



APPLICATION ON NOTIFICATION – CROWN DEVELOPMENT

Type of development:	Section 131 – Crown Development
Development Number:	24014446
Applicant:	Department for Infrastructure and Transport under Section 131 of the <i>Planning, Development and Infrastructure Act 2016</i>)
Nature of Development:	Construction of a two-storey mental health facility with associated carpark, water tanks, generator, transformer, fencing and associated earthworks.
Subject Land:	Lot 4711 Oldham Road, Elizabeth South (CT 6286/864 D130276 AL4711)
Planning & Design Code Version:	2024.11 (20 June 2024)
Zone:	Strategic Innovation Zone (Activity Node Subzone)
Contact Officer:	Ben Williams
Phone Number:	08 7133 2380
Consultation Start Date:	17 July 2024
Consultation Close Date:	14 August 2024
During the notification period, the application documentation can be viewed on the SA Planning Portal: https://plan.sa.gov.au/en/state_developments.	

Written representations must be received by the close date (indicated above) and can either be posted, hand-delivered, or emailed to the State Commission Assessment Panel (SCAP). A representation form is provided as part of this document.

Any representations received after the close date will not be considered.

Postal Address:

The Secretary
State Commission Assessment Panel
GPO Box 1815
ADELAIDE SA 5001

Street Address:

Planning and Land Use Services
Level 9, 83 Pirie Street
ADELAIDE SA 5001

****Please call 1800 752 664 (Plan SA Help desk) beforehand to confirm access and visitation arrangements.**

Email Address: spreps@sa.gov.au

**PLANNING, DEVELOPMENT AND INFRASTRUCTURE ACT 2016
S131 – CROWN DEVELOPMENT**

REPRESENTATION ON APPLICATION

Applicant: Department for Infrastructure and Transport
Development Number: 24014446
Nature of Development: Construction of a two-storey mental health facility with associated carpark, water tanks, generator, transformer, fencing and associated earthworks.
Zone / Policy Area: Strategic Innovation Zone and Activity Node Subzone
Subject Land: Lot 4711 Oldham Road, Elizabeth South (AL4711 of D130276, CT 6286/864)
Contact Officer: Ben Williams **Phone Number** 08 7133 2380
Close Date: 14 August 2024

My Name: _____ My phone number: _____

Primary method(s) of contact: _____ Email: _____
Postal Address: _____ Postcode: _____

You may be contacted via your nominated PRIMARY METHOD(s) OF CONTACT if you indicate below that you wish to be heard by the State Commission Assessment Panel in support of your submission.

- My interests are:
(please tick one)
- owner of local property
 - occupier of local property
 - a representative of a company/other organisation affected by the proposal
 - a private citizen

The address of the property affected is: _____
Postcode _____

- My interests are:
(please tick one)
- I support the development
 - I support the development with some concerns
 - I oppose the development

The specific aspects of the application to which I make comment on are: _____

- I:**
- wish to be heard in support of my submission
 - do not wish to be heard in support of my submission
- (please tick one) (Please tick one)

- By:**
- appearing personally
 - being represented by the following person
- (please tick one) (Please tick one)

Signature: _____

Date: _____



PLANNING, DEVELOPMENT AND INFRASTRUCTURE ACT 2016

SECTION 131 - CROWN DEVELOPMENT

NOTICE OF APPLICATION FOR APPROVAL TO DEVELOPMENT

Notice is hereby given that an application has been made by the **Department for Infrastructure and Transport (DIT)** under Section 131 of the *Planning, Development and Infrastructure Act 2016* for approval to construct a two-storey mental health facility with associated carpark, water tanks, generator, transformer, fencing and associated earthworks at Oldham Road, Elizabeth South **Development Number: 24014446.**

The development site is located at: Lot 4711 Oldham Road, Elizabeth South (AL4711 of D130276: CT 6286/864).

The subject land is located within the Strategic Innovation Zone, Activity Node Subzone of the Planning and Design Code, Version 2024.11 (20 June 2024).

A copy of the planning application is available for download from the SA Planning Portal at https://plan.sa.gov.au/en/state_developments and can also be viewed in person at Planning and Land Use Services, Department for Housing and Urban Development, Level 9, 83 Pirie Street, Adelaide. Please call 1800 752 664 (Plan SA Help desk) beforehand to confirm access and visitation arrangements.

Any person or body who desires to do so may make representations concerning the application by notice in writing delivered to the Secretary, State Commission Assessment Panel, GPO Box 1815, Adelaide SA 5001 **NOT LATER THAN WEDNESDAY 14 AUGUST 2024.** An online submission form is available on the SA Planning Portal, or submissions may also be emailed to: spcreps@sa.gov.au.

Each person or body making a representation should state the reason for the representation and whether that person or body wishes to be given the opportunity to appear before the State Commission Assessment Panel (SCAP) to further explain the representation. Submissions received may be published in SCAP agenda papers.

Should you wish to discuss the application and the public notification procedure please contact Ben Williams on (08) 7133 2380 or ben.williams2@sa.gov.au

STATE COMMISSION ASSESSMENT PANEL
spcreps@sa.gov.au

CONCEPT REPORT

Revision 02 – Issued for SCAP Approval

NORTHERN CRISIS STABILISATION CENTRE (6822-PC-2021)



Image 1: Greenway Architects' Impression of the proposed NCSC concept

Concept Report

NORTHERN CRISIS STABILISATION CENTRE (6822-PC-2021)

Project and Client Information

Site Address	Lot 4711, Oldham Road, Elizabeth South
Asset Number	Not Applicable
DIT Project Manager	Ben Wildy, DIT
Lead Agency Rep.	Amit Gupta, SA Health

Concept Report Prepared By

Company	Greenway Architects
Position	Lead PSC Representative
Contact	Brett Coshell, Assoc. Director Email: b.coshell@greenwayarchitects.com.au Phone: 0488 180 185
Revision	02
Date	14/05/2024

Sign Off

Lead Agency Rep.	Amit Gupta, SA Health
Date	
Signature	
End User Rep. (if applicable)	Darren Golley, NALHN
Date	
Signature	

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1. Executive Summary

This concept report has been prepared by Greenway Architects on behalf of the Department for Health and Wellbeing for the proposed new Northern Crisis Stabilisation Centre.

The Mental Health Services Plan 2020-2025 demonstrates that alternative pathways to accessing mental health support, Emergency Department (ED) avoidance and connecting to mental health crisis supported care are necessary responses to an increased strain on mental health services.

It is proposed (based on the limited beds in the north of Adelaide) that funding of a 16-bed crisis retreat residential centre would operate in the northern metropolitan area but be available to take admissions state-wide. It is expected the effective operation of crisis retreat beds would provide the opportunity to evaluate acute inpatient bed pathways and direct admission pathways that would improve capacity to the overall Health system.

The project will deliver a community unit operated by North Area Local Health Network (NALHN), and Sonder (a Non-Government Organisation, NGO), that delivers clinical assessment and treatment, and the opportunity of admission to crisis residential care for up to three days. These units are designed to create a therapeutic welcoming setting in a safe environment.

Initially the brief was written around a traditional model of care focused on crisis care with line of sight however as the project has developed there has been a significant policy change towards co-designed, human rights focused, recovery orientated service. The newly developed Model of Care focused on the provision of contemporary best practice in mental health care. The Crisis Stabilisation Centre and co-located Enhanced Head to Health Centre are an opportunity to deliver services that are integrated, human rights informed, recovery-orientated and trauma informed.

This Model of Care has outlined the following items for NALHN's responsibility to the South Australian Community, people who access their services and staff:

- To support the best possible mental health and wellness of people in our community through providing access to effective services and support that are person-centred and directed, integrated, recovery orientated and attuned to the person's individual recovery needs,
- To assist people living in our community to access the services they need and want, when they need them,
- To take a continuous, quality improvement lens to our work and contribute to evidence-informed practice and research across our services,
- To ensure the environments we provide services from are safe, whilst balancing the need for comfort, choice and the de-stigmatisation of mental health and distress,
- To create pathways and opportunities with our service partners to support connected and shared care in the mental health system.

To support this Model this centre will offer the following:

- Peer Support Services to ensure supports are provided with a recovery lens, hopeful and empowering,
- Assessment and Care Coordination Services for people requiring specialist mental health support and partnerships where necessary (including with the co-located Head to Health Centre) to ensure this care is holistic,
- Culturally and linguistically informed services to meet the needs of the diverse Northern Community,
- Services in a homelike environment that is designed specifically with person-directed healing at the heart of its ethos.

The current design proposal has been developed with input from the lead agency and key stakeholders including both NALHN, Sonder, OCP and Lived Experience groups.

2. Project Team

The following represent the key members of the Project Team, including their organisation and role:

Team member:	Organisation:	Project Role:
Carolyn McKay	Adelaide Primary Health Network (APHN)	Project Manager
Sarah Murray	Adelaide Primary Health Network (APHN)	Deputy CEO
Tamira Pascoe	Adelaide Primary Health Network (APHN)	Executive Director, Mental Health and AOD
Clarissa Bell	Commonwealth	
Ben Wildy	DIT	Senior Project Manager
Cameron Ridley	DIT	Senior Cost Manager
Melissa Nozza	SA Health	Lead Agency Representative
Amit Gupta	SA Health	Project Team Leader
Halimah Safdari	SA Health	Business Support Officer
Anne Burgess	NALHN	Board Chair
Melissa Francis	NALHN	Director, Nursing, Mental Health
Darren Golley	NALHN	Director – Capital Program Delivery Unit
Dianne Callahan	NALHN	Divisional Director, Nursing
Kelly Stewart	NALHN	Project Manager
Sujeeve Sanmuganatham	NALHN	Divisional Director, Medical
Shaun Sweeney	NALHN	Divisional Director, Allied Health & Community Mental Health
Melanie Turner	OCP	Deputy Chief Psychiatrist
Justine Mahne	OCP	Compliance Officer
Anna Tree	DHW, MHSP	Project Manager
Liz Prowse	DHW, MHSP	Executive Director
Skye Lang	DHW, MHSP	Project Manager
Ellie Hodges	LELAN	Executive Director
Sageran Naidoo	Sonder	CEO
Chris Chalubek	Sonder	Executive Manager
Ben Headlam	Sonder	Senior Manager Mental Health & AOD Metro
Kimberley Adams	Sonder	Facilities Manager
Kiara Hillam	Sonder	Executive Manager
Edi Bergamin	Playford Council	Project Manager
Peter Tynan	Greenway Architects	Lead PSC (Architecture) – Director
Samantha Hay	Greenway Architects	Lead PSC (Architecture) – Associate Director, Senior Interior Design
Brett Coshell	Greenway Architects	Lead PSC (Architecture) – Associate Director, Project Architect
David Kennedy	Robert Bird Group	DPSC – Structural Engineers
Tsu Yan Wong	Robert Bird Group	DPSC – Structural Engineers
Patrick Campbell	BCA Engineers	DPSC – Services Consultant
Leath Haddad	BCA Engineers	DPSC – Services Consultant
Raman Kunjamboo	Turner Townsend	Cost Manager
Frank Siow	Frank Siow & Associates	Traffic Consultant
Vic Barone	Katnich Dodd	Building Surveyor
Emmeline McArdle	Oxigen	DPSC – Landscape Architecture
Lewis Hewton	Cundall	ESD Consultant
Jarrod Bishop	LBWco	Environmental Consultant
Brett Fennell	BuildSurv	Building Certifier

3. Existing Site & Facilities

Information and reports

Item	Prepared By	Date
Project Brief	DHW	16.07.2021 – See Appendix D
Site Survey	Alexander Symonds	13.07.2020 – See Appendix L
Soil Tests & Geotechnical Report	LBWco	27.05.2019 – See Appendix J
Stormwater Management Report	RBG	Incorporated into the body of this report.
Soil Contamination / Hazardous Materials	LBWco	13.12.2023 – See Appendix H
Structural and Civil Report	RBG	Incorporated into the body of this report.
Services Report	BCA	Incorporated into the body of this report.
Traffic Report	Frank Siow & Associates	13.05.2024 – See Appendix
Landscape Concept Report	Oxigen	Incorporated into the body of this report.
NCC BCA Review	KD Building Certifiers	19.11.2023- See Appendix K
Planning Report		Not undertaken
Environmental Noise Assessment		Not undertaken

Site – General



PROPOSED SITE FOR NCSC

LYELL McEWIN HOSPITAL

Proposed site (shaded yellow): Lot 4711, Oldham Road, Elizabeth South¹

This subject site is located within the Strategic Innovation Zone (Sinv), in the Activity Node (AN) subzone in the City of Playford council area. It is subject to a number of overlays including matters specifically relating to the nearby Edinburgh Defence Airfield. The building is set back from the site road boundary to create a continuous built form to the public road. The building has also been located to allow clearance from powerlines on the western side of the site.

¹ Plan image from website of South Australian Property and Planning Atlas, <https://sappa.plan.sa.gov.au/>, accessed 10.11.2023

The building is located at the North East corner of the block of vacant land at the intersection of Oldham Road and Mark Road at Elizabeth Vale. It is strategically positioned near the Lyell McEwin Hospital to the east, see image on previous page, as the services provided at the new centre will be complimentary to the existing hospital and help reduce the load on the Emergency Department.

To the north is Mofflin Reserve, providing natural parklands and outdoor recreation which is also an ideal complement to the journey of recovery for mental health. Natural light and a visual connection to nature is an important design feature of this mental health facility.

The site was previously a council reserve. The location within the vacant site was specifically chosen to ensure the best opportunity for natural light as the rest of the site may be developed with multi-story buildings that would otherwise overshadow the proposed site. In this location, the building will be able to maintain the access to natural light to the north.

There are no known heritage or cultural considerations required of the project on the site.

The entry to the site will be from Oldham Road. There is a pedestrian path along Oldham Road which connects the Lyell McEwin Hospital to the entry of the new site.

Vegetation to the existing site has been cleared previously with only a couple of trees still on site. There is a single street tree that may be affected by the new driveway.

There are no existing buildings or structures on the site that require compliance with the NCC, WHS, DDA accessibility, Access to Premises, or other similar standards.

Site – Services

Electrical

There are existing overhead powerlines which were identified early on and will not affect the working of the site. We have investigated the costs of moving the overhead powerlines underground and this has proved cost prohibitive to the development of this project.

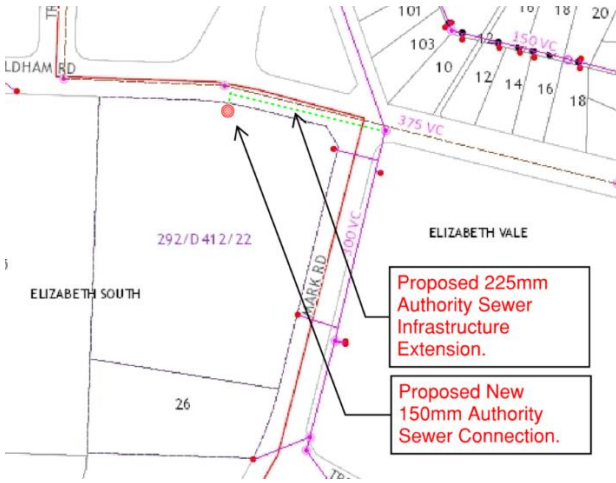
Hydraulic

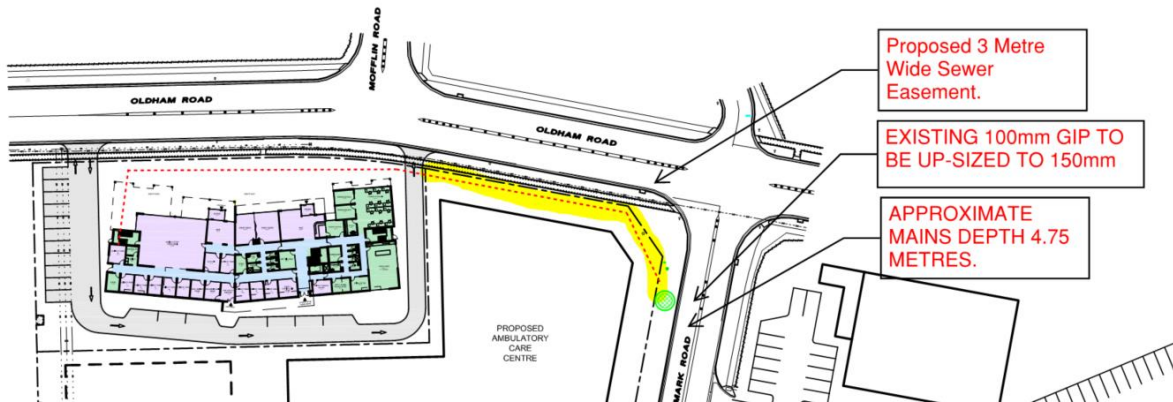
Site Sanitary Drainage:

The proposed building site title boundaries are not currently serviced by any Authority sewer connections. To provide a new sewer connection within the allotment, an Authority sewer infrastructure mains extension will be required within Oldham Road, branching from the existing Authority 300mm sewer main within Mark Road. On the 13th of October, Application has been lodged with S.A Water for the purpose of establishing feasibility and cost, S.A Water Reference H0150046. At the time of writing, the application is under investigation. The estimated cost for the sewer mains extension is in the order of \$110k. Further advice regarding the Authority sewer extension will be provided once received.

The preference is to provide a sewer connection within the site title boundaries in order to prevent the requirement for a sewer easement within the adjoining title.

Should the sewer mains extension not be possible / feasible, the alternative is to provide a sewer easement on the adjacent property to reach an existing Authority sewer connection from Mark Road. The existing connection would need to be up-sized from 100mm to 150mm. Approximate extent of sewer easement highlighted below.





Domestic Cold Water

The site is not currently serviced via an Authority domestic cold water connection / water meter. A new 50mm Authority Domestic Cold Water meter and connection from the existing Authority 200mm water main within Oldham Street is proposed to service the new building.

Application for a new domestic cold water meter and connection has been lodged with S.A Water, Reference number H0150046.



Natural Gas

A high pressure Authority natural gas main runs within Oldham Road and can be made available for the site, however utilization of gas is not being considered for use for this project.

Site – Structural / Civil & Stormwater / Traffic / Environmental

Structural

There are no structural buildings on site.

Civil

Based on the level survey drawings, an existing stormwater infrastructure was found on the Western side of the boundary. The pipe is noted as 300mm diameter, connecting to junction box and side entry pit. It is recommended a CCTV in pipe investigation be carried out to determine the condition of the existing pipe prior to connecting the new to the existing.

Traffic

Refer to Appendix K - Traffic Assessment Report, for further details.

Environmental

Based on the proposed end use of the site as a Crisis Stabilisation Centre, no unacceptable risks to human health or to ecological receptors were evident within soils at the subject site. Refer to the Soil contamination report in Appendix K.

Building/s – General

There are no existing buildings on the site.

Building/s – Services

There are no existing buildings on the site.

Buildings – Structural / Civil

Based on the level survey drawings, an existing stormwater infrastructure was found on the Western side of the boundary. The pipe is noted as 300mm diameter, connecting to junction box and side entry pit. It is recommended a CCTV in pipe investigation be carried out to determine the condition of the existing pipe prior to connecting the new to the existing.

Hazardous materials

LBWco was commissioned undertake a Preliminary Site Investigation (PSI) for Portion Lot 4711 Oldham Road. LBWco previously assessed the wider area including the subject site for City of Playford Council in 2016 and also carried out further soil assessment including on the subject site for ACH Group in 2017.

The objectives of this PSI were to:

- Assess the current and historical land uses and identify potentially contaminating activities that may have occurred within and directly adjacent to the assessment area.
- Assess the likelihood of site contamination resulting from PCAs posing complete source-pathway-receptor relationships, with respect to the proposed land use.
- Provide a preliminary indication of the waste classification of site soils.
- Assess whether soil impacts exist that could pose a risk to future site users.
- Assess whether remediation or site management may be required to make the site suitable for the proposed development.

Based on a desktop review of current and historical information, site inspection and soil assessment, LBWco prepared a summary conceptual site model (CSM) for PCAs that were identified to have occurred at, adjacent to or near the subject site, summarised below:

- One PCA was identified to have occurred onsite:
 - Fill or soil importation (which is not a prescribed PCA under PD14, but is a prescribed PCA under EPR 2009) – UNLIKELY complete source-pathway-receptor (S-R-P) linkage.
- Three PCAs were identified to have occurred on adjacent land within 60 m of the subject site, all of which were assessed as UNLIKELY to be associated with a complete S-P-R linkage.
 - Metal coating, finishing or spray painting (Class 1)
 - Plastics manufacture works (Class 1)
 - Abrasive blasting (Class 2)

Seven prescribed PCAs were identified to have occurred at offsite land, distant from the subject site at greater than 60 m, all of which were assessed as UNLIKELY to be associated with a complete S-P-R linkage.

- Pest control works (Class 1)
- Listed substances (Medical waste) (Class 1)
- Fuel burning facilities (Class 2)
- Electrical or electronics component manufacture (Class 1)
- Service stations (Class 1)
- Motor vehicle manufacture (Class 1)
- Gasworks (Class 1)

The site is located at the eastern extent of a designated EPA Groundwater Prohibition Area which prohibits the taking of groundwater at the site. Future purchasers of the property will be made aware of this via the Form 1 statement according to Section 7 of the Land and Business (Sale and Conveyancing) Act 1994.

Soil Data Conclusions

- Based on the proposed end use of the site as a Crisis Stabilisation Centre, no unacceptable risks to human health or to ecological receptors were evident within soils at the subject site.
- Site remediation is not required to protect health or ecology and as such, site soils are assessed to be suitable for unrestricted reuse onsite.
- Uncontrolled fill was inferred not to have been observed in the soil bores assessed.
- Soils were assessed to meet the physical and chemical requirements of Waste Fill.



4. Concept Proposal

Project Objectives

Over the course of the concept design phase, the project objectives have evolved from the original project brief.

The Crisis Stabilisation Centre will offer sixteen “wellbeing or recovery rooms”. These rooms offer a place of rest and recovery for people in times of distress (for up to three days) and is integrated to NALHN’s existing services (and community services) within a stepped model of care.

The service is deliberately psycho-social in response, understanding that psychological or emotional distress is often linked to trauma and life difficulties. The Crisis Stabilisation Centre will be co-located with the Northern Head to Health Centre (providing social and psychological services) and these centres will operate cohesively as if one service.

It is expected the effective operation of this service would provide the opportunity to evaluate acute inpatient bed pathways and direct admission pathways that would improve capacity.

The ground floor will be operated by the Sonder, who will provide mental health support for both walk-ins guests and limited book appointments. The first floor will be operated by NALHN and will provide short term stays of up to three days.

Benefits of the Crisis Stabilisation Unit include:

- Remove reliance on EDs as admission pathway into Mental Health Services (MHS).
- Facilitate community based assessment of MHS consumers and direct entry to inpatient services when required.
- Multi-disciplinary mental health clinicians, Consultant Psychiatrist, Registrar Medical Officer, the ability to support Candidacy/Nurse Practitioner, Lived Experience workforce and Administration. Further clinician support will be provided by existing community teams and emergency mental health teams, as required.
- Decrease numbers of Mental Health walk-ins into EDs.
- Accept SAAS and SAPOL referrals that do not require Acute/PICU level of admission.
- Improved Mental Health flow for acute inpatient services due to reduction in crisis presentations

Wider Project Objectives.	Outcome.	
1) A new fit for purpose mental health care clinic of sub-acute services with a 16-bed crisis stabilisation residential centre	✓	Outcome met
2) Remove the reliance on Emergency Departments as admission pathway into mental health services	✓	Outcome met
3) Address the principals of care including Meaningful and Therapeutic Engagement, a Home-Like Environment, Culture, and Trauma-Informed Care and Practice	✓	Outcome met
4) Target a 5-star IGRAT rating in accordance with the SA Health Capital Works policy	↔	Ongoing
Site Specific Objectives.		
a) Creating a safe facility for staff and guests to operate in.	✓	Outcome met
b) Creating an accessible workplace.	✓	Outcome met
c) Adequate car parking for visitors and after-hours staff	✓	Outcome met
d) Providing adequate services for the proposed facility	✓	Outcome met

Brief of Requirements

The brief was to provide a new fit for purpose Crisis Stabilisation Centre to address the needs of sub-acute mental health services. Refer to Appendix D for the original project brief.

An accommodation schedule was prepared to guide the preparation of the budget bid. This identified a 16-bed unit at 1,695m², inclusive of circulation space, engineering allowance and planning contingency, and excluding outdoor gardens and covered vehicle canopies. The schedule of accommodation, while aligned with AusHFG, had not been consulted on and was not service specific.

The document that formed the basis of the brief was the "Northern Crisis Stabilisation Unit Schedule of Accommodation v.02". Further review and development was required in Part 1, informed by the consultation framework, which has led to further iterations of the Schedule of Accommodation (SOA).

As a new Model of Care has been developed in conjunction with the concept design phase these revised versions of the SOA have been pivotal to capture the evolution of the brief. Gross total building areas have grown to reflect the increase in rooms required to deliver the services however the final concept design plan is more efficient in circulation than the SOA proposed and hence the floor areas are reduced. Please refer to the outlines below to capture these changes.

SOA Version 2 – September 2021

Original accommodation schedule, which require further investigation and testing.

SOA Version 3 – February 2022

Amended with same set out as Version two, but some additional areas to suit a more defined scope

SOA Version 4 – February 2023

Amended into areas for Head to Health & 16 Bed Short Stay with additional Head to Health areas

SOA Version 5

Amended to better reflect Ground Floor & First Floor with Head to Health merged

SOA Version 6

Additional area requested by Sonder to suit their services

SOA Version 7

Better reflects First Floor with Pods etc. The pod style layout with bedrooms around small lounges was not previously reflected in the SOAs

SOA Version 8

Updated to reflect reduced floor plan, 16 Bed

SOA Version 8a

Updated to reflect reduced floor plan, 12 Bed

SOA Version 9 – February 2024

GROUND FLOOR

Reduced to have 1 entry in lieu of 2. Therefore, this removed 1 off airlock, reception & waiting. Deleted 1 off Consult Room, reduced area to Lounge & deleted External combined comms room. Staff room increased, Meeting room & 2 off Quiet Rooms added. Workstation area reduced by 4 desks & Utility decreased.

FIRST FLOOR

Staff shared office added & lounge area increased. 1 off Counselling room & Prayer room removed. Stores increased slightly.

Current Concept Design plans

As noted, these plans have provided greater efficiencies with circulation than suggested in the SOA and hence, we have been able to achieve a smaller footprint than the final SOA proposed.

A detailed breakdown of the areas as they have developed is provided in **Appendix E – Return Brief SOA.**

The building is divided up into two sections, Head to Health (H2H) / Sonder for walk-ins and limited book services on the ground floor, and the 16-bed short stay facility, run by NALHN on the first floor.

The Crisis Stabilisation Centre will operate cohesively as if one service with the Head to Health centre and in an integrated fashion with the range of existing other NALHN and community services. Highly clinical and medicalised models are available elsewhere on the Lyell McEwen campus and beyond for those that require this type of service.

Head to Health

This mental health hub will offer walk-in support for people in distress, access to short and medium-term psychological therapy and social supports (such as Housing and Employment).

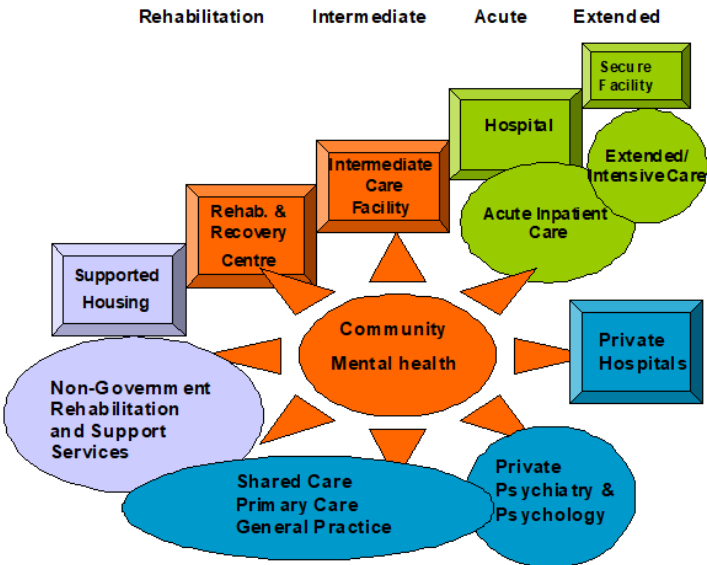
The Centre will be a welcoming, non-stigmatising, easily accessible environment that is trauma informed and culturally appropriate. The service will feature a large area where guests can be welcomed and supported. Individual and group spaces will be available for those who need a quiet space to retreat to or engage in therapeutic activity. Sensory modulation features will be a key element of the design with soft lighting, noise minimization features and discreet partitions, that would look in more in place in a living room (over a clinical setting).

Guests have the right to safety, whilst also avoiding the sense of being under surveillance. CCTV and other measures, where required, will be discrete and unobtrusive.

Consideration will be given to the needs of the LGBTIQA+ community, for example, offering opportunities for safe and appropriate personal care environments that are not gendered. Additionally, the needs of people from multi-cultural backgrounds will be considered through a variety of multiuse spaces.

The Centre will operate a no wrong door policy, welcoming anyone, anytime, (from) anywhere. Guests who would be better suited to another service will be supported to access those services. These arrangements will be offered in an integrated way with a tiered response to supporting travel available, depending on the needs of the person.

The below diagram illustrates the range of community and hospital based mental health service options available in the North of Adelaide. The Northern Head to Health/ Crisis Stabilisation Centre will operate below the threshold of the services highlighted in green. Design features will be cognisant that this service will be primarily for people who are voluntarily engaged and keen to stay in a restful and therapeutic environment.



Short Stay Facility

The Crisis Stabilisation Centre offers sixteen “wellbeing or recovery rooms”. These rooms are available for up to three days. Aligned to the Substance Abuse & Mental Health Services Administration (SAMHSA) Guidelines, the service is deliberately psycho-socially orientated, understanding that psychological or emotional distress is often linked to trauma and life difficulties.

The Model of Care has been designed to empower South Australians living with mental health challenges through the provision of services that are voluntary in nature, least restrictive and cognisant of the impact of trauma from coercive and restrictive practices.

At the heart of this model is an acknowledgement of the healing power of the therapeutic relationship, a need for all interactions to be focused on healing and a person-centred and person-directed care experience. Staff will be an essential partner and central to maintaining the cultural ethos of healing and recovery within the Centre.

The SA Lived Experience Leadership and Advocacy Network (LELAN) & Australian Centre for Social Innovation (TACSI) worked to develop and updated Philosophy of Care Version 2 that has been used to inform the Model of Care for this facility.

In addition to the Philosophy of care a number of stakeholder engagements were undertaken in the consultation process for the Crisis Stabilisation Centre provided strong resonance with care that is provided in a homelike environment.

The service approach is expected to prioritise the development of the therapeutic relationship, incorporation of recovery needs and have a considered position on balancing quality of life and risk mitigation.

The Design life as agreed by the project team, referring to the ABCB Handbook “Durability in Buildings including Plumbing Installations”, for the project has been determined as “Normal”. This provides for the following Design Life requirements:

Requirement:	Duration/description:
Building Design Life Category	Normal
Building Design Life (years)	50 years
Design life for components or sub systems readily accessible and economical to replace or repair (years)	5 years
Design life for components or sub systems with moderate ease of access but difficult or costly to replace or repair (years)	15 years
Design life for components or sub systems note accessible or not economical to replace or repair (years)	50 years

Concept Design – Architectural



² Image: The subject site, looking south.

The chosen location for the new centre is a brownfield site along Oldham Road, in close proximity to the established Lyell McEwin Hospital. Situated on relatively flat terrain, this site once served as a recreational space for the City of Playford, featuring tennis courts, clubrooms, and a car park.

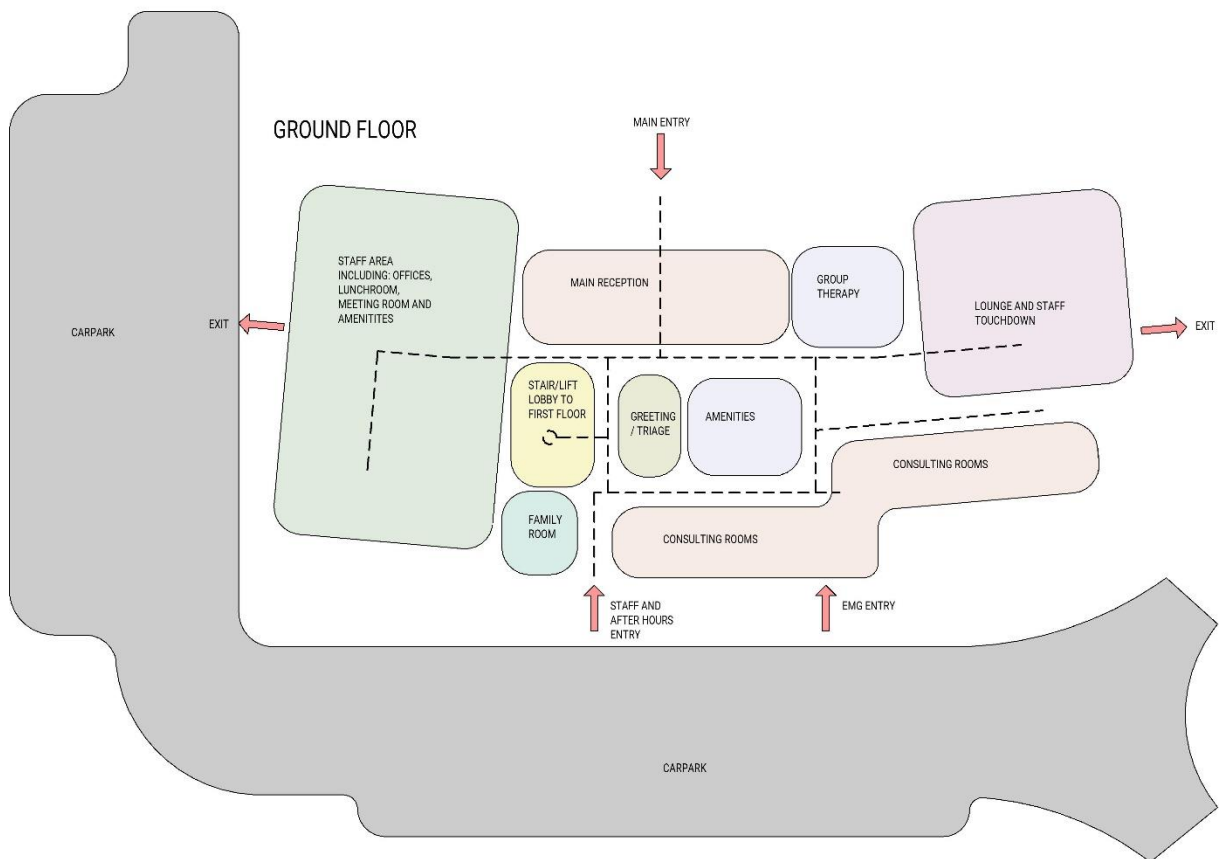
In the stages of concept development, various alternative sites underwent careful consideration before settling on this particular one. A Salisbury location was dismissed due to the high costs associated with necessary upgrades for a new car park to accommodate displaced parking and meet new requirements.

Exploring an option to south of the proposed site was ruled out due to the less-than-ideal outlook onto an existing multi-storey car park at the front entry and concerns about overshadowing from future planned buildings on the site.

An alternative site was briefly considered but was discounted due to the substantial additional costs involved in relocating existing facilities. The consensus for the ideal location was the northwestern side of the proposed property, driven by key factors such as optimal access to natural light and protection from potential obstruction by future developments. The strategic proximity to Lyell McEwin Hospital was deemed crucial, particularly in scenarios necessitating higher levels of care.

² Google Street View, <https://www.google.com/maps/@-34.745739,138.6613346,3a,75y,183.94h,82.45t/data=!3m6!1e1!3m4!1s8HULAGI-5jahZQVFhoz30Q!2e0!7i16384!8i8192?entry=ttu>, viewed 13.11.2023

FUNCTIONAL RELATIONSHIPS DIAGRAM



The building features a primary public entrance facing the street, offering easy access for visitors. For staff outside regular hours and emergency patients, there is a secure car park on the south side.

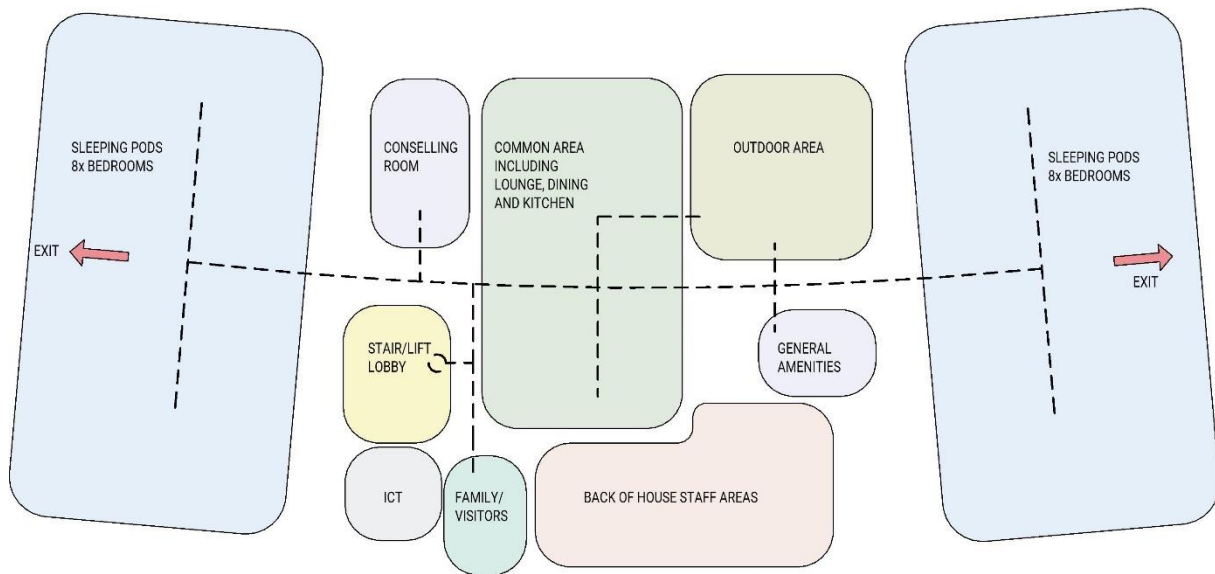
Upon entering, guests will be greeted by a spacious reception area, designed to provide a comfortable waiting environment. From here, they will be directed to either the welcoming greeting room or the lounge touchdown area for further discussions about their well-being. Additionally, the facility includes consulting rooms equipped for guest consultations and part-time sessions.

Staff amenities encompass various spaces including meeting rooms, lunchrooms, offices, and facilities.

Strategically positioned within the facility are centrally located amenities, a family room, and group therapy rooms to ensure accessibility and convenience for all users.

Visible from the main reception area, the staircase and lift to the first floor are prominently situated, offering 24-hour access for all occupants to the first floor.

FIRST FLOOR

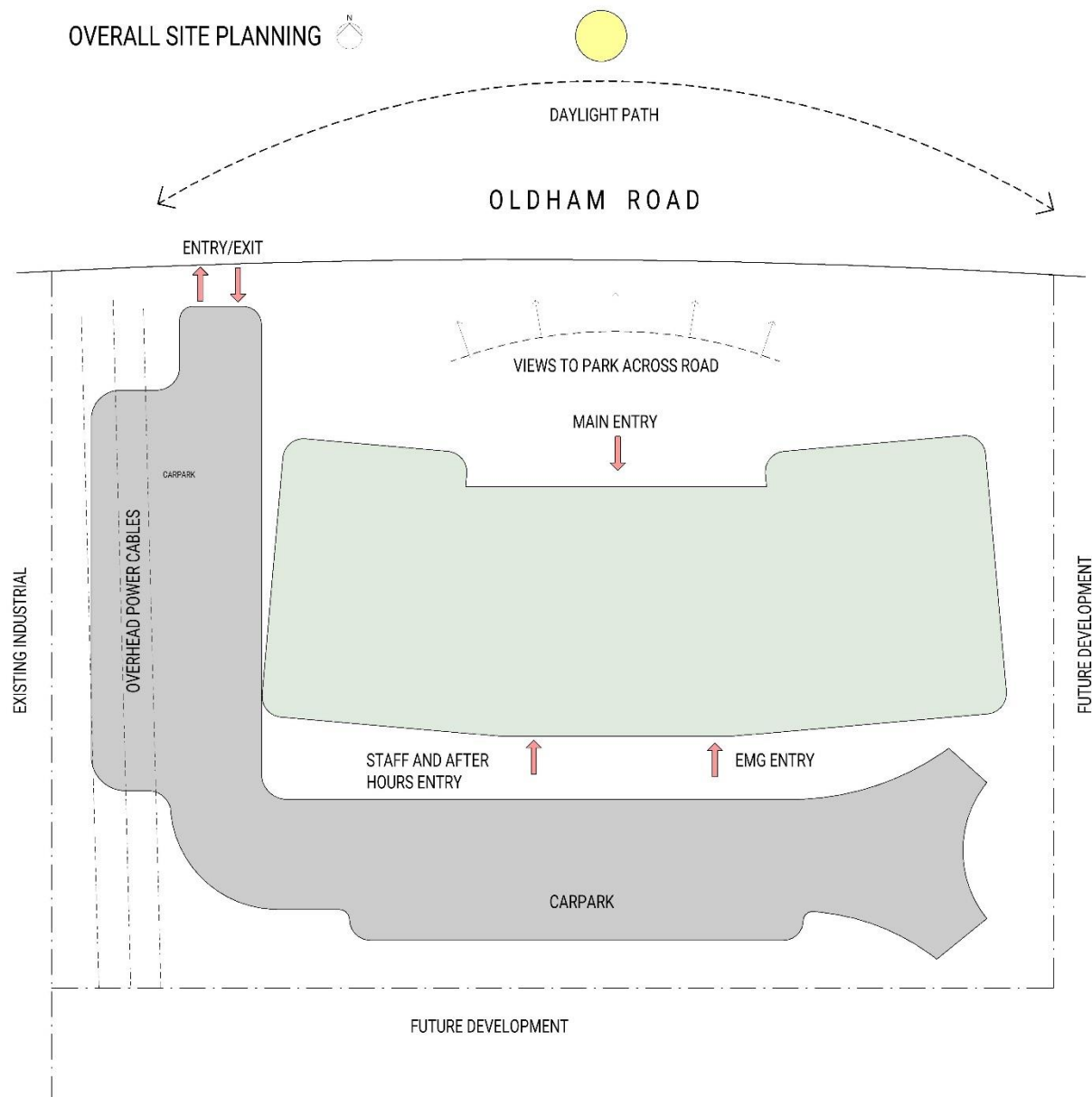


Upon entering through the stair and lift lobby below, guests are welcomed into the centres focal point—the heart of the facility—comprising a domestic kitchen and a central common area designed for both lounging and dining.

Strategically positioned at each of the four corners of the building are sleeping pods including four bedrooms with ensuites, offering optimal views and access to natural light and ventilation.

Efficient functionality characterises the back-of-house area, complete with provisions for cleaners and a meals kitchen. Accessible directly from the lobby, these facilities ensure seamless operations without causing disruption to guests. Similarly, the ICT room is easily reachable.

On the northern side, outdoor balcony and counselling room is strategically placed, capitalising on panoramic views of the adjacent park. A dedicated space for family and visitors, providing privacy, is thoughtfully positioned off the main entry lobby. This arrangement ensures a well-balanced and welcoming environment for all occupants.



ODASA Principles of Good Design

Context

The architectural layout of the structure aligns with Oldham Road to the north, strategically maximising exposure to natural light and picturesque views of the adjacent parklands. The northern orientation offers a vista of Mofflin Reserve, a recently upgraded community park that fosters outdoor recreation—a perfect complement to the therapeutic journey of mental health recovery. The incorporation of ample natural light and a seamless visual connection to nature stands out as a pivotal design element in the context of a mental health facility.

To enhance the overall experience, the building is thoughtfully positioned away from the road, creating secluded courtyards that seamlessly integrate with the lounge areas. These private spaces provide guests with a serene environment, fostering a sense of calm and engagement, and cultural inclusiveness.

Considering the existing powerlines, careful consideration has been given to ensure sufficient clearance around the built form. Consequently, the area beneath the power lines has been repurposed for convenient and accessible parking facilities.

Colour Theory.

Inspiration.



NORTHERN CRISIS STABILISATION CENTRE

GREENWAY
ARCHITECTS

Inclusivity

The design incorporates statutory accessibility requirements, ensuring accessibility with features such as level access and egress, accommodating door widths and corridors for enhanced manoeuvrability. In addition, considerations extend to the installation of all light switches and handles at accessible heights. The provision of accessible parking spaces and bathrooms further underscores the commitment to inclusivity and user-friendly design.

We have developed a design that appears more residential and less institutional from the street so that the centre is more inviting for guests. We have also carefully considered the choice of colours to façade reflect and represent nature.

Durability

The selected materials for the proposed design exhibit considerable durability, ensuring long-term resilience and minimising the need for ongoing maintenance. A robust structure will also contribute to the longevity of the facility. The thoughtful incorporation of these resilient materials aligns with a strategic vision for sustainable infrastructure.

Value

The design actively promotes engagement opportunities for users within the facility and the surrounding courtyards. By aspiring to recreate the welcoming ambiance of a residential home in both scale and appearance, the facility fosters a sense of comfort and familiarity. Additionally, the design extends its invitation to the broader public, engaging them through thoughtfully landscaped areas in front of the building. This intentional approach not only prioritises the well-being of facility users but also seeks to establish a harmonious connection with the community at large, creating an inclusive and inviting environment for all.

Performance

The building is designed to be accessible to the general public, fostering an inclusive and welcoming environment for individuals seeking sub-acute mental health assistance. Prioritising the well-being of both guests and staff, the facility incorporates high-quality spaces, enhancing mental health and providing dedicated areas for staff to decompress in private courtyards and a designated staff room.

This purposefully designed facility not only meets the specific needs of staff but also ensures that both staff and guests are accommodated with efficiency. By doing so, it contributes to alleviating the strain on emergency department resources, effectively managing and reducing the potential influx of patients

seeking mental health assistance. The thoughtful design of the facility thus serves as a proactive measure to enhance mental health support while optimising the overall healthcare system's capacity.

Sustainability

The building is committed to achieving enhanced Environmentally Sustainable Design performance through the utilisation of IGRAT, the Independent Green Rating Tool – a green building rating tool tailored for new constructions and renovations. IGRAT serves as a cornerstone in assessing key performance indicators and verifying sustainable outcomes for all SA Health projects, ensuring a comprehensive approach to sustainability in capital works projects.

In its architectural strategy, the building places a premium on optimising orientation, strategically aligning windows along the northern aspect of the site. This design approach not only prioritises visual access to natural light in relevant rooms but also fosters a healthy and well-connected indoor/outdoor environment for all occupants. Sunlight accessibility is recognized as a vital contributor to the overall health and well-being of on-site personnel.

To further bolster its commitment to sustainable practices, the building will feature a solar panel system on the roof, contributing to the generation of energy needed for its operations. All fittings within the building will be selected with a focus on water and energy efficiency, underscoring a holistic dedication to environmentally conscious design and resource management.



Concept Design – Landscaping

The landscape for the NCSC incorporates landscape treatments that align with the operational and functional requirements of the new centre.

The landscape aims to enhance the overall quality of the site, which is currently open and very exposed. These improvements will be achieved through establishing usable outdoor courtyards, outlook gardens, buffer planting and strategic tree planting.

The architectural layout provides a passive and interactive interface with the surrounding landscape. A series of outdoor courtyards connect from core internal facilities, to offer external areas of respite. Landscape treatments within these areas include, shaded paved areas, small lawns, enclosed gardens, various seating and trees. To the perimeter of the centre are a series of outlook gardens that provide further relief and screening from activity external to the facilities.

The landscape treatment utilised feature groundcover planting and ornamental trees in high use zones such as the entries, staff and visitor outdoor areas, and frontage to Oldham Road. Irrigated lawns are used as a flexible, low maintenance ground treatment in the northern courtyards as well as frontage to Oldham Road. The southern aspect of the NCSC addresses the carpark and staff outdoor area.

All landscape areas prioritise the functional requirement of security and screening while also considering the address to external streetscape and adjoining sites. The landscape design is in accordance with Crime Prevention Through Environment Design (CPTED) principles to deter anti-social behaviours, such as a planting that can conceal trespassers and assist with climbing fences, as well as rocks that may be picked up and thrown at the building.

Landscape Design Objectives:

Pedestrian Circulation:

- Provide clear pathways for easy movement between indoor and outdoor areas.
- Provide legible pedestrian connections from parking areas to the buildings

Safety and Security:

- Implement monitored and controlled site entries.
- Provide flexible and safe outdoor spaces, including lighting of outdoor areas and major circulation pathways.

Respite and Outdoor Connection:

- Provide outdoor spaces that allow opportunity for consumer and staff respite.
- Maximise opportunities for interaction with a pleasant outdoor environment.
- Provide outdoor spaces that are at a human scale, are comfortable, inviting and inclusive.
- Incorporate open views within outdoor areas.
- Provide attractive views from internal building spaces where appropriate.
- Incorporate multi-use spaces to support various activities and to suit use by consumers.

Accessibility:

- Incorporate accessible, equitable furniture items.

Quality and Asset Life:

- Provide varied low maintenance and cost-effective paving surfaces for visual comfort and define outdoor space hierarchy.
- Implement landscape treatments and materials with extended asset life and that consider whole of life costs and DIT / SA Health maintenance requirements.

Planting and Vegetation Types:

- Provide low maintenance irrigated planting to suit the various environmental conditions created by the new buildings and site design.
- Provide vegetation buffers along site boundaries.
- Incorporate low maintenance, and low water use planting selections and local native species where appropriate.

Shade & Amenity:

- Providing tree planting to achieve natural shading and reduce urban heat.
- Incorporate integrated shading structures where required for all year round user comfort providing protection from weather.

Identity and Character:

- Design the Landscape to reflect local identity through materials and plant selection.

Concept Design – Structural

Structural Design Standards

Structural design shall be conducted in accordance with the latest issue of all relevant Australian Design Standards, Codes and other statutory requirements. As a minimum requirement, the design shall be based on, but not limited to:

AS/NZS 1170.0 - 2002	Structural Design Actions Part 0 – General Principles
AS/NZS 1170.1 – 2002	Structural Design Actions Part 1 – Permanent, Imposed and other actions
AS/NZS 1170.2 - 2021	Structural Design Actions Part 2 – Wind Actions
AS 1170.4 - 2007	Structural Design Actions Part 4 – Earthquake Actions in Australia
AS 2312.1 - 2014	Guide to the protection of structural steel against atmospheric corrosion by the use of protective coatings – Paint coatings
AS/NZS 2312.2 - 2014	Guide to the protection of structural steel against atmospheric corrosion by the use of protective coatings – Hot dip galvanising
AS 2870 - 2011	Residential Slabs and Footings
AS 3600 - 2018	Concrete structures
AS 3700 - 2018	Masonry Structures
AS 4100 - 2020	Steel Structures
AS/NZS 4600 - 2018	Cold-Formed Steel Structures

Importance Level and Design Life

The proposed building has been assessed as being Importance Level 3 structure, due to the possibility of building being a health care facility with a capacity of 50 or more resident patients, but not having surgery or emergency treatment facilities. This is subject to private certifier's advice at next phase. The structural elements of the buildings shall be designed to provide adequate performance for a minimum period of 50 years.

Material selection, specifications and detailing of the structural elements shall be in accordance with the design life and the relevant design standards.

Generally, the following minimum material grades shall be adopted.

Concrete

Strength Grade	Structural Item
25 MPa	Footings, Pads
32 MPa	External slabs on ground and exposed concrete generally

Steel

Strength Grade	Structural Item
250 MPa	CHS (C250LO), Plates
300 MPa	Hot rolled sections
350 MPa	CHS (C350LO), RHS (C350LO), SHS (C350LO)

Permanent Actions (G)

Permanent Actions (Self weight) shall be in accordance with Appendix A of AS/NZS1170.1 or in accordance with supplier's specifications for proprietary products.

Superimposed Dead Loads (SDL)

Self-weight of permanent non-structural items shall be calculated based on their layout. That includes partitions, floor finishes and toppings, ceilings and services, plant and equipment, hobs and kerbing, perimeter screens and walling, planters and landscaped areas, and any imposed dead loads from roof framing, glazing and linings which are moveable shall be treated as superimposed dead loads nominated below.

Building Component	kPa
General Clinical and Accommodation Areas	1.0
Amenities	1.5
Exposed Stairs, Balconies, Corridors, Public Spaces, Terraces	1.0

Reference shall be made to the architectural drawings for the extent and location of these loadings.

Designed Live Loads (Q)

The floor slabs in the specifically designated areas shall be designed for the live loads nominated below in accordance with AS/NZS 1170.1.

Building Component	Uniformly Distributed (kPa)	Point Load (kN)
Offices, Consulting Rooms, Bedrooms, Communal Kitchens (Not subject to heavy storage or plant areas)	3.0	2.7
Non-trafficable roof	0.25	1.4
Stairs, Balconies and roofs used for floor type activities	4.0	1.8
Corridors, Terraces subject to wheeled vehicles	5.0	4.5

Design Wind Loads

Design shall be in accordance with AS/NZS 1170.2 using the parameters set out below.

Region	A5
Importance Level	3
Annual Probability of Exceedance	1:1000
V – Strength limit state	46 m/s
V – Serviceability limit state	37 m/s
Terrain Category	3
Terrain/Height Multiplier, Mzcat	0.90
Shielding Multiplier, Ms	1.0
Topographic Multiplier, Mt	1.0
Hill-shape Multiplier, Mh	1.0

The design of façade elements and their connections to the structure shall make provision for all local peak wind pressures effects, calculated using AS/NZS 1170.2 local pressure factors.

Projecting canopies and awnings, particularly at ground level shall be designed to resist the wind forces caused by deflected pressure flow from the surrounding buildings, using the method nominated in AS/NZS 1170.2.

Earthquake Loads

Design shall be in accordance with AS1170.4 using parameter set out below.

Probability Factor, Kp	1.3
Hazard Factor, Z	0.10
Subsoil Classification,	Ce (Subject to Geotechnical Investigation)
Structural Ductility,	2 (Subject to detailed design)
Structural Performance, Sp	0.38 (Subject to detailed design)
Earthquake Design Category, EDC	II

Structural Design

The approximate footprint of the building at Ground floor is 1100m². The building consists of precast wall elements (alternatively core filled reinforced masonry block could be used for core walls), brick veneer and lightweight wall frame system. The composite floor system separates each storey is to have a 2-hour fire rating requirement, with the top storey covered by and steel-clad roof.

Concept Design – Civil & Stormwater

To ensure the existing stormwater management for the site is not negatively impacted by the development, existing levels at the Carpark will need to be worked into the proposed landscaping plans, so that the existing stormwater infrastructure can be utilised and not removed, as they form part of the overall stormwater management for the site. Minor earthworks are likely to be required where existing surfaces are to be removed in preparation for building pad, and reshaping of the perimeter paving level required.

Downpipes from new roofs are to be connected to the existing underground stormwater pipes network. It is anticipated that the minimal change in permeability between pre-development and post-development.

In summary there are no significant changes to the existing stormwater system or significant requirements for earthworks or new pavements.

We understand currently there is a high voltage easement running North-South of the site, near boundary on West. For this reason, RBG recommend adaptive re-use of existing stormwater infrastructure and minimise major excavation where possible. Condition of the existing stormwater pipe is subject to be investigated, prior to connecting from new pipes.

Concept Design – Traffic Management

Refer to the Traffic Assessment Report in Appendix K.

Concept Design – Acoustic Engineering

The building is located opposite a park and within a vacant block. The only neighbour is an industrial site, Vector Technologies, which has their car park along the edge of our site. Issues with outside noise is a low risk.

Concept Design – Mechanical Engineering

The proposed system consists of the following components

- Multi Head VRV/VRF heat recovery DX air conditioning system: This system will serve the ground floor of the Stabilisation Centre. It utilizes a heat recovery capability to optimize energy efficiency. The waste heat recovered from areas requiring cooling is diverted to areas that require heating and vice versa, thus increasing overall system efficiency. The system can be further enhanced by adding a domestic water heating unit that utilizes the rejected heat from the cooling process.
- Ducted split type packaged units with EC fans and in-duct VAV boxes: These units will serve the patient rooms and passages on Level 1. The EC fans and digital compressors of the split ducted units provide increased efficiency during part load operation.

Outside Air Strategy and Improved Indoor Air Quality

The proposed mechanical system for the new Crisis Stabilisation Centre includes an outside air strategy that exceeds the minimum requirements outlined in AS1668.2.

To ensure optimum indoor air quality and a healthy environment for the occupants, the proposed system incorporates a strategy that increases the amount of outside air by 50% above the minimum requirements.

By increasing the amount of outside air, the system aims to improve the ventilation and reduce the concentration of pollutants and contaminants within the building. Adequate ventilation is essential in mental health centres to create a comfortable and healthy environment for the patients, staff, and visitors.

Moreover, the proposed system also includes the use of higher efficiency filters to further enhance indoor air quality. These filters have a higher particle removal efficiency and can capture smaller particles, allergens, and airborne contaminants. The use of these filters helps to minimize the presence of pollutants in the air, ensuring a cleaner and healthier indoor environment.

In addition to the outside air strategy and improved air filters, the proposed mechanical system for the new Crisis Stabilisation Centre also includes CO2 monitoring as part of the indoor air quality management strategy.

Wait and staff areas

Reception and staff areas will be served by VRV ducted or cassette units. Ceiling registers accessible to consumers will be of the anti-ligature type for safety according to VIC Engineering Guidelines for Healthcare Facilities. Larger ducted units will have ERV systems.

Lounges, Dining areas and circulation spaces

The lounges, dining areas and circulation spaces will be served by VRV ducted units. All ceiling registers are to be anti-ligature type for safety according to VIC Engineering Guidelines for Healthcare Facilities.

Patient rooms

Patient rooms will be conditioned by split ducted units with in-duct VAV boxes for individual temperature control. All registers in patient rooms will be of the anti-ligature type and all in-ceiling equipment and access to them will be located outside patient rooms to ensure safety according to VIC Engineering Guidelines for Healthcare Facilities.

Store rooms

Store rooms and dirty utility rooms will be equipped with ducted general exhaust systems sized according to AS1668.2.

Amenity areas

Amenity areas will have ducted toilet exhaust systems designed in accordance with AS1668.2.

Automated control systems

- Central BMS with consideration to connect with existing
- VRV central controller interfaced with BMS

Building Internal Design Criteria

Area Served	Internal Design Conditions			Normal Operating Hours (nominal)	Design Maximum Sound Pressure Level from Mechanical Services (dB(A))
	Summer °C DB	Winter °C DB	% RH		
Wait	22 ± 2	22 ± 2	(A)	8am to 6pm	45
Work Stations, Staff room	22 ± 2	22 ± 2	(A)	8am to 6pm	45
Consult rooms	22 ± 2	22 ± 2	(A)	8am to 6pm	45
Lounges, Dining areas and circulation spaces	24 ± 2	24 ± 2	(A)	24 Hours	45
Patient rooms	22 ± 2	22 ± 2	(A)	24 Hours	45

Key

(A) Denotes no direct humidity control will be provided however inherent psychrometric characteristics will generally limit relative humidity to below 65% under most operating conditions

Outdoor Design Conditions

The air conditioning systems will be selected to satisfy the following criteria under the most adverse combination of external solar loading and the following conditions:
 External ambient conditions for selection of air conditioning plant cooling/heating capacities, to achieve "Internal Design Conditions" above
 Summer: 39.2°C DB, 22.7°C WB (together with most adverse combination of external solar loading)
 Winter: 4.6°C DB

The above criteria is based on AIRAH comfort (non-critical) design conditions for Adelaide.
 Extreme ambient conditions under which all plant shall remain operational:

Summer: 45.0°C DB, 25°C WB
Winter: 0°C DB

Concept Design – Electrical Engineering (inc. comms, security, etc)

Electrical Services

A main switchboard located externally on the west side of the building. The board to be fed from the new SAPN 315kVA padmount transformer.

The main switchboard would power the two tenancy boards –DB. G and DB.F. Retail electrical metering will be provided to separate DB. G (Sonder Tenancy) separate from the main building.

50% of site is to be supported by a generator as per SA Health direction. Estimated size of the generator to support the site to would be 150kVA backup generator.

The run time of the generator to be 12 hours as per SA Health direction.

Power to lighting and power circuits will be split between the two tenancies.

Power will be reticulated via a series of cable tray and catenary wires.

Lighting will be LED based. As part of the SAIPP locally manufactured products will be specified.

Alternative products will however be considered as the intent of SAIPP is not to form a protectionist manufacturing industry but rather give local manufactures an even opportunity.

Exit and Emergency lighting will be provided.

The consult rooms on the ground floor and Level 1 Patient Rooms will be “Body Protected Areas” as directed by clinical staff.

As part of value management process, a 5kW PV System will be provided.

Exact number of power and data outlets to be confirmed as the design progresses.

ICT

A Virtual Local Area Network (VLAN) dedicated to management systems of the two tenancies in the building will be developed. This will be entirely independent of Digital Health Networks.

The VLAN will comprise of IP based Nurse Call System, Master Clock System, Wireless Duress, security/access control, CCTV & Exit and Emergency lighting.

The services for all of the above will be located within the Building Distributor in a dedicated 45RU Rack.

A rack mounted UPS to be installed as a backup for the communications cabinets.

The Catalysts will then support PoE and standard Switches in each Floor Distributor.

A dedicated fibre network will be installed to run the VLAN independent of Digital Health fibre cables.

Nurse Call System – Will be IP Based and either Hills IP7000 or Austco Tacera.

Security/Access Control – will be specified as Gallagher in accordance with SA Health directive

Wireless Duress – Final System will be discussed with users and SA Health during Schematic Design phase.

CCTV – Bosch Analytical or similar.

Concept Design – Hydraulic Engineering

Sanitary Drainage

Based on expected sewer infrastructure depths, it is envisaged that the entirety of the sites sanitary drainage will be accommodated via gravitational means. Preferably the sites sanitary drainage will be connected to a new sewer connection off Oldham road (subject to approval and acceptable costing from S.A Water). Alternatively, if a new sewer connection is not provided then gravitational drainage to the upgraded existing Authority connection from Mark Road is possible.

The sanitary drainage system is to be constructed of UPVC material, with the possible exception of the pan room sanitary drainage, which may be constructed of HDPE material for temperature resistance (pending requirement / selection of pan sanitizing equipment).

Sanitary drainage systems are to be designed to the requirements of AS/NZS 3500.2 and local Authority (Office of Technical Regulators) regulations, with the exception of clinical hand basins, which for infection control purposes will not be provided with either floor waste nor integral overflow.

Where highly reactive soils are present, the sanitary drainage system will be provided with knuckle joints / flexible connections to accommodate potential soil movement.

Sanitary drainage systems installed above habitable spaces will be acoustically rated by either wrapping (with Pyrotek Soundlag 4525c or polypropylene acoustic pipe – Raupiano).

No provisions for emergency sewer storage are being considered for this project (sewer blind tanks that can be utilized to divert the sewer waste stream in the unlikely event of a failure within the Authority Sewer infrastructure).

Trade Waste Drainage

Trade waste drainage is to be constructed of HDPE material.

Trade waste drainage is to be provided for the first-floor commercial kitchen.

Trade waste drainage will be designed in accordance with AS/NZS3500.2 and S.A Water Trade Waste Guidelines.

A pre-treatment device (grease arrestor) will be provided prior to connection to sewer. This will likely comprise of a 2,400 litre in-ground grease arrestor (subject to S.A Water approval).

Sinks and floor wastes (within prep areas) are to be fitted with S.A Water approved strainers.

Domestic Hot and Cold Water

Domestic cold water pipework material shall be either medium density polyethylene (MDPE) (with electrofusion joins only) or dense wrapped copper where located in-ground. Above ground pipework material shall be either copper or cross linked polyethylene (XLPE).

Design of the domestic cold water reticulation system shall be in accordance with AS/NZS 3500.1. Cold water velocities are to be limited to around 1.5 metres per second and not exceed 3.0 metres per second.

Emergency storage of domestic cold water is not being considered for this project (provision of cold water storage tanks and pump sets for the event of Authority water infrastructure failure).

Backflow prevention devices shall be installed in accordance with AS/NZS 3500.1 and the Office of Technical Regulator requirements. Backflow devices will be installed (but not limited to) boundary protection, dirty utility water supplies and irrigation provisions.

Design of the domestic cold water reticulation system shall be in accordance with AS/NZS 3500.1. Cold water velocities are to be limited to around 1.5 metres per second and not exceed 3.0 metres per second.

Design of the domestic hot water reticulation system shall be in accordance with AS/NZS 3500.4. Hot water velocities are to be limited to around 1.0 metres per second and not exceed 3.0 metres per second.

Domestic hot water reticulation systems shall be of flow and return (circulating) type and storage temperatures in excess of 60 degrees Celsius in order to minimize legionella risk.

Dead legs (non circulating) hot water pipe lengths are not to exceed 6 metres.

Scalding protection will be provided via thermostatic mixing valves for ablution fixtures.

Staff kitchenette and waiting bays will be provided with boiling / chilled water provisions.

Domestic hot water is to be generated via centralised electric heat pump system.

Rainwater

Rainwater re-use is not being considered for this project, particularly as rainwater use for toilet flushing is not recommended under the Victorian Health Guideline for clinical areas.

Concept Design – Fire Engineering

Site Infrastructure

It is proposed to serve the site with a new 150mm fire water supply, connected to the 250mm SA Water main within Oldham Road. SA Water Flow Tests and Network Analysis have been applied for, and results received. The results indicate that there is sufficient flow and pressure available from the 250mm SA Water main to serve a combined fire hydrant sprinkler system.

It is proposed to provide a new combined fire hydrant sprinkler booster facing Oldham Road, for South Australian Metropolitan Fire Service use. The booster assembly is to include OTR compliant backflow valves and is to comply with AS2419.1-2021 and AS2118.1-2017.

A new on-site fire hydrant system is required and is proposed to comprise of external fire hydrants located adjacent each stair, providing coverage throughout both Ground and First Floor. All underground pipework, valves and fittings shall be installed in accordance with AS2419.1-2021 and coordinated with other site services.

New sprinkler control valve/s are proposed to be installed, external to the building, and served from the new fire water site supply.

A new Fire Indicator Panel (FIP), with Occupant Warning module is proposed internally within the main entrance of building. The FIP is proposed to be connected to and monitored by the SAMFS monitoring service, via Alarm Signalling Equipment (ASE).

Internal Fire Services

A new sprinkler system is proposed throughout the building in accordance with AS2118.1-2017, Light Hazard requirements. Sprinkler heads shall be selected considering their suitability for each specific area of the building, including within the concealed space above ceilings.

A new fire detection and alarm system will be provided throughout the building in accordance with AS1670.1-2018 requirements. The system will generally comprise of smoke detectors, excepting areas where nuisance alarms are considered a risk (kitchens, bathrooms, etc.)

Occupant warning in accordance with AS1670.4-2018 is required, comprising of speakers to alert occupants of a fire alarm, including within bedrooms. The Occupant Warning system is to be interfaced with both the sprinkler and fire alarm systems.

Fire hose reels are not currently proposed due to not being required by the NCC BCA for Class 2, 3 or 5 buildings.

Portable extinguishers are to be provided throughout the building in accordance with AS2444-2005 and DIT Guide Note G195. Extinguisher types are to be selected based on their suitability for the expected adjacent hazard/s.

Concept Design – Lifts

Proposed lift to comply with NCC Deemed to Satisfy requirements and SAAS Design Recommendations.

Specific design parameters and requirements for the lift are as follows;

- Twenty-one (21) person 1600kg lift car to comply with SAAS Design Guidelines
- Lift car recommended dimensions to be 1500mm wide x 2400mm deep
- Doorway clear opening size of 1000mm wide
- Disabled Access compliance required
- Stretcher Access compliance required
- Audible and Visual floor indication required
- Machine Room Less (MRL) lift configuration
- Standard proprietary lift car finishes
- LED Lighting troffer with integral concealed UV-C air disinfection chamber & inbuilt HEPA filter
- Standard car operating panels including anti-bacterial buttons
- Bumper rails and kick plates to lift car
- Dual SIM (3G/4G) cellular module with 2 hour battery backup
- Battery backup – return to ground floor on power outage
- Swipe card / fob access control
- CCTV to lift car

The following design aspects are not proposed for the lift;

- Custom lift car interiors
- Anti-ligature finishes and provisions
- Destination control (no benefit for two (2) stops)
- Regenerative drive (little benefit for two (2) stops)
- Resistor Bank (not required unless regenerative drive with generator supply)

Concept Design - Ecologically Sustainable Development (ESD)

It is intended to carry forward the established NCSC site ESD principles on as practical given budgetary limitation. Specifically, these are:

- PV Generation Systems increased above minimum 5kW required by DIT guidelines to balance the needs of the IGRAT energy model, the roof space and the budget.
- Consideration to capturing rainwater from the roof areas and reuse for irrigation
- Use of high efficiency LED luminaires indoors and out.
- Sub-metering of Electrical and Hydraulic Services
- Use of VRV heat recovery system
- Consideration to utilise VRV system to preheat domestic hot water utilising waste heat
- Thermally and functionally zoned variable air volume split ducted DX units with EC fans serving patient rooms
- Consideration to allow for natural ventilation to patient rooms by closing supply air VAV box when window is opened
- High efficiency motors

In addition, the requirements of the preliminary IGRAT Scorecard provided in workshop facilitated by D Squared provides specific project targets to achieve a 5-Star IGRAT rating for the project:

Priority ranking of works

Given the critical nature of the facility to the State and the community, there is no proposal to stage or sequence the works, beyond the possibility of an element of Early Works for Civil works and Building Services Infrastructure connections. Accordingly, there are no elements that can be deleted or added to the scope to assist in the process of budget management.

5. Schedule of Works

Demolition

The site is generally cleared and free of any existing structures other than the powerlines located along the western side of the site close to the boundary.

Early works may see portions of the existing site reworked to ensure that the necessary earthworks certification can be achieved for the building pad prior to the commencement of construction of the building.

New Building/s

The envisioned structure is designed with a ground floor predominantly clad in brick and a first floor in lightweight cladding. This combination serves a dual purpose, as the brick imparts a sense of scale and stability to the building, harmonizing with the neighbouring houses and the nearby hospital. In contrast, the lighter colorbond cladding on the first floor reduces the visual mass of the entire structure.

Given that the first floor boasts a larger footprint than the ground floor, it provides shading to most of the ground floor windows. To balance the need for natural light and unobstructed views, windows on the sun-exposed areas of the first floor will be equipped with aluminum hoods, effectively mitigating heat loads while preserving the connection to the outdoors.

The mechanical plant on the ground floor will be surrounded by aluminium louvres, ensuring efficient ventilation and screening.

Internally, the fitout will consist of robust materials with minimal maintenance requirements.

Floor finishes will feature a combination of vinyl in high-use areas, while carpet will be used in internal guest spaces, where possible, to evoke a more residential ambiance. Ceramic tiles will be used throughout wet areas, all meeting the requisite slip rating standards, and vinyl where required.

Internal partitions will be either steel stud-framed with plasterboard linings or glazed partitions, detailed in the architectural drawings.

All selected fixtures and appliances for the project will undergo evaluation for energy and water efficiency, in addition to cost considerations.

Services will cover lighting, power, data, communications, security, mechanical ventilation and exhaust, toilet exhausts, fire detection, and hydraulic services.

Refurbishment of Existing Building/s

There are no existing buildings on this site.

External Works

External enhancements encompass the creation of a new car park featuring 11 visitor spaces situated beneath the powerlines, six secure staff-only parking spaces secured behind a sliding gate, and sheltered emergency vehicle parking spaces. A designated outdoor staff area has been designed to

offer a retreat for staff members. The mechanical plant with external ventilation and a hydraulic plant is easily accessible on the ground level. Additionally, provisions have been made for an enclosed bin area and a secure location for the generator. The site will also be equipped with dedicated bicycle parking facilities.

Strategically positioned, three courtyards play a pivotal role in supporting mental health. Adjacent to the group room and the lounge, these outdoor spaces provide guests with a connection to nature, promoting better mental well-being. A comprehensive improvement plan for various outdoor areas is outlined in the Landscape Architecture plans, ensuring a holistic and aesthetically pleasing transformation.

6. Risk Issues

Project Risk

A Risk Register for this project has been prepared by DIT and is included in Appendix F of this report. A summary of the items identified with a high-risk adjusted risk level rating can be found below:

- Scope creep during concept phase resulting in cost blowouts
- Funding allocation does not accurately reflect detailed design and/or operational requirements resulting in exceeding the approved budget
- Design does not align with the Lead Agency service delivery requirements (e.g. health model of care)
- The design needs to provide provision for future proofing the site. Risk of limiting future expansions/developments
- Non-alignment of all stakeholders
- FF&E schedules and selections not being made with sufficient time to incorporate into the documentation and cost reports

These, and all other risks, will continue to be managed and balanced through the delivery of the project.

Safe Design of Structures

Greenway Architects, (LPSC) in collaboration with the Client, End users and other design team members will continue to prepare a Safety in Design Report in accordance with the Designer's obligations under the Work Health and Safety Act (SA) 2012. (The Act).

Under the regulations of the Act, we are required to provide a written report (a "Safety Report") to the person conducting a business or undertaking who commissioned the design that specified that hazards relating to the design of the structure that, so far as the designer is reasonably aware:

- Create a risk to persons who are to carry out the construction work.
- Are associated only with the particular design and not with other designs of the same type of structure

Ongoing Safety in Design (SID) Workshops will be conducted with the lead agency and end user. Further SID meeting and reviews will be conducted as the project continues.

At the time of the preparation of this Concept Report, the Safety in Design Report is under review. The safety in design report will be updated at the end of each milestone. We will refer to the DIT Principles of Safety Design (G125) and the Safety in Design Risk Assessment matrix.

Hazardous materials

Based on the proposed end use of the site as a Crisis Stabilisation Centre, no unacceptable risks to human health or to ecological receptors were evident within soils at the subject site.

Site remediation is not required to protect health or ecology and as such, site soils are assessed to be suitable for unrestricted reuse onsite.

Uncontrolled fill was inferred not to have been observed in the soil bores assessed.

Soils were assessed to meet the physical and chemical requirements of Waste Fill.

Authorities, Approvals and Compliance

Authority and Statutory Approvals

Greenway Architects will prepare documentation for submission to SCAP for the Planning Consent element of the Development Approval.

Other approvals include:

- Public Works Committee (PWC)
- Building Rules Consent (Private Certification) which will occur at the completion of documentation.

NCC

A preliminary assessment has been undertaken by the private certifier, KD Building Certifiers, of the current proposal. Any recommendations from this will be incorporated into the design moving forward. Refer to Appendix K for full details on the NCC-BCA review.

Titles

- a. The review is based on the understanding that the proposed development is to be cited on a single parcel of land and that future developments will be located within the same parcel – no site boundary proposed between current and future buildings at this stage
- b. If not the case then the boundary between the respective sites and this one is deemed to be a fire source feature

Part A – Classification

- a. The proposed development will be deemed to be a Class 9a (health care building)
- b. Given the nature of Ground floor – it could be argued that the services provided are akin to a Class 5 – Medical Consulting – however it has been assumed that Class 9a best suits the overall use of the building

Part B – Structural Provisions

- a. The building shall be treated as an Importance Level 3 building
- b. Fit out of all architectural and services to take into account Sec 8 of AS1170.4 for bracing against earthquake loads

Part C – Compartmentation/Fire Construction

- a. Building will be considered as Type B construction
- b. Full compliance with Specification 5 – S5C11
- c. Class 9a will trigger a fire rating of a minimum of 2hr (120/120/120)
- d. The floor separating storeys will need to have a 2hr FRL (120/120/120)
- e. Given its Type B and non-required sprinkler system is provided – spandrel construction will not be required as per Part C3D7 i.e. 1hr fire rated skirt around the perimeter of the upper level with no sill height less than 600mm above 1st floor FFL
- f. If load bearing walls are utilised then they will need to be either masonry or concrete
- g. External walls and internal load bearing columns will need to have a 2hr (120/-/-) FRL – applies to all load bearing parts – non load bearing elements if greater than 6m from a fire source feature have no FRL
- h. Upper level internal columns supporting the roof do not require an FRL
- i. Roof needs no FRL
- j. Patient care areas to be separated into 500m² smoke compartments
- k. Ancillary use areas such as kitchen and laundry to be fire separated out – 1hr FRL

-
- l. Non-combustible construction required through out to all external walls
 - m. Attachments to the building façade will need to be non-combustible

Part D – Access / Egress

- a. Given Class 9a – all required exits shall have a 2hr fire separation and be treated as fire isolated stairs
- b. A Class 9a is not permitted to have a non require stairs serving or connecting patient care areas – the current central stair will need further design review to create fire separation at upper level
- c. Required exits shall be treated as fire isolated exits and have min 1.6m deep and 2.7m wide landings
- d. Egress travel distance from patient care areas to not exceed 12m to an exit or point of choice – current design marginally exceeds this at 13m in some instances
- e. Handrails required in corridors serving upper level
- f. Current discharge of fire stairs compliant
- g. DDA access will be required to and within all areas
- h. Refer marked up plan for specific comments

Part E – Essential Services

- a. Building will need to be equipped with:
- b. Fire hydrants/booster
- c. Fire hose reels (may not be required due to non-required sprinkler system)
- d. Fire extinguishers through out
- e. Smoke detection/Occupant Warning (AS1670)
- f. Exit & Emergency lighting
- g. Emergency lift
- h. Shut down of a/c under fire mode
- i. EWIS system

Part F – Health & Amenity

- a. All accommodation areas are to be provided with glazing that is not less than 10% of the floor area to sleeping areas
- b. Class 9a patient care areas need a bath – currently not provided – assume seeking a performance solution
- c. Slop hopper plus flushing provisions required
- d. 2.4m minimum ceilings required through out
- e. If mechanical ventilation is not provided then the windows will need to have an operable portion of no less than 5% of the floor area
- f. The current design provided the minimum required level of sanitary facilities for the accommodation areas
- g. Level of staff numbers at this stage not fully identified - current design can cater for more than 30
- h. Technically toilets for ground floor patrons not required under the BCA – however current design can cater for intended use

Part J – Energy Efficiency

- a. Will apply throughout and to be in accordance with NCC BCA Vol1 – 2022 version if lodged post October 2024 otherwise BCA 2019 Amdt 1 applies

In addition to the above and the following summary, please refer to attached mark up for location and comments reflected within this report.

Non-Statutory Compliance

All work shall comply with the relevant DIT and Lead Agency guide notes, standards and policies.

The following Standards and Guidelines are being referred throughout the design and implementation of the new facilities:

- Australian Health Facility Guidelines (AusHFG)
- SA Health ICT Communications Infrastructure Design Guide and Specifications

-
- SA Health Protective Security Policy (Security Standards)
 - SA Health Security Minimum Standards
 - SA Health Workplace Surveillance Policy Directive
 - SA Health Guidelines for the Control of Legionella
 - SA Health Project Completion Requirements
 - SA Health Capital Works Implementation Policy Guideline
 - SA Health Nurse Call Guideline (Draft)
 - SA Health Signage Standards
 - SA Health Building Design Recommendations for SA Ambulance Service
 - New South Wales Health Infrastructure Engineering Services Guidelines (noting that available SA Health specific technical policy will supersede any guidance contained in the NSW Guidelines).

7. Appendices

Appendix A – Drawings

Concept Drawings
(Site Plan)
(Floor Plans)
(Elevations)
(Landscaping concept plan)
(Material Selections)

Appendix B – Removed

Appendix C – Removed

Appendix D – Project Brief

Appendix E – Return Brief

Appendix F – Project Risk Register

Appendix G – Safety in Design Register

A preliminary Safety in Design Register has been included however it will be supplemented during the documentation phase

Appendix H - Hazardous Materials Report

Nothing to include. Refer Appendix K for soil contamination.

Appendix I – Certificate of Title

Appendix J – SAMIS Plans and other relevant existing plans

Not Applicable. There are no SAMIS Plans yet generated for this facility.

