



DA/0425/1718

Goulburn Aquatic Centre

Supplementary Report



Prepared By Goulburn Mulwaree Council
For Southern Regional Planning Panel
June 2019



Development Application Assessment Report

Application No.	DA/0425/1718
Address and legal description	85 Deccan Street
Proposal	Re-development of Goulburn Aquatic Centre
Date of Lodgement	29 June 2018
Applicant	Goulburn Mulwaree Council
Owner	Goulburn Mulwaree Council (Crown Land)
Number of Submissions	Three
Value of works	\$49,500,000
Assessment officer	Ellie Varga
Authorising/Peer Review Officer	Stephanie Mowle
Reason for determination at Southern Region Planning Panel	Value of works over \$5 million and community facility
Main Issues	Parking, Noise, Heritage and Landscaping
Recommendation	Approval

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1. Supplementary Report

On 17 June 2019, the Southern Regional Planning Panel (SRPP) held a public meeting at Goulburn Mulwaree Council Chambers to consider a Development Application (DA/0425/1718) submitted to Council for the redevelopment of the Goulburn Aquatic and Leisure Centre located at 85 Deccan Street, Goulburn.

At that meeting, the SRPP agreed to defer the determination of the matter until the following information is provided:

A: A revised contamination assessment report that provides a conclusion that satisfies the requirements of Clause 7 of SEPP55 remediation of land.

B: An amended set of conditions which:

- 1. Adopts the KDC recommended amendments to Conditions 12, 22 and 84 (note referenced as 83 in the KDC document) and addition of 102A;*
- 2. Amends KDC Condition 12 by adding the following "Trees 27, 27A, and 28 shall be retained and planted within the aquatic complex. An amended Landscape Plan will nominate a new location for them;*
- 3. Amends Condition 20 to insert after Plan "(developed in accordance with "NSW Government Policy Statement and Guidelines for the Establishment and Implementation of Closed Circuit Television (CCTV) in Public Places)";*
- 4. Deletes Condition 26 requiring an acoustic fence and insert in Condition 101 the words "apart from" before the reference to the acoustic barrier; and*
- 5. Replaces Condition 45 with "prior to the issue of a Construction Certificate a traffic management plan/traffic control plan shall be submitted for approval and any works in the road reserve are to be undertaken in accordance with appropriate engineering standards"*

C: A supplementary report addressing the above.

On receipt of the supplementary report the Panel will determine the matter electronically.

In addition, the Panel recommends:

D: Council updates the existing plan of management for Victoria Park to recognise the need for special event parking.

E: The Panel recommends Council monitors the on street car parking and takes appropriate measures to upgrade the car parking if and when required.

Matter "A"

An Interim Detailed Site Investigation Letter prepared by Robson Environmental has been submitted (**Attachment One**) for consideration. The letter is interim, pending the provision of a comprehensive Detailed Site Investigation Report. It has been advised that the conclusion would remain the same.

The Interim Letter advises the site is considered suitable for the proposed development provided the following soil management recommendations are implemented prior to redevelopment works:

- The drafting and implementation of a Construction Environment Management Plan (CEMP) which includes an Unexpected Finds Protocol (UFP) which has been prepared by a suitably qualified environmental consultant (SQEC), to manage any suspicious hazardous materials (e.g. ACM) in soil/fill material or potential olfactory or visual signs of potential contamination if they are encountered onsite during redevelopment works. Initial inductions into the UFP must be performed by a SQEC. Subsequent inductions can then be performed by senior site personnel previously inducted by the SQEC (**Condition 14**).
- If soil is required to be removed from site as part of the redevelopment works the soil must be assessed by a SQEC in accordance with the NSW EPA (2014) 'Waste Classification Guidelines, Part 1: Classification of Waste'. All soil must remain on site until approval is given by a NSW licensed land fill facility for acceptance of the material (**Condition 59(e)** – new condition).
- As the GMC Aquatic and Leisure Centre is proposed to be demolished as part of the redevelopment works, an intrusive hazardous materials assessment (including asbestos) should be undertaken prior to works (**Condition 14**, **Condition 54** and the Hazardous Materials Survey and Management Plan prepared by Robson Environmental approved in **Condition 1**).

Matter "B"

Attachment Two provides an amended Notice of Determination commensurate with the recommendations of Matter "B".

Matter "C"

Provision of this report satisfies Matter "C".

2. Assessment

2.1 State Environmental Planning Policies – section 4.15(1)(a)(i)

State Environmental Planning Policy No 55 - Remediation of Land

SEPP 55 aims to promote the remediation of land for the purpose of reducing risk to human health or any other aspects of the environment. The site is considered to be potentially contaminated, however the proposed use of the site is not considered to be potentially contaminating.

Clause 7 of SEPP 55 states that a consent authority must not consent to any development on land unless it has considered whether it is contaminated. If the land is contaminated, the consent authority must be satisfied that the land will be suitable in its contaminated state, or will be suitable after remediation, for the purpose for which development is proposed. If the land requires remediation, it must be satisfied that the land will be remediated prior to being used for that purpose.

The proposed use of the site is not changing as part of the development application, being a redevelopment of an existing swimming pool facility. Notwithstanding, a Preliminary Site Investigation Report (PSI), has been prepared in support of the application.

The report notes that based on the results of the PSI and the current use of the site, the identified on-site areas of environmental concern are considered to pose a low risk to users of the site. The PSI makes recommendations in relation to the management of the construction stage, which have been recommended as conditions of consent (**Condition 13**).

In response to the SRPP resolution deferring the application, an Interim Detailed Site Investigation Letter prepared by Robson Environmental has been submitted (**Attachment One**) for consideration.

The Interim Letter advises the site is considered suitable for the proposed development provided the following soil management recommendations are implemented prior to redevelopment works:

- Preparation and implementation of a CEMP;
- Assessment and management of soil in accordance with NSW EPA (2014) 'Waste Classification Guidelines, Part 1: Classification of Waste'; and
- Completion of an intrusive hazardous materials assessment prior to works commencing.

These matters are all capable of being addressed by the recommended conditions in **Attachment Two**.

Pursuant to the provisions of SEPP 55, and subject to conditions, clause 7 of SEPP 55 has therefore been satisfied. Consent can be granted to carry out development on the land.

3. Conclusion

This Supplementary Report has addressed the matters outlined in the SRPP resolution, dated 17 June 2019.

With respect to Matter “A”, the Interim Detailed Site Investigation Letter provided by Robson Environmental advises that the site is suitable for the proposed development.

With respect to Matter “B”, the Notice of Determination has been amended to include the recommended condition alterations and additions.

The proposal is recommended for approval, subject to the imposition of the appropriate conditions at **Attachment Two** to this Supplementary Report.

4. Recommendation

It is recommended that the Southern Regional Planning Panel, as the consent authority pursuant to s4.16 of the *Environmental Planning and Assessment Act 1979*:

- Considers the findings and recommendations contained in this supplementary report;
- Accepts and adopts the findings and recommendations in this supplementary report and the original assessment report, as the reasons for making the decision to grant consent to the applicant; and
- Grants consent/approval for the demolition of the existing Aquatic Centre and construction of a recreation facility (indoor) and recreation facility (outdoor) at 85 Deccan Street, Goulburn for the application in respect of DA/0425/1718.

Ellie Varga

Senior Development Assessment Officer

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5. Attachment One – Interim Detailed Site Investigation Letter

Document Ref: 1051401_EAR_DSI_Int Let Report_20190627

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Via email: yasir.khan@goulburn.nsw.gov.au

Thursday, 27 June 2019

Dear Yasir,

Re: 1051401 – Interim Letter Report - Detailed Site Investigation of the Goulburn Mulwaree Council Aquatic and Leisure Centre at 85 Deccan Street, Goulburn, NSW, 2580 (a portion of Lot 1 DP117890).

Introduction

Robson Environmental Pty Ltd (Robson) is pleased to present this Interim Letter Report to the Goulburn Mulwaree Council (GMC) specific to the Detailed Site Investigation (DSI) of the GMC Aquatic and Leisure Centre at 85 Deccan Street, Goulburn, NSW, 2580 (a portion of Lot 1 DP117890) herein referred to as 'the site'.

Robson understands that the site is currently utilised as the Goulburn Aquatic Centre which includes a two (2) outdoor pools, one (1) indoor pool, an office, male and female change rooms/showers, a clubhouse, associated plant room, and open and shaded grassed and concreted areas. The site has an area of approximately 11,500 square metres (m²) and is zoned for recreational land use.

Background

Robson undertook a Preliminary site Investigation (PSI) on behalf of Clarke Keller in October 2017. The report was titled '*Preliminary site Investigation, Goulburn Aquatic Centre a portion Lot 1 DP117890 October 2017*' (Report reference 10514_EAR_PSI_20171026).

The PSI identified two (2) Areas of Environmental Concern (AECs) and it was recommended that the AECs be assessed for potential contamination should the soils be disturbed for development purposes. The identified AECs are listed below:

- AEC 1: Potential fill material of unknown origin beneath buildings and around pool areas;
- AEC 2: Chemical storage within the outdoor (primary) and indoor (secondary) pool plant rooms.

Due to the proposed redevelopment of the site GMC has requested the identified AECs be assessed to determine if any contamination is present on the site and if it is a risk to the future site users.

SCHEDULE OF CONDITIONS

GENERAL CONDITIONS

1. Development consent has been granted in accordance with this Notice of Determination for the purposes of demolition and construction of a new Recreation Facility (indoor/outdoor). The recreation facility (indoor/outdoor) comprises the following stages:

Stage One

Demolition of existing entry, change rooms, toddler pool, indoor pool building, outdoor playground and removal of vegetation as per SK105 rev H, dated 27.02.2019;

Existing car parking areas to be expanded and access arrangements to Deccan Street re-located;

Construction of an outdoor entry plaza;

Construction of a new Aquatic Centre building comprising the following main spaces:

Entry foyer and crèche,

Gymnasium with gym room and two activity rooms,

refurbishment of existing five lane 25m indoor pool for Learn to Swim activities,

leisure/water play pool,

construction of new eight lane 25m indoor pool,

Warm water pool,

Café,

Ancillary spaces (e.g. toilets, changing rooms, storage areas and circulation spaces), and

Steam and sauna rooms; and

Outdoor recreation and landscaped spaces.

Stage Two

Demolition of existing 50m outdoor pool shell and concourse, outdoor awnings on pool lawn, outdoor sheds and beach volleyball court and removal of vegetation as per SK106 rev H dated 28/02/2019;

Construction of a new eight lane 50m outdoor pool;

Refurbishment of existing pool plant/storage building for toilets, change rooms and storage;

Construction of a new two storey plant room;

Installation of a new beach volleyball court;

Outdoor recreation and landscaped spaces including under cover seating shelters, playground area and BBQ facilities; and

Construction of two zero depth splash pads.

Reason: To confirm the components and stages of the approved development.

2. The development shall be carried out substantially in accordance with the approved stamped and signed plans and/or documentation listed below except where modified by any following condition.

Reference/Dwg No	Title/Description	Date
Architectural Drawings prepared by DWP Clarke Keller, ref AUMEL-17-0400		
SK002 / E	3D Views (Artist's Impression)	27/02/2019
SK003 / E	3D Views (Artist's Impression)	27/02/2019
SK004 / B	Photomontages	27/02/2019
SK101 / E	Site Context Analysis	27/02/2019
SK102 / H	Staging and Masterplan	27/02/2019

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SK103 / L	Site Plan – Victoria Park	27/02/2019
SK104 / G	Site Plan – Existing	27/02/2019
SK105 / H	Site Plan – Demolition – Stage One	27/02/2019
SK106 / H	Site Plan – Demolition – Stage Two	28/02/2019
SK107 / J	Site Plan – Proposed – Stage One	27/02/2019
SK108 / N	Site Plan – Proposed – Stage Two	27/02/2019
SK121 / H	Shadow Diagrams	27/02/2019
SK122 / H	Shadow Diagrams	27/02/2019
SK201 / M	Upper Ground Plan (Stage One & 2)	27/02/2019
SK202 / M	Ground Floor Plan (Stage One & 2)	27/02/2019
SK203 / P	Lower Ground Plan (Stage One & 2)	01/05/2019
SK204 / L	Roof Plan (Stage One & 2)	27/02/2019
SK205 / J	Basement and Plant Rooms Plans (Stage One & 2)	27/02/2019
SK401 / M	Elevations	01/05/2019
SK402 / H	Elevations – Materials	01/05/2019
SK403 / H	Street Elevation	27/02/2019
SK501 / J	Sections	27/02/2019
SK502 / G	Perspective Sections	27/02/2019
Landscape Drawings prepared by Harris Hobbs Landscapes, ref 17099		
L001 / B	Cover Sheet	22/02/2019
L201 / B	Tree Removal Plan	22/02/2019
L202 / B	Tree Removal Plan	22/02/2019
L203 / B	Tree Removal Plan	22/02/2019
L204 / B	Tree Removal Plan	22/02/2019
L301 / B	Landscape Plan	22/02/2019
L302 / B	Landscape Plan	22/02/2019
L303 / B	Landscape Plan	22/02/2019
L304 / B	Landscape Plan	22/02/2019
Structural Plans prepared by Crackerjack Consulting Engineers Pty Ltd, ref. S17_082.		
SK100 / A	Structural Steel Isometric View Stage One	12/04/2018
S030 / A	Main Roof Structural Layout Plan	12/04/2018
S040 / A	Structural Pod over Café Layout Plan	12/04/2018
S050 / A	Structural Pod over Changing Rooms Structural Layout Plan	12/04/2018
S060 / A	Structural Elevations and Sections	12/04/2018
Statement of Environmental Effects prepared by Capital Region Planning, dated 28 February 2019.		
Traffic Impact Assessment prepared by Ontoit, rev.1.6 dated 20 February 2019.		
Preliminary Arboricultural Report prepared by Canopy Tree Experts, ref. 4551, dated 6 April 2018.		

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Biodiversity Assessment prepared by JGH Environmental, ref. 18-128, dated 11 April 2018.
Water Cycle Management Study prepared by Crackerjack Consulting Engineers Pty Ltd, Job No. S17_082, revision G, dated 17 May 2019.
Hazardous Materials Survey & Management Plan, prepared by Robson Environmental, rev. T-04310, dated 7 November 2017.
Preliminary Site Investigation Report prepared by Robson Environmental, rev 10514_EAR_PSI_20171026, dated 26 October 2017.
Mechanical Services Drawings prepared by Umow Lai, M000, M001, M200, M201, M300-M306, ref. SGOU0101, dated 21 June 2018.
Hydraulic Services Drawings prepared by Umow Lai, H000, H001, H002, H100-H102, H200 and H201, ref. SGOU0101, dated 21 June 2018.
Lighting Plans prepared by Umow Lai, E200, E201, E202 & E450, ref. SGOU0101, dated 21 June 2018.
Aboriginal Heritage Due Diligence Assessment prepared by NGH Environmental, ref. 17-255, dated 24 May 2018.
Statement of Heritage Impact, prepared by NGH Environmental, ref. dated 27 September 2018
Preliminary Noise Impact Assessment prepared by Rudds Acoustics, ref. R317111AC, dated 16 April 2018.
Sustainability Report prepared by Umow Lai ref. S.GOU.0101 ESD-R003, dated 12 April 2018.

Reason: *To ensure the development is carried out in accordance with the approved plans and documentation.*

3. In the event of any inconsistency between conditions of this approval and the plans and documentation referred to above, the conditions of this approval prevail, to the extent of the inconsistency.

Reason: *To ensure that the development is undertaken in accordance with the submitted plans and documents (as amended).*

4. The plans and specifications submitted with a Construction Certificate must not be inconsistent with this consent.

Reason: *To ensure compliance with clause 145 of the Environmental Planning and Assessment Regulation 2000.*

5. In accordance with Part 6 Division 8A of the Environmental Planning and Assessment Regulation 2000 compliance with the following prescribed conditions is required:
 - Clause 98A Erection of signs

Reason: *The condition is prescribed under clause 98 of the Environmental Planning and Assessment Regulation 2000.*

6. Unless compliant with exempt development provisions, before signage is erected/displayed separate development consent is required to be issued by Council.

Reason: *To comply with the provisions of the Goulburn Mulwaree Local Environmental Plan 2009.*

7. All conditions are applicable to all stages of the development, unless specified otherwise.

Reason: *To clarify what conditions apply to each stage of the development.*

8. Water NSW - General

The site layout, staging and works shall generally be as specified in the Statement of Environmental Effects prepared by Capital Region Planning (dated 21 December 2018), and shown on the Staging and Masterplan Plan (Dwg. No. SK 102; Rev G; print issue date 08-Jan-19), Site Plan – Proposed – Stage 1 (Dwg. No. SK 107; Rev H; print issue date 08-Jan-19) and Site Plan – Proposed – Stage 2 (Dwg. No. SK 108; Rev M; print issue date 08-Jan-19) all prepared by dwp clarke keller. No revised site layout, staging or external works that may have impacts on water quality, shall be permitted without the agreement of Water NSW.

Reason: *Water NSW has based its assessment under the State Environmental Planning Policy (Sydney Drinking Water Catchment) 2011 on this version of the development.*

9. Water NSW – Changes to Stormwater Treatment or Management

No variation to stormwater treatment or management that will have any impacts on water quality shall be permitted without the agreement of Water NSW.

Reason: *To ensure appropriate stormwater treatment and quality control measures are designed, implemented and maintained so as to achieve a sustainable neutral or beneficial impact on water quality, particularly during wet weather, over the longer term.*

PRIOR TO THE ISSUE OF A CONSTRUCTION CERTIFICATE

10. Construction Certificate

A Construction Certificate, pursuant to section 6.7 of the *Environmental Planning and Assessment Act 1979*, from either Council or an accredited certifying authority certifying that the proposed works are in accordance with the Building Code of Australia is required prior to any works commencing.

Reason: *A requirement under the provisions of the Environmental Planning and Assessment Act 1979.*

11. Demolition

No demolition works are permitted prior to the issue of a Construction Certificate.

Reason: *To clarify the parameters of the development consent.*

12. Amendments to Approved Plans

The applicant shall make the following amendments to the approved plans prior to the issue of a Construction Certificate:

a) Landscape Plan:

- i. The six Flowering Pear (*Pyrus Calleryana*) trees (numbered 3 & 4 and to be relocated on Tree Removal Plan L202 dated 22 February 2019) shall be planted within the Aquatic Centre complex. An amended Landscape Plan will nominate a new location for them.
- ii. The two trees associated with memorial plaques shall be relocated within the Aquatic Centre complex. An amended Landscape Plan will nominate a new location for them. Each plaque shall remain in place with the associated tree.
- iii. Reference to the previously identified zone to plant relocated trees shall be removed from Landscape Plan L304, dated 22 February 2019.
- iv. Acoustic shielding in the form of raised planters, to a height of 800mm, shall be provided to the front of the car parking area (between the car park and Deccan street) as per the recommendations in the Preliminary Noise Impact Assessment prepared by Rudds Acoustics, dated 16 April 2018. An amended Landscape Plan must include this in its design.

- v. Trees 29A and 29B shall be retained and incorporated into the car park design. The design of the carpark shall be amended to facilitate the retention of these trees, based on advice from a suitably qualified Arborist.
 - vi. Trees 73A-C & 73E-I shall be shown as retained on the Landscape Plan.
 - vii. All trees located in the area identified as the northern Stage Two car park shall be shown as retained on the Landscape Plan.
 - viii. Six additional trees shall be planted in the area previously known as the 'southern car park area', and be a species consistent with the recommendations of the landscaping concept.
 - ix. Trees 27, 27A and 28 shall be retained and planted within the Aquatic Centre complex. An amended Landscape Plan will nominate a new location for them.
 - x. There shall be a 500mm wide vegetative buffer (hedge, grassing etc) between the car park and the edge of the footpath on the eastern side of both the northern and southern car parks.
 - xi. Acoustic fencing required by the Noise Impact Assessment prepared by Rudds Acoustics, ref. R317111AC shall be timber construction. No sheet metal fencing is to be used.
- b) Tree Removal Plan:
- i. The zone to plant relocated trees shall be removed from the Tree Removal Plan L204, dated 22 February 2019.
 - ii. Trees 29A, 29B, 73A-C & 73E-I shall be shown as retained as retained on the Tree Removal Plan.
 - iii. All trees located in the area identified as the northern Stage Two car park shall be retained.
- c) Architectural Plans:
- i. SK102 (and any other plans affected by the Stage Two car park) shall be amended to remove the southern and northern Stage Two car parks from the development.
 - ii. A vehicular access gate shall be provided to the eastern boundary of the site for the purposes of emergency access and maintenance purposes.
 - iii. An emergency services vehicular parking space shall be provided to the Aquatic Centre forecourt.

Any changes in this regard shall be reflected as amended plans to be submitted to the Council for approval prior to the issue of a Construction Certificate by the Principal Certifying Authority.

Reason: *To confirm and clarify the terms of Council's approval.*

13. Further Investigation of Areas of Environmental Concern

Further investigations as described in the Preliminary Site Investigation Report prepared by Robson Environmental, dated 27 October 2017 shall be undertaken prior to the issue of a Construction Certificate. Details shall be provided to the Principal Certifying Authority prior to the issue of a Construction Certificate, including details of any requirements to be completed prior to the issue of an Occupation Certificate.

Reason: *To ensure compliance with the recommendations of the approved Preliminary Site Investigation Report.*

14. Construction Environmental Management Plan

Prior to the issue of a Construction Certificate, a Construction Environmental Management Plan (CEMP) with an unexpected finds protocol (UFP) shall be prepared for the site. The CEMP shall outline environmental management practices and procedures to be followed during construction of the project. The CEMP shall be consistent with the Guideline for the Preparation of Environmental Management Plans (DIPNR 2004 or its latest revision). The CEMP shall include, but not necessarily be limited to:

General project information

- A description of the site location including the location of sensitive receivers;

- A description of the project construction works to be undertaken, including timeframes, staging and construction hours;
- Identification and analysis of potential environmental impacts, including environmental hazards and risks, proposed mitigation measures and any residual risks;
- Identification of the potential for cumulative impacts with other construction activities occurring in the vicinity and how such impacts would be managed;
- Statutory and other obligations that the developer is required to fulfil during construction including all relevant approvals, consultations and agreements required from authorities and other stakeholders, and key legislation and policies;
- Identification of a person or persons with responsibility for implementing the CEMP:
 - The responsible person or persons should have authority to call for immediate cessation of works if an issue arises;
 - The responsible person or persons should have responsibility for managing communications and complaints;
 - The responsible person or persons should have responsibility for notifying the NSW EPA, SafeWork NSW and Council if serious or material environmental harm from pollution is caused or threatened in the course of an activity undertaken by that person, as soon as reasonably practicable after becoming aware of the harm or threatened harm.

Communication and complaint resolution

- Identification of the person with responsibility for managing communications and complaints;
- A communications plan that outlines how and when consultation with potentially affected parties will be undertaken, and how potentially affected parties will be informed in advance of works that may have an off-site impact;
- Maintenance of a complaint register to record the following information:
 - the name and address of any complainant,
 - the time and date the complaint was received,
 - a description of the complaint,
 - the activity or activities and any associated equipment that gave rise to the complaint,
 - the action that was taken to resolve the issues that led to the complaint,
 - the date the complaint was resolved and documentation of complainant's level of satisfaction with the actions to resolve the issue.
- Notifying Council of complaints regarding environmental nuisance (particularly noise and construction hours) and the actions undertaken to resolve the complaint, and of any non-conformance with the CEMP that results in environmental nuisance.

Management of the Environmental Issues

- Air quality – describe the measures to be undertaken to minimise air quality impacts from construction activities;
- Noise – nominate hours of construction, measures to be taken to minimise noise from construction activities resulting in noise with an adverse impact on amenity;
- Contamination and Hazardous Materials – identify the means by which site contamination would be managed;
- Waste – identify the means by which general waste and waste derived fill would be managed; and
- Water quality – identify the means by which construction activities would be managed to prevent impacts on water quality.

The CEMP shall be submitted to Council for approval prior to the issue of a Construction Certificate

Reason: *To ensure the safety, amenity and protection of public infrastructure and the environment.*

15. Construction Management Plan

To undertake development works including demolition, earthworks and construction a Construction Management Plan (CMP) is required to be submitted and approved by Council prior to the issue of a Construction Certificate. The CMP shall indicate measures to be implemented to protect the environment as well as public health, safety and convenience. The CMP must include the following:

- a) Details of site security;
- b) Off-street parking for employees, contractors and sub-contractors;
- c) Site access for construction vehicles and equipment purposes;
- d) Public safety in the use of roads and footpaths where development activities adjoin such facilities;
- e) The storage and removal, on a regular frequency, of builder's rubble and waste by trade waste contractors;
- f) Provision for loading and unloading materials;
- g) Location of all building materials, structures, plant and equipment to be stored or placed within the construction site;
- h) How materials are to be loaded/unloaded and potential impact on Council infrastructure (including but not limited to footpaths and street trees);
- i) Public risk policies and management for all contractors' employees using or gaining access over public footpaths and roads;
- j) External lighting and security alarms proposed for the construction site;
- k) Firefighting measures to be available on-site during development and construction;
- l) Sanitary amenities proposed on site during development and construction;
- m) Ensuring the safety of members of the public and Council staff who may have occasion to enter and be in attendance on the site;
- n) Details of management of storm water run-off and the proposed sediment and erosion control measures including the location of any rubble grids;
- o) Details of any air and dust management;
- p) Details of noise and vibration controls;
- q) Anticipated staging and duration of works;
- r) Provision of Traffic Management Plan (TMP) and Traffic Control Plans (TMP); and
- s) Process of checking and receiving fill at the site

Reason: *To ensure the safety, amenity and protection of public infrastructure and the environment.*

16. Water NSW – Soil and Water Management Plan

A Soil and Water Management Plan shall be prepared for each stage of the development by a person with knowledge and experience in the preparation of such plans for all works required as part of the development. The Plan shall:

- meet the requirements outlined in Chapter 2 of NSW Landcom's Soils and Construction: Managing Urban Stormwater (2004)
- be prepared prior to issuance of a Construction Certificate, to the satisfaction of Council, and
- include controls to prevent sediment or polluted water leaving the construction site or entering any natural drainage lines or stormwater drain.

Reason: *To manage adverse environmental and water quality impacts during the construction phase of the development and to minimise the risk of erosion, sedimentation and pollution within or from the site during this construction phase.*

17. Water NSW – Construction Activities

The Soil and Water Management Plan shall be implemented for each stage of the development, and effective erosion and sediment controls shall be installed prior to any construction activity. Erosion and sediment controls shall be regularly inspected, monitored, maintained and retained until works have been completed and ground surface stabilised or groundcover re-established.

Reason: *To manage adverse environmental and water quality impacts during the construction phase of the development and to minimise the risk of erosion,*

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sedimentation and pollution within or from the site during this construction phase.

18. Heritage Conservation

Evidence that the below requirements have been commissioned (quote accepted and payment made) shall be provided to the Principal Certifying Authority, prior to the issue of a Construction Certificate:

- a) The developer shall commission an Interpretation Strategy for the site and its significance as a War Memorial Pool. The strategy shall include a fully developed concept design informed by community consultation and justification of the proposed site for the relocation of the existing plaques (war memorial and commemorative).
- b) The developer shall commission an oral history with key people relevant to the history of the War Memorial Swimming Pool Complex.

Reason: *To retain a heritage record of the buildings to be demolished.*

19. Archival Record of a Building

Prior to the issue of a Construction Certificate, the existing Aquatic Centre in its entirety shall be recorded in accordance with the following:

- (a) Provide two (2) sets of the Archival Record in A4 plastic binders with clear plastic sleeves.
- (b) Provide two (2) typed pages with:
 - (i) Address.
 - (ii) Author.
 - (iii) Date.
 - (iv) Reason for the record.
 - (v) Contents page including index of photo captions.
 - (vi) Maximum one (1) A4 page outline of the history of the building (year built, previous owners and uses, local stories about the building etc.).
- (c) Provide measured drawings with the floor plan and each elevation of the building, at a scale of 1:100, including a north point, bar scale and dimensions, prepared by a qualified draftsman.
- (d) Provide photographs:
 - (i) From a 35mm film camera (or digital equivalent).
 - (ii) Photos showing all general oblique views and elevations. Typically, this is a photo of each room in the existing building including hallways, external verandahs, and external appearance of the building and garden.
 - (iii) Photos showing any details of historical signage or construction details.
 - (iv) Postcard size.
 - (v) Pasted as two (2) photos per A4 page.
 - (vi) Each photo to be captioned, including aspect, e.g. view from northeast.
- (e) Provide a CD with:
 - (i) Scans from negatives as .jpg files with captions saved as file names.
 - (ii) Minimum image size to be 3000 x 1000 pixels.
 - (iii) Text file of the typed pages (saves as a .rtf file).
 - (f) The Archival record shall be submitted to and accepted by Council prior to demolition commencing or the issue of a Construction Certificate, whichever occurs first.

Reason: *To ensure that there is a record of the building for archival purposes.*

20. Closed Circuit Television

Prior to the issue of a Construction Certificate, a Closed Circuit Television (CCTV) Plan (developed in accordance with 'NSW Government Policy Statement and Guidelines for the Establishment and Implementation of Closed Circuit Television (CCTV) in Public Places') shall be submitted to the Principal Certifying Authority for approval. CCTV must be provided as part of Stage One.

Reason: *To ensure compliance with Goulburn Mulwaree Development Control Plan 2009.*

21. Accessible Car Parking Spaces

Six (6) of the car parking spaces provided as part of the total requirement shall be reserved for disabled persons.

These spaces shall be constructed and identified in accordance with Volume 1 of the National Construction Code (NCC) and AS/NZS 2890.6 - Parking Facilities; Off-street parking for people with disabilities.

Details to demonstrate compliance shall be submitted to and approved by the Principal Certifying Authority prior to the issue of the Construction Certificate.

Reason: *To ensure that there is adequate disabled car parking spaces provided for the development.*

22. Off Street Parking Provision - General

Car parking shall comply with the following requirements:

- a) 89 off-street car parking spaces suitably marked in accordance with the approved plans (unless elsewhere specified) shall be provided to the site.
- b) A total of 89 spaces (including six (6) accessible spaces and five (5) parent spaces) shall be provided for Stage One and a total of thirty (30) spaces shall be provided for Stage Two. The southern Stage Two car park does not form part of this Notice of Determination.
- c) Each space shall have minimum dimensions in accordance with Australian Standard AS2890.1 Off Street Car Parking.
- d) The car park shall provide 45 degree angle parking to reinforce the one way nature of the car park.
- e) Five parking spaces shall be dedicated parent spaces as per Plan SK102 rev H.
- f) An Emergency Services car park shall be provided within the Aquatic Centre Forecourt.
- g) The pedestrian crossings at each car park entry/exit shall be removed.
- h) The parking exit to the south of the disabled parking spaces within the northern car park shall be left turn only. Details demonstrating how this is to be achieved and enforced shall be provided with the Construction Certificate Application.
- i) Wheel stops shall be placed on all car parking spaces.

