

Appendix G19

Preliminary Site Contamination Assessment

Environmental Impact Statement

for Alterations and Additions to
St Philip's Christian College,
Cessnock

**PRELIMINARY SITE (CONTAMINATION) ASSESSMENT
ST PHILIP'S CHRISTIAN COLLEGE, NULKABA**

Prepared for ST PHILIP'S CHRISTIAN EDUCATION FOUNDATION LTD

Prepared by RCA Australia

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28 January 2022

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Engineering Geology
Environmental Engineering
Hydrogeology
Construction Materials Testing
Environmental Monitoring
Noise & Vibration
Occupational Hygiene

PRELIMINARY SITE (CONTAMINATION) ASSESSMENT

10 LOMAS LANE, NULKABA

EXECUTIVE SUMMARY

This report presents the findings of a detailed preliminary site (contamination) assessment undertaken for the proposed development at the existing St Philip's Christian College situated at Nulkaba, outside of Cessnock.

A previous phase 1 assessment (Ref [1]) was undertaken in 2009 prior to the initial development of the College and identified that the site was suitable for the proposed use as an educational facility with recreational land. Earthworks for the construction of the College commenced in 2011 and were broadly complete by 2013 and, based on subsequent geotechnical assessment (Ref [5]) included the use of fill in the built areas of the site.

St Philip's is proceeding with a State Significant Development Application for extensions proposed in proximity and to the south of the existing College buildings. An application to undertake the development has been lodged and Secretary's Environmental Assessment Requirements (SEARs) have been issued and are to be addressed as part of the Application. Condition 20 requires a preliminary site investigation to quantify the presence of soil and/or groundwater contamination such that it can be demonstrated that the site is suitable for the proposed use. A hazardous materials assessment is also required. The Condition included a requirement for further investigation if recommended by the preliminary investigation and remediation / management if considered to be required as part of the investigations. In accordance with Condition 20 this report has been reviewed and authorised by Adam Sullivan (CEnvP-SC No. SC40944) who is certified under one of the two (2) schemes approved by the NSW EPA.

RCA have undertaken a desktop study of site use since the previous assessment (Ref [1]), a visual site assessment, shallow soil sampling by hand auger and surface water sampling from four (4) existing dams and one (1) location from Black Creek at the site. A geotechnical assessment (Ref [2]) was undertaken concurrently.

No potential for contamination from site use was identified at the site since the time of the previous assessment (Ref [1]); with the exception of the College construction and demolition of buildings in the south of the site the site use remains unchanged. There is a new service station constructed in immediate proximity to the western boundary however based on the requirements of the *Protection of the Environment Operations (Underground Petroleum Storage Systems) Regulation 2019* RCA does not consider that there is significant potential for contamination to have impacted the site. Other sites with known contamination are limited to distances of >4km from the site and are not considered to have potential to impact at the site.

Fill material was encountered in the College area; based on the findings of the concurrent geotechnical assessment (Ref [2]) the depth of fill is in the order of 1.3m below the surface to a depth exceeding 2.6m below the surface. The fill was primarily a clay material generally consistent with the in-situ materials. With the exception of minor anthropogenic waste (brick and plastic) at depth at one location adjacent the demountable buildings there were no visual or olfactory indications of contamination identified by RCA in either assessment.

Contamination was not identified within the soil at the site with the exception of a minor soil concentration of nickel in excess of general ecological land use criteria (Ref [7]). RCA does not consider that the nickel is indicative of contamination, rather the concentrations of nickel are considered to be representative of the natural strata. Four (4) stockpiles were identified near the centre of western boundary which comprised brown sandy clay materials; a sample from one of the stockpiles did not indicate the presence of any contamination.

Detectable concentrations of hydrocarbons in surface water were restricted to SW4, which is beyond the extent of the College development area and sourced primarily from off-site. The concentrations are in excess of the ecological criteria (Ref [9]) however the testing was not specific to petroleum-based hydrocarbons and based on the absence of any visual or olfactory indications of contamination it is not considered to pose a risk to the dam environment. If water from this dam is proposed to be used for irrigation at sections of the site utilised as part of the College operations, further assessment of the nature of the hydrocarbons is to be undertaken.

Detectable concentrations of metals were identified in the majority of the water samples; these are considered to be representative of natural conditions and not of contamination based on the findings of the site history and the results of the soil samples. There is not considered to be a potentially detrimental impact to ecological systems in the dams or Black Creek due to these concentrations, nor are the concentrations considered to pose a constraint to the continued use of water from Black Creek for irrigation within the College grounds.

No hazardous materials (asbestos, lead based paint, or polychlorinated biphenyls in light fittings) were identified by way of inspection of the demountable buildings or other buildings requiring demolition / renovation as part of the proposed extension. The potentially hazardous material synthetic mineral fibres (SMF) were visually identified within the demountable buildings and is understood, based on discussion with maintenance personnel, to be present within the ceiling cavities of lower floor rooms at the Sports Hall.

Based on the findings of the assessment, RCA considered that the site is suitable for the extension to the existing College as described to RCA (refer **Appendix B**).

Synthetic mineral fibres (SMF), and any insulation not specifically confirmed not to be SMF, must be handled, transported and disposed of in a manner which minimises the potential for contact and does not allow release of the SMF to the environment.

Excavated soil, in the event that it is surplus to requirements and requires removal off-site, is considered likely to be able to be classified as excavated natural material in accordance with the Order (Ref [18]) and underlying rock is considered to be able to be classified as virgin excavated natural material in accordance with the *Protection of the Environment (Operations) Act 1997*. All material is to be certified prior to removal from site; these documents, material tracking and documentation relating to the receiving site are to be retained for provision to regulatory authorities as required.

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SUMMARY OF RESULTS

1 INTRODUCTION

This report presents the findings of a preliminary site (contamination) assessment at the St Philip's Christian College (SPCC) situated at 10 Lomas Lane, Nulkaba outside of Cessnock.

A previous preliminary assessment (Ref [1]) was undertaken in 2009 by AECOM prior to the initial development of the College and identified that the site was suitable for the proposed use as an educational facility with recreational land.

Extensions (which comprise the construction of fourteen (14) new buildings) are proposed in proximity to the existing College buildings as well as to the south, and an application to undertake the development has been lodged. The Planning Secretary's Environmental Assessment Requirements (SEAR) details numerous key issues for the site. Key issue no. 20 details the requirement to address potential for contamination as follows:

Assess and quantify any soil and groundwater contamination and demonstrate that the site is suitable for the proposed use in accordance with SEPP 55. This must include the following prepared by certified consultants recognised by the NSW Environment Protection Authority:

- *Preliminary Site Investigation (PSI).*
- *Detailed Site Investigation (DSI) where recommended in the PSI.*
- *Remediation Action Plan (RAP) where remediation is required. This must specify the proposed remediation strategy.*
- *Preliminary Long-term Environmental Management Plan (LEMP) where containment is proposed on-site.*

Provide a hazardous materials survey of existing aboveground buildings that are proposed to be demolished or altered.

The purpose of the investigation is to address issue no. 20 of the SEAR with regards to an assessment of potential contamination. In accordance with the requirements of the SEAR this report has been reviewed and authorised by Adam Sullivan (CEnvP-SC No. SC40944) who is certified under one of the two (2) schemes approved by the NSW EPA.

This assessment has been undertaken at the request of Mr Andrew Donald from Barr Planning on behalf of St Phillips Christian Education Foundation Limited.

It is noted that a geotechnical assessment was undertaken concurrently; the results of this assessment are reported separately (Ref [2]).

1.1 OBJECTIVE

The objective of this investigation is to assess the potential for contamination to be present and whether the site is suitable for proposed uses without remediation and / or long-term management.

1.2 REGULATORY COMPLIANCE

The assessment works and preparation of this report was undertaken with reference to (but not limited to) the following regulatory guidance documents and standards:

- NSW EPA, *Sampling Design Guidelines* (Ref [3]). This document was used as a reference with regards to the number of samples required for characterisation of the site's contamination status.

