover target for Canberra. Tree cover in primary schools needs to be managed carefully to ensure trees remain safe for students. Schools in the ACT undergo routine surveying and consultation with arborists to ensure safety is always maintained. The school needs to balance the need to increase canopy cover and the costs of routine maintenance to ensure safety. As detailed in Section 5.2.2 of this report, a Tree Assessment has been prepared for the subject site and no tree removal/impacts are proposed as part of this TPV.

3.1.4 ACT Transport Strategy 2020

The ACT Transport Strategy 2020 recognises a need for continued investment in Canberra's strategic road network, cycling and walking network and public transport as well as light rail. The strategy recognises that future transport in Canberra would feature more attractive, flexible travel options that increase choice, reduce carbon emissions and facilitate a compact, vibrant urban form.

In this respect, ACT Education's standard planning documentation for school projects allows for active travel infrastructure (e.g. bicycle storage facilities) to support sustainability, reduced private vehicle use, and multi-modal transport. It is however noted that as a TPV proposal, no physical buildings/works are proposed as part of this proposal.

3.1.5 Ministers Statement of Planning Intent 2015

The 2015 Minister's Statement of Planning Intent outlines planning priorities for Canberra over the immediate, short and medium term up to five years.

One of four priorities under the Statement is for the creation of sustainable, compact and liveable neighbourhoods with better transport choices. The Statement highlighted a community desire for more inclusive neighbourhoods that deliver housing choice, community facilities, cater to all socio-demographic groups, and allow for ageing-in-place.

This included the planning intent to:

- create environments that are child and age-friendly, support cycling and walking (active travel) and housing in proximity to recreation opportunities and services (active living)
- planning should encourage greater take-up of public transport and active travel.

Key actions identified in the Statement include to review the existing Territory Plan and planning framework, facilitate investment within local centres and promote active travel initiatives.

The proposed TPV to rezone for education use on subject site supports these intentions, by enabling the provision of additional education facilities.

3.1.6 Other relevant ACT Government strategies

3.1.6.1 The Future of Education Strategy (2018)

The Future of Education Strategy outlines the Government's education strategy for 2018-2028. Future of Education is a 10-year strategy for the ACT to guide all parts of our education system to support and deliver excellence and equity in

educational outcomes for each and every child and young person. The Strategy establishes a policy direction that informs a range of future initiatives and projects, rather than simply listing disjointed remedies.

The Strategy is based on four foundations: to place Students at the Centre, support Empowered Learning Professionals, create Strong Communities for Learning and enhance Systems Supporting Learning. The principles of Excellence, Equity, Access, Agency, and Inclusion underpin the Strategy do. Of particular relevance, the Principle of access:

"Supports for learning and wellbeing are available and provided to all students".

Adequate school capacity and facilities in our communities is critical to ensuring all children have reasonable access to learning as the population grows. New and expanded school projects support the Government's and Directorate's strategic objectives. The proposed rezoning request directly responds to this consideration as it would enable additional land to be incorporated into the existing School for recreation purposes.

3.1.6.2 Set Up for Success (2020)

The Set up for Success: An Early Childhood Strategy for the ACT was launched in 2020. It is a nation-leading ten-year plan for early childhood education and care in the ACT. Set up for Success is based on overwhelming national and international evidence about the importance of quality early childhood education, and aligns with the Future of Education Strategy.

3.1.6.3 Strategic Plan 2018–21 (ACT Education)

The Strategic Plan 2018–21 outlines the Directorate's strategic framework and key focus areas, including placing students at the centre of their learning, empowering education professionals, creating stronger learning communities and strengthening equity and quality in education. The Plan includes a number of strategic goals, including ensuring schools are where students enjoy and thrive in learning. The Plan identifies delivering schools for growing communities as a key action.

Planning for new and expanded schools assists in making progress to deliver against these actions. It also supports the Directorate to achieve goals contained in its Strategic Plan, which the proposed TPV directly responds to.

3.1.6.4 ACT Wellbeing Framework (2020)

The ACT Government is making Canberra and its communities more liveable. The ACT Wellbeing Framework captures what is important to Canberra's communities. As part of the Wellbeing Framework, twelve domains of wellbeing have been identified including:

- access and connectivity – getting to places and accessing services
- education and life-long learning – gaining skills and education needed at all stages of life.

3.2 National Capital Plan

The subject site is not identified as an area subject to the Special Requirement Provisions of the NCP, nor is the subject site classified as National Land. Therefore, the special requirements of the NCP pursuant to Section 12 of the Territory Plan are not applicable in this case.

3.3 Territory Plan

The Territory Plan is a key document that guides planning and development in the ACT to provide the people of the ACT with an attractive, safe and efficient environment in which to live, work and play. The Territory Plan is used to:

- manage development in the ACT, particularly how land is used and what can be built
- assess development applications
- guide the development of new estates and the management of public land.

3.3.1 Strategic directions

The statement of strategic directions is a key component of the Territory Plan that sets out the principles for giving effect to the main object of the Territory Plan as required by the *Planning and Development Act 2007*.

The statement includes the principles for sustainable development as well as the spatial planning and urban design principles that are intended to guide the more specific policy content of the Territory Plan. Table 3.1 below provides a response on how the proposed TPV is considered to be consistent with each principle.

Table 3.1 Territory Plan strategic directions

Strategic direction
General principles
1.1 Planning processes and decisions will be focused on the combined achievement of economic vitality, community wellbeing, and environmental quality. Broad community involvement will be a key element in the pursuit of sustainable development, as will complementary regional strategies and agreements. 1.2 Matters of broader National Capital, metropolitan and regional significance will be carefully considered when formulating Territory Plan policies and when making decisions about development proposals and sequencing. 1.3 Economic, social and environmental objectives will be pursued in a balanced and integrated way, having regard to both short-term and long-term factors, such that present needs can be met without prejudicing the welfare of future generations, and without serious or irreversible loss of life-supporting natural resources or damage to the environment. 1.4 Wherever appropriate, the broader global and regional context and potential cumulative impacts of decisions will be taken into account. Where there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for failing to prevent environmental degradation.
Environmental sustainability
1.5 Planning policies will seek to ensure the efficient use of all resources and to reduce consumption of non-renewable resources. Waste minimisation, reuse and recycling will be encouraged, whilst energy-rating and conservation measures will be applied wherever appropriate, particularly in transport, subdivision planning, and building design and construction. 1.6 The pattern of development is to reflect land capability constraints resulting from topography, soils, geotechnical factors, drainage, natural hazards, microclimate and the sensitivity of ecosystems. Particular attention will be given to the need to conserve soil, water and vegetation; maintain biological diversity; safeguard important ecosystems and ecological processes; and provide and protect wildlife corridors. 1.7 Land and water resources will be planned in accordance with the principles of integrated catchment management and water sensitive urban design. Policies will seek to protect identified environmental values, whilst focusing on opportunities for multi-purpose use of resources. Special attention is to be given to protecting sources of the Territory's water supply and to maintaining environmental flows in rivers and streams.

Strategic direction
1.8 Planning policies will provide for the sustainable management of rural areas, ensuring that rural lands nominated for future urban development or other purposes can be retained in productive use and properly managed for the time being. Appropriate activities to reduce net greenhouse gas emissions will be encouraged. 1.9 Urban expansion will be contained in order to minimise impacts on valuable natural and rural areas. 1.10 Integrated land use and transport planning will seek to maximise accessibility and transport efficiency, prioritise active travel, reduce energy consumption, increase physical activity, support the preferred pattern of development, promote safety, safeguard environmental quality, and minimise greenhouse gas emissions. 1.11 Policies for environmental planning and management will ensure amenity, minimise pollution, and protect public health and safety
Economic sustainability
1.12 Planning policies will facilitate the widest possible range of commercial, retail, industrial, rural, tourism, and other forms of economic activity in order to promote new investment and a more diversified economy, to underpin employment growth, and to respond to changing economic opportunities. 1.13 The characteristics of the city that contribute to economic growth: Canberra's role as the national capital and the seat of Federal Parliament; the ease of getting around the city; the safe and clean environment; and the vibrancy of centres as places of social, cultural and business exchange, will be enhanced. 1.14 An adequate and diverse supply of industrial land will be maintained to facilitate both conventional and new forms of industry. 1.15 Tourism will be fostered by permitting a variety of entertainment, leisure and accommodation facilities, including opportunities for ecotourism, in appropriate locations throughout the Territory. 1.16 Sufficient land will be set aside for major communications, educational, scientific, or other activities requiring broadacre sites in appropriate locations outside urban areas. 1.17 In planning future development and redevelopment, particular emphasis will be placed on cost-effective provision and management of existing and new infrastructure and services, taking into account whole-of-life and whole-of system costs, including the ecological footprint of proposed developments and activities.
Social sustainability
1.18 Provision will be made for a comprehensive range of readily accessible community, cultural, sporting and recreational facilities, distributed according to the varying needs of different localities and population groups. In major centres and developing areas, sites will be safeguarded where necessary for particular community needs. 1.18A Development is planned to promote active living through the following six principles: a) providing connectivity between uses and activity nodes b) preserving open space c) encouraging mixed land use and density d) ensuring public places are safe and attractive for all e) providing supportive infrastructure that encourages regular physical activity f) ensuring environments promote social inclusion, and are equitable and where practicable are accessible by all. 1.19 A variety of open space types will be provided in each district or local area to meet the diverse recreational needs of residents and visitors, and to contribute to community health. 1.20 Planning policies for community facilities and open space will encourage multiple use and flexible design to allow for changing needs.

Strategic direction

1.21 Provision of affordable, adaptable and special-needs housing will be promoted throughout the city, as well as modification or redevelopment of existing stock to meet emerging social needs.

1.22 Urban development will be planned in a manner that promotes community vitality and safety, applying principles of crime prevention through environmental design. Provision will also be made for emergency services infrastructure necessary to ensure a high standard of safety for residents and visitors.

1.23 The needs of people with disabilities will be recognised in all facets of urban planning, particularly including the design and operation of transport and access systems and the assessment of development proposals.

1.24 All new developments and re-developments will be planned with appropriate and segregated network facilities for pedestrians and cyclists; provision for accessible public transport; a legible and permeable hierarchy of roads; conveniently located commercial and community facilities; and a network of open spaces.

1.25 Heritage and cultural values will be safeguarded, including in particular those of the Territory's Aboriginal peoples and those derived from both its rural history and urban development as the National Capital. The distinctive qualities of residential areas and other places, as well as elements of community heritage, will also be recognised and their conservation promoted.

1.26 Identified places of heritage significance will be protected in accordance with requirements for their conservation contained in the Heritage Register and any relevant heritage guidelines under the Heritage Act 2004. Special provisions are included in the Heritage Act for the recognition, registration and conservation of Aboriginal heritage.

Urban areas

2.1 Canberra will continue to develop as a series of discrete urban areas within a landscape setting of hills, ridges and other open spaces. Each town will offer a diversity of housing types; the broadest possible range of employment opportunities; and convenient, linked access prioritising active travel to centres, community facilities and open space.

2.2 Future residential settlement will be accommodated through development of greenfields areas, subject to detailed feasibility and suitability studies; some expansion of existing towns; and appropriate use of suitable vacant or underdeveloped sites.

2.3 Commercial and retail activity will be concentrated in centres and other planned nodes of intensive activity that are well served by public transport to ensure an efficient pattern of development. Primary emphasis will be placed on strengthening and enhancing existing and new centres and nodes, including improved urban design and encouragement of more mixed-use development.

2.4 Planning policies will support revitalisation of the City Centre as the preeminent centre of governance, commerce and entertainment for the ACT and its region, while keeping the City Centre in appropriate balance with other town centres. Within the City Centre, provision will also be made for a range of major community facilities and opportunities for high-density residential development.

2.5 A wide range of housing types will be permitted in identified residential areas close to centres and major transport routes to increase choice; maximise opportunities for affordable housing; and secure some intensification of development consistent with maintaining residential amenity. Outside of these areas, planning policies will protect the typically low density, garden city character of Canberra's suburban areas.

2.6 Higher density development will be encouraged within and near major centres, and in other suitable locations that are well served by public transport.

2.6A Development will provide suitable and well-designed supportive infrastructure that enhances the experience of the urban environment for people of all abilities and encourages and supports regular physical activity.

2.7 Development will be planned to encourage use of public transport, walking and cycling, including commuter cycling. Routes will be reserved for an enhanced inter-town public transport system. Requirements for vehicle parking will be related to commercial needs and transport policy objectives.

Strategic direction
2.8 Industrial areas will be in locations accessible to suitable freight services, and where industrial activity is unlikely to have a significant adverse effect on the environment or the amenity of residential areas. 2.9 A planned hierarchy of roads will be maintained in order to promote road safety, protect the amenity of residential and commercial areas, and facilitate the efficient movement of major traffic flows and heavy vehicles. 2.10 Adequate provision of open space throughout the Territory will remain a high priority. Open space will be planned and carefully maintained as an integrated, hierarchical system that provides for a diversity of sport and recreation activities, contributes to the legibility and character of urban development, is cost-effective to maintain, and assists in the effective management of stormwater.
Non-urban areas
2.11 Planning policies will protect the landscape and environmental qualities of the hills and ridges surrounding urban areas, the Murrumbidgee and other river corridors, the mountains and forests west of the Murrumbidgee River, and productive rural landscapes. 2.12 Planning for non-urban and natural areas will also recognise the values of land for research, education, recreation and tourism purposes. 2.13 Clearance zones will be established where necessary around major facilities to protect the operational efficiency of those facilities and to minimise adverse environmental impacts.
Urban design
2.14 Policies and procedures to promote high quality, creative design of development, urban spaces and landscape settings will be applied throughout the Territory, and innovation encouraged, in keeping with the spirit of the National Capital as an exemplar of best practice. Particular care will be taken to ensure high-amenity, quality design outcomes within residential areas, heritage areas, major centres and activity nodes, and along principal approach routes. The relationship between the public and private realms will also be emphasised in terms of the design quality of precincts and shared spaces, including spaces around buildings, as well as that of individual developments. 2.15 Policies will acknowledge Canberra as the national capital and the symbolic heart of Australia and will seek to preserve the landscape features that give the national capital its character and setting; respect and reinforce the key elements of Walter Burley Griffin's formally adopted plan for Canberra within the proposed urban settlement pattern; enhance and strengthen approaches and backdrops to the city and its national institutions; conserve open space between urban areas as visual separation buffers consistent with the landscape setting; retain areas that are identified as the rural setting surrounding the city; and retain key vistas created by the landscape network within new settlement areas. 2.16 Retention of Canberra's unique landscape setting, including the integration of natural and cultural elements that create its 'garden city' and 'bush capital' qualities, will be accorded the highest priority. Special attention will be given to safeguarding visual amenity, protecting vegetation and other important features within the established urban landscape, and ensuring the high quality of environmental design in new developments or redevelopment. 2.17 Advertisements and signs will be carefully controlled to maintain environmental amenity.

The proposed TPV responds to the above referenced Strategic Directions as:

- it would rezone part of Block 6, Section 64, Fraser from NUZ3 to CFZ and thus provide additional land for education to service the needs of the broader community
- it would retain the Table of prohibited uses for PD1 (Fraser Primary School) expressed at the Fraser Precinct Map over the expanded School site (see Figure 1.7)
- it would transfer custodianship of the subject site to the Education Directorate and in turn, retain the land for public purposes (i.e. education); and
- it would facilitate the provision of additional community uses (and future developments), including educational facilities.

3.3.2 Relevant Territory Plan Zones

As described at Section 1.5 the proposed TPV would have the effect of rezoning a portion of the NUZ3 land to CF. This would enable the use of land for a community use (such as an educational facility or a health facility, amongst other uses).

3.3.3 Relevant Territory Plan Codes

Part 11 of the Territory Plan describes General Codes (GC). Not all GCs are applicable for all developments. It is anticipated that the following GC's would be applicable for a future proposal for buildings and works on the subject site:

- Parking and Vehicular Access General Code
- Bicycle Parking General Code
- Access and Mobility General Code
- Crime Prevention through Environmental Design General Code
- Community and Recreation Facilities Location Guidelines General Code
- Planning for Bushfire Risk Mitigation General Code.

As noted above at Section 1.5 an application for buildings and works associated with an education facility would be subject to the CFDC. Notably, the realigned School boundary would be set back 35 metres from the existing residential hinterland. This would ensure that the subject site would continue to meet R8 (minimum setback of 6 metres) and C8 (criteria-based assessment of setbacks) of the CFDC (amongst others).

The Parking and Vehicular Access General Code (PVAGC) provides car parking requirements for new uses and extensions to existing uses. The PVAGC specifies the following requirement for parking associated with a Pre-, Primary and High School:

- *0.8 spaces per 10 students*
- *0.4 set-down/pick-up spaces per 10 students.*

In this case, the 79 on-site car parking spaces would continue to service the existing School population. Further, as no change to enrolment numbers are proposed, a car parking assessment is not required and no change to parking impacts anticipated by the incorporation of additional land within the School grounds.

3.4 Other statutory processes

3.4.1 EPBCA requirements

The Fraser School Expansion Preliminary Biodiversity Assessment (June 2021) makes the following conclusions regarding the presence (or otherwise) of significant flora/fauna the:

- vegetation within the subject site was not of sufficient condition to meet the EPBC Act listed community
- vegetation within the subject site was not consistent with any EPBC Act listed ecological community. Native dominated grassland, restricted to a northwest corner of the subject site, was consistent with low condition native pasture and was considered to be potentially consistent with NC Act listed Natural Temperate Grassland
- subject site provides potential habitat for four threatened species.

Noting these findings, to minimise impacts to biodiversity the report recommended that the following works be implemented as part of any detailed design of future facilities:

- Development design avoids impacting
  - amenity planting
  - native dominated grassland
  - drainage line.
- Mitigation measures be included in construction environmental management plan to minimise off-site indirect impacts to biodiversity including run-off and noise, as relevant for future works.
- Targeted surveys are undertaken for Golden Sun Moth in accordance with the 'Significant impact guidelines for the critically endangered Golden Sun Moth' (Department of Environment, Water, Heritage and the Arts, 2009), namely:
  - surveys are undertaken during the local flying season (typically late October to early January)
  - surveys are conducted over at least four suitable days, at approximately weekly intervals
  - a local reference site is surveyed to confirm species is flying during surveys
  - surveys are conducted during appropriate conditions for the species:
    - warm to hot days (i.e. above 20°C by 10 am)
    - during the warmest part the day (10 am to 2 pm)
    - on clear or mostly cloudless sky, with still or relatively still wind conditions
    - at least two days since rain
  - if detected onsite, surveys should focus on determining the relative distribution of the species on the subject site.

Following confirmation of a detailed works area, the outcomes of the targeted surveys and when vegetation impacts are known – further consideration regarding the EPBC Act, including pathways would be nominated. Depending on the scope of future works a Referral or an Assessment under the EPBC Act may be required.

3.4.2 Future Development Applications

The *Planning and Development Act 2007* outlines the assessment pathway of different kinds of development proposals.

As un-designated Territory Land, any redevelopment of the subject site would be assessed against the provisions of the TP. Depending on the nature of any future use proposed, one of three (3) development pathways/tracks would apply. They are:

- code
- merit; and
- impact.

The various pathways attract different processes and statutory timeframes.

3.4.3 Other ACT Government approvals

Following completion of the rezoning request, further approvals may be required in relation to (amongst others):

- utilities design and installation/amendments to assets
- tree removal/impacts
- service authority connections.

3.4.3.1 Utility requirements

While utility improvements are not anticipated, any activity which may result in upgrades/amendments to established utility services would require separate approval from the relevant entity. The relevant authorities would also be referred the request for a TPV via the normal statutory process.

3.4.3.2 Tree removal

While tree removal is not anticipated, any activity which may cause damage to regulated or registered trees, such as tree removal, major pruning or groundwork within the Tree Protection Zone requires approval under the *Tree Protection Act 2005* via TCCS.

The Conservator of Fauna and Flora may grant approval to damage a regulated or registered tree if the tree meets one or more of a set number of Tree Protection Approval Criteria. Applications must typically be supported by a report from a qualified arborist.

3.5 Planning review and reform

The ACT Government is currently undertaking a review and reform of its planning framework. The *Planning and Development Act 2007* and Territory Plan have been reviewed as part of this process.

A draft Planning Bill 2022 and associated regulations was released for public comment (comment closed June 2022). The Planning Bill 2022 was introduced in the ACT Legislative Assembly on 21 September 2022.

A draft new format Territory Plan has been released for comment. As part of the development of the new format Territory Plan a suite of district plans are proposed for introduction into the ACT's planning framework. The district plans would articulate localised planning parameters/considerations which are pertinent to decision making within specific areas.

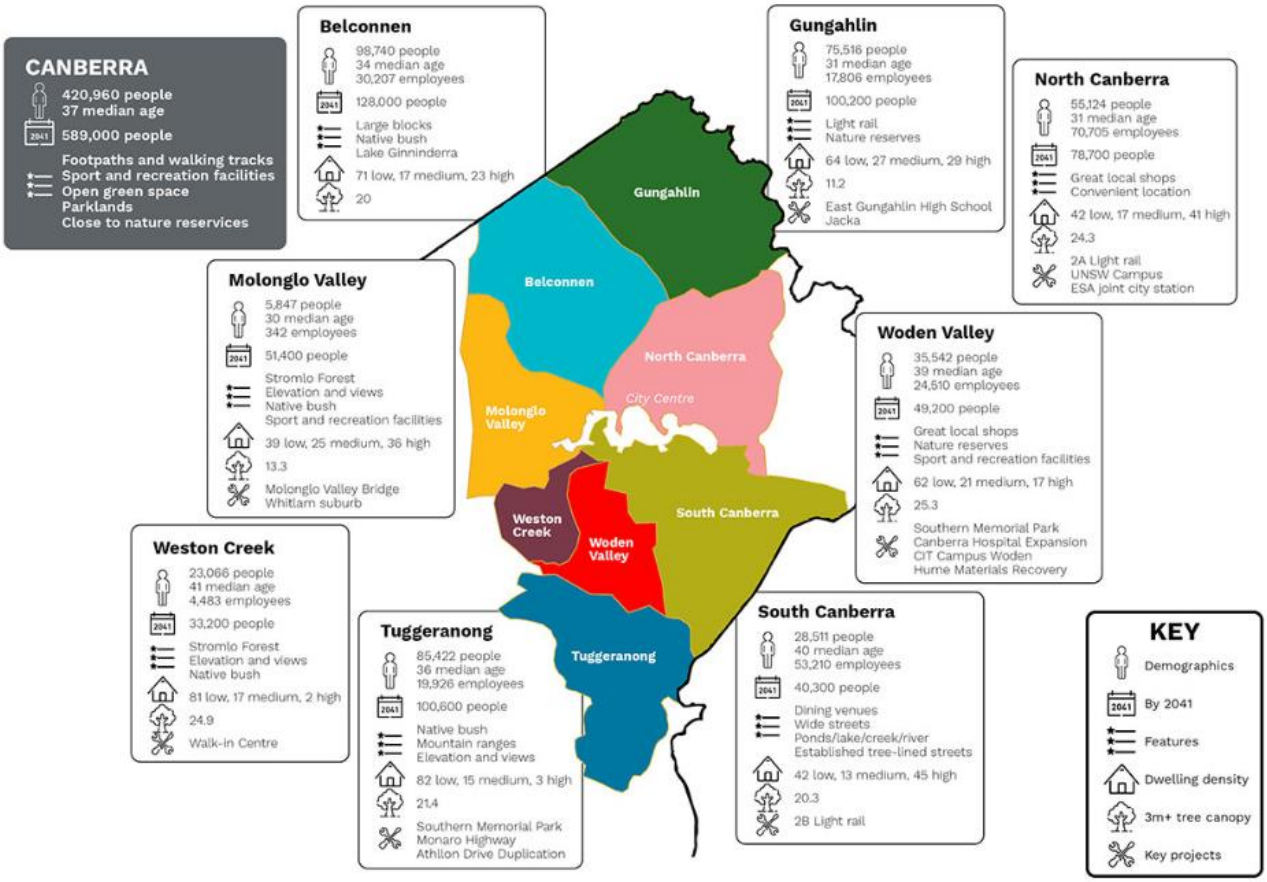


Figure 3.1 ACT Government [17 August 2022]: District Plans

The draft 'Belconnen District Policy' seeks to implement five themes: landscape, community, amenity, employment and access. It is considered that the proposal to rezone a portion of land adjacent to the existing Fraser School to expand the existing School site directly responds to these considerations as:

- a 35 metre wide vegetation buffer would be retained between the residential hinterland and the resultant School site which would retain the landscape character of the area; and
- an increase in area associated with the Fraser School site responds to the community demographic and changing needs of the area.

The policy would also include the prohibited uses table currently at the Fraser Precinct Code/Map within the Territory Plan.

In relation to the proposed TPV, it is considered that its processing should not be delayed until after such time as the new format TP has been finalised as:

- the proposed TPV seeks to rezone land associated with an existing school
- no physical buildings and works are proposed
- the consequential change to the Fraser Precinct Map under the Fraser Precinct Code has no material impact on the content/form of the TP
- the proposed TPV would not introduce a new policy/control into the TP and therefore there would not be any conflict with any incoming (draft) format; and
- the proposed TPV is consistent with the relevant ACT Government policies/objections regarding the delivery of suitably zoned land for education purposes to meet current (and future) demand.

4 Preliminary consultation process

4.1 Approach and process

An Engagement Memo prepared by WSP was submitted to provide further details on the consultation undertaken and feedback received during the consultation period, and forms part of this package. That report detailed how consultation occurred for the proposed TPV to rezone portion of Block 6, Section 64, Fraser.

Consultation was undertaken with reference to the ACT Community Engagement Guideline – available at: https://www.yoursay.act.gov.au/about/community-engagement, which is referred to in the *Scope for a Planning report* along with an express requirement for *"consultation should include holding at least one public engagement session that is widely advertised in print and electronic media…".*

4.1.1 Activities undertaken

A range of activities were undertaken during the community engagement period for the proposed TPV, which occurred between 13 September – 12 October 2022. This engagement aimed to ensure that people were involved in a way that was proactive and meaningful and that a broad cross section of the community could provide feedback and learn more about the process. Activities included:

- letterbox drop to surrounding residents
- presentation by WSP and the Education Directorate to the Belconnen Community Council (20 September 2022)
- Education Directorate presentations to the Fraser School P&C (4 May 2022) and School Board (24 May 2022)
- WSP hosted online community engagement session (28 September 2022)
- collateral hosted on Education Directorate website and Fraser Primary School website for duration of engagement
- various Facebook and Twitter posts by the Education Directorate throughout the engagement period
- opportunity for feedback via phone and/or email, direct to either the Education Directorate or WSP
- question time during the Belconnen Community Council and community engagement session
- publication in multiple Fraser Primary School newsletters.

4.1.2 Collateral

Please refer to the Stakeholder Engagement Memo prepared by WSP for details of all collateral produced as part of the engagement phase (social media posts, newsletters, letterbox drop, website collateral).

4.1.2.1 Letterbox drop

Figure 4.1 depicts the properties subject to the letterbox drop in surrounding areas, undertaken by the Education Directorate as part of initial community engagement in 2022.

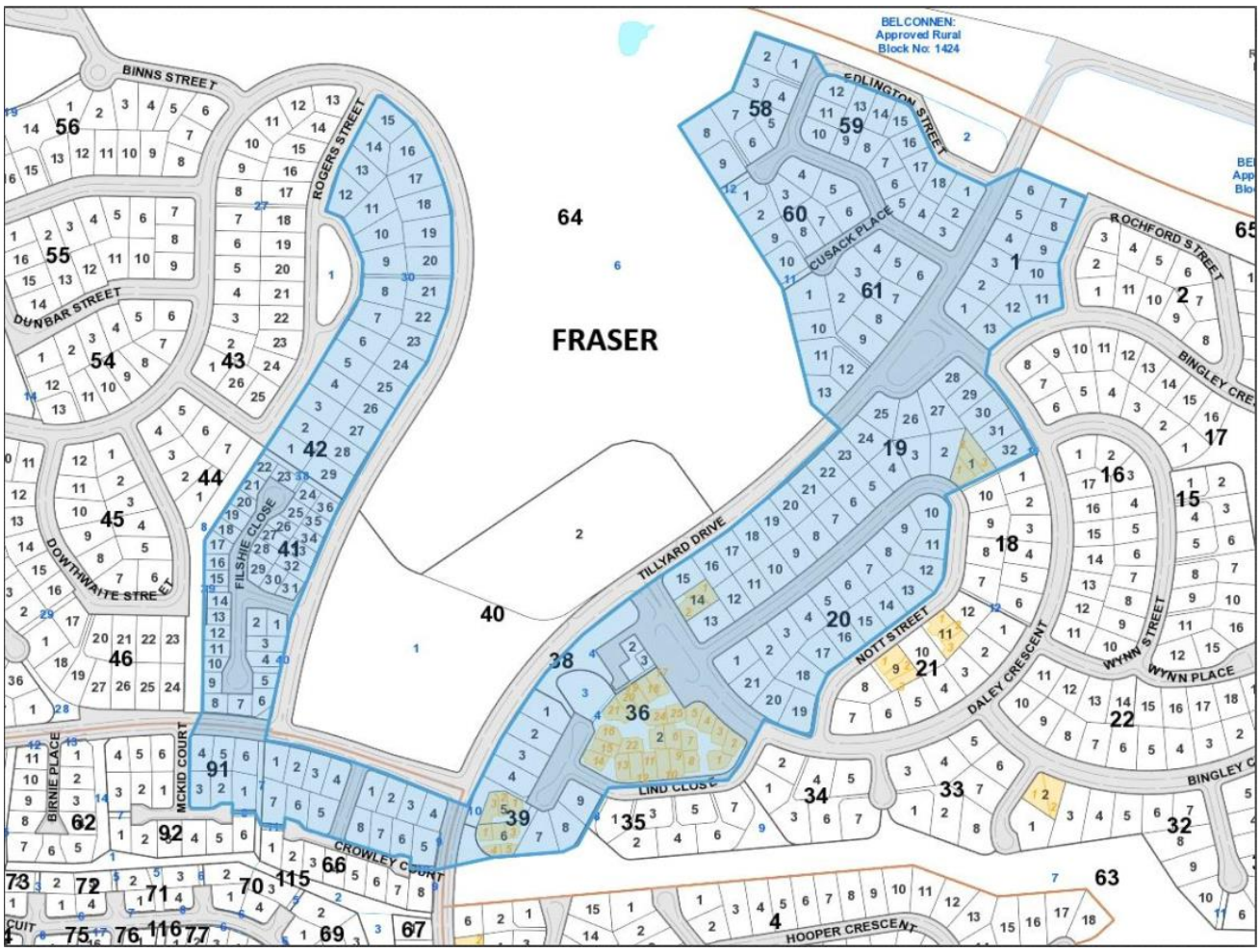


Figure 4.1 Letterbox drop (Source: Education Directorate)

4.1.2.2 Stakeholder engagement session

WSP hosted an online community engagement session in collaboration with officials from the Education Directorate. Twenty three personnel (including WSP staff and Education Directorate staff) RSVP'd to the event. A series of slides were presented to the community during this session and the team were available for questions. The session ran for one hour at 5:30–6:30pm on 28 September 2022.

An example of the PowerPoint presentation is provided below. For details, refer to the enclosed Stakeholder Engagement Memo.

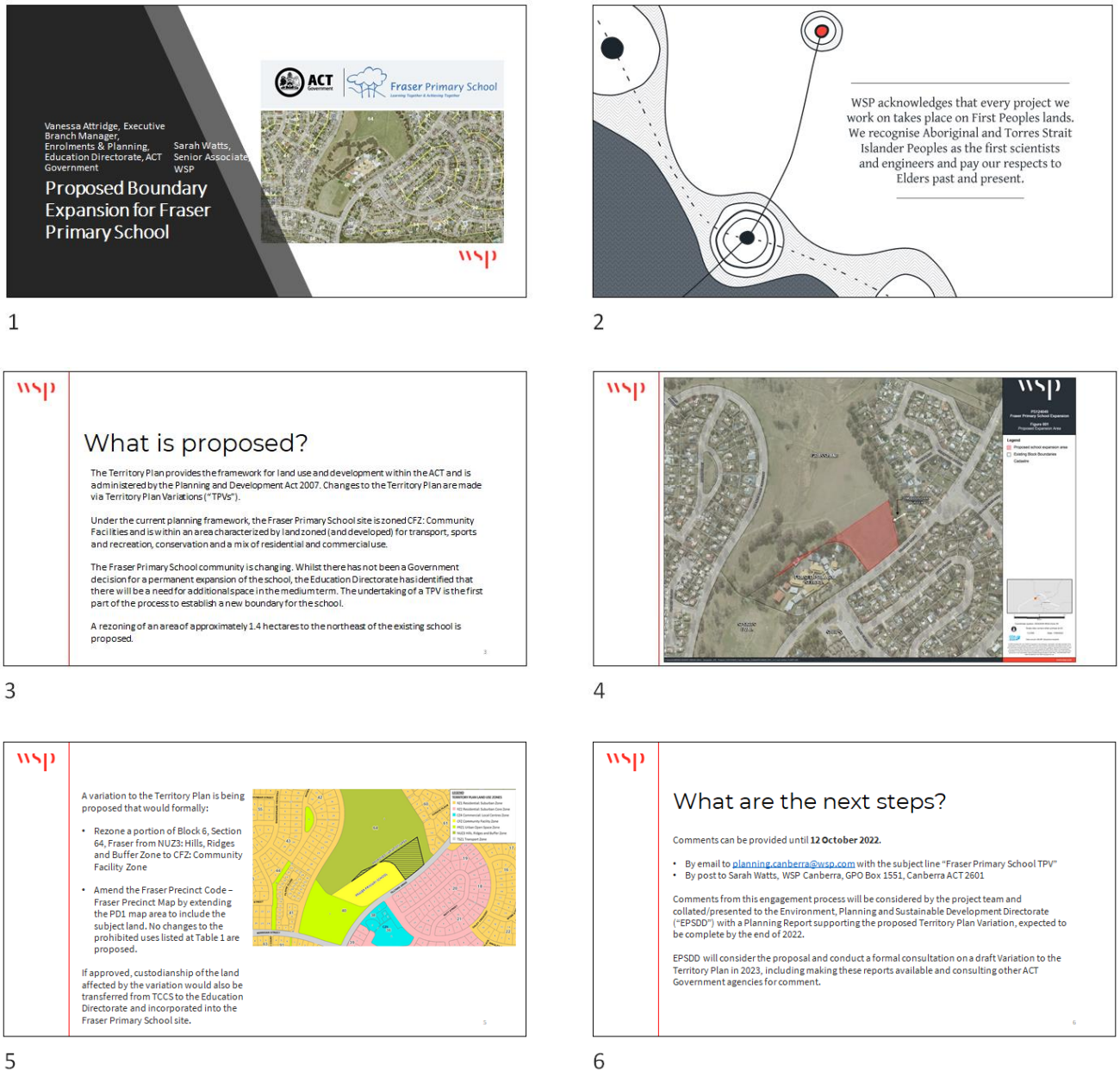


Figure 4.2 PowerPoint presentation community engagement session (and Belconnen Community Council) (Source: WSP)

During the evening, questions from the community centred around the following themes:

- what additional school buildings/infrastructure will be constructed as part of this process?
- why expand the school site to the north/northeast when there is an existing oval to the southwest which could be utilised instead?
- concern there may be adverse impact to property values as result of outlook toward School site
- increase in student enrolment is not expected based on current population and enrolment projections
- concern with car parking impacts and safety for pedestrians
- support for rezoning, but concern in relation to engagement process for potential future buildings/works
- concern about public access/egress to site on weekends/out of hours
- concern about possible future fencing typologies.

Table 4.1 provides a summary of the project team's response to the issues raised.

4.1.2.3 Belconnen community council

WSP and the Education Directorate presented to the Belconnen Community Council using the same PowerPoint presentation provided at 4.1.2.2. Twenty nine people attended the session. No questions were raised during the session in relation to the proposal. The presentation lasted 20 minutes during the Belconnen Community Council meeting on 20 September 2022.

4.1.3 Comments

A total of 17 submissions were received via email during the engagement period. The consideration and responses are provided below.

Table 4.1 Engagement response (Source: WSP Stakeholder Engagement Memo 2022)

Issue	Response
Insufficient space for parents/caregivers to park during pick up/drop off times during School hours. Potholes in proposed site. These result in dangerous driving and walking conditions-presenting a risk to pedestrians.	No change to existing student enrolment numbers is proposed as part of this rezoning process. No infrastructure is proposed to be constructed within the land subject to this proposed TPV. Therefore, no change to existing car parking and access/egress arrangement proposed. The Education Directorate notes the community's concern in relation to existing traffic impacts associated with the Fraser Primary School and will forward them to the relevant ACT Government Directorate for consideration via a separate process.
Additional car parking should be constructed within Tillyard Drive to accommodate demand for School pick up/drop off times. It is likely demand will increase with population growth.	No change to existing student enrolment numbers is proposed as part of this rezoning process. No infrastructure is proposed to be constructed within the subject site. Therefore, no change to existing car parking and access/egress arrangement proposed. The Education Directorate notes the community's concern in relation to existing traffic impacts associated with the Fraser Primary School and will continue to work with other ACT Government Directorates to seek to improve these existing issues, independently from this proposed TPV.
Before/after school traffic associated with the existing School results in dangerous condition for emergency services (impacts Charnwood Station and ambulance/fire services). Consider traffic management as part of this and future proposals.	No additional traffic is expected to be generated by this proposal because the proposal does not impact School enrolments. This proposal is only to expand the land area of the School grounds for students to access additional outdoor space. The Education Directorate notes the community's concern in relation to existing traffic impacts associated with the Fraser Primary School and will continue to work with other ACT Government Directorates to seek to improve these existing issues, independently from this proposed TPV.

Issue	Response
Existing School traffic utilises reserve for parking/access/egress which presents a danger for pedestrians (who could roll their ankles or get hit by a vehicle), motorists and has the potential to injure wildlife or nature.	No change to existing enrolment numbers is proposed as part of this rezoning process. No infrastructure is proposed to be constructed within the subject site. Therefore, no change to existing car parking and access/egress arrangement proposed. The Education Directorate notes the community's concern in relation to existing traffic impacts associated with the Fraser Primary School and will continue to work with other ACT Government Directorates to seek to improve these existing issues, independently from this proposed TPV.
Any extended building/excavation/earthworks and the machinery involved would add great strain to Tillyard Drive and have an adverse effect on emergency services and traffic.	No buildings or works are proposed as part of this TPV. Therefore, there would not be any construction impacts. Any potential future construction works at any ACT public schools would consider managing any traffic impacts and can potentially undertake any necessary works during school holidays and/or outside of peak times to reduce these impacts.
Preference for expansion of the School grounds into the playground/oval to the west/southwest of the subject site and creation of any new access from Kerrigan Street.	A detailed review of the Fraser Primary School's strategic and physical context has been undertaken as part of this TPV proposal. The project team has considered the interfaces of the subject site and determined that the most appropriate area for a planned expansion is to the northeast within the space proposed. The community oval to the south of the School is an important and established community asset that serves the entire suburb of Fraser for sport and recreation use at all times. At times it has been used by the School although it involves students accessing it by crossing a public footpath and requires additional supervision requirements when this area is used by the School, to ensure student safety. A public footpath between the School and the oval is an important community link connecting to the underpass of Tillyard Drive. It is undesirable to have this path through the School site, or to remove the path connection to accommodate an increased School site. The area to the northeast of the School is well located for students to play outdoors in close proximity to their School. On balance, access to this particular site has been identified by the Directorate to be in the best interests of the Fraser Primary School community (as well as the interests of the broader Fraser community), by also continuing to preserve established open space/playing fields at the community oval nearby.

Issue	Response
The ‘paddock’ next to the School (proposed site) is understood to be home to native birds and exotic dominated grasslands. Similar grasslands nearby (500 m away) have been declared as a nature reserve. An environmental impact assessment and cost benefit analysis should be undertaken. Biodiversity should be preserved.	An ecology study was undertaken as part of this process which revealed that on balance, the proposed rezoning would present an acceptable ecological outcome, with the impact area considered to have a low biodiversity value.
Those with properties opposite the area proposed for rezoning are concerned with an adverse impact on property values associated with outlook toward a schoolyard, as opposed to grassland.	It is not expected that this concern will be realised. It is not deemed to be a valid planning consideration for the proposed rezoning to increase the play space and boundaries of the school.
A 35 metre-wide buffer to the residential properties to the north of the grasslands does not appear sufficient.	Under this proposal, the 35 metre buffer retains the existing stand of trees and is considered reasonable to provide a sufficient noise and distance barrier from the School site. This also meets (and actually exceeds) the requirement for a minimum setback under the current planning framework (the Community Facilities Development Code), community development adjacent to residentially zoned land should have a minimum building set back of 6 metres from the boundary shared with a residential zone.
The Education Directorate should release its data which indicates that there is a demand for additional land for the Fraser Primary School. Data should be released on the percentage of students who live in the suburb of Fraser. Anecdotal experience is that the population is ageing.	The Directorate undertakes and publishes a bi-annual Census of school enrolments. It also develops enrolment projections at least annually, for the purpose of predicting the future needs of all ACT public schools. This data provides point in time information and is used as an internal schools planning input, alongside a range of other data sources. Fraser Primary School is currently designated as a ‘Category A School’ for enrolments, meaning it is generally not able to accept students from outside its Priority Enrolment Area. This is primarily due to the high in-area enrolment and capacity for students now and in the near future.
No information on future fencing of the expanded boundary- including its visual appearance, plans for associated community consultation and when it will be constructed.	Under the Planning and Development Act Regulation, all ACT Government schools have access to exemptions for certain types of fencing. No fencing is proposed as part of this rezoning proposal. If a TPV goes ahead, the school Principal (together with the Education Directorate) will work with the school community to consider whether a fence is required in this area. This decision would be based on safety and operational impacts and would also consider impacts for the local community through engagement with nearby residents.

Issue	Response
ACT Government website didn't mention this rezoning.	This preliminary consultation has been undertaken by the ACT Education Directorate (in collaboration with WSP Australia) and includes information shared through the Education and Fraser Primary School websites, as part of proposing a change to the Territory Plan. Once a TPV package is lodged by Education Directorate with Environment, Planning and Sustainable Development Directorate (EPSDD), it is expected a formal Draft Variation to the Territory Plan will be prepared by EPSDD. This proposed change would then follow statutory planning requirements articulated through ACT planning legislation, including a mandatory minimum 6 week public notification period, publicised through the ACT Government (EPSDD) website.
Open, face to face engagement should be conducted at a location such as the Fraser Primary School. Online consultation excludes those without a certain level of digital/ technological connectivity/access.	– The ACT Government regularly engages with the community through a range of communication methods, including online information and engagement sessions, particularly recently during the COVID-19 Pandemic. As part of the initial TPV proposal consultation, a broad range of engagement activities were undertaken to meet the varied needs of the community. This included: — Presentation at the Belconnen Community Council (September 2022 meeting) — Public engagement session — Letterbox drop to nearby Fraser residents — Notice in Fraser Primary School newsletter — Information published on the ACT Education Directorate and Fraser Primary School websites — Facebook post (Education Directorate page) — Telephone number available for verbal discussion or feedback regarding proposal — Comments invited via email or post.
The community consultation should involve co-design processes.	The Education Directorate values the opinions and knowledge held by the community, and respects the importance of ensuring input from the community. The Education Directorate has consulted the community of Fraser of the proposed rezoning proposal. There is no infrastructure to design as no new development or construction has been proposed.

Issue	Response
Provide the necessity arguments for this expansion. Provide the source documentation.	A range of printed and electronic materials have been made available (including throughout Education Directorate-led community consultation) which articulate the Directorate's rationale for the proposed boundary expansion. A formal Draft Territory Plan Variation is expected to follow in 2023.
The current timeframes (6 September – 12 October 22) of consultation is insufficient.	Feedback received during September-October community engagement has been collated into a TPV application package, including a Planning Report, to be lodged with EPSDD late in 2022. It is expected EPSDD will consider the TPV proposal and undertake formal consultation on a Draft Variation to the Territory Plan in 2023, in line with statutory obligations which include making information about the proposal available as well as an opportunity for consultation with the community.

It is recognised that some comments may not be able to be resolved through the TPV process and would require the EPSDD to discuss further with the responsible ACT Government directorates. Therefore, not all community feedback received throughout the process may be directly reflected in the TPV.

4.1.3.1 Key messages

Nevertheless, some of the key messages to emerge from the engagement activities are:

- Fraser residents value open space within their neighbourhood
- the community considers road safety an important issue
- the community considers parking an issue that requires attention from Government
- the Fraser Primary School community (particularly parents) are generally supportive of rezoning some of the green space near Fraser Primary School for use as open space
- several owners/occupiers of properties opposite the School to the east of Tillyard Drive are concerned with the potential for fencing to be erected in what is currently an open view/grassland area
- several owners/occupiers of properties opposite the School to the east of Tillyard Drive are concerned about a reduction in property values should the existing grassland be utilised by the School for educational purposes
- the existing vegetation between the residential hinterland to the northeast and the grassland area proposed for rezoning is valued by the community; and
- in relation to other ACT Government initiatives which may be undertaken, it has been observed that elderly community members would prefer stakeholder engagement activities which were undertaken in person, rather than in an online format.

5 Impact assessment

5.1 Physical features, infrastructure and built form

5.1.1 Topography, soils and geology, and hydrology

No change to the subject site's existing topography, soils and geology and hydrology is proposed as no physical works are proposed.

5.1.2 Roads, traffic and carparking

A memo has been prepared by Indesco in support of the proposed TPV. The analysis concludes that the surrounding road network has capacity to support the existing School and reiterates that no changes to enrolment numbers are proposed as part of this process. Note that the memo refers to 2021 school enrolment figures of 85 preschool students and 529 K-6 students. This report acknowledges the 2022 February school census enrolment numbers of 56 preschool students and 542 K-6 students.

Matters of detailed design in relation to traffic, access/egress and vehicle movements in response to the use/development of the land forming part of this TPV would be resolved via a separate development application for physical works. This may include (amongst other considerations) on-street improvements, car parking improvements and alterations to traffic movements. This is the standard process for consideration of traffic/transport related impacts during any development application.

EPSDD's request for a scoping document made reference to *"Consideration for the future of a bus layover and potentially a parking area e.g. for an oval on weekends as well as a Park and Ride nearby".* It is acknowledged that should any future buildings and works application be prepared – the consideration of bus layovers would need to be addressed and be consistent with the ACT Traffic Management and Safety Guide.

EPSDD Deed Management has reviewed the proposal recommended that consideration be given to:

- demonstrations that utility services can adequately service the additional land should it be incorporated into the existing School. This includes access for emergency vehicles and fire hydrant capacity etc.
- investigation into the road reserve of Shakespeare Crescent to support rezoning (including in relation to capacity and parking)
- exploration of planning frameworks to control access/egress for any future school on land rezoned as part of the proposed TPV
- there is an existing 1050 diameter stormwater line through the middle of the area servicing the surrounding residential area. Consideration of this existing asset should be given during detailed design of any expansion to the existing School.

It is considered that the above matters have been satisfactorily responded to as:

- the interests of emergency servicing authorities would be incorporated into any detailed design associated with a development application for an expansion of the existing School/development of a community facility
- Section 1.5 of this TPV report describes the proposed planning framework. It is not proposed to restrict access/egress points as part of the proposed rezoning request. It is considered reasonable to resolve access/egress via a development application accompanied by a specific design response
- the presence of existing assets (including 1050 diameter SW line) is noted and would be considered by the design team during via a separate development application process.

5.1.3 Public transport

Section 1.2 describes existing public transport services.

No change to existing public transport facilities or services is proposed as part of the proposed TPV.

5.1.4 Active travel

The subject site (and surrounding area) is well serviced by an established network of walking/cycling trails. It is also provided with convenient connections to the Fraser shops/local centre.

Impacts to the established formal pedestrian network have been considered as part of this rezoning request. Owing to the existing street network (and Fraser Oval and Superb Parrot habitat) the proposed land to be rezoned is located to the north and north-east of the existing School. This avoids any impacts to the established formal pedestrian/cycling path to the south of the existing School.

The existing formalised shared path/network are proposed for retention as part of the rezoning request.

5.1.5 Utility services

The proposed rezoning request would not result in any changes to physical infrastructure (sewerage, water, gas, electricity, stormwater and telecommunications).

Icon Water, Evoenergy and EPSDD's Infrastructure Planning Department have been approached for preliminary advice regarding the proposed rezoning request. As part of a future development application process for redevelopment/ subdivision, servicing considerations would need to be considered. They include, but are not limited to the following:

- the presence of the existing DN150 sewer main that traverses part of Block 6 when developing detailed design for any future school buildings/works and associated infrastructure requirements
- modelling to determine existing network capacity and any upgrades (including potential for a substation)
- water and sewer capital contribution charges (as required/triggered).

It is considered that the proposed request for rezoning would not adversely affect the capacity or functionality of any existing servicing authority asset because no physical works or changes to enrolment numbers are proposed.

5.1.6 Contamination

The Environmental Protection Agency (EPA) has reviewed the proposal to rezone land adjacent to the existing School and advised prior to the commencement of the use (i.e. educational facility), an environmental assessment in accordance with the EPA Guidelines must be submitted to and endorsed by the EPA.

A Contaminated Land Preliminary Assessment has been prepared by WSP and is appended to this report. The report concludes that:

- a review of aerial photography shows historical land use of the subject site likely comprised grazing or agricultural cropland, recreational open space prior to the establishment of the Fraser Primary School in 1979
- ACT EPA contaminated land records search indicated no registered contamination within the subject site
- a limited number of environmental concerns were identified at the subject site, including:
  - minor quantities of uncontrolled fill adjacent to boundaries of the subject site
  - household rubbish/building materials and unidentified fibrous material near the northeast boundary of the subject site; and
  - open grassed areas which have potentially undergone management associated within parks and open spaces and agricultural use, which may have included chemical control of pests/weeds
- on the basis of the above, the existing use (education facility) and review of historical information, there is a low likelihood for significant contamination impacts to be present at the subject site. Given the changing land use from open space/grassland to an education facility, it is recommended that limited intrusive soil sampling be undertaken once specific development plans have been finalised (i.e. as part of a development application process).

Therefore, it is considered reasonable to rezone the land to CFZ, noting that any future development application would be subject to a requirement to undertake further detailed investigations, and subsequent endorsement by the EPA.

5.1.7 Bushfire protection

An Assessment of Bushfire Planning Considerations – Fraser School Expansion (March 2021) has been prepared for the subject site by NGH Consulting. As part of the study, an assessment of bushfire considerations has been conducted of the proposed areas of expansion and its surrounding landscape to identify the level of risk that the proposed development may be exposed to. The results of the assessment aim to guide and facilitate the master planning of the future school expansion, by identifying constraints that could influence layout options for the proposed development including applicable bushfire protection measures. They ultimately aim to improve life safety, property protection, safety and access for emergency services and improve the resilience of a proposed development to bushfire attack.

Given that the proposal is for the rezoning of land only, it is considered reasonable to manage the implementation of bushfire planning recommendations via a separate Development Application process for any new buildings/works on the subject site. Such a process would occur after the gazettal of the proposed rezoning. It would include the detailed consideration of mitigation measures such as access/egress, asset protection zones, landscaping, water supply, construction standards and emergency management.

5.1.8 Flooding

The subject site has not been identified within the ACT Government's GIS as a flood prone area. Therefore, it is considered unlikely that the subject site would be subject to adverse flood risk/impact.

5.1.9 Hazardous materials

The proposal to rezone part of the subject site to CFZ would not result in an increased risk of storage or handling or hazardous materials on the subject site. The proposed rezoning would facilitate the use of land for an education facility.

5.1.10 Built form

No built form is proposed as part of the request to rezone the land via a TPV. The suitability of any built form would be subject to a separate development application process. Any development application process would require resolution of key built form, design and siting, waste management, environmental and sustainable design, and massing considerations (amongst others).

EPSDD's Waste Management Department reviewed the proposed rezoning request and recommended reiteration of the 2019 Waste Code's requirement for forward-in and forward-out manoeuvres for waste collection vehicles, noting that truck reversing manoeuvres are not permitted in school zones. Any future development would need to ensure compliance with the Waste Code via submission of a development application. No change to the School's existing waste collection (or volume) is proposed as part of this TPV.

The Chief Minister, Treasury and Economic Development Directorate – Policy and Cabinet Division reviewed the proposed request to rezone the land and recommended inclusion of details to outline how future school buildings/facilities would achieve best practice sustainable design, including urban heat mitigation and green/living infrastructure. In this respect, it is noted that future buildings/works would be subject to a Development Application process which includes a requirement to demonstrate consistency with the ACT Government's policies on environmentally sustainable design (including the ACT Climate Change Strategy 2019-2025) and Canberra's Living Infrastructure Plan.

Waste collection and storage to be undertaken in accordance with the Development Control Code for Best Practice Waste Management in the ACT 2019. Subject to a separate development application associated with any proposed expansion. No change to existing waste management as part of the proposed TPV.

5.1.11 Amenity

With respect to the potential for adverse amenity impacts associated with noise, odour, light spill impacts and safety it is noted that as the proposal is for a rezoning request only, the risk of the above is negligible. Noise, odour, light spill impacts and safety would be considered as part of any future development application.

5.2 Natural features and values

5.2.1 Flora and fauna

Regarding flora and fauna, the Conservator Flora and Fauna has reviewed the proposed subject site (and surrounding area) and advised that early investigations indicate that an expansion by the School into the proposed area would be appropriate subject to investigation into the presence of the Superb Parrot and their habitat. A Preliminary Biodiversity Assessment has been prepared by WSP (and is appended to this report) as part of the preliminary investigation into the proposed boundary realignment. The study found that:

- *"The majority of the study area consists of grassland. Native amenity planting occurs along the north eastern boundary of the site. These trees are small and no hollows were recorded. These trees do however, provide habitat for common species of bird and a visual buffer to the residential development".*
- *"The majority of the study area is dominated by exotic vegetation, however, a small area of native dominated grassland occurs in the north west corner of the study area. Further to the north west, outside the study area is an unknown drainage line".*
- *The vegetation within the site was not consistent with any EPBC listed ecological community. Native dominated grassland, restricted to a north western corner of the study area, was consistent with low condition native pasture and was considered to be potential consistent with NC Act listed Natural Temperate Grassland".*
- *Superb Parrot. Habitat. This species was recorded outside the study area, adjacent to the existing school (including potential nesting hollow)".*

Early investigations explored the possibility of an expansion of the Fraser Primary School to the north/west (i.e. into the Superb Parrot habitat). However, as a result of the findings of the preliminary biodiversity assessment, the proposed boundary realignment was amended to remove the Superb Parrot habitat. The minor boundary change on the western edge of the existing school site would not impact any vegetation or habitat.

As part of any buildings and works application following gazettal of the proposed TPV, it is likely that a referral to the Conservator would be required. This would enable provision of suitable landscaping within the School grounds, noting the presence of the Superb Parrot habitat adjacent to the subject site.

5.2.2 Trees and vegetation

Regarding vegetation management, the Conservator Flora and Fauna has reviewed the proposed subject site (and surrounding area) and advised that early investigations indicate that an expansion by the School into the proposed area would be appropriate subject to a Tree Assessment prepared under the Tree Protection Act. Such an assessment would need to identify trees/vegetation that would require protection, noting that a likely condition of expansion would be that all remnant trees were retained.

TCCS has reviewed the proposal and advised that there appears to be groups of trees present with aesthetic value, which would need to be assessed via a detailed Tree Assessment and as necessary, the recommendations of any Tree Management Plan.

EPSDD's Strategic Planning Department has reviewed the proposal. Given the presence of vegetation to the north, it recommended the exploration of a boundary realignment that would generally avoid the ultimate loss of vegetation determined to be of significance (by a Tree Assessment).

In response to the above considerations raised by the Conservator, TCCS and Strategic Planning, a Tree Assessment has been prepared by Redbox Design Group Landscape Architects for the entire subject site. The assessment concludes:

- trees across the subject site are predominantly Eucalyptus species, which is consistent with much of the planting within the Belconnen District. The existing School play area appeared to be dominated by exotic deciduous species
- tree groups within the existing School site appear to have been generally planted throughout the 1970's
- collectively, the structure and canopy spread of tree groups provides an attractive arrangement for birdlife. This is consistent with the findings of the Tree Assessment Report and Preliminary Biodiversity Assessment Report
- one group of medium value and one group of high value trees were present within that part of the subject site proposed for rezoning.

5.2.3 Air soil and water quality

As no built form is proposed as part of this territory plan variation, there would not be any impacts to air, soil or water quality.

5.3 Social and cultural impacts

5.3.1 Communities of interest

The population and demographic of the School catchment is changing. The Education Directorate has identified the need to expand the subject site boundary of the School to accommodate the existing enrolment population. ACT Health – Strategic Infrastructure has reviewed the proposal and recommended exploration of the potential to co-locate future health facilities/community centre within that part of the subject site proposed for rezoning.

5.3.2 Social infrastructure

The proposed rezoning to facilitate an expansion of the School would assist with the long-term sustainable growth of the School commensurate with population/demographic change in its catchment.

The area of the proposed expansion is currently used for open grassland. The area for the proposed expansion would not encroach into any space used for active resort and recreation. Notably, the rezoning would not impede the function of the shared pedestrian/cyclist facilities proximate/adjacent to the existing School and subject site.

5.3.3 Character and streetscape

As part of the proposal no built form is proposed and therefore, there would not be any streetscape change.

5.3.4 Cultural and heritage environment

The EPSDD – Heritage Department advised that there are no recorded or registered heritage places or objects on the portion of the block affected by the proposed TPV. However, a number of Aboriginal places are located to the north of proposed boundary realignment (within Block 6, Section 64 Fraser). It is noted that Aboriginal places are located some distance from the proposed new boundary. Further, historical aerial imagery indicates that the area was subject to earthworks in the 1970s as part of earlier suburban development, which suggests that the area has low potential for unrecorded aboriginal places or objects.

On this basis, the ACT Heritage Council advises that there are no heritage matters required to be addressed within the Planning Report for the proposed TPV.

5.3.5 Economic environment

The proposed rezoning request would facilitate the incorporation of additional land into the existing School. It would accommodate the existing School population. No additional enrolment capacity or buildings/works are proposed in light of this TPV.

Economic impacts are not anticipated in the short term as no change to the existing School population would occur.

6 Conclusion

The ACT Planning Strategy 2018 identifies education as a priority area for the ACT Government, including the Education Directorate. Provision of suitably zoned land for such a purpose which meets existing and anticipated student demand is necessary to achieve the Directorates objectives.

The proposed territory plan variation is consistent with the suite of ACT Government strategies/policies as it would facilitate the continued use or an existing community facility (the Fraser Primary School) with additional area.

The proposed rezoning request is consistent with the provisions of the *Planning and Development Act 2007* and the Territory Plan. This includes the Fraser Precinct Code, Community Facilities Zone and associated Codes. In relation to considerations raised by the planning authority at the outset of the project, the rezoning request would not result in adverse impacts to:

- physical features, infrastructure and built form
- natural features and values; or
- social and cultural impacts.

As the subject site is not designated as National Land, the provisions of the National Capital Plan are not applicable in this case.

As a consequence of the proposed rezoning, mechanical changes are required to the Territory Plan and associated custodianship:

- the new site boundary would need to be established
- the land would need to be transferred into the custodianship of the Education Directorate
- the Fraser Precinct Map would need to be amended to include that component of the subject site proposed for rezoning.

No buildings and/or works are proposed as part of this TPV. Matters of urban design, streetscape impact, car parking, traffic/access and egress, vegetation removal and master planning (amongst others) would be managed via a separate development application process if needs arise.

On the basis of the above the proposed rezoning would enable the provision of an expansion to the School in such a way that would present an acceptable impact to physical features and infrastructure and the natural environment.

7 Limitation statement

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WSP, Stakeholder Engagement Memo 2022

Memo

To:	ACT Government, Education Directorate
From:	WSP
Subject:	**Stakeholder Engagement Memo**
Our ref:	PS124049 – Stakeholder Engagement Memorandum
Date:	**2 December 2022**

To whom it may concern,

This memorandum provides an overview of the pre-lodgement Stakeholder Engagement activities undertaken in relation to a proposed Territory Plan Variation ("TPV") associated with a boundary expansion of the Fraser Primary School.

1. Contents

Community Engagement Activity & Outcome

- Overview
- Belconnen Community Council
- Public Information Session
- Other Collateral
- Issues Raised & Response

2. Enclosures

- Appendix 1 - Belconnen Community Council Agenda
- Appendix 2 - Belconnen Community Council Slide Deck
- Appendix 3 - Belconnen Community Council Attendee List
- Appendix 4 - Public Information Session RSVP List
- Appendix 5 - Public Information Session Slide Deck
- Appendix 6 - ACT Government website collateral, school newsletters and social media posts
- Appendix 7 - ACT Government Letterbox drop
- Appendix 8 – Email submissions

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WSP acknowledges that every project we work on takes place on First Peoples lands.
We recognise Aboriginal and Torres Strait Islander Peoples as the first scientists and engineers and pay our respects to Elders past and present.

WSP Australia Pty Limited ABN 80 078 004 798

3. Community Engagement Activity & Outcome

3.1 Overview

The ACT Government's stakeholder engagement protocol is underpinned by the *2022 Whole of Government Communications and Engagement Plan*. Accordingly, it is committed to the principles of 'Open Government', which means:

- *"Transparency in process and information*
- *Participation by citizens in the governing process*
- *Public collaboration in finding solutions to problems and participation in the improved well-being of the community".*

Priority actions under the Plan in relation to Education includes *"a focus on the development of new schools – and upgrades to existing schools – to meet the needs of our growing city" (*ACT Government Stakeholder Engagement Snapshot 2022).

The proposed TPV will be undertaken via the *Planning and Development ACT 2007* conventional variation pathway. Under the Act, all draft variations are required to be publicly notified for comment, referred to the Standing Committee and debated at the Legislative Assembly. These mechanisms are considered sufficient to address public concerns.

The activities undertaken as part of this phase have occurred before the formal engagement process. It is noted that a formal process will follow (which is anticipated to fall early-mid 2023).

A range of activities were undertaken during the community engagement period for the proposed TPV, which occurred between September – October 2022. This engagement aimed to ensure that people were involved in a way that was proactive and meaningful and that a broad cross section of the community could provide feedback and learn more about the process.

Some comments may not be able to be resolved through the TPV process and will require the Environment, Planning and Sustainable Development Directorate ("EPSDD") to discuss further with the responsible ACT Government Directorates. Therefore, not all community feedback received throughout the process may be directly reflected in the TPV.

Activities undertaken as part of the engagement included:

- Information posted on the Education and Fraser Primary School website;
- A letterbox drop to local Fraser residents;
- Notice in the Fraser Primary School newsletter;
- Presentation to meetings of the Fraser School P&C Association and School Board;
- Presentation to the Belconnen Community Council;
- A Public Information Session; and
- An invitation to provide feedback via email/post in Sep – Oct 22.

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3.2 Themes emerging from engagement

Some of the key messages to emerge from the engagement activities are:

- Fraser residents value open space within their neighbourhood;
- The community considers road safety an important issue;
- The community considers parking an issue that requires attention from Government;
- The Fraser Primary School community (particularly parents) are generally supportive of rezoning some of the green space near Fraser Primary School for use as open space;
- Several owners/occupiers of properties opposite the school to the east of Tillyard Drive are concerned with the potential for fencing to be erected in what is currently an open view/grassland area;
- Several owners/occupiers of properties opposite the school to the east of Tillyard Drive are concerned about a potential reduction in property values should the existing grassland be utilized by the school for educational purposes;
- The existing vegetation between the residential hinterland to the northeast and the grassland area proposed for rezoning is valued by the community; and
- It has been observed that some community members may prefer opportunities to participate in stakeholder engagement activities in person, rather than in an online format.

3.3 Belconnen Community Council

The Belconnen Community Council is a volunteer-led community organisation which hosts monthly meetings where issues relevant to the Belconnen community are discussed. Officials from the Education Directorate and WSP attended and presented at its Meeting on 20 September 2022 (Refer to Appendix 1 and 2). There were around 20 attendees (Refer Appendix 3). One comment was raised by attendees relating to existing traffic around the school at peak times.

3.4 Public Information Session

WSP hosted a public information session which was conducted over a Microsoft Teams on 28 September 2022. A presentation was made by WSP and officials from the Education Directorate and questions from attendees were taken (Refer Appendix 4 and 5). Issues raised during the session have been summarized at Section 3.6 Issues Raised & Response.

3.5 Other Collateral

A letterbox drop of an information flyer was arranged and undertaken by the Education Directorate. The letterbox drop was completed on 13-14 September and included the distribution of a flyer to around 250 nearby residents. A copy of the flyer and a map of the distribution area is provided at Appendix 7.

Information regarding the proposed boundary expansion was posted on the Fraser Primary School website by the Education Directorate from 13 September to 12 October 2022.

In advance of the broader community consultation, the Education Directorate presented to the Fraser Primary School P&C at a meeting on 4 May 2022 and met with the Fraser Primary School Board on 24 May 2022 to discuss the proposed boundary expansion.

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A notice regarding the proposed expansion was included in the Fraser Primary School newsletter to support communication with the school community (as provided at Appendix 6). The opening of consultation was also advertised by ACT Government social media channels as at Appendix 6.

3.6 Issues Raised & Response

17 submissions were received via email during the engagement period between 13 September – 12 October 2022 (Refer Appendix 8).

The issues raised in these submissions and the relevant consideration by the project team are summarised below at Table 1.

Table 1 – Issue and Response

Issue	Response
Insufficient space for parents/caregivers to park during pick up/drop off times during school hours. Potholes in proposed site. These result in dangerous driving and walking conditions-presenting a risk to pedestrians.	No change to existing student enrolment numbers is proposed as part of this rezoning process. No infrastructure is proposed to be constructed within the land subject to this proposed TPV. Therefore, no change to existing car parking and access/egress arrangement proposed. The Education Directorate notes the community's concern in relation to existing traffic impacts associated with the Fraser Primary School and will forward them to the relevant ACT Government Directorate for consideration via a separate process.
Additional car parking should be constructed within Tillyard Drive to accommodate demand for school pick up/drop off times. It is likely demand will increase with population growth.	No change to existing student enrolment numbers is proposed as part of this rezoning process. No infrastructure is proposed to be constructed within the land subject to this TPV. Therefore, no change to existing car parking and access/egress arrangement proposed. The Education Directorate notes the community's concern in relation to existing traffic impacts associated with the Fraser Primary School and will continue to work with other ACT Government Directorates to seek to improve these existing issues, independently from this proposed TPV.
Before/after school traffic associated with the existing school results in dangerous condition for emergency services (impacts Charnwood Station and ambulance/fire services).	No additional traffic is expected to be generated by this proposal because the proposal does not impact school enrolments. This proposal is only to expand the land area of the school grounds for students to access

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Consider traffic management as part of this and future proposals.	additional outdoor space. The Education Directorate notes the community's concern in relation to existing traffic impacts associated with the Fraser Primary School and will continue to work with other ACT Government Directorates to seek to improve these existing issues, independently from this proposed TPV.
Existing school traffic utilises reserve for parking/access/egress which presents a danger for pedestrians (who could roll their ankles or get hit by a vehicle), motorists and has the potential to injure wildlife or nature.	No change to existing enrolment numbers is proposed as part of this rezoning process. No infrastructure is proposed to be constructed within the land subject to this TPV. Therefore, no change to existing car parking and access/egress arrangement proposed. The Education Directorate notes the community's concern in relation to existing traffic impacts associated with the Fraser Primary School and will continue to work with other ACT Government Directorates to seek to improve these existing issues, independently from this proposed TPV.
Any extended building/excavation/earthworks and the machinery involved would add great strain to Tillyard Drive and have an adverse effect on emergency services and traffic.	No buildings or works are proposed as part of this TPV. Therefore, there would not be any construction impacts. Any future potential construction works at any ACT public schools would consider managing any traffic impacts and can potentially undertake works during school holidays and/or outside of peak times to reduce these impacts.
Preference for expansion of the school grounds into the playground/oval to the west/southwest of the site and creation of any new access from Kerrigan Street.	A detailed review of the Fraser Primary School's strategic and physical context has been undertaken as part of this TPV proposal. The project team has considered the interfaces of the site and determined that the most appropriate area for a planned expansion is to the northeast within the space proposed. The community oval to the south of the school is an important and established community asset that serves the entire suburb of Fraser for sport and recreation use at all times. At times it has been used by the school although it involves students accessing it by crossing a public footpath and requires additional supervision requirements when this

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	area is used by the school, to ensure student safety. A public footpath between the school and the oval is an important community link connecting to the underpass of Tillyard Drive. It is undesirable to have this path through the school site, or to remove the path connection to accommodate an increased school site. The area to the northeast of the school is well located for students to play outdoors in close proximity to their school. On balance, access to this particular site has been identified by the Directorate to be in the best interests of the Fraser Primary School community (as well as the interests of the broader Fraser community, by also continuing to preserve established open space/playing fields at the community oval nearby.
The 'paddock' next to the school (proposed site) is understood to be home to native birds and exotic dominated grasslands. Similar grasslands nearby (500m away) have been declared as a nature reserve. An environmental impact assessment and cost benefit analysis should be undertaken. Biodiversity should be preserved.	An ecology study was undertaken as part of this process which revealed that on balance, the proposed rezoning would present an acceptable ecological outcome, with the impact area considered to have a low biodiversity value.
Those with properties opposite the area proposed for rezoning are concerned with an adverse impact on property values associated with outlook toward a schoolyard, as opposed to grassland.	It is not expected that this concern will be realised. It is not deemed to be a valid planning consideration for the proposed rezoning to increase the play space and boundaries of the school
A 35-metre-wide buffer to the residential properties to the north of the grasslands does not appear sufficient.	Under this proposal, the 35-metre buffer retains the existing stand of trees and is considered reasonable to provide a sufficient noise and distance barrier from the school site. This also meets (and actually exceeds) the requirement for a minimum setback under the current planning framework (the Community Facilities Development Code), community development adjacent to residentially zoned land should have a minimum building set back of 6 metres from the boundary shared with a residential zone.
The Education Directorate should release its data which indicates that there is a demand for additional land for the Fraser Primary	The Directorate undertakes and publishes a bi-annual Census of school enrolments. It also develops enrolment projections, at least

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School. Data should be released on the percentage of students who live in the suburb of Fraser. Anecdotal experience is that the population is ageing.	annually,for the purpose of predicting the future needs of all ACT public schools. This data provides point in time information and is used as an internal schools planning input, alongside a range of other data sources. Fraser Primary School is currently designated as a 'Category A School' for enrolments, meaning it is generally not able to accept students from outside its Priority Enrolment Area. This is primarily due to the high in-area enrolment and capacity for students now and in the near future.
No information on future fencing of the expanded boundary- including its visual appearance, plans for associated community consultation and when it will be constructed.	Under the Planning and Development Act Regulations, all ACT Government schools have access to exemptions for certain types of fencing. No fencing is proposed as part of this rezoning proposal. If a TPV goes ahead, the school Principal (together with the Education Directorate) will work with the school community to consider whether a fence is required in this area. This decision would be based on safety and operational impacts and would also consider impacts for the local community through engagement with nearby residents.
ACT Government website didn't mention this rezoning.	This preliminary consultation has been undertaken by the ACT Education Directorate (in collaboration with WSP Australia) and includes information shared through the Education and Fraser Primary School websites, as part of proposing a change to the Territory Plan. Once a TPV package is lodged by Education Directorate with Environment, Planning and Sustainable Development Directorate (EPSDD), it is expected a formal Draft Variation to the Territory Plan will be prepared by EPSDD. This proposed change would then follow statutory planning requirements articulated through ACT planning legislation, including a mandatory minimum 6-week public notification period, publicised through the ACT Government (EPSDD) website.
Open, face to face engagement should be conducted at a location such as the Fraser Primary School. Online consultation excludes	The ACT Government regularly engages with the community through a range of communication methods, including online

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those without a certain level of digital/ technological connectivity/access.	information and engagement sessions, particularly recently during the COVID-19 Pandemic. As part of the initial TPV proposal consultation, a broad range of engagement activities were undertaken to meet the varied needs of the community. This included: — Presentation at the Belconnen Community Council (September 2022 meeting) — Public engagement session — Letterbox drop to nearby Fraser residents — Notice in Fraser Primary School newsletter — Information published on the ACT Education Directorate and Fraser Primary School websites — Facebook post (Education Directorate page) — Telephone number available for verbal discussion or feedback regarding proposal — Comments invited via email or post.
The community consultation should involve co-design processes.	The Education Directorate values the opinions and knowledge held by the community, and respects the importance of ensuring input from the community. The Education Directorate has consulted the community of Fraser of the proposed rezoning proposal. There is no infrastructure to design as no new development or construction has been proposed.
Provide the necessity arguments for this expansion. Provide the source documentation.	A range of printed and electronic materials have been made available (including throughout Education Directorate-led community consultation) which articulate the Directorate's rationale for the proposed boundary expansion. A formal Draft Territory Plan Variation is expected to follow in 2023.
The current timeframes (6 September - 12 October 22) of consultation is insufficient.	Feedback received during September-October community engagement has been collated into a TPV application package, including a

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	Planning Report, to be lodged with EPSDD late in 2022. It is expected EPSDD will consider the TPV proposal and undertake formal consultation on a Draft Variation to the Territory Plan in 2023, in line with statutory obligations which include making information about the proposal available as well as an opportunity for consultation with the community.

4. Conclusion

We trust that the above provides a sufficient overview of the pre-lodgement stakeholder engagement activities undertaken in relation to a proposal to expand the boundary of the Fraser Primary School via a Territory Plan Variation.

Should you require further clarification, please contact the undersigned.

Kind regards,

Sarah Watts
Senior Associate

Orienne Glover
Student Planner

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Appendix 1 – Belconnen Community Council Agenda

Belconnen Community Council
Building a stronger community

facebook.com/belcouncil twitter.com/belcouncil
PO Box 1131 Belconnen ACT 2617
www.belcouncil.org.au

Belconnen Community Council General Meeting

20 September 2022, 7pm

https://us06web.zoom.us/j/87862117953

AGENDA

7pm	Welcome
7:05pm	Chair's Report
7:15pm	Annual General Meeting* • Chair's Annual Report • Auditor's Report • Election of Committee Members
7:35pm	MLA's updates
7:50pm	Presentation on Fraser Primary School Expansion and Territory Plan Variation. Presenter details TBC.
8:20pm	Update and consultation from Ginninderra Catchment Group by Kat McGilp, Ginninderra Catchment Group Coordinator
8:50pm	General business
9pm	Close

* Documents relating to the AGM be found here:
http://www.belcouncil.org.au/2022-annual-general-meeting/

Next meeting: Tuesday 18 October 7pm, online via Zoom

Appendix 2 – Belconnen Community Council Slide Deck

Vanessa Attridge, Executive Branch Manager, Enrolments & Planning, Education Directorate, ACT Government

Sarah Watts, Senior Associate, WSP

Proposed Boundary Expansion for Fraser Primary School

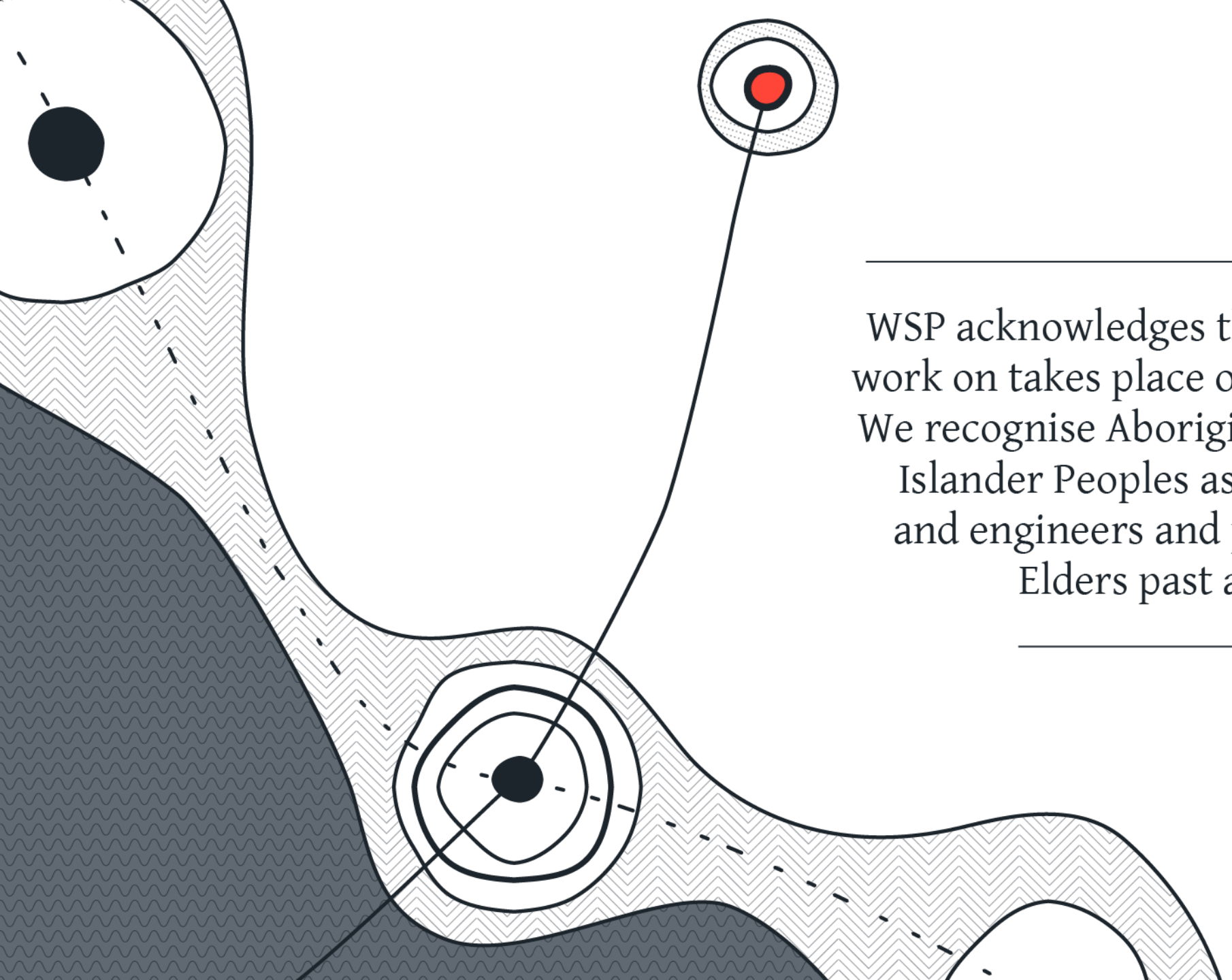
ACT Government

Fraser Primary School

Learning Together & Achieving Together



wsp



WSP acknowledges that every project we work on takes place on First Peoples lands. We recognise Aboriginal and Torres Strait Islander Peoples as the first scientists and engineers and pay our respects to Elders past and present.

What is proposed?

The Territory Plan provides the framework for land use and development within the ACT and is administered by the Planning and Development Act 2007. Changes to the Territory Plan are made via Territory Plan Variations (“TPVs”).

Under the current planning framework, the Fraser Primary School site is zoned CFZ: Community Facilities and is within an area characterized by land zoned (and developed) for transport, sports and recreation, conservation and a mix of residential and commercial use.

The Fraser Primary School community is changing. Whilst there has not been a Government decision for a permanent expansion of the school, the Education Directorate has identified that there will be a need for additional space in the medium term. The undertaking of a TPV is the first part of the process to establish a new boundary for the school.

A rezoning of an area of approximately 1.4 hectares to the northeast of the existing school is proposed.



wsp

PS124049
Fraser Primary School Expansion

Figure 001
Proposed Expansion Area

Legend

- Proposed school expansion area
- Existing Block Boundaries
- Cadastre



Coordinate system: GDA2020 MGA Zone 55

Scale ratio correct when printed at A3

1:2,500 Date: 1/09/2022

GDA 2020

Data source: DELWP, Geoscience Australia

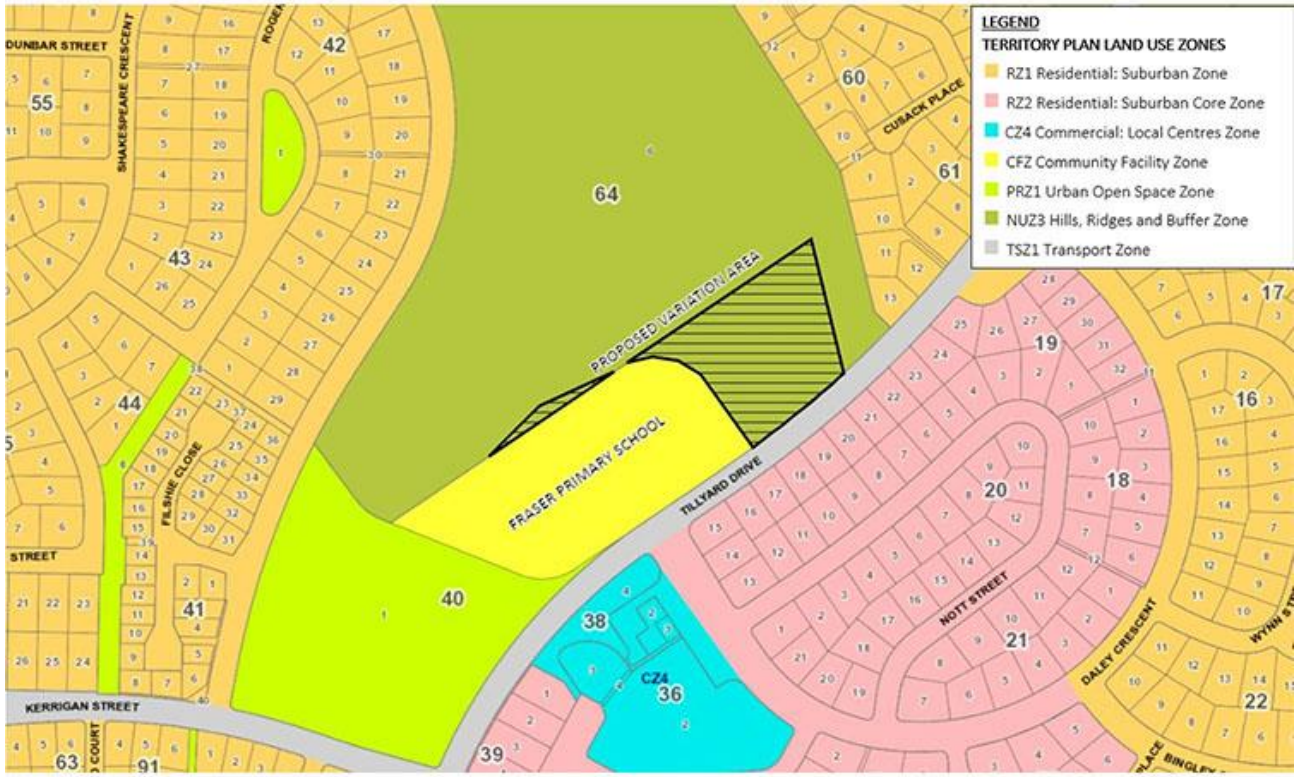
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A variation to the Territory Plan is being proposed that would formally:

- Rezone a portion of Block 6, Section 64, Fraser from NUZ3: Hills, Ridges and Buffer Zone to CFZ: Community Facility Zone

- Amend the Fraser Precinct Code – Fraser Precinct Map by extending the PD1 map area to include the subject land. No changes to the prohibited uses listed at Table 1 are proposed.

If approved, custodianship of the land affected by the variation would also be transferred from TCCS to the Education Directorate and incorporated into the Fraser Primary School site.



What are the next steps?

An online public information session will be held on **Wednesday 28 September 2022 5:30-6:30pm**. RSVP to the email address below.

Comments can be provided until **12 October 2022**.

- By email to planning.canberra@wsp.com with the subject line “Fraser Primary School TPV”
- By post to Sarah Watts, WSP Canberra, GPO Box 1551, Canberra ACT 2601

Comments from this engagement process will be considered by the project team and collated/presented to the Environment, Planning and Sustainable Development Directorate (“EPSDD”) with a Planning Report supporting the proposed Territory Plan Variation, expected to be complete by the end of 2022.

EPSDD will consider the proposal and conduct a formal consultation on a draft Variation to the Territory Plan in 2023, including making these reports available and consulting other ACT Government agencies for comment.

Thank you

wsp.com

Appendix 3 – Belconnen Community Council Attendee List

Name (Ori	User Email	Total Dura	Guest
Adele Sincl	chair@belc	245	No
SimonM		127	Yes
Charles Thomas		116	Yes
Lachlan Butler		113	Yes
Joe		69	Yes
Tara Cheyne MLA		112	Yes
Beth		65	Yes
Kat McGilp		110	Yes
Buryjw		39	Yes
isabellajames-corsaro		23	Yes
Peter Cain MLA		110	Yes
Lachlan Clohesy (Lachl		108	Yes
Mary van de Graaff		108	Yes
DC Haas		107	Yes
Martha Kinsman		104	Yes
Aimee Castrission		103	Yes
imogen.featherstone		102	Yes
Chris G		101	Yes
Jamesg		75	Yes
Orienne Glover		44	Yes
Lesley & John (Lesley I		71	Yes
Sarah Watts		51	Yes
Eben Leifer		57	Yes
Maree Pavloudis		79	Yes
Tom Percival		33	Yes
Vanessa Attridge		30	Yes
Damian's iPad		11	Yes
Christine Coghlan		10	Yes
Matt Watts		110	Yes

Appendix 4 – Public Information Session RSVP List

28 September 2022 – WSP Public Consultation Meeting - Fraser Primary School Boundary Change/Re-zoning

Name	Email address
Sarah Watts	sarah.e.watts@wsp.com
Orienne Glover	Orienne.Glover@wsp.com
Melissa Mula	[redacted]
Lisa Williams	[redacted]
Susan Flanagan	[redacted]
Rebecca Jeffery	[redacted]
Mel MARKEY	[redacted]
O Kusiak	[redacted]
Trish Eves	[redacted]
Lisa Ermanli	[redacted]
Kris Archibald	[redacted]
Leon Hawkins	[redacted]
Amanda Snashall	[redacted]
Tanya and Trent Gourgaud	[redacted]
Justin Keast	[redacted]
Vanessa Attridge	VanessaS.Attridge@act.gov.au
Tom Percival	Tom.Percival@act.gov.au
EDU Directorate	EDUSchoolPlanning@act.gov.au
Heidi Pritchard	[redacted]
Katie Gabriel	[redacted]
Lynsey Campbell	[redacted]
Ross Jelbart	[redacted]
Matthew Checkets	[redacted]

Appendix 5 – Public Information Session Slide Deck

Vanessa Attridge, Executive Branch Manager, Enrolments & Planning, Education Directorate, ACT Government

Sarah Watts, Senior Associate, WSP

Proposed Boundary Expansion for Fraser Primary School

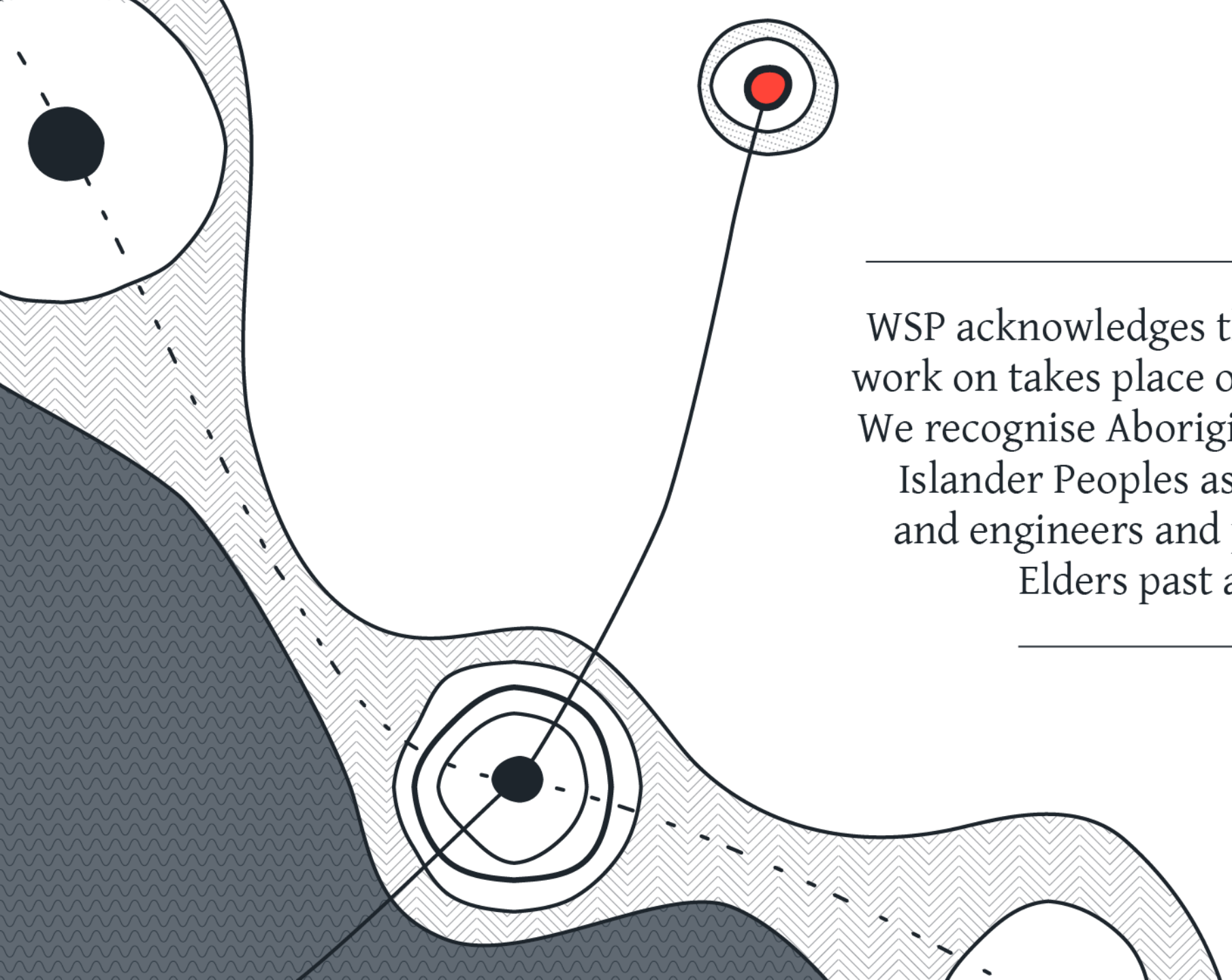
ACT Government

Fraser Primary School

Learning Together & Achieving Together



wsp



WSP acknowledges that every project we work on takes place on First Peoples lands. We recognise Aboriginal and Torres Strait Islander Peoples as the first scientists and engineers and pay our respects to Elders past and present.

What is proposed?

The Territory Plan provides the framework for land use and development within the ACT and is administered by the Planning and Development Act 2007. Changes to the Territory Plan are made via Territory Plan Variations (“TPVs”).

Under the current planning framework, the Fraser Primary School site is zoned CFZ: Community Facilities and is within an area characterized by land zoned (and developed) for transport, sports and recreation, conservation and a mix of residential and commercial use.

The Fraser Primary School community is changing. Whilst there has not been a Government decision for a permanent expansion of the school, the Education Directorate has identified that there will be a need for additional space in the medium term. The undertaking of a TPV is the first part of the process to establish a new boundary for the school.

A rezoning of an area of approximately 1.4 hectares to the northeast of the existing school is proposed.



wsp

PS124049
Fraser Primary School Expansion

Figure 001
Proposed Expansion Area

Legend

- Proposed school expansion area
- Existing Block Boundaries
- Cadastre



Coordinate system: GDA2020 MGA Zone 55

Scale ratio correct when printed at A3

1:2,500 Date: 1/09/2022

GDA 2020

Data source: DELWP, Geoscience Australia

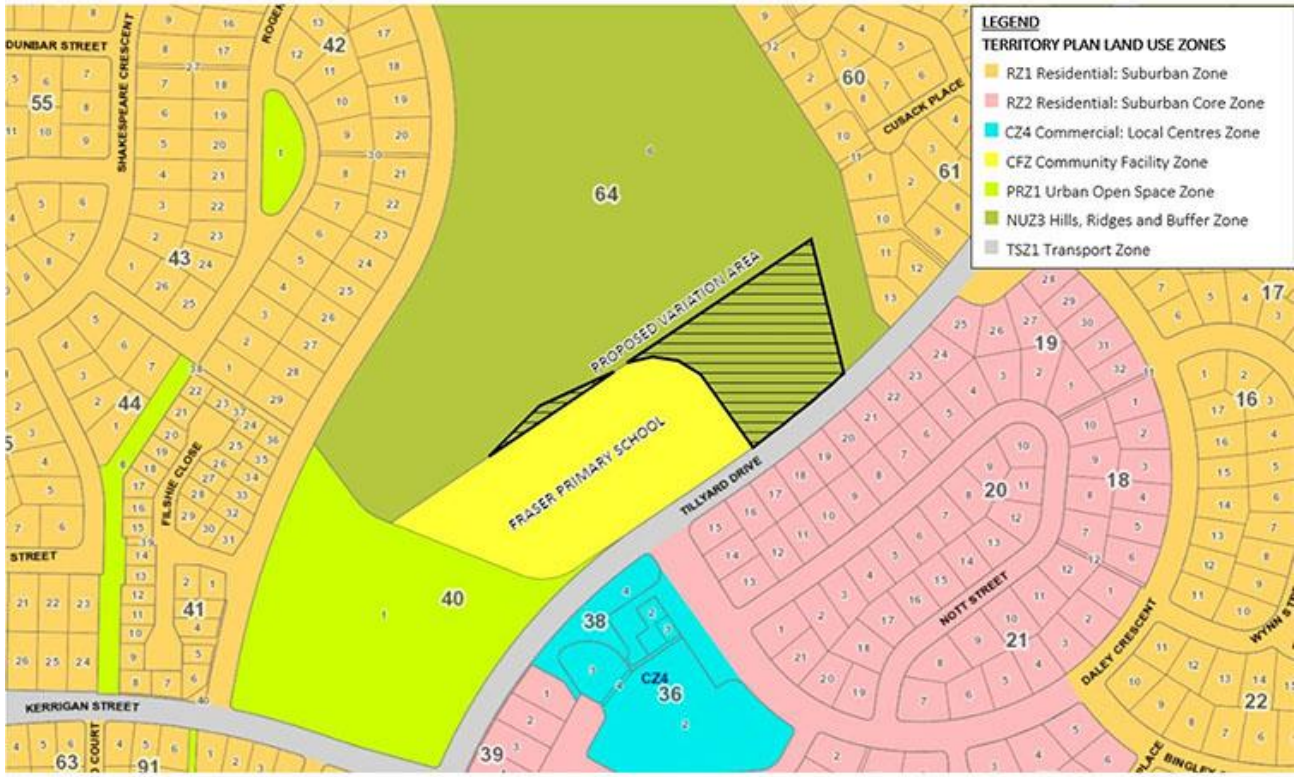
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A variation to the Territory Plan is being proposed that would formally:

- Rezone a portion of Block 6, Section 64, Fraser from NUZ3: Hills, Ridges and Buffer Zone to CFZ: Community Facility Zone

- Amend the Fraser Precinct Code – Fraser Precinct Map by extending the PD1 map area to include the subject land. No changes to the prohibited uses listed at Table 1 are proposed.

If approved, custodianship of the land affected by the variation would also be transferred from TCCS to the Education Directorate and incorporated into the Fraser Primary School site.



What are the next steps?

Comments can be provided until **12 October 2022**.

- By email to planning.canberra@wsp.com with the subject line “Fraser Primary School TPV”
- By post to Sarah Watts, WSP Canberra, GPO Box 1551, Canberra ACT 2601

Comments from this engagement process will be considered by the project team and collated/presented to the Environment, Planning and Sustainable Development Directorate (“EPSDD”) with a Planning Report supporting the proposed Territory Plan Variation, expected to be complete by the end of 2022.

EPSDD will consider the proposal and conduct a formal consultation on a draft Variation to the Territory Plan in 2023, including making these reports available and consulting other ACT Government agencies for comment.

Thank you

wsp.com

Appendix 6 – ACT Government website collateral, school newsletters and social media posts



FRASER FOCUS

Phone Number: 6142 0520

Date: 21 September 2022

Information for Families

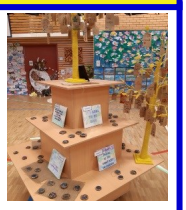
Principal's Message

Please click here to read a message from Mr Deeker.

What's Happening

See what's been happening in Year 3/4.





Awesome Art Show

And just like that our Awesome Art Show is over for another year! We had hundreds of people through the doors over the two days. Special thanks to our amazing staff who supported our students to create magnificent pieces, displayed the art beautifully, as well as organising and running the sausage sizzle and raffle (all winners have been contacted). We can't wait for 2024!

Market Day

What great weather we had for our Market Day yesterday. A fabulous day was had by all. Please click here for a thank you message from our CEOs.

Term 4 Pupil Free Days

Our school will hold the next staff planning days on :

Friday 28 October 2022 (week 3) and **Monday 28 November 2022 (week 8)**

Where possible, we ask that students do not attend school on these days. Students who can't stay at home will be able to attend school and will be supervised while undertaking general learning activities. If you have any further questions about our staff planning days, please contact the Front Office on 6142 0520.

Planning for School Site Expansion

Fraser Primary School is growing. We've recently expanded our learning areas to include additional transportable learning spaces and are now seeking to expand the current school boundary to provide more outdoor space for learning and play. We are seeking feedback from the local community, as part of this process requires variation to the Territory Plan. Families and the community are invited to have their say on the proposed changes which can be found on our website . Consultation closes on 6 October 2022.

School Photos

School photos will be held in term 4 on Tuesday 11 October (K-6 and Preschool beginning of week) and Friday 14 October 2022 (end of week Preschool). Envelopes need to be returned to the Front Office by **Friday 23 September 2022**.

P&C Trivia Night

Ticket Sales are now OPEN for the Fraser Primary 80s Trivia Night! Book your tickets at https://www.trybooking.com/CCAQF. Book a table of 10 for $150.00 or individual tickets for $15.00 (you'll have the option to provide a table preference).

Kds Coffee Van

It is with a sad heart that Kds Coffee van will no longer be able to continue coming to Fraser Primary School on Friday mornings. I will miss all of the lovely smiling faces and catch ups that happen at the van. I will still be at all future Fraser events. For now it is a sad goodbye and I hope to see you all around. Thank you. Kate.

Stay in Touch

You can see more of Fraser Primary School here:

Fraser App

Download the Fraser App for information, updates, absence notifications and canteen ordering

Apple App

Google App

Fraser Facebook

Fraser Website

Recent Notes

P-6 Photo Envelopes

Rescheduled Year 2-6 Track and Field Carnival

Year 3/4 Viewing Activity

Canteen Mango Fundraiser

School Holidays

Term 3 Last Day
Friday 23 September 2022

Term 4 First Day
Monday 10 October 2022



Fraser Primary School
14 September at 21:18 ·



Public Schools
eptember at 18:31 ·

er Primary School is growing. The school community and families are invited to have t
on proposed changes to expand the school boundary to provide more outdoor space
ning and play.

more information or to have your say visit http://ow.ly/VHLv50KIJMB. Consultation clo
October 2022.

21

ACT Public Schools
@ACTEducation

ne Fraser Primary School community & families are vited to have their say on proposed changes to pand the school boundary to provide more outdoor pace for learning & play. For more info or to have you y visit ow.ly/X9BT50KIJME. Consultation closes 12 ctober 2022.



1 PM · Sep 14, 2022 · Hootsuite Inc.

ACT Public Schools
14 September at 18:31 ·

rimary School is growing. The school community and families are invited to have th
osed changes to expand the school boundary to provide more outdoor space for le
y.

e information or to have your say visit http://ow.ly/VHLv50KIJMB. Consultation clos
r 2022.



and 13 others

Like Comment Share

Proposed Boundary Expansion for Fraser Primary School

The Education Directorate is proposing to expand the Fraser Primary School site boundary to provide more outdoor space for student learning and play.

We are seeking feedback from the local community as part of this process which requires variation to the Territory Plan (https://www.planning.act.gov.au/planning-our-city/territory-plan).

The proposed expansion is to the north-east of the existing school to include additional land close to Tillyard Drive.

What is proposed?

An area of land to the northeast of the school is proposed to be re-zoned from open space to community facility land to increase the existing school site by about 1.4 hectares providing additional outdoor space for student learning and play. The proposed new school area is shown on the map below.

This is a growing community, and a growing school. While there hasn't been a Government decision for a permanent expansion of the school at this stage, we know the school will need more space in the medium term. Doing a Territory Plan Variation is the first step in this process, and will give us the flexibility we need to meet the needs of the school community over the coming years. The Government will continue to monitor current and forecast enrolment demand at this school and for the Belconnen region in the future.



Why is this proposed?

Fraser Primary School is a thriving ACT public school supporting the community of northwest Belconnen. The school has seen enrolment grow in recent years and now has almost 600 students enrolled from Preschool to Year 6. The school's Priority Enrolment Area (PEA) includes Fraser and parts of Charnwood, Dunlop and Flynn.

School facilities have been expanded over a number of years with the installation of transportable classrooms to accommodate student growth. These classrooms have been installed on outdoor space within the school grounds and reduced the outdoor play area.

The oval to the south of the school has been used for extra play space but involves students accessing it by crossing a public footpath and additional teacher supervision will be in place when this area is used to ensure student safety.

What is the current use of the land proposed for rezoning?

This land surrounding the school is currently managed by the ACT Government through Transport Canberra and City Services (TCCS) and under the Territory Plan is zoned as *NUZ3: Hills, ridges and buffer areas*. This open space runs alongside the school site and primarily contains cleared pasture and patches of native grasses.

A biodiversity assessment has identified that this part of the block contains 'exotic dominated grassland'. A section of this block further north of the Fraser suburban area (about 500 metres away) is a declared nature reserve for the natural values contained in that area.

A small additional area of land along the northwest edge of the block is included in this proposed variation that will allow the block boundary of the school to be changed so that it aligns with the existing fence.

The area to the northwest of the school, between the school and Shakespeare Crescent contains scattered native tree plantings and is not proposed to be impacted. This area contains important habitat for native birds including sightings of Superb Parrot, which is a declared vulnerable species in the ACT.

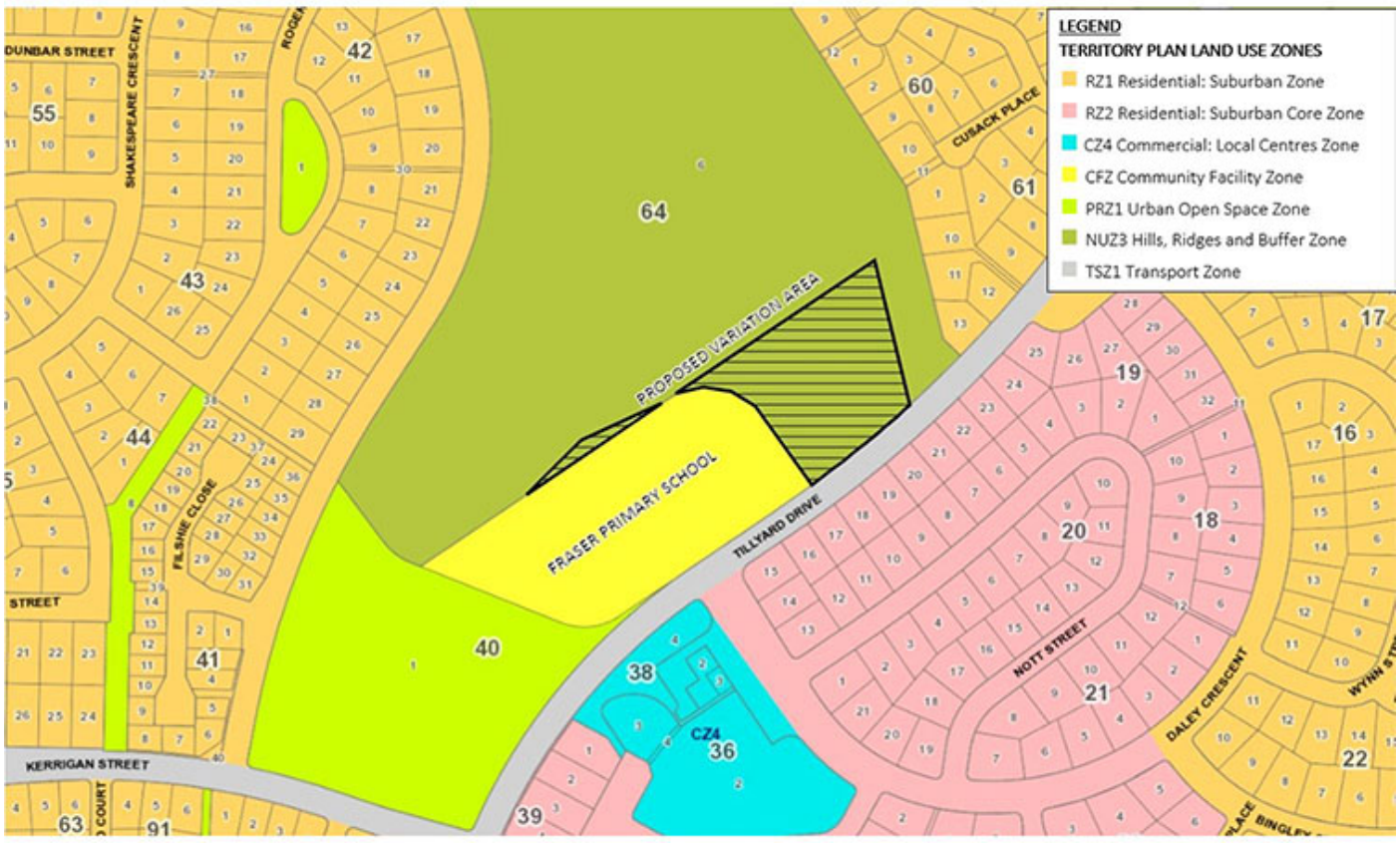
What would be the result of the proposed changes to the Territory Plan?

The Territory Plan (https://www.planning.act.gov.au/planning-our-city/territory-plan) is a statutory document that guides planning and development in the ACT. It is administered by the Environment, Planning and Sustainable Development Directorate and available at https://www.planning.act.gov.au/planning-our-city/territory-plan (https://www.planning.act.gov.au/planning-our-city/territory-plan)

A variation to the Territory Plan is being proposed that would formally:

- Rezone a portion of Block 6, Section 64, Fraser from NUZ3: Hills, Ridges and Buffer Zone to CFZ: Community Facility Zone
- Amend the Fraser Precinct Code – Fraser Precinct Map by extending the PD1 map area to include the subject land. No changes to the prohibited uses listed at Table 1 are proposed.

If approved, custodianship of the land affected by the variation would also be transferred from TCCS to the Education Directorate and incorporated into the Fraser Primary School site.



How has the Education Directorate approached this?

The provision of land for community facilities including schools within the ACT is a strategic priority for the ACT Government. The Education Directorate identifies this in the *Future of Education Strategy* (2018) and *Strategic Plan 2018-2021* available at https://www.education.act.gov.au/our-priorities/future-of-education (https://www.education.act.gov.au/our-priorities/future-of-education). These documents outline the Government's education strategy for 2018 to 2028 and the Directorate's strategic framework in key areas.

The Strategy establishes a policy direction that informs a range of future initiatives and projects. The Strategy has a principle of access: "Supports for learning and wellbeing are available and provided to all students." The Plan includes a number of strategic goals, including ensuring schools are where students enjoy and thrive in learning.

The area identified under this proposal for an expansion of the land available for students at Fraser Primary School will support the Government's and Directorate's strategic objectives, including meeting population and public school enrolment growth through providing ACT public education facilities and access to open space and play areas.

What is the long term plans for the additional land?

No new buildings or facilities are proposed as part of this rezoning process and this proposal is for a permanent expansion of the land area only.

The Directorate monitors and plans for population and public school enrolment growth for all regions of the ACT, including developing areas such as Belconnen, and will continue to monitor the public education needs of the Fraser Primary school community in the future.

How can I have my say?

Written feedback can be provided:

- by email to planning.canberra@wsp.com (mailto:planning.canberra@wsp.com) with the subject line “Fraser Primary School TPV”
- by post to Sarah Watts, WSP Canberra, GPO Box 1551, Canberra ACT 2601

Consultation closes 12 October 2022.

Information session

The Education Directorate’s consultant, WSP, will host an online public information session. Community members can hear from the project team and ask any questions. For COVID safety, this will be held as an online video meeting on:

- **Wednesday 28 September 2022**
- **5:30pm – 6:30pm**

Please register your interest in attending the session via email to planning.canberra@wsp.com (mailto:planning.canberra@wsp.com) by 25 September 2022. You will receive a return email including a link to join the session on Microsoft Teams.

Further questions can also be directed to WSP on 6201 9600 or to Education Directorate at EDUSchoolPlanning@act.gov.au (mailto:EDUSchoolPlanning@act.gov.au)

What are the next steps?

Comments from this engagement process will be considered by the project team and collated in an Engagement Report that is presented to the Environment, Planning and Sustainable Development Directorate (EPSDD) with a Planning Report supporting the proposed Territory Plan Variation, expected to be complete by the end of 2022.

EPSDD will consider the proposal and conduct a formal consultation on a draft Variation to the Territory Plan in 2023, including making these reports available and consulting other ACT Government agencies for comment.



FRASER FOCUS

Phone Number: 6142 0520 | **Date: 12 September 2022**

Information for Families

Merit Awards

Congratulations to the following students who have received a Merit Award last week.

Planning for School Site Expansion

Fraser Primary School is growing. We've recently expanded our learning areas to include additional transportable learning spaces and are now seeking to expand the current school boundary to provide more outdoor space for learning and play. We are seeking feedback from the local community as part of this process which requires variation to the Territory Plan. Families and the community are invited to have their say on the proposed changes which can be found on our website (to be updated by the directorate). Consultation closes on 6 October 2022.

School Satisfaction and Climate Survey

The 2022 School Satisfaction and Climate Survey is now open. The feedback we receive from the survey is highly valuable and helps to shape the future direction of Fraser Primary School. We encourage everyone to complete the survey, so please check your emails for your invitation and contact Ian Blackwell on 6142 0520 if you have any questions.

P&C Trivia Night

Ticket Sales are now OPEN for the Fraser Primary 80s Trivia Night! Book your tickets at https://www.trybooking.com/CCAQF. Book a table of 10 for $150.00 or individual tickets for $15.00 (you'll have the option to provide a table preference).

Support for the Ghanaian Community - Thank You

Dear Fraser community, we appreciate the support and help from the community this year with our Ghana children's appeal to collect educational resources. We would like to thank the community for showing such kindness and your help in supporting the children in Ghana. Sincerely, Elorm and Clara.

Christian Education in Schools

Please click here for more information.

School Photos

School photos will be held in term 4 on Tuesday 11 October (K-6 and preschool beginning of week) and Thursday 13 October 2022 (end of week preschool). Envelopes need to be returned to the Front Office by Friday 23 September 2022.

Student Academic Reports - Semester 2 2022

ACT public schools have commenced preparing student reports for Semester 2 2022. The Education Directorate has again made the decision that student academic reports will be provided with an overall A-E grade, and an assessment of achievement standard statements on a 5-point scale. Reports will not include detailed teacher comments. This strategy supports schools to prioritise teaching and learning as we continue to manage workload pressures due to COVID-19 and other illness.

Our teachers will continue communicating directly with families about student learning and you are encouraged to speak with your child's teacher if you have any questions about their progress.

Stay in Touch

You can see more of Fraser Primary School here:

Fraser App

Download the Fraser App for information, updates, absence notifications and canteen ordering

Apple App

Google App

Fraser Facebook

Fraser Website

Recent Notes

K-4 Market Day - organised by Year 5/6 students

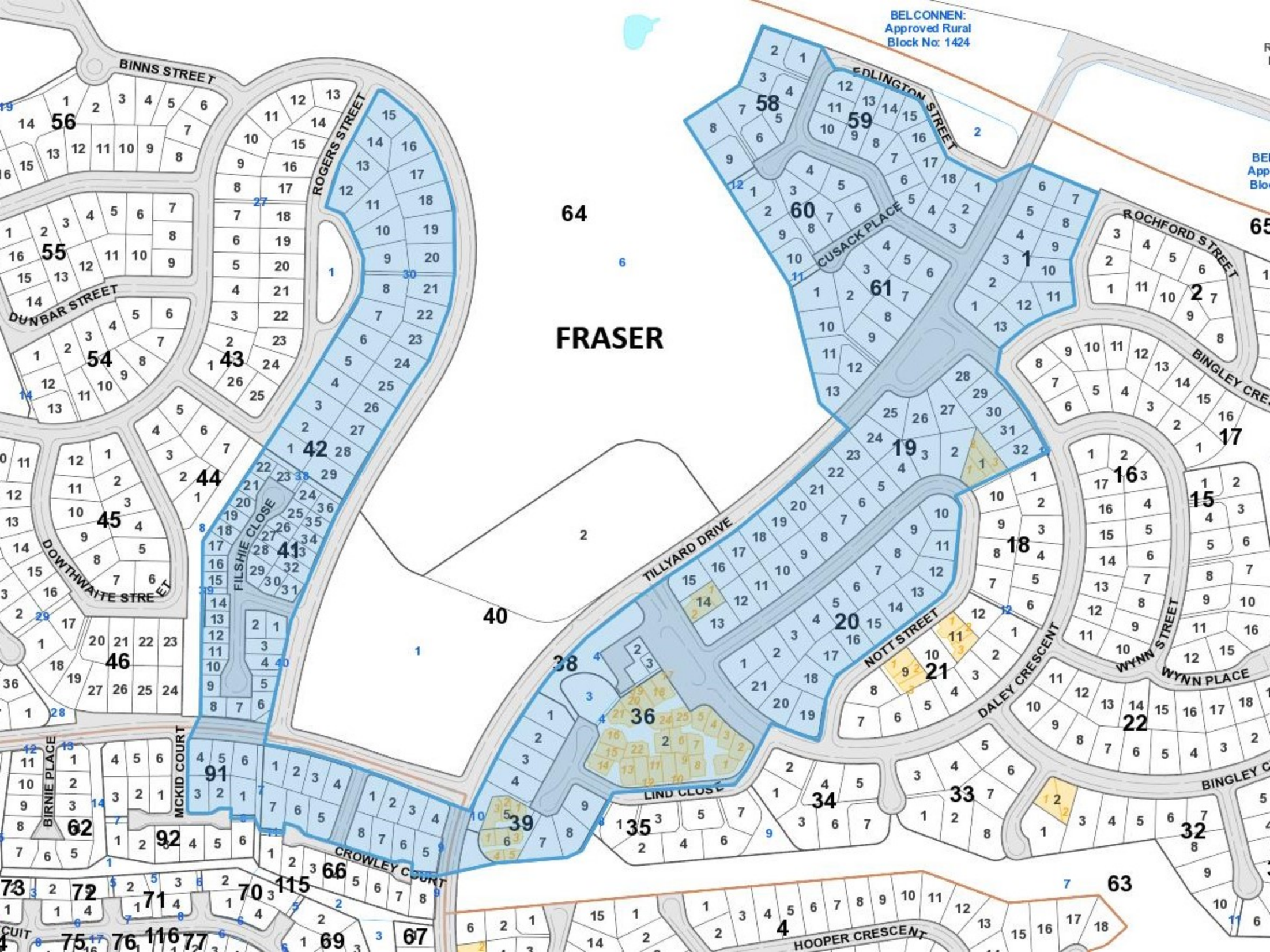
Year 6 Melba Copland Secondary School Transition Visit

Year 5 Combined Band Excursion

Year 5 and 6 Bands Floriade Performance Excursion

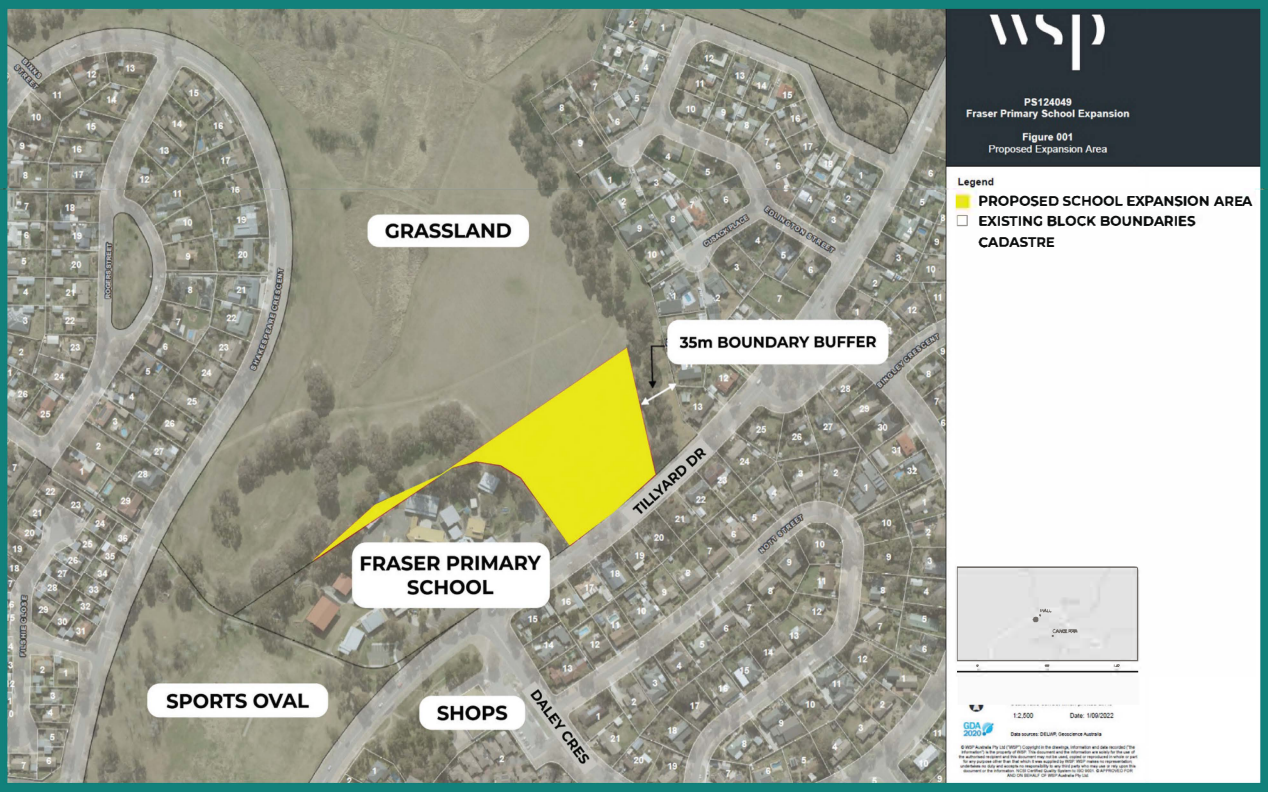


Appendix 7 – ACT Government Letterbox drop


BELCONNEN:
Approved Rural
Block No: 1424
FRASER
BINNS STREET
ROGERS STREET
EDLINGTON STREET
CUSACK PLACE
ROCHFORD STREET
BINGLEY CRES
DUNBAR STREET
FILSHIE CLOSE
TILLYARD DRIVE
DOWTHWAITE STREET
NOTT STREET
DALEY CRESCENT
WYNN STREET
WYNN PLACE
BINGLEY C
LIND CLOSE
MCKID COURT
BIRNIE PLACE
CROWLEY COURT
HOOPER CRESCENT
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Fraser Primary School
Learning Together & Achieving Together

Proposed boundary expansion for Fraser Primary School



Have your say on the proposed boundary expansion for Fraser Primary School

Fraser Primary School is growing. We've recently expanded our learning areas to include additional transportable learning spaces and are now seeking to expand the current school site boundary to provide more outdoor space for learning and play. We are seeking feedback from families and community as part of this process, which requires a variation to the Territory Plan.

The expansion is being proposed to the north-east of the existing school to include additional land close to Tillyard Drive as shown on the map above.

An online information session will be held on **Wednesday 28 September 2022** for families and community to find out more and provide comment on the proposal. Please register online to participate.

Feedback received will help inform the draft planning report in support of a variation to the Territory Plan.

For further information and to have your say visit www.fraserps.act.edu.au, scan the QR code, or email the project team at planning.canberra@wsp.com
Consultation closes 12 October 2022.

ACT Government

To submit comments and questions you can contact us via email at planning.canberra@wsp.com

Appendix 8 – Email submissions

Watts, Sarah

From: Judd, Elisabeth <[redacted]>
Sent: Thursday, September 29, 2022 11:34 AM
To: planning.canberra
Subject: Fraser Primary School TPV

OFFICIAL

To whom it may concern,
I am writing to you in regards of the boundary expansion proposed for the Fraser Primary School. I have a few questions and concerns about the expansion. I live on Edington Street and my house backs on to the grass land where the expansion is planned.

The first question I have is, you have planned this expansion, what is stopping the government on extending the boundary more to put more buildings and play spaces? I specifically purchased my property for the sweeping open views of the glass lands and really don't want my view to be turned into a carpark, back of a class room, or the side of a gymnasium.

Are there plans for more parking arrangements? I live in a cul de sac and really don't want my drive way to be turned into a make shift carpark. This also presents a safety and security issue in the street as there will be an increase of traffic in the street.

What is the likelihood of the government of changing the zoning in other areas of the grass land near Fraser Primary for development of roads and residential areas?

Is there an plans for a government funded early learning centre to be built with in the Fraser Primary School? This will open up early learning for the youngest and most vulnerable members of our community.

Is there an updated time line for this expansion?

I unfortunately missed the Google meets meeting yesterday for updates on the expansion, is there any way I could get an itinerary sent on what was discussed and what questions the community asked?

Many thanks

Elisabeth Judd | Office Assistant
(02) [redacted] | (02) [redacted] | [redacted]
Turner School | Condamine Street | Turner ACT 2612



Watts, Sarah

From: Tahlia S <[redacted]>
Sent: Wednesday, October 5, 2022 7:30 PM
To: planning.canberra
Subject: Fraser Primary School

Hello,
I live in cusack place and back on to the proposed extension zone reserve area.
My only concern if school grounds are extended would be that even more people will park in my street and congest the cul-de-sac at school drop off and pick up times.
I would love to see additional area for a pick up/drop off zone allocated on the west side (shakespear side) in order to ease traffic congestion on the tillyard side.
Thanks

Watts, Sarah

From: Simone Ellacott <[redacted]>
Sent: Wednesday, October 12, 2022 5:22 PM
To: planning.canberra
Subject: Fraser Primary School TPV

Good afternoon,

I hope this email finds you well. Thank you for the opportunity to provide feedback regarding the proposed Territory Plan Variation to rezone Block 6, Section 64 to expand Fraser Primary School grounds.

My fiancé and I recently bought our first home at 205 Tillyard Drive in Fraser which will be directly impacted by these changes. While we understand and support the requirement for increased play space for school students, the land marked for the proposed variation to the Territory Plan has raised multiple concerns which I've outlined below.

Feedback

1. Alternate space for expansion – Sports Oval
    a. The Sports Oval located on the intersection of Tillyard Drive and Kerrigan Street is already utilised by school students.
    b. The area is cleared, levelled with oval markings and sports posts for ball games. It would be logical and assumedly more cost effective to rezone the Sports Oval on Section 40 which is currently classed as an Urban Open Space Zone and would reflect the current land useage.
    c. The expansion of school grounds into this area will have no impacts on nearby residents as there are no shared boundaries.
    d. Most residents do not use this Sports Oval during school hours as children are regularly utilising the space.
    e. There is far more local foot traffic on the proposed variation site than on the existing public footpath.
    f. Expansion in this direction would better align with the current school layout given existing play areas on the South West of the school area.

2. Impacts on native flora and fauna
    a. The proposed variation will impact many native species that inhabit the area. The direction of the expansion moves towards the protected habitat for native birds and vulnerable species which we regularly enjoy as local residents.
    b. In recent months we have been delighted to see echidnas crossing the area that is proposed to be included in the Variation. This is in addition to kangaroos, the vulnerable Superb Parrot, birds, frogs, grasses and native trees.
    c. The alternate option of using the current Sports Oval would reduce further habitat loss.

3. Impacts on residents

a. The proposed expansion is for 1.4 hectares to be used exclusively for the school community which is a considerable encroachment onto shared green space currently accessible to the whole community.
b. The proposal reduces our boundary with the school grounds from 650m to just 35m and comes right to the existing native tree line with no open area left along the boundary line.
c. This space is a very high use area as an off leash dog area. Many local residents walk along Tillyard Drive down onto the current open shared space, they would be required to walk along our fence line to access the bottom portion of the green space which would severely impact our privacy.
d. School children and parents also walk across the area All of this traffic would be redirected into a 'thoroughfare' along our back fence.
e. The area to be rezoned as proposed by the ACT Government is preferable for local walkers as the lower portion of the oval becomes very wet and muddy. In warmer months many residents still prefer to use the top area on higher ground due to snake sightings and kangaroos closer to Shakespeare Crescent and the creek.

4. Battelaxe block
    a. We are first home buyers and after years of saving purchased our home on a battelaxe block. If we knew at the time there would be a school boundary 35m from our fence we wouldn't have proceeded. This space is used as frontage for all of the residents along the fence line on battleaxe blocks, and we have invested a considerable amount into landscaping with the green back space in mind.
    b. A 35m boundary buffer is a drastic decrease from the current layout with 650m buffer.
    c. Expanding in the South West direction would not have any of these impacts on any residents.
    d. I work from home regularly with a home office overlooking the green area. The proposed changes would mean school children and parents can see directly into our home, including the office, bedroom and backyard.
    e. These changes would likely impact the value of our home.
    f. I would be very uncomfortable in my own yard or bedroom with curious school kids only 35m away. We would likely have to invest further money into screening which would in turn remove any element of frontage from our property.
    g. The fencing and construction required would also be an eyesore and on the otherwise uninterrupted shared community green space.

5. Noise pollution
    a. We accept the current sounds coming from the school and were aware of this when we bought our home. This includes fire alarms, bells, school announcements, general play noise and the school song played every morning at 9:00am.
    b. It's important for children to have open green space to play and be active. I understand the requirement for additional area but having this just 35m from our home would be a considerable amount of increased noise.
    c. When walking our dogs near the school, children will stop at the fence and call out to say hello and get excited about the seeing the dogs. This is understandable and I have no issue with this. However, if we had a 35m boundary there would be children that could constantly see our dogs in the yard and call out to them. One of our dogs is a 2 y/on rescue who was mistreated for her first 7 months in various homes. She was extremely nervous when we first adopted her and we've been investing a lot of

time to reduce any barking at passers-by. I'd be very concerned that they would be wound up and barking with kids running around and yelling to them in such close proximity. This in turn would impact our neighbours and force anyone nervous around barking dogs to walk right by our fence.

6. Rubbish
    a. When walking past the school there is often rubbish along the Shakespeare Crescent fence line. This is inevitable but would create the potential for rubbish in our yard and outlook.
    b. This would also increasing the risk of attracting mice and snakes and create danger for residents, children and pets.
    c. This risk would be mostly nullified if the expansion was in the South West direction as it is further from highly populated wildlife areas.

7. No notification
    a. We received no letters or notification of the proposed rezoning and were notified by concerned neighbours.

8. Demountables
    a. As a resident the impacted space is a key feature of our concerns. This assumes the land would be used for increased play space.
    b. It is unclear if there would be demountables or more permanent structures placed on the proposed expansion into the current shared community space. We request confirmation that there will be no demountable or buildings on the space.
    c. We would also hope the area wouldn't be rezoned again for commercial or residential purposes.

Thank you for your consideration. I understand and support the intention of the proposal however there are significant impacts on our lives and I hope alternative options are further investigated.

If you need anything further please let me know.

Kind regards,
Simone
Resident of 205 Tillyard Drive, Fraser

Watts, Sarah

From: Sandi Tichanow <[redacted]>
Sent: Sunday, September 25, 2022 9:01 PM
To: planning.canberra
Subject: Fraser Primary School TPV

I agree with the proposed extension, but I am concerned of the following.

- The school needs to expand now it is too small for students as it is
- If you expand how will you staff
- Why is it land only, it could take another 5 years for your to approve buildings
- If you are going to expand the land and not build for a long time can the area be used as a car park or drop off zone for parents as at the moment it is very hard to park and get anywhere near the school
- If building what car parking is being allowed its hard enough as it is

Watts, Sarah

From: Ross Jelbart <[redacted]>
Sent: Wednesday, September 28, 2022 1:07 PM
To: planning.canberra
Cc: Hutchesson, Sarah
Subject: PS124049 Fraser Primary School Expansion

Dear Sarah.

I am writing regarding the proposed boundary change to Fraser Primary School.

Regarding the mechanism of the proposal:
- Is the current documentation part of a Draft Variation to the territory plan? Or a preliminary design and consultation process. The process listed on the ACT planning website among other items, includes:

"6. DV released for public consultation - 6 weeks minimum"
"Notification is generally in the form of a letter and will be posted to lessees in sections adjoining the site that is being rezoned."

I have only been informed of the proposal second hand with forwarded posts on Facebook. Given that the proposed extension will be opposite my house, I would expect I qualify to be notified if this is part of a genuine Draft Variation.

The earliest notification I can find regarding the proposal is on Facebook from Yvette Berry on September 14th. With Consultation to close on 12th of October, this is significantly less than the 6 week minimum.

If this proposal is part of a Draft Variation to the territory plan and not part of a preliminary process, what is the reason for deviating from the regular process listed by ACT Planning.

Regarding the Actual Proposal:
- What is the proposed new boundary structure, and what consideration has been given to the visual and access impact to adjacent residents.
- Will the proposed area still be accessible for use by the public outside of school hours? Or will use of this space be lost to general public?
- What are the proposed traffic management measures for the new school extension. Currently during school pick up and drop off hours, it is extremely difficult to exit my driveway. Cars are also frequently parked adjacent the road far beyond the school, where the shoulder of the road is not sufficiently wide to park a car without impinging on the road, or parking partly on the verge.
- While the proposal currently does not propose any additional structures, what guarantees do we have that there will be no additional buildings added in the future.
- Given that the proposed area is outdoor play space, what is the reasoning to extend along Tillyard drive, rather than behind the school, given that no additional structures are being added, none of the existing trees would require removal, and impact on adjacent properties would be minimised.
- From a homeowner point of view, having a house with a view over a park and a school up the road, is very different from having a school directly across the road, and I would expect the proposal, if implemented to have a negative effect both on my enjoyment of my home, and the value of my property. What is proposed to mitigate the financial impact of neighbouring properties impacted by the extension.

I would appreciate the opportunity to attend the proposed Teams consultation this evening, I understand the requested RSVP date was 25th of September, however I have only recently been informed of the proposal.

I would also appreciate the opportunity to attend any future face to face consultation, many of the residents surrounding the proposed area are older, and while online teams meetings have become a familiar tool to working

professionals in the last couple of years, it would be a foreign concept to many of my neighbours, and they would be unfairly disadvantaged by restricting consultation to an online only forum.

I look forward to your response.

Kind Regards.
Ross Jelbart
[redacted]

198 Tillyard Drive
Fraser
ACT 2615

Watts, Sarah

From: David Long <[redacted]>
Sent: Wednesday, September 14, 2022 8:29 PM
To: planning.canberra; Babe
Subject: Feedback on Expansion of Fraser Primary School Boundary

Follow Up Flag: Follow up
Flag Status: Completed

Dear Planning Officer

I am writing to lodge my objection to the expansion of the Fraser Primary School Boundary line. My reasons are as follows:

1. I am the owner / resident of 196 Tillyard Drive and the current poor traffic congestion resultant from the lack of parking is already adversely impacting my ability to enjoy my neighbourhood. I have difficulty getting in and out of my driveway because cars are already banked up and parked illegally as to drop off/ pick up their children. I have contacted both the school and ACT government to assist in the management of the traffic and neither are able to address this situation. This is simply unacceptable.

Traffic and road management is the responsibility of the ACT government and I am disappointed in the lack of appropriate infrastructure commensurate with a growing population.