Details shall be submitted to Council prior to the issue of a Construction Certificate showing compliance with this condition.

Reason: *To ensure that there is adequate car parking spaces provided for the development.*

23. On-Street Parking Plan

Prior to the issue of a Construction Certificate, an On-Street Parking Plan shall be provided to Council for consideration and approval. The plan shall show:

- a) twenty (20) on street spaces to be provided as part of Stage One;
- b) eleven (11) on street spaces to be provided as part of Stage Two;
- c) relocation of the Proposed Bus Zone to cater for two (2) 12.5m bus lengths fronting the northern Stage One car park;
- d) a No Parking/Stopping area shall be provided and located within the proposed Bus Zone on SK102 rev H;
- e) compliance with Australian Standard AS2890.5 *On street car parking*; and

- f) linemarking and signage.

Reason: *To ensure that there are adequate car parking spaces provided for the development.*

24. Car Park Design - Site Servicing

The car park shall be designed to accommodate the turning movements of the largest vehicle servicing the development (10.21m Garbage Truck). The car park design shall be submitted to Council for approval prior to the issue of a Construction Certificate and shall incorporate the following:

- a) The site shall accommodate the turning movements of a 10.21m service vehicle;
- b) Service vehicles shall manoeuvre into and out of the site in a forward direction;
- c) The front overhang, and swept path made by the service vehicle shall not obstruct car park traffic or encroach onto parking spaces;
- d) The vehicle swept path shall be reflected on the engineering design plans;
- e) Loading and unloading of service vehicles shall be undertaken onsite with no intrusion onto the road system;
- f) Footpath crossings shall be splayed from the property boundary to the kerb line to accommodate the swept path made by the service vehicle; and
- g) The westernmost exit within the northern car park shall be left out only.

Reason: *To ensure that the car parking area is constructed to Council requirements.*

25. Sustainability

Prior to the issue of a Construction Certificate, construction drawings shall include the following recommendations made within the Sustainability Report prepared by Umow Lai, dated April 2018:

- a) Photovoltaic renewable energy generation;
- b) Energy recovery to heating ventilation, and air conditioning systems and increased outside air rates to provide better indoor air quality;
- c) Application of high energy, hybrid system of heat pump and condensing boiler technology for pool heating, heating hot water and domestic hot water;
- d) Best practice lighting and broad application of LED technology and advanced lighting and cooling systems;
- e) Comprehensive sub-metering to facilitate monitoring and management of utilities; and
- f) Rainwater harvesting and reuse system for non-potable water applications (irrigation and pool top-up).

Details of each recommendation shall be provided prior to the issue of a Construction Certificate by the Private Certifying Authority.

Reason: *To ensure the development satisfies ecologically sustainable development principles.*

26. Hydraulic Engineers Details

Hydraulic Engineers details of the sewer, fire service and water service including backflow prevention, which have been approved by Council as the Water and Sewer Authority shall be submitted with the application for a Construction Certificate.

Hydraulic Engineers details of the stormwater drainage which shows compliance with conditions of consent and Goulburn Mulwaree Councils Stormwater Drainage & Rain water Collection Systems Policy are to be submitted to and approved by the Principal Certifying Authority prior to issue of a Construction Certificate.

The hydraulic plans shall show only one connection point for the sewer discharge. Compliance with Council's Clearance and Easement requirements for Structures adjacent to Sewer & Stormwater Mains Policy shall be demonstrated. Any redundant sewer connections are to be sealed, tested and inspected by Council officer.

The existing water connection at the east of the site shall be relocated to the front of the property (within Deccan Street) in line with Councils Water Metering Policy.

DEVELOPMENT APPLICATION DETERMINATION NOTICE

Reason: *To ensure the development is designed appropriately.*

27. Section 305 Application

An application under section 305 of the *Water Management Act 2000* is required and a Section 306 Notice of Requirements obtained prior to the issue of a Construction Certificate.

Reason: *To retain a level of service for the existing population and to provide the same level of service to the population resulting from new developments.*

28. Internal Driveways and Parking Areas

The internal driveways and parking areas shall be constructed in accordance with Council's standards, including sealing the car park and manoeuvring areas.

The approved Construction Certificate plans shall demonstrate compliance with this condition.

Reason: *To ensure the car parking area is constructed to Council requirements.*

29. Liquid Trade Waste

A Liquid Trade Waste Application must be submitted to and approved by Council prior to the issuing of a Construction Certificate. As the development includes a number of trade waste producing areas (café, creche, waste enclosures etc.) the applicant must be the property owner.

The trade waste application must include the following additional information:

- Hydraulic plans showing the details and location of all liquid trade waste producing areas, all proposed trade waste pre-treatment devices (grease arrestor, oil separator, basket arrestors etc.) all drainage connected to the pre-treatment devices and all onsite drainage from non-trade waste producing areas.
- Details of all proposed backflow prevention devices to be installed onsite.
- Manufacturer details and model numbers of all proposed pre-treatment devices.
- Operational details of car wash water recycling facilities including process diagram, town water connections, storm water connections, proposed volume and water quality of reuse water and discharge water.

Reason: *To ensure that the development complies with statutory requirements.*

30. Food Premises

Construction details of the food premises which show compliance with the requirements of the Food Standard 3.2.3 and AS 4674-2004, Design, Construction and Fit-out of Food Premises shall be submitted with the Construction Certificate application.

Reason: *To ensure compliance with relevant legislation, guidelines and codes.*

31. Section 7.12 Development Contributions

In accordance with the provisions of Section 4.17 and Section 7.12 of the *Environmental Planning and Assessment Act 1979* contributions are required toward the provision of community facilities and infrastructure in accordance with the Section 94A Levy Development Contributions Plan 2009. Contributions must be paid prior to the release of the Construction Certificate. Contributions may be paid in two stages, as per Stage 1 and Stage 2.

The current contributions (2018/2019) under the Section 94A Levy Development Contributions Plan 2009 are based on the cost of construction of the development as follows:

Cost of construction	Rate of levy
\$0 - \$100,000	0%
\$100,001 - \$200,000	0.5%
In excess of \$200,000	1%

Details of the cost of the construction of the development shall be submitted with the application for a Construction Certificate. A cost summary report must be completed for works

with a value no greater than \$200,000. Where the value of the work is greater than \$200,000 the cost shall be certified by a Quantity Surveyor or an equivalent or acceptable alternative agreed to by Council. Refer to Appendix A of the Goulburn Mulwaree Section 94A Levy Development Contributions Plan 2009 for further details.

Reason: *To retain a level of service for the existing population and to provide the same level of service to the population resulting from new developments.*

32. Waste Management Plan

A Waste Management Plan shall be completed and submitted to Council for approval, prior to the issue of the Construction Certificate.

Reason: *To ensure that waste is managed in a sustainable manner.*

33. Tree Protection on Plans

Prior to the issue of any Construction Certificate, trees and native vegetation proposed for retention and those approved for removal must be clearly identified on all the final engineering and landscaping plans. All fenced tree protection areas must be clearly marked as "No Go Area" on all plans.

Reason: *To clearly articulate trees and vegetation to be removed and retained.*

34. Building Code of Australia Report

Prior to the issue of a Construction Certificate, a Building Code of Australia (BCA) Report prepared by a minimum Level A1 BPB Accredited Certifier addressing the relevant clause by clause assessment of the proposed works against the deemed to satisfy requirements of the BCA shall be submitted to the Principal Certifying Authority.

Reason: *To inform of relevant BCA requirements.*

35. Access Report

Prior to the issue of a Construction Certificate, an Access Report addressing the requirements within the *Disability Discrimination Act 1997* and the *Disability (Access to Premises – Buildings) Standards 2010* shall be submitted to the Principal Certifying Authority.

Reason: *To inform of relevant access requirements for persons with a disability.*

36. Access for People with Disabilities

Access for people with disabilities shall be provided in accordance with the requirements of the Building Code of Australia, relevant Australian Standards and with regard to the *Disability Discrimination Act 1992*.

Prior to the issue of a Construction Certificate, the plans shall demonstrate compliance.

Reason: *To inform of relevant access requirements for persons with a disability.*

37. Disabled Toilets

Plans and details of the disabled toilet/s shall comply with the relevant Australian Standards, the Building Code of Australia, and have regard to the *Disability Discrimination Act 1992*.

Prior to the issue of a Construction Certificate, the plans shall demonstrate compliance.

Reason: *To inform of relevant access requirements for persons with a disability.*

38. Stormwater

Prior to the release a Construction Certificate, hydraulic engineering details of the proposed stormwater drainage network for the development shall be submitted to the Principal Certifying Authority, demonstrating adequate and suitable infrastructure to ensure the peak discharge from the site is no greater than the pre-developed peak discharge. This infrastructure shall be designed in accordance with Council's Standards for Engineering Works, Stormwater Drainage & Rainwater Collection Systems Policy and the Goulburn Mulwaree Development Control Plan 2009.

Calculations shall demonstrate that the post-development peak discharge will not exceed the pre-development peak discharge and shall be provided with the application for a Construction Certificate.

Any stormwater temporarily stored onsite shall be done in a manner that does not jeopardise public safety. In this regard the development shall provide a risk assessment with the Construction Certificate documentation.

Reason: *To ensure the peak discharge from the site is no greater than the pre-developed peak discharge.*

39. Detailed Stormwater Drainage System Design

Prior to the issue of a Construction Certificate, a detailed storm water hydraulic drainage plan for the disposal of storm water from the site, prepared in accordance with Council's Design Standards shall be submitted to Council and approved by Council's Development Engineer.

Should any amendments be required to the approved storm water drainage plan, the amended design shall achieve equivalent performance standards in accordance with Design Specifications.

Where the proposed design extends beyond the property boundary, separate approval under section 138 of the *Roads Act 1993*, must be obtained from Council prior to the commencement of works.

Reason: *To ensure adequate storm water management.*

40. Water NSW - Stormwater Management

All water reuse, stormwater treatment and management measures shall be implemented as specified in the Water Cycle Management Study (revision G, dated 17 May 2019) and shown on the Civil Layout Plans (Stage 1 and 2) (Project No.S17_082, SK070, SK071, SK073, Rev C, SK072, SK074, Rev D, all dated 15.05.19) all prepared by Crackerjack Engineers Pty Ltd. Stormwater management measures as a minimum shall include:

- pits, pipes, and gross pollutant traps
- rainwater tanks
- bioretention systems to treat runoff from car parking areas, and
- bioretention basin for main development, and
- on-site detention.

Reason *To ensure appropriate stormwater treatment and quality control measures are designed, implemented and maintained so as to achieve a sustainable neutral or beneficial impact on water quality, particularly during wet weather, over the longer term.*

41. Water NSW – Bioretention Systems

Bioretention systems shall be located and constructed in the carparking areas as specified in the Water Cycle Management Study (revision G, dated 17 May 2019) and shown on the Civil Layout Plans (Stage 1 and 2) (Project No. S17_082; SK070, SK071, Rev C; SK072; Rev D; all dated 15.05.19) all prepared by Crackerjack Engineers Pty Ltd. The bioretention systems shall:

- be designed consistent with Adoption Guidelines for Stormwater Biofiltration Systems Version 2 (Payne et al, 2015, Melbourne, CRC for Water Sensitive Cities)
- also incorporate the following:
 - a filter media consisting of a clean sandy loam with a certified median particle diameter of 0.5 mm, a maximum orthophosphate concentration of 40 mg/kg and a maximum total nitrogen concentration of 400 mg/kg
 - be planted with appropriate deep-rooted, moisture-tolerant vegetation protected by rock mulch (grass and turf is not appropriate vegetation and organic mulch is not suitable)
 - direct all discharge and overflow to Council's stormwater system, and

- be permanently protected from vehicular damage by bollards, fences, castellated kerbs or similar structures, with a sign to be erected to advise of its nature and purpose in water quality management
- be constructed for the appropriate stage after all hardstand areas have been paved or sealed and all ground surfaces have been stabilised.

Reason *To ensure appropriate stormwater treatment and quality control measures are designed, implemented and maintained so as to achieve a sustainable neutral or beneficial impact on water quality, particularly during wet weather, over the longer term.*

42. Water NSW – Bioretention Basin

The bioretention basin, downstream from the onsite detention system, shall

- be designed in consultation with Water NSW
- be designed consistent with the requirements of Adoption Guidelines for Stormwater Biofiltration Systems Version 2 (Payne et al, 2015, Melbourne, CRC for Water Sensitive Cities)
- be located and constructed as specified in the Water Cycle Management Study (revision G, dated 17 May 2019), and shown on the Civil Layout Plans (Stage 1 and 2) (Project No. S17_082; SK074; Rev D; dated 15.05.19) all prepared by Crackerjack Engineers Pty Ltd
- be constructed in Stage 1.

Reason *To ensure appropriate stormwater treatment and quality control measures are designed, implemented and maintained so as to achieve a sustainable neutral or beneficial impact on water quality, particularly during wet weather, over the longer term.*

43. Dilapidation Report

A Dilapidation Report shall be undertaken on all properties and public spaces, which in the opinion of a suitably experienced professional and chartered qualified engineer, could be potentially affected by the construction of the project. The Dilapidation Report shall be carried out taking into account civil infrastructure and submitted to Council prior to the issue of the Construction Certificate.

The Report shall cover structural and geotechnical factors likely to arise from the development.

Reason: *To ensure the structural stability of neighbouring buildings.*

44. Works within the Road Reserve

Prior to the issue of a Construction Certificate, a Traffic Management Plan/Traffic Control Plan shall be submitted for approval and any works in the road reserve are to be undertaken in accordance with appropriate engineering standards.

Reason: *Statutory requirement.*

45. Mechanical Ventilation

The design of the Mechanical Ventilation system shall be in accordance with Australian Standard AS1668.2-2012. Design plans and calculations shall be submitted to Council for Mechanical Ventilation System required over the cooking equipment and/ or the dishwasher if applicable and any other mechanical ventilation within the complex. Plans shall be prepared and Certified by a Mechanical Ventilation Engineer and submitted to Council prior to the issue of a Construction Certificate.

Reason *Statutory requirement.*

PRIOR TO COMMENCEMENT OF WORK

46. Construction Certificate

No work shall commence until a:

- (a) Construction Certificate is obtained from either Goulburn Mulwaree Council or an Accredited Certifier; and
- (b) Construction Certificate is lodged with Council, obtained from an Accredited Certifier (together with associated plans and documents) - a fee applies for this service.

Reason *Statutory requirement.*

47. Notice of Commencement

No work shall commence until a notice of commencement is submitted giving Council:

- (a) Not less than two (2) days' notice of the date on which it is proposed to commence work associated with this Development Consent;
- (b) Details of the appointment of a Principal Certifying Authority (either Goulburn Mulwaree Council or another Accredited Certifier); and
- (c) Details of the name, address and licence details of the Builder.

Reason: *Statutory requirement.*

48. Principal Certifying Authority Sign

Prior to commencement of any work, signage must be erected in a prominent position on the work site identifying:

- The Principal Certifying Authority (PCA) by showing the name, address and telephone number of the PCA;
- The Principal Contractor by showing the Principal Contractor's name, address and telephone number (outside of work hours) for that person; and
- The sign must state that unauthorised entry to the work site is prohibited.

Any such sign is to be maintained while the work is being carried out, but must be removed when the work has been completed.

This clause does not apply to building work, subdivision work or demolition work that is carried out inside an existing building that does not affect the external walls of the building.

Reason: *Statutory requirement.*

49. Sediment and Erosion Control

Sediment and erosion control measures shall be implemented within the site prior to the commencement of construction activities.

Reason: *To manage adverse environmental and water quality impacts during the construction phase of the development and to minimise the risk of erosion, sedimentation and pollution within or from the site during this construction phase.*

50. Provision of Toilet

Toilet facilities shall be provided at or in the vicinity of the work site on which work involved in the erection or demolition of a building is being carried out, for the extent of the construction period for the development.

Reason: *To ensure that there are appropriate facilities on-site for construction workers.*

51. Nomination of Construction Supervisor

A minimum of 48 hours prior to commencement of any construction works on site the Developer shall nominate to Council in writing their representative (Construction Supervisor) who will be responsible for all aspects of construction and site control, including Traffic Control, Sediment and Erosion Control and liaison with Council Officers and all other Authorities.

Details to be submitted include:-

- 1 Name of Representative:
- 2 Company:
- 3 Position:
- 4 Contact phone:
- 5 Contact fax:
- 6 After Hours Contact:
- 7 Signature of Representative:
- 8 Signature & Acceptance of representative by the Developer:
- 9 Council requires that the nominated "Construction Supervisor" either hold qualifications acceptable for Corporate Membership of the Institute of Engineers, Australia, or be Approved by the Director and/or has proven experience and suitable relevant qualifications for the control, supervision and management of civil engineering works as required for carrying land development.

Prior to commencing any works on site the representative shall:

- 1 Inform Council in writing of their intention 48 hours before entering the site.
- 2 Submit to Council a proposed Schedule of Works.

Reason: *To provide Council with a direct contact for the development.*

52. Construction Fence

Prior to works commencing on site, a temporary hoarding or temporary construction site fence must be erected between the work site and adjoining lands before the works begin and must be kept in place until after the completion of the works:

- (a) A 2.4m high plywood (or similar material) hoarding shall be erected to the western site boundary and return along the northern boundary as described in the Noise Impact Assessment prepared by Rudds Acoustic. The hoarding shall be erected in the appropriate location to Council's satisfaction before building work commences.
- (b) The following requirements are to be adhered to with the hoarding:-
 - i. The hoarding being constructed of demountable timber-framed sections, lined with a smooth face material, and painted with an approved white paint, which will not wash or rub off.
 - ii. The hoarding, plant and materials being removed promptly after completion of the building operations, and the area left in a clean and tidy condition.
 - iii. Approval being granted without prejudice to any action deemed necessary by Council should a nuisance arise, or should the hoarding become unsightly or in a bad state of disrepair.
 - iv. Council will require the developer and builder to observe the hoarding and scaffolding safeguards as required by the SafeWork NSW.

Reason: *To ensure public safety and noise attenuation during construction.*

53. Retention of Trees

All trees shown on the approved plans (as modified by the conditions of this consent in relation to tree retention) to be "retained" shall be appropriately marked and protected prior to the commencement of construction works.

Commemorative trees and trees nominated for relocation shall be secured against damage/loss during construction works, prior to the commencement of works.

Reason: *To ensure trees are retained without damage.*

54. Asbestos Containing Material

Works shall be undertaken in accordance with the following:

- a) All asbestos containing materials (ACM) identified in the Hazardous Materials Survey and Management Plan prepared by Robson Environmental dated September 2017 shall be

removed prior to the commencement of demolition works and/or refurbishment (stage dependent).

- b) Removal of ACM shall be undertaken by a competent and suitably trained person as per the Code of Practice for the Safe Removal of Asbestos (2011) and the Work Health And Safety Regulation (2011). The removal/remediation of friable ACM shall be undertaken by a licensed Class A Asbestos Removalist. Removal or remediation of non friable asbestos may be undertaken by either an A or B Class Asbestos Removalist. A competent person may remove $\leq 10\text{m}^2$ of non friable asbestos and associated Asbestos-Contaminated Dust or Debris (ACD), or ACD not associated with the removal of friable or non friable asbestos where this is only a minor contamination.
- c) Prior to the commencement of any remediation works associated with friable asbestos or $>10\text{m}^2$ of non friable asbestos, the Hazardous Materials Survey & Management Plan prepared by Robson Environmental dated September 2017 and a permit application shall be submitted to SafeWork NSW and Comcare (where applicable) at least 5 days prior to removal works commencing. The issued permit shall be provided to Council prior to the commencement of the works associated with the permit.
- d) Air monitoring shall be undertaken during the removal or remediation of friable and non friable asbestos. Air sampling shall be undertaken in accordance with the Guidance Note on the Membrane Filter Method for Estimating Airborne Asbestos Fibres, 2nd Edition [NOHSC: 3003(2005)] and test certificates must be endorsed by a National Association of Testing Authorities (NATA) accredited testing laboratory. Monitoring results shall be made available to Council's Planning and Development officers upon request.

Reason: *To ensure that asbestos is disposed of to a licensed waste facility and is removed in accordance with safe work practices.*

55. Demolition

Demolition shall be carried out in accordance with the applicable provisions of Australian Standard AS2601-2001 - The demolition of structures. Demolition of structures shall be carried out as follows:

- a) The developer is to notify owners and occupiers of premises on either side, opposite and at the rear of the development site five (5) working days prior to demolition. Such notification shall state the date demolition will commence, and is to be placed in the letterbox of every premises (including every residential flat or unit, if any) either side, immediately at the rear of, and directly opposite the demolition site. Demolition must not commence prior to the date stated in the notification.
- b) On the first day of demolition, work is not to commence until the Principal Certifying Authority (PCA) has inspected the site. Should the building to be demolished be deemed likely to contain asbestos, approval to commence demolition will not be granted until the PCA is satisfied that all measures are in place so as to comply with WorkCover's document 'Your Guide to Working with Asbestos'.
- c) On demolition sites where buildings to be demolished are likely to contain asbestos, a standard commercially manufactured sign containing the words "DANGER ASBESTOS REMOVAL IN PROGRESS" measuring not less than 400mm x 300mm is to be erected in a prominent visible position on the site to the satisfaction of Council's Planning and Development officers. The sign is to be erected prior to demolition work commencing and is to remain in place until such time as all asbestos has been removed from the site to an approved waste facility.
- d) Demolition works involving the removal and disposal of asbestos cement must only be undertaken by contractors who hold a current WorkCover "Demolition Licence" and a current WorkCover "Class 2 (Restricted) Asbestos Licence".
- e) Demolition is to be completed within five (5) days of commencement at which time the applicant shall notify the Certifying Authority.
- f) Demolition works are restricted to Monday to Friday between the hours of 7.00am to 6.00pm. No demolition works are to be undertaken on Saturdays, Sundays or Public Holidays.
- g) Protective fencing is to be installed to prevent public access to the site.

DEVELOPMENT APPLICATION DETERMINATION NOTICE

- h) All asbestos laden waste, including asbestos cement flat and corrugated sheets must be disposed of at a facility licensed by the NSW Environmental Protection Authority (EPA) to accept such waste provided to Council.

Note: *The person responsible for disposing of the above asbestos waste is to telephone the EPA on 131 555 or Council's Customer Service Department on (02) 4868 0888 to determine the location of a waste facility licensed to receive asbestos. Within 14 days of the completion of demolition works, the applicant must lodge with Council, all original weighbridge receipts issued by the receiving licensed waste facility as evidence of proper disposal.*

- i) After completion, the applicant shall notify the Principal Certifying Authority within seven (7) days to assess the site and ensure compliance with Australian Standard AS2601 2001 - The Demolition of Structures.
- j) Within 14 days of completion of demolition, the applicant shall submit to Council:
- an asbestos clearance certificate prepared by a WorkCover licensed asbestos assessor; and
 - a signed statement verifying that demolition work and the recycling of materials was undertaken in accordance with the Waste Management Plan approved with this consent. In reviewing such documentation Council will require the provision of actual weighbridge receipts for the recycling/disposal of all materials.

Reason: *To ensure that the works are carried out in accordance with the approval and relevant legislation and to ensure that there is no disturbance to neighbouring properties.*

DURING CONSTRUCTION

56. Approved Documentation

Endorsed Council approved plans, specifications, documentation and the consent shall be made available on site at all times during construction.

Reason: *To ensure compliance with the approved plans.*

57. Hours of Construction

All construction and demolition work shall be carried out in accordance with the 'Noise Guide for Local Government' published by the NSW EPA as amended from time to time. That all construction and demolition work shall be carried out only between the hours of 7.00am and 6.00pm Mondays to Fridays inclusive and on Saturdays between 7.00am and 1.00pm if inaudible on residential premises, otherwise 8.00am to 1.00pm. No construction work shall take place on Sundays or Public Holidays.

Reason: *To ensure that the amenity of the surrounding area is not compromised as a result of the construction of the proposal.*

58. Sediment and Erosion Control Plan

The approved Sediment and Erosion Control Plan shall be implemented, maintained, monitored and adapted throughout construction to prevent sediment moving off-site. The controls shall prevent sediment entering drainage depressions and watercourses, and shall be regularly maintained and retained until works have been completed and groundcover established.

Reason: *To ensure that the environment is protected.*

59. Earthworks

Any earthworks (including any structural support or other related structure for the purposes of the development):

- must not cause a danger to life or property or damage to any adjoining building or structure on the lot or to any building or structure on any adjoining lot;
- must not redirect the flow of any surface or ground water or cause sediment to be

- transported onto an adjoining property;
- (c) that is fill brought to the site-must contain only virgin excavated natural material (VENM) as defined in Part 3 of Schedule 1 to the *Protection of the Environment Operations Act 1997* or any other waste-derived material the subject of a resource recovery exemption;
- (d) that is excavated soil to be removed from the site-must be disposed of in accordance with any requirements under the *Protection of the Environment Operations (Waste) Regulation 2005*;
- (e) must in the first instance be reused onsite (where appropriate) for each stage); and
- (f) must be assessed by a suitably qualified environmental consultant in accordance with the NSW EPA (2014) 'Waste Classification Guidelines, Part 1: Classification of Waste'.

Any excavation shall be carried out in accordance with Excavation Work: Code of Practice (ISBN 978-0-642-785442), published in October 2013 by Safe Work Australia.

Reason: *To ensure structural safety of earthworks and to ensure that excavation and fill are handled correctly.*

60. Imported Fill

All imported fill to be utilised within the site shall be in accordance with the requirements of the *Protection of the Environment Operations Act 1997* and free from contaminants. Evidence shall be retained and provided to Council upon completion of the works to demonstrate compliance. Upon completion of the works, the applicant shall submit to Council any dockets relating to the disposal of fill/waste from a licensed waste facility. These dockets shall also be made available to a Council Officer upon request at any time.

Reason: *To ensure that imported fill is of an acceptable standard for environmental protection purposes.*

61. Fill Plan

At the completion of works, the applicant shall submit to the Principal Certifying Authority for approval, a plan detailing the extent of fill, with engineering certification from a qualified and practicing Geotechnical engineering professional identifying the specification of the filling operation in terms of the level of compaction achieved for each layer of fill placed.

Reason: *To alert future landowners of the existence of fill on the land.*

62. Compliance with the *Protection of the Environment Operations Act 1997*

All works carried out on site during construction/demolition/excavation or earthworks shall comply with the *Protection of the Environment Operations Act 1997*. Approved and effective silencing measures shall be provided and maintained on all power-operated plant used on site.

Reason: *To ensure the proper disposal of wastes.*

63. Waste Management Plan

Requirements of the approved Waste Management Plan shall be complied with during site preparation and throughout construction. Waste management and its storage must not pose a threat to public health or the environment.

Reason: *To ensure that waste is managed in a sustainable manner.*

64. Dust Mitigation

Activities occurring at the site must be carried out in a manner that will minimise emissions of dust from the premises. Trucks entering and leaving the premises that are carrying excavated dusty materials, including clays, sands and soils, must be covered at all times, except during loading and unloading.

Reason: *To ensure that the amenity of neighbouring properties is not compromised.*

65. Noise and Vibration

The construction of the development and preparation of the site, including operation of vehicles, shall be conducted so as to avoid unreasonable noise or vibration and cause no interference to adjoining or nearby occupations. Special precautions shall be taken to avoid nuisance in neighbouring residential areas, particularly from machinery, vehicles, warning sirens, public address systems and the like.

For noisier activities, i.e. ones that exceed LAeq(15 minute) 89dBA, additional localised screening of the activity to minimise disturbance to neighbouring residents shall be adhered to.

These noisy activities shall be scheduled to occur during times that are less likely to be sensitive to neighbouring residents (i.e. between 10:00am and 3:00pm).

In the event of a noise or vibration problem arising, the person in charge of the premises shall, when instructed by an authorised officer of Council or the Accredited Certifier, cease work and carry out an acoustical survey and/or investigation by an appropriately qualified acoustical engineer or qualified and experienced professional consultant and submit the results to Council. The person in charge of the site shall implement any or all of the recommendations of the consultant and any additional requirements of Council. Any requirements of Council in this regard must be complied with immediately.

Reason: *To ensure site safety and mitigate adverse local amenity.*

66. Vehicles during Construction

Vehicles and equipment associated with the development construction are to be located to ensure there is no adverse impact on existing residences and neighbouring properties in the locality.

Reason: *To ensure there is no adverse impact on existing residences and neighbouring properties in the locality.*

67. Stormwater Management during Construction

Discharge of stormwater from the site during and after construction shall be designed to ensure that no adverse effects are had on the existing drain infrastructure system.

Reason: *To manage stormwater during construction.*

68. Trees in Landscape Plan

All trees nominated on the landscape plan shall be at least 3 metres in height at time of planting.

Reason: *To ensure compliance with clause 3.4.6 of the Goulburn Mulwaree Development Control Plan 2009*

69. Aboriginal Objects or Relics

If unrecorded Aboriginal objects are identified during the course of the demolition/construction period, then all activity in the immediate area shall cease, and the area should be cordoned off. Goulburn Mulwaree Council and Pejar Local Aboriginal Land Council shall be notified immediately. NSW Office of Environment and Heritage (OEH) shall be notified by calling Enviroline 131555 so that the site can be adequately assessed and managed.

In the event that human remains are identified, activity must cease immediately near the remains and the area must be cordoned off. The developer shall contact the NSW Police Force who shall make an initial assessment as to whether the remains are part of a crime scene or possible Aboriginal remains. If the remains are thought to be Aboriginal, OEH shall be notified by calling Enviroline 131555. An OEH officer shall determine if the remains are Aboriginal or not; and a management plan shall be developed in consultation with the Aboriginal community before the activity recommences.

Reason: *To comply with the provisions of NSW National Parks and Wildlife Act (1974).*

70. Critical Stage Inspections

In accordance with Section 6.5 of the *Environmental Planning and Assessment Act 1979* and Clause 162A of the Regulations the following Mandatory, Critical Stage Inspections need to be carried out by the Principal Certifying Authority. (PCA)

Forty-eight (48) hours notice is required prior to these inspections.

- In the case of a class 2, 3, 4, 5, 6, 7, 8 or 9 building, after the commencement of the excavation for, and before the placement of, the first footing;
- Prior to covering any stormwater drainage connections; and
- After the building work has been completed and prior to any Occupation Certificate being issued in relation to the building.

Reason: *A requirement under the provisions of the Environmental Planning and Assessment Act 1979.*

71. Hazardous Materials Handling

During demolition/construction works, the recommendations pertaining to handling Lead Paint, Synthetic Mineral Fibre (SMF), and Polychlorinated Biphenyls (PCBs) within the Hazardous Materials Survey & Management Plan prepared by Robson Environmental, dated September 2017 shall be adhered to.

Reason: *To ensure compliance with the development as approved.*

72. Tree Removal

Trees shall be removed only within their respective stages as per SK105 / H and SK106 / H. Stage 2 trees shall be retained during works relating to Stage 1.