- NSW EPA, *Guidelines for Consultants Reporting on Contaminated Sites*, (Ref [4]). This document was used as a reference for the derivation of the scope of work and what information was to be included in this report.
- NSW EPA, *Guidelines for the NSW Site Auditor Scheme* (3rd Ed, (Ref [5]). This document was used as a reference for the derivation of the scope of work and what information was to be included in this report.
- NSW Department of Urban Affairs and Planning, *Managing Land Contamination: Planning Guidelines: SEPP 55 Remediation of Land*, (Ref [6]). This report has been provided satisfy the requirements of the SEPP which require an assessment that the site is suitable or can be made suitable for the proposed use.
- National Environmental Protection Council, *National Environment Protection (Assessment of Site Contamination) Measure*, (Ref [7]). These guidelines were utilised as guideline criteria for the assessment of the contamination status of soil at the site.
- CRC Care, *Technical Report 10, Health screening levels for petroleum in soil and groundwater* (Ref [8]). These guidelines were utilised as guideline criteria for the assessment of the contamination status of soil at the site.
- ANZG, *Australian and New Zealand Guidelines for Fresh and Marine Water Quality Australian and New Zealand Governments and Australian state and territory governments, Canberra ACT, Australia.*, August 2018 (Ref [9]). These guidelines were used as guideline criteria for the assessment of the contamination status of surface water.
- Standards Australia, *Guide to the investigation and sampling of sites with potentially contaminated soil, Part 1: Non-volatile and semi-volatile compounds*, AS 4482.1-2005 (Ref [10]). These guidelines were utilised as a guide for the methodology for the collection of soil samples.

2 SITE IDENTIFICATION AND DESCRIPTION

The site is described as 10 Lomas Lane, Nulkaba and consists of the following Lots:

- Lot 1 DP126765.
- Lot 1 DP 744377.
- Lot 2 DP600895.
- Lot 518 DP837571.

Additional details are shown in **Table 1** below.

Table 1 Site Details

Current zoning (Ref [11])	 RU2- Rural Landscape
Current uses	The northern portion of the site is used by the existing St Philip's Christian College. An existing/former rural residential property, 2 sheds, and some concrete slabs are located in south west corner of the site. In addition, a portion of vacant unused land in the centre of the western boundary is used for stockpiling/storage of soil. A sheep enclosure, likely originally associated with former equestrian activities is also situated within this area of the site.
Size of site	42 ha
Land use to the: North	Open land with some established wineries/vineyards.
South	Vacant land, a rural residential property and a small sheep enclosure.
East	Black Creek located along the eastern boundary of the site and then some established wineries/vineyards.
West	Wine Country Drive and beyond that, a fuel station and Fast 'n Fresh Cafe and residential properties established as well as wineries/vineyards.
Nearest sensitive receptor (human health)	The existing SPCC is considered to be the closest sensitive receptor. A rural residential property is located at the south of the site.
Nearest sensitive receptor (environmental)	Black Creek is located along the eastern boundary of the site. The Creek did formerly cut through the central portion of the site however this section has been blocked off such that there is no Creek flow.

Drawing 1, Appendix A shows the locality and the layout of the site.

The existing St Philip's Christian College facility is situated within the north portion of the site. The proposed development comprises the construction of fourteen (14) buildings: twelve (12) of these will be within the area of the current College, the early learning centre (Narnia) will be situated adjacent to the senior school, the Dynamic Alternative Learning Environment (D.A.L.E) and an aquatic centre is to be situated to the south of the College development. Plans of the development are presented in **Appendix B** and the footprints of the proposed buildings are included on **Drawing 2, Appendix A**.

Excavations during the proposed development are presumed to be limited to those required for footing construction, subject to geotechnical investigation however considered likely to comprise piers / piles from which limited soil removal is required, with the exception of the pool within the Aquatic Centre for which excavation is anticipated to be in the order of up to 3m below the surface for an area of approximately 693m² (refer **Appendix B**).

3 SITE HISTORY AND BACKGROUND INFORMATION

A phase 1 contamination assessment (Ref [1]) was undertaken by AECOM in May 2009 which included a full assessment of site history information. RCA has not repeated the site history assessment except where there is considered to have been a potential for a change in status since the previous assessment's findings.

3.1 PREVIOUS INVESTIGATIONS

3.1.1 PHASE 1 CONTAMINATION ASSESSMENT

The phase 1 contamination assessment (Ref [1]) comprised:

- Review of the site history using available historical information.
- Assessment of the potential for soil and groundwater contamination to exist beneath the site and the potential source of the contamination. This was undertaken via desktop study and site inspection only. No intrusive investigation or chemical assessment was undertaken.
- Preparation of a report detailing the findings of the phase 1 and recommendations for future action.

A summary of the findings of the phase 1 assessment (Ref [1]) is presented below:

- The site history review did not indicate any past potentially contaminating activities on the site itself. The review of historical aerial photographs from 1951 to 2004 indicated that the site was predominantly open grassland with some evidence of clearing and dams within the southern portion of the site. Trotting tracks were visible and numerous sheds and paddocks were established over the years which AECOM concluded were likely to support equestrian activities. There was no other development described on the site. The surrounding land use comprised residential and vineyards which developed over the years.
- The information provided from Workcover did not locate any records pertaining to Dangerous Goods licensing on the property.

- Under the CLM Act 1997, there were no notices under either the *Contaminated Land Management (CLM) Act 1997* or the *Protection of the Environment Operations (POEO) Act 1997* for the site or for the properties in the surrounding area.
- The potential for contamination on the site was considered to be low and the site history assessment did not identify any potentially contaminating activities which would be considered a risk of contamination to the environment or further users of the site.
- AECOM concluded that the site was suitable for the proposed education facility and recreational use.

RCA undertook a review of the geotechnical logs which did not indicate the presence of any anthropogenic or waste materials. There was also no notation regarding any visual or olfactory indications of contamination within the fill (or residual) material.

3.1.2 GEOTECHNICAL INVESTIGATIONS

Two (2) geotechnical assessments have been undertaken at the site: one prior to and one following development of the SPCC at the site.

The first geotechnical investigation was undertaken by Douglas Partners (Ref [12]) prior to the construction of the St Philip's Christian College. A summary of information relevant to this assessment is presented below:

- The site was identified to be within an area of no known occurrence of acid sulfate soil.
- The subsurface profile generally consisted of topsoil of 0.15-0.3m thickness overlying very stiff to hard clayey soils to the limit of investigation (1.75m).
 - Fill was encountered at one location only, situated within an oval shaped track, and comprised a 70mm layer of dense green-grey gravelly sand overlying a mixed clay / sand / gravel layer to 0.15m below the surface.
- Groundwater not encountered within the limit of the investigation (1.75m).
- Pad and strip footings to a depth of approximately 0.6m below the surface were considered to be appropriate for the proposed buildings.

A further geotechnical investigation was undertaken by Valley Civilab (Ref [13]) as part of an assessment for the construction of a proposed building for the senior school on the western side of the existing SPCC area (Building C1 as shown in **Appendix B**). A summary of information relevant to this assessment is presented below:

- The site lies within an area of no known occurrences of acid sulfate soil.
- The site does not lie within a mine subsidence district.
- The subsurface profile generally consisted of 2-2.6m of clay based fill material overlying deep saturated alluvial sands at each of the four (4) locations in the area of the Building C1 footprint and in the north western corner of the site. Rock was encountered at the site at depths of greater than 7.3m.
- Groundwater was encountered at the site in the northwest portion at greater than 3.5m below the surface of the site.
- Surface water was encountered at the site within three (3) small reservoirs in the north-eastern corner, eastern and south edges.

- Valley Civilab concluded (Ref [13]) the site would be suitable for the use of deep footings only due to the presence of fill overlying deep alluvial saturated sands.

RCA undertook a review of the geotechnical logs which did not indicate the presence of any anthropogenic or waste materials. There was also no notation regarding any visual or olfactory indications of contamination within the fill (or residual) material.

3.2 SITE NOTIFICATIONS

The Section 10.7 Planning Certificate as specified under the Environmental Planning and Assessment Regulation 2000 (Schedule 4) includes information associated with any restrictions for the use of the land.

RCA undertook a review of the four (4) section 10.7 certificates applicable to the site. Information relevant to this obtained from the 10.7 certificates and relevant to the site is contained in **Table 2**. The information presented below is applicable to each of the four (4) certificates reviewed unless otherwise stated.