Appendix K – Investigations reports (traffic, site soil contamination, geotechnical)

Appendix L – Site survey plans

Appendix A – Drawings

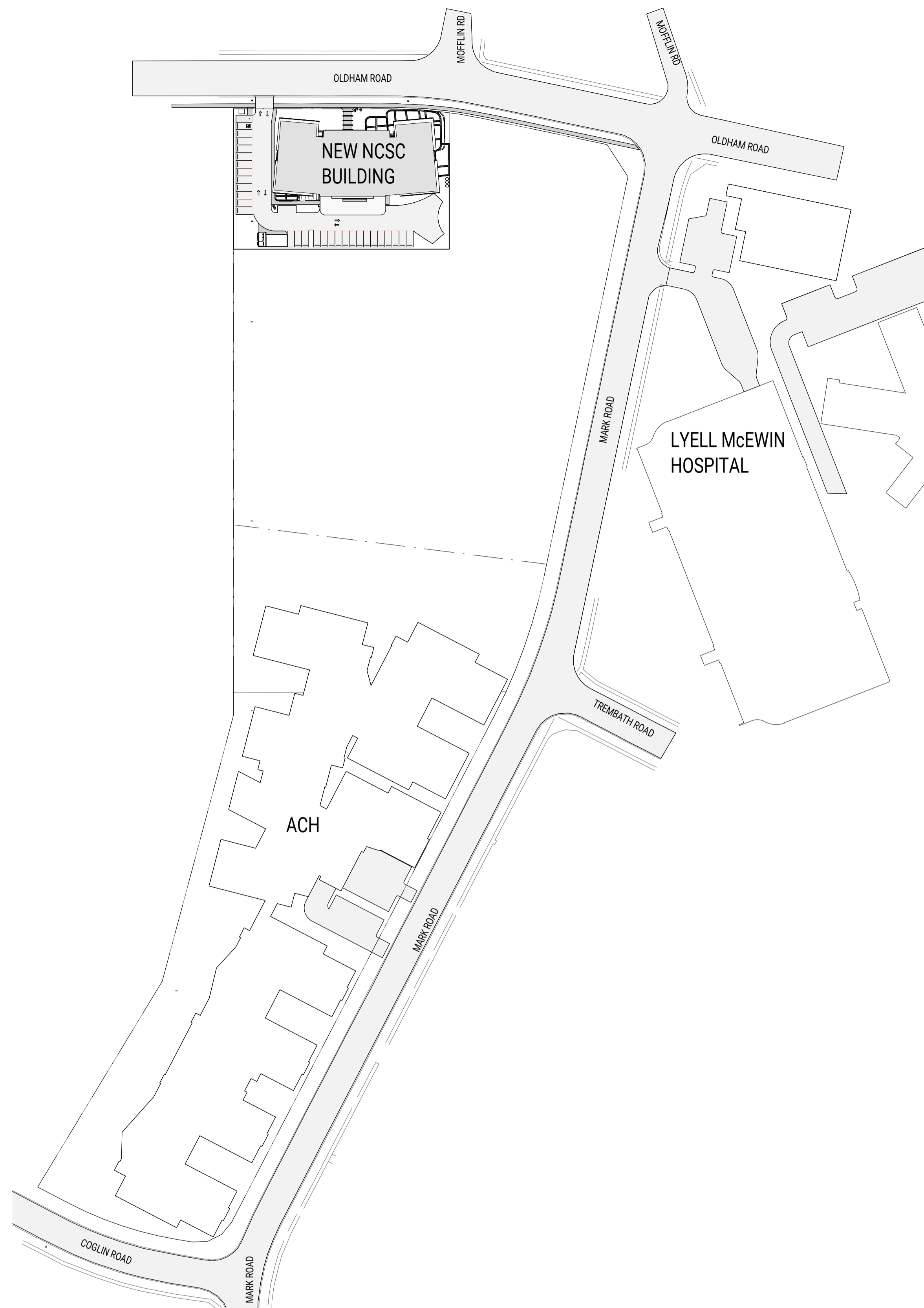
Concept Drawings

(Site Plan)

(Floor Plans)

(Elevations)

(Landscaping concept plan)

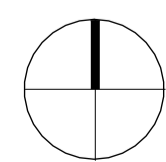


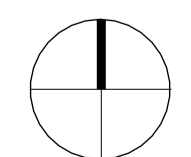
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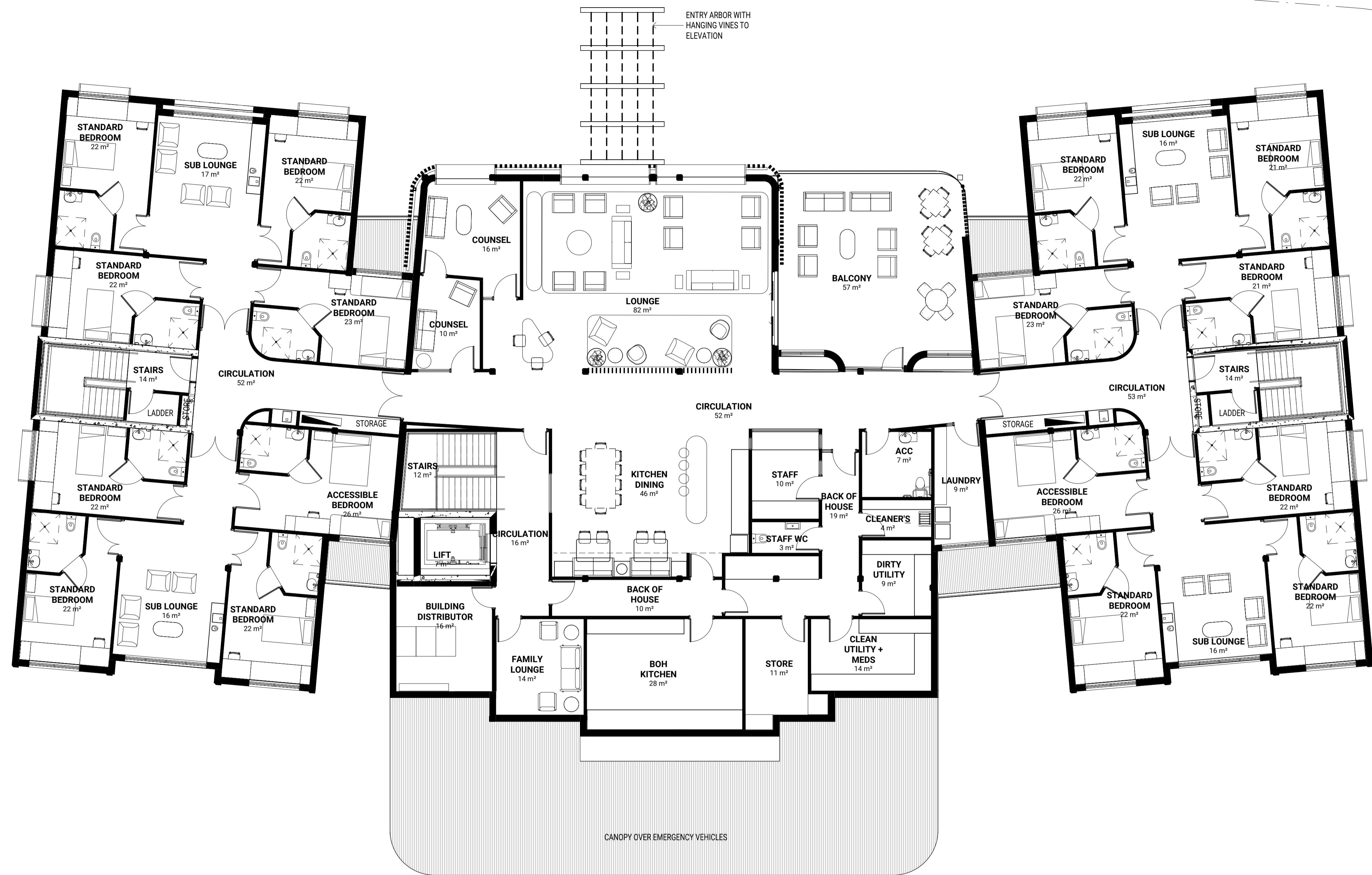


MASTER PLAN OPTION
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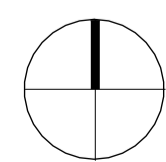
Sheet List			
Sheet Number	Sheet Name	Current Revision	Current Revision Date
PD.01	SITE PLAN	P9	17/05/2024
PD.02	GROUND FLOOR PLAN	P14	17/05/2024
PD.03	FIRST FLOOR PLAN	P14	17/05/2024
PD.04	ROOF PLAN	P9	17/05/2024





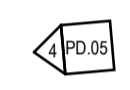
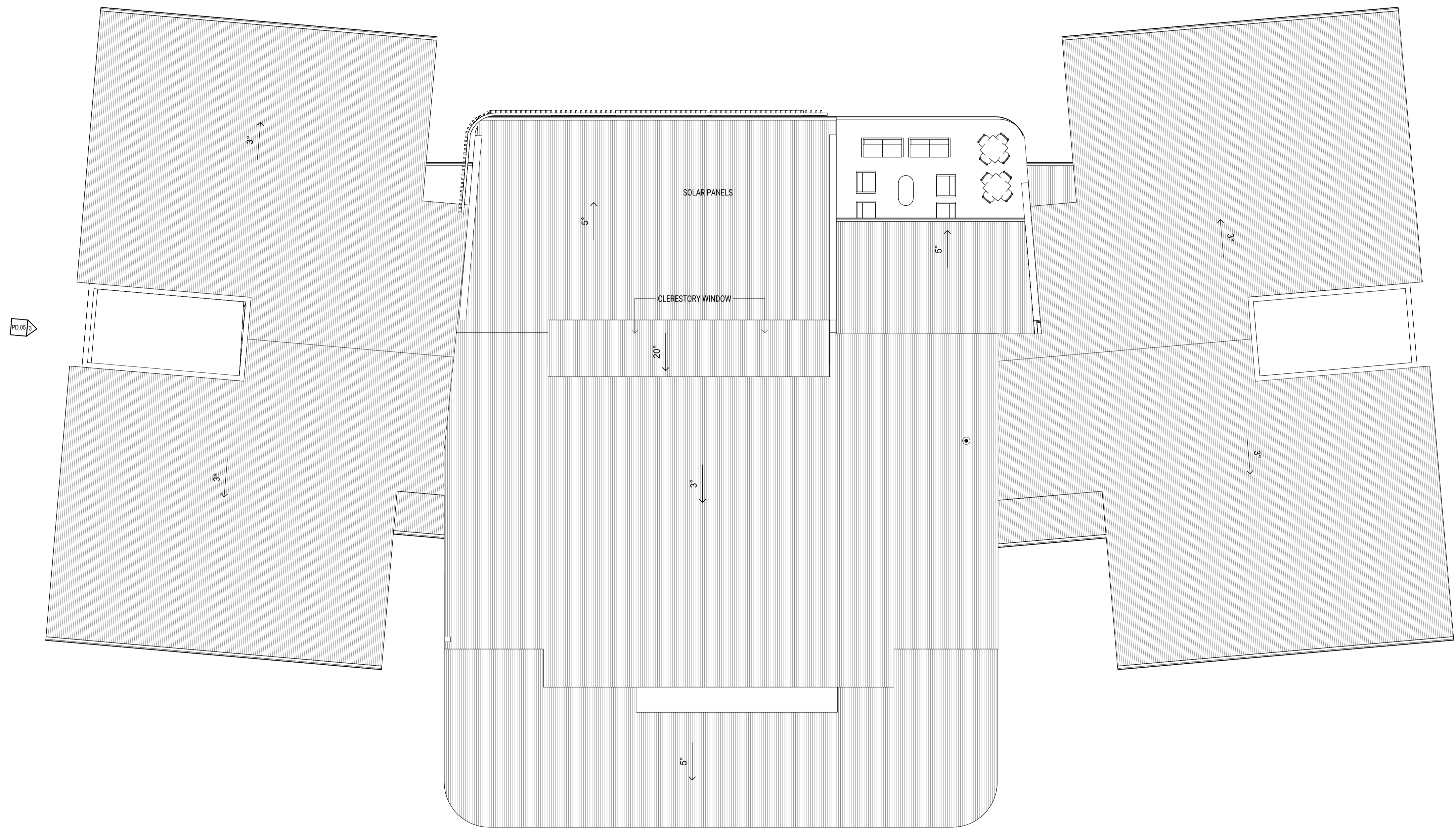


ISSUED FOR SCAP

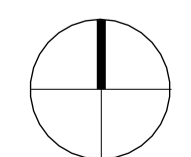




ROOF LEGEND
 R1 ROOFING: KINGKLIP 700

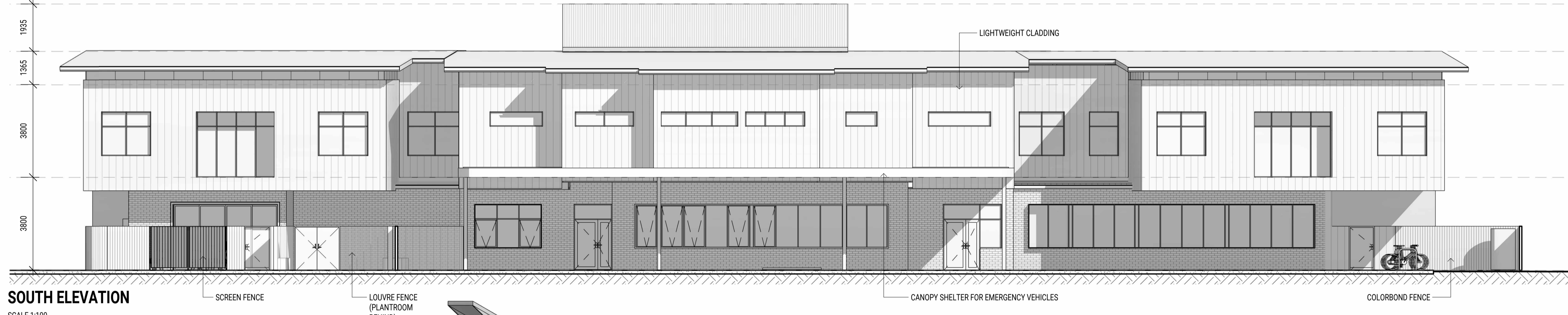


ISSUED FOR SCAP





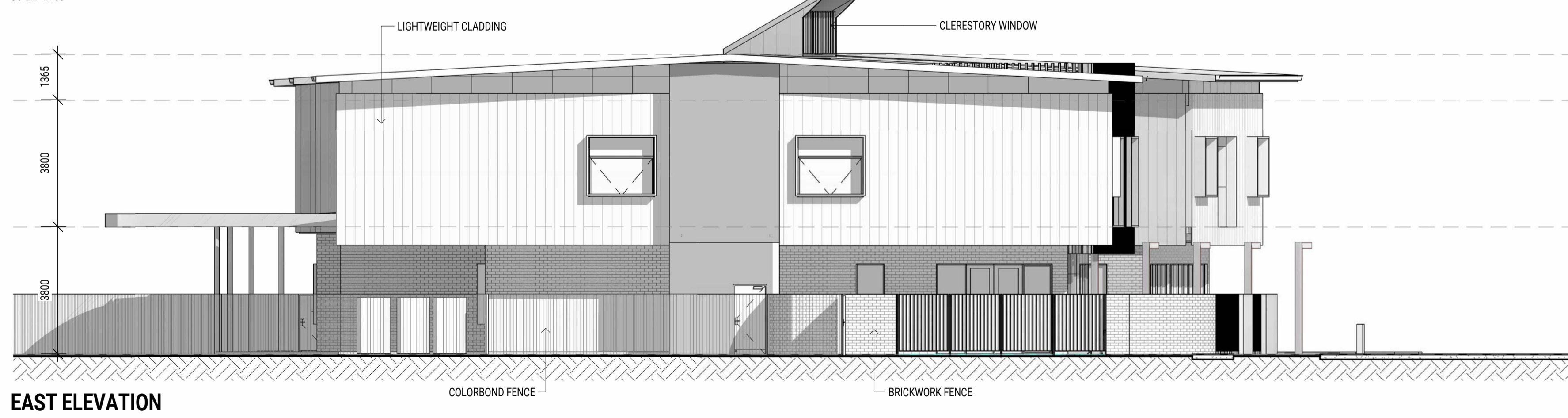
NORTH ELEVATION
SCALE 1:100



SOUTH ELEVATION
SCALE 1:100



WEST ELEVATION
SCALE 1:100



EAST ELEVATION
SCALE 1:100

ISSUED FOR SCAP REVISION



LEGEND

NEW

- EXTENT OF WORKS
- NEW TREE
- IRRIGATED GRASS
- PLANTING
- INSITU CONCRETE PAVING
- INSITU CONCRETE PAVING
- GRANULITIC SAND
- CONCRETE EDGE
- STEEL EDGE
- BIKE RACK
- NATURAL STONE SLITHERS
- LOOSE FURNITURE
- COURTYARD FENCE
- BOUNDARY FENCE
- SCREEN

Revision	Date	Revision	DWN	CHK	APP
A	23.11.23	PRELIMINARY	EM	OJ	-
B	24.02.24	PRELIMINARY	EM	OJ	-
C	09.05.24	FOR COORDINATION	EM	OJ	-
D	13.05.24	FOR APPROVAL	EM	OJ	-

FOR INFORMATION ONLY

Scale
1:100 (A1), 1:200 (A3)

N

This drawing must be read in conjunction with all other contract documents including the project specifications, schedules and any instructions issued during the course of the contract. The Contractor must verify all dimensions on site and check the location of services before commencement of work. The Contractor is to notify the Superintendent of any discrepancies between the drawings or specifications. Drawings are not to be used for construction unless identified in the title block as 'for construction'. All drawings to be read at A1 unless otherwise stated. Drawings are intended for digital setout and DWG files will be issued upon request. Copyright Oxigen Pty Ltd.
Plot File Created: May 13, 2024

Project
NORTHERN CRISIS STABILISATION CENTRE (NCSC)

Client
SA HEALTH

Urban Design + Landscape Architecture
Oxigen
Architecture
Greenway Architects

oxigen

Oxigen Pty Ltd
98-100 Halifax Street
Adelaide SA 5000

T +61 (08) 7324 9600
design@oxigen.net.au
oxigen.net.au

Drawing title
CONCEPT PLAN

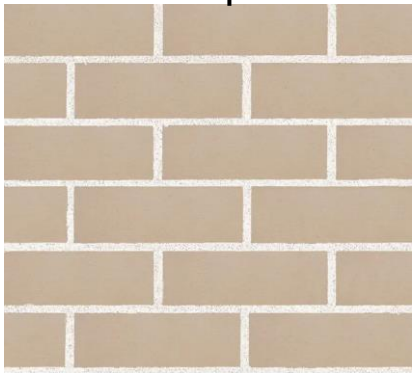
Project number
23.046

Drawing number
101

Revision
D

Preferred Option.

External Materials & Finishes



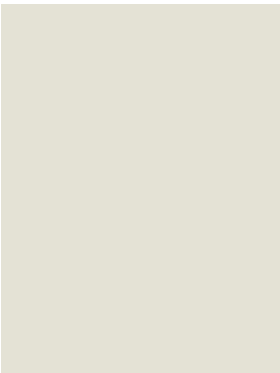
Plain Neutral Brick



Mottled Neutral Brick



Coloured Batten Screen

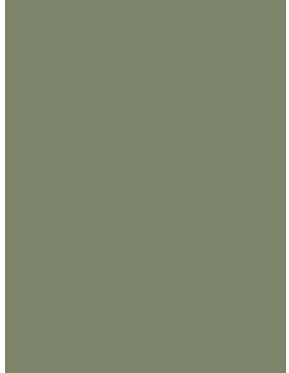


Colour: Surfmist



External Cladding

DOMESTIC
STYLE ROOF
FORM TO
END PODS.
NATURAL
COLOUR
PALETTE.



Colour: Pale Eucalypt



Window Hood Shading

Colour Theory.

Inspiration.

Connection to Nature



Appendix D – Project Brief

REQUEST FOR SERVICE

DEPARTMENT FOR HEALTH AND WELLBEING

TO: DEPARTMENT FOR INFRASTRUCTURE AND TRANSPORT

ATTENTION: BEN HOGARTH, DIRECTOR, BUILDING PROJECTS, DIT ACROSS GOVERNMENT SERVICES DIRECTORATE

RE: NORTHERN CRISIS STABILISATION CENTRE

Services Required <i>(DPTI ref – AS4122 Schedule 2.3)</i>	<input type="checkbox"/> Brief Development <input type="checkbox"/> Master Plan/Scoping Study <input type="checkbox"/> Feasibility Study (Site Option)	<input checked="" type="checkbox"/> Full Services (Parts 1, 2, 3) <input type="checkbox"/> Concept Report (Parts 1 only) <input type="checkbox"/> Other, please specify:
Project Overview	<p>The Mental Health Services Plan 2020-2025 demonstrates that a Crisis Response Model is necessary that incorporates alternative pathways to accessing mental health support, Emergency Department (ED) avoidance and connecting to mental health crisis supported care.</p> <p>The consequence of the COVID -19 Pandemic has increased pressure on the crisis support capacity of mental health services in South Australia and has influenced prioritizing the implementation and funding requirements of the Acute Crisis Retreat beds. This will add further support to the Urgent Mental Health Care Centre offering 24-hour crisis residential support to those assessed requiring brief psychosocial support and improving capacity of acute mental health beds, mental health flow and ED presentations.</p> <p>It is proposed (based on the limited beds in the north of Adelaide) that funding of a 16-bed crisis retreat residential centre would operate in the northern metropolitan area but be available to take admissions state-wide. It is expected the effective operation of Crisis Retreat beds would provide the opportunity to evaluate acute inpatient bed pathways and direct admission pathways that would improve capacity.</p> <p>The project will deliver a community unit operated by a Local Health Network (LHN), Non-Government Organisation (NGO) or private sector provider that delivers clinical assessment and treatment and the opportunity of 48 hour admission to crisis residential care. These units are designed to create a therapeutic welcoming setting in a safe environment that has line of sight and design features of inpatient units and can accept involuntary consumers. It is expected that these units will accept people with higher acuity than an Intermediate Care Centre (ICC), have higher staffing levels, and care for people who would otherwise be admitted to an acute unit. Units such as these in the United States have high staffing levels to deliver intensive interventions – including roles for medical staff, nurse practitioners, allied health and at least 20% peer worker staffing. The units are planned to deliver a recovery-based model, uphold rights and apply zero suicide safety models.</p>	
Project Budget <i>(DPTI ref – AS4122 Schedule 3.7)</i>	<p>The total Project Budget is \$20,400,000 (excl. GST). This budget comprises a \$20.4 million State Government capital funding commitment announced in the 2021/22 State Budget. This includes the following components;</p> <ul style="list-style-type: none">• Land Acquisition: \$940,000• Capital Delivery: \$19,460,000 <p>The budget was prepared based on an internally prepared schedule of accommodation and benchmarked square metre cost rates. Cost benchmarks</p>	

	<p>have been escalated to the current project delivery program.</p> <p>With respect to the preliminary project program, indicative financial year cash-phasing is outlined in the table below:</p> <table border="1" data-bbox="496 349 1458 443"> <thead> <tr> <th>2021-22</th> <th>2022-23</th> <th>2023-24</th> <th>2024-25</th> <th>TOTAL</th> </tr> </thead> <tbody> <tr> <td>2,900,000</td> <td>11,000,000</td> <td>6,500,000</td> <td></td> <td>\$20,400,000</td> </tr> </tbody> </table>	2021-22	2022-23	2023-24	2024-25	TOTAL	2,900,000	11,000,000	6,500,000		\$20,400,000																				
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2,900,000	11,000,000	6,500,000		\$20,400,000																											
<p>Project Program <i>(DPTI ref – AS4122 Schedule 3.8)</i></p>	<p>The project is anticipated to be delivered over a 2.5-year timeframe, with design team procurement commencing in July/August 2021, and service commissioning in early 2024.</p> <p>SA Health encourage opportunities to consider earlier completion wherever practicable, including alternative procurement/delivery approaches and the use of modular construction.</p>																														
<p>Risks</p>	<ul style="list-style-type: none"> ▪ Design and construction of a facility which will deliver a yet to be established service, details around the service model of care and governance are yet to be established and will be developed during the design process. ▪ Delivery of an acute mental health facility, with consumer safety/WHS considerations for consumers, staff and visitors. This includes ligature resistant detailing, sightlines, entrapment points, security systems and security of medication. ▪ Delivery of a freestanding inpatient service separate to an acute hospital setting, consideration of efficient food, security and hotel service models in the design of the facility, the provision of clinical support services, and interfaces with South Australian Ambulance Service (SAAS) and South Australian Police (SAPol). 																														
<p>Lead Professional Service Contractor</p>	<p><input checked="" type="checkbox"/> Architect</p> <p><input type="checkbox"/> Engineer</p> <p><input type="checkbox"/> Other, please specify:</p>																														
<p>Discipline Professional Service Contractors <i>(DPTI ref – AS4122 Schedule 2.5)</i></p>	<table border="0"> <tr> <td><input type="checkbox"/> Access Consultant</td> <td><input type="checkbox"/> Heritage Architect</td> </tr> <tr> <td><input checked="" type="checkbox"/> Acoustic Engineer</td> <td><input checked="" type="checkbox"/> Hydraulics Engineer</td> </tr> <tr> <td><input checked="" type="checkbox"/> Building Surveyor (NCC Advice) engaged by LPSC</td> <td><input type="checkbox"/> Hydro geological Engineer</td> </tr> <tr> <td><input type="checkbox"/> Catering / Kitchen Specialist</td> <td><input checked="" type="checkbox"/> Interior Designer</td> </tr> <tr> <td><input checked="" type="checkbox"/> Certifier (Building Rules Consent) – DIT to engage certifier, LPSC to engage Building Rules advisor</td> <td><input type="checkbox"/> Irrigation Designer</td> </tr> <tr> <td><input checked="" type="checkbox"/> Cost Management – Separate engagement by DIT</td> <td><input checked="" type="checkbox"/> Landscape Architect</td> </tr> <tr> <td><input checked="" type="checkbox"/> Civil Engineer</td> <td><input checked="" type="checkbox"/> Mechanical Engineer</td> </tr> <tr> <td><input checked="" type="checkbox"/> Electrical Engineer</td> <td><input type="checkbox"/> Seismic Engineer (restraint of engineering services in ceilings)</td> </tr> <tr> <td><input checked="" type="checkbox"/> Electronic Engineer (comms / data)</td> <td><input checked="" type="checkbox"/> Structural Engineer</td> </tr> <tr> <td><input checked="" type="checkbox"/> Electronic Security Engineer</td> <td><input checked="" type="checkbox"/> Traffic Engineer</td> </tr> <tr> <td><input type="checkbox"/> Energy Management</td> <td><input type="checkbox"/> Urban Planner</td> </tr> <tr> <td><input type="checkbox"/> Environmental Protection</td> <td><input type="checkbox"/> Value Management</td> </tr> <tr> <td><input type="checkbox"/> Façade Engineer</td> <td><input type="checkbox"/> Vertical Transport Engineer</td> </tr> <tr> <td><input checked="" type="checkbox"/> Fire Services Engineer</td> <td><input type="checkbox"/> Vibration Engineer</td> </tr> <tr> <td></td> <td><input type="checkbox"/> Other, please specify:</td> </tr> </table>	<input type="checkbox"/> Access Consultant	<input type="checkbox"/> Heritage Architect	<input checked="" type="checkbox"/> Acoustic Engineer	<input checked="" type="checkbox"/> Hydraulics Engineer	<input checked="" type="checkbox"/> Building Surveyor (NCC Advice) engaged by LPSC	<input type="checkbox"/> Hydro geological Engineer	<input type="checkbox"/> Catering / Kitchen Specialist	<input checked="" type="checkbox"/> Interior Designer	<input checked="" type="checkbox"/> Certifier (Building Rules Consent) – DIT to engage certifier, LPSC to engage Building Rules advisor	<input type="checkbox"/> Irrigation Designer	<input checked="" type="checkbox"/> Cost Management – Separate engagement by DIT	<input checked="" type="checkbox"/> Landscape Architect	<input checked="" type="checkbox"/> Civil Engineer	<input checked="" type="checkbox"/> Mechanical Engineer	<input checked="" type="checkbox"/> Electrical Engineer	<input type="checkbox"/> Seismic Engineer (restraint of engineering services in ceilings)	<input checked="" type="checkbox"/> Electronic Engineer (comms / data)	<input checked="" type="checkbox"/> Structural Engineer	<input checked="" type="checkbox"/> Electronic Security Engineer	<input checked="" type="checkbox"/> Traffic Engineer	<input type="checkbox"/> Energy Management	<input type="checkbox"/> Urban Planner	<input type="checkbox"/> Environmental Protection	<input type="checkbox"/> Value Management	<input type="checkbox"/> Façade Engineer	<input type="checkbox"/> Vertical Transport Engineer	<input checked="" type="checkbox"/> Fire Services Engineer	<input type="checkbox"/> Vibration Engineer		<input type="checkbox"/> Other, please specify:
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<input checked="" type="checkbox"/> Fire Services Engineer	<input type="checkbox"/> Vibration Engineer																														
	<input type="checkbox"/> Other, please specify:																														

	<input checked="" type="checkbox"/> Geotechnical Engineer
Required Clearances for Lead PSC team members	LPSC Team Members are required to have up-to-date National Police Checks. As the consulting team will not have any direct interface with consumers, no further specific Department for Human Services mandated checks (i.e. 'Child-related services') are required.

Specialised Services Required <i>(DPTI ref – AS4122 Schedule 2.4)</i>	Service	Information Available	Service Required	Comments
	3D Rendering / Animation (photorealistic)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Architectural still renders to be produced for PWC / Media.
	Contamination – desktop analysis	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Disbursement
	Contamination – soil sampling	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Disbursement
	Geotechnical Report	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Disbursement
	Heritage – Conservation Management Plan	<input type="checkbox"/>	<input type="checkbox"/>	N/A
	Site condition audit	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
	Survey – Boundary Identification	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Disbursement
	Survey – Engineering (levels and features)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Disbursement
	Survey – 3D scan model	<input type="checkbox"/>	<input type="checkbox"/>	N/A
	Survey - Underground services	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Disbursement
	Vegetation Survey (Regulated trees, native vegetation, etc.)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Disbursement
	Health Physicist (Radiation shielding assessment)	<input type="checkbox"/>	<input type="checkbox"/>	
Procurement Considerations <i>(DPTI ref – AS4122 Schedule 3.9)</i>	<ul style="list-style-type: none"> ▪ Based on the project size, complexity, and initial schedule, it is requested that a ‘Fixed Lump Sum’ procurement methodology is adopted. ▪ Opportunities for modular construction / fast tracked delivery techniques should be considered. ▪ Agreement on the Lead Professional Service Contractor / Cost Manager field is required between DHW / DIT prior to tenders commencing. DHW has prepared a shortlist of tenderers for consideration. ▪ LPSC to engage secondary discipline consultants including Structural / Civil & Building Services Engineers rather than separate cascading model. 			
Post Construction Review and Post Occupancy Evaluation	<p>Indicate the requirements for the Post-Construction Review and Post-Occupancy Evaluation:</p> <p><input checked="" type="checkbox"/> Combined Review Post-Construction Review and Post-Occupancy Evaluation at 3 months</p> <p><input type="checkbox"/> Separate Reviews Post-Construction Review at 3 months</p>			

	Post-Occupancy Evaluation at 12 months
BIM <i>(DPTI ref – AS4122 Schedule 2.11)</i>	Level of Building Information Modelling required: <input type="checkbox"/> Not mandatory <input checked="" type="checkbox"/> Project Specific BIM required (refer to BIM brief attached)


PROJECT BRIEF

NORHTERN CRISIS STABILISATION UNIT PROJECT

Project Information

Project Name	Northern Crisis Stabilisation Unit
Site Address	TBC
SAMIS Asset Number	-
Lead Agency Project Manager	Melissa Nozza

Brief Prepared by

Name	Jack Reynolds	
Position	Health Facility Planner	
Contact	Jack.Reynolds@sa.gov.au	
Date	16.07.2021	
Signature		

Approving Officer

Name	Tim Packer	
Position	Director Capital Projects	
Contact	Tim.Packer@sa.gov.au	
Date	16.07.2021	
Signature		

Project Objectives

<p>Project Drivers and Purpose</p>	<p>Based on the limited beds in the north of Adelaide and absence of sub-acute services in the North a 16-bed Crisis Stabilisation residential centre is to be established in the northern metropolitan area, but be available to take admissions state-wide.</p> <p>The service would consist of a 12-chair assessment area, acting as a specialist mental health ED, providing many of the clinical features of a typical ED but within a mental health focussed, calming and therapeutic environment. This assessment area will be supported by a 16-bed inpatient unit for short term admissions supporting stabilisation and to establish connections between consumers and social services / community mental health teams.</p> <p>It is expected the effective operation of Crisis Retreat beds would provide the opportunity to evaluate acute inpatient bed pathways and direct admission pathways that would improve capacity.</p> <p>Benefits of the Crisis Stabilisation Unit include:</p> <ul style="list-style-type: none"> ▪ Remove reliance on ED's as admission pathway into Mental Health Services (MHS). ▪ Facilitate community based assessment of MH consumers and direct entry to inpatient services when required. ▪ Each site will have multi-disciplinary mental health clinicians, Consultant Psychiatrist, Registrar Medical Officer, the ability to support Candidacy/Nurse Practitioner, Lived Experience workforce and Administration. Further clinician support will be provided by existing community teams and emergency mental health teams, as required. ▪ Service 18 clients per day with consultations up to 2 hours per client. ▪ Minimise risk to staff – triage, support SAAS, SAPOL. ▪ Extended night-time emergency response. ▪ Direct admissions Crisis beds if there is a vacant bed in region. ▪ Direct admission to Acute Care beds if consumers presentation exceeds the capacity of the service and is clinically indicated (dependant on available beds). ▪ Decrease numbers of Mental Health walk-ins into ED's. ▪ Accept SAAS and SAPOL referrals that do not require Acute/PICU level of admission. ▪ Improved Mental Health flow for acute inpatient services due to reduction in crisis presentations.
<p>Project Description</p>	<p>Part 1/2/3 – Concept Design, Detailed Design/Documentation, Construction Phase</p> <p>As LPSC, lead all concept design, documentation and construction phase activities for the design, delivery and commissioning of the new service. Activities to be undertaken in line with DIT PIP processes.</p>
<p>Project Staging</p>	<ul style="list-style-type: none"> ▪ Nil
<p>Approvals <i>(DPTI ref – AS4122 Schedule 1.13 and</i></p>	<p>The project will require the following Governmental / Authority approvals:</p> <ul style="list-style-type: none"> ▪ Public Works Committee (construction cost > \$4M); ▪ Design Team to contribute to preparation of the submission, including DIT

<p>3.10)</p>	<p>obtaining Crown Solicitor’s Office acquittal and ESD acquittal from the Department for Environment and Water.</p> <ul style="list-style-type: none"> ▪ State Commission Assessment Panel (SCAP) <ul style="list-style-type: none"> ○ Architectural LPSC to prepare SCAP submission for approval. ▪ Building Rules Consent ▪ Mental Health Act Gazettal (Office of the Chief Psychiatrist) <p>This initiative is not currently subject to Infrastructure SA’s Assurance Framework.</p> <p>In accordance with the SA Health Capital Works Implementation Policy, the Project Team will also be required to obtain approval of the design proposal by SA Health at key design milestones – these being final Concept Design, Design Development and Detailed Design.</p>
<p>Development Approval Status/Planning (DPTI ref – AS4122 Schedule 1.13 and 3.10)</p>	<p>Development Approval - Application to be lodged with the SCAP.</p> <p>Guide for Applicants: https://www.sa.gov.au/_data/assets/pdf_file/0012/12036/Guide-for-Applicants-for-Crown-Development-Applications.pdf</p>

Background Information

<p>Government Targets/ESD Performance</p>	<ul style="list-style-type: none"> ▪ Ecological Sustainable Development (ESD) initiatives are to be considered in the design of the facilities. Refer to AS4122 Contract Schedule 4 for DPTI and SA Government policies, guide notes and standards. ▪ In accordance with SA Health Capital Works Policy, the project will be required to apply the SA Health Independent Green Rating Assessment Tool (IGRAT) F framework. The IGRAT Framework requires ‘new-build’ developments to achieve a 5-Star IGRAT Rating, while refurbishments are required to achieve a 4-Star IGRAT Rating. <ul style="list-style-type: none"> ○ Noting that the Northern Crisis Stabilisation Unit will be a new-build, the project will be required to target a 5-Star IGRAT rating throughout design.
<p>Lead Agency Standards and Guidelines</p>	<p>The following Standards and Guidelines are to be referred throughout the design and implementation of the new facilities:</p> <ul style="list-style-type: none"> ▪ Australian Health Facility Guidelines (AusHFG) ▪ SA Health ICT Communications Infrastructure Design Guide and Specifications ▪ SA Health Protective Security Policy (Security Standards) ▪ SA Health Security Minimum Standards ▪ SA Health Workplace Surveillance Policy Directive ▪ SA Health Guidelines for the Control of Legionella ▪ SA Health Project Completion Requirements ▪ SA Health Capital Works Implementation Policy Guideline ▪ SA Health Nurse Call Guideline (Draft) ▪ SA Health Signage Standards

	<ul style="list-style-type: none"> ▪ Chief Psychiatrist standard Restraint and Seclusion 2021 ▪ SA Health Building Design Recommendations for SA Ambulance Service ▪ New South Wales Health Infrastructure Engineering Services Guidelines (noting that available SA Health specific technical policy will supersede any guidance contained in the NSW Guidelines). <p>Refer also to AS4122 Contract Schedules 1-4 for DPTI and SA Government policies, guide notes and standards.</p> <p>During the delivery of the Design Phase, DHW may choose to enact and independent design review process on the relevant design documentation; with any recommendations forthcoming to be considered in consultation with the Project Team and Local Health Network representatives.</p>
Hazardous Materials	<p>Environmental assessment of contaminated soils and hazardous materials (asbestos, lead paint, etc) in existing buildings will be a key consideration in the site selection process.</p>
Heritage	<p>Based on the short-listed development sites there may be heritage considerations, the Lead PSC shall undertake investigations as required, and provide heritage reporting where required as a disbursement to their engagement.</p> <p>Aboriginal Heritage not yet investigated – refer to fact sheet ‘Project Planning and Aboriginal Heritage’ www.dpc.sa.gov.au/ data/assets/pdf file/0015/34602/FactSheet ProjectPlanning.pdf</p>
Existing Buildings and Site Information	<ul style="list-style-type: none"> ▪ To be provided as available based on short listed development sites.
Other Relevant Information and Advice	<p>The Office of the Chief Psychiatrist has identified the National Guidelines for Behavioural Health Crisis Care Best Practice Toolkit as a useful guide for the delivery and operation of this service. This document is published by the Substance Abuse and Mental Health Services Administration (SAMHSA), a branch of the U.S. Department of Health and Human Services.</p> <p>The Urgent Mental Health Care Centre (UMHCC) is operated in the Adelaide CBD by Naemi and provides a crisis care service, but without overnight accommodation. The project will liase with UMHCC staff and consumers to understand postive aspects of design and areas that we can improve on from their experience working and using the new centre. SA Health will seek to provide the design team with a copy of any post occupancy evaluations or documented lessons learned from the UMHCC.</p>
Design Criteria	<p>A welcoming and non-institutional environment is considered critical in the design of the Crisis Stabilisation Unit, this should extend to all consumer occupied areas and to the external presentation of the service.</p> <p>The input of lived experience through a structured consultation and co-design process is considered critical to the successful delivery of Crisis Stabilisation</p>

services.

ODASA Principles of Good Design

- Context
Good design is contextual because it responds to the surrounding built and natural environment and contributes to the quality and character of a place.
 - Inclusivity
Good design is inclusive because it creates places for everyone to use and enjoy, by optimising social opportunity and equitable access.
 - Durability
Good design is durable because it creates buildings and places that are fit for purpose, adaptable and long-lasting.
 - Value
Good design adds value by creating desirable places that promote community and local investment, as well as enhancing social and cultural value.
 - Performance
Good design performs well because it realises the project potential for the benefit of all users and the broader community.
 - Sustainability
Good design is sustainable because it is environmentally responsible and supports long-term economic productivity, health and wellbeing.
-

Site and External Requirements

Site Information	<ul style="list-style-type: none"> ▪ Site is yet to be confirmed.
Operational Hours	<ul style="list-style-type: none"> ▪ Upon completion the service will operate on a 24/7 basis. ▪ Construction works will need to be undertaken during normal work hours with some exceptions for significantly disruptive / invasive tasks.
Site Access and Security	<p>The Northern Crisis Stabilisation Unit requires:</p> <ul style="list-style-type: none"> ▪ Ambulance and SAPOL access for admissions and patient transport. ▪ Safe drop-off and pick-up areas for consumer arrivals and families / carers. ▪ Secure staff parking and safe staff access to the facility. ▪ Planned access for commercial vehicles including food, linen and consumable deliverables, and waste collection. ▪ Safe access from the facility to the site boundary in consideration of public transport linkages.
Service Access	<p>The Crisis Stabilisation Unit will need to suitably plan and design for ambulance, SAPOL, consumer and commercial vehicle access.</p>
Car Parking	<ul style="list-style-type: none"> ▪ Parking provision should be informed by the requirements of the <i>State Planning and Design Code</i>. ▪ These statutory requirements should be tested against service specific car parking assessment by the Traffic Planner.
Other external Requirements	<ul style="list-style-type: none"> ▪ Access to high quality, therapeutic outdoor space is critical to the delivery of contemporary mental health care; ▪ The design of consumer therapy gardens will consider consumer accessibility, outdoor therapy programs, activities, access in inclement weather and consumer safety; and ▪ External fencing will require design consideration to maintain the safety and privacy of consumers, minimise external disturbance and present a welcoming, homelike environment.
Site Engineering Requirements	<ul style="list-style-type: none"> ▪ The seismic design parameters for the new structure are to achieve an 'Importance Level 3' (IL3) per AS1170. ▪ The new facilities will require an 'essential' back-up power circuit (diesel generator), the capacity and requirements of the essential power system will be further developed in detailed design. ▪ Design of the new building footprint and provision of additional paved surfaces (ambulance road and car-parking) may increase the net stormwater runoff incurred on site. Investigations of the existing stormwater infrastructure will need to be reviewed for capacity and the design will need to suitably accommodate the increased production. ▪ Nurse call, fixed/mobile duress systems, CCTV and access control systems will be required in line with SA Health Agency Security Standards and the requirements of an acute mental health facility. ▪ Bedroom security access systems are required to support the physical safety of consumers, including protection of vulnerable consumers in a mixed gender service.

	<ul style="list-style-type: none"> ▪ Engineering services in consumer areas including power outlets, hydraulic fixtures, mechanical grilles, sprinkler heads, light fittings, will be required to be anti-ligature and tamper proof in line with mental health requirements. Engineering design should consider strategies for routine maintenance and servicing to occur outside of the consumer environment. ▪ Review of existing site infrastructure (SAPN Network Capacity, SA Water mains pressure, NBN connection, etc.) will be a component of the site short listing process.
Future Requirements	<ul style="list-style-type: none"> ▪ The facility will serve as a model for future delivery of Crisis Stabilisation Units in Southern Adelaide and in Country South Australia. Post occupancy review and “lessons learned” processes will support this.

Accommodation Requirements

Accommodation Schedule	<p>An accommodation schedule was prepared to guide the preparation of the budget bid. This identified a 16-bed unit at 1,695m², inclusive of circulation space, engineering allowance and planning contingency, and excluding outdoor gardens and covered vehicle canopies.</p> <p>The schedule of accommodation, while aligned with AusHFG, has not been consulted on and is not service specific. Further review and development will be required in Part 1, informed by the consultation framework.</p>
End User Groups	<p>The Project Team will be required to consult with the following organisations throughout concept planning and design development, with DHW to lead initial engagement and support consultation accordingly:</p> <ul style="list-style-type: none"> ▪ Office of the Chief Psychiatrist; ▪ Lived Experience and Consumer Representation; ▪ Peer Review by an appropriate NGO with expertise and leadership in crisis care (potentially RI International); ▪ The appointed NGO or LHN who will have governance of the service; and ▪ Non-clinical support service / hotel service providers associated with the appointed NGO or LHN. <p>The Project Team are anticipated to have a limited interface with:</p> <ul style="list-style-type: none"> ▪ SA Pharmacy (re medication room design); ▪ SA Pathology (re point of care testing, collection services and courier access); ▪ SA Ambulance Service; and ▪ DHW Deputy Agency Security Executive
Internal or Fitout Requirements	<p>Delivery of a non-institutional, homelike and enabling consumer environment, while supporting acute and clinically resourced care in a robust and sustainable facility. Specific mental health considerations to all consumer accessed areas, to include;</p> <ul style="list-style-type: none"> • Ligature resistant detailing; • Staff sightlines; • Potential for entrapment; • Physical / sexual safety of vulnerable consumers; • Access control and duress systems; and • Door design to prevent barricading. <p>Compliance with AusHFG for mental health services.</p>

Other Specialist Requirements	
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Attachments

- Northern Crisis Stabilisation Unit Schedule of Accommodation v.02
- SAMHSA Guidelines for Behavioural Health Crisis Care Best Practice Toolkit
- BIM Brief

Appendix E – Return Brief

NCSC – SCHEDULES OF ACCOMMODATION COMPARISON (Dec 23)

Original SOA Version 2 – supplied with brief for submission (Sept 2021)

AREA	M ²
Entry /Amenities	70
Assessment Areas	337
Admitted Consumer Areas	655
Support	174
Staff Areas	226
Total	1,461
Extra for Engineering & planning	234
GROSS TOTAL	1,695

SOA Version 3 – amended with same set out as above but some additional areas to suit a more defined scope (February 2022)

AREA	M ²	
Entry /Amenities	119	+ Reception & 2 x Greeting rms
Assessment Areas	363	Some areas move from support space
Admitted Consumer Areas	766	As above & area allowed behind staff st.
Support	92	Some areas move to assessment
Staff Areas	226	
Total	1,566	+ 105m ² from V2
Extra for Engineering & planning	250	
GROSS TOTAL	1,816	+ 121m ² from V2

SOA Version 4 – amended into areas for Head to Health & 16 Bed Short Stay with additional Head to Health areas (February 2023)

AREA	M ²	
HEAD TO HEALTH		
Entry /Amenities	119	
Assessment Areas	371	Disposal rm added
Support – 50% of 68	34	
Staff Areas – 50% of 238	119	
Sub total	643	
Extra for Engineering & planning	103	
GROSS TOTAL HEAD TO HEALTH	745	
HEAD TO HEALTH extra		
Extra for Engineering & planning	127	
Extra for Engineering & planning	20	
GROSS TOTAL HEAD TO HEALTH extra	147	added from V3
GROSS COMBINED TOTAL HEAD TO HEALTH	892	
16 BED SHORT STAY		
Admitted Consumer Areas	780	Dirty Utility added
Support – 50% of 68	34	
Staff Areas – 50% of 238	119	
Sub Total	933	
Extra for Engineering & planning	150	
GROSS TOTAL 16 BED SHORT STAY	1,082	
GROSS TOTAL	1,974	+ 158m ² from V3

SOA Version 5 – amended to better reflect Ground Floor & First Floor with Head to Health merged

AREA	M ²
HEAD TO HEALTH	
Entry /Amenities	119
Assessment Areas – incl. extra Head to Health	525
Support	69
Staff Areas	183
Sub total	896
Extra for Engineering & planning	144
GROSS TOTAL HEAD TO HEALTH	1,040
16 BED SHORT STAY	
Admitted Consumer Areas	776
Support	34
Staff Areas – loc. in Admitted Consumer Area	-
Sub Total	810
Extra for Engineering & planning	130
GROSS TOTAL 16 BED SHORT STAY	940
GROSS TOTAL	1,980

+ 6m² from V4

SOA Version 6 – additional area requested by Sonder to suit their services

AREA	M ²
HEAD TO HEALTH	
Entry /Amenities	157
Assessment Areas – incl. extra Head to Health	562
Support	53
Staff Areas	269
Sub total	1,041
Extra for Engineering & planning	167
GROSS TOTAL HEAD TO HEALTH	1,208
16 BED SHORT STAY	
Admitted Consumer Areas	776
Support	34
Staff Areas – loc. in Admitted Consumer Area	-
Sub Total	810
Extra for Engineering & planning	130
GROSS TOTAL 16 BED SHORT STAY	940
GROSS TOTAL	2,148

Additional waiting & reception
 Increase counselling rms from 8 to 14
 Remove a store
 Add 2 offices & increase staff rm to share with upstairs service

+ 168m² from V5

SOA Version 7 – better reflects First Floor with Pods etc. The pod style layout with bedrooms around small lounges was not previously reflected in the SOA's.

AREA	M ²	
HEAD TO HEALTH		
Entry /Amenities	157	
Assessment Areas – incl. extra Head to Health	562	
Support	53	
Staff Areas	269	
Sub total	1,041	
Extra for Engineering & planning	167	
GROSS TOTAL HEAD TO HEALTH	1,208	No change from V6
16 BED SHORT STAY		
Admitted Consumer Areas	871	Added pod lounges + 72m ²
Support	34	
Staff Areas – loc. in Admitted Consumer Area	-	
Sub Total	906	
Extra for Engineering & planning	145	
GROSS TOTAL 16 BED SHORT STAY	1,050	
GROSS TOTAL	2,259	+ 111m ² from V6

SOA Version 8 – updated to reflect reduced floor plan, 16 Bed

AREA	M ²	
HEAD TO HEALTH		
Entry /Amenities	150	
Assessment Areas – incl. extra Head to Health	527	
Support	42	
Staff Areas	202	
Sub total	921	
Extra for Engineering & planning	148	
GROSS TOTAL HEAD TO HEALTH	1,069	No change from V6
16 BED SHORT STAY		
Admitted Consumer Areas	919	Added pod lounges + 72m ²
Support	49	
Staff Areas – loc. in Admitted Consumer Area	-	
Sub Total	968	
Extra for Engineering & planning	154	
GROSS TOTAL 16 BED SHORT STAY	1,122	
GROSS TOTAL	2,191	- 67m ² from V7

SOA Version 8a – updated to reflect reduced floor plan, 12 Bed

AREA	M ²	
HEAD TO HEALTH		
Entry /Amenities	150	
Assessment Areas – incl. extra Head to Health	527	
Support	42	
Staff Areas	202	
Sub total	921	
Extra for Engineering & planning	148	
GROSS TOTAL HEAD TO HEALTH	1,069	No change from V6
12 BED SHORT STAY		
Admitted Consumer Areas	768	Added pod lounges + 72m ²
Support	49	
Staff Areas – loc. in Admitted Consumer Area	-	
Sub Total	817	
Extra for Engineering & planning	131	
GROSS TOTAL 16 BED SHORT STAY	948	
GROSS TOTAL	2,017	- 242m ² from V7

SOA Version 9

GROUND FLOOR

Reduced to have 1 entry in lieu of 2. Therefore, this removed 1 off airlock, reception & waiting. Deleted 1 off Consult Room, reduced area to Lounge & deleted External combined comms room. Staff room increased, Meeting room & 2 off Quiet Rooms added. Workstation area reduced by 4 desks & Utility decreased.

FIRST FLOOR

Staff shared office added & lounge area increased. 1 off Counselling room & Prayer room removed. Stores increased slightly.

AREA	M ²	
HEAD TO HEALTH		
Entry /Amenities	121	1 entry in lieu of 2 -29m²
Assessment Areas – incl. extra Head to Health	447	1 counsel. removed, Lounge reduced -79m²
Support	29	Combined comms rm deleted -13m²
Staff Areas	240	Staff rm increased, Meeting & 2 QR added +38m²
Sub total	838	
Extra for Engineering & planning	134	
GROSS TOTAL HEAD TO HEALTH	972	-96m²
16 BED SHORT STAY		
Admitted Consumer Areas	873	Pod lounges red., 1 counsel & prayer del. -46m²
Support	59	Slight increases to stores +38m²
Staff Areas – loc. in Admitted Consumer Area	-	Staff office added
Sub Total	932	
Extra for Engineering & planning	150	
GROSS TOTAL 16 BED SHORT STAY	1,081	-41m²
GROSS TOTAL	2,053	-138m² from V8

SUMMARY	V2 Original Doc.	V3	V4 H2H added	V5	V6	V7	V8	V8a	V9
Head to Health 16 Bed Short Stay			892	1,040	1,208	1,208	1069	1069	972
			1,092	940	940	1,050	1122	948	1081
Gross Total m²	1,695	1,816	1,974	1,980	2,148	2,259	2191	2017	2,053
		+121m ² from V2	+158m ² from V3	+6m ² from V4	+168m ² from V5	+111m ² from V6	-67m ² from V7	-242m ² from V7	-138m ² from V8

SOA & CONCEPT PLAN COMPARISON	V9	Concept Plans
Head to Health 16 Bed Short Stay	972 1081	910 998
Gross Total m²	2,053	1,908
		-145m ² from V9
		+213m ² from V2 original SOA that determined the budget (no H2H)

Appendix F – Project Risk Register

NORTHERN CRISIS STABILISATION CENTRE - RISK REGISTER

Delivery Stage	Ref	Risk Category	Risk Description and Impact	Existing Controls	Consequence	Likelihood	Risk Level	Action	Action by	Due Date	Adjusted Consequence	Adjusted Likelihood	Adjusted Risk Level	Status
Concept	1	Time	Master program with unrealistic timelines resulting in project delays.		Major	Possible	HIGH	Review of master program with the team and endorsement from delegate if required.	Department PM		Moderate	Possible	MODERATE	Ongoing
Concept	2	Time	Delay to individual project stages resulting in adverse impact to stakeholders.	Compliance with master program and communication of the program to the team	Major	Possible	HIGH	Establish critical Client signoff milestones. Consider liquidated damages option at construction contract stage.	Department PM		Moderate	Possible	MODERATE	Ongoing
Concept	3	Time	Government and PWC approval delays.	Compliance with master program.	Major	Possible	HIGH	Identify approval target dates. Monitor and report progress. Develop detailed program activities and include contingencies within master program.	Lead Agency		Moderate	Unlikely	MODERATE	Ongoing
Concept	4	Time	Project brief unclear or lacking in detail resulting in time wasted finalising the brief during the concept stage.	Enough time spent developing the project brief.	Major	Likely	HIGH	Effective management of Lead Agency briefing and staff consultation process. Consider extending program to include brief development work if required.	Lead Agency		Major	Unlikely	MODERATE	Ongoing
Concept	5	Cost	Scope creep during concept phase resulting in cost blowouts.	Contingency provisions.	Major	Likely	HIGH	Establish Lead Agency governance and approval process for changes. Seek signoff by Steering Committee at required programmed milestones (e.g. Return Brief, Concept design, Design development strategies). Seek budget extension if required.	Lead Agency		Major	Possible	HIGH	Ongoing
Concept	6	Cost	Funding allocation does not accurately reflect final detailed design and/or operational requirements resulting in exceeding the approved budget.	Early cost analysis at project brief stage to ascertain funding requirements.	Critical	Likely	EXTREME	Finalise project scoping early on and prepare an overall cost plan and detailed cost plan for each project. Allow adequate contingencies to address potential future unknowns and Client change requests.	CM		Major	Possible	HIGH	Ongoing
Concept	7	Scope	Life Cycle/ESD requirements not delivered resulting in increased ongoing costs.	Ensure Life Cycle/ESD requirements are considered and included in the Concept brief.	Major	Possible	HIGH	Initiate strategic workshop to further investigate opportunities, understand implications and develop design options to provide optimum outcomes. Minimum performance parameters to be established as part of concept brief process. Adopt DHW IGRAT system	Department PM		Major	Unlikely	MODERATE	Ongoing
Concept	8	Scope	Insufficient time to construct scope resulting in inflated construction pricing and potential for variations and/or contractor claims.	Compliance with master program and contingency provisions.	Major	Possible	HIGH	Obtain any early works expenditure approvals. Consider extending program. Consider procurement methodology facilitates concurrent design and construction utilising early contractor involvement. Adopt realistic industry construction timeframes.	Department PM		Moderate	Unlikely	MODERATE	Ongoing
Concept	9	Scope	Design does not align with Lead Agency service delivery requirements (e.g. health model of care).	Input from relevant stakeholders at the concept stage. Define end user roles / responsibilities.	Critical	Likely	EXTREME	Ensure concept and design development incorporates service delivery requirements. Challenge all assumptions.	Lead Agency		Major	Possible	HIGH	Ongoing

NORTHERN CRISIS STABILISATION CENTRE - RISK REGISTER

Concept	10	Scope	Delay in obtaining council planning approvals.	Compliance with master program, early planning approval submissions.	Major	Possible	HIGH	Maintain close consultation with local council/SCAP. Schedule briefing meeting between LPSC team and planning authorities to obtain commitment to master program requirements.	Department PM		Moderate	Possible	MODERATE	Ongoing
Concept	11	Operational	The design needs to provide provision for future proofing the site. Risk of limiting future expansions/developments.	Masterplanning exercise to inform future needs	Moderate	Likely	HIGH	Design Team to consider masterplanning. Retain flexibility to expand other services on site.	LPSC		Major	Possible	HIGH	Ongoing
Concept	12	Scope	Changes to the Lead Agency brief due to change in government resulting in scope creep.		Major	Possible	HIGH	Review impact of change in scope and seek direction from appropriate delegate.	Lead Agency		Moderate	Unlikely	MODERATE	Ongoing
Concept	13	Quality	Longevity of design life and assessed 'value for money' not clear resulting in poor quality and Lead Agency expectations not met.		Major	Possible	HIGH	Review standards nationally and with existing SA facilities.	LPSC		Moderate	Unlikely	MODERATE	Ongoing
Concept	14	HR	Change of professional services personnel impacting service continuity.		Moderate	Possible	MODERATE	Maintain and support existing Professional Services Contractor relationships. Address any potential changes promptly.	LPSC		Moderate	Possible	MODERATE	Ongoing
Concept	15	HR	Change of end user design team resulting in scope change or inconsistent design requirements.		Moderate	Possible	MODERATE	Establish end user project design team and governance structure for decision making on change requests.	End User		Moderate	Possible	MODERATE	Ongoing
Concept	16	Communication	Non-alignment of all stakeholders.		Major	Possible	HIGH	Determine governance role/responsibilities/accountability promptly. Develop a communication plan and establish and maintain a good consultation process.	Lead Agency		Major	Possible	HIGH	Ongoing
Concept	17	Cost	Contamination and/ or hazardous materials on site impacting the master program and project budget.	Contingency provisions	Moderate	Likely	HIGH	Early site investigations and surveys during concept/ early DD stages (asbestos, soil testing, etc). Consider location of hazardous materials removal. Tender documentation to include remediation activities and include appropriate contingency.	LPSC		Moderate	Possible	MODERATE	Ongoing
Concept	18	Scope	ICT consultation not undertaken to full extent resulting in issues during construction.		Major	Possible	HIGH	Design team to consult with appropriate ICT stakeholders (Digital Health) to ascertain network/ICT requirements.	LPSC		Moderate	Possible	MODERATE	Ongoing
Concept	19	Scope	FF&E Schedules and selections not being made with sufficient time to incorporate into the documentation and cost reports		Moderate	Likely	HIGH	Early consultation with end users and SABME to ascertain FF&E lists. Inclusion of FF&E budget in cost plan.	LPSC		Moderate	Likely	HIGH	Ongoing
Concept	20	Scope	Lack of consultation and endorsement from SAAS/SAPOL resulting in impacting authority vehicle access.	Inclusion in stakeholder management plan and feasibility consultation.	Major	Possible	HIGH	Design team to consult with SAAS / SAPOL Sign-off to be provided.	LPSC		Moderate	Possible	MODERATE	Ongoing
Concept	21	Scope	Fire tanks and pumps siting, condition of existing fire main - new infrastructure may be required, location to be considered, impact to planning approval and footprint		Moderate	Likely	HIGH	Design Team to advise upgrades required.	LPSC		Moderate	Possible	MODERATE	Ongoing

Appendix G – Safety in Design Register

A preliminary Safety in Design Register has been included however it will be supplemented during the documentation phase

GREENWAY ARCHITECTS SA PTY LTD
207 ANGAS STREET ADELAIDE SOUTH AUSTRALIA 5000
TELEPHONE (08) 8232 1888 FACSIMILE (08) 8232 1271
greenwayarchitects.com.au

ABN 89 081 130 985

SAFETY IN DESIGN REPORT – NORTHERN CRISIS STABILISATION CENTRE (21073)

Item	Risk Description	Initial Likelihood	Consequence	Strategy	Residual Likelihood	Action
Architecture						
Floors	Slips (internal)	Likely	Major	Specify flooring with the appropriate slip rating.	Possible	Architect
Floors	Trips and falls (external)	Likely	Major	All paving edges finished flush. Rubble path surfaces to be well compacted.	Possible	Architect
Stairs	Falls	Unlikely	Major	Consider nosings to treads, heights, and handrails to BCA and Australian Standards	Unlikely	Architect
Roof	Leakages leading to building failure.	Unlikely	Significant	The design avoids the use of box gutters and adequate falls to roof.	Unlikely	Architect
Roof	Fall from roof gutters	Likely	Major	Ensure safe roof access	Unlikely	Architect
Security	Break in.	Unlikely	Significant	Adequate surveillance system to be installed. Access control to all entry points. Lighting installed to discourage lingering and reassure staff	Unlikely	Architect, Security Consultant, Services
Glass	Collision with glass.	Very Unlikely	Significant	Visual indicator strips to glazing to be compliant with BCA and Australian Standards.	Unlikely	Architect
Trees	Debris blocking gutters or roots impacting footings.	Likely	Significant	Consider type of trees specified and proximity to building and powerlines. Architect to consider gutter location and gutter type.	Possible	Architect, Landscape Architect
Site	Vehicular Access and Pedestrian Interface	Likely	High	Clear signage to indicate low speed and shared use environment. Clear pavement markings indicating pedestrian crossing zone. Alternate textured paving making drivers aware of a slow	Possible	Architect, Landscape Architect

Item	Risk Description	Initial Likelihood	Consequence	Strategy	Residual Likelihood	Action
				speed zone. Clear lines of sight for vehicle traffic corridor. Paths generally provide line of site to end points. Large shrub planting kept away from path edges. CPTED principles observed for planting adjacent paths.		
Substances						
Off gassing of volatile organic compounds.	Inhalation of hazardous substances.	Likely	Significant	Contractor to use low VOC materials where possible, and ensure appropriate ventilation and PPE is used.	Unlikely	Architect
Construction						
Prevention of Falls	Fall from heights during and post construction.	Unlikely	Major	Contractor to have appropriate working from heights permits. Roof safety system to be installed during construction.	Unlikely	Contractor
Electrical Cables	Trip hazard.	Likely	Minor	Power tools and cables to be made safe and taped to floor as required. Contractor to have relevant safety procedures in place to ensure safe handling.	Unlikely	Contractor
Construction site access	Unauthorised site access.	Unlikely	Major	Contractor to ensure site is adequately secure during the works through hoarding/fencing and surveillance.	Possible	Contractor
SARS-CoV 2	Covid-19 outbreak in SA or on site. Delay in construction.	Unlikely	Major	Contractor to have appropriate Covid Management Plan in place in the event of a state-wide or localised outbreak.	Possible	Contractor
Services						
Site Circulation	Unsafe circulation throughout site through inadequate illumination of spaces.	Unlikely	Minor	Compliance with relevant lighting standards AS1680/AS1158 series. Provide long-lasting, high quality LED luminaires to ensure lighting level compliance even at end-of-life.	Unlikely	Services Consultant, Services Contractor
Access to services plant and equipment	Potential for injury caused by trying to access high level/poorly	Likely	Minor	Provide services plant and equipment in readily accessible locations on	Unlikely	Services Consultant, Architect, Contractor

Item	Risk Description	Initial Likelihood	Consequence	Strategy	Residual Likelihood	Action
	located plant & equipment.			ground level where possible.		
Critical Equipment Maintenance	Inadequate access to high level UPS equipment protecting roller doors	Likely	Minor	Utilise centralised UPS system supplying each roller door via individual sub-circuit.	Unlikely	Services Consultant, Architect, Contractor
Thermal Comfort and Noise	Particularly to critical areas (sleeping).	Likely	Minor	Ensure all plant and equipment is adequately sized, and designed to maintain appropriate acoustic levels.	Unlikely	Services Consultant
Electromagnetic Frequency	Switch board locations.	Very Unlikely	Minor	Consideration to be given to the location of switchboards in respect to various facilities throughout the building.	Very Unlikely	Services Consultant, Architect
Fire & Emergencies						
Access & Egress	Inadequate egress.	Very Unlikely	Significant	Provide access and egress in accordance with the BCA. Ensure exits remain clear and unobstructed during and post construction. Provide emergency and exit lighting system in accordance with NCC 2019 and AS2293 requirements	Very Unlikely	Architect, Services Contractor, Contractor & End User
Evacuation Strategy	Fire during construction.	Very Unlikely	Major	Emergency exit signage and evacuation plan displayed on site during and post construction.	Very Unlikely	Contractor, End User

Form 4 - Safety in Design Risk Assessment Matrix

Project Name: Northern Crisis Stabilisation
 Project Number: 8250
 Revision: 1
 Date: 14.02.2024

Risk Matrix	Severity				
	1	2	3	4	5
5	5	10	15	20	25
4	4	8	12	16	20
3	3	6	9	12	15
2	2	4	6	8	10
1	1	2	3	4	5

Risk Matrix Legend	
13 to 25	Denotes extreme safety in design risk, considered unacceptable. Further action must be taken to improve Safety
5 to 12	Denotes high perceived risk. Further action should be taken to improve safety. Personnel should be made aware of hazards
1 to 4	Denotes moderate perceived risk. Personnel should be made aware of hazards

Hazard Identification						Risk Assessment			Risk Control				Further Action			
Item	Hazard Description	Cause	Effect	Location (if applicable)	Building / Site Lifecycle	Initial Risk			Control Description		Control Category	Residual Risk		Further Action	Responsible Entity	Status
						L	S	R				L	S	R		
Mechanical Services																
M01	Fall from heights	Air Conditioning and Ventilation equipment located in roof/ceiling spaces that require on-going maintenance	Serious injury	Roof / Ceiling spaces	Construction, on-going maintenance	3	4	12	Minimise extent of equipment requiring on-going maintenance above ceilings > 3000AFL. Locate plant requiring access within accessible, dedicated plantrooms	Engineering Control	2	4	8	Mobile Lifting platform to be used for maintenance access	Proprietor & Installing Contractor	
M02	Noise/vibration exposure	Mechanical services plant with high noise levels	Hearing loss	Plant areas generally	On-going maintenance	3	2	6	Minimise noise levels with specified equipment selections Specify appropriate vibration isolation mounts/hangers	Engineering Control	1	2	2	High noise areas (e.g. plant rooms) to be restricted to qualified personnel access only Adopt policy for maintenance personnel to use appropriate PPE (e.g. ear plugs) in high noise areas	Proprietor	
M03	Structural failure	Mechanical plant weights exceeding structural capacity	Serious injury/death	General	Construction, On-going, day to day use	2	5	10	Estimated weights for Mechanical services plant and equipment advised to Structural Engineer during design phase	Engineering Control	1	5	5	Mechanical contractor to advise weights for final plant/equipment selections during construction	Contractor	
M04	Refrigerant Gas Leak	Refrigerant leak associated with Chillers	Asphyxiation	Plant Room	Construction, On-going, day to day use	3	4	12	Air conditioning refrigeration systems designed to meet refrigeration charge limitations of AS 1677 - test existing equipment	Engineering Control	1	4	4	Systems to be tested by qualified, competent contractors Refrigeration systems to be regularly maintained	Contractor Proprietor	
Electrical Services																
E01	Isolation of site power in emergency scenario	Electrical fault or accidental damage to live cables and/or circuits	Serious injury/death	Main Switchboard	On-going, maintenance/day to day use	2	4	8	Main Switchboard specified to be located in accordance with AS/NZS 3000 with isolators labelled in accordance with AS/NZS 3000. Clear access to Main Switchboard maintained for compliance with AS/NZS 3000	Engineering Control	1	4	4	Architect to document appropriate signage to equipment enclosure	Architect	
E02	Isolation of local power in emergency scenario	Accidental damage to live cables and/or circuits	Electrocution, Serious injury, Death	Distribution Boards	On-going, maintenance/day to day use	2	4	8	Distribution boards specified to be located in accordance with AS/NZS 3000 with isolators labelled in accordance with AS/NZS 3000.	Engineering Control	1	4	4	Architect to document appropriate signage to equipment enclosure	Architect	
E03	Electrocution	Access to Live Parts	Death, Serious injury or fire	Electrical Distribution	Investigation and Design works, Construction, Future works	3	5	15	Installation to be undertaken in accordance with AS/NZS 3000 by Licenced Electricians. Live parts only to be accessed by Licenced Electricians.	Engineering Control	1	5	5	Live parts only to be accessed by Licenced Electricians in accordance with AS/NZS 3000 and Electricity Act.	Proprietor	
E04	Electrocution	Existing above ground high voltage and low voltage cable in vicinity of site	Serious injury/death	Refer drawings	Construction	2	5	10	Existing above ground high voltage and low voltage cables shown on drawings Design has been undertaken in accordance with the electricity act of SA (Building near powerlines)	Administration Control Engineering Control	1	5	5	Contractor to construct in accordance with Work Safe SA requirements (Working Safety Near Powerlines)	Contractor	
E05	Electrocution	Unknown underground services	Serious injury/death	Underground	Construction	3	4	12	Dial B4 you Dig completed to ascertain extent of any underground services. Document any existing services on drawings	Administration Control	2	4	8	We are not aware of any existing underground services not shown on drawings. If encountered, report to Superintendent Inground survey to be organised prior to any excavation works	Contractor	
E06	Electrocution	New underground power distribution cables	Serious injury/death	Underground	Construction, future works	3	5	15	Document marking tape over new underground cables Denote cable locations on drawings Document distribution cables to be installed in conduits	Administration Control Administration Control Engineering Control	1	5	5	Install cable marking tape above underground cables at compliant depth Show on as-built drawings Include cable markers on ground or plan drawing of all underground cabling with in site MSB	Contractor Contractor	
E07	Vehicle and Pedestrian trip hazards	Electrical transformers, electrical fixtures, inground cable pits, mounting brackets, luminaires, lighting columns	Serious injury	External works	On-going, day to day use	2	3	6	Locate external electrical fixtures in locations that do not conflict with vehicular movements. Provide physical barriers to protect electrical fixtures. Design inground pits and fittings in locations other than pathways.	Engineering Control Engineering Control Engineering Control	1	3	3	Document bollards/curbs to protect poles and fixtures.	Architect	
E08	Fall from heights	Light fittings, electrical accessories or devices that are located above 2700mm above floor level	Serious injury	Ceiling light fittings, car park lighting	Construction, on-going maintenance	3	4	12	Specify LED luminaires where possible to reduce maintenance frequency Suspend luminaires/accessories to a maximum height of 2700mm AFFL.	Engineering Control Elimination	2	4	8	Working at heights system (mobile lifting platform, scissor lift, scaffolding, etc.) to be used for installation access	Contractor	
E09	Fall from heights	Solar PV panels located on roof	Serious injury, Death	Roof level	Construction, on-going maintenance	3	5	15	Locate solar PV panels 5m from the edge of the roof as per DIT guidelines.	Engineering Control	1	5	5	Ensure anchor points are provided close to roof perimeters for any on-going maintenance work required near roof edge. Roof level to be restricted to qualified personnel access only Roof walkways to be documented	Architect Proprietor Architect	
		Power Supplies located	Serious injury		Construction,				Locate power supplies at least 3m from roof edge. Includes a 1m working space and 2m clearance from roof edge.	Engineering Control				Ensure anchor points are provided close to roof perimeters for any on-going maintenance work required near roof edge.	Architect	


Item	Hazard Identification					Risk Assessment			Risk Control				Further Action			
	Hazard Description	Cause	Effect	Location (if applicable)	Building / Site Lifecycle	Initial Risk			Control Description	Control Category	Residual Risk			Further Action	Responsible Entity	Status
						L	S	R			L	S	R			
E10	Fall from heights	Power supplies located on roof	Death	Roof level	on-going maintenance	3	5	15	Locate power supplies near roof edge with parapet to isolate fall hazard. Power supplies documented to be located within mech plant platform enclosed on all sides	Isolation Isolation	1	5	5	Roof level to be restricted to qualified personnel access only Roof walkways to be maintained	Proprietor Proprietor	
E11	Electrocution	Lighting and Power circuits	Serious injury/death	General	On-going, maintenance/day to day use	3	4	12	Document RCD protection to all lighting and power circuits in accordance with AS/NZS 3000 Document 10mA RCD protection to all power outlet circuits in child accessible areas within ELC Document 10mA RCD/LPD protection to all power outlet circuits in Body/Cardiac Protection areas	Engineering Control Engineering Control Engineering Control	1	4	4	To be tested and maintained to AS/NZS 3000 during DLP To be tested and maintained to AS/NZS 3000 post DLP	Contractor Proprietor	
E12	Electrocution	Cables subject to mechanical and/or UV damage	Serious injury/death	Accessible areas, Roof spaces, Public spaces	Construction, on-going maintenance	2	5	10	Document cable trays for cable reticulation Cable covers documented to exposed cable runs Cables to be installed in UV rated conduit suitable to installed location	Engineering Control Engineering Control Engineering Control	1	5	5	Ensure cable trays are used for cable reticulation during construction (e.g. cables not to be left on ceilings) Ensure cable covers are installed during construction once cables have been reticulated Ensure cable trays are utilised for future cabling or new trays are provided where required	Contractor Contractor Proprietor	
E13	Electrocution	Improper isolation of power supply to equipment being serviced	Death, Serious injury or fire	Mechanical Equipment	Construction, Future Maintenance	3	5	15	Single electrical supply documented to all split mechanical units (i.e. indoor and outdoor units). RCD protection documented to all mechanical units to limit risk and extent of accidental electrification	Engineering Control Engineering Control	1	4	4	Split mechanical units to be wired / installed from a single supply isolator as per documentation. Any modifications to electrical supply arrangement are to provide suitable isolation of both indoor & outdoor units.	Contractor Proprietor	
E14	Electrocution	Suspended Power Outlets	Electrocution, Serious injury, Death	General	On-going, day to day use	3	5	15	Suspended power outlets documented to support a working load rating of 100kg and a minimum break load rating of 200kg. Suspension chain/wire documented to be connected to building structure, not ceiling system. All socket outlets on pendant are to be switched at the outlet.	Engineering Control Engineering Control Engineering Control	1	5	5	Proprietor is to ensure pendant systems are tested annually.	Proprietor	
E15	Trip hazard, electrocution	Use of multiple extension cords for building cleaning purposes	Serious injury/death	General	On-going, maintenance/day to day use	2	4	8	Document variety of power points for cleaning use Power outlets to be engraved 'Cleaners Use Only'	Engineering Control Administration Control	1	4	4	Cleaning to be carried out by competent personnel	Proprietor	
E16	Artificial lighting for safe movement	Poor lighting	Serious injury	General	On-going, day to day use	3	3	9	Lighting levels designed in excess of AS/NZS 1680.0 requirements	Engineering Control	1	3	3	Proprietor to maintain light fittings to ensure design lighting levels are maintained	Proprietor	
E17	Artificial lighting for evacuation in emergency situations	Poor emergency illumination levels and exit signage	Serious injury, Death	General	On-going / day to day use	3	4	12	Emergency illumination levels designed in accordance with BCA Part E4 and AS2293.1 requirements Exit signage arrangement designed in accordance with BCA Part E4 and AS2293.1 requirements Emergency and exit luminaire arrangement signed off by certifier	Engineering Control Engineering Control Administration Control	1	4	4	Emergency and exit luminaires to be tested during DLP and result to be stored on site Emergency and exit testing to be carried out in accordance with AS2293.2 post DLP	Contractor Proprietor	
E18	Personal injury	Insufficient external lighting for safe movement	Serious injury	External areas	Construction, on-going maintenance	4	4	16	Lighting levels designed in accordance with AS/NZS 1158 series	Engineering Control	2	4	8	Proprietor to maintain and clean luminaires to AS/NZS 1158 recommendations	Proprietor	
E19	No operation of life safety and essential equipment on power failure	Backup generator fault / error	Essential services do not operate on loss of power	Life Safety and Essential equipment	On-going / day to day use	3	5	15	Load bank documented for testing of generator Generator fault signals interfaced with building / site BMS for monitoring	Engineering Control Engineering Control	1	5	5	Generator testing and commissioning to be completed prior to handover Testing of generator startup and operation to be undertaken monthly when serving life safety equipment	Contractor Proprietor	
E20	Electrocution	Sensor Taps Power Outlets	Electrocution, Serious injury, Death	Wet Areas	On-going, day to day use	3	5	15	Locate power outlet outside wet area zones in compliance with AS/NZS 3000 Locate power outlets for sensor taps in non readily accessible position such as ceiling space.	Engineering Control Engineering Control	1	5	5	Ensure access to outlet for sensor tap isolation and maintenance is provided.	Architect	
E21	Entrapment	Loss of power supply to lifts	Serious injury, Death	Lifts	On-going, day to day use	3	5	15	Power supply for lift documented from live side of main switch in accordance with AS 1735. Power supply for lift documented to be fire rated supply for safety service in accordance with AS 3000 and NCC.	Engineering Control Engineering Control	1	5	5			
E22	Fire Propagation	Penetrations through fire and/ or smoke barriers	Burns, Death	General	Day to day use, future maintenance	4	5	20	Document fire stopping and smoke sealing to all penetrations to fire and smoke barriers Document comms cables to have consolidation points where crossing fire smoke barrier to minimise amount of additional penetrations post construction. Document fire stopping / smoke sealing systems designed for frequently changed installations in areas where cabling changes often.	Engineering Control Engineering Control Engineering Control	2	5	10	Contractor to install fire stopping / smoke sealing systems in accordance with the NCC or manufacturer's tested methodology installed fire stopping / smoke sealing systems are to be inspected on an annual basis	Contractor Proprietor	
E23	Entanglement	Cables falling out of ceiling during a fire	Burns, Death	Fire isolated corridors, stairs, passageways	Fire event / emergency	4	5	20	All cables are to be installed as a fire rated (non-combustible) wiring system.	Engineering Control	1	5	5	Contractor to use fire rated cable tray or stainless steel catenary system for installation of cabling.	Contractor	
E24	Personal injury	Insufficient clear access to Telecommunications Equipment	Injury	Communication Room, Equipment Location	Day to day use, Future maintenance	3	3	9	Telecommunications equipment located with clear access provisions in accordance with AS/CA S009, AS/NZS 11891, and AS/NZS 14763. Clear access requirements for equipment indicated on drawings.	Engineering Control Engineering Control	1	3	3	Ensure onsite coordination of installed equipment to provide clear access. Proprietor to ensure no future restrictions to clear access to equipment are installed.	Contractor Proprietor	

Hazard Identification						Risk Assessment			Risk Control				Further Action			
Item	Hazard Description	Cause	Effect	Location (if applicable)	Building / Site Lifecycle	Initial Risk			Control Description	Control Category	Residual Risk			Further Action	Responsible Entity	Status
						L	S	R			L	S	R			
Fire Protection Services																
F01	Fire water leakage	Unknown underground services	Serious injury/death	Underground	Construction	3	4	24	Dial B4 you Dig completed to ascertain extent of any underground services. Document any existing services on drawings	Administration Control	2	4	8	We are not aware of any existing underground services not shown on drawings. If encountered, report to Superintendent	Contractor	
F02	Structural failure	Fire pipework weights exceeding structural capacity	Serious injury/death	General	Construction, On-going, day to day use	2	5	10	Fire pipework sizes and routes advised to Structural Engineer during design phase	Engineering Control	1	5	5	Fire Protection contractor to advise weights for final pipework locations during construction	Contractor	
F03	Fire system pipework failure during pressure testing	Fire system installation is poor	Serious injury/death	General	Construction, future works	2	4	8	Document works to be completed in accordance with AS 2419 & AS 2118	Engineering Control	1	4	4	Systems to be installed by qualified, competent contractors Fire systems to be maintained post DLP to Ministers Specification SA76 and AS1851	Contractor Proprietor	
F04	Electrocution	Fire Protection Service electrical system	Serious injury/death	General	Construction, future works	3	5	15	Document works to be completed in accordance with AS 1670 & AS 3000	Engineering Control	2	5	10	Fire systems to be maintained post DLP to Ministers Specification SA76 and AS1851	Proprietor	
F05	Personal injury	Incorrect type of extinguisher installed based on environment	Serious injury/death	General	On-going, day to day use	3	5	15	Extinguishers to be selected and installed in accordance with AS2444, based on type of hazards present	Engineering Control	2	5	10	Contractor to ensure correct type of extinguishers are installed	Contractor	
F06	Fall from heights	Fire Protection services equipment located at or above ceiling level	Serious injury	Roof/ceiling spaces	Construction, on-going maintenance	3	4	12	Minimise extent of equipment requiring on-going maintenance above ceilings > 3000AFL	Engineering Control	2	4	8	Mobile Lifting platform to be used for maintenance access	Proprietor & Installing Contractor	
Hydraulic Services																
H01	Loss of Water, Sewer & Gas Services to existing buildings	Installation of new services	Lack of services - inconvenience	Existing site, generally	Construction	4	4	16	Schedule works to be completed at time to be coordinated with the site proprietor & managing contractor Service location to identify any unknown assets that could be accidentally disconnected	Administration Control Administration Control	2	2	4	Contractor to ensure Principal has been advised when works to proceed	Contractor	
H02	Illness	Non-drinkable water services	Serious illness/death	General	Construction, on-going maintenance	2	5	10	All potential backflow sources to be protected by backflow prevention to AS3500.1	Engineering Control	1	5	5	Contractor to ensure all hazards are protected to AS 3500.1 Maintenance of backflow prevention systems to be completed during DLP Ongoing maintenance of backflow prevention devices to be undertaken by licensed plumber engaged by site proprietor	Contractor Contractor Proprietor	
H03	Illness	Domestic water storage tank (as applicable)	Serious illness/death	External works	Construction, on-going maintenance	2	5	10	Provision of storage tanks to be installed in accordance with AS3500.1, including but not limited to: tank signage, tank access, watermarked components, tank cover (suitable to prevent contamination), overflow & sludge valve	Engineering Control	1	3	3	Contractor to ensure all storage tank works & commissioning are completed in accordance with AS 3500.1 Maintenance of storage tank and components to be undertaken as part of DLP Ongoing maintenance of storage tanks & components to be undertaken by licensed plumber engaged by site proprietor	Contractor Contractor Proprietor	
H04	Loss of raw water supply to softened water tanks	Modifications to water softeners	Lack of ablation water	Site wide	Construction	5	4	20	Schedule works to be completed at time to be coordinated with the Hospital	Administration Control	2	2	4	Contractor to ensure Principal has been advised when works to proceed	Contractor	
H05	Loss of Natural Gas to existing Flats at southern end of site	Installation of new gas meter	Lack of natural gas - inconvenience	Flats at southern end of site	Construction	5	4	20	Schedule works to be completed at time to be coordinated with the Hospital	Administration Control	2	2	4	Contractor to ensure Principal has been advised when works to proceed	Contractor	
H06	Loss of raw water to existing Flats at southern end of site and only single supply to	Installation and diversion of new raw water line	Lack of domestic water supply	Flats at southern end of site	Construction	5	4	20	Schedule works to be completed at time to be coordinated with the Hospital	Administration Control	2	2	4	Contractor to ensure Principal has been advised when works to proceed	Contractor	
H07	Fall from heights	Packaged Hot Water Service, located on roof	Serious injury/death	Roof level generally	Construction, on-going maintenance	3	5	15	Locate HWS plant at least 3m from roof edge	Engineering Control	1	5	5	Ensure anchor points are provided close to roof perimeters for any on-going maintenance work required near roof edge. Roof level to be restricted to qualified personnel access only Roof walkways to be documented	Architect Proprietor Architect	
H08	Legionella	Untreated warm water systems, ponding water	Legionnaires disease, death	Heating water loop, All cooling coil drain trays/drains. Hot water systems	Construction, on-going maintenance	2	5	10	Closed loop chemical dosing system documented to serve Heating Water loop as required by AS/NZS 3666.1 All air side systems to comply with AS/NZS 3666.1 Hot water systems documented to meet "Guidelines for Control of Legionella - 2008"	Engineering Control Engineering Control Engineering Control	1	5	5	Maintenance of Heating Water loop and all air side systems to be completed during DLP to AS/NZS 3666.2 On-going maintenance (post DLP) to be completed to AS/NZS 3666.2	Installing Contractor Proprietor	
H09	Natural Gas and water leakage	Unknown underground services	Serious injury/death	Underground	Construction	3	4	12	Dial B4 you Dig completed to ascertain extent of any underground services. Document any existing services on drawings	Administration Control	2	4	8	We are not aware of any existing underground services not shown on drawings. If encountered, report to Superintendent	Contractor	