Reason: *To ensure the development is undertaken in an orderly fashion.*

73. Supervising Arborist

An arborist qualified to at least Australian Qualifications Framework (AQF) Certificate Level 4 shall be retained throughout all construction work to ensure to proper protection and management of the trees required to be retained and that any necessary pruning/root pruning is carried out in accordance with AS4973-1996 "Pruning of Amenity Trees" and AS4970-2009 "protection of Trees on Development Sites". This includes on site supervision of the erection of tree protection measures and, where approved, any works that are required within the Tree Protection Zone (TPZ) or Structural Root Zone (SRZ).

Reason: *To ensure to proper protection and management of the trees required to be retained and that any necessary pruning/root pruning is carried out in accordance with the relevant Australian Standards.*

74. Plumbing and Drainage Notice of Work

In accordance with the *Plumbing and Drainage Act 2011*, a plumbing and drainage Notice of Work (NoW) must be completed and returned to Council for its records, no later than 2 business days before the work concerned is carried out. The Notice of Work is to identify what plumbing and drainage work is carried out by a particular plumber/drainer.

Reason: *So that Council may ensure that the construction is in accordance with Council's requirements, and so that a permanent record of the drainage details may be held by Council, to assist in future maintenance.*

75. Sanitary Drainage Inspections

All sanitary drainage, plumbing and backflow prevention is to be carried out in accordance with AS 3500 and the *Plumbing and Drainage Act 2011* and the following stages of construction are to be inspected by Council as the Water and Sewer Authority.

Forty-eight (48) hours notice is required prior to these inspections.

- Plumbing and Drainage before backfilling.
- Pressure testing or waterpipes within the building prior to fixing of linings.

- Final inspection of water plumbing and sewer drainage.

Reason: *Statutory requirement.*

76. Storage of Building Materials, Plant and Equipment

All building materials, plant and equipment are to be placed on the site of the development so as to ensure that pedestrian and vehicular access in public places is not restricted and also so that the road reserve is not damaged.

No storage, or placing of any building materials to occur on adjacent public roads or footpath areas in association with the construction, maintenance or use of the development or site.

Reason: *To ensure that pedestrian and vehicular access in public places is not restricted and also so that the road reserve is not damaged.*

77. Rainwater Tanks

Rainwater tanks must be installed in accordance with the Goulburn Mulwaree Councils Stormwater Drainage & Rain water Collection Systems Policy.

Reason: *To ensure compliance with Council's Stormwater Drainage & Rain water Collection Systems Policy.*

PRIOR TO OCCUPATION

78. Occupation Certificate

In accordance with Section 6.9 of the *Environmental Planning and Assessment Act 1979*, an application for an Occupation Certificate, shall be made on completion of the works and the relevant application fee paid. All works specified in the development consent and approved Construction Certificate plans shall be completed and all development consent conditions complied with prior to the issue of the Occupation Certificate.

The Principal Certifying Authority (PCA) is required to be satisfied, amongst other things, that:

- All required inspections (including each applicable mandatory critical stage inspection) have been carried out; and
- Any preconditions to the issue of the certificate required by a development consent have been met.

Reason: *To comply with the provisions of the Environmental Planning and Assessment Act 1979.*

79. Occupation Certificate

The applicant must obtain an Occupation Certificate, pursuant to Section 6.9 of the *Environmental Planning and Assessment Act 1979*, from either Council or an accredited certifying authority, prior to occupation of the building/commencement of the use.

Reason: *To comply with the provisions of the Environmental Planning and Assessment Act 1979.*

80. Heritage Requirements

The following heritage requirements shall be completed prior to the issue of an Occupation Certificate:

- Installation of the Interpretation Strategy recommendations shall be completed.
- The Photographic Archival Recording and Oral History shall be presented to Council and the Goulburn Mulwaree Public Library.

Reason: *To ensure the heritage requirements of this Notice of Determination are done by before the development commences.*

81. Security

All security measures required by this consent such as lighting, access control and security cameras (CCTV) shall be installed prior to the issue of any Occupation Certificate.

Reason: *To ensure the security requirements of this Notice of Determination are done by before the development commences and to ensure Crime Prevention through Environmental Design (CPTED) principles are appropriate for the development.*

82. Plan of Management

Prior to the issue of an Occupation Certificate, a Plan of Management shall be prepared for the site and submitted to Council for approval. The PoM shall include, but not be limited to the following matters:

- employ management procedures so that patrons exiting the site do not create excessive noise outside the venue;
- Group Entry;
- Operational Waste Management;
- Management of patrons who enter the site from the Café; and
- Emergency services access and parking management;
- Event management procedures (see below condition).

Reason: *To ensure the amenity of the neighbourhood is not adversely impacted by the operation of the development.*

83. Event Management Plan

An Event Management Plan (EMP) shall be prepared and endorsed by Council prior to the issue of an Occupation Certificate. The EMP shall be used in the instances when the overall capacity of the Aquatic Centre is expected to be greater than 600 people. The EMP shall include (but not be limited to) management procedures for the following:

- Traffic and parking management, including use of traffic marshalls to facilitate informal parking in the park (locations to be confirmed based on advice from a qualified Arborist),
- Provision of sufficient sanitary facilities to cater for the intended population
 - location, quantity, installation and de-installation procedures, timing

Reason: *To ensure sufficient sanitary facilities for the Aquatic Centre during peak capacity periods.*

84. Food Premises Inspection

The construction of the food premises shall comply with the requirements AS 4674-2004, Design, Construction and Fit-out of Food Premises. Council's Environmental Health Officer is required to inspect and sign off on the satisfactory completion of the construction and fit-out of the food premises prior to the issue of any Occupation Certificate.

Reason: *To ensure registration of the food premises.*

85. Access Construction

The entrance and exit driveways shall have concrete laybacks and heavy-duty concrete vehicular footway crossings.

Reason *To comply with Council's Engineering Standards.*

86. Car Park Construction

Driveways and car parks shall be constructed in accordance with Council's standards, including the sealing of all driveways and car parks. Car parking shall be line marked.

Reason *To comply with Council's Engineering Standards.*

87. Section 307 Certificate

A 307 Certificate of Compliance under Division 5 of Part 2 of Chapter 6 of the *Water Management Act 2000* for water management works (water supply and sewage) shall be obtained prior to the issue of an Occupation Certificate.

Reason: *Statutory requirement.*

88. Payment of Fees for Engineering Review

The current fees for examination of engineering drawings, inspections of works and release of Final Plans are to be paid upon lodgement of an Occupation Certificate.

Reason: *To ensure compliance with Council's Fees and Charges.*

89. Damage to Council Assets

Prior to the issue of an Occupation Certificate, repair of damage to Council property, in addition to that nominated in the Dilapidation Report, however caused during the construction period, shall be undertaken. Repair shall be undertaken on a like for like basis and in accordance with Council's Standards prevailing at the time. The developer shall pay the full cost for any alterations or extension of restoration to the kerb and gutter, concrete footpath, services and/or street trees, should any damage occur during construction.

Reason: *To ensure community assets of Council are repaired should they be damaged during construction.*

90. Internal Civil Certification

On completion of works and prior to issue of the Occupation Certificate, certification from a practicing appropriately qualified engineer shall be submitted to Council detailing that all internal civil works (i.e. internal driveways, paths and stormwater drainage systems including any onsite detention) are in accordance with approved plans and specifications.

Reason: *To comply with Councils requirements.*

91. Works As Executed Drawings

The Developer shall provide a copy of the Work As Executed information on disk (PDF format) prior to the issue of the Occupation Certificate.

The WAE plans are generally the design plans amended to indicate the as-built nature of the work and must include the following:

- any departure from the approved plans;
- any additional work that has been undertaken;
- the location of council conduits, subsoil drains associated with road pavements;
- stop valves, hydrants, sewer manholes, sewer junctions, interlot drainage inlet junctions and stormwater drainage pits;
- all other details of works to be handed over to Council; and
- certification by the developer's registered surveyor that the WAE drawings are a full and accurate representation of the constructed works. This may be achieved by the stamping and signing of each plan.

Reason *To ensure appropriate records are held and asset management.*

92. Maintenance Bond

The maintenance period is 24 months and commences on the date of issue of the Occupation Certification.

The maintenance bond is an amount of 2.5% of the value of the total engineering works (minimum amount \$1,000). This bond is held by Council to cover any defects or omissions which may arise or become apparent in the maintenance period. The maintenance bond is to be paid to Goulburn Mulwaree Council prior to issue of the Occupation Certificate.

During the maintenance period Council may direct the developer to rectify any omission or defect in the work which existed at the time of Notification of Completion or becomes apparent prior to the expiration of the maintenance period. If defects or omissions are not rectified within one month, Council may rectify the omission or defect and apply the maintenance bond as payment of the cost for the rectification.

The maintenance period of any rectification work will be extended a further 24 months, however, at the expiration of the original 24 month maintenance period, the amount of the maintenance bond will be reduced in accordance with the value of the work under maintenance.

The nature of some defects e.g. water main breaks, may necessitate council's immediate action to rectify, in which case, the developer is responsible for reimbursing Council's costs.

Upon expiration of the maintenance period, it will be the developer's responsibility to request Council to the release of the maintenance bond.

The requirement for the developer to rectify defects and omissions in accordance with this clause holds true after the expiration of the maintenance period in the case that such defects and omissions are undiscoverable by normal means but come to light at a subsequent time.

Reason: *To ensure appropriate warranty periods apply for defect liability.*

93. Water NSW - Operational Environmental Management Plan

An Operational Environmental Management Plan shall be prepared in consultation with Water NSW by a person with knowledge and experience in the preparation of such plans prior to the issuance of an Occupation Certificate for relevant stage of the development. The Plan shall:

- outline details about the location and nature of stormwater management structures such as pits, pipes, gross pollutant traps, bioretention systems, bioretention basin, and rainwater collection system
- identify the responsibilities and detailed requirements for the inspection, monitoring and maintenance of all stormwater management structures, including the frequency of such activities
- identify the individuals or positions responsible for inspection and maintenance activities including a reporting protocol and hierarchy, and
- include checklists for recording inspections and maintenance activities.

Reason: *To ensure appropriate stormwater treatment and quality control measures are designed, implemented and maintained so as to achieve a sustainable neutral or beneficial impact on water quality, particularly during wet weather, over the longer term.*

94. Water NSW - Stormwater Management Certification

A suitably qualified stormwater consultant or engineer shall certify in writing to Water NSW and Council prior to the issuance of an Occupation Certificate for each stage of the development that all stormwater management structures have been installed as per these conditions of consent and are in a functional state.

Reason: *To ensure appropriate stormwater treatment and quality control measures are designed, implemented and maintained so as to achieve a sustainable neutral or beneficial impact on water quality, particularly during wet weather, over the longer term.*

95. Final Water and Sewer Inspection

A final inspection of water plumbing and sewer drainage must be conducted by Council as the Water and Sewer Authority. Only after advice that the final water and sewer inspection has been completed in a satisfactory manner may an Occupation Certificate be issued.

Reason: *Statutory requirement.*

96. Certificate of Compliance

A Certificate of Compliance (CoC) and a Sewer Service Diagram prepared by the plumber(s) who submitted the Notice of Work must be issued to Council prior to issue of the Occupation Certificate.

Reason: *So that Council may ensure that the construction is in accordance with Council's requirements, and so that a permanent record of the drainage details may be held by Council, to assist in future maintenance.*

97. Completion of Works

All approved civil engineering works and services as per the approved engineering plans, including construction works within the road reserve, are to be constructed prior to the issue of the Occupation Certificate.

Reason: *To ensure the development is carried out in accordance with the issued Notice of Determination for approval.*

98. Fire Safety Certificate

Prior to the issue of an Occupation Certificate it will be necessary to submit to the Principal Certifying Authority, a Fire Safety Certificate in respect of the fire safety measures installed within the building.

A Fire Safety Certificate is to state, in relation to each essential fire or other safety measure implemented in the building or on the land on which the building is situated that the measure has been assessed by a person (chosen by the owner of the building) who is properly qualified to do so, and that, as at the date of the assessment, the measure was found to be capable of performing to a standard not less than that required by the schedule to the relevant approval.

Reason: *To ensure the safety of the building and compliance with the Environmental Planning and Assessment Regulation 2000.*

99. Landscape Plan Maintenance Schedule

Prior to the issue of any Occupation Certificate, a detailed maintenance schedule shall be submitted to the Principal Certifying Authority for all proposed landscaping to ensure the on-going longevity of the landscaping for the life of the development. The maintenance schedule shall include the following details:

- a) Pest, weed and plant disease control;
- b) Hedging and pruning as required;
- c) Irrigation & lighting system and maintenance;
- d) Lawn mowing and edging;
- e) Mulch renewal of garden beds;
- f) Replacement of dead plants; and
- g) Fertiliser application.

Reason: *To ensure that the landscaping has been carried out in accordance with the Council endorsed landscape plan.*

100. Noise Mitigation

Prior to the issue of an Occupation Certificate, mechanical equipment noise mitigation measures, apart from the acoustic barrier, shall be installed in accordance with the Preliminary Noise Impact Assessment prepared by Rudds Acoustics, ref. R317111AC, dated 16 April 2018, to the satisfaction of Council.

Where condenser units, etc. cannot be located in plant rooms, the units shall be placed in a location that maximises the sound reduction to the nearest affected residents.

Reason: *To ensure that the amenity of neighbouring properties is not compromised.*

101. External Speakers

Prior to the issue of an Occupation Certificate, pole mounted external speakers shall be carefully located and managed to ensure noise is contained to the area in which it is required without excessive noise impacts to neighbours, and comply with the following:

- a) Outdoor speakers shall be on low on poles (no higher than 3m) so they are near the intended listeners; and
- b) Outdoor speakers shall be located so they face away from the nearest residences, or are otherwise physically shielded so direct speaker noise does not adversely impact nearby residents. Under no circumstances can speakers be placed on the western façade of the buildings (the front of the building facing Deccan Street).

Reason: *To ensure that the amenity of neighbouring properties is not compromised.*

102. External Footpaths

Prior to the issue of an Occupation Certificate for Stage One, footpaths nominated on SK102 rev H notated as 'VICTORIA PARK PATHS, SHOWN IN GREY AS PART OF VICTORIA PARK MASTER PLAN BY THE COUNCIL', shall be completed by the Council in accordance with the Victoria Park Plan of Management, Project #10. The paths joining the eastern entrance to Victoria Park shall be redesigned to ensure the main footpath junction to this area of the site is at the eastern most point of the zero depth splash pads.

Reason: *To ensure connectivity with Victoria Park and compliance with the Disability (Access to Premises) Standards 2010.*

102A. Additional Planting

Prior to the issue of any Occupation Certificate, six additional trees, shall be planted in the area previously identified as the 'southern car park area'. Trees shall be a minimum of 3 metres tall at the time of planting, and be a species in accordance with the recommendations of the approved landscaping concept.

Reason: *To ensure that appropriate landscaping is provided to the site and streetscape.*

103. Pool Registration

The Aquatic Centre must be registered on the NSW Swimming Pool Register and its operation separately notified to Council prior to the issue of an occupation certificate.

Reason: *Statutory requirement.*

ONGOING OPERATION

104. Hours of Operation

The operating hours (inclusive of all facilities being the aquatic centre, gymnasium, crèche and café) are as follows:

Monday to Friday	6.00am – 7.45pm
Saturday	8.00am – 5.45pm
Sunday and Public Holidays	9.00am – 5.45pm

Reason: *To ensure that the amenity of the surrounding area is not compromised as a result of the operation of the development.*

105. Landscaping Maintenance

The owner of the building shall ensure that the approved landscaping is maintained in accordance with the maintenance schedule required by this consent.

All landscaped areas on the site shall be maintained on an on-going basis.

Any tree or shrub that fails to establish within 2 years of the initial planting date shall be replaced with the same species of tree or shrub.

Reason: *To ensure the ongoing maintenance of landscaped areas.*

106. Loading and Unloading

The operators are to ensure that all pick up and drop off of deliveries shall occur within the service vehicle area and not from a public road.

Reason: *To ensure public safety and to avoid traffic congestion.*

107. Noise

Noise associated with the operation of any activities on the site, shall not give rise to transmission of "offensive noise" as defined in the *Protection of the Environment Operations Act 1997* to any place of different occupancy.

In the event of a noise or vibration problem arising, the person in charge of the premises shall, when instructed by an authorised officer of Council or the Accredited Certifier, carry out an acoustical survey and/or investigation by an appropriately qualified acoustical engineer or qualified and experienced professional consultant and submit the results to Council. The person in charge of the site shall implement any or all of the recommendations of the consultant and any additional requirements of Council. Any requirements of Council in this regard must be complied with immediately.

Reason: *To ensure that the amenity of neighbouring properties is not compromised.*

108. Public Address System

Pole mounted external speakers shall comply with the following requirements:

- a) Outdoor speakers shall only to be used during the daytime (7.00am – 6.00pm). No outdoor speaker operation of an evening or a night-time is permitted; and
- b) The maximum speaker noise level shall be set at LAeq(15 minute) 65dBA at 3 metres from the speaker.

The internal speaker system shall not cause an adverse impact to nearby residential receivers.

Reason: *To ensure that the amenity of neighbouring properties is not compromised.*

109. Security Lighting

All security lighting shall remain operable during night time periods.

Reason: *To ensure that the safety of the locality is not compromised.*

110. Waste Management

All waste shall be stored only within the waste enclosures throughout the facility and stored for collection within the waste store room.

Reason: *To ensure that waste is managed in a sustainable manner.*

111. Water NSW – Operational Environmental Management Plan

All stormwater treatment devices shall be monitored, maintained and managed as per the Operational Environmental Management Plan.

Reason: *To ensure appropriate stormwater treatment and quality control measures are designed, implemented and maintained so as to achieve a sustainable neutral or beneficial impact on water quality, particularly during wet weather, over the longer term.*

112. Annual Fire Safety Statement

The owner of the building shall:

- i. Furnish to the Council an Annual Fire Safety Statement in respect to each essential service installed in the building;
- ii. Ensure that essential services installed within the building are performing to a standard no less than to which the measure was originally designed;
- iii. Ensure the safety of fire exits;
- iv. Ensure doorways and paths of travel are not obstructed; and

- v. Ensure that offences relating to fire exits do not occur within the building.

The owner of the building shall:

- i. cause a copy of the certificate to be furnished to Fire and Rescue NSW it is preferred this is done electronically via the following email address afss@fire.nsw.gov.au; and
- ii. cause a further copy of the certificate to be kept at the building.

Reason: *To ensure compliance with fire safety requirements.*

113. Amenity

The approved use on the site shall be conducted in such a manner so as not to interfere with the amenity of the neighbourhood by reason of noise, smoke, smell, vibration, gases, vapours, dust, particulate matter or other impurities from the premises.

Reason: *To ensure that the amenity of neighbouring properties is not compromised.*

114. Lighting

All external lighting shall:

- a) Comply with AS 4282-1997 Control of the obtrusive effects of outdoor lighting; and
- b) Be mounted, screened and directed in a way that it does not create a nuisance or light spill on to buildings on adjoining lots or public places.

Lighting at vehicle access points to the development must be provided in accordance with AS/NZS 1158 Set: 2010 Lighting for roads and public spaces Set.

Reason: *To ensure that the amenity of neighbouring properties is not compromised.*

115. Special Events

The use of the facility for special events outside of the approved operating hours shall require separate development consent from Council.

Reason: *To ensure that the amenity of neighbouring properties is not compromised and that the site is used for the purpose in which it was approved.*

116. Pool Compliance

The operation and maintenance of the swimming pool must comply with the requirements of the *Public Health Act 2010* and the Public Health Regulation 2012 including the applicable requirements of Public Swimming Pools and the New South Wales Health publication titled Public Swimming and Spa Pool Advisory Document as amended from time to time by New South Wales Health. Appropriate records are to be kept and maintained demonstrating compliance with the *Public Health Act 2010* and made available to Council upon request.

Reason: *Statutory requirement.*

Objectives

The objectives of the DSI were to:

- Undertake grid based sampling across the site to determine the potential for soil contamination within the AECs;
- Assess whether contaminants (if any) are present at levels which may impact the suitability of the site for the proposed redevelopment;
- Discuss the current site condition;
- Assess and provide recommendations (if required) regarding the need for further environmental investigations;
- Prepare a soil assessment report including the site history review in general accordance with the NSW Office of Environment and Heritage (OEH, 2011) '*Guidelines for Consultants Reporting on Contaminated Sites*', which is endorsed by the NSW EPA.

Regulatory Compliance and Guidelines

The DSI was undertaken in accordance with the requirements of the following regulations and NSW EPA endorsed guidelines:

- NSW Environment Planning and Assessment Act 1979;
- NSW Contaminated Land Management Act 1997;
- NSW Protection of the Environment Operations Act 1997;
- NSW Contaminated Land Management Regulation 2008;
- State Environmental Planning Policy 55 – Remediation of Land (SEPP 55).
- Australian Standard AS 4482.1-2005 'Guide to the sampling and investigation of potentially contaminated soil – Part 1: Non-volatile and semi-volatile compounds' (herein referred to as AS 4482.1-2005);
- National Environment Protection Council (NEPC, 1999) 'National Environment Protection (Assessment of Contaminated Sites) Measure 1999' as amended in May 2013 (ASC NEPM, 2013);
- NSW EPA (1995) 'Sampling Design Guidelines';
- NSW Office of Environment and Heritage (OEH, 2011) '*Guidelines for Consultants Reporting on Contaminated Sites*'.

Scope of Works

The site covers an area of approximately 11,500 m² and approximately 5,000 m² comprises open grassed areas with a number of trees located on the eastern portion of the site. The remainder of the site comprises of buildings, paved areas and the pools with no access to soil.

To assess AEC 1 and AEC 2 Robson undertook both targeted and grid based sampling regimes in accordance with the NSW (1995) '*Sampling Design Guidelines*'.

AEC 1 – Fill material associated with the built infrastructure

As AEC 1 is described as fill material related to the past construction of buildings the pool sample locations were located in accessible areas adjacent to these structures and where there was evidence of fill within the open grassed area. As the open grass area covers an area of approximately 5,000 m² 13 sample locations were selected which is the minimum required to characterise this area. The locations were set out in a grid based pattern with a bias toward the built infrastructure.

AEC 2 – Two (2) Chemical Storage Rooms

The two (2) chemical storage rooms cover a small area and are considered to be point sources of potential contamination. Therefore to determine whether the soil below these chemical storage rooms has been contaminated one (1) sample location was placed within each store room.

A summary of the scope of works for the DSI is presented below.

Preparation for Fieldwork

Prior to fieldwork, the following was undertaken:

- Preparation of a Site Safety Management Plan (SSMP) prior to the commencement of on-site works;
- Engagement of a Telstra-accredited service locator to assess and clear each borehole location for underground services or infrastructure;
- Engagement and mobilisation of a suitably licenced and experienced excavator operator to the site to excavate the boreholes/test pits.

Soil Assessment

The scope of work for the collection and analysis of soil (grid-based samples) is as follows:

- Mobilisation of a suitably qualified environmental consultant (SQEC) to the site with the appropriate equipment for collecting soil samples from each borehole;
- To assess AEC 1, 13 grid based sample locations were excavated across the accessible areas of the site with a bias toward the built infrastructure and observed fill within the open grass areas;
- To assess AEC 2, one (1) borehole was located within each chemical storeroom;
- Collection of soil samples at the near surface, 0.5 metres (m) and at 1.0 m or refusal. The boreholes were excavated to a maximum depth of 1.7 m below ground level (mbgl) or 0.3 m into natural soil which ever came first;
 - If a layer of material was encountered which contained obvious visual or olfactory signs of contamination, then an additional sample was collected at this depth;
 - If asbestos was observed during field work, a further 10 litre (L) sample would be collected at each sample location and sieved (7 millimetre (mm) x 7 mm sieve) to screen for asbestos containing material (ACM) in accordance with the WA Guidelines;
- Field duplicate and triplicate soil samples were collected for quality assurance and quality control (QA/QC) purposes in accordance with Australian Standard 4482.1-2005 *Guide to the investigation and sampling of sites with potentially contaminated*

soil: *Part 1: Non-volatile and semi-volatile compounds* (AS4482.1). In addition, one (1) rinsate sample, one (1) trip blank and one (1) trip spike sample was collected for each day of sampling;

- Each soil sample was field screened for volatile compounds with a photo-ionisation detector (PID);
- The boreholes/test pits were backfilled with the borehole cuttings – no soil was removed from site;
- Based on field observations a selection of soil samples were submitted to National Association of Testing Authorities (NATA) accredited laboratories. Laboratory analysis of the soil samples are outlined in **Table 1** overleaf and included the following:
 - Analysis of up to 22 primary soil samples (allows for 15 near surface samples and 7 samples at depth);
 - Analysis of one (1) duplicate and one (1) triplicate QA/QC samples;
 - Analysis of one (1) trip spike, one (1) trip blank and one (1) rinsate QA/QC samples;
 - All grid based samples were analysed for a standard suite of contaminants including:
 - Total recoverable hydrocarbons (TRH);
 - Benzene, toluene, ethylbenzene, xylenes (BTEX);
 - Polycyclic aromatic hydrocarbons (PAHs);
 - Phenols;
 - Organochlorine pesticides (OCPs);
 - Polychlorinated biphenyls (PCBs);
 - Eight (8) heavy metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc);
 - Acids and pH (soil samples from AEC 2 only).
 - Three (3) samples were analysed for pH, cation exchange capacity (CEC) and percent (%) clay to allow calculation of the site specific ecological investigation level (EIL) criteria;
 - Analysis of QA/QC samples were analysed as per the primary sample;
 - Analysis of the trip blank for TRH C₆-C₉ and BTEX only;
 - Analysis of the trip spike for BTEX only.

The laboratory analytical results were assessed in accordance with the ASC NEPM (2013) criteria. The applicable Health-based Investigation Level (HIL) and Health Screening Level (HSL) for the proposed recreational land use is 'HIL/HSL A – *Residential with garden/accessible soil (home grown produce <10% and vegetable intake, (no poultry), also includes childcare centres, preschools and primary schools*', consideration would also be given to the ASC NEPM (2013) EIL and ecological screening level (ESL) criteria for a residential/open space exposure setting.

Table 1. Sample and Analytical Plan

Area to be Investigated	Number of Samples Allowed	Analytes
AEC 1 - Fill associated with the built infrastructure	13 borehole locations. 13 surface and 7 at depth Total No. of primary soil samples: 20.	TRH, BTEX, PAH, phenols, OCP, PCB, eight (8) heavy metals and asbestos (only if observed).
	Three (3) sample locations to establish the site specific EIL criteria.	pH, cation exchange capacity (CEC) and percent (%) clay.
AEC 2 – Chemical Storage Rooms	One (1) borehole location per chemical storeroom. 2 surface Total No. of primary soil samples: 2	TRH, BTEX, PAH, phenols, OCP, PCB, eight (8) heavy metals, asbestos (only if observed) acids and pH.
QA/QC Samples	One (1) duplicate and one (1) triplicate samples. Total No. of field QA/QC samples: 2.	TRH, BTEX, PAH, phenols, OCP, PCB, eight (8) heavy metals.
	One (1) rinsate sample per day. Total No. of rinsate QA/QC samples: 1	TRH, BTEX, PAH, phenols, OCP, PCB, eight (8) heavy metals.
	One (1) trip spike and one (1) trip blank per day. Total No. of samples: 2	TRH (C ₆ – C ₉) and BTEX.

Notes:

- **TRH:** total recoverable hydrocarbons; **BTEX:** benzene, toluene, ethylbenzene, xylenes; **PAH:** polycyclic aromatic hydrocarbons; **OCP:** organochlorine pesticides; **PCB:** polychlorinated biphenyl; **heavy metals:** arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc.

FIELD WORK AND OBSERVATIONS

The borehole and test pit locations are shown on **Figure 2**. Borehole logs including soil sample descriptions and recorded PID measurements will be provided in the final report. The boreholes and test pits were located and cleared by a Telstra-accredited service locator on Thursday 20 June 2019. Photographs of the site conditions were taken and will be provided in the final report.

General field observations are summarised below:

- Soil sampling was undertaken on 21 June 2019 by a SQEC;
- 22 soil samples were collected from 15 borehole/test pit locations. The samples were collected from depths of between 0.0 and 1.7 m below the ground surface;
- No indications of odours and staining were observed within the sample locations;
- A presumed asbestos below ground water pipe was observed adjacent test pit TP04 however no fragments of potential asbestos containing materials (ACM) were observed within any of the sample locations. The presumed asbestos water pipe is expected to run in a northeast – southwest direction;
- Anthropogenic material consisting of brick fragments was observed in test pit TP01 while brick, concrete and terracotta pipe fragments were observed in test pit TP06 and concrete fragments were observed in test pit TP09;
- The depth of fill across the site ranged from 0.0 to 1.2 m with the majority of the fill located on the east side of the pool;
- The fill generally comprised of a dark brown sandy silt with sand and gravels which was underlain by a natural brown to yellow brown silty clay, moist with medium to high plasticity with both orange and grey mottles;
- A sub sample of each soil sample was screened with the PID. In summary, the samples recorded readings of between 0.1 parts per million (ppm) and 2.3 ppm indicating a negligible potential for the presence of volatile ionisable hydrocarbon species.

The QA/QC samples collected during the assessment included the following:

- Samples QC01 and QC02 which were a duplicate and triplicate of primary sample TP01(0.0-0.2);
- Samples QC03 and QC04 which were a duplicate and triplicate of primary sample TP10(0.0-0.2);
- One (1) rinsate sample identified as R01 was collected from the head of the hand auger at the end of the field day;
- One (1) trip blank identified as TB01 and one (1) trip spike identified as TS01 which accompanied all collected samples during collection and transportation.

ANALYTICAL RESULTS

Laboratory results for the analysed soil samples are presented in **Tables 1 to 4**, whilst the certified laboratory reports, sample receipt advice and COC documentation are included in **Attachment D**.

In summary, all the recorded analytical results were below the ASC NEPM (2013) HIL/HSL 'A' and EIL/ESL urban residential and public open space assessment criteria.

RECOMMENDATIONS

Based on the field observations and the analytical results AEC 1 and AEC 2 identified at the GMC Aquatic and Leisure Centre are no longer considered to be areas of concern and the site is considered suitable from a contaminated land point of view for the proposed development work provided the following soil management recommendations are implemented prior to redevelopment works:

- The drafting and implementation of a Construction Environment Management Plan (CEMP) which includes an Unexpected Finds Protocol (UFP) which has been prepared by a SQEC, to manage any suspicious hazardous materials (e.g. ACM) in soil/fill material or potential olfactory or visual signs of potential contamination if they are encountered onsite during redevelopment works. Initial inductions into the UFP must be performed by a SQEC. Subsequent inductions can then be performed by senior site personnel previously inducted by the SQEC.
- If soil is required to be removed from site as part of the redevelopment works the soil must be assessed by a SQEC in accordance with the NSW EPA (2014) 'Waste Classification Guidelines, Part 1: Classification of Waste'. All soil must remain on site until approval is given by a NSW licensed land fill facility for acceptance of the material.
- As the GMC Aquatic and Leisure Centre is proposed to be demolished as part of the redevelopment works, an intrusive hazardous materials assessment (including asbestos) should be undertaken prior to works.