2. The current area surrounding the school is currently managed by the ACT Government through Transport Canberra and City Services (TCCS) and under the Territory Plan is zoned as *NUZ3: Hills, ridges and buffer areas*. This open space runs alongside the school site and primarily contains cleared pasture and patches of native grasses.

A biodiversity assessment has identified that this part of the block contains 'exotic dominated grassland'. A section of this block further north of the Fraser suburban area (about 500 metres away) is a declared nature reserve for the natural values contained in that area.

Accordingly I wish for this to be preserved to retain the biodiversity of the environment.

3. The process of consultation should be genuine consultation and co design. I would appreciate that there is transparency in all communications as the first that I found out about the expansion of the Fraser primary school boundary line was through social media and not through a letter despite the ACT Government having my details and could have written directly to me.

4. An environmental impact study and cost benefit analysis should be undertaken prior to any expansion of the school.

5. Please provide the source documentation which supports the expansion of the Fraser primary school as the ageing population does not appear to support the premise.

6. Please provide the number of students who attend Fraser who do not reside within Fraser. Without anticipating the cost benefit analysis associated with the proposed expansion of Fraser primary school please provide me with the necessity arguments for this expansion.

I purchased my specific property on the basis that my views, outlook and environment would not be comprised.

I look forward to being a participant of your proposed consultation scheduled in late September 2022. Please send me the details.

I do not authorise my personal details to be published or provided to third parties.

Kindly acknowledge receipt of this correspondence.

Yours sincerely

O Kusiak

Sent from my iPhone

Watts, Sarah

From:	David Long <[redacted]>
Sent:	Friday, September 16, 2022 6:08 PM
To:	Watts, Sarah
Cc:	Babe; planning.canberra
Subject:	Re: Fraser Primary School boundary change (PS124049)
Attachments:	Education Directorate Webpage - Proposed Boundary Expansion for Fraser Primary School - Fraser Primary School.pdf; Fraser Primary school - Proposed Boundary Expansion.pdf

Dear Sarah

Thank you for your time this afternoon. This is to acknowledge receipt of your correspondence.

Additionally can you please provide a copy of ACT government policy stating that consultation processes are conducted online. It is our preference that given that the outcome will affect fraser residents that the consultation process be undertaken in an open public forum such as the Fraser Primary school so that affected parties are able to adequately voice their concerns.

Thank you

Yours sincerely
O Kusiak

Sent from my iPhone

> On 16 Sep 2022, at 4:30 pm, Watts, Sarah <Sarah.E.Watts@wsp.com> wrote:
>
> Hi Olga,
>
> FYI - I've received an error message from your email address [redacted]. Could you please confirm receipt of my email? It has been copied below for ease of reference.
>
> Cheers,
> Sarah
>
> From: Watts, Sarah On Behalf Of planning.canberra
> Sent: Friday, September 16, 2022 4:19 PM
> To: '[redacted]' <[redacted]>
> Subject: Fraser Primary School boundary change (PS124049)
>
> Hi Olga,
>
> Thanks for the call.
>
> As discussed over the phone today, please see below for the links to the material available in relation to the Fraser School boundary expansion:
>
> https://www.fraserps.act.edu.au/
> https://www.fraserps.act.edu.au/fraser_primary_school_boundary_expansion

A copy of the letterbox drop flyer is also attached.

I've printed off a copy of the attached material and it will be included in the mail run on Monday.

Enjoy your weekend.

Kind regards,
Sarah Watts

Senior Associate
WSP

-----Original Message-----
From: Mail Delivery System <MAILER-DAEMON@icp-osb-smtpdir25.iinet.net.au>
Sent: Friday, September 16, 2022 4:22 PM
To: Watts, Sarah
Subject: Undeliverable: Fraser Primary School boundary change (PS124049)

This is the mail system at host icp-osb-smtpdir25.iinet.net.au.

I'm sorry to have to inform you that your message could not be delivered to one or more recipients. It's attached below.

For further assistance, please send mail to postmaster.

If you do so, please include this problem report. You can delete your own text from the attached returned message.

The mail system

<[redacted]> (expanded from <[redacted]>): host
mail-act.iinet.net.au[10.2.252.62] said: 552 5.2.2
<[redacted]> Quota exceeded, please reduce the size of your
emails on the server. (in reply to end of DATA command)

<[redacted]> (expanded from <[redacted]>): host
mail-act.iinet.net.au[10.2.252.62] said: 552 5.2.2
<[redacted]> Quota exceeded, please reduce the size of your
emails on the server. (in reply to end of DATA command)

NOTICE: This communication and any attachments ("this message") may contain information which is privileged, confidential, proprietary or otherwise subject to restricted disclosure under applicable law. This message is for the sole use of the intended recipient(s). Any unauthorized use, disclosure, viewing, copying, alteration, dissemination or distribution of, or reliance on, this message is strictly prohibited. If you have received this message in error, or you are not an authorized or intended recipient, please notify the sender immediately by replying to this message, delete this message and all copies from your e-mail system and destroy any printed copies.

-LAEmHhHzdJzBITWfa4Hgs7pbKI

Watts, Sarah

From: David Long <[redacted]>
Sent: Friday, September 23, 2022 9:29 AM
To: planning.canberra; Watts, Sarah; Babe
Subject: Re: Registration for Proposed Fraser Boundary 28 September at 530 - 630

Dear Sarah

Thank you for the paperwork that you have provided in hard copy.

Can you please provide me with the proposed telephone number that will be used for the online meeting scheduled this week.

Thank you

Yours sincerely

O Kusiak

Sent from my iPhone

> On 17 Sep 2022, at 12:16 pm, David Long <[redacted]> wrote:
>
> Dear Planning Officer
>
> A number of residents of Fraser have requested that any consultation concerning the ' Fraser Primary school expansion boundary' that is undertaken is done so in an open face to face forum rather than online given the impacts of the proposal are real to the residents. The Fraser school is a perfect environment that would facilitate Covid safe consultation.
>
> Genuine consultation should be inclusive of all stakeholders regardless of their access to technology.
>
> Please provide the ACT government policy stating that all consultation should be undertaken by online forums.
>
> The current timeframes of consultation are identified as at 6 and 12 October 22. Please provide why this consultation process is less than a month given the absence of documentation and evidence based data supporting the need of the proposal. The proposal 'Fraser primary school expansion project ' does not appear to be listed on the ACT government consultation website. Please advise why such a significant proposal is excluded from the ACT government website.
>
>
> Kindly acknowledge receipt of this email including providing responses to the issues identified.
>
> Yours sincerely
> O Kusiak
>
>
>
>
>
> Sent from my iPhone

Watts, Sarah

From:	Mel Markey <[redacted]>
Sent:	Wednesday, September 14, 2022 7:38 PM
To:	planning.canberra
Subject:	Fraser primary school TPV
Follow Up Flag:	Follow up
Flag Status:	Completed

Hi folks,

I am very excited for the proposed changes. The school desperately needs more space.

One thing that I wanted to request is that as part of the expansion, consideration is given to parking and/or a more suitable drop off and pick up area as well as re surfacing and seeding the grass areas.
At present the ovals surrounding the school are full of large potholes and are accidents waiting to happen.
So many families roll ankles walking on them all of the time.

Cheers,
Mel MARKEY

Watts, Sarah

From: Checketts, Matthew <[redacted]>
Sent: Wednesday, September 28, 2022 12:19 PM
To: planning.canberra
Cc: matty.checketts@gmail.com
Subject: Fraser Primary School TPV [SEC=UNOFFICIAL]

Hi

I am writing in support of the proposal to increase area of land available to Fraser Primary school students to play in. Our 7 yr old son currently attends the school.

For the size of the school (600 odd students) they have almost no space to play in as, even though they are surrounded by large swathes of land, they are legally limited to the fenced perimeter. This lack of space and high density climate must surely have a negative effect on their feelings of safety, space and creativity.

Maybe a fence at least along the Tilyard Drive side might help provide some separation from the road.

If possible, please keep me informed of any progress on this proposal.

Thanks
Matt

Matthew Checketts
Assistant Manager
Oil and Gas Division | Offshore Resources Branch | Decommissioning Implementation
Ngunnawal Country, 51 Allara Street (GPO Box 2013) Canberra ACT 2601 Australia
Department of Industry, Science and Resources
[redacted] | [redacted]

industry.gov.au ABN 74 599 608 295
Supporting economic growth and job creation for all Australians | We are collaborative, innovative, respectful and strive for excellence

Acknowledgement of Country
Our department recognises the First Peoples of this nation and their ongoing connection to culture and country. We acknowledge First Nations Peoples as the Traditional Owners, Custodians and Lore Keepers of the world's oldest living culture and pay respects to their Elders past, present and emerging.

UNOFFICIAL

Watts, Sarah

From: Lisa Ermanli <[redacted]>
Sent: Thursday, September 15, 2022 4:27 PM
To: planning.canberra
Cc: Lisa Ermanli
Subject: Fraser Primary School TPV

Attention Sarah Watts

Dear Sarah

I'd like to give some feedback prior to the information session to raise a concern that I already hold with traffic flow in and around the area of the school and surrounding streets at key school drop off and pick up times.

We are located in Edlington Street and have recently witnessed cars driving through the walking lane way between 19 Edlington Street and 21 Edlington Street to drive across the grassland area to the school to pick up their children from school. It has happened on days when it is raining as I know there is heavy congestion at the school on Tillyard and Shakespeare Crescent around set down and pick up times.

This issue (I believe) has been reported to Access Canberra and I wanted it to be noted as a serious Health Safety and Environment concern. I personally would not want to see anyone injured who uses the grassland while walking in the area. I'd also like it noted my concern for Edlington Street becoming a through fare for school traffic flow.

Kind regards
Lisa Ermanli

[redacted]

Watts, Sarah

From: Leon Hawkins <[redacted]>
Sent: Saturday, September 17, 2022 9:07 AM
To: planning.canberra
Subject: Fraser Primary School TPV

Follow Up Flag: Follow up
Flag Status: Completed

Hi Team,

Thanks for the opportunity to comment on the proposed boundary expansion for Fraser Primary School.

Noting the Schools growth and no new buildings or facilities are proposed under this rezoning process, I would like to raise my concerns in regards to traffic management.

School drop-off and pick-up times along Tillyard Drive and Shakespeare Crescent is becoming increasingly busy and dangerous as the number of students grow.

You only need to see what is happening along Brigalow Steet in Lyneham during drop-off and pick-up times to see what will happen here as Fraser Primary grows.

As a resident on Shakespeare Crescent the blatant and deliberate blocking of traffic, illegal parking and unauthorised use of resident driveways and gardens to undertake U-turns by parents etc. is getting out of hand and it's only a matter of time before a severe incident will occur.

Grateful if you can consider traffic management as part of this and future proposals.

Cheers

Leon Hawkins
[redacted]

Watts, Sarah

From: kris archibald <[redacted]>
Sent: Thursday, September 15, 2022 2:11 PM
To: planning.canberra
Subject: Fraser Primary School TPV

Follow Up Flag: Follow up
Flag Status: Completed

Thank you for the opportunity to to give feedback on this proposal.

As a resident of Tillyard Dr I am deeply opposed to the site earmarked for the expansion of the school. Not the expansion necessarily, rather the site chosen.

Reason 1: Traffic
Tillyard drive is a busy street during school pickup and drop off 8am-9:30am and 2pm-3:30pm. So much so, that traffic is almost at a stand still during these times. It is a main arterial road for ambulance/ Fire services and as such feeds the local Charnwood station... any extended building/ excavation/ earthworks and the machinery involved with this would add great strain to this road and have an adverse effect on emergency services and traffic alike.

Reason 2: Expand the other way.
The un maintained oval next to the school is the perfect solution. You could reroute some of the school traffic away from the busy Tillyard Dr. Access the school from Kerrigan st. Expand to the left of the school onto the oval. Take the whole oval as the schools 'grounds' and develop as little or as much as you like here. Add whole wings of the school if need be, carparks, synthetic ovals... The sky is the limit but by expanding the other way you limit your options and create more issues.

Reason 3: Native flora and Fauna.
The 'paddock' next to the school (proposed site) is home to native birds and grasses. There needs to be a thorough impact assessment on the implications of this development on this space.

Reason 4: Property prices.
My house is directly opposite the school. I purchased this property for (among many other things) the outlook over this native grassland. It is peaceful. It is different and I hope it will stay the same as it currently is forever.

Reason 5: Personal
If there is a possibility of this expansion happening in the next few years then I would like advanced warning so that I can put my home on the market and relocate my family.

Regards
Kris Archibald
[redacted]

Watts, Sarah

From: Justin Keast <[redacted]>
Sent: Friday, September 23, 2022 1:47 PM
To: planning.canberra
Subject: Fraser Primary School TPV

Follow Up Flag: Follow up
Flag Status: Completed

Hi

I often drive past Fraser Primary School in the afternoon around 3pm. What has always struck me is the lack of proper room for parents to park along Tillyard Drive. I am often concerned that a kid will step out onto the road or a parent will open their car door when another car is trying to pass. Cars queueing to pick up the kids from school often occupy the northbound lane creating a danger for all cars in both directions.

There is a lot of room along the western side of Tillyard Drive. It would be fabulous if the government could consider adding some parking. It would also be good if some room was made for cars queueing to pick up their kids from the front of the school. I am sure that the parents attending that school would also appreciate it.

Kind regards
Justin Keast
[redacted]

Watts, Sarah

From: Juliet Jackman Harris <[redacted]>
Sent: Friday, September 23, 2022 6:18 PM
To: planning.canberra
Subject: Fraser primary land expansion

I wish to object to the land expansion of Fraser Primary school for the following reasons.
* The school has impenetrable fences around its playground and I am assuming that this will also be the case with this new expansion.
* There is no issue using the oval for play. Their argument for the need for staff supervision on the oval is silly as they will also need to supervise this new area.
* What should actually be proposed is that the school oval is upgraded and irrigated to make a nicer space for all the community.
* While no building is currently proposed, once the Territory plan is changed, they will be able to propose building in the future. Children should be able to access local schools (for example Flynn Primary) rather than creating large schools. Traffic is already terrible at this school due to the need for children to be driven to school
*The existing grasslands should be protected and open to all the community

Kind regards Juliet Harris
1 Hooke Place Charnwood

Get Outlook for Android

Watts, Sarah

From: Jessica Hellowell <[redacted]>
Sent: Tuesday, September 27, 2022 4:28 PM
To: planning.canberra
Subject: Fraser Primary School TPV

I would like to recommend more parking for the upgrade for the school. Alot of people are unable to get parking due to the school expending and there being less parks

Get Outlook for Android

Watts, Sarah

From: Jay O'Neil <[redacted]>
Sent: Wednesday, October 12, 2022 10:41 PM
To: planning.canberra
Subject: Fraser primary school TPV

Hi,

Thanks for the chance to have a say on proposed changes to expand Fraser Primary School's footprint. I heard about this from my neighbour. Could I ask you letter box drop nearby houses so we know what's going on into the future?

Loss of open, shared community space
I understand it is proposed to rezone Block 6, Section 64 for Fraser Primary School to expand by 1.4 hectares. My main concern is that this block is currently used by the wider community. If Fraser Primary School expanded into this space, it would be fenced off as is currently the case with all school grounds and so would no longer be able to be enjoyed by the wider community. It is currently used for people to play in with their children as a nice open space. It is also used by people walking and exercising their dogs.

Loss of habitat for wildlife/ birds etc
This space is also currently accessed and used by wildlife such as kangaroos, the odd echidna has been sighted, and birdlife including the vulnerable Superb Parrot. It is home to grasses and natural trees. This would be lost with a fence placed around 1.4hectares of this current open space. Plus the landscaping that would be required to render it suitable for a school community.

Alternate option – current Sports Oval, Section 40
The current Sports Oval, cnr Tillyard Drive & Kerrigan Street is an obvious alternative option. It is already set up as an oval and so wouldn't need to be landscaped for additional play space. Could this be rezoned to be part of Fraser Primary School? It seems a more logical expansion of the current school as it is adjacent to current play space areas of Fraser Primary School.

This alternate option is likely to be more cost effective. The Sports Oval is already levelled and maintained as a sports ground. The proposed site (Block 6, S64) has significant drainage issues.

Lack of clarity about use of proposed expansion
I would appreciate knowing more about what is proposed. Is it to increase play space and space for sports activities, or does this also include additional buildings? If it is to add additional buildings, then it is only fair to be open about this for consideration by local community residents. Especially where they are sited.

I think it's great to see local primary schools expanding and gaining additional space for growing populations. I appreciate being able to have a say but would ask you do more to let the local community know what is happening. As above, I only heard about this proposal after chatting to a neighbour.

My main objection is the loss of current open and shared community space. This is a negative for the local community as well as negative for the natural environment. Especially when expanding in the other direction including the current Sports Oval would seem more logical and potentially more cost effective.

Thanks,
Jay

Watts, Sarah

From: Ian Coulson <[redacted]>
Sent: Tuesday, September 27, 2022 4:38 PM
To: planning.canberra
Subject: Fraser Primary School TPV

Hi,

I believe a good use for this land would be to develop a community bike track similar to those recently built by Chisolm and Bonython schools. This would benefit both the school and wider community while maintaining green space in the area.

Regards,
Ian Coulson (Fraser resident)
[redacted]

Sent from my Galaxy

Watts, Sarah

From: Gemma Harris <[redacted]>
Sent: Wednesday, September 28, 2022 7:46 AM
To: planning.canberra
Subject: Fraser primary extension

Hi, I went to Fraser primary from preschool- year 6 and now I currently work at the After school program. An issue that has stayed all these years is the parking, there is never enough parking for teachers, parents and other staff.

I understand the students will gain more learning space which is great but please consider adding parking to make it easier for all. Thank you.

Sent from my iPhone

ACT Government

ACT Transport Canberra and City Services

TRANSPORT EFFECTS FORM

Provide the Proposal Number to which this application relates:

Development/Site Location Details

If more than one lease/site, attach the following detailed for each lease/site

Block	40		
Section	2	**Unit (if applicable)**	
Suburb	Fraser		
District	Belconnen		
Street Number	177		
Street name	Tillyard Drive		
Postcode	2615		

Attach a detailed site plan that includes the following as a minimum (if a site plan has previously been submitted for the development application that includes all necessary information, attach that plan).

- Access / egress points for private vehicles, pedestrians, cyclists, service/ delivery vehicles;
- Location of the building(s);
- Parking lot layout including dimensions of parking stalls andwidths of aisles;
- Widths of vehicle access / egresspoints; and
- Adjacent streets (labelled).

Fully describe the proposed development (or reference the Development Application)

The proposed school expansion is for an increase to the school area to the north of the existing school site to the residential block boundary. The proposed expansion area is part of Block 6, Section 64, located in Fraser, ACT. The site is bounded by Tillyard Drive to the east, residential use to the north, the subject school to the south and open space to the west.

Note that there is no proposal to increase in student population.

The 2021 enrolment numbers for Fraser Primary School are as follows:

- 85 preschool students
- 529 K-6 students

The figure below shows the expansion area.



Scale of Development (see TIA Guide, Section 4.1)

Proposed Land Use or Activity	Community Facilities | School
Scale/Size	Approximately 14,000 m^2

Describe the operating hours

Being a school development, the proposed site is expected to be operational during school hours, 8:30AM – 3:30PM.

Existing Use of the Site (pre-development):

The site is currently urban open space.

Expected proposed development completion or occupancy

N/A

Surrounding Road Network (see TIA Guide, Section 4.2)

Complete for each road adjoining the development site:

Road Name	Tillyard Drive		
	Through Lanes	Right Turn Lanes	Left Turn Lanes
Number of Lanes	2	1	
Distance to Nearest Access	0m	**Distance to Nearest Intersection**	200m

Road Name	Kerrigan Street		
	Through Lanes	Right Turn Lanes	Left Turn Lanes
Number of Lanes	2	1	
Distance to Nearest Access	200m	**Distance to Nearest Intersection**	200m

Road Name			
	Through Lanes	Right Turn Lanes	Left Turn Lanes
Number of Lanes			
Distance to Nearest Access		**Distance to Nearest Intersection**	

Road Name			
	Through Lanes	Right Turn Lanes	Left Turn Lanes
Number of Lanes			
Distance to Nearest Access		**Distance to Nearest Intersection**	

Traffic Distribution (see TIA Guide, Section 4.3)

The Proposed expansion will not create additional traffic generation since there will not be any increase in the number of students. However, given the expansion of school area, following improvements needs to be considered.

BUS STOP REQUIREMENTS

Section 5.4 of the ACT's Traffic Management and Safety Guide specifies that, wherever possible, bus stops should be located away from crossings and with good visibility. Crossings to and from the bus stop should also have good visibility. Vehicles should not stop within 20m of the rear and 10m of the front of the bus. Bus zone signs should be used in the case of multiple buses. Bus stops should also avoid preventing other vehicles from circulating, especially when stationed for longer timeframes.

The existing parking lot layout and bus stop infrastructure meets these requirements.

ACTIVE TRAVEL ASSESSMENT

Whilst the existing network provides walking and cycling linkages to the existing school boundary, given that the future expansion area which is far from the existing underpass crossing in south of the existing school, the following improvement works are recommended as part of the proposed development to continue to support walking and cycling modes of travel:

- A new Children's Crossing in Tillyard Drive adjacent the school frontage be investigated.
- Upgrade the footpath in open space area to provide a 3m shared path for mixed pedestrian and bicycle usage.
- Construct a 3m shared path along Tillyard Drive in both sides from Daley Crescent South to Daley Crescent North intersection to provide shared path for mixed pedestrian and bicycle usage.

Section 5.3.1 of the ACT's Traffic Management and Safety Guide indicates that the Children's crossings are appropriate when the minimum number of students crossing per peak half hour is 20 and the minimum number of vehicles passing in the same half hour is 50. Crossing movements should be contained within a 30m section of road.



SPEED REDUCTION & SCHOOL ZONE

The current school zone may need to be extended to the end of the school boundary on the north side along Tillyard Drive in future design.



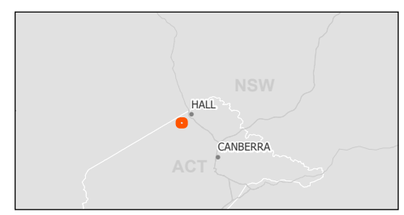
wsp

PS124049
Fraser Primary School Expansion

Figure 001
Proposed Expansion Area

Legend

- Proposed school expansion area
- Existing Block Boundaries
- Cadastre



0 60 120
Meters

Coordinate system: GDA2020 MGA Zone 55

Scale ratio correct when printed at A3

1:2,500 Date: 1/09/2022

GDA 2020

Data sources: DELWP, Geoscience Australia

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SCHOOLS PLANNING EDUCATION

FRASER PRIMARY SCHOOL

CONTAMINATED LAND PRELIMINARY ASSESSMENT

JUNE 2021

CONFIDENTIAL



Question today
Imagine tomorrow
Create for the future

Fraser Primary School
Contaminated Land Preliminary Assessment

Schools Planning Education

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DRAFT

EXECUTIVE SUMMARY

WSP Australia Pty Ltd (WSP) was commissioned by the ACT Government Education Directorate (Education) to undertake a preliminary site investigation (PSI) with respect to contaminated land at part of Block 6, Section 64 Fraser (the 'site'). Education is looking to expand Fraser Primary School, located directly adjacent to the site, to better accommodate the current schooling population.

The purpose of the PSI was to assess whether the site is suitable from a contamination perspective for the proposed Territory Plan Variation.

OBJECTIVES

The objectives of the PSI were to:

- assess the site from a contamination perspective;
- provide a recommendation regarding the suitability of the site for the uses specified in the proposed Territory Plan Variation; and
- provide recommendations for further investigations, if necessary.

SCOPE OF WORKS

The scope of works for this PSI comprised:

- a desktop review of:
  - the site details (location, property information, site zoning and surrounding land uses);
  - the environmental setting (topography, hydrology, geology, hydrogeology, soils, acid sulfate soils);
  - current and former uses of the site and surrounds including historical aerial photographs;
  - ACT EPA regulatory databases including the contaminated sites register, historical building plans register and groundwater bore register;
- interviews with site occupiers and/or managers (where available);
- a site inspection to assess the findings of the desktop review and identify potential signs of contamination; and
- preparation of this PSI report in accordance with ACT EPA *Information Sheet 7 – Guidance for undertaking preliminary contamination investigations for development/lease variation purposes* (2018) and the ACT EPA *Contaminated Sites Environment Protection Policy* (2017).

RESULTS AND CONCLUSIONS

Based on a review of the site historical data and observations made during the site inspection, the following is noted in relation to the site:

- The site is of approximately 4.55 ha and comprises of open spaced grassland adjacent to Fraser Primary school.
- A review of aerial photography shows historical land use of the site as grazing or possible agricultural cropland prior to 1961, and as grazing land since 1961 until 1972, from which time the land has been grassed recreational open space. Significant historical development occurred surrounding the site to the east, south and west post 1972, including establishment of Fraser Primary School in 1979, and construction of Tillyard Drive.

- ACT EPA contaminated land records search indicated no registered contamination within the site.
- A limited number of areas of environmental concern (AECs) have been identified at the site including:
  - minor quantities of uncontrolled fill used near the boundaries of the site;
  - an area containing household rubbish and/or building materials including an unidentified fibrous material near the north-east site boundary; and
  - open space grassed areas which have potentially undergone management activities associated with parks and open spaces and/or historical chemical use for control of pests and weeds as part of either former agricultural use or maintenance of parks and open spaces.

Based on the findings from this assessment including site observations, the current site use and review of historical information identified, there is a low likelihood for significant contamination impacts to be present at the site.

Localised soil contamination may exist within the AECs, likely in discrete areas of the site including in identified fill material and household waste stockpiles and areas of potential historical pesticide/herbicide use. Given the changing land use for the site from open spaced grassland to the intended land-use of primary school it is recommended that a limited intrusive soil investigation be undertaken to assess the site suitability for the intended use, targeting potential impacts within fill materials, the fibrous material located along the north-east site boundary and the potential risk of chemical residues from management activities and/or historical agricultural use.

The limited intrusive sampling will define the risk associated with the uncontrolled fill material within the location of the AECs. The contamination risk from filled areas of the site can be appropriately managed with the use of an Unexpected Finds Protocol (UFP) during project construction.

The limited intrusive soil assessment would also provide preliminary information on the classification of site soils in accordance with EPA guidelines, although should future redevelopment of the site require excavation of soils, waste classification assessment of the soils will be required to classify the soils for off-site disposal under the NSW EPA Guidelines.

General household wastes and debris should be removed from the site prior to development and disposed of at a facility licensed to the EPA to accept such wastes. Prior to disposal the material should be assessed as to its waste classification. The material may be pre-classified but this assessment should be made prior to its disposal.

In conclusion, based on the findings of this Preliminary Site Investigation, the assessed site presents a low (but not absent) risk of contamination and is therefore considered suitable for the proposed Territory Plan Variation. Once specific development plans are finalised, a limited program of targeted soil assessment may be required prior to site development to confirm that the identified AECs do not represent unacceptable risk to future staff and students under the intended primary school use.

1 INTRODUCTION

1.1 PROJECT BACKGROUND

WSP Australia Pty Ltd (WSP) was commissioned by the ACT Government Education Directorate (Education) to undertake a preliminary site investigation (PSI) with respect to contaminated land at part of Block 6, Section 64 Fraser (the 'site'). Education is looking to expand Fraser Primary School, located directly adjacent to the site, to better accommodate the current schooling population. The site boundary and layout in relation to Fraser Primary School is presented in Figure 1, Appendix A.

The purpose of the PSI was to assess whether the site is suitable from a contamination perspective for the proposed Territory Plan Variation.

1.2 OBJECTIVES

The objectives of the PSI were to:

- assess the site from a contamination perspective;
- provide a recommendation regarding the suitability of the site for the uses specified in the proposed Territory Plan Variation; and
- provide recommendations for further investigations, if necessary.

1.3 SCOPE OF WORKS

The scope of works for this PSI comprised:

- a desktop review of:
  - the site details (location, property information, site zoning and surrounding land uses);
  - the environmental setting (topography, hydrology, geology, hydrogeology, soils, acid sulpfate soils);
  - current and former uses of the site and surrounds, including historical aerial photographs;
  - ACT Environment Protection Authority (EPA) regulatory databases including the contaminated sites register, historical building plans register, and groundwater bore register;
- interviews with site occupiers and/or managers (where available);
- a site inspection to assess the findings of the desktop review and identify potential signs of contamination; and
- preparation of this PSI report in accordance with ACT EPA *Information Sheet 7 – Guidance for undertaking preliminary contamination investigations for development/lease variation purposes* (2018) and the ACT EPA *Contaminated Sites Environment Protection Policy* (2017).

It is noted that no previous investigations relevant to the site were available for review as part of this investigation.

2 SITE CHARACTERISATION

2.1 SITE DETAILS

Pertinent site details are provided in Table 2.1. The site location is indicated in Figure 1, Appendix A.

Table 2.1 Site details

Site address	Adjacent to 177 Tillyard Dr, Fraser ACT 2615
Legal identification	Part of Block 6 Section 64 Fraser
Area	Approximately 4.55 hectares (ha)
Local government area	Australian Captial Territory
Current zoning	NUZ3: Hills, ridges and buffer areas, PRZ1: Urban open space and RZ1: Suburban under the *Territory Plan*
Current site use	Open space grassland
Surrounding land use	North: residential and open space grassland with rural agricultural and grazing land beyond East: Tillyard Drive with residential suburban use beyond South: primary school, Tillyard Drive and residential suburban use beyond West: primary school and open space parkland, Shakespear Cresent and residential suburban beyond.

2.2 ENVIRONMENTAL SETTING

Pertinent environmental setting details for the site are provided in Table 2.2.

Table 2.2 Environmental setting

ITEM	**DETAILS**
Topography	The site has a general gradient to the north-west, with an elevation of approximately 611 metres relative to the Australian Height Datum (mAHD) near the south-eastern site boundary at Tillyard Dr, dropping to approximately 597 mAHD at the north-western site boundary.
Hydrology	The nearest surface water body to the site is Halls Creek, located approximately 380 m to the north. Halls Creek is a tributary to Gooromon Ponds, which subsequently flows into Ginninderra Creek and then the Murrumbidgee River approximately 8.9 km west of the site.
Geology	Based on a review of *Canberra 1:100 000 Geological Series Sheet 8727* the site is underlain by Silurian aged (~419-443 million years old) volcanic and associated sedimentary rocks comprising pyroclastic flows (ignimbrite), tuff, sandstone, shale and minor limestone.
Hydrogeology	Groundwater at the site is expected to flow in a north-westerly direction towards Halls Creek and the Murrumbidgee River based on the local topography and the proximity and flow direction of surface water drainages. It is expected that regional groundwater would be present at approximately 6 to 10 metres below ground level (mBGL) based on regional groundwater bore results.

ITEM	DETAILS
Soil landscapes	Based on a review of *Soil Landscapes of the Canberra 1:100,000 Sheet*, the soil landscape of the area encompassing the site is the Williamsdale Soil Landscape, comprising moderately deep, moderately well-drained yellow chromosols, (typically having a friable topsoil overlying a clay dominated subsoil, and non acidic profile) and red and brown kandosols (soils with a distinct topsoil and subsoil but the subsoil remains sandy) on upper rises and fans and poorly drained sodosols (soils with a distinct topsoils and subsoil, in which the subsoil has a high sodium, typically a heavy clay, with a high risk of erosion) in lower areas.
Acid sulphate soils	Based on reviews of the Australian Soil Resource Information System accessed on 18 May 2021, the site is located within an area of a low probability of occurrence for acid sulfate soils.
Sensitive receptors	Sensitive receptors include: — current and future site users; — residents of the neighbouring residential properties and users of Fraser primary school; — underlying groundwater; and — surface waters of Halls Creek and associated tributaries to the north.

2.3 SITE HISTORY

A review of historical aerial photographs of the site and surrounding lands from 1961 onwards indicate the site has been in its current state since at least 1997. A summary of site and surrounding land use history is provided in Table 2.3. Copies of historical aerial photographs that were reviewed as part of the investigation are provided in Appendix B.

Table 2.3 Aerial photography review

YEAR	SITE USE	SURROUNDING USE
1961	The site appears to be open space agricultural land potentially associated with the residence located to the north-west. At the time of the photograph the land appeared grassed. It is possible that prior use may have included some form of cropping as the site was part of a cleared paddock, some of which may have included furrows (though not visible on the site itself). Small dams are located to the north-west of the site and to the north-east of the site.	Open space agricultural land, currently as pastures but some of which may have formerly comprised agricultural cropping based on visible furrowing. Land to the south and east was less developed and was grazing land with scattered trees. An unpaved road runs north-west to south-east approximately 250 m north of the site.
1968	No significant changes since the 1961 image.	No significant changes since the 1961 image.
1972	The site appears to be open space grassland rather than agricultural cropland.	It appears that agricultural cropland has been established to the north of the road located north of the site. There has been some development of roads and levelling of land for new suburbs to the south of the site.

YEAR	SITE USE	SURROUNDING USE
1973	A dirt track can be seen running from the small dam to the north-east of the site to the west through the northern corner of the site. The site remains open space grassland.	Significant development has occurred to the south and south-east of the site. Land has been levelled, roads have been established, and some residential buildings have appeared in the suburbs to the south.
1975	The dirt track running through the northern corner of the site has been widened. The eastern portion of the site has been cleared as part of neighbouring developments to the north-east.	The rural residence to the north-west and the small dams are no longer present. Significant development has occurred directly adjacent to the site to the north-east and south-east comprising of sealed roads and levelled land. Residential buildings have been constructed in the suburb to the west.
1977	The dirt track running through the northern corner of the site has been narrowed and the ground cover of the site appears to have been returned to grassland.	Residential buildings have appeared in the suburbs to the west, east and south of the site and in the streets located directly adjacent to the north-east.
1978	No significant changes since the 1977 image.	The land directly adjacent to the south-west has been levelled. No other significant changes since the 1977 image.
1979-1980	A large stockpile or levelled area, predominantly south west of the site (upon which the Fraser Primay School was constructed), overlaps the south-western boundary of the site.	By 1980 the Fraser Primary School has been constructed directly adjacent to the south-west. Three large stockpiles are located behind the school. No other significant changes since the 1978 image.
1985	No significant changes since the 1979 image. The site appears to be open space grassland.	Additional small structures have appeared behind Fraser Primary School. It appears that there has been an attempt to grow grass on top of the three stockpiles based on the indication of sprinkler use. Trees have been planted lining the suburb streets to the east, west and south. The remainder of Tillyard Dr has been sealed to the north, meeting up with the major road to the north of the site. The major road has been discontinued to the west of Tillyard Dr.
1997	Trees have been established along the south-west and north-east boundaries of the site. The majority of the site remains open space grassland.	Trees have been established surrounding Fraser Primary School and throughout the surrounding suburbs. No significant changes since the 1985 image.
2004	No significant changes since the 1997 image.	No significant changes since the 1997 image.
2014	No significant changes since the 2004 image.	Two additional structures have appeared directly to the south-west of Fraser Primary School. No significant changes since the 2004 image.

YEAR	SITE USE	SURROUNDING USE
2020	No significant changes since the 2014 image.	No significant changes since the 2014 image.

2.4 CONTAMINATED LAND SEARCH

A search of the ACT EPA contaminated sites database conducted on 11 May 2021 indicated that the site has not been recorded on the EPA's contaminated sites management database or geographic information system. It did note that areas of environmental concern (AECs) based on the site's former rural use may exist which may include fuel storage and dispensing facilities, chemical and municipal waste disposal, hazardous materials storage and hazardous material in buildings.

A search of the ACT registered contaminated properties database indicated the site and adjacent properties were not listed however, it has been recorded on the ACT Education list of schools with lead paint or asbestos that lead paint and asbestos have been detected at Fraser Primary School, located west adjacent to the site.

A copy of the contaminated land search for the site is provided in Appendix C.

2.5 HISTORICAL BUILDINGS SEARCH

A search of the ACT Government building file database conducted on 18 May 2021 indicated that no historical or current building plans or evidence of heating systems are indicated at the site.

2.6 GROUNDWATER BORE SEARCH

A search of the Bureau of Meteorology (BOM) groundwater bore register, accessed 18 May 2021, indicated that there are three registered groundwater bores within a 1 km radius of the site.

A summary of the groundwater bore search results is provided in Table 2.4. A copy of the BOM groundwater bore search results is presented in Appendix D.

Table 2.4 Groundwater bore search results

BORE ID	DEPTH	DATE DRILLED	PURPOSE
21	12.8	01/05/1955	Unknown
232	62.5	01/07/1971	Unknown
233	24.84	01/07/1971	Unknown

3 SITE INSPECTION

A walk-over site inspection of the site was undertaken by WSP on 19 May 2021. A photographic log from the site inspection is provided in Appendix E.

3.1 KEY OBSERVATIONS

The key observations from the site inspection are detailed below:

- The study area consisted of open space mowed grassland in good condition with scattered established trees along the south-west and north-east boundaries.
- The site had a general gradient to the north-west (<5%), increasing slightly at the south-east site boundary adjacent to Tillyard Dr, where it appeared to be slightly built up, to the road level, with gravelly sand fill material.
- A low gradient surface water drainage swale was present outside the north-west site boundary running to the north. No obvious drainage lines were present within the site; rather, stormwater at the site is expected to infiltrate directly into the ground.
- Patches of broad-leaf weeds were present throughout the open space areas of the site. The site surface did not indicate any obvious areas of potential contamination (i.e. site surface spills/staining, odour, dead vegetation etc.).
- There was a bare ground track comprising of what appeared to be gravelly sand fill material leading from the southern corner of the site along the south-west site boundary into the off-site area north of Fraser Primary School. Brick fragments and other anthropogenic inclusions were observed on the track surface.
- Approximately800 m^3 of stockpiled soil slightly overlapped the south-west site boundary just north of Fraser Primary School. It was visually estimated that less than 50 m^3 of the soil material was located within the site boundary. The stockpile was covered with well-established vegetation including grass and mature trees where it crossed into the site and appeared to comprise compacted, homogenous brown silty clay with no evidence of erosion.
- Multiple narrow dirt tracks crossed the site, generally leading between the residential area directly adjacent to the north-east and Fraser Primary School located directly adjacent to the south-west.
- Multiple small stockpiles (each <5 m^3) were observed in the trees located along the north-eastern site boundary. One of the stockpiles appeared to comprise mulch, while others had been moulded into bicycle jumps which contained concrete fragments and large gravel fill material.
- A small area (~25 m^2) within the trees along the north-eastern site boundary appeared to have been covered with dispersed brown silty fill material. The area between the residential neighbourhood directly to the north-east and the apparently dispersed soil was covered with what appeared to be blueish synthetic fibres, potentially from housing insulation or other building materials.
- A pile of general household rubbish was located just outside the north-east study area boundary.
- Service pits including fire hydrants, stormwater, sewer and communications were observed just outside the north-east site boundary. A dial before you dig search conducted 25 May 2021 confirmed the lack of services on the site itself (though we note that any contractor conducting subsurface works should satisfy themselves by conducting their own searches).
- No evidence of chemical or dangerous substances storage was observed at the site or in the immediate surrounds and none of the neighbouring sites were noted to be potential contamination sources.
- No asbestos containing material (ACM) was observed at the site.

Potentially contaminating/activities and areas identified included:

- potential use of uncontrolled or uncharacterised fill for the dirt track along the south-west site boundary and for the area just inside the south-east site boundary parallel to Tillyard Dr;
- evidence of sporadic fill stockpiles and/or household rubbish in the treed area along the north-east site boundary; and
- management activities including ongoing application and/or historical use of herbicides/pesticides.

There was no evidence of leachates or wastes observed entering the surface of the site from adjacent properties during the site inspection. Given the former and current site surrounding land use of cleared grassland and residential properties the likelihood of off-site sources of contamination is low.

4 AREAS OF ENVIRONMENTAL CONCERN

This section provides further detail on the potential AECs noted at the site. These are shown in Figure 1, Appendix A.

4.1 FILLED LAND

The fill material along the south-west and south-east site boundaries and within the large stockpile to the west of the site appeared to be predominantly reworked natural soils, likely to have been laid down during development of Tillyard Road and Fraser Primary School. Although limited anthropogenic material was observed on the surface of the dirt track, impacts may exist within fill material.

The large historical stockpile at the south-west boundary of the site was covered with vegetation and appeared stable. The potential for erosion and/or migration of potential contaminants in soil appeared low.

The potential risks from uncontrolled fill to construction workers should be managed through an Unexpected Finds Protocol (UFP) and a construction environmental management plan.

4.2 UNCONTROLLED MATERIAL DUMPING

The small stockpiles observed in the treed area along the north-east site boundary appeared to contain minor amounts of anthropogenic materials including concrete and fibrous material. In addition, the nature of the observed synthetic fibrous material covering the ground between the residential neighbourhood directly to the north-east and the area of dispersed soil has not been identified.

Although one pile of household rubbish was present just inside the north-east study area boundary, it appeared that an active clean-up effort was in progress for the corresponding residence. The length of grass surrounding the rubbish pile indicated that the pile of household rubbish is recent and temporary. In general, the area of the site running parallel to the residential neighbourhood was relatively clean.

4.3 MANAGEMENT ACTIVITES

Historic aerial photographs show the grassland has been well maintained although no information about whether the site has been sprayed with chemicals is known. Due to the historical site use as agricultural land there is a low potential that herbicides and/or pesticides may have been applied to the land.

5 DISCUSSION AND CONCLUSIONS

Based on a review of the site historical data and observations made during the site inspection, the following is noted in relation to the site:

- The site is of approximately 4.55 ha and comprises of open spaced grassland adjacent to Fraser Primary school.
- A review of aerial photography shows historical land use of the site as grazing or possible agricultural cropland prior to 1961, and as grazing land since 1961 until 1972, from which time the land has been grassed recreational open space. Significant historical development occurred surrounding the site to the east, south and west post 1972, including establishment of Fraser Primary School in 1979, and construction of Tillyard Drive.
- ACT EPA contaminated land records search indicated no registered contamination within the site.
- A limited number of areas of environmental concern (AECs) have been identified at the site including:
  - minor quantities of uncontrolled fill used near the boundaries of the site;
  - an area containing household rubbish and/or building materials including an unidentified fibrous material near the north-east site boundary; and
  - open space grassed areas which have potentially undergone management activities associated with parks and open spaces and/or historical chemical use for control of pests and weeds as part of either former agricultural use or maintenance of parks and open spaces.

Based on the findings from this assessment including site observations, the current site use and review of historical information identified, there is a low likelihood for significant contamination impacts to be present at the site.

Localised soil contamination may exist within the AECs, likely in discrete areas of the site including in identified fill material and household waste stockpiles and areas of potential historical pesticide/herbicide use. Given the changing land use for the site from open spaced grassland to the intended land-use of primary school it is recommended that a limited intrusive soil investigation be undertaken to assess the site suitability for the intended use, targeting potential impacts within fill materials, the fibrous material located along the north-east site boundary and the potential risk of chemical residues from management activities and/or historical agricultural use.

The limited intrusive sampling will define the risk associated with the uncontrolled fill material within the location of the AECs. The contamination risk from filled areas of the site can be appropriately managed with the use of an Unexpected Finds Protocol (UFP) during project construction.

The limited intrusive soil assessment would also provide preliminary information on the classification of site soils in accordance with EPA guidelines, although should future redevelopment of the site require excavation of soils, waste classification assessment of the soils will be required to classify the soils for off-site disposal under the NSW EPA Guidelines.

General household wastes and debris should be removed from the site prior to development and disposed of at a facility licensed to the EPA to accept such wastes. Prior to disposal the material should be assessed as to its waste classification. The material may be pre-classified but this assessment should be made prior to its disposal.

In conclusion, based on the findings of this Preliminary Site Investigation, the assessed site presents a low (but not absent) risk of contamination and is therefore considered suitable for the proposed Territory Plan Variation. Once specific development plans are finalised, a limited program of targeted soil assessment may be required prior to site development to confirm that the identified AECs do not represent unacceptable risk to future staff and students under the intended primary school use.

6 LIMITATIONS

This Report is provided by WSP Australia Pty Limited (*WSP*) for Place Laboratory (*Client*) in response to specific instructions from the Client and in accordance with WSP's proposals dated 19 February 2020 and contract with the Client dated 26 February 2021 (*Agreement*).

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REFERENCES

- Australian Soil Resource Information System (https://www.asris.csiro.au/#), accessed 18 May 2021.
- ACT Environment Protection Authority (EPA) 2017, *Contaminated Sites Environment Protection Policy*.
- ACT EPA 2018, *Information Sheet 7 – Guidance for undertaking preliminary contamination investigations for development/lease variation purposes.*
- ACT EPA 2019, *Information Sheet 4 – Requirements for the reuse and disposal of contaminated soil in the ACT.*
- ACT *Territory Plan.*
- Bureau of Meteorology (BOM) groundwater bore register (http://www.bom.gov.au/), accessed 18 May 2021.
- *Canberra 1:100 000 Geological Series Sheet 8727.*
- *Soil Landscapes of the Canberra 1:100,000 Sheet.*

APPENDIX A

FIGURES



wsp

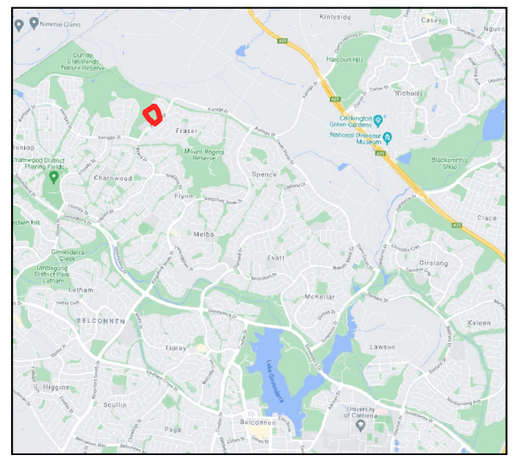
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Figure 1 - Site lcoation and potentail AECs

LEGEND

- Site boundary
- Area of potential herbicide/pesticide use
- Filled areas
- Household rubbish
- Fibrous material
- Dispersed soil
- Small (<5 m3) stockpiles



0 30 60 90 m

Coordinate System: GDA 1994 MGA Zone 56
Scale ratio correct when printed at A3

1:1,382

Date: 10-06-2021

Data Sources: Google Earth

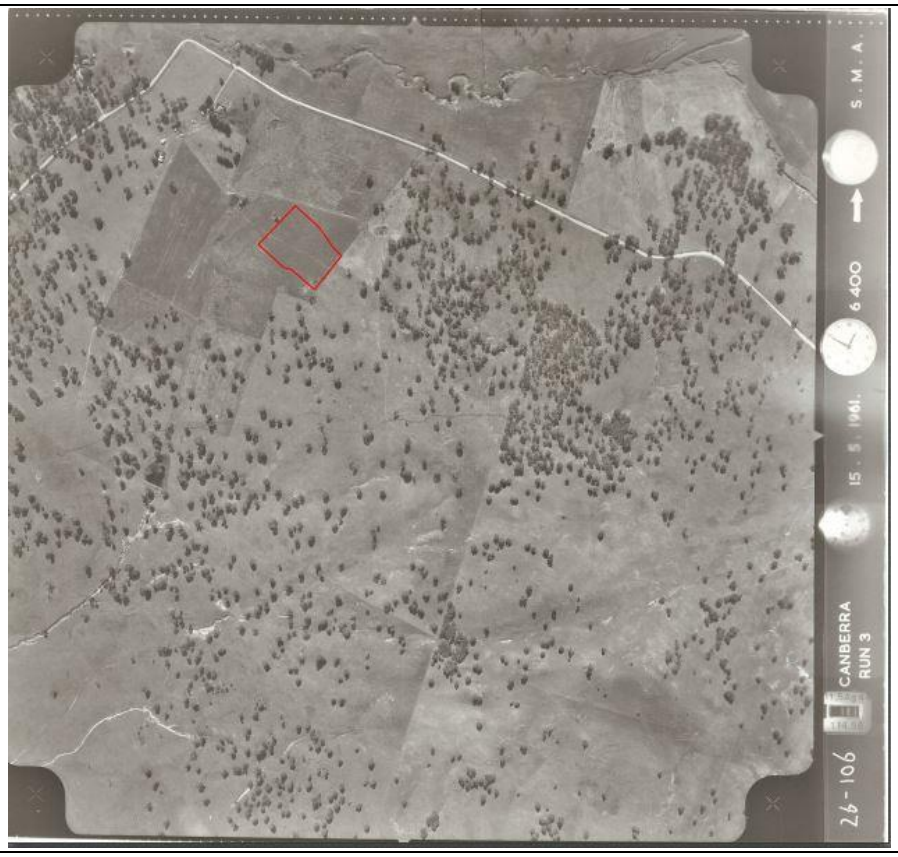
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APPENDIX B

AERIAL PHOTOGRAPHIC LOG

	Aerial Photographic Log	
Client Name ACT Education Directorate	**Site Location** Block 6 Section 64 Fraser	**Project No.** PS124049

Date: 1961

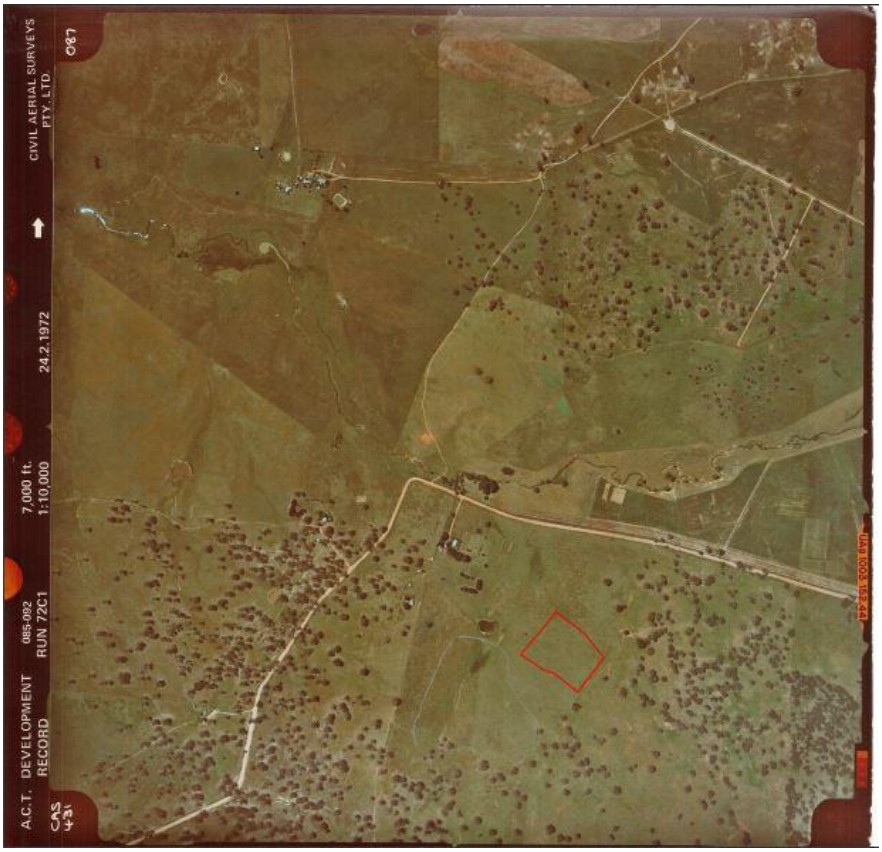


Date: 1968

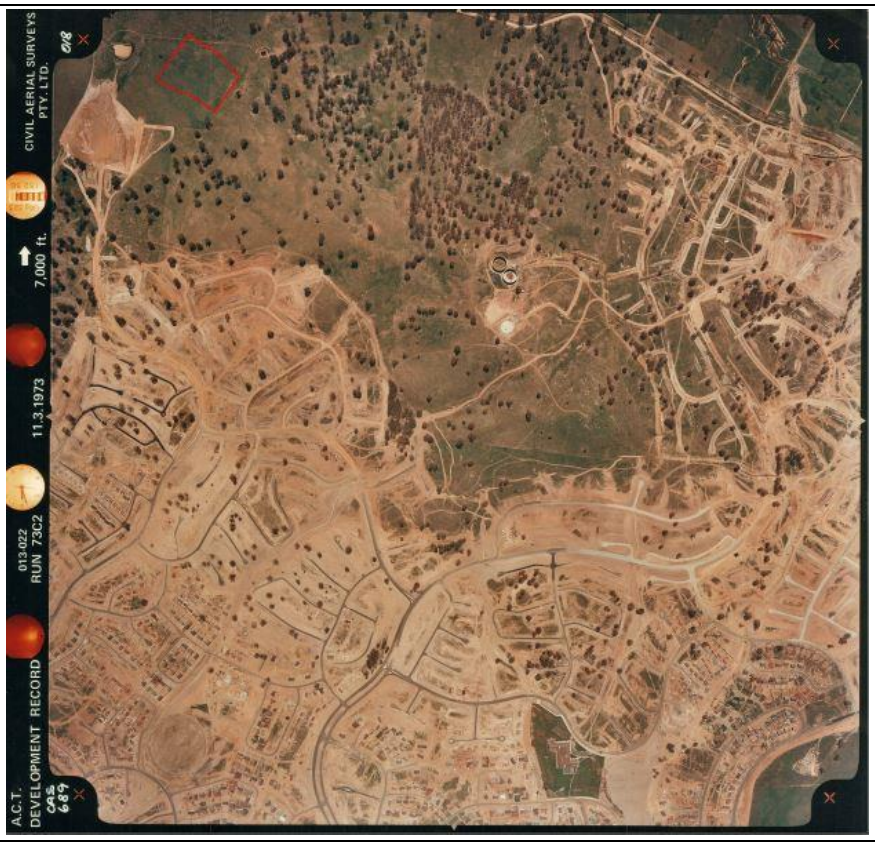


	Aerial Photographic Log	
Client Name ACT Education Directorate	**Site Location** Block 6 Section 64 Fraser	**Project No.** PS124049

Date: 1972



Date: 1973



	Aerial Photographic Log	
Client Name ACT Education Directorate	**Site Location** Block 6 Section 64 Fraser	**Project No.** PS124049

Date: 1975

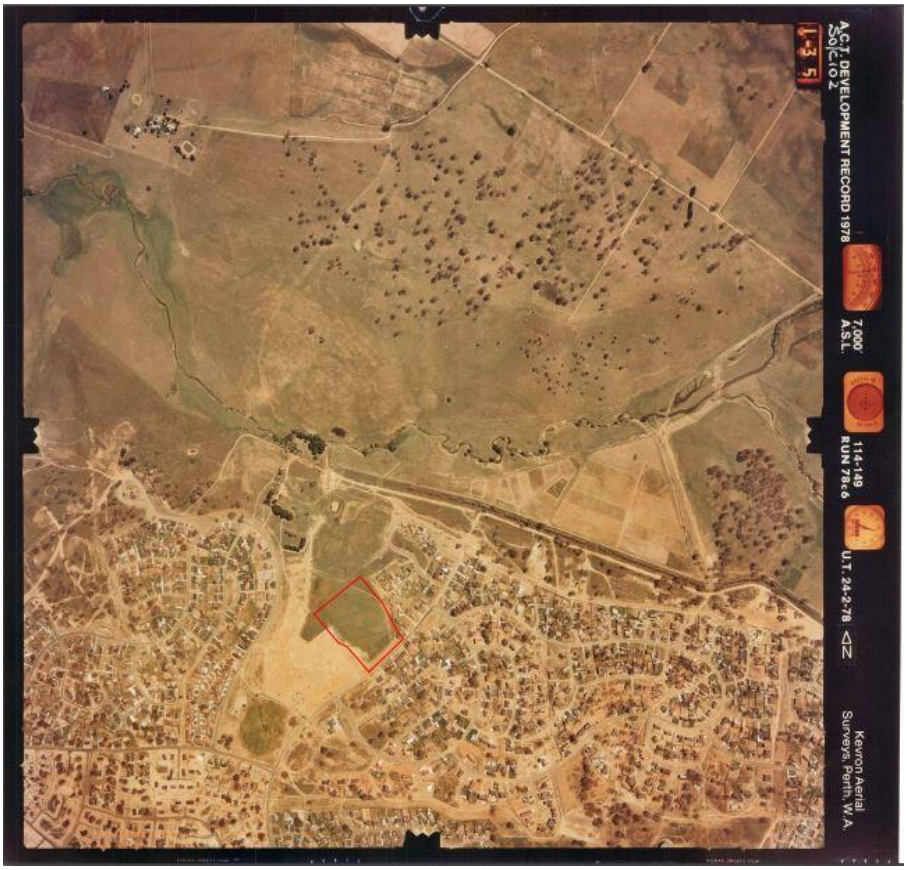


Date: 1977

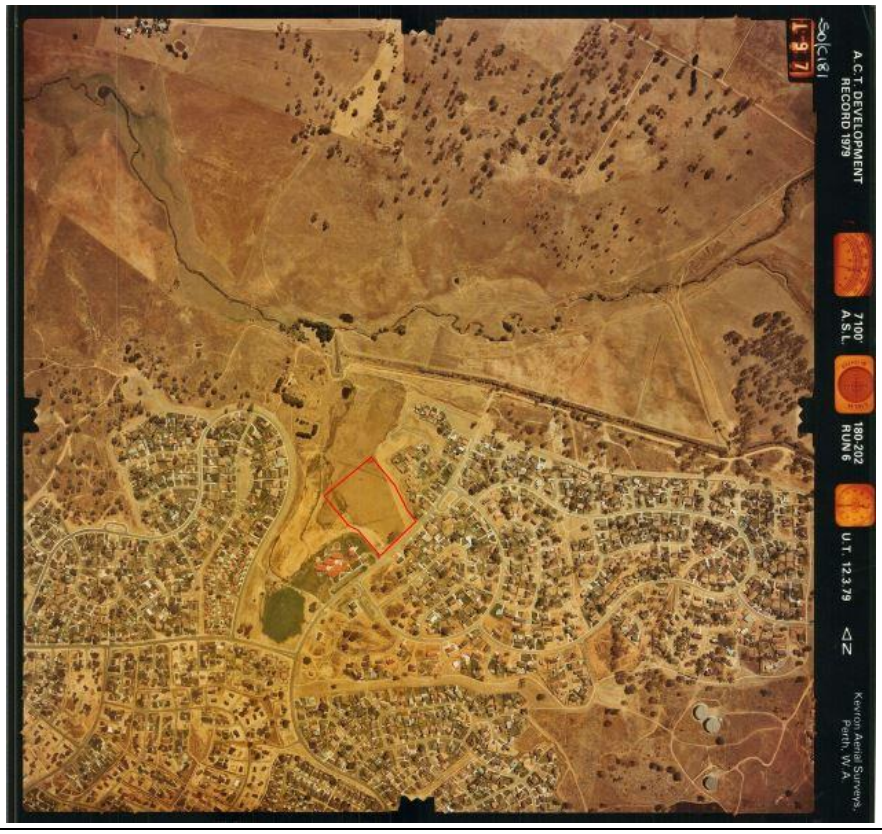


	Aerial Photographic Log	
Client Name ACT Education Directorate	**Site Location** Block 6 Section 64 Fraser	**Project No.** PS124049

Date: 1978

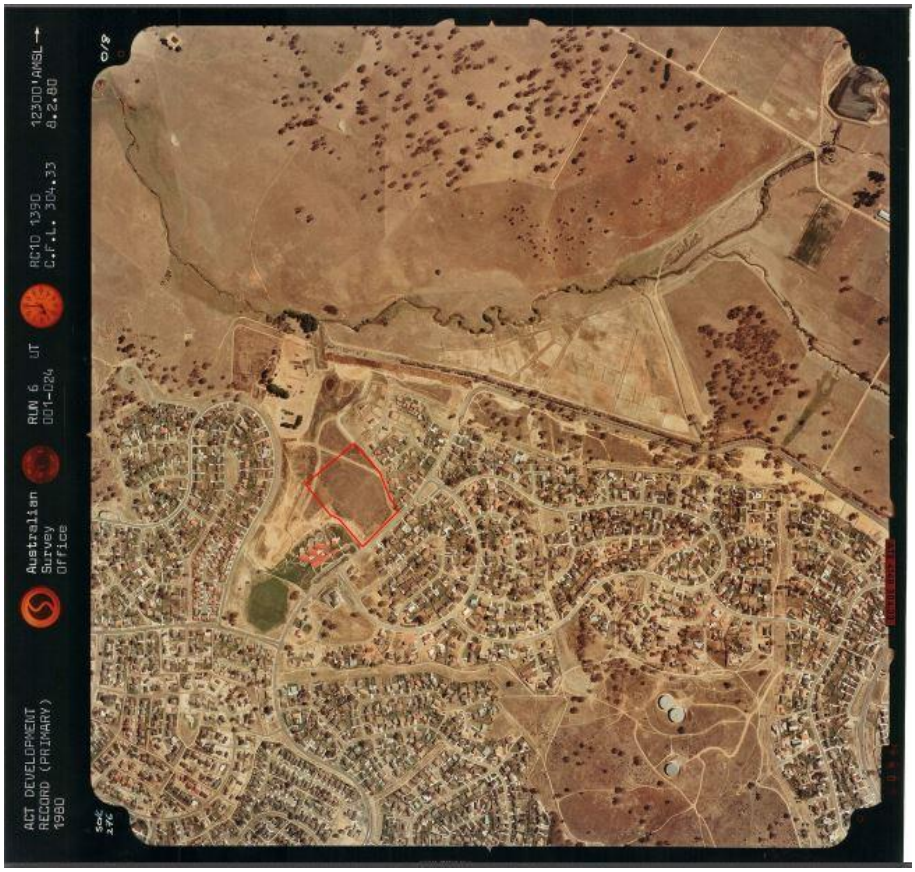


Date: 1979



	Aerial Photographic Log	
Client Name ACT Education Directorate	**Site Location** Block 6 Section 64 Fraser	**Project No.** PS124049

Date: 1980

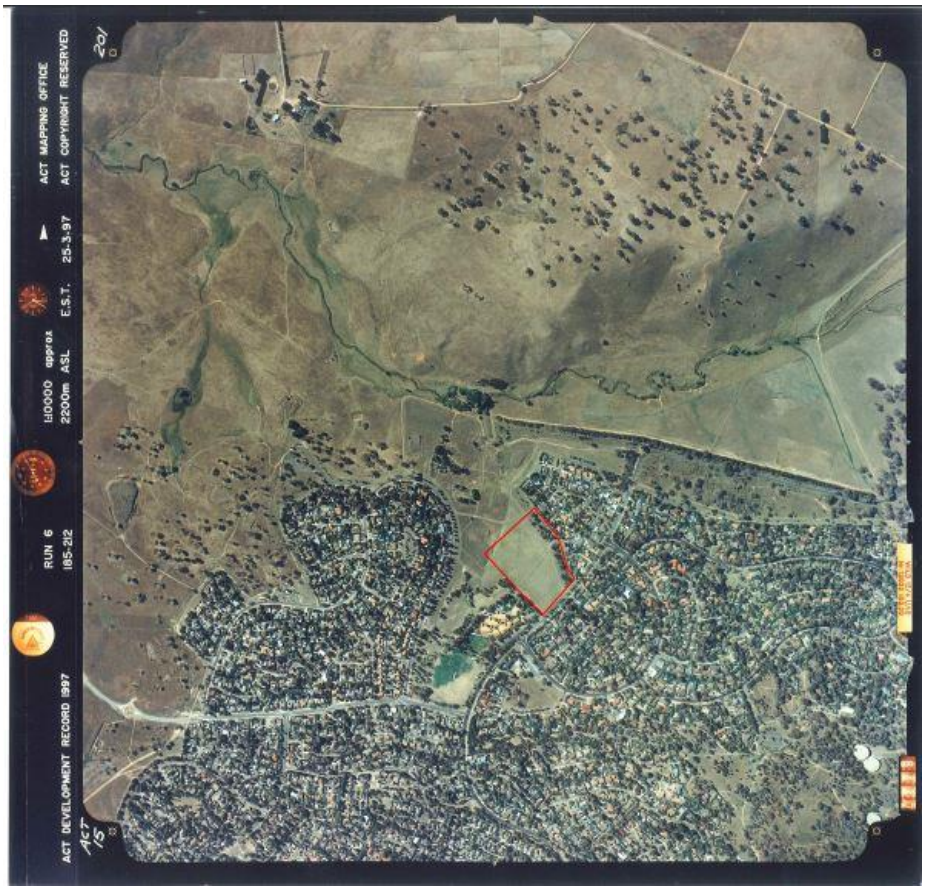


Date: 1985



	Aerial Photographic Log	
Client Name ACT Education Directorate	**Site Location** Block 6 Section 64 Fraser	**Project No.** PS124049

Date: 1997

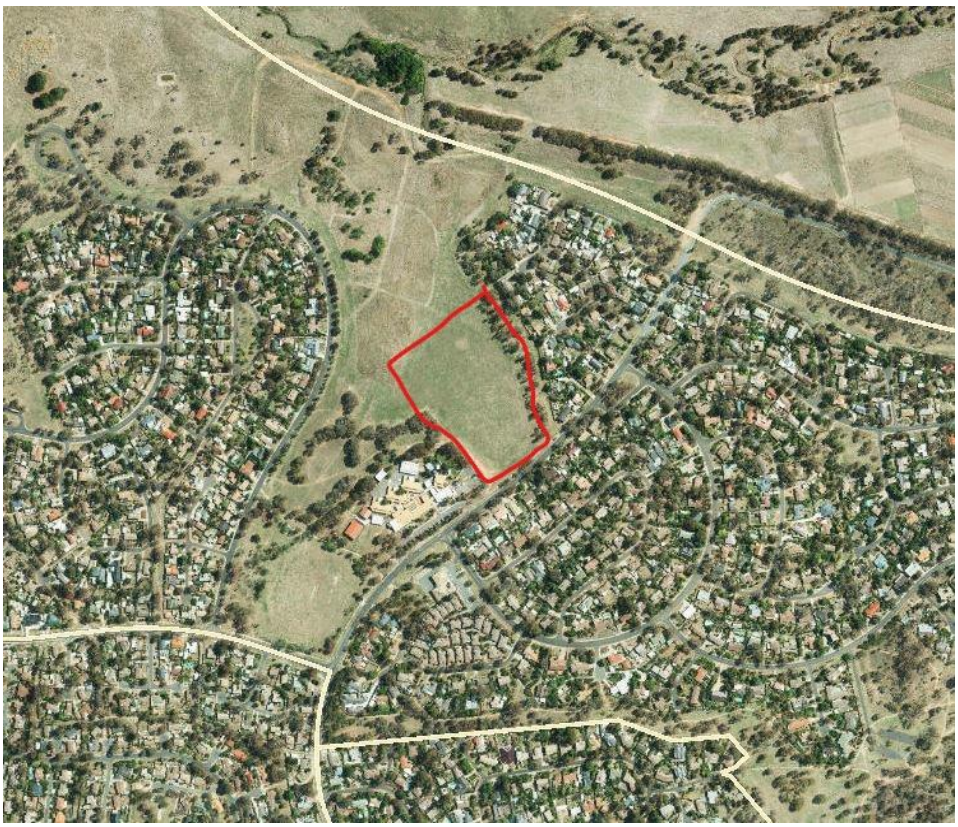


Date: 2004



	Aerial Photographic Log	
Client Name ACT Education Directorate	**Site Location** Block 6 Section 64 Fraser	**Project No.** PS124049

Date: 2014



Date: 2020



APPENDIX C

CONTAMINATED LAND SEARCH

Jeffries, Annabel

From: Heckenberg, Mark <Mark.Heckenberg@act.gov.au> on behalf of Contaminated Sites <ContaminatedSites@act.gov.au>
Sent: Wednesday, 12 May 2021 10:07 AM
To: Jeffries, Annabel
Subject: RE: Contaminated Land Search - 6/64 Fraser

OFFICIAL

Dear Ms Jeffries

RE: CONTAMINATED LAND SEARCH

Thank you for your search form request of 11/05/2021 enquiring about:

Block 6 Section 64 Fraser Belconnen

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.

Areas of environmental concern which have not been recorded by the EPA and are associated with rural activities may exist within the property. These may include fuel storage and dispensing facilities, waste disposal sites associated with domestic and chemical waste disposal, hazardous materials storage (e.g. Pesticides/herbicides, lubricants etc.) and hazardous materials contained in building structures and fittings (e.g. Asbestos, PCB's, lead etc.).

The EPA has no records to indicate that any of the above potentially contaminating activities have been investigated for impacts.

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.

Regards

Mark Heckenberg
Assistant Director, Contaminated Sites
Phone: 02 6207 2151 | Email: mark.heckenberg@act.gov.au
Office of the Environment Protection Authority
Access Canberra | ACT Government
480 Northbourne Avenue, Dickson ACT 2602
GPO Box 158 Canberra ACT 2601 | http://www.act.gov.au/accesscbr

From: smartforms@act.gov.au <smartforms@act.gov.au>
Sent: Tuesday, 11 May 2021 8:35 PM
To: Contaminated Sites <ContaminatedSites@act.gov.au>
Subject: Contaminated Land Search - Application, CW2XCP, Anna Wilkey [SEC=UNCLASSIFIED, DLM=Sensitive: Personal]

Contaminated Land Search - Application

Form data summary

Customer details	Anna Wilkey
Reference code	CW2XCP

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

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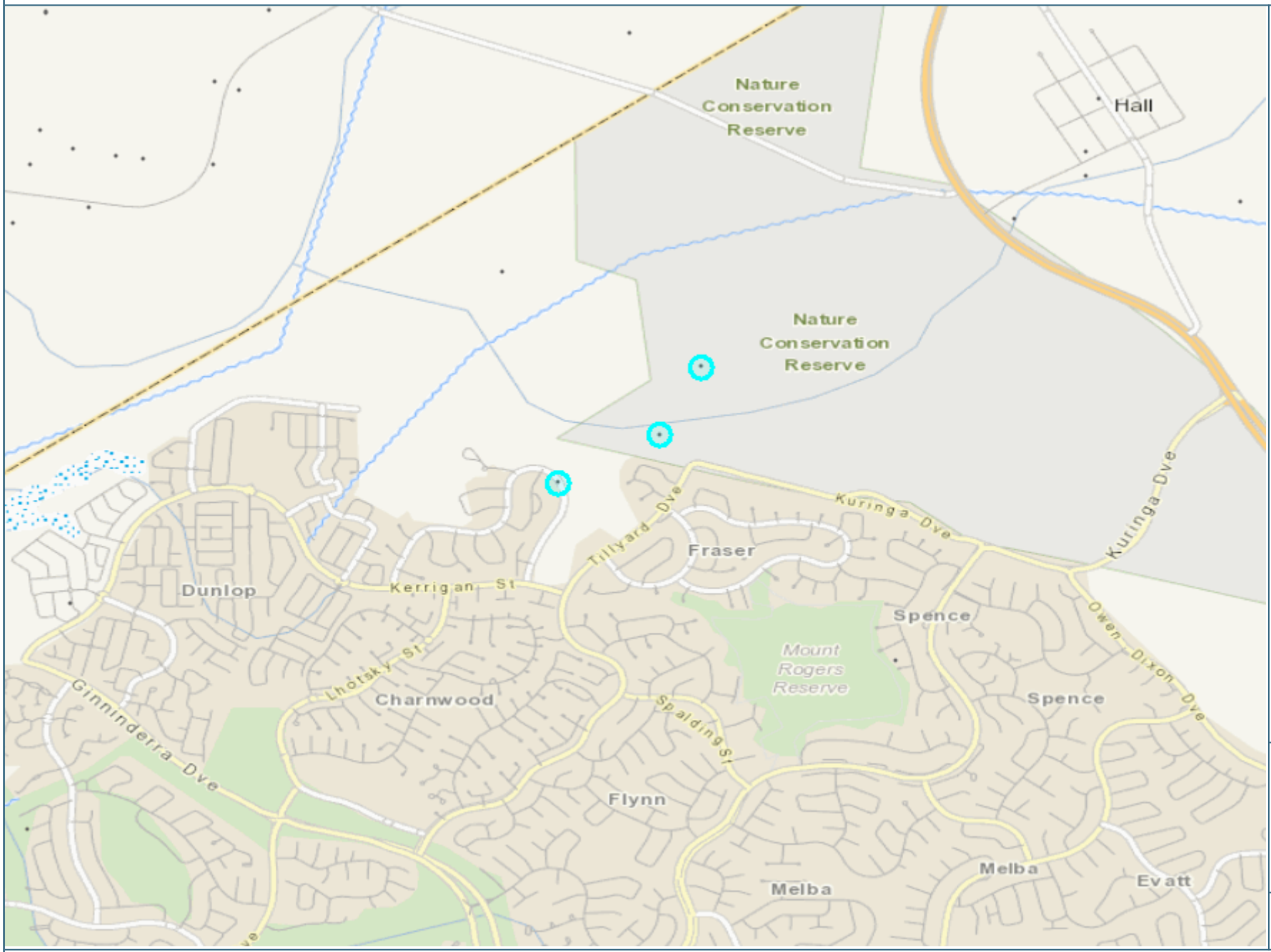
APPENDIX D

GROUNDWATER BORE SEARCH

Australian Government
Bureau of Meteorology

Australian Groundwater Explorer

BOM Groundwater Bore Search - Block 6 Section 64 Fraser



All bores

Bore

All bores

All bores

Bore density per 25km2

1 - 5

6 - 10

11 - 20

21 - 50

51 - 100

101 - 200

More than 200

Mainland outline

N

1:27,024

Kilometres 0.5 1.0

Data Source: Bureau of Meteorology, Geoscience Australia and State/Territory lead water agencies. Refer to metadata for further information: Click here

Australian Albers GDA94

CC BY

Date: 18 May, 2021

APPENDIX E

SITE INSPECTION PHOTOGRAPH LOG

	Site Inspection Photographic Log	
Client Name ACT Education Directorate	**Site Location** Block 6 Section 64 Fraser	**Project No.** PS124049

Photo No.	**Date**
1	19/05/21

Description

Site overview facing north from Tillyard Dr



Photo No.	**Date**
2	19/05/21

Description

South-eastern site boundary facing north-east



	Site Inspection Photographic Log	
Client Name ACT Education Directorate	**Site Location** Block 6 Section 64 Fraser	**Project No.** PS124049

Photo No.	**Date**
3	19/05/21

Description

Dirt track along south-western site boundary



Photo No.	**Date**
4	19/05/21

Description

Example of potentially uncontrolled fill material- brick fragments observed on surface



	Site Inspection Photographic Log	
Client Name ACT Education Directorate	**Site Location** Block 6 Section 64 Fraser	**Project No.** PS124049

Photo No.	**Date**
5	19/05/21

Description

Site overview facing north-east from south-west boundary



Photo No.	**Date**
6	19/05/21

Description

Historical stockpile overlapping south-west site boundary



	Site Inspection Photographic Log	
Client Name ACT Education Directorate	**Site Location** Block 6 Section 64 Fraser	**Project No.** PS124049

Photo No.	**Date**
7	19/05/21

Description

Historical stockpile facing off-site to south-west



Photo No.	**Date**
8	19/05/21

Description

Closeup of historical stockpile surface material



	Site Inspection Photographic Log	
Client Name ACT Education Directorate	**Site Location** Block 6 Section 64 Fraser	**Project No.** PS124049

Photo No.	**Date**
9	19/05/21

Description

North-west portion of the site facing north



Photo No.	**Date**
10	19/05/21

Description

Dirt track crossing site to north-east boundary



	Site Inspection Photographic Log	
Client Name ACT Education Directorate	**Site Location** Block 6 Section 64 Fraser	**Project No.** PS124049

Photo No.	**Date**
11	19/05/21

Description

Site overview facing east



Photo No.	**Date**
12	19/05/21

Description

Drainage line at north-west site boundary running north



	Site Inspection Photographic Log	
Client Name ACT Education Directorate	**Site Location** Block 6 Section 64 Fraser	**Project No.** PS124049

Photo No.	Date
13	19/05/21

Description

Example patch of weeds in north-west portion of site facing south towards Fraser Primary School



Photo No.	Date
14	19/05/21

Description

Small mulch stockpile in northern portion of site along north-eastern site boundary



	Site Inspection Photographic Log	
Client Name ACT Education Directorate	**Site Location** Block 6 Section 64 Fraser	**Project No.** PS124049

Photo No.	Date
15	19/05/21

Description

Service pits along north-eastern site boundary



Photo No.	Date
16	19/05/21

Description

Service pits along north-eastern site boundary



	Site Inspection Photographic Log	
Client Name ACT Education Directorate	**Site Location** Block 6 Section 64 Fraser	**Project No.** PS124049

Photo No.	Date
17	19/05/21

Description

Dispersed stockpile and fibrous material in treed area along north-eastern site boundary



Photo No.	Date
18	19/05/21

Description

Closeup of dispersed soil material in treed area along north-eastern site boundary



	Site Inspection Photographic Log	
Client Name ACT Education Directorate	**Site Location** Block 6 Section 64 Fraser	**Project No.** PS124049

Photo No.	**Date**
19	19/05/21

Description

Closeup of unidentified synthetic fibrous material covering ground between residential and treed area near north-eastern site boundary



Photo No.	**Date**
20	19/05/21

Description

Example of soil beneath unidentified fibrous material



	Site Inspection Photographic Log	
Client Name ACT Education Directorate	**Site Location** Block 6 Section 64 Fraser	**Project No.** PS124049

Photo No.	Date
21	19/05/21

Description

Bike jumps and track within treed area along north-eastern site boundary- unidentified synthetic fibrous material is present in foreground



Photo No.	Date
22	19/05/21

Description

Bike jumps and track within treed area along north-eastern site boundary- small pile of household rubbish is visible in the background



	Site Inspection Photographic Log	
Client Name ACT Education Directorate	**Site Location** Block 6 Section 64 Fraser	**Project No.** PS124049

Photo No.	**Date**
23	19/05/21

Description

Closeup of stockpiled bike jump material



Photo No.	**Date**
24	19/05/21

Description

Closeup of stockpiled bike jump material



	Site Inspection Photographic Log	
Client Name ACT Education Directorate	**Site Location** Block 6 Section 64 Fraser	**Project No.** PS124049

Photo No.	Date
25	19/05/21

Description

North-eastern site boundary facing north-west- small pile of household rubbish is visible in the background



Photo No.	Date
26	19/05/21

Description

Site overview looking west from treed area along north-eastern site boundary



	Site Inspection Photographic Log	
Client Name ACT Education Directorate	**Site Location** Block 6 Section 64 Fraser	**Project No.** PS124049

Photo No.	Date
27	19/05/21

Description

Site overview facing south-west towards Fraser Primary School from treed area along north-eastern site boundary



Photo No.	Date
28	19/05/21

Description

Unofficial driveway and treed area along north-eastern site boundary near Tillyard Dr



	Site Inspection Photographic Log	
Client Name ACT Education Directorate	**Site Location** Block 6 Section 64 Fraser	**Project No.** PS124049

Photo No.	**Date**
29	19/05/21

Description

Site overview facing west towards Fraser Primary School from Tillyard Dr



Photo No.	**Date**
30	19/05/21

Description

Site overview facing north-west from Tillyard Dr



Assessment of Bushfire Planning Considerations

Fraser Primary School Expansion

September 2022

Project Number: 21-116



NSW • ACT • QLD • VIC
W. www.nghconsulting.com.au

Document verification

Project Title:	Fraser Primary School Expansion
Project Number:	21-116
Project File Name:	21-116 Fraser Primary School Bushfire Planning Considerations Final V1.1

Revision	Date	Prepared by	Reviewed by	Approved by
Draft V1.0	24/03/2021	Lewis Tinley Brad Draper	Johanna Duck	Brad Draper
Final 1.0 (minor edits)	31/08/2021	Brad Draper	-	-
Final V1.1 (minor edits)	1/09/2022	Les Seddon (minor edits)	-	-

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Acronyms and abbreviations

APZ	Asset Protection Zone
AS 3959-2018	Australian Standard – Construction of Buildings in Bushfire Prone Areas
BAL	Bushfire Attack Level
BAZ	Bushfire Abatement Zone
BFSA	Bush Fire Safety Authority
BFPL	Bush Fire Prone Land
BPA	Bushfire Prone Area
BPL Map	Bushfire Prone Land Map
BPMs	Bushfire Protection Measures
CCC	Central Coast Council
ESA	ACT Emergency Services Agency
EPA Act	*Environmental Planning and Assessment Act 1979* (NSW)
FFDI	(Forest) Fire Danger Index (also FDI)
FMP	Fuel Management Plan
Ha	Hectare
IPA	Inner Protection Area
kW/m2	kilowatts per square metre (being a measure of radiant heat)
LGA	Local Government Area
LMZ	Land Management Zone
NCC	National Construction Standard (comprising Building Code of Australia)
NSW RFS	NSW Rural Fire Services
OPA	Outer Protection Area
PBP	Planning for Bush Fire Protection (2019)
RF Act	*Rural Fires Act 1997* (NSW)
RMZ	Rural Land Management Zone
SBMP	Strategic Bushfire Management Plan
SFAZ	Strategic Fire Advantage Zone

Executive summary

The Education Directorate (EDU) has identified the need to expand the site boundary of Fraser Primary School (177 Tillyard Dr, Fraser ACT 2615). The objective of this procurement is to prepare the case for a Territory Plan Variation (TPV) to rezone part Block 6 Section 64 Fraser from Hills, Ridges and Buffer (NUZ3) to Community Facilities Zone (CFZ). In consideration of the proposed expansion, consideration of bushfire planning and design constraints is required to determine if an appropriate level of protection relative to the hazard can be provided, in accordance with the ACT Government Environment and Planning, Scope for a Planning Report (dated 18 December 2020).

In the ACT, the Strategic Bushfire Management Plan 2019-2024, Planning for Bushfire Risk Mitigation General Code 2008 and ACT Bushfire Management Standards 2014 require development to incorporate the application of bushfire design and planning guidelines when occurring on land identified as a bushfire prone area. Given that development of a school site is classified as a sensitive use, the ACT's Commissioner of Emergency Services Agency (ESA) will need to grant concurrence to any future development application in connection to the subject land.

It is noted that as the ACT has largely aligned its Planning for Bushfire Risk Mitigation General Code (2008) and Strategic Bushfire Management Plan with the NSW Planning for Bush Fire Protection (PBP)2006 document, which is now replaced by PBP 2019.The NSW requirements will generally meet the minimum requirements for the ACT and in areas provide additional bushfire protection measures. The NSW requirements and relevant ACT requirements have been addressed in this document.

An assessment of bush fire considerations has been conducted of the proposed areas of expansion and its surrounding landscape to identify the level of risk that the proposed development may be exposed to. The results of the assessment aim to guide and facilitate the master planning of the future school expansion, by identifying constraints that could influence layout options for the proposed development with regard given to the application of bushfire protection measures (BPMs). BPMs are a suite of measures which when applied in combination, aim to improve life safety, property protection, safety and access for emergency services and improve the resilience of a proposed development to bush fire attack.

Bush Fire Protection Measures

Future development for the purpose of an educational establishment land use shall incorporate the following bush fire protection measures:

Asset protection zones

Due to the presence of unmanaged grassland vegetation located on land adjacent the proposed school site, an asset protection zone (APZ) is required. An APZ should be provided, ideally wholly within the subject land so that security is provided for ongoing management for the life of the asset. In this case, the APZ would be provided, adjacent the north boundary. An APZ is an area where vegetation management occurs, to ensure that minimal fuel conditions are present. Built environment features such as public roads, footpaths and areas proposed to be designated as open space, parkland or drainage reserves can contribute to the achievement of an APZ. It is also anticipated that a proposed future school use would generally provide and maintain an APZ over the entire site, due to the provision of buildings, hard stand areas (parking, footpaths, access) and

sporting fields, for example, which provide fuel free, or fuel reduced areas, compliant with APZ standards.

Landscaping

Future landscaping that may occur within the subject land shall consider and conform to APZ standards, to ensure that placement and scale of landscaping does not provide a hazard within the proposed development.

Access

The subject land benefits from public roads present along two frontages. The presence of public roads, particularly north west (Shakespeare Crescent) and south east (Tillyard Drive), act as perimeter roads, which also serve surrounding residential land uses. Internal access requirements shall comply with access specifications, to ensure that a fire-fighting appliance (i.e. ACTF&R Compressed Air Foam System 8000 fire appliance) can access and manoeuvre (including safely being able to turn around) within the site, where internal roads are present.

Water supply

The locality benefits from access to a reticulated water mains system, where water hydrants are present. As development of the expanded school boundary occurs, it is expected that water hydrants could be installed adjacent newly constructed roads and would therefore be accessible to emergency services. Furthermore, large development sites, which have a high demand on water usage, usually incorporate a hydrant booster system within the development footprint. Icon Water should be consulted to determine the adequacy of existing infrastructure, including hydrant spacing, to support the proposed expansion of the Fraser Primary School.

Construction standards

The class of buildings involved in a school development, pursuant to the National Construction Code (NCC), do not trigger the application of bushfire construction standards. As the development is occurring over bushfire prone area, it is recommended that future buildings, particularly those located within 100m of unmanaged vegetation (the extent of the current bushfire operational plan), incorporate basic ember protection measures, through application of Bushfire Attack Level (BAL) 12.5 construction standards, identified in Australian Standard 3959-2018 Construction of buildings in bushfire prone areas.

Emergency management

Prior to future use of the site, an evacuation and emergency management plan shall be prepared, in consultation with ESA.

Advisory matters for consideration

- Due to the position of an existing bushfire operational plan, an APZ shall apply to part of the northern boundary of both Option 1 and Option 2 proposed areas of expansion.
    - The extent that the APZ would encroach on the subject land would be contingent on ESA updating their bushfire operational plan (mapping), which may benefit the subject land.

- Open space, access, parking, landscaping (to APZ standards) or ancillary structures are to be located within the extent of an APZ that is located in the subject land.
- Sensitive use (vulnerable) development types are to be located further away from the hazard and positioned clear of designated APZs.
- Access and egress is to be provided through internal roads of sufficient width.
- Compliant water supply and hydrants to be provided.
- Underground electricity and gas services where possible.

NGH has provided mapping of external management plans and required internal APZs, based on current fire management zones and vegetation treatment, identified in the publicly available bushfire operational plan data.

As the ESA would review any future planning application, it would be prudent to seek their in principle agreement on the proposed location and extent of APZs proposed in this document. Specifically, information should be sought, where there may be potential changes to the location and configuration of current fire management zones. Future changes or amendments to fire management zones may benefit the proposed expansion, in the event that the provision of APZs within the subject land, may not be required.

1. INTRODUCTION

NGH has been engaged by the Education Directorate (EDU) to provide bushfire risk assessment input to guide the project team and the Australian Capital Territory (ACT) Education Directorate in master planning the expansion of Fraser Primary School in Fraser (ACT). Consideration of bushfire planning and design constraints is required, in accordance with the ACT Government Environment and Planning, Scope for a Planning Report, identified in Appendix A. The subject land is identified as 177 Tillyard Drive, Fraser ACT 2615 (Block 2 Section 40, Fraser). The proposed expansion area (comprising Option 1 & Option 2) under investigation is located within Block 6, Section 64, Fraser. Both the subject land and proposed expansions areas under investigation are identified in Figure 1-1. The current investigation considers a proposed expansion in two areas:

- Option 1 (west of Fraser Public School), and
- Option 2 (north east of Fraser Public School).
    - Through later discussions with EDU, NGH were advised that a larger footprint is being considered in associated with Option 2, being an increase in area to the north. NGH has identified this potential increase, as an 'additional investigation area' in the suite of Figures presented in this document.

The Locality of Fraser is a residential suburb in the Belconnen district of Canberra. The proposed Fraser school site expansion would have a number of road frontages, including Shakespeare Crescent and Tillyard Drive.

Under the ACT Territory Plan, the land currently has a number of land use zones over the Fraser school site, including:

- CF: Community Facilities (within the current Fraser School site),
- NUZ3: Hills, ridges and buffer areas (in the northern expansion area).

The purpose of this bush fire assessment report is to provide an overview of bush fire protection measures that should be incorporated into the proposal site, commensurate to the sensitive proposed use, to ensure a suitable level of protection against bush fire attack.

1.1 Location

The proposed expansion area is identified as Block 6 Section 64, at Fraser. The Fraser school site is currently developed with school buildings, and has vegetation immediately to the north and suburban development to the south. The surrounding landscape has various vegetation types and urban areas within the built environment (refer to Figure 2-2), including:

- APN: Amenity planting native (to the north east and far north west),
- NG: Native Grassland (to the north east),
- URB: Urban and developed areas (to the south).

More broadly, the surrounding landscape includes a number of land uses (see Figure 1-2), including:

- PRZ1: Urban open space (bordering the south),
- CZ4: Local centre (across Tillyard Drive to the south),
- RZ2: Suburban core (across Tillyard Drive to the south east),

- RZ1: Suburban (to the west of the expansion area).



Figure 1-1 The locality of the Proposal

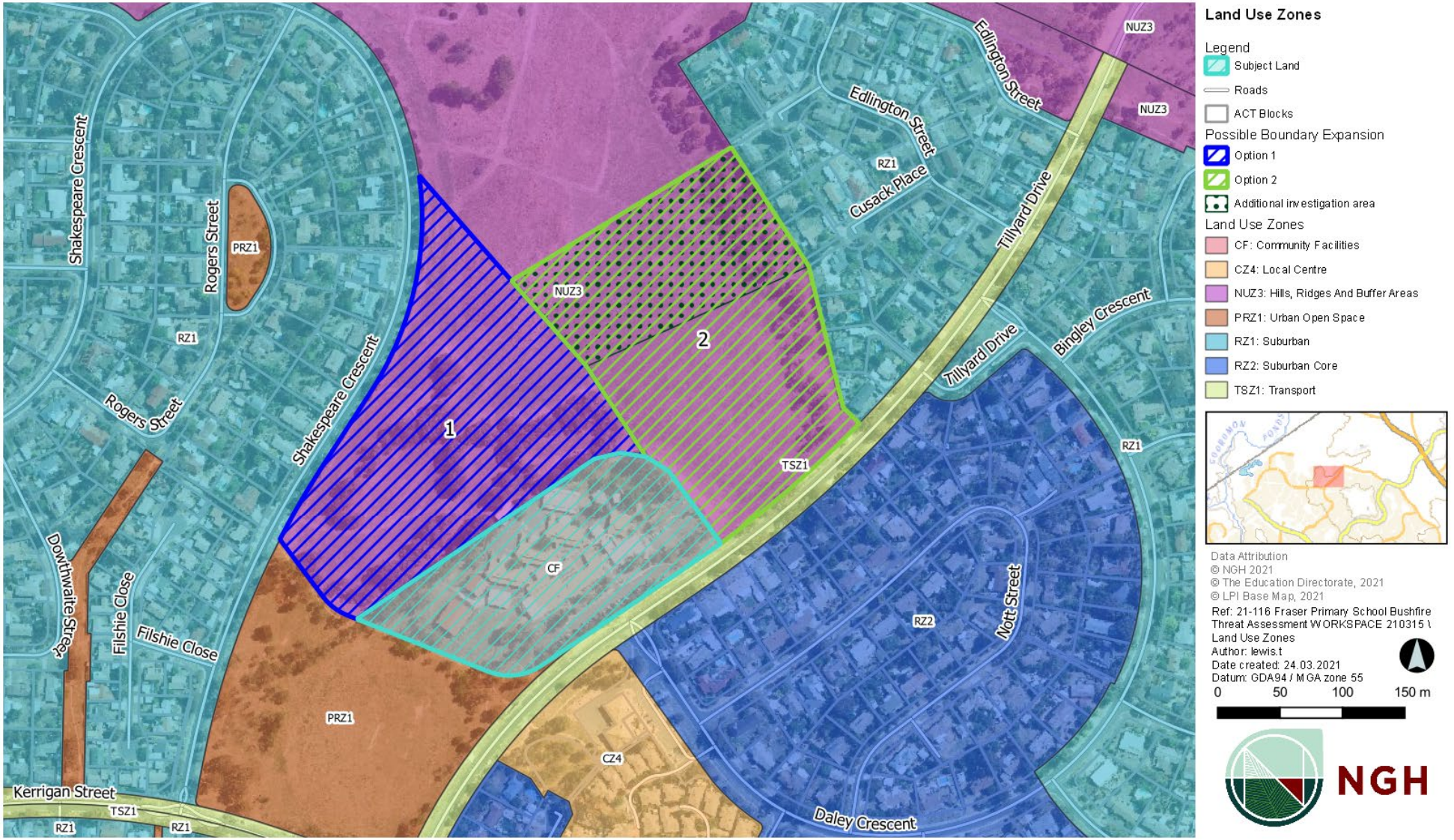


Figure 1-2 Land Use Zones

2. PLANNING FRAMEWORK

The relevant legislative requirements for development on bush fire prone area (BPA) and how they apply to this assessment, are outlined below.

2.1 ACT Legislation and Policy

2.1.1 Emergencies Act 2004

The *Emergencies Act 2004* (ACT) (Emergencies Act) establishes the legislative framework for emergency planning, prevention response and recovery operations within the ACT.
The Emergencies Act seeks to protect and preserve life, property and the environment, and provides for the effective and cohesive management by the Commissioner of the Emergency Services Agency (ESA) of the four emergency services and the enabling services.

The Emergencies Act requires the development of a Strategic Bushfire Management Plan (SBMP) for the ACT. Section 74 of the Act defines the elements of bushfire management that must be addressed in the Plan.

2.1.2 Planning and Development Act 2007

The *Planning and Development Act 2007* (ACT) establishes the ACT Planning and Land Authority (Environment, Planning and Sustainable Development Directorate-Planning) with the function of preparing and administering the *Territory Plan 2008* (Territory Plan). The Planning and Development Act, in conjunction with the Territory Plan, control land-use planning in the ACT and consider bushfire risk at all levels of planning particularly those areas susceptible to bushfires and those areas proposed for urban development and other sensitive uses.

2.1.3 Territory Plan 2008

The *Territory Plan 2008* is a statutory document that guides planning and development in the ACT. The Territory plan is used to:

- Manage development in the ACT, particularly how land is used and what can be built,
- Assess development applications, and
- Guide the development of new estates and the management of public land.

The Planning and Development Act 2007 (the Act) outlines the object, format, content and review processes of the Territory Plan. In accordance with the Act, the Territory Plan must contain, among other things, a statement of strategic directions which:

- Contains broad strategic principles to guide long term planning for the ACT,
- Guides the preparation and making of variations to the Territory Plan, and
- Guides environmental impact statements, planning reports and strategic environmental assessments.

Planning for Bushfire Risk Mitigation General Code 2008

The Planning for Bushfire Mitigation General Code 2008 (the Code), part of the Territory Plan, outlines the legislative requirements for new development in the ACT. The Code references the NSW Rural Fire Services (NSW RFS) guideline, Planning for Bush Fire Protection (PBP) 2006, where a high level of compatibility is sought between NSW and the ACT. The objective of the code is to ensure that bushfire risk is appropriately considered and addressed as during the planning stage, which then applies a suite of bushfire protection measures for the life of the development.

The Code is complimentary to the ACT Emergency Services Authority Strategic Bushfire Management Plan Version 3 (SBMP) 2014, which is a strategic document that identifies measures to reduce the impact of bushfire against development in the ACT. The Code is one of many documents that informs planning and development in the ACT and is considered by the ACT Planning and Land Authority when determining development applications.

The Code seeks to ensure that bushfire risk is appropriately assessed and considered during the planning, development and construction in the ACT.

2.1.4 Strategic Bushfire Management Plan 2019-2024

The Strategic Bushfire Management Plan (SBMP) is the overarching document that directs all levels of bushfire planning in the ACT. Its purpose is to provide a strategic framework to protect the ACT community from bushfires and reduce resulting harm to the physical, social, cultural and economic environment of the Territory.

To achieve this, the SBMP sets objectives and actions for: agency and community preparation and response for bushfires bushfire hazard assessment and risk analysis bushfire prevention, including hazard reduction adaptive management to apply best practice to bushfire management and prevention practices in the ACT in a changing environment.

Measures outlined in the SBMP include:

- Establishing planning controls so developments are appropriately located and designed,
- Managing potential fuel loads,
- Adopting management and operational plans,
- Ensuring well-resourced and effective emergency services, and
- Increasing community awareness and personal action on the risks posed by bushfires.

The SBMP also provides details of acceptable land management practices and the responsibility and commitments required by land owners or authorities.

2.2 NSW Legislation and Policy

The following provides an outline of NSW Legislation and Policy which are referenced in the above ACT legislation and policy documentation. This assessment therefore considers NSW requirements, which include additional bushfire protection measures to the ACT requirements.

2.2.1 Environmental Planning and Assessment Act 1979

The *Environmental Planning and Assessment Act 1979* (NSW) (EP&A Act) and its associated regulations provide the framework for assessing environmental impacts and determining planning approvals for developments and activities in NSW.

In NSW, identification of bush fire prone land mapping is required under Section 10.3 of the EP&A Act, where the Commissioner of the NSW RFS designates what constitutes bush fire prone land (BFPL) and how it is to be mapped. Development on bush fire prone land must consider the NSW Rural Fire Service' (NSW RFS) guideline Planning for Bush Fire Protection 2019.

2.2.2 Planning for Bush Fire Protection 2019

In NSW, the PBP 2019 guideline, published by the NSW RFS is a planning document that applies to all development located on land classified as BFPL across NSW.

The aim of PBP 2019 is to provide for the protection of human life and minimise impacts on property from the threat of bush fire, while having due regard to development potential, site characteristics and protection of the environment. PBP 2019 indicates that bush fire protection can be achieved through a combination of strategies, which are based on the following principles:

- Control the types of development permissible in bush fire prone areas,
- Minimise the impact of radiant heat and direct flame contact by separating development from bush fire hazards,
- Minimise the vulnerability of buildings to ignition and fire spread from flames, radiation and embers,
- Enable appropriate access and egress for the public and firefighters,
- Provide adequate water supplies for bush fire suppression operations,
- Focus on property preparedness, including emergency planning and property maintenance requirements, and
- Facilitate the maintenance of Asset Protection Zones (APZs), fire trails, access for firefighting and on site equipment for fire suppression.

A proposal shall be assessed to first identify risks commensurate to the category of development. Once identified, appropriate mitigation measures can be applied to the subject land. PBP applies a suite of BPMs to development on BFPL, which include:

- Access,
- Landscaping,
- Asset protection zone,
- Building construction and design,
- Emergency management arrangements, and
- Water supply and utilities.

2.3 National Construction Code

The National Construction Code (NCC), formerly referred to as the Building Code of Australia, is adopted in the ACT through the *Building Act 2004* (ACT). It contains provisions, which can be used for construction to resist bushfires in order to reduce the risk to life and minimise the risk of property loss in designated bushfire prone areas.

The NCC specific 'deemed to satisfy' measure is the Australian Standard AS3959 Construction of buildings in bushfire-prone areas. It is acknowledged that the NCC Part G5 Construction in Bushfire Prone areas only applies to Class 1, 2, 3 or 10a structures. Other classes of buildings (Class 4 – 9) such as school buildings do not trigger the bushfire provisions in the NCC, and

therefore related standards (i.e., AS 3959) do not apply. However, in bushfire prone areas it is good practice to consider including basic ember protection construction requirements (as identified in AS 3959) to improve the overall performance of the building against bushfire attack.

2.4 Australian Standard 3959 Construction of buildings in bushfire prone areas

Australian Standard 3959-2018 is prescribed throughout Australia and applies to the construction of buildings on bushfire prone areas. The objective of AS 3959 is to prescribe particular construction details for buildings to reduce the risk of ignition from a bushfire, appropriate to the:

- Potential for ignition caused by burning embers, radiant heat or flame generated by a bushfire, and
- Intensity of the bushfire attack on a building.

2.5 Bushfire Prone Area

The site and surrounds are identified as a “bushfire prone area”, refer to Figure 2-1.

The Bushfire Prone Area (BPA) map is a single risk-based map that defines areas of the ACT that have been assessed as being at high risk to life and property due to bushfires. BPA are designated on the ACT Government mapping portal ACTmapi.

Bushfire prone land maps provide a trigger for new development and consideration of sites that are bushfire prone.

Bushfire prone areas (BPA) is land, which can support a bushfire or is subject to bushfire attack. Canberra’s built-up areas that are adjacent to forest and grassland are designated as BPAs. The locality, specifically North of Fraser Primary School, contains expansive areas of grassland adjacent the urban interface.

Identifying the at-risk areas on the BPA map requires assessment to determine mandatory construction standards for residential buildings under the Australian Standards AS 3959 – Construction of buildings in bushfire prone areas. With regard to Section 2.4 it is reiterated that buildings associated with a proposed school would not trigger the application of AS 3959 as a deemed to satisfy solution within the NCC.

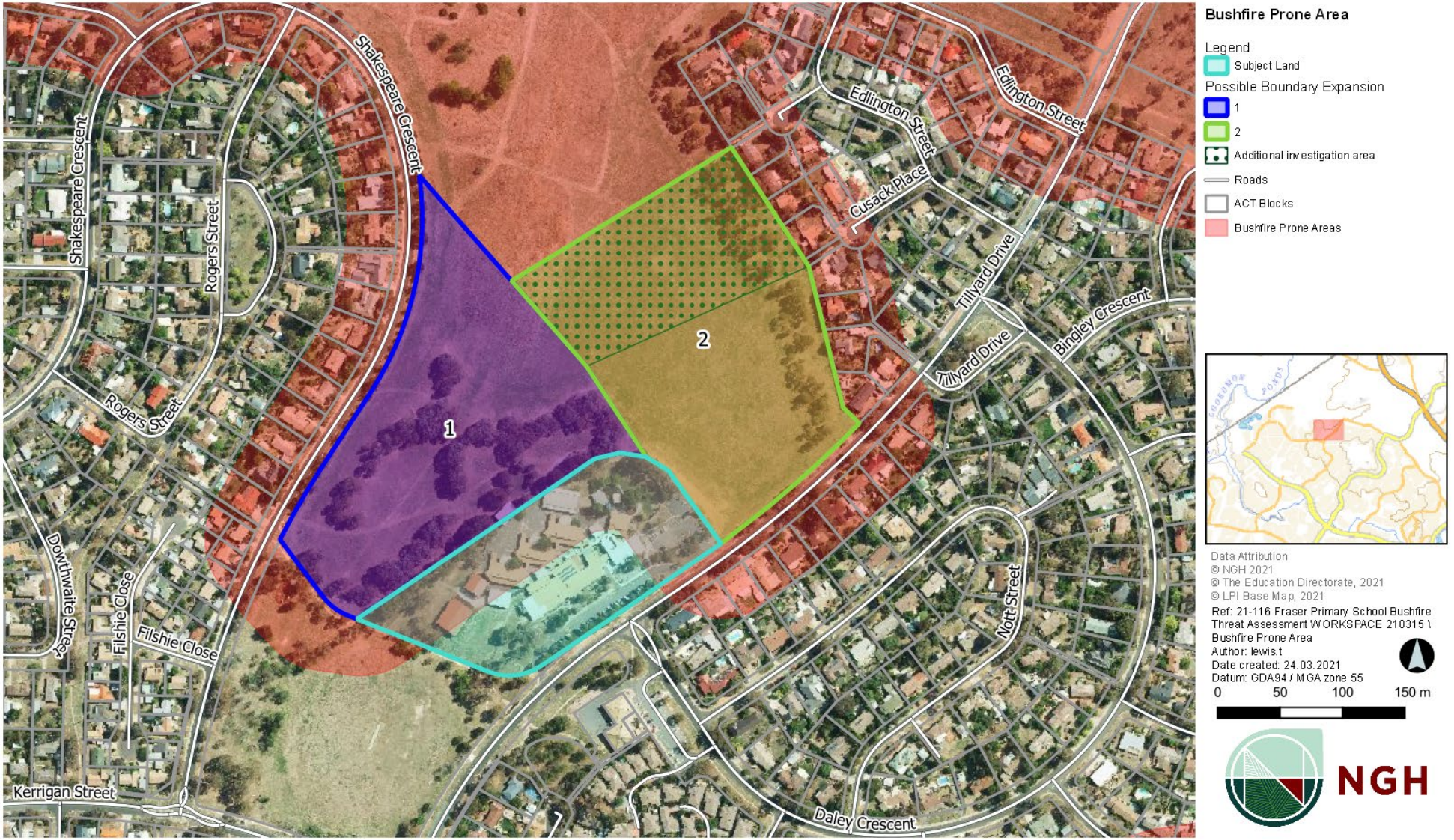


Figure 2-1 Bushfire prone area mapping

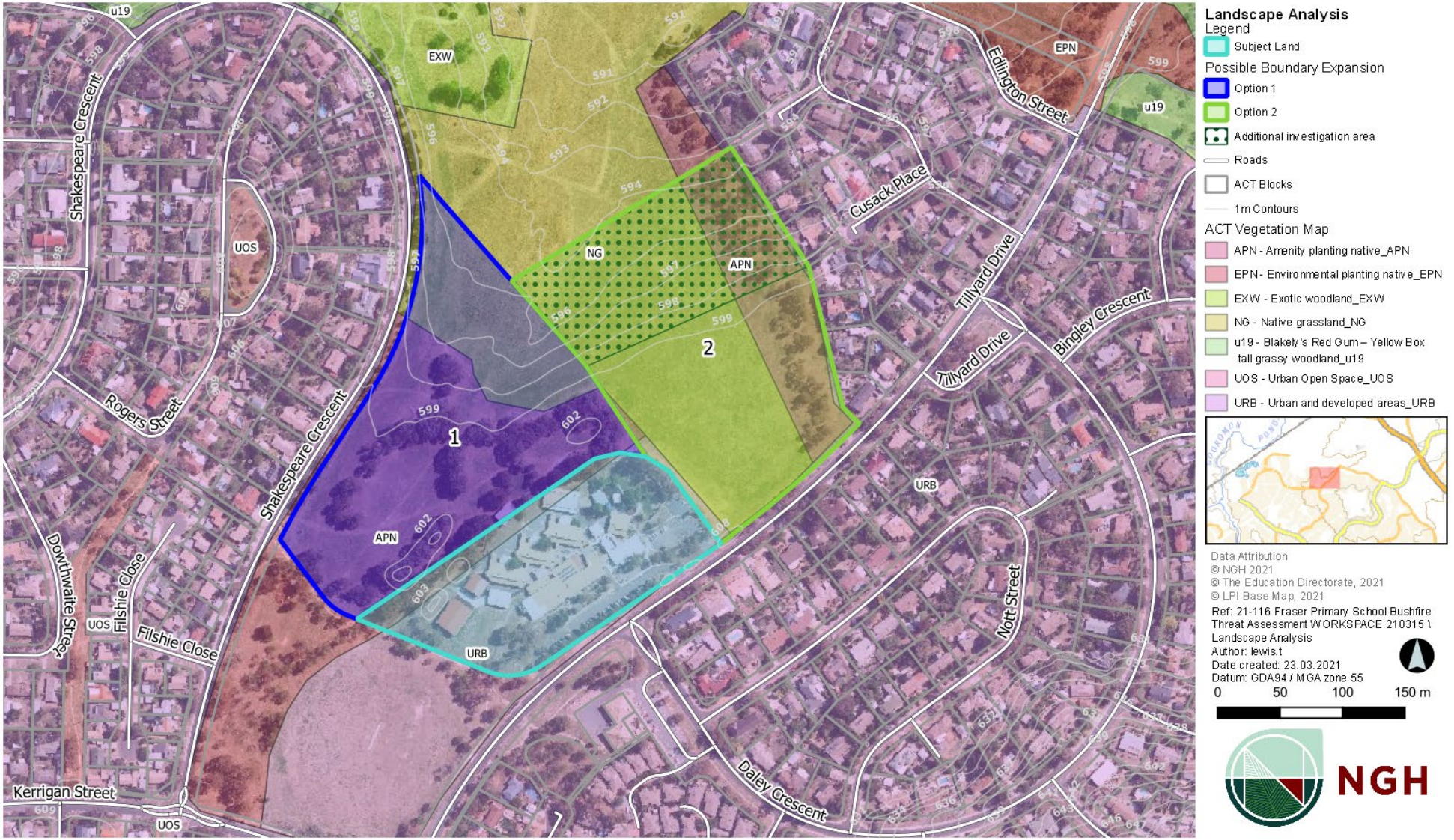


Figure 2-2 Landscape Analysis

2.6 Bushfire Abatement Zone

Under the Emergencies Act, the Commissioner has declared a Bushfire Abatement Zone (BAZ).

The BAZ surrounds Canberra and extends west towards the Murrumbidgee River. The BAZ is a subset of the BPA map, and was developed to identify rural areas where specific measures are required to reduce risk to life and property to the built-up area of Canberra. Measures associated with the BAZ include identification of land-use constraints, planning requirements for land managers (both public and private) and pre-incident planning for bushfires.

The BAZ will be reviewed as required to reflect changes in land use and tenure, and will be approved by the Commissioner.

The entire proposed expansion (both options under consideration) is mapped as BAZ, refer to Figure 2-3.

2.7 Regional Fire Management Plans

The SBMP requires regional fire management plans (RFMPs) to provide a link between the strategy of this plan and the more detailed bushfire operational plans (BOPs). In the SBMP, Fire Management Zones (FMZ) are identified as a subset of BPAs where measurable fuel management treatments are applied. The location and alignment of these zones reflect the risk of bushfires starting and spreading, and impacting on life, property and other assets.

The zones established include Asset Protection Zones (APZ), Strategic Firefighting Advantage Zones (SFAZ), Land Management Zones (LMZ) and Rural Land Management Zones (RMZ).

The widths and locations of the Zones are indicative and the actual widths and location will be determined in consideration of the ACT Fire Management Standards and operational requirements, through the development of Regional Fire Management Plans and Bushfire Operational Plans (including Farm Firewise). The SBMP details considerations used in determining the location and extent of Asset Protection Zones adjacent to new and established urban areas.

Fire Management Zone maps will be reviewed as required to reflect significant changes, which may include unplanned bushfires or changes to the location or extent of assets. The Commissioner is responsible for approval of these maps.

The subject land under investigation is affected by a number of FMZ and the application of a BOP. As detailed in Figure 2-3, the FMZ located in proximity to the proposed expansion include:

- Inner Asset Protection Zone, immediately adjacent the urban interface (residential and public roads),
- Outer Asset Protection Zone, immediately adjacent Inner Asset Protection Zones, and
- SFAZ ACT Government, mapped as partly within Option 2 and situated further north.

The management zones identified above are further broken down into methods of fuel (vegetation) mitigation treatment, where (mechanical) slashing is the preferred method for management and fuel reduction throughout the mapped designated areas.

APZs as shown in Figure 2-3 can be relied on for planning purposes, however as it conflicts with current BOP management, ESA should be consulted to confirm this arrangement. The ACT Strategic Bushfire Management Plan (ACT Government, 2019) notes that:

> The Environment, Planning and Sustainable Development Directorate (EPSDD) delivers RFMP actions through BOPs that describe detailed fuel reduction activities. BOPs are also

prepared by other ACT directorates, national land managers and rural landholders. They aim to reduce bushfire fuels through applying fuel treatments such as prescribed burning, slashing, grazing and physical removal.

A key action provided in the SBMP includes the provision for ACT Government land managers and other entities in the BAZ to prepare, submit and implement a BOP at least every two years. All SFAZs in the RFMP will need to establish baseline data and report data on the area treated, fuel hazard assessment, vegetation type and other matters as appropriate.

As such, a combination of APZs will be provided off site and defendable space will be provided within the site. The school expansion would require that FMZs are redefined, depending on the final boundary configuration and the layout of the school master plan. This would require ongoing consultation with ESA.

2.8 Bush Fire Operational Plan

The Bushfire Operational Plan (BOP) details the specific timing, type and location of fuel reduction, access and infrastructure activities proposed to be undertaken in the ACT. Figure 2-4 shows the Fire Management Zones and their management practice as designated in ACTmapi. The extent of FMZs located adjacent Fraser Primary School and the surrounding area include substantial coverage of assets located at urban interface. Prescribed vegetation management under the BOP, includes slashing of vegetation, as identified above in connection to the RFMP.

2.9 Assessment Framework

As the ACT has largely aligned its Planning for Bushfire Risk Mitigation General Code (2008) with the NSW Planning for Bushfire Protection (2006) document (except for APZ); the NSW requirements meet the minimum requirements for the ACT and additionally cover additional bushfire protection measures. The NSW requirements and relevant ACT requirements have been addressed in this document.

The Strategic Bushfire Management Plan 2019-2024 also enforces that the ESA Commissioner must approve any blocks within the BPA, where sensitive uses are proposed to be located.

The Strategic Bushfire Management Plan 2019-2024 requires sensitive uses (i.e., schools, hospitals) to develop an evacuation and emergency management during the event of a bushfire.

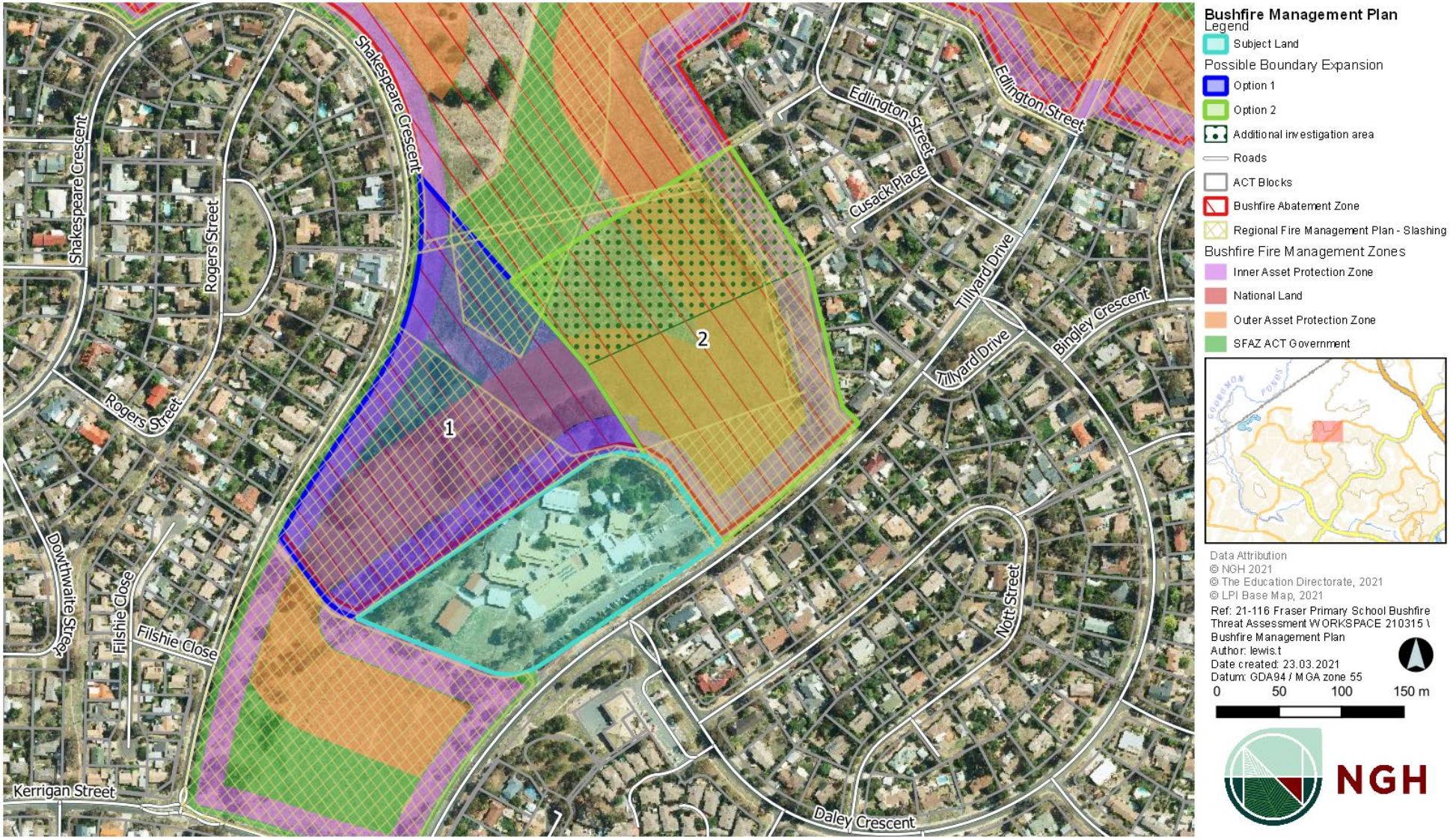


Figure 2-3 Bushfire Management Plan and Fire Management Zones



Figure 2-4 Relationship of Bushire Operational Plan and proposed areas of expansion.

3. BUSHFIRE SITE ASSESSMENT

Identify APZs

The ACT Bushfire Management Plan (version 3) 2014, outlines the methodology involved in determining the appropriate asset protection zones that would apply to the proposed development. The intention is that measurable outcomes required under current and ongoing management policies and procedures.

In NSW, the methodology associated with determining minimum APZ requirements is prescribed by PBP 2019, and is provided below:

1. Determine vegetation formation in all directions around the building to a distance of 140 metres,
2. Determine the effective slope of the land from the building for a distance of 100 metres, and
3. The building is provided with an APZ in accordance with Table A1.12.1 in Appendix 1 (of PBP).

3.1 Vegetation

Analysis of vegetation up to 140 metres from the proposed site has been conducted by:

- Aerial and Satellite imagery to identify vegetation location and cover; and
- Inspection of vegetation within and surrounding the subject land to confirm vegetation classification and structure.

Vegetation within and surrounding the development footprint land to a distance of 140 metres is assessed in accordance with Keith (2004), and further classified in accordance with PBP.

With reference to PBP, *'Where mixes of vegetation formations are located together, the vegetation formation providing the greater hazard shall be used for the purpose of assessment'*. The predominant vegetation located within and around the proposed expansion boundaries, comprises Grassland and remnant areas of Yellow Box Tall Grassy Woodland, with regard to Keith (2004), which is recognised as Grassland and Grassy Woodland vegetation under Figure A1.2 of PBP. Results are supported by site photographs in Figure 3-1 to Figure 3-3. The predominant hazard is identified as Grassland, due to grasses offering a substantial area of ground cover, when compared to isolated areas of Woodland.

Results from regional vegetation mapping are provided in the Landscape Analysis (refer to Figure 2-2) and further refined in the Asset Protection Zone Analysis (refer to Figure 3-4) is summarised in Table 3-1.

Areas of vegetation in relation to the proposed expansion areas are identified below:

- Hazard vegetation – North of the subject land and situated outside of a mapped BOP is Grassland, refer to Figure 3-1. Although this vegetation as a large fire run (expansive areas of grassland is present north of the urban settlement area), it becomes limited in proximity to the proposed expansion area due to the presence of FMZs. Grassy woodland vegetation is present in remnant, isolated areas outside of current FMZs, however areas of grassy woodland are located some distance from the proposed expansion boundary. In accordance with Keith (2004), the vegetation will be assessed as Grassland for assessment under PBP and ACT guidelines.

Non hazard vegetation – categorised as managed land (to APZ standards), is present in areas around the subject land, which largely comprises land identified as designated under a RFMP and is managed operationally under a BOP (these areas were managed at the time of inspection). Developed areas including Fraser Primary School, nearby residential land uses, and public roads are also considered non-hazard. Trees present within the Option 1 investigation area, although having interlocking canopy in some areas, has a managed understory (refer to Figure 3-2), due to application of the current BOP. Perimeter landscaping is present along the eastern boundary of Option 2, however is subject to maintenance as an IPA and slashing under the BOP, refer to Figure 3-3.

- Assumptions – road corridors and areas of open space would be maintained on an ongoing basis. It is also assumed that the presence of APZs under the current BOP would occur for the life of future school use.



Figure 3-1 Delineation of managed (subject to BOP) and unmanaged grassland located north of Option 1 & 2. Fraser Primary School located in the background of the image.



Figure 3-2 Managed woodland vegetation located adjacent Fraser Primary School (in Option 1 footprint). Managed ground fuels and lack of understory stratum is present.



Figure 3-3 Perimeter vegetation within the Option 2 footprint, presenting managed ground fuel and an absence of understory stratum.

3.2 Slope

With reference to the vegetation formations, the predominant (effective slope) is determined and identified in Table 3-1. PBP states *'The effective slope is considered to be the slope under the vegetation which will most significantly influence the bush fire behaviour for each aspect'*. The effective slope is determined by topography over a distance of 100m. This was confirmed through topographic mapping using LiDAR Data (1m point cloud).

The effective slope located under hazard vegetation include:

- North Transect 1) – Downslope 0º – 5º, and
- North (Transect 2) – Downslope 0º – 5º.

3.3 Minimum APZ requirements

The required APZ would be measured perpendicular from the proposed expansion boundary, which is immediately adjacent hazard vegetation.

Table 3-1 Distance to Achieve 10kW/m^2 setbacks for Effective Slope (over 100 metres) under predominant vegetation formations

Direction	Vegetation	Slope	Minimum Setback required to achieve <10kW/m^2 – PBP
North (Transect 1)	Grassland	Downslope 0º – 5º	>40m
North (Transect 2)	Grassland	Downslope 0º – 5º	>40m
East	Built Environment	Not Required	N/A
South	Built Environment	Not Required	N/A
South West	Managed (APZ) sporting field	Not Required	N/A
West	Built Environment	Not Required	N/A

With reference to Table A1.12.1 of PBP and Appendix 4 of PBP, a 40m APZ shall be provided (to satisfy the relevant setbacks identified in Table 3-1 as an inner protection area (IPA).

It is also acknowledged that a significant area of vegetation within Option 1 & 2, in addition to areas located farther south and south-west of Option 1 (and the current school footprint), are covered under an existing bushfire operational plan. These areas would be considered as 'managed' to the specification of an APZ by the appropriate authority.

Analysis of APZ under ACT guidelines

APZ determined by use of the ACT SBMP 2014 conclude that the following APZ widths apply under the following circumstances:

Direction / Aspect	Length of Fire Run	Vegetation type	Asset Interface	Width for Inner APZ (no Outer APZ)
North (Transect 1)	>350m	Grassland (and open woodland)	Primary	40m
North (Transect 2)	>350m	Grassland (and open woodland)	Primary	40m

Note: If vegetation located externally to the proposed boundary expansion continues to be managed under the current BOP, then APZs are partly present outside the proposed boundary and can contribute to the achievement to the required extent of APZs required. If ESA cannot guarantee ongoing management of the BOP, then APZs must be provided wholly within the proposed expansion area.

Fuel Management

APZs in the form of an inner protection area would require any Grassland fuel management practices ensure that Grassland maintained at ≤200mm height when grassland curing ≥70% (SBMP, 2014).

3.4 Bush Fire Attack Level

For the purpose of this assessment, the National Construction Standard (comprising Building Code of Australia) (NCC) does not provide bush fire specific performance requirements for the class of building associated with school buildings (i.e. Class 9). Therefore, a Bush Fire Attack Level (BAL) assessment was not undertaken to determine levels of radiant heat that site specific infrastructure, or buildings may be experience in the event of a fire.

Therefore, with regard to the above, no mandatory construction standards prescribed under AS3959 apply to the proposal. Notwithstanding this, it is recommended that basic ember protection measures are incorporated into future buildings, where development would be located within 100m of unmanaged vegetation (those areas located outside the designated BOP), as identified in Figure 3-4.

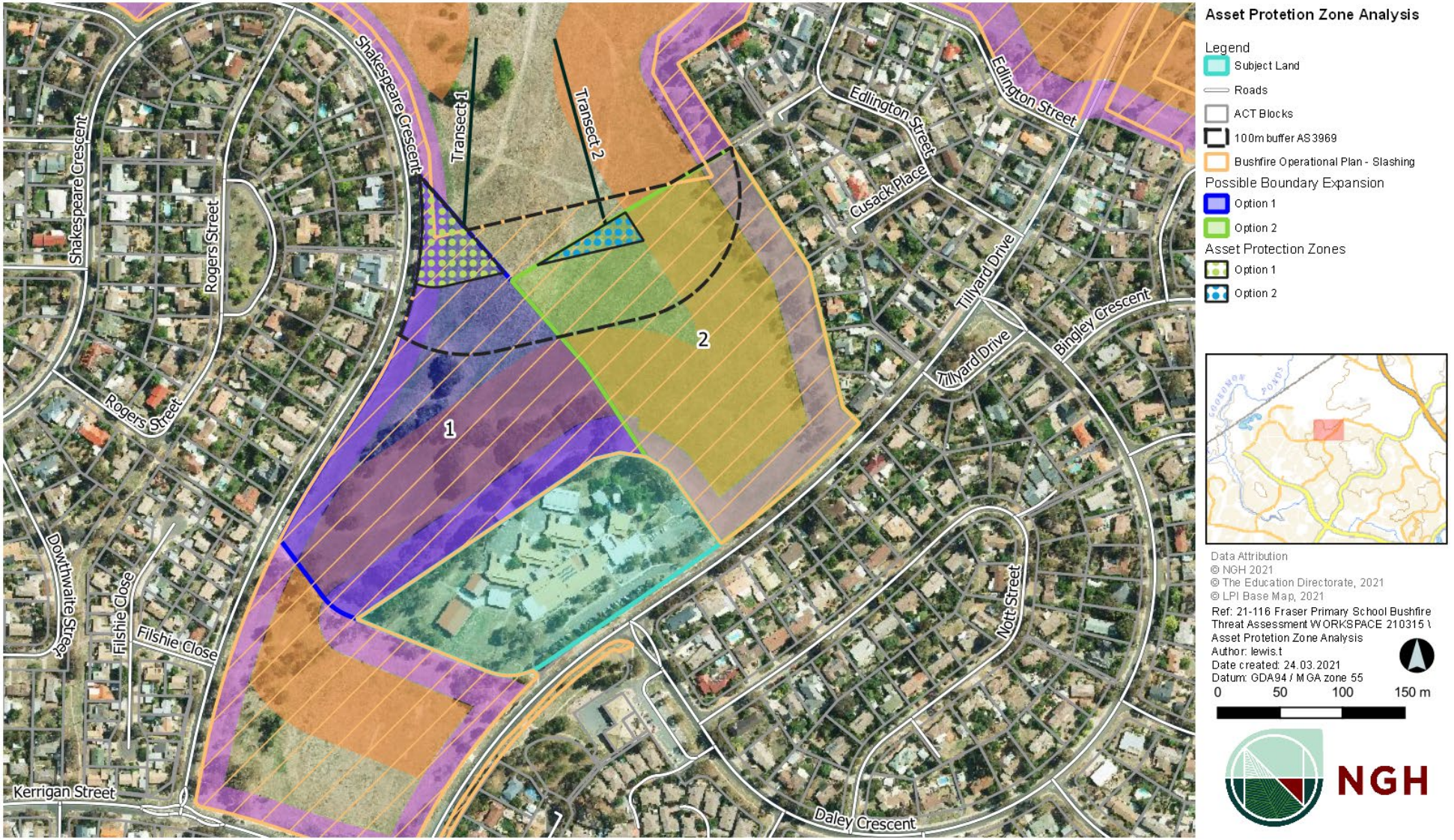


Figure 3-4 Asset Protection Zone Analysis

4. Bushfire Protection Measures (BPMs)

The ACT Fire Management Standards document references the NSW RFS PBP 2006 document. On 1 March 2020, PBP 2006 was replaced with PBP 2019 becoming legislated in NSW. As a result in order to provide an outline of up to date specifications associated with BPMs, PBP 2019 standards are outlined below.

Note: In some cases, the ACT Fire Management Standards provide specific requirements; where this occurs, the ACT BPM is referenced in the tables below.

Bush Fire Protection Measures (BPMs) are a series of controls, that when combined, aim to provide an acceptable level of protection for bush fire risk. In accordance with Section 6.8 of PBP, BPMs are provided to minimise the risk of spread to buildings and take into account the increased vulnerability of the occupants. The measures considered for the proposed development derive from Section 6.8 of PBP (NSW RFS, 2019) and specifically, Tables 6.8a – 6.8d (extracts below) and include:

- Asset Protection Zones,
- Landscaping,
- Access Requirements,
- Water Supplies,
- Gas & Electricity Services, and
- Emergency Management Planning.

4.1 Asset Protection Zones

Intent of measures: to provide suitable building design, construction and sufficient space to ensure that radiant heat levels do not exceed critical limits for firefighters and other emergency services personnel undertaking operations, including supporting or evacuating occupants.

Table 4-1 Summary of Table 6.8a of PBP (Asset Protection Zones)

Performance Criteria	Acceptable Solutions	Comment
The intent may be achieved where:		
Radiant heat levels of greater than 10kW/m² (calculated at 1200K) will not be experienced on any part of the building.	• An APZ is provided in accordance with Table A1.12.1 in Appendix 1.	An APZ of 40m shall apply. The APZ shall be provided to provide an adequate setback between hazard (classified) vegetation and future buildings, refer to Figure 3-4. Within the required areas designated as an APZ, areas such as sporting fields, access roads, parking, non-combustible shade shelters could be located.
APZ maintenance is practical, soil stability is not compromised and the potential for crown fires is minimised.	• APZ are located on lands with a slope less than 18 degrees.	Would comply – land does not exceed 18 degrees.

Performance Criteria	Acceptable Solutions	Comment
APZs are managed and maintained to prevent the spread of a fire to the building. the APZ is provided in perpetuity.	• the APZ is managed in accordance with the requirements of Appendix 4 of this document, and is wholly within the boundaries of the development site; • APZs are wholly within the boundaries of the development site.	Can comply – subject to ongoing maintenance. Can comply. With the exception of mapped BOP treatment areas, it is not expected that an APZ would be proposed over adjoining land.
radiant heat levels of greater than 10kW/m² (calculated at 1200K) will not be experienced on any part of the building.	• an APZ is provided in accordance with Table A1.12.1 in Appendix 1.	Can comply. Future master planning can ensure all buildings (except for non-habitable structures, i.e. storage sheds) would not experience radiant heat levels greater than 10kW/m^2 on any part of the building.

The ACT requirements for an APZ provides a comparable setback to APZ requirements prescribed by PBP 2019. The ACT requirements are identified in Section 3.3.

4.2 Landscaping

Landscaping should be considered throughout the design process and further enforced throughout the operational phase of the development. Suitably positioned and considered landscape design can reduce the risk of flame contact and radiant heat to buildings, thus improving the defence of buildings. A well-considered landscape design includes, but is not limited to:

- Increasing chances of filtering wind-driven embers or burning debris,
- Reduces wind forces,
- Create a discontinuous or spaces between vegetation to slow and reduce the intensity of a fire run towards a building,
- Fire retardant species could be selected, and
- Plant selection that does not drop large amounts of leaf litter that can act as ground fuel in the event of a bush fire.

Table 4-2 Summary of Table 6.8a of PBP (Landscaping)

Performance Criteria	Acceptable Solutions	Comment
The intent may be achieved where:		
landscaping is designed and managed to minimise flame contact and radiant heat to buildings, and the potential for wind-driven embers to cause ignitions.	• landscaping is in accordance with Appendix 4; and • fencing is constructed in accordance with section 7.6.	Future landscaping and management of an APZ could comply to the specifications of Appendix 4 of PBP.

4.3 Construction Standards

Intent of measures: Improve the performance of a building when subjected to bushfire attack in the form of embers, radiant heat and flame contact.

Table 4-3 Summary of Table 6.8a of PBP (Construction Standards)

Performance Criteria	Acceptable Solutions	Comment
The intent may be achieved where:		
the proposed building can withstand bush fire attack in the form of embers, radiant heat and flame contact.	• a construction level of BAL-12.5 under AS 3959 or NASH Standard and section 7.5 of PBP is applied.	Although not prescribed by the NCC, it is recommended that future buildings incorporate basic ember protection standards, to improve a buildings performance against bushfire attack.

4.4 Access

Intent of measures: to provide safe operational access for emergency services personnel in suppressing a bush fire, while residents are accessing or egressing an area. The table below summarises the requirements prescribed in PBP.

Table 4-4 Summary of Table 6.8b of PBP (Access)

Performance Criteria	Acceptable Solutions	Comment
The intent may be achieved where:		
firefighting vehicles are provided with safe, all-weather access to structures and hazard vegetation.	• SFPP access roads are two-wheel drive, all-weather roads; • access is provided to all structures; • traffic management devices are constructed to not prohibit access by emergency services vehicles; • access roads must provide suitable turning areas in accordance with Appendix 3; and • one way only public access roads are no less than 3.5 metres wide and have designated parking bays with hydrants located outside of these areas to ensure accessibility to reticulated water for fire suppression.	Could comply – subject to future detailed design.
the capacity of access roads is adequate for firefighting vehicles.	• the capacity of road surfaces and any bridges/causeways is sufficient to carry fully loaded firefighting vehicles (up to 23 tonnes); bridges and causeways are to clearly indicate load rating.	Could comply– subject to future detailed design.
there is appropriate access to water supply.	• hydrants are located outside of parking reserves and road carriageways to ensure	Could comply. – subject to future detailed design.