Table 2 *Planning Advice Contained in the 10.7 Certificates*

Part 2 relevant Information	• Multiple SEPP applies to site. • Cessnock development plan 2010 Zoning and Land use under relevant LEPs apply to the site. • The land does not include or comprise critical habitat. • The land is not within a heritage conservation area. • There are no heritage listed items within the site. • Complying development under <i>the Exempt and Complying Development Codes 2008</i> may be on the land subject to clause 1.19. • The land is not within a Mine Subsidence District under the <i>Coal Mine Subsidence Compensation Act 2017</i>. • The land is not affected by road widening or realignment. • Development on the land or part of the land is subject to flood related development controls. • The land is not reserved for acquisition. • The Cessnock Section 7.12 Levy Contributions Plan 2017 apply to the land. • The Cessnock City Wide Local Infrastructure Contributions Plan 2020 apply to the land. • The land is not a biodiversity certified land under Part 8 of the <i>Biodiversity Conservation Act 2016</i> • The land is not a biodiversity stewardship site under Part 5 of the <i>Biodiversity Conservation Act 2016</i> • The land is not land that contains a set aside area under section 60ZC of the <i>Local Land Services Act 2013</i>. • The land is identified as bushfire prone land Environmental Planning & Assessment Act 1979. • The land is not subject to a property vegetation plan approved under Part 4 of the <i>Native Vegetation Act 2003</i>. • The land is not subject to an order made under the Trees (Disputes Between Neighbours) Act 2006 to carry out work in relation to a tree on the land. • The land is not affected by a direction by the Minister in force under section 75P (2) (c1) of Part 3A of the Act. • The land is not affected by development consent for seniors housing. • The land is not affected by a current site verification certificate. • The land is not affected by any building notices and building product rectification orders. • There are no matters arising under the Contaminated Land Management Act 1997 which apply to the site.
Part 5 relevant Information	• A draft development control plan does not apply to the land. • The land is not affected by a current notice of order.

The Section 10.7 certificates are included in **Appendix C**.

3.2.1 HERITAGE

RCA undertook a search of the Heritage NSW heritage register¹ and the Department of Agriculture, Water and the Environment and Energy heritage register² for 10 Lomas Lane, Nulkaba and identified that there are no Aboriginal Places or items on the State Heritage Register for the site. There were three (3) items in the vicinity of the site on the Local Environmental Plan (Ref [11]) register:

- Cessnock General Cemetery. The site is marked as approximately 2.7km to the south south west of the site.
- Cessnock East Public School. The site is marked as approximately 5.4km to the south south east of the site.
- Glenmore Private Hospital. The site is marked as approximately 3.8km to the south south west of the site.

The sites are considered too distant to be impacted by any works at the site.

3.3 HISTORICAL PHOTOGRAPHS

RCA undertook a search of the Historical Land Records Viewer³ and identified no images with relevance to the site.

RCA undertook a search through the collections of the Newcastle Library⁴ and did not identify images with relevance to the site.

RCA undertook a search through the State Library of NSW⁵ for photographs relevant to the site and Cessnock. None were found that could be identified as having relevance to the site.

RCA reviewed historical aerial photographs available from *GoogleEarth* and *NearMaps* (used in accordance with commercial licence) since the last reviewed photograph (2004) presented in the phase 1 assessment (Ref [1]), a summary of which is provided in **Table 3**. Two (2) *StreetView* photographs from *Google Maps* have also been presented.

¹ <http://www.environment.nsw.gov.au/heritageapp/heritagesearch.aspx>

² <http://www.environment.gov.au/heritage/publications/australian-heritage-database>

³ <http://hlrv.nswlrs.com.au/pixel.htm>

⁴ <http://www.newcastle.nsw.gov.au/Library/Heritage-History/Search-the-Collection/Hunter-PhotoBank>

⁵ <http://archival.sl.nsw.gov.au/home>

Table 3 *Aerial Photograph Review*

February 2010	The site appears to be generally open, presumably agricultural land and consistent with the description provided in the AECOM (Ref [1]) report. Similarly, the surrounding area appears generally consistent with the description provided in the AECOM (Ref [1]) report. The rural property located in southwest corner of the site has had a number of buildings demolished (footings are visible in above photograph) and the other buildings have been constructed. The area directly to the west appears to be Wine Country Drive and then agricultural (grazing and horticultural land) with residential properties on the south west of the site. The area to the north, south, and east appears to be vacant land or agricultural pasture. The <i>StreetView</i> photograph shows water situated in a depression in the current area of the College buildings.
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**September
2011**



The site remained unchanged from the 2010 photograph with the exception of construction (and presumably filling) works in the north of the site, for the St Philip's Christian College development. This work includes the excavation of a dam in the north west corner of the site. One of the buildings in the south west has been demolished. There doesn't appear to have been any significant changes in the surrounding area since the 2010 photograph.

**September
2012**



The early stages of the College construction, comprising the existing car parking area along the northern boundary, the existing trade training centre and some other demountable buildings in the north of the site are now visible. Further sheds have been demolished in the south west of the site. There have been no significant changes in the surrounding areas since the 2011 aerial photograph.

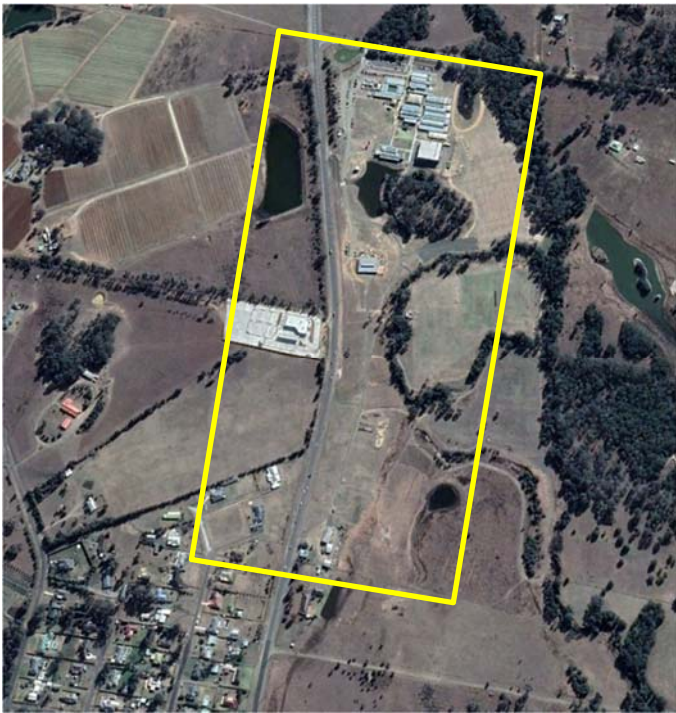
March 2014	 Development of the College has been ongoing with the junior school, sports hall, demountable, and another car park now visible. The remainder of the site remains unchanged since the previous photograph. There doesn't appear to be any significant changes within the surrounding area since the 2012 photograph.
February 2016	 The site and the surrounding area appear relatively unchanged since the 2014 photograph with the exception of the existing D.A.L.E building near the central western boundary which is now present and some finishing of carparking areas. There doesn't appear to be any significant changes within the surrounding area since the 2014 photograph.

**February
2017**



The site appears unchanged from the previous image with the exception of a sheep enclosure which is built within the site near the western boundary (as per small circle in the above photograph). Two (2) stockpiles are also visible adjacent to the north of the sheep enclosure.

Some land disturbance/clearing has commenced to the west of the site in the area of the current BP service station (as per large circle in the above photograph) however otherwise the surrounding area is unchanged from the 2016 aerial.

August 2018	 There have been no significant changes to the site since the 2017 photograph with the exception of one (1) additional stockpile adjacent to a sheep enclosure in the western boundary of the site. The current BP service station (including Fast 'n Fresh Cafe) has been constructed within the cleared area of land immediately west of the site. There does not appear to have been any other significant changes to the surrounding area since the 2017 photograph.
April 2019	 The site and the surrounding area have not significantly changed from the previous image.

September
2020



The site and the surrounding area have not significantly changed from the previous image.