This report should be read in conjunction with the Statement of Limitations and the Report Terms and Conditions attached to this report. Please do not hesitate to contact the undersigned (02) 6171 4623 should you have any queries regarding this letter.

For and on behalf of Robson Environmental Pty Ltd,



Ben Kendon
Manager Environmental Assessment and Remediation
Asbestos Assessor (WorkCover NSW)
License No: LAA001094 (Recognised by WorkSafe ACT)
Robson Environmental Pty Ltd

Attachments

Statement of Limitations

Report Terms and Conditions

Figures

Figure 1: Site Location Plan

Figure 2: Sample Location Plan

Tables

Table 1: Physicochemical Criteria Calculation Results

Table 2: Soil Analytical Results

Table 3: Soil QA/QC Results

Table 4: Water QA/QC Results

Attachments

Attachment A: Sample Receipt Advice, COC Documentation and Certified Laboratory Reports

STATEMENT OF LIMITATIONS

The findings contained within this report are the result of the interpretation of discrete/specific sampling methodologies used in accordance with normal practices and standards. To the best of Robson's knowledge, our assessment of the data represents a reasonable interpretation of the general condition of the site. Under no circumstances, however, can it be considered that these findings represent the actual state of the entire site. In addition, the assessment did not include the direct sampling and analysis of soil vapour or groundwater.

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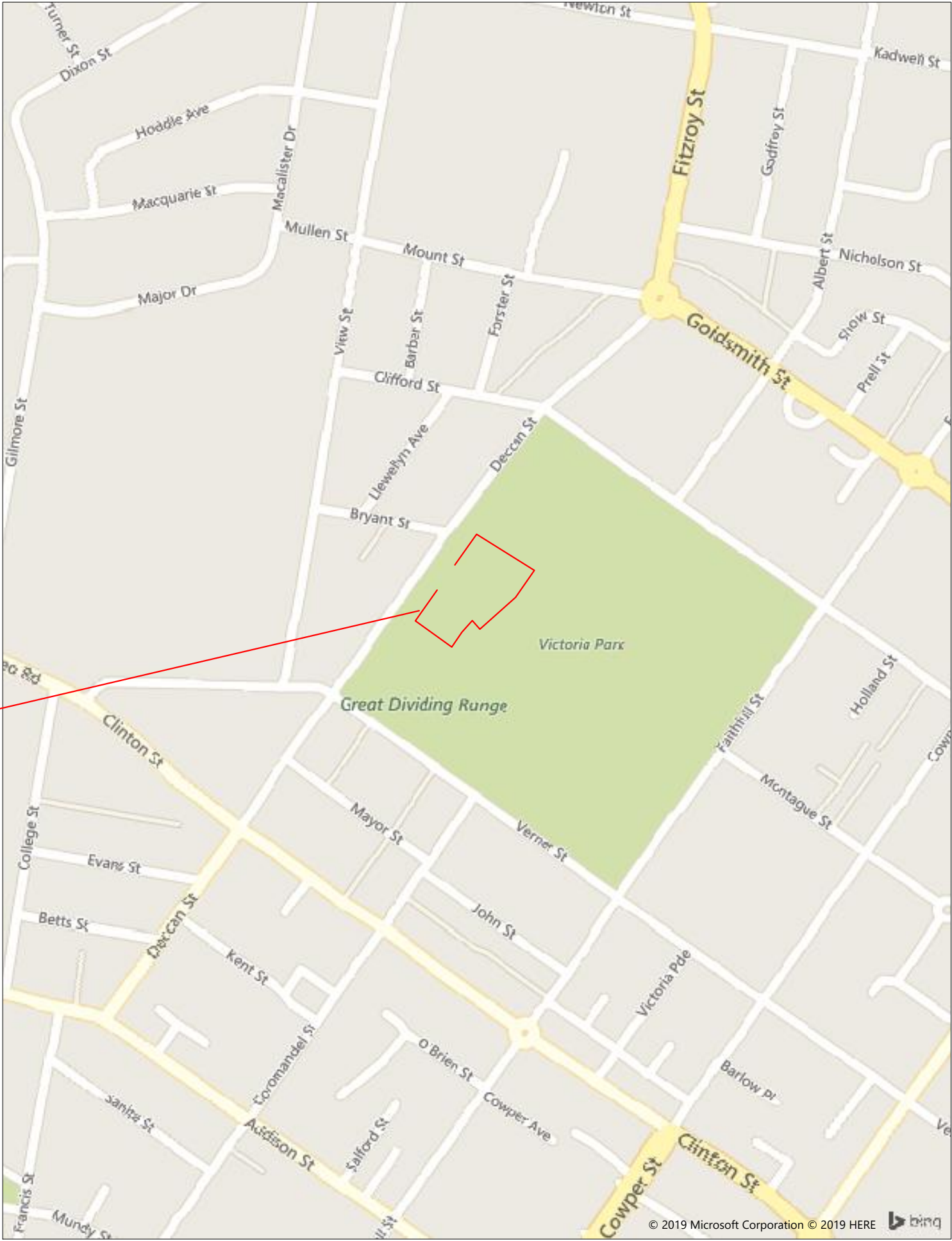
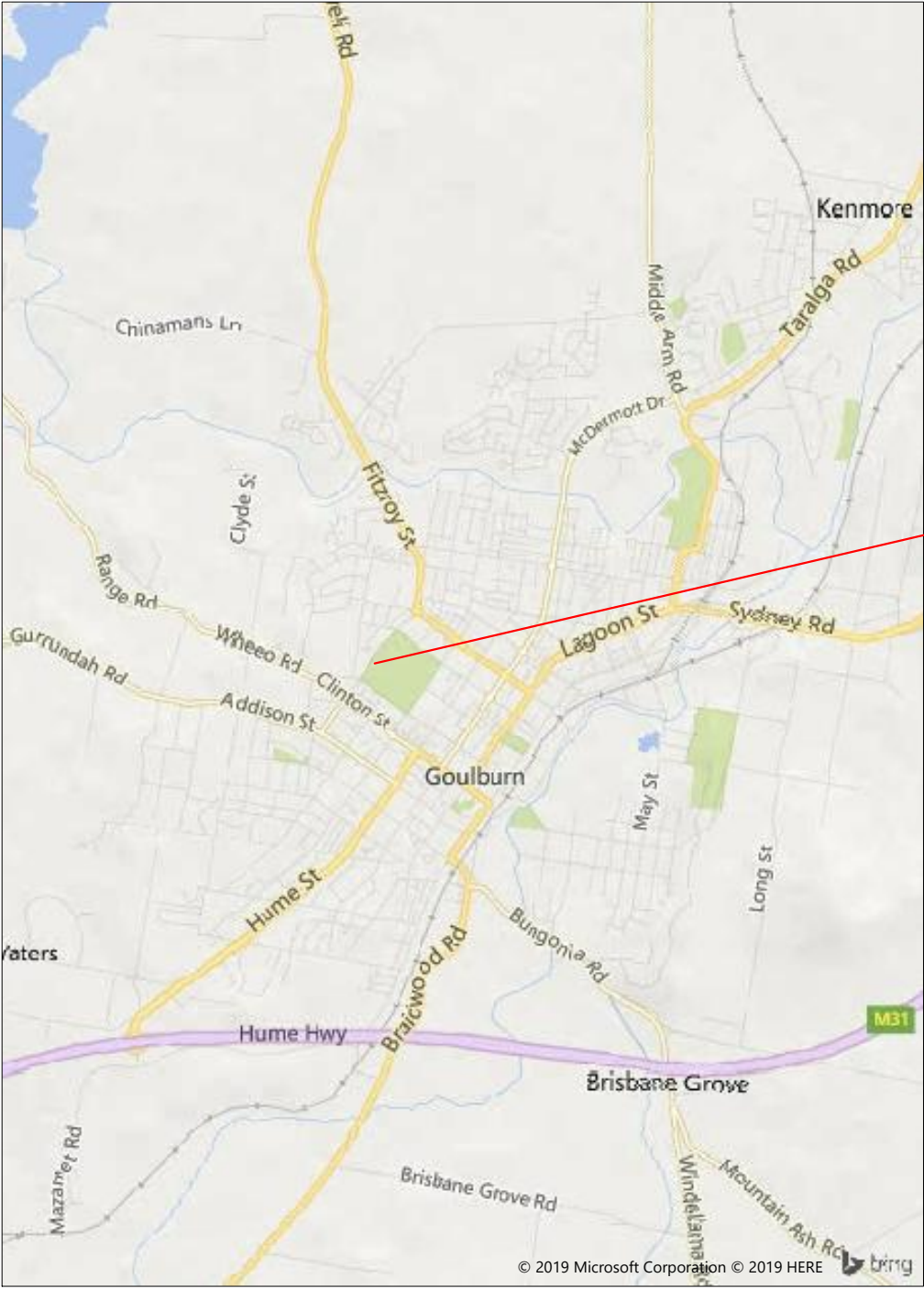
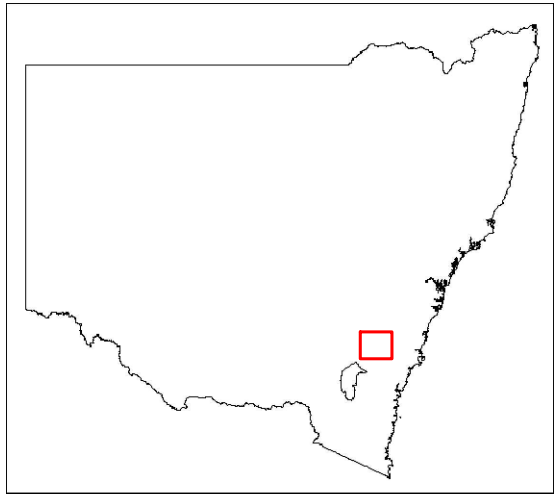
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Figures



LEGEND

SITE BOUNDARY

NOTES
Scale, locations, and boundaries are approximate only.



LEGEND

BLOCK BOUNDARY

SITE BOUNDARY

AEC 1 - FILL MATERIAL

AEC 2 - PLANT ROOM / CHEMICAL STORAGE AREA

BOREHOLE/TEST PIT LOCATION

NOTES

Scale, locations, and boundaries are approximate only.



KEY PLAN - INSET

Tables

Laboratory Identification			220278-13	220278-27	220278-35
Sample Identification			TP1(0-0.2)	TP06(0.4-0.6)	TP09(0.9-1.1)
Sample Depth (m)			0-0.2	0.4-0.6	0.9-1.1
Lithology			SILT, fine to medium grained, dark brown, moist	Sandy CLAY, medium plasticity, brown-orange, moist	Sandy CLAY, high plasticity, brown-orange, moist
Sample Collection Date			21/06/2019	21/06/2019	21/06/2019
Physicochemical Properties	Analyte	Units			
	CEC	meq/100g	7.8	14	9
	Clay %	% w/w	-	-	-
	pH	pH Units	6.7	7.2	7.6
Criteria	Copper	mg/kg	150	230	200
	Nickel	mg/kg	100	230	150
	Cr(III)	mg/kg	-	-	-
	Zinc	mg/kg	370	230	400

Additional Calculation Parameters/Information:

NSW

Low traffic volume

Aged

Urban residential, and public open spaces

BOLD: Criteria shown in bold were used for the assessment

Notes:

TP = Test pit, QA/QC = Quality Assurance/Quality Control

meQ = milli equivalence, mg/kg = milligrams per kilogram

CEC = Cation Exchange Capacity, % = Percent, < = Less than

Chemical Group	Chemical Name	Units	LOR	ASC NEPM (2013) HIL A	ASC NEPM (2013) HSL A/B - Silt (0-1 m)	ASC NEPM (2013) EILs for Urban Res	ASC NEPM (2013) ESLs for Urban Res - Fine (0-2 m)	Location	BH01	BH02	BH03	BH04	BH05	TP01	TP02	TP03	TP04	TP05	TP06	TP06(0-0.2)	TP07(0.9-1.1)	TP07(0-0.2)	TP08	TP09	TP09(0-0.2)	TP10(0.9-1.1)	TP10(0-0.2)	QC01	QC02	TB01	TS01					
								Sample ID	BH01(0-0.2)	BH02(0-0.2)	BH03(0.4-0.6)	BH03(0-0.2)	BH04(0-0.2)	BH05(0.4-0.6)	BH05(0-0.2)	TP01(0-0.2)	TP02(0-0.2)	TP03(0.9-1.1)	TP03(0-0.2)	TP04(0-0.2)	TP05(0-0.2)	TP06(0.4-0.6)	TP06(0-0.2)	TP07(0.9-1.1)	TP07(0-0.2)	TP08(0-0.2)	TP09(0.9-1.1)	TP09(0-0.2)	TP10(0.9-1.1)	TP10(0-0.2)						
								Sample Depth (m)	0-0.2	0-0.2	0.4-0.6	0-0.2	0-0.2	0.4-0.6	0-0.2	0-0.2	0-0.2	0.9-1.1	0-0.2	0-0.2	0-0.2	0.4-0.6	0-0.2	0.9-1.1	0-0.2	0-0.2	0.9-1.1	0-0.2	0.9-1.1	0-0.2	0.9-1.1	0-0.2				
								Sample Date	21/06/2019	21/06/2019	21/06/2019	21/06/2019	21/06/2019	21/06/2019	21/06/2019	21/06/2019	21/06/2019	21/06/2019	21/06/2019	21/06/2019	21/06/2019	21/06/2019	21/06/2019	21/06/2019	21/06/2019	21/06/2019	21/06/2019	21/06/2019	21/06/2019	21/06/2019	21/06/2019	21/06/2019	21/06/2019	21/06/2019	21/06/2019	21/06/2019
Chemical Group	Benzene, Toluene, Ethylbenzene, Xylenes (BTEX)																																			
	Benzene	mg/kg	0.2	NE	0.6	NE	50	<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	[102%]					
	Toluene	mg/kg	0.5	NE	390	NE	85	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	[101%]					
	Ethylbenzene	mg/kg	1	NE	NL	NE	70	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1					
	Xylene (m & p)	mg/kg	2	NE	NE	NE	NE	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2					
	Xylene (o)	mg/kg	1	NE	NE	NE	NE	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1					
	Xylene (Sum of total)	mg/kg	3	NE	95	NE	105	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3					
	BTEX (Sum of total)	mg/kg	0.6	NE	NE	NE	NE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-					
	C6-C9	mg/kg	25	NE	NE	NE	NE	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	-				
	C8-C10	mg/kg	25	NE	NE	NE	NE	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	-				
C10-C14	mg/kg	50	NE	NE	NE	NE	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	-					
C10-C16	mg/kg	50	NE	NE	NE	NE	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	-					
C15-C28	mg/kg	100	NE	NE	NE	NE	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	-					
C29-C36	mg/kg	100	NE	NE	NE	NE	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	-					
C37-C40	mg/kg	100	NE	NE	NE	NE	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	-					
TRH C6-C10 less BTEX (F1)	mg/kg	25	NE	40	NE	180	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	-					
TRH >C10-C16 less Naph (F2)	mg/kg	50	NE	230	NE	120	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	-					
TRH >C16-C34 (F3)	mg/kg	100	NE	NE	NE	1300	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	-					
TRH >C34-C40 (F4)	mg/kg	100	NE	NE	NE	5600	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	-				
C10-C36 (Sum of total)	mg/kg	110	NE	NE	NE	NE	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	-				
C10-C40 (Sum of total)	mg/kg	50	NE	NE	NE	NE	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	-				
Metals	Arsenic	mg/kg	4	100	NE	100	NE	6	<4	5	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	-				
	Cadmium	mg/kg	0.4	20	NE	NE	NE	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	-				
	Chromium (III+VI)	mg/kg	1	100	NE	190	NE	6	13	95	38	58	49	17	16	19	18	5	17	17	85	16	22	19	20	69	7	65	18	15	11	-				
	Copper	mg/kg	1	6000	NE	NE	NE	20	7	19	12	18	13	7	6	7	10	6	5	25	7	5	4	7	24	5	21	5	4.7	-	-	-	-			
	Lead	mg/kg	1	300	NE	1100	NE	5	17	30	23	11	14	11	10	9	13	54	13	11	16	9	9	10	12	17	13	7	7	10	10	-				
	Mercury	mg/kg	0.1	40	NE	NE	NE	<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	<															

Field Duplicates (SOIL)
Filter: Lab_Report_Number in('220278')

Lab Report Number	220278	220278		SE194494	
Field ID	BH01(0-0.2)	QC01	RPD	QC02	RPD
Sampled Date	21/06/2019	21/06/2019		21/06/2019	

Chemical Group	Chemical Name	Units	LOR					
Benzene, Toluene, Ethylbenzene, Xylenes (BTEX)	Benzene	mg/kg	0.2 : 0.1 (Interlab)	<0.2	<0.2	0	<0.1	0
	Toluene	mg/kg	0.5 : 0.1 (Interlab)	<0.5	<0.5	0	<0.1	0
	Ethylbenzene	mg/kg	1 : 0.1 (Interlab)	<1	<1	0	<0.1	0
	Xylene (m & p)	mg/kg	2 : 0.2 (Interlab)	<2	<2	0	<0.2	0
	Xylene (o)	mg/kg	1 : 0.1 (Interlab)	<1	<1	0	<0.1	0
	Xylene (Sum of total)	mg/kg	3 : 0.3 (Interlab)	<3	<3	0	<0.3	0
Total Recoverable Hydrocarbons (TRH)	C6-C9	mg/kg	25 : 20 (Interlab)	<25	<25	0	<20	0
	C6-C10	mg/kg	25	<25	<25	0	<25	0
	C10-C14	mg/kg	50 : 20 (Interlab)	<50	<50	0	<20	0
	C10-C16	mg/kg	50 : 25 (Interlab)	<50	<50	0	<25	0
	C15-C28	mg/kg	100 : 45 (Interlab)	<100	<100	0	<45	0
	C29-C36	mg/kg	100 : 45 (Interlab)	<100	<100	0	<45	0
	TRH C6-C10 less BTEX (F1)	mg/kg	25	<25	<25	0	<25	0
	TRH >C10-C16 less Naph (F2)	mg/kg	50 : 25 (Interlab)	<50	<50	0	<25	0
	TRH >C16-C34 (F3)	mg/kg	100 : 90 (Interlab)	<100	<100	0	<90	0
	TRH >C34-C40 (F4)	mg/kg	100 : 120 (Interlab)	<100	<100	0	<120	0
Metals	C10-C40 (Sum of total)	mg/kg	50 : 210 (Interlab)	<50	<50	0	<210	0
	Arsenic	mg/kg	4 : 1 (Interlab)	6	<4	40	<1	143
	Cadmium	mg/kg	0.4 : 0.3 (Interlab)	<0.4	<0.4	0	<0.3	0
	Chromium (III+VI)	mg/kg	1 : 0.5 (Interlab)	6	15	86	11	59
	Copper	mg/kg	1 : 0.5 (Interlab)	20	5	120	4.7	124
	Lead	mg/kg	1	5	10	67	10	67
	Mercury	mg/kg	0.1 : 0.05 (Interlab)	<0.1	<0.1	0	<0.05	0
	Nickel	mg/kg	1 : 0.5 (Interlab)	4	4	0	2.8	35
Polycyclic Aromatic Hydrocarbons (PAH)	Zinc	mg/kg	1 : 2 (Interlab)	9	45	133	42	129
	Total +ve PAHs	mg/kg	0.05 : 0.8 (Interlab)	<0.05	<0.05	0	<0.8	0
	Acenaphthene	mg/kg	0.1	<0.1	<0.1	0	<0.1	0
	Acenaphthylene	mg/kg	0.1	<0.1	<0.1	0	<0.1	0
	Anthracene	mg/kg	0.1	<0.1	<0.1	0	<0.1	0
	Benz(a)anthracene	mg/kg	0.1	<0.1	<0.1	0	<0.1	0
	Benzo(a)pyrene	mg/kg	0.05 : 0.1 (Interlab)	<0.05	<0.05	0	<0.1	0
	Benzo(a)pyrene TEQ (LOR=0)	mg/kg	0.5	<0.5	<0.5	0		
	Benzo(a)pyrene TEQ (LOR/2)	mg/kg	0.5 : 0.2 TEQ (mg/kg)(Interlab)	<0.5	<0.5	0	<0.2	0
	Benzo(a)pyrene TEQ (LOR)	mg/kg	0.5 : 0.3 TEQ (mg/kg)(Interlab)	<0.5	<0.5	0	<0.3	0
	Benzo(b,j+k)fluoranthene	mg/kg	0.2	<0.2	<0.2	0		
	Benzo(g,h,i)perylene	mg/kg	0.1	<0.1	<0.1	0	<0.1	0
	Chrysene	mg/kg	0.1	<0.1	<0.1	0	<0.1	0
	Dibenz(a,h)anthracene	mg/kg	0.1	<0.1	<0.1	0	<0.1	0
	Fluoranthene	mg/kg	0.1	<0.1	<0.1	0	<0.1	0
	Fluorene	mg/kg	0.1	<0.1	<0.1	0	<0.1	0
	Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	<0.1	<0.1	0	<0.1	0
	Naphthalene	mg/kg	1 : 0.1 (Interlab)	<1	<1	0	<0.1	0
	Naphthalene	mg/kg	0.1	<0.1	<0.1	0	<0.1	0
	Phenanthrene	mg/kg	0.1	<0.1	<0.1	0	<0.1	0
	Pyrene	mg/kg	0.1	<0.1	<0.1	0	<0.1	0
Speciated Phenols	Phenolics Total	mg/kg	5	<5	<5	0		
Polychlorinated Biphenyls (PCBs)	Arochlor 1016	mg/kg	0.1 : 0.2 (Interlab)	<0.1	<0.1	0	<0.2	0
	Arochlor 1221	mg/kg	0.1 : 0.2 (Interlab)	<0.1	<0.1	0	<0.2	0
	Arochlor 1232	mg/kg	0.1 : 0.2 (Interlab)	<0.1	<0.1	0	<0.2	0
	Arochlor 1242	mg/kg	0.1 : 0.2 (Interlab)	<0.1	<0.1	0	<0.2	0
	Arochlor 1248	mg/kg	0.1 : 0.2 (Interlab)	<0.1	<0.1	0	<0.2	0
	Arochlor 1254	mg/kg	0.1 : 0.2 (Interlab)	<0.1	<0.1	0	<0.2	0
	Arochlor 1260	mg/kg	0.1 : 0.2 (Interlab)	<0.1	<0.1	0	<0.2	0
	PCBs (Sum of total)	mg/kg	0.1 : 1 (Interlab)	<0.1	<0.1	0	<1	0
Organochlorine Pesticides (OCPs)	4,4-DDD	mg/kg	0.1	<0.1	<0.1	0	<0.1	0
	4,4-DDE	mg/kg	0.1	<0.1	<0.1	0	<0.1	0
	4,4-DDT	mg/kg	0.1	<0.1	<0.1	0	<0.1	0
	Aldrin	mg/kg	0.1	<0.1	<0.1	0	<0.1	0
	Alpha BHC	mg/kg	0.1	<0.1	<0.1	0	<0.1	0
	Beta BHC	mg/kg	0.1	<0.1	<0.1	0	<0.1	0
	Delta BHC	mg/kg	0.1	<0.1	<0.1	0	<0.1	0
	Alpha Chlordane	mg/kg	0.1	<0.1	<0.1	0	<0.1	0
	Gamma Chlordane	mg/kg	0.1	<0.1	<0.1	0	<0.1	0
	Dieldrin	mg/kg	0.1 : 0.2 (Interlab)	<0.1	<0.1	0	<0.2	0
	Alpha Endosulfan	mg/kg	0.1 : 0.2 (Interlab)	<0.1	<0.1	0	<0.2	0
	Beta Endosulfan	mg/kg	0.1 : 0.2 (Interlab)	<0.1	<0.1	0	<0.2	0
	Endosulfan sulphate	mg/kg	0.1	<0.1	<0.1	0	<0.1	0
	Endrin	mg/kg	0.1 : 0.2 (Interlab)	<0.1	<0.1	0	<0.2	0
	Endrin aldehyde	mg/kg	0.1	<0.1	<0.1	0	<0.1	0
	Lindane	mg/kg	0.1	<0.1	<0.1	0	<0.1	0
	Heptachlor	mg/kg	0.1	<0.1	<0.1	0	<0.1	0
	Heptachlor epoxide	mg/kg	0.1	<0.1	<0.1	0	<0.1	0
	Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1	<0.1	0	<0.1	0
	Methoxychlor	mg/kg	0.1	<0.1	<0.1	0	<0.1	0
	DDT + DDE + DDD (Sum of total)	mg/kg	0.1	<0.1	<0.1	0		

Assessment Criteria:

*RPDs have only been considered where a concentration is greater than 5 times the EQL.
**High RPDs are in bold (Acceptable RPDs 0-50 (>5 x EQL))
***Interlab Duplicates are matched on a per compound basis as methods vary between laboratories.

RESULT	RPD exceeds 50% but is less than 5 x the LOR and is therefore considered suitable
RESULT	Result exceeds the RPD acceptance criteria

Notes:

BH = Borehole, TP = Test pit, QA/QC = Quality Assurance/Quality Control
mg/kg = milligrams per kilogram
% = Percent, < = Less than, # = All constituents are below LOR, - = Not analysed

Laboratory ID	220278-43
Sample ID	R01
Sample Date	21/06/2019

Chemical Group	Chemical Name	Units	LOR	
Benzene, Toluene, Ethylbenzene, Xylenes (BTEX)	Benzene	µg/L	1	<1
	Toluene	µg/L	1	<1
	Ethylbenzene	µg/L	1	<1
	Xylene (m & p)	µg/L	2	<2
	Xylene (o)	µg/L	1	<1
Total Recoverable Hydrocarbons (TRH)	C6-C9	µg/L	10	<10
	C6-C10	mg/L	0.01	<0.01
	C10-C14	µg/L	50	<50
	C10-C16	mg/L	0.05	<0.05
	C15-C28	µg/L	100	<100
	C29-C36	µg/L	100	<100
	TRH C6-C10 less BTEX (F1)	mg/L	0.01	<0.01
	TRH >C10-C16 less Naph (F2)	mg/L	0.05	<0.05
Metals	TRH >C16-C34 (F3)	mg/L	0.1	<0.1
	TRH >C34-C40 (F4)	mg/L	0.1	<0.1
	Arsenic (Filtered)	mg/L	0.05	<0.05
	Cadmium (Filtered)	µg/L	10	<10
	Chromium (III+VI) (Filtered)	mg/L	0.01	<0.01
	Copper (Filtered)	mg/L	0.01	<0.01
	Lead (Filtered)	mg/L	0.03	<0.03
	Mercury (Filtered)	mg/L	0.0005	<0.0005
Polycyclic Aromatic Hydrocarbons (PAH)	Nickel (Filtered)	mg/L	0.02	<0.02
	Zinc (Filtered)	mg/L	0.02	<0.02
	Total +ve PAHs	µg/L	1	<1
	Acenaphthene	µg/L	1	<1
	Acenaphthylene	µg/L	1	<1
	Anthracene	µg/L	1	<1
	Benz(a)anthracene	µg/L	1	<1
	Benzo(a)pyrene	µg/L	1	<1
	Benzo(a)pyrene TEQ	µg/L	5	<5
	Benzo(b,j,k)fluoranthene	mg/L	0.002	<0.002
	Benzo(g,h,i)perylene	µg/L	1	<1
	Chrysene	µg/L	1	<1
	Dibenz(a,h)anthracene	µg/L	1	<1
	Fluoranthene	µg/L	1	<1
	Fluorene	µg/L	1	<1
	Indeno(1,2,3-c,d)pyrene	µg/L	1	<1
	Naphthalene	µg/L	1	<1
	Phenanthrene	µg/L	1	<1
	Pyrene	µg/L	1	<1
Speciated Phenols	Phenolics Total	µg/L	50	<50
Polychlorinated Biphenyls (PCBs)	Arochlor 1016	µg/L	2	<2
	Arochlor 1221	µg/L	2	<2
	Arochlor 1232	µg/L	2	<2
	Arochlor 1242	µg/L	2	<2
	Arochlor 1248	µg/L	2	<2
	Arochlor 1254	µg/L	2	<2
Organochlorine Pesticides (OCPs)	Arochlor 1260	µg/L	2	<2
	4,4-DDD	µg/L	0.2	<0.2
	4,4-DDE	µg/L	0.2	<0.2
	4,4-DDT	µg/L	0.2	<0.2
	Aldrin	µg/L	0.2	<0.2
	Alpha BHC	µg/L	0.2	<0.2
	Beta BHC	µg/L	0.2	<0.2
	Delta BHC	µg/L	0.2	<0.2
	Alpha Chlordane	µg/L	0.2	<0.2
	Gamma Chlordane	µg/L	0.2	<0.2
	Dieldrin	µg/L	0.2	<0.2
	Alpha Endosulfan	µg/L	0.2	<0.2
	Beta Endosulfan	µg/L	0.2	<0.2
	Endosulfan sulphate	µg/L	0.2	<0.2
	Endrin	µg/L	0.2	<0.2
	Endrin aldehyde	µg/L	0.2	<0.2
	Lindane	µg/L	0.2	<0.2
	Heptachlor	µg/L	0.2	<0.2
	Heptachlor epoxide	µg/L	0.2	<0.2
	Hexachlorobenzene (HCB)	µg/L	0.2	<0.2
	Methoxychlor	µg/L	0.2	<0.2

Notes:

R = Rinsate sample
ND = Not detected, µg/L = micrograms per litre
- = Not analysed, LOR = Limit of reporting
< = Less than, mg/L = milligrams per litre, µg/L = micrograms per litre

Assessment Criteria:

Acceptable rinsate and trip blank results are less than laboratory LOR

RESULTS

Results in highlighted cells exceed the adopted assessment criteria

Attachment A

Sample Receipt Advice, COC Documentation and Certified Laboratory
Reports

SAMPLE RECEIPT ADVICE

Client Details

Client	Robson Environmental Pty Ltd
Attention	Alex Hannan-Joyner

Sample Login Details

Your reference	1051401
Envirolab Reference	220278
Date Sample Received	25/06/2019
Date Instructions Received	25/06/2019
Date Results Expected to be Reported	26/06/2019

Sample Condition

Samples received in appropriate condition for analysis	Yes
No. of Samples Provided	42 soil, 1 water
Turnaround Time Requested	1 day
Temperature on Receipt (°C)	14.4
Cooling Method	Ice
Sampling Date Provided	YES

Comments

Clay results will be delayed

Please direct any queries to:

Aileen Hie	Jacinta Hurst
Phone: 02 9910 6200	Phone: 02 9910 6200
Fax: 02 9910 6201	Fax: 02 9910 6201
Email: ahie@envirolab.com.au	Email: jhurst@envirolab.com.au

Analysis Underway, details on the following page:

Sample ID	VTRH(C6-C10)/BTEXN in Soil	svTRH (C10-C40) in Soil	PAHs in Soil	Organochlorine Pesticides in soil	PCBs in Soil	Acid Extractable metals in soil	Misc Soil - Inorg	Misc Inorg - Soil	CEC	Clay 50-120g	VTRH(C6-C10)/BTEXN in Water	svTRH (C10-C40) in Water	PAHs in Water	Total Phenolics in Water	OCP in water	PCBs in Water	Metals in Water - Dissolved	On Hold
BH01-0-0.2	✓	✓	✓	✓	✓	✓	✓											
BH01-0.4-0.6																		✓
BH02-0-0.2	✓	✓	✓	✓	✓	✓	✓											
BH02-0.4-0.6																		✓
BH02-0.8-1.0																		✓
BH03-0-0.2	✓	✓	✓	✓	✓	✓	✓											
BH03-0.4-0.6	✓	✓	✓	✓	✓	✓	✓											
BH03-0.8-1.0																		✓
BH04-0-0.2	✓	✓	✓	✓	✓	✓	✓											
BH04-0.4-0.6																		✓
BH05-0-0.2	✓	✓	✓	✓	✓	✓	✓											
BH05-0.4-0.6	✓	✓	✓	✓	✓	✓	✓											
TP01-0-0.2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓								
TP01-0.4-0.6																		✓
TP01-0.9-1.1																		✓
TP02-0-0.2	✓	✓	✓	✓	✓	✓	✓											
TP02-0.4-0.6																		✓
TP02-0.9-1.1																		✓
TP03-0-0.2	✓	✓	✓	✓	✓	✓	✓											
TP03-0.4-0.6																		✓
TP03-0.9-1.1	✓	✓	✓	✓	✓	✓	✓											
TP04-0-0.2	✓	✓	✓	✓	✓	✓	✓											
TP04-0.4-0.6																		✓
TP05-0-0.2	✓	✓	✓	✓	✓	✓	✓											
TP05-0.4-0.6																		✓
TP06-0-0.2	✓	✓	✓	✓	✓	✓	✓											
TP06-0.4-0.6	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓								
TP07-0-0.2	✓	✓	✓	✓	✓	✓	✓											
TP07-0.4-0.6																		✓
TP07-0.9-1.1	✓	✓	✓	✓	✓	✓	✓											
TP08-0-0.2	✓	✓	✓	✓	✓	✓	✓											
TP08-0.4-0.6																		✓

Sample ID	VTRH(C6-C10)/BTEXN in Soil	svTRH (C10-C40) in Soil	PAHs in Soil	Organochlorine Pesticides in soil	PCBs in Soil	Acid Extractable metals in soil	Misc Soil - Inorg	Misc Inorg - Soil	CEC	Clay 50-120g	VTRH(C6-C10)/BTEXN in Water	svTRH (C10-C40) in Water	PAHs in Water	Total Phenolics in Water	OCP in water	PCBs in Water	Metals in Water - Dissolved	On Hold
TP09-0-0.2	✓	✓	✓	✓	✓	✓	✓											
TP09-0.4-0.6																		✓
TP09-0.9-1.1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓								
TP10-0-0.2	✓	✓	✓	✓	✓	✓	✓											
TP10-0.4-0.6																		✓
TP10-0.9-1.1	✓	✓	✓	✓	✓	✓	✓											
QC01	✓	✓	✓	✓	✓	✓	✓											
QC03																		✓
TS01	✓																	
TB01	✓																	
R01											✓	✓	✓	✓	✓	✓	✓	

The '✓' indicates the testing you have requested. **THIS IS NOT A REPORT OF THE RESULTS.**

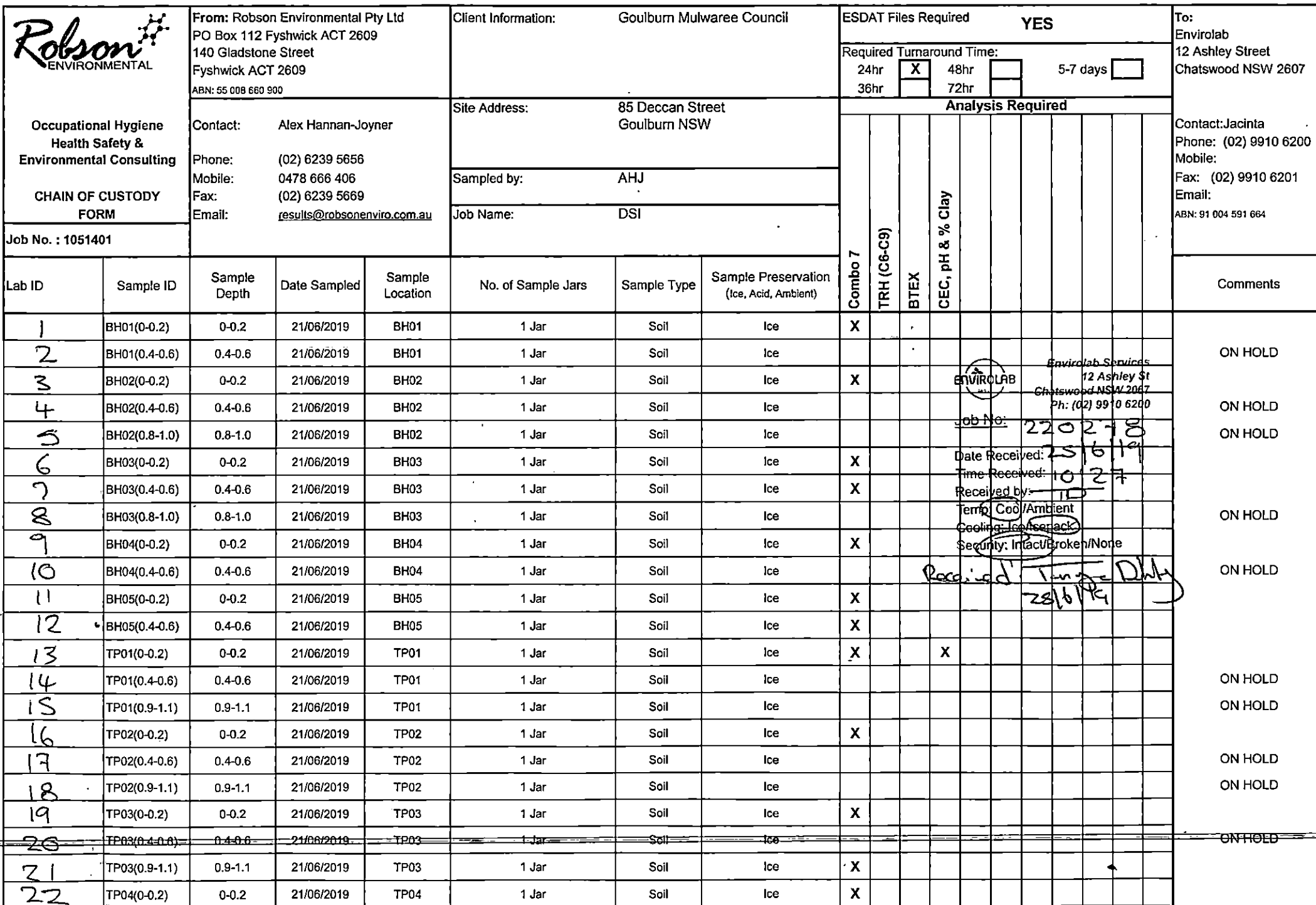
Additional Info

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.

TAT for Micro is dependent on incubation. This varies from 3 to 6 days.



INTERIM REPORT 220278

Client Details

Client	Robson Environmental Pty Ltd
Attention	Alex Hannan-Joyner
Address	PO Box 112, Fyshwick, ACT, 2609

Sample Details

Your Reference	<u>1051401</u>
Number of Samples	42 soil, 1 water
Date samples received	25/06/2019
Date completed instructions received	25/06/2019

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	28/06/2019
Interim Report Date	26/06/2019
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 *	

vTRH(C6-C10)/BTEXN in Soil

Our Reference		220278-1	220278-3	220278-6	220278-7	220278-9
Your Reference	UNITS	BH01	BH02	BH03	BH03	BH04
Depth		0-0.2	0-0.2	0-0.2	0.4-0.6	0-0.2
Date Sampled		21/06/2019	21/06/2019	21/06/2019	21/06/2019	21/06/2019
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	25/06/2019	25/06/2019	25/06/2019	25/06/2019	25/06/2019
Date analysed	-	26/06/2019	26/06/2019	26/06/2019	26/06/2019	26/06/2019
TRH C ₆ - C ₉	mg/kg	<25	<25	<25	<25	<25
TRH C ₆ - C ₁₀	mg/kg	<25	<25	<25	<25	<25
vTPH C ₆ - C ₁₀ less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<3	<3	<3	<3	<3
Surrogate aaa-Trifluorotoluene	%	86	130	104	97	87

vTRH(C6-C10)/BTEXN in Soil

Our Reference		220278-11	220278-12	220278-13	220278-16	220278-19
Your Reference	UNITS	BH05	BH05	TP01	TP02	TP03
Depth		0-0.2	0.4-0.6	0-0.2	0-0.2	0-0.2
Date Sampled		21/06/2019	21/06/2019	21/06/2019	21/06/2019	21/06/2019
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	25/06/2019	25/06/2019	25/06/2019	25/06/2019	25/06/2019
Date analysed	-	26/06/2019	26/06/2019	26/06/2019	26/06/2019	26/06/2019
TRH C ₆ - C ₉	mg/kg	<25	<25	<25	<25	<25
TRH C ₆ - C ₁₀	mg/kg	<25	<25	<25	<25	<25
vTPH C ₆ - C ₁₀ less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<3	<3	<3	<3	<3
Surrogate aaa-Trifluorotoluene	%	102	110	107	106	119

vTRH(C6-C10)/BTEXN in Soil

Our Reference		220278-21	220278-22	220278-24	220278-26	220278-27
Your Reference	UNITS	TP03	TP04	TP05	TP06	TP06
Depth		0.9-1.1	0-0.2	0-0.2	0-0.2	0.4-0.6
Date Sampled		21/06/2019	21/06/2019	21/06/2019	21/06/2019	21/06/2019
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	25/06/2019	25/06/2019	25/06/2019	25/06/2019	25/06/2019
Date analysed	-	26/06/2019	26/06/2019	26/06/2019	26/06/2019	26/06/2019
TRH C ₆ - C ₉	mg/kg	<25	<25	<25	<25	<25
TRH C ₆ - C ₁₀	mg/kg	<25	<25	<25	<25	<25
vTPH C ₆ - C ₁₀ less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<3	<3	<3	<3	<3
Surrogate aaa-Trifluorotoluene	%	109	103	74	102	125

vTRH(C6-C10)/BTEXN in Soil

Our Reference		220278-28	220278-30	220278-31	220278-33	220278-35
Your Reference	UNITS	TP07	TP07	TP08	TP09	TP09
Depth		0-0.2	0.9-1.1	0-0.2	0-0.2	0.9-1.1
Date Sampled		21/06/2019	21/06/2019	21/06/2019	21/06/2019	21/06/2019
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	25/06/2019	25/06/2019	25/06/2019	25/06/2019	25/06/2019
Date analysed	-	26/06/2019	26/06/2019	26/06/2019	26/06/2019	26/06/2019
TRH C ₆ - C ₉	mg/kg	<25	<25	<25	<25	<25
TRH C ₆ - C ₁₀	mg/kg	<25	<25	<25	<25	<25
vTPH C ₆ - C ₁₀ less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<3	<3	<3	<3	<3
Surrogate aaa-Trifluorotoluene	%	125	109	98	102	95

vTRH(C6-C10)/BTEXN in Soil

Our Reference		220278-36	220278-38	220278-39	220278-41	220278-42
Your Reference	UNITS	TP10	TP10	QC01	TS01	TB01
Depth		0-0.2	0.9-1.1	-	-	-
Date Sampled		21/06/2019	21/06/2019	21/06/2019	21/06/2019	21/06/2019
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	25/06/2019	25/06/2019	25/06/2019	25/06/2019	25/06/2019
Date analysed	-	26/06/2019	26/06/2019	26/06/2019	26/06/2019	26/06/2019
TRH C ₆ - C ₉	mg/kg	<25	<25	<25	[NA]	<25
TRH C ₆ - C ₁₀	mg/kg	<25	<25	<25	[NA]	<25
vTPH C ₆ - C ₁₀ less BTEX (F1)	mg/kg	<25	<25	<25	[NA]	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	102%	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	101%	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	103%	<1
m+p-xylene	mg/kg	<2	<2	<2	104%	<2
o-Xylene	mg/kg	<1	<1	<1	103%	<1
naphthalene	mg/kg	<1	<1	<1	[NA]	<1
Total +ve Xylenes	mg/kg	<3	<3	<3	[NA]	<3
Surrogate aaa-Trifluorotoluene	%	104	121	130	103	130

svTRH (C10-C40) in Soil

Our Reference		220278-1	220278-3	220278-6	220278-7	220278-9
Your Reference	UNITS	BH01	BH02	BH03	BH03	BH04
Depth		0-0.2	0-0.2	0-0.2	0.4-0.6	0-0.2
Date Sampled		21/06/2019	21/06/2019	21/06/2019	21/06/2019	21/06/2019
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	25/06/2019	25/06/2019	25/06/2019	25/06/2019	25/06/2019
Date analysed	-	25/06/2019	25/06/2019	25/06/2019	25/06/2019	26/06/2019
TRH C ₁₀ - C ₁₄	mg/kg	<50	<50	<50	<50	<50
TRH C ₁₅ - C ₂₈	mg/kg	<100	<100	<100	<100	<100
TRH C ₂₉ - C ₃₆	mg/kg	<100	<100	<100	<100	<100
TRH >C ₁₀ -C ₁₆	mg/kg	<50	<50	<50	<50	<50
TRH >C ₁₀ - C ₁₆ less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C ₁₆ -C ₃₄	mg/kg	<100	<100	<100	<100	<100
TRH >C ₃₄ -C ₄₀	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	<50	<50
Surrogate o-Terphenyl	%	87	92	92	91	87

svTRH (C10-C40) in Soil

Our Reference		220278-11	220278-12	220278-13	220278-16	220278-19
Your Reference	UNITS	BH05	BH05	TP01	TP02	TP03
Depth		0-0.2	0.4-0.6	0-0.2	0-0.2	0-0.2
Date Sampled		21/06/2019	21/06/2019	21/06/2019	21/06/2019	21/06/2019
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	25/06/2019	25/06/2019	25/06/2019	25/06/2019	25/06/2019
Date analysed	-	26/06/2019	26/06/2019	26/06/2019	26/06/2019	26/06/2019
TRH C ₁₀ - C ₁₄	mg/kg	<50	<50	<50	<50	<50
TRH C ₁₅ - C ₂₈	mg/kg	450	140	<100	<100	<100
TRH C ₂₉ - C ₃₆	mg/kg	230	<100	<100	<100	<100
TRH >C ₁₀ -C ₁₆	mg/kg	58	<50	<50	<50	<50
TRH >C ₁₀ - C ₁₆ less Naphthalene (F2)	mg/kg	58	<50	<50	<50	<50
TRH >C ₁₆ -C ₃₄	mg/kg	580	180	<100	<100	<100
TRH >C ₃₄ -C ₄₀	mg/kg	160	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	800	180	<50	<50	<50
Surrogate o-Terphenyl	%	98	90	84	82	88

svTRH (C10-C40) in Soil

Our Reference		220278-21	220278-22	220278-24	220278-26	220278-27
Your Reference	UNITS	TP03	TP04	TP05	TP06	TP06
Depth		0.9-1.1	0-0.2	0-0.2	0-0.2	0.4-0.6
Date Sampled		21/06/2019	21/06/2019	21/06/2019	21/06/2019	21/06/2019
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	25/06/2019	25/06/2019	25/06/2019	25/06/2019	25/06/2019
Date analysed	-	26/06/2019	26/06/2019	26/06/2019	26/06/2019	26/06/2019
TRH C ₁₀ - C ₁₄	mg/kg	<50	<50	<50	<50	<50
TRH C ₁₅ - C ₂₈	mg/kg	<100	<100	<100	<100	<100
TRH C ₂₉ - C ₃₆	mg/kg	<100	<100	<100	<100	<100
TRH >C ₁₀ -C ₁₆	mg/kg	<50	<50	<50	<50	<50
TRH >C ₁₀ - C ₁₆ less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C ₁₆ -C ₃₄	mg/kg	<100	<100	<100	<100	<100
TRH >C ₃₄ -C ₄₀	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	<50	<50
Surrogate o-Terphenyl	%	80	88	81	79	90

svTRH (C10-C40) in Soil

Our Reference		220278-28	220278-30	220278-31	220278-33	220278-35
Your Reference	UNITS	TP07	TP07	TP08	TP09	TP09
Depth		0-0.2	0.9-1.1	0-0.2	0-0.2	0.9-1.1
Date Sampled		21/06/2019	21/06/2019	21/06/2019	21/06/2019	21/06/2019
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	25/06/2019	25/06/2019	25/06/2019	25/06/2019	25/06/2019
Date analysed	-	26/06/2019	26/06/2019	26/06/2019	26/06/2019	26/06/2019
TRH C ₁₀ - C ₁₄	mg/kg	<50	<50	<50	<50	<50
TRH C ₁₅ - C ₂₈	mg/kg	<100	<100	<100	<100	<100
TRH C ₂₉ - C ₃₆	mg/kg	<100	<100	<100	<100	<100
TRH >C ₁₀ -C ₁₆	mg/kg	<50	<50	<50	<50	<50
TRH >C ₁₀ - C ₁₆ less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C ₁₆ -C ₃₄	mg/kg	<100	<100	<100	<100	<100
TRH >C ₃₄ -C ₄₀	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	<50	<50
Surrogate o-Terphenyl	%	78	80	88	88	89

svTRH (C10-C40) in Soil				
Our Reference		220278-36	220278-38	220278-39
Your Reference	UNITS	TP10	TP10	QC01
Depth		0-0.2	0.9-1.1	-
Date Sampled		21/06/2019	21/06/2019	21/06/2019
Type of sample		soil	soil	soil
Date extracted	-	25/06/2019	25/06/2019	25/06/2019
Date analysed	-	26/06/2019	26/06/2019	26/06/2019
TRH C ₁₀ - C ₁₄	mg/kg	<50	<50	<50
TRH C ₁₅ - C ₂₈	mg/kg	<100	<100	<100
TRH C ₂₉ - C ₃₆	mg/kg	<100	<100	<100
TRH >C ₁₀ -C ₁₆	mg/kg	<50	<50	<50
TRH >C ₁₀ - C ₁₆ less Naphthalene (F2)	mg/kg	<50	<50	<50
TRH >C ₁₆ -C ₃₄	mg/kg	<100	<100	<100
TRH >C ₃₄ -C ₄₀	mg/kg	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50
Surrogate o-Terphenyl	%	89	80	78

PAHs in Soil						
Our Reference		220278-1	220278-3	220278-6	220278-7	220278-9
Your Reference	UNITS	BH01	BH02	BH03	BH03	BH04
Depth		0-0.2	0-0.2	0-0.2	0.4-0.6	0-0.2
Date Sampled		21/06/2019	21/06/2019	21/06/2019	21/06/2019	21/06/2019
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	25/06/2019	25/06/2019	25/06/2019	25/06/2019	25/06/2019
Date analysed	-	26/06/2019	26/06/2019	26/06/2019	26/06/2019	26/06/2019
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	<0.1	0.3	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	0.2	0.9	0.1
Pyrene	mg/kg	<0.1	<0.1	0.2	0.9	0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	0.1	0.6	0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1	0.4	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	0.9	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	0.1	0.55	0.1
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	0.3	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	0.3	<0.1
Total +ve PAH's	mg/kg	<0.05	<0.05	0.60	5.1	0.5
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	0.7	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	0.8	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	0.8	<0.5
Surrogate <i>p</i> -Terphenyl-d14	%	91	90	92	92	92

PAHs in Soil						
Our Reference		220278-11	220278-12	220278-13	220278-16	220278-19
Your Reference	UNITS	BH05	BH05	TP01	TP02	TP03
Depth		0-0.2	0.4-0.6	0-0.2	0-0.2	0-0.2
Date Sampled		21/06/2019	21/06/2019	21/06/2019	21/06/2019	21/06/2019
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	25/06/2019	25/06/2019	25/06/2019	25/06/2019	25/06/2019
Date analysed	-	26/06/2019	26/06/2019	26/06/2019	26/06/2019	26/06/2019
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.2	<0.1	<0.1	<0.1	0.2
Pyrene	mg/kg	0.2	<0.1	<0.1	<0.1	0.2
Benzo(a)anthracene	mg/kg	0.1	<0.1	<0.1	<0.1	0.1
Chrysene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	0.1	<0.05	<0.05	<0.05	0.1
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PAH's	mg/kg	0.80	<0.05	<0.05	<0.05	0.56
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	94	89	91	92	92

PAHs in Soil						
Our Reference		220278-21	220278-22	220278-24	220278-26	220278-27
Your Reference	UNITS	TP03	TP04	TP05	TP06	TP06
Depth		0.9-1.1	0-0.2	0-0.2	0-0.2	0.4-0.6
Date Sampled		21/06/2019	21/06/2019	21/06/2019	21/06/2019	21/06/2019
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	25/06/2019	25/06/2019	25/06/2019	25/06/2019	25/06/2019
Date analysed	-	26/06/2019	26/06/2019	26/06/2019	26/06/2019	26/06/2019
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PAH's	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	87	90	89	90	92

PAHs in Soil						
Our Reference		220278-28	220278-30	220278-31	220278-33	220278-35
Your Reference	UNITS	TP07	TP07	TP08	TP09	TP09
Depth		0-0.2	0.9-1.1	0-0.2	0-0.2	0.9-1.1
Date Sampled		21/06/2019	21/06/2019	21/06/2019	21/06/2019	21/06/2019
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	25/06/2019	25/06/2019	25/06/2019	25/06/2019	25/06/2019
Date analysed	-	26/06/2019	26/06/2019	26/06/2019	26/06/2019	26/06/2019
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	<0.05	<0.05	0.06
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PAH's	mg/kg	<0.05	<0.05	<0.05	<0.05	0.2
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	94	90	94	91	91

PAHs in Soil				
Our Reference		220278-36	220278-38	220278-39
Your Reference	UNITS	TP10	TP10	QC01
Depth		0-0.2	0.9-1.1	-
Date Sampled		21/06/2019	21/06/2019	21/06/2019
Type of sample		soil	soil	soil
Date extracted	-	25/06/2019	25/06/2019	25/06/2019
Date analysed	-	26/06/2019	26/06/2019	26/06/2019
Naphthalene	mg/kg	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1
Total +ve PAH's	mg/kg	<0.05	<0.05	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5
Surrogate <i>p</i> -Terphenyl-d14	%	92	95	88

Organochlorine Pesticides in soil						
Our Reference		220278-1	220278-3	220278-6	220278-7	220278-9
Your Reference	UNITS	BH01	BH02	BH03	BH03	BH04
Depth		0-0.2	0-0.2	0-0.2	0.4-0.6	0-0.2
Date Sampled		21/06/2019	21/06/2019	21/06/2019	21/06/2019	21/06/2019
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	25/06/2019	25/06/2019	25/06/2019	25/06/2019	25/06/2019
Date analysed	-	25/06/2019	25/06/2019	25/06/2019	25/06/2019	25/06/2019
HCB	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	0.4	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	88	94	97	95	97

Organochlorine Pesticides in soil						
Our Reference		220278-11	220278-12	220278-13	220278-16	220278-19
Your Reference	UNITS	BH05	BH05	TP01	TP02	TP03
Depth		0-0.2	0.4-0.6	0-0.2	0-0.2	0-0.2
Date Sampled		21/06/2019	21/06/2019	21/06/2019	21/06/2019	21/06/2019
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	25/06/2019	25/06/2019	25/06/2019	25/06/2019	25/06/2019
Date analysed	-	25/06/2019	25/06/2019	25/06/2019	25/06/2019	25/06/2019
HCB	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	90	92	91	89	93

Organochlorine Pesticides in soil						
Our Reference		220278-21	220278-22	220278-24	220278-26	220278-27
Your Reference	UNITS	TP03	TP04	TP05	TP06	TP06
Depth		0.9-1.1	0-0.2	0-0.2	0-0.2	0.4-0.6
Date Sampled		21/06/2019	21/06/2019	21/06/2019	21/06/2019	21/06/2019
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	25/06/2019	25/06/2019	25/06/2019	25/06/2019	25/06/2019
Date analysed	-	25/06/2019	25/06/2019	25/06/2019	25/06/2019	25/06/2019
HCB	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	0.2	0.1	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	92	92	89	90	90

Organochlorine Pesticides in soil						
Our Reference		220278-28	220278-30	220278-31	220278-33	220278-35
Your Reference	UNITS	TP07	TP07	TP08	TP09	TP09
Depth		0-0.2	0.9-1.1	0-0.2	0-0.2	0.9-1.1
Date Sampled		21/06/2019	21/06/2019	21/06/2019	21/06/2019	21/06/2019
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	25/06/2019	25/06/2019	25/06/2019	25/06/2019	25/06/2019
Date analysed	-	25/06/2019	25/06/2019	25/06/2019	25/06/2019	25/06/2019
HCB	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	89	92	89	89	93

Organochlorine Pesticides in soil				
Our Reference		220278-36	220278-38	220278-39
Your Reference	UNITS	TP10	TP10	QC01
Depth		0-0.2	0.9-1.1	-
Date Sampled		21/06/2019	21/06/2019	21/06/2019
Type of sample		soil	soil	soil
Date extracted	-	25/06/2019	25/06/2019	25/06/2019
Date analysed	-	25/06/2019	25/06/2019	25/06/2019
HCB	mg/kg	<0.1	<0.1	<0.1
alpha-BHC	mg/kg	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1	<0.1
Surrogate TCMX	%	86	92	89

PCBs in Soil						
Our Reference	UNITS	220278-1	220278-3	220278-6	220278-7	220278-9
Your Reference		BH01	BH02	BH03	BH03	BH04
Depth		0-0.2	0-0.2	0-0.2	0.4-0.6	0-0.2
Date Sampled		21/06/2019	21/06/2019	21/06/2019	21/06/2019	21/06/2019
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	25/06/2019	25/06/2019	25/06/2019	25/06/2019	25/06/2019
Date analysed	-	25/06/2019	25/06/2019	25/06/2019	25/06/2019	25/06/2019
Aroclor 1016	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1221	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1232	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1242	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1248	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1254	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1260	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCLMX	%	88	94	97	95	97

PCBs in Soil						
Our Reference	UNITS	220278-11	220278-12	220278-13	220278-16	220278-19
Your Reference		BH05	BH05	TP01	TP02	TP03
Depth		0-0.2	0.4-0.6	0-0.2	0-0.2	0-0.2
Date Sampled		21/06/2019	21/06/2019	21/06/2019	21/06/2019	21/06/2019
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	25/06/2019	25/06/2019	25/06/2019	25/06/2019	25/06/2019
Date analysed	-	25/06/2019	25/06/2019	25/06/2019	25/06/2019	25/06/2019
Aroclor 1016	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1221	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1232	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1242	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1248	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1254	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1260	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCLMX	%	90	92	91	89	93

PCBs in Soil						
Our Reference		220278-21	220278-22	220278-24	220278-26	220278-27
Your Reference	UNITS	TP03	TP04	TP05	TP06	TP06
Depth		0.9-1.1	0-0.2	0-0.2	0-0.2	0.4-0.6
Date Sampled		21/06/2019	21/06/2019	21/06/2019	21/06/2019	21/06/2019
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	25/06/2019	25/06/2019	25/06/2019	25/06/2019	25/06/2019
Date analysed	-	25/06/2019	25/06/2019	25/06/2019	25/06/2019	25/06/2019
Aroclor 1016	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1221	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1232	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1242	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1248	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1254	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1260	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCLMX	%	92	92	89	90	90

PCBs in Soil						
Our Reference		220278-28	220278-30	220278-31	220278-33	220278-35
Your Reference	UNITS	TP07	TP07	TP08	TP09	TP09
Depth		0-0.2	0.9-1.1	0-0.2	0-0.2	0.9-1.1
Date Sampled		21/06/2019	21/06/2019	21/06/2019	21/06/2019	21/06/2019
Type of sample		soil	soil	soil	soil	soil
Date extracted	-	25/06/2019	25/06/2019	25/06/2019	25/06/2019	25/06/2019
Date analysed	-	25/06/2019	25/06/2019	25/06/2019	25/06/2019	25/06/2019
Aroclor 1016	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1221	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1232	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1242	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1248	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1254	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1260	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCLMX	%	89	92	89	89	93

PCBs in Soil				
Our Reference		220278-36	220278-38	220278-39
Your Reference	UNITS	TP10	TP10	QC01
Depth		0-0.2	0.9-1.1	-
Date Sampled		21/06/2019	21/06/2019	21/06/2019
Type of sample		soil	soil	soil
Date extracted	-	25/06/2019	25/06/2019	25/06/2019
Date analysed	-	25/06/2019	25/06/2019	25/06/2019
Aroclor 1016	mg/kg	<0.1	<0.1	<0.1
Aroclor 1221	mg/kg	<0.1	<0.1	<0.1
Aroclor 1232	mg/kg	<0.1	<0.1	<0.1
Aroclor 1242	mg/kg	<0.1	<0.1	<0.1
Aroclor 1248	mg/kg	<0.1	<0.1	<0.1
Aroclor 1254	mg/kg	<0.1	<0.1	<0.1
Aroclor 1260	mg/kg	<0.1	<0.1	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1	<0.1	<0.1
Surrogate TCLMX	%	86	92	89

Acid Extractable metals in soil

Our Reference		220278-1	220278-3	220278-6	220278-7	220278-9
Your Reference	UNITS	BH01	BH02	BH03	BH03	BH04
Depth		0-0.2	0-0.2	0-0.2	0.4-0.6	0-0.2
Date Sampled		21/06/2019	21/06/2019	21/06/2019	21/06/2019	21/06/2019
Type of sample		soil	soil	soil	soil	soil
Date prepared	-	25/06/2019	25/06/2019	25/06/2019	25/06/2019	25/06/2019
Date analysed	-	25/06/2019	25/06/2019	25/06/2019	25/06/2019	25/06/2019
Arsenic	mg/kg	6	<4	<4	5	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	6	13	38	95	58
Copper	mg/kg	20	7	12	19	18
Lead	mg/kg	5	17	23	30	11
Mercury	mg/kg	<0.1	<0.1	<0.1	0.1	<0.1
Nickel	mg/kg	4	3	7	19	17
Zinc	mg/kg	9	29	51	19	12