Performance Criteria	Acceptable Solutions	Comment
	accessibility to reticulated water for fire suppression, and • hydrants are provided in accordance with the relevant clauses of AS 2419.1:2005.	
Non-Perimeter Roads non-perimeter access roads are designed to allow safe access and egress for firefighting vehicles while occupants are evacuating.	• minimum 5.5m carriageway width kerb to kerb; • parking is provided outside of the carriageway width; • hydrants are located clear of parking areas; • there are through roads, and these are linked to the internal road system at an interval of no greater than 500m; • curves of roads have a minimum inner radius of 6m; • the maximum grade road is 15 degrees and average grade of not more than 10 degrees; the road crossfall does not exceed 3 degrees; and • a minimum vertical clearance of 4m to any overhanging obstructions, including tree branches, is provided.	Could comply. – subject to future detailed design.

In addition to the NSW access specifications above, the design requirements from ACT Planning for Bushfire Risk Mitigation General Code, include:

- Emergency access should be provided in the form of an outer ring road or fire trail and access points which together with an edge road has a sealed width of 7.5m plus kerbs, indented parallel parking provision and a minimum hardstand area on the hazard side of 1.5m clear of retaining walls or stone pitched batters for passing of two emergency tankers. An additional clearance of 0.5m on both sides of the road is required to be kept clear of all street furniture including signs.
- Verge width to residential blocks a minimum of approximately 7m with dryland grass surface.
- Street trees species selected for low bark flammability characteristics

4.5 Water & Utility Services

Intent of measures: To provide adequate services of water for the protection of buildings during and after the passage of a bush fire, and to locate gas and electricity so as not to contribute to the risk of fire to a building.

Table 4-5 Summary of Section 6.8c of PBP (Services).

Performance Criteria	Acceptable Solutions	Comment
The intent may be achieved where:		
Water Supplies An adequate water supply is provided for firefighting purposes.	• reticulated water is to be provided to the development, where available.	Could comply. Reticulated water supply is present in the locality and it is assumed would be extended in to service the proposed development.
water supplies are located at regular intervals. the water supply is accessible and reliable for firefighting operations.	• fire hydrant spacing, design and sizing comply with the relevant clauses of AS 2419.1:2005; • hydrants are not located within any road carriageway; and • reticulated water supply to SFPPs uses a ring main system for areas with perimeter roads.	Could comply – subject to future detailed design. Consultation with Icon Water should occur to to determine the adequacy of existing infrastructure.
flows and pressure are appropriate.	• fire hydrant flows and pressures comply with the relevant clauses of AS 2419.1:2005.	Assumed compliance.
the integrity of the water supply is maintained.	• all above-ground water service pipes external to the building are metal, including and up to any taps.	Could comply – subject to future detailed design and construction.
Electricity Services location of electricity services limits the possibility of ignition of surrounding bush land or the fabric of buildings.	• where practicable, electrical transmission lines are underground, and • where overhead, electrical transmission lines are proposed as follows: • lines are installed with short pole spacing (30m), unless crossing gullies, gorges, or riparian areas, and • no part of a tree is closer to a power line than the distance set out in accordance with the specifications in ISSC3 Guideline for Managing Vegetation Near Power Lines.	Could comply. It is recommended that all electricity connections are provided by underground means.
Gas Services location and design of gas services will not lead to ignition of surrounding	• reticulated or bottled gas is installed and maintained in accordance with AS/NZS 1596:2014 and the requirements of relevant authorities, and metal piping is	Could comply – subject to future detailed design.

Performance Criteria	Acceptable Solutions	Comment
bushland or the fabric of buildings.	used; • all fixed gas cylinders Check ACT are kept clear of all flammable materials to a distance of 10m and shielded on the hazard side; • connections to and from gas cylinders are metal; • if gas cylinders need to be kept close to the building, safety valves are directed away from the building and at least 2m away from any combustible material, so they do not act as a catalyst to combustion; • polymer-sheathed flexible gas supply lines to gas meters adjacent to buildings are not to be used; and • above-ground gas service pipes external to the building are metal, including and up to any outlets.	

4.6 Emergency Management

Intent of measures: to provide suitable emergency and evacuation arrangements for occupants of SFPP developments.

Table 4-6 Summary of Section 6.8d of PBP (Emergency Management).

Performance Criteria	Acceptable Solutions	Comment
The intent may be achieved where:		
a Bush Fire Emergency Management and Evacuation Plan is prepared.	• Bush Fire Emergency Management and Evacuation Plan is prepared consistent with the: ○ The NSW RFS document: A Guide to Developing a Bush Fire Emergency Management and Evacuation Plan; ○ NSW RFS Schools Program Guide; ○ Australian Standard AS 3745:2010 Planning for emergencies in facilities; and Australian Standard ○ AS 4083:2010 Planning for emergencies – Health care facilities (where applicable). ○ the Bush Fire Emergency Management and Evacuation Plan should include planning for the early relocation of occupants. • Note: A copy of the Bush Fire Emergency Management and Evacuation Plan should be provided to the Local Emergency Management Committee for its information prior to occupation of the development.	An emergency management plan would be prepared in consultation with ESA, prior to occupation of the site.

5. OTHER PLANNING MATTERS

5.1 Vegetation Management

An APZ is a fuel-reduced area surrounding a building or structure. It is located between the building or structure and the bush fire hazard. An APZ provides:

- a buffer zone between a bush fire hazard and an asset,
- an area of reduced bush fire fuel that allows for suppression of fire,
- an area from which backburning or hazard reduction can be conducted, and
- an area which allows emergency services access and provides a relatively safe area for firefighters to defend property.

An APZ, if designed correctly and maintained regularly, will reduce the risk of:

- direct flame contact on the building,
- damage to the building asset from intense radiant heat, and
- ember attack.

It is recommended that the subject land be managed to the standard of an Inner Protection Area (IPA). An IPA is located in immediate proximity to the asset and provides a defendable space consisting of minimal fuel loads. An IPA shall display characteristics that include, but are not limited to: a tree canopy cover of less than 15% at maturity, a maximum 30% of the IPA may contain shrubs, trees should have lower limbs (up to 2m in height) removed, shrubs are not to have a connection with tree canopy layer, shrubs should not form more than 10% ground cover, maintain 2 – 5m canopy separation of trees and branches are not to overhang buildings. Wooden sheds, combustible material storage areas, stacked flammable building materials, woodpiles, large areas of garden mulch, for example, are not permitted in the IPA.

5.2 Other Environmental Values

NGH understands that vegetation located within part of the Option 1 expansion area, comprises foraging habitat value for the superb parrot. Under the existing BOP, a large proportion of the investigation areas is currently subject to ongoing vegetation management.

WSP were engaged for the purpose of a Preliminary Biodiversity Assessment (WSP, 2021) of Option 2 expansions area. Native amenity planting occurs along the north-eastern boundary of the site; the trees are small, and no hollows were recorded. The remainder of the site generally comprises exotic vegetation. Native dominated grassland was present in the north-western corner of the site; a majority is subject to ongoing management under the current BOP.

6. CONCLUSION

This assessment bushfire planning considerations acknowledges the proposed development as a category of in-fill development, which is subject to Territory Plan to rezone part Block 6, Section 64, Fraser. The proposed expansion areas are currently under investigation and the intention of this document is to consider the application of prescribed bushfire policy and associated guidelines. In addition to informing the Planning Report, which would be prepared for consideration by the planning and land authority, the findings of this report also aim to guide the potential master planning of the site by way of identifying exclusion zones that may apply, which can directly influence the layout of future development footprint. The bushfire considerations outlined above have outlined minimum requirements to achieve conformance with ACT & (NSW) PBP specifications.

For the purpose of master planning the site, future development of the site shall incorporate the following measures into the proposed development.

Asset Protection Zones

- A 40m APZ is required to be provided from the boundary of the proposed expansion area and is provided wholly within the proposed expansion area, except for where a BOP treatment strategy is mapped externally to the proposed investigation area.
- The APZ must be maintained as an Inner Protection Area.

Landscaping

- Future landscaping shall ensure that APZ specifications are not compromised.

Access

- Property access and internal access arrangements shall ensure access to the site is suitable for emergency response vehicles (such as ACTF&R Compressed Air Foam (CAFS) 8000 fire appliances.

Water and Utilities (Electricity and Gas)

- Water hydrants, or a hydrant booster system shall be provided within the proposed development, for areas that are outside an acceptable distance from water hydrants in the public road network.
- Electricity and gas utilities shall be provided by underground means.

Construction Standards

- Construction standards prescribed under AS3959 is recommended to apply to future buildings, due to the proposed school expansion occurring in a mapped BPA.

Emergency Management

- An emergency management and/or evacuation plan should be prepared prior to the development becoming operational. The emergency plan should be prepared in consultation with ESA.

A more detailed assessment can be undertaken once a firm expansion area boundary is known, or once concept plans are available in the future, to provide site layout specific commentary and guidance.

This report has been prepared by Brad Draper, a person who is recognised by the NSW Rural Fire Service as a qualified consultant in Bush Fire Risk Assessment.



BPAD Bushfire Planning & Design Accredited Practitioner Level 2

Brad Draper
Senior Bush fire Consultant

BPAD Accredited Bush fire Practitioner (49517)

7. REFERENCES

ACT Emergency Services Commissioner (2014) ACT Strategic Bushfire Management Plan Version 3

ACT Planning & Land Authority (2008) *ACT Bushfire Migration Code.*

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Keith, D. (2004). Ocean shores to desert dunes: the native vegetation of NSW and the ACT (Selected Extracts). Department of Environment and Conservation (NSW).

NSW Rural Fire Service. (2019). Planning for Bushfire Protection – A Guide for Councils, Planners, Fire Authorities and Developers.

NSW Rural Fire Service. (2006). *Planning for Bushfire Protection* .

Standards Australia. (2018). *Construction of buildings in bushfire-prone Areas, AS3959.*

WSP. (2021) *Fraser School Expansion Preliminary Biodiversity Assessment*.

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Advisory Comments:

Notwithstanding the bush fire protection measures outlined and the recommendations provided, the property and any structures must be adequately maintained for the life of the proposed development. This will assist in providing a reduced level of risk to the property, its occupants and any emergency services personnel that may attend to the property.

> Quote from Planning for Bush Fire Protection (2019), *'Due to a range of limitations, the measures contained in this document do not guarantee that loss of life, injury and/or property damage will not occur during a bush fire event. Limitations of this document include, but are not limited to uncertainties in the following areas: Fire Danger Index; fuel loads; existing developments; human behaviour; and maintenance.'*
>
> Quote from Standards Australia (AS 3959-2018), *'Although this standard is designed to improve the performance of buildings when subjected to bushfire attack in designated bushfire-prone areas there can be no guarantee that a building will survive a bushfire event on every occasion. This is substantially due to the unpredictable nature and behavior of fire and extreme weather conditions.*

Appendix A Scope for a planning report (dated 18.12.2020)

ACT Government
Environment and Planning

Scope for a Planning Report

to inform a proposed Territory Plan variation to rezone part Block 6 Section 64 Fraser from Hills, Ridges and Buffer (NUZ3) to Community Facilities Zone (CFZ).

18 December 2020

A planning report is prepared to provide the information necessary to inform consideration by the planning and land authority, within the Environment, Planning and Sustainable Development Directorate, on preparing a Territory Plan variation in support of the proposal (refer to Part 5.6 of the *Planning and Development Act 2007*).

The planning report is to respond to each of the following parts:

A. Executive summary

B. Description of the proposed Territory Plan variation
(*A comprehensive description of the site and the proposal, current planning policy, the intended development and use, and all proposed changes to the Territory Plan.*)

Provide information on all proposed changes to the Territory Plan and specify any land use changes

Provide information on all proposed changes to the National Capital Plan if any.

C. Justification for the planning policy changes
(*An assessment of the opportunity cost of the proposed change, and discussion of changes in the economic, social, natural and physical environment that necessitate the change in both local and broader contexts*).

D. Strategic planning policy context
(*A discussion of proposed planning policy change and proposed use/development in the context of the ACT's planning framework and strategic planning policy. Identification of any associated changes, e.g. an amendment to the National Capital Plan or public land register*).

Relevant ACT Government policies should be considered in the planning report. This includes but not be limited to:

- The ACT Planning Strategy 2018
- The ACT Climate Change Strategy 2019-2025
- Canberra's Living Infrastructure Plan: Cooling the City

Other relevant Government policies should be considered in the planning report. This includes but not be limited to:

- National Capital Plan
  The National Capital Authority requests an assessment against Section 4.25 of the National Capital Plan, City Centre Special Requirements be provided. The assessment needs to demonstrate that any proposed changes to the Territory Plan are not inconsistent with the National Capital Plan.

E. Preliminary consultation

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

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

- provides 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

F. Impact assessment

(*A discussion of both the suitability and capability of the land for the proposed use/development with a clear conclusion, plus discussion of potential positive and negative impacts on the social, physical and natural environment if the land is developed to its full capacity as proposed.*)

An assessment of potential impacts of the proposal must address:

- **Impact on heritage values**
  - An Unexpected Finds Protocol should be developed for the project, which describes necessary steps to be taken should any Aboriginal places or objects be identified during construction works.
- **Impact on existing flora and fauna**
  - A Tree Assessment and Tree Management Plan is required to identify any trees that would require protection under the Tree Protection Act, as well as any remnant trees noting that a likely condition of expansion would be that all remnant trees are kept.
- **Potential impacts of land contamination activities**
  - An environmental assessment in accordance with Environment Protection Authority (EPA) endorsed guidelines to assess it suitability for its proposed use from a contamination perspective.
- **Traffic impacts**
  - A Traffic Impact Assessment (TIA) Report to understand the likely increase in traffic movements and how these will be managed within the site and any impact on the surrounding road network. Details needed are SIDRA intersection analysis for two intersections of Kerrigan street/Shakespeare Cr and Kerrigan/Tillyard Drive
  - Consideration for the future of a bus layover and potentially a parking area e.g. for an oval on weekends as well as a Park and Ride nearby.
  - Consideration if the road reserve of Shakespeare crescent is sufficient to support the rezoning.
  - Traffic impacts on the external road network for an expanded school and increase in proposed number of students should also be examined.

- **Impact on active travel and existing cycleways**
    - Consideration of direct connections to shops and community route linking to the broader network
    - Opportunities and constraints for increased active travel in the local area traffic management should also be investigated as part of the rezoning request.
- **Bushfire protection requirements:**
    - A Bushfire Threat Assessment and Compliance Report of the proposal by an accredited Bushfire Consultant is required to demonstrate an appropriate level of protection relative to the hazard is provided.
    - The internal and perimeter roads of the development must be designed to allow access for ACTF&R Compressed Air Foam System (CAFS) 8000 fire appliances.
- **Utility services**
    - Consultation with Icon Water to determine the adequacy of existing infrastructure, including hydrant spacing, for the proposed expansion of the school site.
    - Consideration that the existing electricity network supply may not be able to cope with the proposed additional demands and hence, the proponent must allow for the space for new pad mount substation within the amended block boundary. The substation siting must comply with Evoenergy substation siting guide and other relevant separation and clearance and earthing requirements.

Additional detailed planning and design considerations, which form part of this scope are listed in Table 1. The proponent must address all comments in accordance with the actions required in the following table.

Table 1 – Government agencies' comments and service utility providers' comments for proponent to address

Agency	Comments	Required Actions
EPSDD - Heritage	There are no recorded or registered heritage places or objects on this portion of the block. A number of Aboriginal places are located to the north of proposed development area within Block 6 Section 64 Fraser. These are located at some distance from the proposed footprint and will not be damaged by works within the proposed expansion areas. Further, historic aerial imagery indicates that the area was subject to earthworks in the 1970s as part of suburban development, suggesting that the area has low potential to contain unrecorded Aboriginal places or objects. As such the Council considers that there are unlikely to be matters covered by the Heritage Act 2004 arising from the TPV. The Council advises that there are no heritage matters required to be included in the scoping document for the TPV. However, an Unexpected Finds Protocol should be developed for the project, which describes necessary steps to be taken should any Aboriginal places or objects be identified during construction works. A sample has been previously provided to the Education Directorate for reference.	Planning report required to demonstrate comments have been addressed.
EPSDD – Conservator of Flora and Fauna	The proposed site has an exotic understory and mainly planted eucalypts. At this stage it is not considered that there are any significant ecological constraints to the school expanding over the site. A Tree Assessment would be required to identify any trees that would require protection under the Tree Protection Act, as well as any remnant trees noting that a likely condition of expansion would be that all remnant trees are kept. Superb Parrots been observed in past years at the site. The birds could be feeding on eucalypt buds, flowers or lerps and probably also feed on cape weed seeds and onion weed bulbs. However, it is not considered that the area would be a significant feeding resource for this threatened parrot. Superb Parrots are mainly recorded in the Fraser area either in September – early October (prior to breeding) or post breeding in summer. Landscaping of the expanded school should consider utilising Superb Parrot food plants which are bearing the food resource at these times of higher visitation. Advice should be sought from the Conservator if and when development proceeds as to what species this landscaping should include.	Planning report required to demonstrate comments have been addressed. Proponent is to note and discuss with relevant agencies as necessary.

Environmental Protection Agency	The site will require an environmental assessment in accordance with Environment Protection Authority (EPA) endorsed guidelines to assess it suitability for its proposed use from a contamination perspective. The findings of the assessment must be reviewed and endorsed by the EPA prior to the site being used for the proposed use.	Planning report required to demonstrate comments have been addressed. Proponent to note and act on the advice.
Transport Canberra and City Services	**Waste Management** • Although the 2019 Waste Code requires forward-in and forward-out manoeuvres for waste collection vehicles, reversing in and out of sites is still being approved. The Planning Report should clearly state that truck reversing manoeuvres are not permitted in school zones. • The Planning Report should address future developments in and around the school, truck movements and how waste collection can be achieved safely and with full compliance of the Waste Code. **Traffic Impact Assessment** • The proponent is requested to provide a Traffic Impact Assessment (TIA) Report to understand the likely increase in traffic movements and how these will be managed within the site and any impact on nearby road network. • Details needed are SIDRA intersection analysis for two intersections of Kerrigan street/Shakespeare Cr and Kerrigan/Tillyard Drive • TIA must also consider for the future a bus layover and potentially a parking area e.g. for an oval on weekends as well as a Park and Ride nearby. **Active Travel** • The cycleway in question is part of a local community route that provides a direct connection to the shops and the main community route linking to the broader network. Following the design principles articulated in MIS 05, any proposal should maintain and enhance a safe, direct and convenient walking and cycling connection to the Fraser shops and the main community route (shown in blue below) to avoid community severance. In other words, no preference which expansion option they choose, just don't sever community connections by fencing off the path.	Planning report required to demonstrate comments have been addressed Proponent to note and act on the advice.

	 **Vegetation and Tree Management Plan** • The site does not contain any remnant vegetation nor are there any individual exceptional quality trees; however two of the groups of trees were assessed as high quality as they provide aesthetic values and assist with connectivity for native fauna from the ACT border into the suburbs of Fraser and Charnwood. The groups identified as high quality were located on the mound west of the existing playground area and north of the centre of the proposed site. The siting of any new buildings needs to consider and be sympathetic to the retention of these trees. • Planning Report must include a detailed Tree Assessment and Tree Management plan with any formal development application at a late stage.	
EPSDD - Strategic Planning	The proposed location of the school is in an area that contains a large number of mature trees, which form an important landscape and amenity setting. Notwithstanding that a tree survey will be undertaken, the proponent should further consider options to expand the school to the northeast along Tillyard Drive or to the south on the oval, subject to the utilisation of the	Planning report required to demonstrate

	oval. In this way, the large number of trees to the west of the school will not need to be removed. To offset the loss of part of the oval or open space to the northeast, consideration should be given to either establish a community recreation irrigated park (CRIP) in the immediate area or expanding the adjacent playground. In this way the local community will be provided with a higher amenity recreation space and improved active travel connections than what appears currently. An alternative location for the school's expansion, would still need to be assessed including through traffic assessment, active travel, CPTED, and bushfire.	comments have been addressed.
Emergency Services Agency	***Water Supplies:*** *Large installations* are classified as Fire Risk type F4. The proponents must seek clarification from Icon Water to determine the adequacy of existing infrastructure, including hydrant spacing, for the proposed expansion of the school site. ***Bushfire Protection Requirements:*** *Bushfire Threat Assessment and Compliance Report:* The development is located **inside** the area declared by the ESA as the Bushfire Prone Area. Schools are considered as Sensitive-use developments, as per the Strategic Bushfire management plan 2019 version 4 (p61) and require application of appropriate bushfire protection measures. Assessment of the proposal by an accredited Bushfire Consultant is required application to demonstrate an appropriate level of protection relative to the hazard is provided. *ACTF&R Access Requirements for New Estate Development:* The internal and perimeter roads of the development must be designed to allow access for ACTF&R Compressed Air Foam System (CAFS) 8000 fire appliances. ACTF&R CAFS appliances are specifically designed for the urban interface however can be used as a multi-functional vehicle.	Proponent is to note and discuss with relevant agencies as necessary. Planning report required to demonstrate comments have been addressed.
EPSDD - Infrastructure Planning	A site assessment should be undertaken, as is usual, that would cover (among other things) traffic impact, access options, drainage, site servicing (water, sewer, energy, telecommunications), tree survey and other environmental values on site.	Planning report required to demonstrate comments have been addressed.
ACT Health - Strategic Infrastructure	We note that the Education Directorate indicates that *"Upon receipt of the Scope we will engage a consultant to undertake due diligence to support the proposal, including assessment of existing trees, ecological considerations, bushfire risk, traffic impact assessments and other likely impacts on the community. It will also confirm the proposed boundary to best meet the operational needs of the school."*	Planning report required to demonstrate comments have

	Due to the large area of the proposed site, there may be opportunity during the boundary identification process to identify a suitable area for a potential future co-location of a health centre/community centre. This would support what we understand to be a shortage of suitable land, and suitably zoned land, for such facilities.	been addressed.
EPSDD – Deed Management	The proponent should demonstrate that utility services can adequately service an expanded school area. This includes access for emergency vehicles and fire hydrant capacity etc. The proponent should investigate if the road reserve of Shakespeare crescent is sufficient to support the rezoning. This presumes that there will be enhanced use of this road for buses, drop offs and parking. If on street or off street parking is proposed, this should be considered. A change to the zone may not be necessary, however a new block with sufficient setbacks to accommodate these requirements could be proposed as a potential solution. Planning controls may also be useful to identify access to and from the new expanded school (either permitting or prohibiting access as necessary). There is an existing 1050 dia SW line through the middle of the area servicing the surrounding residential area. The proponent will need to look at how this may affect the schools expansion if it remains or if a relocation is feasible and may provide a better built form in the future. Traffic impacts on the external road network for an expanded school and increase in proposed number of students should also be examined. Opportunities and constraints for increased active travel in the local area traffic management should also be investigated as part of the rezoning request.	Discuss with relevant agencies as required. Planning report required to demonstrate comments have been addressed.
CMTEDD - Policy and Cabinet Division	The planning report should address how the additional school buildings and facilities will achieve best practice sustainable design, including in relation to urban heat mitigation and green/living infrastructure. In doing so, the planning report should discuss how development of the new facilities will align with the ACT Climate Change Strategy 2019-2025 and Canberra's Living Infrastructure Plan. The planning report should address any heritage and environmental issues that are relevant to the site; in particular, whether trees will need to be removed and how this will be compensated for. The planning report should address any negative impacts on surrounding development and how they will mitigated; for example, noise and solar access, particularly since the new school buildings and facilities will be closer to residential developments than the existing site. The planning report should address the impacts of expanding the school on traffic in the area and how this will be managed.	Planning report required to demonstrate comments have been addressed.

EPSDD – Climate Change and Sustainability	It is requested that the scoping report include a requirement for the planning report to include the following: • Urban heat and microclimate considerations: *Canberra's Living Infrastructure Plan: Cooling the City* (The Plan) builds on the ACT Government's commitments under the ACT Planning Strategy 2018 to make Canberra a sustainable, liveable and resilient city into the future. The Plan seeks to reduce the urban heat island effect by integrating living infrastructure, such as trees, wetlands and vegetation into urban planning, design and development. The Plan includes actions to achieve 30% canopy cover (or equivalent) and 30% permeable surfaces across Canberra's urban footprint by 2045. The planning report should demonstrate how the proposed land use change will support the objectives and actions of the Plan.	Planning report required to demonstrate the Living infrastructure Plan is addressed and relevant living infrastructure measures are incorporated and detailed.
Evoenergy	Evoenergy do support the proposed Territory Plan Variation – B6 S64 Fraser for increasing the proposed area for Fraser School at B2 S40. However, would like to highlight that the existing electricity network supply may not be able to cope with the proposed additional demands and hence, the proponent must allow for the space for new pad mount substation within the amended block boundary. The substation siting must comply with Evoenergy substation siting guide and other relevant separation and clearance and earthing requirements. Proponent to lodge Preliminary network connection advice application prior to any development/construction activities for supply upgrade work.	Proponent to note and act on the advice.
Icon Water	There is an existing DN150 sewer main running through proposed part block 6. Based on the final block and building design, relocation of sewer main may be required. Once the development is finalised (number of additional students and staff), Icon Water will need to model the network to determine the capacity. This may require upgrade of the network. Water and Sewer Capital Contribution Charge will be required for increase in Equivalent Population.	Proponent is to note and discuss with relevant agencies.

SCHOOLS PLANNING, ACT EDUCATION

JUNE 2021

FRASER SCHOOL EXPANSION

PRELIMINARY BIODIVERSITY ASSESSMENT

wsp



Question today
Imagine tomorrow
Create for the future

Fraser School Expansion
Preliminary Biodiversity Assessment

Schools Planning, ACT Education

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REV	DATE	DETAILS
A	18/06/2021	Draft

	NAME	DATE	SIGNATURE
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Reviewed by:	Alex Cockerill	18/06/2021	
Approved by:	Alex Garrett	18/06/2021	

WSP acknowledge the Ngunnawal people as the traditional custodians of the area. We acknowledge their ongoing connection to country and pay our respects to elders, past and present. WSP is committed to engaging with and honouring Aboriginal and Torres Strait Islander peoples' unique cultural and spiritual relationships to the land and waters.

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DRAFT

1 PROJECT BACKGROUND

The ACT Government Education Directorate (Education) is seeking to rezone part of Block 6 Section 64 Fraser to support a Territory Plan Variation that will enable the expansion of Fraser Primary School. Fraser Primary School is looking to expand the site to better accommodate the current schooling population. In order to provide a functioning primary school site in Fraser that can accommodate current demand, the school site area would need to double in size.

A preliminary biodiversity assessment is required to identify biodiversity constraints within the proposed school site (Figure 1.1).

The scope of works for this biodiversity assessment was to:

- describe and identify the biodiversity values of the site through desktop review and biodiversity field survey
- prepare a Preliminary Ecological Assessment Report to:
  - present the methods and results of the desktop assessment and biodiversity field survey
  - provide advice on the ecological constraints to the proposal to guide design and planning approval pathway.



Figure 1.1 Study area

2 METHODS

2.1 DESKTOP ASSESSMENT

The desktop assessment for this report involved a review of existing biodiversity information. The aim of this review was to identify the existing environment and associated threatened species or threatened ecological community information within a nominal search area of 10 km around the study area. The review involved use of the following information sources:

- ACT Threatened Species List
- ACTmapi – Significant Species, Vegetation Communities' and Registered Trees mapping tool
- Canberra Nature Map (10 km search area)
- Department of Agriculture, Water and the Environment Matters Search Tool (10 km search area)
- Atlas of Living Australia search tool (10 km search area).

2.2 LIKELIHOOD OF OCCURRENCE ASSESSMENT

The likelihood of threatened species, populations, threatened ecological communities and migratory species occurring within 10 km of the study area was assessed against the criteria outlined in Table 2.1. Species subject to the likelihood of occurrence assessments were those identified during the desktop investigations.

Table 2.1 Likelihood of occurrence assessment

LIKELIHOOD OF OCCURRENCE	CRITERIA
Low	Have not been recorded previously in the study area and surrounds and/or the study area is beyond the current known geographic range of the species. Are dependent on specific habitat types or resources that are not present. Are considered extinct in the locality.
Moderate	Have been recorded previously in the study area and surrounds infrequently (i.e. vagrant individuals). Use habitat types or resources that are present, although generally in a poor or modified condition. Are unlikely to maintain sedentary populations, however may seasonally utilise available resources opportunistically during variable seasons or migration.
High	Have been recorded previously within the study area. Are dependent on habitat types or resources that are abundant and/or in good condition. Are known or likely to maintain resident populations within/surrounding the study area. Are known or likely to visit during regular seasonal movements or migration.
Recorded	Have been recorded within the study area during surveys associated with this report.

DRAFT

2.3 FIELD SURVEY

2.3.1 RANDOM MEANDER SURVEY

The study area was visually assessed for the presence of patches of native vegetation, along with threatened ecological communities, and habitat suitability for threatened species. To survey the vegetation in the study area, a random meander technique (Cropper 1993) was employed whereby the recorder walks in a random meander throughout the study area recording dominant and key plant species (e.g. threatened species, noxious weeds), within the vegetation communities and recording condition of vegetation.

2.3.2 VEGETATION PLOTS AND TRANSECT

Detailed plot and transect surveys were completed as outlined in the methodology contained within *ACT Environmental Offsets Policy* (ACT Government - Environment and Planning 2015).

Three plot surveys were undertaken, recording the following site attributes were recorded at each plot:

- Location (easting – northing).
- Vegetation structure and dominant species and vegetation condition. Vegetation structure was recorded through estimates of percentage foliage cover, average height and height range for each vegetation layer.
- Native and exotic species richness (within a 400 square metre quadrat): This consisted of recording all species by systematically walking through each 20 x 20 metre quadrat. The cover abundance (percentage of area of quadrat covered) of each species was estimated.

2.3.3 CONDITION OF VEGETATION COMMUNITIES

Native vegetation is defined under the *Nature Conservation Act 2014* as either:

- 10 percent or more of the area is covered with vegetation (dead or alive)
- no more than 60 percent of the ground layer vegetation cover is exotic annual (at any time of the year)
- more than 50 percent of the perennial ground layer vegetation cover is native vegetation

OR

- trees or shrubs indigenous to the area have a canopy cover of 10 percent or more in any stratum over the area.

The condition of native vegetation was assessed against the ACT Environmental Offsets Policy (ACT Government - Environment and Planning Directorate 2015, ACT Government - Environment and Planning Directorate 2016) definitions of ‘low’ and ‘moderate to good’ condition.

Vegetation in ‘low’ condition means:

- Paddock trees – native over-storey foliage cover less than 25 percent of the lower value of the over-storey percent foliage cover benchmark for that vegetation type, and less than 50 percent of ground cover perennial vegetation is indigenous species.
- Native pasture – trees are absent or form less than one percent cover. The understorey is predominantly comprised of native grasses, and there are five or less native herbs within the most diverse 20 x 20 metres of the investigation area.

‘Moderate to good’ broad condition is native vegetation that is not in ‘low’ broad condition.

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2.3.4 FAUNA HABITAT ASSESSMENT

Fauna habitat assessments were undertaken to assess the likelihood of threatened species of animal (identified in desktop review) occurring within the study area. Fauna habitat characteristics assessed included:

- structure and floristics of the canopy, understorey and ground vegetation, including the presence of flowering and fruiting trees providing potential foraging resources
- presence of hollow-bearing trees providing roosting and breeding habitat for arboreal mammals, birds and reptiles
- presence of the ground cover vegetation, leaf litter, rock outcrops and fallen timber and potential to provide protection for ground-dwelling mammals, reptiles and amphibians
- presence of waterways (ephemeral or permanent) and water bodies.

The following criteria were used to evaluate the condition of habitat values:

- **Good:** A full range of fauna habitat components are usually present (for example, old growth trees, fallen timber, feeding and roosting resources) and habitat linkages to other remnant ecosystems in the landscape are intact.
- **Moderate:** Some fauna habitat components are missing or greatly reduced (for example, old-growth trees and fallen timber), although linkages with other remnant habitats in the landscape are usually intact, but sometimes degraded.
- **Poor:** Many fauna habitat elements in low quality remnants have been lost, including old growth trees (for example, due to past timber harvesting or land clearing) and fallen timber, and tree canopies are often highly fragmented. Habitat linkages with other remnant ecosystems in the landscape have usually been severely compromised by extensive clearing in the past.

Opportunistic sightings of animals were recorded. Evidence of animal activity, such as scats, diggings, scratch marks, nests/dreys, burrows etc., was also noted. This provided indirect information on animal presence and activity.

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3 EXISTING ENVIRONMENT

3.1 VEGETATION

The study area occurs in a suburban area adjacent to the existing school, road and residential development. The study area is connected to the west to an area of open green space.

The majority of the study area consists of grassland. Native Amenity Planting occurs along the north eastern boundary of the site and provides a visual buffer to residential development.

The study area is subject to urban edge effects (weed invasion, recreation pressures, increased predation of grassland fauna by foxes and cats, requirement for management including regular mowing. fire fuel reduction though burning and slashing. Aerial imagery shows evidence of regular mowing over decades.

Vegetation types within the study area are mapped in Figure 3.1.

3.1.1 EXOTIC GRASSLAND

The majority of the site consists of exotic dominated grassland. The groundlayer is dominated by exotic species such as Paspalum (*Paspalum dilatatum*), Goose Grass (*Eleusine tristachya*), African Love Grass (*Eragrostis curvula*), Brome (*Bromus catharticus*), Cat Grass (*Dactylis glomerata*), flat weeds (*Hypochaeris radicata, Plantato lanceolata, Arctotheca calendula)* and Turnip Weed *(Rapistrum rugosum).*

Native species are present (with low cover) and include disturbance-tolerant native species such as Red-leg Grass (*Bothriochloa macra*), Windmill Grass *(Chloris truncata*) and Wallaby Grass (*Austrodanthonia* species).



Photo 3.1 Exotic grassland



Fraser Primary School Territory Plan Variation

Figure 3.1

Vegetation communities

Legend

- Vegetation Plot
- Site Location
- Blocks

Field Verified Vegetation Communities

- Native dominated grassland
- Amenity planting native
- Exotic grassland



0 0.06 0.12 km

Coordinate system: GDA 1994 MGA Zone 55

Scale ratio correct when printed at A3

1:2,500 Date: 15/06/2021

Data sources: - DNRME, TMR, Translink, Geoscience Australia

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3.1.2 NATIVE DOMINATED GRASSLAND

Native dominated grassland occurred in the north western section of the study area.

Native grassland was dominated by disturbance tolerant grasses including Red-leg Grass (*Bothriochloa macra*), Hairy Panic (*Panicum effusum*), Windmill Grass (*Chloris truncata*) and Wallaby Grass (*Austrodanthonia* species). Exotic species included Paspalum (*Paspalum dilatatum*), Goose Grass (*Eleusine tristachya*), African Love Grass (*Eragrostis curvula*), flat weeds (*Hypochaeris radicata, Plantato lanceolata, Arctotheca calendula)* and Turnip Weed *(Rapistrum rugosum)*.

This community was a 'low condition native pasture based on the understorey being predominantly comprised of native grasses, and less than five native herbs within the most diverse 20 x 20 metre vegetation plot (Appendix A).



Photo 3.2 Native dominated grassland

3.1.3 NATIVE AMENITY PLANTING

Native Amenity Planting occurs along the north eastern boundary of the site and provides a visual buffer to residential development. Approximately 75 trees occur in this area with height ranging from 6–11 metres and circumference of 600–1100 mm.

These trees are mature are likely to have been planted at the time of the development of the suburb in the late 1970s. The species are consistent of a range of eucalyptus and other species known to grow well in Canberra: *Casuarina cunninghamiana*, *Eucalyptus bicostata, Eucalyptus cinerea, Eucalyptus maidenii, Eucalyptus mannifera, Eucalyptus melliodora, Eucalyptus nicholii, Eucalyptus polyanthemos, Eucalyptus sideroxylon, Eucalyptus viridis, Acacia baileyana.*

The groundlayer vegetation is sparse and is dominated by exotic grass species such as Paspalum (*Paspalum dilatatum*), Goose Grass (*Eleusine tristachya*) and African Love Grass (*Eragrostis curvula*) and disturbance-tolerant native species such as Red-leg Grass (*Bothriochloa macra*).



Photo 3.3 Amenity planting native

3.2 FAUNA HABITAT

Habitat within the study area consisted of low open grassland with a strip of native tree plantings along the north eastern boundary. The grassland was modified from regular mowing and the invasion of common weed species. No rocky outcropping was observed, and other important grassland habitat features such as invertebrate burrows and soil cracks were limited. No hollows were recorded.

The study area provides habitat for a range of grassland species that are adapted to open environments and tolerant of some disturbance. This includes common urban bird species introduced species such as Fox and House Mouse, as well as native grassland species. Some common grassland species recorded during field surveys included Common Wombat, Eastern Grey Kangaroo, European Rabbit* and European Red Fox*.

An area of tall wet grassland/sedgeland was noted near the north western boundary. This would provide habitat for a range of common species of frog including the Spotted Marsh Frog which was recorded calling during the site visit.

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4 THREATENED BIODIVERSITY

4.1 THREATENED ECOLOGICAL COMMUNITIES

Two threatened ecological communities are known to occur within the locality:

- Yellow Box-Blakely's Red Gum Grassy Woodland
- Natural Temperate Grassland.

These communities and their potential presence within the site are discussed below.

4.1.1 YELLOW BOX-BLAKELY'S RED GUM GRASSY WOODLAND

Yellow Box-Blakely's Red Gum Grassy Woodland (Box Gum Woodland) is listed as Critically Endangered under the NC Act.

Although White Box (*Eucalyptus albens*) does not occur within the ACT, Yellow Box-Blakely's Red Gum Grassy Woodland, depending on condition, is consistent with the EPBC Act Critically Endangered ecological community White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland (Maguire and Mulvaney 2011).

Box Gum Woodland can occur as either open woodland or derived native grassland which has been created through the removal of all tree species.

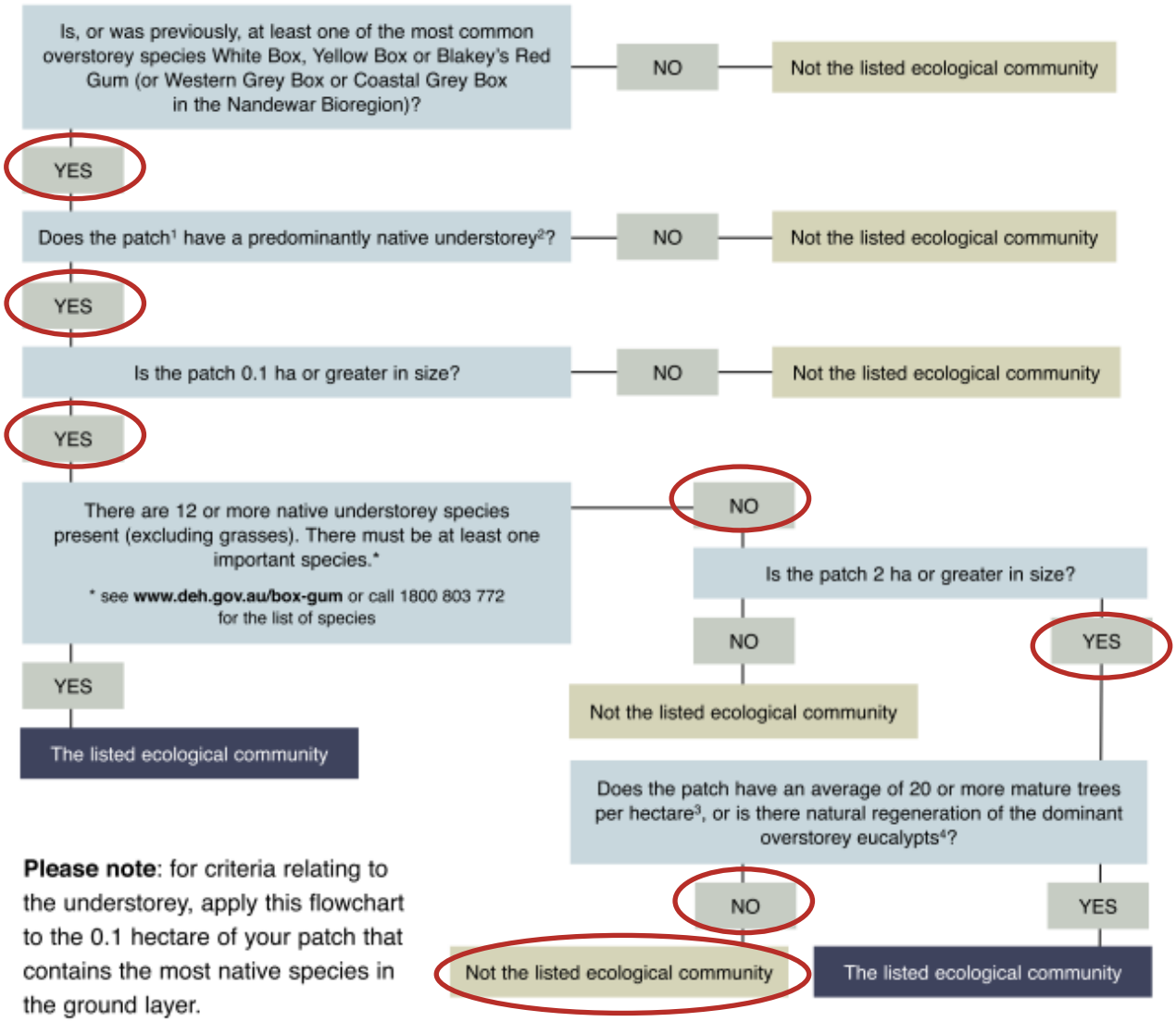
The majority of the vegetation within the site has been mapped as "potential yellow Box – Blakely's Red Gum Grassy Woodland" (ACTmapi, 2021).

4.1.1.1 EPBC ACT LISTED THREATENED COMMUNITY

Although there was no evidence of past clearing of trees evident on site, the area has been mapped as potential Box Gum Woodland (ACTmapi). For this reason, it was assumed that the site previously included characteristic canopy species namely Yellow Box or Blakely's Red Gum, for the purposes of assessing the site vegetation against condition criteria for EPBC Act listed community.

Analysis of vegetation plots within study area indicate that areas with predominantly native understorey were not consistent with the EPBC Act listed community because although the site is larger than 2 ha, there were not 12 or more native understorey species present (excluding grasses) or the presence of mature canopy or natural regeneration of dominant eucalypt species (Figure 4.1).

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1 Patch – a patch is a continuous area containing the ecological community (areas of other ecological communities such as woodlands dominated by other species are not included in a patch). In determining patch size it is important to know what is, and is not, included within any individual patch. The patch is the larger of:

- an area that contains five or more trees in which no tree is greater than 75 m from another tree, or
- the area over which the understorey is predominantly native.

Patches must be assessed at a scale of 0.1 ha (1000m^2) or greater.

2 A predominantly native ground layer is one where at least 50 per cent of the perennial vegetation cover in the ground layer is made up of native species. The best time of the year to determine this is late autumn when the annual species have died back and have not yet started to regrow. (At other times of the year, you can determine whether something is perennial or not is if it is difficult to pull out of the soil. Annual species pull out very easily.)

3 Mature trees are trees with a circumference of at least 125 cm at 130 cm above the ground.

4 Natural regeneration of the dominant overstorey eucalypts when there are mature trees plus regenerating trees of at least 15 cm circumference at 130 cm above the ground.

Source: (Department of the Environment and Heritage 2006)

Figure 4.1 Commonwealth criteria for White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland

4.1.1.2 NC ACT LISTED CRITICALLY ENDANGERED ECOLOGICAL COMMUNITY

An assessment of the characteristics of the NC Act listed Yellow Box – Red Gum Grassy Woodland community against the two patched was undertaken (Table 4.1) (ACT Scientific Committee 2020).

Table 4.1 Characteristics of Yellow Box–Red Gum Grassy Woodland

CHARACTERISTICS OF YELLOW BOX–RED GUM GRASSY WOODLAND TEC	**CHARACTERISTICS OF VEGETATION WITHIN SITE**		
	Exotic grassland	**Native dominated grassland**	**Amenity planting native**
Discontinuous stratum of trees of medium height (10–35 m) with canopies that are separated and with 4–30% foliage cover. The community is dominated by Yellow Box *(Eucalyptus melliodora)* and/ or Blakely's Red Gum *(Eucalyptus blakelyi)*.	No canopy is present.	No canopy is present.	Canopy consists of mix of local and non-local plantings.
There is a species-rich understorey of native tussock grasses, herbs and scattered shrubs. Good condition remnants have a ground cover dominated (50% or more of the perennial species) by native grasses and forbs. The ground 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.	Groundcover dominated by exotic species.	The groundcover is dominated disturbance tolerant native grasses.	Groundcover dominated by exotic species.
	The shrub layer is absent. No remnant trees occur. No natural regeneration.		
Derived (secondary) grasslands where the tree canopy cover is removed (or suffers dieback) but a relatively diverse understorey remains intact.	Consists of grassland with no tree canopy.		Canopy consists of mix of local and non-local plantings.
	Understorey is not intact, is dominated by exotic species and has low native diversity.	Lacks diversity and consists of disturbance tolerant native grasses as well as exotic grasses and forbs.	Understorey is not intact, is dominated by exotic species and has low native diversity.
CONCLUSION	**Not consistent with NC Act listing**	**Vegetation unlikely to be consistent with NC Act listing. Although ground cover is dominated by native grasses, consistent with low condition native pasture, there was no evidence of past tree removal or regeneration.**	**Not consistent with NC Act listing**

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4.1.2 NATURAL TEMPERATE GRASSLAND

Natural Temperate Grassland of the South Eastern Highlands is listed as Critically Endangered under both the EPBC Act and NC Act.

Existing mapping suggests that the study area would not consists of natural temperate grassland for the following reasons:

- the study area is outside the area identified in pre-1750 lowland native grassland in the ACT (Environment ACT 2005)
- study area is not identified as a native grassland in ACT native grassland conservation strategy and action plan
- study area is mapped as potential box gum woodland (ACT Government 2021).

Despite existing mapping, there was no evidence on site of past clearing or regeneration of canopy species. The site is low within the landscape and it is considered that the site may have historically consisted of native grassland community. As the vegetation within the study area was not consistent with Box Gum Woodland derived grassland, an assessment was also undertaken against Natural Temperate Grassland listed threatened ecological community.

4.1.2.1 EPBC ACT LISTED COMMUNITY

Within the study area, native grassland broadly corresponds to the EPBC Act listed *Natural Temperate Grassland of the South Eastern Highlands* community (Table 4.2).

Table 4.2 Key diagnostic characteristics of EPBC Act listed *Natural Temperate Grassland of the South Eastern Highlands*

NATURAL TEMPERATE GRASSLAND OF THE SOUTH EASTERN HIGHLANDS	CONSISTENCY OF SITE WITH DIAGNOSTIC CHARACTERISTICS
Sites are generally confined to the South Eastern Highlands bioregion.	Yes
Sites typically occur at elevations between 350–1200 m above sea level, but may occur as low as 250 m, due to influences of local microclimate.	Yes
Native grasses usually are dominant and include one or more of the following, depending on the association present: – The major dominant or co-dominant grass species in NTG–SEH are: *Themeda triandra* syn. *T. australis* (Kangaroo grass), *Poa sieberiana* (Snowgrass), *Poa labillardierei* (River Tussock Grass), *Austrostipa bigeniculata* (Kneed Speargrass), *Austrostipa scabra* (Slender speargrass), *Bothriochloa macra* (Red Grass), various *Rytidosperma* species syn. *Austrodanthonia* species (Wallaby Grasses) and *Lachnagrostis* spp. (Blowngrasses). – Other grasses that commonly occur, and might form a dominant area within a patch, include *Aristida* spp. (Wiregrasses), *Austrostipa densiflora* (Fox-tail Speargrass), *Dichelachne* spp. (Plume Grasses), indigenous *Eragrostis* spp. (Lovegrasses) and *Poa meionectes* (Fine-leaf Tussock-grass, Short Snowgrass). – Other grasses that are frequently present, though seldom dominant, include *Anthosachne scaber* syn. *Elymus scaber* (Common Wheatgrass), *Panicum effusum* (Hairy Panic), *Chloris truncata* (Windmill Grass), and *Enneapogon nigricans* (Nine-awned Grass).	Yes Species included *Bothriochloa macra* (Red Grass), *Austrodanthonia* species (Wallaby Grasses), *Chloris truncata* (Windmill Grass)
Native sedges may be dominant or co-dominant in some associations, typically *Carex appressa* (Tussock Sedge) or *C. bichenoviana* (Plains Sedge).	n/a

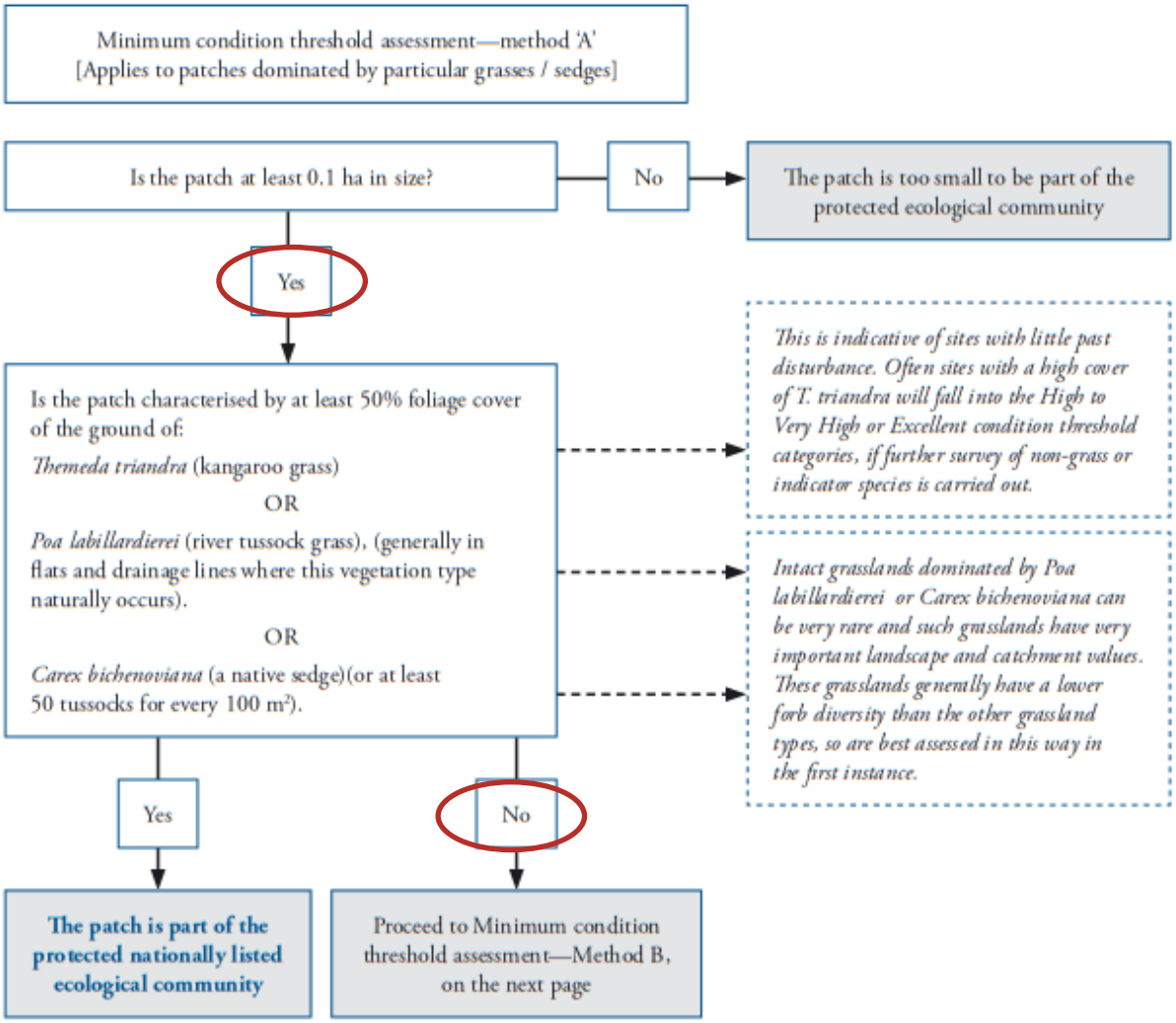
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NATURAL TEMPERATE GRASSLAND OF THE SOUTH EASTERN HIGHLANDS	CONSISTENCY OF SITE WITH DIAGNOSTIC CHARACTERISTICS
Typically, a range of native forb species are present, or, in recently disturbed Sites, components of the indigenous native species (including both existing plants and reproductive propagules in the soil e.g. soil seed banks) are present that are sufficient to re-establish the characteristic native groundcover. Typical forb species for each of the defined associations are outlined in Armstrong et al. (2013).	No
A tree, shrub or sub-shrub layer may be present, with up to 10% Projective foliage cover of each layer being present.	Tree and shrub layer absent.
The area is not a derived or secondary grassland (i.e. a grassland derived from clearing of a woodland or forest community), as assessed by the following criteria: There is no evidence of trees formerly occurring on the Site in a density greater than that which would produce a 10% Projective foliage cover (e.g. there are no stumps, regularly spaced depressions in the ground that were once occupied by tree stumps and that may or may not retain pieces of dead timber, or significant amounts of fallen timber, and/or there are no trees of woodland or forest tree species in a woodland or forest formation adjacent to or near the Site, on similar topographical positions and geological substrates); if these signs are evident, then the Site is likely to be a derived or secondary grassland. As a derived grassland, it may be part of another Threatened ecological community that is listed nationally (EPBC Act) or under ACT, NSW or Victorian legislation. - Natural grasslands in some regions are restricted to frost hollows or on heavy soils, where trees will not usually persist. Sites that are difficult to determine as natural or derived grassland should be considered to be part of NTG–SEH, if they otherwise meet the Description and Key Diagnostic Characteristics.	Study area is not identified as a native grassland in ACT native grassland conservation strategy and action plan. Study area is mapped as potential box gum woodland (ACT Government 2021) However, there is no evidence of past clearing or regeneration of canopy. Unclear if site is natural or derived grassland.
CONCLUSION: Since sites that are difficult to determine as natural or derived grassland should be considered to be part of the listed community, Native grassland areas require further assessment against condition criteria for this community	

As vegetation in study area is broadly consistent with the key diagnostic characteristics outlined in Natural Temperate Grasslands in the Approved Conservation Advice (Threatened Species Scientific Committee 2016), a condition threshold assessment was undertaken to determine if condition meets the listing criteria.

The vegetation within the study area was not of sufficient condition to meet the EPBC Act listed community (Figure 4.2 and Figure 4.3).

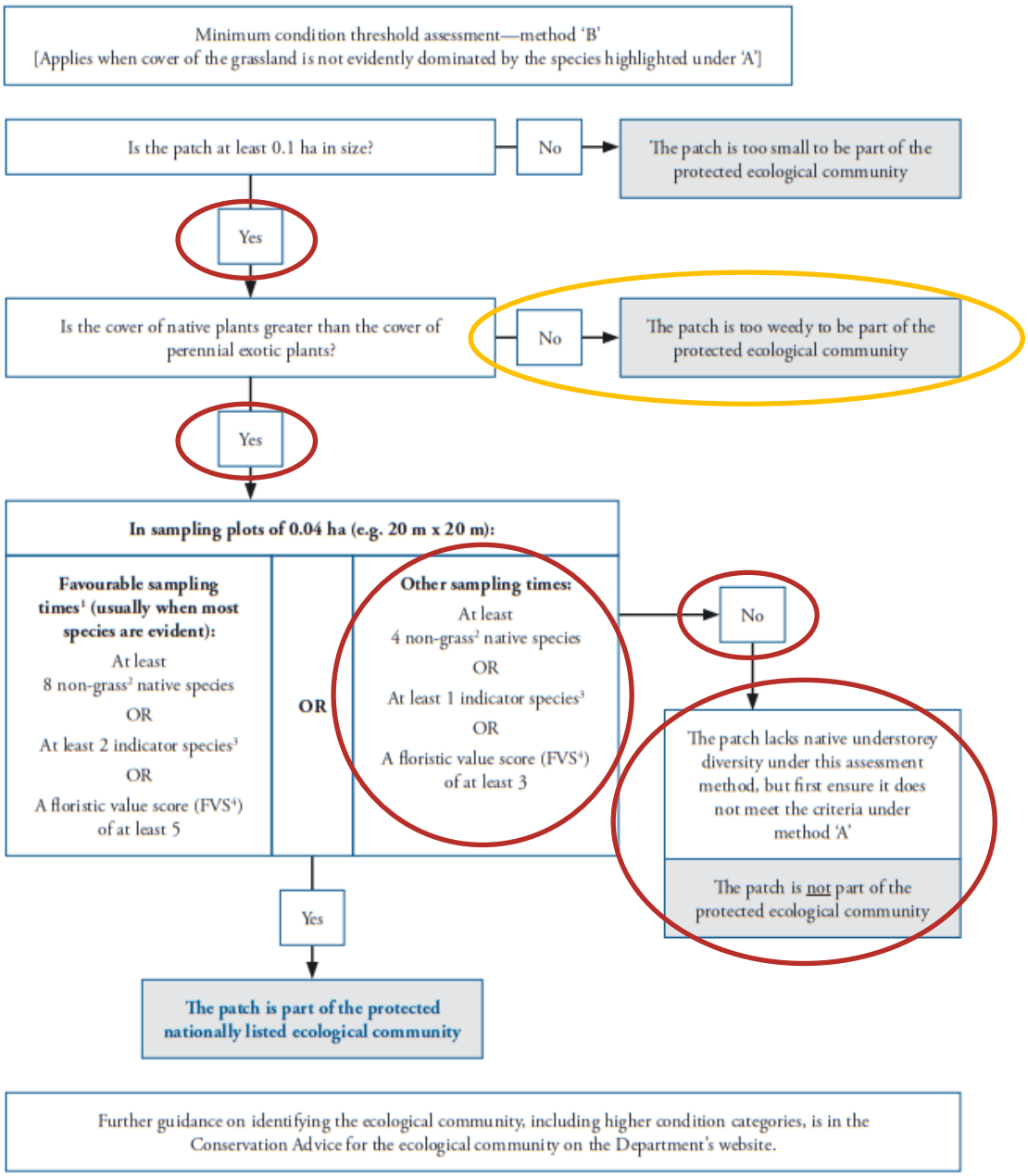
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Please note:

- Assessments of a patch should initially be centred on the area of highest native floristic diversity.
- Consideration must be given to the timing of surveys and recent disturbance.
- The minimum patch size for consideration as part of the listed ecological community is 0.1 ha (e.g. 50 m x 20 m), but other condition thresholds must also be met.
- The surrounding context of a patch must also be taken into account when considering factors that add to the importance of a patch that meets the condition thresholds.
- The list of Indicator species referred to in the Condition Thresholds, can be found on the Species Profiles and Threats (SPRAT) database, on the Department's website[3].
- A relevant expert (e.g. ecological consultant, local NRM or environment agency) may be useful to help identify the ecological community and its condition.

Figure 4.2 Flowchart to identify Natural Temperate Grassland of the South Eastern Highlands ecological community meeting the minimum condition thresholds A for national protection



1. To be assessed in spring to early summer, and/or other time when native plant species are most evident (e.g. significant recent rainfall that has stimulated flowering of native plants). Or if these conditions not present, counts may be estimated from multiple surveys of the same site in different seasons or years.

2. Non-grass species include forbs/herbs (wildflowers), lilies, orchids, rushes and low shrubs. It does not include trees and, for the purposes of these thresholds, sedges.

3. Indicator species are native plant species that are useful surrogates for conservation value of a patch, and are typically disturbance sensitive species. The list is found on the ecological community profile on the Species Profiles and Threats Database (SPRAT), on the Department's website.

4. Floristic Value Score is a method of measuring the quality of a grassland site, based on Rehwinkel (2015) (see the Conservation Advice for the full reference).

Notes: red = native dominated grassland, orange = Exotic Grassland and Amenity Planting Native

Figure 4.3 Flowchart to identify Natural Temperate Grassland of the South Eastern Highlands ecological community meeting the minimum condition thresholds B for national protection

4.1.2.2 NC ACT LISTED COMMUNITY

Natural Temperate Grassland is listed as Critically Endangered under the NC Act. This community is defined by the vegetation structure and dominance by native species of perennial tussock grasses and a diversity of native forbs. This community is dominated by moderately tall (25–50 cm) to tall (50 cm–1.0 m) dense to open native tussock grasses (*Themeda triandra*, *Rytidosperma* species, *Austrostipa* species, *Bothriochloa* macra, *Poa* species). There is also a diversity of native herbaceous plants (forbs), which may comprise up to 70% of species present. The community is naturally treeless or may contain up to 10% cover of trees or shrubs in its tallest stratum. In the ACT, it occurs up to 1200 m above sea level in locations where tree growth is limited by cold air drainage (ACT Scientific Committee 2020).

Although the study area is mapped as "potential Box Gum Woodland" it is difficult to determine if the vegetation on site is a natural or derived grassland community. Given the low landscape position of native dominated grassland Native dominated grassland areas, occurring in the north western corner of the study area would be consistent with *Natural Temperate Grassland* as listed under the NC Act, albeit in low condition.

4.2 THREATENED SPECIES HABITAT

Based on the results of database searches, 21 threatened flora species and 52 threatened fauna species (Appendix B) were identified as occurring or likely to occur in the locality.

No threatened flora species were considered likely to occur within the study are due to the absence of suitable habitat and the level of regular disturbance including mowing.

Four threatened fauna species were considered to have a moderate or higher likelihood of occurring within the study area.

Table 4.3 Threatened species with potential habitat within the study area

COMMON NAME	SCIENTIFIC NAME	EPBC ACT	NC ACT	HABITAT
Little Eagle	*Hieraaetus morphnoides*	–	V	Foraging habitat
Superb Parrot	*Polytelis swainsonii*	V	V	Foraging habitat. This species was recorded outside the study area, adjacent to the existing school (including potential nesting hollow).
Golden Sun Moth	*Synemon plana*	CE	E	Marginal habitat.
Striped Legless Lizard	*Delma impar*	V	V	Marginal habitat in unmown grassland on/near northern boundary of study area.

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5 CONCLUSIONS AND RECOMMENDATIONS

The majority of the study area consists of grassland. Native Amenity Planting occurs along the north eastern boundary of the site. These trees are small and no hollows were recorded. These trees do however, provide habitat for common species of bird and a visual buffer to the residential development.

The majority of the study area is dominated by exotic vegetation, however, a small area of native dominated grassland occurs in the north western corner of the study area. Further to the north west, outside the study area is and unmown drainage line.

The vegetation within the site was not consistent with any EPBC Act listed ecological community. Native dominated grassland, restricted to a north western corner of the study area, was consistent with low condition native pasture and was considered to be potentially consistent with NC Act listed Natural Temperate Grassland.

The study area provides potential habitat for four threatened species (Table 5.1).

Table 5.1 Threatened species with potential habitat within the study area

COMMON NAME	SCIENTIFIC NAME	EPBC ACT	NC ACT	HABITAT	DISCUSSION AND RECOMMENDATIONS
Little Eagle	*Hieraaetus morphnoides*	–	V	Foraging habitat.	Although species may occur on occasion, removal of foraging habitat unlikely to significantly impact species.
Superb Parrot	*Polytelis swainsonii*	V	V	Foraging habitat. This species was recorded outside the study area, adjacent to the existing school (including potential nesting hollow).	Include mitigation measures as part of CEMP to minimise potential impacts to nearby birds. This could include timing of construction work and noise controls.
Golden Sun Moth	*Synemon plana*	CE	E	Marginal habitat.	Undertake surveys during flying season as a precaution.
Striped Legless Lizard	*Delma impar*	V	V	Marginal habitat in unmown grassland on/near northern boundary of study area.	Include mitigation measures as part of CEMP to minimise potential indirect offsite impacts.

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To minimise impacts to biodiversity it is recommended that:

- development design avoids impacting
  - amenity planting
  - native dominated grassland
  - drainage line
- mitigation measures are included in construction environmental management plan (CEMP) to minimise off-site indirect impacts to biodiversity including run-off and noise
- targeted surveys are undertaken for Golden Sun Moth in accordance with the 'Significant impact guidelines for the critically endangered Golden Sun Moth' (Department of Environment Water Heritage and the Arts 2009), namely:
  - surveys are undertaken during the local flying season (typically late October to early January)
  - surveys are conducted over at least four suitable days, at approximately weekly intervals
  - a local reference site is surveyed to confirm species is flying during surveys
  - surveys are conducted during appropriate conditions for the species:
    - warm to hot days (i.e. above 20°C by 10 am)
    - during the warmest part the day (10 am to 2 pm)
    - on clear or mostly cloudless sky, with still or relatively still wind conditions
    - at least two days since rain
  - if detected onsite, surveys should focus on determining the relative distribution of the species on the site.

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6.4 DISCLAIMER

No warranty, undertaking or guarantee whether expressed or implied, is made with respect to the data reported or the Conclusions drawn. To the fullest extent permitted at law, WSP, its related bodies corporate and its officers, employees and agents assumes no responsibility and will not be liable to any third party for, or in relation to any losses, damages or expenses (including any indirect, consequential or punitive losses or damages or any amounts for loss of profit, loss of revenue, loss of opportunity to earn profit, loss of production, loss of contract, increased operational costs, loss of business opportunity, site depredation costs, business interruption or economic loss) of any kind whatsoever, suffered on incurred by a third party.

6.5 ECOLOGY SURVEY LIMITATIONS

The diversity of flora and fauna species recorded in this study are a sample from preliminary research and single day of field survey, meaning a full inventory of species was not made, and therefore these findings should not be regarded as a comprehensive list of the species present at the site. It is unlikely that every species present was recorded.

No sampling technique can totally eliminate the possibility that a species is present. For example, some species of plant may be present in the soil seed bank and some fauna species use habitats on a sporadic or seasonal basis and may not be present during surveys.

Flora and fauna occurrence and detectability can vary with climatic, seasonal and weather conditions, a period of several seasons or years is typically required to identify all the species at a site. The conclusions of this report are consequently based on current available data and sources, along with the conditions of the study area and weather at the time of the survey. This study has aimed to identify the presence of threatened species and threatened ecological communities, along with available habitat for threatened species, acknowledging that presence and habitat conditions can change with time.

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APPENDIX A

VEGETATION PLOT DATA

A1 PLOT DATA

SPECIES	REGIONAL SIGNIFICANCE RATING[1]	COVER ABUNDANCE SCORE[2]		
		Plot 1	Plot 2	Plot 3
Arctotheca calendula	Y	2	1	
Bothriochloa macra	C	4	4	7
Bromus catharticus	Z			3
Chloris truncata	C	4		3
Cirsium vulgare	Y	1	1	
Eleusine tristachya	Z	4	4	4
Eragrostis curvula	X	3	5	3
Hypochaeris radicata	Y	2	2	2
Panicum effusum	C	1	3	4
Paspalum dilatatum	X	5	6	4
Plantago lanceolata	Y	1	2	1
Rumex brownii	C	1	1	
Rumex brownii	C			
Rytidosperma sp.(any unidentified species except R. pallidum)	C	4	3	3
Sonchus oleraceus	Z	1	1	
Taraxacum officinale	Y	1	2	
Verbascum thapsus	Y	1		
Floristic Value Score		0.72	1	1.2
Number of indicator species		0	0	0
Number of non-grass native species		1	1	0
Number of exotic species		10	9	6
Number of significant weed species (level X species)		2	2	2
Weed value score		8.4	8.9	8

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Notes for table above: 1)

REGIONAL SIGNIFICANCE CODES		
A	Indicator species	Species that are uncommon in the region, and where they occur, generally indicate grassland sites of high to very high value; such species occur very rarely or in very low numbers in grasslands that have been subject to intense, frequent, long-term or sometimes even one-off disturbances, such as, ploughing, heavy stock grazing pressures or application of fertilisers; some of these species are also inherently rare.
B	Indicator species	Species that are more common in grassland sites, relative to level 2 species; they generally occur less frequently in highly disturbed sites, though some persist with intermediate levels of disturbance.
C	Common or increaser species	Species that are thought to be 'disturbance-tolerant', 'disturbance responding' or 'increaser' species; increasers respond positively to various disturbances and are thus most commonly recorded in disturbed or degraded sites.
X	Very high impact weed	very high-impact weed species, such as Phalaris (*Phalaris aquatica*), African Love-grass (*Eragrostis curvula*), the exotic stipoid grasses, Serrated Tussock (*Nassella trichotoma*) and Chilean Needle-grass (*N. neesiana*) and Coolatai Grass (*Hyparrhenia hirta*); they are often, though not always and in every region, declared noxious weeds, are the most intractable species, and if occurring over a large proportion of the site, may render the site's value to be low, despite its other inherent values, as they are difficult, time-consuming and costly to remove without also severely impacting on the native species at the site.
Y	Significant weed	these are the more significant and persistent species, mostly either perennial, or biennial, and sometimes woody; they include species such as Cootamundra Wattle (*Acacia baileyana*), Sweet Briar (*Rosa rubiginosa*), St John's Wort (*Hypericum perforatum*) Cat's-ear (*Hypochaeris radicata*), goat's-beards (*Tragopogon* spp.) and Goose Grass (*Eleusine tristachya*); these species can usually be easily removed, even if occurring in high cover over a site.
Z	Common weed	these include the common, though low-impact, mostly annual weeds; these are equivalent to the 'level C' native flora species; they generally have little impact on the grassland's values.

2) Cover and Abundance scores

COVER AND ABUNDANCE SCORES	
1	< 5% cover and solitary (<4 individuals)
2	< 5% cover and few (4–15 individuals)
3	< 5% cover and numerous (>15 individuals)
4	5% – <25% cover
5	25% – <50% cover
6	50% – <75% cover
7	75 or greater % cover

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APPENDIX B

THREATENED SPECIES LIKELIHOOD ASSESSMENT

B1 THREATENED FLORA LIKELIHOOD ASSESSMENT

SCIENTIFIC NAME	COMMON NAME	EPBC ACT STATUS[1]	NC ACT STATUS[2]	HABITAT	LIKELIHOOD OF OCCURRENCE ASSESSMENT
Ammobium craspedioides	Yass Daisy	V	–	Found from near Crookwell on the Southern Tablelands to near Wagga Wagga on the South Western Slopes. Most populations are in the Yass region. Found in moist or dry forest communities, Box-Gum Woodland and secondary grassland derived from clearing of these communities. Grows in association with a large range of eucalypts (*Eucalyptus blakelyi, E. bridgesiana, E. dives, E. goniocalyx, E. macrorhyncha, E. mannifera, E. melliodora, E. polyanthemos, E. rubida*). Apparently unaffected by light grazing, as populations persist in some grazed sites. (Office of Environment & Heritage 2015).	**Low** – not known to occur in area, closest populations are within the Yass area in NSW. Marginal habitat in project area.
Calotis glandulosa	Mauve Burr-daisy	V	–	The species occurs in the Monaro and Kosciuszko regions, and the upper Shoalhaven catchment. There are also old records from the Dubbo area, near Oberon, and Mt Imlay. The species grows in montane and subalpine grasslands in the Australia Alps. Usually in subalpine grassland dominated by Poa spp., montane or natural temperate grassland dominated by *Themeda australis*, and Snow Gum Woodlands on the Monaro and Shoalhaven area. It is a coloniser of bare patches, often occurring on roadsides. The species flowers in spring and summer (Office of Environment & Heritage 2018).	**Low** – not known to occur within area, lack of preferred habitat in project area.
Leucochrysum albicans var. tricolor	Hoary Sunray	E	–	The species occurs in a wide range of communities and habitats occurring within grasslands, grassy areas in woodlands and dry open forests and modified landscapes on a variety of soils types. This subspecies is restricted to the central and southern tablelands and the central western slopes (Royal Botanic Gardens 2007).	**Moderate –** potential habitat within project area.

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SCIENTIFIC NAME	COMMON NAME	EPBC ACT STATUS[1]	NC ACT STATUS[2]	HABITAT	LIKELIHOOD OF OCCURRENCE ASSESSMENT
Rutidosis leptorhynchoides	Button Wrinklewort	E	E	Occurs in Box-Gum Woodland, secondary grassland derived from Box-Gum Woodland or in Natural Temperate Grassland; and often in the ecotone between the two communities. Grows on soils that are usually shallow, stony red-brown clay loams; tends to occupy areas where there is relatively less competition from herbaceous species (either due to the shallow nature of the soils, or at some sites due to the competitive effect of woodland trees). Exhibits an ability to colonise disturbed areas (e.g. vehicle tracks, bulldozer scrapings and areas of soil erosion). Normally flowers between December to March; plants do not usually flower until their second year. Has regenerative buds at the surface of the soil but not below, so plants do not have the ability to resprout from underground structures; the stems usually die back in late summer or autumn and new basal leaves are evident by early winter. Thought to be insect pollinated, although the specific vectors are not known. Observed flourishing at a site a few years after the area was burnt by a wildfire. Apparently susceptible to grazing, being retained in only a small number of populations on roadsides, rail reserves and other un-grazed or very lightly grazed sites (Royal Botanic Gardens 2014).	**Moderate –** potential habitat within project area.
Lepidium ginninderrense	Ginninderra Peppercress	V	E	The Ginninderra Peppercress is known from only two natural sites and two planted sites in the north of the Australian Capital Territory (Department of the Environment and Energy 2018). Given the small distribution of the species, little is known about the species habitat requirements. One of the known natural population occurs in native grasslands on the flood plain of Ginninderra Creek, especially in locations where grass tussocks and other plant growth are short and open, thus there is little competition for space and light. At this site it is associated with Wallaby Grasses (*Rytidosperma* spp.), Windmill Grass (*Chloris truncata*), lemon Beauty-heads (*Calocephalus citreus*) and Fuzzweed (*Vittadinia muelleri*). The other known natural population occurs in patches alongside other native grassland species scattered across otherwise weedy paddocks (ACT Government 2017). The soil type over most of the site is a shallow red earth, with patches of colluvium on the footslopes and the population occurs at an altitude of c.580 metres (Department of the Environment and Energy 2019).	**Moderate –** potential habitat within project area. Species is not known to occur in area.
Lepidium hyssopifolium	Basalt Pepper-cress	E	–	Currently known from about 35 populations. Most occur in Tasmania, three in NSW, and seven in Victoria. In NSW, populations occur in Bathurst and Bungendore (Tumino 2010). Original habitat for the species was likely to be eucalypt and/or *Allocasuarina* woodland with a grassy understorey, and native temperate grasslands. Most remaining populations occur in heavily modified environments (Tumino 2010).	**Low –** no naturally occurring populations within ACT.

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SCIENTIFIC NAME	COMMON NAME	EPBC ACT STATUS[1]	NC ACT STATUS[2]	HABITAT	LIKELIHOOD OF OCCURRENCE ASSESSMENT
Bossiaea grayi	Murrumbidgee bossiaea	–	E	A wiry shrub growing to around 1.5 meters high. The species flowers from September to October and seeds in December. The species is found only with the ACT and is known from ten locations along the Murrumbidgee, Paddy's and Cotter Rivers. The species grows in sandy soil amongst boulders on river banks and adjacent slopes close to rivers, usually at the top of the riparian zone (Environment and Planning Directorate - Environment 2015).	**Low** - no preferred habitat within project area.
Swainsona recta	Small Purple Pea	E	E	Found in grassland and open woodland, often on stony hillsides (Royal Botanic Gardens 2004). Before European settlement it occurred in the grassy understorey of woodlands and open-forests dominated by Blakely's Red Gum (*Eucalyptus blakelyi*), Yellow Box (*E. melliodora*), Candlebark Gum (*E. rubida*) and Long-leaf Box (*E. goniocalyx*). Grows in association with understorey dominants that include Kangaroo Grass (*Themeda triandra*), poa tussocks (*Poa* spp.) and spear-grasses (*Austrostipa* spp.). Plants die back in summer, surviving as a rootstocks until they shoot again in autumn (Department of Environment and Climate Change 2008).	**Moderate –** potential habitat within project area.
Gentiana baeuerlenii	Baeuerlen's Gentian	E	E	The species is known from only one location in the Orroral Valley in Namadgi National Park. The species was previously known from the Quidong area near Bombala where it is now thought to be extinct from the area (Environment Planning and Sustainable Development Directorate 2017). In Namadgi National Park the species grows as an inter-tussock herb in moist tussock grassland and sedgeland associated with ground water, possibly a spring fed-area. The species has not been observed within Namadgi National Park since in the 1990s (Office of Environment & Heritage 2018).	**Low** – in ACT it is known only from Namadgi National Park, where it has not been seen since the 1990's.

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SCIENTIFIC NAME	COMMON NAME	EPBC ACT STATUS[1]	NC ACT STATUS[2]	HABITAT	LIKELIHOOD OF OCCURRENCE ASSESSMENT
Eucalyptus aggregata	Black Gum	V	V	Black Gum is found in the NSW Central and Southern Tablelands, with small isolated populations in Victoria and the ACT. Black Gum has a moderately narrow distribution, occurring mainly in the wetter, cooler and higher parts of the tablelands, for example in the Blayney, Crookwell, Goulburn, Braidwood and Bungendore districts (Office of Environment and Heritage 2017). In the ACT the species occurs to a very minor extent, with only 16 known mature trees in the wild in 2014. Older records identify a further two mature trees by the Kings Highway, but these have subsequently been removed (Department of the Environment and Energy 2019). The species grows on alluvial soils, on cold, poorly-drained flats and hollows adjacent to creeks and small rivers in the lowest parts of the landscape (Office of Environment & Heritage 2019). The species often occurs with other cold-adapted eucalypts such as Snow Gum (*Eucalyptus pauciflora*), manna Gum (*E. viminalis*), Candlebark (*E. rubida*), Black Sallee (*E. stellulata*), and Swamp Gum (*E. ovata*). Often occurs in open woodland formation with a grass ground layer dominated by Kangaroo Grass (*Themesa triandra*) or River Tussock (*Poa labillardierei*). The species also occurs as isolated paddock trees in pastures (Office of Environment & Heritage 2019).	**Low** – species is conspicuous, and no individuals or likely habitat identified in project area.
Arachnorchis actensis	Canberra Spider Orchid	CE	CE	The species is endemic to the ACT and is only known from three populations; slopes of Mount Ainslie and Mount Majura, and a more recently discovered population located in the Majura Valley on land managed by the Department of Defence as Majura Field Firing Range (Frawley 2010). At Mount Ainslie/ Majura the species grows in transitional vegetation zones between Yellow Box - Red Gum Tableland Grassland Woodland and Red Stringybark Tableland Grass/Shrub Forest at altitudes of 645 to 745 m. The species often occurs among rocks, in a groundcover of grasses, forbs, and low shrubs. Soils are shallow gravelly brown clay loam of volcanic origin (Frawley 2010)	**Low** – not known from area, closest records are Mount Majura (>10 km away). Marginal habitat within project area.
Pomaderris cotoneaster	Cotoneaster Pomaderris	E	–	Occurs in south-eastern NSW (South Coast and Southern Tablelands regions) south from the Moss Vale district and in far eastern Vic. (East Gippsland region). Usually growing on shallow soils with outcropping rock, often associated with clifflines (above, on or below) or riverbanks. The species occurs in dry, shrubby open forest on north-west to south-west facing slopes (Department of Agriculture Water and the Environment 2021).	**Low –** not known to occur within ACT. No preferred habitat within project area.
Corunastylis ectopa	Brindabella Midge Orchid	CE	CE	The species is endemic to the ACT and is only known from on hectare of the Brindabella Range within Namadgi National Park. It grows in an open part of the Namadgi eucalypt forest, on steep slope that aces north. It occurs amongst ground cover of low shrubs at 840 meters above sea level (Environment Planning and Sustainable Development Directorate 2012).	**Low –** known only from the Brindabella Ranges within ACT, no preferred habitat within project area.

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SCIENTIFIC NAME	COMMON NAME	EPBC ACT STATUS[1]	NC ACT STATUS[2]	HABITAT	LIKELIHOOD OF OCCURRENCE ASSESSMENT
Prasophyllum petilum	Tarengo Leek Orchid	E	E	Natural populations are known from a total of five sites in NSW. These area at Boorowa, Captains Flat, Ilford, Delegate and a newly recognised population c.10 k SE of Muswellbrook. It also occurs at Hall in the Australian Capital Territory. Grows in open sites within Natural Temperate Grassland at the Boorowa and Delegate sites. Also grows in grassy woodland in association with River Tussock (*Poa labillardieri),* Black Gum *(Eucalyptus aggregata)* and tea-trees (Leptospermum spp.) at Captains Flat and within the grassy groundlayer dominated by Kangaroo Grass (*Themeda triandra*) under Box-Gum Woodland at Ilford (and Hall, ACT). Highly susceptible to grazing, being retained only at little-grazed travelling stock reserves (Boorowa & Delegate) and in cemeteries (Captains Flat, Ilford and Hall) (Office of Environment & Heritage 2015, Department of the Environment and Energy 2019).	**Moderate** – known to occur at Hall (3 km away). Potential habitat within project area.
Pterostylis oreophila	Blue-tongued Greenhood, Kiandra Greenhood	CE	CE	Kinadra Greenhood is a terrestrial orchid found in four distinct geographic locations being the Brindabella Ranges in the ACT, Kiandra and Bago areas of NSW, and northeast Victoria (Department of Sustainability Environment Water Population and Communities 2012). The species extent and area of occupancy are unknown; however its geographic distribution is considered to be restricted as indicated by the low number of mature plants and severe fragmentation. The species grows beside small montane and subalpine streams under tall dense thickets of *Leptospermum grandiflorum* (mountain tea tree), in black oozing mud or less commonly in peaty soils and sphagnum mounds (Department of Sustainability Environment Water Population and Communities 2012). The species is more commonly found in low-light conditions, however appears to also tolerate full sun (Office of Environment and Heritage 2018).	**Low** - known only from the Brindabella Ranges within ACT, no preferred habitat within project area.
Amphibromus fluitans	River Swamp Wallaby-grass	V	–	The species occurs in southern NSW, Victoria, South Australia, and Tasmania. In NSW historic collections come from the Albury area, Along the Murray River, and along the Murrumbidgee River. It grows in moderately fertile soil, with some bare ground, and conditions that are caused by seasonally fluctuating water levels. The specie mostly grows in permanent swamps, but also occurs in billabongs, lagoons, dams, and in roadside ditches (Department of the Environment and Energy 2018).	**Low** – preferred habitat in the form of swamps, billabongs, lagoons, and dams does not occur within the project area. Species not known to occur within ACT.
Muehlenbeckia tuggeranong	Tuggeranong Lignum	E	E	Known from a few sites on flood terraces along the eastern bank of the Murrumbidgee River South of Canberra. Grows on terraces prone to occasional flooding and on adjacent gentle slopes at an altitude of 550 m growing on coarse-textured alluvium, mainly quarzitic sand and gravel (Department of the Environment 2015).	**Low** - no potential habitat occurs within project area.

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SCIENTIFIC NAME	COMMON NAME	EPBC ACT STATUS[1]	NC ACT STATUS[2]	HABITAT	LIKELIHOOD OF OCCURRENCE ASSESSMENT
Pomaderris pallida	Pale Pomaderris	V	V	Pale Pomaderris has been recorded from near Kydra Trig, north-west of Nimmitabel, Tinderry Nature Reserve, and the Queanbeyan River. A record from Byadbo in Kosciuszko National Park has not been relocated. The main distribution is along the Murrumbidgee in the ACT. It was recorded recently in eastern Victoria. This species usually grows in shrub communities surrounded by Brittle Gum (*Eucalyptus mannifera*) and Red Stringybark (*E. macrorhyncha*) or *Callitris* spp. woodland (Royal Botanic Gardens 2009).	**Low –** not known to occur in area. No preferred habitat within project area.
Thesium australe	Austral Toadflax	V	V	Grows in grassland on coastal headlands or grassland and grassy woodland away from the coast (Office of Environment & Heritage 2018). It is a semi-parasitic herb and hosts are likely to be *Themeda triandra* and *Poa* spp. (Harden 1992, Department of Environment and Climate Change 2008). Records within the ACT come from Mulligans Flat Nature Reserve in the north, and along the Murrumbidgee River and in Namadgi National Park in the south. In subalpine and tableland climates, the species dies back to rootstock during winter and resprouts in spring (Department of the Environment and Energy 2019).	**Moderate** – potential habitat within project area.
Senecio macrocarpus	Large-fruit Fireweed	V	–	*Senecio macrocarpus* occurs in SA, Victoria and NSW. In NSW, one population has been discovered near Gundaroo. In NSW, species occurs in partly cleared dry forests and box-gum woodlands which transition to Brittle Gum Forest with a relatively undisturbed understorey of native grasses, forbs and subshrubs (Department of Agriculture Water and the Environment 2021).	**Low –** not known to occur within ACT, closest known population occurs in Gundaroo, NSW.

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B2 THREATENED FAUNA LIKELIHOOD ASSESSMENT

SCIENTIFIC NAME	COMMON NAME	EPBC ACT STATUS[1]	NC ACT STATUS[2]	HABITAT DESCRIPTION	DATA SOURCE	LIKELIHOOD OF OCCURRENCE ASSESSMENT
Amphibians						
Litoria aurea	Green and Golden Bell Frog	V	V	Records from the ACT regions exist from the early 1960s to the mid-1980s from the Uriarra, Murrumbidgee and Ginninderra Creek areas (ACT Scientific Committee 2019). The species inhabits a wide range of waterbodies, including both natural and man-made structures, such as marshes, dams, stream sides and ephemeral ponds, particularly those containing bulrushes (*Typha* spp.) or spikerushes (*Eleocharis* spp.) (Office of Environment & Heritage 2017). It is found in small pockets of habitat in otherwise developed areas and can occur in disturbed sites. Optimum habitat includes unshaded water-bodies that are free of predatory fish (e.g. Plague Minnow (*Gambusia holbrooki*)) and have a grassy area nearby and diurnal sheltering sites available (Office of Environment & Heritage 2017). Terrestrial habitat such as consist of grassy areas and vegetation no higher than woodlands and a range of diurnal shelter sites such as rocks, logs, tussock forming vegetation (Department of Agriculture Water and the Environment 2020)	PMST ACT threatened species list ALA	**Low** – considered locally extinct within the ACT
Litoria booroolongensis	Booroolong Frog	E	–	Restricted to tablelands and slopes in NSW and north-eastern Victoria at 200-1300 m above sea level, predominantly along the western-flowing streams and their headwaters of the Great Dividing Range (Department of Agriculture Water and the Environment 2020). Live along permanent streams with some fringing vegetation cover such as ferns, sedges or grasses. Adults occur on or near cobble banks and other rock structures within stream margins and shelter under rocks or amongst vegetation near the ground on the stream edge (Office of Environment & Heritage 2017). One historic record (1977) of the species comes from the north west of the ACT on the Murrumbidgee River (Atlas of Living Australia 2020).	PMST	**Low** – no preferred habitat in study area

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SCIENTIFIC NAME	COMMON NAME	EPBC ACT STATUS[1]	NC ACT STATUS[2]	HABITAT DESCRIPTION	DATA SOURCE	LIKELIHOOD OF OCCURRENCE ASSESSMENT
Litoria castanea	Yellow-spotted Tree Frog	CE	CE	The species was once known from a northern and southern population. The northern population occurred in the New England Tablelands near the town of Guyra, NSW and the southern population had a distribution between Canberra, ACT and Bombala, NSW on the Southern Tablelands at altitudes between 700 and 800 m (Department of the Environment and Energy 2018). The species suffered extensive decline following the outbreak of the chytrid virus in the 1970s, and was believed to be extinct until rediscovered near Yass on the Southern Tablelands in 2009 (Office of Environment and Heritage 2017). The species is believed to be locally extinct within the ACT (ACT Scientific Committee 2019). The species requires large permanent ponds, swamps, lagoons, farm dams, and the still backwaters of rivers usually with tall reeds present (Office of Environment and Heritage 2017, Department of the Environment and Energy 2018). Shelters during autumn and winter in hollow centres of rotting logs, in earth surrounding uprooted trees, under fallen timber, rocks, other debris or thick vegetation (Office of Environment and Heritage 2017, Department of the Environment and Energy 2018).	PMST ACT threatened species list ALA	**Low** – considered locally extinct within the ACT.
Litoria raniformis	Southern Bell Frog	V	V	In the past, the Southern Bell Frog was distributed across a large area of south-east Australia, including Tasmania, at altitudes of up to 1300 m. Its range has declined over time with the most pronounced decline evident in NSW. In NSW and the ACT, the range of the species was centred on the Murray and Murrumbidgee River valleys and their tributaries (ACT Scientific Committee 2019). It is now thought to be locally extinct in the ACT (ACT Scientific Committee 2019). The species is usually found amongst emergent vegetation such as *Typha* sp. (Bullrushes), *Phragmites* sp. (reeds) and *Eleocharis* sp. (sedges) within or at the edges of still or slow-flowing water bodies such as lagoons, swamps, lakes, ponds, and farm dams (Robinson 1993, Department of Agriculture Water and the Environment 2020). It also occurs in clays or well-watered sandy soils, open grassland, open woodlands and forest, marshes and swamps, steep-banked water edges (e.g. ditches and drains), irrigation channels and crops, lignum shrublands, and at the periphery of rivers (Department of Agriculture Water and the Environment 2020). Refuge sites include soil cracks, fallen timber, debris and dense vegetation on low, frequently inundated floodplains (Cogger 2000 in Department of Agriculture Water and the Environment 2020).	ACT threatened species list	**Low –** considered locally extinct within the ACT.

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SCIENTIFIC NAME	COMMON NAME	EPBC ACT STATUS[1]	NC ACT STATUS[2]	HABITAT DESCRIPTION	DATA SOURCE	LIKELIHOOD OF OCCURRENCE ASSESSMENT
Litoria verreauxii alpine	Alpine Tree Frog	V	V	The Alpine Tree Frog occurs in the south-eastern NSW and Victorian high country (alpine and sub-alpine zones) generally above 1100 m asl. Most locations are within National Park and some are close to alpine resorts (Office of Environment and Heritage 2017). The species was previously thought to occur in Namadgi National Park but this has not been confirmed recently (Department of Agriculture Water and the Environment 2021). Found in a variety of habitats, including woodlands, grasslands, heath, and herb fields (ACT Scientific Committee 2019). The species uses a range of slow moving or still water bodies for breeding, including bogs, fens, stream pools, dams, drainage channels and wetlands. Non-breeding habitat and overwintering refuge may include general ground debris such as logs, leaf litter and rocks (Office of Environment and Heritage 2017).	ACT threatened species list	**Low** – closest ACT record is in Namadgi National Park, but this has not been recently confirmed. No preferred habitat in study area
Pseudophryne pengilleyi	Northern Corroboree Frog	CE	CE	Confined to the high country of the ACT and adjacent NSW, along the Brindabella and Bimberi Ranges and through the Fiery Range and Bogong Mountains (Department of the Environment and Energy 2018). The ACT population occurs as two subpopulations. One occurs only in the sub-alpine zone (above about 1400 m) from near the summit of Mount Bimberi northwards to Ginnini Flat. The other occurs at lower altitudes long the Brindabella Range from Bushrangers Creek in the ACT northwards to near California Flats in NSW (ACT Scientific Committee 2019). Habitat varies from summer to winter. In summer, breeding occurs in shallow pools and seepages in sphagnum bogs, wet tussock grasslands, fens and wet heath, and dry ephemeral waterbodies. They forage and shelter in montane forest, sub-alpine woodland and tall heath adjacent to breeding areas. Outside of the breeding season the species move away from pools to shelter under dense leaf litter, or under logs and rocks in adjacent woodland and tall moist heath (ACT Scientific Committee 2019).	ACT threatened species list	**Low** – closest known distribution is Brindabella ranges, no preferred habitat in study area.
Fish						
Gadopsis bispinosus	Two-spined Blackfish	–	V	The Two-spined Blackfish only occurs in inland drainages of south-eastern Australia, where it is restricted to cool, clear upland or montane streams with abundant instream cover, usually in the form of boulders and cobble. It is more often found in the medium to larger streams where there is greater water depth and lower stream velocity. It is not found in the smallest headwater streams but is generally found in forested catchments, where there is little sediment input to the stream from erosion or land management practices. In the ACT, the species is now found only in the Cotter River catchment upstream of the Cotter Dam (ACT Government 1999).	ACT threatened species list	**Low** – species confined to the Cotter River catchment in ACT

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SCIENTIFIC NAME	COMMON NAME	EPBC ACT STATUS[1]	NC ACT STATUS[2]	HABITAT DESCRIPTION	DATA SOURCE	LIKELIHOOD OF OCCURRENCE ASSESSMENT
Maccullochella macquariensis	Trout Cod	E	E	Once widespread in the south-eastern region of the Murray-Darling Basin with records from the Murray, Murrumbidgee and Macquarie rivers in NSW/ ACT and the Goulburn, Broken, Campaspe, Ovens, King, Buffalo and Mitta Mitta rivers in Victoria. The Murray River from Yarrawonga to Cobram is a large (60-100 m wide), slow flowing and deep (>3 m) river with a sand, silt and clay substrate, and contains abundant snags and woody debris. Seven Creeks (Victoria) is a relatively narrow (5-7 m wide) stream having a rock, gravel and sand substrate. The pools are generally less than 2 m deep and are interspersed by rapids and cascades. The physical characteristics of the Murrumbidgee River in the ACT are intermediate between Seven Creeks and the Murray River. In general, it appears that adults are essentially a pool dwelling, cover-seeking fish. In the ACT the species has been released in the Murrumbidgee River and associated tributaries (ACT Government 1999).	PMST ACT threatened species list ACTMapi – 7.9 km away (SW)	**Low** – no habitat available in study area
Maccullochella peelii	Murray Cod	V	–	The Murray Cod was historically distributed throughout the Murray-Darling Basin, which extends from southern Queensland, through NSW, the ACT and Victoria to South Australia, with the exception of the upper reaches of some tributaries. The species still occurs in most parts of this natural distribution, up to approximately 1000 m above sea level. It utilises a diverse range of habitats from clear rocky streams, such as those found in the upper western slopes of NSW (including the ACT), to slow-flowing, turbid lowland rivers and billabongs. Preferred microhabitat consists of complex structural features in streams such as large rocks, snags (pieces of large submerged woody debris), overhanging stream banks and vegetation, tree stumps, logs, branches and other woody structures. Known to occur in Lake Ginninderra (Department of the Environment 2016).	PMST ACTMapi – 4.2 km away (SE)	**Low** – no habitat available in study area
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/Nepean and Shoalhaven catchments. Macquarie Perch are found in both river and lake habitats; especially the upper reaches of rivers and their tributaries. It prefers clear water and deep, rocky holes with lots of cover. As well as aquatic vegetation, additional cover may comprise of large boulders, debris and overhanging banks. Spawning occurs just above riffles (shallow running water) (Department of the Environment and Energy 2019).	PMST ACT threatened species list ACTMapi – 7.9 km away (SW)	**Low** – no habitat available in study area

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SCIENTIFIC NAME	COMMON NAME	EPBC ACT STATUS[1]	NC ACT STATUS[2]	HABITAT DESCRIPTION	DATA SOURCE	LIKELIHOOD OF OCCURRENCE ASSESSMENT
Bidyanus bidyanus	Silver Perch	CE	E	The Silver Perch is found over a broad area of the Murray-Darling Basin and is often found in similar habitats to Murray Cod (*Maccullochella peelii*) and Golden Perch (*Macquaria ambigua*), i.e. lowland, turbid rivers. It prefers faster, open water, but the general scarcity of information on the habitat preferences of the species makes generalisation difficult. The species is not found in the cool, fast-flowing, upland rivers of the Murray-Darling Basin (ACT Government 2018). In the Canberra region the species has been recorded from the Murrumbidgee River where numbers recorded in a fish trap at Casuarina Sands between 1980 and 1991 declined noticeably from the mid-1980s (ACT Government 2018). In the last decade, there have been a small number of angler reports of the species within the Murrumbidgee River. In NSW bounding the ACT, the species is known from four other locations being: a stocked population in Googong Reservoir on the Queanbeyan River, a stocked population in the Yass weir pool on the Yass River; a stocked population in Lake George; and a population of unknown size in Burrinjuck dam (ACT Government 2018).	ACT threatened species list	**Low** – no habitat available in study area
Birds						
Anthochaera phrygia	Regent Honeyeater	CE; M	CE	Occurs mostly in box-ironbark forests and woodland and prefers wet, fertile sites such as along creek flats, broad river valleys and foothills. Riparian forests with *Casuarina cunninghamiana* and *Amyema cambagei* important for feeding and breeding. Spotted Gum and Swamp Mahogany forests are also important feeding areas in coastal areas. Important food trees include *Eucalyptus sideroxylon* (Mugga Ironbark), *E. albens* (White Box), *E. melliodora* (Yellow Box) and *E. leucoxylon* (Yellow Gum) (Garnett and Crowley 2000). Within the ACT Regent Honeyeaters movements are complex and usually dependent on the occurrence of blossom resource of several eucalypt species. In the ACT region individuals have regularly been associated with the occurrence of Yellow Box – Red Gum Grassy Woodland along the lower slopes of Mounts Ainslie and Majura, extending through Mulligans Flat Nature Reserve to the Sutton and Lake George areas. The occurrence of large heavily flowering eucalypts on fertile soils are important habitats for individuals. Due to the species rapid decline there has been few records of individuals within the ACT, and majority of sightings have been single birds or occasional pairs. It is perceived that the ACT region acts as an area for rare breeding summer visitors. Breeding records are rare - four pairs on the lowest western slopes of Mount Majura bordering Antill Street in Watson in early 1996 (ACT Government - Environment and Planning Directorate - Environment 2015).	PMST ACT threatened species list ALA	**Low–** preferred habitat not present

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SCIENTIFIC NAME	COMMON NAME	EPBC ACT STATUS[1]	NC ACT STATUS[2]	HABITAT DESCRIPTION	DATA SOURCE	LIKELIHOOD OF OCCURRENCE ASSESSMENT
Botaurus poiciloptilus	Australasian Bittern	E	E	The Australasian Bittern is a rare, non-breeding vagrant to the ACT. Most sightings in the region are outside the ACT. It occurs occasionally in the ACT at Jerrabomberra Wetlands and Lake Ginninderra. Opportunistic sightings at McKellar Wetland in 2014 and 2015 were recorded (ACT Scientific Committee 2019). Favours permanent freshwater wetlands with tall, dense vegetation, particularly bullrushes (*Typha* spp.) and spikerushes (*Eleocharis* spp.). Feeding platforms may be constructed over deeper water from reeds trampled by the bird; platforms are often littered with prey remains. Breeding occurs in summer from October to January; nests are built in secluded places in densely-vegetated wetlands on a platform of reeds (Parsons Brinckerhoff 2004).	PMST ACT threatened species list ALA	**Low** – previously known to occur on occasion at Lake Ginninderra (4 km away) but no preferred habitat in study area.
Calidris ferruginea	Curlew Sandpiper	CE, M	–	Curlew Sandpipers occur around the coasts and are also quite widespread inland, though in smaller numbers. In NSW, they are widespread east of the Great Divide, especially in coastal regions. They are occasionally recorded in the Tablelands and are widespread in the Riverina and south-west NSW, with scattered records elsewhere. Occurs in inter-tidal mudflats of estuaries, lagoons, mangrove channels and also around lakes, dams, floodwaters and flooded saltbush surrounding inland lakes. They are also recorded inland, though less often, including around ephemeral and permanent lakes, dams, waterholes and bore drains, usually with bare edges of mud or sand. They occur in both fresh and brackish waters (Morcombe 2003, Department of the Environment and Energy 2019).	PMST ALA	**Low** – no preferred habitat in study area.
Calyptorhynchus lathami	Glossy Black-Cockatoo	–	V	The species is uncommon although widespread throughout suitable forest and woodland habitats, from the central Queensland coast to East Gippsland in Victoria, and inland to the southern tablelands and central western plains of NSW, with a small population in the Riverina. It inhabits open forest and woodlands of the coast and the Great Dividing Range where stands of sheoak occur. Black Sheoak (*Allocasuarina littoralis*) and Forest Sheoak (*A. torulosa*) are important foods. Feeds almost exclusively on the seeds of several species of she-oak *(Casuarina* and *Allocasuarina* species), shredding the cones with the massive bill. In the ACT, they feed almost exclusively on Dropping Sheoaks (*Allocasuarina verticillata*) in larger stands. Major known feeding and breeding areas in Canberra are on Mount Majura and Mount Ainslie although have been sighted through surrounding nature reserves in the ACT. Dependent on large hollow-bearing eucalypts for nest sites (Office of Environment & Heritage 2015, ACT Government - Environment and Planning Directorate - Environment 2016).	ACT threatened species list ALA	**Low** – known to occur in Mount Majura and Mount Ainslie in ACT but sightings are rare and no preferred foraging habitat in study area.

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SCIENTIFIC NAME	COMMON NAME	EPBC ACT STATUS[1]	NC ACT STATUS[2]	HABITAT DESCRIPTION	DATA SOURCE	LIKELIHOOD OF OCCURRENCE ASSESSMENT
Climacteris picumnus victoriae	Brown Treecreeper (eastern subspecies)	–	V	The Brown Treecreeper is found in sub-coastal environments and the inland slopes of the Great Dividing Range from the Grampians in western Victoria, through central New South Wales to the Queensland border and north to the Bunya Mountains. In the ACT, the species is found in dry woodlands and open forest below 1000 m, including in the Clear Range and along the Lower Naas River, Campbell Park, Goorooyarroo, Burbong, former quarries south of the airport, and Castle Hill, north of Tharwa. Important habitat includes relatively undisturbed grassy woodland with native understorey; large living and dead trees for nesting and foraging and fallen timber on the ground layer (Office of Environment & Heritage 2014).	ACT threatened species list ALA	**Low – –** preferred habitat not present
Daphoenositta chrysoptera	Varied Sittella	–	V	The Varied Sittella inhabits most of mainland Australia except the treeless deserts and open grasslands. It inhabits eucalypt forests and woodlands, especially rough-barked species and mature smooth-barked gums with dead branches, mallee and Acacia woodland. The Varied Sittella feeds on arthropods gleaned from crevices in rough or decorticating bark, dead branches, standing dead trees, and from small branches and twigs in the tree canopy. It builds a cup-shaped nest of plant fibres and cobwebs in an upright tree fork high in the living tree canopy, and often re-uses the same fork or tree in successive years (Office of Environment & Heritage 2016). In the ACT, it is recorded in Aranda bushland, O'Connor and Bruce Ridges, Black Mountain, the Pinnacle Stringybark forest, Mt Ainslie–Campbell Park, Mulligan's Flat, Bluett's Eucalypt forest, Naas and Orroral valleys, Shepherd's Lookout and the Murrumbidgee River Corridor. In this region, the species has a preference for areas with Red Stringybark (*Eucalyptus macrorhyncha*) (ACT Government - Environment and Planning Directorate - Environment 2016).	ACT threatened species list ALA	**Low –** preferred habitat not present.

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SCIENTIFIC NAME	COMMON NAME	EPBC ACT STATUS[1]	NC ACT STATUS[2]	HABITAT DESCRIPTION	DATA SOURCE	LIKELIHOOD OF OCCURRENCE ASSESSMENT
Gallinago hardwickii	Latham's Snipe	M	–	The species occurs permanent and ephemeral wetlands up to 2000 m above sea level. They primarily inhabit open, freshwater wetlands with a form of shelter (commonly low, dense vegetation). Occasionally, they are also recorded in saline or brackish water habitats, in modified or artificial habitats, or close to human occupation. These habitats are primarily used during migration (Department of the Environment and Energy 2019). In Australia, the species most commonly inhabit flooded meadows, season or semi-permanent swamps, or open waters. They will utilise a range of other freshwater habitats, in which the structure and composition of vegetation does not appear to alter the suitability of these habitats. Therefore, suitable freshwater habitats may occur in tussock grasslands with reeds, rushed, and sedges, alpine or coastal heathland, lignum or tea-tree scrub, open forest, alpine herbfields, and button-grass plains (Department of the Environment and Energy 2019). Latham's Snipe is a fairly common visitor to the ACT. Canberra Ornithologists Group get regular recordings across the Territory (Canberra Ornithologists Group 2017), with higher number recorded at Jerrabomberra Wetlands, where a radio tracking program for the species started recently.	PMST	**Low** – no preferred habitat in study area.
Grantiella picta	Painted Honeyeater	V	V	Lives in dry forests and woodlands. Primary food is the mistletoes in the genus *Amyema,* though it will take some nectar and insects. Its breeding distribution is dictated by presence of mistletoes which are largely restricted to older trees. Less likely to be found in in strips of remnant box-ironbark woodlands, such as occur along roadsides and in windbreaks, than in wider blocks (Garnett and Crowley 2000). In the ACT region, the species has been recorded from a range of woodlands that contain mistletoe, including River Oak (*Casuarina cunninghamiana*) woodland associated with river systems, and Yellow Box–Red Gum Woodlands at locations such as Mulligans Flat and Campbell Park (ACT Government - Environment and Planning Directorate - Environment 2015).	PMST ACT threatened species list ALA	**Low** – lack of high quality habitat or mistletoe present at study area.
Hieraaetus morphnoides	Little Eagle	–	V	The Little Eagle is distributed throughout the Australian mainland occupying habitats rich in prey within open eucalypt forest, woodland or open woodland. Sheoak or acacia woodlands and riparian woodlands of interior NSW are also used. For nest sites it requires a tall living tree within a remnant patch, where pairs build a large stick nest in winter and lay in early spring. Prey includes birds, reptiles and mammals, with the occasional large insect and carrion. Most of its former native mammalian prey species in inland areas are extinct and rabbits now form a major part of the diet (Marchant and Higgins 1993, Office of Environment and Heritage 2017). Within the ACT sightings have been recorded across majority of the territory, however, breeding range has been restricted to the lower parts of northern ACT around the Murrumbidgee and Molonglo river corridors (ACT Government - Environment and Planning Directorate - Environment 2016).	ACT threatened species list ALA	**Moderate** – marginal foraging habitat. Breeding habitat not present.

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SCIENTIFIC NAME	COMMON NAME	EPBC ACT STATUS[1]	NC ACT STATUS[2]	HABITAT DESCRIPTION	DATA SOURCE	LIKELIHOOD OF OCCURRENCE ASSESSMENT
Hirundapus caudacutus	White-throated Needletail	M, V	V	It is almost exclusively aerial, from heights of less than 1 m up to more than 1000 m above the ground. Occurs in airspace over forests, woodlands, farmlands, plains, lakes, coasts and towns. Breeds in the northern hemisphere and migrates to Australia in October-April. It is widespread in eastern and south-eastern Australia, from the islands in Torres Strait and the tip of Cape York south to Tasmania (Pizzey and Knight 2007, Department of the Environment and Energy 2019).	PMST ACT threatened species list	**Low** – may occur on occasion in aerial spaces above study area.
Lalage tricolor	White-winged Triller	–	V	The species is found across Australia. It is resident near water in the north, but nomadic and seasonally migratory through central and southern Australia and vagrant in northern Tasmania. It is also found in Indonesia and New Guinea. In the ACT region, the species is an uncommon, breeding, summer migrant, and numbers vary from year to year. In the local area, the species is found in and around grassy woodland areas including Yellow Box–Red Gum, Apple Box, Candlebark, or less commonly, Snowgum woodlands. Important habitat includes large living and dead trees and areas of grass and fallen timber for foraging. In the ACT region, records of the species are widespread, but most records are from Hall, Mulligans Flat, Goorooyarroo, the Pinnacle, Campbell Park and the Gigerline–Tharwa area (ACT Government - Environment and Planning Directorate - Environment 2016).	ACT threatened species list ALA	**Low** – uncommon in region, may pass through area however important habitat not present.
Lathamus discolor	Swift Parrot	CE	CE	Breeding occurs in Tasmania, majority migrates to mainland Australia in autumn, over-wintering, particularly in Victoria and central and eastern NSW, but also south-eastern Queensland as far north as Duaringa. In mainland Australia it is semi-nomadic, foraging in flowering eucalypts in eucalypt associations, particularly box-ironbark forests and woodlands. Preference sites with highly fertile soils where large trees have high nectar production, including along drainage lines and isolated rural or urban remnants, and for sites with flowering *Acacia pycnantha*, is indicated. Sites used vary from year to year. In the ACT region, the Swift Parrot is associated with flowering and lerping eucalypts, particularly box-ironbark communities and Yellow Box – Red Gum Woodlands. It has the potential to occur anywhere below 700m and has also been recorded in suburban environments. Majority of records of the species have been from inner Canberra suburbs, Gungahlin and Hall (Garnett and Crowley 2000, Swift Parrot Recovery Team 2001, ACT Government - Environment and Planning Directorate - Environment 2015).	PMST ACT threatened species list ALA	**Moderate –** potential habitat in plantings at edge of study area.

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SCIENTIFIC NAME	COMMON NAME	EPBC ACT STATUS[1]	NC ACT STATUS[2]	HABITAT DESCRIPTION	DATA SOURCE	LIKELIHOOD OF OCCURRENCE ASSESSMENT
Melanodryas cucullata cucullata	Hooded Robin (South-Eastern)	–	V	Found in south-eastern Australia, generally east of the Great Dividing Range. Found in eucalypt woodland and mallee and acacia shrubland. This is one of a suite of species that has declined in woodland areas in south-eastern Australia (Garnett and Crowley 2000, Traill and Duncan 2000). The species occupies drier eucalypt forest, woodland and scrub, grasses and low shrubs, as well as cleared paddocks with regrowth or stumps. It avoids dense forests and urban areas. Yellow Box–Red Gum Grassy Woodland provides important habitat. The species appears unable to survive in remnants smaller than 100-200ha (Department of Environment and Conservation 2005). In the ACT, the species has been recorded at Mulligans Flat Nature Reserve, Goorooyarroo Woodlands, Newline Quarry, Majura Field Firing Range and Tharwa. Black Mountain, Campbell Park, Mt Ainslie and Tuggeranong Homestead may no longer support populations of the species (Department of Environment and Conservation 2005).	ACT threatened species list ALA	**Low –** marginal foraging habitat in plantings at edge of study area however this occurs adjacent to urban area
Numenius madagascariensis	Eastern Curlew	CE; M	–	Inhabits coastal estuaries, mangroves, mud flats and sand pits. It is a migratory shorebird which generally inhabits sea and lake shore mud flats, deltas and similar areas, where it forages for crabs and other crustaceans, clam worms and other annelids, molluscs, insects and other invertebrates. Its migration route ranges from its wintering grounds in Australia to its breeding grounds in northern China, Korea and Russia (Pizzey and Knight 2007).	PMST ALA	**Low** – no preferred habitat in study area.
Petroica boodang	Scarlet Robin	–	V	The Scarlet Robin is found from south east Queensland to south east South Australia and also in Tasmania and south west Western Australia. In NSW, it occurs from the coast to the inland slopes. After breeding, some Scarlet Robins disperse to the lower valleys and plains of the tablelands and slopes. Some birds may appear as far west as the eastern edges of the inland plains in autumn and winter. The Scarlet Robin lives in dry eucalypt forests and woodlands. The understorey is usually open and grassy with few scattered shrubs. This species lives in both mature and regrowth vegetation. It occasionally occurs in mallee or wet forest communities, or in wetlands and tea-tree swamps. Scarlet Robin habitat usually contains abundant logs and fallen timber: these are important components of its habitat. The Scarlet Robin breeds on ridges, hills and foothills of the western slopes, the Great Dividing Range and eastern coastal regions; this species is occasionally found up to 1000 metres in altitude.	ACT threatened species list ALA	**Low –** marginal habitat in plantings at edge of study area, though lacking woody debris.

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SCIENTIFIC NAME	COMMON NAME	EPBC ACT STATUS[1]	NC ACT STATUS[2]	HABITAT DESCRIPTION	DATA SOURCE	LIKELIHOOD OF OCCURRENCE ASSESSMENT
Polytelis swainsonii	Superb Parrot	V	V	The Superb Parrot occurs in south-eastern Australia where it occurs on inland slopes of the Great Divide and its adjacent plains. It mainly utilises eucalypt forests and woodland especially areas along river systems which consist of *Eucalyptus camaldulensis* (River Red Gum), *E. melliodora* (Yellow Box) and E. macrocarpa (Grey Box) (Department of the Environment and Energy 2019). The species is a summer breeding migrant to the ACT, and is gradually extending its range into the ACT from western woodlands (Canberra Ornithologists Group 2017). Within the region individuals inhabit Yellow Box-Red Gum Grassy Woodlands, with Blakey's Red Gum (E. blakelyi) being an important source for nesting hollows (ACT Government 2005). The species has been recorded across the ACT, however breeding records appear to be concentrated in the north of the territory, around the Belconnen and Gungahlin regions (Canberra Ornithologists Group 2017).	PMST ACT threatened species list ALA	**Recorded** - recorded flying over study area and nesting in hollow in large Eucalypt southwest of study area
Rostratula australis	Australian Painted Snipe	E; M	E	It has been recorded at wetlands in all states of Australia. It is most common in eastern Australia, where it has been recorded at scattered locations throughout much of Queensland, NSW, Victoria and south-eastern South Australia. Inhabits shallow, vegetated, temporary or infrequently filled wetlands, including where there are trees such as *Eucalyptus camaldulensis* (River Red Gum), *E. populnea* (Poplar Box) or shrubs such as *Muehlenbeckia florulenta* (Lignum) or *Sarcocornia quinqueflora* (Samphire). Feeds at the water's edge and on mudflats on seeds and invertebrates, including insects, worms, molluscs and crustaceans. Males incubate eggs in a shallow scrape nest (Garnett and Crowley 2000). Breeding habitat requirements may be quite specific and include; shallow wetlands with areas of bare wet mud and both upper and canopy cover nearby. Nest records are all, or nearly all, from or near small islands in freshwater wetlands (Department of the Environment and Energy 2019)	PMST ACT threatened species list ALA	**Low** – no preferred habitat in study area.
Falco hypoleucos	Grey Falcon	V	–	Grey Falcons occur in arid and semi-arid Australia, including the Murray-Darling Basin, Eyre Basin, central Australia and Western Australia. The species is mainly found where annual rainfall is less than 500 mm, except when wet years are followed by drought, when the species becomes more widespread. The Grey Falcon occurs at low densities across inland Australia. The ecology of the Grey Falcon is known almost entirely from anecdotal and opportunistic observations. The species frequents timbered lowland plains, particularly acacia shrublands that are crossed by tree-lined water courses. The species has been observed hunting in treeless areas and frequents tussock grassland and open woodland, especially in winter (Department of Environment and Energy 2019).	PMST	**Low –** ACT is not within species known or predicted distribution. No preferred habitat within study area.

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SCIENTIFIC NAME	COMMON NAME	EPBC ACT STATUS[1]	NC ACT STATUS[2]	HABITAT DESCRIPTION	DATA SOURCE	LIKELIHOOD OF OCCURRENCE ASSESSMENT
Actitis hypoleucos	Common Sandpiper	M	–	The Common Sandpiper frequents a wide range of coastal wetlands and some inland wetlands, with varying levels of salinity. It is mostly encountered along muddy margins or rocky shores and rarely on mudflats. It has been recorded in estuaries and deltas of streams, banks farther upstream; around lakes, pools, billabongs, reservoirs, dams and claypans, and occasionally piers and jetties. The muddy margins utilised by the species are often narrow and may be steep. The species is often associated with mangroves, and sometimes found in areas of mud littered with rocks or snags. Roost sites are typically on rocks or in roots or branches of vegetation, especially mangroves. The species is known to perch on posts, jetties, moored boats and other artificial structures, and to sometimes rest on mud or 'loaf' on rocks (Department of Agriculture Water and the Environment 2021)	PMST	**Low –** no preferred habitat within study area.
Calidris acuminata	Sharp-tailed Sandpiper	M	–	Occurs in a variety of habitats: tidal mudflat, mangrove swamps, saltmarshes, shallow fresh, brackish, salt inland swamps and lakes; flooded and irrigated paddocks, sewage farms and commercial saltfields (Department of Agriculture Water and the Environment 2021).	PMST	**Low** – no preferred habitat within study area
Pandion haliaetus	Eastern Osprey	M	–	The breeding range of the Eastern Osprey extends around the northern coast of Australia (including many offshore islands) from Albany in Western Australia to Lake Macquarie in NSW; with a second isolated breeding population on the coast of South Australia, extending from Head of Bight east to Cape Spencer and Kangaroo Island. The total range (breeding plus non-breeding) around the northern coast is more widespread, extending from Esperance in Western Australia to NSW, where records become scarcer towards the south, and into Victoria and Tasmania, where the species is a rare vagrant. Eastern Ospreys occur in littoral and coastal habitats and terrestrial wetlands of tropical and temperate Australia and offshore islands. They are mostly found in coastal areas but occasionally travel inland along major rivers, particularly in northern Australia (Department of Agriculture Water and the Environment 2021).	PMST	**Low –** no preferred habitat within study area.
Monarcha melanopsis	Black-faced Monarch	M	–	Mainly occurs in rainforests ecosystems. Sometimes found in or near eucalypt forests, woodlands. Especially occurs in 'marginal' habitat during winter or during migration (Department of Agriculture Water and the Environment 2021). The Canberra Ornithologists Group describes the species as a seldomly reported in the ACT, rarely occurring as far inland as the ACT. Records for the species occur from October to April (Canberra Ornithologists Group 2019).	PMST	**Low –** potential marginal habitat within the study area. The species may be observed during migration movements.

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SCIENTIFIC NAME	COMMON NAME	EPBC ACT STATUS[1]	NC ACT STATUS[2]	HABITAT DESCRIPTION	DATA SOURCE	LIKELIHOOD OF OCCURRENCE ASSESSMENT
Motacilla flava	Yellow Wagtail	M	–	This species occurs in a range of habitats including estuarine habitats such as sand dunes, mangrove forests and coastal saltmarshes. This species also occurs in open grassy areas including disturbed sites such as sports grounds and has been recorded on the edges of wetlands, swamps, lakes and farm dams. This species migrates from Asia to Australia in spring-summer. It has been recorded in the estuarine areas of the Hunter River in Newcastle NSW and in QLD and the north of NT and WA (Higgins, Peter et al. 2006).	PMST	**Low –** not known to occur within ACT. No preferred habitat in study area
Rhipidura rufifrons	Rufous Fantail	M	–	Occurs in a range of habitats including the undergrowth of rainforests/wetter eucalypt forests/gullies, monsoon forests paperbarks, sub-inland and coastal scrubs, mangroves, watercourses, parks and gardens. When migrating they may also be recorded on farms, streets and buildings. Migrates to SE Australia in October-April to breed, mostly in or on the coastal side of the Great Dividing Range (Pizzey and Knight 2007).	PMST	**Low -** species may be observed during migration movements; however, the study area does not contain preferred habitat.
Invertebrates						
Euastacus armatus	Murray River crayfish	–	V	The Murray River Crayfish inhabits large and small streams in a variety of habitats including cleared pasture and dry and wet sclerophyll forests at altitudes from close to sea level to over 700 m above sea level. The species prefers faster flowing cool water habitats of the main channels of rivers, in contrast to the Yabby, which prefers slow warm water and billabongs. In lowland rivers such as the Murray and lower Murrumbidgee, the species constructs burrows in the clay river banks for shelter. In the upland rivers with stony beds such as the Tumut, Goobarragandra and upper Murrumbidgee, the species tends to use the interstitial spaces between boulders and cobbles on the river bed for shelter. Within the ACT, it is mainly found in the Murrumbidgee River, but has also been recorded from the Cotter and Paddy's Rivers (ACT Government 2015).	ACT threatened species list ACTMapi (7.9 km away – SE)	**Low** – no habitat available in study area
Perunga ochracea	Perunga Grasshopper	–	V	Important habitat for the species appears to be natural temperate grassland dominated by wallaby, kangaroo and spear grasses with forb food plants located in the inter-tussock spaces. Grass tussocks are used also to escape predators. It may also occur in open woodland areas with a grassy understorey, including the endangered Yellow Box–Red Gum Grassy Woodland community. ACT locality records include Black Mountain, Gungahlin, Majura Valley, Canberra International Airport, Jerrabomberra Valley, Molonglo valley, the Campbell Park paddocks, Belconnen Naval Station, Hall, Kambah Pool, Mt Stromlo, Reid, Weetangera and Tuggeranong (Environment ACT 2006).	ACTMapi (4.6 km away (SE)) ACT threatened species list	**Low-** preferred habitat not present.

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SCIENTIFIC NAME	COMMON NAME	EPBC ACT STATUS[1]	NC ACT STATUS[2]	HABITAT DESCRIPTION	DATA SOURCE	LIKELIHOOD OF OCCURRENCE ASSESSMENT
Synemon plana	Golden Sun Moth	CE	E	The Golden Sun Moth's NSW populations are found in the area between Queanbeyan, Gunning, Young and Tumut. The species' historical distribution extended from Bathurst (central NSW) through the NSW Southern Tablelands, through to central and western Victoria, to Bordertown in eastern South Australia. Occurs in Natural Temperate Grasslands and grassy Box-Gum Woodlands in which groundlayer is dominated by wallaby grasses (*Austrodanthonia* spp). Grasslands dominated by wallaby grasses are typically low and open - the bare ground between the tussocks is thought to be an important microhabitat feature for the Golden Sun Moth, as it is typically these areas on which the females are observed displaying to attract males. Habitat may contain several wallaby grass species, which are typically associated with other grasses particularly spear-grasses *Austrostipa* spp. or Kangaroo Grass *Themeda australis*. The flight period is relatively short, typically lasting from six to eight weeks (during November and December in the ACT region, possibly earlier or later in other regions). Males fly only in bright sunshine during the warmest part of the day (1000 - 1400 hrs). Adults emerge continuously throughout the flying season (Office of Environment and Heritage 2017, Department of the Environment and Energy 2019).	PMST ACTMapi (approximately 660 m to north west) ACT threatened species list ALA	**Moderate** – small areas of potential habitat within study area.
Mammals						
Chalinolobus dwyeri	Large-eared Pied Bat	V	–	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. There are scattered records from the New England Tablelands and North West Slopes. Roosts in caves (near their entrances), crevices in cliffs, old mine workings and in the disused, bottle-shaped mud nests of the Fairy Martin, frequenting low to mid-elevation dry open forest and woodland close to these features. Females have been recorded raising young in maternity roosts (c. 20-40 females) from November through to January in roof domes in sandstone caves and overhangs. They remain loyal to the same cave over many years. Found in well-timbered areas containing gullies (Schultz, Coles et al. 1999).	PMST	**Low** – no roosting habitat identified within study area

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SCIENTIFIC NAME	COMMON NAME	EPBC ACT STATUS[1]	NC ACT STATUS[2]	HABITAT DESCRIPTION	DATA SOURCE	LIKELIHOOD OF OCCURRENCE ASSESSMENT
Dasyurus maculatus maculatus	Spotted-Tailed Quoll (Southern Subspecies)	E	V	Occurs from the Bundaberg area in south-east Queensland, south through NSW to western Victoria and Tasmania. In NSW, it occurs on both sides of the Great Dividing Range and north-east NSW represents a national stronghold (NSW National Parks and Wildlife Service 1999). In the ACT region, occasional sightings with confirmed occurrences in three locations in Namadgi National Park. Most sightings have occurred in timbered ranges and large remnant reserves (Department of Environment 2016). The preferred habitat occurs in wide range of forest types, although appears to prefer moist sclerophyll and rainforest forest types, and riparian habitat. Most common in large unfragmented patches of forest. It has also been recorded from dry sclerophyll forest, open woodland and coastal heathland, and despite its occurrence in riparian areas, it also ranges over dry ridges. Nests in rock caves and hollow logs or trees. Feeds on a variety of prey including birds, terrestrial and arboreal mammals, small macropods, reptiles and arthropods (NSW National Parks and Wildlife Service 1999, NSW National Parks and Wildlife Service 1999).	PMST ACT threatened species list ACTMapi (on site)	**Low** – though habitat is mapped in the area, no preferred habitat of sufficient size and quality was identified within study area.
Dasyurus viverrinus	Eastern Quoll		E	The Eastern Quoll was once widespread across mainland south-eastern Australia, but disappeared from the mainland in the 1960s, now persisting only in Tasmania (ACT Scientific Committee 2019). Since 2002, Eastern Quolls have been reintroduced to three mainland sites: Mt Rothwell Biodiversity Centre in Victoria, Mulligans Flat Woodland Sanctuary in the ACT (both fenced), and Booderee National Park in NSW (unfenced) (Department of Agriculture Water and the Environment 2021). The species is highly flexible in habitat selection, occupying dry sclerophyll forest, scrub heathlands, pasture and cultivated land. Home ranges vary between sexes and depending on habitat quality but range from a few hundred meters to over a kilometre a night (Office of Environment and Heritage 2019).	ACT threatened species list	**Low** – No wild populations currently occur in the ACT
Petauroides volans	Greater Glider	V	V	The Greater Glider has a restricted distribution in eastern Australia, from the Windsor Tableland in north Queensland to central Victoria, with an elevated range from sea level to 1200m above sea level. The species is largely restricted to eucalypt forests and woodlands, with a diet comprising of eucalypt leaves and occasional flowers. It is found in abundance in montane eucalypt forest with relatively old trees and an abundance of hollows. It also favours forests with a diversity of eucalypts to cater for seasonal variation in food abundance (Department of the Environment and Energy 2019). In the ACT region the species has been recorded in the Namadgi National Park and Tidbinbilla Nature Reserve during 2014 arboreal mammal surveys (ACT Government - Environment and Planning Directorate - Environment 2016).	PMST ACT threatened species list	**Low** – marginal foraging habitat but lack of preferred sheltering habitat (large, old hollows) within study area

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SCIENTIFIC NAME	COMMON NAME	EPBC ACT STATUS[1]	NC ACT STATUS[2]	HABITAT DESCRIPTION	DATA SOURCE	LIKELIHOOD OF OCCURRENCE ASSESSMENT
Petrogale penicillata	Brush-tailed Rock-wallaby	V	E	Occurs in inland and sub-coastal south eastern Australia where it inhabits rock slopes. It has a preference for rocks which receive sunlight for a considerable part of the day. Windblown caves, rock cracks or tumbled boulders are used for shelter. Occur in small groups or "colonies" each usually separated by hundreds of metres (NSW National Parks and Wildlife Service 2003). Within the ACT the species is presumed to be extinct, with the last confirmed sighting occurring at Wallaby Rocks in the TNR in 1959. However, the discovery of rock-wallaby skeletal material in NNP suggest a more recent occurrence of the species (Reside and Martin 1996). The nearest known extant colonies to the ACT are at Nattai National Park (156 km NNE of Canberra) and in Kangaroo Valley, NSW (187 km ENE of Canberra) (ACT Government - Environment and Planning Directorate - Environment 2015).	PMST ACT threatened species list	**Low** – presumed to be locally extinct, no habitat in study area.
Phascolarctos cinereus	Koala	V	V	In the ACT region, Koalas are thought to be present through the Brindabella Ranges and in the Orroral Valley, Tidbinbilla reserve and Namadgi National Park (Department of the Environment and Energy 2019). The species inhabits eucalypt woodlands and forests. Koalas Feed on the foliage of more than 70 eucalypt species and 30 non-eucalypt species, but in any one area will select preferred browse species. The preferred tree species vary widely on a regional and local basis. Some preferred species include Forest Red Gum (*Eucalyptus tereticornis),* Grey Gum (*E. punctata*.) in coastal areas, Tallowwood (*E. microcorys*) and Swamp Mahogany (*E. robusta)* are important food species, while in inland areas White Box (*E. albens*), Bimble Box (*E. populnea*) and River Red Gum (*E. camaldulensis*) are favoured (NSW National Parks and Wildlife Service 1999, NSW National Parks and Wildlife Service 2003, Office of Environment and Heritage 2017).	PMST ACT threatened species list	**Low** – marginal habitat present within study area though not known to occur here. No post 1980 records for the species within this area of the ACT.
Pseudomys fumeus	Smoky Mouse	E	E	In the ACT, the species was known from Namadgi National Park, however despite surveys, no live individuals have been recorded in the park since 1987. The Smoky Mouse occurs in a variety of vegetation communities, ranging from coastal heath to dry ridgeline forest, sub-alpine heath and, occasionally, wetter gullies. Except for the wetter sites, a consistent feature of Smoky Mouse habitats is the diversity of heath and bush-pea species present, combined with potential shelter sites in the form of woody debris or rocks. The vegetation at capture sites varies widely in age post-fire (Menkhorst and Knight 2004).	ACT threatened species list	**Low** – not recorded from ACT since the 1980's, no potential habitat within study area.

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SCIENTIFIC NAME	COMMON NAME	EPBC ACT STATUS[1]	NC ACT STATUS[2]	HABITAT DESCRIPTION	DATA SOURCE	LIKELIHOOD OF OCCURRENCE ASSESSMENT
Mastacomys fuscus mordicus	Broad-toothed Rat (mainland)		V	The Broad-toothed Rat has a fragmented distribution, having declined significantly since European settlement. Scattered records occur across the Great Diving Range from near Warburton (Victoria), to the Brindabella Range (ACT) and around Barrington Tops (NSW) (Threatened Species Scientific Committee, 2016). The species occurs in a range of habitats but is typically highly selective in any region. Preferred habitats include alpine and subalpine heathlands, grassland adjacent to boulder outcrops, swamps, sedgelands, coastal grassy or shrubby dunes, and occasionally forests with grassy understorey (Threatened Species Scientific Committee, 2016). The species occupies a complex of runways through dense vegetation of its wet grass, sedge or heath habitat or under snow in the winter (Office of Environment and Heritage, 2017d).	ACT threatened species list	**Low** – no preferred habitat within study area.
Pseudomys novaehollandiae	New Holland Mouse		V	New Holland Mouse has a fragmented distribution across Queensland, NSW, Victoria and Tasmania. In the ACT the species has likely been locally extinct since the 1880s, however the species has been reintroduced to Mulligans Flat Woodland Sanctuary (Department of the Environment and Energy, 2019k). Mulligans Flat Woodland Sanctuary is a predator-proof fenced sanctuary which has reintroduced many native woodland species (Capital Woodlands and Wetlands Conservation Trust, 2015). Habitat for the species includes open heathland, woodlands and forests with a heathland understorey and vegetated sand dunes (Office of Environment and Heritage, 2017e).	ACT threatened species list	**Low** - no wild populations of the species known to occur within the ACT.
Isoodon obesulus obesulus	Southern Brown Bandicoot (Eastern)		E	Inhabits a variety of habitats including heathland, shrubland, sedgeland, heathy open forest and woodland and are usually associated with infertile, sandy and well drained soils, but can be found in a range of soil types (Coates et al. 2008; Menkhorst and Seebeck 1990; NSW DEC 2006; Paull 1993). Within these vegetation communities they typically inhabit areas of dense ground cover. Species experts define suitable habitat for Southern Brown Bandicoots (eastern) to be any patches of native or exotic vegetation, within their distribution, which contains understorey vegetation structure with 50–80% average foliage density in the 0.2–1 m height range. In areas where native habitats have been degraded or diminished, exotic vegetation, such as Blackberry (Rubus spp.), can and often does, provide important habitat (DSEWPaC 2011g).	ACT threatened species list	**Low** – no potential habitat in study area.