The StreetView photograph is presented for comparison to the 2010 photograph from the north western corner of the site.

Reviewed documentation is included in **Appendix C**.

3.4 CONTAMINATED LAND PUBLIC RECORD

RCA undertook a search of the NSW EPA public lands register⁶ and there is no record within the suburb of Cessnock.

RCA undertook a search of sites notified to the NSW EPA⁷ as potentially requiring regulation (as updated 13 August 2021) and confirmed that the site is not notified. However, there are three (3) sites notified for the suburb of Cessnock.

- Caltex Cessnock Service Station, 103-105 Wollombi (Corner James Street) Road, Cessnock. This facility is located approximately 5.6km to the south west of the site.
- Former Mobil Service Station, 102 Wollombi Road, Cessnock. This facility is located approximately 5.5km to the south west of the site.
- Former Service Station, 2-4 Allandale Road, Cessnock. This facility is located approximately 4.1km to the south of the site.

The potential contamination issues associated with the service stations are considered likely to be related with off-site soil and / or groundwater contamination by hydrocarbons. As all three (3) sites are more than 4km from the site, they are considered to be at distance which would not be considered likely to impact on the site.

RCA notes that a new service station was constructed immediately adjacent to the site sometime between February 2017 and August 2018. Whilst there is potential for contamination (primarily from within groundwater) from the storage of underground petroleum in tanks in such close proximity to the site, due to the absence of any notification and the requirement under the *Protection of the Environment Operations (Underground Petroleum Storage Systems) Regulation 2019* for a leak detection system and regular monitoring it is considered unlikely that this facility would have impacted the site since construction.

⁶ <http://www.epa.nsw.gov.au/publicregister/>

⁷ <http://www.epa.nsw.gov.au/clm/publiclist.htm>

3.6 GEOLOGY, HYDROGEOLOGY AND HYDROLOGY

RCA reviewed published geological and hydrogeological maps and summarised the findings in **Table 4**.

Table 4 *Geology and Hydrogeology*

Soil type	The Soil Landscape of Singleton (1:250,000) (Ref [14]) indicates that the majority of the site is made up of Branxton yellow podzolic soils; red podzolic soils are present on crests, yellow soloths are common on drainage lines and lower slopes, and alluvial soils (sands) occur in some creeks. The underlying geology is identified (Ref [14]) to be sandstone, shale, mudstone, siltstone, tuff, conglomerate, limestone and coal.
Acid sulfate soil	The Cessnock Acid Sulfate Soil Risk Map indicates that the site is in an area of no known occurrence for acid sulfate soils.
Groundwater use	There is one (1) registered groundwater well (GW080978) situated approximately 3.6km to the south east of the site. This well is identified as a monitoring bore by NSW Office of Water; and is listed as decommissioned. The next closest registered well (GW200249) is situated approximately 4km to the south west of the site. This well is identified as a test bore.
Number of monitoring wells onsite	There are no known monitoring wells on the site.
Depth to groundwater	GW080978 was drilled to 30m below the surface and the water bearing zone is described as being within the shale at approximately 9m below the surface. Standing water level is identified as 6m below the surface. It is noted that the site of GW08098 is approximately 10m higher than the site. GW200249 was drilled to 18m below the surface; the water bearing zone is identified at 16m below the surface in silt. No standing water or water bearing zone are identified. It is noted that the site of GW200249 is approximately 30m higher than the site.
Estimated Groundwater flow direction	Unknown, presumed to be in a general easterly direction. It is possible that groundwater flows with a northerly aspect due to the higher elevation land approximately 10 and 20km to the south east of the site.
Background water quality	Unknown, presumed not contaminated.

The groundwater information is attached in **Appendix C**.

The College has a 60ML licence to extract water from Black Creek which is used to water the majority of the grassed areas and sporting fields; some of the grassed area and gardens are irrigated with potable water. The majority of water extracted from Black Creek is used directly via pumps and irrigators / sprinklers however some water is directed via the disused section of Black Creek into the large dam in the central portion of the site and irrigation is undertaken from here. The majority of the site's stormwater and offsite stormwater from the west of the site is also directed to the dam in the central portion of the site; water from the two (2) dams in the northern portion of the site is drained back to Black Creek.

3.7 INTEGRITY ASSESSMENT

Information obtained from the 10.7 Certificates is presumed to be accurate however is limited to information Council has obtained and documented.

Information obtained from aerial photography is limited in that it only provides a snapshot of the site in time. RCA considers that adequate coverage was achieved for this investigation with aerials available every year or two (2) from 2009 onwards.

Information obtained from the phase 1 assessment (Ref [1]) and the geotechnical assessment (Ref [12] and [13]) is presumed to be accurate; however, is limited to information obtained and documented by each party involved. RCA considers that there was sufficient information in the phase 1 assessment (Ref [1]) to adequately assess the potentially contaminating activities at the site prior to the initial development of the College.

Overall RCA considers that the site history review is adequate to provide a general understanding of the past nature of land use at the site.

4 PRELIMINARY CONCEPTUAL SITE MODEL

Based on the previous works regarding the AECOM report (Ref [1]), the site has been used for farming and residential purpose since 1894. Parts of the site were also used as informal trotting tracks. No contaminating activity was identified at the site itself with a large proportion of the site remaining undeveloped.

Earthworks for the construction of the College commenced in 2011 and was broadly complete by 2013.

As such the potential contamination, exposure pathways, and receptors are considered as follows:

- Importation of filling to the site:
 - The geotechnical report (Ref [13]) indicated that up to 2m of clay based fill material in the western area of the site near the existing and proposed senior school and library; this material was not identified by the geotechnical assessment (Ref [12]) prior to the development of the College. Wholescale filling does not appear to have occurred across the remainder of the site however there may have been localised filling to elevate buildings (where not on elevated footings) above the flood level. Depending on the source, this may have resulted in contaminated soil to the depth of filling. Contaminants of concern are considered to be hydrocarbons and metals. Asbestos may be present if anthropogenic material is present within the fill however given the recent construction of the College buildings (within ten (10) years) it is not considered likely that waste would have been used as fill.
 - Risks associated with this material are considered to be limited to direct exposure by ingestion or dermal contact. The presence of asbestos would give rise to an inhalation risk.
 - Offsite impacts are considered to be related only to the potential for groundwater contamination.
- Storage and use of chemicals at the site as part of landscaping maintenance.
 - Contaminants of concern are considered to be metals, pesticides and herbicides.

- Risks associated with this material are considered to be limited to direct exposure by ingestion or dermal contact.
- Offsite impacts are considered to be related only to the potential for surface water contamination.
- Regarding contaminated public records three (3) sites have been notified, Caltex Cessnock Service Station, Former Mobil Service Station, and Former Service Station. The potential contamination issues associated with the service stations are considered likely to be related with off-site soil and / or groundwater contamination by hydrocarbons. As all three (3) sites are more than 4km from the site, they are considered to be at distance which would not be considered likely to impact on the site

There are no site activities associated with the College that are considered to pose a risk of contamination with the potential exception of minor leaks of fuel from cars parked in the carparks.

RCA notes that there are extensive demountable buildings present at the site; based on a photograph supplied and observations made during the site inspection, these are new structures with a limited potential for the presence of hazardous materials (such as lead-based paint and asbestos). Similarly, the building proposed for renovations as part of the works is considered unlikely to contain hazardous building materials (based on their construction having occurred less than ten (10) years ago) however due to the requirements of the SEAR, assessment has been included.

5 SAMPLING AND ANALYTICAL QUALITY PLAN

No formal sampling and analytical quality plan (SAQP) were developed for the project, however **Table 5** provides detail and rationale regarding the scope of works undertaken.