Hazard Identification					Risk Assessment			Risk Control				Further Action				
Item	Hazard Description	Cause	Effect	Location (if applicable)	Building / Site Lifecycle	Initial Risk			Control Description	Control Category	Residual Risk			Further Action	Responsible Entity	Status
						L	S	R			L	S	R			
H10	Natural Gas leakage internally	Open gas pipework as a result of non-isolated gas appliances, bunden burners etc.	Serious injury/death/fire/explosion	Gas Appliances Generally	Construction, on-going maintenance	2	5	10	Contractor to provide gas isolation point via electronic solenoid, proving kit, or accessible manual valve to permit isolation of gas services on an individual room basis	Engineering Control	2	4	8	Ongoing maintenance of gas isolation devices to be undertaken by licensed plumber engaged by site proprietor	Proprietor	
													Safe work method statement / training protocol to be developed by proprietor to ensure gas pipework remains isolated when not in use.	Proprietor		
H11	Scalding/burns	Hot water pipe work	Injury	Roof spaces, plant rooms	Construction, on-going maintenance	2	3	6	Document insulation to all hot water pipe work	Engineering Control	1	3	3	Contractor to ensure insulation is provided	Contractor	
H12	Deep excavation collapse	Deep excavations for underground pump chambers, grease arrestors	Serious injury/death	External works	Construction	3	5	15	Document for all excavations to be shored and benched to AS 3500.2	Engineering Control	2	5	10	Contractor to include within appropriate site induction procedure	Contractor	
H13	Natural Gas leak	Gas pipe work	Serious injury/death/fire/explosion	General	Construction, on-going maintenance	2	5	10	Document all gas works to be completed in accordance with AS 5601 (2010)	Engineering Control	1	5	5	Works to be completed by qualified, competent Gas fitter with Certificates of Compliance Gas systems to be maintained post DLP to AS 5601	Contractor Proprietor	
H14	Natural Gas leak	Natural Gas Meters	Serious injury/death/fire/explosion	Car park	Construction, on-going maintenance	2	5	10	Locate ng meters within lockable enclosure away from car parking bays and road	Engineering Control	1	5	5	Ensure that NG meters are protected behind lockable enclosure.	Architect	
H15	Natural Gas leak	Underground APA Gas main on site	Serious injury/death/fire/explosion	Car park	Construction, future works	2	5	10	Obtain as constructed drawings showing exact location of the gas main. Note that Dial before you dig would not show the main located on private property	Administration Control	1	5	5	Ensure As constructed drawings are available	Contractor	
H16	Natural Gas leakage internally	Open gas pipework as a result of non-isolated gas appliances, burners etc.	Serious injury/death/fire/explosion	Gas Appliances Generally	Construction, on-going maintenance	2	5	10	Contractor to provide gas isolation point via electronic solenoid, proving kit, or accessible manual valve to permit isolation of gas services on an individual room basis	Engineering Control	2	4	8	Ongoing maintenance of gas isolation devices to be undertaken by licensed plumber engaged by site proprietor Safe work method statement / training protocol to be developed by proprietor to ensure gas pipework remains isolated when not in use.	Proprietor Proprietor	
Vertical Transportation Services																
VT01	Entrapment	Lift maintenance tech within lift shaft and lift operational	Serious injury/death	Lift Shaft	Construction, On-going, day to day use	4	5	20	Document works to be completed in accordance with Building Code of Australia and AS1735	Engineering Control Administration Control	1	5	5	Emergency stop buttons to be located within the lift shaft Safety devices installed in accordance with AS1735	Contractor Contractor	
VT02	Entrapment	Public trapped within lift during power failure and or equipment failure	Dehydration / fainting / Stress	Lift Car	On-going, day to day use	4	5	20	Document works to be completed in accordance with Building Code of Australia and AS1735 Dual SIM cellular module with battery backup documented as telecommunications pathway Battery backup for lift documented for return to nominated floor and release of passengers on mains power failure	Engineering Control Engineering Control	1	5	5	Emergency communication buttons and dedicated phone lines required Essential power supplies provided to lifts to continue operation during power failure	Contractor Contractor	
VT03	Water ingress to lift shaft	Ground water, poor tanking of lift shaft, storm water	Electrocution	Lift Shaft	Construction, On-going, day to day use	2	4	8	Document works to be completed in accordance with Building Code of Australia and AS1735 Structural Engineer to ensure tanking method to lift pit and shaft is suitable subject to ground water	Engineering Control Engineering Control	1	4	4	Lift shaft and pit to be tanked and tested and certified water tight Structural Engineer to witness and inspect tanking installation	Contractor Structural Engineer	
VT04	Water ingress to lift shaft	Roof water collection above	Electrocution	Lift Shaft	Construction, On-going, day to day use	3	5	15	No stormwater collection systems to be documented above the lift shaft No stormwater downpipes to be located within the lift shaft	Engineering Control Engineering Control	1	5	5	No stormwater systems above or through the lift shaft	Architect	
VT05	Risk of fault	Non related infrastructure / services located within the lift shaft	Electrocution / fault/ explosion / death / fire	Lift Shaft	Construction, On-going, day to day use	2	4	8	No non-related services to be installed / located within the lift shaft	Engineering Control	1	4	4	No non-related services to be installed / located within the lift shaft All designed in accordance with Safework SA requirements	Architect Architect / Engineers	
VT06	Risk of fault	Fire in lift shaft and fire sprinkler activation	Electrocution / fault/ explosion / death / fire	Lift Shaft	Construction, On-going, day to day use	4	5	20	Fire signal to be provided to lift MAP and lift to return to ground/egress floor on	Engineering Control	1	5	5	All designed in accordance with Safework SA requirements Fire detector to be installed for early detection and initiation of fire signal.	Architect / Engineers Fire Services Contractor	
General - Applicable to all Services																
GE01	In-ground contamination	Existing contaminated fill/soil on site	Illness, injury	Underground	Construction	2	4	8	Refer to soil testing report for summary of contamination levels.	Administration Control	2	4	8	We are not aware of any contamination on this site. If encountered, report to Superintendent Soil testing to be undertaken if suspected contamination soil is encountered	Contractor Contractor	
GE02	Earthquake - Collapse of Services / Ceilings / Structure	Insufficient Seismic restraints	Serious injury, Loss of life	General	Construction, future works, on-going	4	4	16	All plant and equipment to have appropriate seismic restraints installed to align with Earthquake Design Category Seismic restraints - cross bracing or similar - to services items designed in accordance with AS1170.4	Engineering Control Engineering Control	2	4	8	All equipment requiring seismic restraint in accordance with AS1170.4 to be installed with sufficient restraints Ensure that any future alterations to services maintain seismic restraint.	Contractor Proprietor	
GE03	Entrapment	Confined Space	Starvation, Dehydration	Pits, Tanks, Ductwork, Shafts,	Construction, future works, on-going	2	4	8	Equipment maintenance access is to not be documented from within a confined space	Substitution	2	4	8	Confined space entry permit to be completed prior to entering a confined space	Contractor	

Hazard Identification						Risk Assessment			Risk Control				Further Action			
Item	Hazard Description	Cause	Effect	Location (if applicable)	Building / Site Lifecycle	Initial Risk			Control Description	Control Category	Residual Risk			Further Action	Responsible Entity	Status
						L	S	R			L	S	R			
			Death	Tunnels, and Trenches	going								Access procedures to be followed when entering confined spaces	Contractor / Proprietor		
GE04	Deep excavation collapse	Deep excavations for underground pump chambers, grease arrestors	Serious injury/death	External works	Construction	3	5	15	Document for all excavations to be shored and benched to Work Health and Safety (Excavation Work) Code of Practice 2015	Engineering Control	2	5	10	Contractor to include within appropriate site induction procedure	Contractor	

SAFETY IN DESIGN RISK REGISTER - BUILDING CONSTRUCTION

PROJECT NAME: Northern Crisis Stabilisation Centre				RBG JOB No: 21602A		PROJECT OWNER: NALHN					 Member of the Surbana Jurong Group
STRUCTURE Description: Double storey building with combination of offices, bedrooms and counselling offices						PARTICIPANTS: David Kennedy, Tsu Yan Wong					

Item ID	Date <small>(date first listed on register)</small>	Hazard <small>(potential source of harm)</small>	Risk / Cause <small>(possible event, or incident causing injury or loss)</small>	Description of Risk <small>(determines the level of consequence)</small>	Persons Affected	Unmitigated Consequence	RBG Mitigation <small>(Risk mitigation occurring during design and development)</small>	Proposed Risk Mitigation (by Others) <small>(Mitigation tool utilised post design)</small>	Risk level			Drawing Ref (optional)	Residual Risk Owner
									Consequence [C]	Likelihood (L)	Rating (C + L)		
2.01	16/2/24	Existing services	Underground high voltage easement on Western side of site, excavation with care during Construction	Workers may be at risk of exposing to high voltage electricity	workers, public	Possible injury or fatality		Survey to locate services prior to commencing construction works.	Catastrophic	Unlikely	Significant		Principal Contractor
5.01	16/2/24	Construction work	Slip, Trip, Fall	If sump pits or lift pit that are not covered, workers could fall / trip	workers	Possible injury or fatality		Provide temporary covers.	Moderate	Unlikely	Low		Principal Contractor
5.05	16/2/24	Construction work	Slip, Trip, Fall	Set down areas present a trip hazard until they are concrete filled; possible for workers to trip and injure themselves	workers	Possible injury or fatality		Provide trip protection.	Minor	Possible	Low		Principal Contractor
6.01	16/2/24	Working at Heights	Working on elevated platforms	Workers may be required to work on elevated platforms to build suspended elements - the risk of falling or dropping items creates a working at heights hazard	workers	Possible injury or fatality		Provide fall protection and safe work methods.	Moderate	Possible	Moderate		Principal Contractor
6.02	16/2/24	Working at Heights	Steel roof construction at top of buildings	Construction of the steel roofs will require work at height above the top floor of the building and at great height above the ground. If a worker falls the consequences would be dire; dropping tools also presents a safety hazard to workers or the public below.	workers, public	Possible injury or fatality	Architect & engineer to work with builder & Steel contractor to establish construction methods prior to detailed design.	Contractor & Steel erector to establish construction methods prior to detailed design.	Major	Unlikely	Moderate		Principal Contractor
6.03	16/2/24	Working at Heights	Maintenance of steel roofs	The top and soffit surfaces of the steel roofs will require maintenance access; the height will require safe access methods and fall restraints for workers. Maintenance could include access to lighting if any is fixed to the roof structures.	Maintenance personnel	Possible injury or fatality	Architect & engineer to work together to design access to roof for maintenance requirement.	Design to reduce or eliminate need to access for maintenance. Design fall protection & document procedures in operations manual.	Moderate	Unlikely	Low		Architect / Building Manager
6.04	16/2/24	Working at Heights	Maintenance of Awnings and fins	The decorative steel fins and awnings will require access for maintenance. the height will require safe access methods and fall restraints for workers. These elements may restrict maintenance access to areas above and below them.	Maintenance personnel	Possible injury or fatality		Consider maintenance access in design. Provide access advice in operation manuals.	Moderate	Unlikely	Low		Architect / Building Manager
8.02	16/2/24	Materials Handling	Falling objects	Overhead work	workers	Possible injury or fatality		Establish safe work methods.	Minor	Unlikely	Negligible		Principal Contractor
9.04	16/2/24	Plant	Failure of dewatering system	Failure of the dewatering system may allow the excavation to flood the site, resulting in soft ground.	workers, public	Possible personal injury or fatality and Structural damage.		Establish dewatering system to prevent flood / water ponding.	Major	Unlikely	Moderate		Principal Contractor
10.01	16/2/24	Construction loads	Failure of structure due to overloading	Stacking of materials on floors, or next to vertical elements may impose loads greater than allowed for in the design. This may cause excessive deflections, damage, or failure of the elements.	workers, public	Possible personal injury or fatality and Structure collapse.		Identify where materials can be stacked on or near the structure and consult RBG regarding load capacity before placing materials.	Major	Unlikely	Moderate		Principal Contractor
10.02	16/2/24	Superimposed loads	Failure of structure due to overloading	Use of heavy equipment next to the building may cause excessive deflections, damage, or failure of structural elements.	workers, public	Possible personal injury or fatality and Structure collapse.		Identify where heavy equipment might be used adjacent to the building and where materials may be stacked and consult RBG regarding load capacities.	Major	Unlikely	Moderate		Principal Contractor
10.03	16/2/24	Dynamic loads	Failure of structure due to overloading	Vibratory activities not allowed for in the structural design may cause damage / failure to the structure or finishes.	workers, public	Possible personal injury or fatality and Structure collapse.		Identify vibration inducing equipment or activities and consult RBG and Architect prior to use.	Moderate	Very Unlikely	Low		Principal Contractor
11.01	16/2/24	Fire	Failure during fire exposure	Fire transfer through structure	Building user	Possible personal injury or fatality and Structure collapse.	Design structural elements for legislated, appropriate and recommended fire resistance levels.		Major	Very Unlikely	Moderate		n/a
12.01	16/2/24	Compliance with Standards	Collapse	non compliance of materials may lead to collapse	workers, public	Possible personal injury or fatality and Structure collapse.	Material test results and data sheets to be reviewed for compliance before use	Material test results and data sheets to be reviewed for compliance before use	Major	Unlikely	Moderate		Principal Contractor
12.02	16/2/24	Compliance with Standards	Collapse	non compliance of fabrication / installation may lead to collapse	workers, public	Possible personal injury or fatality and Structure collapse.	Results of tests conducted during fabrication to be reviewed for compliance before issue of certificate	Assessment of fabrication (incl welding & bolts installed) and compliance with the specification and relevant codes	Major	Unlikely	Moderate		Principal Contractor

Appendix I – Certificate of Title

REAL PROPERTY ACT, 1886



The Registrar-General certifies that this Title Register Search displays the records maintained in the Register Book and other notations at the time of searching.



Certificate of Title - Volume 6286 Folio 864

Parent Title(s) CT 6275/668
Creating Dealing(s) AQ 14052633
Title Issued 27/06/2023 Edition 1 Edition Issued 27/06/2023

Estate Type

FEE SIMPLE

Registered Proprietor

MINISTER FOR HEALTH AND WELLBEING
OF ADELAIDE SA 5000

Description of Land

ALLOTMENT 4711 DEPOSITED PLAN 130276
IN THE AREA NAMED ELIZABETH SOUTH
HUNDRED OF MUNNO PARA

Easements

NIL

Schedule of Dealings

NIL

Notations

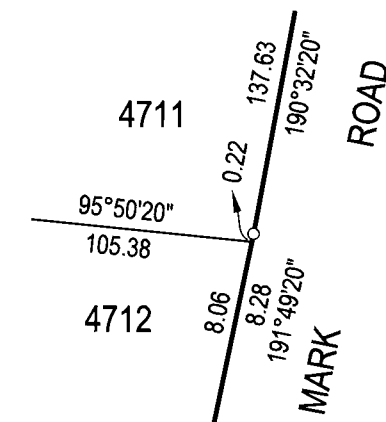
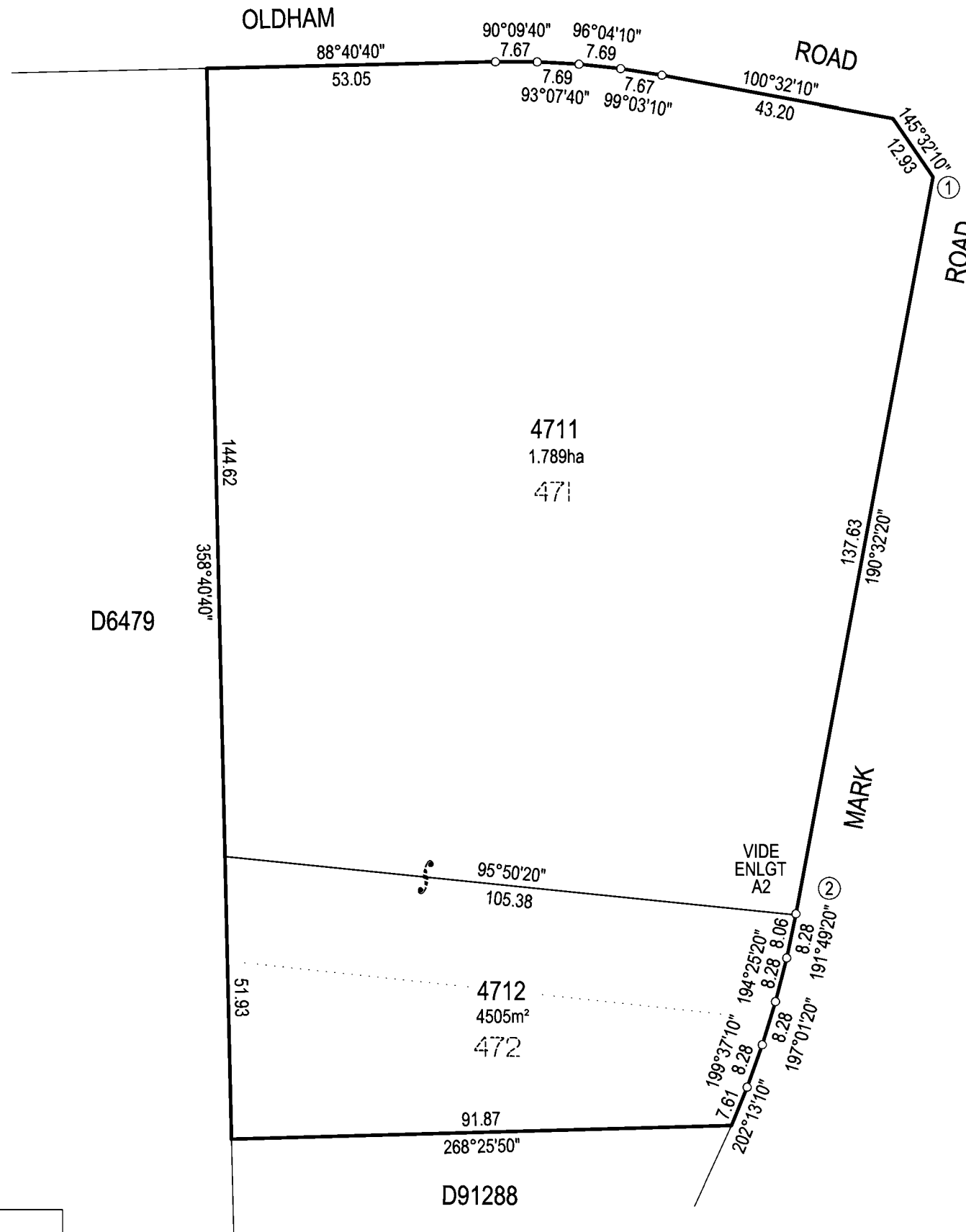
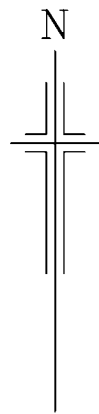
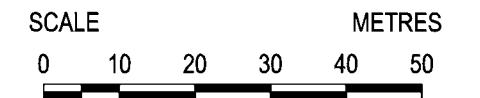
Dealings Affecting Title NIL
Priority Notices NIL
Notations on Plan NIL
Registrar-General's Notes NIL
Administrative Interests NIL

D130276

SHEET 2 OF 2

114003_pland_1_V01_Version_3

BEARING DATUM:	(1) - (2)	190°32'20"
DERIVATION:	D91288	ADOPTED
DRAWING SCALE FACTOR:		1.0
ORIGIN POINT:		
TOTAL AREA:		



ENLARGEMENT A2
NOT TO SCALE

Alexander & Symonds Pty.Ltd.
 11 KING WILLIAM STREET, KENT TOWN
 P.O. BOX 1000 KENT TOWN 5071
 Tel (08) 8130 1666 A.B.N. 93 007 753 988

REFERENCE 20A0457LTO(A)	
PAP 20/06/2022	

Appendix J – SAMIS Plans and other relevant existing plans

Not Applicable. There are no SAMIS Plans yet generated for this facility

19 November, 2023

Greenway Architects
via email

Attention: Peter Tynan

**RE: Northern Crisis Stabilisation Centre – Concept Design phase - NCC BCA
Vol 1 2022 Review**

Dear Peter

The following is a summary of some of the key items to consider with regards to the current concept design for the proposed new Northern Crisis Stabilisation Centre that relate to NCC BCA Vol 1 Building Code matters. They have been based on documents contained within the:

- Greenway Architect – Option 16 Documents dates 08/08/2023

Note: this review has not considered structural nor reviewed specifications which will form part of the formal building rules consent review to be undertaken by the nominated building Certifier.

This documentation is not deemed complete in all aspects and as a result assumptions have been made where this is the case.

Building Code Australia – Deemed to Satisfy Items to Consider

Titles

- a) The review is based on the understanding that the proposed development is to be cited on a single parcel of land and that future developments will be located within the same parcel – no site boundary proposed between current and future buildings at this stage
- b) If not the case then the boundary between the respective sites and this one is deemed to be a first source feature

Part A – Classification

- a. The proposed development will be deemed to be a Class 9a (health care building
- b. Given the nature of Ground floor – it could be argued that the services provided are akin to a Class 5 – Medical Consulting – however it has been assumed that Class 9a best suits the overall use of the building

Part B – Structural Provisions

- a. The building shall be treated as an Importance Level 3 building
- b. Fit out of all architectural and services to take into account Sec 8 of AS1170.4 for bracing against earthquake loads

Part C – Compartmentation/Fire Construction

- a. Building will be considered as Type B construction
- b. Full compliance with Specification 5 – S5C11
- c. Class 9a will trigger a fire rating of a minimum of 2hr (120/120/120)
- d. The floor separating storeys will need to have a 2hr FRL (120/120/120)
- e. Given its Type B and does not trigger the need for sprinklers – spandrel construction will be required as per Part C3D7 i.e. 1hr fire rated skirt around the perimeter of the upper level with no sill height less than 600mm above 1st floor FFL
- f. If load bearing walls are utilised then they will need to be either masonry or concrete
- g. External walls and internal load bearing columns will need to have a 2hr (120/-/-) FRL – applies to all load bearing parts – non load bearing elements if greater than 6m from a fire source feature have no FRL
- h. Upper level internal columns supporting the roof do not require an FRL
- i. Roof needs no FRL
- j. Patient care areas to be separated into 500m² smoke compartments
- k. Ancillary use areas such as kitchen and laundry to be fire separated out – 1hr FRL
- l. Non combustible construction required through out to all external walls
- m. Attachments to the building façade will need to be non combustible

Extract from NCC re FRL's

Table S5C21a: Type B construction: FRL of loadbearing parts of external walls

Distance from a fire-source feature	FRL (in minutes) Structural adequacy / Integrity / Insulation			
	Class 2, 3 or 4 part	Class 5, 7a or 9	Class 6	Class 7b or 8
Less than 1.5 m	90/90/90	120/120/120	180/180/180	240/240/240
1.5 to less than 3 m	90/60/30	120/90/60	180/120/90	240/180/120
3 m to less than 9 m	90/30/30	120/30/30	180/90/60	240/90/60
9 m to less than 18 m	90/30/-	120/30/-	180/60/-	240/60/-
18 m or more	-/-/-	-/-/-	-/-/-	-/-/-

Table S5C21b: Type B construction: FRL of non-loadbearing parts of external walls

Distance from a fire-source feature	FRL (in minutes): Structural adequacy / Integrity / Insulation			
	Class 2, 3 or 4 part	Class 5, 7a or 9	Class 6	Class 7b or 8
Less than 1.5 m	-/90/90	-/120/120	-/180/180	-/240/240
1.5 m to less than 3 m	-/60/30	-/90/60	-/120/90	-/180/120
3 m or more	-/-/-	-/-/-	-/-/-	-/-/-

Table S5C21c: Type B construction: FRL of external columns not incorporated in an external wall

Distance from a fire-source feature	FRL (in minutes): Structural adequacy / Integrity / Insulation			
	Class 2, 3 or 4 part	Class 5, 7a or 9	Class 6	Class 7b or 8
Loadbearing column — less than 18 m	90/-/-	120/-/-	180/-/-	240/-/-

Distance from a fire-source feature	FRL (in minutes): Structural adequacy / Integrity / Insulation			
	Class 2, 3 or 4 part	Class 5, 7a or 9	Class 6	Class 7b or 8
Loadbearing column — 18 m or more	—/—/—	—/—/—	—/—/—	—/—/—
Non-loadbearing column	—/—/—	—/—/—	—/—/—	—/—/—

Table S5C21d: Type B construction: FRL of common walls and fire walls

Wall type	FRL (in minutes): Structural adequacy / Integrity / Insulation			
	Class 2, 3 or 4 part	Class 5, 7a or 9	Class 6	Class 7b or 8
Loadbearing or non-loadbearing	90/90/90	120/120/120	180/180/180	240/240/240

Table S5C21e: Type B construction: FRL of loadbearing internal walls

Location	FRL (in minutes): Structural adequacy / Integrity / Insulation			
	Class 2, 3 or 4 part	Class 5, 7a or 9	Class 6	Class 7b or 8
Fire-resisting lift and stair shafts	90/90/90	120/120/120	180/120/120	240/120/120
Bounding public corridors, public lobbies and the like	60/60/60	120/—/—	180/—/—	240/—/—
Between or bounding sole-occupancy units	60/60/60	120/—/—	180/—/—	240/—/—

Table S5C21f: Type B construction: FRL of non-loadbearing internal walls

Location	FRL (in minutes): Structural adequacy / Integrity / Insulation			
	Class 2, 3 or 4 part	Class 5, 7a or 9	Class 6	Class 7b or 8
Fire-resisting lift and stair shafts	—/90/90	—/120/120	—/120/120	—/120/120
Bounding public corridor, public lobbies and the like	—/60/60	—/—/—	—/—/—	—/—/—
Between or bounding sole-occupancy units	—/60/60	—/—/—	—/—/—	—/—/—

Table S5C21g: Type B construction: FRL of other building elements not covered by Tables S5C21a to S5C21f

Building element	FRL (in minutes): Structural adequacy / Integrity / Insulation			
	Class 2, 3 or 4 part	Class 5, 7a or 9	Class 6	Class 7b or 8
Other loadbearing internal walls and columns	60/—/—	120/—/—	180/—/—	240/—/—
Roofs	—/—/—	—/—/—	—/—/—	—/—/—

Part D – Access / Egress

- a. Given Class 9a – all required exits shall have a 2hr fire separation and be treated as fire isolated stairs
- b. A Class 9a is not permitted to have a non require stairs serving or connecting patient care areas – the current central stair will need further design review to create fire separation at upper level
- c. Required exits shall be treated as fire isolated exits and have min 1.6m deep and 2.7m wide landings
- d. Egress travel distance from patient care areas to not exceed 12m to an exit or point of choice – current design marginally exceeds this at 13m in some instances
- e. Handrails required in corridors serving upper level
- f. Current discharge of fire stairs compliant
- g. DDA access will be required to and within all areas
- h. Refer marked up plan for specific comments

Part E – Essential Services

- a) Building will need to be equipped with:
 - Fire hydrants/booster
 - Fire hose reels
 - Fire extinguishers through out
 - Smoke detection/Occupant Warning (AS1670)
 - Exit & Emergency lighting
 - Emergency lift
 - Shut down of a/c under fire mode
 - EWIS system

Part F – Health & Amenity

- a. All accommodation areas are to be provided with glazing that is not less than 10% of the floor area to sleeping areas
- b. Class 9a patient care areas need a bath – currently not provided – assume seeking a performance solution
- c. Slop hopper plus flushing provisions required
- d. 2.4m minimum ceilings required through out
- e. If mechanical ventilation is not provided then the windows will need to have an operable portion of no less than 5% of the floor area
- f. The current design provided the minimum level of sanitary facilities for the accommodation areas – current design has no DDA compliant ones – however exempt under BCA
- g. Level of staff numbers at this stage not fully identified - current design can cater for more than 30
- h. Technically toilets for ground floor patrons not required under the BCA – however current design can cater for intended use

Part J – Energy Efficiency

- a) Will apply throughout and to be in accordance with NCC BCA Vol1 – 2022 version if lodged post October 2024 otherwise BCA 2019 Amdt 1 applies

In addition to the above and the following summary, please refer to attached mark up for location and comments reflected within this report.

DETAILED ASSESSMENT DATA

FLOOR AREAS AND VOLUMES

Floor	Approx Area (m ²)	Comments
Ground	1060	Marginally exceeds 2000m ² fire compartment – however floors will be required to achieve a 2hr FRL and create the required separation subject to final central stair design
First	1185	

NOMINATED FIRE COMPARTMENTS

Floor	Approx. Area (m ²)	Approx. Volume (m ³)	Comment
Ground	1150	3180	Within Type B
First	1110	6000	Within Type B

POPULATION SUMMARY

Location	Use	Class	Density m ² /person	Part D1.13 Occ No.	D1.6 Egress width (m)	F2.3 Amenity Occ No.	Max Population per floor level	Notes
Ground	Staff & Clinic - Non patient care area	9a	10	100	7	Refer summary above	100	Limited by floor area
First	Patient Care Area	9a	10	118	2	Each bedroom provided with the minimum fixtures	The current egress available will be able to cater for 200 occupants.	Current design will be limited by practical use of the areas – egress and amenities more than adequate

CLAUSE BY CLAUSE ASSESSMENT

SECTION B – STRUCTURE

Clause	Description	Status	Comments
Table B1D3a	Importance Level	N	Deemed to be an IL3 building

SECTION C – FIRE RESISTANCE

Clause	Description	Status	Comments
Part C2 Fire resistance and stability			
C2D2	Type of construction required	A	The building is required to be of Type B fire resisting construction in accordance with Specification C521 of the BCA
C2D3	Calculation of rise in storeys	N	Deemed to be a 2 storey building
C2D4	Buildings of multiple classification	A	The building is required to be constructed of Type B fire resisting construction
C2D5	Mixed types of construction	N/A	Type B thru out
C2D9	Lightweight construction	N	Lightweight construction systems must comply with Specification 6 Lightweight construction uses as a fire-resisting covering of a steel column or the like, and where the covering is not in continuous contact with the column must have the voids filled to a height of not less than 1.2m above the floor and where the column is liable to be damaged must protected by steel or other suitable material.
C2D10	Non combustible materials	A	Not permitted in any fire rated walls, insulation or external walls – refer latest BCA 2022 for concessions Fire engineering may be required subject to final design to allow combustible elements within framed walls
C2D11	Fire hazard properties	A	All materials and assemblies use in the construction of the building must have minimum early fire hazard properties as applicable under Specification 7.
C2D14	Ancillary Elements	A	An ancillary element must not be fixed, installed, attached to or supported by the concealed internal parts or external face of an external wall that is required to be non-combustible unless it is one of the following: An ancillary element that is non-combustible. A gutter, downpipe or other plumbing fixture or fitting. A flashing. A grate, grille or similar cover not more than 2 m ² in area associated with a building service. An electrical switch, socket-outlet, cover plate or the like. A light fitting. A required sign. A sign other than one provided under (a) or (g) that— i. achieves a group number of 1 or 2; and ii. does not extend beyond one storey; and iii. does not extend beyond one fire compartment; and iv. is separated vertically from other signs permitted under (h) by at least 2 storeys. An awning, sunshade, canopy, blind or shading hood other than one provided under (a) that— i. meets the relevant requirements of Table S7C7 as for an internal element; and ii. serves a storey—

			<p>iii.at ground level; or</p> <p>iv.immediately above a storey at ground level; and</p> <p>v.does not serve an exit, where it would render the exit unusable in a fire.</p> <p>A part of a security, intercom or announcement system. Wiring.</p> <p>Waterproofing material installed in accordance with AS 4654.2 and applied to an adjacent floor surface, including vertical upturn, or a roof surface.</p> <p>Collars, sleeves and insulation associated with service installations.</p> <p>Screens applied to vents, weepholes and gaps complying with AS 3959.</p>
C2D15	Fixing of bonded laminated cladding panels	N	<p>(1) In a building required to be of Type A or B construction, externally located bonded laminated cladding panels must have all layers of cladding mechanically supported or restrained to the supporting frame.</p> <p>(2) An externally located bonded laminated cladding panel need not comply with (1) if it is one of the following:</p> <p>A laminated glass system.</p> <p>Layered plasterboard product.</p> <p>Perforated gypsum lath with a normal paper finish.</p> <p>Fibrous-plaster sheet.</p> <p>Fibre-reinforced cement sheeting.</p> <p>A component of a garage door</p>
Part C3 Compartmentation and separation			
C3D3	General floor area limitations	N	Refer summary above
C3D8	Separation by fire walls	N	Subject to design approach this provision may apply – will trigger additional review re fire rating and any structure passing thru fire wall
C3D6	Class 9 Buildings	A	Refer mark up for nominated fire and smoke compartments
C3D7	Vertical separation of openings in external walls	A	<p>(1) If in a building of Type A construction, any part of a window or other opening in an external wall is above another opening in the storey next below and its vertical projection falls no further than 450 mm outside the lower opening (measured horizontally), the openings must be separated by—</p> <p>(a) a spandrel which—</p> <p>(i) is not less than 900 mm in height; and</p> <p>(ii) extends not less than 600 mm above the upper surface of the intervening floor;</p> <p>(iii) and is of non-combustible material having an FRL of not less than 60/60/60;</p> <p>(b) or part of a curtain wall or panel wall that complies with (a);</p> <p>(c) or construction that complies with (a) behind a curtain wall or panel wall and has any gaps packed with a non-combustible material that will withstand thermal expansion and structural movement of the walling without the loss of seal against fire and smoke; or</p> <p>(d) a slab or other horizontal construction that—</p> <p>(i) projects outwards from the external face of the wall not less than 1100 mm; and</p> <p>(ii) extends along the wall not less than 450 mm beyond the openings concerned; and</p> <p>(iii) is non-combustible and has an FRL of not less than 60/60/60.</p>
C3D9	Separation of classifications in the same storey	A	Required around non required stair

C3D11	Separation of lift shafts	A	<p>(1) Any lift connecting more than 2 storeys, or more than 3 storeys if the building is sprinklered, (other than lifts which are wholly within an atrium) must be separated from the remainder of the building by enclosure in a shaft in which—</p> <p>(a) in a building required to be of Type A construction — the walls have the relevant FRL prescribed by Specification 5; and</p> <p>(b) in a building required to be of Type B construction — the walls—</p> <p>(i) if loadbearing, have the relevant FRL prescribed by Table S5C21e; or</p> <p>(ii) if non-loadbearing, be of non-combustible construction.</p> <p>(2) Any lift in a patient care area in a Class 9a health-care building or a resident use area in Class 9c building must be separated from the remainder of the building by a shaft having an FRL of not less than—</p> <p>(a) in a building of Type A or B construction — 120/120/120; or</p> <p>(b) in a building of Type C construction — 60/60/60.</p> <p>(3) An emergency lift must be contained within a fire-resisting shaft having an FRL of not less than 120/120/120.</p> <p>(4) Openings for lift landing doors and services must be protected in accordance with the Deemed-to-Satisfy Provisions of Part C4.</p>
C3D13	Separation of equipment	A	Equipment that comprises lift motors, lift control panels, boilers or batteries must be separated from the remainder of the building by construction with an FRL not less than 120/120/120.
C3D14	Electricity supply system	A	Electrical substations and main switchboards sustaining emergency equipment operating in the emergency mode must be separated from the remainder of the building by construction with an FRL not less than 120/120/120.
Part C3.4 Protection of openings			
C4D4	Separation of external walls and associated openings in different fire compartments	A	Only applicable if a fire wall is introduced
C4D5	Acceptable method of protection	ND	<p>Window openings that are required to be protected are to be protected by wall wetting sprinklers with windows that are automatic closing or permanently fixed in the closed position, -/60/- fire windows or -/60/60 automatic fire shutters.</p> <p>Doorways are to be protected by wall wetting sprinklers used with doors that are self closing or automatic closing or -/60/30 self closing or automatic closing fire doors.</p>
C4D6	Doorways in fire walls	A	Requires 2hr fire doors
C4D8	Protection of doorways in horizontal exits	N/A	No horizontal exits proposed
C4D9	Openings in fire isolated exits	A	<p>(1) Doorways that open to fire-isolated stairways, fire-isolated passageways or fire-isolated ramps, and are not doorways opening to a road or open space, must be protected by -/60/30 fire doors that are self-closing, or automatic closing in accordance with (2) and (3).</p> <p>(2) The automatic-closing operation required by (1) must be initiated by the activation of a smoke detector, or any other detector deemed suitable in accordance with AS 1670.1 if smoke detectors are unsuitable in the atmosphere, installed in accordance with the relevant provisions of AS 1670.1 and located not more than 1.5 m horizontal distance from the approach side of the</p>

			<p>doorway.</p> <p>(3) Where any other required suitable fire alarm system, including a sprinkler system (other than a FPAA101D system) complying with Specification 17, is installed in the building, activation of the system must also initiate the automatic-closing operation.</p> <p>(4) A window in an external wall of a fire-isolated stairway, fire-isolated passageway or fire-isolated ramp must be protected in accordance with C4D5 if it is within 6 m of, and exposed to, a window or other opening in a wall of the same building, other than in the same fire-isolated enclosure.</p>
C4D10	Services penetrations on fire isolated exit	A	<p>Fire-isolated exits must not be penetrated by any services other than—</p> <p>(a) electrical wiring permitted by D3D8(6) to be installed within the exit; or</p> <p>(b) ducting associated with a pressurisation system if it—</p> <p>(i) is constructed of material having an FRL of not less than –/120/60 where it passes through any other part of the building; and</p> <p>(ii) does not open into any other part of the building; or for fire services, water supply and test drain pipes.</p>
C4D11	Openings in fire isolated lift shafts	A	<p>(1) Doorways — If a lift shaft is required to be fire-isolated, an entrance doorway to that shaft must be protected by –</p> <p>(a) /60/– fire doors that—</p> <p>comply with AS 1735.11; and</p> <p>(b) are set to remain closed except when discharging or receiving passengers, goods or vehicles.</p> <p>(2) Lift indicator panels — A lift call panel, indicator panel or other panel in the wall of a fire-isolated lift shaft must be backed by construction having an FRL of not less than –/60/60 if it exceeds 35 000 mm² in area.</p>
C4D13	Openings in floors for services	A	Services passing through floors are to be placed within fire resisting shafts or in accordance with Clause C4D13.
C4D15	Openings for service installation	A	Either compliance with Spec C3.15 or selected in and installed with complying tested proprietary systems
C4D16	Construction Joints	A	To be fire rated relative to fire rating level
C4D17	Columns protected with lightweight construction	A	Refer Spec C1.8
Specification 5 Fire resisting construction			
S5C2	Exposure to fire-source features	A	Only applicable if Hobby Avenue is not a public road
S5C3	Fire protection for a support of another part	A	Structure at ground floor to be rated including floor slab and its supports
S5C21	Type B fire-resisting construction — fire-resistance of building elements	A	Refer summary above for FRL's
Specification 6 Structural tests for lightweight construction		N	All Specifications that will apply in design documentation and construction
Specification 7 Fire hazard properties		N	
Specification 12 Fire doors, smoke doors, fire windows and shutters		N	
Specification 13 Penetration of walls, floors and ceilings by services		N	

SECTION D – ACCESS AND EGRESS

Clause	Description	Status	Comments
D2D3	Number of exists required	C	Each part of the building requires access to two exits
D2D5	Exit travel distances	DNC	Distance to a point of choice or exit exceeds 12m at upper level
D2D6	Distance between alternative exits	C	Less than 45m apart at Grd and First Floor level
D2D7	Dimensions of exits	TBC	In a required exit or path of travel, the unobstructed height throughout must be not less than 2m, except the unobstructed height of any doorway must be reduced to not less than 1980mm. The unobstructed width of each exit or path of travel to an exit except a doorway must not be less than 1m.
D2D8	Widths of exits and paths of travel	C	1m in non patient care areas 1.8m in patient care areas where transportation could be via bed 2 x 1m min wide stairs
D2D9	Width of doorways in exits or paths of travel to exits	TBC	In a required exit or path of travel to an exit, the unobstructed width of a doorway must be not less than— (a) in patient care areas through which patients would normally be transported in beds— (i) if the doorway provides access to, or from, a corridor of width— (A) less than 2.2 m — 1200 mm; or (B) 2.2 m or greater — 1070 mm; and (ii) where the doorway referred to in (i) is fitted with two leaves and one leaf is secured in the closed position in accordance with D3D26(3)(e), the other leaf must permit an unobstructed opening not less than 800 mm wide; or (b) in patient care areas in a horizontal exit — 1250 mm; or (c) the unobstructed width of each exit provided to comply with D2D8, minus 250 mm; or (e) in any other case except where it opens to a sanitary compartment or bathroom — 750 mm wide.
D2D12	Travel via a fire isolate exit	C	(1) A doorway from a room must not open directly into a stairway, passageway or ramp that is required to be fire-isolated unless it is from— (a) a public corridor, public lobby or the like; or (b) a sole-occupancy unit occupying all of a storey; or (c) a sanitary compartment, airlock or the like. (2) Each fire-isolated stairway or fire-isolated ramp must provide independent egress from each storey served and discharge directly, or by way of its own fire-isolated passageway— (a) to a road or open space; or (3) Where a path of travel from the point of discharge of a fire-isolated exit necessitates passing within 6 m of any part of an external wall of the same building, measured horizontally at right angles to the path of travel, the following applies: (a) That part of the wall must have— (i) an FRL of not less than 60/60/60; and (ii) any openings protected internally in accordance with C4D5; and (b) The protection required by (a) must extend for a

			distance of 3 m above or below, as appropriate, the level of the path of travel, or for the height of the wall, whichever is the lesser.
D2D14	Travel by non-fire-isolated stairways or ramps	C	Current design only requires central stair to be separated at upper level under Option 2
D2D15	Discharge from exits	C	Any discharge into Loading Zone will need a clear and unobstructed pathway identified
D2D16	Horizontal exits	N/A	
D2D18	Number of persons accommodated	N	Refer summary above
Part D3 Construction of exits			
D3D2	Application of Part		
D3D8	Installation in exits and paths of travel	A	Electrical boards and the like are to be located within and enclosed by non-combustible construction or have a fire protective covering with the doorway suitably sealed against smoke spreading from the enclosure. Generally the services or equipment may be enclosed in non-combustible construction
D3D9	Enclosure of space under stairs and ramps	N/A	Current design show no access to underside of stairs – if amended will need 1hr fire rated construction to the enclosure
D3D10	Width of stairways	A	Stairway width is to be measured clear of obstructions such as handrails, projecting parts of balustrades or other barriers and the like and extend to a height of not less than 2m. A stairway more than 2m in width is only counted as having a width of 2m unless it is divided by continuous handrail or balustrade between landings and each division is less than 2m wide.
D3D14	Goings and risers	A	Compliance with be required with table D3D14
D3D15	Landings	A	Landings must comply with the requirements of Clause D3D15 of the BCA. Landings must be not less than 750mm long and have a non-slip finish throughout or an adequate non-skid strip near the edge of the landing where it leads to a flight below.
D3D16	Thresholds	A	A threshold of a doorway must not incorporate a step or ramp at any point closer to the doorway than the width of the door leaf unless the door opens to a road or door space, external stair landing or external balcony and the doorsill is not more than 190mm above the finish surface of the ground balcony or the like to which the door opens.
D3D22	Handrails	A	Handrails are to be provided to at least one side of stair flights and located not less than 865mm above the nosings of stairs treads and the floor surface of landings.
Note:	Application of AS1428.1 handrails continuation at landings does not apply in fire isolated stairs		
D3D23	Fixed Platforms walkways, stairways, and ladders	A	Fixed platforms, walkways, stairways, ladders, landings, handrails, balustrade and any tread or riser in a plant room, lift motor room or the like is to comply with AS1657
D3D24	Doorways and doors	A	Final design to be reviewed
D3D25	Swinging doors	A	Final design to be reviewed but all exit doors must swing in the direction of travel

D3D26	Operation of latch	A	<p>Doors in a path of travel that are lockable must be fitted with fail-safe devices to automatically unlock these doors upon activation of the sprinkler system or smoke and heat detectors.</p> <p>The latch of a door in a required exit, forming part of a required exit or in the path of travel is to be readily operable without a key from the side of that faces a person seeking egress. It is to have a single downward action and to be located between 900mm and 1.10m from the floor unless it serves a sanitary compartment. This means lever handles are generally required.</p>
D3D28	Signs on doors	TBC	<p>Signs are not provided to all doors as required.</p> <p>Signage on both sides is to be provided to fire and smoke doors alerting persons that the doors must not be impaired.</p>
D3D29	Protection of openable windows	A	<p>A window opening must be provided with protection, if the floor below the window is 2 m or more above the surface beneath in— a bedroom in a Class 2 or 3 building or Class 4 part of a building;</p> <p>Where the lowest level of the window opening is less than 1.7 m above the floor, a window opening covered by (1) must comply with the following:</p> <p>The openable portion of the window must be protected with—</p> <ul style="list-style-type: none"> (a) a device capable of restricting the window opening; or (i) a screen with secure fittings. (ii) A device or screen required by (a) must— <ul style="list-style-type: none"> (b) not permit a 125 mm sphere to pass through the window opening or screen; and (i) resist an outward horizontal action of 250 N against the— <ul style="list-style-type: none"> (ii) window restrained by a device; or (A) screen protecting the opening; and (B) have a child resistant release mechanism if the screen or device is able to be removed, unlocked or overridden. <p>A barrier with a height not less than 865 mm above the floor is required to an openable window— in addition to window protection, when a child resistant release mechanism is required by (2)(b)(iii); and</p> <ul style="list-style-type: none"> (a) where the floor below the window is 4 m or more above the surface beneath if the window is not covered by (1). (b) <p>A barrier covered by (3) except for (5) must not— permit a 125 mm sphere to pass through it; and</p> <ul style="list-style-type: none"> (a) have any horizontal or near horizontal elements between 150 mm and 760 mm above the floor that facilitate climbing.

Part D4 Access for people with a disability			
D4D3	Access to buildings	A	Access complying with AS1428.1 is to be provided to the following areas: <ol style="list-style-type: none"> From the allotment boundary at the major points of entry. From any accessible car parking space on the allotment. Through the principle public entrance
D4D4	Parts of buildings to be accessible	A	Access complying with AS1428.1 is to be provided to the following areas: <ol style="list-style-type: none"> Any sanitary compartment required for the use of people with disabilities. To areas used by occupants, excluding plant rooms, commercial kitchens, cleaners store room's maintenance access ways or the like. The passenger lifts
D4D5	Concessions	TBC	To be further reviewed but plant room at this stage would be the only areas subject to an exemption
D4D6	Car parking	A	Compliance with AS2890.6 is required for the external carpark shown in the current design
D4D7	Identification of access facilities, services and features	A	Braille and tactile signage complying with Specification 15 and incorporating the international symbol of access or deafness is to be provided to the sanitary facilities and the passenger lift within the building in accordance with AS1428.1.
D4D8	Hearing Augmentation	ND	Subject to final design – applies to any area with an inbuilt amplification system
D4D9	Tactile Indicators	A	Tactile indicators are to be provided to all stairways, ramps and escalators used by the public. Tactile indicators are to Type B indicators complying with AS1428.4
D4D13	Glazing on an accessway	A	On an accessway, where there is no chair rail, handrail or transom, all frameless or fully glazed doors, sidelights and any glazing capable of being mistaken for a doorway or opening, must be clearly marked in accordance with AS 1428.1.
Specification 14 Non-required stairways, ramps and escalators		A	All Specifications that will apply in design documentation and construction
Specification 15 Braille and tactile signs		A	

SECTION E – SERVICES AND EQUIPMENT

Clause	Description	Status	Comments
E1D2	Fire Hydrants	TBC	Fire hydrant must conform to the pressure and flow requirements and distance limitations specified in AS2419.1.
E1D3	Hose reels	A	Fire hose reels required to all areas except accommodation
E1D14	Portable fire extinguishers	A	Portable fire extinguishers are required to be provided in accordance with Clause E1D14 of the BCA and AS2444. A service consultant should confirm compliance with AS2444
Part E2 Smoke hazard management			
E2D3	General requirements	A	An AS1670 smoke detection and occupant warning system will be required + shut down of a/c systems
Part E3 Lift installations			
E3D4	Warning against use of lifts in fire	A	Required
E3D5	Emergency lift	A	(1) At least one emergency lift complying with (4) must be installed in— (a) a building which has an effective height of more than 25 m; and (b) a Class 9a building in which patient care areas are located at a level that does not have direct egress to a road or open space. (2) An emergency lift may be combined with a passenger lift and must serve those storeys served by the passenger lift so that all storeys of the building served by passenger lifts are served by at least one emergency lift. (4) An emergency lift must— (a) be contained within a fire-resisting shaft in accordance with C3D11; and (b) in a Class 9a building serving a patient care area— (i) have minimum dimensions, measured clear of all obstructions, including handrails, etc complying with Table E3D5; and (ii) be connected to a standby power supply system where installed;
E3D6	Landings	C	All lift landings require access to an egress stair
Part E4 Visibility in an emergency, exit signs and warning systems			
E4d2	Emergency light requirements	A	Emergency lighting is to be provided to the building, a service consultant should confirm compliance with AS/NZS2293.1 Emergency lighting is required to: <ul style="list-style-type: none">• Every fire-isolated stairway, fire isolated ramp or fire-isolated passageway.• Every passageway, hallway, corridor or the like, that is part of the path of travel to an exit.• In every room having a floor area more than 100m² that does not open to a corridor or space that has emergency lighting or to a road or open space.• In any room having a floor area more than 300m².
E4D4	Design and operation of emergency light	A	Emergency lighting is required throughout the building in accordance with the requirements of Clause E4D4 of the BCA and AS/NZS 2293.1. A service consultant should confirm compliance with AS/NZS2293.1

E4D5	Exit signs	A	<p>Exit signs are required to be provided in accordance with Clause E4D5 of the BCA.</p> <p>Exit signs must be clearly visible to person approaching the exit and must be installed on, above or adjacent to;</p> <ol style="list-style-type: none"> 1. A door providing direct egress from a storey to a stairway, passageway or ramp serving as a required exit. 2. A door from an enclosed stairway, passageway or ramp at every level of discharge to a road or open space. 3. A horizontal exit. 4. A door serving as or forming part of a required exit in a storey required to be provided with emergency lighting.
E4D6	Direction signs	A	<p>Where an exit is not readily apparent then exit signs with directional arrows must be installed in appropriate positions in corridors, hallways, lobbies and the like indicating the direction to a required exit in accordance with Clause E4D6 of the BCA.</p>
E4D8	Design and operation of exit signs	A	<p>Exit signs are to operate in accordance with AS/NZS2293.1 and be clearly visible at all times while the building is occupied.</p> <p>A service consultant should confirm compliance with AS/NZS2293.1</p>
E4D9	Emergency warning and intercom system	A	<p>An emergency warning and intercom system complying, where applicable, with AS 1670.4 must be installed—</p> <p>(d) in a Class 9a building having a floor area of more than 1000 m² or a rise in storeys of more than 2, and the system—</p> <ol style="list-style-type: none"> (i) must be arranged to provide a warning for occupants; and (ii) in a ward area, may have its alarm adjusted in volume and content to minimise trauma consistent with the type and condition of patients;
Specification 20 Smoke detection and alarm systems		A	<p>Specification that will apply in design documentation and construction</p>

SECTION F – HEALTH AND AMENITY

Clause	Description	Status	Comments
Part F1 Surface water management, rising damp and external waterproofing			
F1D3	Stormwater drainage	A	Stormwater drainage design shall be in accordance with AS/NZS 3500.3
F1D5	External waterproofing membranes	A	A roof, balcony, podium or similar horizontal surface part of a building must be provided with a waterproofing membrane—consisting of materials complying with AS 4654.1; and (a) designed and installed in accordance with AS 4654.2.
F1D6	Damp-proofing	A	Moisture from the ground must be prevented from reaching the lowest floor timber and the walls above the lowest floor joist, the walls above the damp proof course and the underside of a suspended floor constructed of a material other than timber, and the supporting beams or girders. Damp proof course must consist of a material that complies with AS/NZS 2904 or an impervious termite shield in accordance with AS 3660.1.
F1D7	Damp-proofing of floors on the ground	A	A vapour barrier in accordance with AS2870 is to be provided beneath the lower ground floor slab.
Part F2 Wet areas and overflow protection			
F2D2	Wet area construction	A	Shower enclosure surfaces, floor surfaces in bathrooms, shower rooms, slop hoppers, sink compartments, laundry and sanitary compartments is required to be waterproofed in accordance with AS 3740 & SAF1.7
F2D4	Provisions of floor wastes	A	The floor of each bathroom is to be graded to permit drainage to a floor waste if not provided with an inbuilt overflow provision Note: current design has the hand basin outside of the wet area 0 the floor will need to be graded to a floor waste and waterproofed as per AS 3740 & SAF1.7
Part F3 Roof and wall cladding			
F3D2	Roof Coverings	A	Roof coverings are to comply with the relevant Australian Standards as per Clause F3D2
F3D3	Sarking	A	Sarking type materials used for weather proofing of roofs and walls must comply with AS/NZS 4200 Parts 1 and 2.
F3D4	Glazed assemblies	A	Windows, sliding doors with a frame adjustable louvers, shop front and window walls with one piece framing in an external wall must comply with AS2047 requirements for resistance to water penetration.
F3D5	Wall cladding	TBC	BCA 2022 introduces only 3 DTS wall types a) Masonry, including masonry veneer, unreinforced and reinforced masonry: AS 3700. b) Autoclaved aerated concrete: AS 5146.3. c) Metal wall cladding: AS 1562.1. any cladding falling out of this range will need to be treated as a performance solution
Part F4 Sanitary and other facilities			
F4D4	Facilities in Class 3 to 9 buildings	A	(8) A Class 9a health-care building must be provided with— (a) one kitchen or other adequate facility for the preparation and cooking or reheating of food including a kitchen sink and washbasin; and (b) laundry facilities for the cleansing and drying of linen and clothing or adequate facilities for holding and dispatch or treatment of soiled linen and clothing, sanitary products and the like and the receipt and storage of clean linen; and (c) one shower for each 8 patients or part thereof; and (d) one island-type plunge bath in each storey containing a ward area.

F4D5	Facilities for people with disabilities	A	Sanitary facilities for people with disabilities are to be designed in accordance with AS1428.1 and have alternating LH & RH facilities
F4D8	Construction of sanitary compartments	A	Doors to the fully enclosed toilets are to be open outwards, slide or be readily removable from the outside of the sanitary compartment.
F4D10	Microbial (legionella) control	A	Hot water, warm water and cooling water systems in a building other than a system serving only a single sole-occupancy unit in a Class 2 or 3 building or Class 4 part of a building must be installed in accordance with AS/NZS 3666.1.
Part F5 Room heights			
F5D2	Height of rooms and other spaces	A	To be reviewed – will need min: 2.4m to all areas
Part F6 Light and ventilation			
F6D2	Provision of natural light	A	Min 10% to all sleeping areas
F6D3	Methods and extent of natural light	N	(1) Required natural light must be provided by— (a) windows, excluding roof lights, that— (i) have an aggregate light transmitting area measured exclusive of framing members, glazing bars or other obstructions of not less than 10% of the floor area of the room; and (ii) are open to the sky or (b) roof lights, that— (i) have an aggregate light transmitting area measured exclusive of framing members, glazing bars or other obstructions of not less than 3% of the floor area of the room; and (ii) are open to the sky; or a proportional combination of windows and roof lights required by (a) and (b)
F6D5	Artificial lighting	A	Lighting shall be provided throughout the building to comply with AS1680.0 in accordance with the requirements of Clause F6D5 of the BCA
F6D6	Ventilation of rooms	A	Ventilation shall be provided throughout the building in by means of natural ventilation complying with the requirements of AS1668.2 as required by Clause F6D6 of the BCA.
F6D7	Natural ventilation	TBC	A habitable room, office, shop, factory, workroom, sanitary compartment, bathroom, shower room, laundry and any other room occupied by a person for any purpose must have— (a) natural ventilation complying with F6D7; or (b) a mechanical ventilation or air-conditioning system complying with AS 1668.2 and AS/NZS 3666.1.
F6D9	Restriction on location of sanitary compartments	C	A sanitary compartment must not open directly into— (a) a kitchen or pantry; or (b) a public dining room or restaurant; or (c) a dormitory in a Class 3 building; or (d) a room used for public assembly (which is not an early childhood centre, primary school or open spectator stand); or (e) a workplace normally occupied by more than one person.
F6D12	Kitchen local exhaust	A	To be reviewed

Part F8 Condensation management			
F8D2	Application of Part		
F8D3	External wall construction	A	<p>(1) Where a pliable building membrane is installed in an external wall, it must—</p> <p>(a) comply with AS 4200.1; and</p> <p>(b) be installed in accordance with AS 4200.2; and</p> <p>(c) be located on the exterior side of the primary insulation layer of wall assemblies that form the external envelope of a building.</p> <p>(2) Where a pliable building membrane, sarking-type material or insulation layer is installed on the exterior side of the primary insulation layer of an external wall it must have a vapour permeance of not less than—</p> <p>in climate zones 6, 7 and 8, 1.14 µg/N.s.</p>
F8D4	Exhaust systems	A	<p>(1) An exhaust system installed in a kitchen, bathroom, sanitary compartment or laundry must have a minimum flow rate of—</p> <p>(a) 25 L/s for a bathroom or sanitary compartment; and</p> <p>(b) 40 L/s for a kitchen or laundry.</p> <p>(2) Exhaust from a kitchen, kitchen range hood, bathroom, sanitary compartment or laundry must discharge directly or via a shaft or duct to outdoor air.</p> <p>(3) Where space for a clothes drying appliance is provided in accordance with F4D2(1)(b), space must also be provided for ducting from the clothes drying appliance to outdoor air.</p> <p>(4) (3) does not apply if a condensing-type clothes drying appliance is installed.</p> <p>(5) An exhaust system that is not run continuously and is serving a bathroom or sanitary compartment that is not ventilated in accordance with F6D7 must—</p> <p>(a) be interlocked with the room's light switch; and</p> <p>(b) include a run-on timer so that the exhaust system continues to operate for 10 minutes after the light switch is turned off.</p> <p>A</p> <p>(6) Except for rooms that are ventilated in accordance with F6D7, a room with space for ducting a clothes drying appliance to outdoor air in accordance with (3) must be provided with make-up air in accordance with AS 1668.2</p>
Specification 26 Waterproofing and water-resistance requirements for building elements in wet areas		A	All Specifications that will apply in design documentation and construction
Specification 28 Sound insulation for building elements		A	

SECTION J – ENERGY EFFICIENCY -BCA 2019 AMDT 1 – APPLIES UNTIL OCTOBER 2024

Clause	Description	Status	Comments
	Climate Zone	A	The building is located in Climate Zone 5
J1.1	Application of Part	A	Part J1 does not apply to a Class 7, 8 or 9b building that does not have a conditioned space. The input power to the air-conditioning system exceeds 15 W/m ² therefore the building is a conditioned space.
J1.3	Roof and Ceiling Construction	A	The roof and ceiling construction is required to be provided subject to final design
J1.5	Walls	A	The wall construction is required to be provided subject to final design
J2	Glazing	A	The aggregate air-conditioning energy value attributable to the glazing must be checked in accordance with this Part.
J3	Sealing	A	The envelope of the building must be sealed in accordance with this Part
J5	Air-conditioning and ventilation systems	A	The mechanical services must have features that facilitate the efficient use of energy in accordance with this Part.
J6	Artificial lighting and power	A	Artificial lighting must have features that facilitate the efficient use of energy in accordance with this Part.
J7	Hot water supply		Hot water supply systems must be designed and installed in accordance with AS/NZS 3500.4.
J8	Access for Maintenance	A	Access must be provided to all plant, equipment and components that require maintenance. Metering will be required for the separable services

Legend

- a) Clause is administrative information only (**N - Noted**).
- b) Clause is or is not relevant to the proposed work (**A - Applicable or N/A - Not Applicable**).
- c) The proposed work complies with the requirements of the clause (**C - Complies**).
- d) Compliance with the requirements of the clause is unable to be determined from the documentation/ site inspection (**ND - Not Determined**). A recommendation in the "Comments" column will indicate if further information is required.
- e) Proposed work does not comply with the requirements of the clause (**DNC - Does Not Comply**). And will require amending or justification via an alternative solution.

Regards**Vic Barone**

19 November, 2023

Certificate of Registration as Accredited Professional No. APB20190014

Appendix K – Investigations reports
(traffic, site soil contamination, geotechnical)

Frank Siow & Associates

Traffic and Parking Consultants

TO

Mr Brett Coshell
Greenway Architects
207 Angas Street
Adelaide SA 5000

Date: 14 May 2024

PROPOSED NORTHERN CRISIS STABILISATION CENTRE MARK ROAD, ELIZABETH VALE TRAFFIC AND PARKING ASSESSMENT

The subject site is located at the north-western corner of the parcel of land bounded by Oldham Road, Mark Road, and the ACH car park to the south. It is located to the west of and opposite the Lyell McEwin Hospital (LMH). The proposed development forms part of a Master Plan development of the overall health precinct site, which would include future car parking, care centre and health centre.

Mark Road and Oldham Road are local Council roads (City of Playford).

Public and staff parking is available at the nearby LMH multi-storey car park. There are also other private car parks located on the northern side of Oldham Road that are available for hospital staff and visitor parking (see Figure 1 below).



Figure 1: Public and staff off-street parking

There is on-street parking available in the nearby streets such as Mark Road, Trembath Street, Oldham Road, Mofflin Road and Trimmer Road (see Figure 2 below).



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Figure 2: On-street parking

1.0 OVERVIEW OF THE PROJECT

The proposed development is for a Northern Crisis Stabilisation Centre (NCSC) facility (see Figure 3 below for the proposed car park layout). The proposal comprises of:

- 16-bed mental health unit on the upper floor (to be operated by the Northern Adelaide Local Health Network NALHN)
- Head to Health (H2H) care centre on the ground floor (to be operated by a not-for-profit organisation)

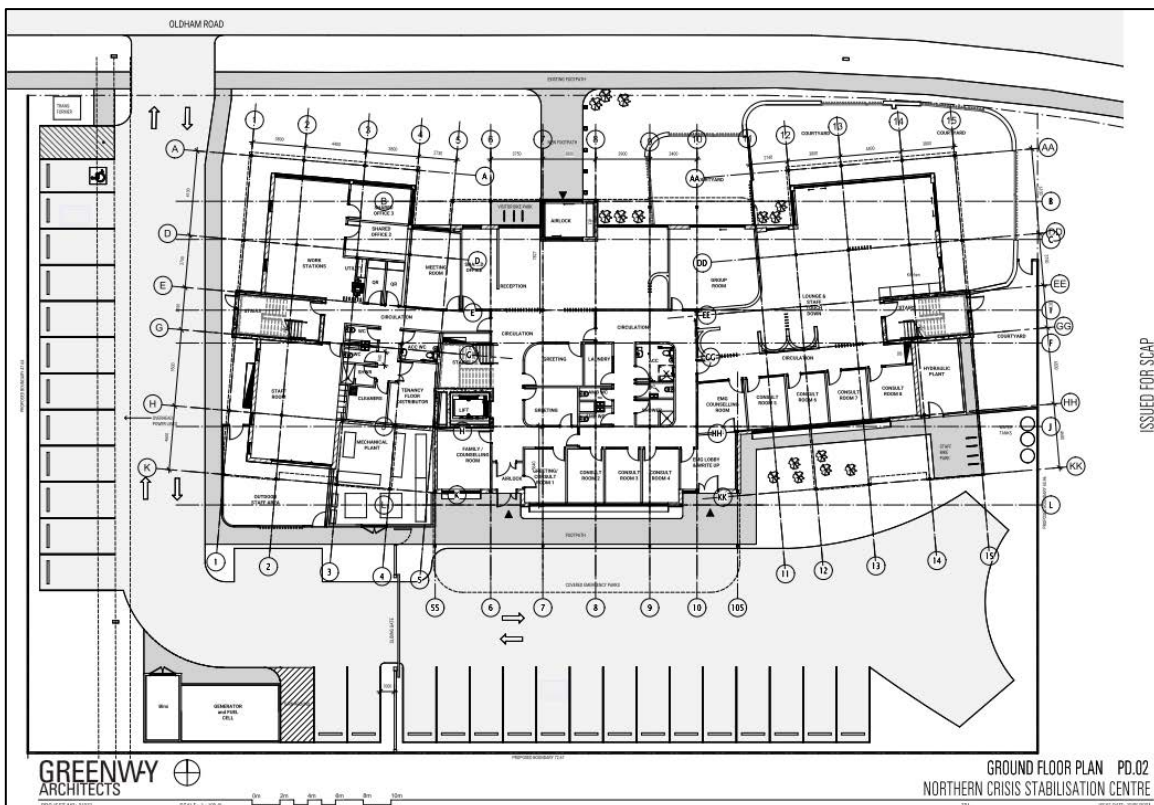


Figure 3: Proposed development

H2H provides mental health information, services and support for individual needs. H2H teams work with individuals to find the right service based on their needs, which may include referral to a health centre or other suitable services in the local area.

The on-site parking provision for the development would be 29 spaces, which would comprise of parking for consumers and inpatients and their visitors (including a disabled parking space), parking for staff and a shared parallel parking bay for use by emergency vehicles (including ambulances and SA Police) and infrequent service vehicles. For security reasons, the rear parking spaces would be restricted from use by the public.

A two-way access point is proposed at Oldham Road at the western end of the subject site. The proposed access point would be located approximately 30m to the east of Trimmer Road. The location of the proposed access point would be consistent with the requirements of the parking guidelines (AS/NZS 2890.1:2004).

The subject site is located within the Strategic Innovation Zone of the Planning and Design Code. The Overlays relevant to the site are:

- Airport Building Heights (Regulated) (All structures over 45 metres)
- Affordable Housing
- Building Near Airfields
- Defence Aviation Area (All structures over 45 metres)
- Hazards (Flooding - General)
- Noise and Air Emissions
- Prescribed Wells Area
- Regulated and Significant Tree
- Traffic Generating Development

2.0 OTHER RELEVANT ASPECTS FOR THE DEVELOPMENT

2.1 Pedestrian access

There are currently footpaths provided on the public roads adjacent to the development site. The new NCSC building would include pedestrian paths to the front entrance of the building from the Oldham Road footpath. A suitable pedestrian path link would also be provided between the pedestrian entrance to the LMH multi-storey car park and the public footpath on Mark Road to enable NCSC users of the public LMH car park to conveniently access the NCSC site.

2.2 Bicycle access

The new NCSC building would include end of trip facilities for cyclists, including bicycle parking and shower facilities to encourage staff to cycle to work. Bicycle parking would be provided at the front for visitors and at the rear of the building for staff.

2.3 Emergency vehicle access

The rear car park design would accommodate access for ambulances and SA Police vehicles with a discrete entrance into the NCSC building for some consumer transport. The design of the car park layout would enable all vehicle movements to and from Oldham Road to occur in a forward direction.

2.4 Service vehicle access

The design of the car park layout includes parking provision for service vehicles, such as linen trucks, food deliveries and access for waste bin collection. It is anticipated that some NCSC services would be shared with the main Lyell McEwin Hospital, such as the preparation of food for the 16-bed mental health unit. The parallel loading bay would conveniently allow the infrequent small trucks to pull up alongside the rear entrance of the building to allow the loading and unloading activities to occur.

A turnaround would be provided at the rear of the driveway that would allow large service trucks, such as the waste collection truck, to service the bin area and travel in and out of the site in a forward direction.

2.5 Visitor and staff access

As the proposal is a crisis centre, convenient parking would be provided for consumers who need access to the services, sometimes at short notice. Consumers can use the spaces near the front entrance and then walk to the front building entrance from there.

Staff parking would be located at the rear of the site where staff would be able to conveniently access the building from the rear entrance.

Disabled parking would be provided for visitors close to the front entrance of the building.

2.6 Public transport availability

The subject site is well served by public transport routes nearby, including in John Rice Avenue (Routes 224, 400, 500, 560), Philip Highway (Routes N224, 560), Oldham Road ((Routes 224, 560) and Mofflin Road (Route 224). These bus routes also connect to other public transport services at the Salisbury Interchange.

3.0 PARKING LAYOUT

The car park layout would have the following dimensions:

Dimension	Proposed	Check against guidelines
Space width (staff)	2.4m	Complies with the requirement
Space width (disabled)	2.4m	Complies with the requirement
Space width (visitors)	2.6m	Complies with the requirement
Space length	5.4m	Complies with the requirement
Parking aisleway width	6.2m min	Exceeds the requirement (5.8m min)

A security gate is proposed at the rear car park. The gate would be left open during the day to provide convenient access for the regular service vehicles but would be closed at night for security purposes.

4.0 CURRENT PARKING CONDITIONS

The public car parks located in the area cater to staff and visitor parking of the LMH and other land uses as follows:

- LMH multi-storey car park (approximately 1,400 parking spaces)
- Oldham Road car parks (approximately 150 parking spaces)
- Playford Hub car park (approximately 600 parking spaces of which 250 parking spaces are leased to SA Health for staff parking)

Parking demand checks were undertaken on Wednesday 8/11/2023 at around 1pm where previous parking surveys around the LMH site had identified this as the peak parking time for the hospital. The surplus parking capacity found were:

- LMH multi-storey car park – 66 vacant spaces
- Oldham Road car parks – 19 vacant spaces
- Playford Hub car park (SA Health leased car park) – 172 vacant spaces
- Total available – 257 vacant spaces

The streets around the LMH are generally restricted from parking (Area wide No Parking between 8am and 6pm Monday to Friday), except where sign-posted with time limit and unrestricted parking zones that LMH staff and visitors can use. Parking checks were made in the adjacent streets, where parking is permitted for staff and visitors:

- Mark Road – no spaces were available
- Oldham Road – only several spaces were available
- Trembath Road – only several spaces were available
- Mofflin Road (where hospital staff are permitted to park) – only several spaces were available
- Mofflin Road (north of Stokes Court where the Area wide No Parking controls terminate up to Hogarth Road – parking permitted on both sides – approximately capacity 60 spaces) – only 3 cars were observed to be parked at this location, approximately 57 vacant spaces were available
- Trimmer Road (Hogarth Road to Oldham Road – Area wide No Parking controls do not apply) – The eastern side of the street has right angled parking bays and parallel kerbside parking. There are approximately 110 parking spaces within this eastern section of the street up to the current construction site for the Mofflin Reserve – only 12 cars were observed parked at this location, approximately 98 vacant spaces were available
- The current Mofflin Reserve redevelopment by the City of Playford appears to add approximately 50 to 60 new right angled parking bays on the eastern side of Trimmer Road, adjacent to the reserve, which would increase the on-street parking capacity further to the area close to the subject site.

In summary, based on the parking checks on 8/11/2023, it is estimated that there were approximately 257 vacant parking spaces available in the nearby off-street public car parks and in excess of 150 vacant parking spaces in Mofflin Road and Trimmer Road close to the subject site.

In the previous 2022 development for Lyell McEwin Hospital associated with the provision of 48 new hospital beds, it was estimated that these additional beds would require 194 parking spaces. The development of the 48 new hospital beds is still in progress.

Even allowing for the additional parking demand that would be generated by the development of 48 new beds at the hospital when the beds are open for use, the off-street parking availability of 257 vacant spaces would exceed the requirement of 194 spaces by 63 spaces. In addition, there would be at least 150 vacant on-street parking space in Mofflin Road and Trimmer Road in reasonably close proximity to the subject development.

5.0 PARKING ASSESSMENT

The subject site is located within the Strategic Innovation Zone of the Planning and Design Code. *Table 1 – General Off-Street Car Parking Requirements* and the following parking rate would be applicable.

- *Hospital* 4.5 spaces per bed for a public hospital
- *Consulting rooms* 4 spaces per consulting room excluding ancillary facilities
- *Office* 4 spaces per 100m² gross leasable floor area

In undertaking the assessment for the proposed mental health beds, we note that there are several important considerations that distinguish the mental health beds to general hospital beds:

- The 16-bed inpatient unit on the first floor would be for those requiring a brief stay to stabilise. Guests would typically be transported by ambulance, SAPOL vehicles or from the H2H referral on the ground floor. Following the brief stay, guests would be transferred to or referred to other mental health services off-site. The mental health beds therefore have different characteristics to a general hospital bed, in terms of the range and type of medical services provided to the guest compared to a public hospital inpatient.

- Some shared services from the main LMH site would be proposed for the NCSC, including the provision of meals for guests of the mental health unit via the main kitchen of the LMH. There is no commercial kitchen proposed on-site.

For the H2H type of facility, there is no defined use that would be directly applicable. While there would be offices, 'consult' rooms and amenities provided, it is a purpose-built facility for a walk-in assistance service and a booked outpatient style service for people in need of immediate or short-term care services in the area of mental health.

The staff that are present would typically see guests in a private room environment to assist with their needs and also to determine the assistance that they may require.

We understand that the consumers are likely to use alternative modes of transport, such as public transport, taxis or rideshare services, to the facility, which would involve short term drop-off and pick-up only.

We think that applying the office parking rate and consulting room parking rate to this H2H facility would not provide a realistic parking assessment of the proposal

For the reasons detailed above, we are of the opinion that a first-principles approach of considering the actual staffing numbers and the anticipated users of the services and visitors would provide a more appropriate and realistic approach to assessing the parking requirement for such a purpose-built mental health facility.

We have been provided with information regarding the anticipated staffing profile and the shift structures for the two services by the operators of the two service.

Based on the experience of NALHN and H2H for this particular type of mental health service, the following parking requirements are anticipated:

NALHN Crisis Stabilisation Unit (CSU - 16-bed facility)

- Open 24 hours with 3 staff shifts (early, late, and night shift with handovers occurring at 3pm and 10pm)
- Peak staffing levels anticipated is 12 (during the daytime period)
- Guests are likely to be transported by ambulance, SA Police vehicles or from the H2H referral
- Short period where staff shifts overlap during hand-over time – short-term spike in parking demand

H2H care centre

- Peak staffing levels anticipated is 15
- Peak visitors not expected to be more than 6 at any one time
- H2H Immediate access facility - opening hours 8am to 9pm weekdays (2 shifts with handover occurring at 4pm), 12pm to 6pm weekend (1 shift)
- Short period where staff shifts overlap during hand-over time– short-term spike in parking demand

H2H Short term care facility

- Opening hours 8am to 6pm weekdays – 1 shift

The staff shift change time for H2H (at 4pm on weekdays) would not coincide with the staff shift change time for the Crisis Stabilisation Unit (at 3pm on weekdays). This helps to reduce the short-term parking demand associated with staff shift changes for the overall site.

5.1 Parking requirements

Based on the above discussion, the following parking requirements are anticipated:

Table 1 – Peak parking requirement based on staff and anticipated visitors

Proposed land use	No. staff	No. consumers/guests	Parking required
CSU	12	2	14 spaces
H2H	15	6	21 spaces
Total	27	8	35 spaces

Given the proximity of public transport services available and use of other modes of transport, it would not be unreasonable to assume that not all staff would drive to work and that some visitors would arrive by taxis or other rideshare services. A 10% discount to the parking requirement is not uncommon.

Applying say a 10% discount to the parking requirement for use of alternative modes of transport, the parking requirement is estimated to be 32 spaces.

The proposed on-site parking provision for the NCSC development is 29 spaces.

The parking shortfall arising would therefore be 3 spaces, which is considered a minor shortfall. There should be more than adequate surplus parking available at the NAHLN car parks to accommodate the parking shortfall arising.

5.2 Parking requirements during staff shift changes

Given the staff shift changes commonly seen at public health facilities like hospitals, there would be periods of the day when a short-term overlap in parking demand occurs between staff who are finishing their shift and staff who are arriving for their shift. This overlap in parking demand is of a very short-term nature. In our experience we think that it would be unreasonable to cater for such short-term parking demands as the outcome would be an excessive provision of parking that would be used very infrequently.

There are several aspects of this short-term overlap of parking demand that should be considered:

- The shift changes for CSU staff and the shift changes for H2H staff would occur at different times, ie 3pm and 4pm respectively. This would help spread the impact of the short-term parking demand than if both uses had the same shift change times.
- Our previous parking surveys of the LMH multi-storey car park for the 2022 development (48 additional hospital beds) showed that the peak parking usage occurred between 1pm and 2pm, with much more vacant parking spaces available from 2.30pm onwards. The shift changes for CSU and H2H staff (being at 3pm and 4pm) would occur when there would be more vacant parking spaces available for use at the LMH multi-storey car park.
- Our recent work for the Modbury Hospital site also showed similar peak parking usage occurring between 1pm and 2pm and reinforces the comment above that more parking would be available at the LMH car park to accommodate the short-term overlap in parking demand from staff shift changes.
- At this stage, 11 visitor spaces are proposed within the car park to make parking readily available for people seeking immediate access to H2H services at short notice. While this is likely to be an over-provision, once the development is completed and if the visitor parking is found to be low, some of the visitor spaces can be managed to accommodate more staff parking on-site if required. This can be appropriately managed by NAHLN and H2H.

5.3 Parking requirements for late afternoon, night and weekend shifts

We understand that these periods would require fewer staff and likely to have fewer visitations as well. The parking requirements would likely be significant less than during the peak morning shift period on weekdays.

We anticipate that the parking provision on-site should be able to accommodate the likely parking demands during these periods.

5.4 Master Plan for the health precinct

Notwithstanding the above assessment and consideration of surrounding off-street and on-street parking availability, the Master Plan 'Whole of Precinct Plan – Oldham Road' identifies the provision of a new multi-storey car park that would be constructed on the southern boundary of the NCSC site. This multi-storey car park being next to the NCSC site, if it were to be constructed in the future, would be able to accommodate all of the minor parking shortfall of the NCSC development (and even the shift change parking demand) without the NCSC having to rely on parking from elsewhere.

While this is only a Master Plan proposal, it does highlight that consideration is being given to a potential new parking facility that to support the land uses changes for the general area around the LMH

The visitor parking demand for H2H would be dependent on the number of consumers and their transport mode. The consumers are likely to use alternative modes of transport, such as public transport, taxis or rideshare services which would involve short term drop-off and pick-up only.

6.0 TRAFFIC IMPACT

The proposed development comprises of mental health facilities that are expected to generate relatively low number of traffic movements. The main trip generator would be by staff.

In this instance, the maximum number of staff of the CSU and H2H would only be 27 during the peak daytime period. This would be expected to generate less than 30 vehicles per hour of the shift times of the CSU and H2H are the same. Because the finishing times of the CSU and H2H are different, the trips generated by staff would likely be much lower than 30 vehicles per hour.

In terms of visitations, H2H anticipates a maximum of 6 consumers at any one time. For the mental health unit beds, visitations to inpatients would likely be low and would typically occur after hours when the traffic flows in the adjacent road network would be low. Access by service vehicles and by emergency services such as SA Police and Ambulance would be infrequent or result in a traffic impact concern.

For all of the reasons detailed above, we do not anticipate that the proposed development would create unacceptable traffic conditions on the adjacent roads.

7.0 INITIAL CONSULTATION WITH COUNCIL

An initial draft traffic report was sent to the City of Playford to seek comments on the Council's concerns and response to the matters raised in the draft traffic report. A consolidated Council response was provided via email dated 24/4/2024.

This proposal at the time of the draft traffic report had a parking provision of 17 spaces on-site at the time. Following the review of the Council's parking concern, the on-site parking provision has now been increased significantly from 17 spaces to 29 spaces. This increased parking provision would address a number of the Council's concerns regarding parking impact in the area.

A number of the Council's concerns had a common 'theme' regarding the use of on-street parking and other private car parks nearby. We have consolidated the common 'themes' and summarised how these concerns would be addressed.

- 1) The draft report provided relies on the LMH multi-story and on-street parking area.

The proposed development is part of the NALHN LMH facility. The LMH multi-storey car park is a staff and visitor car park that is available to the public. The multi-storey car park is located in very close proximity to the development site.