Acid Extractable metals in soil

Our Reference		220278-11	220278-12	220278-13	220278-16	220278-19
Your Reference	UNITS	BH05	BH05	TP01	TP02	TP03
Depth		0-0.2	0.4-0.6	0-0.2	0-0.2	0-0.2
Date Sampled		21/06/2019	21/06/2019	21/06/2019	21/06/2019	21/06/2019
Type of sample		soil	soil	soil	soil	soil
Date prepared	-	25/06/2019	25/06/2019	25/06/2019	25/06/2019	25/06/2019
Date analysed	-	25/06/2019	25/06/2019	25/06/2019	25/06/2019	25/06/2019
Arsenic	mg/kg	<4	<4	<4	<4	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	17	49	16	19	5
Copper	mg/kg	7	13	6	7	10
Lead	mg/kg	11	14	10	9	54
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	5	14	5	7	4
Zinc	mg/kg	120	25	42	15	100

Acid Extractable metals in soil

Our Reference		220278-21	220278-22	220278-24	220278-26	220278-27
Your Reference	UNITS	TP03	TP04	TP05	TP06	TP06
Depth		0.9-1.1	0-0.2	0-0.2	0-0.2	0.4-0.6
Date Sampled		21/06/2019	21/06/2019	21/06/2019	21/06/2019	21/06/2019
Type of sample		soil	soil	soil	soil	soil
Date prepared	-	25/06/2019	25/06/2019	25/06/2019	25/06/2019	25/06/2019
Date analysed	-	25/06/2019	25/06/2019	25/06/2019	25/06/2019	25/06/2019
Arsenic	mg/kg	<4	<4	<4	<4	4
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	18	17	17	16	85
Copper	mg/kg	9	6	5	7	25
Lead	mg/kg	13	13	11	9	16
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	7	5	3	4	24
Zinc	mg/kg	13	16	13	29	16

Acid Extractable metals in soil

Our Reference		220278-28	220278-30	220278-31	220278-33	220278-35
Your Reference	UNITS	TP07	TP07	TP08	TP09	TP09
Depth		0-0.2	0.9-1.1	0-0.2	0-0.2	0.9-1.1
Date Sampled		21/06/2019	21/06/2019	21/06/2019	21/06/2019	21/06/2019
Type of sample		soil	soil	soil	soil	soil
Date prepared	-	25/06/2019	25/06/2019	25/06/2019	25/06/2019	25/06/2019
Date analysed	-	25/06/2019	25/06/2019	25/06/2019	25/06/2019	25/06/2019
Arsenic	mg/kg	<4	<4	<4	<4	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	19	22	20	7	69
Copper	mg/kg	4	5	7	5	24
Lead	mg/kg	10	9	12	13	17
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	4	7	5	4	15
Zinc	mg/kg	14	11	27	26	27

Acid Extractable metals in soil				
Our Reference		220278-36	220278-38	220278-39
Your Reference	UNITS	TP10	TP10	QC01
Depth		0-0.2	0.9-1.1	-
Date Sampled		21/06/2019	21/06/2019	21/06/2019
Type of sample		soil	soil	soil
Date prepared	-	25/06/2019	25/06/2019	25/06/2019
Date analysed	-	25/06/2019	25/06/2019	25/06/2019
Arsenic	mg/kg	<4	<4	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4
Chromium	mg/kg	18	65	15
Copper	mg/kg	5	21	5
Lead	mg/kg	7	7	10
Mercury	mg/kg	<0.1	<0.1	<0.1
Nickel	mg/kg	6	25	4
Zinc	mg/kg	11	11	45

Misc Soil - Inorg

Our Reference		220278-1	220278-3	220278-6	220278-7	220278-9
Your Reference	UNITS	BH01	BH02	BH03	BH03	BH04
Depth		0-0.2	0-0.2	0-0.2	0.4-0.6	0-0.2
Date Sampled		21/06/2019	21/06/2019	21/06/2019	21/06/2019	21/06/2019
Type of sample		soil	soil	soil	soil	soil
Date prepared	-	25/06/2019	25/06/2019	25/06/2019	25/06/2019	25/06/2019
Date analysed	-	26/06/2019	26/06/2019	26/06/2019	26/06/2019	26/06/2019
Total Phenolics (as Phenol)	mg/kg	<5	<5	<5	<5	<5

Misc Soil - Inorg

Our Reference		220278-11	220278-12	220278-13	220278-16	220278-19
Your Reference	UNITS	BH05	BH05	TP01	TP02	TP03
Depth		0-0.2	0.4-0.6	0-0.2	0-0.2	0-0.2
Date Sampled		21/06/2019	21/06/2019	21/06/2019	21/06/2019	21/06/2019
Type of sample		soil	soil	soil	soil	soil
Date prepared	-	25/06/2019	25/06/2019	25/06/2019	25/06/2019	25/06/2019
Date analysed	-	26/06/2019	26/06/2019	26/06/2019	26/06/2019	26/06/2019
Total Phenolics (as Phenol)	mg/kg	<5	<5	<5	<5	<5

Misc Soil - Inorg

Our Reference		220278-21	220278-22	220278-24	220278-26	220278-27
Your Reference	UNITS	TP03	TP04	TP05	TP06	TP06
Depth		0.9-1.1	0-0.2	0-0.2	0-0.2	0.4-0.6
Date Sampled		21/06/2019	21/06/2019	21/06/2019	21/06/2019	21/06/2019
Type of sample		soil	soil	soil	soil	soil
Date prepared	-	25/06/2019	25/06/2019	25/06/2019	25/06/2019	25/06/2019
Date analysed	-	26/06/2019	26/06/2019	26/06/2019	26/06/2019	26/06/2019
Total Phenolics (as Phenol)	mg/kg	<5	<5	<5	<5	<5

Misc Soil - Inorg

Our Reference		220278-28	220278-30	220278-31	220278-33	220278-35
Your Reference	UNITS	TP07	TP07	TP08	TP09	TP09
Depth		0-0.2	0.9-1.1	0-0.2	0-0.2	0.9-1.1
Date Sampled		21/06/2019	21/06/2019	21/06/2019	21/06/2019	21/06/2019
Type of sample		soil	soil	soil	soil	soil
Date prepared	-	25/06/2019	25/06/2019	25/06/2019	25/06/2019	25/06/2019
Date analysed	-	26/06/2019	26/06/2019	26/06/2019	26/06/2019	26/06/2019
Total Phenolics (as Phenol)	mg/kg	<5	<5	<5	<5	<5

Misc Soil - Inorg				
Our Reference		220278-36	220278-38	220278-39
Your Reference	UNITS	TP10	TP10	QC01
Depth		0-0.2	0.9-1.1	-
Date Sampled		21/06/2019	21/06/2019	21/06/2019
Type of sample		soil	soil	soil
Date prepared	-	25/06/2019	25/06/2019	25/06/2019
Date analysed	-	26/06/2019	26/06/2019	26/06/2019
Total Phenolics (as Phenol)	mg/kg	<5	<5	<5

Moisture						
Our Reference	UNITS	220278-1	220278-3	220278-6	220278-7	220278-9
Your Reference		BH01	BH02	BH03	BH03	BH04
Depth		0-0.2	0-0.2	0-0.2	0.4-0.6	0-0.2
Date Sampled		21/06/2019	21/06/2019	21/06/2019	21/06/2019	21/06/2019
Type of sample		soil	soil	soil	soil	soil
Date prepared	-	25/06/2019	25/06/2019	25/06/2019	25/06/2019	25/06/2019
Date analysed	-	26/06/2019	26/06/2019	26/06/2019	26/06/2019	26/06/2019
Moisture	%	7.6	7.5	14	9.9	18

Moisture						
Our Reference	UNITS	220278-11	220278-12	220278-13	220278-16	220278-19
Your Reference		BH05	BH05	TP01	TP02	TP03
Depth		0-0.2	0.4-0.6	0-0.2	0-0.2	0-0.2
Date Sampled		21/06/2019	21/06/2019	21/06/2019	21/06/2019	21/06/2019
Type of sample		soil	soil	soil	soil	soil
Date prepared	-	25/06/2019	25/06/2019	25/06/2019	25/06/2019	25/06/2019
Date analysed	-	26/06/2019	26/06/2019	26/06/2019	26/06/2019	26/06/2019
Moisture	%	7.0	11	13	12	11

Moisture						
Our Reference	UNITS	220278-21	220278-22	220278-24	220278-26	220278-27
Your Reference		TP03	TP04	TP05	TP06	TP06
Depth		0.9-1.1	0-0.2	0-0.2	0-0.2	0.4-0.6
Date Sampled		21/06/2019	21/06/2019	21/06/2019	21/06/2019	21/06/2019
Type of sample		soil	soil	soil	soil	soil
Date prepared	-	25/06/2019	25/06/2019	25/06/2019	25/06/2019	25/06/2019
Date analysed	-	26/06/2019	26/06/2019	26/06/2019	26/06/2019	26/06/2019
Moisture	%	11	12	13	15	16

Moisture						
Our Reference	UNITS	220278-28	220278-30	220278-31	220278-33	220278-35
Your Reference		TP07	TP07	TP08	TP09	TP09
Depth		0-0.2	0.9-1.1	0-0.2	0-0.2	0.9-1.1
Date Sampled		21/06/2019	21/06/2019	21/06/2019	21/06/2019	21/06/2019
Type of sample		soil	soil	soil	soil	soil
Date prepared	-	25/06/2019	25/06/2019	25/06/2019	25/06/2019	25/06/2019
Date analysed	-	26/06/2019	26/06/2019	26/06/2019	26/06/2019	26/06/2019
Moisture	%	14	6.7	14	11	8.3

Moisture				
Our Reference		220278-36	220278-38	220278-39
Your Reference	UNITS	TP10	TP10	QC01
Depth		0-0.2	0.9-1.1	-
Date Sampled		21/06/2019	21/06/2019	21/06/2019
Type of sample		soil	soil	soil
Date prepared	-	25/06/2019	25/06/2019	25/06/2019
Date analysed	-	26/06/2019	26/06/2019	26/06/2019
Moisture	%	11	20	14

Misc Inorg - Soil				
Our Reference		220278-13	220278-27	220278-35
Your Reference	UNITS	TP01	TP06	TP09
Depth		0-0.2	0.4-0.6	0.9-1.1
Date Sampled		21/06/2019	21/06/2019	21/06/2019
Type of sample		soil	soil	soil
Date prepared	-	26/05/2019	26/05/2019	26/05/2019
Date analysed	-	26/05/2019	26/05/2019	26/05/2019
pH 1:5 soil:water	pH Units	6.7	7.2	7.6

CEC				
Our Reference		220278-13	220278-27	220278-35
Your Reference	UNITS	TP01	TP06	TP09
Depth		0-0.2	0.4-0.6	0.9-1.1
Date Sampled		21/06/2019	21/06/2019	21/06/2019
Type of sample		soil	soil	soil
Date prepared	-	26/06/2019	26/06/2019	26/06/2019
Date analysed	-	26/06/2019	26/06/2019	26/06/2019
Exchangeable Ca	meq/100g	5.5	7.0	6.7
Exchangeable K	meq/100g	0.3	0.7	0.3
Exchangeable Mg	meq/100g	1.9	6.5	1.8
Exchangeable Na	meq/100g	<0.1	0.24	0.14
Cation Exchange Capacity	meq/100g	7.8	14	9.0

Clay 50-120g				
Our Reference		220278-13	220278-27	220278-35
Your Reference	UNITS	TP01	TP06	TP09
Depth		0-0.2	0.4-0.6	0.9-1.1
Date Sampled		21/06/2019	21/06/2019	21/06/2019
Type of sample		soil	soil	soil
Date prepared	-			
Date analysed	-			
Clay in soils <2µm	% (w/w)			

vTRH(C6-C10)/BTEXN in Water		
Our Reference		220278-43
Your Reference	UNITS	R01
Depth		-
Date Sampled		21/06/2019
Type of sample		water
Date extracted	-	25/06/2019
Date analysed	-	25/06/2019
TRH C ₆ - C ₉	µg/L	<10
TRH C ₆ - C ₁₀	µg/L	<10
TRH C ₆ - C ₁₀ less BTEX (F1)	µg/L	<10
Benzene	µg/L	<1
Toluene	µg/L	<1
Ethylbenzene	µg/L	<1
m+p-xylene	µg/L	<2
o-xylene	µg/L	<1
Naphthalene	µg/L	<1
Surrogate Dibromofluoromethane	%	107
Surrogate toluene-d8	%	98
Surrogate 4-BFB	%	94

svTRH (C10-C40) in Water		
Our Reference		220278-43
Your Reference	UNITS	R01
Depth		-
Date Sampled		21/06/2019
Type of sample		water
Date extracted	-	25/06/2019
Date analysed	-	26/06/2019
TRH C ₁₀ - C ₁₄	µg/L	<50
TRH C ₁₅ - C ₂₈	µg/L	<100
TRH C ₂₉ - C ₃₆	µg/L	<100
TRH >C ₁₀ - C ₁₆	µg/L	<50
TRH >C ₁₀ - C ₁₆ less Naphthalene (F2)	µg/L	<50
TRH >C ₁₆ - C ₃₄	µg/L	<100
TRH >C ₃₄ - C ₄₀	µg/L	<100
Surrogate o-Terphenyl	%	105

PAHs in Water		
Our Reference		220278-43
Your Reference	UNITS	R01
Depth		-
Date Sampled		21/06/2019
Type of sample		water
Date extracted	-	25/06/2019
Date analysed	-	26/06/2019
Naphthalene	µg/L	<1
Acenaphthylene	µg/L	<1
Acenaphthene	µg/L	<1
Fluorene	µg/L	<1
Phenanthrene	µg/L	<1
Anthracene	µg/L	<1
Fluoranthene	µg/L	<1
Pyrene	µg/L	<1
Benzo(a)anthracene	µg/L	<1
Chrysene	µg/L	<1
Benzo(b,j+k)fluoranthene	µg/L	<2
Benzo(a)pyrene	µg/L	<1
Indeno(1,2,3-c,d)pyrene	µg/L	<1
Dibenzo(a,h)anthracene	µg/L	<1
Benzo(g,h,i)perylene	µg/L	<1
Benzo(a)pyrene TEQ	µg/L	<5
Total +ve PAH's	µg/L	NIL (+)VE
Surrogate <i>p</i> -Terphenyl-d14	%	84

Total Phenolics in Water		
Our Reference		220278-43
Your Reference	UNITS	R01
Depth		-
Date Sampled		21/06/2019
Type of sample		water
Date extracted	-	25/06/2019
Date analysed	-	25/06/2019
Total Phenolics (as Phenol)	mg/L	<0.05

OCP in water		
Our Reference		220278-43
Your Reference	UNITS	R01
Depth		-
Date Sampled		21/06/2019
Type of sample		water
Date extracted	-	25/06/2019
Date analysed	-	25/06/2019
HCB	µg/L	<0.2
alpha-BHC	µg/L	<0.2
gamma-BHC	µg/L	<0.2
beta-BHC	µg/L	<0.2
Heptachlor	µg/L	<0.2
delta-BHC	µg/L	<0.2
Aldrin	µg/L	<0.2
Heptachlor Epoxide	µg/L	<0.2
gamma-Chlordane	µg/L	<0.2
alpha-Chlordane	µg/L	<0.2
Endosulfan I	µg/L	<0.2
pp-DDE	µg/L	<0.2
Dieldrin	µg/L	<0.2
Endrin	µg/L	<0.2
pp-DDD	µg/L	<0.2
Endosulfan II	µg/L	<0.2
pp-DDT	µg/L	<0.2
Endrin Aldehyde	µg/L	<0.2
Endosulfan Sulphate	µg/L	<0.2
Methoxychlor	µg/L	<0.2
Surrogate TCMX	%	94

PCBs in Water		
Our Reference		220278-43
Your Reference	UNITS	R01
Depth		-
Date Sampled		21/06/2019
Type of sample		water
Date extracted	-	25/06/2019
Date analysed	-	25/06/2019
Aroclor 1016	µg/L	<2
Aroclor 1221	µg/L	<2
Aroclor 1232	µg/L	<2
Aroclor 1242	µg/L	<2
Aroclor 1248	µg/L	<2
Aroclor 1254	µg/L	<2
Aroclor 1260	µg/L	<2
Surrogate TCLMX	%	94

Metals in Water - Dissolved		
Our Reference		220278-43
Your Reference	UNITS	R01
Depth		-
Date Sampled		21/06/2019
Type of sample		water
Date digested	-	26/06/2019
Date analysed	-	26/06/2019
Arsenic - Dissolved	mg/L	<0.05
Cadmium - Dissolved	mg/L	<0.01
Chromium - Dissolved	mg/L	<0.01
Copper - Dissolved	mg/L	<0.01
Lead - Dissolved	mg/L	<0.03
Mercury - Dissolved	mg/L	<0.0005
Nickel - Dissolved	mg/L	<0.02
Zinc - Dissolved	mg/L	<0.02

Method ID	Methodology Summary
AS1289.3.6.3	Determination Particle Size Analysis using AS1289.3.6.3 and AS1289.3.6.1 and in house method INORG-107. Clay fraction at <2µm reported.
Inorg-001	pH - Measured using pH meter and electrode in accordance with APHA latest edition, 4500-H+. Please note that the results for water analyses are indicative only, as analysis outside of the APHA storage times.
Inorg-008	Moisture content determined by heating at 105+/-5 °C for a minimum of 12 hours.
Inorg-031	Total Phenolics by segmented flow analyser (in line distillation with colourimetric finish). Solids are extracted in a caustic media prior to analysis.
Metals-009	Determination of exchangeable cations and cation exchange capacity in soils using 1M Ammonium Chloride exchange and ICP-AES analytical finish.
Metals-020	Determination of various metals by ICP-AES.
Metals-021	Determination of Mercury by Cold Vapour AAS.
Org-003	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
Org-003	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis. Note, the Total +ve TRH PQL is reflective of the lowest individual PQL and is therefore "Total +ve TRH" is simply a sum of the positive individual TRH fractions (>C10-C40).
Org-005	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.
Org-005	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's. Note, the Total +ve reported DDD+DDE+DDT PQL is reflective of the lowest individual PQL and is therefore simply a sum of the positive individually report DDD+DDE+DDT.
Org-006	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.
Org-006	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD. Note, the Total +ve PCBs PQL is reflective of the lowest individual PQL and is therefore "Total +ve PCBs" is simply a sum of the positive individual PCBs.
Org-012	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013.

Method ID	Methodology Summary
Org-012	<p>Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS. 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>
Org-013	Water samples are analysed directly by purge and trap GC-MS.
Org-014	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS.
Org-016	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.
Org-016	<p>Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.</p> <p>Note, the Total +ve Xylene PQL is reflective of the lowest individual PQL and is therefore "Total +ve Xylenes" is simply a sum of the positive individual Xylenes.</p>

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-11	220278-3
Date extracted	-			25/06/2019	1	25/06/2019	25/06/2019		25/06/2019	25/06/2019
Date analysed	-			26/06/2019	1	26/06/2019	26/06/2019		26/06/2019	26/06/2019
TRH C ₆ - C ₉	mg/kg	25	Org-016	<25	1	<25	<25	0	96	93
TRH C ₆ - C ₁₀	mg/kg	25	Org-016	<25	1	<25	<25	0	96	93
Benzene	mg/kg	0.2	Org-016	<0.2	1	<0.2	<0.2	0	99	73
Toluene	mg/kg	0.5	Org-016	<0.5	1	<0.5	<0.5	0	92	62
Ethylbenzene	mg/kg	1	Org-016	<1	1	<1	<1	0	96	108
m+p-xylene	mg/kg	2	Org-016	<2	1	<2	<2	0	96	112
o-Xylene	mg/kg	1	Org-016	<1	1	<1	<1	0	95	110
naphthalene	mg/kg	1	Org-014	<1	1	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-016	114	1	86	120	33	103	76

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-12	220278-38
Date extracted	-			[NT]	21	25/06/2019	25/06/2019		25/06/2019	25/06/2019
Date analysed	-			[NT]	21	26/06/2019	26/06/2019		26/06/2019	26/06/2019
TRH C ₆ - C ₉	mg/kg	25	Org-016	[NT]	21	<25	<25	0	96	104
TRH C ₆ - C ₁₀	mg/kg	25	Org-016	[NT]	21	<25	<25	0	96	104
Benzene	mg/kg	0.2	Org-016	[NT]	21	<0.2	<0.2	0	99	105
Toluene	mg/kg	0.5	Org-016	[NT]	21	<0.5	<0.5	0	96	101
Ethylbenzene	mg/kg	1	Org-016	[NT]	21	<1	<1	0	99	106
m+p-xylene	mg/kg	2	Org-016	[NT]	21	<2	<2	0	94	103
o-Xylene	mg/kg	1	Org-016	[NT]	21	<1	<1	0	93	102
naphthalene	mg/kg	1	Org-014	[NT]	21	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-016	[NT]	21	109	121	10	103	107

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	36	25/06/2019	25/06/2019		[NT]	[NT]
Date analysed	-			[NT]	36	26/06/2019	26/06/2019		[NT]	[NT]
TRH C ₆ - C ₉	mg/kg	25	Org-016	[NT]	36	<25	<25	0	[NT]	[NT]
TRH C ₆ - C ₁₀	mg/kg	25	Org-016	[NT]	36	<25	<25	0	[NT]	[NT]
Benzene	mg/kg	0.2	Org-016	[NT]	36	<0.2	<0.2	0	[NT]	[NT]
Toluene	mg/kg	0.5	Org-016	[NT]	36	<0.5	<0.5	0	[NT]	[NT]
Ethylbenzene	mg/kg	1	Org-016	[NT]	36	<1	<1	0	[NT]	[NT]
m+p-xylene	mg/kg	2	Org-016	[NT]	36	<2	<2	0	[NT]	[NT]
o-Xylene	mg/kg	1	Org-016	[NT]	36	<1	<1	0	[NT]	[NT]
naphthalene	mg/kg	1	Org-014	[NT]	36	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-016	[NT]	36	104	100	4	[NT]	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-11	220278-3
Date extracted	-			25/06/2019	1	25/06/2019	25/06/2019		25/06/2019	25/06/2019
Date analysed	-			26/06/2019	1	25/06/2019	25/06/2019		25/06/2019	25/06/2019
TRH C ₁₀ - C ₁₄	mg/kg	50	Org-003	<50	1	<50	<50	0	108	105
TRH C ₁₅ - C ₂₈	mg/kg	100	Org-003	<100	1	<100	<100	0	125	129
TRH C ₂₉ - C ₃₆	mg/kg	100	Org-003	<100	1	<100	<100	0	114	79
TRH >C ₁₀ -C ₁₆	mg/kg	50	Org-003	<50	1	<50	<50	0	108	105
TRH >C ₁₆ -C ₃₄	mg/kg	100	Org-003	<100	1	<100	<100	0	125	129
TRH >C ₃₄ -C ₄₀	mg/kg	100	Org-003	<100	1	<100	<100	0	114	79
Surrogate o-Terphenyl	%		Org-003	91	1	87	85	2	99	99

QUALITY CONTROL: svTRH (C10-C40) in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-12	220278-38
Date extracted	-			[NT]	21	25/06/2019	25/06/2019		25/06/2019	25/06/2019
Date analysed	-			[NT]	21	26/06/2019	26/06/2019		26/06/2019	26/06/2019
TRH C ₁₀ - C ₁₄	mg/kg	50	Org-003	[NT]	21	<50	<50	0	105	99
TRH C ₁₅ - C ₂₈	mg/kg	100	Org-003	[NT]	21	<100	<100	0	123	119
TRH C ₂₉ - C ₃₆	mg/kg	100	Org-003	[NT]	21	<100	<100	0	129	82
TRH >C ₁₀ -C ₁₆	mg/kg	50	Org-003	[NT]	21	<50	<50	0	105	99
TRH >C ₁₆ -C ₃₄	mg/kg	100	Org-003	[NT]	21	<100	<100	0	123	119
TRH >C ₃₄ -C ₄₀	mg/kg	100	Org-003	[NT]	21	<100	<100	0	129	82
Surrogate o-Terphenyl	%		Org-003	[NT]	21	80	80	0	99	96

QUALITY CONTROL: svTRH (C10-C40) in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	36	25/06/2019	25/06/2019		[NT]	[NT]
Date analysed	-			[NT]	36	26/06/2019	26/06/2019		[NT]	[NT]
TRH C ₁₀ - C ₁₄	mg/kg	50	Org-003	[NT]	36	<50	<50	0	[NT]	[NT]
TRH C ₁₅ - C ₂₈	mg/kg	100	Org-003	[NT]	36	<100	<100	0	[NT]	[NT]
TRH C ₂₉ - C ₃₆	mg/kg	100	Org-003	[NT]	36	<100	<100	0	[NT]	[NT]
TRH >C ₁₀ -C ₁₆	mg/kg	50	Org-003	[NT]	36	<50	<50	0	[NT]	[NT]
TRH >C ₁₆ -C ₃₄	mg/kg	100	Org-003	[NT]	36	<100	<100	0	[NT]	[NT]
TRH >C ₃₄ -C ₄₀	mg/kg	100	Org-003	[NT]	36	<100	<100	0	[NT]	[NT]
Surrogate o-Terphenyl	%		Org-003	[NT]	36	89	78	13	[NT]	[NT]

QUALITY CONTROL: PAHs in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-11	220278-3
Date extracted	-			25/06/2019	1	25/06/2019	25/06/2019		25/06/2019	25/06/2019
Date analysed	-			26/06/2019	1	26/06/2019	26/06/2019		26/06/2019	26/06/2019
Naphthalene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	106	102
Acenaphthylene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Fluorene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	96	86
Phenanthrene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	92	90
Anthracene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	92	91
Pyrene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	94	93
Benzo(a)anthracene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	92	87
Benzo(b,j,k)fluoranthene	mg/kg	0.2	Org-012	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-012	<0.05	1	<0.05	<0.05	0	102	100
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-012	95	1	91	92	1	88	86

QUALITY CONTROL: PAHs in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-12	220278-38
Date extracted	-			[NT]	21	25/06/2019	25/06/2019		25/06/2019	25/06/2019
Date analysed	-			[NT]	21	26/06/2019	26/06/2019		26/06/2019	26/06/2019
Naphthalene	mg/kg	0.1	Org-012	[NT]	21	<0.1	<0.1	0	108	108
Acenaphthylene	mg/kg	0.1	Org-012	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-012	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Fluorene	mg/kg	0.1	Org-012	[NT]	21	<0.1	<0.1	0	98	100
Phenanthrene	mg/kg	0.1	Org-012	[NT]	21	<0.1	<0.1	0	96	96
Anthracene	mg/kg	0.1	Org-012	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-012	[NT]	21	<0.1	<0.1	0	94	93
Pyrene	mg/kg	0.1	Org-012	[NT]	21	<0.1	<0.1	0	96	97
Benzo(a)anthracene	mg/kg	0.1	Org-012	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-012	[NT]	21	<0.1	<0.1	0	94	93
Benzo(b,j,k)fluoranthene	mg/kg	0.2	Org-012	[NT]	21	<0.2	<0.2	0	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-012	[NT]	21	<0.05	<0.05	0	104	106
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-012	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-012	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-012	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-012	[NT]	21	87	94	8	92	92

QUALITY CONTROL: PAHs in Soil						Duplicate		Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	36	25/06/2019	25/06/2019		[NT]	[NT]
Date analysed	-			[NT]	36	26/06/2019	26/06/2019		[NT]	[NT]
Naphthalene	mg/kg	0.1	Org-012	[NT]	36	<0.1	<0.1	0	[NT]	[NT]
Acenaphthylene	mg/kg	0.1	Org-012	[NT]	36	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-012	[NT]	36	<0.1	<0.1	0	[NT]	[NT]
Fluorene	mg/kg	0.1	Org-012	[NT]	36	<0.1	<0.1	0	[NT]	[NT]
Phenanthrene	mg/kg	0.1	Org-012	[NT]	36	<0.1	<0.1	0	[NT]	[NT]
Anthracene	mg/kg	0.1	Org-012	[NT]	36	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-012	[NT]	36	<0.1	<0.1	0	[NT]	[NT]
Pyrene	mg/kg	0.1	Org-012	[NT]	36	<0.1	<0.1	0	[NT]	[NT]
Benzo(a)anthracene	mg/kg	0.1	Org-012	[NT]	36	<0.1	<0.1	0	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-012	[NT]	36	<0.1	<0.1	0	[NT]	[NT]
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-012	[NT]	36	<0.2	<0.2	0	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-012	[NT]	36	<0.05	<0.05	0	[NT]	[NT]
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-012	[NT]	36	<0.1	<0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-012	[NT]	36	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-012	[NT]	36	<0.1	<0.1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-012	[NT]	36	92	96	4	[NT]	[NT]

QUALITY CONTROL: Organochlorine Pesticides in soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-11	220278-3
Date extracted	-			25/06/2019	1	25/06/2019	25/06/2019		25/06/2019	25/06/2019
Date analysed	-			25/06/2019	1	25/06/2019	25/06/2019		25/06/2019	25/06/2019
HCB	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
alpha-BHC	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	85	80
gamma-BHC	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	90	88
Heptachlor	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	91	89
delta-BHC	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	113	108
Heptachlor Epoxide	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	90	90
gamma-Chlordane	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	93	89
Dieldrin	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	94	97
Endrin	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	88	97
pp-DDD	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	78	77
Endosulfan II	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Endrin Aldehyde	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	90	94
Methoxychlor	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-005	72	1	88	90	2	86	84

QUALITY CONTROL: Organochlorine Pesticides in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-12	220278-38
Date extracted	-			[NT]	21	25/06/2019	25/06/2019		25/06/2019	25/06/2019
Date analysed	-			[NT]	21	25/06/2019	25/06/2019		25/06/2019	25/06/2019
HCB	mg/kg	0.1	Org-005	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
alpha-BHC	mg/kg	0.1	Org-005	[NT]	21	<0.1	<0.1	0	87	82
gamma-BHC	mg/kg	0.1	Org-005	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-005	[NT]	21	<0.1	<0.1	0	94	89
Heptachlor	mg/kg	0.1	Org-005	[NT]	21	<0.1	<0.1	0	91	84
delta-BHC	mg/kg	0.1	Org-005	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-005	[NT]	21	<0.1	<0.1	0	116	92
Heptachlor Epoxide	mg/kg	0.1	Org-005	[NT]	21	<0.1	<0.1	0	97	91
gamma-Chlordane	mg/kg	0.1	Org-005	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-005	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-005	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-005	[NT]	21	<0.1	<0.1	0	98	92
Dieldrin	mg/kg	0.1	Org-005	[NT]	21	0.2	0.2	0	101	93
Endrin	mg/kg	0.1	Org-005	[NT]	21	<0.1	<0.1	0	94	81
pp-DDD	mg/kg	0.1	Org-005	[NT]	21	<0.1	<0.1	0	82	75
Endosulfan II	mg/kg	0.1	Org-005	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-005	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Endrin Aldehyde	mg/kg	0.1	Org-005	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-005	[NT]	21	<0.1	<0.1	0	88	63
Methoxychlor	mg/kg	0.1	Org-005	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-005	[NT]	21	92	90	2	88	86