Table 5 *Data Quality Objectives of the Site Investigation*

Data Quality Objectives	Description
Step 1 - State the Problem	The site has historically been undeveloped land, presumed agricultural pasture, and a phase 1 assessment (Ref [1]) did not identify any potential for contamination based on the site history however as part of the State Significant Development, a further preliminary assessment is required with reference to the layout of the proposed development. The investigation is required to address the SEAR requirements to assess the potential for contamination since the completion of the previous assessment and for a hazardous materials assessment.
Step 2 - Identify the Goal and Decisions	The key uncertainties that the investigation attempts to address are as follows: • What is the history of the site since 2010, is there any potential for contamination from previous or adjacent use? • What is the extent of contamination within soils (if present)? • Do the concentrations of contaminants in soil exceed acceptable levels? • Are contaminant concentrations in the four (4) dams, and Black Creek from which water is extracted for use at the site at an acceptable level? • Is the site suitable for the intended use? • The specific decisions to be made are as follows: • Is there any fill material across the site and if so, what are the contaminant concentrations in the fill? • Are the contaminant concentrations suitable for the proposed use of the site? • Is any further work required to enable determination of site suitability?
Step 3 - Identify the Inputs to the decisions	The specific types of information needed to resolve the decision statements in Step 2 are noted as follows • Site history information. • Site inspection. • Soil and water sampling results. • Guidelines for assessing risk to human health and the environment from contaminated soil and/or water. Full details of the relevant guidelines are included in Appendix D.

Data Quality Objectives	Description
Step 4 - Define the Boundaries of the investigation	The horizontal extent of the assessment has been defined by the boundary of the Lots which make up the land owned by St Philip's Christian Education Foundation (refer Section 2), and more specifically the area of proposed disturbance for the additional development as interpreted from drawings supplied to RCA into field co-ordinates. The site boundary is presented on Drawing 1, Appendix A. The northern boundary was considered to be defined by Lomas Lane Street and the eastern boundary by the Black Creek. The western boundary was considered to be defined by Wine Country Drive and the southern boundary has been identified in relation to residential houses on the southwest of the site. The vertical extent was based on consideration of the conceptual site model and the absence of any identified significant sources of contamination and as such was limited to the surface soils with some deeper excavation to inspect the shallow sub surface soils. Inspection of the deeper soils was undertaken as part of the concurrent geotechnical assessment (Ref [2]) with samples to be collected in the event of any visual or olfactory indications of contamination.
Step 4 - continued	Groundwater has not been assessed based on the presumed absence of potential contamination and low likelihood that it would be encountered/used at the site. No specific temporal constraints were identified. No specific financial constraints were identified, noting that any variations to costs identified to client were to be confirmed with client prior to additional cost being incurred.
Step 5 - Develop the Decision Rules	Project specific data quality indicators (DQI) of accuracy, precision, completeness, representativeness and comparability are detailed in the Quality Assurance and Control Assessment for the project, Appendix E.
Step 6 - Acceptable Limits on Decision Rules	The following provides the basis of the data's useability assessment which is not in accordance with the DQI: • The result's closeness to the guideline concentrations. • Specific contaminant of concern (carcinogen, bioaccumulation potential, available exposure pathways). • The area of sample locations in question including the potential lateral and vertical extent of questionable information. • Whether the uncertainty can be effectively managed by site management controls. Refer to the Quality Assurance and Control Assessment for the project, Appendix E.

The scope of work, **Section 6**, is considered to comprise Step 7 of the DQO.

6 FIELDWORK

RCA undertook a site inspection on 21 June 2021 and recorded the following observations in **Table 6**. Photographs taken during the works are attached in **Appendix F**.

Table 6 *General Site Conditions and Observations*

Topography	The majority of the site is relatively flat; elevations range from 50 – 80m with slopes gradients of 3 - 5% on local reliefs of 10 to 40m (Ref [14]).
Site condition	Approximately half the site is used as part of the existing St Philip's Christian College with buildings and structures located in the northern portion of the site comprising the junior school, senior school, several demountable, sport halls and the <i>Activate Centre</i>. The Narnia is separate to the remainder of the College on the western boundary in the central portion of the site. The eastern part of the northern and central portions of the site are sporting fields. The southern portion of the site is not formally uses as part of the College; there is also a small sheep enclosure (Photograph 32) in the western part of the southern portion as identified in the 2017 aerial photograph which was in use at the time of inspection. There were four (4) stockpiles on the site near the sheep enclosure however these appear to comprise the same natural material (brown silty sandy clay, Photograph 34 to 37) as the surface and sub surface soils encountered during the works. No indications of contamination were observed in the stockpiles. A rural residential property is situated in southwest of the site. Black Creek runs from the south to the north along the site's eastern boundary. There is a section of trees in the northern portion of the site and the area in the immediate vicinity of Black Creek is vegetated with trees and shrubs. The remainder of the site is grassed; the northern and central portions are maintained (to differing extents) lawn and the southern portion is pasture like grasses. The dams in the north west corner and central portion of the site are generally clear of aquatic plants however both the dams in the north east corner and southern portion of the site are overgrown with reeds / floating plants. The purpose of the dams is for stormwater control; water is extracted from Black Creek and the central dam only. There were no indications of contamination identified in any of the water bodies or within Black Creek.
Condition of Building and roads	There is one asphalt driveway access which leads from the entrance of the site at Lomas Lane Street to the junior school car park. Gravel access tracks are also present which lead from the College buildings in the north to the south of the site. The existing St Philip's Christian College buildings are situated in the northern portion of the site and comprise the junior school, senior school, sport halls, several demountable buildings and the D.A.L.E building. All the College buildings are relatively new and are of brick construction with the exception of the demountable buildings; all appear to be in good condition. A house, two (2) sheds, and some concrete slabs are located in south west corner of the site. The house comprised timber building with tin roof and the sheds comprised tin roof and walls.
Visual Signs of contamination	There were no visual signs of contamination observed.

Signs of erosion	There were no signs of erosion observed.
Presence of drums or waste	One (1) waste stockpile (as shown on Drawing 1, Appendix A and refer Photograph 38) was observed in south east corner of the site. The stockpile comprised timber, furniture, and tree branches.
Identification of potential asbestos containing materials	No asbestos containing materials (ACM) were found on the surface of the site or in the subsurface. A full hazardous materials assessment of the demountable buildings being removed and the buildings to which changes were considered to be required as part of the extension was undertaken. No ACM were found in the nominated buildings as presented in Section 8.3 .
Visible signs of plant stress	The grass and tree vegetation within the site appeared to show no signs of plant stress.
Odours noticeable onsite	There were no noticeable odours on the site.
Evidence of current or former petroleum facilities	There was no evidence of former petroleum facilities on the site.
Chemicals stored onsite	There were no chemicals observed to be stored on the site however it is expected that there would be some chemicals stored for the purpose of cleaning, maintenance and landscaping purposes.
Evidence of waste burial: (anecdotal or otherwise)	There was no evidence of waste burial onsite.

During the inspection an environmental engineer experienced in the handling of potentially contaminated soil and surface water undertook sampling and inspection of shallow surface and sub surface soils and surface water within the existing dams. The scope of work included:

- Site inspection by environmental personnel:
- A hazardous materials assessment undertaken in accordance with SafeWork Australia Codes of Practice (Ref [15] and Ref [16]) on the demountable buildings nominated for removal and the buildings, refer **Appendix B**, to which changes were considered to be required as part of the extension comprising:
 - Inspection of the exterior and interior of the nominated buildings and areas for hazardous materials (asbestos, LBP and PCB in light fittings) and the potentially hazardous material synthetic mineral fibres (SMF) at:
 - Building A1 (junior school).
 - Building C1 (senior school).
 - Building E1 (trade training centre).
 - Building H1 (sports hall).
 - Building K (switch building / proposed café).
 - Area A3 (proposed extension to building A1 shown above).
 - Area A4 (subsequent proposed extension to A3 and A1 shown above).

Photographs taken of the inspected areas are included in **Appendix F**.