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SCIENTIFIC NAME	COMMON NAME	EPBC ACT STATUS[1]	NC ACT STATUS[2]	HABITAT DESCRIPTION	DATA SOURCE	LIKELIHOOD OF OCCURRENCE ASSESSMENT
Pteropus poliocephalus	Grey-headed Flying-fox	V	V	Occurs in subtropical and temperate rainforests, tall sclerophyll forests and woodlands, heaths and swamps as well as urban gardens and cultivated fruit crops. Roosting camps are generally located within 20 km of a regular food source and are commonly found in gullies, close to water, in vegetation with a dense canopy. Feed on the nectar and pollen of native trees, in particular Eucalyptus, Melaleuca and Banksia, and fruits of rainforest trees and vines (Office of Environment and Heritage 2017, Department of the Environment and Energy 2019). The species is a regular visitor to the ACT during summer and autumn months and has more recently over-wintered in the ACT. A known camp is located in Commonwealth Park, a second camp was established more recently near Lake Ginninderra and a new roosting location was potentially identified at Kowen forest in 2018 (ACT Scientific Committee 2019).	PMST ACT threatened species list ALA	**Low** – known roost camp occurs at Lake Ginninderra (4 km away). Marginal foraging habitat within study area. May fly over or occur sporadically in study area.
Reptiles						
Aprasia parapulchella	Pink-tailed Worm Lizard	V	V	This lizard is known from four sites in eastern Australia: near Canberra in the ACT, Tarcutta and Bathurst in NSW, and near Bendigo in Vic. More specifically in the ACT, known habitat include areas around Queanbeyan and regions along the Murrumbidgee and Molonglo River corridors and on adjacent outlying hills (ACT Government - Environment Planning and Sustainable Development 2018). In general, lizards occur in open grassland habitats that have a substantial cover of small rocks (Osbourne and Jones 1995). Lizards also show a preference for sunny aspects, avoiding south facing slopes, these sites tend to be well drained. Some specimens have been collected from grassland sites that appear not to support any native grasses and several animals have been found on the edge of *Callitris enlicheri* woodland and *Eucalyptus macrorhyncha* woodland (Osbourne and Jones 1995). A burrowing species, it is usually found under rocks on well-drained soil and in ant nests, occasionally with several individuals found under the same rock (Swan, Shea et al. 2004).	PMST ACT threatened species list ACTMapi (3.4 km away (NE + SW)) ALA	**Low** – no rocky habitat identified within study area.

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SCIENTIFIC NAME	COMMON NAME	EPBC ACT STATUS[1]	NC ACT STATUS[2]	HABITAT DESCRIPTION	DATA SOURCE	LIKELIHOOD OF OCCURRENCE ASSESSMENT
Delma impar	Striped Legless Lizard	V	V	In the ACT region, four disjunct populations of the species are recognised: Gungahlin, Yarramundi Reach, Majura Valley and Jerrabomberra Valley (Department of the Environment 2016). Found mainly in Natural Temperate Grassland but has also been captured in modified grasslands that have a high cover of exotic grasses. The species is also found in secondary grassland near Natural Temperate Grassland and occasionally in open Box-Gum Woodland. Habitat is where grassland is dominated by perennial, tussock-forming grasses such as Kangaroo Grass (*Themeda triandra*), Spear-grasses (*Austrostipa* spp.), Poa tussocks (*Poa* spp.), and occasionally Wallaby Grasses (*Rytidosperma* spp.) Also sometimes found in grasslands with significant amounts of surface rocks, which are used for shelter (Environment ACT 2005, Office of Environment and Heritage 2017).	PMST ACT threatened species list ACTMapi – 4.9 km from study area ALA	**Moderate** – potential habitat within study area.
Tympanocryptis pinguicolla	Grassland Earless Dragon	E	E	In the ACT region, the species is found only in a small number of sites with suitable native grassland habitat located in the Majura and Jerrabomberra valleys and one adjacent location near Queanbeyan in NSW (Environment ACT 2005). The species occurs in Natural Temperate Grassland sites dominated by wallaby grasses (*Rytidosperma* spp.), spear grasses *(Austrostipa* spp.), Poa Tussock (*Poa sieberiana*), Red Grass (*Bothriochloa macra*), and occasionally Kangaroo Grass (*Themeda australis*). Introduced pasture grasses occur at many of the sites supporting this species, which has also been captured in secondary grassland. Within its habitat, the species appears to prefer areas with a more open structure, characterised by small patches of bare ground between the grasses and herbs. In addition to tussocks, partially embedded surface rocks, and spider and insect holes are used for shelter. These are important micro-habitat elements within the grassland habitat. Rocks and arthropod holes provide important thermal refuges during temperature extremes (Department of Environment and Climate Change 2007).	PMST ACT threatened species list	**Low** – species has highly restricted distribution, not known to occur within area, marginal habitat within study area.

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ABOUT US

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redboxdesigngroup

Fraser Primary Tree Assessment

Revision 02 – FINAL

07.06.2021

Prepared for.

ACT Government
Environment and Planning

Prepared by.

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1. Tree Assessment Report

Introduction

This tree assessment evaluates Trees within part Block 6 Section 64 and Block 2 Section 40, Fraser.

This report has been prepared for the ACT Government for the purposes of reviewing options for the expansion of the Fraser Primary School.

The inspection method used is a Visual Tree Assessment which involves inspecting the tree from ground level.

The base plan information is on aerial imagery. Survey information has not informed tree locations / positions – these are estimated only and should be verified by survey for future development purposes. Particulary trees that are on the boundary between the Primary School and the adjacent open space to the North west and north east.

Trees were assessed individually or in groups.

It is noted that the school boundary fence to the north west and north east does not align with the site boundary.

The field work was carried out during mid March 2021.



Figure 1. Site area for Tree Assessment

Site Description

Land Custodianship

The trees assessed for this report are across two blocks

- Part of Block 6 Section 64 – TCCS custodianship
- Part of Block 2 Section 40 – Education Directorate custodianship



Figure 2. Land Custodianship (extract – ACTMapi)

Site Description

Trees across the assessment site are predominantly Eucalyptus species, which is consistent for much of the plantings within the Belconnen District.

Trees to the north and east of Block 2 Section 40 (the school block) are mature groupings within a large flat area and are likely to have been planted at the time of the development of the suburb in the late 1970s. The species are consistent of a range of eucalyptus known to grow well in Canberra.

- *Eucalyptus polyanthemos,*
- *Eucalyptus melliodora,*
- *Eucalyptus sideroxylon,*
- *Eucalyptus mannifera,*

- *Eucalyptus viminalis,*
- *Eucalyptus albens,*
- *Eucalyptus cinerea,*
- *Eucalyptus bicostata,*
- *Eucalyptus viridis,*
- *Eucalyptus maidenii.*

This area of open space is likely to have high soil moisture levels during wet periods. Many of the tree groups were planted on mounds with Blue Gums (*E.bicostata*) on the high side to take up some of the moisture. The arrangement has been a success as the trees are now generally in good condition despite being quite closely planted. However, the Blue Gums are at a stage when they require regular inspections, particularly those close to the school perimeter fence.

The structure of the canopy and the range of species combined with some tall trees is an attractive arrangement for birdlife. A number of active hollows were noted at the time of the assessment.

The trees groups have an overall high quality rating due to their general good health and contribution to the overall character and of the site. Even though individually some of the trees within the group are not good specimens.

Verge trees on Shakespeare Crescent are exotic deciduous Ash (*Fraxinus oxycarpa 'Raywoodii'*) in varying condition. Many are noted as low quality, but only due to their small stature. A number of trees are likely to have perished, as there are a few gaps in the generally regular spacing along the street. Subject to reasonable ongoing climatic conditions these trees will continue to grow and form a street character

Trees within the school site fenced area are mostly Eucalypt species. The exception is the northern play area that is dominated by exotic deciduous.

Within the perimeter one tree, number 66 (*E. maidenii*), is identified as a dangerous species and should be removed as it poses a safety risk in a very high use area with small children playing many times every school day.

Whist not included in the study area, trees that are on the Tillyard Drive side of the school were noted as providing a buffer to the front of the school. The row of *E. nicholii* between the road and the car park at the front of the school should be monitored regularly as the species is prone to shed branches as it matures. There are also many bird boxes that should be inspected as the ties are starting to compromise the bark in some cases.

These trees form an attractive leafy buffer along the road edge and should be managed to not compromise this aesthetic.

Tree Assessment Inventory

The following is a description of the criteria used to assess individual trees within the study area and adjacent verges.

Note tree locations are estimated only, based on aerial imagery. Topographical survey is required to confirm accurate location.

TREE No: Individual trees are given a unique number shown on attached Tree Assessment Plans.

BOTANICAL NAME: Identification of trees on site by species.

TREE HEIGHT: The height of the tree (in metres) as estimated on site.

TRUNK CIRCUMFERENCE: The circumference (in millimetres) of the tree is measured on site at approximately 1 metre above ground level. Where there is more than one trunk, the sum of the trunks is used.

CANOPY DIAMETER: The estimated canopy diameter (in metres) as measured on site. This is based on the largest extending limb.

GENERAL HEALTH: Condition is based on the present health of the tree as indicated by particular visible characteristics including leaf health and leafiness, dieback, structural health of trunk and major branches, presence of pests and diseases. It also assesses the structural integrity of the tree in terms of its hazard potential. A tree may present a hazard due to defects in the trunk or major limbs.

- Excellent (E): Extremely healthy tree in exceptional condition.
- Good (G): Major trunks, branches and leafiness indicate good health with healthy new shoot growth over whole canopy.
- Fair (F): Trees appears in reasonable health, though may have some characteristics as poor. Fair condition with reasonable shoot growth over whole canopy.
- Poor (P): Trees of poor health and vigour exhibiting characteristics such as a large amount of growth, extensive dieback, trunk rot/defects or poor leafiness with little new shoot growth over whole canopy.
- Dead (D) – Trees that are dead

STRUCTURAL DEFECTS / DECAY (Y-Yes / N- No): A record of any structural defects or decay apparent in the trunk or major branches

PAST DAMAGE / DISTURBANCE (Y-Yes / N- No): Visual evidence of past damage or disturbance to the tree in major trunk and branches

DISEASE / INFESTATION (Y-Yes / N- No): Visual evidence of any disease or infestation with is present in the tree

TREE QUALITY: An overall assessment of the quality of the tree and its relative importance for retention within an urban context. Based on ACT Tree Protection ACT 2005 (Guidelines for Tree Management)

Exceptional (E), is a tree or group of trees that:
- Has natural or cultural heritage importance; or
- Has high aesthetic value and will have a major contribution to the surrounding landscape; or
- Is of outstanding form and condition and is an excellent example of the species; or
- Has significant scientific value, including ecological importance.

High (H), is a tree that:
- Is of good form, structure and health;
- Is without significant defect; and which has potential to make a significant contribution to the landscape

Medium (M), is a tree that:
- Is of reasonable form, structure and health; and whose presence contributes to the landscape but not as significantly as high / exceptional quality trees

Low (L), is a tree that:
- Is of poor, structure or health, is in decline; and which has limited potential to contribute to the landscape

PROTECTED TREES:
A Protected Tree is a tree that is provided protection under the tree Protection Act 2005. The Act defines two types of Protected Tree: Registered Tree and Regulated Tree.

A Registered Tree is a tree that has been identified as being exceptional for it's:

(a) Natural or cultural heritage value;
(b) Landscape and aesthetic value; and
(c) Scientific or ecological value

A Regulated Tree is a tree that is located on leased Territory Land in an area declared as a Tree Management Precinct and is either:

(a) 12m or more in height; or
(b) greater than 1.5m in circumference 9approx. 0.5m in diameter) or more at 1m above natural ground level; or
(c) with two or more trunks and the total circumference of all trunks, 1m above natural ground level, is 1.5m or more; or
(d) 12m in crown width or more

REGISTERED STATUS: Where applicable registered trees are noted. There are no Registered trees on this site.

REGULATED STATUS: A regulated tree is a living tree (other than a registered tree or a palm tree) with one or more of the criteria as noted above.

A tree is not a regulated tree if it is a pest plant under the Pest Plants and Animals Act 2005.

TCCS: A tree that is on public land and is protected, regardless of its physical size or characteristics

COMMENTS: Any arboriculture or other comments / notes relating to the tree or its location. Registered tree numbers are indicted and copies of the relevant sections of the ACT Tree Register are within the appendix of this report where applicable.

NOTES/DISCLAIMER

This report is to be utilised in its entirety only. Any written or verbal submission, report or representation that includes statements taken from the findings, discussions, conclusions or recommendations made by this report, may only be used where the whole of the original report (or a copy) is referenced in and directly attached to that submission, report or representation.

Unless stated otherwise:

- The information contained in this report covers only the trees that were examined and reflects the conditions of those trees at the time of inspections
- Inspections were limited to visual examination of the subject trees from ground level, without dissection, excavation, probing or coring.
- There is no warranty or guarantee, expressed or implied, that problems or deficiencies of the subject trees may not arise in the future.
- The findings of this report may not necessarily agree with reports prepared by others, including the Government Conservator of Trees or TCCS.

Appendix A – Tree Photo Sheets

Photo Sheets are provided for trees within the study boundary only.



TREE No. 1

Species Name	*Fraxinus oxycarpa* 'Raywood'	Tree Height (m)	5m
Species Code	FRo	Trunk circumference (mm)	700mm
Tree Quality	Low	Canopy diameter (m)	4m
Regulated Status	TCCS	No. of trunks	3
Health	Fair	Structural Defects / Decay	No
Past damage disturbance	No	Disease / Pest infestation	No
Comments	Verge tree		

ASSESSMENT DETAILS

Assessor	Redbox Design Group
Date of Assessment	March 2021



TREE No. 2

Species Name	Fraxinus oxycarpa 'Raywood'	Tree Height (m)	5m
Species Code	FRo	Trunk circumference (mm)	600mm
Tree Quality	Low	Canopy diameter (m)	4m
Regulated Status	TCCS	No. of trunks	3
Health	Fair	Structural Defects / Decay	No
Past damage disturbance	No	Disease / Pest infestation	No
Comments	Verge tree		

ASSESSMENT DETAILS

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TREE No. 3

Species Name	Fraxinus oxycarpa 'Raywood'	Tree Height (m)	10m
Species Code	FRo	Trunk circumference (mm)	1000mm
Tree Quality	Low	Canopy diameter (m)	9m
Regulated Status	TCCS	No. of trunks	1
Health	Fair	Structural Defects / Decay	No
Past damage disturbance	No	Disease / Pest infestation	No
Comments	Large dead branches		

ASSESSMENT DETAILS

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TREE No. 4

Species Name	Fraxinus oxycarpa 'Raywood'	Tree Height (m)	6m
Species Code	FRo	Trunk circumference (mm)	600mm
Tree Quality	Moderate	Canopy diameter (m)	5m
Regulated Status	TCCS	No. of trunks	1
Health	Good	Structural Defects / Decay	No
Past damage disturbance	No	Disease / Pest infestation	No
Comments	Verge tree		

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TREE No. 5

Species Name	Fraxinus oxycarpa 'Raywood'	Tree Height (m)	5m
Species Code	FRo	Trunk circumference (mm)	600mm
Tree Quality	Low	Canopy diameter (m)	4m
Regulated Status	TCCS	No. of trunks	1
Health	Fair	Structural Defects / Decay	No
Past damage disturbance	No	Disease / Pest infestation	No
Comments	Verge tree		

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TREE No. 6

Species Name	Fraxinus oxycarpa 'Raywood'	Tree Height (m)	6m
Species Code	FRo	Trunk circumference (mm)	700mm
Tree Quality	Low	Canopy diameter (m)	5m
Regulated Status	TCCS	No. of trunks	1
Health	Good	Structural Defects / Decay	No
Past damage disturbance	No	Disease / Pest infestation	No
Comments	Verge tree – small scar at 1.5m		

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TREE No. 7

Species Name	Fraxinus oxycarpa 'Raywood'	Tree Height (m)	5m
Species Code	FRo	Trunk circumference (mm)	600mm
Tree Quality	Low	Canopy diameter (m)	4m
Regulated Status	TCCS	No. of trunks	1
Health	Good	Structural Defects / Decay	No
Past damage disturbance	No	Disease / Pest infestation	No
Comments	Verge tree		

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TREE No. 8

Species Name	Fraxinus oxycarpa 'Raywood'	Tree Height (m)	5m
Species Code	FRo	Trunk circumference (mm)	600mm
Tree Quality	Low	Canopy diameter (m)	4m
Regulated Status	TCCS	No. of trunks	1
Health	Fair	Structural Defects / Decay	No
Past damage disturbance	No	Disease / Pest infestation	No
Comments	Verge tree		

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TREE No.

Species Name	Fraxinus oxycarpa 'Raywood'	Tree Height (m)	5m
Species Code	FRo	Trunk circumference (mm)	800mm
Tree Quality	Low	Canopy diameter (m)	5m
Regulated Status	TCCS	No. of trunks	1
Health	Fair	Structural Defects / Decay	No
Past damage disturbance	No	Disease / Pest infestation	No
Comments	Verge tree		

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TREE No. 10

Species Name	Fraxinus oxycarpa 'Raywood'	Tree Height (m)	4m
Species Code	FRo	Trunk circumference (mm)	600mm
Tree Quality	Low	Canopy diameter (m)	4m
Regulated Status	TCCS	No. of trunks	1
Health	Good	Structural Defects / Decay	No
Past damage disturbance	No	Disease / Pest infestation	No
Comments	Verge tree – scar 1.3-1.5m		

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TREE No. 11

Species Name	Fraxinus oxycarpa 'Raywood'	Tree Height (m)	4m
Species Code	FRo	Trunk circumference (mm)	500mm
Tree Quality	Low	Canopy diameter (m)	4m
Regulated Status	TCCS	No. of trunks	1
Health	Good	Structural Defects / Decay	No
Past damage disturbance	No	Disease / Pest infestation	No
Comments	Verge tree		

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TREE No. 12

Species Name	Fraxinus oxycarpa 'Raywood'	Tree Height (m)	4m
Species Code	FRo	Trunk circumference (mm)	500mm
Tree Quality	Low	Canopy diameter (m)	4m
Regulated Status	TCCS	No. of trunks	1
Health	Good	Structural Defects / Decay	No
Past damage disturbance	No	Disease / Pest infestation	No
Comments	Verge tree		

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TREE No. 13

Species Name	Fraxinus oxycarpa 'Raywood'	Tree Height (m)	10m
Species Code	FRo	Trunk circumference (mm)	1100mm
Tree Quality	Low	Canopy diameter (m)	8m
Regulated Status	TCCS	No. of trunks	1
Health	Good	Structural Defects / Decay	No
Past damage disturbance	No	Disease / Pest infestation	No
Comments	Verge tree		

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TREE No. 14

Species Name	Fraxinus oxycarpa 'Raywood'	Tree Height (m)	8m
Species Code	FRo	Trunk circumference (mm)	900mm
Tree Quality	Low	Canopy diameter (m)	10m
Regulated Status	TCCS	No. of trunks	1
Health	Good	Structural Defects / Decay	No
Past damage disturbance	No	Disease / Pest infestation	No
Comments	Verge tree		

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TREE No. 15

Species Name	Fraxinus oxycarpa 'Raywood'	Tree Height (m)	9m
Species Code	FRo	Trunk circumference (mm)	900mm
Tree Quality	Medium	Canopy diameter (m)	7m
Regulated Status	TCCS	No. of trunks	1
Health	Good	Structural Defects / Decay	No
Past damage disturbance	No	Disease / Pest infestation	No
Comments	Verge tree		

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TREE No. 16

Species Name	Fraxinus oxycarpa 'Raywood'	Tree Height (m)	6m
Species Code	FRo	Trunk circumference (mm)	900mm
Tree Quality	Low	Canopy diameter (m)	8m
Regulated Status	TCCS	No. of trunks	1
Health	Poor	Structural Defects / Decay	No
Past damage disturbance	No	Disease / Pest infestation	No
Comments	Verge tree – poor canopy and dead wood		

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TREE No. 17

Species Name	Fraxinus oxycarpa 'Raywood'	Tree Height (m)	6m
Species Code	FRo	Trunk circumference (mm)	900mm
Tree Quality	Medium	Canopy diameter (m)	8m
Regulated Status	TCCS	No. of trunks	1
Health	Good	Structural Defects / Decay	No
Past damage disturbance	No	Disease / Pest infestation	No
Comments	Verge tree		

ASSESSMENT DETAILS

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TREE No. 18

Species Name	Fraxinus oxycarpa 'Raywood'	Tree Height (m)	4m
Species Code	FRo	Trunk circumference (mm)	600mm
Tree Quality	Low	Canopy diameter (m)	3m
Regulated Status	TCCS	No. of trunks	1
Health	Fari	Structural Defects / Decay	No
Past damage disturbance	No	Disease / Pest infestation	No
Comments	Verge tree		

ASSESSMENT DETAILS

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TREE No. 19

Species Name	Eucalyptus viridis	Tree Height (m)	8m
Species Code	Evo	Trunk circumference (mm)	1000mm
Tree Quality	Low	Canopy diameter (m)	9m
Regulated Status	TCCS	No. of trunks	1
Health	Poor	Structural Defects / Decay	Yes
Past damage disturbance	Yes	Disease / Pest infestation	No
Comments	Very poor tree		

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TREE No. 20

Species Name	Eucalyptus melliodora	Tree Height (m)	13m
Species Code	Eme	Trunk circumference (mm)	1300mm
Tree Quality	Medium	Canopy diameter (m)	11m
Regulated Status	TCCS	No. of trunks	1
Health	Good	Structural Defects / Decay	No
Past damage disturbance	No	Disease / Pest infestation	No
Comments			

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TREE No. 21

Species Name	Eucalyptus melliodora	Tree Height (m)	13m
Species Code	Eme	Trunk circumference (mm)	1100mm
Tree Quality	Medium	Canopy diameter (m)	11m
Regulated Status	TCCS	No. of trunks	1
Health	Good	Structural Defects / Decay	No
Past damage disturbance	No	Disease / Pest infestation	No
Comments			

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TREE No. 22

Species Name	Eucalyptus bicostata	Tree Height (m)	23m
Species Code	Eub	Trunk circumference (mm)	2400mm
Tree Quality	High	Canopy diameter (m)	13m
Regulated Status	To be verified by survey	No. of trunks	1
Health	Good	Structural Defects / Decay	No
Past damage disturbance	No	Disease / Pest infestation	No
Comments	Active hollow at 5m		

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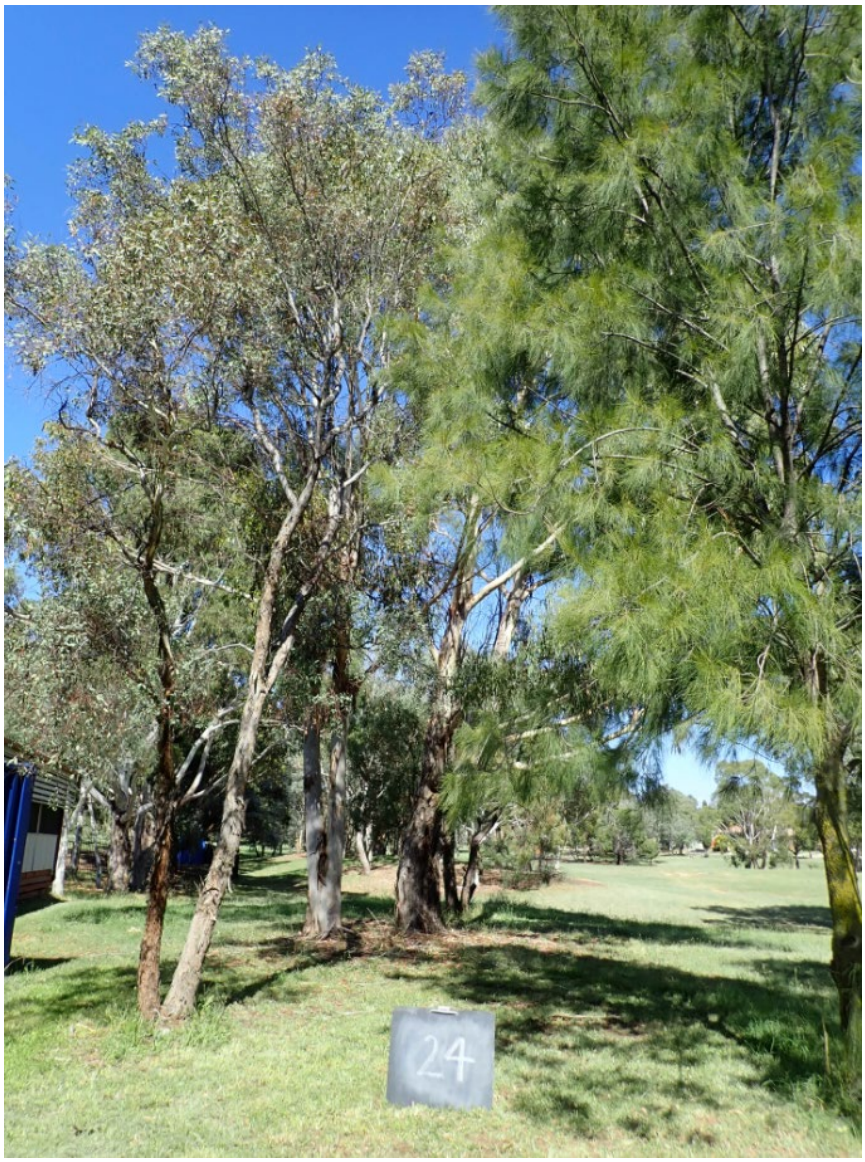


TREE No. 23

Species Name	Eucalyptus bicostata	Tree Height (m)	15m
Species Code	Eub	Trunk circumference (mm)	1300mm
Tree Quality	Medium	Canopy diameter (m)	10m
Regulated Status	TCCS	No. of trunks	1
Health	Fair	Structural Defects / Decay	No
Past damage disturbance	No	Disease / Pest infestation	No
Comments			

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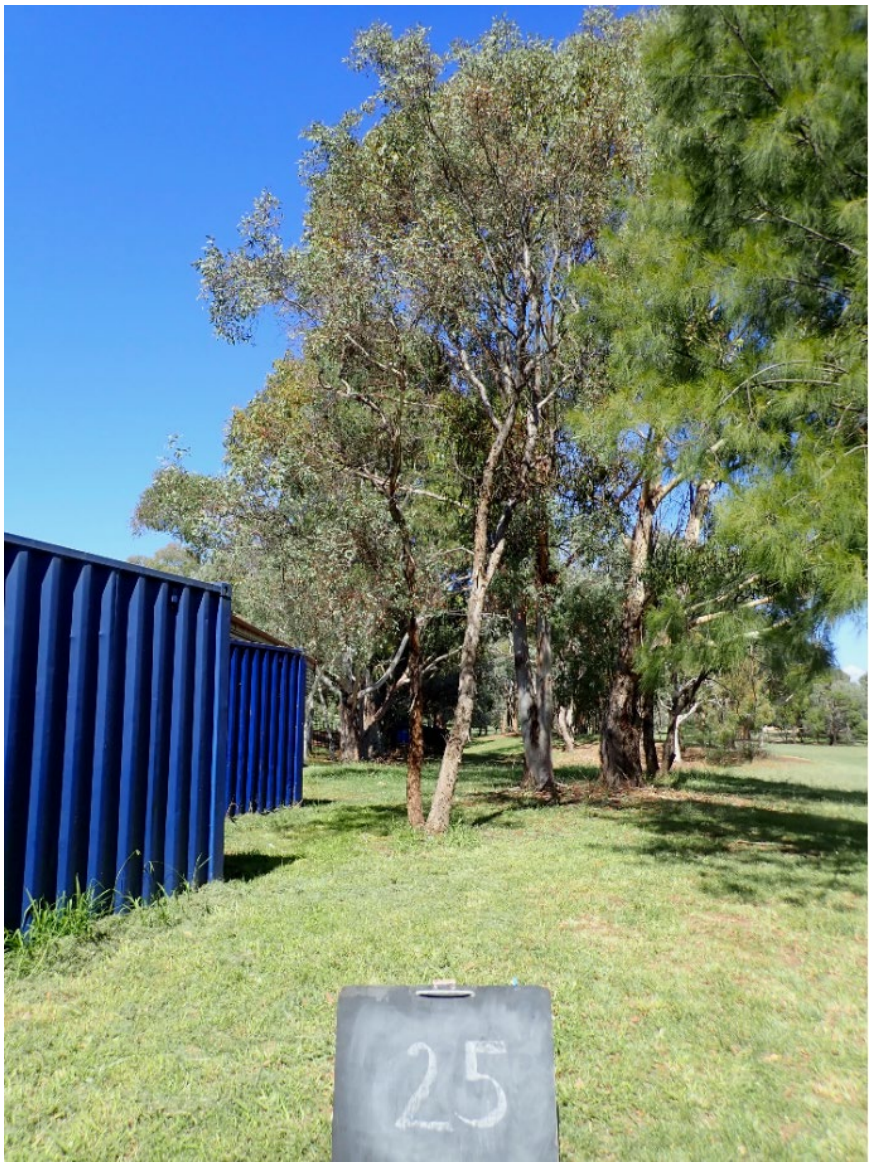


TREE No.

Species Name	Eucalyptus maidenii	Tree Height (m)	15m
Species Code	Eub	Trunk circumference (mm)	2800mm
Tree Quality	Low	Canopy diameter (m)	14m
Regulated Status	TCCS	No. of trunks	1
Health	Fair	Structural Defects / Decay	Yes
Past damage disturbance	No	Disease / Pest infestation	No
Comments	Poor union at 1.4m		

ASSESSMENT DETAILS

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TREE No. 25

Species Name	Eucalyptus polyanthemos	Tree Height (m)	8m
Species Code	EUp	Trunk circumference (mm)	1000mm
Tree Quality	Low	Canopy diameter (m)	4m
Regulated Status	TCCS	No. of trunks	2
Health	Poor	Structural Defects / Decay	No
Past damage disturbance	No	Disease / Pest infestation	No
Comments			

ASSESSMENT DETAILS

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TREE No. 26

Species Name	Casuarina cunninghamiana	Tree Height (m)	8m
Species Code	Ccu	Trunk circumference (mm)	700mm
Tree Quality	Medium	Canopy diameter (m)	5m
Regulated Status	TCCS	No. of trunks	1
Health	Fair	Structural Defects / Decay	No
Past damage disturbance	No	Disease / Pest infestation	No
Comments			

ASSESSMENT DETAILS

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TREE No. 27

Species Name	Eucalyptus polyanthemos	Tree Height (m)	11m
Species Code	EUp	Trunk circumference (mm)	1900mm
Tree Quality	Medium	Canopy diameter (m)	13m
Regulated Status	TCCS	No. of trunks	1
Health	Good	Structural Defects / Decay	No
Past damage disturbance	No	Disease / Pest infestation	No
Comments			

ASSESSMENT DETAILS

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TREE No. 28

Species Name	Casuarina cunninghamiana	Tree Height (m)	5m
Species Code	Ccu	Trunk circumference (mm)	4000mm
Tree Quality	Poor	Canopy diameter (m)	4m
Regulated Status	TCCS	No. of trunks	1
Health	Fair	Structural Defects / Decay	No
Past damage disturbance	No	Disease / Pest infestation	No
Comments			

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TREE No. 29

Species Name	Eucalyptus polyanthemos	Tree Height (m)	12m
Species Code	EUp	Trunk circumference (mm)	1000mm
Tree Quality	Medium	Canopy diameter (m)	9m
Regulated Status	TCCS	No. of trunks	1
Health	Good	Structural Defects / Decay	No
Past damage disturbance	No	Disease / Pest infestation	No
Comments			

ASSESSMENT DETAILS

Assessor	Redbox Design Group
Date of Assessment	March 2021



TREE No. 30

Species Name	Casuarina cunninghamiana	Tree Height (m)	8m
Species Code	Ccu	Trunk circumference (mm)	800mm
Tree Quality	Poor	Canopy diameter (m)	6m
Regulated Status	TCCS	No. of trunks	1
Health	Fair	Structural Defects / Decay	No
Past damage disturbance	No	Disease / Pest infestation	No
Comments			

ASSESSMENT DETAILS

Assessor	Redbox Design Group
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TREE No. 31

Species Name	Eucalyptus polyanthemos	Tree Height (m)	9m
Species Code	EUp	Trunk circumference (mm)	1000mm
Tree Quality	Medium	Canopy diameter (m)	7m
Regulated Status	TCCS	No. of trunks	1
Health	Good	Structural Defects / Decay	No
Past damage disturbance	No	Disease / Pest infestation	No
Comments			

ASSESSMENT DETAILS

Assessor	Redbox Design Group
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TREE No. 32

Species Name	Casuarina cunninghamiana	Tree Height (m)	10m
Species Code	Ccu	Trunk circumference (mm)	800mm
Tree Quality	Medium	Canopy diameter (m)	8m
Regulated Status	TCCS	No. of trunks	1
Health	Good	Structural Defects / Decay	No
Past damage disturbance	No	Disease / Pest infestation	No
Comments			

ASSESSMENT DETAILS

Assessor	Redbox Design Group
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TREE No. 33

Species Name	Eucalyptus mannifera	Tree Height (m)	12m
Species Code	Ema	Trunk circumference (mm)	2100mm
Tree Quality	Low	Canopy diameter (m)	9m
Regulated Status	TCCS	No. of trunks	1
Health	Poor	Structural Defects / Decay	Yes
Past damage disturbance	No	Disease / Pest infestation	No
Comments	Fungal fruiting bodies at 1-2m		

ASSESSMENT DETAILS

Assessor	Redbox Design Group
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TREE No. 34

Species Name	Eucalyptus bicostata	Tree Height (m)	19m
Species Code	EUb	Trunk circumference (mm)	2000mm
Tree Quality	High	Canopy diameter (m)	15m
Regulated Status	To be verified by survey	No. of trunks	1
Health	Good	Structural Defects / Decay	No
Past damage disturbance	No	Disease / Pest infestation	No
Comments			

ASSESSMENT DETAILS

Assessor	Redbox Design Group
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TREE No. 35

Species Name	Eucalyptus bicostata	Tree Height (m)	19m
Species Code	EUb	Trunk circumference (mm)	2000mm
Tree Quality	High	Canopy diameter (m)	15m
Regulated Status	To be verified by survey	No. of trunks	1
Health	Good	Structural Defects / Decay	No
Past damage disturbance	No	Disease / Pest infestation	No
Comments	Part of group on fenceline		

ASSESSMENT DETAILS

Assessor	Redbox Design Group
Date of Assessment	March 2021



TREE No. 36

Species Name	Eucalyptus bicostata	Tree Height (m)	19m
Species Code	EUb	Trunk circumference (mm)	2000mm
Tree Quality	High	Canopy diameter (m)	15m
Regulated Status	To be verified by survey	No. of trunks	1
Health	Good	Structural Defects / Decay	No
Past damage disturbance	No	Disease / Pest infestation	No
Comments	Part of group on fenceline		

ASSESSMENT DETAILS

Assessor	Redbox Design Group
Date of Assessment	March 2021



TREE No. 37

Species Name	Eucalyptus bicostata	Tree Height (m)	19m
Species Code	EUb	Trunk circumference (mm)	2000mm
Tree Quality	High	Canopy diameter (m)	15m
Regulated Status	To be verified by survey	No. of trunks	1
Health	Good	Structural Defects / Decay	No
Past damage disturbance	No	Disease / Pest infestation	No
Comments	Part of group on fenceline		

ASSESSMENT DETAILS

Assessor	Redbox Design Group
Date of Assessment	March 2021



TREE No. 38

Species Name	Eucalyptus bicostata	Tree Height (m)	19m
Species Code	EUb	Trunk circumference (mm)	2000mm
Tree Quality	High	Canopy diameter (m)	15m
Regulated Status	To be verified by survey	No. of trunks	1
Health	Good	Structural Defects / Decay	No
Past damage disturbance	No	Disease / Pest infestation	No
Comments	Part of group on fenceline		

ASSESSMENT DETAILS

Assessor	Redbox Design Group
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TREE No. 39

Species Name	Euclapytus mannifera	Tree Height (m)	7m
Species Code	Ema	Trunk circumference (mm)	1300mm
Tree Quality	Low	Canopy diameter (m)	5m
Regulated Status	To be verified by survey	No. of trunks	1
Health	Fair	Structural Defects / Decay	Yes
Past damage disturbance	No	Disease / Pest infestation	No
Comments	Dieback		

ASSESSMENT DETAILS

Assessor	Redbox Design Group
Date of Assessment	March 2021



TREE No. 40

Species Name	Eucalyptus mannifera	Tree Height (m)	10m
Species Code	Ema	Trunk circumference (mm)	900mm
Tree Quality	Medium	Canopy diameter (m)	7m
Regulated Status	To be verified by survey	No. of trunks	1
Health	Good	Structural Defects / Decay	Yes
Past damage disturbance	No	Disease / Pest infestation	No
Comments	Dieback		

ASSESSMENT DETAILS

Assessor	Redbox Design Group
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TREE No. 41

Species Name	Eucalyptus mannifera	Tree Height (m)	11m
Species Code	Ema	Trunk circumference (mm)	900mm
Tree Quality	Medium	Canopy diameter (m)	8m
Regulated Status	To be verified by survey	No. of trunks	1
Health	Good	Structural Defects / Decay	No
Past damage disturbance	No	Disease / Pest infestation	No
Comments	Dieback		

ASSESSMENT DETAILS

Assessor	Redbox Design Group
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TREE No. 42

Species Name	Eucalyptus mannifera	Tree Height (m)	10m
Species Code	Ema	Trunk circumference (mm)	900mm
Tree Quality	Medium	Canopy diameter (m)	m
Regulated Status	To be verified by survey	No. of trunks	1
Health	Good	Structural Defects / Decay	No
Past damage disturbance	No	Disease / Pest infestation	No
Comments	Dieback		

ASSESSMENT DETAILS

Assessor	Redbox Design Group
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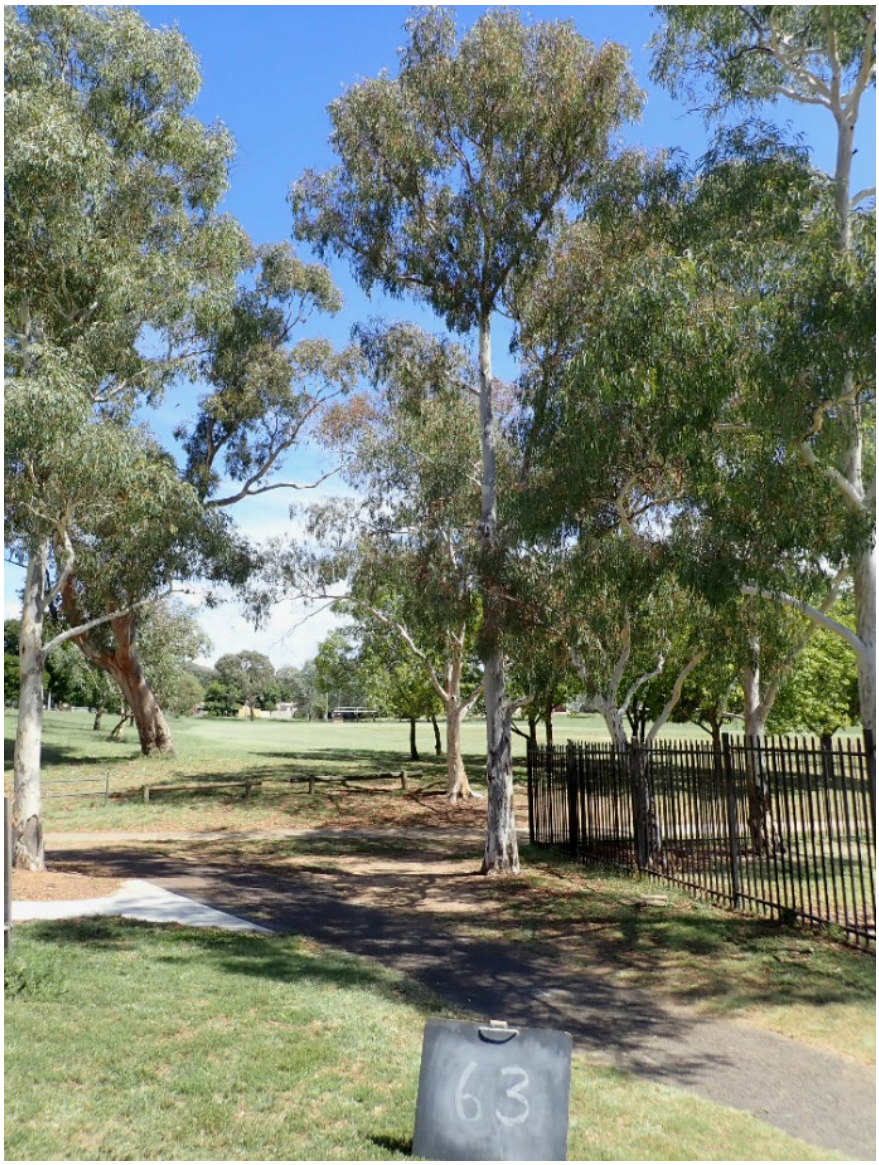


TREE No. 62

Species Name	Eucalyptus mannifera	Tree Height (m)	14m
Species Code	Ema	Trunk circumference (mm)	1000mm
Tree Quality	Medium	Canopy diameter (m)	9m
Regulated Status	Yes	No. of trunks	1
Health	good	Structural Defects / Decay	No
Past damage disturbance	No	Disease / Pest infestation	No
Comments			

ASSESSMENT DETAILS

Assessor	Redbox Design Group
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TREE No. 63

Species Name	Eucalyptus mannifera	Tree Height (m)	14m
Species Code	Ema	Trunk circumference (mm)	1000mm
Tree Quality	Medium	Canopy diameter (m)	9m
Regulated Status	Yes	No. of trunks	1
Health	good	Structural Defects / Decay	No
Past damage disturbance	No	Disease / Pest infestation	No
Comments			

ASSESSMENT DETAILS

Assessor	Redbox Design Group
Date of Assessment	March 2021



TREE No. 64

Species Name	Eucalyptus mannifera	Tree Height (m)	6m
Species Code	Ema	Trunk circumference (mm)	900mm
Tree Quality	Medium	Canopy diameter (m)	8m
Regulated Status	No	No. of trunks	1
Health	Good	Structural Defects / Decay	No
Past damage disturbance	No	Disease / Pest infestation	No
Comments			

ASSESSMENT DETAILS

Assessor	Redbox Design Group
Date of Assessment	March 2021



TREE No. 65

Species Name	Eucalyptus mannifera	Tree Height (m)	8m
Species Code	Ema	Trunk circumference (mm)	1000mm
Tree Quality	Medium	Canopy diameter (m)	7m
Regulated Status	No	No. of trunks	1
Health	Good	Structural Defects / Decay	No
Past damage disturbance	No	Disease / Pest infestation	No
Comments			

ASSESSMENT DETAILS

Assessor	Redbox Design Group
Date of Assessment	March 2021



TREE No. 66

Species Name	Eucalyptus maidenii	Tree Height (m)	18m
Species Code	EUm	Trunk circumference (mm)	1900mm
Tree Quality	Medium	Canopy diameter (m)	12m
Regulated Status	Yes	No. of trunks	1
Health	Good	Structural Defects / Decay	Yes
Past damage disturbance	No	Disease / Pest infestation	No
Comments	Poor union at 6m, active hollow. Remove as a safety hazard in this situation – prone to limb drop at union.		

ASSESSMENT DETAILS

Assessor	Redbox Design Group
Date of Assessment	March 2021



TREE No. 67

Species Name	Eucalyptus mannifera	Tree Height (m)	12m
Species Code	Ema	Trunk circumference (mm)	1400mm
Tree Quality	Medium	Canopy diameter (m)	10m
Regulated Status	Yes	No. of trunks	1
Health	Good	Structural Defects / Decay	No
Past damage disturbance	No	Disease / Pest infestation	No
Comments			

ASSESSMENT DETAILS

Assessor	Redbox Design Group
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TREE No. 68

Species Name	Eucalyptus mannifera	Tree Height (m)	13m
Species Code	Ema	Trunk circumference (mm)	2200mm
Tree Quality	Medium	Canopy diameter (m)	16m
Regulated Status	Yes	No. of trunks	1
Health	Good	Structural Defects / Decay	No
Past damage disturbance	No	Disease / Pest infestation	No
Comments			

ASSESSMENT DETAILS

Assessor	Redbox Design Group
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TREE No. 69

Species Name	Eucalyptus cinerea	Tree Height (m)	9m
Species Code	EUc	Trunk circumference (mm)	1100mm
Tree Quality	Medium	Canopy diameter (m)	7m
Regulated Status	No	No. of trunks	1
Health	Fair	Structural Defects / Decay	No
Past damage disturbance	Ni	Disease / Pest infestation	No
Comments			

ASSESSMENT DETAILS

Assessor	Redbox Design Group
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TREE No. 70

Species Name	Eucalyptus cinerea	Tree Height (m)	5m
Species Code	EUc	Trunk circumference (mm)	600mm
Tree Quality	Low	Canopy diameter (m)	4m
Regulated Status	No	No. of trunks	1
Health	Fair	Structural Defects / Decay	No
Past damage disturbance	No	Disease / Pest infestation	No
Comments			

ASSESSMENT DETAILS

Assessor	Redbox Design Group
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TREE No. 71

Species Name	Eucalyptus bicostata	Tree Height (m)	9m
Species Code	EUb	Trunk circumference (mm)	1100mm
Tree Quality	Medium	Canopy diameter (m)	7m
Regulated Status	No	No. of trunks	1
Health	Good	Structural Defects / Decay	No
Past damage disturbance	No	Disease / Pest infestation	No
Comments			

ASSESSMENT DETAILS

Assessor	Redbox Design Group
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TREE No. 72

Species Name	Eucalyptus nicholii	Tree Height (m)	11m
Species Code	Eni	Trunk circumference (mm)	1100mm
Tree Quality	Medium	Canopy diameter (m)	9m
Regulated Status	No	No. of trunks	1
Health	Fair	Structural Defects / Decay	No
Past damage disturbance	No	Disease / Pest infestation	No
Comments	Asymmetrical canopy. Species can be prone to limb drop		

ASSESSMENT DETAILS

Assessor	Redbox Design Group
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TREE No. 73

Species Name	Eucalyptus maidenii	Tree Height (m)	16m
Species Code	EUm	Trunk circumference (mm)	2300mm
Tree Quality	Low	Canopy diameter (m)	15m
Regulated Status	To be verified by survey	No. of trunks	1
Health	Fair	Structural Defects / Decay	Yes
Past damage disturbance	No	Disease / Pest infestation	No
Comments	Poor union at 1.6m, leaning		

ASSESSMENT DETAILS

Assessor	Redbox Design Group
Date of Assessment	March 2021



TREE No. 74

Species Name	Eucalyptus maidenii	Tree Height (m)	17m
Species Code	EUm	Trunk circumference (mm)	2100mm
Tree Quality	Low	Canopy diameter (m)	11m
Regulated Status	Yes	No. of trunks	1
Health	Fair	Structural Defects / Decay	Yes
Past damage disturbance	No	Disease / Pest infestation	No
Comments	Poor union at 2m		

ASSESSMENT DETAILS

Assessor	Redbox Design Group
Date of Assessment	March 2021



TREE No. 75

Species Name	Eucalyptus maidenii	Tree Height (m)	10m
Species Code	EUm	Trunk circumference (mm)	1600mm
Tree Quality	Medium	Canopy diameter (m)	13m
Regulated Status	To be verified by survey	No. of trunks	1
Health	Good	Structural Defects / Decay	No
Past damage disturbance	No	Disease / Pest infestation	No
Comments			

ASSESSMENT DETAILS

Assessor	Redbox Design Group
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TREE No. 76

Species Name	Callistemon citrinus	Tree Height (m)	4m
Species Code	CAc	Trunk circumference (mm)	300mm
Tree Quality	Low	Canopy diameter (m)	2m
Regulated Status	No	No. of trunks	1
Health	Fair	Structural Defects / Decay	No
Past damage disturbance	No	Disease / Pest infestation	No
Comments			

ASSESSMENT DETAILS

Assessor	Redbox Design Group
Date of Assessment	March 2021



TREE No. 77

Species Name	Eucalyptus nicholii	Tree Height (m)	5m
Species Code	Eni	Trunk circumference (mm)	800mm
Tree Quality	Low	Canopy diameter (m)	4m
Regulated Status	No	No. of trunks	1
Health	Fair	Structural Defects / Decay	No
Past damage disturbance	No	Disease / Pest infestation	No
Comments			

ASSESSMENT DETAILS

Assessor	Redbox Design Group
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TREE No. 78

Species Name	Eucalyptus maidenii	Tree Height (m)	15m
Species Code	EUm	Trunk circumference (mm)	1700mm
Tree Quality	Medium	Canopy diameter (m)	16m
Regulated Status	To be verified by survey	No. of trunks	1
Health	Good	Structural Defects / Decay	No
Past damage disturbance	No	Disease / Pest infestation	No
Comments			

ASSESSMENT DETAILS

Assessor	Redbox Design Group
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TREE No. 79

Species Name	Eucalyptus cinerea	Tree Height (m)	12m
Species Code	EUc	Trunk circumference (mm)	1000mm
Tree Quality	Medium	Canopy diameter (m)	7m
Regulated Status	To be verified by survey	No. of trunks	1
Health	Good	Structural Defects / Decay	No
Past damage disturbance	No	Disease / Pest infestation	No
Comments			

ASSESSMENT DETAILS

Assessor	Redbox Design Group
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TREE No. 80

Species Name	Eucalyptus mannifera	Tree Height (m)	12m
Species Code	Ema	Trunk circumference (mm)	1700mm
Tree Quality	Medium	Canopy diameter (m)	12m
Regulated Status	No	No. of trunks	1
Health	Good	Structural Defects / Decay	No
Past damage disturbance	No	Disease / Pest infestation	No
Comments			

ASSESSMENT DETAILS

Assessor	Redbox Design Group
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TREE No. 83

Species Name	Gleditsia triacanthos	Tree Height (m)	5m
Species Code	GLt	Trunk circumference (mm)	800mm
Tree Quality	Medium	Canopy diameter (m)	7m
Regulated Status	To be verified by survey	No. of trunks	1
Health	Good	Structural Defects / Decay	No
Past damage disturbance	No	Disease / Pest infestation	No
Comments			

ASSESSMENT DETAILS

Assessor	Redbox Design Group
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TREE No. 84

Species Name	Eucalyptus maidenii	Tree Height (m)	14m
Species Code	EUm	Trunk circumference (mm)	1800mm
Tree Quality	Medium	Canopy diameter (m)	11m
Regulated Status	To be verified by survey	No. of trunks	1
Health	Good	Structural Defects / Decay	No
Past damage disturbance	No	Disease / Pest infestation	No
Comments			

ASSESSMENT DETAILS

Assessor	Redbox Design Group
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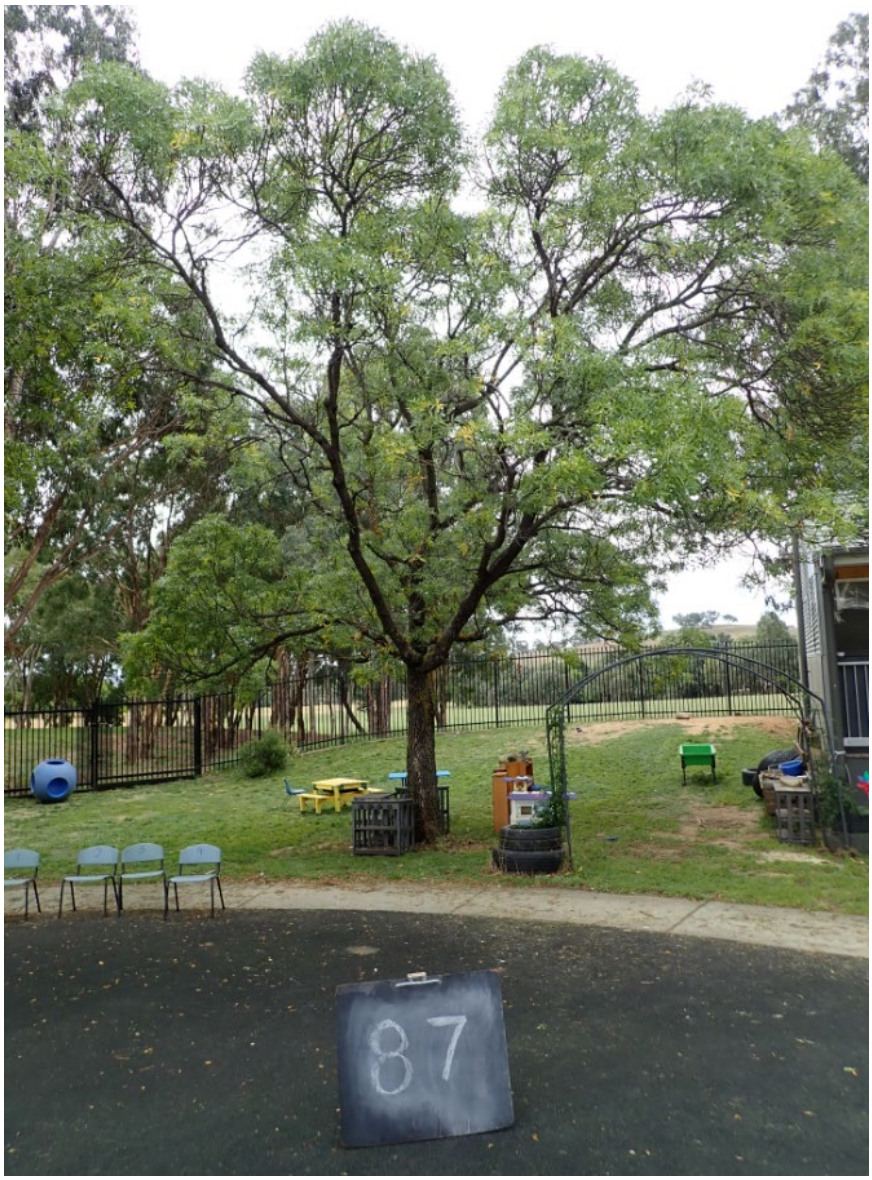


TREE No. 86

Species Name	Fraxinus oxycarpa 'Raywood'	Tree Height (m)	6m
Species Code	FRo	Trunk circumference (mm)	1100mm
Tree Quality	Medium	Canopy diameter (m)	11m
Regulated Status	To be verified by survey	No. of trunks	1
Health	Good	Structural Defects / Decay	No
Past damage disturbance	No	Disease / Pest infestation	No
Comments			

ASSESSMENT DETAILS

Assessor	Redbox Design Group
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TREE No. 87

Species Name	Eucalyptus nicholii	Tree Height (m)	11m
Species Code	Eni	Trunk circumference (mm)	1100mm
Tree Quality	Medium	Canopy diameter (m)	9m
Regulated Status	To be verified by survey	No. of trunks	1
Health	Fair	Structural Defects / Decay	No
Past damage disturbance	No	Disease / Pest infestation	No
Comments	Asymmetrical canopy. Species can be prone to limb drop		

ASSESSMENT DETAILS

Assessor	Redbox Design Group
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GROUP NO. GA

Species Name	Eucalyptus mixed species	Tree Height (m)	12-14m
Species Code	GA EUC	Trunk circumference (mm)	1000-1200mm
Tree Quality	Medium	Canopy diameter (m)	6-10m
Regulated Status	No	No. of trunks	1-2 per tree
Health	Good	Structural Defects / Decay	Yes
Past damage disturbance	No	Disease / Pest infestation	No
Comments	13 trees in group, some with poor unions at base.		

ASSESSMENT DETAILS

Assessor	Redbox Design Group
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TREE No. GROUP B

Species Name	Eucalyptus mixed species	Tree Height (m)	13-14
Species Code	GB EUC	Trunk circumference (mm)	400-900mm
Tree Quality	Medium	Canopy diameter (m)	5-7m
Regulated Status	No	No. of trunks	1-2 per tree
Health	Fair	Structural Defects / Decay	Yes
Past damage disturbance	No	Disease / Pest infestation	No
Comments	15 trees in group. Site conditions are not suitable for this species		

ASSESSMENT DETAILS

Assessor	Redbox Design Group
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TREE GROUP C

Species Name	Eucalyptus mixed species	Tree Height (m)	7-19m
Species Code	GC EUC	Trunk circumference (mm)	800-2000mm
Tree Quality	Medium	Canopy diameter (m)	5-12m
Regulated Status	No	No. of trunks	1-2
Health	Fair to Good	Structural Defects / Decay	No
Past damage disturbance	No	Disease / Pest infestation	No
Comments	10 trees, including 1 dead tree. Group of Eucs includes 1 No. Acacia		

ASSESSMENT DETAILS

Assessor	Redbox Design Group
Date of Assessment	March 2021



TREE GROUP D

Species Name	Eucalyptus mixed species	Tree Height (m)	7-19m
Species Code	GD EUC	Trunk circumference (mm)	800-2000mm
Tree Quality	Medium	Canopy diameter (m)	5-12m
Regulated Status	No	No. of trunks	1-2 per tree
Health	Fair to Good	Structural Defects / Decay	No
Past damage disturbance	No	Disease / Pest infestation	No
Comments	24 trees in group		

ASSESSMENT DETAILS

Assessor	Redbox Design Group
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TREE GROUP E

Species Name	Eucalyptus mixed species	Tree Height (m)	10-15m
Species Code	GE EUC	Trunk circumference (mm)	700-2300mm
Tree Quality	Medium	Canopy diameter (m)	3-11m
Regulated Status	No	No. of trunks	1-3
Health	Good	Structural Defects / Decay	No
Past damage disturbance	No	Disease / Pest infestation	No
Comments	45 trees in group		

ASSESSMENT DETAILS

Assessor	Redbox Design Group
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TREE GROUP F

Species Name	Eucalyptus mixed species	Tree Height (m)	25m average
Species Code	GF EUC	Trunk circumference (mm)	1000-2800mm
Tree Quality	High	Canopy diameter (m)	7-20m
Regulated Status	To be verified by survey	No. of trunks	1
Health	good	Structural Defects / Decay	No
Past damage disturbance	No	Disease / Pest infestation	No
Comments	9 trees in group		

ASSESSMENT DETAILS

Assessor	Redbox Design Group
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TREE GROUP G

Species Name	Eucalyptus mixed species	Tree Height (m)	8-17m average
Species Code	GG EUC	Trunk circumference (mm)	500-2700mm
Tree Quality	Medium	Canopy diameter (m)	5-13m
Regulated Status	No	No. of trunks	1-4 per tree
Health	Fair	Structural Defects / Decay	No
Past damage disturbance	No	Disease / Pest infestation	No
Comments	51 trees in group		

ASSESSMENT DETAILS

Assessor	Redbox Design Group
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TREE GROUP H

Species Name	Eucalyptus mixed species	Tree Height (m)	9-17m average
Species Code	GH EUC	Trunk circumference (mm)	500-2700mm
Tree Quality	High	Canopy diameter (m)	6-13m
Regulated Status	No	No. of trunks	1-4 per tree
Health	Fair	Structural Defects / Decay	No
Past damage disturbance	No	Disease / Pest infestation	No
Comments	48 trees in group		

ASSESSMENT DETAILS

Assessor	Redbox Design Group
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TREE GROUP I

Species Name	Eucalyptus mixed species	Tree Height (m)	8-15m average
Species Code	GI EUC	Trunk circumference (mm)	500-2000mm
Tree Quality	Medium	Canopy diameter (m)	3-9m
Regulated Status	No	No. of trunks	1-2 per tree
Health	Fair	Structural Defects / Decay	No
Past damage disturbance	No	Disease / Pest infestation	No
Comments	59 trees in group		

ASSESSMENT DETAILS

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TREE GROUP J

Species Name	Eucalyptus mixed species	Tree Height (m)	8-15m average
Species Code	GJ EUC	Trunk circumference (mm)	500-2000mm
Tree Quality	High	Canopy diameter (m)	3-9m
Regulated Status	No	No. of trunks	1-3 per tree
Health	Good	Structural Defects / Decay	No
Past damage disturbance	No	Disease / Pest infestation	No
Comments	59 trees in group		

ASSESSMENT DETAILS

Assessor	Redbox Design Group
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TREE GROUP K

Species Name	Eucalyptus mixed species	Tree Height (m)	19m average
Species Code	GK EUC	Trunk circumference (mm)	1000-2000mm
Tree Quality	Medium	Canopy diameter (m)	6-13m
Regulated Status	To be verified by survey	No. of trunks	1 per tree
Health	Good	Structural Defects / Decay	No
Past damage disturbance	No	Disease / Pest infestation	No
Comments	6 trees in group, 1 dead tree		

ASSESSMENT DETAILS

Assessor	Redbox Design Group
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TREE GROUP L

Species Name	Eucalyptus mixed species	Tree Height (m)	6-14m average
Species Code	GL EUC	Trunk circumference (mm)	600-2200mm
Tree Quality	Medium	Canopy diameter (m)	4-8m
Regulated Status	Yes	No. of trunks	1 per tree
Health	Good	Structural Defects / Decay	No
Past damage disturbance	No	Disease / Pest infestation	No
Comments	17 trees in group		

ASSESSMENT DETAILS

Assessor	Redbox Design Group
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TREE GROUP M

Species Name	Eucalyptus mixed species	Tree Height (m)	6-11m average
Species Code	GM EUC	Trunk circumference (mm)	600-1100mm
Tree Quality	High	Canopy diameter (m)	2-10m
Regulated Status	No	No. of trunks	1 per tree
Health	Good	Structural Defects / Decay	No
Past damage disturbance	No	Disease / Pest infestation	No
Comments	34 trees in group. Trees provide a buffer to residential area		

ASSESSMENT DETAILS

Assessor	Redbox Design Group
Date of Assessment	March 2021



TREE GROUP N

Species Name	Eucalyptus mixed species	Tree Height (m)	7-11m average
Species Code	GN EUC	Trunk circumference (mm)	600-1100mm
Tree Quality	Medium	Canopy diameter (m)	3-10m
Regulated Status	No	No. of trunks	1 per tree
Health	Good	Structural Defects / Decay	No
Past damage disturbance	No	Disease / Pest infestation	No
Comments	41 trees in group. Trees provide a buffer to residential area.		

ASSESSMENT DETAILS

Assessor	Redbox Design Group
Date of Assessment	March 2021

TREE GROUP J

Species Name	Eucalyptus mixed species	Tree Height (m)	8-15m average
Species Code	GJ EUC	Trunk circumference (mm)	500-2000mm
Tree Quality	High	Canopy diameter (m)	3-9m
Regulated Status	No	No. of trunks	1-3 per tree
Health	Good	Structural Defects / Decay	No
Past damage disturbance	No	Disease / Pest infestation	No
Comments	59 trees in group		

ASSESSMENT DETAILS

Assessor	Redbox Design Group
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TREE GROUP J

Species Name	Eucalyptus mixed species	Tree Height (m)	8-15m average
Species Code	GJ EUC	Trunk circumference (mm)	500-2000mm
Tree Quality	High	Canopy diameter (m)	3-9m
Regulated Status	No	No. of trunks	1-3 per tree
Health	Good	Structural Defects / Decay	No
Past damage disturbance	No	Disease / Pest infestation	No
Comments	59 trees in group		

ASSESSMENT DETAILS

Assessor	Redbox Design Group
Date of Assessment	March 2021

TREE GROUP F

Species Name	Eucalyptus mixed species	Tree Height (m)	25m average
Species Code	GF EUC	Trunk circumference (mm)	1000-2800mm
Tree Quality	High	Canopy diameter (m)	7-20m
Regulated Status	To be verified by survey	No. of trunks	1
Health	good	Structural Defects / Decay	No
Past damage disturbance	No	Disease / Pest infestation	No
Comments	9 trees in group		

ASSESSMENT DETAILS

Assessor	Redbox Design Group
Date of Assessment	March 2021

TREE GROUP F

Species Name	Eucalyptus mixed species	Tree Height (m)	25m average
Species Code	GF EUC	Trunk circumference (mm)	1000-2800mm
Tree Quality	High	Canopy diameter (m)	7-20m
Regulated Status	To be verified by survey	No. of trunks	1
Health	good	Structural Defects / Decay	No
Past damage disturbance	No	Disease / Pest infestation	No
Comments	9 trees in group		

ASSESSMENT DETAILS

Assessor	Redbox Design Group
Date of Assessment	March 2021

Appendix B – Tree Assessment Plan and Inventory

FRASER PRIMARY SCHOOL

TREE ASSESSMENT - FINAL ISSUE

DRAWING REGISTER

LANDSCAPE WORKS

DWG#	TITLE	DATE	REVISION
1658 - 000	COVER PAGE	07.06.21	B
1658 - 100	TREE ASSESSMENT LEGEND AND SITE PLAN	07.06.21	B
1658 - 101	TREE ASSESSMENT PLAN 1	07.06.21	B
1658 - 102	TREE ASSESSMENT PLAN 2	07.06.21	B
1658 - 103	TREE ASSESSMENT PLAN 3	07.06.21	B
1658 - 104	TREE ASSESSMENT SCHEDULE 1	07.06.21	B
1658 - 105	TREE ASSESSMENT SCHEDULE 2	07.06.21	B

LOCATION PLAN



1:2000@A1 1:4000@A3

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LEGEND

BLOCK BOUNDARY

SITE BOUNDARY

TREE IDENTIFICATION

5 Emf M	TREE NUMBER
5 Emf M	TREE IDENTIFICATION CODE
5 Emf M	TREE QUALITY RATING

SUPPLEMENTARY NOTES

(REGU)	REGULATED
(TCCS)	TCCS TREE

TREE QUALITY ASSESSMENT

An overall assessment of the quality of the tree and its relative importance for retention within an urban context

Low [L]
A tree that:Is of poor, structure or health, is in decline; and which has limited potential to contribute to the landscape.

Medium [M]
A tree that: Is of reasonable form, structure and health; and whose presence contributes to the landscape but not as significantly as high / exceptional quality.

High [H]
A tree that: Is of good form, structure and health; is without significant defect; and which has the potential to make a significant contribution to the landscape

Exceptional [E]
A tree or group of trees that: Has natural or cultural heritage importance; or has high aesthetic value and will have a major contribution to the surrounding landscape; or is of outstanding form and condition and is excellent example of the species; or has significant scientific value, including ecological importance.

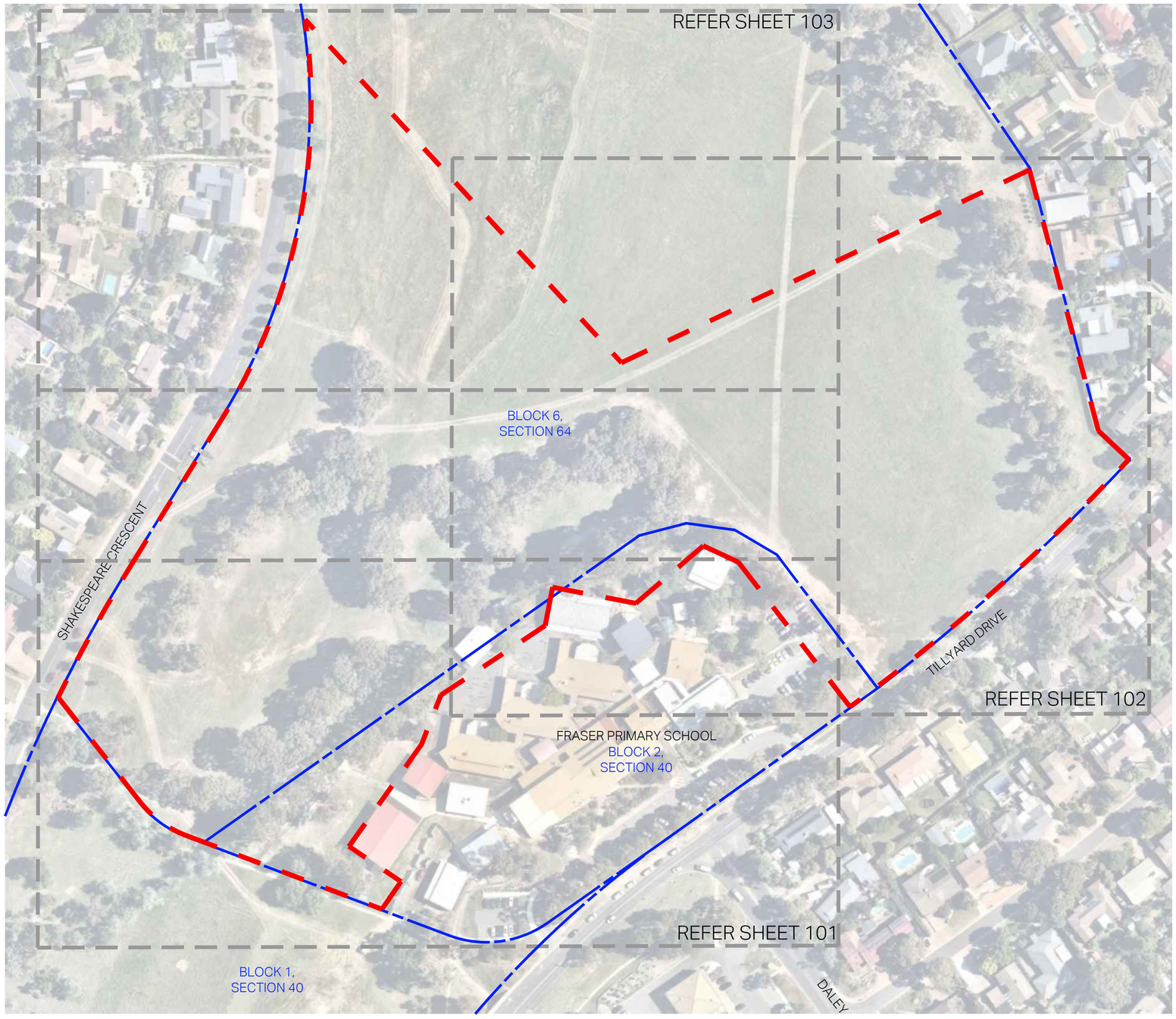
TREE ASSESSMENT SPECIES LIST

Code	Species
ACb	*Acacia baileyana*
CAc	*Callistemon citrinus*
Ccu	*Casuarina cunninghamiana*
EUb	*Eucalyptus bicostata*
EUc	*Eucalyptus cinerea*
EUm	*Eucalyptus maidenii*
Ema	*Eucalyptus mannifera*
Eme	*Eucalyptus melliodora*
Eni	*Eucalyptus nicholii*
EUp	*Eucalyptus polyanthemos*
Esi	*Eucalyptus sideroxylon*
EUs	*Eucalyptus stellulata*
Evi	*Eucalyptus viridis*
FRe	*Fraxinus excelsior*
FRo	*Fraxinus oxycarpa* 'Raywood'
GLt	*Gleditsia triacanthos*
Plc	*Pistacia chinensis*

GROUP: Mixed Eucalyptus Typical Species

EUb	*Eucalyptus bicostata*
EUc	*Eucalyptus cinerea*
EUm	*Eucalyptus maidenii*
Ema	*Eucalyptus mannifera*
Eme	*Eucalyptus melliodora*
Eni	*Eucalyptus nicholii*
EUp	*Eucalyptus polyanthemos*
Esi	*Eucalyptus sideroxylon*
EUs	*Eucalyptus stellulata*
Evi	*Eucalyptus viridis*

SITE PLAN



NOTES
No survey provided, all tree located by aerial imagery. Exact location to be confirmed / verified by survey.

* Status of Regulated / TCCS trees to be confirmed by survey due to uncertainty of boundary location

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REV	ISSUE	DATE	DRN	CHK
B	FINAL ISSUE	07.06.21	HR	KK
A	FOR INFORMATION	30.03.21	RS	KK

NORTH
SCALE 1:1000@A1 | 1:2000@A3
0 10 20 30 40 50m

PROJECT
FRASER PRIMARY SCHOOL
TREE ASSESSMENT

PROJECT No.	SHEET	ISSUE
1658	100	B

TREE ASSESSMENT
Legend & Site Plan

JOINS SHEET 103

BLOCK 6,
SECTION 64

FRASER PRIMARY SCHOOL
BLOCK 2,
SECTION 40

SHAKESPEARE CRESCENT

4 FRo M
3 FRo L
2 FRo L
1 FRo L
18 FRo L
19 Evi L
21 Eme M
20 Eme M
GA EUC M
GB EUC M
GC EUC L
GD EUC M *
GE EUC M *
GF EUC H*
GG EUC M
GH EUC M
GI EUC M
GJ EUC H
GK EUC M*
GL EUC M*
22 EUb H *
23 EUb M
24 EUm L
25 EUp L
26 Ccu M
27 EUp M
28 Ccu L
29 EUp M
30 Ccu M
31 EUp M
32 Ccu M
33 Ema L
34 EUb H*
35 EUb H*
36 EUb H*
37 EUb H*
38 EUb H*
39 Ema L*
62 Ema M
REGU
63 Ema M
REGU
64 Ema M
65 Ema M
66 EUm M
REGU
67 Ema M
REGU
68 EUm M
REGU
69 EUc M
REGU
70 EUc L
REGU
71 EUb M
REGU
72 Eni M
REGU
73 EUm L*
74 EUm L *
75 EUm M*
76 CAc L
REGU
77 Eni L
REGU
78 EUm M*
79 EUc M*
80 Ema M
REGU
83 GLt M*
84 EUm M*
86 FRo M
REGU
87 FRo L
REGU

JOINS SHEET 102

NOTES

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NORTH
SCALE 1:500@A1 | 1:1000@A3
0 5 10 15 20 25m

PROJECT
FRASER PRIMARY SCHOOL
TREE ASSESSMENT

PROJECT No.	SHEET	ISSUE
1658	101	B

TREE ASSESSMENT
Plan 1

JOINS SHEET 103

JOINS SHEET 101

BLOCK 6,
SECTION 64

GM EUC H

GN EUC M

GJ EUC H

33 Ema L

GI EUC M

38 EUb H*

36 EUb H*

35 EUb H*

GK EUC M*

30 Ccu M

31 EUp M

32 Ccu M

Up M

37 EUb H*

GL EUC M*

34 EUb H*

26 Ccu M

86 FRo M
REGU

84 EUm M*

87 FRo L
REGU

39 Ema L*

p L

83 GLt M*

H*

79 EUc M*

40 Ema M*

41 Ema M*

42 Ema M*

TILLYARD DRIVE

61

205

203

207

201

199

200

198

196

194

192

190

188

186

15

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NORTH

SCALE 1:500@A1 | 1:1000@A3

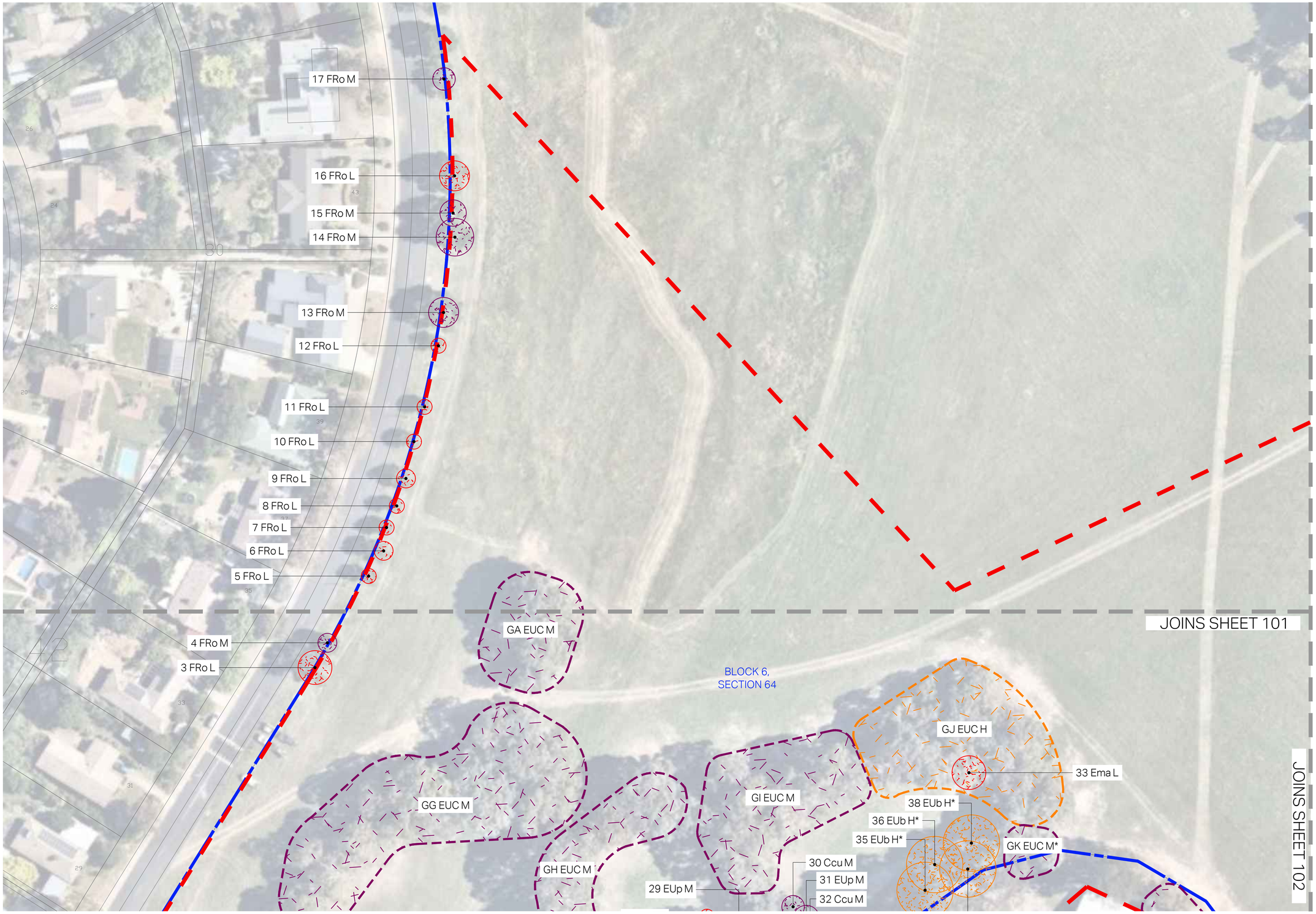
0 5 10 15 20 25m

PROJECT

FRASER PRIMARY SCHOOL
TREE ASSESSMENT

PROJECT No.	SHEET	ISSUE
1658	**102**	**B**

TREE ASSESSMENT
Plan 2



NOTES

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REV	ISSUE	DATE	DRN	CHK
B	FINAL ISSUE	07.06.21	HR	KK
A	FOR INFORMATION	29.03.21	RS	KK

NORTH

SCALE 1:500@A1 | 1:1000@A3

0 5 10 15 20 25m

PROJECT

FRASER PRIMARY SCHOOL

TREE ASSESSMENT

PROJECT No.	SHEET	ISSUE
1658	**103**	**B**

TREE ASSESSMENT
Plan 3

Tree Number	Species	Height (m)	Trunk circumference (mm)	Tree canopy (dia)	Number of Trunks	General Tree Health (D,P,F,G,E)	Structural defects/ Decay (Y/N)	Past Damage or Disturbance (Y,N)	Disease/ Infestation (Y/N)	Tree Quality (E,H,M,L)	Regulated Tree (REGU) or TCCS Tree (TCCS)	Comments
1	*Fraxinus oxycarpa* 'Raywood'	5	700	4	3	F	N	N	N	L	TCCS	
2	*Fraxinus oxycarpa* 'Raywood'	5	600	4	1	F	N	N	N	L	TCCS	
3	*Fraxinus oxycarpa* 'Raywood'	10	1000	9	1	F	N	N	N	L	TCCS	Large dead branches
4	*Fraxinus oxycarpa* 'Raywood'	6	600	5	1	G	N	N	N	M	TCCS	
5	*Fraxinus oxycarpa* 'Raywood'	5	600	4	1	F	N	N	N	L	TCCS	
6	*Fraxinus oxycarpa* 'Raywood'	6	700	5	1	G	N	N	N	L	TCCS	Small scar at 1.5m
7	*Fraxinus oxycarpa* 'Raywood'	5	600	4	1	G	N	N	N	L	TCCS	
8	*Fraxinus oxycarpa* 'Raywood'	5	600	4	1	G	N	N	N	L	TCCS	
9	*Fraxinus oxycarpa* 'Raywood'	5	800	5	1	G	N	N	N	L	TCCS	
10	*Fraxinus oxycarpa* 'Raywood'	4	600	4	1	G	N	N	N	L	TCCS	Scar 1.3 - 1.5m
11	*Fraxinus oxycarpa* 'Raywood'	4	500	4	1	G	N	N	N	L	TCCS	
12	*Fraxinus oxycarpa* 'Raywood'	4	500	4	1	G	N	N	N	L	TCCS	
13	*Fraxinus oxycarpa* 'Raywood'	10	1100	8	1	G	N	N	N	L	TCCS	
14	*Fraxinus oxycarpa* 'Raywood'	8	900	10	1	G	N	N	N	L	TCCS	
15	*Fraxinus oxycarpa* 'Raywood'	9	900	7	1	G	N	N	N	L	TCCS	
16	*Fraxinus oxycarpa* 'Raywood'	6	900	8	1	P	N	N	N	L	TCCS	
17	*Fraxinus oxycarpa* 'Raywood'	6	900	6	1	G	N	N	N	L	TCCS	
18	*Fraxinus oxycarpa* 'Raywood'	4	600	2	1	F	N	N	N	L	TCCS	
19	*Eucalyptus viridis*	8	1000	9	1	P	Y	N	N	L	TCCS	Dying
20	*Eucalyptus melliodora*	13	1300	11	1	G	N	N	N	M	TCCS	Poor union
21	*Eucalyptus melliodora*	13	1100	11	1	G	N	N	N	M	TCCS	
22	*Eucalyptus bicostata*	23	2400	13	1	G	Y	N	N	H	REGU	Active hollow at 5m
23	*Eucalyptus bicostata*	15	1300	10	1	F	N	N	N	M	TCCS	
24	*Eucalyptus maidenii*	15	2800	14	1	F	Y	N	N	L	TCCS	Poor union at 1.4m
25	*Eucalyptus polyanthemos*	8	1000	4	2	P	N	N	N	L	TCCS	
26	*Casuarina cunninghamiana*	8	700	5	1	F	N	N	N	M	TCCS	
27	*Eucalyptus polyanthemos*	11	1900	13	1	G	N	N	N	M	TCCS	
28	*Casuarina cunninghamiana*	5	4000	4	1	F	N	N	N	P	TCCS	
29	*Eucalyptus polyanthemos*	12	1000	9	1	G	N	N	N	M	TCCS	
30	*Casuarina cunninghamiana*	8	800	6	1	G	N	N	N	M	TCCS	
31	*Eucalyptus polyanthemos*	9	1000	7	1	G	N	N	N	M	TCCS	
32	*Casuarina cunninghamiana*	10	800	8	1	G	N	N	N	M	TCCS	
33	*Eucalyptus mannifera*	12	2100	9	1	P	Y	N	N	L	TCCS	Fungal fruiting bodies in rot at 1-2m
34-38	Refer Group O										*	
39	*Eucalyptus mannifera*	7	1300	5	1	F	Y	N	N	L	*	Dieback
40	*Eucalyptus mannifera*	10	900	7	1	G	N	N	N	M	*	
41	*Eucalyptus mannifera*	11	900	8	1	G	N	N	N	M	*	
42	*Eucalyptus mannifera*	10	900	7	1	G	N	N	N	M	*	
43	*Eucalyptus mannifera*	10	1200	10	1	G	N	N	N	M	REGU	
44	*Eucalyptus mannifera*	8	1200	11	1	G	N	N	N	M	REGU	
45	*Eucalyptus mannifera*	5	1000	5	1	F	N	N	N	L	REGU	
46	*Eucalyptus mannifera*	8	1300	9	1	G	N	N	N	M	REGU	Bird box ties affecting tree
47	*Eucalyptus nicholii*	12	1900	9	1	F	N	N	N	L	REGU	A dangerous species
48	*Eucalyptus mannifera*	14	1300	8	1	G	N	N	N	M	REGU	
49	*Eucalyptus nicholii*	17	2400	13	1	G	N	N	N	M	REGU	A dangerous species
50	*Eucalyptus mannifera*	7	1300	9	1	G	N	N	N	M	REGU	
51	*Eucalyptus mannifera*	9	1100	7	1	G	N	N	N	M	REGU	
52	*Eucalyptus stellulata*	4	600	8	1	F	N	N	N	L		Poor form
53	*Casuarina cunninghamiana*	14	900	5	1	F	N	N	N	M	REGU	Low leafiness
54	*Casuarina cunninghamiana*	14	1000	7	1	F	N	N	N	M	REGU	Low leafiness
55	*Eucalyptus mannifera*	13	1700	11	1	G	N	N	N	M	REGU	
56	*Eucalyptus mannifera*	13	1300	9	1	G	N	N	N	M	REGU	
57	*Eucalyptus mannifera*	11	1100	6	1	G	N	N	N	M	REGU	
58	*Eucalyptus mannifera*	13	1600	9	1	G	N	N	N	M	REGU	
59	*Eucalyptus mannifera*	14	1000	5	1	G	N	N	N	M	REGU	
60	*Eucalyptus mannifera*	14	900	5	1	F	N	N	N	L	REGU	
61	*Eucalyptus mannifera*	14	1200	8	1	G	N	N	N	M	REGU	
62	*Eucalyptus mannifera*	14	1000	9	1	G	N	N	N	M	REGU	
63	*Eucalyptus mannifera*	14	1000	10	1	G	N	N	N	M	REGU	
64	*Eucalyptus mannifera*	6	900	8	1	G	N	N	N	M		
65	*Eucalyptus mannifera*	8	1000	7	1	G	N	N	N	M	REGU	
66	*Eucalyptus maidenii*	18	1900	12	1	G	Y	N	N	M	REGU	Poor union at 6m, active hollow REMOVE as a safety hazard in this situation
67	*Eucalyptus mannifera*	12	1400	10	1	G	N	N	N	M	REGU	
68	*Eucalyptus mannifera*	13	2200	16	1	G	N	N	N	M	REGU	
69	*Eucalyptus cinerea*	9	1100	7	1	F	N	N	N	M	REGU	
70	*Eucalyptus cinerea*	5	600	4	1	F	N	N	N	L	REGU	
71	*Eucalyptus bicostata*	9	1100	7	1	G	N	N	N	M	REGU	
72	*Eucalyptus nicholii*	11	1100	9	1	F	N	N	N	M	REGU	A dangerous species, asymmetrical canopy
73	*Eucalyptus maidenii*	16	2300	15	1	F	Y	N	N	L	*	Poor union at 1.6m, leaning
74	*Eucalyptus maidenii*	17	2100	11	1	F	Y	N	N	L	REGU	Poor union at 2m
75	*Eucalyptus maidenii*	10	1600	13	1	G	N	N	N	M	*	
76	*Callistemon citrinus*	4	300	2	1	F	N	N	N	L	REGU	
77	*Eucalyptus nicholii*	5	800	4	1	F	N	N	N	L	REGU	A dangerous species
78	*Eucalyptus maidenii*	15	1700	16	1	G	N	N	N	M	*	
79	*Eucalyptus cinerea*	12	1000	7	1	G	N	N	N	M	*	
80	*Eucalyptus mannifera*	12	1700	12	1	G	N	N	N	M	REGU	
81	*Pistacia chinensis*	5	1200	5	1	G	N	N	N	M	REGU	
82	*Pistacia chinensis*	5	900	5	1	G	N	N	N	M		
83	*Gleditsia triacanthos*	5	800	7	1	G	N	N	N	M	*	
84	*Eucalyptus maidenii*	14	1800	11	1	G	N	N	N	M	*	

NOTES
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NORTH

SCALE 1:500@A1 | 1:1000@A3
0 5 10 15 20 25m

PROJECT
FRASER PRIMARY SCHOOL
TREE ASSESSMENT

PROJECT No.	SHEET	ISSUE
1658	104	B

TREE ASSESSMENT
Schedule 1

Tree Number	Species	Height (m)	Trunk circumference (mm)	Tree canopy (dia)	Number of Trunks	General Tree Health (D,P,F,G,E)	Structural defects/ Decay (Y/N)	Past Damage or Disturbance (Y,N)	Disease/ Infestation (Y/N)	Tree Quality (E,H,M,L)	Regulated Tree or TCCS Tree (open space or verge)	Comments
85	*Fraxinus oxycarpa* 'Raywood'	5	1300	4	3	G	N	N	N	M	REGU	
86	*Fraxinus oxycarpa* 'Raywood'	6	1100	11	1	G	N	N	N	M	REGU	
87	*Fraxinus oxycarpa* 'Raywood'	5	900	8	1	F	N	N	N	L	REGU	Low leafiness
88	*Fraxinus oxycarpa* 'Raywood'	12	1900	16	1	G	N	N	N	M	REGU	
89	*Fraxinus oxycarpa* 'Raywood'	6	1000	4	1	F	N	N	N	L	REGU	
90	*Fraxinus oxycarpa* 'Raywood'	8	1000	7	1	F	N	N	N	L	REGU	Low leafiness
91	*Fraxinus oxycarpa* 'Raywood'	4	600	4	1	F	N	N	N	L		Poor form
92	*Gleditsia triacanthos*	4	500	3	1	F	N	N	N	L		
93	*Gleditsia triacanthos*	4	500	3	1	F	N	N	N	L		
94	*Fraxinus excelsior*	4	600	7	1	G	N	N	N	M		
95	*Fraxinus oxycarpa* 'Raywood'	4	400	4	1	G	N	N	N	M		
96	*Fraxinus oxycarpa* 'Raywood'	4	400	3	1	G	N	N	N	M		
97	*Fraxinus oxycarpa* 'Raywood'	5	600	4	2	G	N	N	N	M		
98	*Eucalyptus sideroxylon*	5	600	2	1	G	N	N	N	M		
99	*Eucalyptus mannifera*	13	1500	9	1	G	N	N	N	M	REGU	
100	*Eucalyptus nicholii*	13	1200	8	1	P	N	N	Y	L	REGU	A dangerous species
101	*Eucalyptus nicholii*	13	1200	11	1	F	N	N	N	L	REGU	A dangerous species
102	*Eucalyptus nicholii*	13	1100	9	1	F	N	N	N	L	REGU	A dangerous species
103	*Eucalyptus nicholii*	9	1000	10	1	F	N	N	N	L	REGU	A dangerous species
104	*Eucalyptus nicholii*	15	1700	12	1	F	N	N	N	L	REGU	A dangerous species
105	*Eucalyptus nicholii*	12	1700	10	1	F	N	N	N	L	REGU	A dangerous species
106	*Eucalyptus nicholii*	13	1600	11	1	F	N	N	N	L	REGU	A dangerous species
107	*Eucalyptus nicholii*	10	1100	10	1	F	N	N	N	L	REGU	A dangerous species
108	*Eucalyptus nicholii*	7	900	5	1	F	N	N	N	L		A dangerous species
109	*Eucalyptus nicholii*	12	1500	11	1	F	N	N	N	L	REGU	A dangerous species
110	*Eucalyptus nicholii*	13	1500	11	1	F	N	N	N	L	REGU	A dangerous species, mistletoe
111	*Eucalyptus nicholii*	14	1700	9	1	P	N	N	N	L	REGU	A dangerous species
112	*Eucalyptus nicholii*	9	900	3	1	F	N	N	N	L		A dangerous species
113	*Eucalyptus nicholii*	13	1400	11	1	F	N	N	N	L	REGU	A dangerous species
114	*Eucalyptus nicholii*	15	1400	7	1	F	N	N	N	L	REGU	A dangerous species, unstable
115	*Eucalyptus nicholii*	7	900	5	1	F	N	N	N	L	REGU	A dangerous species, leaning onto road
116	*Gleditsia triacanthos*	6	1100	7	1	G	N	N	N	M	REGU	Pollarded
117	*Gleditsia triacanthos*	6	1300	7	1	G	N	N	N	M	REGU	Pollarded

Tree Number	Species	Height (m)	Trunk circumference (mm)	Tree canopy (dia)	Number of Trunks	General Tree Health (D,P,F,G,E)	Structural defects/ Decay (Y/N)	Past Damage or Disturbance (Y,N)	Disease/ Infestation (Y/N)	Tree Quality (E,H,M,L)	Regulated Tree or TCCS Tree (open space or verge)	Comments
GA	*Mixed eucalypts*	12-14	1000-2000	6-10	1-2	G	Y	N	N	M	TCCS	13 trees, poor unions at base
GB	*Mixed eucalypts*	13-14	900-1100	5-7	1-2	F	Y	N	N	M	TCCS	15 trees, unsuitable species for this site
GC	Mixed eucalypts, No.1 *Acacia baileyana*	8-11	700-1200	5-9	1-2	F	Y	N	N	L	TCCS	10 trees, 1 dead tree
GD	Mixed eucalypts	7-19	800-2000	5-12	1-2	F-G	N	N	N	M	*	24 trees
GE	Mixed eucalypts	10-15	700-2300	3-11	1-3	G	N	N	N	M	*	45 trees
GF	Mixed eucalypts	25	1000-2800	7-20	1	G	N	N	N	H	*	9 trees
GG	Mixed eucalypts	8-17	500-2700	5-13	1-4	F	N	N	N	M	TCCS	51 trees
GH	Mixed eucalypts	9-17	500-2700	6-13	1-4	F	N	N	N	M	TCCS	48 trees
GI	Mixed eucalypts	8-15	500-2000	3-9	1-2	G	N	N	N	M	TCCS	34 trees
GJ	Mixed eucalypts	8-15	500-2000	3-9	1-3	G	N	N	N	H	TCCS	59 trees
GK	Mixed eucalypts	19	1000-2000	6-13	1	F	N	N	N	M	*	6 trees, 1 dead tree
GL	Mixed eucalypts	6-14	600-2200	4-8	1	F	N	N	N	M	*	17 trees
GM	Mixed eucalypts	6-11	600-1100	2-10	1	G	N	N	N	H	TCCS	34 trees
GN	Mixed eucalypts	7-11	600-1100	3-10	1	G	N	N	N	M	TCCS	41 trees

NOTES
No survey provided, all tree located by aerial imagery. Exact location to be confirmed / verified by survey.

* Status of Regulated / TCCS trees to be confirmed by survey due to uncertainty of boundary location

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CONSULTANTS
ENGINEER: INDESCO
BUSH FIRE: NGH
PLANNER: WSP

CLIENT
ACT Government
Environment, Planning and Sustainable Development

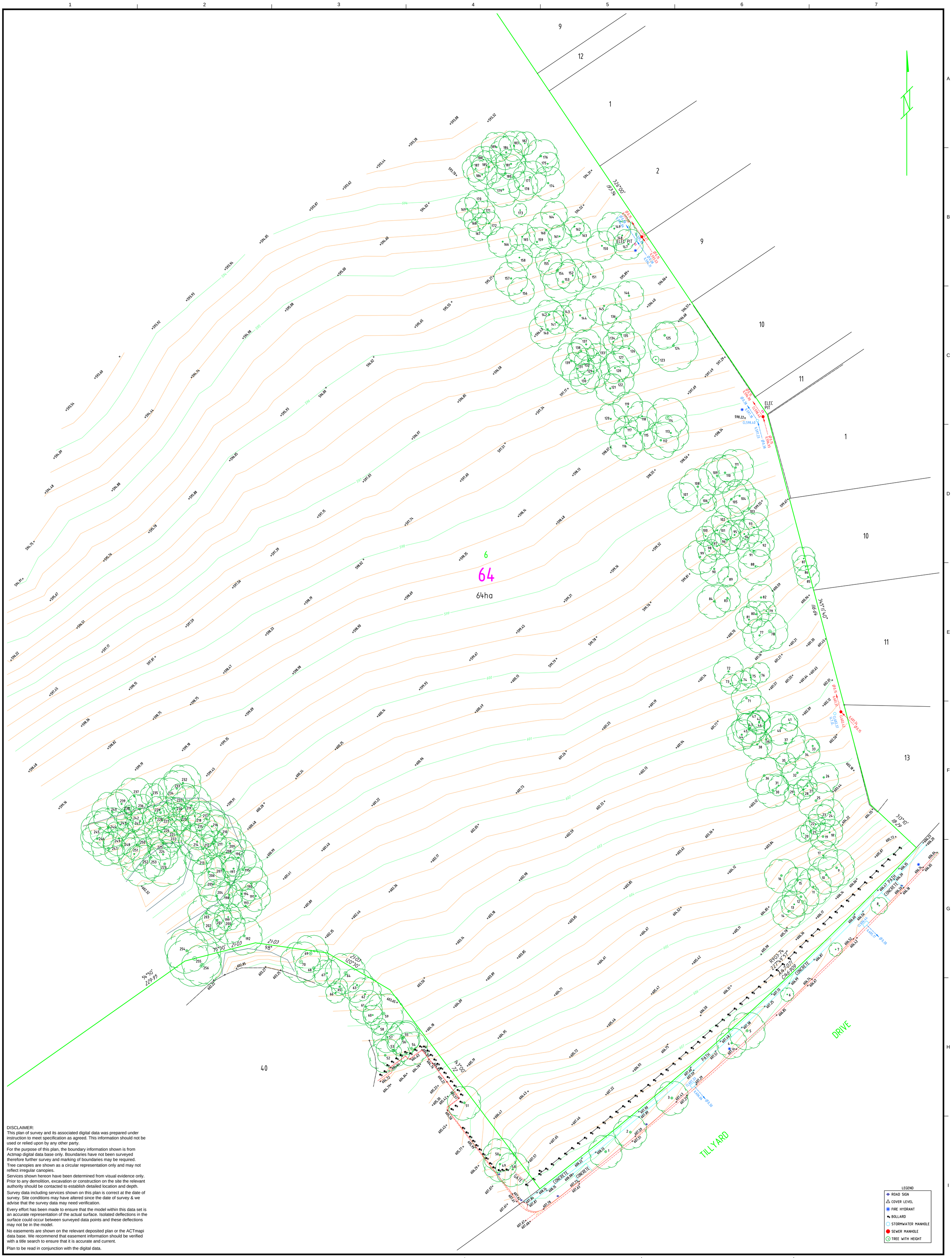
REV	ISSUE	DATE	DRN	CHK
B	FINAL ISSUE	07.06.21	HR	KK
A	FOR INFORMATION	30.03.21	RS	KK

NORTH
SCALE 1:500@A1 | 1:1000@A3
0 5 10 15 20 25m

PROJECT
FRASER PRIMARY SCHOOL
TREE ASSESSMENT

PROJECT No.	SHEET	ISSUE
1658	105	B

TREE ASSESSMENT
Schedule 2



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.

For the purpose of this plan, the boundary information shown is from Actmap digital data base only. Boundaries have not been surveyed therefore further survey and marking of boundaries may be required.

Tree canopies are shown as a circular representation only and may not reflect irregular canopies.

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.

Survey data including services shown on this plan is correct at the date of survey. Site conditions may have altered since the date of survey & we advise that the survey data may need verification.

Every effort has been made to ensure that the model within this data set is an accurate representation of the actual surface. Isolated deflections in the surface could occur between surveyed data points and these deflections may not be in the model.

No easements are shown on the relevant deposited plan or the ACTmapi data base. We recommend that easement information should be verified with a title search to ensure that it is accurate and current.

Plan to be read in conjunction with the digital data.

LEGEND
- ROAD SIGN
- COVER LEVEL
- FIRE HYDRANT
- BOLLARD
- STORMWATER MANHOLE
- SEWER MANHOLE
- TREE WITH HEIGHT

CLIENT
WSP

REVISION	DATE	ZONE

Contour Interval 0.25m
Datum A.H.D
BM KBM 2987
RL 603.874
Scale 1:400 (0 4 8 16)

Surveyed	M. WHEELER	20/10/2021
Drawn	R. FITZSIMMONS	22/10/2021
Checked	B. SKEERS	26/10/2021
Approved	B. RICHARDSON	26/10/2021

Surveyor, Registered under the Surveyors Act 2007.

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DETAIL SURVEY
FRASER PRIMARY SCHOOL
BLOCK 6 SECTION 64
TILLYARD DRIVE
FRASER

Project No. 22021.298 **Rev**

Sheet No. 1 of 2 22021.298_DT_001.dwg

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Fraser Primary School - Tree Table

Num	Canopy	Trunk Dia.	Height	No. of Trunks	Trunk Circ.	Pt Num	Canopy	Trunk Dia.	Height	No. of Trunks	Trunk Circ.	Pt Num	Canopy	Trunk Dia.	Height	No. of Trunks	Trunk Circ.
1	10	0.65	11		2.0	91	10	0.50	12		1.6	181	9	0.45	9		1.4
2	10	0.65	11		2.0	92	8	0.25	9		0.8	182	7	0.25	8		0.8
3	10	0.65	11		2.0	93	9	0.40	12		1.3	183	9	0.45	12		1.4
4	9	0.50	10		1.6	94	9	0.40	12		1.3	184	10	0.45	14		1.4
5	11	0.70	12		2.2	95	9	0.40	12		1.3	185	10	0.50	11		1.6
6	4	0.20	5		0.6	96	9	0.40	12		1.3	186	9	0.30	8		0.9
7	4	0.20	6		0.6	97	8	0.35	10		1.1	187	8	0.25	8		0.8
8	5	0.20	6		0.6	98	7	0.25	7		0.8	188	8	0.25	9		0.8
9	11	0.60	12		1.9	99	10	0.50	12		1.6	189	9	0.45	12		1.4
10	11	0.50	12		1.6	100	6	0.30	7		0.9	190	10	0.65	14		2.0
11	11	0.50	11		1.6	101	9	0.40	12		1.3	191	9	0.50	11		1.6
12	11	0.60	14		1.9	102	10	0.40	12		1.3	192	11	0.65	14		2.0
13	8	0.30	8		0.9	103	12	0.65	16		2.0	193	10	0.45	11	2	1.4
14	10	0.55	12		1.7	104	10	0.50	16		1.6	194	8	0.45	10		1.4
15	8	0.55	9		1.7	105	11	0.60	14		1.9	195	12	0.50	12		1.6
16	10	0.60	13		1.9	106	5	0.25	10		0.8	196	11	0.50	12		1.6
17	9	0.40	8		1.3	107	9	0.40	9		1.3	197	7	0.45	8		1.4
18	8	0.40	9		1.3	108	11	0.55	12		1.7	198	8	0.50	11		1.6
19	8	0.60	12		1.9	109	11	0.55	14		1.7	199	8	0.30	9		0.9
20	5	0.20	8		0.6	110	11	0.55	14		1.7	200	10	0.40	12		1.3
21	6	0.30	8		0.9	111	11	0.55	13		1.7	201	9	0.50	12		1.6
22	6	0.30	9		0.9	112	11	0.55	12		1.7	202	9	0.50	12		1.6
23	8	0.35	11		1.1	113	11	0.45	14		1.4	203	11	0.70	12	3	2.2
24	8	0.40	12		1.3	114	12	1.00	16		3.1	204	10	0.60	12	2	1.9
25	11	0.65	13		2.0	115	10	0.45	13		1.4	205	10	0.50	12		1.6
26	9	0.50	10		1.6	116	10	0.45	13		1.4	206	10	0.45	11		1.4
27	6	0.40	8		1.3	117	7	0.30	9		0.9	207	10	0.45	11	2	1.4
28	6	0.40	8		1.3	118	9	0.35	9		1.1	208	12	0.55	12		1.7
29	6	0.30	7		0.9	119	9	0.35	9		1.1	209	10	0.50	12		1.6
30	10	0.60	14		1.9	120	9	0.45	10		1.4	210	12	0.60	11	4	1.9
31	6	0.20	8		0.6	121	9	0.45	12		1.4	211	8	0.40	11		1.3
32	9	0.55	12		1.7	122	9	0.45	13		1.4	212	9	0.45	12		1.4
33	4	0.45	8		1.4	123	2	0.20	4		0.6	213	8	0.30	8		0.9
34	10	0.50	12		1.6	124	15	0.65	15		2.0	214	11	0.50	12	3	1.6
35	6	0.25	8		0.8	125	8	0.60	14		1.9	215	11	0.50	10	2	1.6
36	11	0.65	12		2.0	126	10	0.50	12		1.6	216	10	0.45	12		1.4
37	12	0.65	15		2.0	127	10	0.50	12		1.6	217	11	0.50	12	3	1.6
38	9	0.50	10		1.6	128	9	0.40	10		1.3	218	9	0.30	10	2	0.9
39	3	0.40	7		1.3	129	10	0.45	12		1.4	219	12	0.60	12	2	1.9
40	10	0.55	14		1.7	130	9	0.35	10		1.1	220	8	0.45	12	2	1.4
41	5	0.20	8		0.6	131	10	0.40	11		1.3	221	10	0.50	12	2	1.6
42	7	0.30	8		0.9	132	8	0.35	9		1.1	222	6	0.25	8		0.8
43	9	0.50	12		1.6	133	6	0.20	6		0.6	223	13	0.65	13	2	2.0
44	9	0.45	9		1.4	134	6	0.30	9		0.9	224	9	0.50	13		1.6
45	10	0.50	12		1.6	135	8	0.35	11		1.1	225	10	0.50	12		1.6
46	7	0.30	8		0.9	136	9	0.35	12		1.1	226	10	0.45	11		1.4
47	10	0.50	13		1.6	137	9	0.45	12		1.4	227	10	0.40	12		1.3
48	10	0.50	10		1.6	138	8	0.45	14		1.4	228	8	0.50	13		1.6
49	10	0.50	12		1.6	139	11	0.60	15		1.9	229	10	0.60	13	3	1.9
50	10	0.50	11		1.6	140	11	0.50	11		1.6	230	7	0.25	7		0.8
51	10	0.60	12		1.9	141	7	0.35	9		1.1	231	10	0.40	11		1.3
52	10	0.60	11		1.9	142	9	0.40	10		1.3	232	11	0.50	12		1.6
53	10	0.70	12		2.2	143	6	0.40	10		1.3	233	11	0.55	12		1.7
54	10	0.70	10		2.2	144	10	0.50	13		1.6	234	12	0.65	13		2.0
55	10	0.70			2.2	145	11	0.50	16		1.6	235	7	0.25	7		0.8
56	10	0.70			2.2	146	9	0.50	9		1.6	236	9	0.50	12		1.6
57	9	0.45	8		1.4	147	9	0.50	9		1.6	237	11	0.55	12		1.7
58	5	0.30	6		0.9	148	9	0.35	8		1.1	238	3	0.20	6		0.6
59	12	0.80	12		2.5	149	10	0.40	13		1.3	239	9	0.45	8		1.4
60	6	0.30	10		0.9	150	9	0.40	13		1.3	240	12	0.55	13		1.7
61	10	0.50	12		1.6	151	8	0.30	7		0.9	241	8	0.55	10	2	1.7
62	10	0.45	10		1.4	152	10	0.35	10		1.1	242	8	0.45	12	2	1.4
63	10	0.50	13		1.6	153	12	0.60	15		1.9	243	8	0.35	8		1.1
64	12	0.90	15		2.8	154	11	0.80	15		2.5	244	12	0.60	13		1.9
65	5	0.40	10		1.3	155	8	0.30	9		0.9	245	11	0.65	11		2.0
66	6	0.40	7		1.3	156	8	0.30	8		0.9	246	10	0.50	10		1.6
67	8	0.40	11		1.3	157	10	0.50	14		1.6	247	10	0.65	12		2.0
68	11	0.80	12		2.5	158	8	0.30	8		0.9	248	11	0.60	13		1.9
69	11	0.90	13		2.8	159	9	0.50	12		1.6	249	10	0.50	14		1.6
70	12	1.00	15		3.1	160	11	0.60	14		1.9	250	9	0.40	12		1.3
71	9	0.60	12		1.9	161	7	0.35	8		1.1	251	10	0.40	12		1.3
72	9	0.50	10		1.6	162	6	0.30	10		0.9	252	12	0.70	14		2.2
73	6	0.30	7		0.9	163	6	0.30	9		0.9	253	12	0.60	13		1.9
74	6	0.30	7		0.9	164	8	0.25	7		0.8	254	13	0.65	14		2.0
75	6	0.30	7		0.9	165	8	0.40	9		1.3	255	16	1.10	22		3.5
76	6	0.30	7		0.9	166	9	0.40	11		1.3	256	12	1.10	26		3.5
77	10	0.50	12		1.6	167	7	0.30	10		0.9						
78	11	0.90	15		2.8	168	7	0.30	10		0.9						
79	6	0.25	6		0.8	169	7	0.45	11		1.4						
80	8	0.40	11		1.3	170	7	0.30	10		0.9						
81	8	0.45	12		1.4	171	7	0.30	10		0.9						
82	8	0.50	12		1.6	172	7	0.30	10		0.9						
83	8	0.50	12		1.6	173	4	0.25	9		0.8						
84	10	0.50	12		1.6	174	10	0.50	13		1.6						
85	7	0.25	8		0.8	175	7	0.30	9		0.9						
86	7	0.25	8		0.8	176	10	0.55	13		1.7						
87	7	0.25	8		0.8	177	10	0.60	11		1.9						
88	10	0.30	11		0.9	178	9	0.45	11		1.4						
89	6	0.25	10		0.8	179	10	0.45	12		1.4						
90	9	0.50	15		1.6	180	12	0.65	14		2.0						

CLIENT

WPS

REVISION		DATE

CANBERRA
11-13 Lawry Place,
Macquarie, ACT. 261
Phone 02 6202 7600

Surveyed	M. WHEELER	20/10/2
Drawn	R. FITZSIMMONS	22/10/2
Checked	B. SKEERS	22/10/2
Approved	B. RICHARDSON	26/10/2

Surveyor, Registered under the Surveyors Act 2007.

TREE TABLE
FRASER PRIMARY SCHOOL
BLOCK 6 SECTION 64
TILLYARD DRIVE
FRASER

Project No. 22021.298 **Rev**

Sheet No. 2 of 2 22021.298_DT_001.

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ACT Government
Environment and Planning

Scope for a Planning Report

to inform a proposed Territory Plan variation to rezone part Block 6 Section 64 Fraser from Hills, Ridges and Buffer (NUZ3) to Community Facilities Zone (CFZ).

18 December 2020

A planning report is prepared to provide the information necessary to inform consideration by the planning and land authority, within the Environment, Planning and Sustainable Development Directorate, on preparing a Territory Plan variation in support of the proposal (refer to Part 5.6 of the *Planning and Development Act 2007*).

The planning report is to respond to each of the following parts:

A. Executive summary

B. Description of the proposed Territory Plan variation
(*A comprehensive description of the site and the proposal, current planning policy, the intended development and use, and all proposed changes to the Territory Plan.*)

Provide information on all proposed changes to the Territory Plan and specify any land use changes

Provide information on all proposed changes to the National Capital Plan if any.

C. Justification for the planning policy changes
(*An assessment of the opportunity cost of the proposed change, and discussion of changes in the economic, social, natural and physical environment that necessitate the change in both local and broader contexts*).

D. Strategic planning policy context
(*A discussion of proposed planning policy change and proposed use/development in the context of the ACT's planning framework and strategic planning policy. Identification of any associated changes, e.g. an amendment to the National Capital Plan or public land register*).

Relevant ACT Government policies should be considered in the planning report. This includes but not be limited to:

- The ACT Planning Strategy 2018
- The ACT Climate Change Strategy 2019-2025
- Canberra's Living Infrastructure Plan: Cooling the City

Other relevant Government policies should be considered in the planning report. This includes but not be limited to:

- National Capital Plan
  The National Capital Authority requests an assessment against Section 4.25 of the National Capital Plan, City Centre Special Requirements be provided. The assessment needs to demonstrate that any proposed changes to the Territory Plan are not inconsistent with the National Capital Plan.

E. Preliminary consultation

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

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

- provides 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

F. Impact assessment

(*A discussion of both the suitability and capability of the land for the proposed use/development with a clear conclusion, plus discussion of potential positive and negative impacts on the social, physical and natural environment if the land is developed to its full capacity as proposed.*)

An assessment of potential impacts of the proposal must address:

- **Impact on heritage values**
  - An Unexpected Finds Protocol should be developed for the project, which describes necessary steps to be taken should any Aboriginal places or objects be identified during construction works.
- **Impact on existing flora and fauna**
  - A Tree Assessment and Tree Management Plan is required to identify any trees that would require protection under the Tree Protection Act, as well as any remnant trees noting that a likely condition of expansion would be that all remnant trees are kept.
- **Potential impacts of land contamination activities**
  - An environmental assessment in accordance with Environment Protection Authority (EPA) endorsed guidelines to assess it suitability for its proposed use from a contamination perspective.
- **Traffic impacts**
  - A Traffic Impact Assessment (TIA) Report to understand the likely increase in traffic movements and how these will be managed within the site and any impact on the surrounding road network. Details needed are SIDRA intersection analysis for two intersections of Kerrigan street/Shakespeare Cr and Kerrigan/Tillyard Drive
  - Consideration for the future of a bus layover and potentially a parking area e.g. for an oval on weekends as well as a Park and Ride nearby.
  - Consideration if the road reserve of Shakespeare crescent is sufficient to support the rezoning.
  - Traffic impacts on the external road network for an expanded school and increase in proposed number of students should also be examined.

- **Impact on active travel and existing cycleways**
    - Consideration of direct connections to shops and community route linking to the broader network
    - Opportunities and constraints for increased active travel in the local area traffic management should also be investigated as part of the rezoning request.
- **Bushfire protection requirements:**
    - A Bushfire Threat Assessment and Compliance Report of the proposal by an accredited Bushfire Consultant is required to demonstrate an appropriate level of protection relative to the hazard is provided.
    - The internal and perimeter roads of the development must be designed to allow access for ACTF&R Compressed Air Foam System (CAFS) 8000 fire appliances.
- **Utility services**
    - Consultation with Icon Water to determine the adequacy of existing infrastructure, including hydrant spacing, for the proposed expansion of the school site.
    - Consideration that the existing electricity network supply may not be able to cope with the proposed additional demands and hence, the proponent must allow for the space for new pad mount substation within the amended block boundary. The substation siting must comply with Evoenergy substation siting guide and other relevant separation and clearance and earthing requirements.

Additional detailed planning and design considerations, which form part of this scope are listed in Table 1. The proponent must address all comments in accordance with the actions required in the following table.

Table 1 – Government agencies' comments and service utility providers' comments for proponent to address

Agency	Comments	Required Actions
EPSDD - Heritage	There are no recorded or registered heritage places or objects on this portion of the block. A number of Aboriginal places are located to the north of proposed development area within Block 6 Section 64 Fraser. These are located at some distance from the proposed footprint and will not be damaged by works within the proposed expansion areas. Further, historic aerial imagery indicates that the area was subject to earthworks in the 1970s as part of suburban development, suggesting that the area has low potential to contain unrecorded Aboriginal places or objects. As such the Council considers that there are unlikely to be matters covered by the Heritage Act 2004 arising from the TPV. The Council advises that there are no heritage matters required to be included in the scoping document for the TPV. However, an Unexpected Finds Protocol should be developed for the project, which describes necessary steps to be taken should any Aboriginal places or objects be identified during construction works. A sample has been previously provided to the Education Directorate for reference.	Planning report required to demonstrate comments have been addressed.
EPSDD – Conservator of Flora and Fauna	The proposed site has an exotic understory and mainly planted eucalypts. At this stage it is not considered that there are any significant ecological constraints to the school expanding over the site. A Tree Assessment would be required to identify any trees that would require protection under the Tree Protection Act, as well as any remnant trees noting that a likely condition of expansion would be that all remnant trees are kept. Superb Parrots been observed in past years at the site. The birds could be feeding on eucalypt buds, flowers or lerps and probably also feed on cape weed seeds and onion weed bulbs. However, it is not considered that the area would be a significant feeding resource for this threatened parrot. Superb Parrots are mainly recorded in the Fraser area either in September – early October (prior to breeding) or post breeding in summer. Landscaping of the expanded school should consider utilising Superb Parrot food plants which are bearing the food resource at these times of higher visitation. Advice should be sought from the Conservator if and when development proceeds as to what species this landscaping should include.	Planning report required to demonstrate comments have been addressed. Proponent is to note and discuss with relevant agencies as necessary.

Environmental Protection Agency	The site will require an environmental assessment in accordance with Environment Protection Authority (EPA) endorsed guidelines to assess it suitability for its proposed use from a contamination perspective. The findings of the assessment must be reviewed and endorsed by the EPA prior to the site being used for the proposed use.	Planning report required to demonstrate comments have been addressed. Proponent to note and act on the advice.
Transport Canberra and City Services	**Waste Management** • Although the 2019 Waste Code requires forward-in and forward-out manoeuvres for waste collection vehicles, reversing in and out of sites is still being approved. The Planning Report should clearly state that truck reversing manoeuvres are not permitted in school zones. • The Planning Report should address future developments in and around the school, truck movements and how waste collection can be achieved safely and with full compliance of the Waste Code. **Traffic Impact Assessment** • The proponent is requested to provide a Traffic Impact Assessment (TIA) Report to understand the likely increase in traffic movements and how these will be managed within the site and any impact on nearby road network. • Details needed are SIDRA intersection analysis for two intersections of Kerrigan street/Shakespeare Cr and Kerrigan/Tillyard Drive • TIA must also consider for the future a bus layover and potentially a parking area e.g. for an oval on weekends as well as a Park and Ride nearby. **Active Travel** • The cycleway in question is part of a local community route that provides a direct connection to the shops and the main community route linking to the broader network. Following the design principles articulated in MIS 05, any proposal should maintain and enhance a safe, direct and convenient walking and cycling connection to the Fraser shops and the main community route (shown in blue below) to avoid community severance. In other words, no preference which expansion option they choose, just don't sever community connections by fencing off the path.	Planning report required to demonstrate comments have been addressed Proponent to note and act on the advice.

	 **Vegetation and Tree Management Plan** • The site does not contain any remnant vegetation nor are there any individual exceptional quality trees; however two of the groups of trees were assessed as high quality as they provide aesthetic values and assist with connectivity for native fauna from the ACT border into the suburbs of Fraser and Charnwood. The groups identified as high quality were located on the mound west of the existing playground area and north of the centre of the proposed site. The siting of any new buildings needs to consider and be sympathetic to the retention of these trees. • Planning Report must include a detailed Tree Assessment and Tree Management plan with any formal development application at a late stage.	
EPSDD - Strategic Planning	The proposed location of the school is in an area that contains a large number of mature trees, which form an important landscape and amenity setting. Notwithstanding that a tree survey will be undertaken, the proponent should further consider options to expand the school to the northeast along Tillyard Drive or to the south on the oval, subject to the utilisation of the	Planning report required to demonstrate

	oval. In this way, the large number of trees to the west of the school will not need to be removed. To offset the loss of part of the oval or open space to the northeast, consideration should be given to either establish a community recreation irrigated park (CRIP) in the immediate area or expanding the adjacent playground. In this way the local community will be provided with a higher amenity recreation space and improved active travel connections than what appears currently. An alternative location for the school's expansion, would still need to be assessed including through traffic assessment, active travel, CPTED, and bushfire.	comments have been addressed.
Emergency Services Agency	***Water Supplies:*** *Large installations* are classified as Fire Risk type F4. The proponents must seek clarification from Icon Water to determine the adequacy of existing infrastructure, including hydrant spacing, for the proposed expansion of the school site. ***Bushfire Protection Requirements:*** *Bushfire Threat Assessment and Compliance Report:* The development is located **inside** the area declared by the ESA as the Bushfire Prone Area. Schools are considered as Sensitive-use developments, as per the Strategic Bushfire management plan 2019 version 4 (p61) and require application of appropriate bushfire protection measures. Assessment of the proposal by an accredited Bushfire Consultant is required application to demonstrate an appropriate level of protection relative to the hazard is provided. *ACTF&R Access Requirements for New Estate Development:* The internal and perimeter roads of the development must be designed to allow access for ACTF&R Compressed Air Foam System (CAFS) 8000 fire appliances. ACTF&R CAFS appliances are specifically designed for the urban interface however can be used as a multi-functional vehicle.	Proponent is to note and discuss with relevant agencies as necessary. Planning report required to demonstrate comments have been addressed.
EPSDD - Infrastructure Planning	A site assessment should be undertaken, as is usual, that would cover (among other things) traffic impact, access options, drainage, site servicing (water, sewer, energy, telecommunications), tree survey and other environmental values on site.	Planning report required to demonstrate comments have been addressed.
ACT Health - Strategic Infrastructure	We note that the Education Directorate indicates that *"Upon receipt of the Scope we will engage a consultant to undertake due diligence to support the proposal, including assessment of existing trees, ecological considerations, bushfire risk, traffic impact assessments and other likely impacts on the community. It will also confirm the proposed boundary to best meet the operational needs of the school."*	Planning report required to demonstrate comments have

	Due to the large area of the proposed site, there may be opportunity during the boundary identification process to identify a suitable area for a potential future co-location of a health centre/community centre. This would support what we understand to be a shortage of suitable land, and suitably zoned land, for such facilities.	been addressed.
EPSDD – Deed Management	The proponent should demonstrate that utility services can adequately service an expanded school area. This includes access for emergency vehicles and fire hydrant capacity etc. The proponent should investigate if the road reserve of Shakespeare crescent is sufficient to support the rezoning. This presumes that there will be enhanced use of this road for buses, drop offs and parking. If on street or off street parking is proposed, this should be considered. A change to the zone may not be necessary, however a new block with sufficient setbacks to accommodate these requirements could be proposed as a potential solution. Planning controls may also be useful to identify access to and from the new expanded school (either permitting or prohibiting access as necessary). There is an existing 1050 dia SW line through the middle of the area servicing the surrounding residential area. The proponent will need to look at how this may affect the schools expansion if it remains or if a relocation is feasible and may provide a better built form in the future. Traffic impacts on the external road network for an expanded school and increase in proposed number of students should also be examined. Opportunities and constraints for increased active travel in the local area traffic management should also be investigated as part of the rezoning request.	Discuss with relevant agencies as required. Planning report required to demonstrate comments have been addressed.
CMTEDD - Policy and Cabinet Division	The planning report should address how the additional school buildings and facilities will achieve best practice sustainable design, including in relation to urban heat mitigation and green/living infrastructure. In doing so, the planning report should discuss how development of the new facilities will align with the ACT Climate Change Strategy 2019-2025 and Canberra's Living Infrastructure Plan. The planning report should address any heritage and environmental issues that are relevant to the site; in particular, whether trees will need to be removed and how this will be compensated for. The planning report should address any negative impacts on surrounding development and how they will mitigated; for example, noise and solar access, particularly since the new school buildings and facilities will be closer to residential developments than the existing site. The planning report should address the impacts of expanding the school on traffic in the area and how this will be managed.	Planning report required to demonstrate comments have been addressed.

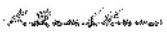
EPSDD – Climate Change and Sustainability	It is requested that the scoping report include a requirement for the planning report to include the following: • Urban heat and microclimate considerations: *Canberra's Living Infrastructure Plan: Cooling the City* (The Plan) builds on the ACT Government's commitments under the ACT Planning Strategy 2018 to make Canberra a sustainable, liveable and resilient city into the future. The Plan seeks to reduce the urban heat island effect by integrating living infrastructure, such as trees, wetlands and vegetation into urban planning, design and development. The Plan includes actions to achieve 30% canopy cover (or equivalent) and 30% permeable surfaces across Canberra's urban footprint by 2045. The planning report should demonstrate how the proposed land use change will support the objectives and actions of the Plan.	Planning report required to demonstrate the Living infrastructure Plan is addressed and relevant living infrastructure measures are incorporated and detailed.
Evoenergy	Evoenergy do support the proposed Territory Plan Variation – B6 S64 Fraser for increasing the proposed area for Fraser School at B2 S40. However, would like to highlight that the existing electricity network supply may not be able to cope with the proposed additional demands and hence, the proponent must allow for the space for new pad mount substation within the amended block boundary. The substation siting must comply with Evoenergy substation siting guide and other relevant separation and clearance and earthing requirements. Proponent to lodge Preliminary network connection advice application prior to any development/construction activities for supply upgrade work.	Proponent to note and act on the advice.
Icon Water	There is an existing DN150 sewer main running through proposed part block 6. Based on the final block and building design, relocation of sewer main may be required. Once the development is finalised (number of additional students and staff), Icon Water will need to model the network to determine the capacity. This may require upgrade of the network. Water and Sewer Capital Contribution Charge will be required for increase in Equivalent Population.	Proponent is to note and discuss with relevant agencies.

Detailed Site Investigation

Fraser Primary School, Block 6
Section 64, Fraser, ACT 2615

Prepared for Major Projects, Education

17 July 2024

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This report has been prepared for Major Projects, Education in accordance with the terms and conditions of appointment for Q24022. Lanterra Consulting Pty Ltd cannot accept any responsibility for any use of or reliance on the contents of this report by any third party.

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Executive Summary

Major Projects, Education engaged Lanterra Consulting Pty Ltd (Lanterra) to complete a detailed site investigation (DSI) across the vacant open space land adjacent to the Fraser Primary School located on Block 6 Section 64, Fraser, ACT 2615 (herein referred to as the site) in response to the ACT Government '*Statement of Requirement, Fraser Primary School Boundary Expansion – Limited Soil Intrusive Investigation'*.

The investigation area was approximately 12,480 square metres (m^2) and was part of Block 6 Section 64, which has a total area of 64,291 m^2. Block 6 Section 64 is zoned PRZ1: Urban Open Space; NUZ3: Hills, Ridges, and Buffer Areas and RZ1: Suburban. It is understood that a variation to the Territory Plan is proposed to rezone part of the site as CF: Community Facilities to permit an expansion of the school.

The objectives of this DSI were to assess the suitability of the site for the proposed Fraser Primary School boundary expansion for future use as a primary school from a contamination perspective.

The scope of this DSI comprised of the following:

- A review of historical information that may be available to understand the history of the site and potential origins of contamination.
- A review of the environmental setting with regards to geology, topography, hydrology, and hydrogeology.
- Undertake a site investigation across the site including constructing eighteen (18) for soil sampling within the site (BH1 to BH18; **Figure 3**, **Appendix A**).
- Undertake soil analysis at a National Associated of Testing Authorities (NATA) accredited laboratory for the analyses of contaminants of potential concern (COPCs) identified by Lanterra.

Based on the site layout and its surroundings, the following areas of environmental concern (AECs) were identified by WSP:

AEC 1 – Fill Material

Based on the PSI undertaken by WSP, and the site inspection conducted on 09 April 2024, it appears that fill material comprised of reworked natural soil was moved to the site during the development of Fraser Primary School and Tillyard Drive. However, should fill have been imported onto the site, in the event that the material was sourced from a contaminated property, then it would introduce contamination.

AEC 2 – Uncontrolled Material Dumping

The PSI identified small stockpiles along the northeastern site boundary. These stockpiles were noted as containing minor amounts of anthropogenic material. These stockpiles however were situated outside the boundary of the investigation area and were therefore not assessed as part of this DSI.

AEC 3 – Urban Open Space Areas

The potential for chemical use (particularly herbicides and pesticides) on the grassland across the site was unknown. While the potential for previous use of herbicides and/or pesticides across the grassland was low, the potential for these to have been used could not be eliminated.

AEC 4 – Soil Mound North of School

A small soil mound comprised of unknown material was found on the site. Should material have been imported onto the site, in the event that the material was sourced from a contaminated property, then it would introduce contamination. It is noted that this material was located outside of the northern boundary of the investigation area and was investigated separately.

The following contaminants of potential concern (COPC) were identified to characterise and assess the site:

- Total recoverable hydrocarbons (TRH)
- Benzene, toluene, ethylbenzene, xylene (BTEX)
- Polycyclic aromatic hydrocarbons (PAH)
- Organochlorine pesticides/organophosphorus pesticides (OCP/OPPs)
- Phenols
- Heavy metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc)
- Asbestos.

Based on the review of the WSP preliminary assessment (**Section 4**) and this investigation, a summary of the key findings are as follows:

- Suspected reworked natural material was encountered from the surface to a maximum depth of 2.1 m bgl across the site investigation area and generally corresponded with a brown - pale brown gravely sandy clay.
- Soil across the site has not been impacted by other COPCs considering that they were primarily below the laboratory limit of reporting (LOR) and therefore below the adopted assessment criteria for this investigation.
- Soil analytical results were above ACT EPA (2022) '*Information Sheet 4: Requirements for the Reuse and Disposal of Contaminated Soil in the ACT*', therefore, any excess material generated on site should undergo assessment and waste classification prior to disposal.

Based on the findings above, Lanterra concludes and recommends the following:

- Based on the history of the site and results of this investigation, the site is considered suitable for the land uses permitted under the existing PRZ1: Urban Open Space; NUZ3: Hills, Ridges, and Buffer Areas and RZ1: Suburban zones and the proposed CF: Community Facilities zone to permit the proposed expansion to the Fraser Primary School from a contamination perspective.
- Any soil to be removed from the site as part of the remediation works must be assessed in accordance with the ACT EPA (2022) *'Information Sheet 4 – Requirements for the reuse and disposal of contaminated soil in the ACT'* and a standalone waste classification report must be prepared.
- While no concentrations of CoPC above the adopted assessment criteria were identified, CoPC may be present in fill material identified across the site. As a precaution, an unexpected finds protocol must be prepared prior to development commencing on the site.

1. Introduction

Major Projects, Education engaged Lanterra Consulting Pty Ltd (Lanterra) to complete a detailed site investigation (DSI) across a field located on of Block 6 Section 64, Fraser, ACT 2615 (herein referred to as the site) in response to the ACT Government '*Statement of Requirement, Fraser Primary School Boundary Expansion – Limited Soil Intrusive Investigation*'. The location and layout of the site is illustrated in **Figure 1** and **Figure 2, Appendix A**.

The investigation area is approximately 12,480 square metres (m^2) and is part of Block 6 Section 64, which has a total area of 64,291 m^2 and is zoned PRZ1: Urban Open Space; NUZ3: Hills, Ridges, and Buffer Areas; RZ1: Suburban.

WSP identified a soil mound to the north of Fraser Primary School and adjacent to the investigation area. The soil mound was observed to be densely vegetated and approximately 800 m^3. It appeared that fill material comprised of reworked natural soil was moved to the site during the development of Fraser Primary School and Tillyard Drive. However, should fill have been imported onto the site, in the event that the material was sourced from a contaminated property, then it would introduce contamination. The soil mound was assessed separately for disposal at a licensed waste facility.

The WSP investigation, which incorporated a larger area of investigation, also identified potential areas of environmental concern located to the north of the investigation area of this assessment. Therefore, this investigation did not assess the identified AECs located to the north.

To characterise the site from a contamination perspective, this investigation has been completed in general accordance with the National Environment Protection Council (2013) 'National Environment Protection (Assessment of Site Contamination) Measure 1999' as amended in 2013 (ASC NEPM 2013) which has been endorsed by the ACT Environment Protection Authority (EPA).

The results were also used to assess material as waste in accordance with the ACT EPA (2021) *'Information Sheet 4: Requirements for the Reuse and Disposal of Contaminated Soil in the ACT'* for its suitability to be disposed at the Mugga II Quarry. Lanterra notes that this assessment has been undertaken for reference only and that a waste classification report must be prepared prior to any soil disposal from the site.

1.1 Objectives

The assessment of soil across the site was aimed to achieve the following objectives:

- Assess the site for the proposed Fraser Primary School boundary expansion for its suitability for future use as a primary school from a contamination perspective.
- Assess material as waste in accordance with the ACT EPA (2021) *'Information Sheet 4: Requirements for the Reuse and Disposal of Contaminated Soil in the ACT'* for its suitability to be disposed at the Mugga II Quarry.

1.2 Scope of Work

The following scope work has been completed to meet the project objectives:

- Review of the environmental investigations completed by WSP;
- Engage a suitably qualified contractor to excavate test pits across the site with the aid of an excavator.

- Undertake a site investigation across the site including advancing eighteen (18) boreholes for soil sampling (see **Figure 3**, **Appendix A**).
- Undertake soil analysis at a National Associated of Testing Authorities (NATA) accredited laboratory for the analyses of contaminants of potential concern (COPCs) identified by Lanterra.

Preparation of a Detailed Site Investigation report that would be provided to Major Projects, Education.

1.3 Regulatory Guidelines / Legislations

The investigation and preparation of this report was undertaken with reference to (but not limited to) the following regulatory guidance documents and standards:

- *ACT Government (2020) Information Sheet 11 - EPA Report Submission Requirements*
- *ACT EPA (2017) Contaminated Sites Environment Protection Policy*
- *ACT EPA (2007) General Environment Protection Policy*
- *ACT EPA (2021) 'Information Sheet 4: Requirements for the Reuse and Disposal of Contaminated Soil in the ACT'*
- *National Environmental Protection Council (NEPC) (2013). National Environment Protection (Assessment of Site Contamination) Measure 1999 (as amended April 2013)*
- *ACT EPA (2021) Environmental Standards: Assessment and classification of liquid and non-liquid wastes*
- *NSW EPA (2017) Guidelines for the NSW Site Auditor Scheme (3rd Ed.) (2017)*
- *NSW EPA (2022) Contaminated Land Guidelines – Sampling Design Part 1 – Application*
- *NSW EPA (2020) Contaminated Land Guidelines - Consultants Reporting on Contaminated Land*
- *Standards Australia (2005). Guide to the investigation and sampling of sites with potentially contaminated soil. Part 1: Non-volatile and semi-volatile compounds AS4482.1 (2005) and Part 2: Volatile substances, AS4482.2 (2005)*

1.4 Limitations

The findings of the report were based on the Scope of Work outlined above. Lanterra performed services in a manner consistent with the normal level of care and expertise exercised by members of the environmental assessment profession. No warranties express or implied, are made.