On-street parking, where available, can also be considered when assessing the parking adequacy of a development proposal. The principle of using shared parking areas (such as use of the LMH public car park) and on-street parking (where available) is supported in **PO 5.1** of the Planning and Design Code:

Part 4 – General Development Policies – Transport, Access and Parking – Performance Outcome 5.1
Sufficient on-site vehicle parking and specifically marked accessible car parking places are provided to meet the needs of the development or land use having regard to factors that may support a reduced on-site rate such as:

- a) availability of on-street car parking (our underline for emphasis)
- b) shared use of other parking areas (our underline for emphasis)
- c) *in relation to a mixed-use development, where the hours of operation of commercial activities complement the residential use of the site, the provision of vehicle parking may be shared*
- d) *the adaptive reuse of a State or Local Heritage Place.*

In response to the Council's comments, the proposed development has now been amended to significantly increase the parking provision on-site to 29 spaces. The parking shortfall arising (anticipated to be 3 spaces) would be suitably accommodated by the existing parking surplus at the LMH car parks, without the need to rely on on-street parking.

- 2) As discussed in the recent meeting with SA Health and Greenway Architect, this proposed development cannot rely on third party parking and on street parking to address any parking shortfalls within their site. Of note, the two(2) Oldham road carparks are likely to be developed at a future point in time and thus cannot be relied on long term as part of the parking solution.
- 3) There are no mentions of the timed parking area on Mark Road, Trembath Street, Oldham Road, Mofflin Road, Trimmer Road and Haydown Road.
- 4) The available on-street parking around the subject site is limited specifically on Oldham Road and Marks Road. Visitors and staff will generally avoid paid parking in the multi-storey car parking.
- 5) As more and more development occur within the heath prescient the demand for on-street will increase. The report emphasises on availability of on-street parking on Mofflin Road and Trimmer Road both roads have parking restrictions and residential parking permits.
Mofflin Road has long-term parking on the western side of the road and residential parking on the eastern side, the western side of the road is occupied before 9 am, and there are minimal parking spaces. Trimmer Road has No Stopping from 7 am to 5 pm on the western side and 2P parking on the eastern side within the 90-degree parking area.
- 6) The parking restriction needs to be taken into consideration as part of the available parking spaces within the health prescient.
- 7) Given work to develop the health precinct and create obligations for sites to provide their own onsite provision then I would be concerned with the approach taken in this report. Given the substantial balance of the land to be developed, if we accept this rationale for the current application, it will be repeated in future applications (as they have done from the 2022 application) and could have serious implications for the viability of the health precinct if we don't have appropriate parking provision on the sites to be developed.

As discussed in (1) above, the proposed development has now been amended to provide 29 parking spaces on-site. The parking shortfall of 3 spaces would be suitably accommodated by the existing parking surplus at the NALHN car parks, without the need to rely on on-street parking or other private car parks in Oldham Road.

- 8) The draft report does not demonstrate how they produced/arrived at the requirement for 17 parking spaces for the site.

- 9) Plan SA requires the following parking rates to be implemented. The number of off-street parking spaces provided is not sufficient for the subject site.

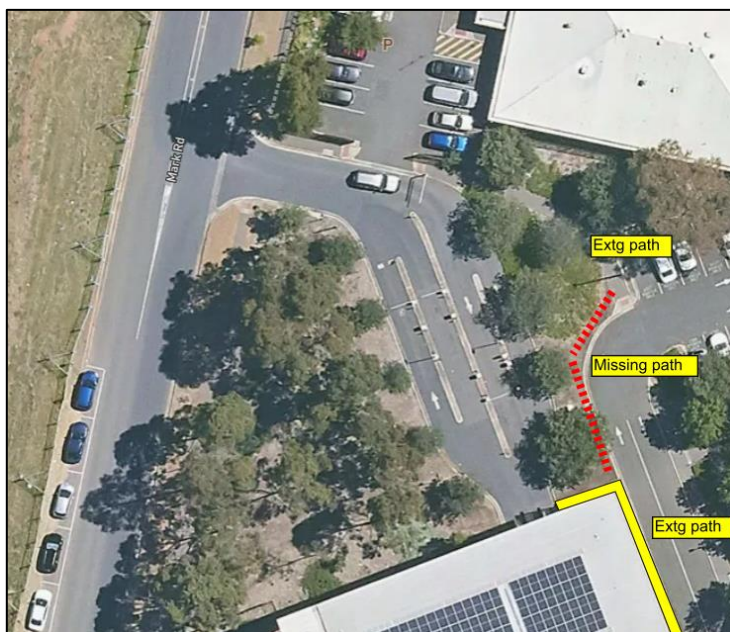
The parking assessment for the development is detailed in Section 5.0, which considered the parking requirements of the Planning and Design Code and the approach adopted to assess the parking requirement for the specific type of facility proposed for the site.

- 10) Playford Hub car park is not within walking distance of the subject site. This car parking area should be excluded from the draft report.

Staff of NCSC (who are not able to park on-site) would be directed to use the LMH multi-storey car park which is in close proximity to the NCSC site. This would be appropriately managed by NALHN.

- 11) From an application perspective, they would need to provide for their parking onsite, or if they are looking to rely in part on the LMH multi deck, then they would need to consider and implement some improvements to footpath and public realm to facilitate pedestrian movements as they are currently limited, making use of the LMH multi deck for parking unlikely. This was discussed in our recent meeting with SA Health and Greenway Architects, this needs to be addressed as part of this development application.

We understand that an improved pedestrian link would be provided from the main pedestrian entrance of the LMH multi-storey car park to the public footpaths on Mark Road and Oldham Road to the subject site (see concept plan below)



- 12) The Playford hub car park was built to provide parking across stage 2 and 3 of the north west development on the ex- Elizabeth Vale shopping Centre site, for the future multi storey allied health building and Calvary hospitals. Because of this, it's inappropriate to assume any use of this parking in a separate application. Given the existing parking pressures in the area, level of CRS's which have been received and continue to be received by Council and concerns raised by current Lyell McEwin staff regarding parking access, I am surprised that the attached DRAFT traffic report has identified 257 available parking spaces in the immediate vicinity. The latter needs to be justified.

The parking information in our draft traffic report was based on parking surveys that we undertook in the area on 8/11/2023. The information is intended to provide an understanding of the current parking conditions in the area. As discussed in (1), the proposed development has now been amended to provide 29 parking spaces on-site and the minor parking shortfall arising would be suitably accommodated and managed by NALHN at the LMH multi-storey car park nearby.

We understand that 250 parking spaces in the Playford Hub car park are leased to SA Health and available for the hospital use. This leased portion of the car park has separate entry and exit controls to the public car parking spaces.

There were other Council comments regarding the need for public realm upgrades. We have not responded to these as they were not traffic related.

8.0 CONCLUSIONS

This traffic report is associated with the development of a Northern Crisis Stabilisation Centre on the subject site, which comprises of a 16-bed mental health unit on the upper floor and a Head to Health (H2H) care centre on the ground floor. The H2H is a purpose-built facility for a walk-in assistance service and a booked outpatient style service for people in need of immediate or short-term care services in the area of mental health.

A car park of 29 spaces would be provided on-site (including a disabled parking space). A shared parallel parking bay would be provided at the rear of the building for use by emergency vehicles (including ambulances and SA Police) and infrequent service vehicles. A two-way access point is proposed at Oldham Road at the western end of the subject site to service the car park.

The proposed car park would be designed to the requirements of AS/NZS 2890.1:2004, AS 2890.6:2022 (disabled parking) and AS 2890.2:2018 (Commercial vehicle access).

We have had regard to the Planning and Design Code in the parking assessment and a more realistic first principles approach to assess the likely parking requirements for the specific types of land uses proposed. Our assessment indicates that adequate parking would be provided with a minor parking shortfall arising that would be suitably accommodated by the LMH multi-storey car park.

We do not have concern with the traffic impact of the proposal, given the relatively small staff numbers involved and the low visitations anticipated for the proposed facility.

Having regard to the above assessment, we are of the opinion that the proposed development would be supportable from a traffic and parking perspective.

Yours sincerely,

Frank Siow

FRANK SIOW
Principal Consultant



DELIVERING
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SOLUTIONS**



Preliminary Site Investigation

**Portion of Lot 4711 Oldham Road,
Elizabeth South, SA**

Report for Greenway Architects

Preliminary Site Investigation

Portion of Lot 4711 Oldham Road, Elizabeth South, SA

Report for Greenway Architects

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Greenway Architects	Tracey Roughana	●
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List of Acronyms

ACH	Aged Care Housing Group Inc
ASC NEPM	<i>National Environment Protection (Assessment of Site Contamination) Measure 1999 (amended 2013)</i>
BGL	below ground level
BTEX	Benzene, Toluene, Ethylbenzene and Xylenes
Code	Planning & Design Code 2019, State Planning Commission (the Code)
COI	Contaminants of interest
CRCCARE	Cooperative Research Centre for Contamination Assessment and Remediation of the Environment
CSM	Conceptual site model
CT	Certificate of title
DEW	Department for Environment and Water, Government of South Australia
DIT	Department for Infrastructure and Transport
DSI	Detailed Site Investigation
EHS	Environment, Health and Safety
EIL/ESL	Ecological investigation/screening level
EP Act	<i>Environment Protection Act 1993, Government of South Australia</i>
EPA	<i>Environment Protection Authority, Government of South Australia</i>
EPP-WQ	<i>Environment Protection (Water Quality) Policy 2015, Government of South Australia</i>
EPR	<i>Environment Protection Regulations 2009, Government of South Australia</i>
EV	Environmental Value
GAR	Guidelines for the assessment and remediation of site contamination
GPA	Groundwater Prohibition Area
Greenway	Greenway Architects
HIL/HSL	Health investigation/screening level
IW	Intermediate Waste
LBWco	LBW co Pty Ltd
LLCW	Low-level Contaminated Waste
LOR	Limit of Reporting
mg/kg	milligrams per kilogram
mg/L	milligrams per litre
NATA	National Association of Testing Authorities
NCSC	Northern Crisis Stabilisation Centre
OCP	Organochlorine pesticides
PAH	Polycyclic aromatic hydrocarbon
PCA	Potentially contaminating activity
PD14	<i>State Planning Commission Practice Direction 14 (Site Contamination Assessment)</i>

PDI Act	<i>Planning, Development and Infrastructure Act 2016</i>
PFAS	per - and polyfluoroalkyl substances
PSI	Preliminary Site Investigation
QA/QC	Quality Assurance/Quality Control
RPD	Relative Percentage Difference
SA	South Australia
SWL	Standing water level
TDS	Total dissolved solids
TRH	Total recoverable hydrocarbons
UCL	Upper confidence level
WF	Waste Fill

Executive Summary

LBWco was commissioned by Greenway Architects (Greenway) to undertake a Preliminary Site Investigation (PSI) for Portion Lot 4711 Oldham Road, Elizabeth South, South Australia (the site). A site locality plan is provided as Figure 1, Appendix A.

LBWco understood the following:

- Greenway had been engaged by the Department for Infrastructure and Transport (DIT) to provide services for the proposed development of a Northern Crisis Stabilisation Centre (NCSC).
- The proposed new land use was considered not to constitute a change to a more sensitive land use under the State Planning Commission per Planning Direction 14 (PD14) framework.
- DIT required this PSI to advise on site contamination risk for the project and waste classification of soils that may become surplus.

LBWco previously assessed the wider area including the subject site for City of Playford Council (Council) in 2016 and also carried out further soil assessment including on the subject site for ACH Group (ACH) in 2017 (Refer Section 2).

The objectives of this PSI were to:

- Assess the current and historical land uses and identify potentially contaminating activities (PCAs) that may have occurred within and directly adjacent to the assessment area.
- Assess the likelihood of site contamination resulting from PCAs posing complete source-pathway-receptor relationships, with respect to the proposed land use.
- Provide a preliminary indication of the waste classification of site soils.
- Assess whether soil impacts exist that could pose a risk to future site users.
- Assess whether remediation or site management may be required to make the site suitable for the proposed development.

Desktop Conclusions

Based on a desktop review of current and historical information, site inspection and soil assessment, LBWco prepared a summary conceptual site model (CSM) for PCAs that were identified to have occurred at, adjacent to or near the subject site, summarised below:

- One PCA was identified to have occurred onsite:
 - Fill or soil importation (which is not a prescribed PCA under PD14, but is a prescribed PCA under EPR 2009) – **UNLIKELY** complete source-pathway-receptor (S-R-P) linkage.
- Three PCAs were identified to have occurred on adjacent land within 60 m of the subject site, all of which were assessed as **UNLIKELY** to be associated with a complete S-P-R linkage.
 - Metal coating, finishing or spray painting (Class 1)
 - Plastics manufacture works (Class 1)
 - Abrasive blasting (Class 2)

- Seven prescribed PCAs were identified to have occurred at offsite land, distant from the subject site at greater than 60 m, all of which were assessed as **UNLIKELY** to be associated with a complete S-P-R linkage.
 - Pest control works (Class 1)
 - Listed substances (Medical waste) (Class 1)
 - Fuel burning facilities (Class 2)
 - Electrical or electronics component manufacture (Class 1)
 - Service stations (Class 1)
 - Motor vehicle manufacture (Class 1)
 - Gasworks (Class 1)

The site is located at the eastern extent of a designated EPA Groundwater Prohibition Area (GPA) which prohibits the taking of groundwater at the site. Future purchasers of the property will be made aware of this via the Form 1 statement according to Section 7 of the *Land and Business (Sale and Conveyancing) Act 1994*.

Soil Data Conclusions

- Based on the proposed end use of the site as a Crisis Stabilisation Centre, no unacceptable risks to human health or to ecological receptors were evident within soils at the subject site.
- Site remediation is not required to protect health or ecology and as such, site soils are assessed to be suitable for unrestricted reuse onsite.
- Uncontrolled fill was inferred not to have been observed in the soil bores assessed.
- Soils were assessed to meet the physical and chemical requirements of Waste Fill.

Recommendations

A watching Brief should be maintained during earthworks for indications of unexpected contamination. Should suspected impacts be identified, the advice of an Environmental Consultant should be sought.

Soils for disposal, including the small stockpiles identified during the 2023 site inspection must be inspected and assessed against the physical requirements of Waste Fill. The soil must not contain inclusions exceeding 100 mm in length and must not include asbestos, bitumen/asphalt or other non-mineralogical material.

The information provided in this report is subject to the limitations expressed in Section 14. The reader should make themselves aware of the limitations and how they relate to the conclusions provided.

1 Introduction

LBWco was commissioned by Greenway Architects (Greenway) to undertake a Preliminary Site Investigation (PSI) for Portion Lot 4711 Oldham Road, Elizabeth South, South Australia (the site). A site locality plan is provided as Figure 1, Appendix A.

LBWco understood the following:

- Greenway had been engaged by the Department for Infrastructure and Transport (DIT) to provide services for the proposed development of a Northern Crisis Stabilisation Centre (NCSC).
- The proposed new land use was considered not to constitute a change to a more sensitive land use under the State Planning Commission per Planning Direction 14 (PD14) framework.
- DIT required this PSI to advise on site contamination risk for the project and waste classification of soils that may become surplus.

LBWco previously assessed the wider area including the subject site for City of Playford Council (Council) in 2016 and also carried out further soil assessment including on the subject site for ACH Group (ACH) in 2017 (Refer Section 2).

1.1 Objectives

The objectives of this **preliminary site investigation** were to:

- Assess the current and historical land uses and identify potentially contaminating activities (PCAs) that may have occurred within and directly adjacent to the assessment area.
- Assess the likelihood of site contamination resulting from PCAs posing complete source-pathway-receptor relationships, with respect to the proposed land use.
- Provide a preliminary indication of the waste classification of site soils.
- Assess whether soil impacts exist that could pose a risk to future site users.
- Assess whether remediation or site management may be required to make the site suitable for the proposed development.

This investigation was undertaken in general accordance with LBWco's proposal to Greenway on 13 October 2023 (LBWco ref P232497 L01), and provides an update to the desktop and soil assessment previously carried out for the site.

2 Background

The following subsections summarise the previous assessment work carried out by LBWco on and in the vicinity of the subject site.

Bore locations associated with the below stages of investigation within the subject site area are shown on Figure 3, Appendix A relative to the 2023 soil bores and the proposed development.

2.1 Preliminary Site Investigation (LBWco, 2016a)

LBWco (formerly Environmental Projects (LBW | ep)) was commissioned by Council to undertake a PSI¹ at the site. The boundary of the 2016 PSI included the 2023 subject site, and land to the east and south.

LBWco understood that Council intended to divest the site and had identified a preferred purchaser. The preferred purchaser was proposing to develop a residential aged care facility at the site, with specialist medical services, retail and training facilities.

The objectives of the PSI were to:

- Identify whether PCAs, defined in the SA EPA Environment Protection Regulations 2009, may have occurred on or near the site
- Assess the potential for PCAs to have caused site contamination, with respect to the proposed aged and health care facility land use
- Broadly quantify any residual contamination levels on the site caused by identified PCAs and assess the risk posed by these contaminants, with respect to the proposed aged and health care facility land use.

Based on the assessment data available to LBWco, the following conclusions were provided:

- One on-site PCA was identified: Fill or soil importation.
- Several off-site PCAs in the surrounding area were identified including plastics manufacture, motor vehicle repair or maintenance and service stations.
- Concentrations of potential target contaminants in soils did not exceed the relevant human health and ecological investigation levels for the proposed aged and health care facility use of the site.
- For the majority of site soils, concentrations of potential contaminants in soil were compliant with Waste Fill (WF) criteria for off-site disposal. The exception was for shallow soils at SB03, which complied with Intermediate Waste Soil (IWS) criteria².

LBWco recommended the following:

- An additional program of soil sampling and laboratory testing should be undertaken following removal of the tennis court pavement to classify fill materials present underneath, either via in-situ assessment or as a stockpile (segregated from natural materials) as these materials could not be sampled during the PSI.
- A soil vapour assessment was recommended to identify any vapour exposure risks to future residents from off-site sources, given the offsite PCAs determined within the PSI.

¹ LBWco 2016, Lot 47 Oldham Road, Elizabeth South, Preliminary Site Investigation, ref 160796 R01, dated 20 May 2016.

² Noting that this bore location lies outside of the current subject site to the south

2.2 Detail Site Investigation (LBWco, 2016b)

LBWco was commissioned by Council to undertake a detailed site investigation³ (DSI) of soil and soil vapour at Lot 47, Oldham Road, Elizabeth South. The boundary of the 2016 DSI included the 2023 subject site and land to the east and south.

The objectives of the DSI were to supplement the PSI data by:

- Characterising the contamination status of site soils and soil vapour in consideration of the identified onsite and offsite PCAs
- Assessing whether site soils were suitable for the proposed land use and whether remediation or management might have been needed to achieve suitability
- Assessing the vapour intrusion risk to future site users from potentially contaminated soils or groundwater
- Providing advice on the waste classification for soils that may become surplus during construction requiring off-site disposal.

LBWco concluded the following regarding the proposed residential land use:

- There was no evidence of unacceptable risk to human health from chemical contamination in soils or from soil vapour.
- Should off-site disposal of surplus fill and natural soils have been required, all on-site soils were suitable to be disposed of as WF.

An assessment of groundwater was not undertaken due to the following:

- No direct exposure pathways to the site were identified for the proposed development.
- No sources of groundwater contamination were identified at the site.
- Potential exposure from offsite groundwater sources were considered via the soil vapour pathway assessment.

2.3 ACH VITA North Soil Assessment (LBWco, 2017)

LBWco completed a soil assessment⁴ to the east of site and part of a proposed Lyell McEwin Allied Health Precinct for Aged Care Housing Group Inc.

LBWco concluded:

- Soils assessed were suitable for retention on site, subject to consideration of aesthetic and geotechnical properties
- Site soils were suitable for disposal to a licensed landfill as Waste Fill, or reuse at a third party non-sensitive use site as Waste Derived Fill in accordance with EPA (2010) Standard for the Production and Use of Waste Derived Fill.

³ LBWco 2017, Lot 47 Oldham Road, Elizabeth South, Detailed Site Investigation, ref 160849 R01, dated 13 October 2016.

⁴ LBWco 2017, Lyell McEwin Allied Health Precinct (VITA North), Oldham Road, Elizabeth Vale, Soil Assessment Report, ref 170951 R01, dated 28 September 2017.

2.4 ACH VITA North Additional Soil Assessment (LBWco, 2019)

LBWco was commissioned by Aged Care Housing Group Inc. (ACH) to undertake additional soil assessment⁵ works within the north-eastern corner of the vacant property, marginally overlapping with the 2023 assessment area.

The works were to confirm the waste classification since LBWco 2017.

LBWco concluded the following:

- The 2019 findings were generally consistent with those previously reported in the 2016 and 2017 assessments.
- Site soils were suitable for disposal to a licenced landfill as Waste Fill, or reuse at a third-party property under non-sensitive land-use conditions as Waste Derived Fill, in accordance with the EPA (2010) Standard for the Production and Use of Waste Derived Fill.

⁵ LBWco 2019, ACH VITA North Additional Soil Assessment, Oldham Road Elizabeth Vale Waste Classification, ref 170951-01 L01, dated 17 June 2019.

3 Regulatory Framework

In South Australia, the assessment, management and remediation of site contamination is regulated by the *Environment Protection Act 1993* (EP Act). The EP Act defines site contamination in section 5B as follows:

- (1) *For the purposes of this Act, site contamination exists at a site if –*
- (a) *chemical substances are present on or below the surface of the site in concentrations above the background concentrations (if any); and*
 - (b) *the chemical substances have, at least in part, come to be present there as a result of an activity at the site or elsewhere; and*
 - (c) *the presence of the chemical substances in those concentrations has resulted in –*
 - (i) *actual or potential harm to the health or safety of human beings that is not trivial, taking into account current or proposed land uses; or*
 - (ii) *actual or potential harm to water that is not trivial; or*
 - (iii) *other actual or potential environmental harm that is not trivial, taking into account current or proposed land uses.*
- (2) *For the purposes of this Act, environmental harm is caused by the presence of chemical substances –*
- (a) *whether the harm is a direct or indirect result of the presence of the chemical substances; and*
 - (b) *whether the harm results from the presence of the chemical substances alone or the combined effects of the presence of the chemical substances and other factors.*
- (3) *For the purposes of this Act, site contamination does not exist at a site if circumstances of a kind prescribed by regulation apply to the site.*

The first stage in determining whether site contamination exists is to assess whether chemical substances have been added to the site through an activity, and whether these substances are above background concentrations. The second stage is to assess whether the chemical substances have resulted in actual or potential harm to the health or safety of human beings or the environment (including water) that is not trivial.

If site contamination is determined to be present at a site, the EP Act provides mechanisms to assign responsibility for the contamination and appropriate assessment and/or remediation of the contamination.

The professional assessment of site contamination and consequential risk to human health and the environment is guided by NEPC 1999, *National Environment Protection (Assessment of Site Contamination) Measure*, National Environment Protection Council (the ASC NEPM, as amended 2013), Australian Standards and numerous other guidelines and technical publications prepared by the EPA and other scientific organisations.

3.1 Planning, Development and Infrastructure Act

Although a PSI is not required for planning purposes, we have reported in line with State Planning Commission Practice Direction 14 (Site Contamination Assessment) (PD14, 2023) to maintain the framework for assessing source-pathway-receptor scenarios relative to a prescribed list of PCAs.

The process for assessing and approving development and/or land division applications in South Australia is governed by the *Planning, Development and Infrastructure Act 2016* (PDI Act). Under Section 42 of the PDI Act, the State Planning Commission is authorised to issue practice directions for the purposes of the PDI Act. The rules that relate to a change in the use of land, which is considered a form of development under the PDI Act, are set out in Section 4 of the Act.

Section 65(1) of the PDI Act requires that a Planning and Design Code (the Code) be established in South Australia.

The Code implements the requirements of Section 6 of the PDI Act by setting out a comprehensive set of policies, rules and classifications which, when combined with mapping, apply in the various parts of the State for the purposes of development assessment in South Australia.

Part 9 of the Code details the circumstances in which a relevant authority must refer a development application to an external body, including the EPA.

State Planning Commission Practice Direction 14 (Site Contamination Assessment) (PD14, 2023) is issued under sections 42 and 127 of the PDI Act and describes how site contamination risks are to be assessed in the planning and development decision making processes. In particular, PD14, 2023 details the requirements related to site contamination assessment that are to be considered by a relevant authority when considering an application for planning consent, including specific conditions for development authorisations where remediation may be necessary before occupation or use of land that is the subject of an application.

4 Site History Investigation Methodology

4.1 Site History Investigation Guidance

The site history investigation methodology was developed with reference to the guidance provided in the following documents:

- ASC NEPM, 2013
- Edwards J. W., Van Alphen M. and Langley A., Identification and Assessment of Contaminated Land: Improving Site History Appraisal. Contaminated Sites Monograph Series No 3, SA Health Commission, Adelaide (1994)
- EPA, 2019. Guidelines for the assessment and remediation of site contamination (GAR, 2019)
- PD14, 2023.

Assessment of PCAs was made with reference to Section 50 and Schedule 3 Part 1 of the *Environment Protection Regulations 2009* (EPR 2009) and schedule 1 of Practice Direction 14 (PD14, 2023).

4.2 Methodology

The history of PCAs undertaken on or adjacent to the site was researched using:

- Historical aerial photography from 2016 to 2023 sourced from Nearmap.com
- WaterConnect database of groundwater records, maintained by the Department for Environment and Water (DEW)
- The Site Contamination Index and Public Register of records held by EPA relating specifically to site contamination for the subject site and surrounding local area
- Certificate of title (CT) review of ownership and lease information since 2013 – South Australian Integrated Land Information System
- EPA Public Register Section 7, Land and Business (Sales and Conveyancing) Act 1994 record search.
- Observations and information gathered during a site inspection.

5 Site Information

5.1 Site Details and Identification

Site identification details are provided in Table 1. Copies of the current CT for the site are provided in Appendix B.

Table 1 Site Identification Details

Site Address	Portion Lot 4711 Oldham Road, Elizabeth South, SA
CT Reference	Portion CT 6286 / 864
Current Site Owner	Minister for Health and Wellbeing of Adelaide SA 5000
Total Site Area	0.3 ha
Local Government Authority	City of Playford
Zoning	Strategic Innovation
Current Land Use	Vacant (temporary carpark)
Last Known Land Use*	Sports courts (Open space/recreation – Item 3 per PD14)
Proposed Land Use	Crisis stabilisation centre (Hospital – Item 4 per PD14)

*PD14 states that, in circumstances in where there is no current land use (ie vacant), the proposed use will be taken to be a more sensitive use other than where (i) the immediate previous use was for a residential purpose; or (ii) the relevant allotment was lawfully created for a residential purpose and has not been used for any other purpose since that time; or (iii) the propose use is industrial.

5.2 Topography

According to the topographic map of the Mount Lofty Ranges (Dept. of Lands 1990), the site is generally flat with an elevation of approximately 40 m Australian Height Datum. The surrounding land is generally flat, with a gentle slope towards the west in the direction of Gulf St Vincent.

5.3 Geology

Local geology was reviewed via the 1:250,000 Adelaide geology map Sheet SI 54-9 (Geological Survey of SA, Dept of Mines 1962), which indicated that the site was underlain by a sequence of Quaternary age sediments in the order of 100 metres in thickness. Quaternary sediments comprise a mixture of alluvial fan and streambed deposits with clay predominating, but with distinct stratigraphic layers and isolated lenses of coarser sediments. There are two main formations associated with the site including the Pooraka formation in the upper few metres, and Hindmarsh Clay, which is present at depth extending to the base of the Quaternary sequence. Both formations are predominantly clay, but contain sandy, silty, micaceous and gravelly materials.

5.4 Hydrogeology

On 29 November 2023, a search of the South Australian Government Water Connect database identified 339 wells within a 2 km radius of the site. The search results are presented in Appendix C.

The following key information was identified from the database results:

- No on-site bores were identified. The closest bore to the site with a recorded standing water level (SWL) was approximately 35 m north of the site, drilled to a depth of 194 metres below ground level (mBGL) with a SWL of 22.1 mBGL.

Table 2 Summary of Local Groundwater Information within 2 km of site

Number of bores	339		
Range of installed depths (mBGL)	5.49 - 203		
Range of SWLs (mBGL)	1.0 - 40		
Range of TDS* (mg/L)	69 - 4233		
Purpose listed for bores	143 Investigation	8	Foundation
Some listed with multiple purposes	58 Irrigation	2	Recreational
	48 Observation	2	Environmental
	22 Monitoring	1	Town Water Supply
	16 Stock	1	Recharge
	9 Exploration	50	Unlisted
	9 Domestic		

*total dissolved solids

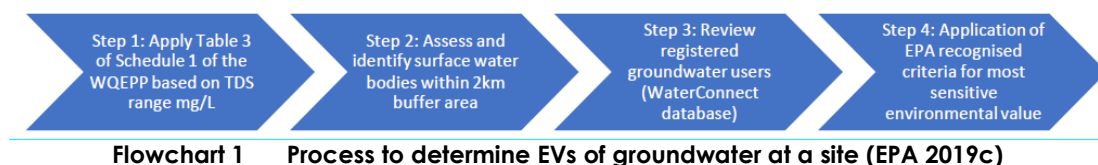
5.5 Sensitive Receiving Environments

Little Para River was present approximately 800 m south/south-east of site.

5.6 Environmental Values of Groundwater

The following section documents the application of the four-step process in determining the Environmental Values (EV) of groundwater as recommended by the EPA.

This section steps through the EV process for groundwater at the site.



5.6.1 Step 1: Determination of Prescribed EVs of groundwater using the EPP-WQ

Clause 3, schedule 1 of the EPP-WQ prescribes EVs of groundwater in TDS concentration ranges.

Table 3 Environmental Values Relative to TDS in wells

EV	EPP-WQ Specified TDS range (mg/L)	Measured TDS in Regional Groundwater	EV relevant for consideration based on TDS?
Drinking water for human consumption	<1,200	69 – 4,233 mg/L	Yes
Primary industry – irrigation and general use	< 3,000		Yes
Primary industry – livestock drinking water	<13,000		Yes
Primary industry – aquaculture	<13,000		Yes

Based on the regional TDS concentrations, all prescribed EVs are relevant for assessment of the groundwater in respect to whether site contamination exists.

- **Drinking water – for human consumption**
- **Primary industries – irrigation and general uses**
- **Primary industries – livestock drinking water**
- **Primary industries – aquaculture and human consumption of aquatic foods**

5.6.2 Step 2: Application of a buffer distance for the protection of surface waters

As recommended in the GAR, a buffer distance of 2 km was adopted for the consideration of surface water impacts within the assessment of EVs of groundwater.



Diagram 1. Surface water records within 2km of site (ESRI, DEW).

Table 4 Environmental Values Relative Surface Waters

EV	Notes	EV relevant within 2 km buffer zone?
Aquatic Ecosystems (freshwater)	Little Para River was present approximately 800 m south/south-east of site.	Yes
Aquatic Ecosystems (marine water)	No marine ecosystems were identified within 2 km of site.	No
Recreational (non-domestic)	Little Para River was present approximately 800 m south/south-east of site.	Yes

Based on consideration of Table 4, aquatic freshwater ecosystems and recreational are considered to be relevant EVs for assessment relative to site groundwater.

5.6.3 Step 3: Review of groundwater data using Water Connect

The findings of the WaterConnect database search are presented in Table 5.

Table 5 Application of WaterConnect data to determine EVs

Registered Use	Notes	EV relevant based on registered uses within 2 km buffer zone?
Domestic	Nine domestic bores were identified within 2 km of site of which may be used for potable, recreational or irrigation use.	Yes
Town Water Supply	One town water supply bore was identified within 2 km of site of which may be used for potable, recreational or irrigation use.	Yes
Recreation and aesthetics	Two recreational bores were identified within 2 km of site of which may be used for recreation and aesthetic use.	Yes
Industrial (general industry)	No industrial bores were identified within 2 km of site of which may be used for irrigation, aquaculture or industrial use.	No

Other factors may apply to the consideration of EVs, for which data was not available or which LBWco was not aware of, at the time preparing the above assessment. These factors alone, or in combination with other factors, may lead to a different outcome.

Based on the above assessment from steps 1, 2 and 3, the following EVs were determined to be applicable to the regional aquifer for assessment of site contamination based on applicability as a default EV set via the EPP-WQ or in the context of current or realistic potential future uses for groundwater in the vicinity of the site:

- **Aquatic ecosystems (freshwater)**
- **Drinking water – for human consumption**
- **Recreation and aesthetics**
- **Primary industries – irrigation and general uses**
- **Primary industries – livestock drinking water**

5.6.4 Step 4: EPA recognised criteria

Step 4 would be considered at the DSI stage and is not considered further for the PSI.

5.7 Site Inspection

On 27 November 2023, a Senior Environmental Consultant from LBWco inspected the site. Important features of the site pertaining to the potential for site contamination were noted and a photographic record was made. Records of the site visit and site photos from November 2023 are presented below, and a site layout plan detailing onsite observations and surrounding land uses is presented on Figure 2, Appendix A.

5.7.1 Current Land Use and Site Structures

At the time of the site inspection, the site was vacant, and was predominantly covered with grass and weed cover. The entire allotment was secured with temporary fencing with a

locked gate at the north (within site boundary) along Oldham Road, and a gate to the southeast along Mark Road, adjacent to the Lyell McEwin Hospital. A compacted rubble track had been constructed, intersecting the site from a gate to the north, beyond the site boundary to the southwest.

Two small stockpiles of gravelly clay (approximately 10 m³) consistent with the rubble track material visible on Figures 2 and 3 in Appendix A, and a stockpile of ballast material, were present at the northern entrance to the site. The source of these stockpiles was unknown however the material appeared to have been used onsite to construct the track which was represented by bores BH07 and BH04. There was no physical or chemical testing evidence to suggest that this material may be impacted.

The adjacent portion of the allotment was being utilised for contractor parking associated with the Sarah Constructions site – ACH Group to the south. Small trees and shrubs were scattered across the site.

5.7.2 Evidence of potential site contamination

There was no evidence of potential site contamination noted from the site inspection.

5.7.3 Site Photographs

Selected photographs taken in November 2023, of relevant on-site and off-site features at the time of the site inspection are presented below.



Photograph 1.

View of the site from the east



Photograph 2.

View of the site from the west



Photograph 3.

Two small stockpiles of gravelly clay material (approximately 10 m³) along Oldham Road



Photograph 4.

Stockpile of ballast material



Photograph 5.

Concrete building material on the allotment, approximately 150 m south of the site



Photograph 6.

Vector Technologies, adjacent land to the west.

5.8 Anecdotal Information

As reported in LBWco (2016), during the 19 April 2016 site inspection, LBWco spoke to Mrs Jill Vandeleur from the SA Tennis Academy which occupied the site at the time. At this time, the subject site formed the car park to the tennis club and the courts were to the south.

Relevant information from Mrs Vaneleur was as follows:

- The site had been operated as a tennis club with the tennis courts and club room built in 1988, prior to which the site was undeveloped.
- The only fill assumed to be present on the site was associated with the levelling for the tennis courts, club rooms and car parks.
- No hazardous materials were stored on the site with the exception of domestic weed killer.
- No knowledge of asbestos onsite or underground storage tanks

5.9 Adjacent Land Use Summary

Based upon the site inspection and review of current aerial photography, the general land use in the immediate vicinity of the site was mixed commercial / light industrial and open space:

- North: Recreational reserve across Oldham Road, Adelaide City Engineering to the northwest
- East: Vacant, utilised for contractor carparking. Lyell McEwin Hospital further east across Mark Road
- West: Vector Technologies immediately west, Aquatek Products, and a service station approximately 250 m west north west. Further west across Philip Highway was the former General Motors Holden Automotive manufacturing facility, approximately 340 m from the site.
- South: Vacant, being utilised for car parking. Sarah Constructions – ACH Group site further south, approximately 200 m south of the site.

6 Site History

6.1 Certificates of Title

The site comprised a portion of one current certificate of title. Detailed historical site ownership since 2016 is summarised in a title tree, alongside the CTs, in Appendix B.

LBWco 2016 noted that the site owner was the City of Playford and concluded that no PCAs were likely to have occurred on the site or in adjacent land parcels.

On 29 November 2023 LBWco conducted a search of current and historical CTs from 2016 to current day.

In July 2017 the site was transferred to Aged Care and Housing Group and an encumbrance was lodged by the City of Playford. In February 2021, an application for a plan of division was lodged by Aged Care and Housing Group. The City of Playford were transferred back the site in April 2021 and in September 2022, another application for a plan of division was lodged by Aged Care and Housing Group. From October 2022 to June 2023, a caveat was applied by the Registrar-General and an acquisition registered to the current site owner, Minister for Health and Wellbeing, in June 2023.

No PCAs were identified from the certificates of title from 2016 to current day.

6.2 Aerial Photographs

The aerial review conducted in 2016 identified that a shed was constructed in the south-eastern portion of site, associated with nearby sports courts, between 1979 and 1989. A sealed carpark had been constructed onsite by 1999 and by 2009, a smaller gravel carpark north of the shed. This was generally consistent with the layout in 2016.

Aerial photographs from 2016 to 2023 were downloaded from Nearmap.com and are provided in Appendix D.

A detailed summary of the features and apparent land use(s) observed in the aerial photography since 2016 is provided in Table 6.

Table 6 Aerial Photography Summary

Date	Description
March 2016	<p>Onsite:</p> <ul style="list-style-type: none"> A sealed carpark covered the western and central portion of site. A building (tennis club house) was present in the south-eastern portion of site and a gravel carpark in the north-eastern portion. <p>Offsite:</p> <ul style="list-style-type: none"> Sealed tennis courts were present to the south of the site and grassed areas/reserves to the north and east. To the west were commercial/industrial buildings.
January 2017	<p>Onsite:</p> <ul style="list-style-type: none"> Generally consistent with previous aerial imagery <p>Offsite:</p> <ul style="list-style-type: none"> Generally consistent with previous aerial imagery
January 2018	<p>Onsite:</p> <ul style="list-style-type: none"> Generally consistent with previous aerial imagery <p>Offsite:</p> <ul style="list-style-type: none"> Generally consistent with previous aerial imagery

Date	Description
July 2018	<p>Onsite:</p> <ul style="list-style-type: none"> Demolition had occurred including the removal of the carpark, trees and shed. <p>Offsite:</p> <ul style="list-style-type: none"> Demolition had occurred to the east and south of the site including the removal of the sports courts and trees. The north and west appeared generally consistent with previous aerial imagery.
January 2019	<p>Onsite:</p> <ul style="list-style-type: none"> Generally consistent with previous aerial imagery. A stockpile was present in the south-eastern portion of the site. <p>Offsite:</p> <ul style="list-style-type: none"> A linear stockpile or mound was visible parallel with Mark Road, east of site.
February 2020	<p>Onsite:</p> <ul style="list-style-type: none"> An access track appeared to be running north-south through the site. A rumble grid had been placed at the gate entrance in the northern portion of site. <p>Offsite:</p> <ul style="list-style-type: none"> The vacant land to the south appeared to have been used for a small construction laydown area, including the storage of materials. Surface soil appeared to have been disturbed in this area, indicating minor earthworks.
January 2021	<p>Onsite:</p> <ul style="list-style-type: none"> Generally consistent with previous aerial imagery <p>Offsite:</p> <ul style="list-style-type: none"> Generally consistent with previous aerial imagery
January 2022	<p>Onsite:</p> <ul style="list-style-type: none"> An unsealed track had been created, weaving through the site, and a small shed or structure in the central portion of site. <p>Offsite:</p> <ul style="list-style-type: none"> An unsealed track had been created on the vacant land to the south and east. Small sheds or structures had been erected to the south-east.
February 2023	<p>Onsite:</p> <ul style="list-style-type: none"> The small structure/shed had been removed. Otherwise, generally consistent with previous aerial imagery. <p>Offsite:</p> <ul style="list-style-type: none"> Demolition of a carpark and some buildings had occurred to the west. At the time of the aerial photograph, earthworks were occurring onsite.
November 2023	<p>Onsite:</p> <ul style="list-style-type: none"> Generally consistent with previous aerial imagery <p>Offsite:</p> <ul style="list-style-type: none"> A building had been constructed to the west. The grassed area to the north of site had been landscaped including sealed parks and grassed/vegetated areas.

6.3 EPA Public Register Searches

6.3.1 Section 7

A Section 7 Search under the Land and Business (Sales and Conveyancing) Act 1994 was conducted by the EPA for the site. The search results are provided in Appendix E, and indicated, as 27 November 2023:

- There were no mortgages, charges or prescribed by encumbrances affecting the site under the relevant sections of the Environment Protection Act 1993
- No license or environmental authorisation was ever issued to operate a waste depot on the land under the South Australia Waste Management Commission Act 1979, the Waste Management Act 1987 or the Environment Protection Act 1993
- In relation to the subject site, the EPA Register did not hold any information relating to
 - Material or serious environmental harm caused or threatened in the course of an activity
 - Site contamination notified to the EPA under section 83A of the Environment Protection Act 1993
 - Site contamination audit report(s)
- The EPA Register did hold information relating to notice of prohibition or restriction on taking water affected by site contamination and environmental assessment report(s).
- These relate to a Groundwater Prohibition Area (GPA) applied to numerous suburbs, including the site. The note indicates that the prohibition extends to approximately 35 mBGL. The contamination is in the form of petroleum hydrocarbons, chlorinated hydrocarbons, metals and per - and polyfluoroalkyl substances (PFAS) which represent actual or potential harm to human health or safety.
 - LBWco briefly reviewed the EPA determination report⁶ for the GPA which described that the GPA is sourced from the former Holden vehicle manufacturer plant (approximately 340 m to the west). It was noted that the groundwater contamination plume extends offsite approximately 1 km to the west-northwest and is considered stable. The subject site is on the eastern-most boundary of the GPA, therefore, up-hydraulic gradient of the former Holden property and within the buffer zone, up gradient of the identified impacts, assuming a south westerly flow direction as indicated within the GPA report.

⁶ EPA 2023, Groundwater Prohibition Area (GPA) – portions of Edinburgh, Edinburgh North, Elizabeth South and Salisbury North, EPA determination report, dated April 2023.

6.3.2 Site Contamination Index

The EPA maintains a searchable database of key notifications on its website called the Site Contamination Index. LBWco conducted a search of the database and identified the following records within 0.5 km of the site. The full list can be found in Appendix F.

Table 7 Site Contamination Index Records with 0.5 km

Vicinity	Property	Notification	Type	Activity
65 m east	Lot 1 Haydown Road Elizabeth Vale SA 5112	60666	109 Notification	Pest controls works
340 m west	Lot 12 Grainger Roads Elizabeth South SA 5112	61102-01	S83A Notification	Motor vehicle manufacture
340 m west	Lot 12 Philip Highway Elizabeth South SA 5112	61102-02	S83A Notification	Not recorded
340 m west	Various Titles Grainger Roads Elizabeth South SA 5112	61102-03	S83A Notification	Not recorded
340 m west	Various Titles Grainger Roads Elizabeth South SA 5112	61102-04	S83A Notification	Not recorded
340 m west	Philip Highway Elizabeth South SA	61102-05	S83A Notification	Not recorded
340 m west	180 Philip Highway Elizabeth South SA 5112	61102-06	S83A Notification	Motor vehicle manufacture
340 m west	180 Philip Highway Elizabeth South SA 5112	61102-07	S83A Notification	Motor vehicle manufacture
340 m west	180 Philip Highway Elizabeth South SA 5112	61102-08	S83A Notification	Motor vehicle manufacture
340 m west	180 Philip Highway Elizabeth South SA 5112	61102-09	S83A Notification	Motor vehicle manufacture
340 m west	180 Philip Highway Elizabeth South SA 5112	61102-10	S83A Notification	Motor vehicle manufacture
340 m west	180 Philip Highway Elizabeth South SA 5112	61102-11	S83A Notification	Motor vehicle manufacture
340 m west	180 & 185 Philip Highway Elizabeth South SA 5112	61428	Voluntary Proposal	Motor vehicle manufacture
340 m west	180 Philip Highway Elizabeth South SA 5112	61608	109 Notification	Motor vehicle manufacture
340 m west	180 Philip Highway Elizabeth South SA 5112	61905	Voluntary Proposal	Motor vehicle manufacture
340 m west	180 Philip Highway Elizabeth South SA 5112	62107	Voluntary Proposal	Motor vehicle manufacture
370 m north	14 Wiley Street Elizabeth South SA 5112	61499	S83 Notification	Listed substances (manufacture, production, recycling)

Records relating to the Grainger Road and Philip Highway addresses all relate to the former Holden Manufacturing plant (i.e. all of the above with the exception of the first and the last table entries). The exact distances of the activities are unknown. The distance to the site boundary is provided in the above table.

6.3.3 Public Register

LBWco conducted a search of the EPA Public Register on 29 November 2023 and identified the following records within 500 m of the site.

Table 8 EPA Public Register Documents

Vicinity	Property	Record No	Record Type	Entity	Activity
65 m east	Allotment 1, Haydown Road, Elizabeth Vale SA 5112	641	Licence	Northern Adelaide Local Health Network	Activity producing listed waste, fuel burning not coal or wood, helicopter landing facilities
		2609	Licence	SA Pathology	Activity producing listed waste
		641	Licence Application	Lyell McEwin Health Services	Fuel burning not coal or wood, helicopter landing facilities
42 m north-west	6 Oldham Road, Elizabeth South SA 5112 and Various Locations throughout South Australia	50682	Licence	AFL Services Pty Ltd	Abrasive blasting, Surface coating works (spray painting or powder coating)
		51573	Licence	Eptec Services Pty Ltd	
230 m west at closest	Philip Highway, Elizabeth South SA 5112	27610	Environment Protection Order	No record	No record
		11867	Environment Protection Order	SAFCOL Australia Pty Ltd	No record
250 m west	185 Philip Highway, Elizabeth South SA 5112	50867	Licence	United Petroleum Pty Ltd	Petrol stations
260 m south	Allotment 701 (DP 81151) Coglein Road, Elizabeth South SA 5112	43702	Licence Application	Barkuma Incorporated	Waste Recycling Depot (Waste for Resource Recovery Or Transfer)
372 m north	18 Wiley Street Elizabeth South 5112 and Various Locations Throughout SA, SA	45282	Licence	Northern Gritblasting Pty Ltd	Abrasive Blasting
378 m north	12 Wiley Street, Elizabeth South SA 5112	51685	Licence	OZCoat (SA) PTY LTD	Abrasive Blasting, Surface Coating Works (Spray Painting or Powder Coating)
		46542	Licence Application	Nu Vision Pty Ltd	Surface Coating Works (Spray Painting or Powder Coating)
402 m south	195 Philip Highway, Elizabeth South SA 5112	51547	Licence	Algum Pty. Limited	Waste Recovery Facility

6.4 Dangerous Substances

A search of the Dangerous Substances Register was carried out by SafeWork SA in 2016 and the search output was included within LBWco (2016). The output confirmed that as of 13 April 2016, there were no licensed items listed for the site.

As the site was disused and then demolished shortly following this, there is no reason to suspect that a dangerous substances were stored on the site after this time therefore an updated search was considered not to be warranted.

6.5 Site History Update Overview

The site had been used for the tennis clubhouse and associated car parking since approximately 1989, prior to which it was undeveloped.

From 2017, the site was transferred between the City of Prospect and Aged Care and Housing Group until the current site owner, Minister for Health, and Wellbeing, acquired the site in June 2023.

In 2018 the carpark, trees and tennis clubhouse building were removed. The remainder of the wider property to the south and east including the tennis courts to the south and trees to the east were also removed at this time. From this date, the site was used as an unsealed access track and carparking for the construction laydown area to the south of site.

7 Potentially Contaminating Activities

A desktop assessment of prescribed PCAs, as defined in *Practice Direction 14, 2021* and/or the *Environment Protection Regulations 2009*, that were likely to have been undertaken at or near the site is presented in Table 9 below.

Schedule 1 of PD14, 2023 categorises activities into either Class 1, Class 2 or Class 3 activities with Class 1 activities considered to have the highest potential for environmental risk. Classifications for the PCAs identified are listed below, where relevant.

Refer to Figure 4, Appendix A, for a visual summary of the following activities.

Table 9 Potentially Contaminating Activities

Activity	Description	PCA as per PD14 2023?	PCA as per EPR 2009?	Comment/Location
Onsite				
Fill or soil importation	<i>Importation, to premises of a business, of soil or other fill originating from a site at which another potentially contaminating activity has taken place</i>	No	Yes	Historical aerials (Section 6.2) and the site inspection (Section 5.7) identified that fill had been imported to site. The fill has the potential to be imported from a site at which a PCA had occurred, although this is not known. Small stockpiles identified onsite were consistent with site surface material.
Adjacent Land <i>Land within 60 m of the subject site boundary, per section 3(1) of the PDI Act 2016</i>				
Metal coating, finishing or spray painting	<i>Finishing, treating or coating of metal (including anodising, galvanising, pickling, electroplating, heat treatment, powder coating, enamelling and spray painting)</i>	Yes Class 1	Yes	A licence for surface coating works applied to a property 42 m north-west of site (refer Section 6.3.3).
Plastics manufacture works	<i>Operation of works for manufacture (including blending, mixing and formulation) of plastics or plastic components (excluding processing and moulding of plastics manufactured elsewhere)</i>	Yes Class 1	Yes	LBWco 2016 (ref section 2.1) identified a plastics manufacture works immediately west of site from prior to 1973 until at least 2016 (Blown Plastics Pty Ltd), now Vector Technologies (plastics supplier).
Abrasive blasting	<i>Operation of works for abrasive blast cleaning or disposal of abrasive blasting material (including mobile abrasive blasting works and abrasive blast cleaning carried out in fully enclosed booths but excluding abrasive blast cleaning undertaken for residential purposes)</i>	Yes Class 2	Yes	A licence for abrasive blasting applied to a property 42 m north-west of site (refer Section 6.3.3).

Activity	Description	PCA as per PD14 2023?	PCA as per EPR 2009?	Comment/Location
Distant Offsite <i>Activities on land >60 m from the subject site boundary, per section 3(1) of the PDI Act 2016</i>				
Pest control works	<i>Operation of premises for storage of pesticides or filling or washing of tanks used in pest control operations</i>	Yes Class 1	Yes	A Site Contamination Index record was identified for Pest control works at the Lyell McEwin hospital (refer Section 6.3.2). The hospital boundary is 65 m east of site; however the location of this operation is unknown.
Listed substances (Medical waste)	<i>Listed substances -manufacture (including as a by-product or waste) [...] of a listed substance of product containing a listed substance..</i>	Yes Class 1	Yes	A licence for activity producing listed wastes at the Lyell McEwin hospital (refer Section 6.3.3). The hospital boundary is 65 m east of site; however, the location of this operation is unknown.
Fuel burning facilities	<i>Burning of solid or liquid fuel (including for generation of power or steam at rate of heat release exceeding 1MW)</i>	Yes Class 2	Yes	A licence for fuel burning at the Lyell McEwin hospital, (refer Section 6.3.3). The hospital boundary is 65 m east of site; however, the location of this operation is unknown.
Electrical or electronics component manufacture	<i>Manufacture of electrical or electronics components</i>	Yes Class 1	Yes	LBWco 2016 identified an electrical or electronics component manufacture 100 m west of site.
Service stations	<i>Operation of retail fuel outlets</i>	Yes Class 1	Yes	A service station is present 250 m west of site (Section 5.7).
Motor vehicle manufacture	<i>Manufacture of motor vehicles</i>	Yes Class 1	Yes	Former Holden vehicle manufacture, 340 m west at closest location.
Gasworks	<i>Operation of gasworks or gas holders</i>	Yes Class 1	Yes	LBWco 2016 identified a gasworks 400 m west of site.

8 Soil Investigation Methodology

8.1 Guidance Documents

The soil investigation was undertaken with reference to the guidance provided in the following documents:

- ASC NEPM, as amended in 2013. Schedules B (1), B (4)
- EPA, 2019 Guidelines for the Assessment and Remediation of Site Contamination

8.2 Soil sampling and Analysis Rationale

Prior to the commencement of the intrusive investigation a grid-based proposed sampling plan was prepared. The sample location plan is provided as Figure 3 in Appendix A.

Recovery of soil samples from soil bores and selection of samples for testing was undertaken based on soil descriptions. Soil samples were tested for a broad range of potential chemicals of interest.

8.3 Fieldwork Methodology

The soil assessment fieldwork methodology, including field quality assurance/quality control (QA/QC) measures implemented during the investigation, is summarised in Table 10.

Table 10 Summary of Soil Investigation Methodology

Activity	Details
Environment, Health and Safety (EHS)	Prior to the commencement of field activities, a site-specific EHS plan was prepared, and a site sampling plan was developed.
Service location	Before You Dig Australia records were reviewed prior mobilisation and onsite prior to works commencing. Service location was conducted by Locate SA with LBWco field personnel on 27 November 2023, prior to intrusive works.
Soil sampling	On 4 December 2023, seven soil bores (SB01-SB07) were drilled with experienced drilling contractor, Williams Drilling and Sampling Services using push tube methodology with plastic liners. Drilling was performed under the full-time supervision of an experienced LBWco field consultant. All soil bores were drilled to 1.2 m. Samples were collected from each distinct soil layer at depth intervals considered appropriate by LBWco for the purposes of the investigation. During sampling, individual identification numbers were assigned to each sample collected.
Sample handling	Soil samples were handled exclusively by an LBWco consultant and were stored in glass jars supplied by the primary contract laboratory, Eurofins. Nitrile gloves were worn whilst collecting the samples, which were collected using the glass jars, to avoid equipment contamination.
Quality control duplicate and blank sampling	1 intra-laboratory duplicate, and 1 inter-laboratory duplicate were submitted for laboratory analysis to test laboratory repeatability. A rinsate was collected from a clean plastic liner to assess for cross-contamination.

Activity	Details
	Quality control duplicate and blank sample results are included within Appendix I.
Soil logging	Soils encountered at each sampling location were logged in general accordance with Standards Australia (2017) Geotechnical Site Investigations AS1726. Soil logs are provided in Appendix G.
Sample preservation	Soil samples were stored under chilled conditions in a portable cooler immediately following sampling and during delivery to the contract laboratories, Eurofins and Envirolab. Sample transport was performed in accordance with LBWco's chain of custody procedures.
Borehole abandonment	Soil bores were backfilled with sand or excess drilling spoil and the surface reinstated to a safe condition following sampling and logging.
Laboratory analysis	Selected samples were submitted for analysis of potential contaminants of concern, including: <ul style="list-style-type: none"> • Metals • Polycyclic aromatic hydrocarbons (PAHs) • Total recoverable hydrocarbons (TRH) • Benzene, toluene, ethylbenzene, xylene (BTEX) • Organochlorine pesticides (OCPs) • Physico-chemical parameters (pH, cation exchange capacity, percent clay, percent organic carbon) • A broad suite of potential chemicals of interest included in the SA EPA Waste Screen <p>Primary analytical testing was undertaken by Eurofins, with inter-laboratory sampling undertaken by Envirolab. Both laboratories were accredited by the National Association of Testing Authorities (NATA) for the analyses performed.</p>

8.4 Screening Guidelines

The ASC NEPM provides a nationally consistent framework for assessing the presence and significance of site contamination in soil and groundwater. The NEPM methodology is based on assessing potential for an unacceptable risk to human health or the environment through concentrations of chemical substances using conservative, generic investigation levels for various environmental settings and land use scenarios.

Investigation levels are defined in the ASC NEPM as “concentrations of a contaminant above which further appropriate investigation and evaluation will be required. They are not clean up or response levels”. A response level is defined as “the concentration of a contaminant at a specific site based on a site assessment for which some form of response is required to provide an adequate margin of safety to protect public health and/or the environment”.

The NEPM health investigation levels (HILs) are based on conservative assumptions around protecting a young child living or playing on the site and subjected to exposure to contaminated soils. The most stringent HILs/HSLs are assigned to sensitive land uses such as low-density residential properties, childcare centres and primary schools.

8.4.1 Human Health Screening Guidelines

Based on the proposed land use of the site for a stabilisation centre (hospital unit), LBWco adopted the ASC NEPM HILs for exposure settings 'A' – low-density residential and 'D' – commercial/industrial. Exposure setting 'A' provides a conservative representation for possible future child site users. Exposure setting 'D' provides representation for future onsite staff.

ASC NEPM HSLs for the vapour intrusion exposure pathway depend on the grain size of site soils and the depth of potential volatile contaminants from site receptors. For this assessment, HSLs for residential and commercial/industrial land use, sandy soils and a contaminant depth of 0-1 mBGL were adopted.

HSLs for direct contact with soils are provided in the CRC CARE Technical Report 10 for consideration of risk from petroleum hydrocarbons in soils. The guidelines for commercial/industrial properties were adopted.

A summary of the adopted health-based guidelines is provided below:

- ASC NEPM 1999, Soil HIL A – residential
- ASC NEPM 1999, Soil HIL D – commercial/industrial
- CRC CARE 2011, Soil HSL A – residential
- CRC CARE 2011, Soil HSL D – commercial/industrial
- ASC NEPM 1999 Soil HSL A/B for vapour intrusion – residential (sand, depth 0-1 mBGL)
- ASC NEPM 1999 Soil HSL D for vapour intrusion – commercial / industrial (sand, depth 0-1 mBGL)

The adopted health-based guidelines are presented on chemical summary tables in Appendix H.

8.4.2 Ecological Screening Guidelines

Chemical contaminants can adversely affect the ecological values of a site. The contaminant levels considered acceptable based on human health considerations may not afford protection to the local ecology. To consider the potential for toxicity to sensitive plants and animals, contaminant concentrations have also been compared to ecological investigation levels (EILs) and ecological screening levels (ESLs) presented in the ASC NEPM. These values typically only apply to the top 2 m of the soil profile where plants (and to a lesser degree animals) will interact with the soil.

EILs were derived using site-specific physio-chemical parameters from sample BH05-03 as inputs into the NEPM 2013 Ecological Investigation Level Calculation Spreadsheet. The derived EILs were considered to produce appropriately conservative screening values.

ESLs depend upon the grain size of site soils. For shallow site soils, ESLs for coarse-grained soils were considered most appropriate.

A summary of the adopted ecological-based guidelines is provided below:

- NEPM 1999 EIL – Urban Residential and Commercial/Industrial
- NEPM 1999 Soil ESL - Urban Residential and Commercial / Industrial (coarse)

The adopted ecological-based guidelines are presented on chemical summary tables in Appendix H, along with the output from the ASC NEPM Ecological Investigation Level Calculation Spreadsheet.

The ESLs presented in the ASC NEPM 1999 (as amended 2013) were adopted from provisional Canadian environmental health soil quality guidelines (CCME SQC_E). Following the ASC NEPM amendment in 2013, new toxicological data led the Canadian Council of Ministers of the Environment (CCME) to revise the Canadian SGQ_Es for benzo(a)pyrene to 20 mg/kg for residential sites and 72 mg/kg for commercial / industrial sites. Correspondence from EPA⁷ supported the use of the revised CCME SGQ_E within preliminary environmental risk assessments and risk management decisions, as use of the existing NEPM ESL benzo(a)pyrene criteria may result in an overly conservative approach to soil remediation and management. The CCME screening levels for benzo(a)pyrene have been included in the soil chemical data tables presented in Appendix H.

8.4.3 Management Limits

In addition to risk-based human health and ecological guidelines, the ASC NEPM provides management limits that consider other potentially unacceptable impacts of hydrocarbon contamination. These include the potential for free-phase formation of impacts in underlying groundwater, fire and explosive hazards, effects on buried infrastructure, and aesthetic considerations. The management limit for residential/parklands and commercial/industrial land use and coarse-grained soils was adopted for the assessment.

⁷ SAEPA (2 July 2015), *EPA guidance in relation to BaP ESLs*, email from Wendy Boyce to Site Contamination Auditors.

9 Results

The following section presents the field observations and results of the laboratory soil testing. Soil sample locations are presented on Figure 3 in Appendix A. Tabulated results of chemical testing are presented in Appendix H. Laboratory certificates of analysis are presented in Appendix J.

9.1 Field Observations

A total of 13⁸ soil bores were drilled to between 0.5 and 3.75 m below ground level (mBGL) across the three investigation stages.

Soil bore locations are presented in Figure 3, Appendix A and soil bore logs are presented in Appendix G.

Fill material was observed to be present at each of the 13 soil bores completed.

9.1.1 LBWco 2016 Investigation

Fill identified within SB01, SB02, SB04 and SB15 was generally described as a gravelly sand material extending from 0.05 mBGL to a maximum depth of 0.2 mBGL and was present beneath the (now removed) asphalt carpark surface as engineered fill.

Underlying natural material was described as a brown silty clay.

9.1.2 LBWco 2019 Investigation

Soil bore SB01, which was just to the east of the current site boundary was located within the unsealed car park area to the north of the now demolished clubhouse building. The surface fill of 0.3 m thickness was broadly consistent with engineered fill beneath the asphalt car park in the western part of the site. Soil described as reworked natural material of stiff clay was present beneath this to a depth of 1.5 mBGL.

Soil bore SB02 was located within the former footprint of the now demolished clubhouse in the south eastern portion of the site. The soil profile was recorded to be similar to SB01 with sub-slab sand to 0.3 mBGL and reworked natural clay to 1.6 mBGL.

There is potential that reworked natural material was used to fill the void of removed footings from the building which was removed from site in 2018. However, the presence of 'reworked natural material' also at SB01 which was outside of the former building footprint suggests that the 'reworked natural' material may have been incorrectly interpreted as such and may have been unworked natural material, the description for which was broadly consistent with the description of reworked material.

9.1.3 December 2023 Investigation

Soil bore BH01 was located within the footprint of the now demolished club house building. Fill was present to 0.4 mBGL and comprised silty clay with sand and gravel. Inclusions of glass fragments were also noted. This material is inferred to represent disturbed shallow fill material containing residual inclusions from the demolition of the club house building. Natural clayey sand was present from 0.4 mBGL.

⁸ One of which (SB01 from 2019) was just outside the eastern site boundary but has been included on the figure and the log provided, due to its close proximity. Laboratory data for this bore has not been included within this assessment.

Soil bore BH02 was located within the former unsealed car park to the north of the former club house. Fill material was again consistent with compacted sandy fill which was found to be present across the wider car park area.

Remaining soil bores BH03 to BH07 were located within the area of the now removed asphalt car park to the west of the former clubhouse and comprised of a pale tan-grey or white gravelly sand at the surface, consistent with the engineered granular fill underlying the now removed asphalt carpark.

LBWco infers that uncontrolled fill was not observed in the soil bores assessed.

9.2 Laboratory Results

Laboratory results from 2016, 2019 and 2023 were compared to the relevant guidelines summarised in Section 8.

9.2.1 Health and Ecological Guidelines

All concentrations were reported below both the health-based guidelines and ecological guidelines for residential and commercial/industrial land uses.

9.2.2 Waste Criteria

Copper was reported in a surface sample in SB02 (2019) at a maximum concentration of 100 mg/kg, exceeding the WF guideline of 60 mg/kg, compliant with IW. The duplicate sample also contained elevated copper (85 mg/kg) as compared to the WF guideline.

All other concentrations were reported to be consistent with WF.

9.2.3 Statistical Analysis

Where individual sample concentrations exceeded an assessment criterion, the US EPA's Pro UCL program was used to calculate the 95% upper confidence level (UCL) for comparison to the waste classification maximum criteria, which is accepted by the ASC NEPM. The ASC NEPM recommends the following when applying statistics for comparison of a data set to a single criterion:

- The maximum concentration detected should not exceed the criterion by more than 2.5 times (250%)
- The standard deviation of the data set should not exceed 50% of the criterion
- The mean concentration at the 95% upper confidence level (95% UCL) should be less than the target criterion.

The Pro UCL output is provided in Appendix H and summarised in Table 11.

Table 11 Summary of Statistical Analysis

Analyte	No. Samples	Conc. Range	Waste Class. Maximum			Standard Deviation	95% UCL	Waste Classification Outcome
			WF	IW	LLCW			
			(mg/kg)					
Copper	13	<LOR* - 100	60	2000	7500	27	32	WF

*Limit of Reporting (LOR)

Based on the statistical analysis undertaken, site soils were assessed to be compliant with WF.

10 Data Validation

A quality control / quality assurance (QC/QA) validation assessment was completed for the 2023 assessment to assess the suitability of the soil data for use in this PSI. QA/QC results for the previous assessments can be found in LBWco 2016 and LBWco 2019. The outcomes were that the data was suitable to be relied upon for the purpose of the assessment. This section therefore relates to the 2023 data only.

The relative percentage difference (RPD) for a pair of duplicate concentrations was calculated using the formula:

$$\text{RPD (\%)} = \frac{100(x_1 - x_2)}{X}$$

where x_1, x_2 = duplicate results and X = mean of duplicate results.

According to the ASC NEPM,

- typical RPD values for soil are in the range of $\pm 30\%$
- a RPD within the range was considered to show acceptable agreement and, conversely, data was considered to have relatively poor agreement where a RPD was outside this range.

Generally higher RPD values occur for organic compounds than for metals and where low concentrations of an analyte are recorded. Where one or more samples within a duplicate pair reported a concentration less than five times the LOR, the duplicate pair was considered to demonstrate acceptable precision where the difference between two samples was less than twice the LOR, irrespective of the calculated RPD.

The results of internal laboratory quality control procedures are provided within the laboratory certificates of analysis (Appendix J). The acceptance criterion for internal laboratory replicates was set at an RPD of 30%. Laboratory recoveries should be in the range 50% to 150%.

Table 12 indicates conformance to specific QA/QC requirements for soil analysis (see Appendix I for QA/QC tables).

Table 12 Soil Data Validation

Aspect	Compliant	Comment	Acceptable
Chain of custody documentation completed	Yes	Samples were transported under strict LBWco chain of custody procedures.	Yes
Samples delivered to laboratory within sample holding times and with correct preservative	Yes	Samples were delivered to the laboratories within the sample holding times and in laboratory-supplied containers.	Yes
Analyses NATA accredited	Mostly	% Clay, which informs the EIL criteria from trivalent chromium, was not NATA accredited. As the minimum EIL possible for trivalent chromium is 15 mg/kg, and reported concentrations do not exceed this value, this is not considered to impact interpretation of results. Eurofins and Envirolab were NATA accredited for all the analyses performed.	Yes
Required number of sample duplicates analysed	Yes	One intralaboratory and one interlaboratory duplicate were analysed for 12 primary samples. This complies with the minimum requirements recommended in the ASC NEPM.	Yes
Soil QA/QC samples reported RPDs within limits recommended by the ASC NEPM	Mostly	64 of 67 duplicate pairs reported RPDs within 30%, demonstrating acceptable precision and repeatability. The elevated RPDs for metals and PAH were attributed to heterogeneity within the fill material. The datasets for the metals were within similar ranges and the most conservative value was selected for the assessment. This was not considered to impact interpretation of results.	Yes
Equipment rinsate blank frequency of at least one per day	Yes	A rinsate sample was collected.	Yes
Blank samples contained concentrations below the LOR.	Yes	Chemicals of interest were not reported in the rinsate, demonstrating adequate decontamination of equipment.	Yes
Acceptable laboratory QC results	Yes	QC indicators, including laboratory duplicates, method blanks, laboratory control spikes and matrix spikes were considered acceptable and within the desired range as per the ASC NEPM guidelines.	Yes

Quality control data collected during this investigation indicated that the majority of QA/QC results were within acceptable limits. Accordingly, LBWco considered that the data quality was adequate for the purpose of this investigation.

11 Conceptual Site Model

To enable an assessment to be made of the interrelationships between the identified PCAs, potential sources of contamination, chemicals of interest, transport mechanisms, exposure pathways, receptors and risk, a conceptual site model (CSM) was developed from the desktop and intrusive site assessment information obtained.

Risk from site contamination is determined based on the interrelationship of the following three components:

1. Contaminant source
2. Receptor
3. Pathway from source to receptor

For an unacceptable risk to human health or the environment to exist relative to site contamination, the following must be satisfied:

- a **SOURCE** of contamination of sufficient toxicity to cause harm must be present;
AND
- a complete **PATHWAY** must exist between the source of contamination and a receptor;
AND
- a **RECEPTOR** must be present with potential to be exposed.

Where there is no source OR there is no complete exposure pathway OR there is no receptor, there is no risk associated with exposure to contamination.

A contaminant source for this scenario must be of sufficient concentration/mass that toxicity to a receptor would occur via exposure. Toxicity may be realised via acute (short-term) or chronic (long-term) exposure.

The CSM relative to identified PCAs at or near the site is presented in Table 13 below and presented in Figure 4, Appendix A.

Table 13 CSM – Desktop Assessment of Risk from PCAs

Potentially contaminating activity <i>PD14 Classification</i>	Contaminants of interest (COI)	Area of Interest	Potentially affected media	Pathway(s)	Onsite Receptor(s)	Does complete pathway exist?
Onsite						
Fill or soil importation <i>Not a PCA per PD14</i>	Typical contaminants include metals, PAHs, petroleum hydrocarbons and OCPs	Across entire site surface.	Soil	Direct contact, dust inhalation, ingestion	Current site users Future site users Construction workers Site ecology	Unlikely Laboratory results indicated no source of contaminants. Stockpiles identified onsite were consistent with In-situ material
			Soil Vapour	Soil vapour migration	Current site users Future site users Construction workers	Unlikely As above. No source of volatile chemical substances evident.
			Groundwater	Migration of contaminants	Current site users Future site users Construction workers	Unlikely As above. No source of contamination in fill material with potential to impact groundwater.

Potentially contaminating activity <i>PD14 Classification</i>	Contaminants of interest (COI)	Area of Interest	Potentially affected media	Pathway(s)	Onsite Receptor(s)	Does complete pathway exist?
Adjacent Land						
<i>Land within 60 m of the subject site boundary, per section 3(1) of the PDI Act 2016</i>						
Metal coating, finishing or spray painting <i>Class 1</i> Abrasive blasting <i>Class 2</i>	Hydrocarbons, solvents (including chlorinated hydrocarbons) and heavy metals	42 m north-west of site	Soil vapour and groundwater	Migration of contaminants and soil vapour migration	Current site users Future site users Construction workers	Unlikely Soil vapour assessment across the wider site (LBWco, 2016b) did not identify soil vapour impacts which also indicates that groundwater is unlikely to be impacted with volatile contaminants. Regional groundwater flow is to the south west. Any impacts are unlikely to migrate to the site. Groundwater extraction is not proposed as part of development as the site falls within an EPA designated groundwater prohibition area (GPA).
Plastics manufacture works <i>Class 1</i>	Various, typically including solvents, phthalates	Directly west of site	Soil vapour and groundwater	Migration of contaminants	Current site users Future site users Construction workers	Unlikely Soil vapour assessment across the wider site (LBWco, 2016b) did not identify soil vapour impacts which also indicates that groundwater is unlikely to be impacted with volatile contaminants. Regional groundwater flow is to the south west therefore any impacts are unlikely to migrate to the site. Groundwater extraction is not proposed as part of development as the site falls within an EPA designated GPA.

Potentially contaminating activity <i>PD14 Classification</i>	Contaminants of interest (COI)	Area of Interest	Potentially affected media	Pathway(s)	Onsite Receptor(s)	Does complete pathway exist?
Offsite <i>Activities on land >60 m from the subject site boundary, per section 3(1) of the PDI Act 2016</i>						
Pest control works <i>Class 1</i> Listed substances (Medical waste) <i>Class 1</i> Fuel burning facilities <i>Class 2</i>	Pesticides, termiticides herbicides potentially containing heavy metals and OCPs Biological waste, pathogens TRH, PAHs, heavy metals	Lyell McEwin Hospital. The hospital boundary is 65 m east of site, however the exact location of these activities are unknown and likely to be further.	Soil vapour and groundwater	Migration of contaminants and soil vapour migration	Current site users Future site users Construction workers	Unlikely Soil vapour assessment across the wider site (LBWco, 2016b) did not identify soil vapour impacts which also indicates that groundwater is unlikely to be impacted with volatile contaminants. Groundwater extraction is not proposed as part of development as the site falls within an EPA designated GPA.
Electrical or electronics component manufacture <i>Class 1</i>	Petroleum hydrocarbons, solvents, oils, grease and metals	100 m west of site	Soil vapour and groundwater	Migration of contaminants	Current site users Future site users Construction workers	Unlikely Soil vapour assessment across the wider site (LBWco, 2016b) did not identify soil vapour impacts which also indicates that groundwater is unlikely to be impacted with volatile contaminants. Regional groundwater flow is to the south west therefore any impacts are unlikely to migrate to the site. Groundwater extraction is not proposed as part of development as the site falls within an EPA designated GPA.

Potentially contaminating activity <i>PD14 Classification</i>	Contaminants of interest (COI)	Area of Interest	Potentially affected media	Pathway(s)	Onsite Receptor(s)	Does complete pathway exist?
Service stations <i>Class 1</i>	Petroleum hydrocarbons, PAH, solvents.	250 m west of site	Soil vapour and groundwater	Migration of contaminants	Current site users Future site users Construction workers	Unlikely Soil vapour assessment across the wider site (LBWco, 2016b) did not identify soil vapour impacts which also indicates that groundwater is unlikely to be impacted with volatile contaminants. Regional groundwater flow is to the south west therefore any impacts are unlikely to migrate to the site. The service station is new (March 2022), therefore impacts are considered improbable Groundwater extraction is not proposed as part of development as the site falls within an EPA designated GPA.
Motor vehicle manufacture <i>Class 1</i>	Hydrocarbons, metals, solvents including chlorinated solvents	340 m west	Soil vapour and groundwater	Migration of contaminants	Current site users Future site users Construction workers	Unlikely Soil vapour assessment across the wider site (LBWco, 2016b) did not identify soil vapour impacts which also indicates that groundwater is unlikely to be impacted with volatile contaminants. Regional groundwater flow is to the south west therefore any impacts are unlikely to migrate to the site. Groundwater extraction is not proposed as part of development as the site falls within an EPA designated GPA.

Potentially contaminating activity <i>PD14 Classification</i>	Contaminants of interest (COI)	Area of Interest	Potentially affected media	Pathway(s)	Onsite Receptor(s)	Does complete pathway exist?
Gasworks <i>Class 1</i>	Hydrocarbons, metals, solvents, PAHs, phenols, acids, alkalis, elemental sulphur and cyanides	400 m west	Soil vapour and groundwater	Migration of contaminants	Current site users Future site users Construction workers	<p>Unlikely</p> <p>Soil vapour assessment across the wider site (LBWco, 2016b) did not identify soil vapour impacts which also indicates that groundwater is unlikely to be impacted with volatile contaminants.</p> <p>Regional groundwater flow is to the south west therefore any impacts are unlikely to migrate to the site.</p> <p>Groundwater extraction is not proposed as part of development as the site falls within an EPA designated GPA.</p>

12 Conclusions

12.1 Desktop Review

Based on a desktop review of current and historical information, site inspection and soil assessment, LBWco prepared a summary CSM for PCAs that were identified to have occurred at, adjacent to or near the subject site, summarised below:

- One PCA was identified to have occurred onsite:
 - Fill or soil importation (which is not a prescribed PCA under PD14, but is a prescribed PCA under EPR 2009) – **UNLIKELY** complete SPR linkage.
- Three PCAs were identified to have occurred on adjacent land within 60 m of the subject site, all of which were assessed as **UNLIKELY** to be associated with a complete S-P-R linkage.
 - Metal coating, finishing or spray painting (Class 1)
 - Plastics manufacture works (Class 1)
 - Abrasive blasting (Class 2)
- Seven prescribed PCAs were identified to have occurred at offsite land, distant from the subject site at greater than 60 m, all of which were assessed as **UNLIKELY** to be associated with a complete S-P-R linkage.
 - Pest control works (Class 1)
 - Listed substances (Medical waste) (Class 1)
 - Fuel burning facilities (Class 2)
 - Electrical or electronics component manufacture (Class 1)
 - Service stations (Class 1)
 - Motor vehicle manufacture (Class 1)
 - Gasworks (Class 1)

The site is located at the eastern extent of a designated EPA Groundwater Prohibition Area (GPA) which prohibits the taking of groundwater at the site. Future purchasers of the property will be made aware of this via the Form 1 statement according to Section 7 of the *Land and Business (Sale and Conveyancing) Act 1994*.

12.2 Soil Assessment

- Based on the proposed end use of the site as a Crisis Stabilisation Centre, no unacceptable risks to human health or to ecological receptors were evident within soils at the subject site.
- Site remediation is not required to protect health or ecology and as such, site soils are assessed to be suitable for unrestricted reuse onsite.
- Uncontrolled fill was inferred not to have been observed in the soil bores assessed.
- Soils were assessed to meet the physical and chemical requirements of Waste Fill.

13 Recommendations

A watching Brief should be maintained during earthworks for indications of unexpected contamination. Should suspected impacts be identified, the advice of an Environmental Consultant should be sought.

Soils for disposal, including the small stockpiles identified during the 2023 site inspection must be inspected and assessed against the physical requirements of Waste Fill. The soil must not contain inclusions exceeding 100 mm in length and must not include asbestos, bitumen/asphalt or other non-mineralogical material.

The information provided in this report is subject to the limitations expressed in Section 14. The reader should make themselves aware of the limitations and how they relate to the conclusions provided.

14 Limitations

Scope of Services

This environmental site assessment report ("the report") has been prepared in accordance with the scope of services set out in the contract, or as otherwise agreed, between Greenway Architects and LBW co Pty Ltd (LBWco) ("scope of services"). In some circumstances the scope of services may have been limited by a range of factors such as time, budget, access and/or site disturbance constraints.

Reliance on Data

In preparing the report, LBWco has relied upon data, surveys, analyses, designs, plans and other information provided by Greenway Architects and other individuals and organisations, most of which are referred to in the report ("the data"). Except as otherwise stated in the report, LBWco has not verified the accuracy or completeness of the data. To the extent that the statements, opinions, facts, information, conclusions and/or recommendations in the report ("conclusions") are based in whole or part on the data, those conclusions are contingent upon the accuracy and completeness of the data. LBWco will not be liable in relation to incorrect conclusions should any data, information or condition be incorrect or have been concealed, withheld, misrepresented or otherwise not fully disclosed to LBWco.

Desktop Environmental Conclusions

In accordance with the scope of services, LBWco has relied upon the data and has conducted desktop site history research in the preparation of the report. The nature and extent investigation conducted is described in the report.

No desktop investigation, no matter how thorough, can eliminate the possibility that not all potentially contaminating activities were identified or provide sufficient confidence to determine the suitability of a site for a given use. The conclusions are based only upon the data and information available to LBWco at the time of preparing this report.

Within the limitations imposed by the scope of services, the investigation and preparation of this report have been undertaken and performed in a professional manner, in accordance with generally accepted practices and using a degree of skill and care ordinarily exercised by reputable environmental consultants under similar circumstances. No other warranty, expressed or implied, is made.

Environmental Conclusions

In accordance with the scope of services, LBWco has relied upon the data and has conducted environmental field monitoring and/or testing in the preparation of the report. The nature and extent of monitoring and/or testing conducted is described in the report.

On all sites, varying degrees of non-uniformity of the vertical and horizontal soil or groundwater conditions are encountered. Hence no monitoring, common testing or sampling technique can eliminate the possibility that monitoring or testing results/samples are not totally representative of soil and/or groundwater conditions encountered. The conclusions are based upon the data and the environmental field monitoring and/or testing and are therefore merely indicative of the environmental condition of the site at the time of preparing the report, including the presence or otherwise of contaminants or emissions.

Also, it should be recognised that site conditions, including the extent and concentration of contaminants, can change with time.

Within the limitations imposed by the scope of services, the monitoring, testing, sampling and preparation of this report have been undertaken and performed in a professional manner, in accordance with generally accepted practices and using a degree of skill and care ordinarily exercised by reputable environmental consultants under similar circumstances. No other warranty, expressed or implied, is made.

Report for Benefit of Greenway Architects

The report has been prepared for the benefit of Greenway Architects and no other party. LBWco assumes no responsibility and will not be liable to any other person or organisation for or in relation to any matter dealt with or conclusions expressed in the report, or for any loss or damage suffered by any other person or organisation arising from matters dealt with or conclusions expressed in the report (including without limitation matters arising from any negligent act or omission of LBWco or for any loss or damage suffered by any other party relying upon the matters dealt with or conclusions expressed in the report). Other parties should not rely upon the report or the accuracy or completeness of any conclusions and should make their own enquiries and obtain independent advice in relation to such matters.

Other Limitations

LBWco will not be liable to update or revise the report to take into account any events or emergent circumstances or facts occurring or becoming apparent after the date of the report.

Appendix A

Figures



FIGURE 1

Site Locality Plan

Client: Greenway Architects
 Project: Northern Crisis Stabilisation Centre
 Site: Portion Lot 4711 Oldham Rd, Elizabeth South, SA

Legend

Site boundary



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	Spatial Reference: GDA2020 MGA Zone 54		
	Source: Nearmap.com (5 November 2023)		
Job No	231499	Scale at A3:	1:2,400
Drawn	JC	Rev	0
Approved	<i>Neil Brown</i>	Date	12/12/2023

FIGURE 2

Site Inspection Observations

Client: Greenway Architects
 Project: Northern Crisis Stabilisation Centre
 Site: Portion Lot 4711 Oldham Rd, Elizabeth South, SA

Legend

- Site boundary
- 60 m from site boundary



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	Spatial Reference: GDA2020 MGA Zone 54		
	Source: Nearmap.com (5 November 2023)		
Job No	231499	Scale at A3:	1:800
Drawn	JC	Rev	0
Approved	<i>Neil Brewer</i>	Date	12/12/2023

FIGURE 3

Proposed Development and Soil Bores

Client: Greenway Architects
 Project: Northern Crisis Stabilisation Centre
 Site: Portion Lot 4711 Oldham Rd, Elizabeth South, SA

Legend

- Site boundary
- Soil bore
- 2016
- 2019
- 2023

Note: Site Plan drawn by Greenway Architects. Project No. G21073, dated 6 September 2023.