QUALITY CONTROL: Organochlorine Pesticides in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	36	25/06/2019	25/06/2019		[NT]	[NT]
Date analysed	-			[NT]	36	25/06/2019	25/06/2019		[NT]	[NT]
HCB	mg/kg	0.1	Org-005	[NT]	36	<0.1	<0.1	0	[NT]	[NT]
alpha-BHC	mg/kg	0.1	Org-005	[NT]	36	<0.1	<0.1	0	[NT]	[NT]
gamma-BHC	mg/kg	0.1	Org-005	[NT]	36	<0.1	<0.1	0	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-005	[NT]	36	<0.1	<0.1	0	[NT]	[NT]
Heptachlor	mg/kg	0.1	Org-005	[NT]	36	<0.1	<0.1	0	[NT]	[NT]
delta-BHC	mg/kg	0.1	Org-005	[NT]	36	<0.1	<0.1	0	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-005	[NT]	36	<0.1	<0.1	0	[NT]	[NT]
Heptachlor Epoxide	mg/kg	0.1	Org-005	[NT]	36	<0.1	<0.1	0	[NT]	[NT]
gamma-Chlordane	mg/kg	0.1	Org-005	[NT]	36	<0.1	<0.1	0	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-005	[NT]	36	<0.1	<0.1	0	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-005	[NT]	36	<0.1	<0.1	0	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-005	[NT]	36	<0.1	<0.1	0	[NT]	[NT]
Dieldrin	mg/kg	0.1	Org-005	[NT]	36	<0.1	<0.1	0	[NT]	[NT]
Endrin	mg/kg	0.1	Org-005	[NT]	36	<0.1	<0.1	0	[NT]	[NT]
pp-DDD	mg/kg	0.1	Org-005	[NT]	36	<0.1	<0.1	0	[NT]	[NT]
Endosulfan II	mg/kg	0.1	Org-005	[NT]	36	<0.1	<0.1	0	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-005	[NT]	36	<0.1	<0.1	0	[NT]	[NT]
Endrin Aldehyde	mg/kg	0.1	Org-005	[NT]	36	<0.1	<0.1	0	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-005	[NT]	36	<0.1	<0.1	0	[NT]	[NT]
Methoxychlor	mg/kg	0.1	Org-005	[NT]	36	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-005	[NT]	36	86	91	6	[NT]	[NT]

QUALITY CONTROL: PCBs in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-11	220278-3
Date extracted	-			25/06/2019	1	25/06/2019	25/06/2019		25/06/2019	25/06/2019
Date analysed	-			25/06/2019	1	25/06/2019	25/06/2019		25/06/2019	25/06/2019
Aroclor 1016	mg/kg	0.1	Org-006	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-006	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-006	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-006	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-006	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-006	<0.1	1	<0.1	<0.1	0	102	103
Aroclor 1260	mg/kg	0.1	Org-006	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCLMX	%		Org-006	72	1	88	90	2	90	89

QUALITY CONTROL: PCBs in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-12	220278-38
Date extracted	-			[NT]	21	25/06/2019	25/06/2019		25/06/2019	25/06/2019
Date analysed	-			[NT]	21	25/06/2019	25/06/2019		25/06/2019	25/06/2019
Aroclor 1016	mg/kg	0.1	Org-006	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-006	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-006	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-006	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-006	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-006	[NT]	21	<0.1	<0.1	0	100	100
Aroclor 1260	mg/kg	0.1	Org-006	[NT]	21	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCLMX	%		Org-006	[NT]	21	92	90	2	92	83

QUALITY CONTROL: PCBs in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	36	25/06/2019	25/06/2019		[NT]	[NT]
Date analysed	-			[NT]	36	25/06/2019	25/06/2019		[NT]	[NT]
Aroclor 1016	mg/kg	0.1	Org-006	[NT]	36	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-006	[NT]	36	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-006	[NT]	36	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-006	[NT]	36	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-006	[NT]	36	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-006	[NT]	36	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1260	mg/kg	0.1	Org-006	[NT]	36	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCLMX	%		Org-006	[NT]	36	86	91	6	[NT]	[NT]

QUALITY CONTROL: Acid Extractable metals in soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-11	220278-3
Date prepared	-			25/06/2019	1	25/06/2019	25/06/2019		25/06/2019	25/06/2019
Date analysed	-			25/06/2019	1	25/06/2019	25/06/2019		25/06/2019	25/06/2019
Arsenic	mg/kg	4	Metals-020	<4	1	6	10	50	105	97
Cadmium	mg/kg	0.4	Metals-020	<0.4	1	<0.4	<0.4	0	104	93
Chromium	mg/kg	1	Metals-020	<1	1	6	8	29	109	98
Copper	mg/kg	1	Metals-020	<1	1	20	33	49	110	107
Lead	mg/kg	1	Metals-020	<1	1	5	5	0	110	101
Mercury	mg/kg	0.1	Metals-021	<0.1	1	<0.1	<0.1	0	97	88
Nickel	mg/kg	1	Metals-020	<1	1	4	5	22	113	102
Zinc	mg/kg	1	Metals-020	<1	1	9	8	12	110	98

QUALITY CONTROL: Acid Extractable metals in soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-12	220278-38
Date prepared	-			[NT]	21	25/06/2019	25/06/2019		25/06/2019	25/06/2019
Date analysed	-			[NT]	21	25/06/2019	25/06/2019		25/06/2019	25/06/2019
Arsenic	mg/kg	4	Metals-020	[NT]	21	<4	<4	0	109	81
Cadmium	mg/kg	0.4	Metals-020	[NT]	21	<0.4	<0.4	0	108	77
Chromium	mg/kg	1	Metals-020	[NT]	21	18	15	18	113	120
Copper	mg/kg	1	Metals-020	[NT]	21	9	8	12	114	114
Lead	mg/kg	1	Metals-020	[NT]	21	13	13	0	115	84
Mercury	mg/kg	0.1	Metals-021	[NT]	21	<0.1	<0.1	0	91	88
Nickel	mg/kg	1	Metals-020	[NT]	21	7	6	15	117	97
Zinc	mg/kg	1	Metals-020	[NT]	21	13	12	8	115	88

QUALITY CONTROL: Acid Extractable metals in soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	36	25/06/2019	25/06/2019		[NT]	[NT]
Date analysed	-			[NT]	36	25/06/2019	25/06/2019		[NT]	[NT]
Arsenic	mg/kg	4	Metals-020	[NT]	36	<4	<4	0	[NT]	[NT]
Cadmium	mg/kg	0.4	Metals-020	[NT]	36	<0.4	<0.4	0	[NT]	[NT]
Chromium	mg/kg	1	Metals-020	[NT]	36	18	21	15	[NT]	[NT]
Copper	mg/kg	1	Metals-020	[NT]	36	5	5	0	[NT]	[NT]
Lead	mg/kg	1	Metals-020	[NT]	36	7	9	25	[NT]	[NT]
Mercury	mg/kg	0.1	Metals-021	[NT]	36	<0.1	<0.1	0	[NT]	[NT]
Nickel	mg/kg	1	Metals-020	[NT]	36	6	6	0	[NT]	[NT]
Zinc	mg/kg	1	Metals-020	[NT]	36	11	14	24	[NT]	[NT]

QUALITY CONTROL: Misc Soil - Inorg						Duplicate		Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-11	220278-3
Date prepared	-			25/06/2019	1	25/06/2019	25/06/2019		25/06/2019	25/06/2019
Date analysed	-			26/06/2019	1	26/06/2019	26/06/2019		26/06/2019	26/06/2019
Total Phenolics (as Phenol)	mg/kg	5	Inorg-031	<5	1	<5	<5	0	98	102

QUALITY CONTROL: Misc Soil - Inorg						Duplicate		Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-12	220278-38
Date prepared	-			[NT]	21	25/06/2019	25/06/2019		25/06/2019	25/06/2019
Date analysed	-			[NT]	21	26/06/2019	26/06/2019		26/06/2019	26/06/2019
Total Phenolics (as Phenol)	mg/kg	5	Inorg-031	[NT]	21	<5	<5	0	98	98

QUALITY CONTROL: Misc Soil - Inorg						Duplicate		Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	36	25/06/2019	25/06/2019		[NT]	[NT]
Date analysed	-			[NT]	36	26/06/2019	26/06/2019		[NT]	[NT]
Total Phenolics (as Phenol)	mg/kg	5	Inorg-031	[NT]	36	<5	<5	0	[NT]	[NT]

QUALITY CONTROL: Misc Inorg - Soil						Duplicate		Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-11	[NT]
Date prepared	-			26/05/2019	[NT]	[NT]	[NT]	[NT]	26/05/2019	[NT]
Date analysed	-			26/05/2019	[NT]	[NT]	[NT]	[NT]	26/05/2019	[NT]
pH 1:5 soil:water	pH Units		Inorg-001	[NT]	[NT]	[NT]	[NT]	[NT]	102	[NT]

QUALITY CONTROL: CEC					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			26/06/2019	[NT]	[NT]	[NT]	[NT]	26/06/2019	[NT]
Date analysed	-			26/06/2019	[NT]	[NT]	[NT]	[NT]	26/06/2019	[NT]
Exchangeable Ca	meq/100g	0.1	Metals-009	<0.1	[NT]	[NT]	[NT]	[NT]	101	[NT]
Exchangeable K	meq/100g	0.1	Metals-009	<0.1	[NT]	[NT]	[NT]	[NT]	108	[NT]
Exchangeable Mg	meq/100g	0.1	Metals-009	<0.1	[NT]	[NT]	[NT]	[NT]	95	[NT]
Exchangeable Na	meq/100g	0.1	Metals-009	<0.1	[NT]	[NT]	[NT]	[NT]	103	[NT]

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Water						Duplicate		Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			25/06/2019	[NT]	[NT]	[NT]	[NT]	25/06/2019	[NT]
Date analysed	-			25/06/2019	[NT]	[NT]	[NT]	[NT]	25/06/2019	[NT]
TRH C ₆ - C ₉	µg/L	10	Org-016	<10	[NT]	[NT]	[NT]	[NT]	113	[NT]
TRH C ₆ - C ₁₀	µg/L	10	Org-016	<10	[NT]	[NT]	[NT]	[NT]	113	[NT]
Benzene	µg/L	1	Org-016	<1	[NT]	[NT]	[NT]	[NT]	120	[NT]
Toluene	µg/L	1	Org-016	<1	[NT]	[NT]	[NT]	[NT]	112	[NT]
Ethylbenzene	µg/L	1	Org-016	<1	[NT]	[NT]	[NT]	[NT]	110	[NT]
m+p-xylene	µg/L	2	Org-016	<2	[NT]	[NT]	[NT]	[NT]	112	[NT]
o-xylene	µg/L	1	Org-016	<1	[NT]	[NT]	[NT]	[NT]	113	[NT]
Naphthalene	µg/L	1	Org-013	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate Dibromofluoromethane	%		Org-016	103	[NT]	[NT]	[NT]	[NT]	99	[NT]
Surrogate toluene-d8	%		Org-016	99	[NT]	[NT]	[NT]	[NT]	100	[NT]
Surrogate 4-BFB	%		Org-016	94	[NT]	[NT]	[NT]	[NT]	100	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Water					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			25/06/2019	[NT]	[NT]	[NT]	[NT]	25/06/2019	[NT]
Date analysed	-			26/06/2019	[NT]	[NT]	[NT]	[NT]	26/06/2019	[NT]
TRH C ₁₀ - C ₁₄	µg/L	50	Org-003	<50	[NT]	[NT]	[NT]	[NT]	70	[NT]
TRH C ₁₅ - C ₂₈	µg/L	100	Org-003	<100	[NT]	[NT]	[NT]	[NT]	70	[NT]
TRH C ₂₉ - C ₃₆	µg/L	100	Org-003	<100	[NT]	[NT]	[NT]	[NT]	83	[NT]
TRH >C ₁₀ - C ₁₆	µg/L	50	Org-003	<50	[NT]	[NT]	[NT]	[NT]	70	[NT]
TRH >C ₁₆ - C ₃₄	µg/L	100	Org-003	<100	[NT]	[NT]	[NT]	[NT]	70	[NT]
TRH >C ₃₄ - C ₄₀	µg/L	100	Org-003	<100	[NT]	[NT]	[NT]	[NT]	83	[NT]
Surrogate o-Terphenyl	%		Org-003	84	[NT]	[NT]	[NT]	[NT]	75	[NT]

QUALITY CONTROL: PAHs in Water					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	[NT]
Date extracted	-			25/06/2019	[NT]	[NT]	[NT]	[NT]	25/06/2019	[NT]
Date analysed	-			26/06/2019	[NT]	[NT]	[NT]	[NT]	26/06/2019	[NT]
Naphthalene	µg/L	1	Org-012	<1	[NT]	[NT]	[NT]	[NT]	82	[NT]
Acenaphthylene	µg/L	1	Org-012	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Acenaphthene	µg/L	1	Org-012	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluorene	µg/L	1	Org-012	<1	[NT]	[NT]	[NT]	[NT]	86	[NT]
Phenanthrene	µg/L	1	Org-012	<1	[NT]	[NT]	[NT]	[NT]	78	[NT]
Anthracene	µg/L	1	Org-012	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluoranthene	µg/L	1	Org-012	<1	[NT]	[NT]	[NT]	[NT]	72	[NT]
Pyrene	µg/L	1	Org-012	<1	[NT]	[NT]	[NT]	[NT]	80	[NT]
Benzo(a)anthracene	µg/L	1	Org-012	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chrysene	µg/L	1	Org-012	<1	[NT]	[NT]	[NT]	[NT]	72	[NT]
Benzo(b,j+k)fluoranthene	µg/L	2	Org-012	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(a)pyrene	µg/L	1	Org-012	<1	[NT]	[NT]	[NT]	[NT]	70	[NT]
Indeno(1,2,3-c,d)pyrene	µg/L	1	Org-012	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibenzo(a,h)anthracene	µg/L	1	Org-012	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(g,h,i)perylene	µg/L	1	Org-012	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-012	77	[NT]	[NT]	[NT]	[NT]	77	[NT]

QUALITY CONTROL: Total Phenolics in Water						Duplicate		Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			25/06/2019	[NT]	[NT]	[NT]	[NT]	25/06/2019	[NT]
Date analysed	-			25/06/2019	[NT]	[NT]	[NT]	[NT]	25/06/2019	[NT]
Total Phenolics (as Phenol)	mg/L	0.05	Inorg-031	<0.05	[NT]	[NT]	[NT]	[NT]	102	[NT]

QUALITY CONTROL: OCP in water					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			25/06/2019	[NT]	[NT]	[NT]	[NT]	25/06/2019	[NT]
Date analysed	-			25/06/2019	[NT]	[NT]	[NT]	[NT]	25/06/2019	[NT]
HCB	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
alpha-BHC	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	[NT]	[NT]	73	[NT]
gamma-BHC	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
beta-BHC	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	[NT]	[NT]	72	[NT]
Heptachlor	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	[NT]	[NT]	70	[NT]
delta-BHC	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aldrin	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	[NT]	[NT]	74	[NT]
Heptachlor Epoxide	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	[NT]	[NT]	76	[NT]
gamma-Chlordane	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
alpha-Chlordane	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endosulfan I	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDE	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	[NT]	[NT]	72	[NT]
Dieldrin	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	[NT]	[NT]	81	[NT]
Endrin	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	[NT]	[NT]	72	[NT]
pp-DDD	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	[NT]	[NT]	71	[NT]
Endosulfan II	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDT	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endrin Aldehyde	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endosulfan Sulphate	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	[NT]	[NT]	75	[NT]
Methoxychlor	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate TCMX	%		Org-005	72	[NT]	[NT]	[NT]	[NT]	78	[NT]

QUALITY CONTROL: PCBs in Water					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			25/06/2019	[NT]	[NT]	[NT]	[NT]	25/06/2019	[NT]
Date analysed	-			25/06/2019	[NT]	[NT]	[NT]	[NT]	25/06/2019	[NT]
Aroclor 1016	µg/L	2	Org-006	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1221	µg/L	2	Org-006	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1232	µg/L	2	Org-006	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1242	µg/L	2	Org-006	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1248	µg/L	2	Org-006	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1254	µg/L	2	Org-006	<2	[NT]	[NT]	[NT]	[NT]	99	[NT]
Aroclor 1260	µg/L	2	Org-006	<2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate TCLMX	%		Org-006	72	[NT]	[NT]	[NT]	[NT]	104	[NT]

QUALITY CONTROL: Metals in Water - Dissolved					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date digested	-			26/06/2019	[NT]	[NT]	[NT]	[NT]	26/06/2019	[NT]
Date analysed	-			26/06/2019	[NT]	[NT]	[NT]	[NT]	26/06/2019	[NT]
Arsenic - Dissolved	mg/L	0.05	Metals-020	<0.05	[NT]	[NT]	[NT]	[NT]	107	[NT]
Cadmium - Dissolved	mg/L	0.01	Metals-020	<0.01	[NT]	[NT]	[NT]	[NT]	100	[NT]
Chromium - Dissolved	mg/L	0.01	Metals-020	<0.01	[NT]	[NT]	[NT]	[NT]	102	[NT]
Copper - Dissolved	mg/L	0.01	Metals-020	<0.01	[NT]	[NT]	[NT]	[NT]	101	[NT]
Lead - Dissolved	mg/L	0.03	Metals-020	<0.03	[NT]	[NT]	[NT]	[NT]	102	[NT]
Mercury - Dissolved	mg/L	0.0005	Metals-021	<0.0005	[NT]	[NT]	[NT]	[NT]	100	[NT]
Nickel - Dissolved	mg/L	0.02	Metals-020	<0.02	[NT]	[NT]	[NT]	[NT]	103	[NT]
Zinc - Dissolved	mg/L	0.02	Metals-020	<0.02	[NT]	[NT]	[NT]	[NT]	103	[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.	

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; 60-140% for organics (+/-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.

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.



SAMPLE RECEIPT ADVICE

SE194494

CLIENT DETAILS

Contact Alex Hannan-Joyner
Client Robson Environmental Pty Ltd
Address 140 Gladstone Street, FYSHWICK
PO Box 112, FYSHWICK
ACT 2609

Telephone (02) 6239 5656
Facsimile (02) 6239 5669
Email alex@robsonenviro.com.au

Project **1051401 DSI**
Order Number **1051401**
Samples 1

LABORATORY DETAILS

Manager Huong Crawford
Laboratory SGS Alexandria Environmental
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Alexandria NSW 2015

Telephone +61 2 8594 0400
Facsimile +61 2 8594 0499
Email au.environmental.sydney@sgs.com

Samples Received Tue 25/6/2019
Report Due Wed 26/6/2019
SGS Reference **SE194494**

SUBMISSION DETAILS

This is to confirm that 1 sample was received on Tuesday 25/6/2019. Results are expected to be ready by COB Wednesday 26/6/2019. Please quote SGS reference SE194494 when making enquiries. Refer below for details relating to sample integrity upon receipt.

Samples clearly labelled	Yes	Complete documentation received	Yes
Sample container provider	SGS	Sample cooling method	Ice Bricks
Samples received in correct containers	Yes	Sample counts by matrix	1 Soil
Date documentation received	25/6/2019	Type of documentation received	COC
Samples received in good order	Yes	Samples received without headspace	Yes
Sample temperature upon receipt	12.2°C	Sufficient sample for analysis	Yes
Turnaround time requested	Next Day		

Unless otherwise instructed, water and bulk samples will be held for one month from date of report, and soil samples will be held for two months.

COMMENTS

1 sample has been placed on hold as no tests have been assigned for it. This sample will not be processed.

This document is issued by the Company under its General Conditions of Service accessible at www.sgs.com/en/Terms-and-Conditions.aspx. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.



SAMPLE RECEIPT ADVICE

SE194494

CLIENT DETAILS

Client **Robson Environmental Pty Ltd**

Project **1051401 DSI**

SUMMARY OF ANALYSIS

No.	Sample ID	OC Pesticides in Soil	PAH (Polynuclear Aromatic Hydrocarbons) in Soil	PCBs in Soil	Speciated Phenols in Soil	Total Recoverable Elements in Soil/Waste	TRH (Total Recoverable Hydrocarbons) in Soil	VOC's in Soil	Volatile Petroleum Hydrocarbons in Soil
001	QC02	29	26	11	18	7	10	12	8

CONTINUED OVERLEAF

The above table represents SGS' interpretation of the client-supplied Chain Of Custody document.
The numbers shown in the table indicate the number of results requested in each package.
Please indicate as soon as possible should your request differ from these details .
Testing as per this table shall commence immediately unless the client intervenes with a correction .



SAMPLE RECEIPT ADVICE

SE194494

CLIENT DETAILS

Client **Robson Environmental Pty Ltd**

Project **1051401 DSI**

SUMMARY OF ANALYSIS

No.	Sample ID	Mercury in Soil	Moisture Content
001	QC02	1	1

The above table represents SGS' interpretation of the client-supplied Chain Of Custody document.
The numbers shown in the table indicate the number of results requested in each package.
Please indicate as soon as possible should your request differ from these details .
Testing as per this table shall commence immediately unless the client intervenes with a correction .

SE194494 COC
Received: 25-Jun-2019

CLIENT DETAILS

Contact Alex Hannan-Joyner
 Client Robson Environmental Pty Ltd
 Address 140 Gladstone Street, FYSHWICK
 PO Box 112, FYSHWICK
 ACT 2609

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 Facsimile (02) 6239 5669
 Email alex@robsonenviro.com.au

Project **1051401 DSI**
 Order Number **1051401**
 Samples 1

LABORATORY DETAILS

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 Alexandria NSW 2015

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 Email au.environmental.sydney@sgs.com

SGS Reference **SE194494 R0**
 Date Received 25/6/2019
 Date Reported 26/6/2019

COMMENTS

Accredited for compliance with ISO/IEC 17025 - Testing. NATA accredited laboratory 2562(4354).

SIGNATORIES



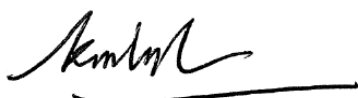
Akheequear Beniamdeen
 Chemist



Dong Liang
 Metals/Inorganics Team Leader



Kamrul Ahsan
 Senior Chemist



Ly Kim Ha
 Organic Section Head

VOC's in Soil [AN433] Tested: 25/6/2019

			QC02
			SOIL
			-
			21/6/2019
			SE194494.001
PARAMETER	UOM	LOR	
Benzene	mg/kg	0.1	<0.1
Toluene	mg/kg	0.1	<0.1
Ethylbenzene	mg/kg	0.1	<0.1
m/p-xylene	mg/kg	0.2	<0.2
o-xylene	mg/kg	0.1	<0.1
Naphthalene	mg/kg	0.1	<0.1
Total Xylenes	mg/kg	0.3	<0.3
Total BTEX	mg/kg	0.6	<0.6

Volatile Petroleum Hydrocarbons in Soil [AN433] Tested: 25/6/2019

			QC02
			SOIL
			-
			21/6/2019
			SE194494.001
PARAMETER	UOM	LOR	
Benzene (F0)	mg/kg	0.1	<0.1
TRH C6-C9	mg/kg	20	<20
TRH C6-C10	mg/kg	25	<25
TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25

TRH (Total Recoverable Hydrocarbons) in Soil [AN403] Tested: 25/6/2019

			QC02
			SOIL
			-
			21/6/2019
			SE194494.001
PARAMETER	UOM	LOR	
TRH C10-C14	mg/kg	20	<20
TRH C15-C28	mg/kg	45	<45
TRH C29-C36	mg/kg	45	<45
TRH C37-C40	mg/kg	100	<100
TRH >C10-C16	mg/kg	25	<25
TRH >C10-C16 - Naphthalene (F2)	mg/kg	25	<25
TRH >C16-C34 (F3)	mg/kg	90	<90
TRH >C34-C40 (F4)	mg/kg	120	<120
TRH C10-C36 Total	mg/kg	110	<110
TRH C10-C40 Total (F bands)	mg/kg	210	<210

PAH (Polynuclear Aromatic Hydrocarbons) in Soil [AN420] Tested: 25/6/2019

			QC02
			SOIL
			-
			21/6/2019
			SE194494.001
PARAMETER	UOM	LOR	
Naphthalene	mg/kg	0.1	<0.1
2-methylnaphthalene	mg/kg	0.1	<0.1
1-methylnaphthalene	mg/kg	0.1	<0.1
Acenaphthylene	mg/kg	0.1	<0.1
Acenaphthene	mg/kg	0.1	<0.1
Fluorene	mg/kg	0.1	<0.1
Phenanthrene	mg/kg	0.1	<0.1
Anthracene	mg/kg	0.1	<0.1
Fluoranthene	mg/kg	0.1	<0.1
Pyrene	mg/kg	0.1	<0.1
Benzo(a)anthracene	mg/kg	0.1	<0.1
Chrysene	mg/kg	0.1	<0.1
Benzo(b&j)fluoranthene	mg/kg	0.1	<0.1
Benzo(k)fluoranthene	mg/kg	0.1	<0.1
Benzo(a)pyrene	mg/kg	0.1	<0.1
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1
Dibenzo(ah)anthracene	mg/kg	0.1	<0.1
Benzo(ghi)perylene	mg/kg	0.1	<0.1
Carcinogenic PAHs, BaP TEQ <LOR=0	TEQ (mg/kg)	0.2	<0.2
Carcinogenic PAHs, BaP TEQ <LOR=LOR	TEQ (mg/kg)	0.3	<0.3
Carcinogenic PAHs, BaP TEQ <LOR=LOR/2	TEQ (mg/kg)	0.2	<0.2
Total PAH (18)	mg/kg	0.8	<0.8
Total PAH (NEPM/WHO 16)	mg/kg	0.8	<0.8

Speciated Phenols in Soil [AN420] Tested: 25/6/2019

			QC02
			SOIL
			-
			21/6/2019
			SE194494.001
PARAMETER	UOM	LOR	
Phenol	mg/kg	0.5	<0.5
2-methyl phenol (o-cresol)	mg/kg	0.5	<0.5
3/4-methyl phenol (m/p-cresol)	mg/kg	1	<1
Total Cresol	mg/kg	1.5	<1.5
2-chlorophenol	mg/kg	0.5	<0.5
2,4-dimethylphenol	mg/kg	0.5	<0.5
2,6-dichlorophenol	mg/kg	0.5	<0.5
2,4-dichlorophenol	mg/kg	0.5	<0.5
2,4,6-trichlorophenol	mg/kg	0.5	<0.5
2-nitrophenol	mg/kg	0.5	<0.5
4-nitrophenol	mg/kg	1	<1
2,4,5-trichlorophenol	mg/kg	0.5	<0.5
2,3,4,6/2,3,5,6-tetrachlorophenol	mg/kg	1	<1
Pentachlorophenol	mg/kg	0.5	<0.5
2,4-dinitrophenol	mg/kg	2	<2
4-chloro-3-methylphenol	mg/kg	2	<2

OC Pesticides in Soil [AN420] Tested: 25/6/2019

			QC02
			SOIL
			-
			21/6/2019
			SE194494.001
PARAMETER	UOM	LOR	
Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1
Alpha BHC	mg/kg	0.1	<0.1
Lindane	mg/kg	0.1	<0.1
Heptachlor	mg/kg	0.1	<0.1
Aldrin	mg/kg	0.1	<0.1
Beta BHC	mg/kg	0.1	<0.1
Delta BHC	mg/kg	0.1	<0.1
Heptachlor epoxide	mg/kg	0.1	<0.1
o,p'-DDE	mg/kg	0.1	<0.1
Alpha Endosulfan	mg/kg	0.2	<0.2
Gamma Chlordane	mg/kg	0.1	<0.1
Alpha Chlordane	mg/kg	0.1	<0.1
trans-Nonachlor	mg/kg	0.1	<0.1
p,p'-DDE	mg/kg	0.1	<0.1
Dieldrin	mg/kg	0.2	<0.2
Endrin	mg/kg	0.2	<0.2
o,p'-DDD	mg/kg	0.1	<0.1
o,p'-DDT	mg/kg	0.1	<0.1
Beta Endosulfan	mg/kg	0.2	<0.2
p,p'-DDD	mg/kg	0.1	<0.1
p,p'-DDT	mg/kg	0.1	<0.1
Endosulfan sulphate	mg/kg	0.1	<0.1
Endrin Aldehyde	mg/kg	0.1	<0.1
Methoxychlor	mg/kg	0.1	<0.1
Endrin Ketone	mg/kg	0.1	<0.1
Isodrin	mg/kg	0.1	<0.1
Mirex	mg/kg	0.1	<0.1
Total CLP OC Pesticides	mg/kg	1	<1

PCBs in Soil [AN420] Tested: 25/6/2019

			QC02
			SOIL
			-
			21/6/2019
			SE194494.001
PARAMETER	UOM	LOR	
Arochlor 1016	mg/kg	0.2	<0.2
Arochlor 1221	mg/kg	0.2	<0.2
Arochlor 1232	mg/kg	0.2	<0.2
Arochlor 1242	mg/kg	0.2	<0.2
Arochlor 1248	mg/kg	0.2	<0.2
Arochlor 1254	mg/kg	0.2	<0.2
Arochlor 1260	mg/kg	0.2	<0.2
Arochlor 1262	mg/kg	0.2	<0.2
Arochlor 1268	mg/kg	0.2	<0.2
Total PCBs (Arochlors)	mg/kg	1	<1

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES [AN040/AN320] Tested: 25/6/2019

			QC02
			SOIL
			-
			21/6/2019
			SE194494.001
PARAMETER	UOM	LOR	
Arsenic, As	mg/kg	1	<1
Cadmium, Cd	mg/kg	0.3	<0.3
Chromium, Cr	mg/kg	0.5	11
Copper, Cu	mg/kg	0.5	4.7
Lead, Pb	mg/kg	1	10
Nickel, Ni	mg/kg	0.5	2.8
Zinc, Zn	mg/kg	2	42



ANALYTICAL RESULTS

SE194494 R0

Mercury in Soil [AN312] Tested: 25/6/2019

			QC02
			SOIL
			-
			21/6/2019
			SE194494.001
PARAMETER	UOM	LOR	
Mercury	mg/kg	0.05	<0.05

Moisture Content [AN002] Tested: 25/6/2019

			QC02
			SOIL
			-
			21/6/2019
			SE194494.001
PARAMETER	UOM	LOR	
% Moisture	%w/w	0.5	16

METHOD

METHODOLOGY SUMMARY

AN002	The test is carried out by drying (at either 40°C or 105°C) a known mass of sample in a weighed evaporating basin. After fully dry the sample is re-weighed. Samples such as sludge and sediment having high percentages of moisture will take some time in a drying oven for complete removal of water.
AN040/AN320	A portion of sample is digested with nitric acid to decompose organic matter and hydrochloric acid to complete the digestion of metals. The digest is then analysed by ICP OES with metals results reported on the dried sample basis. Based on USEPA method 200.8 and 6010C.
AN040	A portion of sample is digested with Nitric acid to decompose organic matter and Hydrochloric acid to complete the digestion of metals and then filtered for analysis by ASS or ICP as per USEPA Method 200.8.
AN312	Mercury by Cold Vapour AAS in Soils: After digestion with nitric acid, hydrogen peroxide and hydrochloric acid, mercury ions are reduced by stannous chloride reagent in acidic solution to elemental mercury. This mercury vapour is purged by nitrogen into a cold cell in an atomic absorption spectrometer or mercury analyser. Quantification is made by comparing absorbances to those of the calibration standards. Reference APHA 3112/3500
AN403	Total Recoverable Hydrocarbons: Determination of Hydrocarbons by gas chromatography after a solvent extraction. Detection is by flame ionisation detector (FID) that produces an electronic signal in proportion to the combustible matter passing through it. Total Recoverable Hydrocarbons (TRH) are routinely reported as four alkane groupings based on the carbon chain length of the compounds: C6-C9, C10-C14, C15-C28 and C29-C36 and in recognition of the NEPM 1999 (2013), >C10-C16 (F2), >C16-C34 (F3) and >C34-C40 (F4). F2 is reported directly and also corrected by subtracting Naphthalene (from VOC method AN433) where available.
AN403	Additionally, the volatile C6-C9 fraction may be determined by a purge and trap technique and GC/MS because of the potential for volatiles loss. Total Recoverable Hydrocarbons - Silica (TRH-Si) follows the same method of analysis after silica gel cleanup of the solvent extract. Aliphatic/Aromatic Speciation follows the same method of analysis after fractionation of the solvent extract over silica with differential polarity of the eluent solvents.
AN403	The GC/FID method is not well suited to the analysis of refined high boiling point materials (ie lubricating oils or greases) but is particularly suited for measuring diesel, kerosene and petrol if care to control volatility is taken. This method will detect naturally occurring hydrocarbons, lipids, animal fats, phenols and PAHs if they are present at sufficient levels, dependent on the use of specific cleanup/fractionation techniques. Reference USEPA 3510B, 8015B.
AN420	(SVOCs) including OC, OP, PCB, Herbicides, PAH, Phthalates and Speciated Phenols (etc) in soils, sediments and waters are determined by GCMS/ECD technique following appropriate solvent extraction process (Based on USEPA 3500C and 8270D).
AN420	SVOC Compounds: Semi-Volatile Organic Compounds (SVOCs) including OC, OP, PCB, Herbicides, PAH, Phthalates and Speciated Phenols in soils, sediments and waters are determined by GCMS/ECD technique following appropriate solvent extraction process (Based on USEPA 3500C and 8270D).
AN433	VOCs and C6-C9 Hydrocarbons by GC-MS P&T: VOC's are volatile organic compounds. The sample is presented to a gas chromatograph via a purge and trap (P&T) concentrator and autosampler and is detected with a Mass Spectrometer (MSD). Solid samples are initially extracted with methanol whilst liquid samples are processed directly. References: USEPA 5030B, 8020A, 8260.