Subject to the Scope of Work, the assessment was limited strictly to identifying typical environmental conditions associated with the subject property area and does not include evaluation of any other issues.

The absence of any identified hazardous or toxic materials on the subject property should not be interpreted as a guarantee that such materials do not exist on the site. Lanterra will not investigate any waste materials from the property that may have been disposed of off the site, nor related waste management practices.

The results of this assessment are based upon the site inspection and the sampling specified above conducted by Lanterra personnel and information from the Client or regulatory agencies. All conclusions and recommendations regarding the property area will be the professional opinions of the Lanterra personnel involved with the project, subject to the qualifications made above.

While normal assessments of data reliability are made, Lanterra will not assume responsibility or liability for errors in any data obtained from regulatory agencies, statements from sources outside of Lanterra, or developments resulting from situations outside the scope of this project.

2. Site Characteristics

2.1 Site Identification and Description

The site location and a detailed site plan are presented as **Figure 1** and **Figure 2**, **Appendix A**.

Table 1: *Summary of Site Details*

Site Characteristics	Detail
Street Address	Adjacent to Fraser Primary School, 177 Tillyard Dr, Fraser ACT 2615
Approximate Easting and Northing (centre of site)	Easting: 686155 Northing: 6103907 GDA2020/MGA zone 55
Approximate Elevation (m AHD)	597 – 611 m
Block, Section, Division	Block 6 Section 64, Fraser
Land Zoning	PRZ1: Urban Open Space; NUZ3: Hills, Ridges, and Buffer Areas; RZ1: Suburban
Proposed Zoning	Part of the site is proposed to be changed to CF: Community Facilities
Current Land Use	Urban open space
Investigation Area	Approximately 12,480 m^2

The following description is based on observations made during fieldwork conducted on 9 April 2024:

- The site was accessible via Fraser Primary School car park, off Tillyard Drive, via a locked gate.
- The eastern portion of the site was lined by mature trees and grass while the western portion corresponds to an unsealed area.
- Fraser primary school is located to the west of the site and residential properties are located to the south and east of the site.
- To the north of the investigation area is open vacant land and low-density residential dwellings.
- No general household waste was observed across the site at the time of assessment.

A detailed site plan is presented in **Figure 2, Appendix A** while photographs of the site are provided in **Appendix D**.

2.2 Surrounding Land Uses

A summary of the land uses that surround the site are as follows:

- **North**: Vacant open land, and low-density residential dwellings,
- **South**: Tillyard Drive and residential dwellings.
- **East**: Low density residential dwellings
- **West**: School facilities including driveways and carpark.

2.3 Sensitive Environments

Lanterra identified the following sensitive environments across the site and its surroundings:

- Current users of the site including students, staff and visitors who may have access to the field.
- Residents in the adjacent low density residential houses to the east of the site.

2.4 Proposed Land Use

It is anticipated that the investigation area will be the site of the Fraser Primary School expansion. This will require a variation to the Territory Plan to rezone part of the site as CF: Community Facilities.

The site is to be rezoned for CF Community Facilities. Table 2 outlines the permitted development / land uses under the current zoning PRZ1, NUZ3 and RZ1, and the proposed zoning CF.

Table 2: *Territory Plan 2023 – Zoning and Permitted Land Uses*

Zone	Permitted Land Uses	
CF: Community Facility	• ancillary use • business agency • childcare centre • community activity centre • community theatre • consolidation • cultural facility • demolition • development in a location and of a type identified in a precinct map as additional merit track development • educational establishment • emergency services facility • health facility • hospital • indoor recreation facility	• minor road • minor use • office • outdoor recreation facility • parkland • place of worship • public agency • religious associated use • residential care accommodation • retirement village • sign • subdivision • supportive housing • temporary use • varying a lease (where not code track or impact track assessable)
PRZ1: Urban Open Space	• ancillary use • aquatic recreation facility • communications facility • community activity centre • consolidation • demolition • development in a location and of a type identified in a precinct map as additional • major road • major utility installation	• minor road • minor use • municipal depot • outdoor recreation facility • parkland • playing field • sign • subdivision • temporary use • varying a lease (where not code track or impact track assessable)
NUZ3: Hills, Ridges, and Buffer Areas	• agriculture • ancillary use • communications facility • consolidation • demolition • development in a location and of a type identified in a precinct map as additional • farm tourism • land management facility • major road • major utility installation	• minor road • minor use • nature conservation area • outdoor education establishment • outdoor recreation facility • parkland • scientific research establishment • sign • subdivision • temporary use • woodlot

Zone	Permitted Land Uses	
RZ1: Suburban	• ancillary use • Boarding house • childcare centre • community activity centre • consolidation • demolition • guest house • habitable suite • health facility • home business • minor use • multi-unit housing	• parkland • relocatable unit • residential care accommodation • retirement complex Sign • single dwelling housing (where not exempt development or code track assessable) • special dwelling • subdivision • supportive housing • temporary use

3. Site History

3.1 Previous Investigations

WSP completed a preliminary site investigation in June 2021[1]. A summary of the report in relation to the site is provided below.

The objective of the PSI was to assess the site from a contamination perspective and provide a recommendation regarding the suitability of the site for the proposed Major Plan Amendment (formerly Territory Plan Variation) for the expansion of Fraser Primary School.

The PSI involved a review of historical data relating to the site. Through a review of historical aerial photographs from 1961 onward it was determined that the site has been unoccupied open grassland since 1997. Prior to 1997 the site appeared to be used as agricultural land. Development surrounding the site was undertaken after 1972, with Fraser Primary School and Tillyard Drive being established in 1979.

The site has not been recorded on the ACT EPA's contaminated sites management database; however, the sites former rural use may have introduced AECs relating to fuel storage and dispensing facilities, chemical and municipal waste disposal, hazardous materials storage, and hazardous materials in buildings. Fraser Primary School, located to the west of the site has been recorded on the ACT Education list of school with lead paint or asbestos.

The site inspection for the PSI undertaken by WSP in May 2021 identified a stockpile of soil to the north of Fraser Primary School. The stockpile was noted to be covered by well-established vegetation, and approximately 800 m^3 in size.

Along the northeastern site boundary small stockpiles consisting of mulch, concrete fragments and large gravel fill material were observed.

No asbestos containing materials or evidence of chemical or dangerous substance storage was observed at the site.

Areas of environmental concern identified by WSP are as follows:

- Filled land: WSP identified fill material along the southwest and southeast site boundaries. WSP identified these materials as potentially reworked natural soils that were likely to be laid down during the development of Tillyard Road and Fraser Primary School.
- Uncontrolled Material Dumping: The stockpiles identified during the site inspection along the north-east site boundary appeared to contain minor amounts of anthropogenic materials such as concrete and fibrous material.
- Management activities: Open space grassed areas may have been subjected to historical chemical use for control of pests and weeds as part of either former agricultural use or maintenance of parks and open spaces.

WSP concluded that the site presented a low risk of contamination and considered the site suitable for the proposed Major Plan Amendment. WSP recommended a targeted soil assessment prior to

[1] WSP (2021) Contaminated Land Preliminary Assessment Fraser Primary School

site development to confirm that the identified AECs do not present unacceptable risk to future site users.

4. Site Condition and Environmental Setting

4.1 Topography

The elevation of the site varied from 597 - 611 m above the Australian Height Datum (m AHD) and slopes gently to the northwest.

4.2 Visible Signs of Contamination

No traces of anthropogenic materials or ACM were observed on the surface of the site on 9 April 2024. No staining or other indicators of contamination were noted either.

4.3 Odours

There were no olfactory indicators of possible contamination noted during the drilling of the boreholes.

4.4 Fill Material

Imported fill material and topsoil are believed to be present along the southwest and southeast boundaries and within the large stockpile to the west of the site. This material appears to be predominantly reworked natural soils, that are likely to be sourced from the development of Fraser Primary School and Tillyard Road.

5. Geology and Hydrogeology

5.1 Geology

The 1:100,000 Geological Series, Canberra, NSW, and ACT Sheet 8727 (Bureau of Mineral Resource 1992) identified the site to be underlain by Silurian aged volcanic rocks of the Mount Ainslie Volcanics rocks comprising of Dacitic ignimbrite, minor ashstone, agglomerate and shale.

5.2 Hydrogeology

A groundwater bore search was undertaken by WSP as part of the PSI in 2021. The purpose of the bore search was to document the location and depth of any nearby registered groundwater bores, and the associated quality of the groundwater so that potential impacts of contaminants from the site or surrounding land uses (if any) on local users of groundwater may be assessed.

WSP identified three (3) groundwater boreholes within 1 km of the site.

Based on the topography of the site and its surrounding and the nearest water body, the groundwater flow direction is inferred to be flowing in a north – northwest direction.

5.3 Hydrology

Most storm water is expected to infiltrate into the subsurface.

Based on the local topography storm water that does not infiltrate would flow in a northwest direction to be captured by the stormwater network and then re directed to the north in the direction of Halls Creek, which is approximately 380 m north of the site.

5.4 Acid Sulfate Soil Risk

A review of the Australian Soil Resource Information System (ASRIS) map shows the subject site to be situated in an area of 'low probability for acid sulfate soil'.

6. Preliminary Conceptual Site Model

Conceptual site models (CSM) are a method of presenting site contamination information and the relationships between sources of contamination, how it may have been introduced to the site, possible pathways for contaminant migration and exposure and the receptors that may be affected by contaminants.

Based on the information reviewed prior to conducting any intrusive investigation, the CSM was developed to assist with generating areas of environmental concern (AEC) based on the risk of contamination being present and the potential for exposure pathways.

The preliminary CSM is presented in the sections below.

6.1 Areas of Environmental Concern

The areas of environmental concern (AECs) for the site, as identified by WSP, are summarised below.

AEC 1 – Fill Material

Based on the PSI undertaken by WSP, and the site inspection conducted on 09 April 2024, it appeared that fill material comprised of reworked natural soil was moved to the site during the development of Fraser Primary School and Tillyard Drive. However, should fill have been imported onto the site, in the event that the material was sourced from a contaminated property, then it would introduce contamination.

AEC 2 – Uncontrolled Material Dumping

The PSI identified small stockpiles along the northeastern site boundary. These stockpiles were noted as containing minor amounts of anthropogenic material, and fibrous materials. It is noted that this material was located outside of the northeastern boundary of the investigation and therefore these areas were not assessed as a part of this DSI.

AEC 3 – Management Activities

Chemical use on the grassland across the site is unknown, although WSP indicated that the potential impact of previous herbicides and/or pesticides use across the grassland was low.

AEC 4 – Soil Mound North of School

WSP identified a soil mound potentially comprised of fill material located on site, to the north of Fraser Primary School and adjacent to the investigation area. The soil mound was observed to be densely vegetated and approximately 800 m^3. It appeared that fill material comprised of reworked natural soil was moved to the site during the development of Fraser Primary School and Tillyard Drive. However, should fill have been imported onto the site, in the event that the material was sourced from a contaminated property, then it would introduce contamination.

6.2 Contaminants of Potential Concern

To assess the potential impact that historical activities may have on the site and its surroundings, the following contaminants of potential concern (COPC) were identified.

Table 3: *Identified COPC and the associated AECs*

AECs	Media	COPC
AEC 1 – Fill Material	Soil	• Total recoverable hydrocarbons (TRH); • Benzene, toluene, ethylbenzene, xylene (BTEX); • Polycyclic aromatic hydrocarbons (PAH); • Organochlorine and organophosphate pesticides (OCP/OPP); • Polychlorinated biphenyls (PCBs); • Heavy metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc); and • Anthropogenic material including asbestos containing materials (ACM).
AEC 3 – Management Activities	Soil	• Total recoverable hydrocarbons (TRH); • Benzene, toluene, ethylbenzene, xylene (BTEX); • Polycyclic aromatic hydrocarbons (PAH); • Organochlorine and organophosphate pesticides (OCP/OPP); • Polychlorinated biphenyls (PCBs); • Heavy metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc); and • Anthropogenic material including asbestos containing materials (ACM).
AEC 4 – Soil Mound North of School	Soil	• Total recoverable hydrocarbons (TRH); • Benzene, toluene, ethylbenzene, xylene (BTEX); • Polycyclic aromatic hydrocarbons (PAH); • Organochlorine and organophosphate pesticides (OCP/OPP); • Polychlorinated biphenyls (PCBs); • Heavy metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc); and • Anthropogenic material including asbestos containing materials (ACM).

6.3 Exposure Pathways and Receptors

For a contaminant to pose a risk to either human health and/or the environment, there must be a potentially complete or complete pathway between the contaminant and the receptor. Identified receptors at the site are as follows:

- On-site workers associated with the current and future use of the site.
- Current users of the site.
- Future construction workers engaged as part as the development.
- Residents of the neighbouring properties.
- Ecological receptors.

Common pathways for contaminants to migrate through the environment and result in exposure to receptors are summarised in **Table 4** below.

Table 4: *Summary of Exposure Pathways*

Pathway	Contaminants of Concern	Exposure Pathway Complete or Potentially Complete	Comments
Direct Contact with Soil including dermal contact and ingestion	TRH, BTEX, PAH, OCP/OPP, PCB, Heavy metals	Potentially Complete	Based on the history of the site and observations, the potential presence of these COPCs in the surface or subsurface of the site cannot be ruled out and could pose a risk to the human health and the environment. Therefore, the pathway for direct contact is considered potentially complete
Direct Contact with Groundwater including dermal contact and ingestion	TRH, BTEX, PAH, OCP/OPP, PCB, Heavy metals.	Incomplete	No abstraction bores are located on or near the site and therefore the risk of exposure to groundwater is considered negligible.
Inhalation of Asbestos Fibres	Asbestos	Potentially Complete	Given the historical uncontrolled material dumping observed at the site at the time of the WSP investigation asbestos fines and fibres may be present in soils within the site posing a risk for the human health.
Inhalation of gasses and vapour	TRH, BTEX	Incomplete	Potential fuel/oil leaks from parked cars may result in volatile compounds being introduced to shallow soil across the site. While the potential risk of vapour inhalation is low based on the outdoor environment, the exposure pathway is potentially complete.

In its current condition, there are potentially complete contaminant exposure pathways which are contingent on whether COPCs are present.

7. Data Quality Objectives

This section outlines the data quality objectives (DQOs) applied to the investigation.

The DQO process is a planning tool that relies on scientific methods for establishing criteria for data quality and for designing data collection programs. The DQO defines the experimental process required to test a hypothesis. The DQO process aims to ensure that efforts relating to data collection are cost-effective, by eliminating unnecessary, duplicative, or overly precise data whilst at the same time, ensuring the data collected is of sufficient quality and quantity to support defensible decision making.

The DQO process consists of seven steps, which are designed to clarify the study objectives, define the appropriate type of data, and specify tolerable levels of potential decision errors. The seven-step DQO process adopted for this investigation is as follows:

Step 1: State the Problem – concisely describe the problem to be studied. Review prior studies and existing information to gain a sufficient understanding to define the problem;

Step 2: Identify the Decision – identify what questions the study will attempt to resolve, and what actions may result;

Step 3: Identify the Inputs to the Decision – identify the information that needs to be obtained and the measurements that need to be taken to resolve the decision statement;

Step 4: Define the Study Boundaries – specify the time periods and spatial area to which decisions will apply. Determine when and where data should be collected;

Step 5: Develop a Decision Rule – define the statistical parameter of interest, specify the action level, and integrate the previous DQO outputs into a single statement that describes the logical basis for choosing among alternative actions;

Step 6: Specify Tolerable Limits on Decision Errors – define the decision maker's tolerable decision error rates based on a consideration of the consequences of making an incorrect decision; and

Step 7: Optimise the Design –evaluate information from the previous steps and generate alternative data collection designs. Choose the most resource-effective design that meets all DQOs.

The DQOs derived for the investigation are presented in **Table 5.**

Table 5: *DQOs derived for the Investigation.*

Step	Details
Step 1: State the Problem	The site has been used for activities that have the potential to introduce contaminants into the environment.
Step 2: Identify the Decision	The purpose of the investigation was to assess the soil across the field to delineate the vertical and lateral extents of contamination. Should COPCs be identified at concentrations that exceeded the adopted assessment criteria, then management and /or options for remediation to make the site suitable may be necessary.
Step 3: Identify the Inputs into the Decision	• Review of site history of the area (see **Section 3**). • Site inspections and soil investigation completed by Lanterra in this DSI. • Identification of AECs and COPCs for analysis. As the site is part of a school, the following assessment criteria from the National Environment Protection Council (NEPC) '*National Environment Protection*

Step	Details
	(Assessment of Site Contamination) Measure 1999' (revised in 2013; ASC NEPM 2013) has been selected: • Health Based Investigation Levels for Residential Sites (HIL A) • Health Based Screening Levels for Residential Sites (HSL A) • Ecological Investigation Levels (EIL) for Urban Residential and Public Open Space • Ecological Screening Levels (ESL) for Urban Residential and Public Open Space Additionally, the analytical results would be assessed against the ACT EPA (2021) 'Environmental Standards: Assessment and classification of liquid and non-liquid wastes' to provide a waste classification for the impacted material. Selected assessment criteria based on the proposed development (see **Section 9**).
Step 4: Define the Site Boundaries	The investigation is limited to the site boundary shown in **Appendix A: Figure 2**. The vertical boundary of the site was 2.0 m below ground level (bgl) which was the maximum sampling depth. It is also noted that the results of the assessment are limited to the condition of the site as of 09 April 2024 when the site investigation work was completed.
Step 5: Develop a Decision Rule	• If review of previous investigations reports identified data gaps and/or potentially contaminating activities that require further investigations and/or management. • If site inspections identified signs of recent contamination, then further assessment to assess the potential contamination will be required, to determine the management actions required. • If the laboratory quality assurance / quality control data are within acceptable ranges, the results will be considered suitable for use. • If the concentrations of contaminants in samples analysed exceed the adopted assessment criteria, further investigation for delineation may be required to determine the remediation/management required. • If analytical results for COPCs are below the adopted criteria for the adopted assessment criteria, then the soil condition on-site would be considered not impacted by potential contaminating activities.
Step 6: Specify Tolerable Limits	The tolerable limits for the investigation adopted for quality assurance/quality. control (QA/QC) purposes are as follows: • The relative percentage difference (RPD) for laboratory duplicates for TRH and BTEX analysis is less than 60%; and • Recovery of matrix spikes and surrogate spikes is as per the laboratory's. • Quality Assurance targets accepted under their NATA accreditation. The tolerable limits for field QA/QC data are as follows: • RPD criteria of 30% or less, for concentrations > or = 5 times practical quantitation limits (PQL); Replicate data for field duplicates for inorganics, including metals and inorganics are expected to be as follows: RPD criteria of 30% or less, for concentrations > or = 5 times PQL.
Step 7: Optimise the Design	The investigation program for this assessment is detailed in **Section 8** to adequately characterise the identified risks of contamination across the site (**Section 3** and **Section 4**).

Step	Details
	As a summary, eighteen (18) boreholes for soil sampling were constructed to assess potential impact across the site.

8. Sampling, Analysis and Quality Plan

Details of the sampling and analytical plan adopted to meet the project objectives are presented in the following sections.

8.1 Chronology of Events

The chronology of key project events is summarised in Table 6 below:

Table 6: *Summary of the Chronology of Works*

Date	Event
13 February 2024	Lanterra was engaged by Major Projects, Education to undertake a detailed site investigation to assess the open field adjacent to Fraser Primary School located on Block 6 Section 64, Fraser
03 April 2024	Initial site inspection and service location completed
09 April 2024	Excavation of bore holes BH1 to BH18
18 April 2024	Receipt of laboratory results
9 May 2024	Issue of DSI report

8.2 Sampling Plan

8.2.1 Soil

Considering the identified potential contamination risks, the sampling plan follows a systematic grid sampling pattern across the site, in accordance with the NSW EPA (2022) 'Contaminated Land Guidelines – Sampling Design Part 1 – Application'.

The NSW EPA (2022) Contaminated Land Guidelines – Sampling Design Part 1 – Application recommends 25 sample locations for a site of approximately 1.2 ha. Based on the previous use of the site and the likelihood for contamination to be introduced, the eighteen (18) sampling locations were considered appropriate to adequately assess the suitability of the site from a contamination perspective.

The sample plan adopted is presented in **Figure 3**, **Appendix A**.

8.2.2 Quality Assurance / Quality Control

For quality assurance / quality control (QA/QC) purposes, the following samples were collected in accordance with AS4482.1 (2005).

- One (1) field duplicate sample for each twenty (20) primary soil samples to be analysed by the primary laboratory to assess the precision of the results;
- One (1) field triplicate sample for each twenty (20) primary soil samples to be analysed by a secondary laboratory to assess the accuracy of the primary laboratory;

The QA/QC analytical plan was considered appropriate.

8.3 Analytical Plan

From the samples collected across the site, the analytical plan presented in **Table *7*** was executed to assess the identified COPCs.

Table 7: *Analytical plan for the investigation*

Sample Type	Sample Media	TRH	BTEX	PAH	Phenols	PCB	OCP/OPP	Heavy Metals	Asbestos
Primary	Soil	18	18	18	18	18	18	18	18
Duplicate	Soil	1	1	1	1	1	1	1	0
Triplicate	Soil	1	1	1	0	1	0	1	0

All samples were analysed for ACM, AF and FA by a NATA accredited laboratory.

9. Assessment Criteria

The assessment criteria adopted for the investigation was based on the proposed Territory Plan variation to included CF: Community Facilities to permit the expansion of the Fraser Primary School. The investigation also considered the uses permitted under the current PRZ1: Urban Open Space; NUZ3: Hills, Ridges, and Buffer Areas; RZ1: Suburban zones.

Therefore, the following criteria has been adopted from the ASC NEPM 2013 and details of the criteria are presented in the following sections.

9.1 Soil Assessment Criteria

The assessment criteria to be adopted for soil materials are as follow:

- Health Based Investigation Levels for Residential Sites (HIL A)
- Health Based Screening Levels for Residential Sites (HSL A) for a silt lithology and a depth of 0 m to <1 m below ground level. This assumption is considered appropriate based on the predominant soil observed on site.
- Ecological Investigation Levels (EIL) for aged contaminants in Urban Residential and Public Open Space;
- Ecological Screening Levels (ESL) for Urban Residential and Public Open Space for fine soil based on fine texture.
- Health Based Investigation Levels for Residential Sites where:
    - 0.01 %w/wt asbestos for ACM
    - 0.001 %w/wt asbestos for asbestos fines (AF) and fibrous asbestos (FA).

It is noted that the laboratory limit of reporting for the NATA accredited analytical method is 0.01 %w/wt which is greater than the adopted criteria of 0.001 %w/wt for AF and FA. Therefore, where asbestos is detected at trace concentrations in the soil, it will be assumed that asbestos exceeds the criterion value.

The EIL criteria was derived based estimated physicochemical properties (pH, cation exchange capacity (CEC) and percent clay.) that are typical of soil within the ACT.

The values used for calculating the EILs are summarised in Table 7 below.

Table 8: *Adopted physicochemical parameters based on typical soil within the ACT.*

Physicochemical Property	Unit	Value
pH	pH Unit	6
CEC	meq / 100g	10
% Clay	%w / w	10

The EIL criteria was calculated using the ASC NEPM 2013 EIL Interactive (Excel) Calculation Spreadsheet using values for aged contaminants. Results of the EIL calculations are presented in **Appendix E**.

These criteria are shown in **Table 8**.

Table 9: *Soil Assessment Criteria*

Contaminant Group	HIL/HSL – A (mg/kg)	EIL – Urban Residential and Public Open Space (mg/kg)	ESL-Urban Residential and Public Open Space (mg/kg)
Heavy Metals			
Arsenic	100	100	-
Cadmium	20	-	-
Chromium (III)	100	410	-
Copper	6,000	210	-
Lead	300	1,100	-
Nickel	400	170	-
Zinc	7,400	480	-
Mercury	40	-	-
Pesticides			
Aldrin and Dieldrin	6	-	-
Chlordane	50	-	-
DDT	-	180	-
DDT+DDD+DDE	240	-	-
Endrin	10	-	-
HCB	10	-	-
Heptachlor	6	-	-
Methoxychlor	300	-	-
Mirex	10		
Chlorpyrifos	160		
TRH and BTEX			
TRH C_6-C_{10} – BTEX (F1)	40	-	180
TRH >C_{10}-C_{16} – Naphthalene (F2)	230	-	120
TRH >C_{16}-C_{34} (F3)	-	-	1,300

Contaminant Group	HIL/HSL – A (mg/kg)	EIL – Urban Residential and Public Open Space (mg/kg)	ESL-Urban Residential and Public Open Space (mg/kg)
TRH >C_{34}-C_{40} (F4)	-	-	5,600
Benzene	0.6	-	65
Toluene	390	-	105
Ethylbenzene	NL	-	125
Xylenes	95	-	45
PAHs and PCBs			
Total PAH	300	-	-
Benzo(a)pyrene	-	-	0.7
Carcinogenic PAHs as B(a)P TEQ	3	-	-
Naphthalene	4	170	-
Total PCB	1	-	-
Phenols			
Phenol	3,000	-	-
Pentachlorophenol	100	-	-
Cresols	400	-	-
Asbestos			
Bonded ACM	0.01%	-	-
FA and AF (friable asbestos)	0.001%	-	-
All forms of asbestos	No visible asbestos for surface soil	-	-

Notes:

- NL denotes non-limiting.
- ESL for Carcinogenic PAH provides concentration for Benzo(a)pyrene only.
- ACM denotes asbestos containing material.

The adopted criteria has also been used to assess the suitability of soil for disposal at Mugga 2 Quarry as asbestos waste is based on Table 1 in the ACT EPA (2022) '*Information Sheet 4: Requirements for the Reuse and Disposal of Contaminated Soil in the ACT*'.

The values of the adopted assessment criteria are presented in **Appendix B** – **Table 3**.

10. Methods

A suitably qualified and experienced environmental scientist and an excavation subcontractor was mobilised to the site with appropriate equipment to undertake the soil investigation required. Methodology as below:

- All boreholes (BH1 to BH18) were excavated by a 300 mm diameter auger until natural material was encountered.
- Samples were collected at the surface (0.0-0.1 m), 0.5m below ground level (bgl), at 1.0 m and then each metre thereafter to the target depth which was approximately 0.5 m below the boundary with natural soil, at changes in lithology or zones of gross contamination.
- Single-use disposable nitrile gloves were used to extract the samples from each sampling location to prevent cross-contamination.
- Samples were collected directly from soil recovered from the auger with care taken to not collect soil that was in contact with the auger.
- Soil samples were placed into a laboratory prepared 250 mL glass jar for the analysis of heavy metals and TRH, PAH, Phenols, OCC, OPP, and PCBs and sealed with a Teflon lined screw-top lid.
- Each soil sample was described in general accordance with the Unified Soil Classification System (USCS) and details of any discolouration, staining, odours, or other indicators of contamination noted.
- Each sample was labelled including the sample name, the job number, the date of sample and the sample depth.
- All samples were immediately placed and stored in an ice-filled esky to keep them chilled. Samples were transported to a NATA accredited laboratory with the signed chain of custody (COC) form with the required analysis (**Appendix C**).

11. Quality Assurance (QA) and Quality Control (QC) Plan

11.1 Field QA/QC

Two (2) field duplicate and two (2) field triplicate samples was collected for calculating the relative percent difference (RPD) and assess the precision and accuracy of the laboratory. An RPD of less than 30% is considered acceptable where the analyte concentration is greater than five (5) times the laboratory LOR. Should the RPD be greater than 30%, then further investigation as to the reason for high RPD would occur.

The duplicate and triplicate samples were collected with the following primary samples:

- $QC1_{soil}$ and $QC2_{soil}$ were collected with primary sample BH10 0.5-0.6
- $QC3_{soil}$ and $QC4_{soil}$ were collected with primary sample BH18 1.0-1.1

The results of the RPD calculation for each analyte were less than 30% and/or with concentrations less than five (5) times the LOR. A summary of the RPDs is tabulated below:

Table 10: *Summary of RPDs*

Sample Type	Number of samples	Target	Actual	Criteria Met (Yes/No)
Primary samples	18			
Duplicate (QA/QC)	2	≥ 5%	11%	Yes
Triplicate (QA/QC)	2	≥ 5%	11%	Yes
Total RPDs	306			
Total RPDs > 5x LOR & > 30%	3	≤ 5%	3.6%	Yes

The results of the RPD calculations for each heavy metal was less than 30% with the exception of the following:

- **Arsenic:** 36% (BH10 0.5-0.6 and QC2) and 67% (BH18 1.0-1.1 and QC4)
- **Chromium:** 36% (BH10 0.5-0.6 and QC2) and 115% (BH18 1.0-1.1 and QC4)
- **Copper 41%** (BH18 1.0-1.1 and QC4)
- **Lead:** 47% (BH10 0.5-0.6 and QC1) and 39% (BH10 0.5-0.6 and QC2) and 151% (BH18 1.0-1.1 and QC4)
- **Mercury:** 171% (BH18 1.0-1.1 and QC4)

The exceedances in the heavy metal RPD calculations were attributed to sample heterogeneity. However, given that the concentrations of heavy metals for the primary and secondary samples were well below the adopted criteria, this exceedance does not affect the outcome of the investigation. Therefore, the analytical data was considered suitable for the objectives of the investigation.

The QA/QC results and calculated RPDs are presented in **Appendix B: Table 1** and **Table 2**.

11.2 Laboratory QA/QC

A review of the laboratory QA/QC data is summarised below.

Holding Times

All holding times were reported within their tolerable ranges.

Laboratory Accreditation

All analysis was performed in NATA accredited laboratory as follow:

- **Primary Laboratory:** SGS Australia Pty Ltd (NATA accreditation No. 2562)
- **Secondary Laboratory:** Envirolab Services Pty Ltd (NATA accreditation No. 2901)

Surrogate and Spike Recoveries

All surrogate recoveries were within the tolerable limits with the exception of the following:

Table 11: *Surrogate Recovery Exceedances*

Parameter	Sample Name	Sample Number	Criteria	Recovery (%)
2,4,6 - Tribromophenol	BH2 0.0-0.1	SE263523.012	50 - 130%	32
	BH5 0.0-0.1	SE263523.015	50 - 130%	65
	BH6 0.5-0.6	SE263523.016	50 - 130%	49
	BH7 0.0-0.1	SE263523.017	50 - 130%	42
	BH8 0.0-0.1	SE263523.018	50 - 130%	48
D5-phenol	BH2 0.0-0.1	SE263523.012	50 - 130%	5
	BH6 0.5-0.6	SE263523.016	50 - 130%	33
	BH7 0.0-0.1	SE263523.017	50 - 130%	14
	BH8 0.0-0.1	SE263523.018	50 - 130%	32

The laboratory advised that the above exceedances were due to matrix interference. The exceedances were not considered to affect the results of this investigation.

All matrix spike recoveries were within tolerable limits with the exception of the following:

Parameter	QC Sample	Sample Number	Recovery (%)
Chromium	SE263523.020	LB309687.004	70
D8-toluene	SE263523.020	LB309678.004	66

The laboratory advised that the above exceedances were due to sample heterogeneity, and at least 2 of the 3 surrogates were within acceptance criteria for d-8 toluene. The exceedances were not considered to affect the results of this investigation.

Laboratory Control Sample Results

All laboratory control sample results were within the tolerable limits.

Laboratory Duplicate Results

The duplicate sample RPDs were within the tolerable range with the exception of the following:

Table 12: *Duplicate Recovery Exceedances*

Parameter	Original	Duplicate	Criteria	Recovery (%)
Lead	SE263523.010	LB309466.014	200%	68
Nickel	SE263616.001	LB309687.014	200%	52
TRH C10-C14	SE263616.001	LB309677.014	200%	77

The laboratory advised that the above exceedances were due to sample heterogeneity. Reanalysis of sample SE263523.010 in duplicate confirmed LB309466.014 sample heterogeneity and inconsistency of results.

Laboratory Blank Results

All method laboratory blanks were below the laboratory LOR and therefore within tolerable limits.

12. Results

The findings from site inspection and laboratory analytical results of the investigation are presented in the following sections.

12.1 Visual Observations / Field Measurements

Suspected imported fill material was observed from the surface to a maximum depth 1.6 m bgl in BH3 and BH4. In general, this material can be described as brown - pale brown gravely sandy clay.

An approximately 0.1 m thick layer of potentially imported topsoil was observed across each borehole (BH1 to BH18), which was generally described as a gravely sandy clay silt and dark brown in colour.

Natural materials were observed during the advancement of each borehole across the site (BH1 to BH18) from 0.1 m to 1.6 m. This material was described as a sandy silty clay – sandy clay, pale brown – brown, orange, occasionally resembling residual soil, in accordance with the underlying geology of the area (see **Section 5**).

No odour was detected in any of the soil samples collected.

Borehole details are provided in **Appendix F**.

12.2 Analytical Results

Eighteen (18) primary soil samples were collected for analysis. A summary of the analytical results is presented in **Appendix B: Table 1**, while copies of the laboratory reports, sample receipt and COCs are presented in **Appendix C**.

A summary of the results is presented below.

PAH, BTEX, PAH, Phenols, OCP/OPP, and PCBs

Concentrations of PAH, BTEX, PAH, Phenols, OCP/OPP, and PCBs were below the laboratory limit of reporting in each sample with the exception of BH15 0.0-0.1 which had detectable concentrations of PAH – Pyrene (0.1 mg/kg), however this concentration was low and does not affect the site for its current or future land uses.

TRH

Concentrations of TRH compounds were below the laboratory LOR in each sample and therefore were below the adopted assessment criteria.

Heavy Metals

A total of eighteen (18) primary soil samples were analysed for heavy metals from across the site. Details of metal concentrations were as follows:

- Concentrations of cadmium and mercury were below the laboratory LOR in each sample analysed with the exception of QC3 for cadmium and mercury, and QC4 for mercury, however these concentrations were below the adopted assessment criteria.

- Concentrations of arsenic, chromium, copper, lead, nickel, and zinc were detected above the laboratory limit of reporting in each sample, but all concentrations were below the adopted assessment criteria.

Asbestos

Concentrations of asbestos were below the laboratory LOR in each sample and therefore were below the adopted assessment criteria.

12.3 Classification of Waste Soil for Disposal

Analytical results for every sample were below the assessment criteria of Table 1 in the ACT EPA (2022) '*Information Sheet 4: Requirements for the Reuse and Disposal of Contaminated Soil in the ACT*'.

- Concentrations of lead were detected above the laboratory limit of reporting in sample BH3 0.5-0.6, with a reported concentration of 210 mg/kg. This concentration was above the adopted assessment criteria for General Solid Waste (100 mg/kg).
- Therefore, a 95% UCL statistical analysis was undertaken to determine the average concentration for lead across the site. The results indicated the average concentration of lead to be 105 mg/kg, which is above the adopted assessment criteria for General Solid Waste (**Appendix B: Table 4**).

13. Discussion

Based on the results of this investigation, the following observation on the overall impact of the site condition is discussed:

- Based on the observations of this DSI, the grassland area of the site consisted of reworked natural material that was encountered from the surface to a maximum depth of 2.1 m bgl.
- Soil across the site has not been impacted by COPCs considering that they were mostly below the laboratory LOR and therefore below the adopted assessment criteria for this investigation.
- Based on the assessment of the analytical results against *Information Sheet 4* criteria, any excess material may not be suitable for disposal as General Solid Waste at a licensed waste facility. Any soil that requires disposal from the site must be assessed in accordance with the ACT EPA (2022) *'Information Sheet 4 – Requirements for the reuse and disposal of contaminated soil in the ACT'* and a standalone report must be prepared.
- While no concentrations of CoPC above the adopted assessment criteria were identified, CoPC may be present in fill identified across the site. As a precaution, an unexpected finds protocol (UFP) must be prepared prior to development commencing on the site.

14. Revised Conceptual Site Model

Based on the results of the intrusive investigation, the CSM has been revised to reflect information obtained from the site investigation.

14.1 Summary of Site Condition

No traces of anthropogenic material including suspected asbestos containing material were observed across the surface of the investigation area.

Prior to any soil removal a waste classification must be undertaken following the guidelines of the ACT EPA (2022) *'Information Sheet 4 – Requirements for the reuse and disposal of contaminated soil in the ACT'.*

14.2 Potential Receptors and Exposure Pathways

Based on the results of the investigation, the revised CSM is presented in the table below:

Table 13: *Revised Conceptual Site Model*

Pathway	COPCs	Potential Receptors	Exposure Pathway Complete or Potentially Complete	Comments
Direct Contact with Soil including dermal contact and ingestion	TRH, BTEX, PAH, PCB, Phenols, OCP, OPP, Heavy metals	• On-site users • On-site workers • Future workers • Ecological receptors	Incomplete	The site investigation did not identify concentration of COPCs in soil that would pose an unacceptable risk to the human health and the environment. Therefore, the pathway associated with these COPCs is considered incomplete.
Direct Contact with Groundwater including dermal contact and ingestion	TRH, BTEX, PAH, OCP/OPP, PCB, Heavy metals.	• On-site users • On-site workers • Future workers • Ecological receptors	Incomplete	Based on the nature of the impact and the fact that no abstraction bores are located on or near the site the risk of exposure to groundwater is considered negligible.
Inhalation of Asbestos Fibres	Asbestos	• On-site users • On-site workers • Future workers	Incomplete	No asbestos fibres and fines were observed in any of the analysed samples.
Inhalation of gasses and vapour	TRH, BTEX, VOC	• On-site users • On-site workers • Future workers • Future residents	Incomplete	Volatile compounds were below the adopted criteria of this investigation. Therefore, the exposure pathway is incomplete.

15. Summary and Conclusions

Major Projects, Education engaged Lanterra to complete a DSI across a field adjacent to Fraser Primary School located on Block 6 Section 64, Fraser, ACT 2615 in response to the ACT Government '*Statement of Requirement, Fraser Primary School Boundary Expansion – Limited Soil Intrusive Investigation*'.

The objectives of this DSI were to assess the site for the proposed Fraser Primary School boundary expansion for the land uses permitted under the PRZ1: Urban Open Space; NUZ3: Hills, Ridges, and Buffer Areas; RZ1: Suburban zones.

Based on the review of the WSP preliminary assessment (**Section 4**) and this investigation, a summary of the key findings are as follows:

- Reworked natural material was encountered from the surface to a maximum depth of 2.1 m bgl across the site investigation area and generally corresponded with a brown - pale brown gravely clayey sand.
- Soil across the site has not been impacted by other COPCs considering that they were mostly below the laboratory LOR and therefore below the adopted assessment criteria for this investigation.
- Soil analytical results were above ACT EPA (2022) '*Information Sheet 4: Requirements for the Reuse and Disposal of Contaminated Soil in the ACT*', therefore, any excess material generated on site should undergo assessment and waste classification prior to disposal.

Based on the findings above, Lanterra concludes and recommends the following:

- Based on the history of the site and results of this investigation, the site is considered suitable for the proposed Fraser Primary School expansion and other land uses permitted under the CF: Community Facilities zone. The site is also considered suitable for the land uses permitted under the existing PRZ1: Urban Open Space; NUZ3: Hills, Ridges, and Buffer Areas and RZ1: Suburban zones (**Table 14**) from a contamination perspective.

Table 14: *Territory Plan 2023 – Zoning and Permitted Land Uses*

Zone	Permitted Land Uses	
CF: Community Facility	• ancillary use • business agency • childcare centre • community activity centre • community theatre • consolidation • cultural facility • demolition • development in a location and of a type identified in a precinct map as additional merit track development • educational establishment • emergency services facility • health facility • hospital • indoor recreation facility	• minor road • minor use • office • outdoor recreation facility • parkland • place of worship • public agency • religious associated use • residential care accommodation • retirement village • sign • subdivision • supportive housing • temporary use • varying a lease (where not code track or impact track assessable)
PRZ1: Urban	• ancillary use • aquatic recreation facility	• minor road • minor use

Zone	Permitted Land Uses	
Open Space	• communications facility • community activity centre • consolidation • demolition • development in a location and of a type identified in a precinct map as additional • major road • major utility installation	• municipal depot • outdoor recreation facility • parkland • playing field • sign • subdivision • temporary use • varying a lease (where not code track or impact track assessable)
NUZ3: Hills, Ridges, and Buffer Areas	• agriculture • ancillary use • communications facility • consolidation • demolition • development in a location and of a type identified in a precinct map as additional • farm tourism • land management facility • major road • major utility installation	• minor road • minor use • nature conservation area • outdoor education establishment • outdoor recreation facility • parkland • scientific research establishment • sign • subdivision • temporary use • woodlot
RZ1: Suburban	• ancillary use • Boarding house • childcare centre • community activity centre • consolidation • demolition • guest house • habitable suite • health facility • home business • minor use • multi-unit housing	• parkland • relocatable unit • residential care accommodation • retirement complex Sign • single dwelling housing (where not exempt development or code track assessable) • special dwelling • subdivision • supportive housing • temporary use

- Any soil to be removed from the site as part of the remediation works must be assessed in accordance with the ACT EPA (2022) *'Information Sheet 4 – Requirements for the reuse and disposal of contaminated soil in the ACT'* and a standalone waste classification report must be prepared.
- While no concentrations of CoPC above the adopted assessment criteria were identified, CoPC may be present in fill material identified across the site. As a precaution, an unexpected finds protocol must be prepared prior to development commencing on the site.

16. References

ACT EPA (2017) '*Contaminated Sites Environment Protection Policy*'.

ACT Government (2020) '*Information Sheet 11 - EPA Report Submission Requirements*'.

ACT EPA (2007) '*General Environment Protection Policy*'.

ACT EPA (2020) *'Information Sheet 4 – Requirements for the reuse and disposal of contaminated soil in the ACT'*.

Bureau of Mineral Resources, Geology and Geophysics (1984) '*1:100,000 Hydrogeology of the Australian Capital Territory and Environs*'.

Bureau of Mineral Resources, Geology and Geophysics (1992) '*1:100,000 Geological Series, Canberra, New South Wales and Australian Capital Territory, Sheet 8727*'.

National Environmental Protection Council (NEPC) (2013) '*National Environment Protection (Assessment of Site Contamination) Measure 1999*' (as amended April 2013).

NSW EPA (2017) '*Guidelines for the NSW Site Auditor Scheme (3rd Ed.)'*.

NSW EPA (2020) '*Contaminated Land Guidelines - Consultants Reporting on Contaminated Land*'.

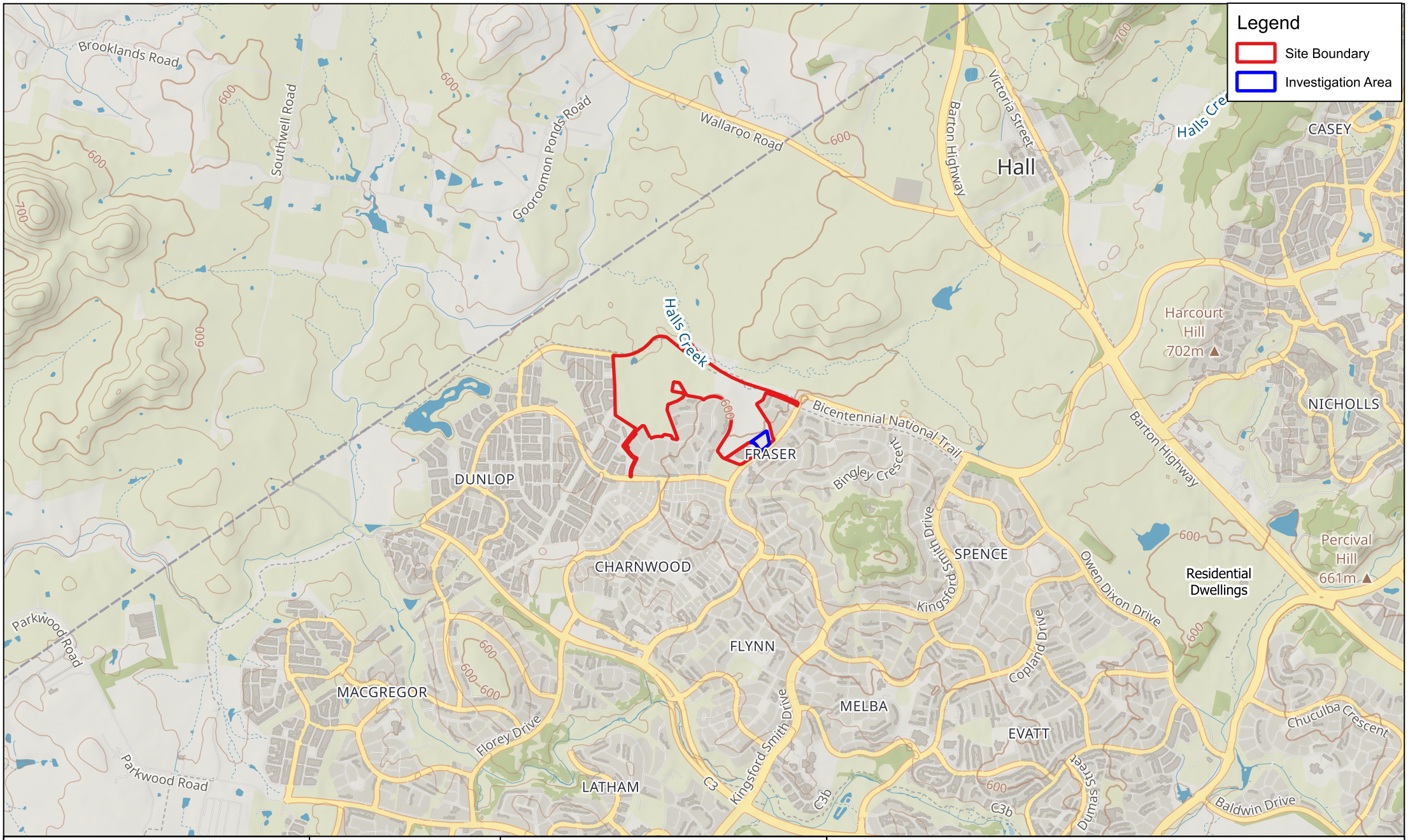
NSW EPA (2022) 'Contaminated Land Guidelines – Sampling Design Part 1 - Application 'Sampling Design Guidelines'.

Standards Australia (2005) '*Guide to the investigation and sampling of sites with potentially contaminated soil. Part 1: Non-volatile and semi-volatile compounds AS4482.1 (2005) and Part 2: Volatile substances, AS4482.2 (2005)*'.

WSP (2021) Contaminated Land Preliminary Assessment Fraser Primary School

Appendix A

Figures



0 1 2 km

N

Image Source: Google Satellite

Coordinate System: GDA 2020 MGA Zone 55

Ianterra consulting

Unit 13/71 Leichhardt Street, Kingston, ACT2604

ABN 30 629 182 823

FIGURE 1: Site Locality

PROJECT No:	P24050
PROJECT:	Detailed Site Investigation
LOCATION:	Block 6 Section 64, Fraser, ACT
CLIENT:	Major Projects, Education



0 25 50 m

N

Image Source: Nearmap February 2024

Coordinate System: GDA 2020 MGA Zone 55

lanterra consulting

Unit 13/71 Leichhardt Street, Kingston, ACT2604

ABN 30 629 182 823

FIGURE 2: Site Layout

PROJECT No:	P24050
PROJECT:	Detailed Site Investigation
LOCATION:	Block 6 Section 64, Fraser, ACT
CLIENT:	Major Projects, Education



0 25 50 m

N

Image Source: Nearmap February 2024

Coordinate System: GDA 2020 MGA Zone 55

lanterra consulting

Unit 13/71 Leichhardt Street, Kingston, ACT2604

ABN 30 629 182 823

FIGURE 3: Sample Locations

PROJECT No:	P24050
PROJECT:	Detailed Site Investigation
LOCATION:	Block 6 Section 64, Fraser, ACT
CLIENT:	Major Projects, Education

Appendix B

P24050 - Detailed Site Investigation, Block 6, Seciton 64 Fraser ACT

Table 1: Analytical Results

							Field_ID	BH1 0.0-0.1	BH2 0.0-0.1	BH3 0.5-0.6	BH4 0.5-0.6	BH5 0.0-0.1	BH6 0.5-0.6	BH7 0.0-0.1	BH8 0.0-0.1	BH9 0.5-0.6	BH10 0.5-0.6	BH11 0.0-0.1
							Depth m	0.0-0.1	0.0-0.1	0.5-0.6	0.5-0.6	0.0-0.1	0.5-0.6	0.0-0.1	0.0-0.1	0.5-0.6	0.5-0.6	0.0-0.1
							Sampled-date	9/04/2024	9/04/2024	9/04/2024	9/04/2024	9/04/2024	9/04/2024	9/04/2024	9/04/2024	9/04/2024	9/04/2024	9/04/2024
							Fill/Natural											
				ASC NEPM (2013) E1/ESL Urban Residential and Public Open Space	ASC NEPM (2013) HSL A (mg/kg) 0.0-1.0m/1.0-2.0m/2.0-4.0m	ASC NEPM (2013) HSL A												
Method_Type	**ChemName**	**Units**	**EQL**															
Metals in soil	Arsenic, As	mg/kg	1	100		100		**8**	**10**	**13**	**15**	**18**	**11**	**13**	**15**	**11**	**16**	**17**
	Cadmium, Cd	mg/kg	0.3			20		<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
	Chromium, Cr	mg/kg	0.3	490		100		**24**	**23**	**28**	**32**	**36**	**30**	**33**	**27**	**22**	**32**	**46**
	Copper, Cu	mg/kg	0.5	180		6000		**7.8**	**7.2**	**6.6**	**15**	**13**	**7.2**	**13**	**8**	**5.9**	**13**	**15**
	Lead, Pb	mg/kg	1	1100		300		**40**	**57**	**54**	**210**	**71**	**53**	**60**	**58**	**52**	**56**	**52**
	Nickel, Ni	mg/kg	0.5	120		400		**10**	**6**	**5.6**	**30**	**11**	**5.5**	**11**	**7.2**	**5.6**	**11**	**13**
	Zinc, Zn	mg/kg	2	430		7400		**110**	**110**	**120**	**200**	**150**	**110**	**160**	**150**	**120**	**160**	**180**
	Mercury	mg/kg	0.05			40		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Organochlorine Pesticides	Hexachlorobenzene (HCB)	mg/kg	0.1			10		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Alpha BHC	mg/kg	0.1					<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Lindane	mg/kg	0.1					<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Heptachlor	mg/kg	0.1			6		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Aldrin	mg/kg	0.1			6		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Beta BHC	mg/kg	0.1					<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Delta BHC	mg/kg	0.1					<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Heptachlor epoxide	mg/kg	0.1					<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	o,p'-DDE	mg/kg	0.1					<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Alpha Endosulfan	mg/kg	0.2			270		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	Gamma Chlordane	mg/kg	0.1			50		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Alpha Chlordane	mg/kg	0.1			50		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	trans-Nonachlor	mg/kg	0.1					<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	p,p'-DDE	mg/kg	0.1					<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Dieldrin	mg/kg	0.2			6		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	Endrin	mg/kg	0.2			10		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	o,p'-DDD	mg/kg	0.1					<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	o,p'-DDT	mg/kg	0.1					<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Beta Endosulfan	mg/kg	0.2					<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	p,p'-DDD	mg/kg	0.1			240		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	p,p'-DDT	mg/kg	0.1	180		240		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Endosulfan sulphate	mg/kg	0.1					<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Endrin Aldehyde	mg/kg	0.1			10		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Methoxychlor	mg/kg	0.1			300		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Endrin ketone	mg/kg	0.1					<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Isodrin	mg/kg	0.1					<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Mirex	mg/kg	0.1			10		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Organophosphorus Pesticides	Dichlorvos	mg/kg	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Dimethoate	mg/kg	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Diazinon (Dimpylate)	mg/kg	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Fenitrothion	mg/kg	0.2					<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	Malathion	mg/kg	0.2					<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2			160		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	Parathion-ethyl (Parathion)	mg/kg	0.2					<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	Bromophos Ethyl	mg/kg	0.2					<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	Methidathion	mg/kg	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Ethion	mg/kg	0.2					<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	Azinphos-methyl (Guthion)	mg/kg	0.2					<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
PAHs in Soil	Naphthalene	mg/kg	0.1	170	5/NL/NL			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	2-methylnaphthalene	mg/kg	0.1					<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	1-methylnaphthalene	mg/kg	0.1					<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Acenaphthylene	mg/kg	0.1					<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Acenaphthene	mg/kg	0.1					<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Fluorene	mg/kg	0.1					<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Phenanthrene	mg/kg	0.1					<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Anthracene	mg/kg	0.1					<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Fluoranthene	mg/kg	0.1					<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Pyrene	mg/kg	0.1					<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Benzo(a)anthracene	mg/kg	0.1					<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Chrysene	mg/kg	0.1					<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Benzo(b&j)fluoranthene	mg/kg	0.1					<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Benzo(k)fluoranthene	mg/kg	0.1					<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Benzo(e)pyrene	mg/kg	0.1	0.7				<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Indeno(1,2,3-cd)pyrene	mg/kg	0.1					<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Dibenzo(ah)anthracene	mg/kg	0.1					<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Benzo(ghi)perylene	mg/kg	0.1					<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Carcinogenic PAHs, BaP TEQ <LOR=0	TEQ (mg/kg)	0.2			3		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	Carcinogenic PAHs, BaP TEQ <LOR=LOR	TEQ (mg/kg)	0.3			3		<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
	Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	TEQ (mg/kg)	0.2			3		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	Total PAH (18)	mg/kg	0.8			300		<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
PCBs in Soil	Arochlor 1016	mg/kg	0.2					<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	Arochlor 1221	mg/kg	0.2					<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	Arochlor 1232	mg/kg	0.2					<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	Arochlor 1242	mg/kg	0.2					<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	Arochlor 1248	mg/kg	0.2					<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	Arochlor 1254	mg/kg	0.2					<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	Arochlor 1260	mg/kg	0.2					<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	Arochlor 1262	mg/kg	0.2					<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	Arochlor 1268	mg/kg	0.2					<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	Total PCBs (Arochlors)	mg/kg	1			1		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
TRH Soil C10-C40 NEPM	TRH C10-C14	mg/kg	20					<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
	TRH C15-C28	mg/kg	45					<45	<45	<45	<45	<45	<45	<45	<45	<45	<45	<45
	TRH C29-C36	mg/kg	45					<45	<45	<45	<45	<45	<45	<45	<45	<45	<45	<45
	TRH C37-C40	mg/kg	100					<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
	TRH >C10-C16	mg/kg	25					<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25
	TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	120	280/NL/NL			<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25
	TRH >C16-C34 (F3)	mg/kg	90	1300				<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90
	TRH >C34-C40 (F4)	mg/kg	120	5600				<120	<120	<120	<120	<120	<120	<120	<120	<120	<120	<120
	TRH C10-C36 Total	mg/kg	110					<110	<110	<110	<110	<110	<110	<110	<110	<110	<110	<110
	TRH >C10-C40 Total (F bands)	mg/kg	210					<210	<210	<210	<210	<210	<210	<210	<210	<210	<210	<210
BTEX + VOC	Benzene	mg/kg	0.1	65	0.7/1/2			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Toluene	mg/kg	0.1	105	480/NL/NL/NL			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Ethylbenzene	mg/kg	0.1	125	NL/NL/NL			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	m/p-xylene	mg/kg	0.2					<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	o-xylene	mg/kg	0.1					<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Total Xylenes	mg/kg	0.3	45	110/310/NL			<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
	Total BTEX	mg/kg	0.6					<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6
	Benzene (FD)	mg/kg	20		0.7/1/2			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	TRH C6-C9	mg/kg	0.1					<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
	TRH C6-C10	mg/kg	25					<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25
	TRH C6-C10 minus BTEX (F1)	mg/kg	25	180	50/90/150			<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25
Speciated Phenol	Phenol	mg/kg	0.5			3000		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	2-methyl phenol (o-cresol)	mg/kg	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	3/4-methyl phenol (m/p-cresol)	mg/kg	1					<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Total Cresol	mg/kg	1.5			400		<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5
	2-chlorophenol	mg/kg	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	2,4-dimethylphenol	mg/kg	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	2,6-dichlorophenol	mg/kg	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	2,4-dichlorophenol	mg/kg	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	2,4,6-trichlorophenol	mg/kg	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	2-nitrophenol	mg/kg	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	4-nitrophenol	mg/kg	1					<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	2,4,5-trichlorophenol	mg/kg	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	2,3,4,6/2,3,5,6-tetrachlorophenol	mg/kg	1					<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	Pentachlorophenol	mg/kg	0.5			100		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	2,4-dinitrophenol	mg/kg	2					<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
	4-chloro-3-methylphenol	mg/kg	2					<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Physicochemical Properties	pH	No unit	0.1					N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
	CEC	cmol/kg	1					N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
	%clay (<75 um)	%w/w	0.1					N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Fibre Identification in soil	Asbestos Detected	No unit	0					No	No	No	No	No	No	No	No	No	No	No
	Estimated Fibres	%w/w	0.01					<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

Table 1: Analytical Results

							Field_ID	BH12 0.0-0.1	BH13 0.0-0.1	BH14 0.5-0.6	BH15 0.0-0.1	BH16 0.0-0.1	BH17 0.0-0.1	BH18 1.0-1.1	QC1	QC2	QC3	QC4
							Depth m	0.0-0.1	0.0-0.1	0.5-0.6	0.0-0.1	0.0-0.1	0.0-0.1	1.0-1.1	QC1	1.0-1.1	QC3	1.0-1.1
							Sampled-date	9/04/2024	9/04/2024	9/04/2024	9/04/2024	9/04/2024	9/04/2024	9/04/2024	9/04/2024	9/04/2024	9/04/2024	9/04/2024
							Fill/Natural											
				ASC NEPM (2013) EIL/ESL Urban Residential and Public Open Space	ASC NEPM (2013) HSL-A (mg/kg) 0.0-1.0m/1.0-2.0m/2.0-4.0m	ASC NEPM (2013) HIL A												
Method_Type	**ChemName**	**Units**	**EQL**															
Metals in soil	Arsenic, As	mg/kg	1	100		100	**5**	**20**	**15**	**11**	**10**	**18**	**8**	**17**	**23**	**7**	**10**
	Cadmium, Cd	mg/kg	0.3			20	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	**0.6**	<0.3	<0.4	**0.4**	**0.8**
	Chromium, Cr	mg/kg	0.3	490		100	**30**	**36**	**24**	**26**	**29**	**29**	**41**	**40**	**46**	**35**	**48**
	Copper, Cu	mg/kg	0.5	180		6000	**5.9**	**13**	**17**	**9.9**	**8.4**	**9.9**	**12**	**13**	**17**	**8.7**	**17**
	Lead, Pb	mg/kg	1	1100		300	**14**	**87**	**76**	**58**	**42**	**52**	**79**	**90**	**83**	**73**	**110**
	Nickel, Ni	mg/kg	0.5	120		400	**15**	**12**	**13**	**6.9**	**6.8**	**15**	**11**	**14**	**13**	**9.4**	**14**
	Zinc, Zn	mg/kg	2	430		7400	**45**	**200**	**180**	**140**	**110**	**110**	**280**	**170**	**170**	**250**	**320**
	Mercury	mg/kg	0.05			40	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	**0.23**	**0.1**
Organochlorine Pesticides	Hexachlorobenzene (HCB)	mg/kg	0.1			10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	N.A.	N.A.	N.A.	N.A.
	Alpha BHC	mg/kg	0.1				<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	N.A.	N.A.	N.A.	N.A.
	Lindane	mg/kg	0.1				<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	N.A.	N.A.	N.A.	N.A.
	Heptachlor	mg/kg	0.1			6	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	N.A.	N.A.	N.A.	N.A.
	Aldrin	mg/kg	0.1			6	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	N.A.	N.A.	N.A.	N.A.
	Beta BHC	mg/kg	0.1				<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	N.A.	N.A.	N.A.	N.A.
	Delta BHC	mg/kg	0.1				<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	N.A.	N.A.	N.A.	N.A.
	Heptachlor epoxide	mg/kg	0.1				<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	N.A.	N.A.	N.A.	N.A.
	o,p'-DDE	mg/kg	0.1				<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	N.A.	N.A.	N.A.	N.A.
	Alpha Endosulfan	mg/kg	0.2			270	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	N.A.	N.A.	N.A.	N.A.
	Gamma Chlordane	mg/kg	0.1			50	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	N.A.	N.A.	N.A.	N.A.
	Alpha Chlordane	mg/kg	0.1			50	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	N.A.	N.A.	N.A.	N.A.
	trans-Nonachlor	mg/kg	0.1				<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	N.A.	N.A.	N.A.	N.A.
	p,p'-DDE	mg/kg	0.1				<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	N.A.	N.A.	N.A.	N.A.
	Dieldrin	mg/kg	0.2			6	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	N.A.	N.A.	N.A.	N.A.
	Endrin	mg/kg	0.2			10	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	N.A.	N.A.	N.A.	N.A.
	o,p'-DDD	mg/kg	0.1				<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	N.A.	N.A.	N.A.	N.A.
	o,p'-DDT	mg/kg	0.1				<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	N.A.	N.A.	N.A.	N.A.
	Beta Endosulfan	mg/kg	0.2				<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	N.A.	N.A.	N.A.	N.A.
	p,p'-DDD	mg/kg	0.1			240	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	N.A.	N.A.	N.A.	N.A.
	p,p'-DDT	mg/kg	0.1	180		240	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	N.A.	N.A.	N.A.	N.A.
	Endosulfan sulphate	mg/kg	0.1				<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	N.A.	N.A.	N.A.	N.A.
	Endrin Aldehyde	mg/kg	0.1			10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	N.A.	N.A.	N.A.	N.A.
	Methoxychlor	mg/kg	0.1			300	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	N.A.	N.A.	N.A.	N.A.
	Endrin Ketone	mg/kg	0.1				<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	N.A.	N.A.	N.A.	N.A.
	Isodrin	mg/kg	0.1				<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	N.A.	N.A.	N.A.	N.A.
	Mirex	mg/kg	0.1			10	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	N.A.	N.A.	N.A.	N.A.
Organophosphorus Pesticides	Dichlorvos	mg/kg	0.5				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	N.A.	N.A.	N.A.	N.A.
	Dimethoate	mg/kg	0.5				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	N.A.	N.A.	N.A.	N.A.
	Diazinon (Dimpylate)	mg/kg	0.5				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	N.A.	N.A.	N.A.	N.A.
	Fenitrothion	mg/kg	0.2				<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	N.A.	N.A.	N.A.	N.A.
	Malathion	mg/kg	0.2				<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	N.A.	N.A.	N.A.	N.A.
	Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2			160	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	N.A.	N.A.	N.A.	N.A.
	Parathion-ethyl (Parathion)	mg/kg	0.2				<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	N.A.	N.A.	N.A.	N.A.
	Bromophos Ethyl	mg/kg	0.2				<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	N.A.	N.A.	N.A.	N.A.
	Methidathion	mg/kg	0.5				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	N.A.	N.A.	N.A.	N.A.
	Ethion	mg/kg	0.2				<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	N.A.	N.A.	N.A.	N.A.
	Azinophos-methyl (Guthion)	mg/kg	0.2				<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	N.A.	N.A.	N.A.	N.A.
PAHs in Soil	Naphthalene	mg/kg	0.1	170	5/NL/NL		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	1-methylnaphthalene	mg/kg	0.1				<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	N.A.	<0.1	N.A.
	1-methylnaphthalene	mg/kg	0.1				<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	N.A.	<0.1	N.A.
	Acenaphthylene	mg/kg	0.1				<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Acenaphthene	mg/kg	0.1				<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Fluorene	mg/kg	0.1				<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Phenanthrene	mg/kg	0.1				<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Anthracene	mg/kg	0.1				<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Fluoranthene	mg/kg	0.1				<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Pyrene	mg/kg	0.1				<0.1	<0.1	<0.1	**0.1**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Benzo(a)anthracene	mg/kg	0.1				<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Chrysene	mg/kg	0.1				<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Benzo(b&j)fluoranthene	mg/kg	0.1				<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Benzo(k)fluoranthene	mg/kg	0.1				<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.1	<0.2
	Benzo(a)pyrene	mg/kg	0.1	0.7			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Indeno(1,2,3-cd)pyrene	mg/kg	0.1				<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Dibenzo(ah)anthracene	mg/kg	0.1				<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Benzo(ghi)perylene	mg/kg	0.1				<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Carcinogenic PAHs, BaP TEQ <LOR=0	TEQ (mg/kg)	0.2			3	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	N.A.	<0.2	N.A.
	Carcinogenic PAHs, BaP TEQ <LOR=LOR	TEQ (mg/kg)	0.3			3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	N.A.	<0.3	N.A.
	Carcinogenic PAHs, BaP TEQ >LOR=LOR/2	TEQ (mg/kg)	0.2			3	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	N.A.	<0.2	N.A.
	Total PAH (18)	mg/kg	0.8			300	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.05	<0.8	<0.05
PCBs in Soil	Aroclor 1016	mg/kg	0.2				<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	N.A.	N.A.	N.A.	N.A.
	Aroclor 1221	mg/kg	0.2				<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	N.A.	N.A.	N.A.	N.A.
	Aroclor 1232	mg/kg	0.2				<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	N.A.	N.A.	N.A.	N.A.
	Aroclor 1242	mg/kg	0.2				<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	N.A.	N.A.	N.A.	N.A.
	Aroclor 1248	mg/kg	0.2				<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	N.A.	N.A.	N.A.	N.A.
	Aroclor 1254	mg/kg	0.2				<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	N.A.	N.A.	N.A.	N.A.
	Aroclor 1260	mg/kg	0.2				<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	N.A.	N.A.	N.A.	N.A.
	Aroclor 1262	mg/kg	0.2				<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	N.A.	N.A.	N.A.	N.A.
	Aroclor 1268	mg/kg	0.2				<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	N.A.	N.A.	N.A.	N.A.
	Total PCBs (Aroclors)	mg/kg	1			1	<1	<1	<1	<1	<1	<1	<1	N.A.	N.A.	N.A.	N.A.
TRH Soil C10-C40 NEPM	TRH C10-C14	mg/kg	20				<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<50
	TRH C15-C28	mg/kg	45				<45	<45	<45	<45	<45	<45	<45	<45	<45	<45	<100
	TRH C29-C36	mg/kg	45				<45	<45	<45	<45	<45	<45	<45	<45	<45	<45	<100
	TRH C37-C40	mg/kg	100				<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	N.A.
	TRH >C10-C16	mg/kg	25				<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<50
	TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	120	280/NL/NL		<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<50
	TRH >C16-C34 (F3)	mg/kg	90	1300			<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	<100
	TRH >C34-C40 (F4)	mg/kg	120	5600			<120	<120	<120	<120	<120	<120	<120	<120	<120	<120	<100
	TRH C10-C36 Total	mg/kg	110				<110	<110	<110	<110	<110	<110	<110	<110	<110	<110	N.A.
	TRH >C10-C40 Total (F bands)	mg/kg	210				<210	<210	<210	<210	<210	<210	<210	<210	<210	<210	<50
BTEX + VOC	Benzene	mg/kg	0.1	65	0.7/1/2		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Toluene	mg/kg	0.1	105	480/NL/NL/NL		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Ethylbenzene	mg/kg	0.1	125	NL/NL/NL		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	m/p-xylene	mg/kg	0.2				<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	o-xylene	mg/kg	0.1				<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Total Xylenes	mg/kg	0.3	45	110/310/NL		<0.3	<0.3	<0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.3	<0.1	<0.1
	Total BTEX	mg/kg	0.6				<0.6	<0.3	<0.3	<0.2	<0.3	<0.3	<0.3	<0.2	<0.3	<0.2	<0.3
	Benzene (F0)	mg/kg	20		0.7/1/2		<0.1	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6
	TRH C6-C9	mg/kg	0.1				<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
	TRH C6-C10	mg/kg	25				<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25
	TRH C6-C10 minus BTEX (F1)	mg/kg	25	180	50/90/150		<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25
Speciated Phenol	Phenol	mg/kg	0.5			3000	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	N.A.	N.A.	N.A.	N.A.
	2-methyl phenol (o-cresol)	mg/kg	0.5				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	N.A.	N.A.	N.A.	N.A.
	3/4-methyl phenol (m/p-cresol)	mg/kg	1				<1	<1	<1	<1	<1	<1	<1	N.A.	N.A.	N.A.	N.A.
	Total Cresol	mg/kg	1.5			400	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	N.A.	N.A.	N.A.	N.A.
	2-chlorophenol	mg/kg	0.5				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	N.A.	N.A.	N.A.	N.A.
	2,4-dimethylphenol	mg/kg	0.5				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	N.A.	N.A.	N.A.	N.A.
	2,6-dichlorophenol	mg/kg	0.5				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	N.A.	N.A.	N.A.	N.A.
	2,4-dichlorophenol	mg/kg	0.5				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	N.A.	N.A.	N.A.	N.A.
	2,4,6-trichlorophenol	mg/kg	0.5				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	N.A.	N.A.	N.A.	N.A.
	2-nitrophenol	mg/kg	0.5				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	N.A.	N.A.	N.A.	N.A.
	4-nitrophenol	mg/kg	1				<1	<1	<1	<1	<1	<1	<1	N.A.	N.A.	N.A.	N.A.
	2,4,5-trichlorophenol	mg/kg	0.5				<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	N.A.	N.A.	N.A.	N.A.
	2,3,4,6/2,3,5,6-tetrachlorophenol	mg/kg	1				<1	<1	<1	<1	<1	<1	<1	N.A.	N.A.	N.A.	N.A.
	Pentachlorophenol	mg/kg	0.5			100	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	N.A.	N.A.	N.A.	N.A.
	2,4-dinitrophenol	mg/kg	2				<2	<2	<2	<2	<2	<2	<2	N.A.	N.A.	N.A.	N.A.
	4-chloro-3-methylphenol	mg/kg	2				<2	<2	<2	<2	<2	<2	<2	N.A.	N.A.	N.A.	N.A.
Physicochemical Properties	pH	No unit	0.1				N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
	CEC	cmol/kg	1				N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
	%clay (<75 um)	%w/w	0.1				N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Fibre Identification in soil	Asbestos Detected	No unit	0				No	No	No	No	No	No	No	N.A.	N.A.	N.A.	N.A.
	Estimated Fibres	%w/w	0.01				<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	N.A.	N.A.	N.A.	N.A.

P24050 - Detailed Site Investigation, Block 6, Seciton 64 Fraser ACT
Table 2: Soil Analytical Results - RPD

				Field_ID	BH10	QC1	RPD	QC2	RPD	BH18	QC3	RPD	QC4	RPD
				Depth m	0.5-0.6	0.5-0.6		0.2		1.0-1.1	1.0-1.1		1.0-1.1	
				Sampled-date	9/04/2024	9/04/2024		9/04/2024		9/04/2024	9/04/2024		9/04/2024	
				Sample Type	Stockpile	Stockpile		Stockpile		Stockpile	Stockpile		Stockpile	
Method_Type	**ChemName**	**Units**	**EQL**											
Metals in soil	Arsenic, As	mg/kg	1	**16**	**17**	**6%**	**23**	**36%**	**8**	**4**	**67%**	**10**	**22%**
	Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	**0%**	<0.4	0%	**0.6**	<0.3	0%	**0.8**	**29%**
	Chromium, Cr	mg/kg	0.3	**32**	**40**	**22%**	**46**	**36%**	**41**	**11**	**115%**	**48**	**16%**
	Copper, Cu	mg/kg	0.5	**13**	**13**	**0%**	**17**	**27%**	**12**	**7.9**	**41%**	**17**	**34%**
	Lead, Pb	mg/kg	1	**56**	**90**	**47%**	**83**	**39%**	**79**	**11**	**151%**	**110**	**33%**
	Nickel, Ni	mg/kg	0.5	**11**	**14**	**24%**	**13**	**17%**	**11**	**8.3**	**28%**	**14**	**24%**
	Zinc, Zn	mg/kg	2	**160**	**170**	**6%**	**170**	**6%**	**280**	**22**	**171%**	**320**	**13%**
	Mercury	mg/kg	0.05	<0.05	<0.05	**0%**	<0.1	0%	<0.05	<0.05	0%	**0.1**	0%
PAHs in Soil	Naphthalene	mg/kg	0.1	<0.1	<0.1	0%	N.A.	0%	<0.1	<0.1	0%	N.A.	0%
	2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	0%	N.A.	0%	<0.1	<0.1	0%	N.A.	0%
	1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	0%	N.A.	0%	<0.1	<0.1	0%	N.A.	0%
	Acenaphthylene	mg/kg	0.1	<0.1	<0.1	0%	N.A.	0%	<0.1	<0.1	0%	N.A.	0%
	Acenaphthene	mg/kg	0.1	<0.1	<0.1	0%	N.A.	0%	<0.1	<0.1	0%	N.A.	0%
	Fluorene	mg/kg	0.1	<0.1	<0.1	0%	N.A.	0%	<0.1	<0.1	0%	N.A.	0%
	Phenanthrene	mg/kg	0.1	<0.1	<0.1	0%	N.A.	0%	<0.1	<0.1	0%	N.A.	0%
	Anthracene	mg/kg	0.1	<0.1	<0.1	0%	N.A.	0%	<0.1	<0.1	0%	N.A.	0%
	Fluoranthene	mg/kg	0.1	<0.1	<0.1	0%	N.A.	0%	<0.1	<0.1	0%	N.A.	0%
	Pyrene	mg/kg	0.1	<0.1	<0.1	0%	N.A.	0%	<0.1	<0.1	0%	N.A.	0%
	Benzo(a)anthracene	mg/kg	0.1	<0.1	<0.1	0%	N.A.	0%	<0.1	<0.1	0%	N.A.	0%
	Chrysene	mg/kg	0.1	<0.1	<0.1	0%	N.A.	0%	<0.1	<0.1	0%	N.A.	0%
	Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	<0.1	0%	N.A.	0%	<0.1	<0.1	0%	N.A.	0%
	Benzo(k)fluoranthene	mg/kg	0.1	<0.1	<0.1	0%	N.A.	0%	<0.1	<0.1	0%	N.A.	0%
	Benzo(a)pyrene	mg/kg	0.1	<0.1	<0.1	0%	N.A.	0%	<0.1	<0.1	0%	N.A.	0%
	Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1	0%	N.A.	0%	<0.1	<0.1	0%	N.A.	0%
	Dibenzo(ah)anthracene	mg/kg	0.1	<0.1	<0.1	0%	N.A.	0%	<0.1	<0.1	0%	N.A.	0%
	Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1	0%	N.A.	0%	<0.1	<0.1	0%	N.A.	0%
	Carcinogenic PAHs, BaP TEQ <LOR=0	TEQ (mg/	0.2	<0.2	<0.2	0%	N.A.	0%	<0.2	<0.2	0%	N.A.	0%
	Carcinogenic PAHs, BaP TEQ <LOR=LOR	TEQ (mg/	0.3	<0.3	<0.3	0%	N.A.	0%	<0.3	<0.3	0%	N.A.	0%
	Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	TEQ (mg/	0.2	<0.2	<0.2	0%	N.A.	0%	<0.2	<0.2	0%	N.A.	0%
	Total PAH (18)	mg/kg	0.8	<0.8	<0.8	0%	N.A.	0%	<0.8	<0.8	0%	N.A.	0%
TRH Soil C10-C40 NEPM	TRH C10-C14	mg/kg	20	<20	<20	0%	<50	0%	<20	<20	0%	<50	0%
	TRH C15-C28	mg/kg	45	<45	<45	0%	<100	0%	<45	<45	0%	<100	0%
	TRH C29-C36	mg/kg	45	<45	<45	0%	<100	0%	<45	<45	0%	<100	0%
	TRH C37-C40	mg/kg	100	<100	<100	0%	N.A.	0%	<100	<100	0%	N.A.	0%
	TRH >C10-C16	mg/kg	25	<25	<25	0%	<50	0%	<25	<25	0%	<50	0%
	TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	<25	<25	0%	<50	0%	<25	<25	0%	<50	0%
	TRH >C16-C34 (F3)	mg/kg	90	<90	<90	0%	<100	0%	<90	<90	0%	<100	0%
	TRH >C34-C40 (F4)	mg/kg	120	<120	<120	0%	<100	0%	<120	<120	0%	<100	0%
	TRH C10-C36 Total	mg/kg	110	<110	<110	0%	N.A.	0%	<110	<110	0%	N.A.	0%
	TRH C10-C40 Total (F bands)	mg/kg	210	<210	<210	0%	<50	0%	<210	<210	0%	<50	0%
BTEX + VOC	Benzene	mg/kg	0.1	<0.1	<0.1	0%	<0.1	0%	<0.1	<0.1	0%	<0.1	0%
	Toluene	mg/kg	0.1	<0.1	<0.1	0%	<0.1	0%	<0.1	<0.1	0%	<0.1	0%
	Ethylbenzene	mg/kg	0.1	<0.1	<0.1	0%	<0.1	0%	<0.1	<0.1	0%	<0.1	0%
	m/p-xylene	mg/kg	0.2	<0.2	<0.2	0%	<0.2	0%	<0.2	<0.2	0%	<0.2	0%
	o-xylene	mg/kg	0.1	<0.1	<0.1	0%	<0.1	0%	<0.1	<0.1	0%	<0.1	0%
	Total Xylenes	mg/kg	0.3	<0.3	<0.1	0%	<0.1	0%	<0.3	<0.1	0%	<0.1	0%
	Total BTEX	mg/kg	0.6	<0.6	<0.3	0%	<0.3	0%	<0.6	<0.3	0%	<0.3	0%
	Benzene (F0)	mg/kg	20	<0.1	<0.6	0%	<0.6	0%	<0.1	<0.6	0%	<0.6	0%
	TRH C6-C9	mg/kg	0.1	<20	<20	0%	<20	0%	<20	<20	0%	<20	0%
	TRH C6-C10	mg/kg	25	<25	<25	0%	<25	0%	<25	<25	0%	<25	0%
	TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	0%	<25	0%	<25	<25	0%	<25	0%

Red text denotes RPD > 5x above detection limit and > 30% (i.e. failed RPD)

P24050 - Fraser Primary School Block 6 Section 64 - Waste Classification Assessment

Table 3: Soil Analytical Results

										Field_ID	BH1 0.0-0.1	BH2 0.0-0.1	BH3 0.5-0.6	BH4 0.5-0.6	BH5 0.0-0.1	BH6 0.5-0.6	BH7 0.0-0.1	BH8 0.0-0.1	BH9 0.5-0.6
										Depth m										
										Sampled date	9/04/2024	9/04/2024	9/04/2024	9/04/2024	9/04/2024	9/04/2024	9/04/2024	9/04/2024	9/04/2024
										Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
				Table 1 of ACT Government (2021) Environmental Standards: Assessment & Classification of Liquid and Non-Liquid Wastes																	
				General Solid Waste CT1 (mg/kg)	Restricted Solid Waste CT2 (mg/kg)	General Solid Waste SCC1 (mg/kg)	General Solid Waste TCLP1 (mg/L)	Restricted Solid Waste SCC2 (mg/kg)	Restricted Solid Waste TCLP2 (mg/L)												
Method_Type	ChemName	Units	EQL																		
Metals in soil	Arsenic, As	mg/kg	0	100	400	500	5	2,000	20		10	13	15	18	11	13	15	11	16
	Cadmium, Cd	mg/kg	0.3	20	80	100	1	400	4		<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
	Chromium, Cr	mg/kg	0.3	100	400	1900	5	7600	20		23	28	32	36	30	33	27	22	32
	Copper, Cu	mg/kg	0.5								7.2	6.6	15	13	7.2	13	8	5.9	13
	Lead, Pb	mg/kg	0	100	400	1500	5	6000	20		57	54	210	71	53	60	58	52	56
	Nickel, Ni	mg/kg	0.5	40	160	1050	210	4200	8		6	5.6	30	11	5.5	11	7.2	5.6	11
	Zinc, Zn	mg/kg	0								110	120	200	150	110	160	150	120	160
	Mercury	mg/kg	0.05	4	16	50	0.2	200	0.8		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
PAHs in Soil	Naphthalene	mg/kg	0.1								<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	2-methylnaphthalene	mg/kg	0.1								<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	1-methylnaphthalene	mg/kg	0.1								<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Acenaphthylene	mg/kg	0.1								<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Acenaphthene	mg/kg	0.1								<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Fluorene	mg/kg	0.1								<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Phenanthrene	mg/kg	0.1								<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Anthracene	mg/kg	0.1								<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Fluoranthene	mg/kg	0.1								<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Pyrene	mg/kg	0.1								<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Benzo(a)anthracene	mg/kg	0.1								<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Chrysene	mg/kg	0.1								<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Benzo(b&j)fluoranthene	mg/kg	0.1								<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Benzo(k)fluoranthene	mg/kg	0.1								<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Benzo(a)pyrene	mg/kg	0.1	0.8	3.2	10	0.04	23	0.16		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Indeno(1,2,3-cd)pyrene	mg/kg	0.1								<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Dibenzo(a&h)anthracene	mg/kg	0.1								<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Benzo(ghi)perylene	mg/kg	0.1								<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Carcinogenic PAHs, BaP TEQ <LOR=0	TEQ (mg/kg	0.2								<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	Carcinogenic PAHs, BaP TEQ <LOR=LOR	TEQ (mg/kg	0.3								<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
	Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	TEQ (mg/kg	0.2								<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	Total PAH (18)	mg/kg	0.8	200	800	200		800			<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
Organochlorine Pesticides	Hexachlorobenzene (HCB)	mg/kg	0.1								<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Alpha BHC	mg/kg	0.1								<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Lindane	mg/kg	0.1								<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Heptachlor	mg/kg	0.1								<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Aldrin	mg/kg	0.1								<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Beta BHC	mg/kg	0.1								<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Delta BHC	mg/kg	0.1								<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Heptachlor epoxide	mg/kg	0.1								<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	o,p'-DDE	mg/kg	0.1								<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Alpha Endosulfan	mg/kg	0.2								<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	Gamma Chlordane	mg/kg	0.1								<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Alpha Chlordane	mg/kg	0.1								<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	trans-Nonachlor	mg/kg	0.1								<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	p,p'-DDE	mg/kg	0.1								<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Dieldrin	mg/kg	0.2								<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	Endrin	mg/kg	0.2								<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	o,p'-DDD	mg/kg	0.1								<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	o,p'-DDT	mg/kg	0.1								<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Beta Endosulfan	mg/kg	0.2								<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	p,p'-DDD	mg/kg	0.1								<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	p,p'-DDT	mg/kg	0.1								<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Endosulfan sulphate	mg/kg	0.1								<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Endrin Aldehyde	mg/kg	0.1								<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Methoxychlor	mg/kg	0.1								<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Endrin Ketone	mg/kg	0.1								<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Isodrin	mg/kg	0.1								<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Mirex	mg/kg	0.1								<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Total OC Pesticides*	mg/kg	0	50	50						<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Organophosphate Pesticides	Dichlorvos	mg/kg	0.5								<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Dimethoate	mg/kg	0.5								<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Diazinon (Dimpylate)	mg/kg	0.5								<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Fenitrothion	mg/kg	0.2								<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	Malathion	mg/kg	0.2								<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	4	16	7.5	0.2	30	0.8		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	Parathion-ethyl (Parathion)	mg/kg	0.2								<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	Bromophos Ethyl	mg/kg	0.2								<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	Methidathion	mg/kg	0.5								<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Ethion	mg/kg	0.2								<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	Azinphos-methyl (Guthion)	mg/kg	0.2								<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	Total OP Pesticides	mg/kg	0.7								<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7
PCB	Aroclor 1016	mg/kg	0.2								<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	Aroclor 1221	mg/kg	0.2								<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	Aroclor 1232	mg/kg	0.2								<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	Aroclor 1242	mg/kg	0.2								<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	Aroclor 1248	mg/kg	0.2								<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	Aroclor 1254	mg/kg	0.2								<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	Aroclor 1260	mg/kg	0.2								<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	Aroclor 1262	mg/kg	0.2								<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	Aroclor 1268	mg/kg	0.2								<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	Total PCBs (Aroclors)	mg/kg	0	50	50	50		50			<1	<1	<1	<1	<1	<1	<1	<1	<1
Speciated Phenol	Phenol	mg/kg	0.5	288	1152	518	14.4	2073	57.6		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	2-methyl phenol (o-cresol)	mg/kg	0.5								<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	3/4-methyl phenol (m/p-cresol)	mg/kg	0								<1	<1	<1	<1	<1	<1	<1	<1	<1
	Total Cresol	mg/kg	1.5	4000	16,000	7200	200	28800	800		<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5
	2-chlorophenol	mg/kg	0.5								<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	2,4-dimethylphenol	mg/kg	0.5								<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	2,6-dichlorophenol	mg/kg	0.5								<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	2,4-dichlorophenol	mg/kg	0.5								<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	2,4,6-trichlorophenol	mg/kg	0.5	40	160	72	2	288	8		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	2-nitrophenol	mg/kg	0.5								<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	4-nitrophenol	mg/kg	0								<1	<1	<1	<1	<1	<1	<1	<1	<1
	2,4,5-trichlorophenol	mg/kg	0.5	8,000	32,000	14400	400	57,600	1600		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	2,3,4,6/2,3,5,6-tetrachlorophenol*	mg/kg	0								<1	<1	<1	<1	<1	<1	<1	<1	<1
	Pentachlorophenol*	mg/kg	0.5								<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	2,4-dinitrophenol	mg/kg	2								<2	<2	<2	<2	<2	<2	<2	<2	<2
	4-chloro-3-methylphenol	mg/kg	0								<2	<2	<2	<2	<2	<2	<2	<2	<2
TRH Soil C10-C40 NEPM	TRH C10-C14	mg/kg	20								<20	<20	<20	<20	<20	<20	<20	<20	<20
	TRH C15-C28	mg/kg	45								<45	<45	<45	<45	<45	<45	<45	<45	<45
	TRH C29-C36	mg/kg	45								<45	<45	<45	<45	<45	<45	<45	<45	<45
	TRH C37-C40	mg/kg	100								<100	<100	<100	<100	<100	<100	<100	<100	<100
	TRH >C10-C16	mg/kg	25								<25	<25	<25	<25	<25	<25	<25	<25	<25
	TRH >C10-C16 - Naphthalene (F2)	mg/kg	25								<25	<25	<25	<25	<25	<25	<25	<25	<25
	TRH >C16-C34 (F3)	mg/kg	90								<90	<90	<90	<90	<90	<90	<90	<90	<90
	TRH >C34-C40 (F4)	mg/kg	120								<120	<120	<120	<120	<120	<120	<120	<120	<120
	TRH C10-C36 Total	mg/kg	110	10000	40,000	10000		40000			<110	<110	<110	<110	<110	<110	<110	<110	<110
	TRH C10-C40 Total (F bands)	mg/kg	210								<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BTEX + VOC	Benzene	mg/kg	0.1	10	40	18	0.5	2000	20		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Toluene	mg/kg	0.1	288	1152	518	14.4	2073	57.6		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Ethylbenzene	mg/kg	0.1	600	2400	1080	30	4320	120		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	m/p-xylene	mg/kg	0.2								<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	o-xylene	mg/kg	0.1								<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Total Xylenes	mg/kg	0.3	1000	4000	1800	50	7200	200		<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
	Total BTEX	mg/kg	0.6								<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6	<0.6
	Benzene (F0)	mg/kg	20	10	40	18	0.5	2000	20		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	TRH C6-C9	mg/kg	0.1	650	2600	650		2600			<20	<20	<20	<20	<20	<20	<20	<20	<20
	TRH C6-C10	mg/kg	25								<25	<25	<25	<25	<25	<25	<25	<25	<25
	TRH C6-C10 minus BTEX (F1)	mg/kg	25								<25	<25	<25	<25	<25	<25	<25	<25	<25
Asbestos	Asbestos Detected	No unit	0								No	No	No	No	No	No	No	No	No
	Estimated Fibres	%w/w	0.01								<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

P24050 - Fraser Primary School Block 6 Section 64 - Waste Classification Assessment

Table 3: Soil Analytical Results

| | | |

Appendix C

Laboratory Reports and Chain of Custody Documentation

ANALYTICAL REPORT

Accreditation No. 2562

CLIENT DETAILS

Contact	Chris Gunton
Client	LANTERRA CONSULTING PTY LTD
Address	Unit 13, 71 Leichhardt Street Kingston ACT 2604
Telephone	0432 324 348
Facsimile	(Not specified)
Email	chris@lanterra.com.au
Project	**P24050**
Order Number	**P24050**
Samples	28

LABORATORY DETAILS

Manager	Huong Crawford
Laboratory	SGS Alexandria Environmental
Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	+61 2 8594 0400
Facsimile	+61 2 8594 0499
Email	au.environmental.sydney@sgs.com
SGS Reference	**SE263523 R0**
Date Received	11/4/2024
Date Reported	18/4/2024

COMMENTS

Accredited for compliance with ISO/IEC 17025 - Testing. NATA accredited laboratory 2562(4354).

No respirable fibres detected in all soil samples using trace analysis technique.
Sample #3-6,12-20,24: A portion of the sample supplied has been sub-sampled for asbestos analysis in soil according to SGS In-house procedures due to large volume. We therefore cannot guarantee that the sub-sample is representative of the entire sample supplied. SGS Industries and Environment recommends supplying approximately 50-100g of sample in a separate container.
Asbestos analysed by Approved Identifiers Ravee Sivasubramaniam and Yusuf Kuthpudin

SIGNATORIES

Akheeqar BENIAMEEN
Chemist

Dong LIANG
Metals/Inorganics Team Leader

Huong CRAWFORD
Production Manager

Ly Kim HA
Organic Section Head

Ravee SIVASUBRAMANIAM
Hygiene Team Leader

Teresa NGUYEN
Organic Chemist

VOC's in Soil [AN433] Tested: 12/4/2024

PARAMETER	UOM	LOR	SP1 0.0-0.1 SOIL - 9/4/2024 SE263523.001	SP1 0.5-0.6 SOIL - 9/4/2024 SE263523.002	SP2 0.5-0.6 SOIL - 9/4/2024 SE263523.003	SP2 1.0-1.1 SOIL - 9/4/2024 SE263523.004	SP3 0.5-0.6 SOIL - 9/4/2024 SE263523.005
Benzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Toluene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Ethylbenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
m/p-xylene	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
o-xylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Naphthalene (VOC)*	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total Xylenes*	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Total BTEX*	mg/kg	0.6	<0.6	<0.6	<0.6	<0.6	<0.6

PARAMETER	UOM	LOR	SP3 1.0-1.1 SOIL - 9/4/2024 SE263523.006	SP4 0.0-0.1 SOIL - 9/4/2024 SE263523.007	SP4 0.5-0.6 SOIL - 9/4/2024 SE263523.008	SP5 0.5-0.6 SOIL - 9/4/2024 SE263523.009	SP5 1.0-1.1 SOIL - 9/4/2024 SE263523.010
Benzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Toluene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Ethylbenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
m/p-xylene	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
o-xylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Naphthalene (VOC)*	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total Xylenes*	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Total BTEX*	mg/kg	0.6	<0.6	<0.6	<0.6	<0.6	<0.6

PARAMETER	UOM	LOR	BH1 0.0-0.1 SOIL - 9/4/2024 SE263523.011	BH2 0.0-0.1 SOIL - 9/4/2024 SE263523.012	BH3 0.5-0.6 SOIL - 9/4/2024 SE263523.013	BH4 0.5-0.6 SOIL - 9/4/2024 SE263523.014	BH5 0.0-0.1 SOIL - 9/4/2024 SE263523.015
Benzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Toluene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Ethylbenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
m/p-xylene	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
o-xylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Naphthalene (VOC)*	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total Xylenes*	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Total BTEX*	mg/kg	0.6	<0.6	<0.6	<0.6	<0.6	<0.6

PARAMETER	UOM	LOR	BH6 0.5-0.6 SOIL - 9/4/2024 SE263523.016	BH7 0.0-0.1 SOIL - 9/4/2024 SE263523.017	BH8 0.0-0.1 SOIL - 9/4/2024 SE263523.018	BH9 0.5-0.6 SOIL - 9/4/2024 SE263523.019	BH10 0.5-0.6 SOIL - 9/4/2024 SE263523.020
Benzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Toluene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Ethylbenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
m/p-xylene	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
o-xylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Naphthalene (VOC)*	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total Xylenes*	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Total BTEX*	mg/kg	0.6	<0.6	<0.6	<0.6	<0.6	<0.6

VOC's in Soil [AN433] Tested: 12/4/2024 (continued)

PARAMETER	UOM	LOR	BH11 0.0-0.1 SOIL - 9/4/2024 SE263523.021	BH12 0.0-0.1 SOIL - 9/4/2024 SE263523.022	BH13 0.0-0.1 SOIL - 9/4/2024 SE263523.023	BH14 0.5-0.6 SOIL - 9/4/2024 SE263523.024	BH15 0.0-0.1 SOIL - 9/4/2024 SE263523.025
Benzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Toluene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Ethylbenzene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
m/p-xylene	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
o-xylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Naphthalene (VOC)*	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total Xylenes*	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Total BTEX*	mg/kg	0.6	<0.6	<0.6	<0.6	<0.6	<0.6

PARAMETER	UOM	LOR	BH16 0.0-0.1 SOIL - 9/4/2024 SE263523.026	BH17 0.0-0.1 SOIL - 9/4/2024 SE263523.027	QC1 SOIL - 9/4/2024 SE263523.028
Benzene	mg/kg	0.1	<0.1	<0.1	<0.1
Toluene	mg/kg	0.1	<0.1	<0.1	<0.1
Ethylbenzene	mg/kg	0.1	<0.1	<0.1	<0.1
m/p-xylene	mg/kg	0.2	<0.2	<0.2	<0.2
o-xylene	mg/kg	0.1	<0.1	<0.1	<0.1
Naphthalene (VOC)*	mg/kg	0.1	<0.1	<0.1	<0.1
Total Xylenes*	mg/kg	0.3	<0.3	<0.3	<0.3
Total BTEX*	mg/kg	0.6	<0.6	<0.6	<0.6

Volatile Petroleum Hydrocarbons in Soil [AN433] Tested: 12/4/2024

PARAMETER	UOM	LOR	SP1 0.0-0.1 SOIL - 9/4/2024 SE263523.001	SP1 0.5-0.6 SOIL - 9/4/2024 SE263523.002	SP2 0.5-0.6 SOIL - 9/4/2024 SE263523.003	SP2 1.0-1.1 SOIL - 9/4/2024 SE263523.004	SP3 0.5-0.6 SOIL - 9/4/2024 SE263523.005
Benzene (F0)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TRH C6-C9	mg/kg	20	<20	<20	<20	<20	<20
TRH C6-C10	mg/kg	25	<25	<25	<25	<25	<25
TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	<25	<25	<25

PARAMETER	UOM	LOR	SP3 1.0-1.1 SOIL - 9/4/2024 SE263523.006	SP4 0.0-0.1 SOIL - 9/4/2024 SE263523.007	SP4 0.5-0.6 SOIL - 9/4/2024 SE263523.008	SP5 0.5-0.6 SOIL - 9/4/2024 SE263523.009	SP5 1.0-1.1 SOIL - 9/4/2024 SE263523.010
Benzene (F0)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TRH C6-C9	mg/kg	20	<20	<20	<20	<20	<20
TRH C6-C10	mg/kg	25	<25	<25	<25	<25	<25
TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	<25	<25	<25

PARAMETER	UOM	LOR	BH1 0.0-0.1 SOIL - 9/4/2024 SE263523.011	BH2 0.0-0.1 SOIL - 9/4/2024 SE263523.012	BH3 0.5-0.6 SOIL - 9/4/2024 SE263523.013	BH4 0.5-0.6 SOIL - 9/4/2024 SE263523.014	BH5 0.0-0.1 SOIL - 9/4/2024 SE263523.015
Benzene (F0)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TRH C6-C9	mg/kg	20	<20	<20	<20	<20	<20
TRH C6-C10	mg/kg	25	<25	<25	<25	<25	<25
TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	<25	<25	<25

PARAMETER	UOM	LOR	BH6 0.5-0.6 SOIL - 9/4/2024 SE263523.016	BH7 0.0-0.1 SOIL - 9/4/2024 SE263523.017	BH8 0.0-0.1 SOIL - 9/4/2024 SE263523.018	BH9 0.5-0.6 SOIL - 9/4/2024 SE263523.019	BH10 0.5-0.6 SOIL - 9/4/2024 SE263523.020
Benzene (F0)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TRH C6-C9	mg/kg	20	<20	<20	<20	<20	<20
TRH C6-C10	mg/kg	25	<25	<25	<25	<25	<25
TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	<25	<25	<25

PARAMETER	UOM	LOR	BH11 0.0-0.1 SOIL - 9/4/2024 SE263523.021	BH12 0.0-0.1 SOIL - 9/4/2024 SE263523.022	BH13 0.0-0.1 SOIL - 9/4/2024 SE263523.023	BH14 0.5-0.6 SOIL - 9/4/2024 SE263523.024	BH15 0.0-0.1 SOIL - 9/4/2024 SE263523.025
Benzene (F0)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TRH C6-C9	mg/kg	20	<20	<20	<20	<20	<20
TRH C6-C10	mg/kg	25	<25	<25	<25	<25	<25
TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	<25	<25	<25

PARAMETER	UOM	LOR	BH16 0.0-0.1 SOIL - 9/4/2024 SE263523.026	BH17 0.0-0.1 SOIL - 9/4/2024 SE263523.027	QC1 SOIL - 9/4/2024 SE263523.028
Benzene (F0)	mg/kg	0.1	<0.1	<0.1	<0.1
TRH C6-C9	mg/kg	20	<20	<20	<20
TRH C6-C10	mg/kg	25	<25	<25	<25
TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	<25

TRH (Total Recoverable Hydrocarbons) in Soil [AN403] Tested: 12/4/2024

PARAMETER	UOM	LOR	SP1 0.0-0.1 SOIL - 9/4/2024 SE263523.001	SP1 0.5-0.6 SOIL - 9/4/2024 SE263523.002	SP2 0.5-0.6 SOIL - 9/4/2024 SE263523.003	SP2 1.0-1.1 SOIL - 9/4/2024 SE263523.004	SP3 0.5-0.6 SOIL - 9/4/2024 SE263523.005
TRH C10-C14	mg/kg	20	<20	<20	<20	<20	<20
TRH C15-C28	mg/kg	45	<45	<45	<45	<45	<45
TRH C29-C36	mg/kg	45	<45	<45	<45	<45	<45
TRH C37-C40	mg/kg	100	<100	<100	<100	<100	<100
TRH >C10-C16	mg/kg	25	<25	<25	<25	<25	<25
TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	<25	<25	<25	<25	<25
TRH >C16-C34 (F3)	mg/kg	90	<90	<90	<90	<90	<90
TRH >C34-C40 (F4)	mg/kg	120	<120	<120	<120	<120	<120
TRH C10-C36 Total	mg/kg	110	<110	<110	<110	<110	<110
TRH >C10-C40 Total (F bands)	mg/kg	210	<210	<210	<210	<210	<210

PARAMETER	UOM	LOR	SP3 1.0-1.1 SOIL - 9/4/2024 SE263523.006	SP4 0.0-0.1 SOIL - 9/4/2024 SE263523.007	SP4 0.5-0.6 SOIL - 9/4/2024 SE263523.008	SP5 0.5-0.6 SOIL - 9/4/2024 SE263523.009	SP5 1.0-1.1 SOIL - 9/4/2024 SE263523.010
TRH C10-C14	mg/kg	20	<20	<20	<20	<20	<20
TRH C15-C28	mg/kg	45	<45	<45	<45	<45	<45
TRH C29-C36	mg/kg	45	<45	<45	<45	<45	<45
TRH C37-C40	mg/kg	100	<100	<100	<100	<100	<100
TRH >C10-C16	mg/kg	25	<25	<25	<25	<25	<25
TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	<25	<25	<25	<25	<25
TRH >C16-C34 (F3)	mg/kg	90	<90	<90	<90	<90	<90
TRH >C34-C40 (F4)	mg/kg	120	<120	<120	<120	<120	<120
TRH C10-C36 Total	mg/kg	110	<110	<110	<110	<110	<110
TRH >C10-C40 Total (F bands)	mg/kg	210	<210	<210	<210	<210	<210

PARAMETER	UOM	LOR	BH1 0.0-0.1 SOIL - 9/4/2024 SE263523.011	BH2 0.0-0.1 SOIL - 9/4/2024 SE263523.012	BH3 0.5-0.6 SOIL - 9/4/2024 SE263523.013	BH4 0.5-0.6 SOIL - 9/4/2024 SE263523.014	BH5 0.0-0.1 SOIL - 9/4/2024 SE263523.015
TRH C10-C14	mg/kg	20	<20	<20	<20	<20	<20
TRH C15-C28	mg/kg	45	<45	<45	<45	<45	<45
TRH C29-C36	mg/kg	45	<45	<45	<45	<45	<45
TRH C37-C40	mg/kg	100	<100	<100	<100	<100	<100
TRH >C10-C16	mg/kg	25	<25	<25	<25	<25	<25
TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	<25	<25	<25	<25	<25
TRH >C16-C34 (F3)	mg/kg	90	<90	<90	<90	<90	<90
TRH >C34-C40 (F4)	mg/kg	120	<120	<120	<120	<120	<120
TRH C10-C36 Total	mg/kg	110	<110	<110	<110	<110	<110
TRH >C10-C40 Total (F bands)	mg/kg	210	<210	<210	<210	<210	<210

TRH (Total Recoverable Hydrocarbons) in Soil [AN403] Tested: 12/4/2024 (continued)

PARAMETER	UOM	LOR	BH6 0.5-0.6 SOIL - 9/4/2024 SE263523.016	BH7 0.0-0.1 SOIL - 9/4/2024 SE263523.017	BH8 0.0-0.1 SOIL - 9/4/2024 SE263523.018	BH9 0.5-0.6 SOIL - 9/4/2024 SE263523.019	BH10 0.5-0.6 SOIL - 9/4/2024 SE263523.020
TRH C10-C14	mg/kg	20	<20	<20	<20	<20	<20
TRH C15-C28	mg/kg	45	<45	<45	<45	<45	<45
TRH C29-C36	mg/kg	45	<45	<45	<45	<45	<45
TRH C37-C40	mg/kg	100	<100	<100	<100	<100	<100
TRH >C10-C16	mg/kg	25	<25	<25	<25	<25	<25
TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	<25	<25	<25	<25	<25
TRH >C16-C34 (F3)	mg/kg	90	<90	<90	<90	<90	<90
TRH >C34-C40 (F4)	mg/kg	120	<120	<120	<120	<120	<120
TRH C10-C36 Total	mg/kg	110	<110	<110	<110	<110	<110
TRH >C10-C40 Total (F bands)	mg/kg	210	<210	<210	<210	<210	<210

PARAMETER	UOM	LOR	BH11 0.0-0.1 SOIL - 9/4/2024 SE263523.021	BH12 0.0-0.1 SOIL - 9/4/2024 SE263523.022	BH13 0.0-0.1 SOIL - 9/4/2024 SE263523.023	BH14 0.5-0.6 SOIL - 9/4/2024 SE263523.024	BH15 0.0-0.1 SOIL - 9/4/2024 SE263523.025
TRH C10-C14	mg/kg	20	<20	<20	<20	<20	<20
TRH C15-C28	mg/kg	45	<45	<45	<45	<45	<45
TRH C29-C36	mg/kg	45	<45	<45	<45	<45	<45
TRH C37-C40	mg/kg	100	<100	<100	<100	<100	<100
TRH >C10-C16	mg/kg	25	<25	<25	<25	<25	<25
TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	<25	<25	<25	<25	<25
TRH >C16-C34 (F3)	mg/kg	90	<90	<90	<90	<90	<90
TRH >C34-C40 (F4)	mg/kg	120	<120	<120	<120	<120	<120
TRH C10-C36 Total	mg/kg	110	<110	<110	<110	<110	<110
TRH >C10-C40 Total (F bands)	mg/kg	210	<210	<210	<210	<210	<210

PARAMETER	UOM	LOR	BH16 0.0-0.1 SOIL - 9/4/2024 SE263523.026	BH17 0.0-0.1 SOIL - 9/4/2024 SE263523.027	QC1 SOIL - 9/4/2024 SE263523.028
TRH C10-C14	mg/kg	20	<20	<20	<20
TRH C15-C28	mg/kg	45	<45	<45	<45
TRH C29-C36	mg/kg	45	<45	<45	<45
TRH C37-C40	mg/kg	100	<100	<100	<100
TRH >C10-C16	mg/kg	25	<25	<25	<25
TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	<25	<25	<25
TRH >C16-C34 (F3)	mg/kg	90	<90	<90	<90
TRH >C34-C40 (F4)	mg/kg	120	<120	<120	<120
TRH C10-C36 Total	mg/kg	110	<110	<110	<110
TRH >C10-C40 Total (F bands)	mg/kg	210	<210	<210	<210

PAH (Polynuclear Aromatic Hydrocarbons) in Soil [AN420] Tested: 12/4/2024

PARAMETER	UOM	LOR	SP1 0.0-0.1 SOIL - 9/4/2024 SE263523.001	SP1 0.5-0.6 SOIL - 9/4/2024 SE263523.002	SP2 0.5-0.6 SOIL - 9/4/2024 SE263523.003	SP2 1.0-1.1 SOIL - 9/4/2024 SE263523.004	SP3 0.5-0.6 SOIL - 9/4/2024 SE263523.005
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(k)fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(ah)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Carcinogenic PAHs, BaP TEQ <LOR=0*	TEQ (mg/kg)	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Carcinogenic PAHs, BaP TEQ <LOR=LOR*	TEQ (mg/kg)	0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Carcinogenic PAHs, BaP TEQ <LOR=LOR/2*	TEQ (mg/kg)	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Total PAH (18)	mg/kg	0.8	<0.8	<0.8	<0.8	<0.8	<0.8
Total PAH (NEPM/WHO 16)	mg/kg	0.8	<0.8	<0.8	<0.8	<0.8	<0.8

PARAMETER	UOM	LOR	SP3 1.0-1.1 SOIL - 9/4/2024 SE263523.006	SP4 0.0-0.1 SOIL - 9/4/2024 SE263523.007	SP4 0.5-0.6 SOIL - 9/4/2024 SE263523.008	SP5 0.5-0.6 SOIL - 9/4/2024 SE263523.009	SP5 1.0-1.1 SOIL - 9/4/2024 SE263523.010
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(k)fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(ah)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Carcinogenic PAHs, BaP TEQ <LOR=0*	TEQ (mg/kg)	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Carcinogenic PAHs, BaP TEQ <LOR=LOR*	TEQ (mg/kg)	0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Carcinogenic PAHs, BaP TEQ <LOR=LOR/2*	TEQ (mg/kg)	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Total PAH (18)	mg/kg	0.8	<0.8	<0.8	<0.8	<0.8	<0.8
Total PAH (NEPM/WHO 16)	mg/kg	0.8	<0.8	<0.8	<0.8	<0.8	<0.8

PAH (Polynuclear Aromatic Hydrocarbons) in Soil [AN420] Tested: 12/4/2024 (continued)

PARAMETER	UOM	LOR	BH1 0.0-0.1 SOIL - 9/4/2024 SE263523.011	BH2 0.0-0.1 SOIL - 9/4/2024 SE263523.012	BH3 0.5-0.6 SOIL - 9/4/2024 SE263523.013	BH4 0.5-0.6 SOIL - 9/4/2024 SE263523.014	BH5 0.0-0.1 SOIL - 9/4/2024 SE263523.015
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(k)fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(ah)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Carcinogenic PAHs, BaP TEQ <LOR=0*	TEQ (mg/kg)	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Carcinogenic PAHs, BaP TEQ <LOR=LOR*	TEQ (mg/kg)	0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Carcinogenic PAHs, BaP TEQ <LOR=LOR/2*	TEQ (mg/kg)	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Total PAH (18)	mg/kg	0.8	<0.8	<0.8	<0.8	<0.8	<0.8
Total PAH (NEPM/WHO 16)	mg/kg	0.8	<0.8	<0.8	<0.8	<0.8	<0.8

PARAMETER	UOM	LOR	BH6 0.5-0.6 SOIL - 9/4/2024 SE263523.016	BH7 0.0-0.1 SOIL - 9/4/2024 SE263523.017	BH8 0.0-0.1 SOIL - 9/4/2024 SE263523.018	BH9 0.5-0.6 SOIL - 9/4/2024 SE263523.019	BH10 0.5-0.6 SOIL - 9/4/2024 SE263523.020
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(k)fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(ah)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Carcinogenic PAHs, BaP TEQ <LOR=0*	TEQ (mg/kg)	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Carcinogenic PAHs, BaP TEQ <LOR=LOR*	TEQ (mg/kg)	0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Carcinogenic PAHs, BaP TEQ <LOR=LOR/2*	TEQ (mg/kg)	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Total PAH (18)	mg/kg	0.8	<0.8	<0.8	<0.8	<0.8	<0.8
Total PAH (NEPM/WHO 16)	mg/kg	0.8	<0.8	<0.8	<0.8	<0.8	<0.8

PAH (Polynuclear Aromatic Hydrocarbons) in Soil [AN420] Tested: 12/4/2024 (continued)

PARAMETER	UOM	LOR	BH11 0.0-0.1 SOIL - 9/4/2024 SE263523.021	BH12 0.0-0.1 SOIL - 9/4/2024 SE263523.022	BH13 0.0-0.1 SOIL - 9/4/2024 SE263523.023	BH14 0.5-0.6 SOIL - 9/4/2024 SE263523.024	BH15 0.0-0.1 SOIL - 9/4/2024 SE263523.025
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	**0.1**
Benzo(a)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(k)fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(ah)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Carcinogenic PAHs, BaP TEQ <LOR=0*	TEQ (mg/kg)	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Carcinogenic PAHs, BaP TEQ <LOR=LOR*	TEQ (mg/kg)	0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Carcinogenic PAHs, BaP TEQ <LOR=LOR/2*	TEQ (mg/kg)	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Total PAH (18)	mg/kg	0.8	<0.8	<0.8	<0.8	<0.8	<0.8
Total PAH (NEPM/WHO 16)	mg/kg	0.8	<0.8	<0.8	<0.8	<0.8	<0.8

PARAMETER	UOM	LOR	BH16 0.0-0.1 SOIL - 9/4/2024 SE263523.026	BH17 0.0-0.1 SOIL - 9/4/2024 SE263523.027	QC1 SOIL - 9/4/2024 SE263523.028
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1
2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1
1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	0.1	<0.1	<0.1	<0.1
Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1
Benzo(k)fluoranthene	mg/kg	0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene	mg/kg	0.1	<0.1	<0.1	<0.1
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1	<0.1
Dibenzo(ah)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1
Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1	<0.1
Carcinogenic PAHs, BaP TEQ <LOR=0*	TEQ (mg/kg)	0.2	<0.2	<0.2	<0.2
Carcinogenic PAHs, BaP TEQ <LOR=LOR*	TEQ (mg/kg)	0.3	<0.3	<0.3	<0.3
Carcinogenic PAHs, BaP TEQ <LOR=LOR/2*	TEQ (mg/kg)	0.2	<0.2	<0.2	<0.2
Total PAH (18)	mg/kg	0.8	<0.8	<0.8	<0.8
Total PAH (NEPM/WHO 16)	mg/kg	0.8	<0.8	<0.8	<0.8

Speciated Phenols in Soil [AN420] Tested: 12/4/2024

PARAMETER	UOM	LOR	SP1 0.0-0.1 SOIL - 9/4/2024 SE263523.001	SP1 0.5-0.6 SOIL - 9/4/2024 SE263523.002	SP2 0.5-0.6 SOIL - 9/4/2024 SE263523.003	SP2 1.0-1.1 SOIL - 9/4/2024 SE263523.004	SP3 0.5-0.6 SOIL - 9/4/2024 SE263523.005
Phenol	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2-methyl phenol (o-cresol)	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
3/4-methyl phenol (m/p-cresol)	mg/kg	1	<1	<1	<1	<1	<1
Total Cresol	mg/kg	1.5	<1.5	<1.5	<1.5	<1.5	<1.5
2-chlorophenol	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-dimethylphenol	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2,6-dichlorophenol	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-dichlorophenol	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2,4,6-trichlorophenol	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2-nitrophenol	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
4-nitrophenol	mg/kg	1	<1	<1	<1	<1	<1
2,4,5-trichlorophenol	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2,3,4,6/2,3,5,6-tetrachlorophenol	mg/kg	1	<1	<1	<1	<1	<1
Pentachlorophenol	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-dinitrophenol	mg/kg	2	<2	<2	<2	<2	<2
4-chloro-3-methylphenol	mg/kg	2	<2	<2	<2	<2	<2

PARAMETER	UOM	LOR	SP3 1.0-1.1 SOIL - 9/4/2024 SE263523.006	SP4 0.0-0.1 SOIL - 9/4/2024 SE263523.007	SP4 0.5-0.6 SOIL - 9/4/2024 SE263523.008	SP5 0.5-0.6 SOIL - 9/4/2024 SE263523.009	SP5 1.0-1.1 SOIL - 9/4/2024 SE263523.010
Phenol	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2-methyl phenol (o-cresol)	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
3/4-methyl phenol (m/p-cresol)	mg/kg	1	<1	<1	<1	<1	<1
Total Cresol	mg/kg	1.5	<1.5	<1.5	<1.5	<1.5	<1.5
2-chlorophenol	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-dimethylphenol	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2,6-dichlorophenol	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-dichlorophenol	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2,4,6-trichlorophenol	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2-nitrophenol	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
4-nitrophenol	mg/kg	1	<1	<1	<1	<1	<1
2,4,5-trichlorophenol	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2,3,4,6/2,3,5,6-tetrachlorophenol	mg/kg	1	<1	<1	<1	<1	<1
Pentachlorophenol	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-dinitrophenol	mg/kg	2	<2	<2	<2	<2	<2
4-chloro-3-methylphenol	mg/kg	2	<2	<2	<2	<2	<2

Speciated Phenols in Soil [AN420] Tested: 12/4/2024 (continued)

PARAMETER	UOM	LOR	BH1 0.0-0.1 SOIL - 9/4/2024 SE263523.011	BH2 0.0-0.1 SOIL - 9/4/2024 SE263523.012	BH3 0.5-0.6 SOIL - 9/4/2024 SE263523.013	BH4 0.5-0.6 SOIL - 9/4/2024 SE263523.014	BH5 0.0-0.1 SOIL - 9/4/2024 SE263523.015
Phenol	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2-methyl phenol (o-cresol)	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
3/4-methyl phenol (m/p-cresol)	mg/kg	1	<1	<1	<1	<1	<1
Total Cresol	mg/kg	1.5	<1.5	<1.5	<1.5	<1.5	<1.5
2-chlorophenol	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-dimethylphenol	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2,6-dichlorophenol	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-dichlorophenol	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2,4,6-trichlorophenol	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2-nitrophenol	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
4-nitrophenol	mg/kg	1	<1	<1	<1	<1	<1
2,4,5-trichlorophenol	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2,3,4,6/2,3,5,6-tetrachlorophenol	mg/kg	1	<1	<1	<1	<1	<1
Pentachlorophenol	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-dinitrophenol	mg/kg	2	<2	<2	<2	<2	<2
4-chloro-3-methylphenol	mg/kg	2	<2	<2	<2	<2	<2

PARAMETER	UOM	LOR	BH6 0.5-0.6 SOIL - 9/4/2024 SE263523.016	BH7 0.0-0.1 SOIL - 9/4/2024 SE263523.017	BH8 0.0-0.1 SOIL - 9/4/2024 SE263523.018	BH9 0.5-0.6 SOIL - 9/4/2024 SE263523.019	BH10 0.5-0.6 SOIL - 9/4/2024 SE263523.020
Phenol	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2-methyl phenol (o-cresol)	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
3/4-methyl phenol (m/p-cresol)	mg/kg	1	<1	<1	<1	<1	<1
Total Cresol	mg/kg	1.5	<1.5	<1.5	<1.5	<1.5	<1.5
2-chlorophenol	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-dimethylphenol	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2,6-dichlorophenol	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-dichlorophenol	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2,4,6-trichlorophenol	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2-nitrophenol	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
4-nitrophenol	mg/kg	1	<1	<1	<1	<1	<1
2,4,5-trichlorophenol	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2,3,4,6/2,3,5,6-tetrachlorophenol	mg/kg	1	<1	<1	<1	<1	<1
Pentachlorophenol	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-dinitrophenol	mg/kg	2	<2	<2	<2	<2	<2
4-chloro-3-methylphenol	mg/kg	2	<2	<2	<2	<2	<2

Speciated Phenols in Soil [AN420] Tested: 12/4/2024 (continued)

PARAMETER	UOM	LOR	BH11 0.0-0.1 SOIL - 9/4/2024 SE263523.021	BH12 0.0-0.1 SOIL - 9/4/2024 SE263523.022	BH13 0.0-0.1 SOIL - 9/4/2024 SE263523.023	BH14 0.5-0.6 SOIL - 9/4/2024 SE263523.024	BH15 0.0-0.1 SOIL - 9/4/2024 SE263523.025
Phenol	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2-methyl phenol (o-cresol)	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
3/4-methyl phenol (m/p-cresol)	mg/kg	1	<1	<1	<1	<1	<1
Total Cresol	mg/kg	1.5	<1.5	<1.5	<1.5	<1.5	<1.5
2-chlorophenol	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-dimethylphenol	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2,6-dichlorophenol	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-dichlorophenol	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2,4,6-trichlorophenol	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2-nitrophenol	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
4-nitrophenol	mg/kg	1	<1	<1	<1	<1	<1
2,4,5-trichlorophenol	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2,3,4,6/2,3,5,6-tetrachlorophenol	mg/kg	1	<1	<1	<1	<1	<1
Pentachlorophenol	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2,4-dinitrophenol	mg/kg	2	<2	<2	<2	<2	<2
4-chloro-3-methylphenol	mg/kg	2	<2	<2	<2	<2	<2

PARAMETER	UOM	LOR	BH16 0.0-0.1 SOIL - 9/4/2024 SE263523.026	BH17 0.0-0.1 SOIL - 9/4/2024 SE263523.027
Phenol	mg/kg	0.5	<0.5	<0.5
2-methyl phenol (o-cresol)	mg/kg	0.5	<0.5	<0.5
3/4-methyl phenol (m/p-cresol)	mg/kg	1	<1	<1
Total Cresol	mg/kg	1.5	<1.5	<1.5
2-chlorophenol	mg/kg	0.5	<0.5	<0.5
2,4-dimethylphenol	mg/kg	0.5	<0.5	<0.5
2,6-dichlorophenol	mg/kg	0.5	<0.5	<0.5
2,4-dichlorophenol	mg/kg	0.5	<0.5	<0.5
2,4,6-trichlorophenol	mg/kg	0.5	<0.5	<0.5
2-nitrophenol	mg/kg	0.5	<0.5	<0.5
4-nitrophenol	mg/kg	1	<1	<1
2,4,5-trichlorophenol	mg/kg	0.5	<0.5	<0.5
2,3,4,6/2,3,5,6-tetrachlorophenol	mg/kg	1	<1	<1
Pentachlorophenol	mg/kg	0.5	<0.5	<0.5
2,4-dinitrophenol	mg/kg	2	<2	<2
4-chloro-3-methylphenol	mg/kg	2	<2	<2

OC Pesticides in Soil [AN420] Tested: 12/4/2024

PARAMETER	UOM	LOR	SP1 0.0-0.1 SOIL - 9/4/2024 SE263523.001	SP1 0.5-0.6 SOIL - 9/4/2024 SE263523.002	SP2 0.5-0.6 SOIL - 9/4/2024 SE263523.003	SP2 1.0-1.1 SOIL - 9/4/2024 SE263523.004	SP3 0.5-0.6 SOIL - 9/4/2024 SE263523.005
Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Alpha BHC	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Lindane (gamma BHC)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Beta BHC	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Delta BHC	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
o,p'-DDE*	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Gamma Chlordane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Alpha Chlordane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
trans-Nonachlor	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
p,p'-DDE	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Endrin	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
o,p'-DDD*	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
o,p'-DDT*	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Beta Endosulfan	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
p,p'-DDD	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
p,p'-DDT	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin aldehyde	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin ketone	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Isodrin	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Mirex	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total CLP OC Pesticides	mg/kg	1	<1	<1	<1	<1	<1
Total OC VIC EPA	mg/kg	1	<1	<1	<1	<1	<1

OC Pesticides in Soil [AN420] Tested: 12/4/2024 (continued)

PARAMETER	UOM	LOR	SP3 1.0-1.1 SOIL - 9/4/2024 SE263523.006	SP4 0.0-0.1 SOIL - 9/4/2024 SE263523.007	SP4 0.5-0.6 SOIL - 9/4/2024 SE263523.008	SP5 0.5-0.6 SOIL - 9/4/2024 SE263523.009	SP5 1.0-1.1 SOIL - 9/4/2024 SE263523.010
Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Alpha BHC	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Lindane (gamma BHC)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Beta BHC	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Delta BHC	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
o,p'-DDE*	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Gamma Chlordane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Alpha Chlordane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
trans-Nonachlor	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
p,p'-DDE	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Endrin	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
o,p'-DDD*	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
o,p'-DDT*	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Beta Endosulfan	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
p,p'-DDD	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
p,p'-DDT	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin aldehyde	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin ketone	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Isodrin	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Mirex	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total CLP OC Pesticides	mg/kg	1	<1	<1	<1	<1	<1
Total OC VIC EPA	mg/kg	1	<1	<1	<1	<1	<1

OC Pesticides in Soil [AN420] Tested: 12/4/2024 (continued)

PARAMETER	UOM	LOR	BH1 0.0-0.1 SOIL - 9/4/2024 SE263523.011	BH2 0.0-0.1 SOIL - 9/4/2024 SE263523.012	BH3 0.5-0.6 SOIL - 9/4/2024 SE263523.013	BH4 0.5-0.6 SOIL - 9/4/2024 SE263523.014	BH5 0.0-0.1 SOIL - 9/4/2024 SE263523.015
Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Alpha BHC	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Lindane (gamma BHC)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Beta BHC	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Delta BHC	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
o,p'-DDE*	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Gamma Chlordane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Alpha Chlordane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
trans-Nonachlor	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
p,p'-DDE	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Endrin	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
o,p'-DDD*	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
o,p'-DDT*	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Beta Endosulfan	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
p,p'-DDD	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
p,p'-DDT	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin aldehyde	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin ketone	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Isodrin	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Mirex	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total CLP OC Pesticides	mg/kg	1	<1	<1	<1	<1	<1
Total OC VIC EPA	mg/kg	1	<1	<1	<1	<1	<1

OC Pesticides in Soil [AN420] Tested: 12/4/2024 (continued)

PARAMETER	UOM	LOR	BH6 0.5-0.6 SOIL - 9/4/2024 SE263523.016	BH7 0.0-0.1 SOIL - 9/4/2024 SE263523.017	BH8 0.0-0.1 SOIL - 9/4/2024 SE263523.018	BH9 0.5-0.6 SOIL - 9/4/2024 SE263523.019	BH10 0.5-0.6 SOIL - 9/4/2024 SE263523.020
Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Alpha BHC	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Lindane (gamma BHC)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Beta BHC	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Delta BHC	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
o,p'-DDE*	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Gamma Chlordane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Alpha Chlordane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
trans-Nonachlor	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
p,p'-DDE	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Endrin	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
o,p'-DDD*	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
o,p'-DDT*	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Beta Endosulfan	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
p,p'-DDD	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
p,p'-DDT	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin aldehyde	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin ketone	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Isodrin	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Mirex	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total CLP OC Pesticides	mg/kg	1	<1	<1	<1	<1	<1
Total OC VIC EPA	mg/kg	1	<1	<1	<1	<1	<1

OC Pesticides in Soil [AN420] Tested: 12/4/2024 (continued)

PARAMETER	UOM	LOR	BH11 0.0-0.1 SOIL - 9/4/2024 SE263523.021	BH12 0.0-0.1 SOIL - 9/4/2024 SE263523.022	BH13 0.0-0.1 SOIL - 9/4/2024 SE263523.023	BH14 0.5-0.6 SOIL - 9/4/2024 SE263523.024	BH15 0.0-0.1 SOIL - 9/4/2024 SE263523.025
Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Alpha BHC	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Lindane (gamma BHC)	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Beta BHC	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Delta BHC	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
o,p'-DDE*	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Gamma Chlordane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Alpha Chlordane	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
trans-Nonachlor	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
p,p'-DDE	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Endrin	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
o,p'-DDD*	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
o,p'-DDT*	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Beta Endosulfan	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
p,p'-DDD	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
p,p'-DDT	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin aldehyde	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin ketone	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Isodrin	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Mirex	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total CLP OC Pesticides	mg/kg	1	<1	<1	<1	<1	<1
Total OC VIC EPA	mg/kg	1	<1	<1	<1	<1	<1

OC Pesticides in Soil [AN420] Tested: 12/4/2024 (continued)

PARAMETER	UOM	LOR	BH16 0.0-0.1 SOIL - 9/4/2024 SE263523.026	BH17 0.0-0.1 SOIL - 9/4/2024 SE263523.027
Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1
Alpha BHC	mg/kg	0.1	<0.1	<0.1
Lindane (gamma BHC)	mg/kg	0.1	<0.1	<0.1
Heptachlor	mg/kg	0.1	<0.1	<0.1
Aldrin	mg/kg	0.1	<0.1	<0.1
Beta BHC	mg/kg	0.1	<0.1	<0.1
Delta BHC	mg/kg	0.1	<0.1	<0.1
Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1
o,p'-DDE*	mg/kg	0.1	<0.1	<0.1
Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2
Gamma Chlordane	mg/kg	0.1	<0.1	<0.1
Alpha Chlordane	mg/kg	0.1	<0.1	<0.1
trans-Nonachlor	mg/kg	0.1	<0.1	<0.1
p,p'-DDE	mg/kg	0.1	<0.1	<0.1
Dieldrin	mg/kg	0.2	<0.2	<0.2
Endrin	mg/kg	0.2	<0.2	<0.2
o,p'-DDD*	mg/kg	0.1	<0.1	<0.1
o,p'-DDT*	mg/kg	0.1	<0.1	<0.1
Beta Endosulfan	mg/kg	0.2	<0.2	<0.2
p,p'-DDD	mg/kg	0.1	<0.1	<0.1
p,p'-DDT	mg/kg	0.1	<0.1	<0.1
Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1
Endrin aldehyde	mg/kg	0.1	<0.1	<0.1
Methoxychlor	mg/kg	0.1	<0.1	<0.1
Endrin ketone	mg/kg	0.1	<0.1	<0.1
Isodrin	mg/kg	0.1	<0.1	<0.1
Mirex	mg/kg	0.1	<0.1	<0.1
Total CLP OC Pesticides	mg/kg	1	<1	<1
Total OC VIC EPA	mg/kg	1	<1	<1

OP Pesticides in Soil [AN420] Tested: 12/4/2024

PARAMETER	UOM	LOR	SP1 0.0-0.1 SOIL - 9/4/2024 SE263523.001	SP1 0.5-0.6 SOIL - 9/4/2024 SE263523.002	SP2 0.5-0.6 SOIL - 9/4/2024 SE263523.003	SP2 1.0-1.1 SOIL - 9/4/2024 SE263523.004	SP3 0.5-0.6 SOIL - 9/4/2024 SE263523.005
Dichlorvos	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dimethoate	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Diazinon (Dimpylate)	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fenitrothion	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Malathion	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Bromophos Ethyl	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Methidathion	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Ethion	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Total OP Pesticides*	mg/kg	1.7	<1.7	<1.7	<1.7	<1.7	<1.7

PARAMETER	UOM	LOR	SP3 1.0-1.1 SOIL - 9/4/2024 SE263523.006	SP4 0.0-0.1 SOIL - 9/4/2024 SE263523.007	SP4 0.5-0.6 SOIL - 9/4/2024 SE263523.008	SP5 0.5-0.6 SOIL - 9/4/2024 SE263523.009	SP5 1.0-1.1 SOIL - 9/4/2024 SE263523.010
Dichlorvos	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dimethoate	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Diazinon (Dimpylate)	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fenitrothion	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Malathion	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Bromophos Ethyl	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Methidathion	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Ethion	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Total OP Pesticides*	mg/kg	1.7	<1.7	<1.7	<1.7	<1.7	<1.7

PARAMETER	UOM	LOR	BH1 0.0-0.1 SOIL - 9/4/2024 SE263523.011	BH2 0.0-0.1 SOIL - 9/4/2024 SE263523.012	BH3 0.5-0.6 SOIL - 9/4/2024 SE263523.013	BH4 0.5-0.6 SOIL - 9/4/2024 SE263523.014	BH5 0.0-0.1 SOIL - 9/4/2024 SE263523.015
Dichlorvos	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dimethoate	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Diazinon (Dimpylate)	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fenitrothion	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Malathion	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Bromophos Ethyl	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Methidathion	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Ethion	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Total OP Pesticides*	mg/kg	1.7	<1.7	<1.7	<1.7	<1.7	<1.7

OP Pesticides in Soil [AN420] Tested: 12/4/2024 (continued)

PARAMETER	UOM	LOR	BH6 0.5-0.6 SOIL - 9/4/2024 SE263523.016	BH7 0.0-0.1 SOIL - 9/4/2024 SE263523.017	BH8 0.0-0.1 SOIL - 9/4/2024 SE263523.018	BH9 0.5-0.6 SOIL - 9/4/2024 SE263523.019	BH10 0.5-0.6 SOIL - 9/4/2024 SE263523.020
Dichlorvos	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dimethoate	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Diazinon (Dimpylate)	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fenitrothion	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Malathion	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Bromophos Ethyl	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Methidathion	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Ethion	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Total OP Pesticides*	mg/kg	1.7	<1.7	<1.7	<1.7	<1.7	<1.7

PARAMETER	UOM	LOR	BH11 0.0-0.1 SOIL - 9/4/2024 SE263523.021	BH12 0.0-0.1 SOIL - 9/4/2024 SE263523.022	BH13 0.0-0.1 SOIL - 9/4/2024 SE263523.023	BH14 0.5-0.6 SOIL - 9/4/2024 SE263523.024	BH15 0.0-0.1 SOIL - 9/4/2024 SE263523.025
Dichlorvos	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dimethoate	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Diazinon (Dimpylate)	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fenitrothion	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Malathion	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Bromophos Ethyl	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Methidathion	mg/kg	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Ethion	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Total OP Pesticides*	mg/kg	1.7	<1.7	<1.7	<1.7	<1.7	<1.7

PARAMETER	UOM	LOR	BH16 0.0-0.1 SOIL - 9/4/2024 SE263523.026	BH17 0.0-0.1 SOIL - 9/4/2024 SE263523.027
Dichlorvos	mg/kg	0.5	<0.5	<0.5
Dimethoate	mg/kg	0.5	<0.5	<0.5
Diazinon (Dimpylate)	mg/kg	0.5	<0.5	<0.5
Fenitrothion	mg/kg	0.2	<0.2	<0.2
Malathion	mg/kg	0.2	<0.2	<0.2
Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2	<0.2
Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	<0.2
Bromophos Ethyl	mg/kg	0.2	<0.2	<0.2
Methidathion	mg/kg	0.5	<0.5	<0.5
Ethion	mg/kg	0.2	<0.2	<0.2
Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	<0.2
Total OP Pesticides*	mg/kg	1.7	<1.7	<1.7

PCBs in Soil [AN420] Tested: 12/4/2024

PARAMETER	UOM	LOR	SP1 0.0-0.1 SOIL - 9/4/2024 SE263523.001	SP1 0.5-0.6 SOIL - 9/4/2024 SE263523.002	SP2 0.5-0.6 SOIL - 9/4/2024 SE263523.003	SP2 1.0-1.1 SOIL - 9/4/2024 SE263523.004	SP3 0.5-0.6 SOIL - 9/4/2024 SE263523.005
Arochlor 1016	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1221	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1232	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1242	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1248	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1254	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1260	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1262	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1268	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Total PCBs (Arochlors)	mg/kg	1	<1	<1	<1	<1	<1