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	0 20 m		
	Spatial Reference: GDA2020 MGA Zone 54		
	Source: Nearmap.com (5 November 2023)		
Job No	231499	Scale at A3:	1:400
Drawn	JC	Rev	0
Approved	<i>Nick Brown</i>	Date	12/12/2023

Department for Infrastructure and Transport (DIT) | 1 February 2023, Roadmap (map) data as per current information, downloaded 10 February 2023, 09:47 February 2023. Downloaded from the DIT | Data, data as per current information, downloaded 10 February 2023, 09:47 February 2023.

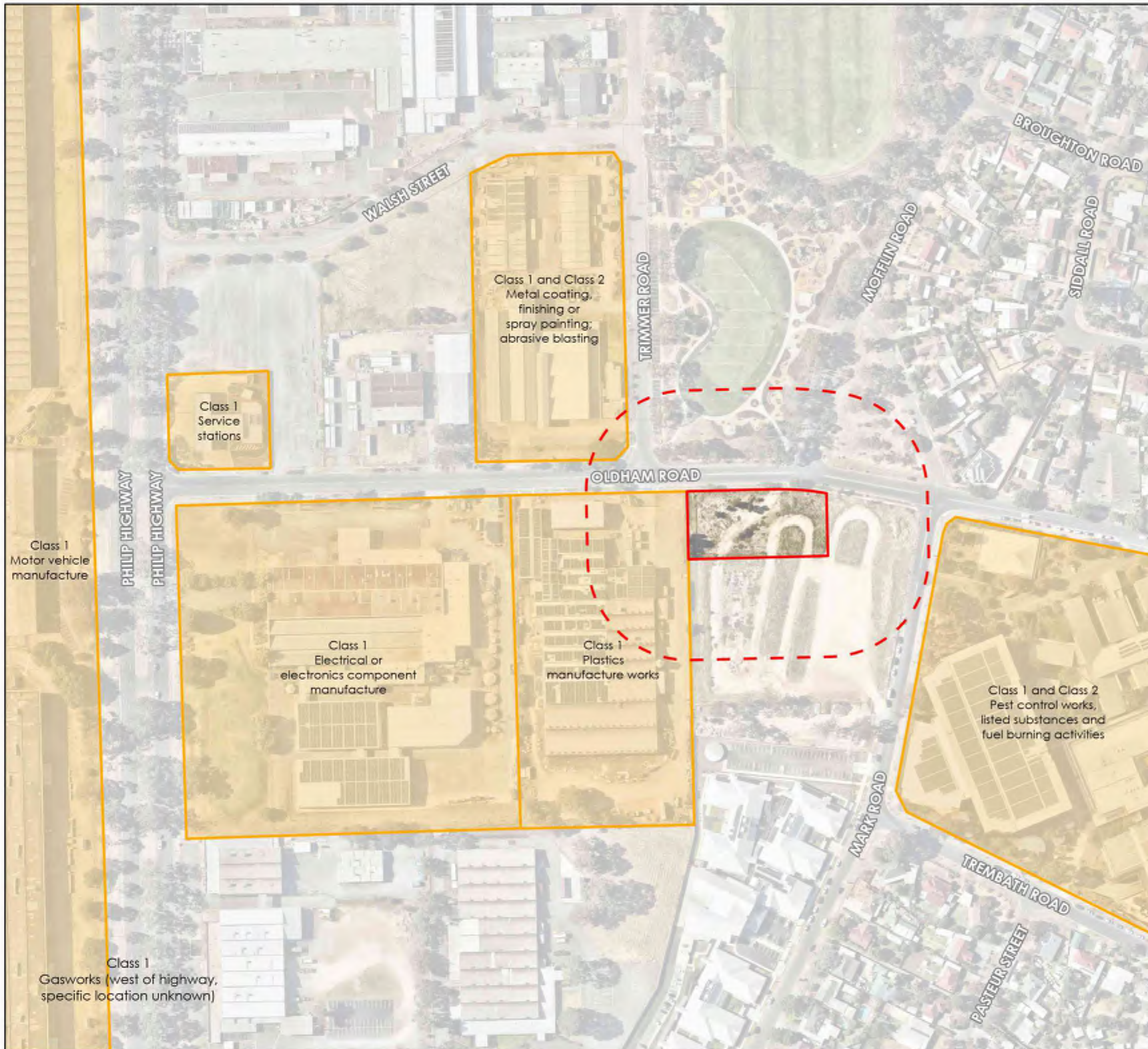
FIGURE 4

Offsite Potentially Contaminating Activities


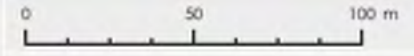
Client: Greenway Architects
 Project: Northern Crisis Stabilisation Centre
 Site: Portion Lot 4711 Oldham Rd, Elizabeth South, SA

Legend

- Site boundary
- 60 m from site boundary
- Offsite PCA



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	Spatial Reference: GDA2020 MGA Zone 54		
	Source: Nearmap.com (5 November 2023)		
Job No	231499	Scale at A3:	1:2,250
Drawn	JC	Rev	0
Approved	<i>Nick Brown</i>	Date	13/12/2023

Department for Infrastructure and Transport (DIT) February 2023. Road signs data as per Victorian Department of Transport, downloaded 11 February 2023. Downloaded from the Victorian Department of Transport, downloaded 11 February 2023. Downloaded from the Victorian Department of Transport, downloaded 11 February 2023. Downloaded from the Victorian Department of Transport, downloaded 11 February 2023.

Appendix B

Certificates of Title

Land Ownership History
Portion Lot 4711 Oldham Road, Elizabeth South, SA
Preliminary Site Investigation Update
231499



CT 6286 / 864 (Current CT)
Allotment 4711, Deposited Plan 130276, Area named Elizabeth South, Hundred of Munno Para
27.06.2023 Title Issued. Registered is Proprietor Minister for Health and Wellbeing.



CT 6275 / 668
27.06.2023 Cancelled to CT 6286 / 864.
07.06.2023 Acquisition registered for Minister of Health and Wellbeing.
07.06.2023 Withdrawal of Registrar-General's Caveat.
06.10.2022 Registrar-General's Caveat lodged.
19.09.2022 Title Issued.



CT 6252 / 257
19.09.2022 Title cancelled to CT 6275 / 668 and CT 6275 / 669 (offsite).
07.09.2022 Certified application for deposit of a plan of division lodged by Aged Car and Housing Group and City of Playford.
27.04.2021 Discharge of Encumbrance
27.04.2021 Transfer to City of Playford
Encumbrance from 2017 by City of Playford continued to apply.
26.03.2021 Title issued.



CT 6109 / 465
26.03.2021 Title cancelled to CT 6252 / 257 and CT 6252 / 258 (offsite).
19.02.2021 Uncertified application for deposit of a plan of division lodged by Aged Care and Housing Group
24.07.2017 Encumbrance lodged by City of Playford.
24.07.2017 Transfer to Aged Care and Housing Group.
16.04.2013 Title issued.



Refer 160796 R01

REAL PROPERTY ACT, 1986



South Australia

The Registrar-General certifies that this Title Register Search displays the records maintained in the Register Book and other notations at the time of searching.



Certificate of Title - Volume 6286 Folio 864

Parent Title(s) CT 6275/668
Creating Dealing(s) AQ 14052633
Title Issued 27/06/2023 **Edition** 1 **Edition Issued** 27/06/2023

Estate Type

FEE SIMPLE

Registered Proprietor

MINISTER FOR HEALTH AND WELLBEING
OF ADELAIDE SA 5000

Description of Land

ALLOTMENT 4711 DEPOSITED PLAN 130276
IN THE AREA NAMED ELIZABETH SOUTH
HUNDRED OF MUNNO PARA

Easements

NIL

Schedule of Dealings

NIL

Notations

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

Certificate of Title

Title Reference: CT 6286/864
Status: CURRENT
Parent Title(s): CT 6275/668
Dealing(s) Creating Title: AQ 14052633
Title Issued: 27/06/2023
Edition: 1

Dealings

No lodged Dealings found.

Certificate of Title

Title Reference: CT 6275/668
Status: CANCELLED
Parent Title(s): CT 6252/257
Dealing(s) Creating Title: RTC 13872881
Title Issued: 19/09/2022
Title Cancelled: 27/06/2023
Child Title(s): CT 6286/864
Edition: 2

Dealings

Lodgement Date	Completion Date	Dealing Number	Dealing Type	Dealing Status	Details
07/06/2023	27/06/2023	14052633	ACQUISITION	REGISTERED	MINISTER FOR HEALTH AND WELLBEING
07/06/2023	27/06/2023	14052632	WITHDRAWAL OF REGISTRAR-GENERAL'S CAVEAT	REGISTERED	13890919
06/10/2022	19/10/2022	13890919	REGISTRAR-GENERAL'S CAVEAT	REGISTERED	

Certificate of Title

Title Reference: CT 6252/257
Status: CANCELLED
Parent Title(s): CT 6109/465
Dealing(s) Creating Title: RTU 13469222
Title Issued: 26/03/2021
Title Cancelled: 19/09/2022
Child Title(s): CT 6275/668, CT 6275/669
Edition: 3

Dealings

Lodgement Date	Completion Date	Dealing Number	Dealing Type	Dealing Status	Details
07/09/2022	19/09/2022	13872881	CERTIFIED APPLICATION FOR DEPOSIT OF A PLAN OF DIVISION	REGISTERED	AGED CARE AND HOUSING GROUP INC., CITY OF PLAYFORD
27/04/2021	04/05/2021	13511701	DISCHARGE OF ENCUMBRANCE	REGISTERED	12767877
27/04/2021	30/04/2021	13511703	TRANSFER	REGISTERED	CITY OF PLAYFORD
24/07/2017	11/08/2017	12767877	ENCUMBRANCE	REGISTERED	CITY OF PLAYFORD

Certificate of Title

Title Reference: CT 6109/465
Status: CANCELLED
Parent Title(s): CT 6100/630
Dealing(s) Creating Title: RTU 11910527, RT 11910528
Title Issued: 16/04/2013
Title Cancelled: 26/03/2021
Child Title(s): CT 6252/257, CT 6252/258
Edition: 2

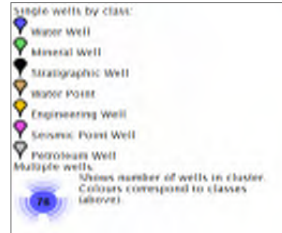
Dealings

Lodgement Date	Completion Date	Dealing Number	Dealing Type	Dealing Status	Details
19/02/2021	26/03/2021	13469222	UNCERTIFIED APPLICATION FOR DEPOSIT OF A PLAN OF DIVISION	REGISTERED	AGED CARE AND HOUSING GROUP INC.
24/07/2017	11/08/2017	12767877	ENCUMBRANCE	REGISTERED	CITY OF PLAYFORD
24/07/2017	11/08/2017	12767876	TRANSFER	REGISTERED	AGED CARE AND HOUSING GROUP INC.

Appendix C

WaterConnect Database Summary

Project Number 231499
 Report Title Preliminary Site Investigation Update
 Site Address Portion Lot 4711, Oldham Rd, Elizabeth South
 Search Date 29-Nov-23



Headings	Class
EC: Electrical conductivity	WW: Water wells
TDS: Total dissolved solids	WP: Waterpoint well
SWL: Standing water level	MW: Monitoring Well
RSWL: Relative standing water level	ENG: Engineering Well
	Strat: Stratigraphic Well

Purpose	Status
APN: Anode Protection	ABD: Abandoned
APP: Appraisal	BKF: Backfilled
ASR: Aquifer Storage and Recovery	CFL: Controlled flowing
CMT: Construction Materials	NL: Not located
COA: Coal	OPR: Operational
DAM: Dam	NOP: Not Operational
DEP: Deepening	UFL: Uncontrolled flowing
DEV: Development	UKN: Unknown
DOM: Domestic	RHB: Rehabilitated
DRN: Drainage	
DWT: Dewatering	
ENV: Environmental	
ETH: Earthing	
EXP: Exploration	
FIR: Fire Fighting	
FND: Foundations	REC: Recharge
GEN: General Usage	RHL: Rock Hole
GTH: Geothermal Energy	RIV: River
HOL: Water Hole	SCI: Scientific
IND: Industrial	SEA: Sea Water
INV: Investigation	SEL: Seismic
IRR: Irrigation	SOK: Soak
LAK: Lake	SPR: Spring
LWD: Liquid Waste Disposal	STK: Stock
MON: Monitoring	TNK: Tank
MWS: Mine Water Supply	TWS: Town Water Supply (Public/Municipal)
OBS: Observation	UKN: Unknown
PRO: Production	WAS: Waste Disposal
RCL: Recreational	
RDC: Road Construction / Maintenance	

Well Search Summary	
Search Radius:	2.0 km
Total number of wells:	339
Onsite wells:	0
Shallow wells (<20m):	136
Closest bore to site (approx 35m north)	6628-18526
Salinity in shallow wells (TDS mg/L)	Min: 69
	Max: 2745
Salinity in deeper wells (TDS mg/L)	Min: 448
	Max: 4233

Unit No.	Class	Purpose	Status	Status Date	Original Drilled Depth	Original Drilled Date	SWL	RSWL	Water Level Date	TDS	EC	EC Date	pH	pH date	Yield	Yield date	mga easting	mga northing	mga zone
6628-16263	WW	ENVRCL	BKF	33953	127	15/12/1992	0	47.4									287442.44	6151694.82	54
6628-21254	WW	INV			59.5	13/06/2003	1	26.4	13/06/2003	600	1090	37785			1	37723	284227.72	6153581.5	54
6628-5135	WW	INV				1/01/1963	3.35	41.65	21/03/1969	460	836	25283	6	25283	2.53	25283	286742.43	6151718.79	54
6628-5143	WW	OBS	OPR	36063	25.91	12/02/1968	5.11	44.77	5/09/2023	777	1410	28578	8.2	28578	0.38		287650.75	6151745.47	54
6628-5142	WW	OBS	NL	36063	12.19	30/01/1968	6.47	43.53	17/09/1997	1061	1920	28578	7.1	28578	0.25	24867	287649.42	6151636.79	54
6628-4975	WW	IRR	OPR		32.46	23/08/1974	6.71	25.29	23/08/1974	605	1100	27269	6.9	27269	6.31	27264	284780.36	6151088.73	54
6628-12948	WW	IRR	OPR		51	5/09/1983	7	27.8	5/09/1983	821	1489	32552	8	32552	5.05	30564	285427.41	6151024.72	54
6628-4976	WW	IRR	BKF	34865	27.43		7.62	27.38	15/08/1963	790	1433	23244			1.52	23238	284533.37	6151254.75	54
6628-4988	WW	IRR	BKF	15342	36.58	1/01/1942	7.62	32.38	26/05/1970	775	1405	21999			2.84	25714	285917.44	6151657.77	54
6628-4986	WW	IRR	BKF				7.77	32.23	18/02/1969	551	1002	25252	6.5	25252	0.51	25252	285405.41	6151209.78	54
6628-5137	WW	DOMIRR	OPR		8.23	43.77	5/03/1963	909	1649	23076					3.79	23075	287375.41	6151566.86	54
6628-5097	WW	IRR	OPR		18.29	1/01/1962	8.84	26.16	3/02/1969	670	1216	25259	7	25259	0.51	25237	285369.38	6150932.69	54
6628-5106	WW	OBS	UKN	36137	45.72	13/03/1969	9.05	27.75	22/04/1992	416	756	27996	8.5	27996			285623.37	6151368.69	54
6628-22489	WW	MON			12	31/10/2005	9.1	20.9	31/10/2005								286083.92	6154421.38	54
6628-4989	WW	IRR	OPR		9.14	1/01/1920	30.86	26/05/1970							1.89	25714	286001.4	6151564.72	54
6628-4990	WW	IRRSTK	OPR		9.14	1/01/1920	30.86	26/05/1970									285858.44	6151500.69	54
6628-4991	WW	IRRSTK			9.14	30.86	30/05/1962								1.14	22796	286063.38	6151597.8	54
6628-5102	WW	IRR	BKF	27985	9.14	30.86	31/03/1967	646	1172	26046	6.5	26046			0.01	26046	285787.4	6151306.7	54
6628-22488	WW	MON			12	31/10/2005	9.2	20.7	31/10/2005								286086.25	6154427.42	54
6628-22490	WW	MON			13	1/11/2005	9.3	20.6	1/11/2005								286090.42	6154425.41	54
6628-32619	WW	MON	OPR	45166	165	15/07/2023	10.26	29.44	5/09/2023	622	1130	45122			3	45122	285805.73	6151537.52	54
6628-5105	WW	OBS	BKF	33287	15.24	28/02/1969	10.45	23.55	12/10/1990	517	940	27996	8.4	27996	1.26	25250	285541.37	6151361.78	54
6628-4971	WW	IRRSTK			10.67	24.33	7/08/1963	890	1615	23230							284836.44	6151357.74	54
6628-5131	WW	INV			1/01/1912	10.67	31.33	31/01/1969									286341.42	6151540.89	54
6628-23420	WW	INV	BKF	43656	13	1/08/2007	11	25.1	1/08/2007								285124.99	6152351.41	54
6628-23555	WW	INV			13	14/01/2008	11	19.6	14/01/2008								285986.42	6154276.05	54
6628-23557	WW	INV			13	16/01/2008	11	19.3	16/01/2008								286072.06	6154309.01	54
6628-23421	WW	INV	BKF	43656	13.5	2/08/2007	11.2	24.9	2/08/2007								285125.03	6152345.04	54
6628-4993	WW	IRR	BKF	35842	40	6/05/1974	11.3	28.7	6/05/1974	757	1372	31621	7.7	31621	5.05	27155	285894.42	6151678.77	54

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Unit No.	Class	Purpose	Status	Status Date	Original Drilled Depth	Original Drilled Date	SWL	RSWL	Water Level Date	TDS	EC	EC Date	pH	pH date	Yield	Yield date	mga easting	mga northing	mga zone
6628-23422	WW	INV			13.5	3/08/2007	11.3	18.3	3/08/2007								286072.56	6154464.73	54
6628-23425	WW		BKF	43656	13.5	7/08/2007	11.3	24.8	7/08/2007								285109.21	6152354.04	54
6628-23426	WW	INV			13.5	8/08/2007	11.3	18.5	8/08/2007								286119.78	6154455.62	54
6628-23427	WW	INV			13	8/08/2007	11.3	18.4	8/08/2007								286089.18	6154459.35	54
6628-23423	WW	INV	BKF	43656	13.5	7/08/2007	11.4	24.8	7/08/2007								285132.94	6152344.78	54
6628-23430	WW	INV			13.5	10/08/2007	11.4	18.2	10/08/2007								286095.25	6154482.02	54
6628-27837	WW	INV			14.8	28/11/2014	11.5	34.8	28/11/2014								287240.5	6153098.86	54
6628-25258	WW	INV			15	28/09/2009	11.6	18.4	28/09/2009								285881.5	6154386.59	54
6628-3089	WW		OPR	20090	137.77	1/01/1928	11.89	21.11	30/11/1955	992	1798	14800			9.47	20423	285633.4	6153905.81	54
6628-25257	WW	INV			15	5/09/2009	11.9	18.1	5/09/2009								285913.98	6154396.78	54
6628-25198	WW	INV			15	12/04/2010	12	18.1	12/04/2010								285903.44	6154361.24	54
6628-25199	WW	INV			15	13/04/2010	12	18.3	13/04/2010								286015.13	6154313.9	54
6628-25213	WW	INV			15	15/04/2010	12	17.9	15/04/2010								285895.49	6154407.45	54
6628-25214	WW	INV			15	14/04/2010	12	18	14/04/2010								285884.33	6154375.23	54
6628-27836	WW	INV			15.4	28/11/2014	12	34	28/11/2014								287200.97	6153088.95	54
6628-25256	WW	INV			15	5/09/2009	12.2	17.8	5/09/2009								285897.37	6154366.1	54
6628-27835	WW	INV			15.5	28/11/2014	12.2	33.8	28/11/2014								287217.02	6153108.08	54
6628-4967	WW	IRR	OPR		34.7	1/01/1950	12.24	23.76	12/02/1969	890	1615	25246	6.5	25246	3.16	25246	284923.42	6151374.76	54
6628-28315	WW				15	14/12/2015	12.8	33.5	14/12/2015								287245.05	6153100.41	54
6628-29036	WW	INV			15	31/05/2017	12.8	32.9	31/05/2017								287194.14	6153106.78	54
6628-18686	WW	INV			18	3/04/1997	12.94	14.46	3/04/1997	2745	4910	35523	7.3	35523			284242.55	6153644.78	54
6628-3082	ENG	FND	UKN	21086	27.43	23/09/1957	12.95	24.05	23/09/1957	1570	2832	21086	7.5	21086			285487.46	6152749.83	54
6628-21257	WW	INV			30	22/05/2003	13	15.8	22/05/2003	1990	3580	37763			0.31	37763	284445.76	6153578.51	54
6628-28314	WW	INV			15	14/12/2015	13	33	14/12/2015								287236.37	6153130.84	54
6628-27308	WW	INV			16.5	3/06/2014	13.5	14.6	3/06/2014								284764.53	6153640.02	54
6628-4995	WW	IRR	OPR	36373	187.5	14/06/1967	13.62	36.38	8/05/1974	740	1342	45184	7.1	33982	25.26	24819	287470.47	6151777.82	54
6628-4945	WW	IRR	BKF	37694	29.87	1/01/1963	13.72	20.28	18/02/1969	899	1630	37574	7.5	31621	1.26	25252	284438.37	6151317.78	54
6628-4954	WW	TWS	BKF	33855	155.4	1/11/1951	13.72	20.97	9/11/1951	485	882	18932			5.6	33855	284784.4	6151827.77	54
6628-4974	WW	IRR					13.72	19.28	7/08/1963								284768.39	6151153.71	54
6628-5130	WW	IRR				1/01/1912	13.72	31.28	31/01/1969	772	1400	26484	6.5	26484	3.79		286302.39	6151426.89	54
6628-5132	WW	IRRSTK	OPR			1/01/1914	13.72	29.28	31/01/1969	641	1165	25234	7.5	25234	3.79	25234	286440.41	6151561.84	54
6628-28316	WW	INV			15	15/12/2015	14	32.4	15/12/2015								287235.32	6153073.32	54
6628-18690	WW	INV			18	3/04/1997	14.16	14.74	3/04/1997	2340	4200	35523	7.4	35523			284637.54	6153479.79	54
6628-4998	WW	IRROBS	OPR	35796	102.11	26/11/1951	14.85	36.22	5/09/2023	911	1653	21058			1.64	21058	287694.78	6151937.49	54
6628-22949	WW	INV			16	21/09/2006	15	13.2	21/09/2006								284406.75	6153581.48	54
6628-22950	WW	INV			30	26/09/2006	15	13.2	26/09/2006								284406.75	6153581.48	54
6628-22951	WW	INV			30	28/06/2006	15	13.2	28/06/2006								284406.75	6153581.48	54
6628-22952	WW	INV			22	22/09/2006	15	13.2	22/09/2006								284406.75	6153581.48	54
6628-22953	WW	INV			20	28/09/2006	15	13.2	28/09/2006								284406.75	6153581.48	54
6628-22954	WW	INV			30	30/09/2006	15	13.2	30/09/2006								284406.75	6153581.48	54
6628-22955	WW	INV			20	3/10/2006	15	13.2	3/10/2006								284406.75	6153581.48	54
6628-22957	WW	INV			20	4/10/2006	15	13.2	4/10/2006								284406.75	6153581.48	54
6628-22959	WW	INV			20	6/10/2006	15	13.2	6/10/2006								284406.75	6153581.48	54
6628-22960	WW	INV			30	8/10/2006	15	13.2	8/10/2006								284406.75	6153581.48	54
6628-5104	WW	OBS	UKN	36137	45.72	13/03/1969	15.07	27.83	14/11/1991	89	161	27996	8.1	27996	1.26	25267	285766.43	6151109.76	54
6628-4977	WW	DOMIRR, STK					15.24	26.76	27/04/1949	585	1064	18015			0.95	18015	285658.38	6151744.74	54
6628-27117	WW	INV			17.5	8/07/2013	15.4	13.1	8/07/2013								284904.75	6153869.49	54
6628-21396	WW		BKF	34863	23.85	26/11/1994	15.85	26.75	26/11/1994	722	1310	34667				286596.37	6151646.14	54	
6628-27116	WW	INV			17	8/07/2013	16	12	8/07/2013								284799.75	6153771.48	54
6628-30336	WW		BKF	43656			16.3	13	10/07/2019								284507.38	6153241.65	54
6628-23812	WW	INV			22.5	15/10/2008	16.8	17.1	15/10/2008								284656.62	6151718.01	54
6628-24553	WW	INV			29	1/10/2008	17	17.1	1/10/2008								284711.41	6151686.1	54
6628-29733	WW		OPR	44743	120.5	7/09/2018	17	11.3	7/09/2018	659	1196	45184			8	43348	284080.74	6153002.51	54
6628-28659	WW	INV	BKF	43656			17.7	15.9	10/07/2019								285082.45	6153161.67	54
6628-20807	WW	MON	BKF	43656	22	21/09/2001	17.8	16.4	10/07/2019								284836.07	6152202.51	54
6628-30333	WW		BKF	43656			17.9	14.4	10/07/2019								285101.38	6153318.21	54
6628-28663	WW	INV	BKF	43656			18	14	10/07/2019								284908.81	6153221.65	54
6628-30360	WW		BKF	43656			18	16	10/07/2019								285267.7	6153348.43	54
6628-5090	WW	IRR	NL	37656	30.48		18.29	16.71	28/11/1969	0	0	37408	6.5	25233	1.5	25535	284908.35	6150973.75	54
6628-5093	WW	INV	ABD		82.3	26/02/1947	18.29	19.71	26/02/1947	135	245	17205			3.16	17233	285159.35	6150795.72	54
6628-5123	WW	IRR	OPR				18.29	24.71	1/01/1962	1038	1880	21461					285730.36	6150959.76	54
6628-28681	WW	INV	BKF	43656			18.6	15.7	10/07/2019								285320.02	6153326.04	54
6628-30361	WW		BKF	43656			18.6	18	10/07/2019								285569.47	6153138.46	54
6628-20805	WW	MON	BKF	43656	21	28/09/2001	18.7	15.2	10/07/2019								285246.95	6153195.2	54
6628-28680	WW	INV	BKF	43656	30	23/09/2016	18.7	15.6	10/07/2019								285320.02	6153325.93	54

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6628-4981	WW	OBS	UKN	36137	45.72	26/03/1969	18.78	25.22	14/11/1991	69	126	27996	8.2	27996	4.55	25288	285726.72	6151630.47	54
6628-28656	WW	INV	BKF	43656	36	13/10/2016	18.8		10/07/2019								285983.23	6152688.24	54
6628-30354	WW		BKF	43656			18.8	16.3	10/07/2019								285204.32	6152994.87	54
6628-20798	WW	MON	BKF	43656	23.25	22/02/2002	18.9	18.3	10/07/2019								285129.02	6151993.16	54
6628-29480	WW	MON			22	16/04/2018	18.9	18.5	16/04/2018						0.2	43206	285293.42	6152236.21	54
6628-29479	WW	MON			22	12/04/2018	19	18.1	12/04/2018						0.2	43202	285218.7	6152184.08	54
6628-30347	WW		BKF	43656			19.1	17.3	10/07/2019								285280.41	6152705.53	54
6628-28654	WW	INV	BKF	43656			19.2	17.4	10/07/2019								285309	6152703.05	54
6628-28669	WW	INV	BKF	43656	24	7/10/2016	19.2	15.4	10/07/2019								285104.51	6152966.41	54
6628-28676	WW	INV	BKF	43656	28	27/09/2016	19.2	14.8	10/07/2019								284944.17	6152919.94	54
6628-29482	WW	MON			22	20/04/2018	19.2	18.7	20/04/2018						0.2	43210	285297.75	6152140.98	54
6628-30340	WW		BKF	43656			19.2	17.4	10/07/2019								285309.01	6152701.9	54
6628-30353	WW		BKF	43656			19.2	16.6	10/07/2019								285165.54	6152844.29	54
6628-29481	WW	MON			22	18/04/2018	19.28	18.52	18/04/2018						0.2	43208	285297.82	6152173.17	54
6628-26143	WW	INV	BKF	43656	23.5	14/12/2010	19.3	17	14/12/2010								285324.08	6152793.49	54
6628-26144	WW	INV	BKF	43656	23.5	15/12/2010	19.3	17	15/12/2010								285322.73	6152849.51	54
6628-26146	WW	INV	BKF	43656	24	23/10/2010	19.3	17.7	23/10/2010								285316.05	6152481.44	54
6628-30334	WW		BKF	43656			19.3	17	10/07/2019								285320.11	6152848.56	54
6628-30335	WW		BKF	43656			19.3	14.6	10/07/2019								285086.97	6153102.87	54
6628-30338	WW		BKF	43656			19.3	17.3	10/07/2019								285313.21	6152694.68	54
6628-30356	WW		BKF	43656			19.3	15.8	10/07/2019								285396.52	6153292.39	54
6628-28671	WW	INV	BKF	43656			19.4	15.5	10/07/2019								285202.82	6153044.29	54
6628-28682	WW	INV	BKF	43656	33	24/08/2016	19.4	16.9	10/07/2019								285327.58	6152860.75	54
6628-28664	WW	INV	BKF	43656	33	11/10/2016	19.5	17.7	10/07/2019								285513.62	6152783.07	54
6628-30346	WW		BKF	43656			19.5	17.5	10/07/2019								285306.12	6152528.43	54
6628-30349	WW		BKF	43656			19.5	17.3	10/07/2019								285332.37	6152668.09	54
6628-26148	WW	INV	BKF	43656	23.5	23/10/2010	19.6	17.2	23/10/2010								285250.33	6152514.36	54
6628-28665	WW	INV	BKF	43656			19.6	17.6	10/07/2019								285513.62	6152782.96	54
6628-30343	WW		BKF	43656			19.6	17.5	10/07/2019								285333.3	6152521.95	54
6628-30344	WW		BKF	43656			19.6	17	10/07/2019								285321.28	6152697.81	54
6628-30352	WW		BKF	43656			19.6	17	10/07/2019								285509.13	6152883.97	54
6628-30345	WW		BKF	43656			19.7	17.4	10/07/2019								285320.55	6152529.96	54
6628-5107	WW	OBS	BKF	33280	91.44	1/03/1969	19.78	16.85	13/02/1979	520	945	27905	7.9	27905			285605.41	6151384.69	54
6628-10989	WW	IRR	BKF	38184	60	28/10/1978	19.8	24.2	16/07/2004	600	1090	37102	7.7	31621	4.42	28791	286018.4	6151723.83	54
6628-26149	WW	INV	BKF	43656	24	24/10/2010	19.8	16.9	24/10/2010								285244.08	6152540.73	54
6628-28661	WW	INV	BKF	43656			19.8	16.6	10/07/2019								285504.74	6153026.58	54
6628-28673	WW	INV	BKF	43656	24.5	5/10/2016	19.8	16.2	10/07/2019								285377.5	6153084.99	54
6628-30339	WW		BKF	43656	32.3	10/07/2019	19.8	17.3	10/07/2019								285341.52	6152531.99	54
6628-30342	WW		BKF	43656			19.8	17.3	10/07/2019								285326.99	6152530.09	54
6628-26142	WW	INV	BKF	43656	23.5	13/12/2010	19.9	15.8	13/12/2010								285331.74	6153078.65	54
6628-30341	WW		BKF	43656			19.9	17.2	10/07/2019								285335.37	6152530.98	54
6628-30359	WW		BKF	43656			20	16.4	10/07/2019								285510.04	6153082.74	54
6628-28684	WW	INV	BKF	43656	22.3	28/09/2016	20.1	16.2	10/07/2019								285501.9	6153222.74	54
6628-20802	WW	MON			23	21/02/2002	20.2	15.9	21/02/2002								285205.76	6152722.5	54
6628-20806	WW	MON			24	21/09/2001	20.3	17.1	21/09/2001								285326.73	6152296.48	54
6628-30337	WW		BKF	43656			20.3	16.4	10/07/2019								285554.19	6152956.43	54
6628-30355	WW		BKF	43656			20.3	17.8	10/07/2019								285580.68	6152721.73	54
6628-30364	WW		BKF	43656			20.3	16.4	10/07/2019								285554.12	6152952.21	54
6628-28678	WW	INV	BKF	43656	33.5	26/09/2016	20.5	18	10/07/2019								285585.95	6152674.77	54
6628-28679	WW	INV	BKF	43656			20.5	18	10/07/2019								285585.95	6152674.88	54
6628-30357	WW		BKF	43656			20.6	17.5	10/07/2019								285659.3	6152780.06	54
6628-30358	WW		BKF	43656			20.7	18.3	10/07/2019								285666.7	6152668.24	54
6628-5103	WW	OBS			203	5/04/1968	20.87	15.42	5/09/2023	666	1210	33695	6.7	33695			285579.44	6151386.75	54
6628-5092	WW	IRROBS	OPR	37956	168.25	25/05/1947	21.34	13.66	3/12/1947	658	1195	40602			3.75	24561	285192.37	6150989.71	54
6628-5099	WW	IRR	BKF		36.58	1/01/1932	21.34	19.66	31/03/1969	460	836	25268	7	25268	1.89	25293	285461.41	6150811.76	54
6628-19038	WW	DOMREC	OPR	37408	30	19/06/1998	22	19.4	19/06/1998	1423	2570	37408					286442.72	6152886.48	54
6628-20801	WW	MON			26	20/02/2002	22	14.8	20/02/2002								285283.77	6152594.47	54
6628-21253	WW	INV			59	17/06/2003	22	6.8	17/06/2003	594	1080	37789			1.5	37789	284450.78	6153551.55	54
6628-18526	WW	INV	OPQ	41509	194	27/05/1997	22.1	18.3	10/07/2019	684	1242	45090			6	35577	285893.53	6152684.67	54
6628-4966	WW	DOMIRR, STK	OPR			1/01/1963	22.86	13.14	13/02/1969	746	1354	25252	7	25252	9.47	25247	284978.4	6151295.69	54
6628-20800	WW	MON			25	19/02/2002	23	13.7	19/02/2002								285292.73	6152646.51	54
6628-28657	WW	INV	BKF	43656	27	13/10/2016	23.8	18	10/07/2019								285983.23	6152688.13	54
6628-5139	WW	DOMIRR, STK			19.2		23.91	23.09	31/01/1973	605	1100	26695	7	26695	1.26	17899	287213.4	6151688.86	54
6628-4973	WW	IRR					24.38	10.62	12/02/1969	551	1002	25221	6	25221	1.64	23229	284707.41	6151328.75	54
6628-5091	WW	IRR	OPR		30.48	1/01/1963	24.38	10.62	7/08/1963	641	1165	25233	7	25233	1.26	25204	284937.41	6150968.77	54
6628-20799	WW	MON			27	19/02/2002	25	11.9	19/02/2002								285336.71	6152626.56	54
6628-4996	WW	OBS	OPR	36063	182.88	7/09/1967	33.47	16.15	5/09/2023	484	880	27905	9.9	27905	2.53	24722	287509.77	6151781.5	54

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6628-7010	WW	OBS	OPR		36063	78.64	2/04/1968	33.78	16.15	5/09/2023	1832	3300	28832	11.5	28832		287630.51	6151785.29	54	
6628-3093	WW	OBS	NL		36063	125.5	12/07/1977	34.21	13.09	11/06/2002	2795	5000	28318	11.5	28318	1	28318	287266.38	6153738.83	54
6628-22432	WW	IRR	OPR		42615	157	21/03/2006	40	14.3	21/03/2006	754	1368	45184		12.5	38797	287059.77	6151341.47	54	
6628-3077	WW		DRY		14611		1/01/1940										285353.44	6152584.78	54	
6628-3079	ENG	FND	ABD		23294	27.43	10/10/1963										284897.41	6152400.76	54	
6628-3080	ENG	FND	ABD		23295	15.24	11/10/1963										284773.44	6152397.75	54	
6628-3081	ENG	FND	ABD		20842	15.24	22/01/1957										285959.33	6154388.85	54	
6628-3083	ENG	FND	UKN		21093	18.29	30/09/1957				1701	3067	21093				285451.45	6152871.85	54	
6628-3084	ENG	FND	ABD		21094	6.1	1/10/1957										285346.44	6152821.79	54	
6628-3086	ENG	FND	ABD		20786	14.94	27/11/1956										286537.45	6152692.8	54	
6628-3087	WW		UKN														286975.46	6152924.81	54	
6628-3088	WW		ABD														285500.43	6153623.8	54	
6628-3103	ENG	FND	ABD		22538	5.49	14/09/1961										285902.39	6154059.68	54	
6628-3106	WW		ABD		31210												287331.35	6152921.83	54	
6628-3117	WW		ABD		23538												287405.39	6153146.84	54	
6628-4940	WW	IRR									790	1433	22776		0.63		284699.37	6151730.77	54	
6628-4947	WW	IRR															284398.4	6151967.78	54	
6628-4948	WW	IRR	BKF	38310	18.29	8/07/1940					1154	2090	37408	6.8	33667	1.26	25252	284631.38	6151649.71	54
6628-4950	WW		INV														284630.4	6151769.78	54	
6628-4952	WW	IRRSTK	OPR			33.22	30/09/1955				740	1344	20362		2.53	20362	284694.41	6151672.72	54	
6628-4953	WW	STK	ABD								1508	2722	14800		0.38	14800	284298.42	6152199.72	54	
6628-4955	WW, ENG	EXP	UKN		23302	27.43	18/10/1963				1035	1874	23301				284943.4	6152200.73	54	
6628-4956	WW, ENG	EXP	UKN		23305	15.24	21/10/1963										284786.42	6152218.7	54	
6628-4958	WW, ENG	EXP	UKN		28142	15	17/01/1977										285099.37	6151641.8	54	
6628-4959	WW, ENG	EXP	UKN		28150	10.05	25/01/1977										285097.44	6151645.75	54	
6628-4960	WW, ENG	EXP	UKN		28143	10.45	18/01/1977										285068.41	6151782.69	54	
6628-4961	WW, ENG	EXP	UKN		28145	10	20/01/1977										285194.38	6151797.73	54	
6628-4962	WW, ENG	EXP	UKN		28149	10.05	24/01/1977										285209.44	6151654.69	54	
6628-4963	WW, ENG	EXP	UKN		28151	10	26/01/1977										285268.38	6151711.78	54	
6628-4964	WW, ENG	EXP	UKN		28152	10	27/01/1977										285393.38	6151846.77	54	
6628-4965	WW	DOMIRR, STK	BKF		23228										5.05	23228	285154.41	6151414.79	54	
6628-4968	WW	DOMIRR, STK													2.53		284667.36	6151423.7	54	
6628-4969	WW	INV					1/01/1962										285043.39	6151246.71	54	
6628-4970	WW	INV	BKF														285024.42	6151344.71	54	
6628-4972	WW	IRR	OPR			45.72	1/01/1950				540	982	23230		3.28	23230	284973.41	6151136.75	54	
6628-4978	WW	IRRSTK									562	1022	18015		3.79	18015	285414.36	6151634.73	54	
6628-4979	WW	IRR									815	1478	21625		12.63		285622.45	6151482.76	54	
6628-4980	WW	IRR	OPR								680	1234	23481		13.89	21599	285391.41	6151432.75	54	
6628-4982	WW	INV				31.09	14/07/1972				768	1392	31792	7.2	31792	9.47	26494	285579.37	6151487.75	54
6628-4983	WW	IRR	OPR			37932	1/03/1962				455	827	40939	8.1	31621		285359.74	6151196.5	54	
6628-4984	WW	IRR	BKF			22992	1/01/1946				636	1156	22992				285394.38	6151136.71	54	
6628-4985	WW	IRR	DRY			44742	1/01/1961				1750	3154	25252	6	25252		285250.74	6151160.52	54	
6628-4987	WW	IRR	UEQ			44917	29.26	25/11/1971			672	1220	26262	7	26262	6.31	26262	285421.36	6151130.79	54
6628-4992	WW	INV	ABD														286113.46	6151669.88	54	
6628-4994	WW	IRRSTK	OPR														287308.45	6151887.83	54	
6628-4997	WP										882	1600	27747	8.6	27747		287213.47	6151764.77	54	
6628-5001	WW	IRR													1.26		287691.48	6151774.82	54	
6628-5003	WW	IRR	ABD			65.53	1/11/1949				1015	1838	21058		2.53	23531	287696.42	6152040.85	54	
6628-5094	WW	INV									551	1002	25234	6.5	25234		285576.43	6151079.7	54	
6628-5095	WW	IRR	UEQ			44917					448	815	38478	6.5	26484	3.79	25238	285498.44	6151132.7	54
6628-5096	WW	INV					1/01/1962				740	1344	22992				285226.41	6150779.75	54	
6628-5098	WW					36.27	13/09/1962										285461.42	6151007.76	54	
6628-5100	WW	INV															285689.37	6151181.77	54	
6628-5101	WW	IRR	OPR								981	1778	22993		1.89	22647	285589.36	6151314.73	54	
6628-5108	WW, ENG	INV				7.92											285550.4	6151390.74	54	
6628-5109	WW	IRR	OPR			60.6	27/09/1976				594	1080	34654	6.5	34654	4	28023	285755.4	6151323.71	54
6628-5122	WW	DOMIRR, STK	OPR								1054	1909	14983		1.26	14983	286061.36	6150692.78	54	
6628-5133	WW	IRR	BKF			36132	22.86	1/01/1928			580	1055	25233	7	25233	1.52	22647	285882.36	6151346.75	54
6628-5134	WW	IRR	BKF														286648.44	6151691.86	54	
6628-5136	WW	DOMIRR, STK									791	1434	18015				287229.39	6151563.81	54	
6628-5138	WW	INV															287296.39	6151387.79	54	
6628-5140	WW	IRRSTK	OPR								811	1471	18015		2.53	18015	287074.41	6151547.8	54	
6628-5141	WW	INV				45.72	1/01/1966				670	1216	25283	6.5	25283	2.53	24473	287305.41	6151579.78	54
6628-5144	WP	OBS									1980	3562	28578	12.1	28578		287548.43	6151741.77	54	
6628-5145	WW, ENG	OBS	ABD			7.62											287570.44	6151728.85	54	
6628-9483	WW	IRR	OPR			37574	60	4/04/1978			651	1182	43040	7.6	28588		285541.7	6150978.56	54	
6628-10967	WW	INV OBS	OPR			29011	62	5/06/1979			4233	7500	29011	7.9	29011		287266.38	6153738.83	54	

WaterConnect Groundwater Database Records



Unit No.	Class	Purpose	Status	Status Date	Original Drilled Depth	Original Drilled Date	SWL	RSWL	Water Level Date	TDS	EC	EC Date	pH	pH date	Yield	Yield date	mga easting	mga northing	mga zone
6628-10974	WW		BKF	34865	24	21/06/1979				739	1340	31792	7.7	31792	2.5	29027	286318.45	6151433.81	54
6628-10975	WW	OBS	OPR	29019	42	13/06/1979				2376	4262	29019	7.4	29019			285182.41	6153749.9	54
6628-11297	WW	OBS			8.5	17/12/1979				938	1700	29250	7.9	29250			287450.44	6151661.82	54
6628-11298	WW	OBS			15	4/01/1980				961	1740	29250	7.7	29250			287450.44	6151661.82	54
6628-11307	WW	OBS			25	21/01/1980				745	1351	29299	7.7	29299			284784.42	6151067.74	54
6628-11308	WW	OBS			20	14/01/1980				761	1380	29234	7.3	29234			286550.41	6151680.81	54
6628-11309	WW	OBS			25	25/01/1980				912	1652	29276	7.9	29276			286460.43	6151334.78	54
6628-11314	WW	OBS			23	8/01/1980				2624	4700	29228	7	29228			287150.45	6151317.82	54
6628-11319	WW	OBS			20	4/01/1980				816	1480	29224	7.4	29224			285746.37	6151266.78	54
6628-11324	WW	OBS			15	19/12/1979				790	1432	33662	8.1	33662			287433.45	6151758.87	54
6628-11328	WW	OBS			30	1/02/1980				1800	3242	29252	7.3	29252			284339.41	6151791.7	54
6628-11331	WW	OBS			19.5	8/01/1980				705	1280	29227	7.8	29227			285768.37	6151415.68	54
6628-11340	WW	OBS			20	11/01/1980				938	1700	29231	8.2	29231			285609.44	6150677.7	54
6628-11341	WW	OBS			38	2/02/1980											287621.46	6152295.82	54
6628-11342	WW	OBS			29	21/02/1980											287308.47	6152413.78	54
6628-11343	WW	OBS			25	8/02/1980				2058	3700	29259	7.6	29259			286496.42	6152301.85	54
6628-11344	WW	OBS			30	7/02/1980				1049	1900	29256	7.1	29256			285409.43	6151747.7	54
6628-11345	WW	OBS			30	4/02/1980				1021	1850	29255	7.5	29255			285652.39	6151942.71	54
6628-11346	WW	OBS			25	5/03/1980				827	1500	29285	7.6	29285			285560.39	6151433.7	54
6628-11347	WW	OBS			19.4	10/01/1980											285607.41	6151200.73	54
6628-11577	WW	OBS			24	11/01/1980				938	1700	29231	7.5	29231			287513.41	6151893.79	54
6628-11752	WW	IRR			30	27/05/1978				799	1450	28608	8.2	28608	2.5	28637	285419.42	6151217.76	54
6628-13931	WW	INV OBS	OPR	29011	62	5/06/1979				640	1162	29011	8.7	29011			287266.38	6153738.83	54
6628-18676	WW	OBS			19	16/12/1996				2205	3960	35415	7.5	35415			284627.54	6153499.75	54
6628-18677	WW	OBS			20	16/12/1996				2391	4290	35415	7.5	35415			284517.54	6153564.76	54
6628-18678	WW	OBS			20	17/12/1996				2352	4220	35416	7.6	35416			284507.5	6153539.78	54
6628-18679	WW	OBS			23	17/12/1996				2510	4500	35416	7.5	35416			284472.49	6153504.78	54
6628-18680	WW	OBS			19	18/12/1996				2499	4480	35417	7.4	35417			284457.49	6153554.7	54
6628-18681	WW	OBS			19	18/12/1996				2778	4970	35417	7.6	35417			284457.57	6153629.73	54
6628-18682	WW	OBS			18	18/12/1996				2567	4600	35417	7.3	35417			284432.56	6153574.76	54
6628-18683	WW	OBS			23	18/12/1996				2426	4350	35418	7.4	35418			284402.55	6153529.77	54
6628-18684	WW	OBS			2409	4320				2409	4320	35417	7.4	35417			284382.52	6153559.71	54
6628-18685	WW	OBS			22	18/12/1996				2364	4240	35417	7.5	35417			284377.51	6153624.75	54
6628-18691	WW	OBS			19	16/12/1996				2182	3920	35415	7.4	35415			284632.54	6153544.71	54
6628-19221	WW	ENVRCL			45.6	7/12/1998				617	1120	36203			2	36133	285882.56	6151314.68	54
6628-20937	WW	MON															284239.89	6153617.3	54
6628-20940	WW	MON			21.5	24/09/2002											284266.08	6153695.94	54
6628-21426	WW	MON			23.6	2/09/2003											285568.53	6153351.48	54
6628-22956	WW	INV			30	4/10/2006											284406.75	6153581.48	54
6628-22958	WW	INV			30	16/10/2006											284406.75	6153581.48	54
6628-23198	WW	INV			6	8/01/2008											285362.73	6154409.47	54
6628-23424	WW		BKF	43656	13.5	8/08/2007											285130.79	6152408.98	54
6628-23428	WW	INV			13.3	7/08/2007											286085.84	6154461.15	54
6628-23429	WW	INV			13	8/08/2007											286082.6	6154462.63	54
6628-23553	WW	INV			13	22/01/2008											285973.04	6154315.7	54
6628-23554	WW	INV			13	15/01/2008											285934.84	6154334.78	54
6628-23556	WW	INV			13	21/01/2008											286162.69	6154390.91	54
6628-24554	WW				29	1/10/2008											284671.12	6151732.33	54
6628-25170	WW	INV			16	16/03/2010											284437.36	6153565.55	54
6628-25171	WW	INV			23.5	14/04/2010											284432.86	6153569.88	54
6628-25172	WW	INV			31	11/04/2010											284432.06	6153564.54	54
6628-25173	WW	INV			13	18/04/2010											284439.28	6153541.96	54
6628-25174	WW	INV			26	16/04/2010											284443.51	6153541.28	54
6628-25254	WW	INV			14	30/07/2009											286069.07	6154303.39	54
6628-25255	WW	INV			15	29/07/2009											285942.21	6154344.83	54
6628-26048	WW				24	9/09/2011											285087.39	6153099.19	54
6628-26141	WW	INV			23.4	12/11/2010											285278.61	6152580.14	54
6628-26145	WW	INV			23.8	21/10/2010											285303.43	6152556.75	54
6628-26313	WW	INV			23.5	12/11/2010											285236.7	6152582.27	54
6628-26458	WW	INV			15.7	2/07/2012											287289.78	6151312.95	54
6628-27114	WW	INV	BKF	41466	20	11/07/2013											284849.75	6153823.48	54
6628-27115	WW	INV	BKF	41465	20	10/07/2013											284866.76	6153797.46	54
6628-27118	WW				17.5	9/07/2013											284914.75	6153833.54	54
6628-27209	WW		OPR	44743													285180.7	6150983.56	54
6628-27274	WW		BKF	40722													285861.46	6151347.71	54
6628-28652	WW	INV															285345.86	6153522.31	54
6628-28653	WW	INV															285345.77	6153522.2	54

WaterConnect Groundwater Database Records



Unit No.	Class	Purpose	Status	Status Date	Original Drilled Depth	Original Drilled Date	SWL	RSWL	Water Level Date	TDS	EC	EC Date	pH	pH date	Yield	Yield date	mga easting	mga northing	mga zone
6628-28655	WW	INV			22	14/10/2016											284802.62	6152857.8	54
6628-28658	WW	INV															285082.54	6153161.68	54
6628-28660	WW	INV	BKF	43656	32.5	12/10/2016											285504.74	6153026.58	54
6628-28662	WW	INV			29	11/10/2016											284908.81	6153221.76	54
6628-28666	WW	INV			27.2	10/10/2016											285983.23	6152688.24	54
6628-28667	WW	INV															285983.23	6152688.13	54
6628-28668	WW	INV			33	7/10/2016											285104.51	6152966.41	54
6628-28670	WW	INV			29.5	6/10/2016											285202.82	6153044.29	54
6628-28672	WW	INV			32	5/10/2016											285377.5	6153084.99	54
6628-28674	WW	INV			34.7	4/10/2016											285116.22	6152817.97	54
6628-28675	WW	INV	BKF	43656	27.2	4/10/2016											285116.22	6152817.97	54
6628-28677	WW	INV															284944.17	6152919.82	54
6628-28683	WW	INV															285327.58	6152860.86	54
6628-28685	WW	INV			28	28/09/2016											285501.9	6153222.74	54
6628-28860	WW	INV			25	5/07/2017											284669.73	6153736.47	54
6628-28862	WW	INV			25	5/07/2017											284669.73	6153736.47	54
6628-28886	WW	MON			20	20/06/2017									0.3	42905	284594.07	6153723.93	54
6628-28888	WW	MON			19	22/06/2017									0.3	42907	284812.73	6153690.54	54
6628-28890	WW	MON			19	22/06/2017									0.2	42908	284968.79	6153736.47	54
6628-29230	WW	INV			18	12/10/2017											284422.71	6153052.57	54
6628-29231	WW	INV			22	5/12/2017											285291.38	6152209.97	54
6628-29232	WW	INV			22	6/12/2017											285248.65	6152184.23	54
6628-29285	WW	INV			20	23/01/2018											284571.78	6153177.48	54
6628-29286	WW	INV			20	23/01/2018											284500.73	6153214.55	54
6628-29502	WW	INV			18	26/02/2018											285388.37	6153011.77	54
6628-29503	WW	INV	DRY	43156	18	25/02/2018			25/02/2018								285332.24	6152865.07	54
6628-29504	WW	INV	DRY	43155	18	24/02/2018			24/02/2018								285347.11	6153013.03	54
6628-29505	WW	INV	DRY	43154	18	23/02/2018			23/02/2018								285238.8	6152903.96	54
6628-29506	WW	INV			20	22/02/2018											285093.5	6152967.15	54
6628-29507	WW	INV	DRY	43158	18	27/02/2018			27/02/2018								285395.62	6153054.12	54
6628-29686	WW	INV			15	5/06/2018											287173.31	6153108.51	54
6628-29687	WW	INV			15	6/06/2018											287167.07	6153093.05	54
6628-29688	WW	INV			15	4/06/2018											287238.03	6153063.06	54
6628-29689	WW	INV			15	7/06/2018											287295	6153103.23	54
6628-30350	WW		BKF	43656	19.4	10/07/2019											285322.84	6152917.95	54
6628-30351	WW		BKF	43656													285322.1	6152916.43	54
6628-30362	WW		BKF	43656													285823.73	6152855.29	54
6628-30363	WW		BKF	43656	21.3	10/07/2019											284504.1	6153244.43	54
6628-30561	WW	INV			18	25/11/2019			25/11/2019								284802.13	6153755.01	54
6628-30562	WW	INV			19	26/11/2019			26/11/2019								284889.84	6153725.42	54
6628-30563	WW	INV			19	27/11/2019			27/11/2019								284856.74	6153638.22	54
6628-31214	WW	INV	BKF	44206	60	10/01/2021											284789.73	6153688.52	54
6628-31255	WW	INV			22	18/03/2021											285236.74	6152254.51	54
6628-31402	WW	INV			19	23/04/2021											287142.73	6153115.52	54



Appendix D

Historical Aerials

March 2016 Historical Aerial

Client: Greenway Architects
Project: Northern Crisis Stabilisation Centre
Site: Portion Lot 4711 Oldham Rd, Elizabeth South, SA

Legend

-  Site boundary
-  60 m from site boundary



low CO | DELIVERING
ENVIRONMENTAL
SOLUTIONS



0 40 m

Spatial Reference: GDA2020 MGA Zone 54



Source: Nearmap.com (15 March 2016)

Job No	231499	Scale at A3:	1:800
Drawn	JC	Rev	0
Approved	<i>Nick Jones</i>	Date	5/12/2023

January 2017 Historical Aerial

Client: Greenway Architects
Project: Northern Crisis Stabilisation Centre
Site: Portion Lot 4711 Oldham Rd, Elizabeth South, SA

Legend

-  Site boundary
-  60 m from site boundary



low CO | DELIVERING
ENVIRONMENTAL
SOLUTIONS



0 40 m

Spatial Reference: GDA2020 MGA Zone 54

Source: Nearmap.com (21 January 2017)



Job No	231499	Scale at A3:	1:800
Drawn	JC	Rev	0
Approved	<i>Nick Jones</i>	Date	5/12/2023

January 2018

Historical Aerial

Client: Greenway Architects
Project: Northern Crisis Stabilisation Centre
Site: Portion Lot 4711 Oldham Rd, Elizabeth South, SA

Legend

-  Site boundary
-  60 m from site boundary



low CO | DELIVERING ENVIRONMENTAL SOLUTIONS



0 40 m

Spatial Reference: GDA2020 MGA Zone 54



Source: Nearmap.com (16 January 2018)

Job No	231499	Scale at A3:	1:800
Drawn	JC	Rev	0
Approved	<i>Nick Jones</i>	Date	5/12/2023

July 2018 Historical Aerial

Client: Greenway Architects
Project: Northern Crisis Stabilisation Centre
Site: Portion Lot 4711 Oldham Rd, Elizabeth South, SA

Legend

-  Site boundary
-  60 m from site boundary



low CO | DELIVERING ENVIRONMENTAL SOLUTIONS



0 40 m

Spatial Reference: GDA2020 MGA Zone 54



Source: Nearmap.com (3 July 2018)

Job No	231499	Scale at A3:	1:800
Drawn	JC	Rev	0
Approved	<i>Nick Brown</i>	Date	5/12/2023

January 2019 Historical Aerial

Client: Greenway Architects
Project: Northern Crisis Stabilisation Centre
Site: Portion Lot 4711 Oldham Rd, Elizabeth South, SA

Legend

-  Site boundary
-  60 m from site boundary



low CO | DELIVERING
ENVIRONMENTAL
SOLUTIONS



0 40 m

Spatial Reference: GDA2020 MGA Zone 54



Source: Nearmap.com (28 January 2019)

Job No	231499	Scale at A3:	1:800
Drawn	JC	Rev	0
Approved	<i>Nick Brown</i>	Date	5/12/2023

February 2020 Historical Aerial

Client: Greenway Architects
Project: Northern Crisis Stabilisation Centre
Site: Portion Lot 4711 Oldham Rd, Elizabeth South, SA

Legend

-  Site boundary
-  60 m from site boundary



low CO | DELIVERING
ENVIRONMENTAL
SOLUTIONS



0 40 m

Spatial Reference: GDA2020 MGA Zone 54



Source: Nearmap.com (4 February 2020)

Job No	231499	Scale at A3:	1:800
Drawn	JC	Rev	0
Approved	<i>Nick Brown</i>	Date	5/12/2023

January 2021 Historical Aerial

Client: Greenway Architects
Project: Northern Crisis Stabilisation Centre
Site: Portion Lot 4711 Oldham Rd, Elizabeth South, SA

Legend

-  Site boundary
-  60 m from site boundary



low CO | DELIVERING
ENVIRONMENTAL
SOLUTIONS



0 40 m

Spatial Reference: GDA2020 MGA Zone 54

Source: Nearmap.com (7 January 2021)

Job No	231499	Scale at A3:	1:800
Drawn	JC	Rev	0
Approved	<i>Nick Brown</i>	Date	5/12/2023



January 2022



Historical Aerial

Client: Greenway Architects
 Project: Northern Crisis Stabilisation Centre
 Site: Portion Lot 4711 Oldham Rd, Elizabeth South, SA

Legend

- Site boundary
- 60 m from site boundary



low CO | DELIVERING ENVIRONMENTAL SOLUTIONS

			
	Spatial Reference: GDA2020 MGA Zone 54		
	Source: Nearmap.com [26 January 2022]		
Job No	231499	Scale at A3:	1:800
Drawn	JC	Rev	0
Approved	<i>Nick Jones</i>	Date	5/12/2023

February 2023 Historical Aerial


Client: Greenway Architects
Project: Northern Crisis Stabilisation Centre
Site: Portion Lot 4711 Oldham Rd, Elizabeth South, SA

Legend

-  Site boundary
-  60 m from site boundary





low CO | DELIVERING ENVIRONMENTAL SOLUTIONS

	0 40 m		
	Spatial Reference: GDA2020 MGA Zone 54		
	Source: Nearmap.com (6 February 2023)		
Job No	231499	Scale at A3:	1:800
Drawn	JC	Rev	0
Approved	<i>Nick Brown</i>	Date	5/12/2023

November 2023 Historical Aerial

Client: Greenway Architects
Project: Northern Crisis Stabilisation Centre
Site: Portion Lot 4711 Oldham Rd, Elizabeth South, SA

Legend

-  Site boundary
-  60 m from site boundary



low CO | DELIVERING
ENVIRONMENTAL
SOLUTIONS



0 40 m

Spatial Reference: GDA2020 MGA Zone 54

Source: Nearmap.com (5 November 2023)

Job No	231499	Scale at A3:	1:800
Drawn	JC	Rev	0
Approved	<i>Nick Jones</i>	Date	5/12/2023

Appendix E

EPA Section 7



Environment Protection Authority
GPO Box 2607 Adelaide SA 5001
211 Victoria Square Adelaide SA 5000
T (08) 8204 2004
Country areas 1800 623 445

Receipt No :
Admin No : 125352 (82464)

LBW Co
184 Magill Road
NORWOOD SA 5067

Contact: Section 7
Telephone: (08) 8204 2026
Email: epasection7@sa.gov.au

Contact: Public Register
Telephone: (08) 8204 9128
Email: epa.publicregister@sa.gov.au

27 November, 2023

EPA STATEMENT TO FORM 1 - CONTRACTS FOR SALE OF LAND OR BUSINESS

The EPA provides this statement to assist the vendor meet its obligations under section 7(1)(b) of the *Land and Business (Sale and Conveyancing) Act 1994*. A response to the questions prescribed in Schedule 1-Contracts for sale of land or business-forms (Divisions 1 and 2) of the *Land and Business (Sale and Conveyancing) Act 1994* is provided in relation to the land.

I refer to your enquiry concerning the parcel of land comprised in

Title Reference CT Volume 6286 Folio 864
Address Allotment 4711 (D130276), Oldham Road, ELIZABETH SOUTH SA 5112

Schedule – Division 1 – *Land and Business (Sale and Conveyancing) Regulations 2010*

PARTICULARS OF MORTGAGES, CHARGES AND PRESCRIBED ENCUMBRANCES AFFECTING THE LAND

8. *Environment Protection Act 1993*

Does the EPA hold any of the following details relating to the *Environment Protection Act 1993*:

8.1	Section 59 - Environment performance agreement that is registered in relation to the land.	NO
8.2	Section 93 - Environment protection order that is registered in relation to the land.	NO
8.3	Section 93A - Environment protection order relating to cessation of activity that is registered in relation to the land.	NO
8.4	Section 99 - Clean-up order that is registered in relation to the land.	NO
8.5	Section 100 - Clean-up authorisation that is registered in relation to the land.	NO
8.6	Section 103H - Site contamination assessment order that is registered in relation to the land.	NO
8.7	Section 103J - Site remediation order that is registered in relation to the land.	NO

8.8	Section 103N - Notice of declaration of special management area in relation to the land (due to possible existence of site contamination).	NO
8.9	Section 103P - Notation of site contamination audit report in relation to the land.	NO
8.10	Section 103S - Notice of prohibition or restriction on taking water affected by site contamination in relation to the land.	YES

Schedule – Division 2 – Land and Business (Sale and Conveyancing) Regulations 2010

PARTICULARS RELATING TO ENVIRONMENT PROTECTION

3-Licences and exemptions recorded by EPA in public register

Does the EPA hold any of the following details in the public register:

a)	details of a current licence issued under Part 6 of the <i>Environment Protection Act 1993</i> to conduct any prescribed activity of environmental significance under Schedule 1 of that Act at the land?	NO
b)	details of a licence no longer in force issued under Part 6 of the <i>Environment Protection Act 1993</i> to conduct any prescribed activity of environmental significance under Schedule 1 of that Act at the land?	NO
c)	details of a current exemption issued under Part 6 of the <i>Environment Protection Act 1993</i> from the application of a specified provision of that Act in relation to an activity carried on at the land?	NO
d)	details of an exemption no longer in force issued under Part 6 of the <i>Environment Protection Act 1993</i> from the application of a specified provision of that Act in relation to an activity carried on at the land?	NO
e)	details of a licence issued under the repealed <i>South Australian Waste Management Commission Act 1979</i> to operate a waste depot at the land?	NO
f)	details of a licence issued under the repealed <i>Waste Management Act 1987</i> to operate a waste depot at the land?	NO
g)	details of a licence issued under the repealed <i>South Australian Waste Management Commission Act 1979</i> to produce waste of a prescribed kind (within the meaning of that Act) at the land?	NO
h)	details of a licence issued under the repealed <i>Waste Management Act 1987</i> to produce prescribed waste (within the meaning of that Act) at the land?	NO

4-Pollution and site contamination on the land - details recorded by the EPA in public register

Does the EPA hold any of the following details in the public register in relation to the land or part of the land:

a)	details of serious or material environmental harm caused or threatened in the course of an activity (whether or not notified under section 83 of the <i>Environment Protection Act 1993</i>)?	NO
----	--	----

- | | | |
|----|--|------------|
| b) | details of site contamination notified to the EPA under section 83A of the <i>Environment Protection Act 1993</i> ? | NO |
| c) | a copy of a report of an environmental assessment (whether prepared by the EPA or some other person or body and whether or not required under legislation) that forms part of the information required to be recorded in the public register? | YES |
| d) | a copy of a site contamination audit report? | NO |
| e) | details of an agreement for the exclusion or limitation of liability for site contamination to which section 103E of the <i>Environment Protection Act 1993</i> applies? | NO |
| f) | details of an agreement entered into with the EPA relating to an approved voluntary site contamination assessment proposal under section 103I of the <i>Environment Protection Act 1993</i> ? | NO |
| g) | details of an agreement entered into with the EPA relating to an approved voluntary site remediation proposal under section 103K of the <i>Environment Protection Act 1993</i> ? | NO |
| h) | details of a notification under section 103Z(1) of the <i>Environment Protection Act 1993</i> relating to the commencement of a site contamination audit? | NO |
| i) | details of a notification under section 103Z(2) of the <i>Environment Protection Act 1993</i> relating to the termination before completion of a site contamination audit? | NO |
| j) | details of records, held by the former <i>South Australian Waste Management Commission</i> under the repealed <i>Waste Management Act 1987</i> , of waste (within the meaning of that Act) having been deposited on the land between 1 January 1983 and 30 April 1995? | NO |

5-Pollution and site contamination on the land - other details held by EPA

Does the EPA hold any of the following details in relation to the land or part of the land:

- | | | |
|----|--|----|
| a) | a copy of a report known as a "Health Commission Report" prepared by or on behalf of the <i>South Australian Health Commission</i> (under the repealed <i>South Australian Health Commission Act 1976</i>)? | NO |
| b) | details (which may include a report of an environmental assessment) relevant to an agreement entered into with the EPA relating to an approved voluntary site contamination assessment proposal under section 103I of the <i>Environment Protection Act 1993</i> ? | NO |
| c) | details (which may include a report of an environmental assessment) relevant to an agreement entered into with the EPA relating to an approved voluntary site remediation proposal under section 103K of the <i>Environment Protection Act 1993</i> ? | NO |
| d) | a copy of a pre-1 July 2009 site audit report? | NO |
| e) | details relating to the termination before completion of a pre-1 July 2009 site audit? | NO |

Records identified in this EPA Statement to Form 1: **SC62792**

The above records have been identified with a YES response in this EPA Statement to Form 1 and can be obtained by contacting the Public Register on (08) 8204 9128 or email epa.publicregister@sa.gov.au

All care and diligence has been taken to access the above information from available records. Historical records provided to the EPA concerning matters arising prior to 1 May 1995 are limited and may not be accurate or complete.

NOTE

Section 103S of the Environment Protection Act 1993 - GROUNDWATER PROHIBITION AREA - PORTIONS OF EDINBURGH, EDINBURGH NORTH, ELIZABETH SOUTH, SALISBURY NORTH. Date of Notice: 10/08/2023. Date of Gazette in which notice published: 10/08/2023. Description of the groundwater to which the notice relates: The prohibition relates to groundwater in: (i) The 1st Quaternary aquifer of the Pooraka Formation and the 2nd and 3rd Quaternary aquifers of the underlying Hindmarsh Clay Formation, being the body of groundwater encountered from the ground surface to approximately 35 metres below ground surface within the specified area. Particulars in the notice of the site contamination affecting the groundwater: The site contamination affecting the groundwater is in the form of petroleum hydrocarbons, chlorinated hydrocarbons, metals and per - and polyfluoroalkyl substances (PFAS) which represent actual or potential harm to human health or safety.

NOTE

General

Resources regarding this site can be found on the EPA website,
https://www.epa.sa.gov.au/environmental_info/site_contamination/gpa

Appendix F

EPA Site Contamination Index

EPA Site Contamination Index Search



Project Number 231499
Report Title Preliminary Site Inspection Update
Site Address Portion Lot 4711 Oldham Rd, Elizabeth South SA

Within 0.5 km of subject site =
 Potentially within 0.5 km of subject site =

Elizabeth South

Notification no	Type	Address	Council	Potentially contaminating activity
61608	109 Notification	180 Philip Highway ELIZABETH SOUTH SA 5112	City Of Playford	Motor vehicle manufacture
10218	109 Notification	Allotment 28 (F113412) Philip Highway ELIZABETH SOUTH SA 5112	City Of Playford	Surface Coating
60702	Audit Notification	74 Philip Highway ELIZABETH SOUTH SA 5112	City Of Playford	Service stations
62556	Audit Notification	74 Philip Highway ELIZABETH SOUTH SA 5112	City Of Playford	Listed Substances (storage); Service stations
60824	Audit Notification	Lots 10 & 61 Commercial Road and Lot 12 Grainger Road ELIZABETH SOUTH SA 5112	City Of Playford	Motor vehicle manufacture
62556 - 001	Audit Report	74 Philip Highway ELIZABETH SOUTH SA 5112	City Of Playford	Fill or soil importation; Motor vehicle repair or maintenance; Service stations
60824 - 001	Audit Report	Lots 10 & 61 Commercial Road and Lot 12 Grainger Road ELIZABETH SOUTH SA 5112	City Of Playford	Motor vehicle manufacture
60702	Audit Termination	74 Philip Highway ELIZABETH SOUTH SA 5112	City Of Playford	Not recorded
61499	S83 Notification	14 Wiley Street ELIZABETH SOUTH SA 5112	City Of Playford	Listed Substances (manufacture, production, recycling)

EPA Site Contamination Index Search



Project Number 231499
 Report Title Preliminary Site Inspection Update
 Site Address Portion Lot 4711 Oldham Rd, Elizabeth South SA

Within 0.5 km of subject site =
 Potentially within 0.5 km of subject site =

Elizabeth South

61499	S83 Notification	14 Wiley Street ELIZABETH SOUTH SA 5112	City Of Playford	Listed Substances (manufacture, production, recycling)
17316	S83 Notification	74 Philip Highway ELIZABETH SOUTH SA 5112	City Of Playford	Not recorded
60010 - 08	S83A Notification	Commercial Road ELIZABETH SOUTH SA 5112	City Of Playford	Motor vehicle manufacture
61043 - 02	S83A Notification	74 Philip Highway ELIZABETH SOUTH SA 5112	City Of Playford	Listed Substances (storage); Motor vehicle repair or maintenance; Service stations

EPA Site Contamination Index Search



Project Number 231499
 Report Title Preliminary Site Inspection Update
 Site Address Portion Lot 4711 Oldham Rd, Elizabeth South SA

Within 0.5 km of subject site =
 Potentially within 0.5 km of subject site =

Elizabeth South

Notification	Address	City	Activity
61102 - 03	Various Titles Philip Highway ELIZABETH SOUTH SA 5112	City Of Playford	Not recorded
61102 - 04	Various Titles Grainger Roads ELIZABETH SOUTH SA 5112	City Of Playford	Not recorded
61102 - 02	Lot 12 Philip Highway ELIZABETH SOUTH SA 5112	City Of Playford	Not recorded
61102 - 06	180 Philip Highway ELIZABETH SOUTH SA 5112	City Of Playford	Motor vehicle manufacture
61043 - 02	74 Philip Highway ELIZABETH SOUTH SA 5112	City Of Playford	Listed Substances (storage); Motor vehicle repair or maintenance; Service stations

EPA Site Contamination Index Search



Project Number 231499
Report Title Preliminary Site Inspection Update
Site Address Portion Lot 4711 Oldham Rd, Elizabeth South SA

Within 0.5 km of subject site =
 Potentially within 0.5 km of subject site =

Elizabeth South

61102 - 04	Notification	Roads ELIZABETH SOUTH SA 5112	City Of Playford	Not recorded
61102 - 03	S83A Notification	Various Titles Philip Highway ELIZABETH SOUTH SA 5112	City Of Playford	Not recorded
10524	SAHC	5-9 Bayer Road ELIZABETH SOUTH SA 5112	City Of Playford	Transport depots or loading sites

Elizabeth Vale

60666	109 Notification	Lot 1 Haydown Road ELIZABETH VALE SA 5112	City Of Playford	Pest control works
61414 - 02	S83A Notification	149 Main North Road ELIZABETH VALE SA 5112	City Of Playford	Listed Substances (storage); Service stations
61414 - 03	S83A Notification	149 Main North Road ELIZABETH VALE SA 5112	City Of Playford	Service stations
61414 - 01	S83A Notification	Lot 97 Main North Road ELIZABETH VALE SA 5112	City Of Salisbury	Service stations

Last updated: 23 October 2023

Appendix G

Soil Bore Logs

SOIL LOG

Sampling Location ID: SB01

LBW environmental projects

184 Magill Road Norwood SA 5067
PO Box 225 Stepney SA 5069

Site Location: Lot 47 Oldham Rd, Elizabeth South

Project: Preliminary Site Investigation

Client: City of Playford







Job No.: 160796

Date Commenced: 26.4.2016

Date Completed: 26.4.2016

Logged By: HC

Checked By: K. Bradley

Subsurface Lithology					Sampling Details					
Drilling Method	Water	Depth (m)	Graphic	USCS	Description	Moisture	Recovery	Sample ID	PID (ppm)	Additional Comments
Push Tube		0.0			Asphalt Surface					
					FILL Gravelly SAND: Fine grained, pale grey/white, with fine to medium angular gravels.	D		SB01-01		Duplicate: SB01-04.
					Silty CLAY Low to medium plasticity, brown. Increasing to medium plasticity and becoming dark red-brown.	D		SB01-02		
		0.5			End of Hole			SB01-03		

SOIL LOG

Sampling Location ID: SB02

LBW environmental projects

Site Location: Lot 47 Oldham Rd, Elizabeth South

Date Commenced: 26.4.2016

184 Magill Road Norwood SA 5067
PO Box 225 Stepney SA 5069

Project: Preliminary Site Investigation










Date Completed: 26.4.2016

Client: City of Playford

Logged By: HC

Job No.: 160796

Checked By: K Bradey

Subsurface Lithology					Sampling Details					
Drilling Method	Water	Depth (m)	Graphic	USCS	Description	Moisture	Recovery	Sample ID	PID (ppm)	Additional Comments
Push Tube		0.0			Asphalt Surface					
					FILL Sandy GRAVEL: Fine to medium angular gravels, pale grey/white, with fine to medium grained sand.	D		SB02-01		Asphalt from surface mixed in to 0.2 MBGL.
					FILL SAND: Fine grained, pale grey/white, with trace fine to medium gravel.	D		SB02-02		
					Silty CLAY Medium plasticity, brown.	D		SB02-03		
				End of Hole			SB02-04			
		0.5								

SOIL LOG

Sampling Location ID: SB04

LBW environmental projects

Site Location: Lot 47 Oldham Rd, Elizabeth South

Date Commenced: 26.4.2016

Project: Preliminary Site Investigation

Date Completed: 26.4.2016








184 Magill Road Norwood SA 5067
PO Box 225 Stepney SA 5069

Client: City of Playford

Logged By: HC

Job No.: 160796

Checked By: K Brodey

Subsurface Lithology					Sampling Details					
Drilling Method	Water	Depth (m)	Graphic	USCS	Description	Moisture	Recovery	Sample ID	PTD (ppm)	Additional Comments
Push Tube		0.0			Soil Surface FILL SAND: Fine to medium grained, yellow, with trace fine to medium gravel.	D		SB04-01		Duplicate: SB04-05.
					FILL GRAVEL: Fine to medium angular gravels, blue/grey.	D		SB04-02		
					Silty CLAY Medium plasticity, brown.	D		SB04-03		
								SB04-04		
		0.5			End of Hole					

SOIL LOG

Sampling Location ID: SB15



Site Location: Lot 47 Oldham Rd, Elizabeth South

Date Commenced: 26.4.2016

Project: Preliminary Site Investigation

Date Completed: 26.4.2016

184 Magill Road Norwood SA 5067
PO Box 225 Stepney SA 5069

Client: City of Playford

Logged By: HC

Job No.: 160796

Checked By: K Bradey

Subsurface Lithology					Sampling Details					
Drilling Method	Water	Depth (m)	Graphic	USCS	Description	Moisture	Recovery	Sample ID	PID (ppm)	Additional Comments
Push Tube		0.0			Asphalt Surface	D		SB15-01		Asphalt fragments from surface mixed in fill layer.
					FILL Gravelly SAND: Fine grained, pale grey/white, with fine to medium gravels.	D		SB15-02		
						Silty CLAY Low to medium plasticity, brown.				
					Increasing to medium plasticity and becoming dark red-brown.					
					Trace calcareous mottling.			SB15-03		
		0.5			End of Hole					



SOIL BORE SB01

PROJECT NUMBER 170951-01	DRILLING DATE 27/05/2019	COORDINATES -34.7460027, 138.66174641
PROJECT NAME ACH VITA North Assessment	DRILLING COMPANY Indepth Drilling	COORD SYSTEM Latitude, Longitude
ADDRESS Oldham Road Elizabeth Vale	DRILL RIG Geoprobe	LOGGED BY LBWco Tab1
	DRILLING METHOD Push Tube	CHECKED BY <i>Mick Brewer</i>
	BOREHOLE DIAMETER (mm) 50	
	TOTAL DEPTH (mBGL) 3.75	

COMMENTS

Depth (mBGL)	Samples	Duplicate	Interlab Dup	Graphic Log	Material Description	Moisture	Additional Observations
	SB01-01				FILL: gravelly sand, tan, coarse, loose, poorly graded, subangular, with rock fragments	wet	
0.5	SB01-02	SB01-07			FILL (REWORKED NATURAL): clay, dark brown, low plasticity, stiff, with rock fragments	SM	
1	SB01-03				FILL (REWORKED NATURAL): clay, light brown, low plasticity, stiff, trace rock fragments	D	
1.5	SB01-04				CLAY: brown, low plasticity, stiff, trace rock fragments	D	
2							
2.5							
3	SB01-05				CLAY: red-brown, low plasticity, stiff, trace rock fragments	D	
3.5	SB01-06						
					Termination Depth at: 3.75 m		



SOIL BORE SB02

PROJECT NUMBER 170951-01	DRILLING DATE 27/05/2019	COORDINATES -34.74621024, 138.6618958
PROJECT NAME ACH VITA North Assessment	DRILLING COMPANY Indepth Drilling	COORD SYSTEM Latitude, Longitude
ADDRESS Oldham Road Elizabeth Vale	DRILL RIG Geoprobe	LOGGED BY LBWco Tab1
	DRILLING METHOD Push Tube	CHECKED BY <i>Nick Brown</i>
	BOREHOLE DIAMETER (mm) 50	
	TOTAL DEPTH (mBGL) 3.75	

COMMENTS

Depth (mBGL)	Samples	Duplicate	Interlab Dup	Graphic Log	Material Description	Moisture	Additional Observations	
	SB02-01	SB02-08			FILL: gravelly sand, grey, coarse, loose, poorly graded, subangular, with asphalt	wet		
	SB02-02				FILL (REWORKED NATURAL): clay, dark brown, low plasticity, stiff, with rock fragments, trace rootlets	SM		
0.5	SB02-03				FILL (REWORKED NATURAL): clay, light brown, low plasticity, stiff, trace rock fragments, with white mottling	D		
	SB02-04							
1								
1.5	SB02-05					CLAY: brown, low plasticity, stiff, trace rock fragments	D	
2								
2.5								
3	SB02-06				CLAY: red-brown, low plasticity, stiff, trace rock fragments	D		
3.5	SB02-07							
					Termination Depth at: 3.75 m			



SOIL BORE BH01

PROJECT NUMBER 231499	DRILLING DATE 04/12/2023	COORDINATES -34.74598844, 138.66167148
PROJECT NAME Greenway NCSC PSI	DRILLING COMPANY WDS	COORD SYSTEM GDA2020_MGA_zone_54
ADDRESS Lot 4711 Oldham Road, Elizabeth South, SA	DRILL RIG Geoprobe	LOGGED BY Gaetano Garfi
	DRILLING METHOD Push Tube	CHECKED BY <i>Neil Jensen</i>
	BOREHOLE DIAMETER (mm) 50	
	TOTAL DEPTH (mBGL) 1.20	

COMMENTS

Depth (mBGL)	Samples	Duplicate	Graphic Log	Material Description	Moisture	Additional Observations
	BH01-01	BH01-02 BH01-03		FILL: silty clay, brown, fine, low plasticity, with sand, with gravel, with glass fragments up to 10 mm	D	
0.5	BH01-04			CLAYEY SAND: brown, fine, low plasticity, trace rootlets, trace gravel	D	
1	BH01-05			SILTY SAND: tan -brown, with clay, trace rootlets	D	
	BH01-06					
				Termination Depth at: 1.20 m		



SOIL BORE BH02

PROJECT NUMBER 231499	DRILLING DATE 04/12/2023	COORDINATES -34.74590193, 138.66173353
PROJECT NAME Greenway NCSC PSI	DRILLING COMPANY WDS	COORD SYSTEM GDA2020_MGA_zone_54
ADDRESS Lot 4711 Oldham Road, Elizabeth South, SA	DRILL RIG Geoprobe	LOGGED BY Gaetano Garfi
	DRILLING METHOD Push Tube	CHECKED BY <i>Nick Jones</i>
	BOREHOLE DIAMETER (mm) 50	
	TOTAL DEPTH (mBGL) 1.20	

COMMENTS

Depth (mBGL)	Samples	Duplicate	Graphic Log	Material Description	Moisture	Additional Observations
	BH02-01			FILL: gravelly sand, pale tan -grey, fine and coarse, with rootlets, with rock fragments	D	
	BH02-02			FILL: silty clay, brown, fine, low plasticity, with sand, with gravel	D	
0.5	BH02-03			SANDY CLAY: red-brown, fine, low plasticity, with rootlets, trace rock fragments	D	
	BH02-04			SILTY SAND: tan -brown, with clay, trace rootlets, trace calcareous inclusions	D	
1	BH02-05					
				Termination Depth at: 1.20 m		