FOOTNOTES

*	NATA accreditation does not cover the performance of this service.	-	Not analysed.	UOM	Unit of Measure.
**	Indicative data, theoretical holding time exceeded.	NVL	Not validated.	LOR	Limit of Reporting.
		IS	Insufficient sample for analysis.	↑↓	Raised/lowered Limit of Reporting.
		LNR	Sample listed, but not received.		

Unless it is reported that sampling has been performed by SGS, the samples have been analysed as received.
Solid samples expressed on a dry weight basis.

Where "Total" analyte groups are reported (for example, Total PAHs, Total OC Pesticides) the total will be calculated as the sum of the individual analytes, with those analytes that are reported as <LOR being assumed to be zero. The summed (Total) limit of reporting is calculated by summing the individual analyte LORs and dividing by two. For example, where 16 individual analytes are being summed and each has an LOR of 0.1 mg/kg, the "Totals" LOR will be 1.6 / 2 (0.8 mg/kg). Where only 2 analytes are being summed, the "Total" LOR will be the sum of those two LORs.

Some totals may not appear to add up because the total is rounded after adding up the raw values.

If reported, measurement uncertainty follow the ± sign after the analytical result and is expressed as the expanded uncertainty calculated using a coverage factor of 2, providing a level of confidence of approximately 95%, unless stated otherwise in the comments section of this report.

Results reported for samples tested under test methods with codes starting with ARS-SOP, radionuclide or gross radioactivity concentrations are expressed in becquerel (Bq) per unit of mass or volume or per wipe as stated on the report. Becquerel is the SI unit for activity and equals one nuclear transformation per second.

Note that in terms of units of radioactivity:

- 1 Bq is equivalent to 27 pCi
- 37 MBq is equivalent to 1 mCi

For results reported for samples tested under test methods with codes starting with ARS-SOP, less than (<) values indicate the detection limit for each radionuclide or parameter for the measurement system used. The respective detection limits have been calculated in accordance with ISO 11929.

The QC and MU criteria are subject to internal review according to the SGS QAQC plan and may be provided on request or alternatively can be found here: www.sgs.com.au/pv.sgsvr/en-gb/environment.

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STATEMENT OF QA/QC PERFORMANCE

SE194494 R0

CLIENT DETAILS

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Project **1051401 DSI**
Order Number **1051401**
Samples 1

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SGS Reference **SE194494 R0**
Date Received 25 Jun 2019
Date Reported 26 Jun 2019

COMMENTS

All the laboratory data for each environmental matrix was compared to SGS' stated Data Quality Objectives (DQO). Comments arising from the comparison were made and are reported below.

The data relating to sampling was taken from the Chain of Custody document.
This QA/QC Statement must be read in conjunction with the referenced Analytical Report.
The Statement and the Analytical Report must not be reproduced except in full.

All Data Quality Objectives were met with the exception of the following:

Duplicate	Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES	1 item
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SAMPLE SUMMARY

Samples clearly labelled	Yes	Complete documentation received	Yes
Sample container provider	SGS	Sample cooling method	Ice Bricks
Samples received in correct containers	Yes	Sample counts by matrix	1 Soil
Date documentation received	25/6/2019	Type of documentation received	COC
Samples received in good order	Yes	Samples received without headspace	Yes
Sample temperature upon receipt	12.2°C	Sufficient sample for analysis	Yes
Turnaround time requested	Next Day		

SGS holding time criteria are drawn from current regulations and are highly dependent on sample container preservation as specified in the SGS "Field Sampling Guide for Containers and Holding Time" (ref: GU-(AU)-ENV.001). Soil samples guidelines are derived from NEPM "Schedule B(3) Guideline on Laboratory Analysis of Potentially Contaminated Soils". Water sample guidelines are derived from "AS/NZS 5667.1 : 1998 Water Quality - sampling part 1" and APHA "Standard Methods for the Examination of Water and Wastewater" 21st edition 2005.

Extraction and analysis holding time due dates listed are calculated from the date sampled, although holding times may be extended after laboratory extraction for some analytes. The due dates are the suggested dates that samples may be held before extraction or analysis and still be considered valid.

Extraction and analysis dates are shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria. If the sampled date is not supplied then compliance with criteria cannot be determined. If the received date is after one or both due dates then holding time will fail by default.

Mercury in Soil

Method: ME-(AU)-[ENV]AN312

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
QC02	SE194494.001	LB176928	21 Jun 2019	25 Jun 2019	19 Jul 2019	25 Jun 2019	19 Jul 2019	26 Jun 2019

Moisture Content

Method: ME-(AU)-[ENV]AN002

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
QC02	SE194494.001	LB176926	21 Jun 2019	25 Jun 2019	05 Jul 2019	25 Jun 2019	30 Jun 2019	26 Jun 2019

OC Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
QC02	SE194494.001	LB176924	21 Jun 2019	25 Jun 2019	05 Jul 2019	25 Jun 2019	04 Aug 2019	26 Jun 2019

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN420

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
QC02	SE194494.001	LB176924	21 Jun 2019	25 Jun 2019	05 Jul 2019	25 Jun 2019	04 Aug 2019	26 Jun 2019

PCBs in Soil

Method: ME-(AU)-[ENV]AN420

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
QC02	SE194494.001	LB176924	21 Jun 2019	25 Jun 2019	05 Jul 2019	25 Jun 2019	04 Aug 2019	26 Jun 2019

Speciated Phenols in Soil

Method: ME-(AU)-[ENV]AN420

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
QC02	SE194494.001	LB176924	21 Jun 2019	25 Jun 2019	05 Jul 2019	25 Jun 2019	04 Aug 2019	26 Jun 2019

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES

Method: ME-(AU)-[ENV]AN040/AN320

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
QC02	SE194494.001	LB176927	21 Jun 2019	25 Jun 2019	18 Dec 2019	25 Jun 2019	18 Dec 2019	26 Jun 2019

TRH (Total Recoverable Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN403

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
QC02	SE194494.001	LB176924	21 Jun 2019	25 Jun 2019	05 Jul 2019	25 Jun 2019	04 Aug 2019	26 Jun 2019

VOC's in Soil

Method: ME-(AU)-[ENV]AN433

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
QC02	SE194494.001	LB176923	21 Jun 2019	25 Jun 2019	05 Jul 2019	25 Jun 2019	04 Aug 2019	26 Jun 2019

Volatile Petroleum Hydrocarbons in Soil

Method: ME-(AU)-[ENV]AN433

Sample Name	Sample No.	QC Ref	Sampled	Received	Extraction Due	Extracted	Analysis Due	Analysed
QC02	SE194494.001	LB176923	21 Jun 2019	25 Jun 2019	05 Jul 2019	25 Jun 2019	04 Aug 2019	26 Jun 2019

Surrogate results are evaluated against upper and lower limit criteria established in the SGS QA/QC plan (Ref: MP-(AU)-[ENV]QU-022). At least two of three routine level soil sample surrogate spike recoveries for BTEX/VOC are to be within 70-130% where control charts have not been developed and within the established control limits for charted surrogates. Matrix effects may void this as an acceptance criterion. Water sample surrogate spike recoveries are to be within 40-130%. The presence of emulsions, surfactants and particulates may void this as an acceptance criterion.

Result is shown in **Green** when within suggested criteria or **Red** with an appended reason identifier when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

OC Pesticides In Soil

Method: ME-(AU)-[ENV]AN420

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Tetrachloro-m-xylene (TCMX) (Surrogate)	QC02	SE194494.001	%	60 - 130%	111

PAH (Polynuclear Aromatic Hydrocarbons) In Soil

Method: ME-(AU)-[ENV]AN420

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
2-fluorobiphenyl (Surrogate)	QC02	SE194494.001	%	70 - 130%	76
d14-p-terphenyl (Surrogate)	QC02	SE194494.001	%	70 - 130%	84
d5-nitrobenzene (Surrogate)	QC02	SE194494.001	%	70 - 130%	76

PCBs In Soil

Method: ME-(AU)-[ENV]AN420

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Tetrachloro-m-xylene (TCMX) (Surrogate)	QC02	SE194494.001	%	60 - 130%	111

Speciated Phenols In Soil

Method: ME-(AU)-[ENV]AN420

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
2,4,6-Tribromophenol (Surrogate)	QC02	SE194494.001	%	70 - 130%	80
d5-phenol (Surrogate)	QC02	SE194494.001	%	50 - 130%	84

VOC's in Soil

Method: ME-(AU)-[ENV]AN433

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	QC02	SE194494.001	%	60 - 130%	106
d4-1,2-dichloroethane (Surrogate)	QC02	SE194494.001	%	60 - 130%	128
d8-toluene (Surrogate)	QC02	SE194494.001	%	60 - 130%	74
Dibromofluoromethane (Surrogate)	QC02	SE194494.001	%	60 - 130%	101

Volatile Petroleum Hydrocarbons In Soil

Method: ME-(AU)-[ENV]AN433

Parameter	Sample Name	Sample Number	Units	Criteria	Recovery %
Bromofluorobenzene (Surrogate)	QC02	SE194494.001	%	60 - 130%	106
d4-1,2-dichloroethane (Surrogate)	QC02	SE194494.001	%	60 - 130%	128
d8-toluene (Surrogate)	QC02	SE194494.001	%	60 - 130%	74
Dibromofluoromethane (Surrogate)	QC02	SE194494.001	%	60 - 130%	101

Blank results are evaluated against the limit of reporting (LOR), for the chosen method and its associated instrumentation, typically 2.5 times the statistically determined method detection limit (MDL).

Result is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

Mercury in Soil

Method: ME-(AU)-ENVJAN312

Sample Number	Parameter	Units	LOR	Result
LB176928.001	Mercury	mg/kg	0.05	<0.05

OC Pesticides in Soil

Method: ME-(AU)-ENVJAN420

Sample Number	Parameter	Units	LOR	Result
LB176924.001	Hexachlorobenzene (HCB)	mg/kg	0.1	<0.1
	Alpha BHC	mg/kg	0.1	<0.1
	Lindane	mg/kg	0.1	<0.1
	Heptachlor	mg/kg	0.1	<0.1
	Aldrin	mg/kg	0.1	<0.1
	Beta BHC	mg/kg	0.1	<0.1
	Delta BHC	mg/kg	0.1	<0.1
	Heptachlor epoxide	mg/kg	0.1	<0.1
	Alpha Endosulfan	mg/kg	0.2	<0.2
	Gamma Chlordane	mg/kg	0.1	<0.1
	Alpha Chlordane	mg/kg	0.1	<0.1
	p,p'-DDE	mg/kg	0.1	<0.1
	Dieldrin	mg/kg	0.2	<0.2
	Endrin	mg/kg	0.2	<0.2
	Beta Endosulfan	mg/kg	0.2	<0.2
	p,p'-DDD	mg/kg	0.1	<0.1
	p,p'-DDT	mg/kg	0.1	<0.1
	Endosulfan sulphate	mg/kg	0.1	<0.1
	Endrin Aldehyde	mg/kg	0.1	<0.1
	Methoxychlor	mg/kg	0.1	<0.1
	Endrin Ketone	mg/kg	0.1	<0.1
Surrogates	Isodrin	mg/kg	0.1	<0.1
	Mirex	mg/kg	0.1	<0.1
	Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-	88

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

Method: ME-(AU)-ENVJAN420

Sample Number	Parameter	Units	LOR	Result
LB176924.001	Naphthalene	mg/kg	0.1	<0.1
	2-methylnaphthalene	mg/kg	0.1	<0.1
	1-methylnaphthalene	mg/kg	0.1	<0.1
	Acenaphthylene	mg/kg	0.1	<0.1
	Acenaphthene	mg/kg	0.1	<0.1
	Fluorene	mg/kg	0.1	<0.1
	Phenanthrene	mg/kg	0.1	<0.1
	Anthracene	mg/kg	0.1	<0.1
	Fluoranthene	mg/kg	0.1	<0.1
	Pyrene	mg/kg	0.1	<0.1
	Benzo(a)anthracene	mg/kg	0.1	<0.1
	Chrysene	mg/kg	0.1	<0.1
	Benzo(a)pyrene	mg/kg	0.1	<0.1
	Indeno(1,2,3-cd)pyrene	mg/kg	0.1	<0.1
	Dibenzo(ah)anthracene	mg/kg	0.1	<0.1
	Benzo(ghi)perylene	mg/kg	0.1	<0.1
	Total PAH (18)	mg/kg	0.8	<0.8
Surrogates	d5-nitrobenzene (Surrogate)	%	-	92
	2-fluorobiphenyl (Surrogate)	%	-	90
	d14-p-terphenyl (Surrogate)	%	-	80

PCBs in Soil

Method: ME-(AU)-ENVJAN420

Sample Number	Parameter	Units	LOR	Result
LB176924.001	Arochlor 1016	mg/kg	0.2	<0.2
	Arochlor 1221	mg/kg	0.2	<0.2
	Arochlor 1232	mg/kg	0.2	<0.2
	Arochlor 1242	mg/kg	0.2	<0.2
	Arochlor 1248	mg/kg	0.2	<0.2
	Arochlor 1254	mg/kg	0.2	<0.2

Blank results are evaluated against the limit of reporting (LOR), for the chosen method and its associated instrumentation, typically 2.5 times the statistically determined method detection limit (MDL).

Result is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

PCBs in Soil (continued)

Method: ME-(AU)-[ENV]AN420

Sample Number	Parameter	Units	LOR	Result
LB176924.001	Arochlor 1260	mg/kg	0.2	<0.2
	Arochlor 1262	mg/kg	0.2	<0.2
	Arochlor 1268	mg/kg	0.2	<0.2
	Total PCBs (Arochlors)	mg/kg	1	<1
	Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	%	-

Speciated Phenols in Soil

Method: ME-(AU)-[ENV]AN420

Sample Number	Parameter	Units	LOR	Result
LB176924.001	Phenol	mg/kg	0.5	<0.5
	2-methyl phenol (o-cresol)	mg/kg	0.5	<0.5
	3/4-methyl phenol (m/p-cresol)	mg/kg	1	<1
	2-chlorophenol	mg/kg	0.5	<0.5
	2,4-dimethylphenol	mg/kg	0.5	<0.5
	2,6-dichlorophenol	mg/kg	0.5	<0.5
	2,4-dichlorophenol	mg/kg	0.5	<0.5
	2,4,6-trichlorophenol	mg/kg	0.5	<0.5
	2-nitrophenol	mg/kg	0.5	<0.5
	4-nitrophenol	mg/kg	1	<1
	2,4,5-trichlorophenol	mg/kg	0.5	<0.5
	2,3,4,6/2,3,5,6-tetrachlorophenol	mg/kg	1	<1
	Pentachlorophenol	mg/kg	0.5	<0.5
	2,4-dinitrophenol	mg/kg	2	<2
	4-chloro-3-methylphenol	mg/kg	2	<2
Surrogates	2,4,6-Tribromophenol (Surrogate)	%	-	82
	d5-phenol (Surrogate)	%	-	111

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES

Method: ME-(AU)-[ENV]AN040/AN320

Sample Number	Parameter	Units	LOR	Result
LB176927.001	Arsenic, As	mg/kg	1	<1
	Cadmium, Cd	mg/kg	0.3	<0.3
	Chromium, Cr	mg/kg	0.5	<0.5
	Copper, Cu	mg/kg	0.5	<0.5
	Nickel, Ni	mg/kg	0.5	<0.5
	Lead, Pb	mg/kg	1	<1
	Zinc, Zn	mg/kg	2	<2

TRH (Total Recoverable Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN403

Sample Number	Parameter	Units	LOR	Result
LB176924.001	TRH C10-C14	mg/kg	20	<20
	TRH C15-C28	mg/kg	45	<45
	TRH C29-C36	mg/kg	45	<45
	TRH C37-C40	mg/kg	100	<100
	TRH C10-C36 Total	mg/kg	110	<110

VOC's in Soil

Method: ME-(AU)-[ENV]AN433

Sample Number		Parameter	Units	LOR	Result
LB176923.001	Monocyclic Aromatic Hydrocarbons	Benzene	mg/kg	0.1	<0.1
		Toluene	mg/kg	0.1	<0.1
		Ethylbenzene	mg/kg	0.1	<0.1
		m/p-xylene	mg/kg	0.2	<0.2
		o-xylene	mg/kg	0.1	<0.1
	Polycyclic VOCs	Naphthalene	mg/kg	0.1	<0.1
	Surrogates	Dibromofluoromethane (Surrogate)	%	-	75
		d4-1,2-dichloroethane (Surrogate)	%	-	128
		d8-toluene (Surrogate)	%	-	77
		Bromofluorobenzene (Surrogate)	%	-	108
	Totals	Total BTEX	mg/kg	0.6	<0.6

Volatile Petroleum Hydrocarbons in Soil

Method: ME-(AU)-[ENV]AN433

Sample Number	Parameter	Units	LOR	Result	
LB176923.001	TRH C6-C9	mg/kg	20	<20	
	Surrogates	Dibromofluoromethane (Surrogate)	%	-	75
		d4-1,2-dichloroethane (Surrogate)	%	-	128

Blank results are evaluated against the limit of reporting (LOR), for the chosen method and its associated instrumentation, typically 2.5 times the statistically determined method detection limit (MDL).

Result is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

Volatile Petroleum Hydrocarbons in Soil (continued)

Method: ME-(AU)-ENVJAN433

Sample Number	Parameter	Units	LOR	Result
LB176923.001	d8-toluene (Surrogate)	%	-	77

Duplicates are calculated as Relative Percentage Difference (RPD) using the formula: $RPD = | \text{OriginalResult} - \text{ReplicateResult} | \times 100 / \text{Mean}$

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: $MAD = 100 \times \text{SDL} / \text{Mean} + \text{LR}$

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifier when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

Mercury in Soil

Method: ME-(AU)-[ENV]AN312

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE194504.003	LB176928.008	Mercury	mg/kg	0.05	<0.05	<0.05	157	0

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES

Method: ME-(AU)-[ENV]AN040/AN320

Original	Duplicate	Parameter	Units	LOR	Original	Duplicate	Criteria %	RPD %
SE194504.003	LB176927.008	Arsenic, As	mg/kg	1	2	4	62	85 @
		Cadmium, Cd	mg/kg	0.3	<0.3	<0.3	200	0
		Chromium, Cr	mg/kg	0.5	5.5	6.0	39	8
		Copper, Cu	mg/kg	0.5	35	39	31	13
		Nickel, Ni	mg/kg	0.5	15	15	33	2
		Lead, Pb	mg/kg	1	12	12	38	1
		Zinc, Zn	mg/kg	2	59	62	33	5

Laboratory Control Standard (LCS) results are evaluated against an expected result, typically the concentration of analyte spiked into the control during the sample preparation stage, producing a percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA /QC plan (Ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

Mercury in Soil

Method: ME-(AU)-[ENV]AN312

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB176928.002	Mercury	mg/kg	0.05	0.23	0.2	70 - 130	115

OC Pesticides in Soil

Method: ME-(AU)-[ENV]AN420

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB176924.002	Heptachlor	mg/kg	0.1	0.2	0.2	60 - 140	107
	Aldrin	mg/kg	0.1	0.2	0.2	60 - 140	95
	Delta BHC	mg/kg	0.1	0.2	0.2	60 - 140	95
	Dieldrin	mg/kg	0.2	<0.2	0.2	60 - 140	85
	Endrin	mg/kg	0.2	<0.2	0.2	60 - 140	92
	p,p'-DDT	mg/kg	0.1	0.2	0.2	60 - 140	107
Surrogates	Tetrachloro-m-xylene (TCMX) (Surrogate)	mg/kg	-	0.12	0.15	40 - 130	79

PAH (Polynuclear Aromatic Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN420

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB176924.002	Naphthalene	mg/kg	0.1	4.5	4	60 - 140	111
	Acenaphthylene	mg/kg	0.1	5.0	4	60 - 140	124
	Acenaphthene	mg/kg	0.1	4.8	4	60 - 140	120
	Phenanthrene	mg/kg	0.1	4.7	4	60 - 140	118
	Anthracene	mg/kg	0.1	4.6	4	60 - 140	115
	Fluoranthene	mg/kg	0.1	4.4	4	60 - 140	109
	Pyrene	mg/kg	0.1	4.9	4	60 - 140	124
	Benzo(a)pyrene	mg/kg	0.1	4.7	4	60 - 140	117
Surrogates	d5-nitrobenzene (Surrogate)	mg/kg	-	0.4	0.5	40 - 130	76
	2-fluorobiphenyl (Surrogate)	mg/kg	-	0.4	0.5	40 - 130	88
	d14-p-terphenyl (Surrogate)	mg/kg	-	0.5	0.5	40 - 130	100

PCBs in Soil

Method: ME-(AU)-[ENV]AN420

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB176924.002	Arochlor 1260	mg/kg	0.2	0.3	0.4	60 - 140	78

Speciated Phenols in Soil

Method: ME-(AU)-[ENV]AN420

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB176924.002	Phenol	mg/kg	0.5	1.0	1	70 - 130	96
	2,4-dichlorophenol	mg/kg	0.5	1.0	1	70 - 130	100
	2,4,6-trichlorophenol	mg/kg	0.5	0.8	1	70 - 130	84
	Pentachlorophenol	mg/kg	0.5	0.8	1	70 - 130	83
	2,4,6-Tribromophenol (Surrogate)	mg/kg	-	4.0	5	40 - 130	79
Surrogates	d5-phenol (Surrogate)	mg/kg	-	2.1	2	40 - 130	105

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES

Method: ME-(AU)-[ENV]AN040/AN320

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB176927.002	Arsenic, As	mg/kg	1	330	336.32	79 - 120	97
	Cadmium, Cd	mg/kg	0.3	420	416.6	69 - 131	102
	Chromium, Cr	mg/kg	0.5	33	35.2	80 - 120	94
	Copper, Cu	mg/kg	0.5	310	370.46	80 - 120	84
	Nickel, Ni	mg/kg	0.5	180	210.88	79 - 120	84
	Lead, Pb	mg/kg	1	89	107.87	79 - 120	82
	Zinc, Zn	mg/kg	2	270	301.27	80 - 121	91

TRH (Total Recoverable Hydrocarbons) in Soil

Method: ME-(AU)-[ENV]AN403

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB176924.002	TRH C10-C14	mg/kg	20	43	40	60 - 140	108
	TRH C15-C28	mg/kg	45	<45	40	60 - 140	105
	TRH C29-C36	mg/kg	45	<45	40	60 - 140	85
	TRH F Bands	mg/kg	25	43	40	60 - 140	108
	TRH >C16-C34 (F3)	mg/kg	90	<90	40	60 - 140	100
	TRH >C34-C40 (F4)	mg/kg	120	<120	20	60 - 140	75

VOC's in Soil

Method: ME-(AU)-[ENV]AN433

Sample Number	Parameter	Units	LOR
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Laboratory Control Standard (LCS) results are evaluated against an expected result, typically the concentration of analyte spiked into the control during the sample preparation stage, producing a percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA /QC plan (Ref: MP-(AU)-[ENV]QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended dagger symbol (†) when outside suggested criteria.

VOC's in Soil (continued)

Method: ME-(AU)-[ENV]AN433

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB176923.002	Monocyclic	Benzene	mg/kg	0.1	2.2	2.9	60 - 140
	Aromatic	Toluene	mg/kg	0.1	2.4	2.9	60 - 140
		Ethylbenzene	mg/kg	0.1	2.4	2.9	60 - 140
		m/p-xylene	mg/kg	0.2	6.1	5.8	60 - 140
		o-xylene	mg/kg	0.1	2.9	2.9	60 - 140
	Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	5.2	5	60 - 140
		d4-1,2-dichloroethane (Surrogate)	mg/kg	-	6.3	5	60 - 140
		d8-toluene (Surrogate)	mg/kg	-	3.9	5	60 - 140
		Bromofluorobenzene (Surrogate)	mg/kg	-	5.3	5	60 - 140

Volatile Petroleum Hydrocarbons in Soil

Method: ME-(AU)-[ENV]AN433

Sample Number	Parameter	Units	LOR	Result	Expected	Criteria %	Recovery %
LB176923.002		TRH C6-C10	mg/kg	25	26	24.65	60 - 140
		TRH C6-C9	mg/kg	20	26	23.2	60 - 140
	Surrogates	Dibromofluoromethane (Surrogate)	mg/kg	-	5.2	5	60 - 140
		d4-1,2-dichloroethane (Surrogate)	mg/kg	-	6.3	5	60 - 140
		d8-toluene (Surrogate)	mg/kg	-	3.9	5	60 - 140
		Bromofluorobenzene (Surrogate)	mg/kg	-	5.3	5	60 - 140
	VPH F Bands	TRH C6-C10 minus BTEX (F1)	mg/kg	25	<25	7.25	60 - 140

Matrix Spike (MS) results are evaluated as the percentage recovery of an expected result, typically the concentration of analyte spiked into a field sub-sample during the sample preparation stage. The original sample's result is subtracted from the sub-sample result before determining the percentage recovery. The criteria applied to the percentage recovery is established in the SGS QA/QC plan (ref: MP-(AU)-(ENV)QU-022). For more information refer to the footnotes in the concluding page of this report.

Recovery is shown in **Green** when within suggested criteria or **Red** with an appended reason identifier when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

Mercury in Soil

Method: ME-(AU)-(ENV)AN312

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE194494.001	LB176928.004	Mercury	mg/kg	0.05	0.24	<0.05	0.2	111

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES

Method: ME-(AU)-(ENV)AN040/AN320

QC Sample	Sample Number	Parameter	Units	LOR	Result	Original	Spike	Recovery%
SE194494.001	LB176927.004	Arsenic, As	mg/kg	1	50	<1	50	98
		Cadmium, Cd	mg/kg	0.3	48	<0.3	50	96
		Chromium, Cr	mg/kg	0.5	59	11	50	96
		Copper, Cu	mg/kg	0.5	56	4.7	50	102
		Nickel, Ni	mg/kg	0.5	50	2.8	50	95
		Lead, Pb	mg/kg	1	55	10	50	91
		Zinc, Zn	mg/kg	2	84	42	50	84

Matrix spike duplicates are calculated as Relative Percent Difference (RPD) using the formula: $RPD = | \text{OriginalResult} - \text{ReplicateResult} | \times 100 / \text{Mean}$

The original result is the analyte concentration of the matrix spike. The Duplicate result is the analyte concentration of the matrix spike duplicate.

The RPD is evaluated against the Maximum Allowable Difference (MAD) criteria and can be graphically represented by a curve calculated from the Statistical Detection Limit (SDL) and Limiting Repeatability (LR) using the formula: $MAD = 100 \times \text{SDL} / \text{Mean} + \text{LR}$

Where the Maximum Allowable Difference evaluates to a number larger than 200 it is displayed as 200.

RPD is shown in **Green** when within suggested criteria or **Red** with an appended reason identifier when outside suggested criteria. Refer to the footnotes section at the end of this report for failure reasons.

No matrix spike duplicates were required for this job.

Samples analysed as received.

Solid samples expressed on a dry weight basis.

QC criteria are subject to internal review according to the SGS QA/QC plan and may be provided on request or alternatively can be found here : https://www.sgs.com.au/~media/Local/Australia/Documents/Technical Documents/MP-AU-ENV-QU-022_QA_QC_Plan.pdf

- * NATA accreditation does not cover the performance of this service .
 - ** Indicative data, theoretical holding time exceeded.
 - Sample not analysed for this analyte.
 - IS Insufficient sample for analysis.
 - LNR Sample listed, but not received.
 - LOR Limit of reporting.
 - QFH QC result is above the upper tolerance.
 - QFL QC result is below the lower tolerance.
-
- ① At least 2 of 3 surrogates are within acceptance criteria.
 - ② RPD failed acceptance criteria due to sample heterogeneity.
 - ③ Results less than 5 times LOR preclude acceptance criteria for RPD.
 - ④ Recovery failed acceptance criteria due to matrix interference.
 - ⑤ Recovery failed acceptance criteria due to the presence of significant concentration of analyte (i.e. the concentration of analyte exceeds the spike level).
 - ⑥ LOR was raised due to sample matrix interference.
 - ⑦ LOR was raised due to dilution of significantly high concentration of analyte in sample.
 - ⑧ Reanalysis of sample in duplicate confirmed sample heterogeneity and inconsistency of results.
 - ⑨ Recovery failed acceptance criteria due to sample heterogeneity.
 - ⑩ LOR was raised due to high conductivity of the sample (required dilution).
 - † Refer to Analytical Report comments for further information.

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6. Attachment Two – Amended Notice of Determination