PARAMETER	UOM	LOR	SP3 1.0-1.1 SOIL - 9/4/2024 SE263523.006	SP4 0.0-0.1 SOIL - 9/4/2024 SE263523.007	SP4 0.5-0.6 SOIL - 9/4/2024 SE263523.008	SP5 0.5-0.6 SOIL - 9/4/2024 SE263523.009	SP5 1.0-1.1 SOIL - 9/4/2024 SE263523.010
Arochlor 1016	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1221	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1232	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1242	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1248	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1254	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1260	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1262	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1268	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Total PCBs (Arochlors)	mg/kg	1	<1	<1	<1	<1	<1

PARAMETER	UOM	LOR	BH1 0.0-0.1 SOIL - 9/4/2024 SE263523.011	BH2 0.0-0.1 SOIL - 9/4/2024 SE263523.012	BH3 0.5-0.6 SOIL - 9/4/2024 SE263523.013	BH4 0.5-0.6 SOIL - 9/4/2024 SE263523.014	BH5 0.0-0.1 SOIL - 9/4/2024 SE263523.015
Arochlor 1016	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1221	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1232	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1242	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1248	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1254	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1260	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1262	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1268	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Total PCBs (Arochlors)	mg/kg	1	<1	<1	<1	<1	<1

PCBs in Soil [AN420] Tested: 12/4/2024 (continued)

PARAMETER	UOM	LOR	BH6 0.5-0.6 SOIL - 9/4/2024 SE263523.016	BH7 0.0-0.1 SOIL - 9/4/2024 SE263523.017	BH8 0.0-0.1 SOIL - 9/4/2024 SE263523.018	BH9 0.5-0.6 SOIL - 9/4/2024 SE263523.019	BH10 0.5-0.6 SOIL - 9/4/2024 SE263523.020
Arochlor 1016	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1221	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1232	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1242	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1248	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1254	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1260	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1262	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1268	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Total PCBs (Arochlors)	mg/kg	1	<1	<1	<1	<1	<1

PARAMETER	UOM	LOR	BH11 0.0-0.1 SOIL - 9/4/2024 SE263523.021	BH12 0.0-0.1 SOIL - 9/4/2024 SE263523.022	BH13 0.0-0.1 SOIL - 9/4/2024 SE263523.023	BH14 0.5-0.6 SOIL - 9/4/2024 SE263523.024	BH15 0.0-0.1 SOIL - 9/4/2024 SE263523.025
Arochlor 1016	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1221	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1232	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1242	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1248	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1254	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1260	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1262	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arochlor 1268	mg/kg	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Total PCBs (Arochlors)	mg/kg	1	<1	<1	<1	<1	<1

PARAMETER	UOM	LOR	BH16 0.0-0.1 SOIL - 9/4/2024 SE263523.026	BH17 0.0-0.1 SOIL - 9/4/2024 SE263523.027
Arochlor 1016	mg/kg	0.2	<0.2	<0.2
Arochlor 1221	mg/kg	0.2	<0.2	<0.2
Arochlor 1232	mg/kg	0.2	<0.2	<0.2
Arochlor 1242	mg/kg	0.2	<0.2	<0.2
Arochlor 1248	mg/kg	0.2	<0.2	<0.2
Arochlor 1254	mg/kg	0.2	<0.2	<0.2
Arochlor 1260	mg/kg	0.2	<0.2	<0.2
Arochlor 1262	mg/kg	0.2	<0.2	<0.2
Arochlor 1268	mg/kg	0.2	<0.2	<0.2
Total PCBs (Arochlors)	mg/kg	1	<1	<1

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES [AN040/AN320] Tested: 12/4/2024

PARAMETER	UOM	LOR	SP1 0.0-0.1 SOIL - 9/4/2024 SE263523.001	SP1 0.5-0.6 SOIL - 9/4/2024 SE263523.002	SP2 0.5-0.6 SOIL - 9/4/2024 SE263523.003	SP2 1.0-1.1 SOIL - 9/4/2024 SE263523.004	SP3 0.5-0.6 SOIL - 9/4/2024 SE263523.005
Arsenic, As	mg/kg	1	7	10	3	3	10
Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Chromium, Cr	mg/kg	0.5	22	40	14	15	29
Copper, Cu	mg/kg	0.5	6.7	10	4.0	3.5	10
Lead, Pb	mg/kg	1	37	78	10	11	55
Nickel, Ni	mg/kg	0.5	6.8	8.9	3.1	9.1	8.3
Zinc, Zn	mg/kg	2	80	150	19	39	120

PARAMETER	UOM	LOR	SP3 1.0-1.1 SOIL - 9/4/2024 SE263523.006	SP4 0.0-0.1 SOIL - 9/4/2024 SE263523.007	SP4 0.5-0.6 SOIL - 9/4/2024 SE263523.008	SP5 0.5-0.6 SOIL - 9/4/2024 SE263523.009	SP5 1.0-1.1 SOIL - 9/4/2024 SE263523.010
Arsenic, As	mg/kg	1	8	6	10	7	8
Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Chromium, Cr	mg/kg	0.5	27	22	29	24	24
Copper, Cu	mg/kg	0.5	8.7	6.1	12	7.8	7.8
Lead, Pb	mg/kg	1	58	30	49	40	40
Nickel, Ni	mg/kg	0.5	7.4	5.3	9.9	8.0	10
Zinc, Zn	mg/kg	2	110	53	110	110	110

PARAMETER	UOM	LOR	BH1 0.0-0.1 SOIL - 9/4/2024 SE263523.011	BH2 0.0-0.1 SOIL - 9/4/2024 SE263523.012	BH3 0.5-0.6 SOIL - 9/4/2024 SE263523.013	BH4 0.5-0.6 SOIL - 9/4/2024 SE263523.014	BH5 0.0-0.1 SOIL - 9/4/2024 SE263523.015
Arsenic, As	mg/kg	1	10	13	15	18	11
Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Chromium, Cr	mg/kg	0.5	23	28	32	36	30
Copper, Cu	mg/kg	0.5	7.2	6.6	15	13	7.2
Lead, Pb	mg/kg	1	57	54	210	71	53
Nickel, Ni	mg/kg	0.5	6.0	5.6	30	11	5.5
Zinc, Zn	mg/kg	2	110	120	200	150	110

PARAMETER	UOM	LOR	BH6 0.5-0.6 SOIL - 9/4/2024 SE263523.016	BH7 0.0-0.1 SOIL - 9/4/2024 SE263523.017	BH8 0.0-0.1 SOIL - 9/4/2024 SE263523.018	BH9 0.5-0.6 SOIL - 9/4/2024 SE263523.019	BH10 0.5-0.6 SOIL - 9/4/2024 SE263523.020
Arsenic, As	mg/kg	1	13	15	11	16	17
Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Chromium, Cr	mg/kg	0.5	33	27	22	32	46
Copper, Cu	mg/kg	0.5	13	8.0	5.9	13	15
Lead, Pb	mg/kg	1	60	58	52	56	52
Nickel, Ni	mg/kg	0.5	11	7.2	5.6	11	13
Zinc, Zn	mg/kg	2	160	150	120	160	180

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES [AN040/AN320] Tested: 12/4/2024

(continued)

PARAMETER	UOM	LOR	BH11 0.0-0.1 SOIL - 9/4/2024 SE263523.021	BH12 0.0-0.1 SOIL - 9/4/2024 SE263523.022	BH13 0.0-0.1 SOIL - 9/4/2024 SE263523.023	BH14 0.5-0.6 SOIL - 9/4/2024 SE263523.024	BH15 0.0-0.1 SOIL - 9/4/2024 SE263523.025
Arsenic, As	mg/kg	1	5	11	20	15	11
Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Chromium, Cr	mg/kg	0.5	30	24	36	34	26
Copper, Cu	mg/kg	0.5	5.9	7.3	13	17	9.9
Lead, Pb	mg/kg	1	14	45	87	76	58
Nickel, Ni	mg/kg	0.5	15	6.0	12	13	6.9
Zinc, Zn	mg/kg	2	45	110	200	180	140

PARAMETER	UOM	LOR	BH16 0.0-0.1 SOIL - 9/4/2024 SE263523.026	BH17 0.0-0.1 SOIL - 9/4/2024 SE263523.027	QC1 SOIL - 9/4/2024 SE263523.028
Arsenic, As	mg/kg	1	10	18	17
Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	<0.3
Chromium, Cr	mg/kg	0.5	29	29	40
Copper, Cu	mg/kg	0.5	8.4	9.9	13
Lead, Pb	mg/kg	1	42	52	90
Nickel, Ni	mg/kg	0.5	6.8	15	14
Zinc, Zn	mg/kg	2	110	110	170

Mercury in Soil [AN312] Tested: 12/4/2024

PARAMETER	UOM	LOR	SP1 0.0-0.1 SOIL - 9/4/2024 SE263523.001	SP1 0.5-0.6 SOIL - 9/4/2024 SE263523.002	SP2 0.5-0.6 SOIL - 9/4/2024 SE263523.003	SP2 1.0-1.1 SOIL - 9/4/2024 SE263523.004	SP3 0.5-0.6 SOIL - 9/4/2024 SE263523.005
Mercury	mg/kg	0.05	<0.05	<0.05	<0.05	<0.05	<0.05

PARAMETER	UOM	LOR	SP3 1.0-1.1 SOIL - 9/4/2024 SE263523.006	SP4 0.0-0.1 SOIL - 9/4/2024 SE263523.007	SP4 0.5-0.6 SOIL - 9/4/2024 SE263523.008	SP5 0.5-0.6 SOIL - 9/4/2024 SE263523.009	SP5 1.0-1.1 SOIL - 9/4/2024 SE263523.010
Mercury	mg/kg	0.05	<0.05	<0.05	<0.05	<0.05	<0.05

PARAMETER	UOM	LOR	BH1 0.0-0.1 SOIL - 9/4/2024 SE263523.011	BH2 0.0-0.1 SOIL - 9/4/2024 SE263523.012	BH3 0.5-0.6 SOIL - 9/4/2024 SE263523.013	BH4 0.5-0.6 SOIL - 9/4/2024 SE263523.014	BH5 0.0-0.1 SOIL - 9/4/2024 SE263523.015
Mercury	mg/kg	0.05	<0.05	<0.05	<0.05	<0.05	<0.05

PARAMETER	UOM	LOR	BH6 0.5-0.6 SOIL - 9/4/2024 SE263523.016	BH7 0.0-0.1 SOIL - 9/4/2024 SE263523.017	BH8 0.0-0.1 SOIL - 9/4/2024 SE263523.018	BH9 0.5-0.6 SOIL - 9/4/2024 SE263523.019	BH10 0.5-0.6 SOIL - 9/4/2024 SE263523.020
Mercury	mg/kg	0.05	<0.05	<0.05	<0.05	<0.05	<0.05

PARAMETER	UOM	LOR	BH11 0.0-0.1 SOIL - 9/4/2024 SE263523.021	BH12 0.0-0.1 SOIL - 9/4/2024 SE263523.022	BH13 0.0-0.1 SOIL - 9/4/2024 SE263523.023	BH14 0.5-0.6 SOIL - 9/4/2024 SE263523.024	BH15 0.0-0.1 SOIL - 9/4/2024 SE263523.025
Mercury	mg/kg	0.05	<0.05	<0.05	<0.05	<0.05	<0.05

PARAMETER	UOM	LOR	BH16 0.0-0.1 SOIL - 9/4/2024 SE263523.026	BH17 0.0-0.1 SOIL - 9/4/2024 SE263523.027	QC1 SOIL - 9/4/2024 SE263523.028
Mercury	mg/kg	0.05	<0.05	<0.05	<0.05

Moisture Content [AN002] Tested: 12/4/2024

PARAMETER	UOM	LOR	SP1 0.0-0.1 SOIL - 9/4/2024 SE263523.001	SP1 0.5-0.6 SOIL - 9/4/2024 SE263523.002	SP2 0.5-0.6 SOIL - 9/4/2024 SE263523.003	SP2 1.0-1.1 SOIL - 9/4/2024 SE263523.004	SP3 0.5-0.6 SOIL - 9/4/2024 SE263523.005
% Moisture	%w/w	1	12.0	12.7	11.9	8.2	9.5

PARAMETER	UOM	LOR	SP3 1.0-1.1 SOIL - 9/4/2024 SE263523.006	SP4 0.0-0.1 SOIL - 9/4/2024 SE263523.007	SP4 0.5-0.6 SOIL - 9/4/2024 SE263523.008	SP5 0.5-0.6 SOIL - 9/4/2024 SE263523.009	SP5 1.0-1.1 SOIL - 9/4/2024 SE263523.010
% Moisture	%w/w	1	8.9	13.3	14.5	13.4	11.9

PARAMETER	UOM	LOR	BH1 0.0-0.1 SOIL - 9/4/2024 SE263523.011	BH2 0.0-0.1 SOIL - 9/4/2024 SE263523.012	BH3 0.5-0.6 SOIL - 9/4/2024 SE263523.013	BH4 0.5-0.6 SOIL - 9/4/2024 SE263523.014	BH5 0.0-0.1 SOIL - 9/4/2024 SE263523.015
% Moisture	%w/w	1	13.2	15.9	13.3	15.3	14.8

PARAMETER	UOM	LOR	BH6 0.5-0.6 SOIL - 9/4/2024 SE263523.016	BH7 0.0-0.1 SOIL - 9/4/2024 SE263523.017	BH8 0.0-0.1 SOIL - 9/4/2024 SE263523.018	BH9 0.5-0.6 SOIL - 9/4/2024 SE263523.019	BH10 0.5-0.6 SOIL - 9/4/2024 SE263523.020
% Moisture	%w/w	1	7.9	16.8	18.6	12.3	11.0

PARAMETER	UOM	LOR	BH11 0.0-0.1 SOIL - 9/4/2024 SE263523.021	BH12 0.0-0.1 SOIL - 9/4/2024 SE263523.022	BH13 0.0-0.1 SOIL - 9/4/2024 SE263523.023	BH14 0.5-0.6 SOIL - 9/4/2024 SE263523.024	BH15 0.0-0.1 SOIL - 9/4/2024 SE263523.025
% Moisture	%w/w	1	14.5	16.7	16.7	12.4	17.0

PARAMETER	UOM	LOR	BH16 0.0-0.1 SOIL - 9/4/2024 SE263523.026	BH17 0.0-0.1 SOIL - 9/4/2024 SE263523.027	QC1 SOIL - 9/4/2024 SE263523.028
% Moisture	%w/w	1	18.5	16.0	10.9

Fibre Identification in soil [AS4964/AN602] Tested: 16/4/2024

PARAMETER	UOM	LOR	SP1 0.0-0.1 SOIL - 9/4/2024 SE263523.001	SP1 0.5-0.6 SOIL - 9/4/2024 SE263523.002	SP2 0.5-0.6 SOIL - 9/4/2024 SE263523.003	SP2 1.0-1.1 SOIL - 9/4/2024 SE263523.004	SP3 0.5-0.6 SOIL - 9/4/2024 SE263523.005
Asbestos Detected	No unit	-	No	No	No	No	No
Estimated Fibres*	%w/w	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Date Analysed*	No unit	-	18/04/2024 00:00	18/04/2024 00:00	18/04/2024 00:00	18/04/2024 00:00	18/04/2024 00:00

PARAMETER	UOM	LOR	SP3 1.0-1.1 SOIL - 9/4/2024 SE263523.006	SP4 0.0-0.1 SOIL - 9/4/2024 SE263523.007	SP4 0.5-0.6 SOIL - 9/4/2024 SE263523.008	SP5 0.5-0.6 SOIL - 9/4/2024 SE263523.009	SP5 1.0-1.1 SOIL - 9/4/2024 SE263523.010
Asbestos Detected	No unit	-	No	No	No	No	No
Estimated Fibres*	%w/w	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Date Analysed*	No unit	-	18/04/2024 00:00	18/04/2024 00:00	18/04/2024 00:00	18/04/2024 00:00	18/04/2024 00:00

PARAMETER	UOM	LOR	BH1 0.0-0.1 SOIL - 9/4/2024 SE263523.011	BH2 0.0-0.1 SOIL - 9/4/2024 SE263523.012	BH3 0.5-0.6 SOIL - 9/4/2024 SE263523.013	BH4 0.5-0.6 SOIL - 9/4/2024 SE263523.014	BH5 0.0-0.1 SOIL - 9/4/2024 SE263523.015
Asbestos Detected	No unit	-	No	No	No	No	No
Estimated Fibres*	%w/w	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Date Analysed*	No unit	-	18/04/2024 00:00	18/04/2024 00:00	18/04/2024 00:00	18/04/2024 00:00	18/04/2024 00:00

PARAMETER	UOM	LOR	BH6 0.5-0.6 SOIL - 9/4/2024 SE263523.016	BH7 0.0-0.1 SOIL - 9/4/2024 SE263523.017	BH8 0.0-0.1 SOIL - 9/4/2024 SE263523.018	BH9 0.5-0.6 SOIL - 9/4/2024 SE263523.019	BH10 0.5-0.6 SOIL - 9/4/2024 SE263523.020
Asbestos Detected	No unit	-	No	No	No	No	No
Estimated Fibres*	%w/w	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Date Analysed*	No unit	-	18/04/2024 00:00	18/04/2024 00:00	18/04/2024 00:00	18/04/2024 00:00	18/04/2024 00:00

PARAMETER	UOM	LOR	BH11 0.0-0.1 SOIL - 9/4/2024 SE263523.021	BH12 0.0-0.1 SOIL - 9/4/2024 SE263523.022	BH13 0.0-0.1 SOIL - 9/4/2024 SE263523.023	BH14 0.5-0.6 SOIL - 9/4/2024 SE263523.024	BH15 0.0-0.1 SOIL - 9/4/2024 SE263523.025
Asbestos Detected	No unit	-	No	No	No	No	No
Estimated Fibres*	%w/w	0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Date Analysed*	No unit	-	18/04/2024 00:00	18/04/2024 00:00	18/04/2024 00:00	18/04/2024 00:00	18/04/2024 00:00

PARAMETER	UOM	LOR	BH16 0.0-0.1 SOIL - 9/4/2024 SE263523.026	BH17 0.0-0.1 SOIL - 9/4/2024 SE263523.027
Asbestos Detected	No unit	-	No	No
Estimated Fibres*	%w/w	0.01	<0.01	<0.01
Date Analysed*	No unit	-	18/04/2024 00:00	18/04/2024 00:00

METHOD	METHODOLOGY SUMMARY
AN002	The test is carried out by drying (at either 40°C or 105°C) a known mass of sample in a weighed evaporating basin. After fully dry the sample is re-weighed. Samples such as sludge and sediment having high percentages of moisture will take some time in a drying oven for complete removal of water.
AN040/AN320	A portion of sample is digested with nitric acid to decompose organic matter and hydrochloric acid to complete the digestion of metals. The digest is then analysed by ICP OES with metals results reported on the dried sample basis. Based on USEPA method 200.8 and 6010C.
AN040	A portion of sample is digested with Nitric acid to decompose organic matter and Hydrochloric acid to complete the digestion of metals and then filtered for analysis by AAS or ICP as per USEPA Method 200.8.
AN312	Mercury by Cold Vapour AAS in Soils: After digestion with nitric acid, hydrogen peroxide and hydrochloric acid, mercury ions are reduced by stannous chloride reagent in acidic solution to elemental mercury. This mercury vapour is purged by nitrogen into a cold cell in an atomic absorption spectrometer or mercury analyser. Quantification is made by comparing absorbances to those of the calibration standards. Reference APHA 3112/3500
AN403	Total Recoverable Hydrocarbons: Determination of Hydrocarbons by gas chromatography after a solvent extraction. Detection is by flame ionisation detector (FID) that produces an electronic signal in proportion to the combustible matter passing through it. Total Recoverable Hydrocarbons (TRH) are routinely reported as four alkane groupings based on the carbon chain length of the compounds: C6-C9, C10-C14, C15-C28 and C29-C36 and in recognition of the NEPM 1999 (2013), >C10-C16 (F2), >C16-C34 (F3) and >C34-C40 (F4). F2 is reported directly and also corrected by subtracting Naphthalene (from VOC method AN433) where available.
AN403	Additionally, the volatile C6-C9 fraction may be determined by a purge and trap technique and GC/MS because of the potential for volatiles loss. Total Recoverable Hydrocarbons - Silica (TRH-Si) follows the same method of analysis after silica gel cleanup of the solvent extract. Aliphatic/Aromatic Speciation follows the same method of analysis after fractionation of the solvent extract over silica with differential polarity of the eluent solvents .
AN403	The GC/FID method is not well suited to the analysis of refined high boiling point materials (ie lubricating oils or greases) but is particularly suited for measuring diesel, kerosene and petrol if care to control volatility is taken. This method will detect naturally occurring hydrocarbons, lipids, animal fats, phenols and PAHs if they are present at sufficient levels, dependent on the use of specific cleanup/fractionation techniques. Reference USEPA 3510B, 8015B.
AN420	(SVOCs) including OC, OP, PCB, Herbicides, PAH, Phthalates and Speciated Phenols (etc) in soils, sediments and waters are determined by GCMS/ECD technique following appropriate solvent extraction process (Based on USEPA 3500C and 8270D).
AN420	SVOC Compounds: Semi-Volatile Organic Compounds (SVOCs) including OC, OP, PCB, Herbicides, PAH, Phthalates and Speciated Phenols in soils, sediments and waters are determined by GCMS/ECD technique following appropriate solvent extraction process (Based on USEPA 3500C and 8270D).
AN433	VOCs and C6-C9 Hydrocarbons by GC-MS P&T: VOC`s are volatile organic compounds. The sample is presented to a gas chromatograph via a purge and trap (P&T) concentrator and autosampler and is detected with a Mass Spectrometer (MSD). Solid samples are initially extracted with methanol whilst liquid samples are processed directly. References: USEPA 5030B, 8020A, 8260.
AN602/AS4964	Qualitative identification of chrysotile, amosite and crocidolite in bulk samples by polarised light microscopy (PLM) in conjunction with dispersion staining (DS). AS4964 provides the basis for this document. Unequivocal identification of the asbestos minerals present is made by obtaining sufficient diagnostic `clues`, which provide a reasonable degree of certainty, dispersion staining is a mandatory `clue` for positive identification. If sufficient `clues` are absent, then positive identification of asbestos is not possible. This procedure requires removal of suspect fibres/bundles from the sample which cannot be returned.
AN602/AS4964	Fibres/material that cannot be unequivocably identified as one of the three asbestos forms, will be reported as unknown mineral fibres (umf) The fibres detected may or may not be asbestos fibres.
AN602/AS4964	AS4964.2004 Method for the Qualitative Identification of Asbestos in Bulk Samples, Section 8.4, Trace Analysis Criteria, Note 4 states:"Depending upon sample condition and fibre type, the detection/reporting limit (RL) of this technique has been found to lie generally in the range of 1 in 1,000 to 1 in 10,000 parts by weight, equivalent to 1 to 0.1 g/kg."
AN602/AS4964	The sample can be reported “no asbestos found at the reporting limit (RL) of 0.1 g/kg” (<0.01%w/w) where AN602 section 4.5 of this method has been followed, and if- (a) no trace asbestos fibres have been detected (i.e. no ‘respirable’ fibres): (b) the estimated weight of non-respirable asbestos fibre bundles and/or the estimated weight of asbestos in asbestos-containing materials are found to be less than 0.1g/kg: and (c) these non-respirable asbestos fibre bundles and/or the asbestos containing materials are only visible under stereo-microscope viewing conditions.

FOOTNOTES

*	NATA accreditation does not cover the performance of this service.	-	Not analysed.	UOM	Unit of Measure.
		NVL	Not validated.	LOR	Limit of Reporting.
**	Indicative data, theoretical holding time exceeded.	IS	Insufficient sample for analysis.	↑↓	Raised/lowered Limit of Reporting.
		LNR	Sample listed, but not received.		
***	Indicates that both * and ** apply.				

Unless it is reported that sampling has been performed by SGS, the samples have been analysed as received.
Solid samples expressed on a dry weight basis.

Where "Total" analyte groups are reported (for example, Total PAHs, Total OC Pesticides) the total will be calculated as the sum of the individual analytes, with those analytes that are reported as <LOR being assumed to be zero. The summed (Total) limit of reporting is calculated by summing the individual analyte LORs and dividing by two. For example, where 16 individual analytes are being summed and each has an LOR of 0.1 mg/kg, the "Totals" LOR will be 1.6 / 2 (0.8 mg/kg). Where only 2 analytes are being summed, the " Total" LOR will be the sum of those two LORs.

Some totals may not appear to add up because the total is rounded after adding up the raw values.

If reported, measurement uncertainty follow the ± sign after the analytical result and is expressed as the expanded uncertainty calculated using a coverage factor of 2, providing a level of confidence of approximately 95%, unless stated otherwise in the comments section of this report.

Results reported for samples tested under test methods with codes starting with ARS-SOP, radionuclide or gross radioactivity concentrations are expressed in becquerel (Bq) per unit of mass or volume or per wipe as stated on the report. Becquerel is the SI unit for activity and equals one nuclear transformation per second.
Note that in terms of units of radioactivity:

a. 1 Bq is equivalent to 27 pCi
b. 37 MBq is equivalent to 1 mCi

For results reported for samples tested under test methods with codes starting with ARS-SOP, less than (<) values indicate the detection limit for each radionuclide or parameter for the measurement system used. The respective detection limits have been calculated in accordance with ISO 11929.

The QC and MU criteria are subject to internal review according to the SGS QAQC plan and may be provided on request or alternatively can be found here: www.sgs.com.au/en-gb/environment-health-and-safety.

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STATEMENT OF QA/QC PERFORMANCE

SE263523 R0

CLIENT DETAILS

Contact	Chris Gunton
Client	LANTERRA CONSULTING PTY LTD
Address	Unit 13, 71 Leichhardt Street Kingston ACT 2604
Telephone	0432 324 348
Facsimile	(Not specified)
Email	chris@lanterra.com.au
Project	**P24050**
Order Number	**P24050**
Samples	28

LABORATORY DETAILS

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SGS Reference	**SE263523 R0**
Date Received	11 Apr 2024
Date Reported	18 Apr 2024

COMMENTS

All the laboratory data for each environmental matrix was compared to SGS' stated Data Quality Objectives (DQO). Comments arising from the comparison were made and are reported below.

The data relating to sampling was taken from the Chain of Custody document.
This QA/QC Statement must be read in conjunction with the referenced Analytical Report.
The Statement and the Analytical Report must not be reproduced except in full.

All Data Quality Objectives were met with the exception of the following:

Surrogate	Speciated Phenols in Soil	9 items
Duplicate	Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES	1 item
	Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES	1 item
	TRH (Total Recoverable Hydrocarbons) in Soil	1 item
Matrix Spike	Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES	1 item
	VOC's in Soil	1 item
	Volatile Petroleum Hydrocarbons in Soil	1 item

SAMPLE SUMMARY

Sample counts by matrix	28 Soil	Type of documentation received	COC
Date documentation received	11/4/2024	Samples received in good order	Yes
Samples received without headspace	Yes	Sample temperature upon receipt	15.3°C
Sample container provider	SGS	Turnaround time requested	Standard
Samples received in correct containers	Yes	Sufficient sample for analysis	Yes
Sample cooling method	Ice Bricks	Samples clearly labelled	Yes
Complete documentation received	Yes		

HOLDING TIME SUMMARY

SE263523 R0

SGS holding time criteria are drawn from current regulations and are highly dependent on sample container preservation as specified in the SGS "Field Sampling Guide for Containers and Holding Time" (ref: GU-(AU)-ENV.001). Soil samples guidelines are derived from NEPM "Schedule B(3) Guideline on Laboratory Analysis of Potentially Contaminated Soils". Water sample guidelines are derived from "AS/NZS 5667.1 : 1998 Water Quality - sampling part 1" and APHA "Standard Methods for the Examination of Water and Wastewater" 21st edition 2005.

Extraction and analysis holding time due dates listed are calculated from the date sampled, although holding times may be extended after laboratory extraction for some analytes. The due dates are the suggested dates that samples may be held before extraction or analysis and still be considered valid.

Extraction and analysis dates are shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria. If the

Fibre Identification in soil

Method: ME-(AU)-[ENV]AS4964/AN602

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
SP1 0.0-0.1	SE263523.001	LB309770	09 Apr 2024	11 Apr 2024	09 Apr 2025	16 Apr 2024	09 Apr 2025	18 Apr 2024
SP1 0.5-0.6	SE263523.002	LB309770	09 Apr 2024	11 Apr 2024	09 Apr 2025	16 Apr 2024	09 Apr 2025	18 Apr 2024
SP2 0.5-0.6	SE263523.003	LB309770	09 Apr 2024	11 Apr 2024	09 Apr 2025	16 Apr 2024	09 Apr 2025	18 Apr 2024
SP2 1.0-1.1	SE263523.004	LB309770	09 Apr 2024	11 Apr 2024	09 Apr 2025	16 Apr 2024	09 Apr 2025	18 Apr 2024
SP3 0.5-0.6	SE263523.005	LB309770	09 Apr 2024	11 Apr 2024	09 Apr 2025	16 Apr 2024	09 Apr 2025	18 Apr 2024
SP3 1.0-1.1	SE263523.006	LB309770	09 Apr 2024	11 Apr 2024	09 Apr 2025	16 Apr 2024	09 Apr 2025	18 Apr 2024
SP4 0.0-0.1	SE263523.007	LB309770	09 Apr 2024	11 Apr 2024	09 Apr 2025	16 Apr 2024	09 Apr 2025	18 Apr 2024
SP4 0.5-0.6	SE263523.008	LB309770	09 Apr 2024	11 Apr 2024	09 Apr 2025	16 Apr 2024	09 Apr 2025	18 Apr 2024
SP5 0.5-0.6	SE263523.009	LB309770	09 Apr 2024	11 Apr 2024	09 Apr 2025	16 Apr 2024	09 Apr 2025	18 Apr 2024
SP5 1.0-1.1	SE263523.010	LB309770	09 Apr 2024	11 Apr 2024	09 Apr 2025	16 Apr 2024	09 Apr 2025	18 Apr 2024
BH1 0.0-0.1	SE263523.011	LB309770	09 Apr 2024	11 Apr 2024	09 Apr 2025	16 Apr 2024	09 Apr 2025	18 Apr 2024
BH2 0.0-0.1	SE263523.012	LB309770	09 Apr 2024	11 Apr 2024	09 Apr 2025	16 Apr 2024	09 Apr 2025	18 Apr 2024
BH3 0.5-0.6	SE263523.013	LB309770	09 Apr 2024	11 Apr 2024	09 Apr 2025	16 Apr 2024	09 Apr 2025	18 Apr 2024
BH4 0.5-0.6	SE263523.014	LB309770	09 Apr 2024	11 Apr 2024	09 Apr 2025	16 Apr 2024	09 Apr 2025	18 Apr 2024
BH5 0.0-0.1	SE263523.015	LB309770	09 Apr 2024	11 Apr 2024	09 Apr 2025	16 Apr 2024	09 Apr 2025	18 Apr 2024
BH6 0.5-0.6	SE263523.016	LB309770	09 Apr 2024	11 Apr 2024	09 Apr 2025	16 Apr 2024	09 Apr 2025	18 Apr 2024
BH7 0.0-0.1	SE263523.017	LB309770	09 Apr 2024	11 Apr 2024	09 Apr 2025	16 Apr 2024	09 Apr 2025	18 Apr 2024
BH8 0.0-0.1	SE263523.018	LB309770	09 Apr 2024	11 Apr 2024	09 Apr 2025	16 Apr 2024	09 Apr 2025	18 Apr 2024
BH9 0.5-0.6	SE263523.019	LB309770	09 Apr 2024	11 Apr 2024	09 Apr 2025	16 Apr 2024	09 Apr 2025	18 Apr 2024
BH10 0.5-0.6	SE263523.020	LB309770	09 Apr 2024	11 Apr 2024	09 Apr 2025	16 Apr 2024	09 Apr 2025	18 Apr 2024
BH11 0.0-0.1	SE263523.021	LB309770	09 Apr 2024	11 Apr 2024	09 Apr 2025	16 Apr 2024	09 Apr 2025	18 Apr 2024
BH12 0.0-0.1	SE263523.022	LB309770	09 Apr 2024	11 Apr 2024	09 Apr 2025	16 Apr 2024	09 Apr 2025	18 Apr 2024
BH13 0.0-0.1	SE263523.023	LB309770	09 Apr 2024	11 Apr 2024	09 Apr 2025	16 Apr 2024	09 Apr 2025	18 Apr 2024
BH14 0.5-0.6	SE263523.024	LB309770	09 Apr 2024	11 Apr 2024	09 Apr 2025	16 Apr 2024	09 Apr 2025	18 Apr 2024
BH15 0.0-0.1	SE263523.025	LB309770	09 Apr 2024	11 Apr 2024	09 Apr 2025	16 Apr 2024	09 Apr 2025	18 Apr 2024
BH16 0.0-0.1	SE263523.026	LB309770	09 Apr 2024	11 Apr 2024	09 Apr 2025	16 Apr 2024	09 Apr 2025	18 Apr 2024
BH17 0.0-0.1	SE263523.027	LB309770	09 Apr 2024	11 Apr 2024	09 Apr 2025	16 Apr 2024	09 Apr 2025	18 Apr 2024

Mercury in Soil

Method: ME-(AU)-[ENV]AN312

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
SP1 0.0-0.1	SE263523.001	LB309467	09 Apr 2024	11 Apr 2024	07 May 2024	12 Apr 2024	07 May 2024	17 Apr 2024
SP1 0.5-0.6	SE263523.002	LB309467	09 Apr 2024	11 Apr 2024	07 May 2024	12 Apr 2024	07 May 2024	17 Apr 2024
SP2 0.5-0.6	SE263523.003	LB309467	09 Apr 2024	11 Apr 2024	07 May 2024	12 Apr 2024	07 May 2024	17 Apr 2024
SP2 1.0-1.1	SE263523.004	LB309467	09 Apr 2024	11 Apr 2024	07 May 2024	12 Apr 2024	07 May 2024	17 Apr 2024
SP3 0.5-0.6	SE263523.005	LB309467	09 Apr 2024	11 Apr 2024	07 May 2024	12 Apr 2024	07 May 2024	17 Apr 2024
SP3 1.0-1.1	SE263523.006	LB309467	09 Apr 2024	11 Apr 2024	07 May 2024	12 Apr 2024	07 May 2024	17 Apr 2024
SP4 0.0-0.1	SE263523.007	LB309467	09 Apr 2024	11 Apr 2024	07 May 2024	12 Apr 2024	07 May 2024	17 Apr 2024
SP4 0.5-0.6	SE263523.008	LB309467	09 Apr 2024	11 Apr 2024	07 May 2024	12 Apr 2024	07 May 2024	17 Apr 2024
SP5 0.5-0.6	SE263523.009	LB309467	09 Apr 2024	11 Apr 2024	07 May 2024	12 Apr 2024	07 May 2024	17 Apr 2024
SP5 1.0-1.1	SE263523.010	LB309467	09 Apr 2024	11 Apr 2024	07 May 2024	12 Apr 2024	07 May 2024	17 Apr 2024
BH1 0.0-0.1	SE263523.011	LB309467	09 Apr 2024	11 Apr 2024	07 May 2024	12 Apr 2024	07 May 2024	17 Apr 2024
BH2 0.0-0.1	SE263523.012	LB309467	09 Apr 2024	11 Apr 2024	07 May 2024	12 Apr 2024	07 May 2024	17 Apr 2024
BH3 0.5-0.6	SE263523.013	LB309467	09 Apr 2024	11 Apr 2024	07 May 2024	12 Apr 2024	07 May 2024	17 Apr 2024
BH4 0.5-0.6	SE263523.014	LB309467	09 Apr 2024	11 Apr 2024	07 May 2024	12 Apr 2024	07 May 2024	17 Apr 2024
BH5 0.0-0.1	SE263523.015	LB309467	09 Apr 2024	11 Apr 2024	07 May 2024	12 Apr 2024	07 May 2024	17 Apr 2024
BH6 0.5-0.6	SE263523.016	LB309467	09 Apr 2024	11 Apr 2024	07 May 2024	12 Apr 2024	07 May 2024	17 Apr 2024
BH7 0.0-0.1	SE263523.017	LB309467	09 Apr 2024	11 Apr 2024	07 May 2024	12 Apr 2024	07 May 2024	17 Apr 2024
BH8 0.0-0.1	SE263523.018	LB309467	09 Apr 2024	11 Apr 2024	07 May 2024	12 Apr 2024	07 May 2024	17 Apr 2024
BH9 0.5-0.6	SE263523.019	LB309467	09 Apr 2024	11 Apr 2024	07 May 2024	12 Apr 2024	07 May 2024	17 Apr 2024
BH10 0.5-0.6	SE263523.020	LB309691	09 Apr 2024	11 Apr 2024	07 May 2024	15 Apr 2024	07 May 2024	17 Apr 2024
BH11 0.0-0.1	SE263523.021	LB309691	09 Apr 2024	11 Apr 2024	07 May 2024	15 Apr 2024	07 May 2024	17 Apr 2024
BH12 0.0-0.1	SE263523.022	LB309691	09 Apr 2024	11 Apr 2024	07 May 2024	15 Apr 2024	07 May 2024	17 Apr 2024
BH13 0.0-0.1	SE263523.023	LB309691	09 Apr 2024	11 Apr 2024	07 May 2024	15 Apr 2024	07 May 2024	17 Apr 2024
BH14 0.5-0.6	SE263523.024	LB309691	09 Apr 2024	11 Apr 2024	07 May 2024	15 Apr 2024	07 May 2024	17 Apr 2024
BH15 0.0-0.1	SE263523.025	LB309691	09 Apr 2024	11 Apr 2024	07 May 2024	15 Apr 2024	07 May 2024	17 Apr 2024
BH16 0.0-0.1	SE263523.026	LB309691	09 Apr 2024	11 Apr 2024	07 May 2024	15 Apr 2024	07 May 2024	17 Apr 2024
BH17 0.0-0.1	SE263523.027	LB309691	09 Apr 2024	11 Apr 2024	07 May 2024	15 Apr 2024	07 May 2024	17 Apr 2024
QC1	SE263523.028	LB309691	09 Apr 2024	11 Apr 2024	07 May 2024	15 Apr 2024	07 May 2024	17 Apr 2024

Moisture Content

Method: ME-(AU)-[ENV]AN002

Sample Name	Sample No.	QC Ref

HOLDING TIME SUMMARY

SE263523 R0

SGS holding time criteria are drawn from current regulations and are highly dependent on sample container preservation as specified in the SGS "Field Sampling Guide for Containers and Holding Time" (ref: GU-(AU)-ENV.001). Soil samples guidelines are derived from NEPM "Schedule B(3) Guideline on Laboratory Analysis of Potentially Contaminated Soils". Water sample guidelines are derived from "AS/NZS 5667.1 : 1998 Water Quality - sampling part 1" and APHA "Standard Methods for the Examination of Water and Wastewater" 21st edition 2005.

Extraction and analysis holding time due dates listed are calculated from the date sampled, although holding times may be extended after laboratory extraction for some analytes. The due dates are the suggested dates that samples may be held before extraction or analysis and still be considered valid.

Extraction and analysis dates are shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria. If the

Moisture Content (continued)

Method: ME-(AU)-[ENV]AN002

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
SP1 0.0-0.1	SE263523.001	LB309468	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	17 Apr 2024	15 Apr 2024
SP1 0.5-0.6	SE263523.002	LB309468	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	17 Apr 2024	15 Apr 2024
SP2 0.5-0.6	SE263523.003	LB309468	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	17 Apr 2024	15 Apr 2024
SP2 1.0-1.1	SE263523.004	LB309468	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	17 Apr 2024	15 Apr 2024
SP3 0.5-0.6	SE263523.005	LB309468	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	17 Apr 2024	15 Apr 2024
SP3 1.0-1.1	SE263523.006	LB309468	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	17 Apr 2024	15 Apr 2024
SP4 0.0-0.1	SE263523.007	LB309468	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	17 Apr 2024	15 Apr 2024
SP4 0.5-0.6	SE263523.008	LB309468	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	17 Apr 2024	15 Apr 2024
SP5 0.5-0.6	SE263523.009	LB309468	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	17 Apr 2024	15 Apr 2024
SP5 1.0-1.1	SE263523.010	LB309468	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	17 Apr 2024	15 Apr 2024
BH1 0.0-0.1	SE263523.011	LB309468	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	17 Apr 2024	15 Apr 2024
BH2 0.0-0.1	SE263523.012	LB309468	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	17 Apr 2024	15 Apr 2024
BH3 0.5-0.6	SE263523.013	LB309468	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	17 Apr 2024	15 Apr 2024
BH4 0.5-0.6	SE263523.014	LB309468	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	17 Apr 2024	15 Apr 2024
BH5 0.0-0.1	SE263523.015	LB309468	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	17 Apr 2024	15 Apr 2024
BH6 0.5-0.6	SE263523.016	LB309468	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	17 Apr 2024	15 Apr 2024
BH7 0.0-0.1	SE263523.017	LB309468	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	17 Apr 2024	15 Apr 2024
BH8 0.0-0.1	SE263523.018	LB309468	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	17 Apr 2024	15 Apr 2024
BH9 0.5-0.6	SE263523.019	LB309468	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	17 Apr 2024	15 Apr 2024
BH10 0.5-0.6	SE263523.020	LB309681	09 Apr 2024	11 Apr 2024	23 Apr 2024	15 Apr 2024	20 Apr 2024	17 Apr 2024
BH11 0.0-0.1	SE263523.021	LB309681	09 Apr 2024	11 Apr 2024	23 Apr 2024	15 Apr 2024	20 Apr 2024	17 Apr 2024
BH12 0.0-0.1	SE263523.022	LB309681	09 Apr 2024	11 Apr 2024	23 Apr 2024	15 Apr 2024	20 Apr 2024	17 Apr 2024
BH13 0.0-0.1	SE263523.023	LB309681	09 Apr 2024	11 Apr 2024	23 Apr 2024	15 Apr 2024	20 Apr 2024	17 Apr 2024
BH14 0.5-0.6	SE263523.024	LB309681	09 Apr 2024	11 Apr 2024	23 Apr 2024	15 Apr 2024	20 Apr 2024	17 Apr 2024
BH15 0.0-0.1	SE263523.025	LB309681	09 Apr 2024	11 Apr 2024	23 Apr 2024	15 Apr 2024	20 Apr 2024	17 Apr 2024
BH16 0.0-0.1	SE263523.026	LB309681	09 Apr 2024	11 Apr 2024	23 Apr 2024	15 Apr 2024	20 Apr 2024	17 Apr 2024
BH17 0.0-0.1	SE263523.027	LB309681	09 Apr 2024	11 Apr 2024	23 Apr 2024	15 Apr 2024	20 Apr 2024	17 Apr 2024
QC1	SE263523.028	LB309681	09 Apr 2024	11 Apr 2024	23 Apr 2024	15 Apr 2024	20 Apr 2024	17 Apr 2024

OC Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
SP1 0.0-0.1	SE263523.001	LB309464	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	22 May 2024	16 Apr 2024
SP1 0.5-0.6	SE263523.002	LB309464	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	22 May 2024	16 Apr 2024
SP2 0.5-0.6	SE263523.003	LB309464	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	22 May 2024	16 Apr 2024
SP2 1.0-1.1	SE263523.004	LB309464	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	22 May 2024	16 Apr 2024
SP3 0.5-0.6	SE263523.005	LB309464	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	22 May 2024	16 Apr 2024
SP3 1.0-1.1	SE263523.006	LB309464	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	22 May 2024	16 Apr 2024
SP4 0.0-0.1	SE263523.007	LB309464	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	22 May 2024	16 Apr 2024
SP4 0.5-0.6	SE263523.008	LB309464	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	22 May 2024	16 Apr 2024
SP5 0.5-0.6	SE263523.009	LB309464	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	22 May 2024	16 Apr 2024
SP5 1.0-1.1	SE263523.010	LB309464	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	22 May 2024	16 Apr 2024
BH1 0.0-0.1	SE263523.011	LB309464	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	22 May 2024	16 Apr 2024
BH2 0.0-0.1	SE263523.012	LB309464	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	22 May 2024	16 Apr 2024
BH3 0.5-0.6	SE263523.013	LB309464	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	22 May 2024	16 Apr 2024
BH4 0.5-0.6	SE263523.014	LB309464	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	22 May 2024	16 Apr 2024
BH5 0.0-0.1	SE263523.015	LB309464	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	22 May 2024	16 Apr 2024
BH6 0.5-0.6	SE263523.016	LB309464	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	22 May 2024	16 Apr 2024
BH7 0.0-0.1	SE263523.017	LB309464	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	22 May 2024	16 Apr 2024
BH8 0.0-0.1	SE263523.018	LB309464	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	22 May 2024	16 Apr 2024
BH9 0.5-0.6	SE263523.019	LB309464	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	22 May 2024	16 Apr 2024
BH10 0.5-0.6	SE263523.020	LB309677	09 Apr 2024	11 Apr 2024	23 Apr 2024	15 Apr 2024	25 May 2024	18 Apr 2024
BH11 0.0-0.1	SE263523.021	LB309677	09 Apr 2024	11 Apr 2024	23 Apr 2024	15 Apr 2024	25 May 2024	18 Apr 2024
BH12 0.0-0.1	SE263523.022	LB309677	09 Apr 2024	11 Apr 2024	23 Apr 2024	15 Apr 2024	25 May 2024	18 Apr 2024
BH13 0.0-0.1	SE263523.023	LB309677	09 Apr 2024	11 Apr 2024	23 Apr 2024	15 Apr 2024	25 May 2024	18 Apr 2024
BH14 0.5-0.6	SE263523.024	LB309677	09 Apr 2024	11 Apr 2024	23 Apr 2024	15 Apr 2024	25 May 2024	18 Apr 2024
BH15 0.0-0.1	SE263523.025	LB309677	09 Apr 2024	11 Apr 2024	23 Apr 2024	15 Apr 2024	25 May 2024	18 Apr 2024
BH16 0.0-0.1	SE263523.026	LB309677	09 Apr 2024	11 Apr 2024	23 Apr 2024	15 Apr 2024	25 May 2024	18 Apr 2024
BH17 0.0-0.1	SE263523.027	LB309677	09 Apr 2024	11 Apr 2024	23 Apr 2024	15 Apr 2024	25 May 2024	18 Apr 2024
QC1	SE263523.028	LB309677	09 Apr 2024	11 Apr 2024	23 Apr 2024	15 Apr 2024	25 May 2024	18 Apr 2024

HOLDING TIME SUMMARY

SE263523 R0

SGS holding time criteria are drawn from current regulations and are highly dependent on sample container preservation as specified in the SGS "Field Sampling Guide for Containers and Holding Time" (ref: GU-(AU)-ENV.001). Soil samples guidelines are derived from NEPM "Schedule B(3) Guideline on Laboratory Analysis of Potentially Contaminated Soils". Water sample guidelines are derived from "AS/NZS 5667.1 : 1998 Water Quality - sampling part 1" and APHA "Standard Methods for the Examination of Water and Wastewater" 21st edition 2005.

Extraction and analysis holding time due dates listed are calculated from the date sampled, although holding times may be extended after laboratory extraction for some analytes. The due dates are the suggested dates that samples may be held before extraction or analysis and still be considered valid.

Extraction and analysis dates are shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria. If the

OP Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
SP1 0.0-0.1	SE263523.001	LB309464	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	22 May 2024	17 Apr 2024
SP1 0.5-0.6	SE263523.002	LB309464	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	22 May 2024	17 Apr 2024
SP2 0.5-0.6	SE263523.003	LB309464	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	22 May 2024	17 Apr 2024
SP2 1.0-1.1	SE263523.004	LB309464	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	22 May 2024	17 Apr 2024
SP3 0.5-0.6	SE263523.005	LB309464	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	22 May 2024	17 Apr 2024
SP3 1.0-1.1	SE263523.006	LB309464	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	22 May 2024	17 Apr 2024
SP4 0.0-0.1	SE263523.007	LB309464	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	22 May 2024	17 Apr 2024
SP4 0.5-0.6	SE263523.008	LB309464	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	22 May 2024	17 Apr 2024
SP5 0.5-0.6	SE263523.009	LB309464	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	22 May 2024	17 Apr 2024
SP5 1.0-1.1	SE263523.010	LB309464	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	22 May 2024	17 Apr 2024
BH1 0.0-0.1	SE263523.011	LB309464	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	22 May 2024	17 Apr 2024
BH2 0.0-0.1	SE263523.012	LB309464	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	22 May 2024	17 Apr 2024
BH3 0.5-0.6	SE263523.013	LB309464	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	22 May 2024	17 Apr 2024
BH4 0.5-0.6	SE263523.014	LB309464	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	22 May 2024	17 Apr 2024
BH5 0.0-0.1	SE263523.015	LB309464	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	22 May 2024	17 Apr 2024
BH6 0.5-0.6	SE263523.016	LB309464	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	22 May 2024	17 Apr 2024
BH7 0.0-0.1	SE263523.017	LB309464	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	22 May 2024	17 Apr 2024
BH8 0.0-0.1	SE263523.018	LB309464	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	22 May 2024	17 Apr 2024
BH9 0.5-0.6	SE263523.019	LB309464	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	22 May 2024	17 Apr 2024
BH10 0.5-0.6	SE263523.020	LB309677	09 Apr 2024	11 Apr 2024	23 Apr 2024	15 Apr 2024	25 May 2024	18 Apr 2024
BH11 0.0-0.1	SE263523.021	LB309677	09 Apr 2024	11 Apr 2024	23 Apr 2024	15 Apr 2024	25 May 2024	18 Apr 2024
BH12 0.0-0.1	SE263523.022	LB309677	09 Apr 2024	11 Apr 2024	23 Apr 2024	15 Apr 2024	25 May 2024	18 Apr 2024
BH13 0.0-0.1	SE263523.023	LB309677	09 Apr 2024	11 Apr 2024	23 Apr 2024	15 Apr 2024	25 May 2024	18 Apr 2024
BH14 0.5-0.6	SE263523.024	LB309677	09 Apr 2024	11 Apr 2024	23 Apr 2024	15 Apr 2024	25 May 2024	18 Apr 2024
BH15 0.0-0.1	SE263523.025	LB309677	09 Apr 2024	11 Apr 2024	23 Apr 2024	15 Apr 2024	25 May 2024	18 Apr 2024
BH16 0.0-0.1	SE263523.026	LB309677	09 Apr 2024	11 Apr 2024	23 Apr 2024	15 Apr 2024	25 May 2024	18 Apr 2024
BH17 0.0-0.1	SE263523.027	LB309677	09 Apr 2024	11 Apr 2024	23 Apr 2024	15 Apr 2024	25 May 2024	18 Apr 2024
QC1	SE263523.028	LB309677	09 Apr 2024	11 Apr 2024	23 Apr 2024	15 Apr 2024	25 May 2024	18 Apr 2024

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN420

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
SP1 0.0-0.1	SE263523.001	LB309464	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	22 May 2024	17 Apr 2024
SP1 0.5-0.6	SE263523.002	LB309464	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	22 May 2024	17 Apr 2024
SP2 0.5-0.6	SE263523.003	LB309464	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	22 May 2024	17 Apr 2024
SP2 1.0-1.1	SE263523.004	LB309464	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	22 May 2024	17 Apr 2024
SP3 0.5-0.6	SE263523.005	LB309464	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	22 May 2024	17 Apr 2024
SP3 1.0-1.1	SE263523.006	LB309464	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	22 May 2024	17 Apr 2024
SP4 0.0-0.1	SE263523.007	LB309464	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	22 May 2024	17 Apr 2024
SP4 0.5-0.6	SE263523.008	LB309464	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	22 May 2024	17 Apr 2024
SP5 0.5-0.6	SE263523.009	LB309464	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	22 May 2024	17 Apr 2024
SP5 1.0-1.1	SE263523.010	LB309464	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	22 May 2024	17 Apr 2024
BH1 0.0-0.1	SE263523.011	LB309464	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	22 May 2024	17 Apr 2024
BH2 0.0-0.1	SE263523.012	LB309464	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	22 May 2024	17 Apr 2024
BH3 0.5-0.6	SE263523.013	LB309464	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	22 May 2024	17 Apr 2024
BH4 0.5-0.6	SE263523.014	LB309464	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	22 May 2024	17 Apr 2024
BH5 0.0-0.1	SE263523.015	LB309464	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	22 May 2024	17 Apr 2024
BH6 0.5-0.6	SE263523.016	LB309464	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	22 May 2024	17 Apr 2024
BH7 0.0-0.1	SE263523.017	LB309464	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	22 May 2024	17 Apr 2024
BH8 0.0-0.1	SE263523.018	LB309464	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	22 May 2024	17 Apr 2024
BH9 0.5-0.6	SE263523.019	LB309464	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	22 May 2024	17 Apr 2024
BH10 0.5-0.6	SE263523.020	LB309677	09 Apr 2024	11 Apr 2024	23 Apr 2024	15 Apr 2024	25 May 2024	18 Apr 2024
BH11 0.0-0.1	SE263523.021	LB309677	09 Apr 2024	11 Apr 2024	23 Apr 2024	15 Apr 2024	25 May 2024	18 Apr 2024
BH12 0.0-0.1	SE263523.022	LB309677	09 Apr 2024	11 Apr 2024	23 Apr 2024	15 Apr 2024	25 May 2024	18 Apr 2024
BH13 0.0-0.1	SE263523.023	LB309677	09 Apr 2024	11 Apr 2024	23 Apr 2024	15 Apr 2024	25 May 2024	18 Apr 2024
BH14 0.5-0.6	SE263523.024	LB309677	09 Apr 2024	11 Apr 2024	23 Apr 2024	15 Apr 2024	25 May 2024	18 Apr 2024
BH15 0.0-0.1	SE263523.025	LB309677	09 Apr 2024	11 Apr 2024	23 Apr 2024	15 Apr 2024	25 May 2024	18 Apr 2024
BH16 0.0-0.1	SE263523.026	LB309677	09 Apr 2024	11 Apr 2024	23 Apr 2024	15 Apr 2024	25 May 2024	18 Apr 2024
BH17 0.0-0.1	SE263523.027	LB309677	09 Apr 2024	11 Apr 2024	23 Apr 2024	15 Apr 2024	25 May 2024	18 Apr 2024
QC1	SE263523.028	LB309677	09 Apr 2024	11 Apr 2024	23 Apr 2024	15 Apr 2024	25 May 2024	18 Apr 2024

HOLDING TIME SUMMARY

SE263523 R0

SGS holding time criteria are drawn from current regulations and are highly dependent on sample container preservation as specified in the SGS "Field Sampling Guide for Containers and Holding Time" (ref: GU-(AU)-ENV.001). Soil samples guidelines are derived from NEPM "Schedule B(3) Guideline on Laboratory Analysis of Potentially Contaminated Soils". Water sample guidelines are derived from "AS/NZS 5667.1 : 1998 Water Quality - sampling part 1" and APHA "Standard Methods for the Examination of Water and Wastewater" 21st edition 2005.

Extraction and analysis holding time due dates listed are calculated from the date sampled, although holding times may be extended after laboratory extraction for some analytes. The due dates are the suggested dates that samples may be held before extraction or analysis and still be considered valid.

Extraction and analysis dates are shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria. If the

PCBs in Soil

Method: ME-(AU)-[ENV]AN420

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
SP1 0.0-0.1	SE263523.001	LB309464	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	22 May 2024	16 Apr 2024
SP1 0.5-0.6	SE263523.002	LB309464	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	22 May 2024	16 Apr 2024
SP2 0.5-0.6	SE263523.003	LB309464	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	22 May 2024	16 Apr 2024
SP2 1.0-1.1	SE263523.004	LB309464	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	22 May 2024	16 Apr 2024
SP3 0.5-0.6	SE263523.005	LB309464	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	22 May 2024	16 Apr 2024
SP3 1.0-1.1	SE263523.006	LB309464	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	22 May 2024	16 Apr 2024
SP4 0.0-0.1	SE263523.007	LB309464	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	22 May 2024	16 Apr 2024
SP4 0.5-0.6	SE263523.008	LB309464	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	22 May 2024	16 Apr 2024
SP5 0.5-0.6	SE263523.009	LB309464	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	22 May 2024	16 Apr 2024
SP5 1.0-1.1	SE263523.010	LB309464	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	22 May 2024	16 Apr 2024
BH1 0.0-0.1	SE263523.011	LB309464	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	22 May 2024	16 Apr 2024
BH2 0.0-0.1	SE263523.012	LB309464	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	22 May 2024	16 Apr 2024
BH3 0.5-0.6	SE263523.013	LB309464	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	22 May 2024	16 Apr 2024
BH4 0.5-0.6	SE263523.014	LB309464	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	22 May 2024	16 Apr 2024
BH5 0.0-0.1	SE263523.015	LB309464	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	22 May 2024	16 Apr 2024
BH6 0.5-0.6	SE263523.016	LB309464	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	22 May 2024	16 Apr 2024
BH7 0.0-0.1	SE263523.017	LB309464	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	22 May 2024	16 Apr 2024
BH8 0.0-0.1	SE263523.018	LB309464	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	22 May 2024	16 Apr 2024
BH9 0.5-0.6	SE263523.019	LB309464	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	22 May 2024	16 Apr 2024
BH10 0.5-0.6	SE263523.020	LB309677	09 Apr 2024	11 Apr 2024	23 Apr 2024	15 Apr 2024	25 May 2024	18 Apr 2024
BH11 0.0-0.1	SE263523.021	LB309677	09 Apr 2024	11 Apr 2024	23 Apr 2024	15 Apr 2024	25 May 2024	18 Apr 2024
BH12 0.0-0.1	SE263523.022	LB309677	09 Apr 2024	11 Apr 2024	23 Apr 2024	15 Apr 2024	25 May 2024	18 Apr 2024
BH13 0.0-0.1	SE263523.023	LB309677	09 Apr 2024	11 Apr 2024	23 Apr 2024	15 Apr 2024	25 May 2024	18 Apr 2024
BH14 0.5-0.6	SE263523.024	LB309677	09 Apr 2024	11 Apr 2024	23 Apr 2024	15 Apr 2024	25 May 2024	18 Apr 2024
BH15 0.0-0.1	SE263523.025	LB309677	09 Apr 2024	11 Apr 2024	23 Apr 2024	15 Apr 2024	25 May 2024	18 Apr 2024
BH16 0.0-0.1	SE263523.026	LB309677	09 Apr 2024	11 Apr 2024	23 Apr 2024	15 Apr 2024	25 May 2024	18 Apr 2024
BH17 0.0-0.1	SE263523.027	LB309677	09 Apr 2024	11 Apr 2024	23 Apr 2024	15 Apr 2024	25 May 2024	18 Apr 2024
QC1	SE263523.028	LB309677	09 Apr 2024	11 Apr 2024	23 Apr 2024	15 Apr 2024	25 May 2024	18 Apr 2024

Speciated Phenols in Soil

Method: ME-(AU)-[ENV]AN420

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
SP1 0.0-0.1	SE263523.001	LB309465	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	22 May 2024	18 Apr 2024
SP1 0.5-0.6	SE263523.002	LB309465	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	22 May 2024	18 Apr 2024
SP2 0.5-0.6	SE263523.003	LB309465	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	22 May 2024	18 Apr 2024
SP2 1.0-1.1	SE263523.004	LB309465	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	22 May 2024	18 Apr 2024
SP3 0.5-0.6	SE263523.005	LB309465	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	22 May 2024	18 Apr 2024
SP3 1.0-1.1	SE263523.006	LB309465	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	22 May 2024	18 Apr 2024
SP4 0.0-0.1	SE263523.007	LB309465	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	22 May 2024	18 Apr 2024
SP4 0.5-0.6	SE263523.008	LB309465	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	22 May 2024	18 Apr 2024
SP5 0.5-0.6	SE263523.009	LB309465	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	22 May 2024	18 Apr 2024
SP5 1.0-1.1	SE263523.010	LB309465	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	22 May 2024	18 Apr 2024
BH1 0.0-0.1	SE263523.011	LB309465	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	22 May 2024	18 Apr 2024
BH2 0.0-0.1	SE263523.012	LB309465	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	22 May 2024	18 Apr 2024
BH3 0.5-0.6	SE263523.013	LB309465	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	22 May 2024	18 Apr 2024
BH4 0.5-0.6	SE263523.014	LB309465	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	22 May 2024	18 Apr 2024
BH5 0.0-0.1	SE263523.015	LB309465	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	22 May 2024	18 Apr 2024
BH6 0.5-0.6	SE263523.016	LB309465	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	22 May 2024	18 Apr 2024
BH7 0.0-0.1	SE263523.017	LB309465	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	22 May 2024	18 Apr 2024
BH8 0.0-0.1	SE263523.018	LB309465	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	22 May 2024	18 Apr 2024
BH9 0.5-0.6	SE263523.019	LB309465	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	22 May 2024	18 Apr 2024
BH10 0.5-0.6	SE263523.020	LB309653	09 Apr 2024	11 Apr 2024	23 Apr 2024	15 Apr 2024	25 May 2024	18 Apr 2024
BH11 0.0-0.1	SE263523.021	LB309653	09 Apr 2024	11 Apr 2024	23 Apr 2024	15 Apr 2024	25 May 2024	18 Apr 2024
BH12 0.0-0.1	SE263523.022	LB309653	09 Apr 2024	11 Apr 2024	23 Apr 2024	15 Apr 2024	25 May 2024	18 Apr 2024
BH13 0.0-0.1	SE263523.023	LB309653	09 Apr 2024	11 Apr 2024	23 Apr 2024	15 Apr 2024	25 May 2024	18 Apr 2024
BH14 0.5-0.6	SE263523.024	LB309653	09 Apr 2024	11 Apr 2024	23 Apr 2024	15 Apr 2024	25 May 2024	18 Apr 2024
BH15 0.0-0.1	SE263523.025	LB309653	09 Apr 2024	11 Apr 2024	23 Apr 2024	15 Apr 2024	25 May 2024	18 Apr 2024
BH16 0.0-0.1	SE263523.026	LB309653	09 Apr 2024	11 Apr 2024	23 Apr 2024	15 Apr 2024	25 May 2024	18 Apr 2024
BH17 0.0-0.1	SE263523.027	LB309653	09 Apr 2024	11 Apr 2024	23 Apr 2024	15 Apr 2024	25 May 2024	18 Apr 2024

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES

Method: ME-(AU)-[ENV]AN040/AN320

Sample Name	Sample No.	QC Ref

SGS holding time criteria are drawn from current regulations and are highly dependent on sample container preservation as specified in the SGS "Field Sampling Guide for Containers and Holding Time" (ref: GU-(AU)-ENV.001). Soil samples guidelines are derived from NEPM "Schedule B(3) Guideline on Laboratory Analysis of Potentially Contaminated Soils". Water sample guidelines are derived from "AS/NZS 5667.1 : 1998 Water Quality - sampling part 1" and APHA "Standard Methods for the Examination of Water and Wastewater" 21st edition 2005.

Extraction and analysis holding time due dates listed are calculated from the date sampled, although holding times may be extended after laboratory extraction for some analytes. The due dates are the suggested dates that samples may be held before extraction or analysis and still be considered valid.

Extraction and analysis dates are shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria. If the

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES (continued) — **Method: ME-(AU)-[ENV]AN040/AN320**

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
SP1 0.0-0.1	SE263523.001	LB309466	09 Apr 2024	11 Apr 2024	06 Oct 2024	12 Apr 2024	06 Oct 2024	16 Apr 2024
SP1 0.5-0.6	SE263523.002	LB309466	09 Apr 2024	11 Apr 2024	06 Oct 2024	12 Apr 2024	06 Oct 2024	16 Apr 2024
SP2 0.5-0.6	SE263523.003	LB309466	09 Apr 2024	11 Apr 2024	06 Oct 2024	12 Apr 2024	06 Oct 2024	16 Apr 2024
SP2 1.0-1.1	SE263523.004	LB309466	09 Apr 2024	11 Apr 2024	06 Oct 2024	12 Apr 2024	06 Oct 2024	16 Apr 2024
SP3 0.5-0.6	SE263523.005	LB309466	09 Apr 2024	11 Apr 2024	06 Oct 2024	12 Apr 2024	06 Oct 2024	16 Apr 2024
SP3 1.0-1.1	SE263523.006	LB309466	09 Apr 2024	11 Apr 2024	06 Oct 2024	12 Apr 2024	06 Oct 2024	16 Apr 2024
SP4 0.0-0.1	SE263523.007	LB309466	09 Apr 2024	11 Apr 2024	06 Oct 2024	12 Apr 2024	06 Oct 2024	16 Apr 2024
SP4 0.5-0.6	SE263523.008	LB309466	09 Apr 2024	11 Apr 2024	06 Oct 2024	12 Apr 2024	06 Oct 2024	16 Apr 2024
SP5 0.5-0.6	SE263523.009	LB309466	09 Apr 2024	11 Apr 2024	06 Oct 2024	12 Apr 2024	06 Oct 2024	16 Apr 2024
SP5 1.0-1.1	SE263523.010	LB309466	09 Apr 2024	11 Apr 2024	06 Oct 2024	12 Apr 2024	06 Oct 2024	16 Apr 2024
BH1 0.0-0.1	SE263523.011	LB309466	09 Apr 2024	11 Apr 2024	06 Oct 2024	12 Apr 2024	06 Oct 2024	16 Apr 2024
BH2 0.0-0.1	SE263523.012	LB309466	09 Apr 2024	11 Apr 2024	06 Oct 2024	12 Apr 2024	06 Oct 2024	16 Apr 2024
BH3 0.5-0.6	SE263523.013	LB309466	09 Apr 2024	11 Apr 2024	06 Oct 2024	12 Apr 2024	06 Oct 2024	16 Apr 2024
BH4 0.5-0.6	SE263523.014	LB309466	09 Apr 2024	11 Apr 2024	06 Oct 2024	12 Apr 2024	06 Oct 2024	16 Apr 2024
BH5 0.0-0.1	SE263523.015	LB309466	09 Apr 2024	11 Apr 2024	06 Oct 2024	12 Apr 2024	06 Oct 2024	16 Apr 2024
BH6 0.5-0.6	SE263523.016	LB309466	09 Apr 2024	11 Apr 2024	06 Oct 2024	12 Apr 2024	06 Oct 2024	16 Apr 2024
BH7 0.0-0.1	SE263523.017	LB309466	09 Apr 2024	11 Apr 2024	06 Oct 2024	12 Apr 2024	06 Oct 2024	16 Apr 2024
BH8 0.0-0.1	SE263523.018	LB309466	09 Apr 2024	11 Apr 2024	06 Oct 2024	12 Apr 2024	06 Oct 2024	16 Apr 2024
BH9 0.5-0.6	SE263523.019	LB309466	09 Apr 2024	11 Apr 2024	06 Oct 2024	12 Apr 2024	06 Oct 2024	16 Apr 2024
BH10 0.5-0.6	SE263523.020	LB309687	09 Apr 2024	11 Apr 2024	06 Oct 2024	15 Apr 2024	06 Oct 2024	17 Apr 2024
BH11 0.0-0.1	SE263523.021	LB309687	09 Apr 2024	11 Apr 2024	06 Oct 2024	15 Apr 2024	06 Oct 2024	17 Apr 2024
BH12 0.0-0.1	SE263523.022	LB309687	09 Apr 2024	11 Apr 2024	06 Oct 2024	15 Apr 2024	06 Oct 2024	17 Apr 2024
BH13 0.0-0.1	SE263523.023	LB309687	09 Apr 2024	11 Apr 2024	06 Oct 2024	15 Apr 2024	06 Oct 2024	17 Apr 2024
BH14 0.5-0.6	SE263523.024	LB309687	09 Apr 2024	11 Apr 2024	06 Oct 2024	15 Apr 2024	06 Oct 2024	17 Apr 2024
BH15 0.0-0.1	SE263523.025	LB309687	09 Apr 2024	11 Apr 2024	06 Oct 2024	15 Apr 2024	06 Oct 2024	17 Apr 2024
BH16 0.0-0.1	SE263523.026	LB309687	09 Apr 2024	11 Apr 2024	06 Oct 2024	15 Apr 2024	06 Oct 2024	17 Apr 2024
BH17 0.0-0.1	SE263523.027	LB309687	09 Apr 2024	11 Apr 2024	06 Oct 2024	15 Apr 2024	06 Oct 2024	17 Apr 2024
QC1	SE263523.028	LB309687	09 Apr 2024	11 Apr 2024	06 Oct 2024	15 Apr 2024	06 Oct 2024	17 Apr 2024

TRH (Total Recoverable Hydrocarbons) in Soil — **Method: ME-(AU)-[ENV]AN403**

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
SP1 0.0-0.1	SE263523.001	LB309464	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	22 May 2024	16 Apr 2024
SP1 0.5-0.6	SE263523.002	LB309464	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	22 May 2024	16 Apr 2024
SP2 0.5-0.6	SE263523.003	LB309464	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	22 May 2024	16 Apr 2024
SP2 1.0-1.1	SE263523.004	LB309464	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	22 May 2024	16 Apr 2024
SP3 0.5-0.6	SE263523.005	LB309464	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	22 May 2024	16 Apr 2024
SP3 1.0-1.1	SE263523.006	LB309464	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	22 May 2024	16 Apr 2024
SP4 0.0-0.1	SE263523.007	LB309464	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	22 May 2024	16 Apr 2024
SP4 0.5-0.6	SE263523.008	LB309464	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	22 May 2024	16 Apr 2024
SP5 0.5-0.6	SE263523.009	LB309464	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	22 May 2024	16 Apr 2024
SP5 1.0-1.1	SE263523.010	LB309464	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	22 May 2024	16 Apr 2024
BH1 0.0-0.1	SE263523.011	LB309464	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	22 May 2024	16 Apr 2024
BH2 0.0-0.1	SE263523.012	LB309464	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	22 May 2024	16 Apr 2024
BH3 0.5-0.6	SE263523.013	LB309464	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	22 May 2024	16 Apr 2024
BH4 0.5-0.6	SE263523.014	LB309464	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	22 May 2024	16 Apr 2024
BH5 0.0-0.1	SE263523.015	LB309464	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	22 May 2024	16 Apr 2024
BH6 0.5-0.6	SE263523.016	LB309464	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	22 May 2024	16 Apr 2024
BH7 0.0-0.1	SE263523.017	LB309464	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	22 May 2024	16 Apr 2024
BH8 0.0-0.1	SE263523.018	LB309464	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	22 May 2024	16 Apr 2024
BH9 0.5-0.6	SE263523.019	LB309464	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	22 May 2024	16 Apr 2024
BH10 0.5-0.6	SE263523.020	LB309677	09 Apr 2024	11 Apr 2024	23 Apr 2024	15 Apr 2024	25 May 2024	18 Apr 2024
BH11 0.0-0.1	SE263523.021	LB309677	09 Apr 2024	11 Apr 2024	23 Apr 2024	15 Apr 2024	25 May 2024	18 Apr 2024
BH12 0.0-0.1	SE263523.022	LB309677	09 Apr 2024	11 Apr 2024	23 Apr 2024	15 Apr 2024	25 May 2024	18 Apr 2024
BH13 0.0-0.1	SE263523.023	LB309677	09 Apr 2024	11 Apr 2024	23 Apr 2024	15 Apr 2024	25 May 2024	18 Apr 2024
BH14 0.5-0.6	SE263523.024	LB309677	09 Apr 2024	11 Apr 2024	23 Apr 2024	15 Apr 2024	25 May 2024	18 Apr 2024
BH15 0.0-0.1	SE263523.025	LB309677	09 Apr 2024	11 Apr 2024	23 Apr 2024	15 Apr 2024	25 May 2024	18 Apr 2024
BH16 0.0-0.1	SE263523.026	LB309677	09 Apr 2024	11 Apr 2024	23 Apr 2024	15 Apr 2024	25 May 2024	18 Apr 2024
BH17 0.0-0.1	SE263523.027	LB309677	09 Apr 2024	11 Apr 2024	23 Apr 2024	15 Apr 2024	25 May 2024	18 Apr 2024
QC1	SE263523.028	LB309677	09 Apr 2024	11 Apr 2024	23 Apr 2024	15 Apr 2024	25 May 2024	18 Apr 2024

HOLDING TIME SUMMARY

SE263523 R0

SGS holding time criteria are drawn from current regulations and are highly dependent on sample container preservation as specified in the SGS "Field Sampling Guide for Containers and Holding Time" (ref: GU-(AU)-ENV.001). Soil samples guidelines are derived from NEPM "Schedule B(3) Guideline on Laboratory Analysis of Potentially Contaminated Soils". Water sample guidelines are derived from "AS/NZS 5667.1 : 1998 Water Quality - sampling part 1" and APHA "Standard Methods for the Examination of Water and Wastewater" 21st edition 2005.

Extraction and analysis holding time due dates listed are calculated from the date sampled, although holding times may be extended after laboratory extraction for some analytes. The due dates are the suggested dates that samples may be held before extraction or analysis and still be considered valid.

Extraction and analysis dates are shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria. If the

VOC's in Soil

Method: ME-(AU)-[ENV]AN433

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
SP1 0.0-0.1	SE263523.001	LB309470	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	23 Apr 2024	18 Apr 2024
SP1 0.5-0.6	SE263523.002	LB309470	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	23 Apr 2024	18 Apr 2024
SP2 0.5-0.6	SE263523.003	LB309470	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	23 Apr 2024	18 Apr 2024
SP2 1.0-1.1	SE263523.004	LB309470	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	23 Apr 2024	18 Apr 2024
SP3 0.5-0.6	SE263523.005	LB309470	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	23 Apr 2024	18 Apr 2024
SP3 1.0-1.1	SE263523.006	LB309470	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	23 Apr 2024	18 Apr 2024
SP4 0.0-0.1	SE263523.007	LB309470	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	23 Apr 2024	18 Apr 2024
SP4 0.5-0.6	SE263523.008	LB309470	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	23 Apr 2024	18 Apr 2024
SP5 0.5-0.6	SE263523.009	LB309470	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	23 Apr 2024	18 Apr 2024
SP5 1.0-1.1	SE263523.010	LB309470	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	23 Apr 2024	18 Apr 2024
BH1 0.0-0.1	SE263523.011	LB309470	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	23 Apr 2024	18 Apr 2024
BH2 0.0-0.1	SE263523.012	LB309470	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	23 Apr 2024	18 Apr 2024
BH3 0.5-0.6	SE263523.013	LB309470	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	23 Apr 2024	18 Apr 2024
BH4 0.5-0.6	SE263523.014	LB309470	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	23 Apr 2024	18 Apr 2024
BH5 0.0-0.1	SE263523.015	LB309470	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	23 Apr 2024	18 Apr 2024
BH6 0.5-0.6	SE263523.016	LB309470	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	23 Apr 2024	18 Apr 2024
BH7 0.0-0.1	SE263523.017	LB309470	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	23 Apr 2024	18 Apr 2024
BH8 0.0-0.1	SE263523.018	LB309470	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	23 Apr 2024	18 Apr 2024
BH9 0.5-0.6	SE263523.019	LB309470	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	23 Apr 2024	18 Apr 2024
BH10 0.5-0.6	SE263523.020	LB309678	09 Apr 2024	11 Apr 2024	23 Apr 2024	15 Apr 2024	23 Apr 2024	18 Apr 2024
BH11 0.0-0.1	SE263523.021	LB309678	09 Apr 2024	11 Apr 2024	23 Apr 2024	15 Apr 2024	23 Apr 2024	18 Apr 2024
BH12 0.0-0.1	SE263523.022	LB309678	09 Apr 2024	11 Apr 2024	23 Apr 2024	15 Apr 2024	23 Apr 2024	18 Apr 2024
BH13 0.0-0.1	SE263523.023	LB309678	09 Apr 2024	11 Apr 2024	23 Apr 2024	15 Apr 2024	23 Apr 2024	18 Apr 2024
BH14 0.5-0.6	SE263523.024	LB309678	09 Apr 2024	11 Apr 2024	23 Apr 2024	15 Apr 2024	23 Apr 2024	18 Apr 2024
BH15 0.0-0.1	SE263523.025	LB309678	09 Apr 2024	11 Apr 2024	23 Apr 2024	15 Apr 2024	23 Apr 2024	18 Apr 2024
BH16 0.0-0.1	SE263523.026	LB309678	09 Apr 2024	11 Apr 2024	23 Apr 2024	15 Apr 2024	23 Apr 2024	18 Apr 2024
BH17 0.0-0.1	SE263523.027	LB309678	09 Apr 2024	11 Apr 2024	23 Apr 2024	15 Apr 2024	23 Apr 2024	18 Apr 2024
QC1	SE263523.028	LB309678	09 Apr 2024	11 Apr 2024	23 Apr 2024	15 Apr 2024	23 Apr 2024	18 Apr 2024

Volatile Petroleum Hydrocarbons in Soil

Method: ME-(AU)-[ENV]AN433

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
SP1 0.0-0.1	SE263523.001	LB309470	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	23 Apr 2024	18 Apr 2024
SP1 0.5-0.6	SE263523.002	LB309470	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	23 Apr 2024	18 Apr 2024
SP2 0.5-0.6	SE263523.003	LB309470	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	23 Apr 2024	18 Apr 2024
SP2 1.0-1.1	SE263523.004	LB309470	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	23 Apr 2024	18 Apr 2024
SP3 0.5-0.6	SE263523.005	LB309470	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	23 Apr 2024	18 Apr 2024
SP3 1.0-1.1	SE263523.006	LB309470	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	23 Apr 2024	18 Apr 2024
SP4 0.0-0.1	SE263523.007	LB309470	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	23 Apr 2024	18 Apr 2024
SP4 0.5-0.6	SE263523.008	LB309470	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	23 Apr 2024	18 Apr 2024
SP5 0.5-0.6	SE263523.009	LB309470	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	23 Apr 2024	18 Apr 2024
SP5 1.0-1.1	SE263523.010	LB309470	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	23 Apr 2024	18 Apr 2024
BH1 0.0-0.1	SE263523.011	LB309470	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	23 Apr 2024	18 Apr 2024
BH2 0.0-0.1	SE263523.012	LB309470	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	23 Apr 2024	18 Apr 2024
BH3 0.5-0.6	SE263523.013	LB309470	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	23 Apr 2024	18 Apr 2024
BH4 0.5-0.6	SE263523.014	LB309470	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	23 Apr 2024	18 Apr 2024
BH5 0.0-0.1	SE263523.015	LB309470	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	23 Apr 2024	18 Apr 2024
BH6 0.5-0.6	SE263523.016	LB309470	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	23 Apr 2024	18 Apr 2024
BH7 0.0-0.1	SE263523.017	LB309470	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	23 Apr 2024	18 Apr 2024
BH8 0.0-0.1	SE263523.018	LB309470	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	23 Apr 2024	18 Apr 2024
BH9 0.5-0.6	SE263523.019	LB309470	09 Apr 2024	11 Apr 2024	23 Apr 2024	12 Apr 2024	23 Apr 2024	18 Apr 2024
BH10 0.5-0.6	SE263523.020	LB309678	09 Apr 2024	11 Apr 2024	23 Apr 2024	15 Apr 2024	23 Apr 2024	18 Apr 2024
BH11 0.0-0.1	SE263523.021	LB309678	09 Apr 2024	11 Apr 2024	23 Apr 2024	15 Apr 2024	23 Apr 2024	18 Apr 2024
BH12 0.0-0.1	SE263523.022	LB309678	09 Apr 2024	11 Apr 2024	23 Apr 2024	15 Apr 2024	23 Apr 2024	18 Apr 2024
BH13 0.0-0.1	SE263523.023	LB309678	09 Apr 2024	11 Apr 2024	23 Apr 2024	15 Apr 2024	23 Apr 2024	18 Apr 2024
BH14 0.5-0.6	SE263523.024	LB309678	09 Apr 2024	11 Apr 2024	23 Apr 2024	15 Apr 2024	23 Apr 2024	18 Apr 2024
BH15 0.0-0.1	SE263523.025	LB309678	09 Apr 2024	11 Apr 2024	23 Apr 2024	15 Apr 2024	23 Apr 2024	18 Apr 2024
BH16 0.0-0.1	SE263523.026	LB309678	09 Apr 2024	11 Apr 2024	23 Apr 2024	15 Apr 2024	23 Apr 2024	18 Apr 2024
BH17 0.0-0.1	SE263523.027	LB309678	09 Apr 2024	11 Apr 2024	23 Apr 2024	15 Apr 2024	23 Apr 2024	18 Apr 2024
QC1	SE263523.028	LB309678	09 Apr 2024	11 Apr 2024	23 Apr 2024	15 Apr 2024	23 Apr 2024	18 Apr 2024

Surrogate results are evaluated against upper and lower limit criteria established in the SGS QA/QC plan (Ref: MP-(AU)-[ENV]QU-022). At least two of three routine level soil sample surrogate spike recoveries for BTEX/VOC are to be within 70-130% where control charts have not been developed and within the established control limits for charted surrogates. Matrix effects may void this as an acceptance criterion. Water sample surrogate spike recoveries are to be within 40-130%. The presence of emulsions, surfactants and particulates may void this as an acceptance criterion.

Result is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

OC Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Tetrachloro-m-xylene (TCMX) (Surrogate)	SP1 0.0-0.1	SE263523.001	%	60 - 130%	109
	SP1 0.5-0.6	SE263523.002	%	60 - 130%	99
	SP2 0.5-0.6	SE263523.003	%	60 - 130%	109
	SP2 1.0-1.1	SE263523.004	%	60 - 130%	108
	SP3 0.5-0.6	SE263523.005	%	60 - 130%	118
	SP3 1.0-1.1	SE263523.006	%	60 - 130%	114
	SP4 0.0-0.1	SE263523.007	%	60 - 130%	112
	SP4 0.5-0.6	SE263523.008	%	60 - 130%	111
	SP5 0.5-0.6	SE263523.009	%	60 - 130%	113
	SP5 1.0-1.1	SE263523.010	%	60 - 130%	107
	BH1 0.0-0.1	SE263523.011	%	60 - 130%	113
	BH2 0.0-0.1	SE263523.012	%	60 - 130%	103
	BH3 0.5-0.6	SE263523.013	%	60 - 130%	109
	BH4 0.5-0.6	SE263523.014	%	60 - 130%	110
	BH5 0.0-0.1	SE263523.015	%	60 - 130%	110
	BH6 0.5-0.6	SE263523.016	%	60 - 130%	106
	BH7 0.0-0.1	SE263523.017	%	60 - 130%	115
	BH8 0.0-0.1	SE263523.018	%	60 - 130%	109
	BH9 0.5-0.6	SE263523.019	%	60 - 130%	114
	BH10 0.5-0.6	SE263523.020	%	60 - 130%	127
	BH11 0.0-0.1	SE263523.021	%	60 - 130%	124
	BH12 0.0-0.1	SE263523.022	%	60 - 130%	125
	BH13 0.0-0.1	SE263523.023	%	60 - 130%	122
	BH14 0.5-0.6	SE263523.024	%	60 - 130%	128
	BH15 0.0-0.1	SE263523.025	%	60 - 130%	123
	BH16 0.0-0.1	SE263523.026	%	60 - 130%	126
	BH17 0.0-0.1	SE263523.027	%	60 - 130%	119

OP Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
2-fluorobiphenyl (Surrogate)	SP1 0.0-0.1	SE263523.001	%	60 - 130%	100
	SP1 0.5-0.6	SE263523.002	%	60 - 130%	91
	SP2 0.5-0.6	SE263523.003	%	60 - 130%	95
	SP2 1.0-1.1	SE263523.004	%	60 - 130%	93
	SP3 0.5-0.6	SE263523.005	%	60 - 130%	92
	SP3 1.0-1.1	SE263523.006	%	60 - 130%	95
	SP4 0.0-0.1	SE263523.007	%	60 - 130%	95
	SP4 0.5-0.6	SE263523.008	%	60 - 130%	93
	SP5 0.5-0.6	SE263523.009	%	60 - 130%	87
	SP5 1.0-1.1	SE263523.010	%	60 - 130%	86
	BH1 0.0-0.1	SE263523.011	%	60 - 130%	100
	BH2 0.0-0.1	SE263523.012	%	60 - 130%	89
	BH3 0.5-0.6	SE263523.013	%	60 - 130%	96
	BH4 0.5-0.6	SE263523.014	%	60 - 130%	93
	BH5 0.0-0.1	SE263523.015	%	60 - 130%	121
	BH6 0.5-0.6	SE263523.016	%	60 - 130%	90
	BH7 0.0-0.1	SE263523.017	%	60 - 130%	101
	BH8 0.0-0.1	SE263523.018	%	60 - 130%	95
	BH9 0.5-0.6	SE263523.019	%	60 - 130%	92
	BH10 0.5-0.6	SE263523.020	%	60 - 130%	105
	BH11 0.0-0.1	SE263523.021	%	60 - 130%	106
	BH12 0.0-0.1	SE263523.022	%	60 - 130%	93
	BH13 0.0-0.1	SE263523.023	%	60 - 130%	118
	BH14 0.5-0.6	SE263523.024	%	60 - 130%	109
	BH15 0.0-0.1	SE263523.025	%	60 - 130%	106
	BH16 0.0-0.1	SE263523.026	%	60 - 130%	104
	BH17 0.0-0.1	SE263523.027	%	60 - 130%	107
d14-p-terphenyl (Surrogate)	SP1 0.0-0.1	SE263523.001	%	60 - 130%	114
	SP1 0.5-0.6	SE263523.002	%	60 - 130%	112
	SP2 0.5-0.6	SE263523.003	%	60 - 130%	109
	SP2 1.0-1.1	SE263523.004	%	60 - 130%	112

Surrogate results are evaluated against upper and lower limit criteria established in the SGS QA /QC plan (Ref: MP-(AU)-[ENV]QU-022). At least two of three routine level soil sample surrogate spike recoveries for BTEX/VOC are to be within 70-130% where control charts have not been developed and within the established control limits for charted surrogates. Matrix effects may void this as an acceptance criterion. Water sample surrogate spike recoveries are to be within 40-130%. The presence of emulsions, surfactants and particulates may void this as an acceptance criterion.

Result is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

OP Pesticides in Soil (continued)

Method: ME-(AU)-[ENV]AN420

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
d14-p-terphenyl (Surrogate)	SP3 0.5-0.6	SE263523.005	%	60 - 130%	108
	SP3 1.0-1.1	SE263523.006	%	60 - 130%	106
	SP4 0.0-0.1	SE263523.007	%	60 - 130%	113
	SP4 0.5-0.6	SE263523.008	%	60 - 130%	111
	SP5 0.5-0.6	SE263523.009	%	60 - 130%	111
	SP5 1.0-1.1	SE263523.010	%	60 - 130%	112
	BH1 0.0-0.1	SE263523.011	%	60 - 130%	113
	BH2 0.0-0.1	SE263523.012	%	60 - 130%	111
	BH3 0.5-0.6	SE263523.013	%	60 - 130%	110
	BH4 0.5-0.6	SE263523.014	%	60 - 130%	121
	BH5 0.0-0.1	SE263523.015	%	60 - 130%	105
	BH6 0.5-0.6	SE263523.016	%	60 - 130%	110
	BH7 0.0-0.1	SE263523.017	%	60 - 130%	106
	BH8 0.0-0.1	SE263523.018	%	60 - 130%	113
	BH9 0.5-0.6	SE263523.019	%	60 - 130%	106
	BH10 0.5-0.6	SE263523.020	%	60 - 130%	105
	BH11 0.0-0.1	SE263523.021	%	60 - 130%	101
	BH12 0.0-0.1	SE263523.022	%	60 - 130%	95
	BH13 0.0-0.1	SE263523.023	%	60 - 130%	116
	BH14 0.5-0.6	SE263523.024	%	60 - 130%	105
	BH15 0.0-0.1	SE263523.025	%	60 - 130%	105
	BH16 0.0-0.1	SE263523.026	%	60 - 130%	103
	BH17 0.0-0.1	SE263523.027	%	60 - 130%	104

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN420

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
2-fluorobiphenyl (Surrogate)	SP1 0.0-0.1	SE263523.001	%	70 - 130%	100
	SP1 0.5-0.6	SE263523.002	%	70 - 130%	91
	SP2 0.5-0.6	SE263523.003	%	70 - 130%	95
	SP2 1.0-1.1	SE263523.004	%	70 - 130%	93
	SP3 0.5-0.6	SE263523.005	%	70 - 130%	92
	SP3 1.0-1.1	SE263523.006	%	70 - 130%	95
	SP4 0.0-0.1	SE263523.007	%	70 - 130%	95
	SP4 0.5-0.6	SE263523.008	%	70 - 130%	93
	SP5 0.5-0.6	SE263523.009	%	70 - 130%	87
	SP5 1.0-1.1	SE263523.010	%	70 - 130%	86
	BH1 0.0-0.1	SE263523.011	%	70 - 130%	100
	BH2 0.0-0.1	SE263523.012	%	70 - 130%	89
	BH3 0.5-0.6	SE263523.013	%	70 - 130%	96
	BH4 0.5-0.6	SE263523.014	%	70 - 130%	93
	BH5 0.0-0.1	SE263523.015	%	70 - 130%	121
	BH6 0.5-0.6	SE263523.016	%	70 - 130%	90
	BH7 0.0-0.1	SE263523.017	%	70 - 130%	101
	BH8 0.0-0.1	SE263523.018	%	70 - 130%	95
	BH9 0.5-0.6	SE263523.019	%	70 - 130%	92
	BH10 0.5-0.6	SE263523.020	%	70 - 130%	105
	BH11 0.0-0.1	SE263523.021	%	70 - 130%	106
	BH12 0.0-0.1	SE263523.022	%	70 - 130%	93
	BH13 0.0-0.1	SE263523.023	%	70 - 130%	118
	BH14 0.5-0.6	SE263523.024	%	70 - 130%	109
	BH15 0.0-0.1	SE263523.025	%	70 - 130%	106
	BH16 0.0-0.1	SE263523.026	%	70 - 130%	104
	BH17 0.0-0.1	SE263523.027	%	70 - 130%	107
	QC1	SE263523.028	%	70 - 130%	102
d14-p-terphenyl (Surrogate)	SP1 0.0-0.1	SE263523.001	%	70 - 130%	114
	SP1 0.5-0.6	SE263523.002	%	70 - 130%	112
	SP2 0.5-0.6	SE263523.003	%	70 - 130%	109
	SP2 1.0-1.1	SE263523.004	%	70 - 130%	112
	SP3 0.5-0.6	SE263523.005	%	70 - 130%	108
	SP3 1.0-1.1	SE263523.006	%	70 - 130%	106
	SP4 0.0-0.1	SE263523.007	%	70 - 130%	113

Surrogate results are evaluated against upper and lower limit criteria established in the SGS QA/QC plan (Ref: MP-(AU)-[ENV]QU-022). At least two of three routine level soil sample surrogate spike recoveries for BTEX/VOC are to be within 70-130% where control charts have not been developed and within the established control limits for charted surrogates. Matrix effects may void this as an acceptance criterion. Water sample surrogate spike recoveries are to be within 40-130%. The presence of emulsions, surfactants and particulates may void this as an acceptance criterion.

Result is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

PAH (Polynuclear Aromatic Hydrocarbons) in Soil (continued)

Method: ME-(AU)-[ENV]AN420

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
d14-p-terphenyl (Surrogate)	SP4 0.5-0.6	SE263523.008	%	70 - 130%	111
	SP5 0.5-0.6	SE263523.009	%	70 - 130%	111
	SP5 1.0-1.1	SE263523.010	%	70 - 130%	112
	BH1 0.0-0.1	SE263523.011	%	70 - 130%	113
	BH2 0.0-0.1	SE263523.012	%	70 - 130%	111
	BH3 0.5-0.6	SE263523.013	%	70 - 130%	110
	BH4 0.5-0.6	SE263523.014	%	70 - 130%	121
	BH5 0.0-0.1	SE263523.015	%	70 - 130%	105
	BH6 0.5-0.6	SE263523.016	%	70 - 130%	110
	BH7 0.0-0.1	SE263523.017	%	70 - 130%	106
	BH8 0.0-0.1	SE263523.018	%	70 - 130%	113
	BH9 0.5-0.6	SE263523.019	%	70 - 130%	106
	BH10 0.5-0.6	SE263523.020	%	70 - 130%	105
	BH11 0.0-0.1	SE263523.021	%	70 - 130%	101
	BH12 0.0-0.1	SE263523.022	%	70 - 130%	95
	BH13 0.0-0.1	SE263523.023	%	70 - 130%	116
	BH14 0.5-0.6	SE263523.024	%	70 - 130%	105
	BH15 0.0-0.1	SE263523.025	%	70 - 130%	105
	BH16 0.0-0.1	SE263523.026	%	70 - 130%	103
	BH17 0.0-0.1	SE263523.027	%	70 - 130%	104
	QC1	SE263523.028	%	70 - 130%	100
d5-nitrobenzene (Surrogate)	SP1 0.0-0.1	SE263523.001	%	70 - 130%	92
	SP1 0.5-0.6	SE263523.002	%	70 - 130%	86
	SP2 0.5-0.6	SE263523.003	%	70 - 130%	88
	SP2 1.0-1.1	SE263523.004	%	70 - 130%	75
	SP3 0.5-0.6	SE263523.005	%	70 - 130%	98
	SP3 1.0-1.1	SE263523.006	%	70 - 130%	85
	SP4 0.0-0.1	SE263523.007	%	70 - 130%	97
	SP4 0.5-0.6	SE263523.008	%	70 - 130%	91
	SP5 0.5-0.6	SE263523.009	%	70 - 130%	87
	SP5 1.0-1.1	SE263523.010	%	70 - 130%	99
	BH1 0.0-0.1	SE263523.011	%	70 - 130%	97
	BH2 0.0-0.1	SE263523.012	%	70 - 130%	85
	BH3 0.5-0.6	SE263523.013	%	70 - 130%	89
	BH4 0.5-0.6	SE263523.014	%	70 - 130%	97
	BH5 0.0-0.1	SE263523.015	%	70 - 130%	107
	BH6 0.5-0.6	SE263523.016	%	70 - 130%	86
	BH7 0.0-0.1	SE263523.017	%	70 - 130%	91
	BH8 0.0-0.1	SE263523.018	%	70 - 130%	90
	BH9 0.5-0.6	SE263523.019	%	70 - 130%	87
	BH10 0.5-0.6	SE263523.020	%	70 - 130%	92
	BH11 0.0-0.1	SE263523.021	%	70 - 130%	93
	BH12 0.0-0.1	SE263523.022	%	70 - 130%	78
	BH13 0.0-0.1	SE263523.023	%	70 - 130%	115
	BH14 0.5-0.6	SE263523.024	%	70 - 130%	104
	BH15 0.0-0.1	SE263523.025	%	70 - 130%	90
	BH16 0.0-0.1	SE263523.026	%	70 - 130%	95
	BH17 0.0-0.1	SE263523.027	%	70 - 130%	101
	QC1	SE263523.028	%	70 - 130%	97

PCBs in Soil

Method: ME-(AU)-[ENV]AN420

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
TCMX (Surrogate)	SP1 0.0-0.1	SE263523.001	%	60 - 130%	106
	SP1 0.5-0.6	SE263523.002	%	60 - 130%	96
	SP2 0.5-0.6	SE263523.003	%	60 - 130%	106
	SP2 1.0-1.1	SE263523.004	%	60 - 130%	105
	SP3 0.5-0.6	SE263523.005	%	60 - 130%	115
	SP3 1.0-1.1	SE263523.006	%	60 - 130%	111
	SP4 0.0-0.1	SE263523.007	%	60 - 130%	108
	SP4 0.5-0.6	SE263523.008	%	60 - 130%	108
	SP5 0.5-0.6	SE263523.009	%	60 - 130%	109

Surrogate results are evaluated against upper and lower limit criteria established in the SGS QA/QC plan (Ref: MP-(AU)-[ENV]QU-022). At least two of three routine level soil sample surrogate spike recoveries for BTEX/VOC are to be within 70-130% where control charts have not been developed and within the established control limits for charted surrogates. Matrix effects may void this as an acceptance criterion. Water sample surrogate spike recoveries are to be within 40-130%. The presence of emulsions, surfactants and particulates may void this as an acceptance criterion.

Result is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

PCBs in Soil (continued) — Method: ME-(AU)-[ENV]AN420

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
TCMX (Surrogate)	SP5 1.0-1.1	SE263523.010	%	60 - 130%	106
	BH1 0.0-0.1	SE263523.011	%	60 - 130%	111
	BH2 0.0-0.1	SE263523.012	%	60 - 130%	101
	BH3 0.5-0.6	SE263523.013	%	60 - 130%	108
	BH4 0.5-0.6	SE263523.014	%	60 - 130%	108
	BH5 0.0-0.1	SE263523.015	%	60 - 130%	109
	BH6 0.5-0.6	SE263523.016	%	60 - 130%	104
	BH7 0.0-0.1	SE263523.017	%	60 - 130%	113
	BH8 0.0-0.1	SE263523.018	%	60 - 130%	107
	BH9 0.5-0.6	SE263523.019	%	60 - 130%	112
	BH10 0.5-0.6	SE263523.020	%	60 - 130%	124
	BH11 0.0-0.1	SE263523.021	%	60 - 130%	118
	BH12 0.0-0.1	SE263523.022	%	60 - 130%	122
	BH13 0.0-0.1	SE263523.023	%	60 - 130%	119
	BH14 0.5-0.6	SE263523.024	%	60 - 130%	117
	BH15 0.0-0.1	SE263523.025	%	60 - 130%	120
	BH16 0.0-0.1	SE263523.026	%	60 - 130%	123
	BH17 0.0-0.1	SE263523.027	%	60 - 130%	118

Speciated Phenols in Soil — Method: ME-(AU)-[ENV]AN420

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
2,4,6-Tribromophenol (Surrogate)	SP1 0.0-0.1	SE263523.001	%	70 - 130%	105
	SP1 0.5-0.6	SE263523.002	%	70 - 130%	93
	SP2 0.5-0.6	SE263523.003	%	70 - 130%	117
	SP2 1.0-1.1	SE263523.004	%	70 - 130%	108
	SP3 0.5-0.6	SE263523.005	%	70 - 130%	107
	SP3 1.0-1.1	SE263523.006	%	70 - 130%	95
	SP4 0.0-0.1	SE263523.007	%	70 - 130%	104
	SP4 0.5-0.6	SE263523.008	%	70 - 130%	105
	SP5 0.5-0.6	SE263523.009	%	70 - 130%	94
	SP5 1.0-1.1	SE263523.010	%	70 - 130%	87
	BH1 0.0-0.1	SE263523.011	%	70 - 130%	99
	BH2 0.0-0.1	SE263523.012	%	70 - 130%	32 ④
	BH3 0.5-0.6	SE263523.013	%	70 - 130%	104
	BH4 0.5-0.6	SE263523.014	%	70 - 130%	107
	BH5 0.0-0.1	SE263523.015	%	70 - 130%	65 ④
	BH6 0.5-0.6	SE263523.016	%	70 - 130%	49 ④
	BH7 0.0-0.1	SE263523.017	%	70 - 130%	42 ④
	BH8 0.0-0.1	SE263523.018	%	70 - 130%	48 ④
	BH9 0.5-0.6	SE263523.019	%	70 - 130%	102
	BH10 0.5-0.6	SE263523.020	%	70 - 130%	109
	BH11 0.0-0.1	SE263523.021	%	70 - 130%	107
	BH12 0.0-0.1	SE263523.022	%	70 - 130%	108
	BH13 0.0-0.1	SE263523.023	%	70 - 130%	107
	BH14 0.5-0.6	SE263523.024	%	70 - 130%	81
	BH15 0.0-0.1	SE263523.025	%	70 - 130%	100
	BH16 0.0-0.1	SE263523.026	%	70 - 130%	93
	BH17 0.0-0.1	SE263523.027	%	70 - 130%	110
d5-phenol (Surrogate)	SP1 0.0-0.1	SE263523.001	%	50 - 130%	91
	SP1 0.5-0.6	SE263523.002	%	50 - 130%	95
	SP2 0.5-0.6	SE263523.003	%	50 - 130%	117
	SP2 1.0-1.1	SE263523.004	%	50 - 130%	101
	SP3 0.5-0.6	SE263523.005	%	50 - 130%	83
	SP3 1.0-1.1	SE263523.006	%	50 - 130%	75
	SP4 0.0-0.1	SE263523.007	%	50 - 130%	93
	SP4 0.5-0.6	SE263523.008	%	50 - 130%	94
	SP5 0.5-0.6	SE263523.009	%	50 - 130%	88
	SP5 1.0-1.1	SE263523.010	%	50 - 130%	79
	BH1 0.0-0.1	SE263523.011	%	50 - 130%	91
	BH2 0.0-0.1	SE263523.012	%	50 - 130%	5 ④
	BH3 0.5-0.6	SE263523.013	%	50 - 130%	107

Surrogate results are evaluated against upper and lower limit criteria established in the SGS QA/QC plan (Ref: MP-(AU)-[ENV]QU-022). At least two of three routine level soil sample surrogate spike recoveries for BTEX/VOC are to be within 70-130% where control charts have not been developed and within the established control limits for charted surrogates. Matrix effects may void this as an acceptance criterion. Water sample surrogate spike recoveries are to be within 40-130%. The presence of emulsions, surfactants and particulates may void this as an acceptance criterion.

Result is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

Speciated Phenols in Soil (continued)

Method: ME-(AU)-[ENV]AN420

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
d5-phenol (Surrogate)	BH4 0.5-0.6	SE263523.014	%	50 - 130%	103
	BH5 0.0-0.1	SE263523.015	%	50 - 130%	53
	BH6 0.5-0.6	SE263523.016	%	50 - 130%	33 ④
	BH7 0.0-0.1	SE263523.017	%	50 - 130%	14 ④
	BH8 0.0-0.1	SE263523.018	%	50 - 130%	32 ④
	BH9 0.5-0.6	SE263523.019	%	50 - 130%	95
	BH10 0.5-0.6	SE263523.020	%	50 - 130%	117
	BH11 0.0-0.1	SE263523.021	%	50 - 130%	100
	BH12 0.0-0.1	SE263523.022	%	50 - 130%	102
	BH13 0.0-0.1	SE263523.023	%	50 - 130%	104
	BH14 0.5-0.6	SE263523.024	%	50 - 130%	52
	BH15 0.0-0.1	SE263523.025	%	50 - 130%	89
	BH16 0.0-0.1	SE263523.026	%	50 - 130%	88
	BH17 0.0-0.1	SE263523.027	%	50 - 130%	113

VOC's in Soil

Method: ME-(AU)-[ENV]AN433

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	SP1 0.0-0.1	SE263523.001	%	60 - 130%	108
	SP1 0.5-0.6	SE263523.002	%	60 - 130%	93
	SP2 0.5-0.6	SE263523.003	%	60 - 130%	89
	SP2 1.0-1.1	SE263523.004	%	60 - 130%	97
	SP3 0.5-0.6	SE263523.005	%	60 - 130%	111
	SP3 1.0-1.1	SE263523.006	%	60 - 130%	91
	SP4 0.0-0.1	SE263523.007	%	60 - 130%	93
	SP4 0.5-0.6	SE263523.008	%	60 - 130%	111
	SP5 0.5-0.6	SE263523.009	%	60 - 130%	99
	SP5 1.0-1.1	SE263523.010	%	60 - 130%	76
	BH1 0.0-0.1	SE263523.011	%	60 - 130%	98
	BH2 0.0-0.1	SE263523.012	%	60 - 130%	85
	BH3 0.5-0.6	SE263523.013	%	60 - 130%	101
	BH4 0.5-0.6	SE263523.014	%	60 - 130%	86
	BH5 0.0-0.1	SE263523.015	%	60 - 130%	102
	BH6 0.5-0.6	SE263523.016	%	60 - 130%	95
	BH7 0.0-0.1	SE263523.017	%	60 - 130%	102
	BH8 0.0-0.1	SE263523.018	%	60 - 130%	93
	BH9 0.5-0.6	SE263523.019	%	60 - 130%	85
	BH10 0.5-0.6	SE263523.020	%	60 - 130%	76
	BH11 0.0-0.1	SE263523.021	%	60 - 130%	79
	BH12 0.0-0.1	SE263523.022	%	60 - 130%	70
	BH13 0.0-0.1	SE263523.023	%	60 - 130%	76
	BH14 0.5-0.6	SE263523.024	%	60 - 130%	75
	BH15 0.0-0.1	SE263523.025	%	60 - 130%	83
	BH16 0.0-0.1	SE263523.026	%	60 - 130%	85
	BH17 0.0-0.1	SE263523.027	%	60 - 130%	83
	QC1	SE263523.028	%	60 - 130%	67
d4-1,2-dichloroethane (Surrogate)	SP1 0.0-0.1	SE263523.001	%	60 - 130%	95
	SP1 0.5-0.6	SE263523.002	%	60 - 130%	108
	SP2 0.5-0.6	SE263523.003	%	60 - 130%	108
	SP2 1.0-1.1	SE263523.004	%	60 - 130%	111
	SP3 0.5-0.6	SE263523.005	%	60 - 130%	120
	SP3 1.0-1.1	SE263523.006	%	60 - 130%	110
	SP4 0.0-0.1	SE263523.007	%	60 - 130%	101
	SP4 0.5-0.6	SE263523.008	%	60 - 130%	120
	SP5 0.5-0.6	SE263523.009	%	60 - 130%	114
	SP5 1.0-1.1	SE263523.010	%	60 - 130%	86
	BH1 0.0-0.1	SE263523.011	%	60 - 130%	112
	BH2 0.0-0.1	SE263523.012	%	60 - 130%	97
	BH3 0.5-0.6	SE263523.013	%	60 - 130%	111
	BH4 0.5-0.6	SE263523.014	%	60 - 130%	109
	BH5 0.0-0.1	SE263523.015	%	60 - 130%	111
	BH6 0.5-0.6	SE263523.016	%	60 - 130%	110

Surrogate results are evaluated against upper and lower limit criteria established in the SGS QA/QC plan (Ref: MP-(AU)-[ENV]QU-022). At least two of three routine level soil sample surrogate spike recoveries for BTEX/VOC are to be within 70-130% where control charts have not been developed and within the established control limits for charted surrogates. Matrix effects may void this as an acceptance criterion. Water sample surrogate spike recoveries are to be within 40-130%. The presence of emulsions, surfactants and particulates may void this as an acceptance criterion.

Result is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

VOC's in Soil (continued)

Method: ME-(AU)-[ENV]AN433

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
d4-1,2-dichloroethane (Surrogate)	BH7 0.0-0.1	SE263523.017	%	60 - 130%	113
	BH8 0.0-0.1	SE263523.018	%	60 - 130%	107
	BH9 0.5-0.6	SE263523.019	%	60 - 130%	85
	BH10 0.5-0.6	SE263523.020	%	60 - 130%	71
	BH11 0.0-0.1	SE263523.021	%	60 - 130%	80
	BH12 0.0-0.1	SE263523.022	%	60 - 130%	83
	BH13 0.0-0.1	SE263523.023	%	60 - 130%	70
	BH14 0.5-0.6	SE263523.024	%	60 - 130%	86
	BH15 0.0-0.1	SE263523.025	%	60 - 130%	80
	BH16 0.0-0.1	SE263523.026	%	60 - 130%	88
	BH17 0.0-0.1	SE263523.027	%	60 - 130%	69
	QC1	SE263523.028	%	60 - 130%	84
d8-toluene (Surrogate)	SP1 0.0-0.1	SE263523.001	%	60 - 130%	96
	SP1 0.5-0.6	SE263523.002	%	60 - 130%	107
	SP2 0.5-0.6	SE263523.003	%	60 - 130%	109
	SP2 1.0-1.1	SE263523.004	%	60 - 130%	118
	SP3 0.5-0.6	SE263523.005	%	60 - 130%	129
	SP3 1.0-1.1	SE263523.006	%	60 - 130%	110
	SP4 0.0-0.1	SE263523.007	%	60 - 130%	110
	SP4 0.5-0.6	SE263523.008	%	60 - 130%	125
	SP5 0.5-0.6	SE263523.009	%	60 - 130%	119
	SP5 1.0-1.1	SE263523.010	%	60 - 130%	86
	BH1 0.0-0.1	SE263523.011	%	60 - 130%	101
	BH2 0.0-0.1	SE263523.012	%	60 - 130%	100
	BH3 0.5-0.6	SE263523.013	%	60 - 130%	104
	BH4 0.5-0.6	SE263523.014	%	60 - 130%	102
	BH5 0.0-0.1	SE263523.015	%	60 - 130%	111
	BH6 0.5-0.6	SE263523.016	%	60 - 130%	111
	BH7 0.0-0.1	SE263523.017	%	60 - 130%	116
	BH8 0.0-0.1	SE263523.018	%	60 - 130%	99
	BH9 0.5-0.6	SE263523.019	%	60 - 130%	87
	BH10 0.5-0.6	SE263523.020	%	60 - 130%	65
	BH11 0.0-0.1	SE263523.021	%	60 - 130%	86
	BH12 0.0-0.1	SE263523.022	%	60 - 130%	91
	BH13 0.0-0.1	SE263523.023	%	60 - 130%	81
	BH14 0.5-0.6	SE263523.024	%	60 - 130%	96
	BH15 0.0-0.1	SE263523.025	%	60 - 130%	90
	BH16 0.0-0.1	SE263523.026	%	60 - 130%	93
	BH17 0.0-0.1	SE263523.027	%	60 - 130%	91
	QC1	SE263523.028	%	60 - 130%	85

Volatile Petroleum Hydrocarbons in Soil

Method: ME-(AU)-[ENV]AN433

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	SP1 0.0-0.1	SE263523.001	%	60 - 130%	108
	SP1 0.5-0.6	SE263523.002	%	60 - 130%	93
	SP2 0.5-0.6	SE263523.003	%	60 - 130%	89
	SP2 1.0-1.1	SE263523.004	%	60 - 130%	97
	SP3 0.5-0.6	SE263523.005	%	60 - 130%	111
	SP3 1.0-1.1	SE263523.006	%	60 - 130%	91
	SP4 0.0-0.1	SE263523.007	%	60 - 130%	93
	SP4 0.5-0.6	SE263523.008	%	60 - 130%	111
	SP5 0.5-0.6	SE263523.009	%	60 - 130%	99
	SP5 1.0-1.1	SE263523.010	%	60 - 130%	76
	BH1 0.0-0.1	SE263523.011	%	60 - 130%	98
	BH2 0.0-0.1	SE263523.012	%	60 - 130%	85
	BH3 0.5-0.6	SE263523.013	%	60 - 130%	101
	BH4 0.5-0.6	SE263523.014	%	60 - 130%	86
	BH5 0.0-0.1	SE263523.015	%	60 - 130%	102
	BH6 0.5-0.6	SE263523.016	%	60 - 130%	95
	BH7 0.0-0.1	SE263523.017	%	60 - 130%	102
	BH8 0.0-0.1	SE263523.018	%	60 - 130%	93

Surrogate results are evaluated against upper and lower limit criteria established in the SGS QA /QC plan (Ref: MP-(AU)-[ENV]QU-022). At least two of three routine level soil sample surrogate spike recoveries for BTEX/VOC are to be within 70-130% where control charts have not been developed and within the established control limits for charted surrogates. Matrix effects may void this as an acceptance criterion. Water sample surrogate spike recoveries are to be within 40-130%. The presence of emulsions, surfactants and particulates may void this as an acceptance criterion.

Result is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

Volatile Petroleum Hydrocarbons in Soil (continued) — **Method: ME-(AU)-[ENV]AN433**

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	BH9 0.5-0.6	SE263523.019	%	60 - 130%	85
	BH10 0.5-0.6	SE263523.020	%	60 - 130%	76
	BH11 0.0-0.1	SE263523.021	%	60 - 130%	79
	BH12 0.0-0.1	SE263523.022	%	60 - 130%	70
	BH13 0.0-0.1	SE263523.023	%	60 - 130%	76
	BH14 0.5-0.6	SE263523.024	%	60 - 130%	75
	BH15 0.0-0.1	SE263523.025	%	60 - 130%	83
	BH16 0.0-0.1	SE263523.026	%	60 - 130%	85
	BH17 0.0-0.1	SE263523.027	%	60 - 130%	83
	QC1	SE263523.028	%	60 - 130%	67
d4-1,2-dichloroethane (Surrogate)	SP1 0.0-0.1	SE263523.001	%	60 - 130%	95
	SP1 0.5-0.6	SE263523.002	%	60 - 130%	108
	SP2 0.5-0.6	SE263523.003	%	60 - 130%	108
	SP2 1.0-1.1	SE263523.004	%	60 - 130%	111
	SP3 0.5-0.6	SE263523.005	%	60 - 130%	120
	SP3 1.0-1.1	SE263523.006	%	60 - 130%	110
	SP4 0.0-0.1	SE263523.007	%	60 - 130%	101
	SP4 0.5-0.6	SE263523.008	%	60 - 130%	120
	SP5 0.5-0.6	SE263523.009	%	60 - 130%	114
	SP5 1.0-1.1	SE263523.010	%	60 - 130%	86
	BH1 0.0-0.1	SE263523.011	%	60 - 130%	112
	BH2 0.0-0.1	SE263523.012	%	60 - 130%	97
	BH3 0.5-0.6	SE263523.013	%	60 - 130%	111
	BH4 0.5-0.6	SE263523.014	%	60 - 130%	109
	BH5 0.0-0.1	SE263523.015	%	60 - 130%	111
	BH6 0.5-0.6	SE263523.016	%	60 - 130%	110
	BH7 0.0-0.1	SE263523.017	%	60 - 130%	113
	BH8 0.0-0.1	SE263523.018	%	60 - 130%	107
	BH9 0.5-0.6	SE263523.019	%	60 - 130%	85
	BH10 0.5-0.6	SE263523.020	%	60 - 130%	71
	BH11 0.0-0.1	SE263523.021	%	60 - 130%	80
	BH12 0.0-0.1	SE263523.022	%	60 - 130%	83
	BH13 0.0-0.1	SE263523.023	%	60 - 130%	70
	BH14 0.5-0.6	SE263523.024	%	60 - 130%	86
	BH15 0.0-0.1	SE263523.025	%	60 - 130%	80
	BH16 0.0-0.1	SE263523.026	%	60 - 130%	88
	BH17 0.0-0.1	SE263523.027	%	60 - 130%	69
	QC1	SE263523.028	%	60 - 130%	84
d8-toluene (Surrogate)	SP1 0.0-0.1	SE263523.001	%	60 - 130%	96
	SP1 0.5-0.6	SE263523.002	%	60 - 130%	107
	SP2 0.5-0.6	SE263523.003	%	60 - 130%	109
	SP2 1.0-1.1	SE263523.004	%	60 - 130%	118
	SP3 0.5-0.6	SE263523.005	%	60 - 130%	129
	SP3 1.0-1.1	SE263523.006	%	60 - 130%	110
	SP4 0.0-0.1	SE263523.007	%	60 - 130%	110
	SP4 0.5-0.6	SE263523.008	%	60 - 130%	125
	SP5 0.5-0.6	SE263523.009	%	60 - 130%	119
	SP5 1.0-1.1	SE263523.010	%	60 - 130%	86
	BH1 0.0-0.1	SE263523.011	%	60 - 130%	101
	BH2 0.0-0.1	SE263523.012	%	60 - 130%	100
	BH3 0.5-0.6	SE263523.013	%	60 - 130%	104
	BH4 0.5-0.6	SE263523.014	%	60 - 130%	102
	BH5 0.0-0.1	SE263523.015	%	60 - 130%	111
	BH6 0.5-0.6	SE263523.016	%	60 - 130%	111
	BH7 0.0-0.1	SE263523.017	%	60 - 130%	116
	BH8 0.0-0.1	SE263523.018	%	60 - 130%	99
	BH9 0.5-0.6	SE263523.019	%	60 - 130%	87
	BH10 0.5-0.6	SE263523.020	%	60 - 130%	65
	BH11 0.0-0.1	SE263523.021	%	60 - 130%	86
	BH12 0.0-0.1	SE263523.022	%	60 - 130%	91
	BH13 0.0-0.1	SE263523.023	%	60 - 130%	81

Surrogate results are evaluated against upper and lower limit criteria established in the SGS QA /QC plan (Ref: MP-(AU)-[ENV]QU-022). At least two of three routine level soil sample surrogate spike recoveries for BTEX/VOC are to be within 70-130% where control charts have not been developed and within the established control limits for charted surrogates. Matrix effects may void this as an acceptance criterion. Water sample surrogate spike recoveries are to be within 40-130%. The presence of emulsions, surfactants and particulates may void this as an acceptance criterion.

Result is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

Volatile Petroleum Hydrocarbons in Soil (continued) — **Method: ME-(AU)-[ENV]AN433**

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
d8-toluene (Surrogate)	BH14 0.5-0.6	SE263523.024	%	60 - 130%	96
	BH15 0.0-0.1	SE263523.025	%	60 - 130%	90
	BH16 0.0-0.1	SE263523.026	%	60 - 130%	93
	BH17 0.0-0.1	SE263523.027	%	60 - 130%	91
	QC1	SE263523.028	%	60 - 130%	85

Blank results are evaluated against the limit of reporting (LOR), for the chosen method and its associated instrumentation, typically 2.5 times the statistically determined method detection limit (MDL).

Result is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

Mercury in Soil

Method: ME-(AU)-[ENV]AN312

Sample Number	Parameter	Units	LOR	Result
LB309467.001	Mercury	mg/kg	0.05	<0.05
LB309691.001	Mercury	mg/kg	0.05	<0.05

OC Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result
LB309464.001		Alpha BHC	mg/kg	0.1	<0.1
		Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1
		Beta BHC	mg/kg	0.1	<0.1
		Lindane (gamma BHC)	mg/kg	0.1	<0.1
		Delta BHC	mg/kg	0.1	<0.1
		Heptachlor	mg/kg	0.1	<0.1
		Aldrin	mg/kg	0.1	<0.1
		Isodrin	mg/kg	0.1	<0.1
		Heptachlor epoxide	mg/kg	0.1	<0.1
		Gamma Chlordane	mg/kg	0.1	<0.1
		Alpha Chlordane	mg/kg	0.1	<0.1
		Alpha Endosulfan	mg/kg	0.2	<0.2
		p,p'-DDE	mg/kg	0.1	<0.1
		Dieldrin	mg/kg	0.2	<0.2
		Endrin	mg/kg	0.2	<0.2
		Beta Endosulfan	mg/kg	0.2	<0.2
		p,p'-DDD	mg/kg	0.1	<0.1
		Endrin aldehyde	mg/kg	0.1	<0.1
		Endosulfan sulphate	mg/kg	0.1	<0.1
		p,p'-DDT	mg/kg	0.1	<0.1
		Endrin ketone	mg/kg	0.1	<0.1
		Methoxychlor	mg/kg	0.1	<0.1
		Mirex	mg/kg	0.1	<0.1
	Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	109
LB309677.001		Alpha BHC	mg/kg	0.1	<0.1
		Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1
		Beta BHC	mg/kg	0.1	<0.1
		Lindane (gamma BHC)	mg/kg	0.1	<0.1
		Delta BHC	mg/kg	0.1	<0.1
		Heptachlor	mg/kg	0.1	<0.1
		Aldrin	mg/kg	0.1	<0.1
		Isodrin	mg/kg	0.1	<0.1
		Heptachlor epoxide	mg/kg	0.1	<0.1
		Gamma Chlordane	mg/kg	0.1	<0.1
		Alpha Chlordane	mg/kg	0.1	<0.1
		Alpha Endosulfan	mg/kg	0.2	<0.2
		p,p'-DDE	mg/kg	0.1	<0.1
		Dieldrin	mg/kg	0.2	<0.2
		Endrin	mg/kg	0.2	<0.2
		Beta Endosulfan	mg/kg	0.2	<0.2
		p,p'-DDD	mg/kg	0.1	<0.1
		Endrin aldehyde	mg/kg	0.1	<0.1
		Endosulfan sulphate	mg/kg	0.1	<0.1
		p,p'-DDT	mg/kg	0.1	<0.1
		Endrin ketone	mg/kg	0.1	<0.1
		Methoxychlor	mg/kg	0.1	<0.1
		Mirex	mg/kg	0.1	<0.1
	Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	109

OP Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

Sample Number	Parameter	Units	LOR	Result
LB309464.001	Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2
	Bromophos Ethyl	mg/kg	0.2	<0.2
	Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2
	Diazinon (Dimpylate)	mg/kg	0.5	<0.5
	Dichlorvos	mg/kg	0.5	<0.5

Blank results are evaluated against the limit of reporting (LOR), for the chosen method and its associated instrumentation, typically 2.5 times the statistically determined method detection limit (MDL).

Result is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

OP Pesticides in Soil (continued)

Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result
LB309464.001		Dimethoate	mg/kg	0.5	<0.5
		Ethion	mg/kg	0.2	<0.2
		Fenitrothion	mg/kg	0.2	<0.2
		Malathion	mg/kg	0.2	<0.2
		Methidathion	mg/kg	0.5	<0.5
		Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2
	Surrogates	2-fluorobiphenyl (Surrogate)	%	-	90
		d14-p-terphenyl (Surrogate)	%	-	99
LB309677.001		Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2
		Bromophos Ethyl	mg/kg	0.2	<0.2
		Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2
		Diazinon (Dimpylate)	mg/kg	0.5	<0.5
		Dichlorvos	mg/kg	0.5	<0.5
		Dimethoate	mg/kg	0.5	<0.5
		Ethion	mg/kg	0.2	<0.2
		Fenitrothion	mg/kg	0.2	<0.2
		Malathion	mg/kg	0.2	<0.2
		Methidathion	mg/kg	0.5	<0.5
		Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2
	Surrogates	2-fluorobiphenyl (Surrogate)	%	-	112
		d14-p-terphenyl (Surrogate)	%	-	111

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result
LB309464.001		Naphthalene	mg/kg	0.1	<0.1
		2-methylnaphthalene	mg/kg	0.1	<0.1
		1-methylnaphthalene	mg/kg	0.1	<0.1
		Acenaphthylene	mg/kg	0.1	<0.1
		Acenaphthene	mg/kg	0.1	<0.1
		Fluorene	mg/kg	0.1	<0.1
		Phenanthrene	mg/kg	0.1	<0.1
		Anthracene	mg/kg	0.1	<0.1
		Fluoranthene	mg/kg	0.1	<0.1
		Pyrene	mg/kg	0.1	<0.1
		Benzo(a)anthracene	mg/kg	0.1	<0.1
		Chrysene	mg/kg	0.1	<0.1
		Benzo(a)pyrene	mg/kg	0.1	<0.1
		Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1
		Dibenzo(ah)anthracene	mg/kg	0.1	<0.1
		Benzo(ghi)perylene	mg/kg	0.1	<0.1
		Total PAH (18)	mg/kg	0.8	<0.8
	Surrogates	d5-nitrobenzene (Surrogate)	%	-	89
		2-fluorobiphenyl (Surrogate)	%	-	90
		d14-p-terphenyl (Surrogate)	%	-	99
LB309677.001		Naphthalene	mg/kg	0.1	<0.1
		2-methylnaphthalene	mg/kg	0.1	<0.1
		1-methylnaphthalene	mg/kg	0.1	<0.1
		Acenaphthylene	mg/kg	0.1	<0.1
		Acenaphthene	mg/kg	0.1	<0.1
		Fluorene	mg/kg	0.1	<0.1
		Phenanthrene	mg/kg	0.1	<0.1
		Anthracene	mg/kg	0.1	<0.1
		Fluoranthene	mg/kg	0.1	<0.1
		Pyrene	mg/kg	0.1	<0.1
		Benzo(a)anthracene	mg/kg	0.1	<0.1
		Chrysene	mg/kg	0.1	<0.1
		Benzo(a)pyrene	mg/kg	0.1	<0.1
		Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1
		Dibenzo(ah)anthracene	mg/kg	0.1	<0.1
		Benzo(ghi)perylene	mg/kg	0.1	<0.1
		Total PAH (18)	mg/kg	0.8	<0.8

Blank results are evaluated against the limit of reporting (LOR), for the chosen method and its associated instrumentation, typically 2.5 times the statistically determined method detection limit (MDL).

Result is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

PAH (Polynuclear Aromatic Hydrocarbons) in Soil (continued)

Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result
LB309677.001	Surrogates	d5-nitrobenzene (Surrogate)	%	-	116
		2-fluorobiphenyl (Surrogate)	%	-	112
		d14-p-terphenyl (Surrogate)	%	-	111

PCBs in Soil

Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result
LB309464.001		Arochlor 1016	mg/kg	0.2	<0.2
		Arochlor 1221	mg/kg	0.2	<0.2
		Arochlor 1232	mg/kg	0.2	<0.2
		Arochlor 1242	mg/kg	0.2	<0.2
		Arochlor 1248	mg/kg	0.2	<0.2
		Arochlor 1254	mg/kg	0.2	<0.2
		Arochlor 1260	mg/kg	0.2	<0.2
		Arochlor 1262	mg/kg	0.2	<0.2
		Arochlor 1268	mg/kg	0.2	<0.2
		Total PCBs (Arochlors)	mg/kg	1	<1
	Surrogates	TCMX (Surrogate)	%	-	106
LB309677.001		Arochlor 1016	mg/kg	0.2	<0.2
		Arochlor 1221	mg/kg	0.2	<0.2
		Arochlor 1232	mg/kg	0.2	<0.2
		Arochlor 1242	mg/kg	0.2	<0.2
		Arochlor 1248	mg/kg	0.2	<0.2
		Arochlor 1254	mg/kg	0.2	<0.2
		Arochlor 1260	mg/kg	0.2	<0.2
		Arochlor 1262	mg/kg	0.2	<0.2
		Arochlor 1268	mg/kg	0.2	<0.2
		Total PCBs (Arochlors)	mg/kg	1	<1
	Surrogates	TCMX (Surrogate)	%	-	117

Speciated Phenols in Soil

Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result
LB309465.001		Phenol	mg/kg	0.5	<0.5
		2-methyl phenol (o-cresol)	mg/kg	0.5	<0.5
		3/4-methyl phenol (m/p-cresol)	mg/kg	1	<1
		2-chlorophenol	mg/kg	0.5	<0.5
		2,4-dimethylphenol	mg/kg	0.5	<0.5
		2,6-dichlorophenol	mg/kg	0.5	<0.5
		2,4-dichlorophenol	mg/kg	0.5	<0.5
		4-chloro-3-methylphenol	mg/kg	2	<2
		2,4,6-trichlorophenol	mg/kg	0.5	<0.5
		2-nitrophenol	mg/kg	0.5	<0.5
		4-nitrophenol	mg/kg	1	<1
		2,4,5-trichlorophenol	mg/kg	0.5	<0.5
		2,3,4,6/2,3,5,6-tetrachlorophenol	mg/kg	1	<1
		Pentachlorophenol	mg/kg	0.5	<0.5
		2,4-dinitrophenol	mg/kg	2	<2
	Surrogates	2,4,6-Tribromophenol (Surrogate)	%	-	110
		d5-phenol (Surrogate)	%	-	113
LB309653.001		Phenol	mg/kg	0.5	<0.5
		2-methyl phenol (o-cresol)	mg/kg	0.5	<0.5
		3/4-methyl phenol (m/p-cresol)	mg/kg	1	<1
		2-chlorophenol	mg/kg	0.5	<0.5
		2,4-dimethylphenol	mg/kg	0.5	<0.5
		2,6-dichlorophenol	mg/kg	0.5	<0.5
		2,4-dichlorophenol	mg/kg	0.5	<0.5
		4-chloro-3-methylphenol	mg/kg	2	<2
		2,4,6-trichlorophenol	mg/kg	0.5	<0.5
		2-nitrophenol	mg/kg	0.5	<0.5
		4-nitrophenol	mg/kg	1	<1
		2,4,5-trichlorophenol	mg/kg	0.5	<0.5
		2,3,4,6/2,3,5,6-tetrachlorophenol	mg/kg	1	<1
		Pentachlorophenol	mg/kg	0.5	<0.5

Blank results are evaluated against the limit of reporting (LOR), for the chosen method and its associated instrumentation, typically 2.5 times the statistically determined method detection limit (MDL).