SOIL BORE BH03

PROJECT NUMBER 231499	DRILLING DATE 04/12/2023	COORDINATES -34.74597104, 138.66151315
PROJECT NAME Greenway NCSC PSI	DRILLING COMPANY WDS	COORD SYSTEM GDA2020_MGA_zone_54
ADDRESS Lot 4711 Oldham Road, Elizabeth South, SA	DRILL RIG Geoprobe	LOGGED BY Gaetano Garfi
	DRILLING METHOD Push Tube	CHECKED BY <i>Nick Green</i>
	BOREHOLE DIAMETER (mm) 50	
	TOTAL DEPTH (mBGL) 1.20	

COMMENTS

Depth (mBGL)	Samples	Duplicate	Graphic Log	Material Description	Moisture	Additional Observations
	BH03-01			FILL: gravelly sand, pale tan -yellow, fine to medium	D	
	BH03-02			FILL: gravelly sand, white, fine	D	
	BH03-03			SILTY CLAY: red-brown, fine, low plasticity, with rootlets, with gravel	D	
0.5						
	BH03-04			GRAVELLY CLAY: tan -brown, with silt, with sand, with calcareous inclusions	D	
1						
	BH03-05			CLAY: pale brown, moderate plasticity	D	
				Termination Depth at:1.20 m		



SOIL BORE BH04

PROJECT NUMBER 231499	DRILLING DATE 04/12/2023	COORDINATES -34.7460509, 138.6613405
PROJECT NAME Greenway NCSC PSI	DRILLING COMPANY WDS	COORD SYSTEM GDA2020_MGA_zone_54
ADDRESS Lot 4711 Oldham Road, Elizabeth South, SA	DRILL RIG Geoprobe	LOGGED BY Gaetano Garfi
	DRILLING METHOD Push Tube	CHECKED BY <i>Mike Jones</i>
	BOREHOLE DIAMETER (mm) 50	
	TOTAL DEPTH (mBGL) 1.20	

COMMENTS

Depth (mBGL)	Samples	Duplicate	Graphic Log	Material Description	Moisture	Additional Observations
	BH04-01			FILL: gravelly sand, white, fine	D	
	BH04-02	BH04-03 BH04-04		SILTY CLAY: red-brown, fine, moderate plasticity, with rootlets, with gravel	D	
0.5						
	BH04-05					
	BH04-06			SILTY CLAY: pale brown, low plasticity, with calcareous inclusions, trace gravel	D	
1						
	BH04-07					
				Termination Depth at: 1.20 m		



SOIL BORE BH05

PROJECT NUMBER 231499	DRILLING DATE 04/12/2023	COORDINATES -34.74590884, 138.6611344
PROJECT NAME Greenway NCSC PSI	DRILLING COMPANY WDS	COORD SYSTEM GDA2020_MGA_zone_54
ADDRESS Lot 4711 Oldham Road, Elizabeth South, SA	DRILL RIG Geoprobe	LOGGED BY Gaetano Garfi
	DRILLING METHOD Push Tube	CHECKED BY <i>Nick Jansen</i>
	BOREHOLE DIAMETER (mm) 50	
	TOTAL DEPTH (mBGL) 1.20	

COMMENTS




Depth (mBGL)	Samples	Duplicate	Graphic Log	Material Description	Moisture	Additional Observations
	BH05-01			FILL: gravelly sand, white, fine	D	
	BH05-02			SILTY CLAY: red-brown, fine, moderate plasticity, with rootlets, with gravel	D	
-0.5						
	BH05-03			SILTY CLAY: pale brown, low plasticity, with calcareous inclusions, with gravel	D	
-1						
	BH05-04					
				Termination Depth at: 1.20 m		



SOIL BORE BH06

PROJECT NUMBER 231499	DRILLING DATE 04/12/2023	COORDINATES -34.7461452, 138.66117993
PROJECT NAME Greenway NCSC PSI	DRILLING COMPANY WDS	COORD SYSTEM GDA2020_MGA_zone_54
ADDRESS Lot 4711 Oldham Road, Elizabeth South, SA	DRILL RIG Geoprobe	LOGGED BY Gaetano Garfi
	DRILLING METHOD Push Tube	CHECKED BY <i>Nick Jones</i>
	BOREHOLE DIAMETER (mm) 50	
	TOTAL DEPTH (mBGL) 1.20	

COMMENTS

Depth (mBGL)	Samples	Duplicate	Graphic Log	Material Description	Moisture	Additional Observations
	BH06-01			FILL: gravelly sand, white, fine	D	
	BH06-02			SILTY CLAY: red-brown, fine, moderate plasticity, with rootlets, with gravel	D	
-0.5						
	BH06-03			SILTY CLAY: pale brown, low plasticity, with calcareous inclusions, with gravel	D	
-1						
	BH06-04					
				Termination Depth at: 1.20 m		



SOIL BORE BH07

PROJECT NUMBER 231499	DRILLING DATE 04/12/2023	COORDINATES 34.74607535, 138.66153172
PROJECT NAME Greenway NCSC PSI	DRILLING COMPANY WDS	COORD SYSTEM GDA2020_MGA_zone_54
ADDRESS Lot 4711 Oldham Road, Elizabeth South, SA	DRILL RIG Geoprobe	LOGGED BY Gaetano Garfi
	DRILLING METHOD Push Tube	CHECKED BY <i>Mik Jones</i>
	BOREHOLE DIAMETER (mm) 50	
	TOTAL DEPTH (mBGL) 1.20	

COMMENTS

Depth (mBGL)	Samples	Duplicate	Graphic Log	Material Description	Moisture	Additional Observations
	BH07-01	BH07-02		FILL: gravelly sand, white, fine	D	
	BH07-03	BH07-04		SILTY CLAY: red-brown, fine, moderate plasticity, with rootlets, with gravel	D	
0.5						
	BH07-05					
1						
	BH07-06			SILTY CLAY: pale brown, low plasticity, with calcareous inclusions, with gravel	D	
	BH07-07					
				Termination Depth at: 1.20 m		

Appendix H

Chemical Summary Tables

	Metals																		
	Arsenic	Barium	Beryllium	Iron	Cadmium	Chromium (Hexavalent)	Chromium (III+VI)	Chromium (Trivalent)	Cobalt	Copper	Iron	Lead	Manganese	Mercury	Molybdenum	Nickel	Selenium	Silver	Zinc
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
LOR	2	1	1	3	0.4	1	1	1	1	1	20	1	1	0.1	1	1	2	1	1
NEM 1999 Soil HILA - Residential	100	60	4,500	20	100				100	6,000	300	3,800	40		400	200			7,400
NEM 1999 Soil HILD - Commercial/Industrial	3,000	500	300,000	700	3,600				4,000	240,000	1,500	60,000	730		6,000	10,000			400,000
CRC CARE 2011 Soil HSLA Direct Contact - Residential (Low Density)																			
CRC CARE 2011 Soil HSLD Direct Contact - Commercial/Industrial																			
NEM 1999 Management Limits - Residential/Parklands (coarse)																			
NEM 1999 Management Limits - Commercial/Industrial (coarse)																			
NEM 1999 Soil HSLA/B Vapour/Intrusion - Res. (Sand, 0-1 mBGL)																			
NEM 1999 Soil HSLD Vapour/Intrusion - Comm/Ind (Sand, 0-1 mBGL)																			
NEM 1999 EIL - Urban Residential	100							400		240		1100			390				1100
NEM 1999 EIL - Commercial/Industrial	160							650		340		1800			660				1700
NEM 1999 Soil ESL - Urban Residential (coarse)																			
NEM 1999 Soil ESL - Commercial/Industrial (coarse)																			

Field ID	Depth (m)	Date	Lab Report	Sample Type																			
S801-01	0 - 0.1	26/04/2016	8376	Primary	<4	-	<1	4	<0.4	-	3	-	1	2	-	3	48	<0.1	-	2	<2	-	3
S801-04	0 - 0.1	26/04/2016	8376	Infiltrat.D	<4	-	<1	<3	<0.4	-	2	-	<1	<1	-	2	18	<0.1	-	<1	<2	-	1
S802-01	0 - 0.1	26/04/2016	8376	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S804-02	0.1 - 0.15	26/04/2016	8376	Primary	<4	-	<1	3	<0.4	-	<1	-	<1	<1	-	2	84	<0.1	-	<1	<2	-	4
S815-01	0 - 0.05	26/04/2016	8378	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S822-01	0.0 - 0.1	27/05/2019	16956	Primary	<4	39	<1	-	<0.4	<1	12	12	6	100	-	4	280	<0.1	<1	10	-	<1	16
S822-08	0.0 - 0.1	27/05/2019	16956	Infiltrat.D	5	38	<1	-	<0.4	<1	15	15	9	85	-	7	270	<0.1	<1	16	-	<1	15
S822-02	0.25 - 0.35	27/05/2019	16956	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH01-01	0 - 0.3	4/12/2023	1050793	Primary	4.2	-	-	-	<0.4	-	24	-	-	20	-	22	-	<0.1	-	13	-	-	33
BH01-02	0 - 0.3	4/12/2023	1050793	Primary	4.4	-	-	-	<0.4	-	25	-	-	21	-	24	-	<0.1	-	14	-	-	41
BH01-04	0.4 - 0.5	4/12/2023	1050793	Primary	4.3	-	<2	<10	<0.4	-	31	-	12	18	-	18	480	<0.1	-	18	<2	-	29
BH02-01	0 - 0.1	4/12/2023	1050793	Primary	5.4	30	<2	-	<0.4	<1	14	14	7.1	11	20,000	19	430	<0.1	-	11	-	<2	58
BH02-02	0.2 - 0.3	4/12/2023	1050793	Primary	3.7	-	-	-	<0.4	-	30	-	-	17	-	15	-	<0.1	-	16	-	-	25
BH02-03	0.3 - 0.4	4/12/2023	1050793	Primary	4	-	<2	<20	<0.4	-	29	-	8.3	15	-	11	240	<0.1	-	17	<2	-	28
BH03-01	0 - 0.1	4/12/2023	1050793	Primary	4	-	-	-	<0.4	-	<5	-	-	<5	-	<5	-	<0.1	-	<5	-	-	<3
BH03-04	0.65 - 0.75	4/12/2023	1050793	Primary	5	-	<2	16	<0.4	-	37	-	11	17	-	13	300	<0.1	-	21	<2	-	28
BH04-02	0.25 - 0.45	4/12/2023	1050793	Primary	4.4	-	<2	<20	<0.4	-	38	-	14	19	-	15	430	<0.1	-	19	<2	-	24
BH04-03	0.75 - 0.45	4/12/2023	41076	Infiltrat.D	<4	-	<1	<10	<0.4	-	32	-	13	16	-	10	430	<0.1	-	15	<2	-	18
BH05-01	0 - 0.1	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH05-03	0.7 - 0.8	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	25,000	-	-	-	-	-	-
BH04-01	0 - 0.1	4/12/2023	1050793	Primary	2.4	-	-	-	<0.4	-	<5	-	-	<5	-	<5	-	<0.1	-	<5	-	-	<3
BH04-02	0.3 - 0.4	4/12/2023	1050793	Primary	5.6	-	<2	<10	<0.4	-	47	-	12	24	-	17	390	<0.1	-	26	<2	-	29

	TRH							BTEX					
	TRH C-C10	TRH C-C10 less BTEX (F1)	TRH <C10-C14	TRH >C10-C14 less Naphthalene (F2)	TRH >C14-C24	TRH >C24-C40	TRH >C10-C40 (sum of fractions)	Benzene	Toluene	Ethylbenzene	Xylenes (o)	Xylenes (m & p)	Xylenes Total
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
LOR	20	20	50	50	100	100	50	0.1	0.1	0.1	0.1	0.2	0.3
NEPM 1999 Soil HIL A - Residential													
NEPM 1999 Soil HIL D - Commercial/Industrial													
CRC CARE 2011 Soil HSL A Direct Contact - Residential (Low Density)	4,400		3,300	4,500	6,300		100	14,000	4,500				12,000
CRC CARE 2011 Soil HSL D Direct Contact - Commercial/Industrial	26,000		20,000	27,000	38,000		430	99,000	27,000				81,000
NEPM 1999 Management Limits - Residential/Parkslands (coarse)	700	1,000		2,500	10,000								
NEPM 1999 Management Limits - Commercial/Industrial (coarse)	700	1,000		3,500	10,000								
NEPM 1999 Soil HSL A/B Vapour/Intrusion - Res. (Sand, 0-1 mBGL)	45		110				0.5	160	55				40
NEPM 1999 Soil HSL D Vapour/Intrusion - Comm/Ind (Sand, 0-1 mBGL)	260						3						230
NEPM 1999 EIL - Urban Residential													
NEPM 1999 EIL - Commercial/Industrial													
NEPM 1999 Soil ESL - Urban Residential (coarse)	180	120		300	2,800		50	85	70				105
NEPM 1999 Soil ESL - Commercial/Industrial (coarse)	215	170		1700	3,300		75	135	165				180

Field ID	Depth (m)	Date	Lab Report	Sample Type															
SB01-01	0 - 0.1	26/04/2016	8376	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB01-04	0 - 0.1	26/04/2016	8376	Interlab_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB02-01	0 - 0.1	26/04/2016	8376	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB04-02	0.1 - 0.15	26/04/2016	8376	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB13-01	0 - 0.05	26/04/2016	8376	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB02-01	0.0 - 0.1	27/05/2019	16936	Primary	<25	<25	<50	<50	<100	<100	<50	<0.2	<0.5	<1	<1	<2	<2	<1	<1
SB02-08	0.0 - 0.1	27/05/2019	16936	Interlab_D	<25	<25	<50	<50	<100	<100	<50	<0.2	<0.5	<1	<1	<2	<2	<1	<1
SB02-02	0.25 - 0.35	27/05/2019	16936	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH01-01	0 - 0.3	4/12/2023	1050793	Primary	<20	<20	<50	<50	<100	<100	<100	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.3	<0.3
BH01-02	0 - 0.3	4/12/2023	1050793	Primary	<20	<20	<50	<50	<100	<100	<100	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.3	<0.3
BH01-04	0.4 - 0.5	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH02-01	0 - 0.1	4/12/2023	1050793	Primary	<20	<20	<50	<50	<100	<100	<100	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.3	<0.3
BH02-02	0.2 - 0.3	4/12/2023	1050793	Primary	<20	<20	<50	<50	<100	<100	<100	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.3	<0.3
BH02-03	0.3 - 0.4	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH03-01	0 - 0.1	4/12/2023	1050793	Primary	<20	<20	<50	<50	<100	<100	<100	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.3	<0.3
BH03-04	0.65 - 0.75	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH04-02	0.25 - 0.45	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH04-03	0.25 - 0.45	4/12/2023	41076	Interlab_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH05-01	0 - 0.1	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.3	<0.3
BH05-03	0.7 - 0.8	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH04-01	0 - 0.1	4/12/2023	1050793	Primary	<20	<20	<50	<50	<100	<100	<100	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.3	<0.3
BH04-02	0.3 - 0.4	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.3	<0.3

		PAH																									
		Acenaphthene	Acenaphthylene	Anthracene	Benzo[a]anthracene	Benzo[b]pyrene	Benzo[k]fluoranthene	Benzo[a,h]perylene	Benzo[e]fluoranthene	Benzo[ghi]perylene	Benzo[a]pyrene	Benzo[a]fluoranthene	Benzo[b]fluoranthene	Chrysene	Diene[a,h]anthracene	Fluorene	Fluoranthene	Fluorene	Indeno[1,2,3-c,d]pyrene	Naphthalene	Phenanthrene	Benzo[a]pyrene IQ	Pyrene	Total PAH	Carcinogenic PAH (BoP, 1TG also IOR)	Carcinogenic PAH (BoP, 1TG also IOR)	Carcinogenic PAH (BoP, 1TG IOR)
		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	
LOR		0.1	0.1	0.1	0.1	0.05	0.2	0.1	0.5	0.5	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.5	0.1	0.05	0.5	0.5	0.5
NPEM 1999 Soil HLL A - Residential																								300	3	3	3
NPEM 1999 Soil HLL D - Commercial/Industrial																								4,000	40	40	40
CRC CARE 2011 Soil HLL A Direct Contact - Residential (Low Density)																											
CRC CARE 2011 Soil HLL D Direct Contact - Commercial/Industrial																											
NPEM 1999 Management Limits - Residential/Parklands (coarse)																											
NPEM 1999 Management Limits - Commercial/Industrial (coarse)																											
NPEM 1999 Soil HLL A/B Vapour Intrusion - Res. (Sand, 0-1 mBGL)																											
NPEM 1999 Soil HLL D Vapour Intrusion - Comm/Ind (Sand, 0-1 mBGL)																											
NPEM 1999 EIL - Urban Residential																											
NPEM 1999 EIL - Commercial/Industrial																											
NPEM 1999 Soil ESL - Urban Residential (coarse)																											
NPEM 1999 Soil ESL - Commercial/Industrial (coarse)																											

Field ID	Depth (m)	Date	Lab Report	Sample Type	Acenaphthene	Acenaphthylene	Anthracene	Benzo[a]anthracene	Benzo[b]pyrene	Benzo[k]fluoranthene	Benzo[a,h]perylene	Benzo[e]fluoranthene	Benzo[a]pyrene	Benzo[a]fluoranthene	Chrysene	Diene[a,h]anthracene	Fluorene	Fluoranthene	Fluorene	Indeno[1,2,3-c,d]pyrene	Naphthalene	Phenanthrene	Benzo[a]pyrene IQ	Pyrene	Total PAH	Carcinogenic PAH (BoP, 1TG also IOR)	Carcinogenic PAH (BoP, 1TG also IOR)	Carcinogenic PAH (BoP, 1TG IOR)	
SB01-01	0 - 0.1	26/04/2016	8376	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB01-04	0 - 0.1	26/04/2016	8376	Interstitial_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB02-01	0 - 0.1	26/04/2016	8376	Primary	<0.1	<0.1	<0.1	<0.1	<0.05	<0.2	<0.1	-	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.5	<0.1	<0.05	-	<0.5	<0.5	
SB04-02	0.1 - 0.15	26/04/2016	8376	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB15-01	0 - 0.05	26/04/2016	8376	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB02-01	0.0 - 0.1	27/05/2019	16956	Primary	<0.1	<0.1	<0.1	<0.1	<0.05	<0.2	<0.1	-	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.5	<0.1	<0.05	-	<0.5	<0.5	
SB02-08	0.0 - 0.1	27/05/2019	16956	Interstitial_D	<0.1	<0.1	<0.1	<0.1	<0.05	<0.2	<0.1	-	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.5	<0.1	<0.05	-	<0.5	<0.5	
SB02-02	0.25 - 0.35	27/05/2019	16956	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH01-01	0 - 0.3	4/12/2023	1050793	Primary	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	0.6	1.2	
BH01-02	0 - 0.3	4/12/2023	1050793	Primary	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	0.6	1.2	
BH01-04	0.4 - 0.5	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH02-01	0 - 0.1	4/12/2023	1050793	Primary	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	0.6	1.2	
BH02-02	0.2 - 0.3	4/12/2023	1050793	Primary	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	0.6	1.2	
BH02-03	0.3 - 0.4	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH03-01	0 - 0.1	4/12/2023	1050793	Primary	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	0.6	1.2	
BH03-04	0.65 - 0.75	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH04-02	0.25 - 0.45	4/12/2023	1050793	Primary	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	0.6	1.2	
BH04-03	0.75 - 0.45	4/12/2023	41076	Interstitial_D	<0.1	<0.1	<0.1	<0.1	<0.05	-	<0.1	-	-	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.05	<0.5	<0.5	<0.5	
BH05-01	0 - 0.1	4/12/2023	1050793	Primary	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	0.6	1.2	
BH05-03	0.7 - 0.8	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH04-01	0 - 0.1	4/12/2023	1050793	Primary	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	0.6	1.2	
BH04-02	0.3 - 0.4	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

	Halogenated Benzenes						
	Trichloroethylene (TCE)	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene	4-chlorobutene	Bromobenzene	Chlorobenzene
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
LOR	0.5	0.5	0.5	0.5	0.5	0.5	0.5
NEPM 1999 Soil HIL A - Residential							
NEPM 1999 Soil HIL D - Commercial/Industrial							
CRC CARE 2011 Soil HSL A Direct Contact - Residential (Low Density)							
CRC CARE 2011 Soil HSL D Direct Contact - Commercial/Industrial							
NEPM 1999 Management Limits - Residential/Parklands (coarse)							
NEPM 1999 Management Limits - Commercial/Industrial (coarse)							
NEPM 1999 Soil HSL A/B Vapour Intrusion - Res. (Sand, 0-1 mBGL)							
NEPM 1999 Soil HSL D Vapour Intrusion - Comm/Ind (Sand, 0-1 mBGL)							
NEPM 1999 EIL - Urban Residential							
NEPM 1999 EIL - Commercial/Industrial							
NEPM 1999 Soil ESL - Urban Residential (coarse)							
NEPM 1999 Soil ESL - Commercial/Industrial (coarse)							

Field ID	Depth (m)	Date	Lab Report	Sample Type							
SB01-01	0 - 0.1	26/04/2016	8376	Primary	-	-	-	-	-	-	-
SB01-04	0 - 0.1	26/04/2016	8376	Infiltrat.D	-	-	-	-	-	-	-
SB02-01	0 - 0.1	26/04/2016	8376	Primary	-	-	-	-	-	-	-
SB04-02	0.1 - 0.15	26/04/2016	8376	Primary	-	-	-	-	-	-	-
SB13-01	0 - 0.05	26/04/2016	8376	Primary	-	-	-	-	-	-	-
SB02-01	0.0 - 0.1	27/05/2019	16936	Primary	-	-	-	-	-	-	-
SB02-08	0.0 - 0.1	27/05/2019	16936	Infiltrat.D	-	-	-	-	-	-	-
SB02-02	0.25 - 0.35	27/05/2019	16936	Primary	-	-	-	-	-	-	-
BH01-01	0 - 0.3	4/12/2023	1050793	Primary	-	-	-	-	-	-	-
BH01-02	0 - 0.3	4/12/2023	1050793	Primary	-	-	-	-	-	-	-
BH01-04	0.4 - 0.5	4/12/2023	1050793	Primary	-	-	-	-	-	-	-
BH02-01	0 - 0.1	4/12/2023	1050793	Primary	<0.5	-	-	-	-	-	-
BH02-02	0.2 - 0.3	4/12/2023	1050793	Primary	-	-	-	-	-	-	-
BH02-03	0.3 - 0.4	4/12/2023	1050793	Primary	-	-	-	-	-	-	-
BH03-01	0 - 0.1	4/12/2023	1050793	Primary	-	-	-	-	-	-	-
BH03-04	0.65 - 0.75	4/12/2023	1050793	Primary	-	-	-	-	-	-	-
BH04-02	0.25 - 0.45	4/12/2023	1050793	Primary	-	-	-	-	-	-	-
BH04-03	0.25 - 0.45	4/12/2023	41076	Infiltrat.D	-	-	-	-	-	-	-
BH05-01	0 - 0.1	4/12/2023	1050793	Primary	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH05-03	0.7 - 0.8	4/12/2023	1050793	Primary	-	-	-	-	-	-	-
BH04-01	0 - 0.1	4/12/2023	1050793	Primary	-	-	-	-	-	-	-
BH04-02	0.3 - 0.4	4/12/2023	1050793	Primary	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

	Organochlorine Pesticides																										
	4,4-DDD mg/kg	4,4-DDE mg/kg	4,4-DDF mg/kg	DDT+OPE+DDD mg/kg	p-HCH mg/kg	γ-HCH mg/kg	δ-HCH mg/kg	β-HCH (lindane) mg/kg	Alinin mg/kg	Dieldrin mg/kg	Alinir + Dieldrin mg/kg	Chlordane mg/kg	Chlordane (cis) mg/kg	Chlordane (trans) mg/kg	Endosulfan I mg/kg	Endosulfan II mg/kg	Endosulfan sulphate mg/kg	Endrin mg/kg	Endrin aldehyde mg/kg	Endrin ketone mg/kg	Heptachlor mg/kg	Heptachlor epoxide mg/kg	Hexachlorbenzene mg/kg	Methoxychlor mg/kg	Mirex mg/kg	Toxaphene mg/kg	
LOR	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.1	0.1	0.1	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.5	0.5
NEM 1999 Soil H1L A - Residential				240								6	50					10			6		10	300	10	20	
NEM 1999 Soil H1L D - Commercial/Industrial				3,600								45	530					100			50		50	2,500	100	160	
CRC CARE 2011 Soil HSL A Direct Contact - Residential (Low Density)																											
CRC CARE 2011 Soil HSL D Direct Contact - Commercial/Industrial																											
NEM 1999 Management Limits - Residential/Parklands (coarse)																											
NEM 1999 Management Limits - Commercial/Industrial (coarse)																											
NEM 1999 Soil HSL A/B Vapour Intrusion - Res. (Sand, 0-1 mBGL)																											
NEM 1999 Soil HSL D Vapour Intrusion - Comm/Ind (Sand, 0-1 mBGL)																											
NEM 1999 EIL - Urban Residential				180																							
NEM 1999 EIL - Commercial/Industrial				640																							
NEM 1999 Soil ESL - Urban Residential (coarse)																											
NEM 1999 Soil ESL - Commercial/Industrial (coarse)																											

Field ID	Depth (m)	Date	Lab Report	Sample Type																																
SB01-01	0 - 0.1	26/04/2016	8376	Primary	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.5	<2	
SB01-04	0 - 0.1	26/04/2016	8376	Inferlab_D	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.5	<2			
SB02-01	0 - 0.1	26/04/2016	8376	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
SB04-02	0.1 - 0.15	26/04/2016	8376	Primary	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.5	<2			
SB15-01	0 - 0.05	26/04/2016	8376	Primary	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.5	<2			
SB02-01	0.0 - 0.1	27/05/2019	16956	Primary	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.5	<2		
SB02-08	0.0 - 0.1	27/05/2019	16956	Inferlab_D	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.5	<2		
SB02-02	0.25 - 0.35	27/05/2019	16956	Primary	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.5	<2		
BH01-01	0 - 0.3	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
BH01-02	0 - 0.3	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
BH01-04	0.4 - 0.5	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
BH02-01	0 - 0.1	4/12/2023	1050793	Primary	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.5	<2
BH02-02	0.2 - 0.3	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
BH02-03	0.3 - 0.4	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
BH03-01	0 - 0.1	4/12/2023	1050793	Primary	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.5	<2
BH03-04	0.65 - 0.75	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH04-02	0.25 - 0.45	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH04-03	0.25 - 0.45	4/12/2023	41076	Inferlab_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH05-01	0 - 0.1	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH05-03	0.7 - 0.8	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH04-01	0 - 0.1	4/12/2023	1050793	Primary	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.5	<2
BH04-02	0.3 - 0.4	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

	Organophosphorous Pesticide																		
	Azinphos methyl	Boflor (Sulprata)	Bromophos-ethyl	Chlorfenvinphos	Chlorpyrifos	Chlorpyrifos-methyl	Coumaphos	Demeton-O	Demeton-S	Diazinon	Dibromos	Dimethoate	Disulfoton	EPN	Ethion	Ethionap	Fenitrothion	Fenvalerthion	Fenitrothion
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
LOR	0.1	0.2	0.1	0.2	0.1	0.1	2	0.2	0.2	0.1	0.1	0.1	0.2	0.2	0.1	0.2	0.1	0.2	0.2
NEM 1999 Soil HSL A - Residential					160														
NEM 1999 Soil HSL D - Commercial/Industrial					2,000														
CRC CARE 2011 Soil HSL A Direct Contact - Residential (Low Density)																			
CRC CARE 2011 Soil HSL D Direct Contact - Commercial/Industrial																			
NEM 1999 Management Limits - Residential/Parklands (coarse)																			
NEM 1999 Management Limits - Commercial/Industrial (coarse)																			
NEM 1999 Soil HSL A/B Vapour/Intrusion - Res. (Sand, 0-1 mBGL)																			
NEM 1999 Soil HSL D Vapour/Intrusion - Comm/Ind (Sand, 0-1 mBGL)																			
NEM 1999 EIL - Urban Residential																			
NEM 1999 EIL - Commercial/Industrial																			
NEM 1999 Soil ESL - Urban Residential (coarse)																			
NEM 1999 Soil ESL - Commercial/Industrial (coarse)																			

Field ID	Depth (m)	Date	Lab Report	Sample Type	Azinphos methyl	Boflor (Sulprata)	Bromophos-ethyl	Chlorfenvinphos	Chlorpyrifos	Chlorpyrifos-methyl	Coumaphos	Demeton-O	Demeton-S	Diazinon	Dibromos	Dimethoate	Disulfoton	EPN	Ethion	Ethionap	Fenitrothion	Fenvalerthion	Fenitrothion	
SB01-01	0 - 0.1	26/04/2016	8376	Primary	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB01-04	0 - 0.1	26/04/2016	8376	Inferlab_D	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB02-01	0 - 0.1	26/04/2016	8376	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB04-02	0.1 - 0.15	26/04/2016	8376	Primary	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB13-01	0 - 0.05	26/04/2016	8376	Primary	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB02-01	0.0 - 0.1	27/05/2019	16956	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB02-08	0.0 - 0.1	27/05/2019	16956	Inferlab_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB02-02	0.25 - 0.35	27/05/2019	16956	Primary	<0.1	-	<0.1	-	<0.1	<0.1	-	-	-	<0.1	<0.1	<0.1	-	-	<0.1	-	<0.1	-	-	-
BH01-01	0 - 0.3	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH01-02	0 - 0.3	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH01-04	0.4 - 0.5	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH02-01	0 - 0.1	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH02-02	0.2 - 0.3	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH02-03	0.3 - 0.4	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH03-01	0 - 0.1	4/12/2023	1050793	Primary	<0.2	<0.2	-	<0.2	<0.2	<0.2	<2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
BH03-04	0.65 - 0.75	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH04-02	0.25 - 0.45	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH04-03	0.25 - 0.45	4/12/2023	41076	Inferlab_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH05-01	0 - 0.1	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH05-03	0.7 - 0.8	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH04-01	0 - 0.1	4/12/2023	1050793	Primary	<0.2	<0.2	-	<0.2	<0.2	<0.2	<2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
BH04-02	0.3 - 0.4	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

	Metalloids	Mercury	Methyl parathion	Methoxychlor (Phosdrin)	Monochlorophenol	Lead (Pb)	Lead (Dibrom)	Orthoarsite	Parathion	Phorate	Phenolphthalein-methyl	Phosphorus	Rotenone	Terbufos	Toluthion	Tribromobenzene	Tetrachloroethene
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
LOR	0.1	0.2	0.2	0.2	2	0.2	2	0.1	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.2
NEPM 1999 Soil HSL A - Residential																	
NEPM 1999 Soil HSL D - Commercial/Industrial																	
CRC CARE 2011 Soil HSL A Direct Contact - Residential (Low Density)																	
CRC CARE 2011 Soil HSL D Direct Contact - Commercial/Industrial																	
NEPM 1999 Management Limits - Residential/Parklands (coarse)																	
NEPM 1999 Management Limits - Commercial/Industrial (coarse)																	
NEPM 1999 Soil HSL A/B Vapour Intrusion - Res. (Sand, 0-1 mBGL)																	
NEPM 1999 Soil HSL D Vapour Intrusion - Comm/Ind (Sand, 0-1 mBGL)																	
NEPM 1999 EIL - Urban Residential																	
NEPM 1999 EIL - Commercial/Industrial																	
NEPM 1999 Soil ESL - Urban Residential (coarse)																	
NEPM 1999 Soil ESL - Commercial/Industrial (coarse)																	

Field ID	Depth (m)	Date	Lab Report	Sample Type																																	
S001-01	0 - 0.1	26/04/2016	8376	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
S001-04	0 - 0.1	26/04/2016	8376	Interlab_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
S002-01	0 - 0.1	26/04/2016	8376	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
S004-02	0.1 - 0.15	26/04/2016	8376	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
S015-01	0 - 0.05	26/04/2016	8376	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
S022-01	0.0 - 0.1	27/05/2019	16956	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
S022-08	0.0 - 0.1	27/05/2019	16956	Interlab_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
S022-02	0.25 - 0.35	27/05/2019	16956	Primary	<0.1	-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
BH01-01	0 - 0.3	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
BH01-02	0 - 0.3	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
BH01-04	0.4 - 0.5	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
BH02-01	0 - 0.1	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
BH02-02	0.2 - 0.3	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
BH02-03	0.3 - 0.4	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
BH03-01	0 - 0.1	4/12/2023	1050793	Primary	<0.2	<0.2	<0.2	<0.2	<2	<0.2	<2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	
BH03-04	0.65 - 0.75	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
BH04-02	0.25 - 0.45	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
BH04-03	0.75 - 0.45	4/12/2023	41076	Interlab_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
BH05-01	0 - 0.1	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
BH05-03	0.7 - 0.8	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
BH04-01	0 - 0.1	4/12/2023	1050793	Primary	<0.2	<0.2	<0.2	<0.2	<2	<0.2	<2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
BH04-02	0.3 - 0.4	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	

	Polychlorinated Biphenyls										Phenols														
	Arochlor 1216	Arochlor 1221	Arochlor 1232	Arochlor 1242	Arochlor 1248	Arochlor 1254	Arochlor 1260	PCBs (sum of PCBs)	2,4-dimethylphenol	2-methylphenol	2-nitrophenol	3,4-dimethylphenol	4,6-Dinitro-2-methylphenol	4,4-Dinitro-o-cyclohexylphenol	4-chloro-3-methylphenol	2,4-dinitrophenol	4-methylphenol	4-nitrophenol	Cresol Total	Dioxin	Total Phenols	Phenols Total	Phenols (Total Halogenated)	Phenols (Total Non Halogenated)	
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
LOR	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1	0.2	0.2	0.2	0.4	5	20	1	2	0.4	4	0.2	1	0.2	0.2	1	20	
NEM 1999 Soil HSL A - Residential								7											400		3,000				
NEM 1999 Soil HSL D - Commercial/Industrial																			25,000		240,000				
CRC CARE 2011 Soil HSL A Direct Contact - Residential (Low Density)																									
CRC CARE 2011 Soil HSL D Direct Contact - Commercial/Industrial																									
NEM 1999 Management Limits - Residential/Parklands (coarse)																									
NEM 1999 Management Limits - Commercial/Industrial (coarse)																									
NEM 1999 Soil HSL A/B Vapour/Intrusion - Res. (Sand, 0-1 mBGL)																									
NEM 1999 Soil HSL D Vapour/Intrusion - Comm/Ind (Sand, 0-1 mBGL)																									
NEM 1999 EIL - Urban Residential																									
NEM 1999 EIL - Commercial/Industrial																									
NEM 1999 Soil ESL - Urban Residential (coarse)																									
NEM 1999 Soil ESL - Commercial/Industrial (coarse)																									

Field ID	Depth (m)	Date	Lab Report	Sample Type																						
SB01-01	0 - 0.1	26/04/2016	8376	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
SB01-04	0 - 0.1	26/04/2016	8376	Infiltration_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
SB02-01	0 - 0.1	26/04/2016	8376	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
SB04-02	0.1 - 0.15	26/04/2016	8376	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
SB15-01	0 - 0.05	26/04/2016	8376	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
SB02-01	0.0 - 0.1	27/05/2019	16956	Primary	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	-	-	-	<2	<2	<0.4	<4	<0.2	-	<0.2	<0.2
SB02-08	0.0 - 0.1	27/05/2019	16956	Infiltration_D	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	-	-	-	<2	<2	<0.4	<4	<0.2	-	<0.2	<0.2	
SB02-02	0.25 - 0.35	27/05/2019	16956	Primary	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	
BH01-01	0 - 0.3	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
BH01-02	0 - 0.3	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
BH01-04	0.4 - 0.5	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
BH02-01	0 - 0.1	4/12/2023	1050793	Primary	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.5	<0.2	<1	<0.4	<5	<20	<1	<5	<5	<0.5	<20	<0.5	<1	<20
BH02-02	0.2 - 0.3	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
BH02-03	0.3 - 0.4	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
BH03-01	0 - 0.1	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
BH03-04	0.65 - 0.75	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
BH04-02	0.25 - 0.45	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
BH04-03	0.25 - 0.45	4/12/2023	41076	Infiltration_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
BH05-01	0 - 0.1	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
BH05-03	0.7 - 0.8	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
BH04-01	0 - 0.1	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
BH04-02	0.3 - 0.4	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	

	Halogenated Phenols								MAH				
	2,3,4,6-tetrachlorophenol	2,4,5-trichlorophenol	2,4,6-trichlorophenol	2,4-dichlorophenol	2,4-dichlorophenol	2-chlorophenol	Hexachlorophenol	Heptachlorophenol	Total MAH	1,2,4-Trimethylbenzene	1,3,5-Trimethylbenzene	Isopropylbenzene	Biphenyl
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
LOR	0.2	0.2	0.2	0.2	0.2	0.2	1	10	0.5	0.5	0.5	0.5	0.5
NFPM 1999 Soil HIL A - Residential							100						
NFPM 1999 Soil HIL D - Commercial/Industrial							660						
CRC CARE 2011 Soil HIL A Direct Contact - Residential (Low Density)													
CRC CARE 2011 Soil HIL D Direct Contact - Commercial/Industrial													
NFPM 1999 Management Limits - Residential/Parklands (coarse)													
NFPM 1999 Management Limits - Commercial/Industrial (coarse)													
NFPM 1999 Soil HSL A/B Vapour Intrusion - Res. (Sand, 0-1 mBGL)													
NFPM 1999 Soil HSL D Vapour Intrusion - Comm/Ind (Sand, 0-1 mBGL)													
NFPM 1999 EIL - Urban Residential													
NFPM 1999 EIL - Commercial/Industrial													
NFPM 1999 Soil ESL - Urban Residential (coarse)													
NFPM 1999 Soil ESL - Commercial/Industrial (coarse)													

Field ID	Depth (m)	Date	Lab Report	Sample Type															
SB01-01	0 - 0.1	26/04/2016	8376	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB01-04	0 - 0.1	26/04/2016	8376	Infiltrat.D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB02-01	0 - 0.1	26/04/2016	8376	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB04-02	0.1 - 0.15	26/04/2016	8376	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB13-01	0 - 0.05	26/04/2016	8376	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB02-01	0.0 - 0.1	27/05/2019	16956	Primary	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<1	-	-	-	-	-	-	-	-
SB02-08	0.0 - 0.1	27/05/2019	16956	Infiltrat.D	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<1	-	-	-	-	-	-	-	-
SB02-02	0.25 - 0.35	27/05/2019	16956	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH01-01	0 - 0.3	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH01-02	0 - 0.3	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH01-04	0.4 - 0.5	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH02-01	0 - 0.1	4/12/2023	1050793	Primary	-	<1	<1	<0.5	<0.5	<0.5	<1	<10	-	-	-	-	-	-	-
BH02-02	0.2 - 0.3	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH02-03	0.3 - 0.4	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH03-01	0 - 0.1	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH03-04	0.65 - 0.75	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH04-02	0.25 - 0.45	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH04-03	0.75 - 0.45	4/12/2023	41076	Infiltrat.D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH05-01	0 - 0.1	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BH05-03	0.7 - 0.8	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH04-01	0 - 0.1	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH04-02	0.3 - 0.4	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

	Chlorinated Hydrocarbons																				
	1,1,1,2-tetrachloroethane	1,1,1-trichloroethane	1,1,2,2-tetrachloroethane	1,1,2-trichloroethane	1,1-dichloroethane	1,1-dichloroethene	1,2,3-trichloropropane	1,2-dichloroethane	1,2-dichloropropane	1,3-dichloropropane	1,3-dichloropropane	1,1,1-trichloroethane	1,1,1,2-tetrachloroethane	1,1,2-trichloroethane	1,1,2,2-tetrachloroethane	1,1,2-trichloroethane	1,1-dichloroethane	1,2-dichloroethane	1,3-dichloropropane	1,3-dichloropropane	
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
LOR	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
NPEM 1999 Soil HSLA - Residential																					
NPEM 1999 Soil HSLD - Commercial/Industrial																					
CRC CARE 2011 Soil HSLA Direct Contact - Residential (Low Density)																					
CRC CARE 2011 Soil HSLD Direct Contact - Commercial/Industrial																					
NPEM 1999 Management Limits - Residential/Parklands (coarse)																					
NPEM 1999 Management Limits - Commercial/Industrial (coarse)																					
NPEM 1999 Soil HSLA/B Vapour Infiltration - Res. (Sand, 0-1 mBGL)																					
NPEM 1999 Soil HSLD Vapour Infiltration - Comm/Ind (Sand, 0-1 mBGL)																					
NPEM 1999 EIL - Urban Residential																					
NPEM 1999 EIL - Commercial/Industrial																					
NPEM 1999 Soil ESL - Urban Residential (coarse)																					
NPEM 1999 Soil ESL - Commercial/Industrial (coarse)																					

Field ID	Depth (m)	Date	Lab Report	Sample Type	1,1,1,2-tetrachloroethane	1,1,1-trichloroethane	1,1,2,2-tetrachloroethane	1,1,2-trichloroethane	1,1-dichloroethane	1,1-dichloroethene	1,2,3-trichloropropane	1,2-dichloroethane	1,2-dichloropropane	1,3-dichloropropane	1,3-dichloropropane	1,1,1-trichloroethane	1,1,1,2-tetrachloroethane	1,1,2-trichloroethane	1,1,2,2-tetrachloroethane	1,1,2-trichloroethane	1,1-dichloroethane	1,2-dichloroethane	1,3-dichloropropane	1,3-dichloropropane	1,1,1-trichloroethane	1,1,1,2-tetrachloroethane	1,1,2-trichloroethane	1,1,2,2-tetrachloroethane	1,1,2-trichloroethane	1,1-dichloroethane	1,2-dichloroethane	1,3-dichloropropane	1,3-dichloropropane					
SB01-01	0 - 0.1	26/04/2016	8376	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB01-04	0 - 0.1	26/04/2016	8376	Interlab_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB02-01	0 - 0.1	26/04/2016	8376	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB04-02	0.1 - 0.15	26/04/2016	8376	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB15-01	0 - 0.05	26/04/2016	8376	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB02-01	0.0 - 0.1	27/05/2019	16956	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB02-08	0.0 - 0.1	27/05/2019	16956	Interlab_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB02-02	0.25 - 0.35	27/05/2019	16956	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH01-01	0 - 0.3	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH01-02	0 - 0.3	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH01-04	0.4 - 0.5	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH02-01	0 - 0.1	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH02-02	0.2 - 0.3	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH02-03	0.3 - 0.4	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH03-01	0 - 0.1	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH03-04	0.65 - 0.75	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH04-02	0.25 - 0.45	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH04-03	0.75 - 0.45	4/12/2023	41076	Interlab_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH05-01	0 - 0.1	4/12/2023	1050793	Primary	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
BH05-03	0.7 - 0.8	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH04-01	0 - 0.1	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH04-02	0.3 - 0.4	4/12/2023	1050793	Primary	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	

	Halogenated Hydrocarbons					Solvents					Inorganics							
	1,2-dibromomethane	Iodomethane	Dichlorodifluoromethane	Iodomethane	Trichlorofluoromethane	Methyl Ethyl ketone	4-Methyl-2-pentanone	Acetone	Allyl chloride	Carbon disulfide	TOC	Cation Exchange Capacity (CEC)	Clay (%)	Crumbie Soil	Iron (%)	Conductivity (1:5 aqueous extract)	Molature Content	pH (lab)
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	cmol/kg	%	mg/kg	%	US/cm	%	pH Units
LOR	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	1,000	0.5	0.1	0.5	0.01	10	0.1	0.1
NEM 1999 Soil HIL A - Residential																		
NEM 1999 Soil HIL D - Commercial/Industrial																		
CRC CARE 2011 Soil HIL A Direct Contact - Residential (Low Density)																		
CRC CARE 2011 Soil HIL D Direct Contact - Commercial/Industrial																		
NEM 1999 Management Limits - Residential/Parklands (coarse)																		
NEM 1999 Management Limits - Commercial/Industrial (coarse)																		
NEM 1999 Soil HSL A/B Vapour Intrusion - Res. (Sand, 0-1 mBGL)																		
NEM 1999 Soil HSL D Vapour Intrusion - Comm/Ind (Sand, 0-1 mBGL)																		
NEM 1999 EIL - Urban Residential																		
NEM 1999 EIL - Commercial/Industrial																		
NEM 1999 Soil ESL - Urban Residential (coarse)																		
NEM 1999 Soil ESL - Commercial/Industrial (coarse)																		

Field ID	Depth (m)	Date	Lab Report	Sample Type															
SB01-01	0 - 0.1	26/04/2016	8376	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.1
SB01-04	0 - 0.1	26/04/2016	8376	Infiltrat.D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.6
SB02-01	0 - 0.1	26/04/2016	8376	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.2
SB04-02	0.1 - 0.15	26/04/2016	8376	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.8
SB13-01	0 - 0.05	26/04/2016	8376	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.3
SB02-01	0.0 - 0.1	27/05/2019	16956	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9
SB02-08	0.0 - 0.1	27/05/2019	16956	Infiltrat.D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8.8
SB02-02	0.25 - 0.35	27/05/2019	16956	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	13
BH01-01	0 - 0.3	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.4
BH01-02	0 - 0.3	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8.9
BH01-04	0.4 - 0.5	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.8
BH02-01	0 - 0.1	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.3
BH02-02	0.2 - 0.3	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10
BH02-03	0.3 - 0.4	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8.8
BH03-01	0 - 0.1	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<1
BH03-04	0.65 - 0.75	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8.1
BH04-02	0.25 - 0.45	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9.6
BH04-03	0.25 - 0.45	4/12/2023	41076	Infiltrat.D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12
BH05-01	0 - 0.1	4/12/2023	1050793	Primary	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.9
BH05-03	0.7 - 0.8	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9.3
BH04-01	0 - 0.1	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.2
BH04-02	0.3 - 0.4	4/12/2023	1050793	Primary	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	9.3

NEPM Ecological Investigation Level Calculations

Portion Lot 4711 Oldham Road, Elizabeth South, SA
 Preliminary Site Investigation Update
 231499

Chromium

Inputs
Select contaminant from list below Cr_III
Below needed to calculate fresh and aged ACLs
Enter % clay (values from 0 to 100%) 8.8
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
or for aged ABCs only
Enter State (or closest State) SA
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	#NUM!	140
Urban residential and open public spaces	#NUM!	400
Commercial and industrial	#NUM!	650

NEPM Ecological Investigation Level Calculations

Portion Lot 4711 Oldham Road, Elizabeth South, SA
 Preliminary Site Investigation Update
 231499

Copper

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) 34
Enter soil pH (calcium chloride method) (values from 1 to 14) 7.3
Enter organic carbon content (%OC) (values from 0 to 50%) 0.5
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
or for aged ABCs only
Enter State (or closest State) SA
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	#NUM!	90
Urban residential and open public spaces	#NUM!	240
Commercial and industrial	#NUM!	340

NEPM Ecological Investigation Level Calculations

Portion Lot 4711 Oldham Road, Elizabeth South, SA
Preliminary Site Investigation Update
231499

Lead

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

NEPM Ecological Investigation Level Calculations

Portion Lot 4711 Oldham Road, Elizabeth South, SA
 Preliminary Site Investigation Update
 231499

Nickel

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)
34
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
or for aged ABCs only
Enter State (or closest State)
SA
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	#NUM!	70
Urban residential and open public spaces	#NUM!	390
Commercial and industrial	#NUM!	660

NEPM Ecological Investigation Level Calculations

Portion Lot 4711 Oldham Road, Elizabeth South, SA
 Preliminary Site Investigation Update
 231499

Zinc

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)
34
Enter soil pH (calcium chloride method) (values from 1 to 14)
7.3
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
or for aged ABCs only
Enter State (or closest State)
SA
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	#NUM!	290
Urban residential and open public spaces	#NUM!	1100
Commercial and industrial	#NUM!	1700

	Metals																		
	Arsenic	Barium	Beryllium	Boron	Cadmium	Chromium (hexavalent)	Chromium (III+VI)	Chromium (trivalent)	Cobalt	Copper	Iron	Lead	Manganese	Mercury	Molybdenum	Nickel	Selenium	Silver	Zinc
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
LOR	2	1	1	3	0.4	1	1	1	1	1	1	1	1	0.1	1	1	2	0.2	1
SA EPA - Waste Fill	20	300	20		3	1		400	170	60		300	500	1		60			200
SA EPA - Intermediate Waste	200		40		30	200		170	2,000	1,200		6,000	30			600			14,000
SA EPA - Low Level Contaminated Waste	750		150		60	750		1,000	7,500	5,000		10,000	110			3,000			50,000
Exceeds SA EPA - Low Level Contaminated Waste																			

Field ID	Depth (m)	Date	Lab Report	Sample Type	As	Ba	Be	B	Cd	Cr (hex)	Cr (III+VI)	Cr (trivalent)	Co	Cu	Fe	Pb	Mn	Hg	Mo	Ni	Se	Ag	Zn
SB01-01	0 - 0.1	26/04/2016	8376	Primary	<4	-	<1	4	<0.4	-	3	-	1	2	-	3	48	<0.1	-	2	<2	-	3
SB01-04	0 - 0.1	26/04/2016	8376	Intralab_D	<4	-	<1	<3	<0.4	-	2	-	<1	<1	-	2	18	<0.1	-	<1	<2	-	1
SB02-01	0 - 0.1	26/04/2016	8376	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB04-02	0.1 - 0.15	26/04/2016	8376	Primary	<4	-	<1	3	<0.4	-	<1	-	<1	<1	-	2	84	<0.1	-	<1	<2	-	4
SB15-01	0 - 0.05	26/04/2016	8376	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB02-01	0.0 - 0.1	27/05/2019	16956	Primary	<4	39	<1	-	<0.4	<1	12	12	6	100	-	6	280	<0.1	<1	10	-	<1	16
SB02-08	0.0 - 0.1	27/05/2019	16956	Intralab_D	5	38	<1	-	<0.4	<1	15	15	9	85	-	5	470	<0.1	<1	16	-	<1	15
SB02-02	0.25 - 0.35	27/05/2019	16956	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH01-01	0 - 0.3	4/12/2023	1050793	Primary	4.2	-	-	-	<0.4	-	24	-	-	20	-	22	-	<0.1	-	13	-	-	33
BH01-02	0 - 0.3	4/12/2023	1050793	Intralab_D	4.4	-	-	-	<0.4	-	25	-	-	21	-	24	-	<0.1	-	14	-	-	41
BH01-04	0.4 - 0.5	4/12/2023	1050793	Primary	4.3	-	<2	<10	<0.4	-	31	-	12	18	-	18	480	<0.1	-	18	<2	-	29
BH02-01	0 - 0.1	4/12/2023	1050793	Primary	5.4	30	<2	-	<0.4	<1	14	14	7.1	11	20,000	19	430	<0.1	-	11	-	<2	58
BH02-02	0.2 - 0.3	4/12/2023	1050793	Primary	3.7	-	-	-	<0.4	-	30	-	-	17	-	15	-	<0.1	-	16	-	-	25
BH02-03	0.3 - 0.4	4/12/2023	1050793	Primary	4	-	<2	<20	<0.4	-	29	-	8.3	15	-	11	240	<0.1	-	17	<2	-	28
BH03-01	0 - 0.1	4/12/2023	1050793	Primary	4	-	-	-	<0.4	-	<5	-	-	<5	-	<5	-	<0.1	-	<5	-	-	<5
BH03-04	0.65 - 0.75	4/12/2023	1050793	Primary	5	-	<2	16	<0.4	-	37	-	11	17	-	13	300	<0.1	-	21	<2	-	28
BH04-02	0.25 - 0.45	4/12/2023	1050793	Primary	4.4	-	<2	<20	<0.4	-	38	-	14	19	-	15	430	<0.1	-	19	<2	-	24
BH04-03	0.25 - 0.45	4/12/2023	41076	Intralab_D	<4	-	<1	<10	<0.4	-	32	-	13	16	-	10	430	<0.1	-	15	<2	-	18
BH05-01	0 - 0.1	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH05-03	0.7 - 0.8	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	25,000	-	-	-	-	-	-	-	-
BH06-01	0 - 0.1	4/12/2023	1050793	Primary	2.4	-	-	-	<0.4	-	<5	-	-	<5	-	<5	-	<0.1	-	<5	-	-	<5
BH06-02	0.3 - 0.4	4/12/2023	1050793	Primary	5.6	-	<2	<10	<0.4	-	47	-	12	24	-	17	390	<0.1	-	26	<2	-	29

	PAH																		
	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Benzo(e)fluoranthene	Benzo(i)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Naphthalene	Phenanthrene	Pyrene	Benzo(a)pyrene TEQ	Total PAH
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
LOR	0.1	0.1	0.1	0.1	0.05	0.1	0.2	0.2	0.5	0.5	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.5	0.05
SA EPA - Waste Fill					1														5
SA EPA - Intermediate Waste					2														40
SA EPA - Low Level Contaminated Waste					5														200
Exceeds SA EPA - Low Level Contaminated Waste																			

Field ID	Depth (m)	Date	Lab Report	Sample Type	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Benzo(e)fluoranthene	Benzo(i)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Naphthalene	Phenanthrene	Pyrene	Benzo(a)pyrene TEQ	Total PAH	
SB01-01	0 - 0.1	26/04/2016	8376	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
SB01-04	0 - 0.1	26/04/2016	8376	Intralab_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
SB02-01	0 - 0.1	26/04/2016	8376	Primary	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1	-	<0.2	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.5	<0.05
SB04-02	0.1 - 0.15	26/04/2016	8376	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
SB15-01	0 - 0.05	26/04/2016	8376	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
SB02-01	0.0 - 0.1	27/05/2019	16956	Primary	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1	-	<0.2	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.5	<0.05
SB02-08	0.0 - 0.1	27/05/2019	16956	Intralab_D	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1	-	<0.2	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.5	<0.05
SB02-02	0.25 - 0.35	27/05/2019	16956	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
BH01-01	0 - 0.3	4/12/2023	1050793	Primary	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
BH01-02	0 - 0.3	4/12/2023	1050793	Intralab_D	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
BH01-04	0.4 - 0.5	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
BH02-01	0 - 0.1	4/12/2023	1050793	Primary	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
BH02-02	0.2 - 0.3	4/12/2023	1050793	Primary	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
BH02-03	0.3 - 0.4	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
BH03-01	0 - 0.1	4/12/2023	1050793	Primary	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
BH03-04	0.65 - 0.75	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
BH04-02	0.25 - 0.45	4/12/2023	1050793	Primary	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
BH04-03	0.25 - 0.45	4/12/2023	41076	Inferlab_D	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1	<0.2	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.05	
BH05-01	0 - 0.1	4/12/2023	1050793	Primary	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
BH05-03	0.7 - 0.8	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
BH06-01	0 - 0.1	4/12/2023	1050793	Primary	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
BH06-02	0.3 - 0.4	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	

	TRH					BTEX					
	TRH C6-C7	TRH C10-C14	TRH C15-C28	TRH C29 - C34	TRH C10 - C34 (sum of fractions)	Benzene	Toluene	Ethylbenzene	Xylyne (o)	Xylyne (m & p)	Xylyne Total
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
LOR	10	20	50	50	50	0.1	0.1	0.1	0.1	0.2	0.3
SA EPA - Waste Fil	65				1,000	1	1.4	3.1			14
SA EPA - Intermediate Waste	100				1,000	5	50	100			180
SA EPA - Low Level Contaminated Waste	1,000				10,000	15	500	1,000			1,800
Exceeds SA EPA - Low Level Contaminated Waste											

Field ID	Depth (m)	Date	Lab Report	Sample Type															
SB01-01	0 - 0.1	26/04/2016	8376	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB01-04	0 - 0.1	26/04/2016	8376	Intralab_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB02-01	0 - 0.1	26/04/2016	8376	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB04-02	0.1 - 0.15	26/04/2016	8376	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB15-01	0 - 0.05	26/04/2016	8376	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB02-01	0.0 - 0.1	27/05/2019	16956	Primary	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	<1	<2	<1	<1	<1	<1
SB02-08	0.0 - 0.1	27/05/2019	16956	Intralab_D	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<1	<1	<2	<1	<1	<1	<1
SB02-02	0.25 - 0.35	27/05/2019	16956	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH01-01	0 - 0.3	4/12/2023	1050793	Primary	<20	<20	<50	<50	<50	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.3	<0.3	<0.3	<0.3
BH01-02	0 - 0.3	4/12/2023	1050793	Intralab_D	<20	<20	<50	<50	<50	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.3	<0.3	<0.3	<0.3
BH01-04	0.4 - 0.5	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH02-01	0 - 0.1	4/12/2023	1050793	Primary	<20	<20	<50	<50	<50	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.3	<0.3	<0.3	<0.3
BH02-02	0.2 - 0.3	4/12/2023	1050793	Primary	<20	<20	<50	<50	<50	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.3	<0.3	<0.3	<0.3
BH02-03	0.3 - 0.4	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH03-01	0 - 0.1	4/12/2023	1050793	Primary	<20	<20	<50	<50	<50	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.3	<0.3	<0.3	<0.3
BH03-04	0.65 - 0.75	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH04-02	0.25 - 0.45	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH04-03	0.25 - 0.45	4/12/2023	41076	Intralab_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH05-01	0 - 0.1	4/12/2023	1050793	Primary	-	-	-	-	-	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.3	<0.3	<0.3	<0.3
BH05-03	0.7 - 0.8	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH06-01	0 - 0.1	4/12/2023	1050793	Primary	<20	<20	<50	<50	<50	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.3	<0.3	<0.3	<0.3
BH06-02	0.3 - 0.4	4/12/2023	1050793	Primary	-	-	-	-	-	<0.1	<0.1	<0.1	<0.1	<0.2	<0.3	<0.3	<0.3	<0.3	<0.3

	Organochlorine Pesticides																								
	4,4-DDD	4,4-DDE	4,4-DDT	DDT+DDE+DDD	p-p'HC	o-p'HC	p-p'HC	o-p'HC (Lindane)	Aldrin	Dieldrin	Aldin + Dieldrin	Chlordane	Chlordane (Cis)	Chlordane (trans)	Endosulfan I	Endosulfan II	Endosulfan sulphate	Endrin	Endrin aldehyde	Endrin ketone	Heptachlor	Heptachlor epoxide	Hexachlorobenzene	Methoxychlor	Toxaphene
LOR	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
SA EPA - Waste Fill			2									2	2								2				
SA EPA - Intermediate Waste			2									2	2								2				
SA EPA - Low Level Contaminated Waste			50									50	50								50				
Exceeds SA EPA - Low Level Contaminated Waste																									

Field ID	Depth (m)	Date	Lab Report	Sample Type	4,4-DDD	4,4-DDE	4,4-DDT	DDT+DDE+DDD	p-p'HC	o-p'HC	p-p'HC	o-p'HC (Lindane)	Aldrin	Dieldrin	Aldin + Dieldrin	Chlordane	Chlordane (Cis)	Chlordane (trans)	Endosulfan I	Endosulfan II	Endosulfan sulphate	Endrin	Endrin aldehyde	Endrin ketone	Heptachlor	Heptachlor epoxide	Hexachlorobenzene	Methoxychlor	Toxaphene		
SB01-01	0 - 0.1	26/04/2016	8376	Primary	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<2	
SB01-04	0 - 0.1	26/04/2016	8376	Intratab_D	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<2	
SB02-01	0 - 0.1	26/04/2016	8376	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
SB04-02	0.1 - 0.15	26/04/2016	8376	Primary	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.1	<2	
SB15-01	0 - 0.05	26/04/2016	8376	Primary	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.1	<2	
SB02-01	0.0 - 0.1	27/05/2019	16956	Primary	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.1	-	
SB02-08	0.0 - 0.1	27/05/2019	16956	Intratab_D	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.1	-	
SB02-02	0.25 - 0.35	27/05/2019	16956	Primary	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	<0.1	<0.1	<0.1	<0.1	-	
BH01-01	0 - 0.3	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
BH01-02	0 - 0.3	4/12/2023	1050793	Intratab_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
BH01-04	0.4 - 0.5	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
BH02-01	0 - 0.1	4/12/2023	1050793	Primary	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.5
BH02-02	0.2 - 0.3	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH02-03	0.3 - 0.4	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH03-01	0 - 0.1	4/12/2023	1050793	Primary	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.5
BH03-04	0.65 - 0.75	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH04-02	0.25 - 0.45	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH04-03	0.25 - 0.45	4/12/2023	41076	Intratab_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH05-01	0 - 0.1	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH05-03	0.7 - 0.8	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH06-01	0 - 0.1	4/12/2023	1050793	Primary	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	-	-	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.5
BH06-02	0.3 - 0.4	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

	Azinphos methyl	BoStar (Sulprofos)	Bromophos-ethyl	Chlorfenvinphos	Chlorpyrifos	Chlorpyrifos-methyl	Coumaphos	Demeton-O	Demeton-S	Diazinon	Dichlorvos	Dimethoate	Disulfoton	EPN	Ethion	Ethoprop	Fenitrothion	Organophosphates
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
LOR	0.05	0.2	0.05	0.05	0.05	0.05	2	0.2	0.2	0.05	0.05	0.05	0.2	0.2	0.05	0.2	0.1	
SA EPA - Waste Fill																		
SA EPA - Intermediate Waste																		
SA EPA - Low Level Contaminated Waste																		
Exceeds SA EPA - Low Level Contaminated Waste																		

Field ID	Depth (m)	Date	Lab Report	Sample Type	Azinphos methyl	BoStar (Sulprofos)	Bromophos-ethyl	Chlorfenvinphos	Chlorpyrifos	Chlorpyrifos-methyl	Coumaphos	Demeton-O	Demeton-S	Diazinon	Dichlorvos	Dimethoate	Disulfoton	EPN	Ethion	Ethoprop	Fenitrothion	Organophosphates
SB01-01	0 - 0.1	26/04/2016	8376	Primary	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-
SB01-04	0 - 0.1	26/04/2016	8376	Intralab_D	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-
SB02-01	0 - 0.1	26/04/2016	8376	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB04-02	0.1 - 0.15	26/04/2016	8376	Primary	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-
SB15-01	0 - 0.05	26/04/2016	8376	Primary	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-
SB02-01	0.0 - 0.1	27/05/2019	16956	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB02-08	0.0 - 0.1	27/05/2019	16956	Intralab_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB02-02	0.25 - 0.35	27/05/2019	16956	Primary	<0.1	<0.1	-	<0.1	<0.1	-	-	-	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	-	-	<0.1
BH01-01	0 - 0.3	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH01-02	0 - 0.3	4/12/2023	1050793	Intralab_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH01-04	0.4 - 0.5	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH02-01	0 - 0.1	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH02-02	0.2 - 0.3	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH02-03	0.3 - 0.4	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH03-01	0 - 0.1	4/12/2023	1050793	Primary	<0.2	<0.2	-	<0.2	<0.2	<0.2	<2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
BH03-04	0.65 - 0.75	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH04-02	0.25 - 0.45	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH04-03	0.25 - 0.45	4/12/2023	41076	Intralab_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH05-01	0 - 0.1	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH05-03	0.7 - 0.8	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH06-01	0 - 0.1	4/12/2023	1050793	Primary	<0.2	<0.2	-	<0.2	<0.2	<0.2	<2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
BH06-02	0.3 - 0.4	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Phosphorous Pesticides																	
Fenathion	Fenitrothion	Malathion	Merphos	Methyl parathion	Mevinphos (Phosdin)	Monocrotophos	Naled (Dibrom)	Omethoate	Parathion	Phorate	Triphos-methyl	Pyrazophos	Ronnel	Tebufoz	Triathion	Trichloroate	Tetrachlorophos
mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
LOR	0.2	0.05	0.05	0.2	0.2	0.2	0.2	2	0.1	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.2
SA EPA - Waste Fill																	
SA EPA - Intermediate Waste																	
SA EPA - Low Level Contaminated Waste																	
Exceeds SA EPA - Low Level Contaminated Waste																	

Field ID	Depth (m)	Date	Lab Report	Sample Type	Fenathion	Fenitrothion	Malathion	Merphos	Methyl parathion	Mevinphos (Phosdin)	Monocrotophos	Naled (Dibrom)	Omethoate	Parathion	Phorate	Triphos-methyl	Pyrazophos	Ronnel	Tebufoz	Triathion	Trichloroate	Tetrachlorophos	
SB01-01	0 - 0.1	26/04/2016	8376	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB01-04	0 - 0.1	26/04/2016	8376	Intralab_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB02-01	0 - 0.1	26/04/2016	8376	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB04-02	0.1 - 0.15	26/04/2016	8376	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB15-01	0 - 0.05	26/04/2016	8376	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB02-01	0.0 - 0.1	27/05/2019	16956	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB02-08	0.0 - 0.1	27/05/2019	16956	Intralab_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB02-02	0.25 - 0.35	27/05/2019	16956	Primary	-	-	<0.1	-	-	-	-	-	-	<0.1	-	-	-	<0.1	-	-	-	-	-
BH01-01	0 - 0.3	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH01-02	0 - 0.3	4/12/2023	1050793	Intralab_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH01-04	0.4 - 0.5	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH02-01	0 - 0.1	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH02-02	0.2 - 0.3	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH02-03	0.3 - 0.4	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH03-01	0 - 0.1	4/12/2023	1050793	Primary	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<2	<0.2	<2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
BH03-04	0.65 - 0.75	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH04-02	0.25 - 0.45	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH04-03	0.25 - 0.45	4/12/2023	41076	Intralab_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH05-01	0 - 0.1	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH05-03	0.7 - 0.8	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH06-01	0 - 0.1	4/12/2023	1050793	Primary	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<2	<0.2	<2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
BH06-02	0.3 - 0.4	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

	Pesticide	Polychlorinated Biphenyls								Phenols															
	Mitec	Arochlor 1016	Arochlor 1221	Arochlor 1232	Arochlor 1242	Arochlor 1248	Arochlor 1254	Arochlor 1260	PCBs (Sum of Total)	2,4-dimethylphenol	2-methylphenol	2-nitrophenol	3,4,4-trimethylphenol	4,6-Dinitro-2-methylphenol	4,6-Dinitro-o-cyclohexyl phenol	4-chloro-3-methylphenol	2,4-dinitrophenol	4-methylphenol	4-nitrophenol	Cresol Total	Dinoseb	Total Phenols	Phenolics Total	Phenols (Total Halogenated)	Phenols (Total Non Halogenated)
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
LOR	0.5	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.4	5	20	1	2	0.4	4	0.2	1	0.2	0.2	1	20
SA EPA - Waste Fill									2													0.5			
SA EPA - Intermediate Waste									2													17,000			
SA EPA - Low Level Contaminated Waste									50													50,000			
Exceeds SA EPA - Low Level Contaminated Waste																									

Field ID	Depth (m)	Date	Lab Report	Sample Type	Mitec	Arochlor 1016	Arochlor 1221	Arochlor 1232	Arochlor 1242	Arochlor 1248	Arochlor 1254	Arochlor 1260	PCBs (Sum of Total)	2,4-dimethylphenol	2-methylphenol	2-nitrophenol	3,4,4-trimethylphenol	4,6-Dinitro-2-methylphenol	4,6-Dinitro-o-cyclohexyl phenol	4-chloro-3-methylphenol	2,4-dinitrophenol	4-methylphenol	4-nitrophenol	Cresol Total	Dinoseb	Total Phenols	Phenolics Total	Phenols (Total Halogenated)	Phenols (Total Non Halogenated)		
SB01-01	0 - 0.1	26/04/2016	8376	Primary	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
SB01-04	0 - 0.1	26/04/2016	8376	Intralab_D	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
SB02-01	0 - 0.1	26/04/2016	8376	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
SB04-02	0.1 - 0.15	26/04/2016	8376	Primary	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
SB15-01	0 - 0.05	26/04/2016	8376	Primary	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
SB02-01	0.0 - 0.1	27/05/2019	16956	Primary	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	-	-	<2	<2	<0.4	<4	<0.2	-	<0.2	<0.2	-	-	-	
SB02-08	0.0 - 0.1	27/05/2019	16956	Intralab_D	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.2	<0.2	-	-	<2	<2	<0.4	<4	<0.2	-	<0.2	<0.2	-	-	-	
SB02-02	0.25 - 0.35	27/05/2019	16956	Primary	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH01-01	0 - 0.3	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH01-02	0 - 0.3	4/12/2023	1050793	Intralab_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH01-04	0.4 - 0.5	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH02-01	0 - 0.1	4/12/2023	1050793	Primary	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.5	<0.2	<1	<0.4	<5	<20	<1	<5	-	<5	<0.5	<20	<0.5	-	<1	<20	-
BH02-02	0.2 - 0.3	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH02-03	0.3 - 0.4	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH03-01	0 - 0.1	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH03-04	0.65 - 0.75	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH04-02	0.25 - 0.45	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH04-03	0.25 - 0.45	4/12/2023	41076	Intralab_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH05-01	0 - 0.1	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH05-03	0.7 - 0.8	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH06-01	0 - 0.1	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH06-02	0.3 - 0.4	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

	Halogenated Phenols							
	2,3,4,6-tetrachlorophenol	2,4,5-trichlorophenol	2,4,6-trichlorophenol	2,4-dichlorophenol	2,6-dichlorophenol	2-chlorophenol	pentachlorophenol	tetrachlorophenols
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
LOR	0.2	0.2	0.2	0.2	0.2	0.2	1	1
SA EPA - Waste Fil								
SA EPA - Intermediate Waste								
SA EPA - Low Level Contaminated Waste								
Exceeds SA EPA - Low Level Contaminated Waste								

Field ID	Depth (m)	Date	Lab Report	Sample Type								
SB01-01	0 - 0.1	26/04/2016	8376	Primary	-	-	-	-	-	-	-	-
SB01-04	0 - 0.1	26/04/2016	8376	Intralab_D	-	-	-	-	-	-	-	-
SB02-01	0 - 0.1	26/04/2016	8376	Primary	-	-	-	-	-	-	-	-
SB04-02	0.1 - 0.15	26/04/2016	8376	Primary	-	-	-	-	-	-	-	-
SB15-01	0 - 0.05	26/04/2016	8376	Primary	-	-	-	-	-	-	-	-
SB02-01	0.0 - 0.1	27/05/2019	16956	Primary	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<1	-
SB02-08	0.0 - 0.1	27/05/2019	16956	Intralab_D	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<1	-
SB02-02	0.25 - 0.35	27/05/2019	16956	Primary	-	-	-	-	-	-	-	-
BH01-01	0 - 0.3	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-
BH01-02	0 - 0.3	4/12/2023	1050793	Intralab_D	-	-	-	-	-	-	-	-
BH01-04	0.4 - 0.5	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-
BH02-01	0 - 0.1	4/12/2023	1050793	Primary	-	<1	<1	<0.5	<0.5	<0.5	<1	<10
BH02-02	0.2 - 0.3	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-
BH02-03	0.3 - 0.4	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-
BH03-01	0 - 0.1	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-
BH03-04	0.65 - 0.75	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-
BH04-02	0.25 - 0.45	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-
BH04-03	0.25 - 0.45	4/12/2023	41076	Intralab_D	-	-	-	-	-	-	-	-
BH05-01	0 - 0.1	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-
BH05-03	0.7 - 0.8	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-
BH06-01	0 - 0.1	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-
BH06-02	0.3 - 0.4	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-

	Chlorinated Hydrocarbons																									
	1,1,1,2-tetrachloroethane	1,1,1-trichloroethane	1,1,2,2-tetrachloroethane	1,1,2-trichloroethane	1,1-dichloroethane	1,1-dichloroethene	1,2,3-trichloropropane	1,2-dichloroethane	1,2-dichloropropane	1,3-dichloropropane	Bromochloromethane	Bromodichloromethane	Bromoform	Carbon tetrachloride	Chlorodibromomethane	Chloroethane	Chloroform	Chloromethane	cis-1,2-dichloroethene	cis-1,3-dichloropropene	Dibromomethane	Dichloromethane	Trichloroethene (TCE)	trans-1,2-dichloroethene	trans-1,3-dichloropropane	Vinyl chloride
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
LOR	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
SA EPA - Waste Fill																										
SA EPA - Intermediate Waste																										
SA EPA - Low Level Contaminated Waste																										
Exceeds SA EPA - Low Level Contaminated Waste																										

Field ID	Depth (m)	Date	Lab Report	Sample Type	1,1,1,2-tetrachloroethane	1,1,1-trichloroethane	1,1,2,2-tetrachloroethane	1,1,2-trichloroethane	1,1-dichloroethane	1,1-dichloroethene	1,2,3-trichloropropane	1,2-dichloroethane	1,2-dichloropropane	1,3-dichloropropane	Bromochloromethane	Bromodichloromethane	Bromoform	Carbon tetrachloride	Chlorodibromomethane	Chloroethane	Chloroform	Chloromethane	cis-1,2-dichloroethene	cis-1,3-dichloropropene	Dibromomethane	Dichloromethane	Trichloroethene (TCE)	trans-1,2-dichloroethene	trans-1,3-dichloropropane	Vinyl chloride	
SB01-01	0 - 0.1	26/04/2016	8376	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
SB01-04	0 - 0.1	26/04/2016	8376	Intralab_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
SB02-01	0 - 0.1	26/04/2016	8376	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
SB04-02	0.1 - 0.15	26/04/2016	8376	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
SB15-01	0 - 0.05	26/04/2016	8376	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
SB02-01	0.0 - 0.1	27/05/2019	16956	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
SB02-08	0.0 - 0.1	27/05/2019	16956	Intralab_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
SB02-02	0.25 - 0.35	27/05/2019	16956	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
BH01-01	0 - 0.3	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
BH01-02	0 - 0.3	4/12/2023	1050793	Intralab_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
BH01-04	0.4 - 0.5	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
BH02-01	0 - 0.1	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
BH02-02	0.2 - 0.3	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
BH02-03	0.3 - 0.4	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
BH03-01	0 - 0.1	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
BH03-04	0.65 - 0.75	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
BH04-02	0.25 - 0.45	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
BH04-03	0.25 - 0.45	4/12/2023	41076	Intralab_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
BH05-01	0 - 0.1	4/12/2023	1050793	Primary	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
BH05-03	0.7 - 0.8	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
BH06-01	0 - 0.1	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
BH06-02	0.3 - 0.4	4/12/2023	1050793	Primary	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

	VOCs	Halogenated Benzenes						Halogenated Hydrocarbons					MAH				Inorganics			Solvents				
	Tetrachloroethene (PCE)	1,2-dichlorobenzene	1,3-dichlorobenzene	1,4-dichlorobenzene	4-Chlorotoluene	Bromobenzene	Chlorobenzene	1,2-dibromoethane	Bromomethane	Dichlorodifluoromethane	Iodomethane	Trichlorofluoromethane	Total MAH	1,2,4-trimethylbenzene	1,3,5-trimethylbenzene	Isopropylbenzene	Styrene	Cyanide Total	Moisture Content	pH (Lab)	Methyl Ethyl Ketone	4-Methyl-2-pentanone	Acetone	Allyl chloride
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	%	pH Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
LOR	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.1	0.1	0.5	0.5	0.5	0.5	0.5
SA EPA - Waste Fill																		500						
SA EPA - Intermediate Waste	14																	1,000						
SA EPA - Low Level Contaminated Waste	25.2																	3,500						
Exceeds SA EPA - Low Level Contaminated Waste																								

Field ID	Depth (m)	Date	Lab Report	Sample Type																					
SB01-01	0 - 0.1	26/04/2016	8376	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB01-04	0 - 0.1	26/04/2016	8376	Intralab_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB02-01	0 - 0.1	26/04/2016	8376	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB04-02	0.1 - 0.15	26/04/2016	8376	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB15-01	0 - 0.05	26/04/2016	8376	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SB02-01	0.0 - 0.1	27/05/2019	16956	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	9	-	-	-	-	-	-
SB02-08	0.0 - 0.1	27/05/2019	16956	Intralab_D	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	8.8	-	-	-	-	-	-
SB02-02	0.25 - 0.35	27/05/2019	16956	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	13	-	-	-	-	-	-
BH01-01	0 - 0.3	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.4	-	-	-	-	-	-
BH01-02	0 - 0.3	4/12/2023	1050793	Intralab_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8.9	-	-	-	-	-	-
BH01-04	0.4 - 0.5	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.8	-	-	-	-	-	-
BH02-01	0 - 0.1	4/12/2023	1050793	Primary	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	<5	4.3	-	-	-	-	-	-
BH02-02	0.2 - 0.3	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10	-	-	-	-	-	-
BH02-03	0.3 - 0.4	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8.8	-	-	-	-	-	-
BH03-01	0 - 0.1	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	-	-	-	-	-	-
BH03-04	0.65 - 0.75	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8.1	-	-	-	-	-	-
BH04-02	0.25 - 0.45	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9.6	-	-	-	-	-	-
BH04-03	0.25 - 0.45	4/12/2023	41076	Intralab_D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12	-	-	-	-	-	-
BH05-01	0 - 0.1	4/12/2023	1050793	Primary	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	1.9	-	<0.5	<0.5	<0.5	<0.5	<0.5
BH05-03	0.7 - 0.8	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9.3	7.3	-	-	-	-	-
BH06-01	0 - 0.1	4/12/2023	1050793	Primary	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.2	-	-	-	-	-	-
BH06-02	0.3 - 0.4	4/12/2023	1050793	Primary	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	9.3	-	<0.5	<0.5	<0.5	<0.5	<0.5

User Selected Options

Date/Time of Computation ProUCL 5.2 12/12/2023 12:11:44 PM
 From File WorkSheet.xls
 Full Precision OFF
 Confidence Coefficient 95%
 Number of Bootstrap Operations 2000

Copper

General Statistics

Total Number of Observations	13	Number of Distinct Observations	11
Number of Detects	10	Number of Non-Detects	3
Number of Distinct Detects	9	Number of Distinct Non-Detects	2
Minimum Detect	2	Minimum Non-Detect	1
Maximum Detect	100	Maximum Non-Detect	5
Variance Detects	741.8	Percent Non-Detects	23.08%
Mean Detects	24.4	SD Detects	27.24
Median Detects	17.5	CV Detects	1.116
Skewness Detects	2.862	Kurtosis Detects	8.735
Mean of Logged Detects	2.813	SD of Logged Detects	0.949

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.577	Shapiro Wilk GOF Test	
1% Shapiro Wilk Critical Value	0.781	Detected Data Not Normal at 1% Significance Level	
Lilliefors Test Statistic	0.406	Lilliefors GOF Test	
1% Lilliefors Critical Value	0.304	Detected Data Not Normal at 1% Significance Level	

Detected Data Not Normal at 1% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	19.08	KM Standard Error of Mean	7.21
90KM SD	24.66	95% KM (BCA) UCL	33.31
95% KM (t) UCL	31.93	95% KM (Percentile Bootstrap) UCL	31.69
95% KM (z) UCL	30.94	95% KM Bootstrap t UCL	47.5
90% KM Chebyshev UCL	40.71	95% KM Chebyshev UCL	50.5
97.5% KM Chebyshev UCL	64.1	99% KM Chebyshev UCL	90.81

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	1.038	Anderson-Darling GOF Test	
5% A-D Critical Value	0.74	Detected Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.297	Kolmogorov-Smirnov GOF	
5% K-S Critical Value	0.271	Detected Data Not Gamma Distributed at 5% Significance Level	

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	1.454	k star (bias corrected MLE)	1.084
Theta hat (MLE)	16.78	Theta star (bias corrected MLE)	22.5
nu hat (MLE)	29.08	nu star (bias corrected)	21.69
Mean (detects)	24.4		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	18.77
Maximum	100	Median	17
SD	25.9	CV	1.38
k hat (MLE)	0.365	k star (bias corrected MLE)	0.332
Theta hat (MLE)	51.47	Theta star (bias corrected MLE)	56.57
nu hat (MLE)	9.483	nu star (bias corrected)	8.628
Adjusted Level of Significance (β)	0.0301		
Approximate Chi Square Value (8.63, α)	3.104	Adjusted Chi Square Value (8.63, β)	2.65
95% Gamma Approximate UCL	52.18	95% Gamma Adjusted UCL	61.11

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	19.08	SD (KM)	24.66
Variance (KM)	608.1	SE of Mean (KM)	7.21
k hat (KM)	0.598	k star (KM)	0.512
nu hat (KM)	15.56	nu star (KM)	13.3
theta hat (KM)	31.87	theta star (KM)	37.28
80% gamma percentile (KM)	31.36	90% gamma percentile (KM)	51.37
95% gamma percentile (KM)	72.68	99% gamma percentile (KM)	125

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (13.30, α)	6.097	Adjusted Chi Square Value (13.30, β)	5.417
95% KM Approximate Gamma UCL	41.62	95% KM Adjusted Gamma UCL	46.85

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.828	Shapiro Wilk GOF Test
10% Shapiro Wilk Critical Value	0.869	Detected Data Not Lognormal at 10% Significance Level
Lilliefors Test Statistic	0.256	Lilliefors GOF Test
10% Lilliefors Critical Value	0.241	Detected Data Not Lognormal at 10% Significance Level

Detected Data Not Lognormal at 10% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	19.38	Mean in Log Scale	2.378
SD in Original Scale	25.44	SD in Log Scale	1.176
95% t UCL (assumes normality of ROS data)	31.96	95% Percentile Bootstrap UCL	31.66
95% BCA Bootstrap UCL	39	95% Bootstrap t UCL	48.71
95% H-UCL (Log ROS)	62.97		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	2.217	KM Geo Mean	9.18
KM SD (logged)	1.353	95% Critical H Value (KM-Log)	3.496
KM Standard Error of Mean (logged)	0.4	95% H-UCL (KM -Log)	89.83
KM SD (logged)	1.353	95% Critical H Value (KM-Log)	3.496
KM Standard Error of Mean (logged)	0.4		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	19.19	Mean in Log Scale	2.251
SD in Original Scale	25.58	SD in Log Scale	1.399
95% t UCL (Assumes normality)	31.84	95% H-Stat UCL	107.5

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution

Suggested UCL to Use

95% KM (t) UCL 31.93

The calculated UCLs are based on assumptions that the data were collected in a random and unbiased manner.