- The collection of seventeen (17) soil samples from seventeen (17) locations as follows:
 - Five (5) locations in areas of proposed construction within the operational area of the College (HA1-HA5).
 - Five (5) locations within the proposed Narnia (HA6-HA10).
 - Two (2) locations within the D.A.L.E area (HA11-HA12).
 - Three (3) locations within the proposed area of the aquatic centre (HA13-HA15).
 - Two (2) locations to characterise the fill material along the northern boundary of the site (HA16-HA17).
 - Soil samples collected from approximately the surface (0.05-0.1m) at each location collected with the use of a hand auger or hand trowel. At two (2) locations (HA11 and HA14) the hand auger advanced to approximately 0.5m depth from surface to allow for inspection of the sub surface soils.
 - Soil samples was assessed with the photoionisation detector (PID) for the presence of volatile compounds. The results are included in **Appendix G**.
- The collection of samples from each of the four (4) stockpiles.
- Analysis of sixteen (16) samples and one (1) stockpile sample for total recoverable hydrocarbons (TRH), benzene, toluene, ethylbenzene, xylene (BTEX), polycyclic aromatic hydrocarbons (PAH) and metals (arsenic, cadmium, chromium, copper, nickel, lead, zinc, mercury). Four (4) shallow samples from the area of the aquatic centre, Narnia and D.A.L.E were also analysed for herbicides.
- Collection of surface water samples from each of the four (4) dams onsite and at one location within the Black Creek. All the water samples were analysed for TRH, BTEX, PAH and metals.

No samples were collected as part of the hazardous materials audit as there was no indication of hazardous materials (asbestos, lead based paint (LBP) or PCB in light fittings) identified during RCA's assessment. Results of the hazardous materials assessment are shown in **Section 8.3** of this report.

Soil across the site comprised brown silty sandy clay with the clay content increasing with depth; sample descriptions are included in **Appendix G**. Fill material was encountered in the north western portion of the site in raised mounds near the dam (HA16 and HA17), car park area near the active centre (HA4) where a dark brown silty sandy clay material was encountered and in proximity to the senior school building (HA5). It is noted that the concurrent geotechnical assessment (Ref [2]) identified fill at all locations within the College area. Locations BH13 and TP18 did not encounter fill.

The soil contamination assessment and surface water sampling locations are shown on **Drawing 2, Appendix A** along with the geotechnical sampling locations within the College area.

7 QUALITY ASSURANCE/QUALITY CONTROL

RCA has assessed the quality assurance and control in **Appendix E** and found it to be acceptable for the purpose of site assessment.

8 RESULTS

All soil and water results are compared to the relevant criteria in **Appendix G**. The following **Sections 8.1 and 8.2** present summaries for the site contamination components.

A summary of the hazardous materials assessment component of RCA's work is presented in **Section 8.3**.

8.1 SOIL

- BTEX concentrations were not detected and are therefore considered less than the criteria (Ref [7] and Ref [8]).
- TRH concentrations were not detected and are therefore considered less than the criteria (Ref [7] and Ref [8]).
- PAH concentrations were not detected and are therefore considered less than the criteria (Ref [7]).
- Metals concentrations were not detected or were detected at low concentrations less than the human health criteria (Ref [7]). Nickel was detected slightly above the ecological criterion (Ref [7]) in one sample (HA4).
- Herbicides were not detected and are therefore considered less than the criteria (Ref [7]).

Soil results in excess of the relevant ecological and human health criteria are presented in **Table 7**.

Table 7 *Soil Results above Relevant Criteria*

Sample Identification (depth)	Analyte	Criteria	Concentration
HA4(0.08m)	Nickel	30 ^a	35

All concentrations in mg/kg.

^a Ecological Criteria for Urban Residential and Public Open Space (Ref [7]).

8.2 WATER

- BTEX concentrations were not detected and are therefore considered less than the criteria (Ref [9] and Ref [17]).
- TRH concentrations were not detected and are therefore considered less than the criterion (Ref [9]) with the exception of SW4. It is noted that the detection limits are higher than the criterion.
- PAH concentrations were not detected and are therefore considered less than the criteria (Ref [9] and Ref [17]). It is noted that some of the ecological criteria, and the drinking water criterion, are less than the laboratory detection limit.
- The majority of metals concentrations were not detected or were detected at low concentrations less than the criteria (Ref [9] and Ref [17]) however some concentrations were in excess of the criteria. It is noted that the detection limit is higher than the ecological criterion for mercury.

Surface water results in excess of the relevant ecological and human health criteria are presented in **Table 8**.

Table 8 *Surface Water Results above Relevant Criteria*

Sample Identification	Analyte	Criteria	Concentration
SW1 (north west boundary)	Copper	1.4 ^b	2
SW3 (western boundary)	Chromium	1 ^b	2
	Copper	1.4 ^b	2
SW4(southern boundary)	TRH C ₆ -C ₄₀	7 ^b	2,150
	Chromium	1 ^b	3
	Copper	1.4 ^b	6
	Zinc	8 ^b	33
SW5 (Black Creek)	Copper	1 ^b	3
	Zinc	8 ^b	18

^a Australian Drinking Water Guidelines (Ref [17]).

^b 95% Ecological Protection Level for Fresh Water (Ref [9]).

8.3 HAZARDOUS MATERIALS ASSESSMENT

No hazardous materials (asbestos, LBP or PCB in light fittings) were encountered during RCA's site inspection.

The potentially hazardous material synthetic mineral fibres (SMF) were visually identified within ceiling insulation at the following locations:

- The ceiling cavity of demountable building no. E4a (refer to **Appendix F, Photograph 25**). Note not all of the ceiling cavities were able to be checked on the day of RCA's inspection, however it is considered likely that all of the demountable buildings have insulation containing SMF within ceiling cavities.

Based on information provided by maintenance personnel, the ceiling cavities of lower floor rooms within building no. H1 (Sports Hall) refer to **Appendix F, Photograph 26** are considered likely to have SMF present. SMF was not present within the main (upper level) ceiling cavity of building no. H1.

RCA have recommended management precautions in **Section 10** for the safe handling and removal of SMF, if encountered during works and requiring removal.

9 SITE CONTAMINATION CHARACTERISATION

Based on information provided in the previous AECOM report (Ref [1]), the site has been used for farming and rural residential purpose prior to the development of the College. Parts of the site were also used as informal trotting tracks. No contaminating activities were identified as having occurred at the site itself with a large proportion of the site historically remaining undeveloped. Earthworks for the construction of the College commenced in 2011 and was broadly complete by 2013.

The additional site history review undertaken as part of this assessment indicates that there have been no significant contaminating activities at the site nor around the site since construction of the College.

A site inspection undertaken identified significant filling comprising silty sandy clay materials in the area of the College; concurrent geotechnical assessment (Ref [2]) identified the depth of filling to range from 1.3m to greater than 2.6m at location TP10 (refer **Drawing 2, Appendix A**). It is considered that the fill may be slightly greater in the centre of the College building areas noting that a *StreetView* photograph from 2010 (refer **Table 3**) indicates the presence of a depression in the area of the College buildings. The fill was not considered to pose a risk of contamination as there was no hydrocarbon staining, asbestos materials or any other indications of contamination identified by either this or the concurrent geotechnical assessment (Ref [2]). Four (4) stockpiles of fill material were also observed at the site however this material appeared to be consistent with the natural silty sandy clay material and was considered to have been derived from the site, although the source is unknown and may be from another site nearby. One waste stockpile observed in south east of the site comprised inert material (tree branches, timber, furniture) was not considered to pose a risk of contamination and is situated away from the proposed development area.

Soil samples have been collected from seventeen (17) in-situ locations across the site, and from the mounded and stockpiled fill material to characterise the potential for contamination. Sampling locations were situated in the areas of the aquatic centre, Narnia, D.A.L.E. and in areas of proposed construction within the operational area of the College where proposed construction will require the disturbance and excavation of soil. Given the site history information, as considered by the previous contamination assessment (Ref [1]) and by RCA (refer **Section 3**), indicated a limited formal use of the site with the exception of the operation of the College and the absence of potential contamination with the exception of filling at the site, and the absence of indications of potential contamination observed during the site inspection and excavation by both this contamination and a concurrent geotechnical assessment (Ref [2]) it is considered that the number of sampling locations is appropriate for the purpose of a preliminary site (contamination) assessment.

There were no concentrations of hydrocarbons or herbicides identified in any soil sample and the concentrations of metals were either not detected or well below the human health criteria such that there is no risk to human health for the proposed development and ongoing use of the College.