Result is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

Speciated Phenols in Soil (continued)

Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result
LB309653.001		2,4-dinitrophenol	mg/kg	2	<2
	Surrogates	2,4,6-Tribromophenol (Surrogate)	%	-	94
		d5-phenol (Surrogate)	%	-	103

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES

Method: ME-(AU)-[ENV]AN040/AN320

Sample Number		Parameter	Units	LOR	Result
LB309466.001		Arsenic, As	mg/kg	1	<1
		Cadmium, Cd	mg/kg	0.3	<0.3
		Chromium, Cr	mg/kg	0.5	<0.5
		Copper, Cu	mg/kg	0.5	<0.5
		Nickel, Ni	mg/kg	0.5	<0.5
		Lead, Pb	mg/kg	1	<1
		Zinc, Zn	mg/kg	2	<2.0
LB309687.001		Arsenic, As	mg/kg	1	<1
		Cadmium, Cd	mg/kg	0.3	<0.3
		Chromium, Cr	mg/kg	0.5	<0.5
		Copper, Cu	mg/kg	0.5	<0.5
		Nickel, Ni	mg/kg	0.5	<0.5
		Lead, Pb	mg/kg	1	<1
		Zinc, Zn	mg/kg	2	<2.0

TRH (Total Recoverable Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN403

Sample Number		Parameter	Units	LOR	Result
LB309464.001		TRH C10-C14	mg/kg	20	<20
		TRH C15-C28	mg/kg	45	<45
		TRH C29-C36	mg/kg	45	<45
		TRH C37-C40	mg/kg	100	<100
		TRH C10-C36 Total	mg/kg	110	<110
LB309677.001		TRH C10-C14	mg/kg	20	<20
		TRH C15-C28	mg/kg	45	<45
		TRH C29-C36	mg/kg	45	<45
		TRH C37-C40	mg/kg	100	<100
		TRH C10-C36 Total	mg/kg	110	<110

VOC's in Soil

Method: ME-(AU)-[ENV]AN433

Sample Number		Parameter	Units	LOR	Result
LB309470.001	Monocyclic Aromatic Hydrocarbons	Benzene	mg/kg	0.1	<0.1
		Toluene	mg/kg	0.1	<0.1
		Ethylbenzene	mg/kg	0.1	<0.1
		m/p-xylene	mg/kg	0.2	<0.2
		o-xylene	mg/kg	0.1	<0.1
	Polycyclic VOCs	Naphthalene (VOC)*	mg/kg	0.1	<0.1
	Surrogates	d4-1,2-dichloroethane (Surrogate)	%	-	108
		d8-toluene (Surrogate)	%	-	120
		Bromofluorobenzene (Surrogate)	%	-	105
	Totals	Total BTEX*	mg/kg	0.6	<0.6
LB309678.001	Monocyclic Aromatic Hydrocarbons	Benzene	mg/kg	0.1	<0.1
		Toluene	mg/kg	0.1	<0.1
		Ethylbenzene	mg/kg	0.1	<0.1
		m/p-xylene	mg/kg	0.2	<0.2
		o-xylene	mg/kg	0.1	<0.1
	Polycyclic VOCs	Naphthalene (VOC)*	mg/kg	0.1	<0.1
	Surrogates	d4-1,2-dichloroethane (Surrogate)	%	-	82
		d8-toluene (Surrogate)	%	-	89
		Bromofluorobenzene (Surrogate)	%	-	83
	Totals	Total BTEX*	mg/kg	0.6	<0.6

Volatile Petroleum Hydrocarbons in Soil

Method: ME-(AU)-[ENV]AN433

Sample Number		Parameter	Units	LOR	Result
LB309470.001		TRH C6-C9	mg/kg	20	<20
	Surrogates	d4-1,2-dichloroethane (Surrogate)	%	-	108
LB309678.001		TRH C6-C9	mg/kg	20	<20
	Surrogates	d4-1,2-dichloroethane (Surrogate)	%	-	82

Duplicates are calculated as Relative Percentage Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

NOTE: The RPD reported is calculated from the unrounded data for the original and replicate result. Manual calculation of the RPD from the rounded data reported may

Mercury in Soil

Method: ME-(AU)-[ENV]AN312

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE263523.010	LB309467.014	Mercury	mg/kg	0.05	<0.05	<0.05	200	0
SE263523.019	LB309467.024	Mercury	mg/kg	0.05	<0.05	<0.05	200	0
SE263616.001	LB309691.014	Mercury	mg/kg	0.05	0.025166666	0.0258996763	200	0
SE263616.008	LB309691.020	Mercury	mg/kg	0.05	0.015499869	0.0206678193	200	0

Moisture Content

Method: ME-(AU)-[ENV]AN002

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE263523.010	LB309468.011	% Moisture	%w/w	1	11.9	12.6	38	6
SE263523.019	LB309468.021	% Moisture	%w/w	1	12.3	11.8	38	4
SE263616.001	LB309681.011	% Moisture	%w/w	1	10.59602649	09.2989985693	40	13
SE263616.008	LB309681.018	% Moisture	%w/w	1	14.62945139	552.2519413287	37	18

OC Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE263523.010	LB309464.014		Alpha BHC	mg/kg	0.1	<0.1	<0.1	200	0
			Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	200	0
			Beta BHC	mg/kg	0.1	<0.1	<0.1	200	0
			Lindane (gamma BHC)	mg/kg	0.1	<0.1	<0.1	200	0
			Delta BHC	mg/kg	0.1	<0.1	<0.1	200	0
			Heptachlor	mg/kg	0.1	<0.1	<0.1	200	0
			Aldrin	mg/kg	0.1	<0.1	<0.1	200	0
			Isodrin	mg/kg	0.1	<0.1	<0.1	200	0
			Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	200	0
			Gamma Chlordane	mg/kg	0.1	<0.1	<0.1	200	0
			Alpha Chlordane	mg/kg	0.1	<0.1	<0.1	200	0
			Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2	200	0
			o,p'-DDE*	mg/kg	0.1	<0.1	<0.1	200	0
			p,p'-DDE	mg/kg	0.1	<0.1	<0.1	200	0
			Dieldrin	mg/kg	0.2	<0.2	<0.2	200	0
			Endrin	mg/kg	0.2	<0.2	<0.2	200	0
			Beta Endosulfan	mg/kg	0.2	<0.2	<0.2	200	0
			o,p'-DDD*	mg/kg	0.1	<0.1	<0.1	200	0
			p,p'-DDD	mg/kg	0.1	<0.1	<0.1	200	0
			Endrin aldehyde	mg/kg	0.1	<0.1	<0.1	200	0
			Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1	200	0
			o,p'-DDT*	mg/kg	0.1	<0.1	<0.1	200	0
			p,p'-DDT	mg/kg	0.1	<0.1	<0.1	200	0
			Endrin ketone	mg/kg	0.1	<0.1	<0.1	200	0
			Methoxychlor	mg/kg	0.1	<0.1	<0.1	200	0
			Mirex	mg/kg	0.1	<0.1	<0.1	200	0
			trans-Nonachlor	mg/kg	0.1	<0.1	<0.1	200	0
			Total CLP OC Pesticides	mg/kg	1	<1	<1	200	0
			Total OC VIC EPA	mg/kg	1	<1	<1	200	0
		Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0.16	0.17	30	5
SE263523.019	LB309464.024		Alpha BHC	mg/kg	0.1	<0.1	<0.1	200	0
			Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	200	0
			Beta BHC	mg/kg	0.1	<0.1	<0.1	200	0
			Lindane (gamma BHC)	mg/kg	0.1	<0.1	<0.1	200	0
			Delta BHC	mg/kg	0.1	<0.1	<0.1	200	0
			Heptachlor	mg/kg	0.1	<0.1	<0.1	200	0
			Aldrin	mg/kg	0.1	<0.1	<0.1	200	0
			Isodrin	mg/kg	0.1	<0.1	<0.1	200	0
			Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	200	0
			Gamma Chlordane	mg/kg	0.1	<0.1	<0.1	200	0
			Alpha Chlordane	mg/kg	0.1	<0.1	<0.1	200	0
			Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2	200	0
			o,p'-DDE*	mg/kg	0.1	<0.1	<0.1	200	0
			p,p'-DDE	mg/kg	0.1	<0.1	<0.1	200	0
			Dieldrin	mg/kg	0.2	<0.2	<0.2	200	0
			Endrin	mg/kg	0.2	<0.2	<0.2	200	0
			Beta Endosulfan	mg/kg	0.2	<0.2	<0.2	200	0
			o,p'-DDD*	mg/kg	0.1	<0.1	<0.1	200	0

Duplicates are calculated as Relative Percentage Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

NOTE: The RPD reported is calculated from the unrounded data for the original and replicate result. Manual calculation of the RPD from the rounded data reported may

OC Pesticides in Soil (continued)

Method: ME-(AU)-[ENV]AN420

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE263523.019	LB309464.024		p,p'-DDD	mg/kg	0.1	<0.1	<0.1	200	0
			Endrin aldehyde	mg/kg	0.1	<0.1	<0.1	200	0
			Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1	200	0
			o,p'-DDT*	mg/kg	0.1	<0.1	<0.1	200	0
			p,p'-DDT	mg/kg	0.1	<0.1	<0.1	200	0
			Endrin ketone	mg/kg	0.1	<0.1	<0.1	200	0
			Methoxychlor	mg/kg	0.1	<0.1	<0.1	200	0
			Mirex	mg/kg	0.1	<0.1	<0.1	200	0
			trans-Nonachlor	mg/kg	0.1	<0.1	<0.1	200	0
			Total CLP OC Pesticides	mg/kg	1	<1	<1	200	0
			Total OC VIC EPA	mg/kg	1	<1	<1	200	0
		Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0.17	0.15	30	10
SE263523.027	LB309677.022		Alpha BHC	mg/kg	0.1	<0.1	2.4867332621	200	0
			Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	0.0229591761	200	0
			Beta BHC	mg/kg	0.1	<0.1	3.9096120119	200	0
			Lindane (gamma BHC)	mg/kg	0.1	<0.1	2.0627598120	200	0
			Delta BHC	mg/kg	0.1	<0.1	0.0063394110	200	0
			Heptachlor	mg/kg	0.1	<0.1	6.0931747856	200	0
			Aldrin	mg/kg	0.1	<0.1	8.5311708537	200	0
			Isodrin	mg/kg	0.1	<0.1	0	200	0
			Heptachlor epoxide	mg/kg	0.1	<0.1	0.0001250970	200	0
			Gamma Chlordane	mg/kg	0.1	<0.1	0.0002159012	200	0
			Alpha Chlordane	mg/kg	0.1	<0.1	4.2746844368	200	0
			Alpha Endosulfan	mg/kg	0.2	<0.2	2.6923703902	200	0
			o,p'-DDE*	mg/kg	0.1	<0.1	2.0446823433	200	0
			p,p'-DDE	mg/kg	0.1	<0.1	5.0271813617	200	0
			Dieldrin	mg/kg	0.2	<0.2	1.6727907311	200	0
			Endrin	mg/kg	0.2	<0.2	0.0001799176	200	0
			Beta Endosulfan	mg/kg	0.2	<0.2	0	200	0
			o,p'-DDD*	mg/kg	0.1	<0.1	0.0003485446	200	0
			p,p'-DDD	mg/kg	0.1	<0.1	0.0002527190	200	0
			Endrin aldehyde	mg/kg	0.1	<0.1	0	200	0
			Endosulfan sulphate	mg/kg	0.1	<0.1	2.4529571913	200	0
			o,p'-DDT*	mg/kg	0.1	<0.1	0.0002747527	200	0
			p,p'-DDT	mg/kg	0.1	<0.1	0.0003265463	200	0
			Endrin ketone	mg/kg	0.1	<0.1	0.0023927098	200	0
			Methoxychlor	mg/kg	0.1	<0.1	0	200	0
			Mirex	mg/kg	0.1	<0.1	0.0331484613	200	0
			trans-Nonachlor	mg/kg	0.1	<0.1	2.5353053548	200	0
			Total CLP OC Pesticides	mg/kg	1	<1	0	200	0
			Total OC VIC EPA	mg/kg	1	<1	0	200	0
		Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0.18	0.1661043183	30	7

OP Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE263523.010	LB309464.014		Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	<0.2	200	0
			Bromophos Ethyl	mg/kg	0.2	<0.2	<0.2	200	0
			Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2	<0.2	200	0
			Diazinon (Dimpylate)	mg/kg	0.5	<0.5	<0.5	200	0
			Dichlorvos	mg/kg	0.5	<0.5	<0.5	200	0
			Dimethoate	mg/kg	0.5	<0.5	<0.5	200	0
			Ethion	mg/kg	0.2	<0.2	<0.2	200	0
			Fenitrothion	mg/kg	0.2	<0.2	<0.2	200	0
			Malathion	mg/kg	0.2	<0.2	<0.2	200	0
			Methidathion	mg/kg	0.5	<0.5	<0.5	200	0
			Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	<0.2	200	0
			Total OP Pesticides*	mg/kg	1.7	<1.7	<1.7	200	0
		Surrogates	2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.5	30	15
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.6	0.6	30	2
SE263523.019	LB309464.024		Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	<0.2	200	0
			Bromophos Ethyl	mg/kg	0.2	<0.2	<0.2	200	0

Duplicates are calculated as Relative Percentage Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

NOTE: The RPD reported is calculated from the unrounded data for the original and replicate result. Manual calculation of the RPD from the rounded data reported may

OP Pesticides in Soil (continued)

Method: ME-(AU)-[ENV]AN420

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE263523.019	LB309464.024		Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2	<0.2	200	0
			Diazinon (Dimpylate)	mg/kg	0.5	<0.5	<0.5	200	0
			Dichlorvos	mg/kg	0.5	<0.5	<0.5	200	0
			Dimethoate	mg/kg	0.5	<0.5	<0.5	200	0
			Ethion	mg/kg	0.2	<0.2	<0.2	200	0
			Fenitrothion	mg/kg	0.2	<0.2	<0.2	200	0
			Malathion	mg/kg	0.2	<0.2	<0.2	200	0
			Methidathion	mg/kg	0.5	<0.5	<0.5	200	0
			Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	<0.2	200	0
			Total OP Pesticides*	mg/kg	1.7	<1.7	<1.7	200	0
		Surrogates	2-fluorobiphenyl (Surrogate)	mg/kg	-	0.5	0.5	30	4
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5	30	3
SE263523.027	LB309677.022		Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	0.0054513103	200	0
			Bromophos Ethyl	mg/kg	0.2	<0.2	0	200	0
			Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2	8.0512663753	200	0
			Diazinon (Dimpylate)	mg/kg	0.5	<0.5	0.0090256116	200	0
			Dichlorvos	mg/kg	0.5	<0.5	0	200	0
			Dimethoate	mg/kg	0.5	<0.5	0.0031087661	200	0
			Ethion	mg/kg	0.2	<0.2	0.0009988443	200	0
			Fenitrothion	mg/kg	0.2	<0.2	0.0011461096	200	0
			Malathion	mg/kg	0.2	<0.2	0.0001997902	200	0
			Methidathion	mg/kg	0.5	<0.5	0	200	0
			Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	0	200	0
			Total OP Pesticides*	mg/kg	1.7	<1.7	0	200	0
		Surrogates	2-fluorobiphenyl (Surrogate)	mg/kg	-	0.5	0.5357719777	30	0
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5135467353	30	1

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN420

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE263523.010	LB309464.014		Naphthalene	mg/kg	0.1	<0.1	<0.1	200	0
			2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	200	0
			1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	200	0
			Acenaphthylene	mg/kg	0.1	<0.1	<0.1	200	0
			Acenaphthene	mg/kg	0.1	<0.1	<0.1	200	0
			Fluorene	mg/kg	0.1	<0.1	<0.1	200	0
			Phenanthrene	mg/kg	0.1	<0.1	<0.1	200	0
			Anthracene	mg/kg	0.1	<0.1	<0.1	200	0
			Fluoranthene	mg/kg	0.1	<0.1	<0.1	200	0
			Pyrene	mg/kg	0.1	<0.1	<0.1	200	0
			Benzo(a)anthracene	mg/kg	0.1	<0.1	<0.1	200	0
			Chrysene	mg/kg	0.1	<0.1	<0.1	200	0
			Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	<0.1	200	0
			Benzo(k)fluoranthene	mg/kg	0.1	<0.1	<0.1	200	0
			Benzo(a)pyrene	mg/kg	0.1	<0.1	<0.1	200	0
			Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1	200	0
			Dibenzo(ah)anthracene	mg/kg	0.1	<0.1	<0.1	200	0
			Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1	200	0
			Carcinogenic PAHs, BaP TEQ <LOR=0*	mg/kg	0.2	<0.2	<0.2	200	0
			Carcinogenic PAHs, BaP TEQ <LOR=LOR/2*	mg/kg	0.2	<0.2	<0.2	175	0
			Carcinogenic PAHs, BaP TEQ <LOR=LOR*	mg/kg	0.3	<0.3	<0.3	134	0
			Total PAH (18)	mg/kg	0.8	<0.8	<0.8	200	0
		Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.5	0.5	30	6
			2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.5	30	15
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.6	0.6	30	2
SE263523.019	LB309464.024		Naphthalene	mg/kg	0.1	<0.1	<0.1	200	0
			2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	200	0
			1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	200	0
			Acenaphthylene	mg/kg	0.1	<0.1	<0.1	200	0
			Acenaphthene	mg/kg	0.1	<0.1	<0.1	200	0
			Fluorene	mg/kg	0.1	<0.1	<0.1	200	0
			Phenanthrene	mg/kg	0.1	<0.1	<0.1	200	0

Duplicates are calculated as Relative Percentage Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

NOTE: The RPD reported is calculated from the unrounded data for the original and replicate result. Manual calculation of the RPD from the rounded data reported may

PAH (Polynuclear Aromatic Hydrocarbons) in Soil (continued) — **Method: ME-(AU)-[ENV]AN420**

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE263523.019	LB309464.024		Anthracene	mg/kg	0.1	<0.1	<0.1	200	0
			Fluoranthene	mg/kg	0.1	<0.1	<0.1	200	0
			Pyrene	mg/kg	0.1	<0.1	<0.1	200	0
			Benzo(a)anthracene	mg/kg	0.1	<0.1	<0.1	200	0
			Chrysene	mg/kg	0.1	<0.1	<0.1	200	0
			Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	<0.1	200	0
			Benzo(k)fluoranthene	mg/kg	0.1	<0.1	<0.1	200	0
			Benzo(a)pyrene	mg/kg	0.1	<0.1	<0.1	200	0
			Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1	200	0
			Dibenzo(ah)anthracene	mg/kg	0.1	<0.1	<0.1	200	0
			Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1	200	0
			Carcinogenic PAHs, BaP TEQ <LOR=0*	mg/kg	0.2	<0.2	<0.2	200	0
			Carcinogenic PAHs, BaP TEQ <LOR=LOR/2*	mg/kg	0.2	<0.2	<0.2	175	0
			Carcinogenic PAHs, BaP TEQ <LOR=LOR*	mg/kg	0.3	<0.3	<0.3	134	0
			Total PAH (18)	mg/kg	0.8	<0.8	<0.8	200	0
		Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.4	0.4	30	1
			2-fluorobiphenyl (Surrogate)	mg/kg	-	0.5	0.5	30	4
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5	30	3
SE263523.027	LB309677.022		Naphthalene	mg/kg	0.1	<0.1	0	200	0
			2-methylnaphthalene	mg/kg	0.1	<0.1	0	200	0
			1-methylnaphthalene	mg/kg	0.1	<0.1	0	200	0
			Acenaphthylene	mg/kg	0.1	<0.1	0.0022582576	200	0
			Acenaphthene	mg/kg	0.1	<0.1	0	200	0
			Fluorene	mg/kg	0.1	<0.1	0	200	0
			Phenanthrene	mg/kg	0.1	<0.1	0.0048562958	200	0
			Anthracene	mg/kg	0.1	<0.1	0.0044917427	200	0
			Fluoranthene	mg/kg	0.1	<0.1	0.0030032153	200	0
			Pyrene	mg/kg	0.1	<0.1	0.0047816096	200	0
			Benzo(a)anthracene	mg/kg	0.1	<0.1	0.0079245802	200	0
			Chrysene	mg/kg	0.1	<0.1	0.0082853565	200	0
			Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	0.0031045557	200	0
			Benzo(k)fluoranthene	mg/kg	0.1	<0.1	0.0029198716	200	0
			Benzo(a)pyrene	mg/kg	0.1	<0.1	0.0018711382	200	0
			Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	0.0003029378	200	0
			Dibenzo(ah)anthracene	mg/kg	0.1	<0.1	0	200	0
			Benzo(ghi)perylene	mg/kg	0.1	<0.1	0.0021416052	200	0
			Carcinogenic PAHs, BaP TEQ <LOR=0*	mg/kg	0.2	<0.2	0	200	0
			Carcinogenic PAHs, BaP TEQ <LOR=LOR/2*	mg/kg	0.2	<0.2	0.121	175	0
			Carcinogenic PAHs, BaP TEQ <LOR=LOR*	mg/kg	0.3	<0.3	0.242	134	0
			Total PAH (18)	mg/kg	0.8	<0.8	0	200	0
		Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.5	0.5045589419	30	0
			2-fluorobiphenyl (Surrogate)	mg/kg	-	0.5	0.5357719777	30	0
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5135467353	30	1
SE263616.001	LB309677.014		Naphthalene	mg/kg	0.1	0.030022570	7 0.0282919272	200	0
			2-methylnaphthalene	mg/kg	0.1	0.061242987	5 0.0618964048	192	0
			1-methylnaphthalene	mg/kg	0.1	0.075886915	8 0.0755454727	162	0
			Acenaphthylene	mg/kg	0.1	0.007675480	5 0.0033664426	200	0
			Acenaphthene	mg/kg	0.1	0.011726845	0 0.0123103882	200	0
			Fluorene	mg/kg	0.1	0.020279713	9 0.0197103540	200	0
			Phenanthrene	mg/kg	0.1	0.329078234	9 0.3419319364	60	4
			Anthracene	mg/kg	0.1	0.039506662	5 0.0500946420	200	0
			Fluoranthene	mg/kg	0.1	0.066213060	5 0.0770330779	170	0
			Pyrene	mg/kg	0.1	0.115944889	6 0.1277452062	112	10
			Benzo(a)anthracene	mg/kg	0.1	0.066728192	3 0.0708472813	175	0
			Chrysene	mg/kg	0.1	0.130250033	4 0.1442181309	103	10
			Benzo(b&j)fluoranthene	mg/kg	0.1	0.066356259	7 0.0708690155	176	0
			Benzo(k)fluoranthene	mg/kg	0.1	0.017634614	6 0.0182113344	200	0
			Benzo(a)pyrene	mg/kg	0.1	0.040903187	8 0.0410700650	200	0
			Indeno(1,2,3-cd)pyrene	mg/kg	0.1	0.004002711	3 0.0246006082	200	0
			Dibenzo(ah)anthracene	mg/kg	0.1	0.017102345	5 0.0178529301	200	0
			Benzo(ghi)perylene	mg/kg	0.1	0.031195812	4 0.0330191687	200	0

Duplicates are calculated as Relative Percentage Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

NOTE: The RPD reported is calculated from the unrounded data for the original and replicate result. Manual calculation of the RPD from the rounded data reported may

PAH (Polynuclear Aromatic Hydrocarbons) in Soil (continued)

Method: ME-(AU)-[ENV]AN420

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE263616.001	LB309677.014		Carcinogenic PAHs, BaP TEQ <LOR=0*	mg/kg	0.2	0.001302500	30.0014421813	200	0
			Carcinogenic PAHs, BaP TEQ <LOR=LOR/2*	mg/kg	0.2	0.121802500	30.1219421813	174	0
			Carcinogenic PAHs, BaP TEQ <LOR=LOR*	mg/kg	0.3	0.242302500	30.2424421813	134	0
			Total PAH (18)	mg/kg	0.8	0.575273157	90.6138952737	47	6
		Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.488837951	40.4917858515	30	1
			2-fluorobiphenyl (Surrogate)	mg/kg	-	0.470496730	50.4698937047	30	0
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.514538653	20.5178719255	30	1

PCBs in Soil

Method: ME-(AU)-[ENV]AN420

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE263523.010	LB309464.014		Arochlor 1016	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1221	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1232	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1242	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1248	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1254	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1260	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1262	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1268	mg/kg	0.2	<0.2	<0.2	200	0
			Total PCBs (Arochlors)	mg/kg	1	<1	<1	200	0
		Surrogates	TCMX (Surrogate)	mg/kg	-	0	0	30	3
SE263523.019	LB309464.024		Arochlor 1016	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1221	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1232	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1242	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1248	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1254	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1260	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1262	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1268	mg/kg	0.2	<0.2	<0.2	200	0
			Total PCBs (Arochlors)	mg/kg	1	<1	<1	200	0
		Surrogates	TCMX (Surrogate)	mg/kg	-	0	0	30	11
SE263523.027	LB309677.022		Arochlor 1016	mg/kg	0.2	<0.2	0	200	0
			Arochlor 1221	mg/kg	0.2	<0.2	0	200	0
			Arochlor 1232	mg/kg	0.2	<0.2	0	200	0
			Arochlor 1242	mg/kg	0.2	<0.2	0	200	0
			Arochlor 1248	mg/kg	0.2	<0.2	0	200	0
			Arochlor 1254	mg/kg	0.2	<0.2	0	200	0
			Arochlor 1260	mg/kg	0.2	<0.2	0	200	0
			Arochlor 1262	mg/kg	0.2	<0.2	0	200	0
			Arochlor 1268	mg/kg	0.2	<0.2	0	200	0
			Total PCBs (Arochlors)	mg/kg	1	<1	0	200	0
		Surrogates	TCMX (Surrogate)	mg/kg	-	0	0.161395213	9	30

Speciated Phenols in Soil

Method: ME-(AU)-[ENV]AN420

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE263523.010	LB309465.014		Phenol	mg/kg	0.5	<0.5	<0.5	200	0
			2-methyl phenol (o-cresol)	mg/kg	0.5	<0.5	<0.5	200	0
			3/4-methyl phenol (m/p-cresol)	mg/kg	1	<1	<1	200	0
			Total Cresol	mg/kg	1.5	<1.5	<1.5	200	0
			2-chlorophenol	mg/kg	0.5	<0.5	<0.5	200	0
			2,4-dimethylphenol	mg/kg	0.5	<0.5	<0.5	200	0
			2,6-dichlorophenol	mg/kg	0.5	<0.5	<0.5	200	0
			2,4-dichlorophenol	mg/kg	0.5	<0.5	<0.5	200	0
			4-chloro-3-methylphenol	mg/kg	2	<2	<2	200	0
			2,4,6-trichlorophenol	mg/kg	0.5	<0.5	<0.5	200	0
			2-nitrophenol	mg/kg	0.5	<0.5	<0.5	200	0
			4-nitrophenol	mg/kg	1	<1	<1	200	0
			2,4,5-trichlorophenol	mg/kg	0.5	<0.5	<0.5	200	0
			2,3,4,6/2,3,5,6-tetrachlorophenol	mg/kg	1	<1	<1	200	0
			Pentachlorophenol	mg/kg	0.5	<0.5	<0.5	200	0
			2,4-dinitrophenol	mg/kg	2	<2	<2	200	0

Duplicates are calculated as Relative Percentage Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

NOTE: The RPD reported is calculated from the unrounded data for the original and replicate result. Manual calculation of the RPD from the rounded data reported may

Speciated Phenols in Soil (continued) — **Method: ME-(AU)-[ENV]AN420**

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE263523.010	LB309465.014	Surrogates	2,4,6-Tribromophenol (Surrogate)	mg/kg	-	4.4	4.6	30	6
			d5-phenol (Surrogate)	mg/kg	-	1.6	2.1	30	27
SE263523.019	LB309465.024		Phenol	mg/kg	0.5	<0.5	<0.5	200	0
			2-methyl phenol (o-cresol)	mg/kg	0.5	<0.5	<0.5	200	0
			3/4-methyl phenol (m/p-cresol)	mg/kg	1	<1	<1	200	0
			Total Cresol	mg/kg	1.5	<1.5	<1.5	200	0
			2-chlorophenol	mg/kg	0.5	<0.5	<0.5	200	0
			2,4-dimethylphenol	mg/kg	0.5	<0.5	<0.5	200	0
			2,6-dichlorophenol	mg/kg	0.5	<0.5	<0.5	200	0
			2,4-dichlorophenol	mg/kg	0.5	<0.5	<0.5	200	0
			4-chloro-3-methylphenol	mg/kg	2	<2	<2	200	0
			2,4,6-trichlorophenol	mg/kg	0.5	<0.5	<0.5	200	0
			2-nitrophenol	mg/kg	0.5	<0.5	<0.5	200	0
			4-nitrophenol	mg/kg	1	<1	<1	200	0
			2,4,5-trichlorophenol	mg/kg	0.5	<0.5	<0.5	200	0
			2,3,4,6/2,3,5,6-tetrachlorophenol	mg/kg	1	<1	<1	200	0
			Pentachlorophenol	mg/kg	0.5	<0.5	<0.5	200	0
			2,4-dinitrophenol	mg/kg	2	<2	<2	200	0
		Surrogates	2,4,6-Tribromophenol (Surrogate)	mg/kg	-	5.1	5.3	30	5
			d5-phenol (Surrogate)	mg/kg	-	1.9	1.9	30	0
SE263616.002	LB309653.014		Phenol	mg/kg	0.5	0.0255560625	0.02	200	0
			2-methyl phenol (o-cresol)	mg/kg	0.5	0	0	200	0
			3/4-methyl phenol (m/p-cresol)	mg/kg	1	0	0	200	0
			Total Cresol	mg/kg	1.5	0	0	200	0
			2-chlorophenol	mg/kg	0.5	0.0255560625	0	200	0
			2,4-dimethylphenol	mg/kg	0.5	0	0	200	0
			2,6-dichlorophenol	mg/kg	0.5	0	0	200	0
			2,4-dichlorophenol	mg/kg	0.5	0	0	200	0
			4-chloro-3-methylphenol	mg/kg	2	0	0	200	0
			2,4,6-trichlorophenol	mg/kg	0.5	0	0	200	0
			2-nitrophenol	mg/kg	0.5	0	0	200	0
			4-nitrophenol	mg/kg	1	0	0	200	0
			2,4,5-trichlorophenol	mg/kg	0.5	0	0	200	0
			2,3,4,6/2,3,5,6-tetrachlorophenol	mg/kg	1	0	0	200	0
			Pentachlorophenol	mg/kg	0.5	0	0	200	0
			2,4-dinitrophenol	mg/kg	2	0.1788924376	0.14	200	0
		Surrogates	2,4,6-Tribromophenol (Surrogate)	mg/kg	-	5.3	4.76	30	11
			d5-phenol (Surrogate)	mg/kg	-	2.34	2.13	30	9
SE263616.005	LB309653.018		Phenol	mg/kg	0.5	0.0227398830	0.02	200	0
			2-methyl phenol (o-cresol)	mg/kg	0.5	0	0	200	0
			3/4-methyl phenol (m/p-cresol)	mg/kg	1	0.0227398830	0	200	0
			Total Cresol	mg/kg	1.5	0.0227398830	0	200	0
			2-chlorophenol	mg/kg	0.5	0.0227398830	0	200	0
			2,4-dimethylphenol	mg/kg	0.5	0	0	200	0
			2,6-dichlorophenol	mg/kg	0.5	0	0	200	0
			2,4-dichlorophenol	mg/kg	0.5	0	0	200	0
			4-chloro-3-methylphenol	mg/kg	2	0	0	200	0
			2,4,6-trichlorophenol	mg/kg	0.5	0	0	200	0
			2-nitrophenol	mg/kg	0.5	0	0	200	0
			4-nitrophenol	mg/kg	1	0.0227398830	0	200	0
			2,4,5-trichlorophenol	mg/kg	0.5	0	0	200	0
			2,3,4,6/2,3,5,6-tetrachlorophenol	mg/kg	1	0	0	200	0
			Pentachlorophenol	mg/kg	0.5	0	0	200	0
			2,4-dinitrophenol	mg/kg	2	0.1364392981	0.1	200	0
		Surrogates	2,4,6-Tribromophenol (Surrogate)	mg/kg	-	4.97	5.12	30	3
			d5-phenol (Surrogate)	mg/kg	-	2.26	2.3	30	2

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES — **Method: ME-(AU)-[ENV]AN040/AN320**

Original	Duplicate		Parameter	Units	LOR

Duplicates are calculated as Relative Percentage Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

NOTE: The RPD reported is calculated from the unrounded data for the original and replicate result. Manual calculation of the RPD from the rounded data reported may

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES (continued)

Method: ME-(AU)-[ENV]AN040/AN320

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE263523.010	LB309466.014		Arsenic, As	mg/kg	1	8	8	42	2
			Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	200	0
			Chromium, Cr	mg/kg	0.5	24	26	32	8
			Copper, Cu	mg/kg	0.5	7.8	7.6	37	3
			Nickel, Ni	mg/kg	0.5	10	8.4	35	21
			Lead, Pb	mg/kg	1	40	80	32	68 ⑧
			Zinc, Zn	mg/kg	2	110	110	32	0
SE263523.019	LB309466.024		Arsenic, As	mg/kg	1	16	16	36	1
			Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	192	0
			Chromium, Cr	mg/kg	0.5	32	33	32	3
			Copper, Cu	mg/kg	0.5	13	13	34	5
			Nickel, Ni	mg/kg	0.5	11	11	35	4
			Lead, Pb	mg/kg	1	56	51	32	9
			Zinc, Zn	mg/kg	2	160	160	31	2
SE263616.001	LB309687.014		Arsenic, As	mg/kg	1	3.86836785933	.7194563492	56	4
			Cadmium, Cd	mg/kg	0.3	0.1303358443	0.1708819444	200	0
			Chromium, Cr	mg/kg	0.5	7.0879001883	9.6710303571	36	31
			Copper, Cu	mg/kg	0.5	13.73265222846	.826091269	31	7
			Nickel, Ni	mg/kg	0.5	5.66321092279	.6932228174	37	52 ②
			Lead, Pb	mg/kg	1	29.13788135596	.4440144841	33	22
			Zinc, Zn	mg/kg	2	15.31167608254	.392946428	31	29

TRH (Total Recoverable Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN403

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE263523.010	LB309464.014		TRH C10-C14	mg/kg	20	<20	<20	200	0
			TRH C15-C28	mg/kg	45	<45	<45	200	0
			TRH C29-C36	mg/kg	45	<45	<45	200	0
			TRH C37-C40	mg/kg	100	<100	<100	200	0
			TRH C10-C36 Total	mg/kg	110	<110	<110	200	0
			TRH >C10-C40 Total (F bands)	mg/kg	210	<210	<210	200	0
		TRH F Bands	TRH >C10-C16	mg/kg	25	<25	<25	200	0
			TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	<25	<25	200	0
			TRH >C16-C34 (F3)	mg/kg	90	<90	<90	200	0
			TRH >C34-C40 (F4)	mg/kg	120	<120	<120	200	0
SE263523.019	LB309464.024		TRH C10-C14	mg/kg	20	<20	<20	200	0
			TRH C15-C28	mg/kg	45	<45	<45	200	0
			TRH C29-C36	mg/kg	45	<45	<45	200	0
			TRH C37-C40	mg/kg	100	<100	<100	200	0
			TRH C10-C36 Total	mg/kg	110	<110	<110	200	0
			TRH >C10-C40 Total (F bands)	mg/kg	210	<210	<210	200	0
		TRH F Bands	TRH >C10-C16	mg/kg	25	<25	<25	200	0
			TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	<25	<25	200	0
			TRH >C16-C34 (F3)	mg/kg	90	<90	<90	200	0
			TRH >C34-C40 (F4)	mg/kg	120	<120	<120	200	0
SE263523.027	LB309677.022		TRH C10-C14	mg/kg	20	<20	<20	200	0
			TRH C15-C28	mg/kg	45	<45	<45	200	0
			TRH C29-C36	mg/kg	45	<45	<45	200	0
			TRH C37-C40	mg/kg	100	<100	<100	200	0
			TRH C10-C36 Total	mg/kg	110	<110	<110	200	0
			TRH >C10-C40 Total (F bands)	mg/kg	210	<210	<210	200	0
		TRH F Bands	TRH >C10-C16	mg/kg	25	<25	<25	200	0
			TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	<25	<25	200	0
			TRH >C16-C34 (F3)	mg/kg	90	<90	<90	200	0
			TRH >C34-C40 (F4)	mg/kg	120	<120	<120	200	0
SE263616.001	LB309677.014		TRH C10-C14	mg/kg	20	32.019694471	27.550294904	75	77 ②
			TRH C15-C28	mg/kg	45	00.987507784	33.993171410	76	7
			TRH C29-C36	mg/kg	45	15.891343371	62.956486060	121	14
			TRH C37-C40	mg/kg	100	5.51846723088	.9879767007	200	0
			TRH C10-C36 Total	mg/kg	110	08.898545627	74.499952375	87	18
			TRH >C10-C40 Total (F bands)	mg/kg	210	97.394732021	62.212843902	147	0
		TRH F Bands	TRH >C10-C16	mg/kg	25	74.432926695	24.796878778	76	73

Duplicates are calculated as Relative Percentage Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

NOTE: The RPD reported is calculated from the unrounded data for the original and replicate result. Manual calculation of the RPD from the rounded data reported may

TRH (Total Recoverable Hydrocarbons) in Soil (continued)

Method: ME-(AU)-[ENV]AN403

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE263616.001	LB309677.014	TRH F Bands	TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	74.43292669524.796878777		76	73
			TRH >C16-C34 (F3)	mg/kg	90	22.96180532627.415965124		102	4
			TRH >C34-C40 (F4)	mg/kg	120	15.15476425980.881225043(		200	0

VOC's in Soil

Method: ME-(AU)-[ENV]AN433

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE263523.010	LB309470.014	Monocyclic Aromatic	Benzene	mg/kg	0.1	<0.1	<0.1	200	0
			Toluene	mg/kg	0.1	<0.1	<0.1	200	0
			Ethylbenzene	mg/kg	0.1	<0.1	<0.1	200	0
			m/p-xylene	mg/kg	0.2	<0.2	<0.2	200	0
			o-xylene	mg/kg	0.1	<0.1	<0.1	200	0
		Polycyclic	Naphthalene (VOC)*	mg/kg	0.1	<0.1	<0.1	200	0
		Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	8.6	11.5	50	29
			d8-toluene (Surrogate)	mg/kg	-	8.6	11.3	50	27
			Bromofluorobenzene (Surrogate)	mg/kg	-	7.6	10.9	50	36
		Totals	Total BTEX*	mg/kg	0.6	<0.6	<0.6	200	0
			Total Xylenes*	mg/kg	0.3	<0.3	<0.3	200	0
SE263523.019	LB309470.024	Monocyclic Aromatic	Benzene	mg/kg	0.1	<0.1	<0.1	200	0
			Toluene	mg/kg	0.1	<0.1	<0.1	200	0
			Ethylbenzene	mg/kg	0.1	<0.1	<0.1	200	0
			m/p-xylene	mg/kg	0.2	<0.2	<0.2	200	0
			o-xylene	mg/kg	0.1	<0.1	<0.1	200	0
		Polycyclic	Naphthalene (VOC)*	mg/kg	0.1	<0.1	<0.1	200	0
		Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	8.5	10.2	50	18
			d8-toluene (Surrogate)	mg/kg	-	8.7	10.5	50	19
			Bromofluorobenzene (Surrogate)	mg/kg	-	8.5	8.9	50	5
		Totals	Total BTEX*	mg/kg	0.6	<0.6	<0.6	200	0
			Total Xylenes*	mg/kg	0.3	<0.3	<0.3	200	0

Volatile Petroleum Hydrocarbons in Soil

Method: ME-(AU)-[ENV]AN433

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE263523.010	LB309470.014		TRH C6-C10	mg/kg	25	<25	<25	200	0
			TRH C6-C9	mg/kg	20	<20	<20	200	0
		Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	8.6	11.5	50	29
			d8-toluene (Surrogate)	mg/kg	-	8.6	11.3	50	27
			Bromofluorobenzene (Surrogate)	mg/kg	-	7.6	10.9	50	36
		VPH F Bands	Benzene (F0)	mg/kg	0.1	<0.1	<0.1	200	0
			TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	200	0
SE263523.019	LB309470.024		TRH C6-C10	mg/kg	25	<25	<25	200	0
			TRH C6-C9	mg/kg	20	<20	<20	200	0
		Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	8.5	10.2	50	18
			d8-toluene (Surrogate)	mg/kg	-	8.7	10.5	50	19
			Bromofluorobenzene (Surrogate)	mg/kg	-	8.5	8.9	50	5
		VPH F Bands	Benzene (F0)	mg/kg	0.1	<0.1	<0.1	200	0
			TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	200	0

Laboratory Control Standard (LCS) results are evaluated against an expected result, typically the concentration of analyte spiked into the control during the sample preparation stage, producing a percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA /QC plan (Ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

Mercury in Soil

Method: ME-(AU)-[ENV]AN312

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB309467.002	Mercury	mg/kg	0.05	0.22	0.2	80 - 120	109
LB309691.002	Mercury	mg/kg	0.05	0.20	0.2	80 - 120	98

OC Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB309464.002		Delta BHC	mg/kg	0.1	0.2	0.2	60 - 140	87
		Heptachlor	mg/kg	0.1	0.2	0.2	60 - 140	91
		Aldrin	mg/kg	0.1	0.2	0.2	60 - 140	91
		Dieldrin	mg/kg	0.2	<0.2	0.2	60 - 140	89
		Endrin	mg/kg	0.2	<0.2	0.2	60 - 140	85
		p,p'-DDT	mg/kg	0.1	0.2	0.2	60 - 140	95
	Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0.16	0.15	40 - 130	107
LB309677.002		Delta BHC	mg/kg	0.1	0.2	0.2	60 - 140	99
		Heptachlor	mg/kg	0.1	0.2	0.2	60 - 140	99
		Aldrin	mg/kg	0.1	0.2	0.2	60 - 140	98
		Dieldrin	mg/kg	0.2	<0.2	0.2	60 - 140	99
		Endrin	mg/kg	0.2	<0.2	0.2	60 - 140	95
		p,p'-DDT	mg/kg	0.1	0.2	0.2	60 - 140	108
	Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0.15	0.15	40 - 130	103

OP Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB309464.002		Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	1.8	2	60 - 140	89
		Diazinon (Dimpylate)	mg/kg	0.5	2.0	2	60 - 140	99
		Dichlorvos	mg/kg	0.5	1.4	2	60 - 140	68
		Ethion	mg/kg	0.2	1.9	2	60 - 140	94
	Surrogates	2-fluorobiphenyl (Surrogate)	mg/kg	-	0.5	0.5	40 - 130	106
		d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5	40 - 130	99
LB309677.002		Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	1.8	2	60 - 140	91
		Diazinon (Dimpylate)	mg/kg	0.5	1.9	2	60 - 140	93
		Dichlorvos	mg/kg	0.5	1.3	2	60 - 140	65
		Ethion	mg/kg	0.2	1.7	2	60 - 140	84
	Surrogates	2-fluorobiphenyl (Surrogate)	mg/kg	-	0.5	0.5	40 - 130	100
		d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5	40 - 130	99

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB309464.002		Naphthalene	mg/kg	0.1	4.8	4	60 - 140	121
		Acenaphthylene	mg/kg	0.1	4.6	4	60 - 140	115
		Acenaphthene	mg/kg	0.1	4.8	4	60 - 140	120
		Phenanthrene	mg/kg	0.1	4.8	4	60 - 140	119
		Anthracene	mg/kg	0.1	4.9	4	60 - 140	123
		Fluoranthene	mg/kg	0.1	5.0	4	60 - 140	126
		Pyrene	mg/kg	0.1	4.6	4	60 - 140	115
		Benzo(a)pyrene	mg/kg	0.1	5.3	4	60 - 140	133
	Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.6	0.5	40 - 130	113
		2-fluorobiphenyl (Surrogate)	mg/kg	-	0.5	0.5	40 - 130	106
		d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5	40 - 130	99
LB309677.002		Naphthalene	mg/kg	0.1	4.1	4	60 - 140	103
		Acenaphthylene	mg/kg	0.1	4.1	4	60 - 140	102
		Acenaphthene	mg/kg	0.1	4.3	4	60 - 140	108
		Phenanthrene	mg/kg	0.1	4.0	4	60 - 140	100
		Anthracene	mg/kg	0.1	4.5	4	60 - 140	113
		Fluoranthene	mg/kg	0.1	4.2	4	60 - 140	106
		Pyrene	mg/kg	0.1	4.3	4	60 - 140	108
		Benzo(a)pyrene	mg/kg	0.1	4.3	4	60 - 140	108
	Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.5	0.5	40 - 130	96
		2-fluorobiphenyl (Surrogate)	mg/kg	-	0.5	0.5	40 - 130	100
		d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5	40 - 130	99

PCBs in Soil

Method: ME-(AU)-[ENV]AN420

Sample Number	Parameter	Units	LOR

Laboratory Control Standard (LCS) results are evaluated against an expected result, typically the concentration of analyte spiked into the control during the sample preparation stage, producing a percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA /QC plan (Ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

PCBs in Soil (continued)

Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB309464.002		Arochlor 1260	mg/kg	0.2	0.4	0.4	60 - 140	105
LB309677.002		Arochlor 1260	mg/kg	0.2	0.4	0.4	60 - 140	110

Speciated Phenols in Soil

Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB309465.002		Phenol	mg/kg	0.5	1.2	1	70 - 130	118
		2,4-dichlorophenol	mg/kg	0.5	0.8	1	70 - 130	76
		2,4,6-trichlorophenol	mg/kg	0.5	0.8	1	70 - 130	82
		Pentachlorophenol	mg/kg	0.5	0.7	1	70 - 130	74
	Surrogates	2,4,6-Tribromophenol (Surrogate)	mg/kg	-	5.6	5	40 - 130	113
		d5-phenol (Surrogate)	mg/kg	-	2.3	2	40 - 130	114
LB309653.002		Phenol	mg/kg	0.5	1.3	1	70 - 130	126
		2,4-dichlorophenol	mg/kg	0.5	0.9	1	70 - 130	86
		2,4,6-trichlorophenol	mg/kg	0.5	0.9	1	70 - 130	92
		Pentachlorophenol	mg/kg	0.5	0.7	1	70 - 130	74
	Surrogates	2,4,6-Tribromophenol (Surrogate)	mg/kg	-	5.4	5	40 - 130	107
		d5-phenol (Surrogate)	mg/kg	-	2.3	2	40 - 130	116

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES

Method: ME-(AU)-[ENV]AN040/AN320

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB309466.002	Arsenic, As	mg/kg	1	330	318.22	80 - 120	103
	Cadmium, Cd	mg/kg	0.3	4.7	4.81	70 - 130	98
	Chromium, Cr	mg/kg	0.5	39	38.31	80 - 120	101
	Copper, Cu	mg/kg	0.5	310	290	80 - 120	107
	Nickel, Ni	mg/kg	0.5	180	187	80 - 120	99
	Lead, Pb	mg/kg	1	91	89.9	80 - 120	102
	Zinc, Zn	mg/kg	2	270	273	80 - 120	100
LB309687.002	Arsenic, As	mg/kg	1	330	318.22	80 - 120	104
	Cadmium, Cd	mg/kg	0.3	4.6	4.81	70 - 130	96
	Chromium, Cr	mg/kg	0.5	41	38.31	80 - 120	108
	Copper, Cu	mg/kg	0.5	310	290	80 - 120	105
	Nickel, Ni	mg/kg	0.5	190	187	80 - 120	100
	Lead, Pb	mg/kg	1	90	89.9	80 - 120	100
	Zinc, Zn	mg/kg	2	270	273	80 - 120	100

TRH (Total Recoverable Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN403

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB309464.002		TRH C10-C14	mg/kg	20	39	40	60 - 140	98
		TRH C15-C28	mg/kg	45	<45	40	60 - 140	99
		TRH C29-C36	mg/kg	45	<45	40	60 - 140	85
	TRH F Bands	TRH >C10-C16	mg/kg	25	39	40	60 - 140	99
		TRH >C16-C34 (F3)	mg/kg	90	<90	40	60 - 140	99
		TRH >C34-C40 (F4)	mg/kg	120	<120	20	60 - 140	76
LB309677.002		TRH C10-C14	mg/kg	20	41	40	60 - 140	102
		TRH C15-C28	mg/kg	45	<45	40	60 - 140	101
		TRH C29-C36	mg/kg	45	<45	40	60 - 140	88
	TRH F Bands	TRH >C10-C16	mg/kg	25	41	40	60 - 140	103
		TRH >C16-C34 (F3)	mg/kg	90	<90	40	60 - 140	100
		TRH >C34-C40 (F4)	mg/kg	120	<120	20	60 - 140	80

VOC's in Soil

Method: ME-(AU)-[ENV]AN433

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB309470.002	Monocyclic Aromatic	Benzene	mg/kg	0.1	3.4	5	60 - 140	69
		Toluene	mg/kg	0.1	4.0	5	60 - 140	80
		Ethylbenzene	mg/kg	0.1	3.3	5	60 - 140	65
		m/p-xylene	mg/kg	0.2	7.0	10	60 - 140	70
		o-xylene	mg/kg	0.1	3.4	5	60 - 140	68
	Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	11.2	10	70 - 130	112
		d8-toluene (Surrogate)	mg/kg	-	11.3	10	70 - 130	113
		Bromofluorobenzene (Surrogate)	mg/kg	-	11.3	10	70 - 130	113
LB309678.002	Monocyclic Aromatic	Benzene	mg/kg	0.1	4.4	5	60 - 140	88
		Toluene	mg/kg	0.1	4.5	5	60 - 140	91

Laboratory Control Standard (LCS) results are evaluated against an expected result, typically the concentration of analyte spiked into the control during the sample preparation stage, producing a percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA /QC plan (Ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

VOC's in Soil (continued)

Method: ME-(AU)-[ENV]AN433

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB309678.002	Monocyclic	Ethylbenzene	mg/kg	0.1	4.4	5	60 - 140	89
	Aromatic	m/p-xylene	mg/kg	0.2	8.8	10	60 - 140	88
		o-xylene	mg/kg	0.1	4.4	5	60 - 140	88
	Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	7.6	10	70 - 130	76
		d8-toluene (Surrogate)	mg/kg	-	8.5	10	70 - 130	85
		Bromofluorobenzene (Surrogate)	mg/kg	-	9.5	10	70 - 130	95

Volatile Petroleum Hydrocarbons in Soil

Method: ME-(AU)-[ENV]AN433

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB309470.002		TRH C6-C10	mg/kg	25	81	92.5	60 - 140	87
		TRH C6-C9	mg/kg	20	70	80	60 - 140	88
	Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	11.2	10	70 - 130	112
		Bromofluorobenzene (Surrogate)	mg/kg	-	11.3	10	70 - 130	113
	VPH F Bands	TRH C6-C10 minus BTEX (F1)	mg/kg	25	60	62.5	60 - 140	96
LB309678.002		TRH C6-C10	mg/kg	25	92	92.5	60 - 140	99
		TRH C6-C9	mg/kg	20	83	80	60 - 140	104
	Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	7.6	10	70 - 130	76
		Bromofluorobenzene (Surrogate)	mg/kg	-	9.5	10	70 - 130	95
	VPH F Bands	TRH C6-C10 minus BTEX (F1)	mg/kg	25	65	62.5	60 - 140	104

Matrix Spike (MS) results are evaluated as the percentage recovery of an expected result, typically the concentration of analyte spiked into a field sub -sample during the sample preparation stage. The original sample's result is subtracted from the sub-sample result before determining the percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA/QC plan (ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

Mercury in Soil

Method: ME-(AU)-[ENV]AN312

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE263523.001	LB309467.004	Mercury	mg/kg	0.05	0.25	<0.05	0.2	114
SE263523.020	LB309691.004	Mercury	mg/kg	0.05	0.23	<0.05	0.2	100

OC Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE263523.001	LB309464.004		Alpha BHC	mg/kg	0.1	<0.1	<0.1	-	-
			Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	-	-
			Beta BHC	mg/kg	0.1	<0.1	<0.1	-	-
			Lindane (gamma BHC)	mg/kg	0.1	<0.1	<0.1	-	-
			Delta BHC	mg/kg	0.1	0.2	<0.1	0.2	105
			Heptachlor	mg/kg	0.1	0.2	<0.1	0.2	103
			Aldrin	mg/kg	0.1	0.2	<0.1	0.2	97
			Isodrin	mg/kg	0.1	<0.1	<0.1	-	-
			Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	-	-
			Gamma Chlordane	mg/kg	0.1	<0.1	<0.1	-	-
			Alpha Chlordane	mg/kg	0.1	<0.1	<0.1	-	-
			Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2	-	-
			o,p'-DDE*	mg/kg	0.1	<0.1	<0.1	-	-
			p,p'-DDE	mg/kg	0.1	<0.1	<0.1	-	-
			Dieldrin	mg/kg	0.2	<0.2	<0.2	0.2	93
			Endrin	mg/kg	0.2	<0.2	<0.2	0.2	94
			Beta Endosulfan	mg/kg	0.2	<0.2	<0.2	-	-
			o,p'-DDD*	mg/kg	0.1	<0.1	<0.1	-	-
			p,p'-DDD	mg/kg	0.1	<0.1	<0.1	-	-
			Endrin aldehyde	mg/kg	0.1	<0.1	<0.1	-	-
			Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1	-	-
			o,p'-DDT*	mg/kg	0.1	<0.1	<0.1	-	-
			p,p'-DDT	mg/kg	0.1	0.2	<0.1	0.2	114
			Endrin ketone	mg/kg	0.1	<0.1	<0.1	-	-
			Methoxychlor	mg/kg	0.1	<0.1	<0.1	-	-
			Mirex	mg/kg	0.1	<0.1	<0.1	-	-
			trans-Nonachlor	mg/kg	0.1	<0.1	<0.1	-	-
			Total CLP OC Pesticides	mg/kg	1	1	<1	-	-
			Total OC VIC EPA	mg/kg	1	1	<1	-	-
		Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0.16	0.16	-	106
SE263523.020	LB309677.004		Alpha BHC	mg/kg	0.1	<0.1	<0.1	-	-
			Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	-	-
			Beta BHC	mg/kg	0.1	<0.1	<0.1	-	-
			Lindane (gamma BHC)	mg/kg	0.1	<0.1	<0.1	-	-
			Delta BHC	mg/kg	0.1	0.2	<0.1	0.2	98
			Heptachlor	mg/kg	0.1	0.2	<0.1	0.2	103
			Aldrin	mg/kg	0.1	0.2	<0.1	0.2	102
			Isodrin	mg/kg	0.1	<0.1	<0.1	-	-
			Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	-	-
			Gamma Chlordane	mg/kg	0.1	<0.1	<0.1	-	-
			Alpha Chlordane	mg/kg	0.1	<0.1	<0.1	-	-
			Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2	-	-
			o,p'-DDE*	mg/kg	0.1	<0.1	<0.1	-	-
			p,p'-DDE	mg/kg	0.1	<0.1	<0.1	-	-
			Dieldrin	mg/kg	0.2	0.2	<0.2	0.2	103
			Endrin	mg/kg	0.2	<0.2	<0.2	0.2	98
			Beta Endosulfan	mg/kg	0.2	<0.2	<0.2	-	-
			o,p'-DDD*	mg/kg	0.1	<0.1	<0.1	-	-
			p,p'-DDD	mg/kg	0.1	<0.1	<0.1	-	-
			Endrin aldehyde	mg/kg	0.1	<0.1	<0.1	-	-
			Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1	-	-
			o,p'-DDT*	mg/kg	0.1	<0.1	<0.1	-	-
			p,p'-DDT	mg/kg	0.1	0.2	<0.1	0.2	121
			Endrin ketone	mg/kg	0.1	<0.1	<0.1	-	-
			Methoxychlor	mg/kg	0.1	<0.1	<0.1	-	-

Matrix Spike (MS) results are evaluated as the percentage recovery of an expected result, typically the concentration of analyte spiked into a field sub -sample during the sample preparation stage. The original sample's result is subtracted from the sub-sample result before determining the percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA/QC plan (ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

OC Pesticides in Soil (continued)

Method: ME-(AU)-[ENV]AN420

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE263523.020	LB309677.004		Mirex	mg/kg	0.1	<0.1	<0.1	-	-
			trans-Nonachlor	mg/kg	0.1	<0.1	<0.1	-	-
			Total CLP OC Pesticides	mg/kg	1	1	<1	-	-
			Total OC VIC EPA	mg/kg	1	1	<1	-	-
		Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0.16	0.19	-	105

OP Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE263523.001	LB309464.004		Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	<0.2	-	-
			Bromophos Ethyl	mg/kg	0.2	<0.2	<0.2	-	-
			Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	1.9	<0.2	2	93
			Diazinon (Dimpylate)	mg/kg	0.5	2.0	<0.5	2	98
			Dichlorvos	mg/kg	0.5	1.3	<0.5	2	63
			Dimethoate	mg/kg	0.5	<0.5	<0.5	-	-
			Ethion	mg/kg	0.2	1.9	<0.2	2	95
			Fenitrothion	mg/kg	0.2	<0.2	<0.2	-	-
			Malathion	mg/kg	0.2	<0.2	<0.2	-	-
			Methidathion	mg/kg	0.5	<0.5	<0.5	-	-
			Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	<0.2	-	-
			Total OP Pesticides*	mg/kg	1.7	7.0	<1.7	-	-
		Surrogates	2-fluorobiphenyl (Surrogate)	mg/kg	-	0.5	0.5	-	109
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.6	-	95
SE263523.020	LB309677.004		Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	<0.2	-	-
			Bromophos Ethyl	mg/kg	0.2	<0.2	<0.2	-	-
			Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	1.8	<0.2	2	89
			Diazinon (Dimpylate)	mg/kg	0.5	1.8	<0.5	2	92
			Dichlorvos	mg/kg	0.5	1.3	<0.5	2	65
			Dimethoate	mg/kg	0.5	<0.5	<0.5	-	-
			Ethion	mg/kg	0.2	1.6	<0.2	2	82
			Fenitrothion	mg/kg	0.2	<0.2	<0.2	-	-
			Malathion	mg/kg	0.2	<0.2	<0.2	-	-
			Methidathion	mg/kg	0.5	<0.5	<0.5	-	-
			Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	<0.2	-	-
			Total OP Pesticides*	mg/kg	1.7	6.6	<1.7	-	-
		Surrogates	2-fluorobiphenyl (Surrogate)	mg/kg	-	0.5	0.5	-	101
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5	-	104

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN420

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE263523.001	LB309464.004		Naphthalene	mg/kg	0.1	3.8	<0.1	4	94
			2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	-	-
			1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	-	-
			Acenaphthylene	mg/kg	0.1	4.1	<0.1	4	103
			Acenaphthene	mg/kg	0.1	4.0	<0.1	4	101
			Fluorene	mg/kg	0.1	<0.1	<0.1	-	-
			Phenanthrene	mg/kg	0.1	3.8	<0.1	4	96
			Anthracene	mg/kg	0.1	3.8	<0.1	4	96
			Fluoranthene	mg/kg	0.1	4.0	<0.1	4	99
			Pyrene	mg/kg	0.1	3.5	<0.1	4	88
			Benzo(a)anthracene	mg/kg	0.1	<0.1	<0.1	-	-
			Chrysene	mg/kg	0.1	<0.1	<0.1	-	-
			Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	<0.1	-	-
			Benzo(k)fluoranthene	mg/kg	0.1	<0.1	<0.1	-	-
			Benzo(a)pyrene	mg/kg	0.1	4.1	<0.1	4	103
			Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1	-	-
			Dibenzo(ah)anthracene	mg/kg	0.1	<0.1	<0.1	-	-
			Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1	-	-
			Carcinogenic PAHs, BaP TEQ <LOR=0*	TEQ (mg/kg)	0.2	4.1	<0.2	-	-
			Carcinogenic PAHs, BaP TEQ <LOR=LOR/2*	TEQ (mg/kg)	0.2	4.2	<0.2	-	-
			Carcinogenic PAHs, BaP TEQ <LOR=LOR*	TEQ (mg/kg)	0.3	4.3	<0.3	-	-
			Total PAH (18)	mg/kg	0.8	31	<0.8	-	-
		Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.5	0.5	-	99

Matrix Spike (MS) results are evaluated as the percentage recovery of an expected result, typically the concentration of analyte spiked into a field sub -sample during the sample preparation stage. The original sample's result is subtracted from the sub-sample result before determining the percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA/QC plan (ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

PAH (Polynuclear Aromatic Hydrocarbons) in Soil (continued)

Method: ME-(AU)-[ENV]AN420

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE263523.001	LB309464.004	Surrogates	2-fluorobiphenyl (Surrogate)	mg/kg	-	0.5	0.5	-	109
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.6	-	95
SE263523.020	LB309677.004		Naphthalene	mg/kg	0.1	4.2	<0.1	4	104
			2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	-	-
			1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	-	-
			Acenaphthylene	mg/kg	0.1	4.0	<0.1	4	100
			Acenaphthene	mg/kg	0.1	4.3	<0.1	4	108
			Fluorene	mg/kg	0.1	<0.1	<0.1	-	-
			Phenanthrene	mg/kg	0.1	3.9	<0.1	4	98
			Anthracene	mg/kg	0.1	4.3	<0.1	4	109
			Fluoranthene	mg/kg	0.1	4.3	<0.1	4	106
			Pyrene	mg/kg	0.1	4.3	<0.1	4	107
			Benzo(a)anthracene	mg/kg	0.1	<0.1	<0.1	-	-
			Chrysene	mg/kg	0.1	<0.1	<0.1	-	-
			Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	<0.1	-	-
			Benzo(k)fluoranthene	mg/kg	0.1	<0.1	<0.1	-	-
			Benzo(a)pyrene	mg/kg	0.1	4.2	<0.1	4	105
			Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1	-	-
			Dibenzo(ah)anthracene	mg/kg	0.1	<0.1	<0.1	-	-
			Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1	-	-
			Carcinogenic PAHs, BaP TEQ <LOR=0*	TEQ (mg/kg)	0.2	4.2	<0.2	-	-
			Carcinogenic PAHs, BaP TEQ <LOR=LOR/2*	TEQ (mg/kg)	0.2	4.3	<0.2	-	-
			Carcinogenic PAHs, BaP TEQ <LOR=LOR*	TEQ (mg/kg)	0.3	4.3	<0.3	-	-
			Total PAH (18)	mg/kg	0.8	34	<0.8	-	-
		Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.5	0.5	-	101
			2-fluorobiphenyl (Surrogate)	mg/kg	-	0.5	0.5	-	101
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5	-	104

PCBs in Soil

Method: ME-(AU)-[ENV]AN420

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE263523.001	LB309464.004		Arochlor 1016	mg/kg	0.2	<0.2	<0.2	-	-
			Arochlor 1221	mg/kg	0.2	<0.2	<0.2	-	-
			Arochlor 1232	mg/kg	0.2	<0.2	<0.2	-	-
			Arochlor 1242	mg/kg	0.2	<0.2	<0.2	-	-
			Arochlor 1248	mg/kg	0.2	<0.2	<0.2	-	-
			Arochlor 1254	mg/kg	0.2	<0.2	<0.2	-	-
			Arochlor 1260	mg/kg	0.2	0.4	<0.2	0.4	89
			Arochlor 1262	mg/kg	0.2	<0.2	<0.2	-	-
			Arochlor 1268	mg/kg	0.2	<0.2	<0.2	-	-
			Total PCBs (Arochlors)	mg/kg	1	<1	<1	-	-
		Surrogates	TCMX (Surrogate)	mg/kg	-	0	0	-	103
SE263523.020	LB309677.004		Arochlor 1016	mg/kg	0.2	<0.2	<0.2	-	-
			Arochlor 1221	mg/kg	0.2	<0.2	<0.2	-	-
			Arochlor 1232	mg/kg	0.2	<0.2	<0.2	-	-
			Arochlor 1242	mg/kg	0.2	<0.2	<0.2	-	-
			Arochlor 1248	mg/kg	0.2	<0.2	<0.2	-	-
			Arochlor 1254	mg/kg	0.2	<0.2	<0.2	-	-
			Arochlor 1260	mg/kg	0.2	0.5	<0.2	0.4	121
			Arochlor 1262	mg/kg	0.2	<0.2	<0.2	-	-
			Arochlor 1268	mg/kg	0.2	<0.2	<0.2	-	-
			Total PCBs (Arochlors)	mg/kg	1	<1	<1	-	-
		Surrogates	TCMX (Surrogate)	mg/kg	-	0	0	-	102

Speciated Phenols in Soil

Method: ME-(AU)-[ENV]AN420

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE263523.001	LB309465.004		Phenol	mg/kg	0.5	1.0	<0.5	1	102
			2-methyl phenol (o-cresol)	mg/kg	0.5	<0.5	<0.5	-	-
			3/4-methyl phenol (m/p-cresol)	mg/kg	1	<1	<1	-	-
			Total Cresol	mg/kg	1.5	<1.5	<1.5	-	-
			2-chlorophenol	mg/kg	0.5	<0.5	<0.5	-	-
			2,4-dimethylphenol	mg/kg	0.5	<0.5	<0.5	-	-
			2,6-dichlorophenol	mg/kg	0.5	<0.5	<0.5	-	-

Matrix Spike (MS) results are evaluated as the percentage recovery of an expected result, typically the concentration of analyte spiked into a field sub -sample during the sample preparation stage. The original sample's result is subtracted from the sub-sample result before determining the percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA/QC plan (ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

Speciated Phenols in Soil (continued)

Method: ME-(AU)-[ENV]AN420

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE263523.001	LB309465.004		2,4-dichlorophenol	mg/kg	0.5	0.8	<0.5	1	78
			4-chloro-3-methylphenol	mg/kg	2	<2	<2	-	-
			2,4,6-trichlorophenol	mg/kg	0.5	0.9	<0.5	1	90
			2-nitrophenol	mg/kg	0.5	<0.5	<0.5	-	-
			4-nitrophenol	mg/kg	1	<1	<1	-	-
			2,4,5-trichlorophenol	mg/kg	0.5	0.8	<0.5	-	-
			2,3,4,6/2,3,5,6-tetrachlorophenol	mg/kg	1	<1	<1	-	-
			Pentachlorophenol	mg/kg	0.5	0.9	<0.5	1	90
			2,4-dinitrophenol	mg/kg	2	<2	<2	-	-
		Surrogates	2,4,6-Tribromophenol (Surrogate)	mg/kg	-	5.5	5.3	-	110
			d5-phenol (Surrogate)	mg/kg	-	2.0	1.8	-	99
SE263523.020	LB309653.004		Phenol	mg/kg	0.5	1.3	<0.5	1	128
			2-methyl phenol (o-cresol)	mg/kg	0.5	<0.5	<0.5	-	-
			3/4-methyl phenol (m/p-cresol)	mg/kg	1	<1	<1	-	-
			Total Cresol	mg/kg	1.5	<1.5	<1.5	-	-
			2-chlorophenol	mg/kg	0.5	<0.5	<0.5	-	-
			2,4-dimethylphenol	mg/kg	0.5	<0.5	<0.5	-	-
			2,6-dichlorophenol	mg/kg	0.5	<0.5	<0.5	-	-
			2,4-dichlorophenol	mg/kg	0.5	0.9	<0.5	1	88
			4-chloro-3-methylphenol	mg/kg	2	<2	<2	-	-
			2,4,6-trichlorophenol	mg/kg	0.5	0.9	<0.5	1	94
			2-nitrophenol	mg/kg	0.5	<0.5	<0.5	-	-
			4-nitrophenol	mg/kg	1	<1	<1	-	-
			2,4,5-trichlorophenol	mg/kg	0.5	0.9	<0.5	-	-
			2,3,4,6/2,3,5,6-tetrachlorophenol	mg/kg	1	<1	<1	-	-
			Pentachlorophenol	mg/kg	0.5	0.7	<0.5	1	70
			2,4-dinitrophenol	mg/kg	2	<2	<2	-	-
		Surrogates	2,4,6-Tribromophenol (Surrogate)	mg/kg	-	5.8	5.5	-	116
			d5-phenol (Surrogate)	mg/kg	-	2.4	2.3	-	120

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES

Method: ME-(AU)-[ENV]AN040/AN320

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE263523.001	LB309466.004	Arsenic, As	mg/kg	1	48	7	50	83
		Cadmium, Cd	mg/kg	0.3	40	<0.3	50	79
		Chromium, Cr	mg/kg	0.5	64	22	50	84
		Copper, Cu	mg/kg	0.5	53	6.7	50	92
		Nickel, Ni	mg/kg	0.5	50	6.8	50	86
		Lead, Pb	mg/kg	1	78	37	50	82
		Zinc, Zn	mg/kg	2	120	80	50	77
SE263523.020	LB309687.004	Arsenic, As	mg/kg	1	57	17	50	82
		Cadmium, Cd	mg/kg	0.3	40	<0.3	50	79
		Chromium, Cr	mg/kg	0.5	81	46	50	70 ⑨
		Copper, Cu	mg/kg	0.5	55	15	50	79
		Nickel, Ni	mg/kg	0.5	52	13	50	80
		Lead, Pb	mg/kg	1	87	52	50	70

TRH (Total Recoverable Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN403

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE263523.001	LB309464.004		TRH C10-C14	mg/kg	20	53	<20	40	112
			TRH C15-C28	mg/kg	45	61	<45	40	123
			TRH C29-C36	mg/kg	45	52	<45	40	96
			TRH C37-C40	mg/kg	100	<100	<100	-	-
			TRH C10-C36 Total	mg/kg	110	170	<110	-	-
			TRH >C10-C40 Total (F bands)	mg/kg	210	<210	<210	-	-
		TRH F Bands	TRH >C10-C16	mg/kg	25	53	<25	40	112
			TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	53	<25	-	-
			TRH >C16-C34 (F3)	mg/kg	90	<90	<90	40	131
			TRH >C34-C40 (F4)	mg/kg	120	<120	<120	-	-
SE263523.020	LB309677.004		TRH C10-C14	mg/kg	20	45	<20	40	109
			TRH C15-C28	mg/kg	45	45	<45	40	109
			TRH C29-C36	mg/kg	45	<45	<45	40	94
			TRH C37-C40	mg/kg	100	<100	<100	-	-

Matrix Spike (MS) results are evaluated as the percentage recovery of an expected result, typically the concentration of analyte spiked into a field sub -sample during the sample preparation stage. The original sample's result is subtracted from the sub-sample result before determining the percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA/QC plan (ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

TRH (Total Recoverable Hydrocarbons) in Soil (continued)

Method: ME-(AU)-[ENV]AN403

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE263523.020	LB309677.004		TRH C10-C36 Total	mg/kg	110	<110	<110	-	-
			TRH >C10-C40 Total (F bands)	mg/kg	210	<210	<210	-	-
		TRH F	TRH >C10-C16	mg/kg	25	46	<25	40	110
		Bands	TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	46	<25	-	-
			TRH >C16-C34 (F3)	mg/kg	90	<90	<90	40	106
			TRH >C34-C40 (F4)	mg/kg	120	<120	<120	-	-

VOC's in Soil

Method: ME-(AU)-[ENV]AN433

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE263523.001	LB309470.004	Monocyclic	Benzene	mg/kg	0.1	4.3	<0.1	5	85
		Aromatic	Toluene	mg/kg	0.1	5.0	<0.1	5	101
			Ethylbenzene	mg/kg	0.1	4.8	<0.1	5	96
			m/p-xylene	mg/kg	0.2	11	<0.2	10	105
			o-xylene	mg/kg	0.1	5.3	<0.1	5	105
		Polycyclic	Naphthalene (VOC)*	mg/kg	0.1	<0.1	<0.1	-	-
		Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	11.8	9.5	10	118
			d8-toluene (Surrogate)	mg/kg	-	12.0	9.6	10	120
			Bromofluorobenzene (Surrogate)	mg/kg	-	12.1	10.8	10	121
		Totals	Total BTEX*	mg/kg	0.6	30	<0.6	-	-
			Total Xylenes*	mg/kg	0.3	16	<0.3	-	-
SE263523.020	LB309678.004	Monocyclic	Benzene	mg/kg	0.1	3.7	<0.1	5	75
		Aromatic	Toluene	mg/kg	0.1	4.0	<0.1	5	80
			Ethylbenzene	mg/kg	0.1	4.1	<0.1	5	82
			m/p-xylene	mg/kg	0.2	8.3	<0.2	10	83
			o-xylene	mg/kg	0.1	4.2	<0.1	5	84
		Polycyclic	Naphthalene (VOC)*	mg/kg	0.1	<0.1	<0.1	-	-
		Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	7.3	7.1	10	73
			d8-toluene (Surrogate)	mg/kg	-	6.6	6.5	10	66 ①
			Bromofluorobenzene (Surrogate)	mg/kg	-	8.2	7.6	10	82
		Totals	Total BTEX*	mg/kg	0.6	24	<0.6	-	-
			Total Xylenes*	mg/kg	0.3	13	<0.3	-	-

Volatile Petroleum Hydrocarbons in Soil

Method: ME-(AU)-[ENV]AN433

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE263523.001	LB309470.004		TRH C6-C10	mg/kg	25	99	<25	92.5	107
			TRH C6-C9	mg/kg	20	85	<20	80	106
		Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	11.8	9.5	10	118
			d8-toluene (Surrogate)	mg/kg	-	12.0	9.6	10	120
			Bromofluorobenzene (Surrogate)	mg/kg	-	12.1	10.8	-	121
		VPH F	Benzene (F0)	mg/kg	0.1	4.3	<0.1	-	-
		Bands	TRH C6-C10 minus BTEX (F1)	mg/kg	25	69	<25	62.5	110
SE263523.020	LB309678.004		TRH C6-C10	mg/kg	25	78	<25	92.5	85
			TRH C6-C9	mg/kg	20	72	<20	80	89
		Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	7.3	7.1	10	73
			d8-toluene (Surrogate)	mg/kg	-	6.6	6.5	10	66 ①
			Bromofluorobenzene (Surrogate)	mg/kg	-	8.2	7.6	-	82
		VPH F	Benzene (F0)	mg/kg	0.1	3.7	<0.1	-	-
		Bands	TRH C6-C10 minus BTEX (F1)	mg/kg	25	54	<25	62.5	86

Matrix spike duplicates are calculated as Relative Percent Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The original result is the analyte concentration of the matrix spike. The Duplicate result is the analyte concentration of the matrix spike duplicate.

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the

No matrix spike duplicates were required for this job.

Samples analysed as received.

Solid samples expressed on a dry weight basis.

QC criteria are subject to internal review according to the SGS QA/QC plan and may be provided on request or alternatively can be found here: https://www.sgs.com.au/~/media/Local/Australia/Documents/Technical Documents/MP-AU-ENV-QU-022 QA QC Plan.pdf

*	NATA accreditation does not cover the performance of this service.
**	Indicative data, theoretical holding time exceeded.
***	Indicates that both * and ** apply.
-	Sample not analysed for this analyte.
IS	Insufficient sample for analysis.
LNR	Sample listed, but not received.
LOR	Limit of reporting.
QFH	QC result is above the upper tolerance.
QFL	QC result is below the lower tolerance.
①	At least 2 of 3 surrogates are within acceptance criteria.
②	RPD failed acceptance criteria due to sample heterogeneity.
③	Results less than 5 times LOR preclude acceptance criteria for RPD.
④	Recovery failed acceptance criteria due to matrix interference.
⑤	Recovery failed acceptance criteria due to the presence of significant concentration of analyte (i.e. the concentration of analyte exceeds the spike level).
⑥	LOR was raised due to sample matrix interference.
⑦	LOR was raised due to dilution of significantly high concentration of analyte in sample.
⑧	Reanalysis of sample in duplicate confirmed sample heterogeneity and inconsistency of results.
⑨	Recovery failed acceptance criteria due to sample heterogeneity.
⑩	LOR was raised due to high conductivity of the sample (required dilution).
†	Refer to relevant report comments for further information.

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ANALYTICAL REPORT

Accreditation No. 2562

CLIENT DETAILS

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Project	**P24050**
Order Number	**P24050**
Samples	27

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SGS Reference	**SE263523 R0**
Date Received	11 Apr 2024
Date Reported	18 Apr 2024

COMMENTS

Accredited for compliance with ISO/IEC 17025 - Testing. NATA accredited laboratory 2562(4354).

No respirable fibres detected in all soil samples using trace analysis technique.
Sample #3-6,12-20,24: A portion of the sample supplied has been sub-sampled for asbestos analysis in soil according to SGS In-house procedures due to large volume. We therefore cannot guarantee that the sub-sample is representative of the entire sample supplied. SGS Industries and Environment recommends supplying approximately 50-100g of sample in a separate container.
Asbestos analysed by Approved Identifiers Ravee Sivasubramaniam and Yusuf Kuthpudin

SIGNATORIES

S. Ravee

Ravee SIVASUBRAMANIAM
Hygiene Team Leader

RESULTS

Fibre Identification in soil — Method AN602

Laboratory Reference	Client Reference	Matrix	Sample Description	Date Sampled	Date Analysed	Fibre Identification	Est.%w/w*
SE263523.001	SP1 0.0-0.1	Soil	193g Clay, Sand, Rocks	09 Apr 2024	18 Apr 2024	No Asbestos Found at RL of 0.1g/kg	<0.01
SE263523.002	SP1 0.5-0.6	Soil	172g Clay, Sand, Rocks	09 Apr 2024	18 Apr 2024	No Asbestos Found at RL of 0.1g/kg	<0.01
SE263523.003	SP2 0.5-0.6	Soil	116g Clay, Sand, Rocks	09 Apr 2024	18 Apr 2024	No Asbestos Found at RL of 0.1g/kg Organic Fibres Detected	<0.01
SE263523.004	SP2 1.0-1.1	Soil	109g Clay, Sand, Rocks	09 Apr 2024	18 Apr 2024	No Asbestos Found at RL of 0.1g/kg	<0.01
SE263523.005	SP3 0.5-0.6	Soil	106g Clay, Sand, Rocks	09 Apr 2024	18 Apr 2024	No Asbestos Found at RL of 0.1g/kg	<0.01
SE263523.006	SP3 1.0-1.1	Soil	116g Clay, Sand, Rocks	09 Apr 2024	18 Apr 2024	No Asbestos Found at RL of 0.1g/kg	<0.01
SE263523.007	SP4 0.0-0.1	Soil	187g Clay, Sand, Rocks	09 Apr 2024	18 Apr 2024	No Asbestos Found at RL of 0.1g/kg	<0.01
SE263523.008	SP4 0.5-0.6	Soil	197g Clay, Sand, Rocks	09 Apr 2024	18 Apr 2024	No Asbestos Found at RL of 0.1g/kg	<0.01
SE263523.009	SP5 0.5-0.6	Soil	181g Clay, Sand, Rocks	09 Apr 2024	18 Apr 2024	No Asbestos Found at RL of 0.1g/kg	<0.01
SE263523.010	SP5 1.0-1.1	Soil	176g Clay, Sand, Rocks	09 Apr 2024	18 Apr 2024	No Asbestos Found at RL of 0.1g/kg	<0.01
SE263523.011	BH1 0.0-0.1	Soil	192g Clay, Sand, Rocks	09 Apr 2024	18 Apr 2024	No Asbestos Found at RL of 0.1g/kg	<0.01
SE263523.012	BH2 0.0-0.1	Soil	139g Clay, Sand, Rocks	09 Apr 2024	18 Apr 2024	No Asbestos Found at RL of 0.1g/kg	<0.01
SE263523.013	BH3 0.5-0.6	Soil	127g Clay, Sand, Rocks	09 Apr 2024	18 Apr 2024	No Asbestos Found at RL of 0.1g/kg	<0.01
SE263523.014	BH4 0.5-0.6	Soil	152g Clay, Sand, Rocks	09 Apr 2024	18 Apr 2024	No Asbestos Found at RL of 0.1g/kg	<0.01
SE263523.015	BH5 0.0-0.1	Soil	116g Clay, Sand, Rocks	09 Apr 2024	18 Apr 2024	No Asbestos Found at RL of 0.1g/kg	<0.01
SE263523.016	BH6 0.5-0.6	Soil	134g Clay, Sand, Rocks	09 Apr 2024	18 Apr 2024	No Asbestos Found at RL of 0.1g/kg	<0.01
SE263523.017	BH7 0.0-0.1	Soil	130g Clay, Sand, Rocks	09 Apr 2024	18 Apr 2024	No Asbestos Found at RL of 0.1g/kg	<0.01
SE263523.018	BH8 0.0-0.1	Soil	117g Clay, Sand, Rocks	09 Apr 2024	18 Apr 2024	No Asbestos Found at RL of 0.1g/kg	<0.01
SE263523.019	BH9 0.5-0.6	Soil	116g Clay, Sand, Rocks	09 Apr 2024	18 Apr 2024	No Asbestos Found at RL of 0.1g/kg	<0.01
SE263523.020	BH10 0.5-0.6	Soil	101g Clay, Sand, Rocks	09 Apr 2024	18 Apr 2024	No Asbestos Found at RL of 0.1g/kg	<0.01
SE263523.021	BH11 0.0-0.1	Soil	199g Clay, Sand, Rocks	09 Apr 2024	18 Apr 2024	No Asbestos Found at RL of 0.1g/kg	<0.01
SE263523.022	BH12 0.0-0.1	Soil	152g Clay, Sand, Rocks	09 Apr 2024	18 Apr 2024	No Asbestos Found at RL of 0.1g/kg	<0.01
SE263523.023	BH13 0.0-0.1	Soil	173g Clay, Sand, Soil, Rocks	09 Apr 2024	18 Apr 2024	No Asbestos Found at RL of 0.1g/kg Organic Fibres Detected	<0.01
SE263523.024	BH14 0.5-0.6	Soil	167g Clay, Sand, Rocks	09 Apr 2024	18 Apr 2024	No Asbestos Found at RL of 0.1g/kg	<0.01
SE263523.025	BH15 0.0-0.1	Soil	156g Clay, Sand, Soil, Rocks	09 Apr 2024	18 Apr 2024	No Asbestos Found at RL of 0.1g/kg Organic Fibres Detected	<0.01
SE263523.026	BH16 0.0-0.1	Soil	182g Clay, Sand, Soil, Rocks	09 Apr 2024	18 Apr 2024	No Asbestos Found at RL of 0.1g/kg Organic Fibres Detected	<0.01

RESULTS

Fibre Identification in soil — Method AN602

Laboratory Reference	Client Reference	Matrix	Sample Description	Date Sampled	Date Analysed	Fibre Identification	Est.%w/w*
SE263523.027	BH17 0.0-0.1	Soil	155g Clay, Sand, Rocks	09 Apr 2024	18 Apr 2024	No Asbestos Found at RL of 0.1g/kg	<0.01

METHOD SUMMARY

METHOD	METHODOLOGY SUMMARY
AN602/AS4964	Qualitative identification of chrysotile, amosite and crocidolite in bulk samples by polarised light microscopy (PLM) in conjunction with dispersion staining (DS). AS4964 provides the basis for this document. Unequivocal identification of the asbestos minerals present is made by obtaining sufficient diagnostic `clues`, which provide a reasonable degree of certainty, dispersion staining is a mandatory `clue` for positive identification. If sufficient `clues` are absent, then positive identification of asbestos is not possible. This procedure requires removal of suspect fibres/bundles from the sample which cannot be returned.
AN602/AS4964	Fibres/material that cannot be unequivocably identified as one of the three asbestos forms, will be reported as unknown mineral fibres (umf) The fibres detected may or may not be asbestos fibres.
AN602/AS4964	AS4964.2004 Method for the Qualitative Identification of Asbestos in Bulk Samples , Section 8.4, Trace Analysis Criteria, Note 4 states:"Depending upon sample condition and fibre type, the detection/reporting limit (RL) of this technique has been found to lie generally in the range of 1 in 1,000 to 1 in 10,000 parts by weight, equivalent to 1 to 0.1 g/kg."
AN602/AS4964	The sample can be reported “no asbestos found at the reporting limit (RL) of 0.1 g/kg” (<0.01%w/w) where AN602 section 4.5 of this method has been followed, and if- (a) no trace asbestos fibres have been detected (i.e. no ‘respirable ’ fibres): (b) the estimated weight of non-respirable asbestos fibre bundles and/or the estimated weight of asbestos in asbestos-containing materials are found to be less than 0.1g/kg: and (c) these non-respirable asbestos fibre bundles and/or the asbestos containing materials are only visible under stereo-microscope viewing conditions.

FOOTNOTES

Amosite	-	Brown Asbestos	NA	-	Not Analysed
Chrysotile	-	White Asbestos	LNR	-	Listed, Not Required
Crocidolite	-	Blue Asbestos	*	-	NATA accreditation does not cover the performance of this service .
Amphiboles	-	Amosite and/or Crocidolite	**	-	Indicative data, theoretical holding time exceeded.
			***	-	Indicates that both * and ** apply.

(In reference to soil samples only) This report does not comply with the analytical reporting recommendations in the Western Australian Department of Health Guidelines for the Assessment and Remediation and Management of Asbestos Contaminated sites in Western Australia - May 2009.

Unless it is reported that sampling has been performed by SGS, the samples have been analysed as received.

Where reported: 'Asbestos Detected': Asbestos detected by polarised light microscopy, including dispersion staining.
Where reported: 'No Asbestos Found': No Asbestos Found by polarised light microscopy , including dispersion staining.
Where reported: 'UMF Detected': Mineral fibres of unknown type detected by polarised light microscopy, including dispersion staining. Confirmation by another independent analytical technique may be necessary.

Even after disintegration it can be very difficult, or impossible, to detect the presence of asbestos in some asbestos -containing bulk materials using polarised light microscopy. This is due to the low grade or small length or diameter of asbestos fibres present in the material, or to the fact that very fine fibres have been distributed intimately throughout the materials.

The QC and MU criteria are subject to internal review according to the SGS QAQC plan and may be provided on request or alternatively can be found here: www.sgs.com.au/en-gb/environment-health-and-safety .

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This test report shall not be reproduced, except in full.

CHAIN OF CUSTODY & ANALYSIS REQUEST

SGS Environmental Services
Unit 16, 33 Maddox Street
Alexandria NSW 2015
Telephone No: (02) 85940400
Facsimile No: (02) 85940499
Email: au.samplereceipt.sydney@sgs.com

Company Name:	Lanterra Consulting Pty Limited	Project Name/No:	P24050
Address:	Unit 13/ 71 Leichhardt Street, Kingston ACT 2604	Purchase Order No:	
		Results Required By:	Standard TAT
		Telephone:	
Contact Name:	Katie Boulton	Facsimile:	
		Email Results:	katie@lanterra.com.au, chris@lanterra.com.au

Client Sample ID	Date Sampled	Lab Sample ID	LIQUID	SOIL	PRESERVATIVE		CL15	Asbestos	HOLD	CL13
SP1 0.0-0.1	09/04/2024	1		X		2	X	X		
SP1 0.5-0.6	09/04/2024	2		X		2	X	X		
SP1 1.0-1.1	09/04/2024			X		2			X	
SP1 1.6 -1.7	09/04/2024			X		2			X	
SP2 0.0-0.1	09/04/2024			X		2			X	
SP2 0.5-0.6	09/04/2024	3		X		2	X	X		
SP2 1.0-1.1	09/04/2024	4		X		2	X	X		
SP2 2.0-2.1	09/04/2024			X		2			X	
SP3 0.0-0.1	09/04/2024			X		2			X	
SP3 0.5-0.6	09/04/2024	5		X		2	X	X		
SP3 1.0-1.1	09/04/2024	6		X		2	X	X		
SP3 1.6 -1.7	09/04/2024			X		2			X	

SGS EHS Sydney COC
SE263523

Relinquished By: Katie Boulton	Date/Time: 10 April 2024	Received By:	Date/Time 11/04/24 @ 11.10
Samples Intact: (Yes) No	Temperature: Ambient / (Chilled)	Sample Cooler Sealed: Yes/ No	Laboratory Quotation No:
	Comments:		

source:SE_Autoscan.pdf page:1 SGS Ref: SE263523_COC

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		Telephone:	
Contact Name:	Katie Boulton	Facsimile:	
		Email Results:	katie@lanterra.com.au, chris@lanterra.com.au

Client Sample ID	Date Sampled	Lab Sample ID	LIQUID	SOIL	PRESERVATIVE	NO OF CONTAINERS	CL15	Asbestos	HOLD	CL13
SP4 0.0-0.1	09/04/2024	7		X		2	X	X		
SP4 0.5-0.6	09/04/2024	8		X		2	X	X		
SP4 1.0-1.1	09/04/2024			X		2			X	
SP4 2.0-2.1	09/04/2024			X		2			X	
SP5 0.0-0.1	09/04/2024			X		2			X	
SP5 0.5-0.6	09/04/2024	9		X		2	X	X		
SP5 1.0-1.1	09/04/2024	10		X		2	X	X		
BH1 0.0-0.1	09/04/2024	11		X		2	X	X		
BH1 0.5-0.6	09/04/2024			X		2			X	
BH1 1.0-1.1	09/04/2024			X		2			X	
BH2 0.0-0.1	09/04/2024	12		X		2	X	X		
BH2 0.5-0.6	09/04/2024			X		2			X	

Relinquished By: Katie Boulton	Date/Time: 10 April 2024	Received By:	Date/Time 11/04/24 @ 11.10
Samples Intact: (Yes)/ No	Temperature: Ambient / (Chilled)	Sample Cooler Sealed: Yes/ No	Laboratory Quotation No: 305438
	Comments:		

CHAIN OF CUSTODY & ANALYSIS REQUEST

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Alexandria NSW 2015
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Company Name:	Lanterra Consulting Pty Limited	Project Name/No:	P24050
Address:	Unit 13/ 71 Leichhardt Street, Kingston ACT 2604	Purchase Order No:	
		Results Required By:	Standard TAT
		Telephone:	
Contact Name:	Katie Boulton	Facsimile:	
		Email Results:	katie@lanterra.com.au, chris@lanterra.com.au

Client Sample ID	Date Sampled	Lab Sample ID	LIQUID	SOIL	PRESERVATIVE		CL15	Asbestos	HOLD	CL13													
BH2 1.0-1.1	09/04/2024			X		2			X														
BH3 0.0-0.1	09/04/2024			X		2			X														
BH3 0.5-0.6	09/04/2024	13		X		2	X	X															
BH3 1.0-1.1	09/04/2024			X		2			X														
BH3 2.0-2.1	09/04/2024			X		2			X														
BH4 0.0-0.1	09/04/2024			X		2			X														
BH4 0.5-0.6	09/04/2024	14		X		2	X	X															
BH4 1.0-1.1	09/04/2024			X		2			X														
BH5 0.0-0.1	09/04/2024	15		X		2	X	X															
BH5 0.5-0.6	09/04/2024			X		2			X														
BH5 1.0-1.1	09/04/2024			X		2			X														
BH6 0.0-0.1	09/04/2024			X		2			X														

Relinquished By: Katie Boulton	Date/Time: 10 April 2024	Received By: B. Rubasoy	Date/Time 11/04/24 @ 11:10
Samples Intact: (Yes)/ No	Temperature: Ambient / (Chilled)	Sample Cooler Sealed: Yes/ No	Laboratory Quotation No:
	Comments:		

CHAIN OF CUSTODY & ANALYSIS REQUEST

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Email: au.samplereceipt.sydney@sgs.com

Company Name:	Lanterra Consulting Pty Limited	Project Name/No:	P24050
Address:	Unit 13/ 71 Leichhardt Street, Kingston ACT 2604	Purchase Order No:	
		Results Required By:	Standard TAT
		Telephone:	
Contact Name:	Katie Boulton	Facsimile:	
		Email Results:	katie@lanterra.com.au, chris@lanterra.com.au

Client Sample ID	Date Sampled	Lab Sample ID	LIQUID	SOIL	PRESERVATIVE	NO OF CONTAINERS	CL15	Asbestos	HOLD	CL13
BH6 0.5-0.6	09/04/2024	16		X		2	X	X		
BH6 1.0-1.1	09/04/2024			X		2			X	
BH7 0.0-0.1	09/04/2024	17		X		2	X	X		
BH7 0.5-0.6	09/04/2024			X		2			X	
BH7 1.0-1.1	09/04/2024			X		2			X	
BH8 0.0-0.1	09/04/2024	18		X		2	X	X		
BH8 0.5-0.6	09/04/2024			X		2			X	
BH8 1.0-1.1	09/04/2024			X		2			X	
BH9 0.0-0.1	09/04/2024			X		2			X	
BH9 0.5-0.6	09/04/2024	19		X		2	X	X		
BH9 1.0-1.1	09/04/2024			X		2			X	
BH10 0.0-0.1	09/04/2024			X		2			X	

Relinquished By: Katie Boulton	Date/Time: 10 April 2024	Received By:	Date/Time 10/04/24 @ 11:10
Samples Intact: Yes/ No	Temperature: Ambient / Chilled	Sample Cooler Sealed: Yes/ No	Laboratory Quotation No: 305438
	Comments:		

CHAIN OF CUSTODY & ANALYSIS REQUEST

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Facsimile No: (02) 85940499
Email: au.samplereceipt.sydney@sgs.com

Company Name:	Lanterra Consulting Pty Limited	Project Name/No:	P24050
Address:	Unit 13/ 71 Leichhardt Street, Kingston ACT 2604	Purchase Order No:	
		Results Required By:	Standard TAT
		Telephone:	
Contact Name:	Katie Boulton	Facsimile:	
		Email Results:	katie@lanterra.com.au, chris@lanterra.com.au

Client Sample ID	Date Sampled	Lab Sample ID	LIQUID	SOIL	PRESERVATIVE		CL15	Asbestos	HOLD	CL13												
BH10 0.5-0.6	09/04/2024	20		X		2	X	X														
BH10 1.0-1.1	09/04/2024			X		2			X													
BH11 0.0-0.1	09/04/2024	21		X		2	X	X														
BH11 0.5-0.6	09/04/2024			X		2			X													
BH11 1.0-1.1	09/04/2024			X		2			X													
BH12 0.0-0.1	09/04/2024	22		X		2	X	X														
BH12 0.5-0.6	09/04/2024			X		2			X													
BH12 1.0-1.1	09/04/2024			X		2			X													
BH13 0.0-0.1	09/04/2024	23		X		2	X	X														
BH13 0.5-0.6	09/04/2024			X		2			X													
BH13 1.0-1.1	09/04/2024			X		2			X													
BH14 0.0-0.1	09/04/2024			X		2			X													

Relinquished By: Katie Boulton	Date/Time: 10 April 2024	Received By:	Date/Time 11/04/24 @ 11:40
Samples Intact: (Yes) No	Temperature: Ambient / (Chilled)	Sample Cooler Sealed: Yes/ No	Laboratory Quotation No:
	Comments:		

CHAIN OF CUSTODY & ANALYSIS REQUEST

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Company Name:	Lanterra Consulting Pty Limited	Project Name/No:	P24050
Address:	Unit 13/ 71 Leichhardt Street, Kingston ACT 2604	Purchase Order No:	
		Results Required By:	Standard TAT
		Telephone:	
Contact Name:	Katie Boulton	Facsimile:	
		Email Results:	katie@lanterra.com.au, chris@lanterra.com.au

Client Sample ID	Date Sampled	Lab Sample ID	LIQUID	SOIL	PRESERVATIVE	NO OF CONTAINERS	CL15	Asbestos	HOLD	CL13
BH14 0.5-0.6	09/04/2024	24		X		2	X	X		
BH14 1.0-1.1	09/04/2024			X		2			X	
BH15 0.0-0.1	09/04/2024	25		X		2	X	X		
BH15 0.5-0.6	09/04/2024			X		2			X	
BH15 1.0-1.1	09/04/2024			X		2			X	
BH16 0.0-0.1	09/04/2024	26		X		2	X	X		
BH16 0.5-0.6	09/04/2024			X		2			X	
BH16 1.0-1.1	09/04/2024			X		2			X	
BH17 0.0-0.1	09/04/2024	27		X		2	X	X		
BH17 0.5-0.6	09/04/2024			X		2			X	
BH17 1.0-1.1	09/04/2024			X		2			X	
BH18 0.0-0.1	09/04/2024			X		2			X	

Relinquished By: Katie Boulton	Date/Time: 10 April 2024	Received By:	Date/Time 11/04/24 @ 11:10
Samples Intact: Yes/ No	Temperature: Ambient / Chilled	Sample Cooler Sealed: Yes/ No	Laboratory Quotation No: 305438
	Comments:		

CHAIN OF CUSTODY & ANALYSIS REQUEST

SGS Environmental Services
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Alexandria NSW 2015
Telephone No: (02) 85940400
Facsimile No: (02) 85940499
Email: au.samplereceipt.sydney@sgs.com

Company Name:	Lanterra Consulting Pty Limited	Project Name/No:	P24050
Address:	Unit 13/ 71 Leichhardt Street, Kingston ACT 2604	Purchase Order No:	
		Results Required By:	Standard TAT
		Telephone:	
Contact Name:	Katie Boulton	Facsimile:	
		Email Results:	katie@lanterra.com.au, chris@lanterra.com.au

Client Sample ID	Date Sampled	Lab Sample ID	LIQUID	SOIL	PRESERVATIVE		CL15	Asbestos	HOLD	CL10	TRH, BTEX, PAH, 8 Metals											
BH18 0.5-0.6	09/04/2024			X		2			X													
BH18 1.0-1.1	09/04/2024			X		2	X	X														
QC1	09/04/2024	28		X		1				X												
QC2	09/04/2024			X		1					X											Please Forward to Envirolab
QC3	09/04/2024			X		1				X												
QC4	09/04/2024			X		1					X											Please Forward to Envirolab

Relinquished By: Katie Boulton	Date/Time: 10 April 2024	Received By: B. Rubasay	Date/Time 11/04/24 @ 11:40
Samples Intact: (Yes) No	Temperature: Ambient / (Chilled)	Sample Cooler Sealed: Yes/ No	Laboratory Quotation No:
	Comments:		

Yin, Emily (Sydney)

From: Katie Boulton <katie@lanterra.com.au>
Sent: Friday, 12 April 2024 4:48 PM
To: Yin, Emily (Sydney)
Subject: [EXTERNAL] RE: SE263523 - P24050

*** WARNING: this message is from an EXTERNAL SENDER. Please be cautious, particularly with links and attachments. ***

Good afternoon,

Missing samples will be sent out to you, sorry for missing those.

No analysis of sample SP5 1.6-1.9 is required.

Thank you!

Katie Boulton | Environmental Scientist | BEnvSc |
Lanterra Consulting Pty Ltd

lanterra consulting

P: 0422 753 932
E: katie@lanterra.com.au
Unit 13, 71 Leichhardt Street, Kingston, ACT, 2604

From: Yin, Emily (Sydney) <Emily.Yin@sgs.com>
Sent: Friday, April 12, 2024 11:53 AM
To: Chris Gunton <chris@lanterra.com.au>; Katie Boulton <katie@lanterra.com.au>
Cc: Luong, Thi Song Van (Sydney) <ThiSongVan.Luong@sgs.com>
Subject: SE263523 - P24050

Dear All,

Samples with red dots not received.
Extra sample SP5_1.6-1.9 received.
Do you want it analysed.
Please advise as soon as possible.
Thank You.

Regards,

Emily Yin
Environment, Health & Safety
Sample Receipt

SGS Australia Pty Ltd
Unit 16, 33 Maddox Street
Alexandria NSW 2015

Phone: +61 (0)2 8594 0400
Fax: +61 (0)2 8594 0499
E-mail: emily.yin@sgs.com

CHAIN OF CUSTODY & ANALYSIS REQUEST

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Alexandria NSW 2015
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Facsimile No: (02) 85940499
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Address:	Unit 13/ 71 Leichhardt Street, Kingston ACT 2604	Purchase Order No:	
		Results Required By:	Standard TAT
		Telephone:	
Contact Name:	Katie Boulton	Facsimile:	
		Email Results:	katie@lanterra.com.au, chris@lanterra.com.au

Client Sample ID	Date Sampled	Lab Sample ID	LIQUID	SOIL	PRESERVATIVE		CL15	Asbestos	HOLD	CL10	TRH, BTEX, PAH, 8 Metals											SE263523
BH18 0.5-0.6	09/04/2024			X		2			X													
BH18 1.0-1.1	09/04/2024			X		2	X	X														ATC 8317
QC1	09/04/2024			X		1				X												11/4/24
QC2	09/04/2024			X		1					X											**Please Forward to Envirolab**
QC3	09/04/2024			X		1				X												
QC4	09/04/2024			X		1					X											**Please Forward to Envirolab**

Relinquished By: Katie Boulton	Date/Time: 10 April 2024	Received By:	Date/Time
Samples Intact: Yes/ No	Temperature: Ambient / Chilled	Sample Cooler Sealed: Yes/ No	Laboratory Quotation No:
	Comments:		

SAMPLE RECEIPT ADVICE

SE263523

CLIENT DETAILS

Contact	Chris Gunton
Client	LANTERRA CONSULTING PTY LTD
Address	Unit 13, 71 Leichhardt Street Kingston ACT 2604
Telephone	0432 324 348
Facsimile	(Not specified)
Email	chris@lanterra.com.au
Project	**P24050**
Order Number	**P24050**
Samples	28

LABORATORY DETAILS

Manager	Huong Crawford
Laboratory	SGS Alexandria Environmental
Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	+61 2 8594 0400
Facsimile	+61 2 8594 0499
Email	au.environmental.sydney@sgs.com
Samples Received	Thu 11/4/2024
Report Due	Thu 18/4/2024
SGS Reference	**SE263523**

SUBMISSION DETAILS

This is to confirm that 28 samples were received on Thursday 11/4/2024. Results are expected to be ready by COB Thursday 18/4/2024.
Please quote SGS reference SE263523 when making enquiries. Refer below for details relating to sample integrity upon receipt.

Sample counts by matrix	28 Soil	Type of documentation received	COC
Date documentation received	11/4/2024	Samples received in good order	Yes
Samples received without headspace	Yes	Sample temperature upon receipt	15.3°C
Sample container provider	SGS	Turnaround time requested	Standard
Samples received in correct containers	Yes	Sufficient sample for analysis	Yes
Sample cooling method	Ice Bricks	Samples clearly labelled	Yes
Complete documentation received	Yes		

Unless otherwise instructed, water and bulk samples will be held for one month from date of report, and soil samples will be held for two months.

COMMENTS

46 soil samples have been placed on hold as no tests have been assigned for them by the client. These samples will not be processed.
1 Extra sample received - SP5 1.6-1.7

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SAMPLE RECEIPT ADVICE

SE263523

CLIENT DETAILS

Client LANTERRA CONSULTING PTY LTD

Project P24050

SUMMARY OF ANALYSIS

No.	Sample ID	OC Pesticides in Soil	OP Pesticides in Soil	PAH (Polynuclear Aromatic Hydrocarbons) in Soil	PCBs in Soil	Speciated Phenols in Soil	TRH (Total Recoverable Hydrocarbons) in Soil	VOC's in Soil	Volatile Petroleum Hydrocarbons in Soil
001	SP1 0.0-0.1	30	14	26	11	18	10	11	7
002	SP1 0.5-0.6	30	14	26	11	18	10	11	7
003	SP2 0.5-0.6	30	14	26	11	18	10	11	7
004	SP2 1.0-1.1	30	14	26	11	18	10	11	7
005	SP3 0.5-0.6	30	14	26	11	18	10	11	7
006	SP3 1.0-1.1	30	14	26	11	18	10	11	7
007	SP4 0.0-0.1	30	14	26	11	18	10	11	7
008	SP4 0.5-0.6	30	14	26	11	18	10	11	7
009	SP5 0.5-0.6	30	14	26	11	18	10	11	7
010	SP5 1.0-1.1	30	14	26	11	18	10	11	7
011	BH1 0.0-0.1	30	14	26	11	18	10	11	7
012	BH2 0.0-0.1	30	14	26	11	18	10	11	7
013	BH3 0.5-0.6	30	14	26	11	18	10	11	7
014	BH4 0.5-0.6	30	14	26	11	18	10	11	7
015	BH5 0.0-0.1	30	14	26	11	18	10	11	7
016	BH6 0.5-0.6	30	14	26	11	18	10	11	7
017	BH7 0.0-0.1	30	14	26	11	18	10	11	7
018	BH8 0.0-0.1	30	14	26	11	18	10	11	7
019	BH9 0.5-0.6	30	14	26	11	18	10	11	7
020	BH10 0.5-0.6	30	14	26	11	18	10	11	7
021	BH11 0.0-0.1	30	14	26	11	18	10	11	7
022	BH12 0.0-0.1	30	14	26	11	18	10	11	7
023	BH13 0.0-0.1	30	14	26	11	18	10	11	7
024	BH14 0.5-0.6	30	14	26	11	18	10	11	7

CONTINUED OVERLEAF

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Testing as per this table shall commence immediately unless the client intervenes with a correction .

SAMPLE RECEIPT ADVICE

SE263523

CLIENT DETAILS

Client LANTERRA CONSULTING PTY LTD

Project P24050

SUMMARY OF ANALYSIS

No.	Sample ID	OC Pesticides in Soil	OP Pesticides in Soil	PAH (Polynuclear Aromatic Hydrocarbons) in Soil	PCBs in Soil	Speciated Phenols in Soil	TRH (Total Recoverable Hydrocarbons) in Soil	VOC's in Soil	Volatile Petroleum Hydrocarbons in Soil
025	BH15 0.0-0.1	30	14	26	11	18	10	11	7
026	BH16 0.0-0.1	30	14	26	11	18	10	11	7
027	BH17 0.0-0.1	30	14	26	11	18	10	11	7
028	QC1	-	-	26	-	-	10	11	7

CONTINUED OVERLEAF

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SAMPLE RECEIPT ADVICE

SE263523

CLIENT DETAILS

Client LANTERRA CONSULTING PTY LTD

Project P24050

SUMMARY OF ANALYSIS

No.	Sample ID	Fibre Identification in soil	Mercury in Soil	Moisture Content	Total Recoverable Elements in Soil/Waste
001	SP1 0.0-0.1	3	1	1	7
002	SP1 0.5-0.6	3	1	1	7
003	SP2 0.5-0.6	3	1	1	7
004	SP2 1.0-1.1	3	1	1	7
005	SP3 0.5-0.6	3	1	1	7
006	SP3 1.0-1.1	3	1	1	7
007	SP4 0.0-0.1	3	1	1	7
008	SP4 0.5-0.6	3	1	1	7
009	SP5 0.5-0.6	3	1	1	7
010	SP5 1.0-1.1	3	1	1	7
011	BH1 0.0-0.1	3	1	1	7
012	BH2 0.0-0.1	3	1	1	7
013	BH3 0.5-0.6	3	1	1	7
014	BH4 0.5-0.6	3	1	1	7
015	BH5 0.0-0.1	3	1	1	7
016	BH6 0.5-0.6	3	1	1	7
017	BH7 0.0-0.1	3	1	1	7
018	BH8 0.0-0.1	3	1	1	7
019	BH9 0.5-0.6	3	1	1	7
020	BH10 0.5-0.6	3	1	1	7
021	BH11 0.0-0.1	3	1	1	7
022	BH12 0.0-0.1	3	1	1	7
023	BH13 0.0-0.1	3	1	1	7
024	BH14 0.5-0.6	3	1	1	7

CONTINUED OVERLEAF

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SAMPLE RECEIPT ADVICE

SE263523

CLIENT DETAILS

Client LANTERRA CONSULTING PTY LTD

Project P24050

SUMMARY OF ANALYSIS

No.	Sample ID	Fibre Identification in soil	Mercury in Soil	Moisture Content	Total Recoverable Elements in Soil/Waste
025	BH15 0.0-0.1	3	1	1	7
026	BH16 0.0-0.1	3	1	1	7
027	BH17 0.0-0.1	3	1	1	7
028	QC1	-	1	1	7

The above table represents SGS' interpretation of the client-supplied Chain Of Custody document.
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Testing as per this table shall commence immediately unless the client intervenes with a correction .

ANALYTICAL REPORT

Accreditation No. 2562

CLIENT DETAILS

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Project	**P24050**
Order Number	**P24050**
Samples	30

LABORATORY DETAILS

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SGS Reference	**SE263523A R0**
Date Received	16/4/2024
Date Reported	23/4/2024

COMMENTS

Accredited for compliance with ISO/IEC 17025 - Testing. NATA accredited laboratory 2562(4354).

No respirable fibres detected in all soil samples using trace analysis technique.
A portion of the sample supplied has been sub-sampled for asbestos analysis in soil according to SGS In-house procedures due to large volume. We therefore cannot guarantee that the sub-sample is representative of the entire sample supplied. SGS Industries and Environment recommends supplying approximately 50-100g of sample in a separate container.
Asbestos analysed by Approved Identifier Yusuf Kuthpudin

SIGNATORIES

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Chemist

Bennet LO
Senior Chemist

Dong LIANG
Metals/Inorganics Team Leader

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Ravee SIVASUBRAMANIAM
Hygiene Team Leader

Shane MCDERMOTT
Inorganic/Metals Chemist

Teresa NGUYEN
Organic Chemist

VOC's in Soil [AN433] Tested: 19/4/2024

PARAMETER	UOM	LOR	BH18 1.0-1.1 SOIL - 9/4/2024 SE263523A.029	QC3 SOIL - 9/4/2024 SE263523A.030
Benzene	mg/kg	0.1	<0.1	<0.1
Toluene	mg/kg	0.1	<0.1	<0.1
Ethylbenzene	mg/kg	0.1	<0.1	<0.1
m/p-xylene	mg/kg	0.2	<0.2	<0.2
o-xylene	mg/kg	0.1	<0.1	<0.1
Naphthalene (VOC)*	mg/kg	0.1	<0.1	<0.1
Total Xylenes*	mg/kg	0.3	<0.3	<0.3
Total BTEX*	mg/kg	0.6	<0.6	<0.6

Volatile Petroleum Hydrocarbons in Soil [AN433] Tested: 19/4/2024

PARAMETER	UOM	LOR	BH18 1.0-1.1 SOIL - 9/4/2024 SE263523A.029	QC3 SOIL - 9/4/2024 SE263523A.030
Benzene (F0)	mg/kg	0.1	<0.1	<0.1
TRH C6-C9	mg/kg	20	<20	<20
TRH C6-C10	mg/kg	25	<25	<25
TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25

TRH (Total Recoverable Hydrocarbons) in Soil [AN403] Tested: 18/4/2024

PARAMETER	UOM	LOR	BH18 1.0-1.1 SOIL - 9/4/2024 SE263523A.029	QC3 SOIL - 9/4/2024 SE263523A.030
TRH C10-C14	mg/kg	20	<20	<20
TRH C15-C28	mg/kg	45	<45	<45
TRH C29-C36	mg/kg	45	<45	<45
TRH C37-C40	mg/kg	100	<100	<100
TRH >C10-C16	mg/kg	25	<25	<25
TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	<25	<25
TRH >C16-C34 (F3)	mg/kg	90	<90	<90
TRH >C34-C40 (F4)	mg/kg	120	<120	<120
TRH C10-C36 Total	mg/kg	110	<110	<110
TRH >C10-C40 Total (F bands)	mg/kg	210	<210	<210

PAH (Polynuclear Aromatic Hydrocarbons) in Soil [AN420] Tested: 18/4/2024

PARAMETER	UOM	LOR	BH18 1.0-1.1 SOIL - 9/4/2024 SE263523A.029	QC3 SOIL - 9/4/2024 SE263523A.030
Naphthalene	mg/kg	0.1	<0.1	<0.1
2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1
1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1
Acenaphthylene	mg/kg	0.1	<0.1	<0.1
Acenaphthene	mg/kg	0.1	<0.1	<0.1
Fluorene	mg/kg	0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.1	<0.1	<0.1
Anthracene	mg/kg	0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.1	<0.1	<0.1
Pyrene	mg/kg	0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	0.1	<0.1	<0.1
Chrysene	mg/kg	0.1	<0.1	<0.1
Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	<0.1
Benzo(k)fluoranthene	mg/kg	0.1	<0.1	<0.1
Benzo(a)pyrene	mg/kg	0.1	<0.1	<0.1
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1
Dibenzo(ah)anthracene	mg/kg	0.1	<0.1	<0.1
Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1
Carcinogenic PAHs, BaP TEQ <LOR=0*	TEQ (mg/kg)	0.2	<0.2	<0.2
Carcinogenic PAHs, BaP TEQ <LOR=LOR*	TEQ (mg/kg)	0.3	<0.3	<0.3
Carcinogenic PAHs, BaP TEQ <LOR=LOR/2*	TEQ (mg/kg)	0.2	<0.2	<0.2
Total PAH (18)	mg/kg	0.8	<0.8	<0.8
Total PAH (NEPM/WHO 16)	mg/kg	0.8	<0.8	<0.8

Speciated Phenols in Soil [AN420] Tested: 19/4/2024

PARAMETER	UOM	LOR	BH18 1.0-1.1 SOIL - 9/4/2024 SE263523A.029
Phenol	mg/kg	0.5	<0.5
2-methyl phenol (o-cresol)	mg/kg	0.5	<0.5
3/4-methyl phenol (m/p-cresol)	mg/kg	1	<1
Total Cresol	mg/kg	1.5	<1.5
2-chlorophenol	mg/kg	0.5	<0.5
2,4-dimethylphenol	mg/kg	0.5	<0.5
2,6-dichlorophenol	mg/kg	0.5	<0.5
2,4-dichlorophenol	mg/kg	0.5	<0.5
2,4,6-trichlorophenol	mg/kg	0.5	<0.5
2-nitrophenol	mg/kg	0.5	<0.5
4-nitrophenol	mg/kg	1	<1
2,4,5-trichlorophenol	mg/kg	0.5	<0.5
2,3,4,6/2,3,5,6-tetrachlorophenol	mg/kg	1	<1
Pentachlorophenol	mg/kg	0.5	<0.5
2,4-dinitrophenol	mg/kg	2	<2
4-chloro-3-methylphenol	mg/kg	2	<2

OC Pesticides in Soil [AN420] Tested: 18/4/2024

PARAMETER	UOM	LOR	BH18 1.0-1.1 SOIL - 9/4/2024 SE263523A.029
Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1
Alpha BHC	mg/kg	0.1	<0.1
Lindane (gamma BHC)	mg/kg	0.1	<0.1
Heptachlor	mg/kg	0.1	<0.1
Aldrin	mg/kg	0.1	<0.1
Beta BHC	mg/kg	0.1	<0.1
Delta BHC	mg/kg	0.1	<0.1
Heptachlor epoxide	mg/kg	0.1	<0.1
o,p'-DDE*	mg/kg	0.1	<0.1
Alpha Endosulfan	mg/kg	0.2	<0.2
Gamma Chlordane	mg/kg	0.1	<0.1
Alpha Chlordane	mg/kg	0.1	<0.1
trans-Nonachlor	mg/kg	0.1	<0.1
p,p'-DDE	mg/kg	0.1	<0.1
Dieldrin	mg/kg	0.2	<0.2
Endrin	mg/kg	0.2	<0.2
o,p'-DDD*	mg/kg	0.1	<0.1
o,p'-DDT*	mg/kg	0.1	<0.1
Beta Endosulfan	mg/kg	0.2	<0.2
p,p'-DDD	mg/kg	0.1	<0.1
p,p'-DDT	mg/kg	0.1	<0.1
Endosulfan sulphate	mg/kg	0.1	<0.1
Endrin aldehyde	mg/kg	0.1	<0.1
Methoxychlor	mg/kg	0.1	<0.1
Endrin ketone	mg/kg	0.1	<0.1
Isodrin	mg/kg	0.1	<0.1
Mirex	mg/kg	0.1	<0.1
Total CLP OC Pesticides	mg/kg	1	<1
Total OC VIC EPA	mg/kg	1	<1

OP Pesticides in Soil [AN420] Tested: 18/4/2024

PARAMETER	UOM	LOR	BH18 1.0-1.1 SOIL - 9/4/2024 SE263523A.029
Dichlorvos	mg/kg	0.5	<0.5
Dimethoate	mg/kg	0.5	<0.5
Diazinon (Dimpylate)	mg/kg	0.5	<0.5
Fenitrothion	mg/kg	0.2	<0.2
Malathion	mg/kg	0.2	<0.2
Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2
Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2
Bromophos Ethyl	mg/kg	0.2	<0.2
Methidathion	mg/kg	0.5	<0.5
Ethion	mg/kg	0.2	<0.2
Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2
Total OP Pesticides*	mg/kg	1.7	<1.7

PCBs in Soil [AN420] Tested: 18/4/2024

PARAMETER	UOM	LOR	BH18 1.0-1.1 SOIL - 9/4/2024 SE263523A.029
Arochlor 1016	mg/kg	0.2	<0.2
Arochlor 1221	mg/kg	0.2	<0.2
Arochlor 1232	mg/kg	0.2	<0.2
Arochlor 1242	mg/kg	0.2	<0.2
Arochlor 1248	mg/kg	0.2	<0.2
Arochlor 1254	mg/kg	0.2	<0.2
Arochlor 1260	mg/kg	0.2	<0.2
Arochlor 1262	mg/kg	0.2	<0.2
Arochlor 1268	mg/kg	0.2	<0.2
Total PCBs (Arochlors)	mg/kg	1	<1

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES [AN040/AN320] Tested: 19/4/2024

PARAMETER	UOM	LOR	BH18 1.0-1.1 SOIL - 9/4/2024 SE263523A.029	QC3 SOIL - 9/4/2024 SE263523A.030
Arsenic, As	mg/kg	1	**8**	**7**
Cadmium, Cd	mg/kg	0.3	**0.6**	**0.4**
Chromium, Cr	mg/kg	0.5	**41**	**35**
Copper, Cu	mg/kg	0.5	**12**	**8.7**
Lead, Pb	mg/kg	1	**79**	**73**
Nickel, Ni	mg/kg	0.5	**11**	**9.4**
Zinc, Zn	mg/kg	2	**280**	**250**

Mercury in Soil [AN312] Tested: 19/4/2024

PARAMETER	UOM	LOR	BH18 1.0-1.1 SOIL - 9/4/2024 SE263523A.029	QC3 SOIL - 9/4/2024 SE263523A.030
Mercury	mg/kg	0.05	<0.05	**0.23**

Moisture Content [AN002] Tested: 19/4/2024

PARAMETER	UOM	LOR	BH18 1.0-1.1 SOIL - 9/4/2024 SE263523A.029	QC3 SOIL - 9/4/2024 SE263523A.030
% Moisture	%w/w	1	**8.2**	**8.4**

Fibre Identification in soil [AS4964/AN602] Tested: 18/4/2024

PARAMETER	UOM	LOR	BH18 1.0-1.1 SOIL - 9/4/2024 SE263523A.029
Asbestos Detected	No unit	-	No
Estimated Fibres*	%w/w	0.01	<0.01
Date Analysed*	No unit	-	22/04/2024 00:00

METHOD	METHODOLOGY SUMMARY
AN002	The test is carried out by drying (at either 40°C or 105°C) a known mass of sample in a weighed evaporating basin. After fully dry the sample is re-weighed. Samples such as sludge and sediment having high percentages of moisture will take some time in a drying oven for complete removal of water.
AN040/AN320	A portion of sample is digested with nitric acid to decompose organic matter and hydrochloric acid to complete the digestion of metals. The digest is then analysed by ICP OES with metals results reported on the dried sample basis. Based on USEPA method 200.8 and 6010C.
AN040	A portion of sample is digested with Nitric acid to decompose organic matter and Hydrochloric acid to complete the digestion of metals and then filtered for analysis by AAS or ICP as per USEPA Method 200.8.
AN312	Mercury by Cold Vapour AAS in Soils: After digestion with nitric acid, hydrogen peroxide and hydrochloric acid, mercury ions are reduced by stannous chloride reagent in acidic solution to elemental mercury. This mercury vapour is purged by nitrogen into a cold cell in an atomic absorption spectrometer or mercury analyser. Quantification is made by comparing absorbances to those of the calibration standards. Reference APHA 3112/3500
AN403	Total Recoverable Hydrocarbons: Determination of Hydrocarbons by gas chromatography after a solvent extraction. Detection is by flame ionisation detector (FID) that produces an electronic signal in proportion to the combustible matter passing through it. Total Recoverable Hydrocarbons (TRH) are routinely reported as four alkane groupings based on the carbon chain length of the compounds: C6-C9, C10-C14, C15-C28 and C29-C36 and in recognition of the NEPM 1999 (2013), >C10-C16 (F2), >C16-C34 (F3) and >C34-C40 (F4). F2 is reported directly and also corrected by subtracting Naphthalene (from VOC method AN433) where available.
AN403	Additionally, the volatile C6-C9 fraction may be determined by a purge and trap technique and GC/MS because of the potential for volatiles loss. Total Recoverable Hydrocarbons - Silica (TRH-Si) follows the same method of analysis after silica gel cleanup of the solvent extract. Aliphatic/Aromatic Speciation follows the same method of analysis after fractionation of the solvent extract over silica with differential polarity of the eluent solvents.
AN403	The GC/FID method is not well suited to the analysis of refined high boiling point materials (ie lubricating oils or greases) but is particularly suited for measuring diesel, kerosene and petrol if care to control volatility is taken. This method will detect naturally occurring hydrocarbons, lipids, animal fats, phenols and PAHs if they are present at sufficient levels, dependent on the use of specific cleanup/fractionation techniques. Reference USEPA 3510B, 8015B.
AN420	(SVOCs) including OC, OP, PCB, Herbicides, PAH, Phthalates and Speciated Phenols (etc) in soils, sediments and waters are determined by GCMS/ECD technique following appropriate solvent extraction process (Based on USEPA 3500C and 8270D).
AN420	SVOC Compounds: Semi-Volatile Organic Compounds (SVOCs) including OC, OP, PCB, Herbicides, PAH, Phthalates and Speciated Phenols in soils, sediments and waters are determined by GCMS/ECD technique following appropriate solvent extraction process (Based on USEPA 3500C and 8270D).
AN433	VOCs and C6-C9 Hydrocarbons by GC-MS P&T: VOC`s are volatile organic compounds. The sample is presented to a gas chromatograph via a purge and trap (P&T) concentrator and autosampler and is detected with a Mass Spectrometer (MSD). Solid samples are initially extracted with methanol whilst liquid samples are processed directly. References: USEPA 5030B, 8020A, 8260.
AN602/AS4964	Qualitative identification of chrysotile, amosite and crocidolite in bulk samples by polarised light microscopy (PLM) in conjunction with dispersion staining (DS). AS4964 provides the basis for this document. Unequivocal identification of the asbestos minerals present is made by obtaining sufficient diagnostic `clues`, which provide a reasonable degree of certainty, dispersion staining is a mandatory `clue` for positive identification. If sufficient `clues` are absent, then positive identification of asbestos is not possible. This procedure requires removal of suspect fibres/bundles from the sample which cannot be returned.
AN602/AS4964	Fibres/material that cannot be unequivocably identified as one of the three asbestos forms, will be reported as unknown mineral fibres (umf) The fibres detected may or may not be asbestos fibres.
AN602/AS4964	AS4964.2004 Method for the Qualitative Identification of Asbestos in Bulk Samples, Section 8.4, Trace Analysis Criteria, Note 4 states:"Depending upon sample condition and fibre type, the detection/reporting limit (RL) of this technique has been found to lie generally in the range of 1 in 1,000 to 1 in 10,000 parts by weight, equivalent to 1 to 0.1 g/kg."

AN602/AS4964	The sample can be reported “no asbestos found at the reporting limit (RL) of 0.1 g/kg” (<0.01%w/w) where AN602 section 4.5 of this method has been followed, and if- (a) no trace asbestos fibres have been detected (i.e. no ‘respirable ’ fibres): (b) the estimated weight of non-respirable asbestos fibre bundles and/or the estimated weight of asbestos in asbestos-containing materials are found to be less than 0.1g/kg: and (c) these non-respirable asbestos fibre bundles and/or the asbestos containing materials are only visible under stereo-microscope viewing conditions.

FOOTNOTES

*	NATA accreditation does not cover the performance of this service.	-	Not analysed.	UOM	Unit of Measure.
		NVL	Not validated.	LOR	Limit of Reporting.
**	Indicative data, theoretical holding time exceeded.	IS	Insufficient sample for analysis.	↑↓	Raised/lowered Limit of Reporting.
		LNR	Sample listed, but not received.		
***	Indicates that both * and ** apply.				

Unless it is reported that sampling has been performed by SGS, the samples have been analysed as received.
Solid samples expressed on a dry weight basis.

Where "Total" analyte groups are reported (for example, Total PAHs, Total OC Pesticides) the total will be calculated as the sum of the individual analytes, with those analytes that are reported as <LOR being assumed to be zero. The summed (Total) limit of reporting is calculated by summing the individual analyte LORs and dividing by two. For example, where 16 individual analytes are being summed and each has an LOR of 0.1 mg/kg, the "Totals" LOR will be 1.6 / 2 (0.8 mg/kg). Where only 2 analytes are being summed, the " Total" LOR will be the sum of those two LORs.

Some totals may not appear to add up because the total is rounded after adding up the raw values.

If reported, measurement uncertainty follow the ± sign after the analytical result and is expressed as the expanded uncertainty calculated using a coverage factor of 2, providing a level of confidence of approximately 95%, unless stated otherwise in the comments section of this report.

Results reported for samples tested under test methods with codes starting with ARS-SOP, radionuclide or gross radioactivity concentrations are expressed in becquerel (Bq) per unit of mass or volume or per wipe as stated on the report. Becquerel is the SI unit for activity and equals one nuclear transformation per second.
Note that in terms of units of radioactivity:

a. 1 Bq is equivalent to 27 pCi
b. 37 MBq is equivalent to 1 mCi

For results reported for samples tested under test methods with codes starting with ARS-SOP, less than (<) values indicate the detection limit for each radionuclide or parameter for the measurement system used. The respective detection limits have been calculated in accordance with ISO 11929.

The QC and MU criteria are subject to internal review according to the SGS QAQC plan and may be provided on request or alternatively can be found here: www.sgs.com.au/en-qb/environment-health-and-safety.

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STATEMENT OF QA/QC PERFORMANCE

SE263523A R0

CLIENT DETAILS

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Project	**P24050**
Order Number	**P24050**
Samples	30

LABORATORY DETAILS

Manager	Huong Crawford
Laboratory	SGS Alexandria Environmental
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SGS Reference	**SE263523A R0**
Date Received	16 Apr 2024
Date Reported	23 Apr 2024

COMMENTS

All the laboratory data for each environmental matrix was compared to SGS' stated Data Quality Objectives (DQO). Comments arising from the comparison were made and are reported below.

The data relating to sampling was taken from the Chain of Custody document.
This QA/QC Statement must be read in conjunction with the referenced Analytical Report.
The Statement and the Analytical Report must not be reproduced except in full.

All Data Quality Objectives were met (within the SGS Alexandria Environmental laboratory).

SAMPLE SUMMARY

Sample counts by matrix	2 Soil	Type of documentation received	COC
Date documentation received	16/4/2024	Samples received in good order	Yes
Samples received without headspace	Yes	Sample temperature upon receipt	15.3°C
Sample container provider	SGS	Turnaround time requested	Standard
Samples received in correct containers	Yes	Sufficient sample for analysis	Yes
Sample cooling method	Ice Bricks	Samples clearly labelled	Yes
Complete documentation received	Yes		

HOLDING TIME SUMMARY

SE263523A R0

SGS holding time criteria are drawn from current regulations and are highly dependent on sample container preservation as specified in the SGS "Field Sampling Guide for Containers and Holding Time" (ref: GU-(AU)-ENV.001). Soil samples guidelines are derived from NEPM "Schedule B(3) Guideline on Laboratory Analysis of Potentially Contaminated Soils". Water sample guidelines are derived from "AS/NZS 5667.1 : 1998 Water Quality - sampling part 1" and APHA "Standard Methods for the Examination of Water and Wastewater" 21st edition 2005.

Extraction and analysis holding time due dates listed are calculated from the date sampled, although holding times may be extended after laboratory extraction for some analytes. The due dates are the suggested dates that samples may be held before extraction or analysis and still be considered valid.

Extraction and analysis dates are shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria. If the

Fibre Identification in soil — Method: ME-(AU)-[ENV]AS4964/AN602

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH18 1.0-1.1	SE263523A.029	LB310058	09 Apr 2024	16 Apr 2024	09 Apr 2025	18 Apr 2024	09 Apr 2025	23 Apr 2024

Mercury in Soil — Method: ME-(AU)-[ENV]AN312

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH18 1.0-1.1	SE263523A.029	LB310148	09 Apr 2024	16 Apr 2024	07 May 2024	19 Apr 2024	07 May 2024	23 Apr 2024
QC3	SE263523A.030	LB310148	09 Apr 2024	16 Apr 2024	07 May 2024	19 Apr 2024	07 May 2024	23 Apr 2024

Moisture Content — Method: ME-(AU)-[ENV]AN002

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH18 1.0-1.1	SE263523A.029	LB310149	09 Apr 2024	16 Apr 2024	23 Apr 2024	19 Apr 2024	24 Apr 2024	22 Apr 2024
QC3	SE263523A.030	LB310149	09 Apr 2024	16 Apr 2024	23 Apr 2024	19 Apr 2024	24 Apr 2024	22 Apr 2024

OC Pesticides in Soil — Method: ME-(AU)-[ENV]AN420

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH18 1.0-1.1	SE263523A.029	LB310107	09 Apr 2024	16 Apr 2024	23 Apr 2024	18 Apr 2024	28 May 2024	22 Apr 2024
QC3	SE263523A.030	LB310107	09 Apr 2024	16 Apr 2024	23 Apr 2024	18 Apr 2024	28 May 2024	23 Apr 2024

OP Pesticides in Soil — Method: ME-(AU)-[ENV]AN420

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH18 1.0-1.1	SE263523A.029	LB310107	09 Apr 2024	16 Apr 2024	23 Apr 2024	18 Apr 2024	28 May 2024	23 Apr 2024
QC3	SE263523A.030	LB310107	09 Apr 2024	16 Apr 2024	23 Apr 2024	18 Apr 2024	28 May 2024	23 Apr 2024

PAH (Polynuclear Aromatic Hydrocarbons) in Soil — Method: ME-(AU)-[ENV]AN420

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH18 1.0-1.1	SE263523A.029	LB310107	09 Apr 2024	16 Apr 2024	23 Apr 2024	18 Apr 2024	28 May 2024	22 Apr 2024
QC3	SE263523A.030	LB310107	09 Apr 2024	16 Apr 2024	23 Apr 2024	18 Apr 2024	28 May 2024	22 Apr 2024

PCBs in Soil — Method: ME-(AU)-[ENV]AN420

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH18 1.0-1.1	SE263523A.029	LB310107	09 Apr 2024	16 Apr 2024	23 Apr 2024	18 Apr 2024	28 May 2024	22 Apr 2024
QC3	SE263523A.030	LB310107	09 Apr 2024	16 Apr 2024	23 Apr 2024	18 Apr 2024	28 May 2024	23 Apr 2024

Speciated Phenols in Soil — Method: ME-(AU)-[ENV]AN420

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH18 1.0-1.1	SE263523A.029	LB310110	09 Apr 2024	16 Apr 2024	23 Apr 2024	19 Apr 2024	29 May 2024	23 Apr 2024

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES — Method: ME-(AU)-[ENV]AN040/AN320

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH18 1.0-1.1	SE263523A.029	LB310147	09 Apr 2024	16 Apr 2024	06 Oct 2024	19 Apr 2024	06 Oct 2024	23 Apr 2024
QC3	SE263523A.030	LB310147	09 Apr 2024	16 Apr 2024	06 Oct 2024	19 Apr 2024	06 Oct 2024	23 Apr 2024

TRH (Total Recoverable Hydrocarbons) in Soil — Method: ME-(AU)-[ENV]AN403

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH18 1.0-1.1	SE263523A.029	LB310107	09 Apr 2024	16 Apr 2024	23 Apr 2024	18 Apr 2024	28 May 2024	22 Apr 2024
QC3	SE263523A.030	LB310107	09 Apr 2024	16 Apr 2024	23 Apr 2024	18 Apr 2024	28 May 2024	22 Apr 2024

VOC's in Soil — Method: ME-(AU)-[ENV]AN433

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH18 1.0-1.1	SE263523A.029	LB310146	09 Apr 2024	16 Apr 2024	23 Apr 2024	19 Apr 2024	23 Apr 2024	23 Apr 2024
QC3	SE263523A.030	LB310146	09 Apr 2024	16 Apr 2024	23 Apr 2024	19 Apr 2024	23 Apr 2024	23 Apr 2024

Volatile Petroleum Hydrocarbons in Soil — Method: ME-(AU)-[ENV]AN433

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
BH18 1.0-1.1	SE263523A.029	LB310146	09 Apr 2024	16 Apr 2024	23 Apr 2024	19 Apr 2024	23 Apr 2024	23 Apr 2024
QC3	SE263523A.030	LB310146	09 Apr 2024	16 Apr 2024	23 Apr 2024	19 Apr 2024	23 Apr 2024	23 Apr 2024

Surrogate results are evaluated against upper and lower limit criteria established in the SGS QA/QC plan (Ref: MP-(AU)-[ENV]QU-022). At least two of three routine level soil sample surrogate spike recoveries for BTEX/VOC are to be within 70-130% where control charts have not been developed and within the established control limits for charted surrogates. Matrix effects may void this as an acceptance criterion. Water sample surrogate spike recoveries are to be within 40-130%. The presence of emulsions, surfactants and particulates may void this as an acceptance criterion.

Result is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

OC Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Tetrachloro-m-xylene (TCMX) (Surrogate)	BH18 1.0-1.1	SE263523A.029	%	60 - 130%	111

OP Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
2-fluorobiphenyl (Surrogate)	BH18 1.0-1.1	SE263523A.029	%	60 - 130%	103
d14-p-terphenyl (Surrogate)	BH18 1.0-1.1	SE263523A.029	%	60 - 130%	114

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN420

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
2-fluorobiphenyl (Surrogate)	BH18 1.0-1.1	SE263523A.029	%	70 - 130%	103
	QC3	SE263523A.030	%	70 - 130%	99
d14-p-terphenyl (Surrogate)	BH18 1.0-1.1	SE263523A.029	%	70 - 130%	114
	QC3	SE263523A.030	%	70 - 130%	116
d5-nitrobenzene (Surrogate)	BH18 1.0-1.1	SE263523A.029	%	70 - 130%	124
	QC3	SE263523A.030	%	70 - 130%	114

PCBs in Soil

Method: ME-(AU)-[ENV]AN420

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
TCMX (Surrogate)	BH18 1.0-1.1	SE263523A.029	%	60 - 130%	110

Speciated Phenols in Soil

Method: ME-(AU)-[ENV]AN420

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
2,4,6-Tribromophenol (Surrogate)	BH18 1.0-1.1	SE263523A.029	%	70 - 130%	94
d5-phenol (Surrogate)	BH18 1.0-1.1	SE263523A.029	%	50 - 130%	99

VOC's in Soil

Method: ME-(AU)-[ENV]AN433

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	BH18 1.0-1.1	SE263523A.029	%	60 - 130%	84
	QC3	SE263523A.030	%	60 - 130%	83
d4-1,2-dichloroethane (Surrogate)	BH18 1.0-1.1	SE263523A.029	%	60 - 130%	77
	QC3	SE263523A.030	%	60 - 130%	79
d8-toluene (Surrogate)	BH18 1.0-1.1	SE263523A.029	%	60 - 130%	81
	QC3	SE263523A.030	%	60 - 130%	82

Volatile Petroleum Hydrocarbons in Soil

Method: ME-(AU)-[ENV]AN433

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	BH18 1.0-1.1	SE263523A.029	%	60 - 130%	84
	QC3	SE263523A.030	%	60 - 130%	83
d4-1,2-dichloroethane (Surrogate)	BH18 1.0-1.1	SE263523A.029	%	60 - 130%	77
	QC3	SE263523A.030	%	60 - 130%	79
d8-toluene (Surrogate)	BH18 1.0-1.1	SE263523A.029	%	60 - 130%	81
	QC3	SE263523A.030	%	60 - 130%	82

Blank results are evaluated against the limit of reporting (LOR), for the chosen method and its associated instrumentation, typically 2.5 times the statistically determined method detection limit (MDL).