Please verify the data were collected from random locations.

**If the data were collected using judgmental or other non-random methods,
then contact a statistician to correctly calculate UCLs.**

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness using results from simulation studies.

However, simulation results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

Appendix I

Quality Assurance and Quality Control

	Unit	LOR	Field ID		RPD	RPD	
			BH01-01	BH01-02		BH04-03	
			Date	Date		Date	
			Lab Report Number	Lab Report Number		Lab Report Number	
Sample Type			Primary	Intralab_D	Interlab_D	RPD	RPD
TRH							
C6-C10 (F1)	mg/kg	20	<20	<20	0	-	-
C6-C10 (F1 minus BTEX)	mg/kg	20	<20	<20	0	-	-
C10-C16 (F2)	mg/kg	50	<50	<50	0	-	-
C10-C16 (F2 minus Naphthalene)	mg/kg	50	<50	<50	0	-	-
C16-C34 (F3)	mg/kg	100	<100	<100	0	-	-
C34-C40 (F4)	mg/kg	100	<100	<100	0	-	-
C10-C40 (Sum of total)	mg/kg	100	<100	<100	0	-	-
BTEX							
Benzene	mg/kg	0.1	<0.1	<0.1	0	-	-
Toluene	mg/kg	0.1	<0.1	<0.1	0	-	-
Ethylbenzene	mg/kg	0.1	<0.1	<0.1	0	-	-
Xylene (o)	mg/kg	0.1	<0.1	<0.1	0	-	-
Xylene (m & p)	mg/kg	0.2	<0.2	<0.2	0	-	-
Xylene Total	mg/kg	0.3	<0.3	<0.3	0	-	-
PAH							
Benzo(b+j+k)fluoranthene	mg/kg	0.2	-	-	-	<0.2	-
Acenaphthene	mg/kg	0.1	<0.5	<0.5	0	<0.1	0
Acenaphthylene	mg/kg	0.1	<0.5	<0.5	0	<0.1	0
Anthracene	mg/kg	0.1	<0.5	<0.5	0	<0.1	0
Benzo(a)anthracene	mg/kg	0.1	<0.5	<0.5	0	<0.1	0
Benzo(a) pyrene	mg/kg	0.05	<0.5	<0.5	0	<0.05	0
Benzo(g,h,i)perylene	mg/kg	0.1	<0.5	<0.5	0	<0.1	0
Benzo(k)fluoranthene	mg/kg	0.5	<0.5	<0.5	0	-	-
Benzo(b+j)fluoranthene	mg/kg	0.5	<0.5	<0.5	0	-	-
Chrysene	mg/kg	0.1	<0.5	<0.5	0	<0.1	0
Dibenz(a,h)anthracene	mg/kg	0.1	<0.5	<0.5	0	<0.1	0
Fluoranthene	mg/kg	0.1	<0.5	<0.5	0	<0.1	0
Fluorene	mg/kg	0.1	<0.5	<0.5	0	<0.1	0
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	<0.5	<0.5	0	<0.1	0
Naphthalene	mg/kg	0.1	<0.5	<0.5	0	<0.1	0
Phenanthrene	mg/kg	0.1	<0.5	<0.5	0	<0.1	0
Pyrene	mg/kg	0.1	<0.5	<0.5	0	<0.1	0
PAHs (Sum of total)	mg/kg	0.05	<0.5	<0.5	0	<0.05	0
Benzo(a)pyrene TEQ calc (Zero)	mg/kg	0.5	<0.5	<0.5	0	<0.5	0
Benzo(a)pyrene TEQ calc (Half)	mg/kg	0.5	0.6	0.6	0	<0.5	18
Benzo(a)pyrene TEQ (LOR)	mg/kg	0.5	1.2	1.2	0	<0.5	82
Metals							
Arsenic	mg/kg	2	4.2	4.4	5	<4	5
Beryllium	mg/kg	1	-	-	-	<1	-
Boron	mg/kg	10	-	-	-	<10	-
Cadmium	mg/kg	0.4	<0.4	<0.4	0	<0.4	0
Chromium (III+VI)	mg/kg	1	24	25	4	32	29
Cobalt	mg/kg	1	-	-	-	13	-
Copper	mg/kg	1	20	21	5	16	22
Lead	mg/kg	1	22	24	9	10	75
Manganese	mg/kg	1	-	-	-	430	-
Mercury	mg/kg	0.1	<0.1	<0.1	0	<0.1	0
Nickel	mg/kg	1	13	14	7	15	14
Selenium	mg/kg	2	-	-	-	<2	-
Zinc	mg/kg	1	33	41	22	18	59

**Chemical Summary Table
Blanks**



		Field ID	RINSE-01
		Date	4/12/2023
		Sample Type	Rinsate
	Unit	LOR	
Metals			
Arsenic	mg/L	0.001	<0.001
Beryllium	mg/L	0.001	<0.001
Boron	mg/L	0.05	<0.05
Cadmium	mg/L	0.0002	<0.0002
Chromium (III+VI)	mg/L	0.001	<0.001
Cobalt	mg/L	0.001	<0.001
Copper	mg/L	0.001	<0.001
Lead	mg/L	0.001	<0.001
Manganese	mg/L	0.005	<0.005
Mercury	mg/L	0.0001	<0.0001
Nickel	mg/L	0.001	<0.001
Selenium	mg/L	0.001	<0.001
Zinc	mg/L	0.005	<0.005

Appendix J

Laboratory Certificates

LBW co Pty Ltd
184 Magill Road
Norwood
SA 5069



NATA Accredited
Accreditation Number 1261
Site Number 1254

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

Attention: **Matt Fitzgerald**

Report **1050793-S**
Project name **GREENWAY NCSC**
Project ID **231499**
Received Date **Dec 05, 2023**

Client Sample ID			BH01-01	BH01-02	BH01-04	BH02-01
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			M23- De0009499	M23- De0009500	M23- De0009501	M23- De0009502
Date Sampled			Dec 04, 2023	Dec 04, 2023	Dec 04, 2023	Dec 04, 2023
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons						
TRH C6-C9	20	mg/kg	< 20	< 20	-	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	-	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	-	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	-	< 50
TRH C10-C36 (Total)	50	mg/kg	< 50	< 50	-	< 50
TRH C6-C10	20	mg/kg	< 20	< 20	-	< 20
TRH C6-C10 less BTEX (F1) ^{N04}	20	mg/kg	< 20	< 20	-	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	-	< 50
TRH >C10-C16 less Naphthalene (F2) ^{N01}	50	mg/kg	< 50	< 50	-	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	-	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	-	< 100
TRH >C10-C40 (total)*	100	mg/kg	< 100	< 100	-	< 100
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	-	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	-	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	-	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	-	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	-	< 0.1
Xylenes - Total*	0.3	mg/kg	< 0.3	< 0.3	-	< 0.3
4-Bromofluorobenzene (surr.)	1	%	87	84	-	76
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene ^{N02}	0.5	mg/kg	< 0.5	< 0.5	-	< 0.5
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	-	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	-	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	-	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	-	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	-	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	-	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	-	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	-	< 0.5
Benzo(b&j)fluoranthene ^{N07}	0.5	mg/kg	< 0.5	< 0.5	-	< 0.5
Benzo(g,h,i)perylene	0.5	mg/kg	< 0.5	< 0.5	-	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	-	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	-	< 0.5

Client Sample ID			BH01-01	BH01-02	BH01-04	BH02-01
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			M23-De0009499	M23-De0009500	M23-De0009501	M23-De0009502
Date Sampled			Dec 04, 2023	Dec 04, 2023	Dec 04, 2023	Dec 04, 2023
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Dibenz(a,h)anthracene	0.5	mg/kg	< 0.5	< 0.5	-	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	-	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	-	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	-	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	-	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	-	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	-	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	-	< 0.5
2-Fluorobiphenyl (surr.)	1	%	96	85	-	71
p-Terphenyl-d14 (surr.)	1	%	81	79	-	87
Heavy Metals						
Arsenic	2	mg/kg	4.2	4.4	4.3	5.4
Barium	10	mg/kg	-	-	-	30
Beryllium	2	mg/kg	-	-	< 2	< 2
Boron	10	mg/kg	-	-	< 10	-
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	24	25	31	14
Cobalt	5	mg/kg	-	-	12	7.1
Copper	5	mg/kg	20	21	18	11
Iron	20	mg/kg	-	-	-	20000
Lead	5	mg/kg	22	24	18	19
Manganese	5	mg/kg	-	-	480	430
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	13	14	18	11
Selenium	2	mg/kg	-	-	< 2	-
Silver	2	mg/kg	-	-	-	< 2
Zinc	5	mg/kg	33	41	29	58
Sample Properties						
% Moisture	1	%	7.4	8.9	5.8	4.3
Volatile Organics						
Tetrachloroethene	0.5	mg/kg	-	-	-	< 0.5
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	-	-	-	< 0.1
4,4'-DDD	0.05	mg/kg	-	-	-	< 0.05
4,4'-DDE	0.05	mg/kg	-	-	-	< 0.05
4,4'-DDT	0.05	mg/kg	-	-	-	< 0.05
a-HCH	0.05	mg/kg	-	-	-	< 0.05
Aldrin	0.05	mg/kg	-	-	-	< 0.05
b-HCH	0.05	mg/kg	-	-	-	< 0.05
d-HCH	0.05	mg/kg	-	-	-	< 0.05
Dieldrin	0.05	mg/kg	-	-	-	< 0.05
Endosulfan I	0.05	mg/kg	-	-	-	< 0.05
Endosulfan II	0.05	mg/kg	-	-	-	< 0.05
Endosulfan sulphate	0.05	mg/kg	-	-	-	< 0.05
Endrin	0.05	mg/kg	-	-	-	< 0.05
Endrin aldehyde	0.05	mg/kg	-	-	-	< 0.05
Endrin ketone	0.05	mg/kg	-	-	-	< 0.05
g-HCH (Lindane)	0.05	mg/kg	-	-	-	< 0.05

Client Sample ID			BH01-01	BH01-02	BH01-04	BH02-01
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			M23-De0009499	M23-De0009500	M23-De0009501	M23-De0009502
Date Sampled			Dec 04, 2023	Dec 04, 2023	Dec 04, 2023	Dec 04, 2023
Test/Reference	LOR	Unit				
Organochlorine Pesticides						
Heptachlor	0.05	mg/kg	-	-	-	< 0.05
Heptachlor epoxide	0.05	mg/kg	-	-	-	< 0.05
Hexachlorobenzene	0.05	mg/kg	-	-	-	< 0.05
Methoxychlor	0.05	mg/kg	-	-	-	< 0.05
Toxaphene	0.5	mg/kg	-	-	-	< 0.5
Aldrin and Dieldrin (Total)*	0.05	mg/kg	-	-	-	< 0.05
DDT + DDE + DDD (Total)*	0.05	mg/kg	-	-	-	< 0.05
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	-	-	-	< 0.1
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	-	-	-	< 0.1
Dibutylchlorendate (surr.)	1	%	-	-	-	71
Tetrachloro-m-xylene (surr.)	1	%	-	-	-	101
Polychlorinated Biphenyls						
Aroclor-1016	0.1	mg/kg	-	-	-	< 0.1
Aroclor-1221	0.1	mg/kg	-	-	-	< 0.1
Aroclor-1232	0.1	mg/kg	-	-	-	< 0.1
Aroclor-1242	0.1	mg/kg	-	-	-	< 0.1
Aroclor-1248	0.1	mg/kg	-	-	-	< 0.1
Aroclor-1254	0.1	mg/kg	-	-	-	< 0.1
Aroclor-1260	0.1	mg/kg	-	-	-	< 0.1
Total PCB*	0.1	mg/kg	-	-	-	< 0.1
Dibutylchlorendate (surr.)	1	%	-	-	-	71
Tetrachloro-m-xylene (surr.)	1	%	-	-	-	101
Phenols (Halogenated)						
2-Chlorophenol	0.5	mg/kg	-	-	-	< 0.5
2,4-Dichlorophenol	0.5	mg/kg	-	-	-	< 0.5
2,4,5-Trichlorophenol	1	mg/kg	-	-	-	< 1
2,4,6-Trichlorophenol	1	mg/kg	-	-	-	< 1
2,6-Dichlorophenol	0.5	mg/kg	-	-	-	< 0.5
4-Chloro-3-methylphenol	1	mg/kg	-	-	-	< 1
Pentachlorophenol	1	mg/kg	-	-	-	< 1
Tetrachlorophenols - Total	10	mg/kg	-	-	-	< 10
Total Halogenated Phenol*	1	mg/kg	-	-	-	< 1
Phenols (non-Halogenated)						
2-Cyclohexyl-4,6-dinitrophenol	20	mg/kg	-	-	-	< 20
2-Methyl-4,6-dinitrophenol	5	mg/kg	-	-	-	< 5
2-Nitrophenol	1.0	mg/kg	-	-	-	< 1
2,4-Dimethylphenol	0.5	mg/kg	-	-	-	< 0.5
2,4-Dinitrophenol	5	mg/kg	-	-	-	< 5
2-Methylphenol (o-Cresol)	0.2	mg/kg	-	-	-	< 0.2
3&4-Methylphenol (m&p-Cresol)	0.4	mg/kg	-	-	-	< 0.4
Total cresols*	0.5	mg/kg	-	-	-	< 0.5
4-Nitrophenol	5	mg/kg	-	-	-	< 5
Dinoseb	20	mg/kg	-	-	-	< 20
Phenol	0.5	mg/kg	-	-	-	< 0.5
Phenol-d6 (surr.)	1	%	-	-	-	105
Total Non-Halogenated Phenol*	20	mg/kg	-	-	-	< 20

Client Sample ID			BH01-01	BH01-02	BH01-04	BH02-01
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			M23-De0009499	M23-De0009500	M23-De0009501	M23-De0009502
Date Sampled			Dec 04, 2023	Dec 04, 2023	Dec 04, 2023	Dec 04, 2023
Test/Reference	LOR	Unit				
Chromium (hexavalent)	1	mg/kg	-	-	-	< 1
Chromium (trivalent)	5	mg/kg	-	-	-	14
Cyanide (total)	5	mg/kg	-	-	-	< 5

Client Sample ID			BH02-02	BH02-03	BH03-01	BH03-04
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			M23-De0009503	M23-De0009504	M23-De0009505	M23-De0009506
Date Sampled			Dec 04, 2023	Dec 04, 2023	Dec 04, 2023	Dec 04, 2023
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons						
TRH C6-C9	20	mg/kg	< 20	-	< 20	-
TRH C10-C14	20	mg/kg	< 20	-	< 20	-
TRH C15-C28	50	mg/kg	< 50	-	< 50	-
TRH C29-C36	50	mg/kg	< 50	-	< 50	-
TRH C10-C36 (Total)	50	mg/kg	< 50	-	< 50	-
TRH C6-C10	20	mg/kg	< 20	-	< 20	-
TRH C6-C10 less BTEX (F1) ^{N04}	20	mg/kg	< 20	-	< 20	-
TRH >C10-C16	50	mg/kg	< 50	-	< 50	-
TRH >C10-C16 less Naphthalene (F2) ^{N01}	50	mg/kg	< 50	-	< 50	-
TRH >C16-C34	100	mg/kg	< 100	-	< 100	-
TRH >C34-C40	100	mg/kg	< 100	-	< 100	-
TRH >C10-C40 (total)*	100	mg/kg	< 100	-	< 100	-
BTEX						
Benzene	0.1	mg/kg	< 0.1	-	< 0.1	-
Toluene	0.1	mg/kg	< 0.1	-	< 0.1	-
Ethylbenzene	0.1	mg/kg	< 0.1	-	< 0.1	-
m&p-Xylenes	0.2	mg/kg	< 0.2	-	< 0.2	-
o-Xylene	0.1	mg/kg	< 0.1	-	< 0.1	-
Xylenes - Total*	0.3	mg/kg	< 0.3	-	< 0.3	-
4-Bromofluorobenzene (surr.)	1	%	76	-	50	-
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene ^{N02}	0.5	mg/kg	< 0.5	-	< 0.5	-
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	-	< 0.5	-
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	-	0.6	-
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	-	1.2	-
Acenaphthene	0.5	mg/kg	< 0.5	-	< 0.5	-
Acenaphthylene	0.5	mg/kg	< 0.5	-	< 0.5	-
Anthracene	0.5	mg/kg	< 0.5	-	< 0.5	-
Benzo(a)anthracene	0.5	mg/kg	< 0.5	-	< 0.5	-
Benzo(a)pyrene	0.5	mg/kg	< 0.5	-	< 0.5	-
Benzo(b&j)fluoranthene ^{N07}	0.5	mg/kg	< 0.5	-	< 0.5	-
Benzo(g,h,i)perylene	0.5	mg/kg	< 0.5	-	< 0.5	-
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	-	< 0.5	-
Chrysene	0.5	mg/kg	< 0.5	-	< 0.5	-
Dibenz(a,h)anthracene	0.5	mg/kg	< 0.5	-	< 0.5	-
Fluoranthene	0.5	mg/kg	< 0.5	-	< 0.5	-

Client Sample ID			BH02-02	BH02-03	BH03-01	BH03-04
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			M23-De0009503	M23-De0009504	M23-De0009505	M23-De0009506
Date Sampled			Dec 04, 2023	Dec 04, 2023	Dec 04, 2023	Dec 04, 2023
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Fluorene	0.5	mg/kg	< 0.5	-	< 0.5	-
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	-	< 0.5	-
Naphthalene	0.5	mg/kg	< 0.5	-	< 0.5	-
Phenanthrene	0.5	mg/kg	< 0.5	-	< 0.5	-
Pyrene	0.5	mg/kg	< 0.5	-	< 0.5	-
Total PAH*	0.5	mg/kg	< 0.5	-	< 0.5	-
2-Fluorobiphenyl (surr.)	1	%	93	-	71	-
p-Terphenyl-d14 (surr.)	1	%	87	-	79	-
Heavy Metals						
Arsenic	2	mg/kg	3.7	4.0	4.0	5.0
Beryllium	2	mg/kg	-	< 2	-	< 2
Boron	10	mg/kg	-	^{G01} < 20	-	16
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	30	29	< 5	37
Cobalt	5	mg/kg	-	8.3	-	11
Copper	5	mg/kg	17	15	< 5	17
Lead	5	mg/kg	15	11	< 5	13
Manganese	5	mg/kg	-	240	-	300
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	16	17	< 5	21
Selenium	2	mg/kg	-	< 2	-	< 2
Zinc	5	mg/kg	25	28	< 5	28
Sample Properties						
% Moisture	1	%	10	8.8	< 1	8.1
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	-	-	< 0.1	-
4.4'-DDD	0.05	mg/kg	-	-	< 0.05	-
4.4'-DDE	0.05	mg/kg	-	-	< 0.05	-
4.4'-DDT	0.05	mg/kg	-	-	< 0.05	-
a-HCH	0.05	mg/kg	-	-	< 0.05	-
Aldrin	0.05	mg/kg	-	-	< 0.05	-
b-HCH	0.05	mg/kg	-	-	< 0.05	-
d-HCH	0.05	mg/kg	-	-	< 0.05	-
Dieldrin	0.05	mg/kg	-	-	< 0.05	-
Endosulfan I	0.05	mg/kg	-	-	< 0.05	-
Endosulfan II	0.05	mg/kg	-	-	< 0.05	-
Endosulfan sulphate	0.05	mg/kg	-	-	< 0.05	-
Endrin	0.05	mg/kg	-	-	< 0.05	-
Endrin aldehyde	0.05	mg/kg	-	-	< 0.05	-
Endrin ketone	0.05	mg/kg	-	-	< 0.05	-
g-HCH (Lindane)	0.05	mg/kg	-	-	< 0.05	-
Heptachlor	0.05	mg/kg	-	-	< 0.05	-
Heptachlor epoxide	0.05	mg/kg	-	-	< 0.05	-
Hexachlorobenzene	0.05	mg/kg	-	-	< 0.05	-
Methoxychlor	0.05	mg/kg	-	-	< 0.05	-
Toxaphene	0.5	mg/kg	-	-	< 0.5	-
Aldrin and Dieldrin (Total)*	0.05	mg/kg	-	-	< 0.05	-
DDT + DDE + DDD (Total)*	0.05	mg/kg	-	-	< 0.05	-
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	-	-	< 0.1	-

Client Sample ID			BH02-02	BH02-03	BH03-01	BH03-04
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			M23-De0009503	M23-De0009504	M23-De0009505	M23-De0009506
Date Sampled			Dec 04, 2023	Dec 04, 2023	Dec 04, 2023	Dec 04, 2023
Test/Reference	LOR	Unit				
Organochlorine Pesticides						
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	-	-	< 0.1	-
Dibutylchlorendate (surr.)	1	%	-	-	81	-
Tetrachloro-m-xylene (surr.)	1	%	-	-	106	-
Organophosphorus Pesticides						
Azinphos-methyl	0.2	mg/kg	-	-	< 0.2	-
Bolstar	0.2	mg/kg	-	-	< 0.2	-
Chlorfenvinphos	0.2	mg/kg	-	-	< 0.2	-
Chlorpyrifos	0.2	mg/kg	-	-	< 0.2	-
Chlorpyrifos-methyl	0.2	mg/kg	-	-	< 0.2	-
Coumaphos	2	mg/kg	-	-	< 2	-
Demeton-S	0.2	mg/kg	-	-	< 0.2	-
Demeton-O	0.2	mg/kg	-	-	< 0.2	-
Diazinon	0.2	mg/kg	-	-	< 0.2	-
Dichlorvos	0.2	mg/kg	-	-	< 0.2	-
Dimethoate	0.2	mg/kg	-	-	< 0.2	-
Disulfoton	0.2	mg/kg	-	-	< 0.2	-
EPN	0.2	mg/kg	-	-	< 0.2	-
Ethion	0.2	mg/kg	-	-	< 0.2	-
Ethoprop	0.2	mg/kg	-	-	< 0.2	-
Ethyl parathion	0.2	mg/kg	-	-	< 0.2	-
Fenitrothion	0.2	mg/kg	-	-	< 0.2	-
Fensulfothion	0.2	mg/kg	-	-	< 0.2	-
Fenthion	0.2	mg/kg	-	-	< 0.2	-
Malathion	0.2	mg/kg	-	-	< 0.2	-
Merphos	0.2	mg/kg	-	-	< 0.2	-
Methyl parathion	0.2	mg/kg	-	-	< 0.2	-
Mevinphos	0.2	mg/kg	-	-	< 0.2	-
Monocrotophos	2	mg/kg	-	-	< 2	-
Naled	0.2	mg/kg	-	-	< 0.2	-
Omethoate	2	mg/kg	-	-	< 2	-
Phorate	0.2	mg/kg	-	-	< 0.2	-
Pirimiphos-methyl	0.2	mg/kg	-	-	< 0.2	-
Pyrazophos	0.2	mg/kg	-	-	< 0.2	-
Ronnel	0.2	mg/kg	-	-	< 0.2	-
Terbufos	0.2	mg/kg	-	-	< 0.2	-
Tetrachlorvinphos	0.2	mg/kg	-	-	< 0.2	-
Tokuthion	0.2	mg/kg	-	-	< 0.2	-
Trichloronate	0.2	mg/kg	-	-	< 0.2	-
Triphenylphosphate (surr.)	1	%	-	-	66	-

Client Sample ID			BH04-02	BH05-01	BH05-03	BH06-01
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			M23-De0009507	M23-De0009508	M23-De0009509	M23-De0009510
Date Sampled			Dec 04, 2023	Dec 04, 2023	Dec 04, 2023	Dec 04, 2023
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons						
TRH C6-C9	20	mg/kg	-	-	-	< 20
TRH C10-C14	20	mg/kg	-	-	-	< 20
TRH C15-C28	50	mg/kg	-	-	-	< 50
TRH C29-C36	50	mg/kg	-	-	-	< 50
TRH C10-C36 (Total)	50	mg/kg	-	-	-	< 50
TRH C6-C10	20	mg/kg	-	-	-	< 20
TRH C6-C10 less BTEX (F1) ^{N04}	20	mg/kg	-	-	-	< 20
TRH >C10-C16	50	mg/kg	-	-	-	< 50
TRH >C10-C16 less Naphthalene (F2) ^{N01}	50	mg/kg	-	-	-	< 50
TRH >C16-C34	100	mg/kg	-	-	-	< 100
TRH >C34-C40	100	mg/kg	-	-	-	< 100
TRH >C10-C40 (total)*	100	mg/kg	-	-	-	< 100
BTEX						
Benzene	0.1	mg/kg	-	-	-	< 0.1
Toluene	0.1	mg/kg	-	-	-	< 0.1
Ethylbenzene	0.1	mg/kg	-	-	-	< 0.1
m&p-Xylenes	0.2	mg/kg	-	-	-	< 0.2
o-Xylene	0.1	mg/kg	-	-	-	< 0.1
Xylenes - Total*	0.3	mg/kg	-	-	-	< 0.3
4-Bromofluorobenzene (surr.)	1	%	-	-	-	95
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene ^{N02}	0.5	mg/kg	-	-	-	< 0.5
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	-	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	-	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	-	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	-	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	-	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	-	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	-	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	-	< 0.5
Benzo(b&j)fluoranthene ^{N07}	0.5	mg/kg	< 0.5	< 0.5	-	< 0.5
Benzo(g,h,i)perylene	0.5	mg/kg	< 0.5	< 0.5	-	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	-	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	-	< 0.5
Dibenz(a,h)anthracene	0.5	mg/kg	< 0.5	< 0.5	-	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	-	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	-	< 0.5
Indeno(1,2,3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	-	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	-	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	-	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	-	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	-	< 0.5
2-Fluorobiphenyl (surr.)	1	%	91	92	-	139
p-Terphenyl-d14 (surr.)	1	%	89	98	-	96

Client Sample ID			BH04-02	BH05-01	BH05-03	BH06-01
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			M23-De0009507	M23-De0009508	M23-De0009509	M23-De0009510
Date Sampled			Dec 04, 2023	Dec 04, 2023	Dec 04, 2023	Dec 04, 2023
Test/Reference	LOR	Unit				
Heavy Metals						
Arsenic	2	mg/kg	4.4	-	-	2.4
Beryllium	2	mg/kg	< 2	-	-	-
Boron	10	mg/kg	^{G01} < 20	-	-	-
Cadmium	0.4	mg/kg	< 0.4	-	-	< 0.4
Chromium	5	mg/kg	38	-	-	< 5
Cobalt	5	mg/kg	14	-	-	-
Copper	5	mg/kg	19	-	-	< 5
Iron	20	mg/kg	-	-	25000	-
Lead	5	mg/kg	15	-	-	< 5
Manganese	5	mg/kg	430	-	-	-
Mercury	0.1	mg/kg	< 0.1	-	-	< 0.1
Nickel	5	mg/kg	19	-	-	< 5
Selenium	2	mg/kg	< 2	-	-	-
Zinc	5	mg/kg	24	-	-	< 5
Sample Properties						
% Moisture	1	%	9.6	1.9	9.3	1.2
Volatile Organics						
1.1-Dichloroethane	0.5	mg/kg	-	< 0.5	-	-
1.1-Dichloroethene	0.5	mg/kg	-	< 0.5	-	-
1.1.1-Trichloroethane	0.5	mg/kg	-	< 0.5	-	-
1.1.1.2-Tetrachloroethane	0.5	mg/kg	-	< 0.5	-	-
1.1.2-Trichloroethane	0.5	mg/kg	-	< 0.5	-	-
1.1.2.2-Tetrachloroethane	0.5	mg/kg	-	< 0.5	-	-
1.2-Dibromoethane	0.5	mg/kg	-	< 0.5	-	-
1.2-Dichlorobenzene	0.5	mg/kg	-	< 0.5	-	-
1.2-Dichloroethane	0.5	mg/kg	-	< 0.5	-	-
1.2-Dichloropropane	0.5	mg/kg	-	< 0.5	-	-
1.2.3-Trichloropropane	0.5	mg/kg	-	< 0.5	-	-
1.2.4-Trimethylbenzene	0.5	mg/kg	-	< 0.5	-	-
1.3-Dichlorobenzene	0.5	mg/kg	-	< 0.5	-	-
1.3-Dichloropropane	0.5	mg/kg	-	< 0.5	-	-
1.3.5-Trimethylbenzene	0.5	mg/kg	-	< 0.5	-	-
1.4-Dichlorobenzene	0.5	mg/kg	-	< 0.5	-	-
2-Butanone (MEK)	0.5	mg/kg	-	< 0.5	-	-
2-Propanone (Acetone)	0.5	mg/kg	-	< 0.5	-	-
4-Chlorotoluene	0.5	mg/kg	-	< 0.5	-	-
4-Methyl-2-pentanone (MIBK)	0.5	mg/kg	-	< 0.5	-	-
Allyl chloride	0.5	mg/kg	-	< 0.5	-	-
Benzene	0.1	mg/kg	-	< 0.1	-	-
Bromobenzene	0.5	mg/kg	-	< 0.5	-	-
Bromochloromethane	0.5	mg/kg	-	< 0.5	-	-
Bromodichloromethane	0.5	mg/kg	-	< 0.5	-	-
Bromoform	0.5	mg/kg	-	< 0.5	-	-
Bromomethane	0.5	mg/kg	-	< 0.5	-	-
Carbon disulfide	0.5	mg/kg	-	< 0.5	-	-
Carbon Tetrachloride	0.5	mg/kg	-	< 0.5	-	-
Chlorobenzene	0.5	mg/kg	-	< 0.5	-	-
Chloroethane	0.5	mg/kg	-	< 0.5	-	-
Chloroform	0.5	mg/kg	-	< 0.5	-	-

Client Sample ID			BH04-02	BH05-01	BH05-03	BH06-01
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			M23-De0009507	M23-De0009508	M23-De0009509	M23-De0009510
Date Sampled			Dec 04, 2023	Dec 04, 2023	Dec 04, 2023	Dec 04, 2023
Test/Reference	LOR	Unit				
Volatile Organics						
Chloromethane	0.5	mg/kg	-	< 0.5	-	-
cis-1.2-Dichloroethene	0.5	mg/kg	-	< 0.5	-	-
cis-1.3-Dichloropropene	0.5	mg/kg	-	< 0.5	-	-
Dibromochloromethane	0.5	mg/kg	-	< 0.5	-	-
Dibromomethane	0.5	mg/kg	-	< 0.5	-	-
Dichlorodifluoromethane	0.5	mg/kg	-	< 0.5	-	-
Ethylbenzene	0.1	mg/kg	-	< 0.1	-	-
Iodomethane	0.5	mg/kg	-	< 0.5	-	-
Isopropyl benzene (Cumene)	0.5	mg/kg	-	< 0.5	-	-
m&p-Xylenes	0.2	mg/kg	-	< 0.2	-	-
Methylene Chloride	0.5	mg/kg	-	< 0.5	-	-
o-Xylene	0.1	mg/kg	-	< 0.1	-	-
Styrene	0.5	mg/kg	-	< 0.5	-	-
Tetrachloroethene	0.5	mg/kg	-	< 0.5	-	-
Toluene	0.1	mg/kg	-	< 0.1	-	-
trans-1.2-Dichloroethene	0.5	mg/kg	-	< 0.5	-	-
trans-1.3-Dichloropropene	0.5	mg/kg	-	< 0.5	-	-
Trichloroethene	0.5	mg/kg	-	< 0.5	-	-
Trichlorofluoromethane	0.5	mg/kg	-	< 0.5	-	-
Vinyl chloride	0.5	mg/kg	-	< 0.5	-	-
Xylenes - Total*	0.3	mg/kg	-	< 0.3	-	-
Total MAH*	0.5	mg/kg	-	< 0.5	-	-
Vic EPA IWRG 621 CHC (Total)*	0.5	mg/kg	-	< 0.5	-	-
Vic EPA IWRG 621 Other CHC (Total)*	0.5	mg/kg	-	< 0.5	-	-
4-Bromofluorobenzene (surr.)	1	%	-	64	-	-
Toluene-d8 (surr.)	1	%	-	50	-	-
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	-	-	-	< 0.1
4.4'-DDD	0.05	mg/kg	-	-	-	< 0.05
4.4'-DDE	0.05	mg/kg	-	-	-	< 0.05
4.4'-DDT	0.05	mg/kg	-	-	-	< 0.05
a-HCH	0.05	mg/kg	-	-	-	< 0.05
Aldrin	0.05	mg/kg	-	-	-	< 0.05
b-HCH	0.05	mg/kg	-	-	-	< 0.05
d-HCH	0.05	mg/kg	-	-	-	< 0.05
Dieldrin	0.05	mg/kg	-	-	-	< 0.05
Endosulfan I	0.05	mg/kg	-	-	-	< 0.05
Endosulfan II	0.05	mg/kg	-	-	-	< 0.05
Endosulfan sulphate	0.05	mg/kg	-	-	-	< 0.05
Endrin	0.05	mg/kg	-	-	-	< 0.05
Endrin aldehyde	0.05	mg/kg	-	-	-	< 0.05
Endrin ketone	0.05	mg/kg	-	-	-	< 0.05
g-HCH (Lindane)	0.05	mg/kg	-	-	-	< 0.05
Heptachlor	0.05	mg/kg	-	-	-	< 0.05
Heptachlor epoxide	0.05	mg/kg	-	-	-	< 0.05
Hexachlorobenzene	0.05	mg/kg	-	-	-	< 0.05
Methoxychlor	0.05	mg/kg	-	-	-	< 0.05
Toxaphene	0.5	mg/kg	-	-	-	< 0.5
Aldrin and Dieldrin (Total)*	0.05	mg/kg	-	-	-	< 0.05

Client Sample ID			BH04-02	BH05-01	BH05-03	BH06-01
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			M23-De0009507	M23-De0009508	M23-De0009509	M23-De0009510
Date Sampled			Dec 04, 2023	Dec 04, 2023	Dec 04, 2023	Dec 04, 2023
Test/Reference	LOR	Unit				
Organochlorine Pesticides						
DDT + DDE + DDD (Total)*	0.05	mg/kg	-	-	-	< 0.05
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	-	-	-	< 0.1
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	-	-	-	< 0.1
Dibutylchlorendate (surr.)	1	%	-	-	-	82
Tetrachloro-m-xylene (surr.)	1	%	-	-	-	105
Physical Properties						
% Clay*		%	-	-	8.8	-
Conductivity (1:5 aqueous extract at 25 °C as rec.)	10	uS/cm	-	-	350	-
pH (units)(1:5 soil:CaCl2 extract at 25 °C as rec.)	0.1	pH Units	-	-	7.3	-
Total Organic Carbon	0.1	%	-	-	0.5	-
Organophosphorus Pesticides						
Azinphos-methyl	0.2	mg/kg	-	-	-	< 0.2
Bolstar	0.2	mg/kg	-	-	-	< 0.2
Chlorfenvinphos	0.2	mg/kg	-	-	-	< 0.2
Chlorpyrifos	0.2	mg/kg	-	-	-	< 0.2
Chlorpyrifos-methyl	0.2	mg/kg	-	-	-	< 0.2
Coumaphos	2	mg/kg	-	-	-	< 2
Demeton-S	0.2	mg/kg	-	-	-	< 0.2
Demeton-O	0.2	mg/kg	-	-	-	< 0.2
Diazinon	0.2	mg/kg	-	-	-	< 0.2
Dichlorvos	0.2	mg/kg	-	-	-	< 0.2
Dimethoate	0.2	mg/kg	-	-	-	< 0.2
Disulfoton	0.2	mg/kg	-	-	-	< 0.2
EPN	0.2	mg/kg	-	-	-	< 0.2
Ethion	0.2	mg/kg	-	-	-	< 0.2
Ethoprop	0.2	mg/kg	-	-	-	< 0.2
Ethyl parathion	0.2	mg/kg	-	-	-	< 0.2
Fenitrothion	0.2	mg/kg	-	-	-	< 0.2
Fensulfothion	0.2	mg/kg	-	-	-	< 0.2
Fenthion	0.2	mg/kg	-	-	-	< 0.2
Malathion	0.2	mg/kg	-	-	-	< 0.2
Merphos	0.2	mg/kg	-	-	-	< 0.2
Methyl parathion	0.2	mg/kg	-	-	-	< 0.2
Mevinphos	0.2	mg/kg	-	-	-	< 0.2
Monocrotophos	2	mg/kg	-	-	-	< 2
Naled	0.2	mg/kg	-	-	-	< 0.2
Omethoate	2	mg/kg	-	-	-	< 2
Phorate	0.2	mg/kg	-	-	-	< 0.2
Pirimiphos-methyl	0.2	mg/kg	-	-	-	< 0.2
Pyrazophos	0.2	mg/kg	-	-	-	< 0.2
Ronnel	0.2	mg/kg	-	-	-	< 0.2
Terbufos	0.2	mg/kg	-	-	-	< 0.2
Tetrachlorvinphos	0.2	mg/kg	-	-	-	< 0.2
Tokuthion	0.2	mg/kg	-	-	-	< 0.2
Trichloronate	0.2	mg/kg	-	-	-	< 0.2
Triphenylphosphate (surr.)	1	%	-	-	-	76
Heavy Metals						
Iron (%)	0.01	%	-	-	2.5	-

Client Sample ID			BH04-02	BH05-01	BH05-03	BH06-01
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			M23-De0009507	M23-De0009508	M23-De0009509	M23-De0009510
Date Sampled			Dec 04, 2023	Dec 04, 2023	Dec 04, 2023	Dec 04, 2023
Test/Reference	LOR	Unit				
Cation Exchange Capacity						
Cation Exchange Capacity	0.5	meq/100g	-	-	34	-

Client Sample ID			BH06-02
Sample Matrix			Soil
Eurofins Sample No.			M23-De0009511
Date Sampled			Dec 04, 2023
Test/Reference	LOR	Unit	
Heavy Metals			
Arsenic	2	mg/kg	5.6
Beryllium	2	mg/kg	< 2
Boron	10	mg/kg	< 10
Cadmium	0.4	mg/kg	< 0.4
Chromium	5	mg/kg	47
Cobalt	5	mg/kg	12
Copper	5	mg/kg	24
Lead	5	mg/kg	17
Manganese	5	mg/kg	390
Mercury	0.1	mg/kg	< 0.1
Nickel	5	mg/kg	26
Selenium	2	mg/kg	< 2
Zinc	5	mg/kg	29
Sample Properties			
% Moisture	1	%	9.3
Volatile Organics			
1.1-Dichloroethane	0.5	mg/kg	< 0.5
1.1-Dichloroethene	0.5	mg/kg	< 0.5
1.1.1-Trichloroethane	0.5	mg/kg	< 0.5
1.1.1.2-Tetrachloroethane	0.5	mg/kg	< 0.5
1.1.2-Trichloroethane	0.5	mg/kg	< 0.5
1.1.2.2-Tetrachloroethane	0.5	mg/kg	< 0.5
1.2-Dibromoethane	0.5	mg/kg	< 0.5
1.2-Dichlorobenzene	0.5	mg/kg	< 0.5
1.2-Dichloroethane	0.5	mg/kg	< 0.5
1.2-Dichloropropane	0.5	mg/kg	< 0.5
1.2.3-Trichloropropane	0.5	mg/kg	< 0.5
1.2.4-Trimethylbenzene	0.5	mg/kg	< 0.5
1.3-Dichlorobenzene	0.5	mg/kg	< 0.5
1.3-Dichloropropane	0.5	mg/kg	< 0.5
1.3.5-Trimethylbenzene	0.5	mg/kg	< 0.5
1.4-Dichlorobenzene	0.5	mg/kg	< 0.5
2-Butanone (MEK)	0.5	mg/kg	< 0.5
2-Propanone (Acetone)	0.5	mg/kg	< 0.5
4-Chlorotoluene	0.5	mg/kg	< 0.5
4-Methyl-2-pentanone (MIBK)	0.5	mg/kg	< 0.5
Allyl chloride	0.5	mg/kg	< 0.5
Benzene	0.1	mg/kg	< 0.1
Bromobenzene	0.5	mg/kg	< 0.5

Client Sample ID			BH06-02
Sample Matrix			Soil
Eurofins Sample No.			M23-De0009511
Date Sampled			Dec 04, 2023
Test/Reference	LOR	Unit	
Volatile Organics			
Bromochloromethane	0.5	mg/kg	< 0.5
Bromodichloromethane	0.5	mg/kg	< 0.5
Bromoform	0.5	mg/kg	< 0.5
Bromomethane	0.5	mg/kg	< 0.5
Carbon disulfide	0.5	mg/kg	< 0.5
Carbon Tetrachloride	0.5	mg/kg	< 0.5
Chlorobenzene	0.5	mg/kg	< 0.5
Chloroethane	0.5	mg/kg	< 0.5
Chloroform	0.5	mg/kg	< 0.5
Chloromethane	0.5	mg/kg	< 0.5
cis-1.2-Dichloroethene	0.5	mg/kg	< 0.5
cis-1.3-Dichloropropene	0.5	mg/kg	< 0.5
Dibromochloromethane	0.5	mg/kg	< 0.5
Dibromomethane	0.5	mg/kg	< 0.5
Dichlorodifluoromethane	0.5	mg/kg	< 0.5
Ethylbenzene	0.1	mg/kg	< 0.1
Iodomethane	0.5	mg/kg	< 0.5
Isopropyl benzene (Cumene)	0.5	mg/kg	< 0.5
m&p-Xylenes	0.2	mg/kg	< 0.2
Methylene Chloride	0.5	mg/kg	< 0.5
o-Xylene	0.1	mg/kg	< 0.1
Styrene	0.5	mg/kg	< 0.5
Tetrachloroethene	0.5	mg/kg	< 0.5
Toluene	0.1	mg/kg	< 0.1
trans-1.2-Dichloroethene	0.5	mg/kg	< 0.5
trans-1.3-Dichloropropene	0.5	mg/kg	< 0.5
Trichloroethene	0.5	mg/kg	< 0.5
Trichlorofluoromethane	0.5	mg/kg	< 0.5
Vinyl chloride	0.5	mg/kg	< 0.5
Xylenes - Total*	0.3	mg/kg	< 0.3
Total MAH*	0.5	mg/kg	< 0.5
Vic EPA IWRG 621 CHC (Total)*	0.5	mg/kg	< 0.5
Vic EPA IWRG 621 Other CHC (Total)*	0.5	mg/kg	< 0.5
4-Bromofluorobenzene (surr.)	1	%	62
Toluene-d8 (surr.)	1	%	53

Sample History

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

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

Description	Testing Site	Extracted	Holding Time
Eurofins Suite B7			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions - Method: LTM-ORG-2010 TRH C6-C40	Melbourne	Dec 07, 2023	14 Days
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: LTM-ORG-2010 TRH C6-C40	Melbourne	Dec 07, 2023	14 Days
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: LTM-ORG-2010 TRH C6-C40	Melbourne	Dec 07, 2023	14 Days
BTEX - Method: LTM-ORG-2010 BTEX and Volatile TRH	Melbourne	Dec 07, 2023	14 Days
Polycyclic Aromatic Hydrocarbons - Method: LTM-ORG-2130 PAH and Phenols in Soil and Water	Melbourne	Dec 07, 2023	14 Days
Metals M8 - Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS	Melbourne	Dec 07, 2023	28 Days
NEPM 2013 Metals without Cr6+ (As, Be, B, Cd, Co, Cr, Cu, Hg, Pb, Ni, Mn, Se, Zn)	Melbourne	Dec 07, 2023	180 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
Volatile Organics - Method: LTM-ORG-2150 VOCs in Soils Liquid and other Aqueous Matrices (USEPA 8260)	Melbourne	Dec 07, 2023	7 Days
% Clay* - Method: LTM-GEN-7040 Percentage clay, silt and sand by Hydrometer	Melbourne	Dec 07, 2023	14 Days
SA Waste Screen			
SA Waste Metals : Metals M14SA - Method: LTM-MET-3030 by ICP-OES (hydride ICP-OES for Mercury)	Melbourne	Dec 07, 2023	28 Days
Polychlorinated Biphenyls - Method: LTM-ORG-2220 OCP & PCB in Soil and Water (USEPA 8082)	Melbourne	Dec 07, 2023	28 Days
Phenols (Halogenated) - Method: LTM-ORG-2130 PAH and Phenols in Soil and Water	Melbourne	Dec 07, 2023	14 Days
Phenols (non-Halogenated) - Method: LTM-ORG-2130 PAH and Phenols in Soil and Water	Melbourne	Dec 07, 2023	14 Days
Chromium (hexavalent) - Method: LTM-INO-4100 Hexavalent Chromium by Spectrometric detection	Melbourne	Dec 07, 2023	28 Days
Cyanide (total) - Method: LTM-INO-4020 Total Free WAD Cyanide by CFA	Melbourne	Dec 07, 2023	14 Days
NEPM Screen for Soil Classification			
Heavy Metals - Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS	Melbourne	Dec 07, 2023	28 Days
Conductivity (1:5 aqueous extract at 25 °C as rec.) - Method: LTM-INO-4030 Conductivity	Melbourne	Dec 07, 2023	7 Days
pH (units)(1:5 soil:CaCl2 extract at 25 °C as rec.) - Method: LTM-GEN-7090 pH in soil by ISE	Melbourne	Dec 07, 2023	7 Days
Total Organic Carbon - Method: LTM-INO-4060 Total Organic Carbon in water and soil	Melbourne	Dec 07, 2023	28 Days
Cation Exchange Capacity - Method: LTM-MET-3060 Cation Exchange Capacity by bases & Exchangeable Sodium Percentage	Melbourne	Dec 08, 2023	28 Days
% Moisture - Method: LTM-GEN-7080 Moisture	Melbourne	Dec 05, 2023	14 Days
Eurofins Suite B10: BTEX/TRH/PAH/OCP/OPP/M8			
Organochlorine Pesticides - Method: LTM-ORG-2220 OCP & PCB in Soil and Water (USEPA 8270)	Melbourne	Dec 07, 2023	14 Days
Organophosphorus Pesticides - Method: LTM-ORG-2200 Organophosphorus Pesticides by GC-MS (USEPA 8270)	Melbourne	Dec 07, 2023	14 Days

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

Melbourne 6 Monterey Road Dandenong South VIC 3175 +61 3 8564 5000 NATA# 1261 Site# 1254	Geelong 19/8 Lewalan Street Grovedale VIC 3216 +61 3 8564 5000 NATA# 1261 Site# 25403	Sydney 179 Magowar Road Girraween NSW 2145 +61 2 9900 8400 NATA# 1261 Site# 18217	Canberra Unit 1,2 Dacre Street Mitchell ACT 2911 +61 2 6113 8091 NATA# 1261 Site# 25466	Brisbane 1/21 Smallwood Place Murarie QLD 4172 T: +61 7 3902 4600 NATA# 1261 Site# 20794	Newcastle 1/2 Frost Drive Mayfield West NSW 2304 +61 2 4968 8448 NATA# 1261 Site# 25079 & 25289	Perth 46-48 Banksia Road Welshpool WA 6106 +61 8 6253 4444 NATA# 2377 Site# 2370	Auckland 35 O'Rorke Road Penrose, Auckland 1061 +64 9 526 4551 IANZ# 1327	Auckland (Asb) Unit C1/4 Pacific Rise, Mount Wellington, Auckland 1061 +64 9 525 0568 IANZ# 1308	Christchurch 43 Detroit Drive Rolleston, Christchurch 7675 +64 3 343 5201 IANZ# 1290	Tauranga 1277 Cameron Road, Gate Pa, Tauranga 3112 +64 9 525 0568 IANZ# 1402
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Company Name:	LBW co Pty Ltd	Order No.:		Received:	Dec 5, 2023 10:07 AM
Address:	184 Magill Road Norwood SA 5069	Report #:	1050793	Due:	Dec 12, 2023
Project Name:	GREENWAY NCSC	Phone:	08 8331 2417	Priority:	5 Day
Project ID:	231499	Fax:	08 8331 2415	Contact Name:	Matt Fitzgerald

Eurofins Analytical Services Manager : Amy Meunier

Sample Detail						% Clay*	HOLD	Polycyclic Aromatic Hydrocarbons	Volatile Organics	Moisture Set	NEPM Screen for Soil Classification	SA Waste Screen	BTEX/TRH/PAH/HOCP/OPP/PM8	Eurofins Suite B7	NEPM 2013 Metals without Cr6+ (As, Be, B, Cd, Co, Cr, Cu, Hg, Pb, Ni, Mn, Se, Zn)
Melbourne Laboratory - NATA # 1261 Site # 1254						X	X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA # 1261 Site # 20794											X				
External Laboratory															
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID										
1	BH01-01	Dec 04, 2023		Soil	M23-De0009499				X				X		
2	BH01-02	Dec 04, 2023		Soil	M23-De0009500				X				X		
3	BH01-04	Dec 04, 2023		Soil	M23-De0009501				X					X	
4	BH02-01	Dec 04, 2023		Soil	M23-De0009502				X	X					
5	BH02-02	Dec 04, 2023		Soil	M23-De0009503				X				X		
6	BH02-03	Dec 04, 2023		Soil	M23-De0009504				X					X	
7	BH03-01	Dec 04, 2023		Soil	M23-De0009505				X			X			
8	BH03-04	Dec 04, 2023		Soil	M23-De0009506				X					X	
9	BH04-02	Dec 04, 2023		Soil	M23-De0009507			X	X					X	
10	BH05-01	Dec 04, 2023		Soil	M23-De0009508			X	X	X					
11	BH05-03	Dec 04, 2023		Soil	M23-De0009509	X			X	X					
12	BH06-01	Dec 04, 2023		Soil	M23-De0009510				X			X			

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

Melbourne 6 Monterey Road Dandenong South VIC 3175 +61 3 8564 5000 NATA# 1261 Site# 1254	Geelong 19/8 Lewalan Street Grovedale VIC 3216 +61 3 8564 5000 NATA# 1261 Site# 25403	Sydney 179 Magowar Road Girraween NSW 2145 +61 2 9900 8400 NATA# 1261 Site# 18217	Canberra Unit 1,2 Dacre Street Mitchell ACT 2911 +61 2 6113 8091 NATA# 1261 Site# 25466	Brisbane 1/21 Smallwood Place Murarie QLD 4172 T: +61 7 3902 4600 NATA# 1261 Site# 20794	Newcastle 1/2 Frost Drive Mayfield West NSW 2304 +61 2 4968 8448 NATA# 1261 Site# 25079 & 25289	Perth 46-48 Banksia Road Welshpool WA 6106 +61 8 6253 4444 NATA# 2377 Site# 2370	Auckland 35 O'Rorke Road Penrose, Auckland 1061 +64 9 526 4551 IANZ# 1327	Auckland (Asb) Unit C1/4 Pacific Rise, Mount Wellington, Auckland 1061 +64 9 525 0568 IANZ# 1308	Christchurch 43 Detroit Drive Rolleston, Christchurch 7675 +64 3 343 5201 IANZ# 1290	Tauranga 1277 Cameron Road, Gate Pa, Tauranga 3112 +64 9 525 0568 IANZ# 1402
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Company Name: LBW co Pty Ltd	Order No.:	Received: Dec 5, 2023 10:07 AM
Address: 184 Magill Road Norwood SA 5069	Report #: 1050793	Due: Dec 12, 2023
	Phone: 08 8331 2417	Priority: 5 Day
	Fax: 08 8331 2415	Contact Name: Matt Fitzgerald
Project Name: GREENWAY NCSC		
Project ID: 231499		

Eurofins Analytical Services Manager : Amy Meunier

Sample Detail						% Clay*	HOLD	Polyyclic Aromatic Hydrocarbons	Volatile Organics	Moisture Set	NEPM Screen for Soil Classification	SA Waste Screen	BTEX/TRH/PAH/OCP/OPP/PM8	Eurofins Suite B7	NEPM 2013 Metals without Cr6+ (As, Be, B, Cd, Co, Cr, Cu, Hg, Pb, Ni, Mn, Se, Zn)
Melbourne Laboratory - NATA # 1261 Site # 1254						X	X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA # 1261 Site # 20794											X				
13	BH06-02	Dec 04, 2023		Soil	M23-De0009511			X	X						X
14	RINSE-01	Dec 04, 2023		Water	M23-De0009512										X
15	BH01-03	Dec 04, 2023		Soil	M23-De0009513		X								
16	BH01-05	Dec 04, 2023		Soil	M23-De0009514		X								
17	BH01-06	Dec 04, 2023		Soil	M23-De0009515		X								
18	BH02-04	Dec 04, 2023		Soil	M23-De0009516		X								
19	BH02-05	Dec 04, 2023		Soil	M23-De0009517		X								
20	BH03-02	Dec 04, 2023		Soil	M23-De0009518		X								
21	BH03-03	Dec 04, 2023		Soil	M23-De0009519		X								
22	BH03-05	Dec 04, 2023		Soil	M23-De0009520		X								
23	BH04-01	Dec 04, 2023		Soil	M23-De0009521		X								
24	BH04-03	Dec 04, 2023		Soil	M23-De0009522		X								
25	BH04-04	Dec 04, 2023		Soil	M23-De0009523		X								
26	BH04-05	Dec 04, 2023		Soil	M23-De0009524		X								
27	BH04-06	Dec 04, 2023		Soil	M23-De0009525		X								

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Melbourne Laboratory - NATA # 1261 Site # 1254						X	X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA # 1261 Site # 20794											X				
28	BH05-02	Dec 04, 2023		Soil	M23-De0009526		X								
29	BH05-04	Dec 04, 2023		Soil	M23-De0009527		X								
30	BH06-03	Dec 04, 2023		Soil	M23-De0009528		X								
31	BH06-04	Dec 04, 2023		Soil	M23-De0009529		X								
32	BH07-01	Dec 04, 2023		Soil	M23-De0009530		X								
33	BH07-02	Dec 04, 2023		Soil	M23-De0009531		X								
34	BH07-03	Dec 04, 2023		Soil	M23-De0009532		X								
35	BH07-04	Dec 04, 2023		Soil	M23-De0009533		X								
36	BH07-05	Dec 04, 2023		Soil	M23-De0009534		X								
37	BH07-06	Dec 04, 2023		Soil	M23-De0009535		X								
38	BH07-07	Dec 04, 2023		Soil	M23-De0009536		X								
39	BH04-07	Dec 04, 2023		Soil	M23-De0009537		X								
Test Counts						1	25	2	2	13	1	1	2	3	6

Internal Quality Control Review and Glossary

General

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

Holding Times

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

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

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

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

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether, the holding time is 7 days; however, for all other VOCs, such as BTEX or C6-10 TRH, the holding time is 14 days.

Units

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

Terms

APHA	American Public Health Association
CEC	Cation Exchange Capacity
COC	Chain of Custody
CP	Client Parent - QC was performed on samples pertaining to this report
CRM	Certified Reference Material (ISO17034) - reported as percent recovery.
Dry	Where moisture has been determined on a solid sample, the result is expressed on a dry weight basis.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
LOR	Limit of Reporting.
LCS	Laboratory Control Sample - reported as percent recovery.
Method Blank	In the case of solid samples, these are performed on laboratory-certified clean sands and in the case of water samples, these are performed on de-ionised water.
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC represents the sequence or batch that client samples were analysed within.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
SRA	Sample Receipt Advice
Surr - Surrogate	The addition of a similar compound to the analyte target is reported as percentage recovery. See below for acceptance criteria.
TBTO	Tributyltin oxide (<i>bis</i> -tributyltin oxide) - individual tributyltin compounds cannot be identified separately in the environment; however, free tributyltin was measured, and its values were converted stoichiometrically into tributyltin oxide for comparison with regulatory limits.
TCLP	Toxicity Characteristic Leaching Procedure
TEQ	Toxic Equivalency Quotient or Total Equivalence
QSM	US Department of Defense Quality Systems Manual Version 5.4
US EPA	United States Environmental Protection Agency
WA DWER	Sum of PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC - Acceptance Criteria

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

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is ≤30%; however, the following acceptance guidelines are equally applicable:

Results <10 times the LOR:	No Limit
Results between 10-20 times the LOR:	RPD must lie between 0-50%
Results >20 times the LOR:	RPD must lie between 0-30%

NOTE: pH duplicates are reported as a range, not as RPD

Surrogate Recoveries: Recoveries must lie between 20-130% for Speciated Phenols & 50-150% for PFAS. SVOCs recoveries 20 – 150%, VOC recoveries 70 – 130%

PFAS field samples containing surrogate recoveries above the QC limit designated in QSM 5.4, where no positive PFAS results have been reported or reviewed, and no data was affected.

QC Data General Comments

- Where a result is reported as less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
- Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown are not data from your samples.
- pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore, laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
- Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of recovery, the term "INT" appears against that analyte.
- For Matrix Spikes and LCS results, a dash "-" in the report means that the specific analyte was not added to the QC sample.
- Duplicate RPDs are calculated from raw analytical data; thus, it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons							
TRH C6-C9	mg/kg	< 20			20	Pass	
TRH C10-C14	mg/kg	< 20			20	Pass	
TRH C15-C28	mg/kg	< 50			50	Pass	
TRH C29-C36	mg/kg	< 50			50	Pass	
TRH C6-C10	mg/kg	< 20			20	Pass	
TRH >C10-C16	mg/kg	< 50			50	Pass	
TRH >C16-C34	mg/kg	< 100			100	Pass	
TRH >C34-C40	mg/kg	< 100			100	Pass	
Method Blank							
BTEX							
Benzene	mg/kg	< 0.1			0.1	Pass	
Toluene	mg/kg	< 0.1			0.1	Pass	
Ethylbenzene	mg/kg	< 0.1			0.1	Pass	
m&p-Xylenes	mg/kg	< 0.2			0.2	Pass	
o-Xylene	mg/kg	< 0.1			0.1	Pass	
Xylenes - Total*	mg/kg	< 0.3			0.3	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	mg/kg	< 0.5			0.5	Pass	
Method Blank							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	mg/kg	< 0.5			0.5	Pass	
Acenaphthylene	mg/kg	< 0.5			0.5	Pass	
Anthracene	mg/kg	< 0.5			0.5	Pass	
Benz(a)anthracene	mg/kg	< 0.5			0.5	Pass	
Benzo(a)pyrene	mg/kg	< 0.5			0.5	Pass	
Benzo(b&j)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Benzo(g,h,i)perylene	mg/kg	< 0.5			0.5	Pass	
Benzo(k)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Chrysene	mg/kg	< 0.5			0.5	Pass	
Dibenz(a,h)anthracene	mg/kg	< 0.5			0.5	Pass	
Fluoranthene	mg/kg	< 0.5			0.5	Pass	
Fluorene	mg/kg	< 0.5			0.5	Pass	
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.5			0.5	Pass	
Naphthalene	mg/kg	< 0.5			0.5	Pass	
Phenanthrene	mg/kg	< 0.5			0.5	Pass	
Pyrene	mg/kg	< 0.5			0.5	Pass	
Method Blank							
Heavy Metals							
Arsenic	mg/kg	< 2			2	Pass	
Barium	mg/kg	< 10			10	Pass	
Beryllium	mg/kg	< 2			2	Pass	
Boron	mg/kg	< 10			10	Pass	
Cadmium	mg/kg	< 0.4			0.4	Pass	
Chromium	mg/kg	< 5			5	Pass	
Cobalt	mg/kg	< 5			5	Pass	
Copper	mg/kg	< 5			5	Pass	
Iron	mg/kg	< 20			20	Pass	
Lead	mg/kg	< 5			5	Pass	
Manganese	mg/kg	< 5			5	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Mercury	mg/kg	< 0.1			0.1	Pass	
Nickel	mg/kg	< 5			5	Pass	
Selenium	mg/kg	< 2			2	Pass	
Silver	mg/kg	< 2			2	Pass	
Zinc	mg/kg	< 5			5	Pass	
Method Blank							
Volatile Organics							
Tetrachloroethene	mg/kg	< 0.5			0.5	Pass	
1.1-Dichloroethane	mg/kg	< 0.5			0.5	Pass	
1.1-Dichloroethene	mg/kg	< 0.5			0.5	Pass	
1.1.1-Trichloroethane	mg/kg	< 0.5			0.5	Pass	
1.1.1.2-Tetrachloroethane	mg/kg	< 0.5			0.5	Pass	
1.1.2-Trichloroethane	mg/kg	< 0.5			0.5	Pass	
1.1.2.2-Tetrachloroethane	mg/kg	< 0.5			0.5	Pass	
1.2-Dibromoethane	mg/kg	< 0.5			0.5	Pass	
1.2-Dichlorobenzene	mg/kg	< 0.5			0.5	Pass	
1.2-Dichloroethane	mg/kg	< 0.5			0.5	Pass	
1.2-Dichloropropane	mg/kg	< 0.5			0.5	Pass	
1.2.3-Trichloropropane	mg/kg	< 0.5			0.5	Pass	
1.2.4-Trimethylbenzene	mg/kg	< 0.5			0.5	Pass	
1.3-Dichlorobenzene	mg/kg	< 0.5			0.5	Pass	
1.3-Dichloropropane	mg/kg	< 0.5			0.5	Pass	
1.3.5-Trimethylbenzene	mg/kg	< 0.5			0.5	Pass	
1.4-Dichlorobenzene	mg/kg	< 0.5			0.5	Pass	
2-Butanone (MEK)	mg/kg	< 0.5			0.5	Pass	
2-Propanone (Acetone)	mg/kg	< 0.5			0.5	Pass	
4-Chlorotoluene	mg/kg	< 0.5			0.5	Pass	
4-Methyl-2-pentanone (MIBK)	mg/kg	< 0.5			0.5	Pass	
Allyl chloride	mg/kg	< 0.5			0.5	Pass	
Bromobenzene	mg/kg	< 0.5			0.5	Pass	
Bromochloromethane	mg/kg	< 0.5			0.5	Pass	
Bromodichloromethane	mg/kg	< 0.5			0.5	Pass	
Bromoform	mg/kg	< 0.5			0.5	Pass	
Bromomethane	mg/kg	< 0.5			0.5	Pass	
Carbon disulfide	mg/kg	< 0.5			0.5	Pass	
Carbon Tetrachloride	mg/kg	< 0.5			0.5	Pass	
Chlorobenzene	mg/kg	< 0.5			0.5	Pass	
Chloroethane	mg/kg	< 0.5			0.5	Pass	
Chloroform	mg/kg	< 0.5			0.5	Pass	
Chloromethane	mg/kg	< 0.5			0.5	Pass	
cis-1.2-Dichloroethene	mg/kg	< 0.5			0.5	Pass	
cis-1.3-Dichloropropene	mg/kg	< 0.5			0.5	Pass	
Dibromochloromethane	mg/kg	< 0.5			0.5	Pass	
Dibromomethane	mg/kg	< 0.5			0.5	Pass	
Dichlorodifluoromethane	mg/kg	< 0.5			0.5	Pass	
Iodomethane	mg/kg	< 0.5			0.5	Pass	
Isopropyl benzene (Cumene)	mg/kg	< 0.5			0.5	Pass	
Methylene Chloride	mg/kg	< 0.5			0.5	Pass	
Styrene	mg/kg	< 0.5			0.5	Pass	
trans-1.2-Dichloroethene	mg/kg	< 0.5			0.5	Pass	
trans-1.3-Dichloropropene	mg/kg	< 0.5			0.5	Pass	
Trichloroethene	mg/kg	< 0.5			0.5	Pass	
Trichlorofluoromethane	mg/kg	< 0.5			0.5	Pass	
Vinyl chloride	mg/kg	< 0.5			0.5	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Organochlorine Pesticides							
Chlordanes - Total	mg/kg	< 0.1			0.1	Pass	
4.4'-DDD	mg/kg	< 0.05			0.05	Pass	
4.4'-DDE	mg/kg	< 0.05			0.05	Pass	
4.4'-DDT	mg/kg	< 0.05			0.05	Pass	
a-HCH	mg/kg	< 0.05			0.05	Pass	
Aldrin	mg/kg	< 0.05			0.05	Pass	
b-HCH	mg/kg	< 0.05			0.05	Pass	
d-HCH	mg/kg	< 0.05			0.05	Pass	
Dieldrin	mg/kg	< 0.05			0.05	Pass	
Endosulfan I	mg/kg	< 0.05			0.05	Pass	
Endosulfan II	mg/kg	< 0.05			0.05	Pass	
Endosulfan sulphate	mg/kg	< 0.05			0.05	Pass	
Endrin	mg/kg	< 0.05			0.05	Pass	
Endrin aldehyde	mg/kg	< 0.05			0.05	Pass	
Endrin ketone	mg/kg	< 0.05			0.05	Pass	
g-HCH (Lindane)	mg/kg	< 0.05			0.05	Pass	
Heptachlor	mg/kg	< 0.05			0.05	Pass	
Heptachlor epoxide	mg/kg	< 0.05			0.05	Pass	
Hexachlorobenzene	mg/kg	< 0.05			0.05	Pass	
Methoxychlor	mg/kg	< 0.05			0.05	Pass	
Toxaphene	mg/kg	< 0.5			0.5	Pass	
Method Blank							
Polychlorinated Biphenyls							
Aroclor-1016	mg/kg	< 0.1			0.1	Pass	
Aroclor-1221	mg/kg	< 0.1			0.1	Pass	
Aroclor-1232	mg/kg	< 0.1			0.1	Pass	
Aroclor-1242	mg/kg	< 0.1			0.1	Pass	
Aroclor-1248	mg/kg	< 0.1			0.1	Pass	
Aroclor-1254	mg/kg	< 0.1			0.1	Pass	
Aroclor-1260	mg/kg	< 0.1			0.1	Pass	
Total PCB*	mg/kg	< 0.1			0.1	Pass	
Method Blank							
Phenols (Halogenated)							
2-Chlorophenol	mg/kg	< 0.5			0.5	Pass	
2.4-Dichlorophenol	mg/kg	< 0.5			0.5	Pass	
2.4.5-Trichlorophenol	mg/kg	< 1			1	Pass	
2.4.6-Trichlorophenol	mg/kg	< 1			1	Pass	
2.6-Dichlorophenol	mg/kg	< 0.5			0.5	Pass	
4-Chloro-3-methylphenol	mg/kg	< 1			1	Pass	
Pentachlorophenol	mg/kg	< 1			1	Pass	
Tetrachlorophenols - Total	mg/kg	< 10			10	Pass	
Method Blank							
Phenols (non-Halogenated)							
2-Cyclohexyl-4.6-dinitrophenol	mg/kg	< 20			20	Pass	
2-Methyl-4.6-dinitrophenol	mg/kg	< 5			5	Pass	
2-Nitrophenol	mg/kg	< 1			1.0	Pass	
2.4-Dimethylphenol	mg/kg	< 0.5			0.5	Pass	
2.4-Dinitrophenol	mg/kg	< 5			5	Pass	
2-Methylphenol (o-Cresol)	mg/kg	< 0.2			0.2	Pass	
3&4-Methylphenol (m&p-Cresol)	mg/kg	< 0.4			0.4	Pass	
4-Nitrophenol	mg/kg	< 5			5	Pass	
Dinoseb	mg/kg	< 20			20	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Phenol	mg/kg	< 0.5			0.5	Pass	
Method Blank							
Chromium (hexavalent)	mg/kg	< 1			1	Pass	
Cyanide (total)	mg/kg	< 5			5	Pass	
Total Organic Carbon	%	< 0.1			0.1	Pass	
Method Blank							
Organophosphorus Pesticides							
Azinphos-methyl	mg/kg	< 0.2			0.2	Pass	
Bolstar	mg/kg	< 0.2			0.2	Pass	
Chlorfenvinphos	mg/kg	< 0.2			0.2	Pass	
Chlorpyrifos	mg/kg	< 0.2			0.2	Pass	
Chlorpyrifos-methyl	mg/kg	< 0.2			0.2	Pass	
Coumaphos	mg/kg	< 2			2	Pass	
Demeton-S	mg/kg	< 0.2			0.2	Pass	
Demeton-O	mg/kg	< 0.2			0.2	Pass	
Diazinon	mg/kg	< 0.2			0.2	Pass	
Dichlorvos	mg/kg	< 0.2			0.2	Pass	
Dimethoate	mg/kg	< 0.2			0.2	Pass	
Disulfoton	mg/kg	< 0.2			0.2	Pass	
EPN	mg/kg	< 0.2			0.2	Pass	
Ethion	mg/kg	< 0.2			0.2	Pass	
Ethoprop	mg/kg	< 0.2			0.2	Pass	
Ethyl parathion	mg/kg	< 0.2			0.2	Pass	
Fenitrothion	mg/kg	< 0.2			0.2	Pass	
Fensulfothion	mg/kg	< 0.2			0.2	Pass	
Fenthion	mg/kg	< 0.2			0.2	Pass	
Malathion	mg/kg	< 0.2			0.2	Pass	
Merphos	mg/kg	< 0.2			0.2	Pass	
Methyl parathion	mg/kg	< 0.2			0.2	Pass	
Mevinphos	mg/kg	< 0.2			0.2	Pass	
Monocrotophos	mg/kg	< 2			2	Pass	
Naled	mg/kg	< 0.2			0.2	Pass	
Omethoate	mg/kg	< 2			2	Pass	
Phorate	mg/kg	< 0.2			0.2	Pass	
Pirimiphos-methyl	mg/kg	< 0.2			0.2	Pass	
Pyrazophos	mg/kg	< 0.2			0.2	Pass	
Ronnel	mg/kg	< 0.2			0.2	Pass	
Terbufos	mg/kg	< 0.2			0.2	Pass	
Tetrachlorvinphos	mg/kg	< 0.2			0.2	Pass	
Tokuthion	mg/kg	< 0.2			0.2	Pass	
Trichloronate	mg/kg	< 0.2			0.2	Pass	
Method Blank							
Cation Exchange Capacity							
Cation Exchange Capacity	meq/100g	< 0.5			0.5	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons							
TRH C6-C9	%	109			70-130	Pass	
TRH C10-C14	%	124			70-130	Pass	
TRH C6-C10	%	105			70-130	Pass	
TRH >C10-C16	%	121			70-130	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	94			70-130	Pass	
Toluene	%	98			70-130	Pass	

Test	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Ethylbenzene	%	103		70-130	Pass	
m&p-Xylenes	%	106		70-130	Pass	
Xylenes - Total*	%	105		70-130	Pass	
LCS - % Recovery						
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene	%	103		70-130	Pass	
LCS - % Recovery						
Polycyclic Aromatic Hydrocarbons						
Acenaphthene	%	103		70-130	Pass	
Acenaphthylene	%	101		70-130	Pass	
Anthracene	%	114		70-130	Pass	
Benz(a)anthracene	%	92		70-130	Pass	
Benzo(a)pyrene	%	87		70-130	Pass	
Benzo(b&j)fluoranthene	%	117		70-130	Pass	
Benzo(g,h,i)perylene	%	94		70-130	Pass	
Benzo(k)fluoranthene	%	117		70-130	Pass	
Chrysene	%	93		70-130	Pass	
Dibenz(a,h)anthracene	%	76		70-130	Pass	
Fluoranthene	%	125		70-130	Pass	
Fluorene	%	128		70-130	Pass	
Indeno(1,2,3-cd)pyrene	%	90		70-130	Pass	
Naphthalene	%	114		70-130	Pass	
Phenanthrene	%	125		70-130	Pass	
Pyrene	%	125		70-130	Pass	
LCS - % Recovery						
Heavy Metals						
Arsenic	%	100		80-120	Pass	
Barium	%	99		80-120	Pass	
Beryllium	%	99		80-120	Pass	
Boron	%	101		80-120	Pass	
Cadmium	%	99		80-120	Pass	
Chromium	%	99		80-120	Pass	
Cobalt	%	104		80-120	Pass	
Copper	%	103		80-120	Pass	
Iron	%	110		80-120	Pass	
Lead	%	107		80-120	Pass	
Manganese	%	97		80-120	Pass	
Mercury	%	102		80-120	Pass	
Nickel	%	99		80-120	Pass	
Selenium	%	102		80-120	Pass	
Silver	%	105		80-120	Pass	
Zinc	%	103		80-120	Pass	
LCS - % Recovery						
Volatile Organics						
1,1-Dichloroethene	%	77		70-130	Pass	
1,2-Dichlorobenzene	%	121		70-130	Pass	
1,2-Dichloroethane	%	97		70-130	Pass	
Trichloroethene	%	111		70-130	Pass	
LCS - % Recovery						
Organochlorine Pesticides						
Chlordanes - Total	%	93		70-130	Pass	
4,4'-DDD	%	100		70-130	Pass	
4,4'-DDE	%	91		70-130	Pass	
4,4'-DDT	%	100		70-130	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
a-HCH	%	108			70-130	Pass	
Aldrin	%	105			70-130	Pass	
b-HCH	%	88			70-130	Pass	
d-HCH	%	91			70-130	Pass	
Dieldrin	%	79			70-130	Pass	
Endosulfan I	%	112			70-130	Pass	
Endosulfan II	%	87			70-130	Pass	
Endosulfan sulphate	%	82			70-130	Pass	
Endrin	%	117			70-130	Pass	
Endrin aldehyde	%	91			70-130	Pass	
Endrin ketone	%	83			70-130	Pass	
g-HCH (Lindane)	%	96			70-130	Pass	
Heptachlor	%	100			70-130	Pass	
Heptachlor epoxide	%	79			70-130	Pass	
Methoxychlor	%	100			70-130	Pass	
LCS - % Recovery							
Polychlorinated Biphenyls							
Aroclor-1260	%	99			70-130	Pass	
LCS - % Recovery							
Phenols (Halogenated)							
2-Chlorophenol	%	118			25-140	Pass	
2,4-Dichlorophenol	%	83			25-140	Pass	
2,4,5-Trichlorophenol	%	41			25-140	Pass	
2,4,6-Trichlorophenol	%	47			25-140	Pass	
2,6-Dichlorophenol	%	78			25-140	Pass	
4-Chloro-3-methylphenol	%	72			25-140	Pass	
Pentachlorophenol	%	51			25-140	Pass	
Tetrachlorophenols - Total	%	30			25-140	Pass	
LCS - % Recovery							
Phenols (non-Halogenated)							
2-Cyclohexyl-4,6-dinitrophenol	%	30			25-140	Pass	
2-Methyl-4,6-dinitrophenol	%	68			25-140	Pass	
2-Nitrophenol	%	50			25-140	Pass	
2,4-Dimethylphenol	%	35			25-140	Pass	
2,4-Dinitrophenol	%	33			25-140	Pass	
2-Methylphenol (o-Cresol)	%	95			25-140	Pass	
3&4-Methylphenol (m&p-Cresol)	%	96			25-140	Pass	
4-Nitrophenol	%	59			25-140	Pass	
Dinoseb	%	31			25-140	Pass	
Phenol	%	117			25-140	Pass	
LCS - % Recovery							
Chromium (hexavalent)	%	113			70-130	Pass	
Cyanide (total)	%	113			70-130	Pass	
Conductivity (1:5 aqueous extract at 25 °C as rec.)	%	75			70-130	Pass	
Total Organic Carbon	%	105			70-130	Pass	
LCS - % Recovery							
Organophosphorus Pesticides							
Diazinon	%	114			70-130	Pass	
Dimethoate	%	73			70-130	Pass	
Ethion	%	94			70-130	Pass	
Fenitrothion	%	95			70-130	Pass	
Methyl parathion	%	91			70-130	Pass	
Mevinphos	%	104			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery								
Total Recoverable Hydrocarbons				Result 1				
TRH C10-C14	M23-De0015644	NCP	%	125		70-130	Pass	
TRH >C10-C16	M23-De0015644	NCP	%	124		70-130	Pass	
Spike - % Recovery								
Heavy Metals				Result 1				
Arsenic	M23-De0012604	NCP	%	91		75-125	Pass	
Cadmium	M23-De0012604	NCP	%	97		75-125	Pass	
Chromium	M23-De0012604	NCP	%	95		75-125	Pass	
Copper	M23-De0012604	NCP	%	101		75-125	Pass	
Lead	M23-De0012604	NCP	%	80		75-125	Pass	
Mercury	M23-De0012604	NCP	%	99		75-125	Pass	
Nickel	M23-De0012604	NCP	%	110		75-125	Pass	
Zinc	M23-De0012604	NCP	%	98		75-125	Pass	
Spike - % Recovery								
Polycyclic Aromatic Hydrocarbons				Result 1				
Acenaphthene	M23-De0012865	NCP	%	70		70-130	Pass	
Acenaphthylene	M23-De0012865	NCP	%	85		70-130	Pass	
Anthracene	M23-De0012865	NCP	%	79		70-130	Pass	
Benz(a)anthracene	M23-De0012865	NCP	%	74		70-130	Pass	
Benzo(a)pyrene	M23-De0012865	NCP	%	79		70-130	Pass	
Benzo(b&j)fluoranthene	M23-De0012865	NCP	%	75		70-130	Pass	
Benzo(g,h,i)perylene	M23-De0012865	NCP	%	115		70-130	Pass	
Benzo(k)fluoranthene	M23-De0012865	NCP	%	85		70-130	Pass	
Chrysene	M23-De0012865	NCP	%	104		70-130	Pass	
Dibenz(a,h)anthracene	M23-De0012865	NCP	%	87		70-130	Pass	
Fluoranthene	M23-De0012865	NCP	%	115		70-130	Pass	
Fluorene	M23-De0012865	NCP	%	75		70-130	Pass	
Indeno(1,2,3-cd)pyrene	M23-De0012865	NCP	%	84		70-130	Pass	
Naphthalene	M23-De0012865	NCP	%	81		70-130	Pass	
Phenanthrene	M23-De0012865	NCP	%	84		70-130	Pass	
Pyrene	M23-De0012865	NCP	%	100		70-130	Pass	
Spike - % Recovery								
Heavy Metals				Result 1				
Beryllium	M23-De0012604	NCP	%	85		75-125	Pass	
Boron	M23-De0012604	NCP	%	85		75-125	Pass	
Cobalt	M23-De0012604	NCP	%	98		75-125	Pass	
Manganese	M23-De0012604	NCP	%	113		75-125	Pass	
Selenium	M23-De0012604	NCP	%	87		75-125	Pass	
Spike - % Recovery								
Heavy Metals				Result 1				
Barium	M23-De0012604	NCP	%	94		75-125	Pass	
Iron	M23-De0009577	NCP	%	92		75-125	Pass	
Silver	M23-De0012604	NCP	%	101		75-125	Pass	
Spike - % Recovery								
Organochlorine Pesticides				Result 1				
Chlordanes - Total	M23-De0009593	NCP	%	85		70-130	Pass	
4,4'-DDD	M23-De0009593	NCP	%	92		70-130	Pass	
4,4'-DDE	M23-De0009593	NCP	%	84		70-130	Pass	
4,4'-DDT	M23-De0009593	NCP	%	92		70-130	Pass	
a-HCH	M23-De0009593	NCP	%	83		70-130	Pass	
Aldrin	M23-De0009593	NCP	%	79		70-130	Pass	
b-HCH	M23-De0009593	NCP	%	93		70-130	Pass	
d-HCH	M23-De0009593	NCP	%	77		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Dieldrin	M23-De0009593	NCP	%	79		70-130	Pass	
Endosulfan I	M23-De0009593	NCP	%	119		70-130	Pass	
Endosulfan II	M23-De0009593	NCP	%	78		70-130	Pass	
Endosulfan sulphate	M23-De0009593	NCP	%	82		70-130	Pass	
Endrin	M23-De0009593	NCP	%	119		70-130	Pass	
Endrin aldehyde	M23-De0009593	NCP	%	86		70-130	Pass	
Endrin ketone	M23-De0009593	NCP	%	76		70-130	Pass	
γ-HCH (Lindane)	M23-De0009593	NCP	%	95		70-130	Pass	
Heptachlor	M23-De0009593	NCP	%	80		70-130	Pass	
Heptachlor epoxide	M23-De0009593	NCP	%	72		70-130	Pass	
Hexachlorobenzene	M23-De0009593	NCP	%	104		70-130	Pass	
Methoxychlor	M23-De0009593	NCP	%	92		70-130	Pass	
Spike - % Recovery								
Phenols (Halogenated)				Result 1				
2-Chlorophenol	M23-De0010399	NCP	%	100		30-130	Pass	
2,4-Dichlorophenol	M23-De0010399	NCP	%	79		30-130	Pass	
2,4,5-Trichlorophenol	M23-De0010399	NCP	%	56		30-130	Pass	
2,4,6-Trichlorophenol	M23-De0010399	NCP	%	50		30-130	Pass	
2,6-Dichlorophenol	M23-De0010399	NCP	%	73		30-130	Pass	
4-Chloro-3-methylphenol	M23-De0010399	NCP	%	65		30-130	Pass	
Pentachlorophenol	M23-De0006567	NCP	%	90		30-130	Pass	
Tetrachlorophenols - Total	M23-De0006567	NCP	%	36		30-130	Pass	
Spike - % Recovery								
Phenols (non-Halogenated)				Result 1				
2-Cyclohexyl-4,6-dinitrophenol	M23-De0006723	NCP	%	42		30-130	Pass	
2-Methyl-4,6-dinitrophenol	M23-De0006567	NCP	%	42		30-130	Pass	
2-Nitrophenol	M23-De0010399	NCP	%	45		30-130	Pass	
2,4-Dimethylphenol	M23-De0006567	NCP	%	38		30-130	Pass	
2,4-Dinitrophenol	M23-De0006723	NCP	%	51		30-130	Pass	
2-Methylphenol (o-Cresol)	M23-De0010399	NCP	%	71		30-130	Pass	
3&4-Methylphenol (m&p-Cresol)	M23-De0010399	NCP	%	68		30-130	Pass	
4-Nitrophenol	M23-De0006567	NCP	%	57		30-130	Pass	
Dinoseb	M23-De0006567	NCP	%	68		30-130	Pass	
Phenol	M23-De0010399	NCP	%	93		30-130	Pass	
Spike - % Recovery								
				Result 1				
Cyanide (total)	M23-De0003032	NCP	%	70		70-130	Pass	
Spike - % Recovery								
Organophosphorus Pesticides				Result 1				
Diazinon	M23-De0001582	NCP	%	76		70-130	Pass	
Dimethoate	M23-De0001582	NCP	%	94		70-130	Pass	
Ethion	M23-De0001582	NCP	%	75		70-130	Pass	
Fenitrothion	M23-De0001582	NCP	%	111		70-130	Pass	
Methyl parathion	M23-De0001582	NCP	%	113		70-130	Pass	
Mevinphos	M23-De0001582	NCP	%	93		70-130	Pass	
Spike - % Recovery								
Total Recoverable Hydrocarbons				Result 1				
TRH C6-C9	M23-De0009510	CP	%	93		70-130	Pass	
TRH C6-C10	M23-De0009510	CP	%	90		70-130	Pass	
Spike - % Recovery								
BTEX				Result 1				
Benzene	M23-De0009510	CP	%	94		70-130	Pass	
Toluene	M23-De0009510	CP	%	94		70-130	Pass	
Ethylbenzene	M23-De0009510	CP	%	101		70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
m&p-Xylenes	M23-De0009510	CP	%	102			70-130	Pass	
o-Xylene	M23-De0009510	CP	%	104			70-130	Pass	
Xylenes - Total*	M23-De0009510	CP	%	103			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
Naphthalene	M23-De0009510	CP	%	97			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Total Recoverable Hydrocarbons				Result 1	Result 2	RPD			
TRH C10-C14	M23-De0012578	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C15-C28	M23-De0012578	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH C29-C36	M23-De0012578	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH >C10-C16	M23-De0012578	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH >C16-C34	M23-De0012578	NCP	mg/kg	< 100	< 100	<1	30%	Pass	
TRH >C34-C40	M23-De0012578	NCP	mg/kg	< 100	< 100	<1	30%	Pass	
Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Acenaphthene	M23-De0012766	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Acenaphthylene	M23-De0012766	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Anthracene	M23-De0012766	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benz(a)anthracene	M23-De0012766	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(a)pyrene	M23-De0012766	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(b&j)fluoranthene	M23-De0012766	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(g,h,i)perylene	M23-De0012766	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(k)fluoranthene	M23-De0012766	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chrysene	M23-De0012766	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dibenz(a,h)anthracene	M23-De0012766	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluoranthene	M23-De0012766	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluorene	M23-De0012766	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Indeno(1,2,3-cd)pyrene	M23-De0012766	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Naphthalene	M23-De0012766	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Phenanthrene	M23-De0012766	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Pyrene	M23-De0012766	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	M23-De0009501	CP	mg/kg	4.3	4.4	4.1	30%	Pass	
Barium	M23-De0009501	CP	mg/kg	70	70	<1	30%	Pass	
Beryllium	M23-De0009501	CP	mg/kg	< 2	< 2	<1	30%	Pass	
Boron	M23-De0009501	CP	mg/kg	< 10	< 10	<1	30%	Pass	
Cadmium	M23-De0009501	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	M23-De0009501	CP	mg/kg	31	30	2.3	30%	Pass	
Cobalt	M23-De0009501	CP	mg/kg	12	12	1.3	30%	Pass	
Copper	M23-De0009501	CP	mg/kg	18	18	2.4	30%	Pass	
Iron	M23-De0009501	CP	mg/kg	28000	27000	3.5	30%	Pass	
Lead	M23-De0009501	CP	mg/kg	18	20	6.7	30%	Pass	
Manganese	M23-De0014246	NCP	mg/kg	13000	12000	<1	30%	Pass	
Mercury	M23-De0009501	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Nickel	M23-De0009501	CP	mg/kg	18	17	5.3	30%	Pass	
Selenium	M23-De0009501	CP	mg/kg	< 2	< 2	<1	30%	Pass	
Silver	M23-De0009501	CP	mg/kg	< 2	< 2	<1	30%	Pass	
Zinc	M23-De0009501	CP	mg/kg	29	28	2.8	30%	Pass	

Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Barium	M23-De0013019	NCP	mg/kg	31	41	28	30%	Pass
Iron	M23-De0013019	NCP	mg/kg	16000	14000	11	30%	Pass
Silver	M23-De0013019	NCP	mg/kg	< 2	< 2	<1	30%	Pass
Duplicate								
Volatile Organics				Result 1	Result 2	RPD		
Tetrachloroethene	M23-De0009399	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Duplicate								
Organochlorine Pesticides				Result 1	Result 2	RPD		
Chlordanes - Total	M23-De0015727	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
4,4'-DDD	M23-De0015727	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
4,4'-DDE	M23-De0015727	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
4,4'-DDT	M23-De0015727	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
a-HCH	M23-De0015727	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Aldrin	M23-De0015727	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
b-HCH	M23-De0015727	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
d-HCH	M23-De0015727	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Dieldrin	M23-De0015727	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endosulfan I	M23-De0015727	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endosulfan II	M23-De0015727	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endosulfan sulphate	M23-De0015727	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endrin	M23-De0015727	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endrin aldehyde	M23-De0015727	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endrin ketone	M23-De0015727	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
g-HCH (Lindane)	M23-De0015727	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Heptachlor	M23-De0015727	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Heptachlor epoxide	M23-De0015727	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Hexachlorobenzene	M23-De0015727	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Methoxychlor	M23-De0015727	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Toxaphene	M23-De0015727	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Duplicate								
Polychlorinated Biphenyls				Result 1	Result 2	RPD		
Aroclor-1016	M23-De0015727	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Aroclor-1221	M23-De0015727	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Aroclor-1232	M23-De0015727	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Aroclor-1242	M23-De0015727	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Aroclor-1248	M23-De0015727	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Aroclor-1254	M23-De0015727	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Aroclor-1260	M23-De0015727	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Total PCB*	M23-De0015727	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Duplicate								
Phenols (Halogenated)				Result 1	Result 2	RPD		
2-Chlorophenol	M23-De0015727	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
2,4-Dichlorophenol	M23-De0015727	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
2,4,5-Trichlorophenol	M23-De0015727	NCP	mg/kg	< 1	< 1	<1	30%	Pass
2,4,6-Trichlorophenol	M23-De0015727	NCP	mg/kg	< 1	< 1	<1	30%	Pass
2,6-Dichlorophenol	M23-De0015727	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
4-Chloro-3-methylphenol	M23-De0015727	NCP	mg/kg	< 1	< 1	<1	30%	Pass
Pentachlorophenol	M23-De0015727	NCP	mg/kg	< 1	< 1	<1	30%	Pass
Tetrachlorophenols - Total	M23-De0015727	NCP	mg/kg	< 10	< 10	<1	30%	Pass

Duplicate								
Phenols (non-Halogenated)				Result 1	Result 2	RPD		
2-Cyclohexyl-4,6-dinitrophenol	M23-De0015727	NCP	mg/kg	< 20	< 20	<1	30%	Pass
2-Methyl-4,6-dinitrophenol	M23-De0015727	NCP	mg/kg	< 5	< 5	<1	30%	Pass
2-Nitrophenol	M23-De0015727	NCP	mg/kg	< 1	< 1	<1	30%	Pass
2,4-Dimethylphenol	M23-De0015727	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
2,4-Dinitrophenol	M23-De0015727	NCP	mg/kg	< 5	< 5	<1	30%	Pass
2-Methylphenol (o-Cresol)	M23-De0015727	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
3&4-Methylphenol (m&p-Cresol)	M23-De0015727	NCP	mg/kg	< 0.4	< 0.4	<1	30%	Pass
4-Nitrophenol	M23-De0015727	NCP	mg/kg	< 5	< 5	<1	30%	Pass
Dinoseb	M23-De0015727	NCP	mg/kg	< 20	< 20	<1	30%	Pass
Phenol	M23-De0015727	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Chromium (hexavalent)	M23-De0011565	NCP	mg/kg	< 1	< 1	<1	30%	Pass
Cyanide (total)	M23-De0012589	NCP	mg/kg	< 5	< 5	<1	30%	Pass
Duplicate								
Total Recoverable Hydrocarbons				Result 1	Result 2	RPD		
TRH C6-C9	M23-De0009505	CP	mg/kg	< 20	< 20	<1	30%	Pass
TRH C6-C10	M23-De0009505	CP	mg/kg	< 20	< 20	<1	30%	Pass
Duplicate								
BTEX				Result 1	Result 2	RPD		
Benzene	M23-De0009505	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Toluene	M23-De0009505	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Ethylbenzene	M23-De0009505	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
m&p-Xylenes	M23-De0009505	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
o-Xylene	M23-De0009505	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Xylenes - Total*	M23-De0009505	CP	mg/kg	< 0.3	< 0.3	<1	30%	Pass
Duplicate								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD		
Naphthalene	M23-De0009505	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Duplicate								
Organophosphorus Pesticides				Result 1	Result 2	RPD		
Azinphos-methyl	M23-De0015727	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Bolstar	M23-De0015727	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Chlorfenvinphos	M23-De0015727	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Chlorpyrifos	M23-De0015727	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Chlorpyrifos-methyl	M23-De0015727	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Coumaphos	M23-De0015727	NCP	mg/kg	< 2	< 2	<1	30%	Pass
Demeton-S	M23-De0015727	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Demeton-O	M23-De0015727	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Diazinon	M23-De0015727	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Dichlorvos	M23-De0015727	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Dimethoate	M23-De0015727	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Disulfoton	M23-De0015727	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
EPN	M23-De0015727	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Ethion	M23-De0015727	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Ethoprop	M23-De0015727	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Ethyl parathion	M23-De0015727	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Fenitrothion	M23-De0015727	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Fensulfthion	M23-De0015727	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Fenthion	M23-De0015727	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Malathion	M23-De0015727	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Merphos	M23-De0015727	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Methyl parathion	M23-De0015727	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Mevinphos	M23-De0015727	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass

Duplicate								
Organophosphorus Pesticides				Result 1	Result 2	RPD		
Monocrotophos	M23-De0015727	NCP	mg/kg	< 2	< 2	<1	30%	Pass
Naled	M23-De0015727	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Omethoate	M23-De0015727	NCP	mg/kg	< 2	< 2	<1	30%	Pass
Phorate	M23-De0015727	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Pirimiphos-methyl	M23-De0015727	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Pyrazophos	M23-De0015727	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Ronnel	M23-De0015727	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Terbufos	M23-De0015727	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Tetrachlorvinphos	M23-De0015727	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Tokuthion	M23-De0015727	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Trichloronate	M23-De0015727	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Duplicate								
Sample Properties				Result 1	Result 2	RPD		
% Moisture	M23-De0009507	CP	%	9.6	9.7	<1	30%	Pass
Duplicate								
Volatile Organics				Result 1	Result 2	RPD		
1.1-Dichloroethane	M23-De0011190	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
1.1-Dichloroethene	M23-De0011190	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
1.1.1-Trichloroethane	M23-De0011190	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
1.1.1.2-Tetrachloroethane	M23-De0011190	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
1.1.2-Trichloroethane	M23-De0011190	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
1.1.2.2-Tetrachloroethane	M23-De0011190	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
1.2-Dibromoethane	M23-De0011190	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
1.2-Dichlorobenzene	M23-De0011190	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
1.2-Dichloroethane	M23-De0011190	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
1.2-Dichloropropane	M23-De0011190	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
1.2.3-Trichloropropane	M23-De0011190	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
1.2.4-Trimethylbenzene	M23-De0011190	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
1.3-Dichlorobenzene	M23-De0011190	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
1.3-Dichloropropane	M23-De0011190	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
1.3.5-Trimethylbenzene	M23-De0011190	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
1.4-Dichlorobenzene	M23-De0011190	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
2-Butanone (MEK)	M23-De0011190	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
2-Propanone (Acetone)	M23-De0011190	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
4-Chlorotoluene	M23-De0011190	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
4-Methyl-2-pentanone (MIBK)	M23-De0011190	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Allyl chloride	M23-De0011190	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Bromobenzene	M23-De0011190	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Bromochloromethane	M23-De0011190	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Bromodichloromethane	M23-De0011190	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Bromoform	M23-De0011190	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Bromomethane	M23-De0011190	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Carbon disulfide	M23-De0011190	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Carbon Tetrachloride	M23-De0011190	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Chlorobenzene	M23-De0011190	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Chloroethane	M23-De0011190	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Chloroform	M23-De0011190	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Chloromethane	M23-De0011190	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
cis-1.2-Dichloroethene	M23-De0011190	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
cis-1.3-Dichloropropene	M23-De0011190	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Dibromochloromethane	M23-De0011190	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Dibromomethane	M23-De0011190	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Dichlorodifluoromethane	M23-De0011190	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Iodomethane	M23-De0011190	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass

Duplicate								
Volatile Organics				Result 1	Result 2	RPD		
Isopropyl benzene (Cumene)	M23-De0011190	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Methylene Chloride	M23-De0011190	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Styrene	M23-De0011190	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
trans-1.2-Dichloroethene	M23-De0011190	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
trans-1.3-Dichloropropene	M23-De0011190	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Trichloroethene	M23-De0011190	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Trichlorofluoromethane	M23-De0011190	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Vinyl chloride	M23-De0011190	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Conductivity (1:5 aqueous extract at 25 °C as rec.)	M23-De0012589	NCP	uS/cm	1900	2000	2.0	30%	Pass
Total Organic Carbon	M23-Se0061832	NCP	%	0.2	0.3	22	30%	Pass
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Iron (%)	M23-De0009714	NCP	%	0.51	0.50	3.4	30%	Pass
Duplicate								
Cation Exchange Capacity				Result 1	Result 2	RPD		
Cation Exchange Capacity	M23-De0015880	NCP	meq/100g	13	13	<1	30%	Pass

Comments
Sample Integrity

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

Qualifier Codes/Comments

Code	Description
G01	The LORs have been raised due to matrix interference
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
N07	Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to the total of the two co-eluting PAHs

Authorised by:

Amy Meunier	Analytical Services Manager
Edward Lee	Senior Analyst-Organic
Emily Rosenberg	Senior Analyst-Metal
Harry Bacalis	Senior Analyst-Volatile
Joseph Edouard	Senior Analyst-Organic
Joseph Edouard	Senior Analyst-Volatile
Mary Makarios	Senior Analyst-Inorganic
Mary Makarios	Senior Analyst-Metal
Mary Makarios	Senior Analyst-Sample Properties



Glenn Jackson
Managing Director

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

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

Measurement uncertainty of test data is available on request or please [click here](#).

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LBW co Pty Ltd
184 Magill Road
Norwood
SA 5069



NATA Accredited
Accreditation Number 1261
Site Number 1254

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

Attention: **Matt Fitzgerald**

Report **1050793-W**
Project name **GREENWAY NCSC**
Project ID **231499**
Received Date **Dec 05, 2023**

Client Sample ID			RINSE-01
Sample Matrix			Water
Eurofins Sample No.			M23- De0009512
Date Sampled			Dec 04, 2023
Test/Reference	LOR	Unit	
Heavy Metals			
Arsenic	0.001	mg/L	< 0.001
Beryllium	0.001	mg/L	< 0.001
Boron	0.05	mg/L	< 0.05
Cadmium	0.0002	mg/L	< 0.0002
Chromium	0.001	mg/L	< 0.001
Cobalt	0.001	mg/L	< 0.001
Copper	0.001	mg/L	< 0.001
Lead	0.001	mg/L	< 0.001
Manganese	0.005	mg/L	< 0.005
Mercury	0.0001	mg/L	< 0.0001
Nickel	0.001	mg/L	< 0.001
Selenium	0.001	mg/L	< 0.001
Zinc	0.005	mg/L	< 0.005

Sample History

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

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

Description

NEPM 2013 Metals without Cr6+ (As, Be, B, Cd, Co, Cr, Cu, Hg, Pb, Ni, Mn, Se, Zn)

Testing Site

Melbourne

Extracted

Dec 07, 2023

Holding Time

180 Days

- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS

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

Melbourne 6 Monterey Road Dandenong South VIC 3175 +61 3 8564 5000 NATA# 1261 Site# 1254	Geelong 19/8 Lewalan Street Grovedale VIC 3216 +61 3 8564 5000 NATA# 1261 Site# 25403	Sydney 179 Magowar Road Girraween NSW 2145 +61 2 9900 8400 NATA# 1261 Site# 18217	Canberra Unit 1,2 Dacre Street Mitchell ACT 2911 +61 2 6113 8091 NATA# 1261 Site# 25466	Brisbane 1/21 Smallwood Place Murarie QLD 4172 T: +61 7 3902 4600 NATA# 1261 Site# 20794	Newcastle 1/2 Frost Drive Mayfield West NSW 2304 +61 2 4968 8448 NATA# 1261 Site# 25079 & 25289	Perth 46-48 Banksia Road Welshpool WA 6106 +61 8 6253 4444 NATA# 2377 Site# 2370	Auckland 35 O'Rorke Road Penrose, Auckland 1061 +64 9 526 4551 IANZ# 1327	Auckland (Asb) Unit C1/4 Pacific Rise, Mount Wellington, Auckland 1061 +64 9 525 0568 IANZ# 1308	Christchurch 43 Detroit Drive Rolleston, Christchurch 7675 +64 3 343 5201 IANZ# 1290	Tauranga 1277 Cameron Road, Gate Pa, Tauranga 3112 +64 9 525 0568 IANZ# 1402
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Company Name: LBW co Pty Ltd
Address: 184 Magill Road
 Norwood
 SA 5069

Order No.:
Report #: 1050793
Phone: 08 8331 2417
Fax: 08 8331 2415

Received: Dec 5, 2023 10:07 AM
Due: Dec 12, 2023
Priority: 5 Day
Contact Name: Matt Fitzgerald

Project Name: GREENWAY NCSC
Project ID: 231499

Eurofins Analytical Services Manager : Amy Meunier

Sample Detail						% Clay*	HOLD	Polycyclic Aromatic Hydrocarbons	Volatile Organics	Moisture Set	NEPM Screen for Soil Classification	SA Waste Screen	BTEX/TRH/PAH/HOCP/OPP/PM8	Eurofins Suite B7	NEPM 2013 Metals without Cr6+ (As, Be, B, Cd, Co, Cr, Cu, Hg, Pb, Ni, Mn, Se, Zn)
Melbourne Laboratory - NATA # 1261 Site # 1254						X	X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA # 1261 Site # 20794											X				
External Laboratory															
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID										
1	BH01-01	Dec 04, 2023		Soil	M23-De0009499				X				X		
2	BH01-02	Dec 04, 2023		Soil	M23-De0009500				X				X		
3	BH01-04	Dec 04, 2023		Soil	M23-De0009501				X					X	
4	BH02-01	Dec 04, 2023		Soil	M23-De0009502				X	X					
5	BH02-02	Dec 04, 2023		Soil	M23-De0009503				X				X		
6	BH02-03	Dec 04, 2023		Soil	M23-De0009504				X					X	
7	BH03-01	Dec 04, 2023		Soil	M23-De0009505				X			X			
8	BH03-04	Dec 04, 2023		Soil	M23-De0009506				X					X	
9	BH04-02	Dec 04, 2023		Soil	M23-De0009507			X	X					X	
10	BH05-01	Dec 04, 2023		Soil	M23-De0009508			X	X	X					
11	BH05-03	Dec 04, 2023		Soil	M23-De0009509	X			X	X					
12	BH06-01	Dec 04, 2023		Soil	M23-De0009510				X			X			

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

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Company Name: LBW co Pty Ltd
Address: 184 Magill Road
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 SA 5069

Order No.:
Report #: 1050793
Phone: 08 8331 2417
Fax: 08 8331 2415

Received: Dec 5, 2023 10:07 AM
Due: Dec 12, 2023
Priority: 5 Day
Contact Name: Matt Fitzgerald

Project Name: GREENWAY NCSC
Project ID: 231499

Eurofins Analytical Services Manager : Amy Meunier

Sample Detail						% Clay*	HOLD	Polycyclic Aromatic Hydrocarbons	Volatile Organics	Moisture Set	NEPM Screen for Soil Classification	SA Waste Screen	BTEX/TRH/PAH/OC/OPP/PM8	Eurofins Suite B7	NEPM 2013 Metals without Cr6+ (As, Be, B, Cd, Co, Cr, Cu, Hg, Pb, Ni, Mn, Se, Zn)
Melbourne Laboratory - NATA # 1261 Site # 1254						X	X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA # 1261 Site # 20794											X				
13	BH06-02	Dec 04, 2023		Soil	M23-De0009511			X	X						X
14	RINSE-01	Dec 04, 2023		Water	M23-De0009512										X
15	BH01-03	Dec 04, 2023		Soil	M23-De0009513		X								
16	BH01-05	Dec 04, 2023		Soil	M23-De0009514		X								
17	BH01-06	Dec 04, 2023		Soil	M23-De0009515		X								
18	BH02-04	Dec 04, 2023		Soil	M23-De0009516		X								
19	BH02-05	Dec 04, 2023		Soil	M23-De0009517		X								
20	BH03-02	Dec 04, 2023		Soil	M23-De0009518		X								
21	BH03-03	Dec 04, 2023		Soil	M23-De0009519		X								
22	BH03-05	Dec 04, 2023		Soil	M23-De0009520		X								
23	BH04-01	Dec 04, 2023		Soil	M23-De0009521		X								
24	BH04-03	Dec 04, 2023		Soil	M23-De0009522		X								
25	BH04-04	Dec 04, 2023		Soil	M23-De0009523		X								
26	BH04-05	Dec 04, 2023		Soil	M23-De0009524		X								
27	BH04-06	Dec 04, 2023		Soil	M23-De0009525		X								

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 email: EnviroSales@eurofins.com

Melbourne 6 Monterey Road Dandenong South VIC 3175 +61 3 8564 5000 NATA# 1261 Site# 1254	Geelong 19/8 Lewalan Street Grovedale VIC 3216 +61 3 8564 5000 NATA# 1261 Site# 25403	Sydney 179 Magowar Road Girraween NSW 2145 +61 2 9900 8400 NATA# 1261 Site# 18217	Canberra Unit 1,2 Dacre Street Mitchell ACT 2911 +61 2 6113 8091 NATA# 1261 Site# 25466	Brisbane 1/21 Smallwood Place Murarie QLD 4172 T: +61 7 3902 4600 NATA# 1261 Site# 20794	Newcastle 1/2 Frost Drive Mayfield West NSW 2304 +61 2 4968 8448 NATA# 1261 Site# 25079 & 25289	Perth 46-48 Banksia Road Welshpool WA 6106 +61 8 6253 4444 NATA# 2377 Site# 2370	Auckland 35 O'Rorke Road Penrose, Auckland 1061 +64 9 526 4551 IANZ# 1327	Auckland (Asb) Unit C1/4 Pacific Rise, Mount Wellington, Auckland 1061 +64 9 525 0568 IANZ# 1308	Christchurch 43 Detroit Drive Rolleston, Christchurch 7675 +64 3 343 5201 IANZ# 1290	Tauranga 1277 Cameron Road, Gate Pa, Tauranga 3112 +64 9 525 0568 IANZ# 1402
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Company Name:	LBW co Pty Ltd	Order No.:		Received:	Dec 5, 2023 10:07 AM
Address:	184 Magill Road Norwood SA 5069	Report #:	1050793	Due:	Dec 12, 2023
Project Name:	GREENWAY NCSC	Phone:	08 8331 2417	Priority:	5 Day
Project ID:	231499	Fax:	08 8331 2415	Contact Name:	Matt Fitzgerald

Eurofins Analytical Services Manager : Amy Meunier

Sample Detail						% Clay*	HOLD	Polycyclic Aromatic Hydrocarbons	Volatile Organics	Moisture Set	NEPM Screen for Soil Classification	SA Waste Screen	BTEX/TRH/PAH/OC/OPP/PM8	Eurofins Suite B7	NEPM 2013 Metals without Cr6+ (As, Be, B, Cd, Co, Cr, Cu, Hg, Pb, Ni, Mn, Se, Zn)
Melbourne Laboratory - NATA # 1261 Site # 1254						X	X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA # 1261 Site # 20794											X				
28	BH05-02	Dec 04, 2023		Soil	M23-De0009526		X								
29	BH05-04	Dec 04, 2023		Soil	M23-De0009527		X								
30	BH06-03	Dec 04, 2023		Soil	M23-De0009528		X								
31	BH06-04	Dec 04, 2023		Soil	M23-De0009529		X								
32	BH07-01	Dec 04, 2023		Soil	M23-De0009530		X								
33	BH07-02	Dec 04, 2023		Soil	M23-De0009531		X								
34	BH07-03	Dec 04, 2023		Soil	M23-De0009532		X								
35	BH07-04	Dec 04, 2023		Soil	M23-De0009533		X								
36	BH07-05	Dec 04, 2023		Soil	M23-De0009534		X								
37	BH07-06	Dec 04, 2023		Soil	M23-De0009535		X								
38	BH07-07	Dec 04, 2023		Soil	M23-De0009536		X								
39	BH04-07	Dec 04, 2023		Soil	M23-De0009537		X								
Test Counts						1	25	2	2	13	1	1	2	3	6

Internal Quality Control Review and Glossary

General

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

Holding Times

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

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

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

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

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether, the holding time is 7 days; however, for all other VOCs, such as BTEX or C6-10 TRH, the holding time is 14 days.

Units

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

Terms

APHA	American Public Health Association
CEC	Cation Exchange Capacity
COC	Chain of Custody
CP	Client Parent - QC was performed on samples pertaining to this report
CRM	Certified Reference Material (ISO17034) - reported as percent recovery.
Dry	Where moisture has been determined on a solid sample, the result is expressed on a dry weight basis.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
LOR	Limit of Reporting.
LCS	Laboratory Control Sample - reported as percent recovery.
Method Blank	In the case of solid samples, these are performed on laboratory-certified clean sands and in the case of water samples, these are performed on de-ionised water.
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC represents the sequence or batch that client samples were analysed within.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
SRA	Sample Receipt Advice
Surr - Surrogate	The addition of a similar compound to the analyte target is reported as percentage recovery. See below for acceptance criteria.
TBTO	Tributyltin oxide (<i>bis</i> -tributyltin oxide) - individual tributyltin compounds cannot be identified separately in the environment; however, free tributyltin was measured, and its values were converted stoichiometrically into tributyltin oxide for comparison with regulatory limits.
TCLP	Toxicity Characteristic Leaching Procedure
TEQ	Toxic Equivalency Quotient or Total Equivalence
QSM	US Department of Defense Quality Systems Manual Version 5.4
US EPA	United States Environmental Protection Agency
WA DWER	Sum of PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC - Acceptance Criteria

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

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is ≤30%; however, the following acceptance guidelines are equally applicable:

Results <10 times the LOR:	No Limit
Results between 10-20 times the LOR:	RPD must lie between 0-50%
Results >20 times the LOR:	RPD must lie between 0-30%

NOTE: pH duplicates are reported as a range, not as RPD

Surrogate Recoveries: Recoveries must lie between 20-130% for Speciated Phenols & 50-150% for PFAS. SVOCs recoveries 20 – 150%, VOC recoveries 70 – 130%

PFAS field samples containing surrogate recoveries above the QC limit designated in QSM 5.4, where no positive PFAS results have been reported or reviewed, and no data was affected.

QC Data General Comments

- Where a result is reported as less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
- Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown are not data from your samples.
- pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore, laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
- Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of recovery, the term "INT" appears against that analyte.
- For Matrix Spikes and LCS results, a dash "-" in the report means that the specific analyte was not added to the QC sample.
- Duplicate RPDs are calculated from raw analytical data; thus, it is possible to have two sets of data.

Quality Control Results

Test			Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Method Blank								
Heavy Metals								
Arsenic			mg/L	< 0.001		0.001	Pass	
Beryllium			mg/L	< 0.001		0.001	Pass	
Boron			mg/L	< 0.05		0.05	Pass	
Cadmium			mg/L	< 0.0002		0.0002	Pass	
Chromium			mg/L	< 0.001		0.001	Pass	
Cobalt			mg/L	< 0.001		0.001	Pass	
Copper			mg/L	< 0.001		0.001	Pass	
Lead			mg/L	< 0.001		0.001	Pass	
Manganese			mg/L	< 0.005		0.005	Pass	
Mercury			mg/L	< 0.0001		0.0001	Pass	
Nickel			mg/L	< 0.001		0.001	Pass	
Selenium			mg/L	< 0.001		0.001	Pass	
Zinc			mg/L	< 0.005		0.005	Pass	
LCS - % Recovery								
Heavy Metals								
Arsenic			%	97		80-120	Pass	
Beryllium			%	104		80-120	Pass	
Boron			%	112		80-120	Pass	
Cadmium			%	97		80-120	Pass	
Chromium			%	97		80-120	Pass	
Cobalt			%	97		80-120	Pass	
Copper			%	97		80-120	Pass	
Lead			%	98		80-120	Pass	
Manganese			%	97		80-120	Pass	
Mercury			%	102		80-120	Pass	
Nickel			%	96		80-120	Pass	
Selenium			%	97		80-120	Pass	
Zinc			%	95		80-120	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery								
Heavy Metals				Result 1				
Arsenic	M23-De0011364	NCP	%	102		75-125	Pass	
Beryllium	M23-De0011364	NCP	%	107		75-125	Pass	
Boron	M23-De0011364	NCP	%	104		75-125	Pass	
Cadmium	M23-De0011364	NCP	%	102		75-125	Pass	
Chromium	M23-De0011364	NCP	%	117		75-125	Pass	
Cobalt	M23-De0011364	NCP	%	101		75-125	Pass	
Copper	M23-De0011364	NCP	%	96		75-125	Pass	
Lead	M23-De0011364	NCP	%	101		75-125	Pass	
Manganese	M23-De0011364	NCP	%	91		75-125	Pass	
Mercury	M23-De0011364	NCP	%	108		75-125	Pass	
Nickel	M23-De0011364	NCP	%	105		75-125	Pass	
Selenium	M23-De0011364	NCP	%	94		75-125	Pass	
Zinc	M23-De0011364	NCP	%	111		75-125	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	M23-De0011364	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Beryllium	M23-De0011364	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Boron	M23-De0011364	NCP	mg/L	0.11	0.11	3.5	30%	Pass	
Cadmium	M23-De0011364	NCP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
Chromium	M23-De0011364	NCP	mg/L	0.002	0.002	4.2	30%	Pass	
Cobalt	M23-De0011364	NCP	mg/L	0.001	0.001	2.0	30%	Pass	
Copper	M23-De0011364	NCP	mg/L	0.042	0.043	2.9	30%	Pass	
Lead	M23-De0011364	NCP	mg/L	0.002	0.002	2.4	30%	Pass	
Manganese	M23-De0011364	NCP	mg/L	0.10	0.10	1.7	30%	Pass	
Mercury	M23-De0011364	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel	M23-De0011364	NCP	mg/L	0.005	0.005	2.5	30%	Pass	
Selenium	M23-De0011364	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Zinc	M23-De0011364	NCP	mg/L	0.17	0.17	1.9	30%	Pass	

Comments**Sample Integrity**

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

Authorised by:

Amy Meunier

Analytical Services Manager

Mary Makarios

Senior Analyst-Metal

**Glenn Jackson**
Managing Director

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

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

Measurement uncertainty of test data is available on request or please [click here](#).

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Eurofins Environment Testing Australia Pty Ltd

ABN: 50 005 085 521

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

Eurofins ARL Pty Ltd

ABN: 91 05 0159 898

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

Eurofins Environment Testing NZ Ltd

NZBN: 9429046024954

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

Sample Receipt Advice

Company name:	LBW co Pty Ltd
Contact name:	Matt Fitzgerald
Project name:	GREENWAY NCSC
Project ID:	231499
Turnaround time:	5 Day
Date/Time received	Dec 5, 2023 10:07 AM
Eurofins reference	1050793

Sample Information

- ✓ A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- ✓ All samples have been received as described on the above COC.
- ✓ COC has been completed correctly.
- ✓ Attempt to chill was evident.
- ✓ Appropriately preserved sample containers have been used.
- ✓ All samples were received in good condition.
- ✓ Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- ✓ Appropriate sample containers have been used.
- ✓ Sample containers for volatile analysis received with zero headspace.
- ✓ Split sample sent to requested external lab.
- ✗ Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Notes

Contact

If you have any questions with respect to these samples, please contact your Analytical Services Manager:

Amy Meunier on phone : or by email: AmyMeunier@eurofins.com

Results will be delivered electronically via email to Matt Fitzgerald - matt.fitzgerald@lbwco.com.au.

Note: A copy of these results will also be delivered to the general LBW co Pty Ltd email address.



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

Melbourne 6 Monterey Road Dandenong South VIC 3175 +61 3 8564 5000 NATA# 1261 Site# 1254	Geelong 19/8 Lewalan Street Grovedale VIC 3216 +61 3 8564 5000 NATA# 1261 Site# 25403	Sydney 179 Magowar Road Girraween NSW 2145 +61 2 9900 8400 NATA# 1261 Site# 18217	Canberra Unit 1,2 Dacre Street Mitchell ACT 2911 +61 2 6113 8091 NATA# 1261 Site# 25466	Brisbane 1/21 Smallwood Place Murarie QLD 4172 T: +61 7 3902 4600 NATA# 1261 Site# 20794	Newcastle 1/2 Frost Drive Mayfield West NSW 2304 +61 2 4968 8448 NATA# 1261 Site# 25079 & 25289	Perth 46-48 Banksia Road Welshpool WA 6106 +61 8 6253 4444 NATA# 2377 Site# 2370	Auckland 35 O'Rorke Road Penrose, Auckland 1061 +64 9 526 4551 IANZ# 1327	Auckland (Asb) Unit C1/4 Pacific Rise, Mount Wellington, Auckland 1061 +64 9 525 0568 IANZ# 1308	Christchurch 43 Detroit Drive Rolleston, Christchurch 7675 +64 3 343 5201 IANZ# 1290	Tauranga 1277 Cameron Road, Gate Pa, Tauranga 3112 +64 9 525 0568 IANZ# 1402
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Company Name: LBW co Pty Ltd	Order No.:	Received: Dec 5, 2023 10:07 AM
Address: 184 Magill Road Norwood SA 5069	Report #: 1050793	Due: Dec 12, 2023
	Phone: 08 8331 2417	Priority: 5 Day
	Fax: 08 8331 2415	Contact Name: Matt Fitzgerald
Project Name: GREENWAY NCSC		
Project ID: 231499		

Eurofins Analytical Services Manager : Amy Meunier

Sample Detail						% Clay*	HOLD	Polycyclic Aromatic Hydrocarbons	Volatile Organics	Moisture Set	NEPM Screen for Soil Classification	SA Waste Screen	BTEX/TRH/PAH/HOCP/OPP/PM8	Eurofins Suite B7	NEPM 2013 Metals without Cr6+ (As, Be, B, Cd, Co, Cr, Cu, Hg, Pb, Ni, Mn, Se, Zn)
Melbourne Laboratory - NATA # 1261 Site # 1254						X	X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA # 1261 Site # 20794											X				
External Laboratory															
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID										
1	BH01-01	Dec 04, 2023		Soil	M23-De0009499					X				X	
2	BH01-02	Dec 04, 2023		Soil	M23-De0009500					X				X	
3	BH01-04	Dec 04, 2023		Soil	M23-De0009501					X					X
4	BH02-01	Dec 04, 2023		Soil	M23-De0009502					X	X				
5	BH02-02	Dec 04, 2023		Soil	M23-De0009503					X				X	
6	BH02-03	Dec 04, 2023		Soil	M23-De0009504					X					X
7	BH03-01	Dec 04, 2023		Soil	M23-De0009505					X		X			
8	BH03-04	Dec 04, 2023		Soil	M23-De0009506					X					X
9	BH04-02	Dec 04, 2023		Soil	M23-De0009507			X		X					X
10	BH05-01	Dec 04, 2023		Soil	M23-De0009508			X	X	X					
11	BH05-03	Dec 04, 2023		Soil	M23-De0009509	X				X	X				
12	BH06-01	Dec 04, 2023		Soil	M23-De0009510					X		X			



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

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Company Name:	LBW co Pty Ltd	Order No.:		Received:	Dec 5, 2023 10:07 AM
Address:	184 Magill Road Norwood SA 5069	Report #:	1050793	Due:	Dec 12, 2023
Project Name:	GREENWAY NCSC	Phone:	08 8331 2417	Priority:	5 Day
Project ID:	231499	Fax:	08 8331 2415	Contact Name:	Matt Fitzgerald

Eurofins Analytical Services Manager : Amy Meunier

Sample Detail						% Clay*	HOLD	Polycyclic Aromatic Hydrocarbons	Volatile Organics	Moisture Set	NEPM Screen for Soil Classification	SA Waste Screen	BTEX/TRH/PAH/OC/OPP/PM8	Eurofins Suite B7	NEPM 2013 Metals without Cr6+ (As, Be, B, Cd, Co, Cr, Cu, Hg, Pb, Ni, Mn, Se, Zn)
Melbourne Laboratory - NATA # 1261 Site # 1254						X	X	X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA # 1261 Site # 20794											X				
28	BH05-02	Dec 04, 2023		Soil	M23-De0009526		X								
29	BH05-04	Dec 04, 2023		Soil	M23-De0009527		X								
30	BH06-03	Dec 04, 2023		Soil	M23-De0009528		X								
31	BH06-04	Dec 04, 2023		Soil	M23-De0009529		X								
32	BH07-01	Dec 04, 2023		Soil	M23-De0009530		X								
33	BH07-02	Dec 04, 2023		Soil	M23-De0009531		X								
34	BH07-03	Dec 04, 2023		Soil	M23-De0009532		X								
35	BH07-04	Dec 04, 2023		Soil	M23-De0009533		X								
36	BH07-05	Dec 04, 2023		Soil	M23-De0009534		X								
37	BH07-06	Dec 04, 2023		Soil	M23-De0009535		X								
38	BH07-07	Dec 04, 2023		Soil	M23-De0009536		X								
39	BH04-07	Dec 04, 2023		Soil	M23-De0009537		X								
Test Counts						1	25	2	2	13	1	1	2	3	6



184 Magill Road, Norwood SA 5067
 PO Box 225 Steppiv SA 5069
 P: 08 8331 2417 F: 08 8331 2415

E: admin@lbwco.com.au
 ABN: 58 128 992 274

F51050793 5112123

LABORATORY TESTING ORDER

Project Title : Greenway NCSC
Job Number/ 231499
Project ID :
Project Manager: M.Fitzgerald
Email: Matt.Fitzgerald@lbwco.com.au
Phone: 08 8331 2417
Results to: matt.f@lbwco.com.au lbwcoesd@lbwco.com.au
Invoice to: finance@lbwco.com.au

Primary Laboratory: Eurofins
Laboratory Quote Ref: Price Book 2023
Secondary Laboratory: EnviroLab
Laboratory Quote Ref: LBWco Pricelist 202

LBW co's COC REFERENCE (sample delivery group)
 231499-COC-20231205

Turn Around Time
 Standard

SAMPLE DETAILS				CHEMICAL TESTING REQUIRED																	
Date sampled	Sample ID	Sample Matrix	Additional Information / Comments	M13A - 13 Metals (minus CR6+)	PAH	R7	R21	B10	VOC	B7											
04-Dec-23	BH01-01	SOIL								X											
04-Dec-23	BH01-02									X											
04-Dec-23	BH01-03										X										
04-Dec-23	BH01-04				X																
04-Dec-23	BH01-05																				
04-Dec-23	BH01-06																				
04-Dec-23	BH02-01						X														
04-Dec-23	BH02-02										X										
04-Dec-23	BH03-03																				
04-Dec-23	BH03-04				X																
04-Dec-23	BH03-05																				
04-Dec-23	BH04-01																				
04-Dec-23	BH04-02										X										
04-Dec-23	BH04-03																				
04-Dec-23	BH04-04										X										
04-Dec-23	BH04-05																				
04-Dec-23	BH04-06																				
LAB CO AUTHORIZATION				LABORATORY RECEIPT	5	2	1	0	1	0	3	0	0	0	0	0	0	0	0	12	
Requested by: M.Fitzgerald		Received by:		Additional Comments																	
Date time requested: 05-Dec-23		Date time received:																			
Signature:		Signature:																			

PS1058793 912123

OPW

10 FS

LABORATORY TESTING ORDER

Project Title : Greenway NCSC
Job Number/ 231499
Project ID : 231499
Project Manager: M.Fitzgerald
Email: Matt.fitz@lbwco.com.au
Phone: 08 8331 2417
Results for: results@lbwco.com.au lbwco@esdca.com.au
Invoice for: invoice@lbwco.com.au

Primary Laboratory: Eurofins
Laboratory Quote Ref: Price Book 2023
Secondary Laboratory: EnviroLab
Laboratory Quote Ref: LBWco Pricelist 202

LBW CO'S COC REFERENCE (single sticker per)
231499-COC-20231205

Turn Around Time
Standard

SAMPLE DETAILS				CHEMICAL TESTING REQUIRED																	
Date Sampled	Sample ID	Sample Matrix	Additional Information / Comments	M13A - 13 Metals (minus CR6+)	PAH	R7	R21	B10	VOC	B7											
04-Dec-23	BH01-01																				
04-Dec-23	BH03-02									X											
04-Dec-23	BH01-03									X											
04-Dec-23	BH01-04																				
04-Dec-23	BH03-05																				
04-Dec-23	BH01-06																				
04-Dec-23	BH01-08																				
04-Dec-23	BH02-01																				
04-Dec-23	BH02-02							X													
04-Dec-23	BH02-03									X											
04-Dec-23	BH02-04																				
04-Dec-23	BH02-05																				
04-Dec-23	BH03-01		SOIL																		
04-Dec-23	BH03-02																				
04-Dec-23	BH03-03																				
04-Dec-23	BH03-04																				
04-Dec-23	BH03-05																				
04-Dec-23	BH04-01																				
04-Dec-23	BH04-02																				
04-Dec-23	BH04-03																				
04-Dec-23	BH04-04																				
04-Dec-23	BH04-05																				
04-Dec-23	BH04-06																				
LBW CO AUTHONISATION				LABORATORY RECEIPT																	
Requested by:	M. Fitzgerald			Received by:																	
Date Item Requested:	05-Dec-23			Date Item Received:																	
Signature:				Signature:																	
				Additional Comments																	
				5	2	1	0	1	0	3	0	0	0	0	0	0	0	0	12		

Tyrone Gowans

F-5 / 1050793 5112123

From: Amy Meunier
Sent: Tuesday, 5 December 2023 10:24 AM
To: #AU_CAU001_EnviroSampleVic
Subject: FW: 231499-LTO-20231205
Attachments: 231499-LTO-20231205.pdf

Follow Up Flag: Follow up
Flag Status: Completed

INFO: INTERNAL EMAIL - Sent from your own Eurofins email domain.

Hi Tyrone -- COC attached

Kind regards,

Amy Meunier

Analytical Services Manager
Mobile : +61 477 574 867
Email : AmyMeunier@eurofins.com

Eurofins
6 Monterey Road,
Dandenong VIC 3175
Australia

My office hours are 9am to 5:30pm (Monday to Friday)

If you require sample receipt outside these hours please email envirosamplevic@eurofins.com



Christmas Closure Dates

CLICK TO VIEW

From: Matt Fitzgerald <matt.fitzgerald@lbwco.com.au>
Sent: Tuesday, 5 December 2023 10:07 AM
To: Amy Meunier <AmyMeunier@eurofins.com>
Subject: 231499-LTO-20231205

CAUTION: EXTERNAL EMAIL - Sent from an email domain that is not formally trusted by Eurofins.
Do not click on links or open attachments unless you recognise the sender and are certain that the content is safe.

Morning Amy,

Find attached LTO for soil samples which should arrive in Melbourne this morning

Kind Regards

Matt Fitzgerald

SAMPLE REGISTER & CHAIN OF CUSTODY

Project Title: Greenway Architects NCSO Soil Assessment
Job Number: 231499
Project manager: Matt Fitzgerald
Email: matt.fitzgerald@lbwco.com.au
Phone: 8331 2417
Send results to: results@lbwco.com.au
Send invoice to: finance@lbwco.com.au

Primary Lab: Eurofins
Lab Quote Ref: Price Book 2023
Secondary lab: Envirolab
LBWCO Price List 2023
COC Reference: 231499...COC_2023_104
(sample delivery group)

FS1050793 5/12/23

Sample Details 1	Sample Details 2	Sample Custody - Step 1
<p>BH01-01 LBW Job#: 231499 Matrix: Soil Date: 04.12.2023</p>	<p>BH01-02 LBW Job#: 231499 Matrix: Soil Date: 04.12.2023</p>	<p>Relinquished by: GASTANO GARFI</p>
<p>BH01-03 LBW Job#: 231499 Matrix: Soil Date: 04.12.2023</p>	<p>BH01-04 LBW Job#: 231499 Matrix: Soil Date: 04.12.2023</p>	<p>Date/Time Relinquished: 4/12/2023</p>
<p>BH01-05 LBW Job#: 231499 Matrix: Soil Date: 04.12.2023</p>	<p>BH01-06 LBW Job#: 231499 Matrix: Soil Date: 04.12.2023</p>	<p>Signature: <i>[Handwritten Signature]</i></p>
<p>BH02-01 LBW Job#: 231499 Matrix: Soil Date: 04.12.2023</p>	<p>BH02-02 LBW Job#: 231499 Matrix: Soil Date: 04.12.2023</p>	<p>Received by: Paternal</p>
<p>BH02-03 LBW Job#: 231499 Matrix: Soil Date: 04.12.2023</p>	<p>BH02-04 LBW Job#: 231499 Matrix: Soil Date: 04.12.2023</p>	<p>Date/Time Received: 04/12 2pm</p>
<p>BH02-05 LBW Job#: 231499 Matrix: Soil Date: 04.12.2023</p>	<p>BH03-01 LBW Job#: 231499 Matrix: Soil Date: 04.12.2023</p>	<p>Signature: <i>[Handwritten Signature]</i></p>
<p>BH03-02 LBW Job#: 231499 Matrix: Soil Date: 04.12.2023</p>	<p>BH03-03 LBW Job#: 231499 Matrix: Soil Date: 04.12.2023</p>	<p>Date/Time Relinquished:</p>
<p>BH03-04 LBW Job#: 231499 Matrix: Soil Date: 04.12.2023</p>	<p>BH03-05 LBW Job#: 231499 Matrix: Soil Date: 04.12.2023</p>	<p>Signature: <i>[Handwritten Signature]</i></p>
<p>BH04-01 LBW Job#: 231499 Matrix: Soil Date: 04.12.2023</p>	<p>BH04-02 LBW Job#: 231499 Matrix: Soil Date: 04.12.2023</p>	<p>Date/Time Relinquished:</p>
<p>BH04-03 LBW Job#: 231499 Matrix: Soil Date: 04.12.2023</p>	<p>BH04-04 LBW Job#: 231499 Matrix: Soil Date: 04.12.2023</p>	<p>Signature: <i>[Handwritten Signature]</i></p>

15.6°C
- 0.3°C
15.3°C on B



PS1050793 5112123

SAMPLE REGISTER & CHAIN OF CUSTODY

Project title: Greenway Architects NCCS Soil Assessment
Job Number: 231499
Project manager: Matt Fitzgerald
Email: matt.fitzgerald@lbwco.com.au
Phone: 8331 2417
Send results to: results@lbwco.com.au
Send invoice to: finance@lbwco.com.au

Primary Lab: Eurofins
Lab Quote Ref: Price Book 2023
Secondary lab: EnviroLab
 LBWCo Price List 2023

COC Reference: 231499_COC_20231 **2021**
 (sample delivery group)

Sample Details 1	Sample Details 2	Sample Custody - Step 1	Sample Custody - Step 2
BH04-05 LBW Job#: 231499 Matrix: Soil Date: 04.12.2023 BH05-01 LBW Job#: 231499 Matrix: Soil Date: 04.12.2023 BH05-03 LBW Job#: 231499 Matrix: Soil Date: 04.12.2023 BH06-01 LBW Job#: 231499 Matrix: Soil Date: 04.12.2023 BH06-03 LBW Job#: 231499 Matrix: Soil Date: 04.12.2023 BH07-01 LBW Job#: 231499 Matrix: Soil Date: 04.12.2023 BH07-03 LBW Job#: 231499 Matrix: Soil Date: 04.12.2023 BH07-05 LBW Job#: 231499 Matrix: Soil Date: 04.12.2023 BH04-07 LBW Job#: 231499 Matrix: Soil Date: 04.12.2023	BH04-06 LBW Job#: 231499 Matrix: Soil Date: 04.12.2023 BH05-02 LBW Job#: 231499 Matrix: Soil Date: 04.12.2023 BH05-04 LBW Job#: 231499 Matrix: Soil Date: 04.12.2023 BH06-02 LBW Job#: 231499 Matrix: Soil Date: 04.12.2023 BH06-04 LBW Job#: 231499 Matrix: Soil Date: 04.12.2023 BH07-02 LBW Job#: 231499 Matrix: Soil Date: 04.12.2023 BH07-04 LBW Job#: 231499 Matrix: Soil Date: 04.12.2023 BH07-06 LBW Job#: 231499 Matrix: Soil Date: 04.12.2023 BH07-07 LBW Job#: 231499 Matrix: Soil Date: 04.12.2023	Requisitioned by: GAETANO GARFI Date/Time Requisitioned: 4/12/2023 Signature:  Counter and consignment number: Received by: Paesmal Date/Time Received: 04/12 2PM Signature: 	Requisitioned by: Date/Time Requisitioned: Counter and consignment number: Received by: Date/Time Received: Signature:
Sample Custody - Step 2			
RMSF-01 LBW Job#: 231499 Matrix: Soil Date: 04.12.2023			



CERTIFICATE OF ANALYSIS 41076

Client Details

Client	LBW CO PTY LTD
Attention	Matt Fitzgerald
Address	184 Magill Road, Norwood, SA, 5067

Sample Details

Your Reference	231499
Number of Samples	1 Soil
Date samples received	06/12/2023
Date completed instructions received	06/12/2023

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.
Samples were analysed as received from the client. Results relate specifically to the samples as received.
Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

Report Details

Date results requested by	13/12/2023
Date of issue	08/12/2023
NATA Accreditation Number 2901. This document shall not be reproduced except in full.	
Accredited for compliance with ISO/IEC 17025 - Testing. Tests not covered by NATA are denoted with *	

Results Approved By

Tara White, Metals Team Leader
Tianna Milburn, Senior Chemist

Authorised By

Pamela Adams, Laboratory Manager

PAHs in Soil		
Our Reference		41076-1
Your Reference	UNITS	BH04-03
Date Sampled		04/12/2023
Type of sample		Soil
Date extracted	-	06/12/2023
Date analysed	-	07/12/2023
Naphthalene	mg/kg	<0.1
Acenaphthylene	mg/kg	<0.1
Acenaphthene	mg/kg	<0.1
Fluorene	mg/kg	<0.1
Phenanthrene	mg/kg	<0.1
Anthracene	mg/kg	<0.1
Fluoranthene	mg/kg	<0.1
Pyrene	mg/kg	<0.1
Benzo(a)anthracene	mg/kg	<0.1
Chrysene	mg/kg	<0.1
Benzo(b,j&k)fluoranthene	mg/kg	<0.2
Benzo(a)pyrene	mg/kg	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1
Total +ve PAH's	mg/kg	<0.05
Benzo(a)pyrene TEQ calc (Zero)	mg/kg	<0.5
Benzo(a)pyrene TEQ calc (Half)	mg/kg	<0.5
Benzo(a)pyrene TEQ calc (PQL)	mg/kg	<0.5
Surrogate <i>p</i> -Terphenyl-d ₁₄	%	90

NEPM screen metals in soil		
Our Reference		41076-1
Your Reference	UNITS	BH04-03
Date Sampled		04/12/2023
Type of sample		Soil
Date digested	-	07/12/2023
Date analysed	-	07/12/2023
Arsenic	mg/kg	<4
Beryllium	mg/kg	<1
Boron	mg/kg	<10
Cadmium	mg/kg	<0.4
Cobalt	mg/kg	13
Chromium	mg/kg	32
Copper	mg/kg	16
Lead	mg/kg	10
Mercury	mg/kg	<0.1
Manganese	mg/kg	430
Nickel	mg/kg	15
Selenium	mg/kg	<2
Zinc	mg/kg	18

Moisture		
Our Reference		41076-1
Your Reference	UNITS	BH04-03
Date Sampled		04/12/2023
Type of sample		Soil
Date prepared	-	06/12/2023
Date analysed	-	07/12/2023
Moisture	%	12

Method ID	Methodology Summary
Inorg-008	Moisture content determined by heating at 105°C for a minimum of 12 hours.
Metals-020 ICP-AES	Determination of various metals by ICP-AES.
Metals-021 CV-AAS	Determination of Mercury by Cold Vapour AAS.
Org-022/025	<p>Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013.</p> <p>For soil results:-</p> <ol style="list-style-type: none"> 1. 'EQ PQL' values are assuming all contributing PAHs reported as <PQL are actually at the PQL. This is the most conservative approach and can give false positive TEQs given that PAHs that contribute to the TEQ calculation may not be present. 2. 'EQ zero' values are assuming all contributing PAHs reported as <PQL are zero. This is the least conservative approach and is more susceptible to false negative TEQs when PAHs that contribute to the TEQ calculation are present but below PQL. 3. 'EQ half PQL' values are assuming all contributing PAHs reported as <PQL are half the stipulated PQL. Hence a mid-point between the most and least conservative approaches above. <p>Note, the Total +ve PAHs PQL is reflective of the lowest individual PQL and is therefore "Total +ve PAHs" is simply a sum of the positive individual PAHs.</p>

QUALITY CONTROL: PAHs in Soil				Duplicate				Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	41076-1
Date extracted	-			06/12/2023	[NT]	[NT]	[NT]	[NT]	06/12/2023	06/12/2023
Date analysed	-			07/12/2023	[NT]	[NT]	[NT]	[NT]	07/12/2023	07/12/2023
Naphthalene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	102	88
Acenaphthylene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	96	86
Fluorene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	102	90
Phenanthrene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	102	92
Anthracene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	94	86
Pyrene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	96	88
Benzo(a)anthracene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	100	90
Benzo(b,j&k)fluoranthene	mg/kg	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-022/025	<0.05	[NT]	[NT]	[NT]	[NT]	100	90
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate p-Terphenyl-d ₁₄	%		Org-022/025	100	[NT]	[NT]	[NT]	[NT]	96	88

Client Reference: 231499

QUALITY CONTROL: NEPM screen metals in soil						Duplicate		Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date digested	-			07/12/2023	1	07/12/2023	07/12/2023		07/12/2023	[NT]
Date analysed	-			07/12/2023	1	07/12/2023	07/12/2023		07/12/2023	[NT]
Arsenic	mg/kg	4	Metals-020 ICP-AES	<4	1	<4	<4	0	105	[NT]
Beryllium	mg/kg	1	Metals-020 ICP-AES	<1	1	<1	<1	0	103	[NT]
Boron	mg/kg	10	Metals-020 ICP-AES	<10	1	<10	<10	0	100	[NT]
Cadmium	mg/kg	0.4	Metals-020 ICP-AES	<0.4	1	<0.4	<0.4	0	104	[NT]
Cobalt	mg/kg	1	Metals-020 ICP-AES	<1	1	13	13	0	105	[NT]
Chromium	mg/kg	1	Metals-020 ICP-AES	<1	1	32	33	3	103	[NT]
Copper	mg/kg	1	Metals-020 ICP-AES	<1	1	16	16	0	100	[NT]
Lead	mg/kg	1	Metals-020 ICP-AES	<1	1	10	10	0	103	[NT]
Mercury	mg/kg	0.1	Metals-021 CV-AAS	<0.1	1	<0.1	<0.1	0	90	[NT]
Manganese	mg/kg	1	Metals-020 ICP-AES	<1	1	430	420	2	102	[NT]
Nickel	mg/kg	1	Metals-020 ICP-AES	<1	1	15	15	0	103	[NT]
Selenium	mg/kg	2	Metals-020 ICP-AES	<2	1	<2	<2	0	97	[NT]
Zinc	mg/kg	1	Metals-020 ICP-AES	<1	1	18	18	0	104	[NT]

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.
Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.	
The recommended maximums for analytes in urine are taken from "2018 TLVs and BEIs", as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.	
Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2	

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Where matrix spike recoveries fall below the lower limit of the acceptance criteria (e.g. for non-labile or standard Organics <60%), positive result(s) in the parent sample will subsequently have a higher than typical estimated uncertainty (MU estimates supplied on request) and in these circumstances the sample result is likely biased significantly low.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

DATA QUALITY ASSESSMENT SUMMARY

Report Details

Envirolab Report Reference	41076
Client ID	LBW CO PTY LTD
Project Reference	231499
Date Issued	08/12/2023

QC DATA

All laboratory QC data was within the Envirolab Group's specifications.

HOLDING TIME COMPLIANCE EVALUATION

All preservation / holding times (based on AS/ASPHA/ISO/NEPM/USEPA reference documents and standards) are compliant.

Certain analyses have had their recommended technical holding times elongated by filtering and/or freezing on receipt at the laboratory (e.g. BOD, chlorophyll/Pheophytin, nutrients and acid sulphate soil tests).

COMPLIANCE TO QC FREQUENCY (NEPM)

Internal laboratory QC rate complies with NEPM requirements (LCS/MB/MS 1 in 20, Duplicates 1 in 10 samples). Note, samples are batched together with other sample consignments in order to assign QC sample frequency.

QC Evaluation

Duplicate(s) was performed as per NEPM frequency	✓
Laboratory Control Sample(s) were analysed with the samples received	✓
A Method Blank was performed with the samples received	✓
Matrix spike(s) was performed as per NEPM frequency (Not Applicable for Air samples)	✓

Refer to Certificate of Analysis for all Quality Control data.



SAMPLE RECEIPT ADVICE

Client Details

Client	LBW CO PTY LTD
Attention	Matt Fitzgerald

Sample Login Details

Your reference	231499
Envirolab Reference	41076
Date Sample Received	06/12/2023
Date Instructions Received	06/12/2023
Date Results Expected to be Reported	13/12/2023

Sample Condition

Samples received in appropriate condition for analysis	Yes
No. of Samples Provided	1 Soil
Turnaround Time Requested	Standard
Temperature on Receipt (°C)	10.9
Cooling Method	Ice
Sampling Date Provided	YES

Comments

Nil

Please direct any queries to:

Pamela Adams

Phone: 03 9763 2500

Fax: 03 9763 2633

Email: padams@envirolab.com.au

Chris De Luca

Phone: 03 9763 2500

Fax: 03 9763 2633

Email: cdeluca@envirolab.com.au

Analysis Underway, details on the following page:



Envirolab Services Pty Ltd

ABN 37 112 535 645 - 002

25 Research Drive Croydon South VIC 3136

ph 03 9763 2500 fax 03 9763 2633

melbourne@envirolab.com.au

www.envirolab.com.au

Sample ID	PAHs in Soil	MEPM screen metals in soil
BH04-03	✓	✓

The '✓' indicates the testing you have requested. **THIS IS NOT A REPORT OF THE RESULTS.**

Additional Info

Sample storage - Waters are routinely disposed of approximately 1 month and soils approximately 2 months from receipt.

Requests for longer term sample storage must be received in writing.

Please contact the laboratory immediately if observed settled sediment present in water samples is to be included in the extraction and/or analysis (exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, Total Recoverable metals and PFAS analysis where solids are included by default).

ENVIROLAB
 25 Research Drive
 Craydon South VIC 3136
 Ph: (08) 9763 2500

Job No: 41076
 Date Received: 6/12/23
 Time Received: 12:30am
 Received By: AG
 Cooling: Repack
 Security: Intact/Broken/None

lbw
 DELIVERING ENVIRONMENTAL SOLUTIONS

194 Magill Road, Woodrow SA 5067
 PO Box 225 Stepney SA 5069
 P: 08 8331 2417 F: 08 8331 2415

WF
 COPY

E: admin@lbwco.com.au
 ABN: 58 126 592 274

LABORATORY TESTING ORDER

Project Title: Greenway NCSC
 Job Number: 231499
 Project ID:
 Project Manager: M.Fitzgerald
 Email: Matt.fitzgerald@lbwco.com.au
 Phone: 08 8331 2417
 Results to: matt.f@lbwco.com.au, lbwco@esdgl.com.au
 Invoice to: finance@lbwco.com.au

Primary Laboratory: Eurofins
 Laboratory Quote Ref: Price Book 2023
 Secondary Laboratory: EnviroLab
 Laboratory Quote Ref: LBWco PriceList 202

LBW co's CDC REFERENCE (vanilla delivery group)
 231499-COC-20231205

Turn Around Time
 Standard

SAMPLE DETAILS				CHEMICAL TESTING REQUIRED																
Date Sampled	Sample ID	Sample Matrix	Additional Information / Comments	MTA - 13 Matrix (minus CH6*)	FAH	B7	B21	B10	VOC	B7									MOI	
04-Dec-23	BH01-01	SOIL								X										
04-Dec-23	BH01-02									X										
04-Dec-23	BH01-03																			X
04-Dec-23	BH01-04				X															X
04-Dec-23	BH01-05																			X
04-Dec-23	BH01-06																			X
04-Dec-23	BH02-01						X													
04-Dec-23	BH02-02										X									
04-Dec-23	BH02-03				X															X
04-Dec-23	BH02-04																			X
04-Dec-23	BH02-05																			X
04-Dec-23	BH03-01									X										
04-Dec-23	BH03-02																			X
04-Dec-23	BH03-03																			X
04-Dec-23	BH03-04				X															X
04-Dec-23	BH03-05																			X
04-Dec-23	BH04-01																			X
04-Dec-23	BH04-02				X	X														
04-Dec-23	BH04-03			Please forward to EnviroLab	X	X														
04-Dec-23	BH04-04																			X
04-Dec-23	BH04-05																		X	
04-Dec-23	BH04-06																		X	
LBW co AUTHORIZATION				LABORATORY RECEIPT				5	2	1	0	1	0	3	0	0	0	0	12	
Requested by: M.Fitzgerald				Requested by:				Retinalysed by Nicole R (EP) 6/12/23 Sam												
Date/Time requested: 05-Dec-23				Date/Time received:																
Signature:				Signature:																

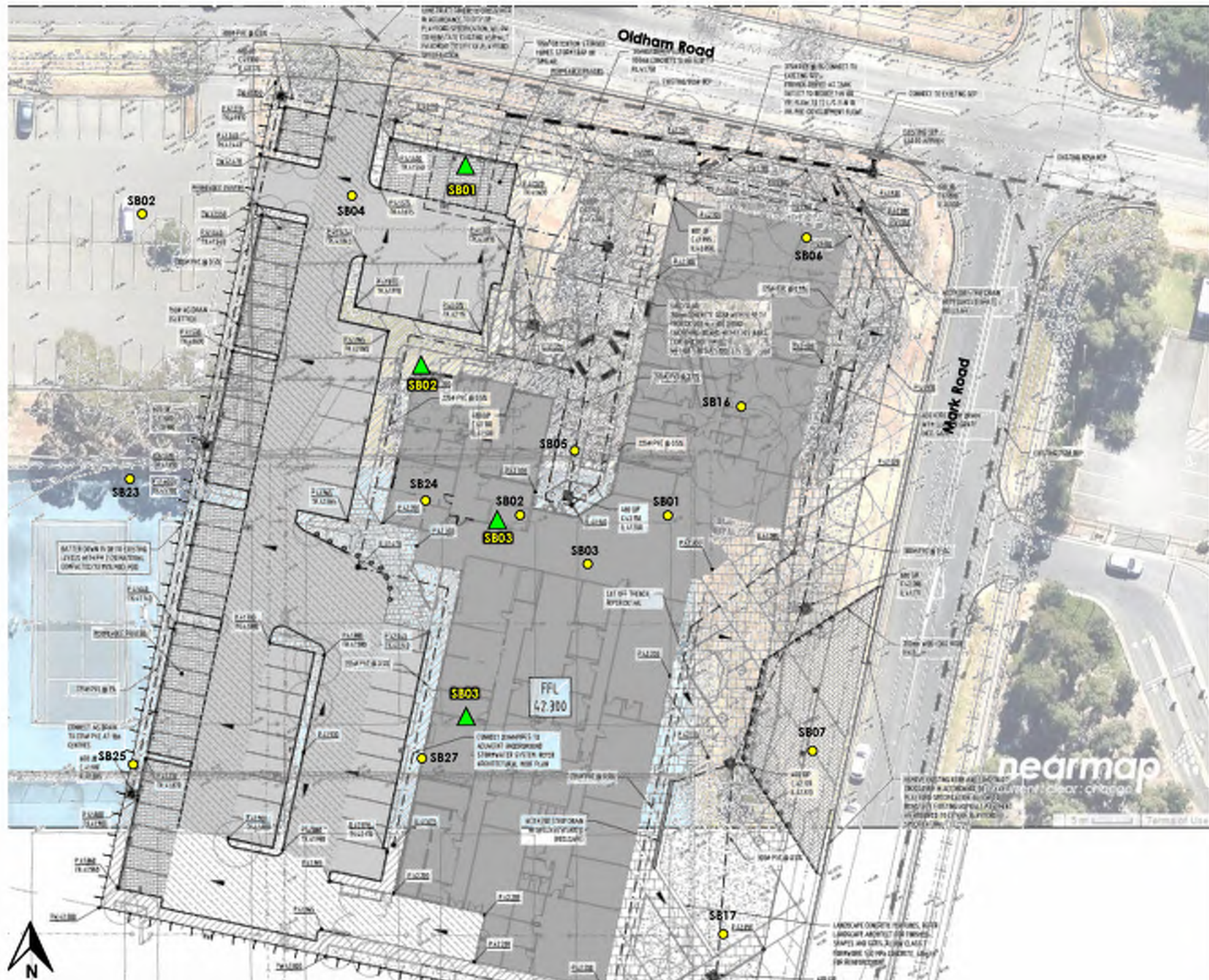


FIGURE 1
Soil Bore
Location Plan

VITA North, Oldham Road,
 Elizabeth Vale

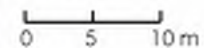
Waste Soil Classification
 Assessment

For
 ACH Group

LEGEND

- Soil bores 2017
- ▲ Soil bores 2019

SCALE



Job Number: 170951-01

Drawn: TH

Checked: JB

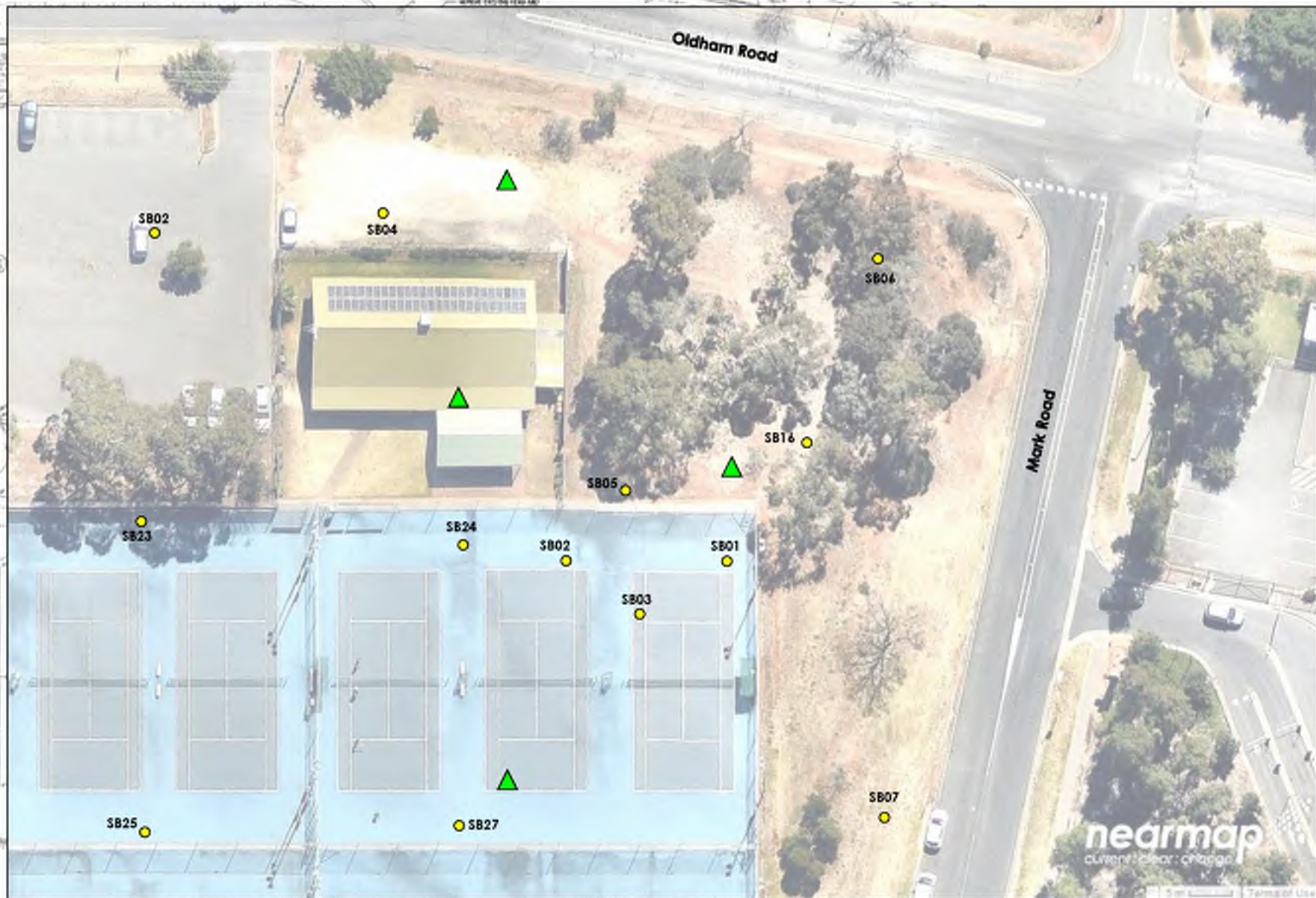


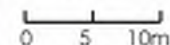
FIGURE 3
Soil Bore
Location Plan 2019

Lot 47 Oldham Road,
 Elizabeth Vale

LEGEND

- Previous Soil bore location
- ▲ Soil bore location (2017)

SCALE



Job Number: 170951-01

Drawn:




Checked:



SOIL BORE SB01

PROJECT NUMBER 170951-01	DRILLING DATE 27/05/2019	COORDINATES -34.7460027, 138.66174641
PROJECT NAME ACH VITA North Assessment	DRILLING COMPANY Indepth Drilling	COORD SYSTEM Latitude, Longitude
ADDRESS Oldham Road Elizabeth Vale	DRILL RIG Geoprobe	LOGGED BY LBWco Tab1
	DRILLING METHOD Push Tube	CHECKED BY
	BOREHOLE DIAMETER (mm) 50	
	TOTAL DEPTH (mBGL) 3.75	




COMMENTS

Depth (mBGL)	Samples	Duplicate	Interlab Dup	Graphic Log	Material Description	Moisture	Additional Observations
	SB01-01				FILL: gravelly sand, tan, coarse, loose, poorly graded, subangular, with rock fragments	wet	
0.5	SB01-02	SB01-07			FILL (REWORKED NATURAL): clay, dark brown, low plasticity, stiff, with rock fragments	SM	
1	SB01-03				FILL (REWORKED NATURAL): clay, light brown, low plasticity, stiff, trace rock fragments	D	
1.5	SB01-04				CLAY: brown, low plasticity, stiff, trace rock fragments	D	
2							
2.5							
3	SB01-05				CLAY: red-brown, low plasticity, stiff, trace rock fragments	D	
3.5							
	SB01-06						
					Termination Depth at: 3.75 m		

SOIL BORE SB02

PROJECT NUMBER 170951-01	DRILLING DATE 27/05/2019	COORDINATES -34.74621024, 138.6618958
PROJECT NAME ACH VITA North Assessment	DRILLING COMPANY Indepth Drilling	COORD SYSTEM Latitude, Longitude
ADDRESS Oldham Road Elizabeth Vale	DRILL RIG Geoprobe	LOGGED BY LBWco Tab1
	DRILLING METHOD Push Tube	CHECKED BY
	BOREHOLE DIAMETER (mm) 50	
	TOTAL DEPTH (mBGL) 3.75	



COMMENTS

Depth (mBGL)	Samples	Duplicate	Interlab Dup	Graphic Log	Material Description	Moisture	Additional Observations
	SB02-01	SB02-08			FILL: gravelly sand, grey, coarse, loose, poorly graded, subangular, with asphalt	wet	
	SB02-02				FILL (REWORKED NATURAL): clay, dark brown, low plasticity, stiff, with rock fragments, trace rootlets	SM	
0.5	SB02-03				FILL (REWORKED NATURAL): clay, light brown, low plasticity, stiff, trace rock fragments, with white mottling	D	
	SB02-04						
1							
1.5							
	SB02-05					CLAY: brown, low plasticity, stiff, trace rock fragments	D
2							
2.5							
	SB02-06				CLAY: red-brown, low plasticity, stiff, trace rock fragments	D	
3							
3.5	SB02-07						
					Termination Depth at: 3.75 m		

SOIL BORE SB03

PROJECT NUMBER 170951-01	DRILLING DATE 27/05/2019	COORDINATES -34.74639875, 138.66198042
PROJECT NAME ACH VITA North Assessment	DRILLING COMPANY Indepth Drilling	COORD SYSTEM Latitude, Longitude
ADDRESS Oldham Road Elizabeth Vale	DRILL RIG Geoprobe	LOGGED BY LBWco Tab1
	DRILLING METHOD Push Tube	CHECKED BY
	BOREHOLE DIAMETER (mm) 50	
	TOTAL DEPTH (mBGL) 3.75	





COMMENTS

Depth (mBGL)	Samples	Duplicate	Interlab Dup	Graphic Log	Material Description	Moisture	Additional Observations
	SB03-01				FILL: gravelly sand, tan, coarse, loose, poorly graded, subangular, with rock fragments, trace asphalt	wet	
	SB03-02				FILL (REWORKED NATURAL): clay, red-brown, moderate plasticity, soft, with rock fragments	M	
0.5							
	SB03-03	SB03-07			CLAY: brown with light brown mottling, moderate plasticity, soft, with rootlets, trace rock fragments	SM	
1							
1.5							
	SB03-04				CLAY: brown, low plasticity, soft, trace rock fragments	SM	
2							
2.5							
	SB03-05				CLAY: red-brown, low plasticity, stiff, trace rock fragments	SM	
3							
3.5							
	SB03-06						
					Termination Depth at: 3.75 m		

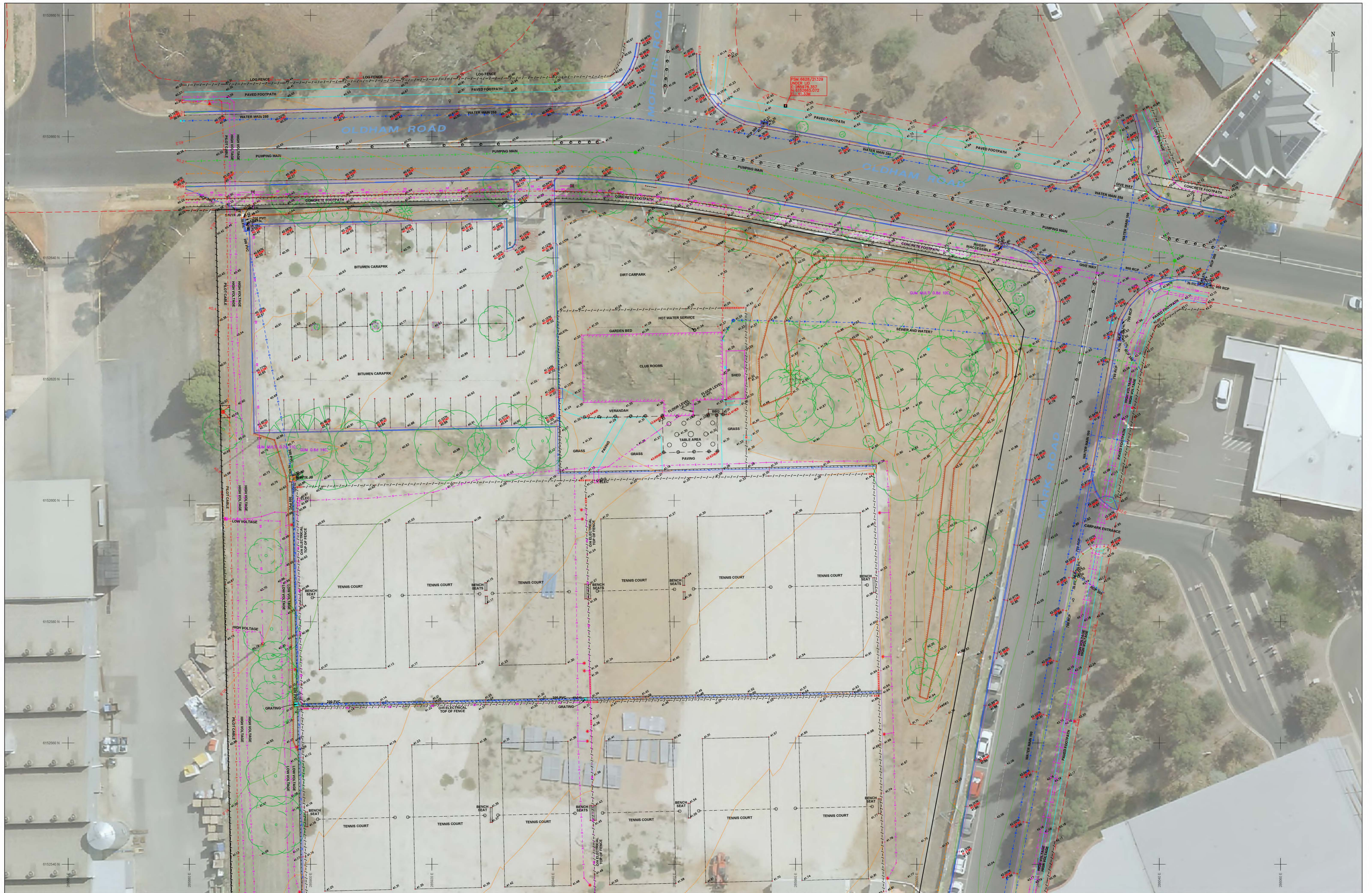
SOIL BORE SB04

PROJECT NUMBER 170951-01	DRILLING DATE 27/05/2019	COORDINATES -34.74663591, 138.66197627
PROJECT NAME ACH VITA North Assessment	DRILLING COMPANY Indepth Drilling	COORD SYSTEM Latitude, Longitude
ADDRESS Oldham Road Elizabeth Vale	DRILL RIG Geoprobe	LOGGED BY LBWco Tab1
	DRILLING METHOD Push Tube	CHECKED BY
	BOREHOLE DIAMETER (mm) 50	
	TOTAL DEPTH (mBGL) 3.75	

COMMENTS

Depth (mBGL)	Samples	Duplicate	Interlab Dup	Graphic Log	Material Description	Moisture	Additional Observations
	SB04-01				FILL: gravelly sand, tan, coarse, loose, poorly graded, subangular, with rock fragments, trace asphalt	wet	
	SB04-02	SB04-07			FILL (REWORKED NATURAL): clay, red-brown, moderate plasticity, soft, with rock fragments	M	
0.5							
1	SB04-03				CLAY: brown with light brown mottling, moderate plasticity, soft, with rootlets, trace rock fragments	SM	
1.5							
2	SB04-04				CLAY: brown, low plasticity, soft, trace rock fragments	SM	
2.5							
3	SB04-05				CLAY: red-brown, low plasticity, stiff, trace rock fragments	SM	
3.5							
	SB04-06						
					Termination Depth at: 3.75 m		

Appendix L – Site survey plans



REV	DATE	DESCRIPTION	ADDITONS, AMENDMENTS AND APPROVALS
0	13.07.2020	INITIAL ISSUE	
A	20.07.2020	TREE DETAIL UPDATED	

47 STATE TOWNERS	47 STATE TOWNERS	47 STATE TOWNERS	47 STATE TOWNERS
47 STATE TOWNERS	47 STATE TOWNERS	47 STATE TOWNERS	47 STATE TOWNERS
47 STATE TOWNERS	47 STATE TOWNERS	47 STATE TOWNERS	47 STATE TOWNERS
47 STATE TOWNERS	47 STATE TOWNERS	47 STATE TOWNERS	47 STATE TOWNERS

LEGEND

47 STATE TOWNERS	47 STATE TOWNERS	47 STATE TOWNERS	47 STATE TOWNERS
47 STATE TOWNERS	47 STATE TOWNERS	47 STATE TOWNERS	47 STATE TOWNERS
47 STATE TOWNERS	47 STATE TOWNERS	47 STATE TOWNERS	47 STATE TOWNERS
47 STATE TOWNERS	47 STATE TOWNERS	47 STATE TOWNERS	47 STATE TOWNERS

COORDINATE SYSTEM

VERTICAL	AHD
HORIZONTAL	GROUND PLANE ORIENTED TO MGA 84 ZONE 54
SCALE	GROUND (CSF = 1.000/15872)
ADOPTED STATION & AUTHORITY	
PSM 662821348	RL 41 959 528
PSM 662821348	E 265995 717 528
	N 6152438 340 528

0	2	4	6	8	12	16	20
m							

Alexander & Symonds Pty Ltd
 11 King William Street Kent Town,
 South Australia 5087
 PO Box 1000 Kent Town, SA 5071
 ABN 93007 753 988

T (08) 8130 1666
 F (08) 8362 0099
 W www.alexander.com.au
 E a.s@alexander.com.au

CONTOUR INTERVAL: MIN 0.2m MAJ 1.0m
 SURVEY: DMR 09.07.2020
 DRAWN: AMP 13.07.2020
 CHECKED: MAPW 13.07.2020

DETAIL & LEVEL SURVEY

LOT 48 MARK ROAD

ELIZABETH SOUTH

DRAWING No: 20A0457 DETAIL(A)_94P

SHEET 1 OF 4

REVISION: A