Minor contamination with regards to ecological criteria (Ref [7]) has been identified with regards to nickel at one (1) location HA4 within the fill material which targeted the area of the proposed Admin and Welcome Centre. The detected concentration was 1.17 times greater than the guideline criterion and was more than double the majority of sample concentrations. RCA does not however consider that the nickel is indicative of contamination, rather the concentrations of nickel are considered to be representative of the natural strata as has been RCA's experience in the Hunter region. The ecological criterion (Ref [7]) for nickel used for the assessment is a conservative value based on a 5cmol/kg cation exchange capacity and is not specific to the site. The ecological criterion increases to 170mg/kg with a 10cmol/kg cation exchange capacity. Given the silty sandy clay nature of the soil it is not considered likely that the cation exchange capacity of the soil is less than 10cmol/kg and as such the nickel concentrations do not pose a risk to the ecology of the site. It is noted that there were no indications of inhibited vegetation growth at the site.

Surface water samples collected from four (4) existing dams and from Black Creek have indicated the absence of hydrocarbons with the exception of in SW4. Some metals concentrations were detected above the ecological criteria (Ref [8]) in the water samples with the exception of SW2.

The dam from which SW4 was collected is situated in the southern portion of the site away from the operational area of the College and approximately 180m south east of the proposed aquatic centre. The dam is described as an irrigation dam on drawings of the site however it is not currently utilised by the College for that purpose; it is intended to use this dam in the future to irrigate at the intended (not currently planned) agricultural centre. Based on the aerial imagery (refer **Drawing 1, Appendix A**) the inflow to this dam is sourced from the south of the site and may include surface water from Wine Country Drive (there is a culvert to the south of Fletcher Street). It is noted that the testing was not specific to petroleum based hydrocarbons and, as there was no odour or sheen visible, may represent naturally occurring hydrocarbons however further testing would be required for this purpose. The concentrations are not considered to represent a risk to the aquatic ecosystem of the dam.

The concentrations of chromium, copper and / or zinc in SW1 (dam to north east of College), SW3 (dam between College and Narnia) as well as those in the Black Creek are not considered representative of contaminations. Detrimental impacts to the aquatic environment of the dams or within Black Creek are not considered to be likely nor is there considered to be potential for contamination of soil by use of this water for irrigation at the site. The concentrations within SW4 are considered to be potentially related to the source of the hydrocarbons and potentially also be due to sedimentation of the dam due to erosion in the area of inflow to the dam. Similarly, however it is not considered that the concentrations pose a risk to the aquatic ecosystem of the dam.

RCA therefore considers that the site is suitable for the proposed development as per the plans provided to RCA (**Appendix B**).

9.1 SURPLUS SOIL MANAGEMENT

Any soils removed from the site must be assessed for their suitability. Current results indicate that the material will likely be able to be classified as excavated natural material in accordance with the Order (Ref [18]) to facilitate beneficial offsite use (subject to regulatory approval for use on the intended receival site) with the exception of soil at north west portion of the site. Underlying rock would be considered to be classified as virgin excavated natural material (VENM) as defined by the Protection of the Environment Operations Act 1997.

All material removed from site must be tracked to demonstrate that it has been suitably managed, transported and placed in accordance with the requirements of the NSW waste legislation. Documents to be maintained comprise:

- Load sheets – truck registration being loaded, time loaded, approximate quantity, description of material being loaded, details of person doing the recording.
- Receival sheets – truck registration received, time received, approximate quantity, description of material being received, details of person doing the recording.
- Dockets from a licensed waste facility will be required if this is the final placement of the material.
- Truck dockets as maintained by the driver transporting the loads.

These records should be kept in readiness for provision to a regulatory authority upon request.

10 CONCLUSIONS

This report has presented the findings of a preliminary site (contamination) assessment undertaken at the proposed site of St Philip's Christian College redevelopment. This assessment has comprised a review of a previous desktop study, update of the site history with additional information available in the time frame from the previous assessment (Ref [1]) to present, a site inspection and the collection of soil samples to target potential areas of concern to characterise potential contamination at the site. Water samples were also collected from four (4) dams and one (1) location within Black Creek which traverses the site from south to north along the eastern boundary and within the central portion of the site, to characterise surface water quality at the site.

The AECOM phase 1 report (Ref [1]) indicated that the site has been used as farming and residential purpose since 1894 with part of the site was also used as informal trotting tracks. No contaminating activity was identified at the site itself with a large proportion of the site historically remaining undeveloped. Earthworks for the construction of the College commenced in 2011 and was broadly complete by 2013; based on geotechnical assessment (Ref [13]) in 2018 the area of the College development was subject to filling of up to 2m.

No potential contaminating activities were identified at the site or within the surrounding area since the completion of the previous assessment report (Ref [1]) based on the site history review.

No indications of waste deposition or contamination were observed within the surface or shallow sub surface soils during the site inspection. Four (4) stockpiles were observed at the site however this material appeared to be consistent with the natural silty sandy clay material identified at the site and was considered to have been derived from the site and not considered to pose a risk of contamination. One stockpile of waste material was observed in the south eastern corner of the site beyond the proposed development area.

Fill material was encountered in the area around the College; the geotechnical logs (Ref [2]) indicated primarily clayey fill material to a depth of greater than 2.6m in the area of the College buildings. There was no indication of anthropogenic material with the exception of brick pavers and plastic at one location (BH10) in close proximity to the demountable structures. There was no other visual or olfactory evidence of contamination identified within the fill material.

The concentrations of hydrocarbons, metals and herbicides were all non-detected or below the human health criteria (Ref [7]) in soil samples collected in the proposed areas of disturbance. The concentration of nickel in the fill at one (1) location (HA4) was slightly in excess of general ecological criterion (Ref [7]) however is considered to be representative of natural conditions and not indicative of the presence of contamination.

Concentrations of hydrocarbons and metals in the surface water of the four (4) dams and at one location within Black Creek were generally not detected and below ecological criteria; concentrations of hydrocarbons in SW4 appear to be sourced from off-site (Wine Country Drive runoff) or from sediment erosion to the south of the site. Concentrations of metals are considered to be indicative of natural conditions with the potential exception of SW4; detrimental impact to the aquatic environments of the dams or of Black Creek are not considered likely. The concentrations of metals are not considered to be a constraint to the continued use of water for irrigation at the site.

A hazardous materials assessment undertaken on the buildings scheduled for extensions or removal did not identify any hazardous materials. The potentially hazardous material SMF was visually identified within the demountable buildings and is understood to be present in the lower floor ceiling cavities of the sports hall. It is recommended that SMF is removed in a manner which minimises contact with the material by workers undertaking the removal or demolition/renovation of the building. If insulation is encountered in any ceiling cavity during the scheduled works it should be treated as containing SMF. The SMF is to be transported and disposed of in a manner which does not allow release of the SMF in accordance with the requirements of the receiving licensed waste facility.

RCA considered that the site is suitable for proposed development as the construction of College and recreational sporting grounds without further assessment, remediation, or management beyond that required for removal of SMF. The quality of the surface water is considered to be suitable for continued use for irrigation at the site; further consideration of the hydrocarbon concentrations is required if the water from the dam in the southern portion is proposed to be used in areas utilised as part of the College operations.

Groundwater has not been assessed and must not be extracted for use without assessment of the suitability of the water for that use.

11 LIMITATIONS

This report has been prepared for St Philip's Christian Education Foundation Ltd. in accordance with an agreement with RCA Australia (RCA). The services performed by RCA have been conducted in a manner consistent with that generally exercised by members of its profession and consulting practice.

This report has been prepared for the sole use of St Philip's Christian Education Foundation Ltd. The report may not contain sufficient information for purposes of other uses or for parties other than St Philip's Christian Education Foundation Ltd. This report shall only be presented in full and may not be used to support objectives other than those stated in the report without written permission from RCA Australia.

The information in this report is considered accurate at the date of issue with regard to the current conditions of the site. Conditions can vary across any site that cannot be explicitly defined by investigation.

Environmental conditions including contaminant concentrations can change in a limited period of time. This should be considered if the report is used following a significant period of time after the date of issue.