Result is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

Mercury in Soil

Method: ME-(AU)-[ENV]AN312

Sample Number	Parameter	Units	LOR	Result
LB310148.001	Mercury	mg/kg	0.05	<0.05

OC Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result
LB310107.001		Alpha BHC	mg/kg	0.1	<0.1
		Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1
		Beta BHC	mg/kg	0.1	<0.1
		Lindane (gamma BHC)	mg/kg	0.1	<0.1
		Delta BHC	mg/kg	0.1	<0.1
		Heptachlor	mg/kg	0.1	<0.1
		Aldrin	mg/kg	0.1	<0.1
		Isodrin	mg/kg	0.1	<0.1
		Heptachlor epoxide	mg/kg	0.1	<0.1
		Gamma Chlordane	mg/kg	0.1	<0.1
		Alpha Chlordane	mg/kg	0.1	<0.1
		Alpha Endosulfan	mg/kg	0.2	<0.2
		p,p'-DDE	mg/kg	0.1	<0.1
		Dieldrin	mg/kg	0.2	<0.2
		Endrin	mg/kg	0.2	<0.2
		Beta Endosulfan	mg/kg	0.2	<0.2
		p,p'-DDD	mg/kg	0.1	<0.1
		Endrin aldehyde	mg/kg	0.1	<0.1
		Endosulfan sulphate	mg/kg	0.1	<0.1
		p,p'-DDT	mg/kg	0.1	<0.1
		Endrin ketone	mg/kg	0.1	<0.1
		Methoxychlor	mg/kg	0.1	<0.1
		Mirex	mg/kg	0.1	<0.1
	Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	107

OP Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result
LB310107.001		Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2
		Bromophos Ethyl	mg/kg	0.2	<0.2
		Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2
		Diazinon (Dimpylate)	mg/kg	0.5	<0.5
		Dichlorvos	mg/kg	0.5	<0.5
		Dimethoate	mg/kg	0.5	<0.5
		Ethion	mg/kg	0.2	<0.2
		Fenitrothion	mg/kg	0.2	<0.2
		Malathion	mg/kg	0.2	<0.2
		Methidathion	mg/kg	0.5	<0.5
		Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2
	Surrogates	2-fluorobiphenyl (Surrogate)	%	-	100
		d14-p-terphenyl (Surrogate)	%	-	114

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN420

Sample Number	Parameter	Units	LOR	Result
LB310107.001	Naphthalene	mg/kg	0.1	<0.1
	2-methylnaphthalene	mg/kg	0.1	<0.1
	1-methylnaphthalene	mg/kg	0.1	<0.1
	Acenaphthylene	mg/kg	0.1	<0.1
	Acenaphthene	mg/kg	0.1	<0.1
	Fluorene	mg/kg	0.1	<0.1
	Phenanthrene	mg/kg	0.1	<0.1
	Anthracene	mg/kg	0.1	<0.1
	Fluoranthene	mg/kg	0.1	<0.1
	Pyrene	mg/kg	0.1	<0.1
	Benzo(a)anthracene	mg/kg	0.1	<0.1
	Chrysene	mg/kg	0.1	<0.1
	Benzo(a)pyrene	mg/kg	0.1	<0.1

Blank results are evaluated against the limit of reporting (LOR), for the chosen method and its associated instrumentation, typically 2.5 times the statistically determined method detection limit (MDL).

Result is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

PAH (Polynuclear Aromatic Hydrocarbons) in Soil (continued)

Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result
LB310107.001		Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1
		Dibenzo(ah)anthracene	mg/kg	0.1	<0.1
		Benzo(ghi)perylene	mg/kg	0.1	<0.1
		Total PAH (18)	mg/kg	0.8	<0.8
	Surrogates	d5-nitrobenzene (Surrogate)	%	-	118
		2-fluorobiphenyl (Surrogate)	%	-	100
		d14-p-terphenyl (Surrogate)	%	-	114

PCBs in Soil

Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result
LB310107.001		Arochlor 1016	mg/kg	0.2	<0.2
		Arochlor 1221	mg/kg	0.2	<0.2
		Arochlor 1232	mg/kg	0.2	<0.2
		Arochlor 1242	mg/kg	0.2	<0.2
		Arochlor 1248	mg/kg	0.2	<0.2
		Arochlor 1254	mg/kg	0.2	<0.2
		Arochlor 1260	mg/kg	0.2	<0.2
		Arochlor 1262	mg/kg	0.2	<0.2
		Arochlor 1268	mg/kg	0.2	<0.2
		Total PCBs (Arochlors)	mg/kg	1	<1
	Surrogates	TCMX (Surrogate)	%	-	106

Speciated Phenols in Soil

Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result
LB310110.001		Phenol	mg/kg	0.5	<0.5
		2-methyl phenol (o-cresol)	mg/kg	0.5	<0.5
		3/4-methyl phenol (m/p-cresol)	mg/kg	1	<1
		2-chlorophenol	mg/kg	0.5	<0.5
		2,4-dimethylphenol	mg/kg	0.5	<0.5
		2,6-dichlorophenol	mg/kg	0.5	<0.5
		2,4-dichlorophenol	mg/kg	0.5	<0.5
		4-chloro-3-methylphenol	mg/kg	2	<2
		2,4,6-trichlorophenol	mg/kg	0.5	<0.5
		2-nitrophenol	mg/kg	0.5	<0.5
		4-nitrophenol	mg/kg	1	<1
		2,4,5-trichlorophenol	mg/kg	0.5	<0.5
		2,3,4,6/2,3,5,6-tetrachlorophenol	mg/kg	1	<1
		Pentachlorophenol	mg/kg	0.5	<0.5
		2,4-dinitrophenol	mg/kg	2	<2
	Surrogates	2,4,6-Tribromophenol (Surrogate)	%	-	72
		d5-phenol (Surrogate)	%	-	80

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES

Method: ME-(AU)-[ENV]AN040/AN320

Sample Number	Parameter	Units	LOR	Result
LB310147.001	Arsenic, As	mg/kg	1	<1
	Cadmium, Cd	mg/kg	0.3	<0.3
	Chromium, Cr	mg/kg	0.5	<0.5
	Copper, Cu	mg/kg	0.5	<0.5
	Nickel, Ni	mg/kg	0.5	<0.5
	Lead, Pb	mg/kg	1	<1
	Zinc, Zn	mg/kg	2	<2.0

TRH (Total Recoverable Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN403

Sample Number	Parameter	Units	LOR	Result
LB310107.001	TRH C10-C14	mg/kg	20	<20
	TRH C15-C28	mg/kg	45	<45
	TRH C29-C36	mg/kg	45	<45
	TRH C37-C40	mg/kg	100	<100
	TRH C10-C36 Total	mg/kg	110	<110

VOC's in Soil

Method: ME-(AU)-[ENV]AN433

Sample Number	Parameter	Units	LOR

Blank results are evaluated against the limit of reporting (LOR), for the chosen method and its associated instrumentation, typically 2.5 times the statistically determined method detection limit (MDL).

Result is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

VOC's in Soil (continued)

Method: ME-(AU)-[ENV]AN433

Sample Number		Parameter	Units	LOR	Result
LB310146.001	Monocyclic Aromatic Hydrocarbons	Benzene	mg/kg	0.1	<0.1
		Toluene	mg/kg	0.1	<0.1
		Ethylbenzene	mg/kg	0.1	<0.1
		m/p-xylene	mg/kg	0.2	<0.2
		o-xylene	mg/kg	0.1	<0.1
	Polycyclic VOCs	Naphthalene (VOC)*	mg/kg	0.1	<0.1
	Surrogates	d4-1,2-dichloroethane (Surrogate)	%	-	82
		d8-toluene (Surrogate)	%	-	83
		Bromofluorobenzene (Surrogate)	%	-	88
	Totals	Total BTEX*	mg/kg	0.6	<0.6

Volatile Petroleum Hydrocarbons in Soil

Method: ME-(AU)-[ENV]AN433

Sample Number		Parameter	Units	LOR	Result
LB310146.001		TRH C6-C9	mg/kg	20	<20
	Surrogates	d4-1,2-dichloroethane (Surrogate)	%	-	82

Duplicates are calculated as Relative Percentage Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

NOTE: The RPD reported is calculated from the unrounded data for the original and replicate result. Manual calculation of the RPD from the rounded data reported may

Mercury in Soil

Method: ME-(AU)-[ENV]AN312

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE263523A.030	LB310148.023	Mercury	mg/kg	0.05	0.23	0.14	57	47
SE263767.029	LB310148.014	Mercury	mg/kg	0.05	<0.05	<0.05	200	0

Moisture Content

Method: ME-(AU)-[ENV]AN002

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE263523A.030	LB310149.021	% Moisture	%w/w	1	8.4	8.4	42	0
SE263767.029	LB310149.011	% Moisture	%w/w	1	11.8	12.1	38	3

OC Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE263523A.029	LB310107.024		Alpha BHC	mg/kg	0.1	<0.1	<0.1	200	0
			Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	200	0
			Beta BHC	mg/kg	0.1	<0.1	<0.1	200	0
			Lindane (gamma BHC)	mg/kg	0.1	<0.1	<0.1	200	0
			Delta BHC	mg/kg	0.1	<0.1	<0.1	200	0
			Heptachlor	mg/kg	0.1	<0.1	<0.1	200	0
			Aldrin	mg/kg	0.1	<0.1	<0.1	200	0
			Isodrin	mg/kg	0.1	<0.1	<0.1	200	0
			Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	200	0
			Gamma Chlordane	mg/kg	0.1	<0.1	<0.1	200	0
			Alpha Chlordane	mg/kg	0.1	<0.1	<0.1	200	0
			Alpha Endosulfan	mg/kg	0.2	<0.2	<0.2	200	0
			o,p'-DDE*	mg/kg	0.1	<0.1	<0.1	200	0
			p,p'-DDE	mg/kg	0.1	<0.1	<0.1	200	0
			Dieldrin	mg/kg	0.2	<0.2	<0.2	200	0
			Endrin	mg/kg	0.2	<0.2	<0.2	200	0
			Beta Endosulfan	mg/kg	0.2	<0.2	<0.2	200	0
			o,p'-DDD*	mg/kg	0.1	<0.1	<0.1	200	0
			p,p'-DDD	mg/kg	0.1	<0.1	<0.1	200	0
			Endrin aldehyde	mg/kg	0.1	<0.1	<0.1	200	0
			Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1	200	0
			o,p'-DDT*	mg/kg	0.1	<0.1	<0.1	200	0
			p,p'-DDT	mg/kg	0.1	<0.1	<0.1	200	0
			Endrin ketone	mg/kg	0.1	<0.1	<0.1	200	0
			Methoxychlor	mg/kg	0.1	<0.1	<0.1	200	0
			Mirex	mg/kg	0.1	<0.1	<0.1	200	0
			trans-Nonachlor	mg/kg	0.1	<0.1	<0.1	200	0
			Total CLP OC Pesticides	mg/kg	1	<1	<1	200	0
			Total OC VIC EPA	mg/kg	1	<1	<1	200	0
		Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0.17	0.17	30	1

OP Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE263523A.029	LB310107.024		Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	<0.2	200	0
			Bromophos Ethyl	mg/kg	0.2	<0.2	<0.2	200	0
			Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2	<0.2	200	0
			Diazinon (Dimpylate)	mg/kg	0.5	<0.5	<0.5	200	0
			Dichlorvos	mg/kg	0.5	<0.5	<0.5	200	0
			Dimethoate	mg/kg	0.5	<0.5	<0.5	200	0
			Ethion	mg/kg	0.2	<0.2	<0.2	200	0
			Fenitrothion	mg/kg	0.2	<0.2	<0.2	200	0
			Malathion	mg/kg	0.2	<0.2	<0.2	200	0
			Methidathion	mg/kg	0.5	<0.5	<0.5	200	0
			Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	<0.2	200	0
			Total OP Pesticides*	mg/kg	1.7	<1.7	<1.7	200	0
		Surrogates	2-fluorobiphenyl (Surrogate)	mg/kg	-	0.5	0.5	30	9
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.6	0.6	30	3
SE263767.029	LB310107.014		Azinphos-methyl (Guthion)	mg/kg	0.2	<0.2	<0.2	200	0
			Bromophos Ethyl	mg/kg	0.2	<0.2	<0.2	200	0

Duplicates are calculated as Relative Percentage Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

NOTE: The RPD reported is calculated from the unrounded data for the original and replicate result. Manual calculation of the RPD from the rounded data reported may

OP Pesticides in Soil (continued)

Method: ME-(AU)-[ENV]AN420

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE263767.029	LB310107.014		Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	<0.2	<0.2	200	0
			Diazinon (Dimpylate)	mg/kg	0.5	<0.5	<0.5	200	0
			Dichlorvos	mg/kg	0.5	<0.5	<0.5	200	0
			Dimethoate	mg/kg	0.5	<0.5	<0.5	200	0
			Ethion	mg/kg	0.2	<0.2	<0.2	200	0
			Fenitrothion	mg/kg	0.2	<0.2	<0.2	200	0
			Malathion	mg/kg	0.2	<0.2	<0.2	200	0
			Methidathion	mg/kg	0.5	<0.5	<0.5	200	0
			Parathion-ethyl (Parathion)	mg/kg	0.2	<0.2	<0.2	200	0
			Total OP Pesticides*	mg/kg	1.7	<1.7	<1.7	200	0
		Surrogates	2-fluorobiphenyl (Surrogate)	mg/kg	-	0.5	0.5	30	4
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.6	0.6	30	2

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN420

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE263523A.029	LB310107.024		Naphthalene	mg/kg	0.1	<0.1	<0.1	200	0
			2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	200	0
			1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	200	0
			Acenaphthylene	mg/kg	0.1	<0.1	<0.1	200	0
			Acenaphthene	mg/kg	0.1	<0.1	<0.1	200	0
			Fluorene	mg/kg	0.1	<0.1	<0.1	200	0
			Phenanthrene	mg/kg	0.1	<0.1	<0.1	200	0
			Anthracene	mg/kg	0.1	<0.1	<0.1	200	0
			Fluoranthene	mg/kg	0.1	<0.1	<0.1	200	0
			Pyrene	mg/kg	0.1	<0.1	<0.1	200	0
			Benzo(a)anthracene	mg/kg	0.1	<0.1	<0.1	200	0
			Chrysene	mg/kg	0.1	<0.1	<0.1	200	0
			Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	<0.1	200	0
			Benzo(k)fluoranthene	mg/kg	0.1	<0.1	<0.1	200	0
			Benzo(a)pyrene	mg/kg	0.1	<0.1	<0.1	200	0
			Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1	200	0
			Dibenzo(ah)anthracene	mg/kg	0.1	<0.1	<0.1	200	0
			Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1	200	0
			Carcinogenic PAHs, BaP TEQ <LOR=0*	mg/kg	0.2	<0.2	<0.2	200	0
			Carcinogenic PAHs, BaP TEQ <LOR=LOR/2*	mg/kg	0.2	<0.2	<0.2	175	0
			Carcinogenic PAHs, BaP TEQ <LOR=LOR*	mg/kg	0.3	<0.3	<0.3	134	0
			Total PAH (18)	mg/kg	0.8	<0.8	<0.8	200	0
		Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.6	0.6	30	8
			2-fluorobiphenyl (Surrogate)	mg/kg	-	0.5	0.5	30	9
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.6	0.6	30	3
SE263767.029	LB310107.014		Naphthalene	mg/kg	0.1	<0.1	<0.1	200	0
			2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	200	0
			1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	200	0
			Acenaphthylene	mg/kg	0.1	<0.1	<0.1	200	0
			Acenaphthene	mg/kg	0.1	<0.1	<0.1	200	0
			Fluorene	mg/kg	0.1	<0.1	<0.1	200	0
			Phenanthrene	mg/kg	0.1	<0.1	<0.1	199	0
			Anthracene	mg/kg	0.1	<0.1	<0.1	200	0
			Fluoranthene	mg/kg	0.1	0.1	0.1	103	3
			Pyrene	mg/kg	0.1	0.1	0.1	114	1
			Benzo(a)anthracene	mg/kg	0.1	<0.1	<0.1	200	0
			Chrysene	mg/kg	0.1	<0.1	<0.1	200	0
			Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	<0.1	195	0
			Benzo(k)fluoranthene	mg/kg	0.1	<0.1	<0.1	200	0
			Benzo(a)pyrene	mg/kg	0.1	<0.1	<0.1	200	0
			Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1	200	0
			Dibenzo(ah)anthracene	mg/kg	0.1	<0.1	<0.1	200	0
			Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1	200	0
			Carcinogenic PAHs, BaP TEQ <LOR=0*	mg/kg	0.2	<0.2	<0.2	200	0
			Carcinogenic PAHs, BaP TEQ <LOR=LOR/2*	mg/kg	0.2	<0.2	<0.2	175	0
			Carcinogenic PAHs, BaP TEQ <LOR=LOR*	mg/kg	0.3	<0.3	<0.3	134	0

Duplicates are calculated as Relative Percentage Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

NOTE: The RPD reported is calculated from the unrounded data for the original and replicate result. Manual calculation of the RPD from the rounded data reported may

PAH (Polynuclear Aromatic Hydrocarbons) in Soil (continued)

Method: ME-(AU)-[ENV]AN420

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE263767.029	LB310107.014		Total PAH (18)	mg/kg	0.8	<0.8	<0.8	69	2
		Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.6	0.5	30	9
			2-fluorobiphenyl (Surrogate)	mg/kg	-	0.5	0.5	30	4
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.6	0.6	30	2

PCBs in Soil

Method: ME-(AU)-[ENV]AN420

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE263523A.029	LB310107.025		Arochlor 1016	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1221	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1232	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1242	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1248	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1254	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1260	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1262	mg/kg	0.2	<0.2	<0.2	200	0
			Arochlor 1268	mg/kg	0.2	<0.2	<0.2	200	0
			Total PCBs (Arochlors)	mg/kg	1	<1	<1	200	0
		Surrogates	TCMX (Surrogate)	mg/kg	-	0	0	30	1

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES

Method: ME-(AU)-[ENV]AN040/AN320

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE263523A.030	LB310147.023		Arsenic, As	mg/kg	1	7	7	44	10
			Cadmium, Cd	mg/kg	0.3	0.4	0.7	83	47
			Chromium, Cr	mg/kg	0.5	35	46	31	28
			Copper, Cu	mg/kg	0.5	8.7	11	35	26
			Nickel, Ni	mg/kg	0.5	9.4	11	35	20
			Lead, Pb	mg/kg	1	73	90	31	20
			Zinc, Zn	mg/kg	2	250	330	31	29
SE263767.029	LB310147.014		Arsenic, As	mg/kg	1	4	4	56	6
			Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	200	0
			Chromium, Cr	mg/kg	0.5	7.1	7.3	37	2
			Copper, Cu	mg/kg	0.5	0.6	<0.5	117	26
			Nickel, Ni	mg/kg	0.5	0.8	0.8	93	1
			Lead, Pb	mg/kg	1	9	10	41	7
			Zinc, Zn	mg/kg	2	20	21	40	6

TRH (Total Recoverable Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN403

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE263523A.029	LB310107.024		TRH C10-C14	mg/kg	20	<20	<20	200	0
			TRH C15-C28	mg/kg	45	<45	<45	200	0
			TRH C29-C36	mg/kg	45	<45	<45	200	0
			TRH C37-C40	mg/kg	100	<100	<100	200	0
			TRH C10-C36 Total	mg/kg	110	<110	<110	200	0
			TRH >C10-C40 Total (F bands)	mg/kg	210	<210	<210	200	0
		TRH F Bands	TRH >C10-C16	mg/kg	25	<25	<25	200	0
			TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	<25	<25	200	0
			TRH >C16-C34 (F3)	mg/kg	90	<90	<90	200	0
			TRH >C34-C40 (F4)	mg/kg	120	<120	<120	200	0
SE263767.029	LB310107.014		TRH C10-C14	mg/kg	20	<20	<20	200	0
			TRH C15-C28	mg/kg	45	<45	<45	200	0
			TRH C29-C36	mg/kg	45	<45	<45	173	0
			TRH C37-C40	mg/kg	100	<100	<100	200	0
			TRH C10-C36 Total	mg/kg	110	<110	<110	200	0
			TRH >C10-C40 Total (F bands)	mg/kg	210	<210	<210	200	0
		TRH F Bands	TRH >C10-C16	mg/kg	25	<25	<25	200	0
			TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	<25	<25	200	0
			TRH >C16-C34 (F3)	mg/kg	90	<90	<90	200	0
			TRH >C34-C40 (F4)	mg/kg	120	<120	<120	200	0

VOC's in Soil

Method: ME-(AU)-[ENV]AN433

Original	Duplicate	Parameter	Units	LOR

Duplicates are calculated as Relative Percentage Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

NOTE: The RPD reported is calculated from the unrounded data for the original and replicate result. Manual calculation of the RPD from the rounded data reported may

VOC's in Soil (continued)

Method: ME-(AU)-[ENV]AN433

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE263523A.030	LB310146.024	Monocyclic	Benzene	mg/kg	0.1	<0.1	<0.1	200	0
		Aromatic	Toluene	mg/kg	0.1	<0.1	<0.1	200	0
			Ethylbenzene	mg/kg	0.1	<0.1	<0.1	200	0
			m/p-xylene	mg/kg	0.2	<0.2	<0.2	200	0
			o-xylene	mg/kg	0.1	<0.1	<0.1	200	0
		Polycyclic	Naphthalene (VOC)*	mg/kg	0.1	<0.1	<0.1	200	0
		Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	7.9	8.0	50	1
			d8-toluene (Surrogate)	mg/kg	-	8.2	8.4	50	2
			Bromofluorobenzene (Surrogate)	mg/kg	-	8.3	8.6	50	3
		Totals	Total BTEX*	mg/kg	0.6	<0.6	<0.6	200	0
			Total Xylenes*	mg/kg	0.3	<0.3	<0.3	200	0
SE263767.029	LB310146.014	Monocyclic	Benzene	mg/kg	0.1	<0.1	<0.1	200	0
		Aromatic	Toluene	mg/kg	0.1	<0.1	<0.1	200	0
			Ethylbenzene	mg/kg	0.1	<0.1	<0.1	200	0
			m/p-xylene	mg/kg	0.2	<0.2	<0.2	200	0
			o-xylene	mg/kg	0.1	<0.1	<0.1	200	0
		Polycyclic	Naphthalene (VOC)*	mg/kg	0.1	<0.1	<0.1	200	0
		Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	8.6	8.4	50	2
			d8-toluene (Surrogate)	mg/kg	-	8.6	8.5	50	2
			Bromofluorobenzene (Surrogate)	mg/kg	-	8.9	8.8	50	1
		Totals	Total BTEX*	mg/kg	0.6	<0.6	<0.6	200	0
			Total Xylenes*	mg/kg	0.3	<0.3	<0.3	200	0

Volatile Petroleum Hydrocarbons in Soil

Method: ME-(AU)-[ENV]AN433

Original	Duplicate		Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE263523A.030	LB310146.024		TRH C6-C10	mg/kg	25	<25	<25	200	0
			TRH C6-C9	mg/kg	20	<20	<20	200	0
		Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	7.9	8.0	50	1
			d8-toluene (Surrogate)	mg/kg	-	8.2	8.4	50	2
			Bromofluorobenzene (Surrogate)	mg/kg	-	8.3	8.6	50	3
		VPH F Bands	Benzene (F0)	mg/kg	0.1	<0.1	<0.1	200	0
			TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	200	0
SE263767.029	LB310146.014		TRH C6-C10	mg/kg	25	<25	<25	200	0
			TRH C6-C9	mg/kg	20	<20	<20	200	0
		Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	8.6	8.4	50	2
			d8-toluene (Surrogate)	mg/kg	-	8.6	8.5	50	2
			Bromofluorobenzene (Surrogate)	mg/kg	-	8.9	8.8	50	1
		VPH F Bands	Benzene (F0)	mg/kg	0.1	<0.1	<0.1	200	0
			TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	<25	200	0

Laboratory Control Standard (LCS) results are evaluated against an expected result, typically the concentration of analyte spiked into the control during the sample preparation stage, producing a percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA /QC plan (Ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

Mercury in Soil

Method: ME-(AU)-[ENV]AN312

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB310148.002	Mercury	mg/kg	0.05	0.20	0.2	80 - 120	102

OC Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB310107.002		Delta BHC	mg/kg	0.1	0.2	0.2	60 - 140	117
		Heptachlor	mg/kg	0.1	0.2	0.2	60 - 140	116
		Aldrin	mg/kg	0.1	0.2	0.2	60 - 140	117
		Dieldrin	mg/kg	0.2	0.2	0.2	60 - 140	112
		Endrin	mg/kg	0.2	0.2	0.2	60 - 140	124
		p,p'-DDT	mg/kg	0.1	0.3	0.2	60 - 140	125
	Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0.16	0.15	40 - 130	109

OP Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB310107.002		Chlorpyrifos (Chlorpyrifos Ethyl)	mg/kg	0.2	2.2	2	60 - 140	110
		Diazinon (Dimpylate)	mg/kg	0.5	2.4	2	60 - 140	121
		Dichlorvos	mg/kg	0.5	2.0	2	60 - 140	99
		Ethion	mg/kg	0.2	2.8	2	60 - 140	139
	Surrogates	2-fluorobiphenyl (Surrogate)	mg/kg	-	0.6	0.5	40 - 130	111
		d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5	40 - 130	103

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB310107.002		Naphthalene	mg/kg	0.1	4.4	4	60 - 140	111
		Acenaphthylene	mg/kg	0.1	4.6	4	60 - 140	116
		Acenaphthene	mg/kg	0.1	4.6	4	60 - 140	114
		Phenanthrene	mg/kg	0.1	4.5	4	60 - 140	112
		Anthracene	mg/kg	0.1	4.6	4	60 - 140	114
		Fluoranthene	mg/kg	0.1	4.7	4	60 - 140	116
		Pyrene	mg/kg	0.1	4.3	4	60 - 140	106
		Benzo(a)pyrene	mg/kg	0.1	4.8	4	60 - 140	121
	Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.6	0.5	40 - 130	122
		2-fluorobiphenyl (Surrogate)	mg/kg	-	0.6	0.5	40 - 130	111
		d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5	40 - 130	103

PCBs in Soil

Method: ME-(AU)-[ENV]AN420

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB310107.002	Arochlor 1260	mg/kg	0.2	0.4	0.4	60 - 140	108

Speciated Phenols in Soil

Method: ME-(AU)-[ENV]AN420

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB310110.002		Phenol	mg/kg	0.5	1.2	1	70 - 130	116
		2,4-dichlorophenol	mg/kg	0.5	0.9	1	70 - 130	94
		2,4,6-trichlorophenol	mg/kg	0.5	0.9	1	70 - 130	94
		Pentachlorophenol	mg/kg	0.5	1.3	1	70 - 130	130
	Surrogates	2,4,6-Tribromophenol (Surrogate)	mg/kg	-	3.5	5	40 - 130	70
		d5-phenol (Surrogate)	mg/kg	-	1.4	2	40 - 130	71

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES

Method: ME-(AU)-[ENV]AN040/AN320

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB310147.002	Arsenic, As	mg/kg	1	320	318.22	80 - 120	102
	Cadmium, Cd	mg/kg	0.3	4.8	4.81	70 - 130	99
	Chromium, Cr	mg/kg	0.5	41	38.31	80 - 120	107
	Copper, Cu	mg/kg	0.5	300	290	80 - 120	104
	Nickel, Ni	mg/kg	0.5	180	187	80 - 120	97
	Lead, Pb	mg/kg	1	91	89.9	80 - 120	101
	Zinc, Zn	mg/kg	2	270	273	80 - 120	99

TRH (Total Recoverable Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN403

Sample Number	Parameter	Units	LOR

Laboratory Control Standard (LCS) results are evaluated against an expected result, typically the concentration of analyte spiked into the control during the sample preparation stage, producing a percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA /QC plan (Ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

TRH (Total Recoverable Hydrocarbons) in Soil (continued)

Method: ME-(AU)-[ENV]AN403

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB310107.002		TRH C10-C14	mg/kg	20	47	40	60 - 140	118
		TRH C15-C28	mg/kg	45	<45	40	60 - 140	111
		TRH C29-C36	mg/kg	45	<45	40	60 - 140	85
	TRH F Bands	TRH >C10-C16	mg/kg	25	47	40	60 - 140	117
		TRH >C16-C34 (F3)	mg/kg	90	<90	40	60 - 140	100
		TRH >C34-C40 (F4)	mg/kg	120	<120	20	60 - 140	82

VOC's in Soil

Method: ME-(AU)-[ENV]AN433

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB310146.002	Monocyclic	Benzene	mg/kg	0.1	4.3	5	60 - 140	86
	Aromatic	Toluene	mg/kg	0.1	4.5	5	60 - 140	91
		Ethylbenzene	mg/kg	0.1	4.5	5	60 - 140	90
		m/p-xylene	mg/kg	0.2	9.1	10	60 - 140	91
		o-xylene	mg/kg	0.1	4.6	5	60 - 140	92
	Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	9.4	10	70 - 130	94
		d8-toluene (Surrogate)	mg/kg	-	9.6	10	70 - 130	96
		Bromofluorobenzene (Surrogate)	mg/kg	-	9.3	10	70 - 130	93

Volatile Petroleum Hydrocarbons in Soil

Method: ME-(AU)-[ENV]AN433

Sample Number		Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB310146.002		TRH C6-C10	mg/kg	25	75	92.5	60 - 140	81
		TRH C6-C9	mg/kg	20	64	80	60 - 140	80
	Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	9.4	10	70 - 130	94
		Bromofluorobenzene (Surrogate)	mg/kg	-	9.3	10	70 - 130	93
	VPH F Bands	TRH C6-C10 minus BTEX (F1)	mg/kg	25	48	62.5	60 - 140	77

Matrix Spike (MS) results are evaluated as the percentage recovery of an expected result, typically the concentration of analyte spiked into a field sub -sample during the sample preparation stage. The original sample's result is subtracted from the sub-sample result before determining the percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA/QC plan (ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

Mercury in Soil

Method: ME-(AU)-[ENV]AN312

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE263767.020	LB310148.004	Mercury	mg/kg	0.05	0.20	<0.05	0.2	96

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN420

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE263767.020	LB310107.004		Naphthalene	mg/kg	0.1	4.3	<0.1	4	107
			2-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	-	-
			1-methylnaphthalene	mg/kg	0.1	<0.1	<0.1	-	-
			Acenaphthylene	mg/kg	0.1	4.4	<0.1	4	110
			Acenaphthene	mg/kg	0.1	4.4	<0.1	4	109
			Fluorene	mg/kg	0.1	<0.1	<0.1	-	-
			Phenanthrene	mg/kg	0.1	4.3	<0.1	4	107
			Anthracene	mg/kg	0.1	4.3	<0.1	4	107
			Fluoranthene	mg/kg	0.1	4.4	<0.1	4	110
			Pyrene	mg/kg	0.1	4.1	<0.1	4	103
			Benzo(a)anthracene	mg/kg	0.1	<0.1	<0.1	-	-
			Chrysene	mg/kg	0.1	<0.1	<0.1	-	-
			Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1	<0.1	-	-
			Benzo(k)fluoranthene	mg/kg	0.1	<0.1	<0.1	-	-
			Benzo(a)pyrene	mg/kg	0.1	4.6	<0.1	4	115
			Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1	<0.1	-	-
			Dibenzo(ah)anthracene	mg/kg	0.1	<0.1	<0.1	-	-
			Benzo(ghi)perylene	mg/kg	0.1	<0.1	<0.1	-	-
			Carcinogenic PAHs, BaP TEQ <LOR=0*	TEQ (mg/kg)	0.2	4.6	<0.2	-	-
			Carcinogenic PAHs, BaP TEQ <LOR=LOR/2*	TEQ (mg/kg)	0.2	4.7	<0.2	-	-
			Carcinogenic PAHs, BaP TEQ <LOR=LOR*	TEQ (mg/kg)	0.3	4.8	<0.3	-	-
			Total PAH (18)	mg/kg	0.8	35	<0.8	-	-
		Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.6	0.6	-	118
			2-fluorobiphenyl (Surrogate)	mg/kg	-	0.5	0.5	-	108
			d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.6	-	100

Speciated Phenols in Soil

Method: ME-(AU)-[ENV]AN420

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE263752.002	LB310110.004		Phenol	mg/kg	0.5	1.2	<0.5	1	122
			2-methyl phenol (o-cresol)	mg/kg	0.5	<0.5	<0.5	-	-
			3/4-methyl phenol (m/p-cresol)	mg/kg	1	<1	<1	-	-
			Total Cresol	mg/kg	1.5	<1.5	<1.5	-	-
			2-chlorophenol	mg/kg	0.5	<0.5	<0.5	-	-
			2,4-dimethylphenol	mg/kg	0.5	<0.5	<0.5	-	-
			2,6-dichlorophenol	mg/kg	0.5	<0.5	<0.5	-	-
			2,4-dichlorophenol	mg/kg	0.5	1.0	<0.5	1	100
			4-chloro-3-methylphenol	mg/kg	2	<2	<2	-	-
			2,4,6-trichlorophenol	mg/kg	0.5	1.0	<0.5	1	98
			2-nitrophenol	mg/kg	0.5	<0.5	<0.5	-	-
			4-nitrophenol	mg/kg	1	<1	<1	-	-
			2,4,5-trichlorophenol	mg/kg	0.5	<0.5	<0.5	-	-
			2,3,4,6/2,3,5,6-tetrachlorophenol	mg/kg	1	<1	<1	-	-
			Pentachlorophenol	mg/kg	0.5	0.8	<0.5	1	82
			2,4-dinitrophenol	mg/kg	2	<2	<2	-	-
		Surrogates	2,4,6-Tribromophenol (Surrogate)	mg/kg	-	4.5	4.3	-	90
			d5-phenol (Surrogate)	mg/kg	-	2.2	2.2	-	109

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES

Method: ME-(AU)-[ENV]AN040/AN320

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE263767.020	LB310147.004	Arsenic, As	mg/kg	1	46	3	50	86
		Cadmium, Cd	mg/kg	0.3	40	<0.3	50	81
		Chromium, Cr	mg/kg	0.5	52	5.4	50	92
		Copper, Cu	mg/kg	0.5	54	6.6	50	95
		Nickel, Ni	mg/kg	0.5	45	0.9	50	89
		Lead, Pb	mg/kg	1	55	9	50	91
		Zinc, Zn	mg/kg	2	55	6.6	50	97

Matrix Spike (MS) results are evaluated as the percentage recovery of an expected result, typically the concentration of analyte spiked into a field sub -sample during the sample preparation stage. The original sample's result is subtracted from the sub-sample result before determining the percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA/QC plan (ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

TRH (Total Recoverable Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN403

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE263767.020	LB310107.004		TRH C10-C14	mg/kg	20	53	<20	40	125
			TRH C15-C28	mg/kg	45	51	<45	40	113
			TRH C29-C36	mg/kg	45	<45	<45	40	88
			TRH C37-C40	mg/kg	100	<100	<100	-	-
			TRH C10-C36 Total	mg/kg	110	<110	<110	-	-
			TRH >C10-C40 Total (F bands)	mg/kg	210	<210	<210	-	-
		TRH F	TRH >C10-C16	mg/kg	25	52	<25	40	124
		Bands	TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	52	<25	-	-
			TRH >C16-C34 (F3)	mg/kg	90	<90	<90	40	96
			TRH >C34-C40 (F4)	mg/kg	120	<120	<120	-	-

VOC's in Soil

Method: ME-(AU)-[ENV]AN433

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE263767.020	LB310146.004	Monocyclic	Benzene	mg/kg	0.1	4.6	<0.1	5	91
		Aromatic	Toluene	mg/kg	0.1	4.8	<0.1	5	97
			Ethylbenzene	mg/kg	0.1	4.9	<0.1	5	98
			m/p-xylene	mg/kg	0.2	9.9	<0.2	10	99
			o-xylene	mg/kg	0.1	5.0	<0.1	5	100
		Polycyclic	Naphthalene (VOC)*	mg/kg	0.1	<0.1	<0.1	-	-
		Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	9.3	7.3	10	93
			d8-toluene (Surrogate)	mg/kg	-	9.5	7.4	10	95
			Bromofluorobenzene (Surrogate)	mg/kg	-	9.3	8.2	10	93
		Totals	Total BTEX*	mg/kg	0.6	29	<0.6	-	-
			Total Xylenes*	mg/kg	0.3	15	<0.3	-	-

Volatile Petroleum Hydrocarbons in Soil

Method: ME-(AU)-[ENV]AN433

QC Sample	Sample Number		Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE263767.020	LB310146.004		TRH C6-C10	mg/kg	25	80	<25	92.5	86
			TRH C6-C9	mg/kg	20	69	<20	80	86
		Surrogates	d4-1,2-dichloroethane (Surrogate)	mg/kg	-	9.3	7.3	10	93
			d8-toluene (Surrogate)	mg/kg	-	9.5	7.4	10	95
			Bromofluorobenzene (Surrogate)	mg/kg	-	9.3	8.2	-	93
		VPH F	Benzene (F0)	mg/kg	0.1	4.6	<0.1	-	-
		Bands	TRH C6-C10 minus BTEX (F1)	mg/kg	25	51	<25	62.5	81

Matrix spike duplicates are calculated as Relative Percent Difference (RPD) using the formula: RPD = | OriginalResult - ReplicateResult | x 100 / Mean

The original result is the analyte concentration of the matrix spike. The Duplicate result is the analyte concentration of the matrix spike duplicate.

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: MAD = 100 x SDL / Mean + LR

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifer when outside suggested criteria. Refer to the footnotes section at the

No matrix spike duplicates were required for this job.

Samples analysed as received.

Solid samples expressed on a dry weight basis.

QC criteria are subject to internal review according to the SGS QA/QC plan and may be provided on request or alternatively can be found here: https://www.sgs.com.au/~/media/Local/Australia/Documents/Technical Documents/MP-AU-ENV-QU-022 QA QC Plan.pdf

*	NATA accreditation does not cover the performance of this service.
**	Indicative data, theoretical holding time exceeded.
***	Indicates that both * and ** apply.
-	Sample not analysed for this analyte.
IS	Insufficient sample for analysis.
LNR	Sample listed, but not received.
LOR	Limit of reporting.
QFH	QC result is above the upper tolerance.
QFL	QC result is below the lower tolerance.
①	At least 2 of 3 surrogates are within acceptance criteria.
②	RPD failed acceptance criteria due to sample heterogeneity.
③	Results less than 5 times LOR preclude acceptance criteria for RPD.
④	Recovery failed acceptance criteria due to matrix interference.
⑤	Recovery failed acceptance criteria due to the presence of significant concentration of analyte (i.e. the concentration of analyte exceeds the spike level).
⑥	LOR was raised due to sample matrix interference.
⑦	LOR was raised due to dilution of significantly high concentration of analyte in sample.
⑧	Reanalysis of sample in duplicate confirmed sample heterogeneity and inconsistency of results.
⑨	Recovery failed acceptance criteria due to sample heterogeneity.
⑩	LOR was raised due to high conductivity of the sample (required dilution).
†	Refer to relevant report comments for further information.

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ANALYTICAL REPORT

Accreditation No. 2562

CLIENT DETAILS

Contact	Chris Gunton
Client	LANTERRA CONSULTING PTY LTD
Address	Unit 13, 71 Leichhardt Street Kingston ACT 2604
Telephone	0432 324 348
Facsimile	(Not specified)
Email	chris@lanterra.com.au
Project	**P24050**
Order Number	**P24050**
Samples	1

LABORATORY DETAILS

Manager	Huong Crawford
Laboratory	SGS Alexandria Environmental
Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	+61 2 8594 0400
Facsimile	+61 2 8594 0499
Email	au.environmental.sydney@sgs.com
SGS Reference	**SE263523A R0**
Date Received	16 Apr 2024
Date Reported	23 Apr 2024

COMMENTS

Accredited for compliance with ISO/IEC 17025 - Testing. NATA accredited laboratory 2562(4354).

No respirable fibres detected in all soil samples using trace analysis technique.
A portion of the sample supplied has been sub-sampled for asbestos analysis in soil according to SGS In-house procedures due to large volume. We therefore cannot guarantee that the sub-sample is representative of the entire sample supplied. SGS Industries and Environment recommends supplying approximately 50-100g of sample in a separate container.
Asbestos analysed by Approved Identifier Yusuf Kuthpudin

SIGNATORIES

Ravee SIVASUBRAMANIAM
Hygiene Team Leader

RESULTS

Fibre Identification in soil — Method AN602

Laboratory Reference	Client Reference	Matrix	Sample Description	Date Sampled	Date Analysed	Fibre Identification	Est.%w/w*
SE263523A.029	BH18 1.0-1.1	Soil	163g Clay, Sand, Rocks	09 Apr 2024	22 Apr 2024	No Asbestos Found at RL of 0.1g/kg	<0.01

METHOD SUMMARY

METHOD	METHODOLOGY SUMMARY
AN602/AS4964	Qualitative identification of chrysotile, amosite and crocidolite in bulk samples by polarised light microscopy (PLM) in conjunction with dispersion staining (DS). AS4964 provides the basis for this document. Unequivocal identification of the asbestos minerals present is made by obtaining sufficient diagnostic `clues`, which provide a reasonable degree of certainty, dispersion staining is a mandatory `clue` for positive identification. If sufficient `clues` are absent, then positive identification of asbestos is not possible. This procedure requires removal of suspect fibres/bundles from the sample which cannot be returned.
AN602/AS4964	Fibres/material that cannot be unequivocably identified as one of the three asbestos forms, will be reported as unknown mineral fibres (umf) The fibres detected may or may not be asbestos fibres.
AN602/AS4964	AS4964.2004 Method for the Qualitative Identification of Asbestos in Bulk Samples , Section 8.4, Trace Analysis Criteria, Note 4 states:"Depending upon sample condition and fibre type, the detection/reporting limit (RL) of this technique has been found to lie generally in the range of 1 in 1,000 to 1 in 10,000 parts by weight, equivalent to 1 to 0.1 g/kg."
AN602/AS4964	The sample can be reported “no asbestos found at the reporting limit (RL) of 0.1 g/kg” (<0.01%w/w) where AN602 section 4.5 of this method has been followed, and if- (a) no trace asbestos fibres have been detected (i.e. no ‘respirable ’ fibres): (b) the estimated weight of non-respirable asbestos fibre bundles and/or the estimated weight of asbestos in asbestos-containing materials are found to be less than 0.1g/kg: and (c) these non-respirable asbestos fibre bundles and/or the asbestos containing materials are only visible under stereo-microscope viewing conditions.

FOOTNOTES

Amosite	-	Brown Asbestos	NA	-	Not Analysed
Chrysotile	-	White Asbestos	LNR	-	Listed, Not Required
Crocidolite	-	Blue Asbestos	*	-	NATA accreditation does not cover the performance of this service .
Amphiboles	-	Amosite and/or Crocidolite	**	-	Indicative data, theoretical holding time exceeded.
			***	-	Indicates that both * and ** apply.

(In reference to soil samples only) This report does not comply with the analytical reporting recommendations in the Western Australian Department of Health Guidelines for the Assessment and Remediation and Management of Asbestos Contaminated sites in Western Australia - May 2009.

Unless it is reported that sampling has been performed by SGS, the samples have been analysed as received.

Where reported: 'Asbestos Detected': Asbestos detected by polarised light microscopy, including dispersion staining.
Where reported: 'No Asbestos Found': No Asbestos Found by polarised light microscopy , including dispersion staining.
Where reported: 'UMF Detected': Mineral fibres of unknown type detected by polarised light microscopy, including dispersion staining. Confirmation by another independent analytical technique may be necessary.

Even after disintegration it can be very difficult, or impossible, to detect the presence of asbestos in some asbestos -containing bulk materials using polarised light microscopy. This is due to the low grade or small length or diameter of asbestos fibres present in the material, or to the fact that very fine fibres have been distributed intimately throughout the materials.

The QC and MU criteria are subject to internal review according to the SGS QAQC plan and may be provided on request or alternatively can be found here: www.sgs.com.au/en-gb/environment-health-and-safety .

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CHAIN OF CUSTODY & ANALYSIS REQUEST

SGS Environmental Services
Unit 16, 33 Maddox Street
Alexandria NSW 2015
Telephone No: (02) 85940400
Facsimile No: (02) 85940499
Email: au.samplereceipt.sydney@sgs.com

Company Name:	Lanterra Consulting Pty Limited	Project Name/No:	P24050
Address:	Unit 13/ 71 Leichhardt Street, Kingston ACT 2604	Purchase Order No:	
		Results Required By:	Standard TAT
		Telephone:	
Contact Name:	Katie Boulton	Facsimile:	
		Email Results:	katie@lanterra.com.au, chris@lanterra.com.au

Client Sample ID	Date Sampled	Lab Sample ID	LIQUID	SOIL	PRESERVATIVE		CL15	Asbestos	HOLD	CL10	TRH, BTEX, PAH, 8 Metals											
BH18 1.0-1.1	09/04/2024	29		X		2	X	X														
QC3	09/04/2024	30		X		1				X												
QC4	09/04/2024			X		1					X											

SGS Alexandria Environmental
SE263523A COC
Received: 16 – Apr – 2024

Please Forward to Envirolab

Relinquished By: Katie Boulton	Date/Time: 15 April 2024	Received By:	Date/Time 16.4.24 10:20
Samples Intact: Yes/ No	Temperature: Ambient / Chilled 17.6	Sample Cooler Sealed: Yes/ No	Laboratory Quotation No:
	Comments: Missing samples from sample receipt no: 348622		

source: SE_Autoscan.pdf page: 10 SGS Ref: SE263523A_COC

SAMPLE RECEIPT ADVICE

SE263523A

CLIENT DETAILS

Contact	Chris Gunton
Client	LANTERRA CONSULTING PTY LTD
Address	Unit 13, 71 Leichhardt Street Kingston ACT 2604
Telephone	0432 324 348
Facsimile	(Not specified)
Email	chris@lanterra.com.au
Project	**P24050**
Order Number	**P24050**
Samples	30

LABORATORY DETAILS

Manager	Huong Crawford
Laboratory	SGS Alexandria Environmental
Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	+61 2 8594 0400
Facsimile	+61 2 8594 0499
Email	au.environmental.sydney@sgs.com
Samples Received	Tue 16/4/2024
Report Due	Tue 23/4/2024
SGS Reference	**SE263523A**

SUBMISSION DETAILS

This is to confirm that 30 samples were received on Tuesday 16/4/2024. Results are expected to be ready by COB Tuesday 23/4/2024. Please quote SGS reference SE263523A when making enquiries. Refer below for details relating to sample integrity upon receipt.

Sample counts by matrix	2 Soil	Type of documentation received	COC
Date documentation received	16/4/2024	Samples received in good order	Yes
Samples received without headspace	Yes	Sample temperature upon receipt	15.3°C
Sample container provider	SGS	Turnaround time requested	Standard
Samples received in correct containers	Yes	Sufficient sample for analysis	Yes
Sample cooling method	Ice Bricks	Samples clearly labelled	Yes
Complete documentation received	Yes		

Unless otherwise instructed, water and bulk samples will be held for one month from date of report, and soil samples will be held for two months.

COMMENTS

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SAMPLE RECEIPT ADVICE

SE263523A

CLIENT DETAILS

Client LANTERRA CONSULTING PTY LTD

Project P24050

SUMMARY OF ANALYSIS

No.	Sample ID	OC Pesticides in Soil	OP Pesticides in Soil	PAH (Polynuclear Aromatic Hydrocarbons) in Soil	PCBs in Soil	Speciated Phenols in Soil	TRH (Total Recoverable Hydrocarbons) in Soil	VOC's in Soil	Volatile Petroleum Hydrocarbons in Soil
029	BH18 1.0-1.1	30	14	26	11	18	10	11	7
030	QC3	-	-	26	-	-	10	11	7

CONTINUED OVERLEAF

The above table represents SGS' interpretation of the client-supplied Chain Of Custody document.
The numbers shown in the table indicate the number of results requested in each package.
Please indicate as soon as possible should your request differ from these details .
Testing as per this table shall commence immediately unless the client intervenes with a correction .

SAMPLE RECEIPT ADVICE

SE263523A

CLIENT DETAILS

Client LANTERRA CONSULTING PTY LTD

Project P24050

SUMMARY OF ANALYSIS

No.	Sample ID	Fibre Identification in soil	Mercury in Soil	Moisture Content	Total Recoverable Elements in Soil/Waste
029	BH18 1.0-1.1	3	1	1	7
030	QC3	-	1	1	7

The above table represents SGS' interpretation of the client-supplied Chain Of Custody document.
The numbers shown in the table indicate the number of results requested in each package.
Please indicate as soon as possible should your request differ from these details .
Testing as per this table shall commence immediately unless the client intervenes with a correction .

Appendix D

Site Photograph

ianterra consulting	**SITE PHOTOGRAPHS**

Client Name	**Site Location**	**Project No.**
Major Projects, Education	Block 6 Section 64, Fraser, ACT 2615	P24050

Photo No.	**Date**
1.	09/04/2024

Description

View of BH6 to the east of site.



Photo No.	**Date**
2.	09/04/2024

Description

View of BH1 and northern end of site.



EIL Calculations

Appendix E

Inputs
Select contaminant from list below
As
Below needed to calculate fresh and aged ACLs
Below needed to calculate fresh and aged ABCs
or for fresh ABCs only
or for aged ABCs only

Outputs		
Land use	Arsenic generic EILs (mg contaminant/kg dry soil)	
	Fresh	Aged
National parks and areas of high conservation value	20	40
Urban residential and open public spaces	50	100
Commercial and industrial	80	160

Inputs
Select contaminant from list below
Cr_III
Below needed to calculate fresh and aged ACLs
Enter % clay (values from 0 to 100%)
10
Below needed to calculate fresh and aged ABCs
Measured background concentration (mg/kg). Leave blank if no measured value
or for fresh ABCs only
Enter iron content (aqua regia method) (values from 0 to 50%) to obtain estimate of background concentration
7
or for aged ABCs only
Enter State (or closest State)
NSW
Enter traffic volume (high or low)
low

Outputs		
Land use	Cr III soil-specific EILs (mg contaminant/kg dry soil)	
	Fresh	Aged
National parks and areas of high conservation value	130	140
Urban residential and open public spaces	230	410
Commercial and industrial	340	670

Inputs
Select contaminant from list below
Cu
Below needed to calculate fresh and aged ACLs
Enter cation exchange capacity (silver thiourea method) (values from 0 to 100 cmolc/kg dwt)
10
Enter soil pH (calcium chloride method) (values from 1 to 14)
6
Enter organic carbon content (%OC) (values from 0 to 50%)
1
Below needed to calculate fresh and aged ABCs
Measured background concentration (mg/kg). Leave blank if no measured value
or for fresh ABCs only
Enter iron content (aqua regia method) (values from 0 to 50%) to obtain estimate of background concentration
7
or for aged ABCs only
Enter State (or closest State)
NSW
Enter traffic volume (high or low)
low

Outputs		
Land use	Cu soil-specific EILs (mg contaminant/kg dry soil)	
	Fresh	Aged
National parks and areas of high conservation value	70	80
Urban residential and open public spaces	120	210
Commercial and industrial	170	300

Inputs
Select contaminant from list below
DDT
Below needed to calculate fresh and aged ACLs
Below needed to calculate fresh and aged ABCs
or for fresh ABCs only
or for aged ABCs only

Outputs		
Land use	DDT generic EILs (mg contaminant/kg dry soil)	
	Fresh	Aged
National parks and areas of high conservation value	3	3
Urban residential and open public spaces	180	180
Commercial and industrial	640	640

Inputs
Select contaminant from list below
Naphthalene
Below needed to calculate fresh and aged ACLs
Below needed to calculate fresh and aged ABCs
or for fresh ABCs only
or for aged ABCs only

Outputs		
Land use	Naphthalene generic EILs (mg contaminant/kg dry soil)	
	Fresh	Aged
National parks and areas of high conservation value	10	10
Urban residential and open public spaces	170	170
Commercial and industrial	370	370

Inputs
Select contaminant from list below
Ni
Below needed to calculate fresh and aged ACLs
Enter cation exchange capacity (silver thiourea method) (values from 0 to 100 cmolc/kg dwt)
10
Below needed to calculate fresh and aged ABCs
Measured background concentration (mg/kg). Leave blank if no measured value
or for fresh ABCs only
Enter iron content (aqua regia method) (values from 0 to 50%) to obtain estimate of background concentration
7
or for aged ABCs only
Enter State (or closest State)
NSW
Enter traffic volume (high or low)
low

Outputs		
Land use	Ni soil-specific EILs (mg contaminant/kg dry soil)	
	Fresh	Aged
National parks and areas of high conservation value	35	35
Urban residential and open public spaces	80	170
Commercial and industrial	130	290

Inputs
Select contaminant from list below
Pb
Below needed to calculate fresh and aged ACLs
Below needed to calculate fresh and aged ABCs
or for fresh ABCs only
or for aged ABCs only

Outputs		
Land use	Lead generic EILs (mg contaminant/kg dry soil)	
	Fresh	Aged
National parks and areas of high conservation value	110	470
Urban residential and open public spaces	270	1100
Commercial and industrial	440	1800

Inputs
Select contaminant from list below
Zn
Below needed to calculate fresh and aged ACLs
Enter cation exchange capacity (silver thiourea method) (values from 0 to 100 cmolc/kg dwt)
10
Enter soil pH (calcium chloride method) (values from 1 to 14)
6
Below needed to calculate fresh and aged ABCs
Measured background concentration (mg/kg). Leave blank if no measured value
or for fresh ABCs only
Enter iron content (aqua regia method) (values from 0 to 50%) to obtain estimate of background concentration
7
or for aged ABCs only
Enter State (or closest State)
NSW
Enter traffic volume (high or low)
low

Outputs		
Land use	Zn soil-specific EILs (mg contaminant/kg dry soil)	
	Fresh	Aged
National parks and areas of high conservation value	75	170
Urban residential and open public spaces	190	480
Commercial and industrial	280	700

Borehole Logs

Appendix F

lanterra consulting	**BORE LOG** **BH1**	**PROJECT NUMBER:** P24050 **CLIENT NAME:** Major Projects, Education **ADDRESS:** Block 6 Section 64, Fraser, ACT

PROJECT NAME: Detailed Site Investigation - Fraser Primary School	**COORDINATE SYSTEM:** GDA2020 / MGA zone 55
CONTRACTOR: Ground Control	**EASTING:** 686,081.6736 mE
DRILL METHOD: Auger	**NORTHING:** 6,103,878.775 mN
DIAMETER: 300 mm	**ELEVATION (APPROX):** 602.0 AHD
HOLE DEPTH: 1.1 m	**DATE DRILLED:** 09/04/2024

Depth (m)	Geological Unit	Sample Name	PID (ppm)	Analysed	Graphic	USCS	(Depth) Lithological Description	Additional Observations	Elevation (AHD)
0.0		BH1 0.0-0.1	0.3	Y		SC	**(0.0) Gravelly Sandy Clay:** Dark brown, moist, firm	Topsoil: Grassed surface	602
							(0.1) Gravelly Sandy Clay: Pale brown - yellow brown, moist, soft	Natural: Traces of weathered volcanics	
0.5	*Natural*	BH1 0.5-0.6	0.3	N					
1.0		BH1 1.0-1.1	0.3	N					601
								End of hole at 1.1 m	
1.5									
2.0									600
2.5									
3.0									599

Comments	**LOGGED BY** KB **CHECKED BY** CG

lanterra consulting	**BORE LOG** **BH2**	**PROJECT NUMBER:** P24050 **CLIENT NAME:** Major Projects, Education **ADDRESS:** Block 6 Section 64, Fraser, ACT

PROJECT NAME: Detailed Site Investigation - Fraser Primary School	**COORDINATE SYSTEM:** GDA2020 / MGA zone 55
CONTRACTOR: Ground Control	**EASTING:** 686,105.7356 mE
DRILL METHOD: Auger	**NORTHING:** 6,103,896.088 mN
DIAMETER: 300 mm	**ELEVATION (APPROX):** 602.0 AHD
HOLE DEPTH: 1.1 m	**DATE DRILLED:** 09/04/2024

Depth (m)	Geological Unit	Sample Name	PID (ppm)	Analysed	Graphic	USCS	(Depth) Lithological Description	Additional Observations	Elevation (AHD)
0.0		BH2 0.0-0.1	0.3	Y		SC	**(0.0) Gravelly Sandy Clay:** Brown - dark brown, moist, soft	Topsoil: Grassed Surface	602
							(0.1) Gravelly Sandy Clay: Pale brown - yellow brown, moist, soft	Natural: Weathered volcanic rocks	
0.5	*Natural*	BH2 0.5-0.6	0.3	N					
1.0		BH2 1.0-1.1	0.3	N					601
								End of hole at 1.1 m	
1.5									
2.0									600
2.5									
3.0									599

Comments	**LOGGED BY** KB **CHECKED BY** CG

lanterra consulting	**BORE LOG** **BH3**	**PROJECT NUMBER:** P24050 **CLIENT NAME:** Major Projects, Education **ADDRESS:** Block 6 Section 64, Fraser, ACT

PROJECT NAME: Detailed Site Investigation - Fraser Primary School	**COORDINATE SYSTEM:** GDA2020 / MGA zone 55
CONTRACTOR: Ground Control	**EASTING:** 686,128.9173 mE
DRILL METHOD: Auger	**NORTHING:** 6,103,911.64 mN
DIAMETER: 300 mm	**ELEVATION (APPROX):** 602.0 AHD
HOLE DEPTH: 2.1	**DATE DRILLED:** 09/04/2024

Depth (m)	Geological Unit	Sample Name	PID (ppm)	Analysed	Graphic	USCS	(Depth) Lithological Description	Additional Observations	Elevation (AHD)
0.0		BH3 0.0-0.1	0.2	N		SM	**(0.0) Sandy Clay:** Darl brown, moist, soft	Topsoil: Grassed Surface	602
	Residual Soil					GC	**(0.1) Gravelly Sandy Clay:** Brown - pale brown, moist, soft	Residual Soil: Traces of gravel	
0.5		BH3 0.5-0.6	0.2	Y					
1.0		BH3 1.0-1.1	0.2	N					601
1.5									
	Natural					SM	**(1.6) Sandy Silty Clay:** Brown - orange brown, dry - moist, soft	Natural	
2.0		BH3 2.0-2.1	0.2	N					600
								End of hole at 2.1 m	
2.5									
3.0									599

Comments	**LOGGED BY** KB **CHECKED BY** CG

lanterra consulting	**BORE LOG** **BH4**	**PROJECT NUMBER:** P24050 **CLIENT NAME:** Major Projects, Education **ADDRESS:** Block 6 Section 64, Fraser, ACT

PROJECT NAME: Detailed Site Investigation - Fraser Primary School	**COORDINATE SYSTEM:** GDA2020 / MGA zone 55
CONTRACTOR: Ground Control	**EASTING:** 686,151.512 mE
DRILL METHOD: Auger	**NORTHING:** 6,103,927.192 mN
DIAMETER: 300 mm	**ELEVATION (APPROX):** 602.0 AHD
HOLE DEPTH: 1.1 m	**DATE DRILLED:** 09/04/2024

Depth (m)	Geological Unit	Sample Name	PID (ppm)	Analysed	Graphic	USCS	(Depth) Lithological Description	Additional Observations	Elevation (AHD)
0.0		BH4 0.0-0.1	0.2	N		SM	**(0.0) Sandy Clay:** Darl brown, moist, soft	Topsoil: Grassed Surface	602
	Residual Soil					GC	**(0.1) Gravelly Sandy Clay:** Brown - yellow brown, moist, soft	Residual Soil: Traces of gravel	
0.5		BH4 0.5-0.6	0.2	Y					
	Natural						**(0.6) Gravelly Sandy Clay:** Yellow brown, dry - moist, soft	Natural	
1.0		BH4 1.0-1.1	0.2	N					601
								End of hole at 1.1 m	
1.5									
2.0									600
2.5									
3.0									599

Comments	**LOGGED BY** KB **CHECKED BY** CG

lanterra consulting	**BORE LOG** **BH5**	**PROJECT NUMBER:** P24050 **CLIENT NAME:** Major Projects, Education **ADDRESS:** Block 6 Section 64, Fraser, ACT

PROJECT NAME: Detailed Site Investigation - Fraser Primary School	**COORDINATE SYSTEM:** GDA2020 / MGA zone 55
CONTRACTOR: Ground Control	**EASTING:** 686,172.9331 mE
DRILL METHOD: Auger	**NORTHING:** 6,103,942.158 mN
DIAMETER: 300 mm	**ELEVATION (APPROX):** 602.0 AHD
HOLE DEPTH: 1.1 m	**DATE DRILLED:** 09/04/2024

Depth (m)	Geological Unit	Sample Name	PID (ppm)	Analysed	Graphic	USCS	(Depth) Lithological Description	Additional Observations	Elevation (AHD)
0.0		BH5 0.0-0.1	0.2	N		GC	**(0.0) Gravelly Sandy Clay:** Dark brown, moist, soft	Topsoil: Grassed Surface	602
						SM	**(0.1) Gravelly Silty Clay:** Pale brown - yellow brown, moist, soft	Natural: Traces of weathered volcanics	
0.5	*Natural*	BH5 0.5-0.6	0.2	Y					
1.0		BH5 1.0-1.1	0.2	N					601
								End of hole at 1.1 m	
1.5									
2.0									600
2.5									
3.0									599

Comments	**LOGGED BY** KB **CHECKED BY** CG

lanterra consulting	**BORE LOG** **BH6**	**PROJECT NUMBER:** P24050 **CLIENT NAME:** Major Projects, Education **ADDRESS:** Block 6 Section 64, Fraser, ACT

PROJECT NAME: Detailed Site Investigation - Fraser Primary School	**COORDINATE SYSTEM:** GDA2020 / MGA zone 55
CONTRACTOR: Ground Control	**EASTING:** 686,185.1108 mE
DRILL METHOD: Auger	**NORTHING:** 6,103,913.401 mN
DIAMETER: 300 mm	**ELEVATION (APPROX):** 603.0 AHD
HOLE DEPTH: 1.1 m	**DATE DRILLED:** 09/04/2024

Depth (m)	Geological Unit	Sample Name	PID (ppm)	Analysed	Graphic	USCS	(Depth) Lithological Description	Additional Observations	Elevation (AHD)
0.0		BH6 0.0-0.1	0.2	N		GC	**(0.0) Gravelly Sandy Clay:** Dark brown, moist, soft	Topsoil: Grassed Surface	603
						SC	**(0.1) Sandy Clay:** Brown - red brown, moist, soft	Natural: Traces of weathered volcanics	
0.5	*Natural*	BH6 0.5-0.6	0.2	Y		SM	**(0.4) Sandy Silty Clay:** Pale brown, moist, soft		
1.0		BH6 1.0-1.1	0.2	N					602
								End of hole at 1.1 m	
1.5									
2.0									601
2.5									
3.0									600

Comments	**LOGGED BY** KB **CHECKED BY** CG

lanterra consulting	**BORE LOG** **BH7**	**PROJECT NUMBER:** P24050 **CLIENT NAME:** Major Projects, Education **ADDRESS:** Block 6 Section 64, Fraser, ACT

PROJECT NAME: Detailed Site Investigation - Fraser Primary School	**COORDINATE SYSTEM:** GDA2020 / MGA zone 55
CONTRACTOR: Ground Control	**EASTING:** 686,165.7438 mE
DRILL METHOD: Auger	**NORTHING:** 6,103,899.903 mN
DIAMETER: 300 mm	**ELEVATION (APPROX):** 603.0 AHD
HOLE DEPTH: 1.1 m	**DATE DRILLED:** 09/04/2024

Depth (m)	Geological Unit	Sample Name	PID (ppm)	Analysed	Graphic	USCS	(Depth) Lithological Description	Additional Observations	Elevation (AHD)
0.0		BH7 0.0-0.1	0.3	Y		SC	**(0.0) Sandy Clay:** Brown - dark brown, moist, soft	Topsoil: Grassed Surface	603
	Natural					GC	**(0.2) Gravelly Sandy Clay:** Pale brown - yellow brown, moist, soft	Natural: Traces of weathered volcanics	
0.5		BH7 0.5-0.6	0.3	N					
1.0		BH7 1.0-1.1	0.3	N					602
								End of hole at 1.1 m	
1.5									
2.0									601
2.5									
3.0									600

Comments	**LOGGED BY** KB **CHECKED BY** CG

lanterra consulting	**BORE LOG** **BH8**	**PROJECT NUMBER:** P24050 **CLIENT NAME:** Major Projects, Education **ADDRESS:** Block 6 Section 64, Fraser, ACT

PROJECT NAME: Detailed Site Investigation - Fraser Primary School	**COORDINATE SYSTEM:** GDA2020 / MGA zone 55
CONTRACTOR: Ground Control	**EASTING:** 686,145.2031 mE
DRILL METHOD: Auger	**NORTHING:** 6,103,885.964 mN
DIAMETER: 300 mm	**ELEVATION (APPROX):** 603.0 AHD
HOLE DEPTH: 1.1 m	**DATE DRILLED:** 09/04/2024

Depth (m)	Geological Unit	Sample Name	PID (ppm)	Analysed	Graphic	USCS	(Depth) Lithological Description	Additional Observations	Elevation (AHD)
0.0		BH8 0.0-0.1	0.3	Y		SC	**(0.0) Sandy Clay:** Dark brown, moist, soft	Topsoil: Grassed Surface	603
	Natural					GC	**(0.2) Gravelly Sandy Clay:** Brown - yellow brown, moist, soft	Natural: Traces of weathered volcanics	
0.5		BH8 0.5-0.6	0.3	N					
1.0		BH8 1.0-1.1	0.3	N					602
								End of hole at 1.1 m	
1.5									
2.0									601
2.5									
3.0									600

Comments	**LOGGED BY** KB **CHECKED BY** CG

lanterra consulting	**BORE LOG** **BH9**	**PROJECT NUMBER:** P24050 **CLIENT NAME:** Major Projects, Education **ADDRESS:** Block 6 Section 64, Fraser, ACT

PROJECT NAME: Detailed Site Investigation - Fraser Primary School	**COORDINATE SYSTEM:** GDA2020 / MGA zone 55
CONTRACTOR: Ground Control	**EASTING:** 686,123.7821 mE
DRILL METHOD: Auger	**NORTHING:** 6,103,870.852 mN
DIAMETER: 300 mm	**ELEVATION (APPROX):** 603.0 AHD
HOLE DEPTH: 1.1 m	**DATE DRILLED:** 09/04/2024

Depth (m)	Geological Unit	Sample Name	PID (ppm)	Analysed	Graphic	USCS	(Depth) Lithological Description	Additional Observations	Elevation (AHD)
0.0		BH9 0.0-0.1	0.2	N		GC	**(0.0) Gravelly Sandy Clay:** Dark brown, moist, soft	Topsoil: Grassed Surface	603
						SC	**(0.1) Sandy Clay:** Dark brown, moist, soft	Natural: Traces of weathered volcanics	
0.5	*Natural*	BH9 0.5-0.6	0.2	Y			**(0.5) Sandy Clay:** Pale brown - yellow brown, moist, soft		
1.0		BH9 1.0-1.1	0.3	N		GC	**(1.0) Gravelly Sandy Clay:** Pale brown - yellow brown, moist, soft	End of hole at 1.1 m	602
1.5									
2.0									601
2.5									
3.0									600

Comments	**LOGGED BY** KB **CHECKED BY** CG

lanterra consulting	**BORE LOG** **BH10**	**PROJECT NUMBER:** P24050 **CLIENT NAME:** Major Projects, Education **ADDRESS:** Block 6 Section 64, Fraser, ACT

PROJECT NAME: Detailed Site Investigation - Fraser Primary School	**COORDINATE SYSTEM:** GDA2020 / MGA zone 55
CONTRACTOR: Ground Control	**EASTING:** 686,101.4807 mE
DRILL METHOD: Auger	**NORTHING:** 6,103,854.713 mN
DIAMETER: 300 mm	**ELEVATION (APPROX):** 603.0 AHD
HOLE DEPTH: 1.1 m	**DATE DRILLED:** 09/04/2024

Depth (m)	Geological Unit	Sample Name	PID (ppm)	Analysed	Graphic	USCS	(Depth) Lithological Description	Additional Observations	Elevation (AHD)
0.0		BH10 0.0-0.1	0.3	N		GC	**(0.0) Gravelly Sandy Clay:** Dark brown, moist, soft	Topsoil: Grassed Surface	603
							(0.1) Gravelly Sandy Clay: Pale brown - yellow brown, moist, soft	Natural: Traces of weathered volcanics	
0.5	*Natural*	BH10 0.5-0.6	0.3	Y					
1.0		BH10 1.0-1.1	0.3	N					602
								End of hole at 1.1 m	
1.5									
2.0									601
2.5									
3.0									600

Comments	**LOGGED BY** KB **CHECKED BY** CG

lanterra consulting	**BORE LOG** **BH11**	**PROJECT NUMBER:** P24050 **CLIENT NAME:** Major Projects, Education **ADDRESS:** Block 6 Section 64, Fraser, ACT

PROJECT NAME: Detailed Site Investigation - Fraser Primary School	**COORDINATE SYSTEM:** GDA2020 / MGA zone 55
CONTRACTOR: Ground Control	**EASTING:** 686,119.2338 mE
DRILL METHOD: Auger	**NORTHING:** 6,103,831.238 mN
DIAMETER: 300 mm	**ELEVATION (APPROX):** 604.0 AHD
HOLE DEPTH: 1.1 m	**DATE DRILLED:** 09/04/2024

Depth (m)	Geological Unit	Sample Name	PID (ppm)	Analysed	Graphic	USCS	(Depth) Lithological Description	Additional Observations	Elevation (AHD)
0.0		BH11 0.0-0.1	0.3	Y		GC	**(0.0) Gravelly Sandy Clay:** Dark brown, moist, soft	Topsoil: Grassed Surface	604
							(0.1) Gravelly Sandy Clay: Pale brown - yellow brown, moist, soft	Natural: Traces of weathered volcanics	
0.5	*Natural*	BH11 0.5-0.6	0.3	N					
1.0		BH11 1.0-1.1	0.3	N					603
								End of hole at 1.1 m	
1.5									
2.0									602
2.5									
3.0									601

Comments	**LOGGED BY** KB **CHECKED BY** CG

lanterra consulting	**BORE LOG** **BH12**	**PROJECT NUMBER:** P24050 **CLIENT NAME:** Major Projects, Education **ADDRESS:** Block 6 Section 64, Fraser, ACT

PROJECT NAME: Detailed Site Investigation - Fraser Primary School	**COORDINATE SYSTEM:** GDA2020 / MGA zone 55
CONTRACTOR: Ground Control	**EASTING:** 686,141.2417 mE
DRILL METHOD: Auger	**NORTHING:** 6,103,847.377 mN
DIAMETER: 300 mm	**ELEVATION (APPROX):** 604.0 AHD
HOLE DEPTH: 1.1 m	**DATE DRILLED:** 09/04/2024

Depth (m)	Geological Unit	Sample Name	PID (ppm)	Analysed	Graphic	USCS	(Depth) Lithological Description	Additional Observations	Elevation (AHD)
0.0		BH12 0.0-0.1	0.2	Y		GC	**(0.0) Gravelly Sandy Clay:** Dark brown, moist, soft	Topsoil: Grassed Surface	604
	Natural						**(0.1) Gravelly Sandy Silty Clay:** Pale brown - yellow brown, dry - moist, soft	Natural: Traces of weathered volcanics	
0.5		BH12 0.5-0.6	0.2	N					
1.0		BH12 1.0-1.1	0.2	N					603
								End of hole at 1.1 m	
1.5									
2.0									602
2.5									
3.0									601

Comments	**LOGGED BY** KB **CHECKED BY** CG

lanterra consulting	**BORE LOG** **BH13**	**PROJECT NUMBER:** P24050 **CLIENT NAME:** Major Projects, Education **ADDRESS:** Block 6 Section 64, Fraser, ACT

PROJECT NAME: Detailed Site Investigation - Fraser Primary School	**COORDINATE SYSTEM:** GDA2020 / MGA zone 55
CONTRACTOR: Ground Control	**EASTING:** 686,165.3037 mE
DRILL METHOD: Auger	**NORTHING:** 6,103,864.69 mN
DIAMETER: 300 mm	**ELEVATION (APPROX):** 605.0 AHD
HOLE DEPTH: 1.1 m	**DATE DRILLED:** 09/04/2024

Depth (m)	Geological Unit	Sample Name	PID (ppm)	Analysed	Graphic	USCS	(Depth) Lithological Description	Additional Observations	Elevation (AHD)
0.0		BH13 0.0-0.1	0.2	Y		SM	**(0.0) Sandy Silty Clay:** Dark brown, moist, soft. Traces of black nodules	Topsoil: Grassed Surface	605
	Natural					GC	**(0.1) Gravelly Sandy Silty Clay:** Orange brown, moist, soft	Natural: Traces of weathered volcanics	
0.5		BH13 0.5-0.6	0.2	N					
						SM	**(0.8) Sandy Silty Clay:** Brown - orange brown, moist, soft		
1.0		BH13 1.0-1.1	0.2	N					604
								End of hole at 1.1 m	
1.5									
2.0									603
2.5									
3.0									602

Comments	**LOGGED BY** KB **CHECKED BY** CG

lanterra consulting	**BORE LOG** **BH14**	**PROJECT NUMBER:** P24050 **CLIENT NAME:** Major Projects, Education **ADDRESS:** Block 6 Section 64, Fraser, ACT

PROJECT NAME: Detailed Site Investigation - Fraser Primary School	**COORDINATE SYSTEM:** GDA2020 / MGA zone 55
CONTRACTOR: Ground Control	**EASTING:** 686,186.72 mE
DRILL METHOD: Auger	**NORTHING:** 6,103,881.71 mN
DIAMETER: 300 mm	**ELEVATION (APPROX):** 605.0 AHD
HOLE DEPTH: 1.1 m	**DATE DRILLED:** 09/04/2024

Depth (m)	Geological Unit	Sample Name	PID (ppm)	Analysed	Graphic	USCS	(Depth) Lithological Description	Additional Observations	Elevation (AHD)
0.0		BH14 0.0-0.1	0.2	N		SC	**(0.0) Sandy Clay:** Dark brown, moist, soft	Topsoil: Grassed Surface	605
	Natural						**(0.1) Sandy Clay:** Brown - orange brown, moist, soft. Traces of black nodules	Natural: Traces of weathered volcanics	
0.5		BH14 0.5-0.6	0.2	Y					
1.0		BH14 1.0-1.1	0.2	N					604
								End of hole at 1.1 m	
1.5									
2.0									603
2.5									
3.0									602

Comments

LOGGED BY	**KB**
CHECKED BY	**CG**

lanterra consulting	**BORE LOG** **BH15**	**PROJECT NUMBER:** P24050 **CLIENT NAME:** Major Projects, Education **ADDRESS:** Block 6 Section 64, Fraser, ACT

PROJECT NAME: Detailed Site Investigation - Fraser Primary School	**COORDINATE SYSTEM:** GDA2020 / MGA zone 55
CONTRACTOR: Ground Control	**EASTING:** 686,201.6901 mE
DRILL METHOD: Auger	**NORTHING:** 6,103,858.528 mN
DIAMETER: 300 mm	**ELEVATION (APPROX):** 606.0 AHD
HOLE DEPTH: 1.1 m	**DATE DRILLED:** 09/04/2024

Depth (m)	Geological Unit	Sample Name	PID (ppm)	Analysed	Graphic	USCS	(Depth) Lithological Description	Additional Observations	Elevation (AHD)
0.0		BH15 0.0-0.1	0.2	Y		GC	**(0.0) Gravelly Sandy Clay:** Dark brown, moist, soft	Topsoil: Grassed Surface	606
	Natural						**(0.1) Gravelly Sandy Clay:** Pale brown - yellow brown, moist, soft.	Natural: Traces of weathered volcanics	
0.5		BH15 0.5-0.6	0.2	N					
						GM	**(0.8) Gravelly Sandy Silt:** Pale brown - grey brown, moist, soft		
1.0		BH15 1.0-1.1	0.2	N					605
								End of hole at 1.1 m	
1.5									
2.0									604
2.5									
3.0									603

Comments	**LOGGED BY** KB **CHECKED BY** CG

lanterra consulting	**BORE LOG** **BH16**	**PROJECT NUMBER:** P24050 **CLIENT NAME:** Major Projects, Education **ADDRESS:** Block 6 Section 64, Fraser, ACT

PROJECT NAME: Detailed Site Investigation - Fraser Primary School	**COORDINATE SYSTEM:** GDA2020 / MGA zone 55
CONTRACTOR: Ground Control	**EASTING:** 686,180.1223 mE
DRILL METHOD: Auger	**NORTHING:** 6,103,841.948 mN
DIAMETER: 300 mm	**ELEVATION (APPROX):** 607.0 AHD
HOLE DEPTH: 1.1 m	**DATE DRILLED:** 09/04/2024

Depth (m)	Geological Unit	Sample Name	PID (ppm)	Analysed	Graphic	USCS	(Depth) Lithological Description	Additional Observations	Elevation (AHD)
0.0		BH16 0.0-0.1	0.2	Y		GC	**(0.0) Gravelly Sandy Clay:** Dark brown, moist, soft	Topsoil: Grassed Surface	607
						SM	**(0.1) Sandy Silty Clay:** Dark brown - brown, moist, soft	Natural: Traces of weathered volcanics	
0.5	*Natural*	BH16 0.5-0.6	0.2	N			**(0.6) Sandy Silty Clay:** Pale brown - yellow brown, moist, soft		
1.0		BH16 1.0-1.1	0.2	N					606
								End of hole at 1.1 m	
1.5									
2.0									605
2.5									
3.0									604

Comments	**LOGGED BY** KB **CHECKED BY** CG

lanterra consulting	**BORE LOG** **BH17**	**PROJECT NUMBER:** P24050 **CLIENT NAME:** Major Projects, Education **ADDRESS:** Block 6 Section 64, Fraser, ACT

PROJECT NAME: Detailed Site Investigation - Fraser Primary School	**COORDINATE SYSTEM:** GDA2020 / MGA zone 55
CONTRACTOR: Ground Control	**EASTING:** 686,161.0488 mE
DRILL METHOD: Auger	**NORTHING:** 6,103,826.836 mN
DIAMETER: 300 mm	**ELEVATION (APPROX):** 607.0 AHD
HOLE DEPTH: 1.1 m	**DATE DRILLED:** 09/04/2024

Depth (m)	Geological Unit	Sample Name	PID (ppm)	Analysed	Graphic	USCS	(Depth) Lithological Description	Additional Observations	Elevation (AHD)
0.0		BH17 0.0-0.1	0.2	Y		GC	**(0.0) Gravelly Sandy Clay:** Dark brown, moist, soft	Topsoil: Grassed Surface	607
	Natural						**(0.1) Gravelly Sandy Clay:** Dark brown - red brown, moist, soft	Natural: Traces of weathered volcanics	
0.5		BH17 0.5-0.6	0.2	N					
1.0		BH17 1.0-1.1	0.2	N		SM	**(0.9) Sandy Silty Clay:** Pale brown - yellow brown, moist, soft		606
								End of hole at 1.1 m	
1.5									
2.0									605
2.5									
3.0									604

Comments	**LOGGED BY** KB **CHECKED BY** CG

lanterra consulting	**BORE LOG** **BH18**	**PROJECT NUMBER:** P24050 **CLIENT NAME:** Major Projects, Education **ADDRESS:** Block 6 Section 64, Fraser, ACT

PROJECT NAME: Detailed Site Investigation - Fraser Primary School	**COORDINATE SYSTEM:** GDA2020 / MGA zone 55
CONTRACTOR: Ground Control	**EASTING:** 686,140.0679 mE
DRILL METHOD: Auger	**NORTHING:** 6,103,811.137 mN
DIAMETER: 300 mm	**ELEVATION (APPROX):** 608.0 AHD
HOLE DEPTH: 1.1 m	**DATE DRILLED:** 09/04/2024

Depth (m)	Geological Unit	Sample Name	PID (ppm)	Analysed	Graphic	USCS	(Depth) Lithological Description	Additional Observations	Elevation (AHD)
0.0		BH18 0.0-0.1	0.3	Y		GC	**(0.0) Gravelly Sandy Clay:** Brown - red brown, moist, soft - firm	Topsoil: Grassed Surface	608
						GP	**(0.1) Gravelly Sand:** Light brown, dry - moist, soft	Natural: Traces of weathered volcanics	
0.5	*Natural*	BH18 0.5-0.6	0.3	N					
1.0		BH18 1.0-1.1	0.3	N					607
								End of hole at 1.1 m	
1.5									
2.0									606
2.5									
3.0									605

Comments	**LOGGED BY** KB **CHECKED BY** CG

Appendix G

(NSW EPA 2020, Contaminated Land Guidelines: Consultant Reporting on Contaminated Land)

Report section	Required information	Included
Document control	Date, version number, author and reviewer (including certification details) and who commissioned the report	☒
Executive summary	Background	☒
	Objectives of the investigation	☒
	Scope of work	☒
	Where appropriate, a summary of key findings, observations and sampling results (if available)	☒
	Summary of conclusions and recommendations	☒
Objectives	The objectives of the investigation/report and the broader objectives for the site/investigation	☒
Scope of work	Scope of work performed (work not undertaken where relevant)	☒
Site identification	Site identification and detail items from ASC NEPM Field Checklist 'Site information' sheet.	☒
Site history	Site history items from ASC NEPM Field Checklist 'Site information' sheet. A summary is enough if detailed information was included in an available referenced previous report.	☒
Site condition and surrounding environment	Site condition and surrounding environment items from ASC NEPM Field Checklist 'Site information' sheet. A summary is enough if detailed information was included in an available referenced previous report, to be updated with site-specific information.	☒
Assessment criteria	Table listing all selected assessment criteria and references	☒
	Rationale for the selection of assessment criteria, including assumptions and limitations of the criteria (relevant to the assessment and current or proposed landuse) and any deviations from approved guidelines.	☒
	Rationale for any site-specific assessment criteria developed through a site-specific risk assessment.	☒
	A strategy to achieve pre-determined data quality objectives, including sampling strategy and justification for the sampling design.	☒

Report section	Required information	Included
Sampling and analysis quality plan and sampling methodology	Procedures to be undertaken if the data does not meet the expected data quality objectives.	☒
	Sampling an analysis plan and methodology items from ASC NEPM Field Checklist 'SAP, QAQC Sheet'	☒
Results	Summary of previous results, if applicable	☒
	A table(s) of analytical results that:	
	shows all essential details such as sample identification numbers and sampling depth	☒
	shows assessment criteria	☒
	highlights all results exceeding any assessment criteria (not just the highest)	☒
	includes a summary/discussion of the analytical results	☒
	includes sample descriptions for all media where applicable (e.g. soil, sediment, surface water, groundwater, biota)	☒
	includes test pit or bore logs (well construction details where appropriate for example groundwater level expressed in Australian height datum)	☒
	includes site plan showing all sample locations	☒
	includes site plan(s) showing the extent of soil and groundwater contamination exceeding selected assessment criteria for each sampling depth, including identification numbers and depths of all samples analysed	☒
	follows appropriate statistical procedures when comparing site data with the investigation and screening levels.	☒
Quality assurance/quality control data evaluation	Details of sampling team	☒
	Reference to sampling plan/method, including any deviations from it – sampling and analysis quality plan	☒

Report section	Required information	Included
	Any information that could be required to evaluate measurement uncertainty for subsequent testing (analysis)	☒
	Decontamination procedures carried out between sampling event	☒
	Logs for each sample collected, including date, time, location (with GPS coordinates if possible), sampler, duplicate samples, chemical analysis to be performed, site observations and weather/environmental (i.e. surroundings) conditions. Include any, diagrams, maps, photos.	☒
	Chain of custody fully identifying – for each sample – the sampler, nature of the sample, collection date, analysis to be performed, sample preservation method, departure time from the site and dispatch couriers (s) (where applicable).	☒
	Field quality assurance/quality control results (e.g.) field blank, rinsate blank, trip blank, laboratory prepared trip spike	☒
	Sample splitting techniques – subsampling, containers/preservation (ensure unique ID for subsequent samples provided)	☒
	Statement of duplicate frequency	☒
	Background sample results	☐
	Field instrument calibrations (when used)	☒
	Sampling devices and equipment	☒
	A copy of signed chain-of-custody forms acknowledging receipt date, time and temperature and identity of samples included in shipments.	☒
	Record of holding times and a comparison with method specifications	☒
	Analytical methods used, including any deviations	☒
	Laboratory accreditation for analytical methods used, also noting any methods used which are not covered by accreditation	☒
	Laboratory performance for the analytical method using inter-laboratory duplicates	☒

Report section	Required information	Included
	Surrogates and spikes used throughout the full method process, or only in parts. Results are corrected for the recovery	☒
	A list of what spikes and surrogates were run with their recoveries and acceptance criteria (tabulate)	☒
	Practical quantification limits (PQL)	☒
	Reference laboratory control sample (LCS) and check results	☒
	Laboratory duplicate results (tabulate)	☒
	Laboratory blank results (tabulate)	☒
	Results are within control chart limits	☒
	Evaluation of all quality assurance/control information listed above against the stated data quality objectives, including a quality assurance/control data evaluation	☒
Conceptual site model	Regional and local geology, hydrogeology and hydrology items from ASC NEPM Field Checklist 'CSM' sheet	☒
	List of potential contaminants of concern	☒
	Potential and known sources of contamination on- and offsite	☒
	Mechanism of contamination	☒
	Potentially affected environmental media	☒
	Consideration of spatial and temporal variations	☒
	Actual or potential exposure pathways. Also consider preferential pathways for contaminant migration	☒
	Human and ecological receptors	☒
	Frequency of exposure	☒

Report section	Required information	Included
	Linkage of source, pathway and receptor assessed in terms of potentially complete pathways and likelihood	☒
	Discussion on multiple lines of evidence (for complex sites)	☒
	Previous site investigations, contaminant characteristics and migration items from ASC NEPM Field Checklist 'CSM' sheet	☒
	Conceptual site model items from ASC NEPM Field Checklist 'CSM' sheet	☒
	Meteorological data items from ASC NEPM Field Checklist 'CSM' sheet	☒
	Sources of variability	☒
	Data gap identification	☒
	Sensitivity analysis where modelling is undertaken.	☒
Data Quality Objectives	Step 1: State the problem	☒
	Step 2: Identify the decision / goal of the study	☒
	Step 3: Identify the information inputs	☒
	Step 4: Define the boundaries of the study	☒
	Step 5: Develop the analytical approach	☒
	Step 6: Specify performance or acceptance criteria	☒
	Step 7: Develop the plan for obtaining data	☒
	Are the data quality objectives linked to the conceptual site model, and have they been updated with the conceptual site model?	☒
Site characterisation	Assessment of extent of contamination considering all relevant media, including offsite areas	☒
	Assessment of aesthetic issues	☒
	Assessment of secondary toxicity (if conducting an ecological risk assessment)	☐

Report section	Required information	Included
	Assessment of potential effects of contaminants on human health, and built structures (for example arising from risks to service lines from hydrocarbons in groundwater, or risks to concrete from acid sulphate soils)	☒
	Assessment of chemical degradation products	☐
	Assessment of possible exposure routes and exposed populations (human, ecological)	☒
	Any evidence of, or potential for, migration of contaminants from the site, including odour, air quality, stormwater, sedimentation, soil vapour, ground gases and groundwater issues	☒
Conclusions and recommendations	Summary of all findings	☒
	Conclusions addressing the stated objectives	☒
	Assumptions used in reaching the conclusions	☒
	Extent of uncertainties in the results	☒
	A clear-cut statement that the consultant considers the site to be suitable for the proposed use (where applicable)	☒
	A statement detailing all limitations and constraints on the use of the site (where applicable)	☒
	Recommendations for further work, if appropriate	☒

ACT Government
Chief Minister, Treasury and Economic Development

File Ref: 1-2021/42164

Mr Tom Percival
Director, Schools Planning
Education Directorate
GPO Box 158
Canberra ACT 2601

Dear Mr Percival

ENDORSEMENT OF DETAILED SITE INVESTIGATION – PART BLOCK 6 SECTION 64 FRASER BELCONNEN

The Environment Protection Authority (the Authority) has reviewed the report titled *"Detailed Site Investigation Fraser Primary School, Block 6 Section 64, Fraser, ACT 2615"* dated 17 July 2024 by Lanterra Consulting Pty Ltd.

The Authority has assessed the report and supports the consultant's findings that the investigation area *"is considered suitable for the land uses permitted under the existing PRZ1: Urban Open Space; NUZ3: Hills, Ridges, and Buffer Areas and RZ1: Suburban zones and the proposed CF: Community Facilities zone to permit the proposed expansion to the Fraser Primary School from a contamination perspective"*, subject to the following conditions:

- Prior to any development occurring at the investigation area, a site specific unexpected finds protocol (UFP) must be prepared by a suitably qualified environmental consultant and implemented during site development works. The UFP must include, amongst other things, appropriate procedures for the identification, assessment, management, validation and disposal of potential contamination at the site and contractor induction procedures into the use of the UFP;
- All spoil identified at the site must be managed in accordance with the Authority's Information Sheet - Spoil Management in the ACT;
- All soil subject to disposal from the site must be assessed in accordance with the Authority's Information Sheet 4 - Requirements for the reuse and disposal of contaminated soil in the ACT; and
- No soil is to be disposed from site without approval from the Office of the Environment Protection Authority.

The assessment has been generally undertaken in accordance with the Authority's Contaminated Sites Environment Protection Policy 2017 and associated guidelines.

This letter of endorsement must be read in conjunction with the above report.

Where the above report has been submitted in accordance with a condition of a development approval, the report along with this letter of endorsement must be lodged with the ACT Environment, Planning and Sustainable Development Directorate using their eDevelopment system.

This should not be taken as a warranty by the Authority or the Territory that the land is fit for any particular purpose.

Yours sincerely



Dr Su Wild-River
Delegate, Environment Protection Authority

29 July 2024

ACT Government

Territory Planning Authority

CONSULTATION REPORT

Draft Plan Amendment to the Territory Plan 01

Block 6 Section 64 Fraser

April 2025

This consultation report was prepared under division 5.2.5 of the *Planning Act 2023*

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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 01 – Block 6 Section 64 Fraser (DPA-01).

This document should be read in conjunction with recommended DPA-01 given to the Minister and is available on the Planning website.

1.2 Outline of process

The Authority has considered comments received from agencies and the public on DPA-02 during the public consultation period. This consultation report has been prepared to outline comments received and how they have been considered or responded to.

DPA-01 has been given to the Minister to refer to the relevant Legislative Assembly Standing Committee. More information about the next steps for DPA-01 are provided in the DPA referred to the Minister and 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 DPA-01.

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.
Conservator of Flora and Fauna	
The site may contain Golden Sun Moth habitat and it has been documented that Superb Parrots use the area. However, the site does not support critical habitat. Therefore, rezoning the proposed portion of the site will not reduce the protection these species receive.	Noted.
Environment Protection Authority	
The Environment Protection Authority (EPA) has reviewed the report titled *"Detailed Site Investigation Fraser Primary School, Block 6 Section 64, Fraser, ACT 2615"* dated 17 July 2024 by Lanterra Consulting Pty Ltd and supports the proposed draft major plan amendment subject to a number of conditions.	Noted. The approval and conditions from EPA are acknowledged and relevant assessment will be undertaken during the development application (DA) stage.
Heritage Council	
The Major Plan Amendment Supporting Report includes a response to the previous Council advice and states that appropriate protocols for unexpected discoveries would be implemented as part of any future works. On this basis, there are no heritage objections to the proposal.	Noted.
Land Custodian - Transport Canberra and City Services	
The Draft MPA for the subject block is supported. As per previous advice, and nominated in the latest report, the highlighted traffic item will need to be addressed at DA or post DA stage.	Noted.

3.0 CONSULTATION WITH THE PUBLIC

3.1 Consultation

Written comments were invited from the public about DPA-01 from 9 December 2024 to 21 February 2025.

3.2 Comments

One written comment was received during the public consultation.

A copy of the public submission was made publicly available on the Planning website in accordance with section 65 of the Act after the completion of public consultation and is at Appendix 2 of this document.

3.3 Summary of issues raised

Below is a summary of the issues raised in the public submission received during public consultation:

- Support rezoning
- Traffic Effects Form recommendations
- Safer street side parking

3.4 Issues raised and responses

The issues raised in the public comment during public consultation and responses are outlined below.

3.4.1 Support rezoning

Support the rezoning of part Block 6 Section 64 Fraser to Community Facility Zone.

Response:
Noted.

3.4.2 Traffic Effects Form recommendations

The following recommendations of the Traffic Effects Form are supported:

- Investigation of a new Children's Crossing on Tillyard Drive adjacent to the school frontage.
- Upgrading the footpath in the open space area to provide a 3m shared path for mixed pedestrian and bicycle usage.
- Construction of a 3m shared path along Tillyard Drive on both sides of the road from Daley Crescent south to Daley Crescent north intersections with

Tillyard Drive to provide a shared (and widened) path for mixed pedestrian and bicycle usage.

Response:
Noted.

The suggestions have been passed onto Transport Canberra and City Services for consideration.

3.4.3 Safer streetside parking

Suggestion of creating an indent in the kerb along the northwestern side of Tillyard Drive to make streetside parking for parents and students safer.

Response:
Noted.

The suggestions have been passed onto Transport Canberra and City Services for consideration.

4.0 CHANGES MADE TO DPA-01 FROM CONSULTATION

4.1 Government entities

Government entities were consulted, and the relevant comments considered in finalising DPA-01 prior to public consultation. The written comments received from Government entities prior to the public consultation of DPA–01 are included in Appendix 1 of this consultation report and summarised in section 2 of this report.

Entity comments were previously addressed, and no further comments were sought or received from Government entities following initial entity consultation.

4.2 Public

No changes have been made to DPA-01 in response to the public comment received during public consultation for DPA-01. This is because the comment indicated support for the rezoning and provided general suggestions.

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	ဖဲနမ့ၢ်လိၣ်ဘၣ်ပ့ၤကတိၤကျိုးထံတၢ်တဂၤအခါဝံသးစူၤကိးဘၣ်-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

From: WorksApproval
To: Terrplan
Subject: RE: Agency Circulation – Draft Major Plan Amendment D - Fraser section 64 block 6 (expansion of Fraser Primary School) [SEC=OFFICIAL]
Date: Tuesday, 27 August 2024 10:38:03 AM

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 Team
Thank you for the referral for Draft Major Plan Amendment D, part Block 6 Section 64 Fraser. 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 concerns.
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: Terrplan <Terrplan@act.gov.au>
Sent: Friday, August 23, 2024 7:09 PM
To: [redacted]
Subject: Agency Circulation – Draft Major Plan Amendment D - Fraser section 64 block 6 (expansion of Fraser Primary School)

Dear Mandatory Agencies

REQUEST FOR COMMENTS: Draft Major Plan Amendment – Fraser section 64 block 6

Your comments are requested as a mandatory consultation agency, under section 62 of the *Planning Act 2023*, on the attached Draft Major Plan Amendment D (DPA-D) for Fraser section 64 block 6.

DPA-D proposes to make the following changes to the Territory Plan:

- Rezone approximately 1.36 hectares of Fraser section 64 block 6 from NUZ3 Hills, Ridges and Buffer to Community Facility, to allow expansion of the Fraser Primary School located on the adjoining block.
- Amend the Belconnen District Policy to prohibit retirement village and supportive housing on the area rezoned to Community Facility.

Your agency has previously provided comments on the former planning report, please refer to the Supporting Report (attached).

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 Friday 30 August 2024**.

Your comments (including nil comments) can be sent to the Territory Plan & Coordination Section by email terrplan@act.gov.au.

Thank you

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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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.

From: ConservatorFloraFauna
To: Terrplan
Subject: RE: Agency Circulation – Draft Major Plan Amendment D - Fraser section 64 block 6 (expansion of Fraser Primary School)
Date: Thursday, 29 August 2024 3:11:56 PM

OFFICIAL

Good afternoon,
Thank you for providing the Conservator of Flora and Fauna the opportunity to comment on this Draft MPA. As per our original comments on this proposal, the site may contain Golden Sun Moth habitat and it has been documented that Superb Parrots use the area. However, the site does not support critical habitat. Therefore, rezoning the proposed portion of the site will not reduce the protection these species receive.
Thanks!

[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: Terrplan <Terrplan@act.gov.au>
Sent: Friday, August 23, 2024 7:09 PM
To: [redacted]
Subject: Agency Circulation – Draft Major Plan Amendment D - Fraser section 64 block 6 (expansion of Fraser Primary School)
Dear Mandatory Agencies

REQUEST FOR COMMENTS: Draft Major Plan Amendment – Fraser section 64 block 6

Your comments are requested as a mandatory consultation agency, under section 62 of the *Planning Act 2023*, on the attached Draft Major Plan Amendment D (DPA-D) for Fraser section 64 block 6.

DPA-D proposes to make the following changes to the Territory Plan:

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- Amend the Belconnen District Policy to prohibit retirement village and supportive housing on the area rezoned to Community Facility.

Your agency has previously provided comments on the former planning report, please refer to the Supporting Report (attached).
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The closing date for comments is **COB Friday 30 August 2024**.
Your comments (including nil comments) can be sent to the Territory Plan & Coordination Section by email terrplan@act.gov.au.
Thank you

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: Agency Circulation – Draft Major Plan Amendment D - Fraser section 64 block 6 (expansion of Fraser Primary School)
Date:	Tuesday, 3 September 2024 12:56:59 PM
Attachments:	image001.png

Dear Territory Plan Coordination Team,

Thank you for the opportunity to review and provide comments on the Draft Major Plan Amendment – Fraser section 64 block 6.

The Environment Protection Authority (EPA) has reviewed the report titled *"Detailed Site Investigation Fraser Primary School, Block 6 Section 64, Fraser, ACT 2615"* dated 17 July 2024 by Lanterra Consulting Pty Ltd and would support the proposed draft major plan amendment subject to the following conditions:

Contamination

- Prior to any development occurring at the investigation area, a site specific unexpected finds protocol (UFP) must be prepared by a suitably qualified environmental consultant and implemented during site development works. The UFP must include, amongst other things, appropriate procedures for the identification, assessment, management, validation and disposal of potential contamination at the site and contractor induction procedures into the use of the UFP;
- All spoil identified at the site must be managed in accordance with the Authority's Information Sheet - Spoil Management in the ACT;
- All soil subject to disposal from the site must be assessed in accordance with the Authority's Information Sheet 4 - Requirements for the reuse and disposal of contaminated soil in the ACT; and
- No soil is to be disposed from site without approval from the Office of the Environment Protection Authority.

For further information please contact the Environment Protection Authority Planning Liaison at EPAPlanningLiaison@act.gov.au.

Regards,

[redacted]
Environment Protection Authority (including Water Resources)
Clinical Waste Controller
Delegate for Lakes
Access Canberra|Chief Minister,Treasury and Economic Development Directorate |ACT Government
Phone: 02 6207 1191|Mobile 0435 102 070|Email: su.wild-river@act.gov.au
480 Northbourne Avenue, Dickson | GPO Box 158 Canberra City ACT 2601 | www.act.gov.au/accessCBR

From: Terrplan <Terrplan@act.gov.au>
Sent: Friday, August 23, 2024 7:09 PM
To: [redacted]>;

[redacted]

Subject: Agency Circulation – Draft Major Plan Amendment D - Fraser section 64 block 6 (expansion of Fraser Primary School)

Dear Mandatory Agencies

REQUEST FOR COMMENTS: Draft Major Plan Amendment – Fraser section 64 block 6

Your comments are requested as a mandatory consultation agency, under section 62 of the *Planning Act 2023*, on the attached Draft Major Plan Amendment D (DPA-D) for Fraser section 64 block 6.

DPA-D proposes to make the following changes to the Territory Plan:

- Rezone approximately 1.36 hectares of Fraser section 64 block 6 from NUZ3 Hills, Ridges and Buffer to Community Facility, to allow expansion of the Fraser Primary School located on the adjoining block.
- Amend the Belconnen District Policy to prohibit retirement village and supportive housing on the area rezoned to Community Facility.

Your agency has previously provided comments on the former planning report, please refer to the Supporting Report (attached).

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 Friday 30 August 2024**.

Your comments (including nil comments) can be sent to the Territory Plan & Coordination Section by email terrplan@act.gov.au.

Thank you

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: [redacted]
Subject: ACT Heritage Council Advice - Agency Circulation – Draft Major Plan Amendment D - Fraser section 64 block 6 (expansion of Fraser Primary School)
Date: Monday, 2 September 2024 9:08:33 AM
Attachments: image001.png
image002.png

OFFICIAL

Hello Territory Plan team,

Thank you for seeking ACT Heritage Council (the Council) advice on the proposed Draft Major Plan Amendment D for the expansion of Fraser Primary School (Block 2, Section 40, Fraser). The proposal seeks to rezone approximately 1.36 hectares of Block 6, Section 64 Fraser from NUZ3 Hills, Ridges and Buffer to Community Facility, to allow the expansion of the Fraser Primary School located on the adjoining block and to incorporate this portion into the existing School grounds. The proposal also seeks to amend the Belconnen District Policy to prohibit retirement village and supportive housing on the area rezoned to Community Facility. The subject land is currently managed by Transport Canberra City Services (TCCS).

Previous Council advice issued on the same Territory Plan Variation in September 2023 stated that a review of the ACT Heritage Register found that there are no nominated or registered heritage places of built, natural or Aboriginal cultural value located within the part of the Block proposed for rezoning. An inspection of historic aerial imagery also indicated that the area was largely disturbed through earthworks and the development of the urban landscape from the 1970s onwards, and it is considered unlikely that any previously undiscovered Aboriginal heritage places would be located within the block in question. However, as there is still a possibility that some Aboriginal places may be extant, an Unexpected Discoveries Protocol (UDP) was previously requested.

It is understood that no physical (or infrastructure) works are proposed as part of the Draft Major Plan Amendment D at this stage, and that urban design, master planning, built form and landscaping (amongst other considerations) would be resolved via a Development Application process for future buildings and works, if proposed. Should any physical works be proposed on the site in future (whether requiring other approval or not), then a UDP will be required.

The Major Plan Amendment Supporting Report includes a response to the previous Council advice and states that appropriate protocols for unexpected discoveries would be implemented as part of any future works.

On this basis, and as a delegate of the Council, I advise that there are no heritage objections to the proposed Draft Major Plan Amendment D for Fraser Primary School Boundary Expansion (Part Block 6 Section 64 Fraser).
Kind regards,

[redacted]
[redacted] **| A/Senior Director, as delegate for ACT Heritage Council**
ACT Heritage I heritage@act.gov.au| Access Canberra switchboard 13 22 81
Environment, Planning and Sustainable Development I **ACT Government**
480 Northbourne Avenue I Dickson I GPO Box 158 Canberra ACT 2601
www.environment.act.gov.au

@EnvironPlan facebook.com/EnvironPlan

From: Terrplan <Terrplan@act.gov.au>
Sent: Friday, August 23, 2024 7:09 PM
To: [redacted]
Subject: Agency Circulation – Draft Major Plan Amendment D - Fraser section 64 block 6 (expansion of Fraser Primary School)

Dear Mandatory Agencies

REQUEST FOR COMMENTS: Draft Major Plan Amendment – Fraser section 64 block 6

Your comments are requested as a mandatory consultation agency, under section 62 of the *Planning Act 2023*, on the attached Draft Major Plan Amendment D (DPA-D) for Fraser section 64 block 6.

DPA-D proposes to make the following changes to the Territory Plan:

- Rezone approximately 1.36 hectares of Fraser section 64 block 6 from NUZ3 Hills, Ridges and Buffer to Community Facility, to allow expansion of the Fraser Primary School located on the adjoining block.
- Amend the Belconnen District Policy to prohibit retirement village and supportive housing on the area rezoned to Community Facility.

Your agency has previously provided comments on the former planning report, please refer to the Supporting Report (attached).

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 Friday 30 August 2024**.

Your comments (including nil comments) can be sent to the Territory Plan & Coordination Section by email terrplan@act.gov.au.

Thank you

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: [redacted]
Subject: RE: Agency Circulation – Draft Major Plan Amendment D - Fraser section 64 block 6 (expansion of Fraser Primary School)
Date: Wednesday, 11 September 2024 3:38:46 PM

Dear Terr Plan team,

The Draft MPA D for the subject block is supported. As per previous advice, and nominated in the latest report, the Traffic item highlighted by TCCS will need to be addressed at DA or Post DA stages.

Thank you,

Kind regards,

[redacted] **Assistant Director**
Development Assessment | Development Coordination Branch
Phone: 02 6207 3931 | Email: [redacted]
Transport Canberra and City Services | ACT Government
480 Northbourne Avenue Dickson | GPO Box 158 Canberra ACT 2601 | www.transport.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 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.

From: Terrplan <Terrplan@act.gov.au>
Sent: Friday, August 23, 2024 7:09 PM
To: [redacted]

[redacted]

Subject: Agency Circulation – Draft Major Plan Amendment D - Fraser section 64 block 6 (expansion of Fraser Primary School)

Dear Agencies

REQUEST FOR COMMENTS: DraftMajor Plan Amendment – Fraser section 64 block 6

Your comments are requested on the attached Draft Major Plan Amendment D (DPA-D) for Fraser section 64 block 6.

DPA-D proposes to make the following changes to the Territory Plan:

- Rezone approximately 1.36 hectares of Fraser section 64 block 6 from NUZ3 Hills, Ridges and Buffer to Community Facility, to allow expansion of the Fraser Primary School located on the adjoining block.
- Amend the Belconnen District Policy to prohibit retirement village and supportive housing on the area rezoned to Community Facility.

Your agency may have previously provided comments on the former planning report, please refer to the Supporting Report (attached).

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 Friday 30 August 2024**.

Your comments (including nil comments) can be sent to the Territory Plan & Coordination Section by email terrplan@act.gov.au.

Thank you

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

APPENDIX 2 Comment from the public

From: [redacted]
To: Terrplan
Subject: Written Comments - DPA-01 Fraser Section 64 Block 4
Date: Wednesday, 15 January 2025 8:28:47 AM

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.

To whom it may concern,

Reference:

DPA-01 Fraser Section 64 Block 4

Contact Details:

Name: [redacted]
Number: [redacted]
Email: [redacted]

Written Comments:

I am a parent of 3 existing/future students of Fraser Preschool and Primary school and have been a long term resident in the area.

I support the rezoning of Section 64 Block 4 to allow the expansion Fraser Primary as the increase in the area of available outdoor space will improve the ability for students and staff
to access outdoor space for learning and play.

I have reviewed the Traffic Effects Form and also support the recommendations for:

- A new Children's Crossing in Tillyard Drive adjacent the school frontage be investigated.
- Upgrade the footpath in open space area to provide a 3m shared path for mixed pedestrian
and bicycle usage.
- Construct a 3m shared path along Tillyard Drive in both sides from Daley Crescent South to Daley Crescent North intersection to provide shared path for mixed pedestrian and bicycle
usage.

On the last two points, I would like to suggest that the the curbside frontage of the newly zoned/expanded area allow for safer street side parking. At drop off and pick up times, cars park alongside the northbound lane of Tillyard Drive from the preschool driveway up to the northbound bus stop. Creating an indent in the curb for street side parking will be safer for parents and students.

I am happy to be contacted in regards to my written comments.

Kind Regards,
[redacted]

APPENDIX 3 Public consultation version of DPA-01

ACT Government

Territory Planning Authority

DRAFT

MAJOR PLAN AMENDMENT

to the

TERRITORY PLAN 01

Fraser School

Change of zoning from NUZ3 to CFZ

for

Part Block 6 Section 64 Fraser

December 2024

This draft major plan amendment was prepared under division 5.2.3 of the *Planning Act 2023*

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1.0 INTRODUCTION

1.1 Outline of the process

Draft plan amendment 01 (DPA-01) to the Territory Plan is an authority-initiated major plan amendment (MPA).

Under section 63 of the *Planning Act 2023* (the Act) the Territory Planning Authority (the Authority) is making DPA-01 available for public comment.

For more information about the content of the Territory Plan and the major plan amendment processes please refer to the planning website 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

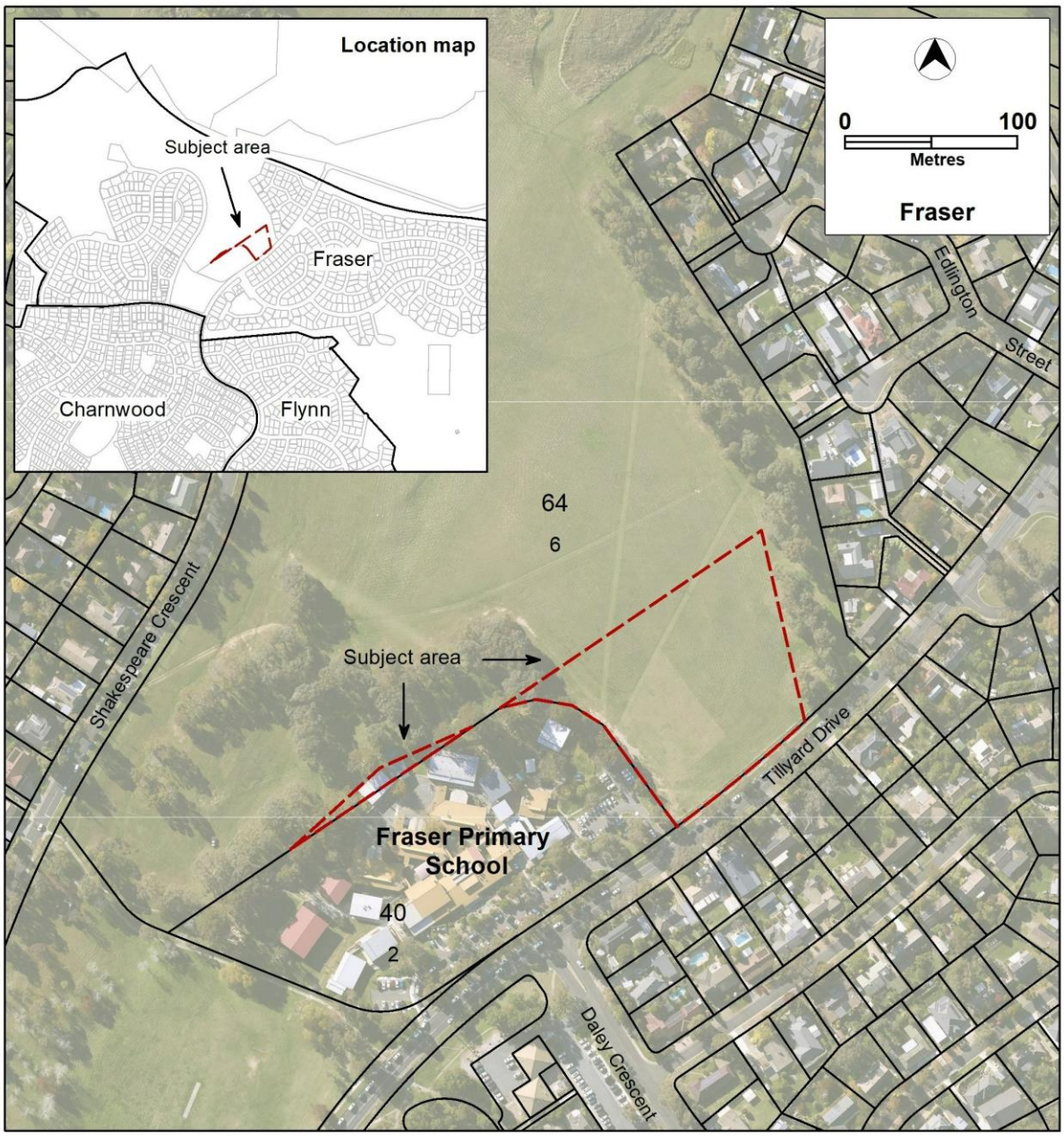
DPA-01 proposes to amend the Territory Plan map to rezone part Block 6 Section 64 Fraser from NUZ3 Hills, Ridges and Buffer to Community Facility to enable the site to be used to expand the Fraser Primary School. It also proposes to amend the Belconnen District Policy to prohibit retirement village and supportive housing on the area being rezoned.

1.4 Site Description

The subject site is located at part Block 6 Section 64 Fraser in Belconnen District (Figure 1). The site is currently zoned NUZ3 Hills, Ridges and Buffer.

The site adjoins the Fraser Primary School and comprises part Block 2 Section 40 Fraser (see Figure 1). The block is a large open space (64.29 hectares) which extends across the northern parts of Fraser and Dunlop and includes peripheral open space, near Tillyard Drive and Shakespeare Crescent, and parts of the Dunlop Grasslands Nature Reserve, to the northwest of Fraser.

Figure 1 – Location Map



2.0 REASONS FOR THE DRAFT PLAN AMENDMENT

Fraser Primary School is situated within an existing block of approximately 2.6 ha. Responding to increases in enrolment demand from the local Priority Enrolment Area, school facilities have been expanded incrementally over a number of years. New teaching spaces have been accommodated within the existing block and this, in turn has reduced the available outdoor space.

The school reports an increase in requirements for teacher supervision during break times due to line-of-site issues related to disconnected available play spaces. There is also pressure on the existing outdoor spaces within the school grounds due to the number of children accessing and playing on the area daily. An increase in the area of available outdoor space will improve the ability for students and staff to access outdoor space for learning and play.

The rezoning will enable the required expansion of the school site within the Community Facility zone. The proposal also regularises the zoning of existing structures located to the north-west of Block 2 Section 40.

2.1 Amendment to the Territory Plan Map

DPA-01 proposes to amend the Territory Plan map to rezone part of Fraser Block 6 Section 64 from NUZ3 Hills, Ridges and Buffer to Community Facility.

The existing and proposed Territory Plan zoning for the subject area is shown in Figures 2 and 3 respectively.

Figure 2 – Existing Territory Plan Map

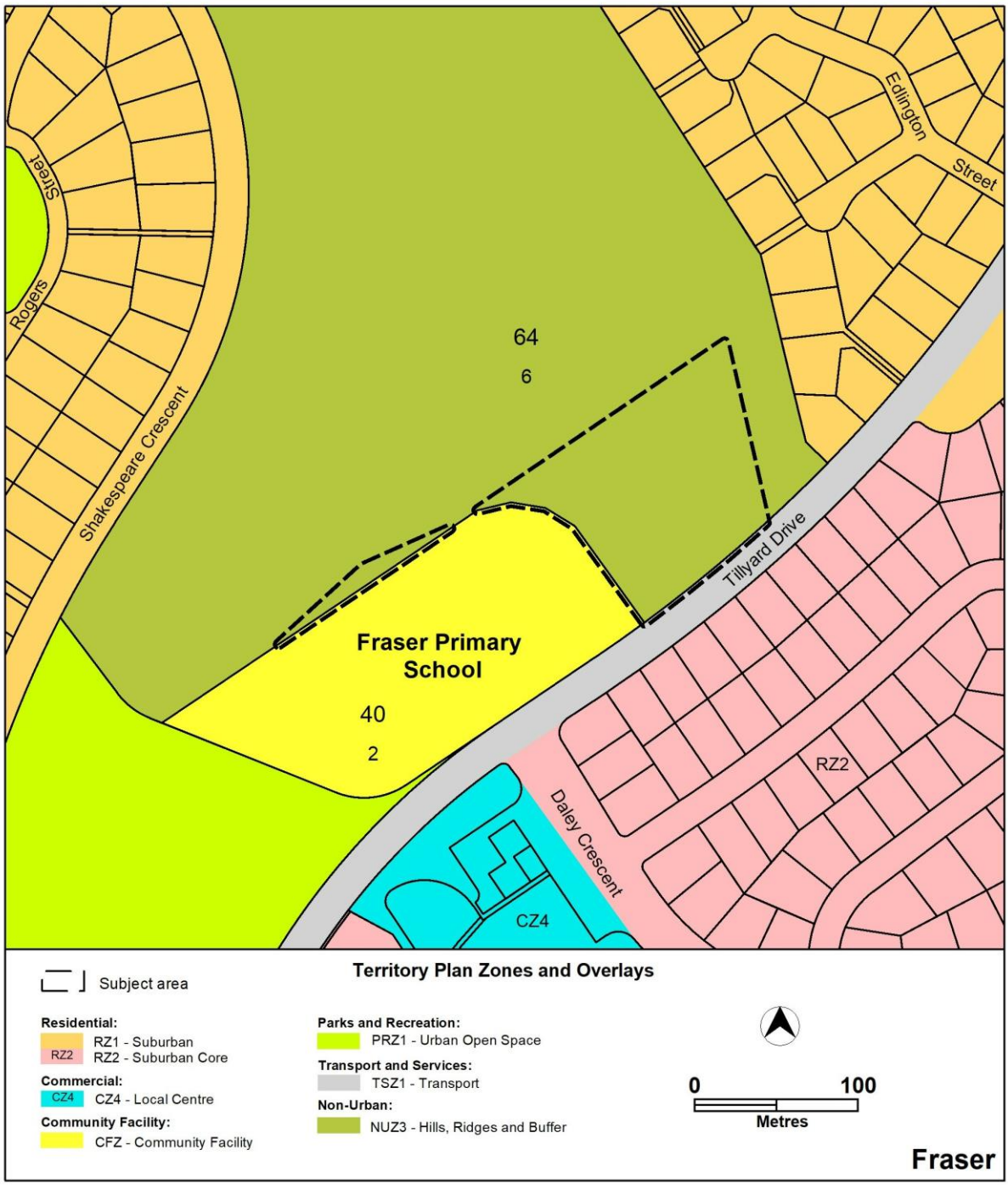
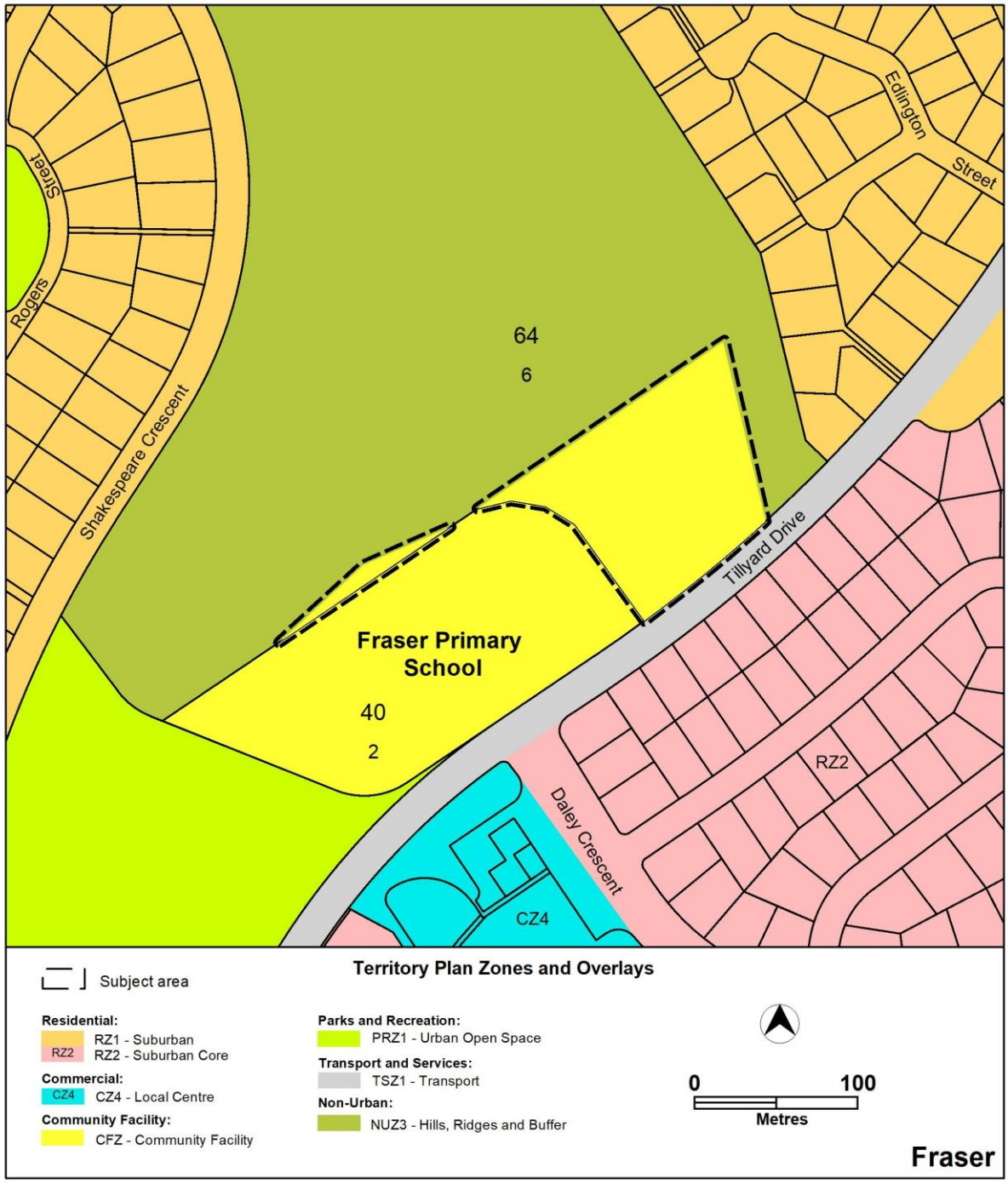


Figure 3 – Proposed Territory Plan Map



2.2 Amendment to Territory Plan policies, design guides and specifications

DPA-01 proposes to amend the Belconnen District Policy to prohibit retirement village and supportive housing on the area rezoned to Community Facility. These uses are prohibited on the current school site. The proposed change incorporates the prohibition of these uses both for the existing school site and the areas to be rezoned into the school site into a map, rather than referring to block and section numbers (see Figure 24A below).

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 Act

A supporting report has been prepared for DPA-01. The supporting report, which is available on the planning website (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 required entities who may have an interest in the proposed amendment.

The ACT Planning Strategy

The proposed changes contained in DPA-01 align 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 proposed rezoning of the site to Community Facility would facilitate the delivery of improved educational services to the local community.

DPA-01 is aligned with the directions set out in the ACT Planning Strategy 2018. The supporting report for the MPA 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 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 proposal is consistent with the Belconnen District Strategy.

The supporting report provides further details.

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 Belconnen District Policy and Community Facility 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 ENTITIES

In accordance with section 62 of the Act the Authority has consulted with each of the following in relation to DPA-01

- 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 entities on DPA-01 are below.

3.1 National Capital Authority

The National Capital Authority provided the following comments on 27 August 2024:

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 concerns.

Authority's Response
Noted.

3.2 Conservator of Flora and Fauna

The Conservator of Flora and Fauna provided the following comments on 29 August 2024:

As per our original comments on this proposal, the site may contain Golden Sun Moth habitat and it has been documented that Superb Parrots use the area. However, the site does not support critical habitat. Therefore, rezoning the proposed portion of the site will not reduce the protection these species receive.

Authority's Response
Noted.

3.3 Environment Protection Authority

The Environment Protection Authority provided the following comments on 3 September 2024:

The Environment Protection Authority (EPA) has reviewed the report titled *"Detailed Site Investigation Fraser Primary School, Block 6 Section 64, Fraser, ACT 2615"* dated 17 July 2024 by Lanterra Consulting Pty Ltd and would support the proposed draft major plan amendment subject to the following conditions:

Contamination

- Prior to any development occurring at the investigation area, a site specific unexpected finds protocol (UFP) must be prepared by a suitably qualified environmental consultant and implemented during site development

works. The UFP must include, amongst other things, appropriate procedures for the identification, assessment, management, validation and disposal of potential contamination at the site and contractor induction procedures into the use of the UFP;
- All spoil identified at the site must be managed in accordance with the Authority's Information Sheet - Spoil Management in the ACT;
- All soil subject to disposal from the site must be assessed in accordance with the Authority's Information Sheet 4 - Requirements for the reuse and disposal of contaminated soil in the ACT; and
- No soil is to be disposed from site without approval from the Office of the Environment Protection Authority.

Authority's Response
Noted.

3.4 Heritage Council

The Heritage Council provided the following comments on 2 September 2024:

The proposal seeks to rezone approximately 1.36 hectares of Block 6, Section 64 Fraser from NUZ3 Hills, Ridges and Buffer to Community Facility, to allow the expansion of the Fraser Primary School located on the adjoining block and to incorporate this portion into the existing School grounds. The proposal also seeks to amend the Belconnen District Policy to prohibit retirement village and supportive housing on the area rezoned to Community Facility. The subject land is currently managed by Transport Canberra City Services (TCCS).

Previous Council advice issued on the same Territory Plan Variation in September 2023 stated that a review of the ACT Heritage Register found that there are no nominated or registered heritage places of built, natural or Aboriginal cultural value located within the part of the Block proposed for rezoning. An inspection of historic aerial imagery also indicated that the area was largely disturbed through earthworks and the development of the urban landscape from the 1970s onwards, and it is considered unlikely that any previously undiscovered Aboriginal heritage places would be located within the block in question. However, as there is still a possibility that some Aboriginal places may be extant, an Unexpected Discoveries Protocol (UDP) was previously requested.

It is understood that no physical (or infrastructure) works are proposed as part of the Draft Major Plan Amendment D at this stage, and that urban design, master planning, built form and landscaping (amongst other considerations) would be resolved via a Development Application process for future buildings and works, if proposed. Should any physical works be proposed on the site in future (whether requiring other approval or not), then a UDP will be required.

The Major Plan Amendment Supporting Report includes a response to the previous Council advice and states that appropriate protocols for unexpected discoveries would be implemented as part of any future works.
On this basis, and as a delegate of the Council, I advise that there are no heritage objections to the proposed Draft Major Plan Amendment D for Fraser Primary School Boundary Expansion (Part Block 6 Section 64 Fraser).

Authority's Response
Noted.

3.5 Transport Canberra and City Services (land custodian)

Transport Canberra and City Services provided the following comments on 11 September 2024:

The Draft MPA D [subsequently renamed DPA-01] for the subject block is supported. As per previous advice, and nominated in the latest report, the Traffic item highlighted by TCCS will need to be addressed at DA or Post DA stages.

Authority's Response
Noted.

3.6 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 Act does not apply to DPA-01 which means it does not have interim effect and 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-01 on or before 21 February 2024.

5.2 Requirements for written comments

Comments need to include your name and reference to DPA-01. The Authority may contact you in relation to your comments to request further information. Please include your contact details, including an email address and/or telephone number, to enable the Authority to contact you in relation to your comments, if required.

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 deliver to: Access Canberra Building Services Shopfront at 8 Darling Street, Mitchell ACT 2911

Where comments are mailed or hand delivered to the addresses above, they should be marked to the attention of:
Territory Plan & Coordination Section, EPSDD and include reference to DPA-01

5.4 Public release of written comments

Written comments received on this DPA 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 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.

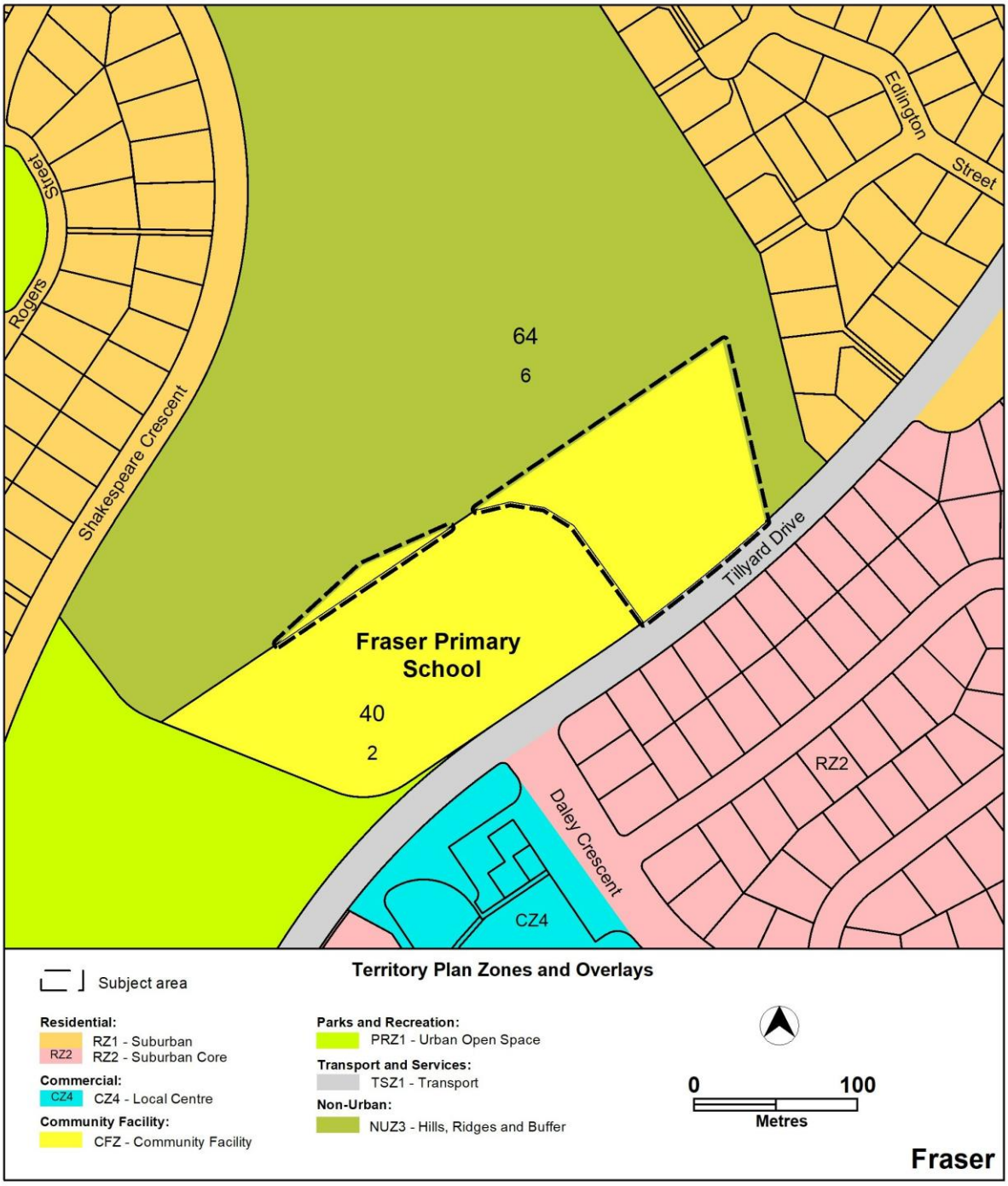
6.0 DRAFT MAJOR PLAN AMENDMENT 01

This section details how DPA-01 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



6.2 Amendment to the Belconnen District Policy

A. Land Use Table; Locality; Fraser; Relevant parcel or Figure

Omit

Block 2 Section 40

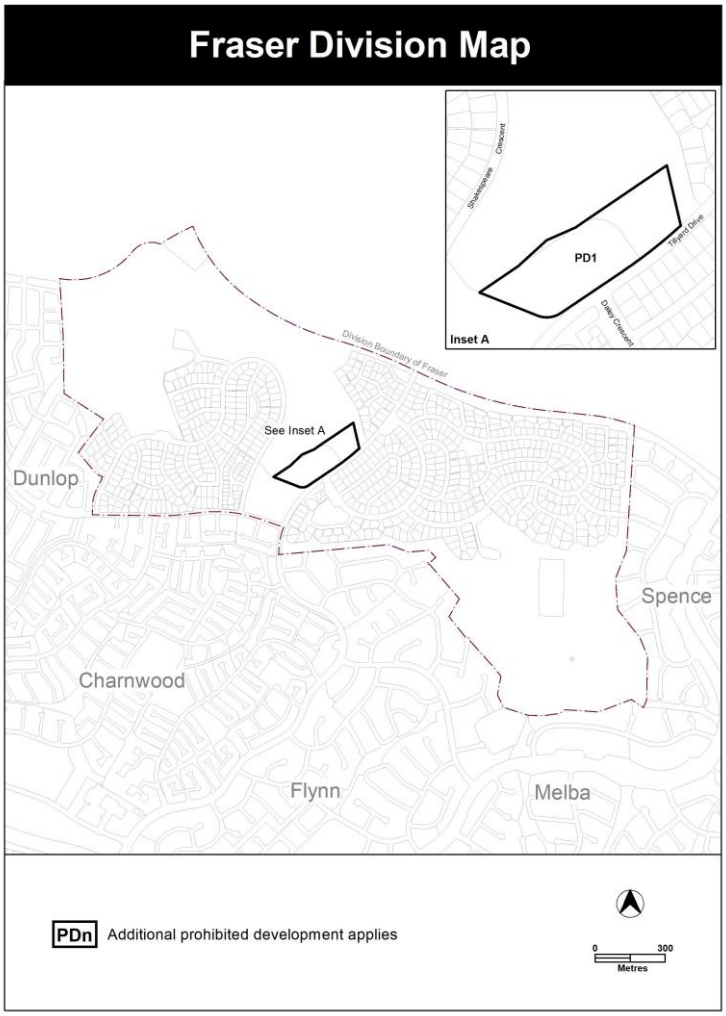
Insert with hyperlink to Figure 24A

PD1 Figure 24A

B. Figures – Assessable and Prohibited Development

Insert with hyperlink to Land Use Table

Figure 24A Fraser
Link back to Land Use Table



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	ဖဲနမ့ၢ်လိဉ်ဘဉ်ပှၤကတိၤကျိုးထံတၢ်တဂၤအခါဝံသးစူၤကိးဘဉ်-၁၃၁ ၄၅၀ တက့ၢ်.

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