Yours faithfully
RCA AUSTRALIA



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Adam Sullivan (CEnvP-SC#40944)
Certified Environmental Practitioner
Site Contamination

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- [1] AECOM, *Phase 1 Contamination Assessment, Wine Country Drive, Nulkaba, NSW*, Ref: N60521047_RPT_26May09.
- [2] RCA Australia, *Preliminary Geotechnical Investigation, St Philip's Christian College Cessnock Campus, Nulkaba*, RCA ref: 15613-202/1, October 2021.
- [3] NSW EPA, *Sampling Design Guidelines*, September 1995.
- [4] NSW EPA, *Guidelines for Consultants Reporting on Contaminated Sites*, April 2020.
- [5] NSW EPA, *Guidelines for the NSW Site Auditor Scheme (3rd Edition)*, October 2017.
- [6] Department of Urban Affairs and Planning / Environment Protection Authority, *Managing Land Contamination, Planning Guidelines SEPP 55 – Remediation of Land*, August 1998.
- [7] NEPC, *National Environment Protection (Assessment of Site Contamination) Measure*, 1999 as amended 2013.

- [8] CRC Care, *Technical Report 10, Health screening levels for petroleum in soil and groundwater*, September 2011.
- [9] ANZG, *Australian and New Zealand Guidelines for Fresh and Marine Water Quality* Australian and New Zealand Governments and Australian state and territory governments, Canberra ACT, Australia., August 2018. Available at www.waterquality.gov.au/anz-guidelines.
- [10] Standards Australia, *Guide to the investigation and sampling of sites with potentially contaminated soil, Part 1: Non-volatile and semi-volatile compounds*, AS 4482.1-2005.
- [11] Newcastle Local Environment Plan 2012 under the Environmental Planning and Assessment Act 1979 published (12July 2019).
- [12] Douglas Partners, *Report on Preliminary Geotechnical Investigation, St Philips Christian College, New Campus Development, Wine Country Drive, Nulkaba*, Project 49376, August 2009.
- [13] Valley Civilab, *Geotechnical Investigation St Philip's Christian College, Wine Country Drive, Nulkaba, NSW*, Ref: P1569-R-001-Rev0-19, October 2018.
- [14] NSW Soil Conservation Service – Soil Landscapes of Singleton – 1:250,000 Sheet SI 56-1.
- [15] SafeWork Australia, *Code of Practice: How to manage and control asbestos in the workplace*: September 2016.
- [16] SafeWork Australia, *Code of Practice: How to safely remove asbestos*: September 2016.
- [17] National Health and Medical Research Council, *Australian Drinking Water Guidelines*, 2011.
- [18] Resource Recovery Order under Part 9, Clause 93 of the Protection of the Environment Operations (Waste) Regulation 2014, *The excavated natural material order 2014*.

GLOSSARY

ASC NEPM	National Environment Protection (Assessment of Site Contamination) Measure.
EIL	Ecological investigation level. Relates to soil concentrations which may pose a risk to ecological health.
ESL	Ecological screening level. Relates to vapour risk from petroleum hydrocarbons which may pose a risk to ecological health.
HIL	Health investigation level. Relates to soil concentrations which may pose a risk to human health in soil.
HSL	Health screening level. Relates to the vapour risk from petroleum hydrocarbons which may pose a risk to human health in soil.
In-Situ	In place, without excavation.

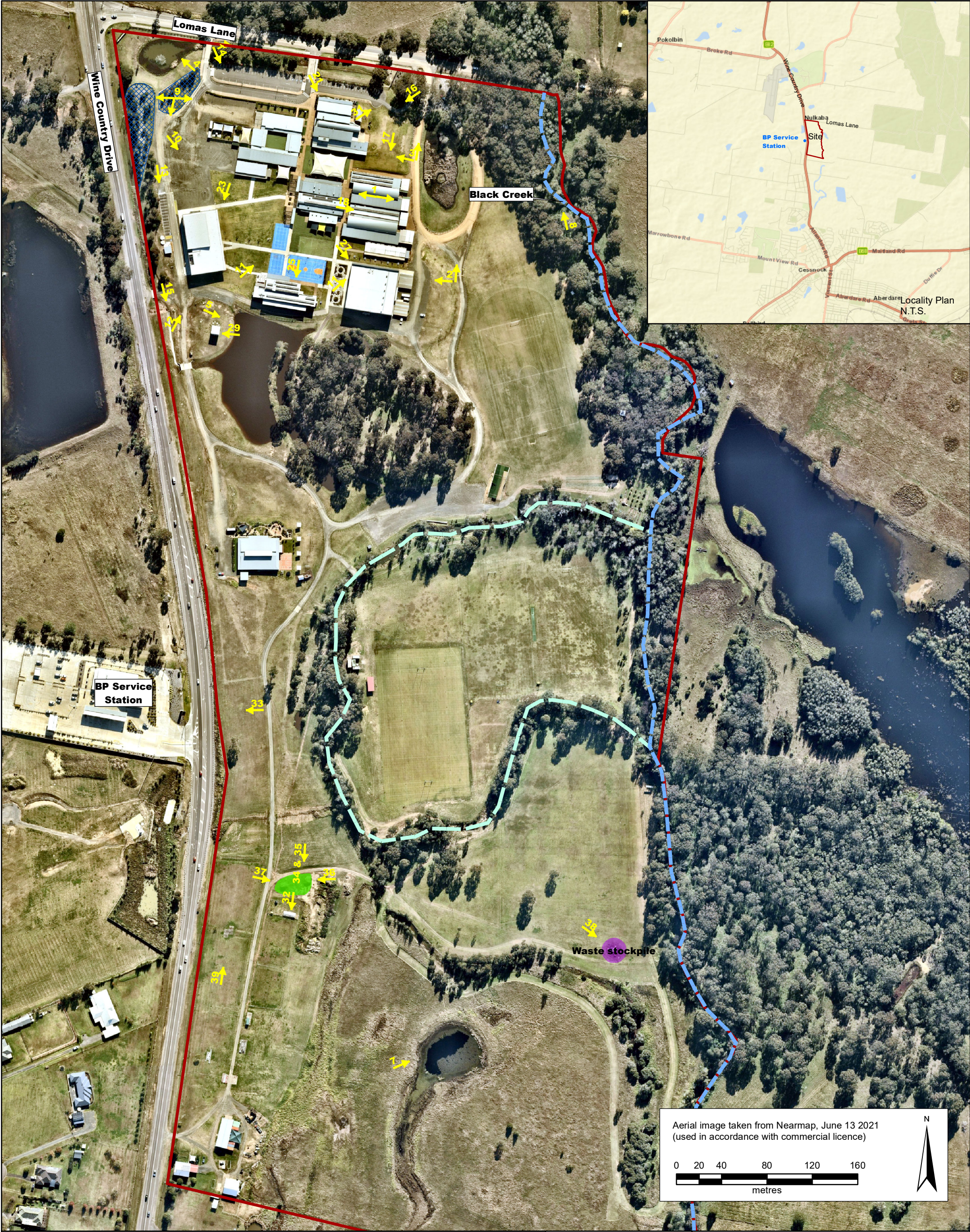
Intralaboratory	A sample split into two and sent blind to the sample laboratory for comparative analysis.
ISL	Investigation screening levels for soil. Comprised of HIL/EIL and HSL/ESL
kg	kilogram, 1000 gram.
LEP	Local environment plan. A planning tool for the Local Government.
µg	microgram, 1/1000 milligram.
mg	milligram, 1/1000 gram.
NEPC	National Environment Protection Council.
NHMRC	National Health and Medical Research Council.
NSW EPA	NSW Environment Protection Authority – made a separate entity in 2011 to regulates the contaminated land industry.
PQL	Practical Quantitation Limit.
QA	Quality Assurance.
QC	Quality Control.
RPD	Relative Percentage Difference.
SMF	Synthetic Mineral Fibres

Chemical Compounds

BTEX	Benzene, toluene, ethylbenzene, xylene.
PAH	Polycyclic aromatic hydrocarbons. Multi-ring compounds found in fuels, oils and creosote. These are also common combustion
TRH	Total recoverable hydrocarbons

Appendix A

Drawings



LEGEND

- Approximate site boundary
-
- Black Creek



CLIENT	St. Philip's Christian Education Foundation Ltd	RCA Ref	15613-201/2
DRAWN BY	AK	SCALE	1:3,000 (A3)
APPROVED BY	AS	DATE	21/09/2021
		DRAWING No	1
		OFFICE	NEWCASTLE
		REV	0

SITE LOCALITY AND LAYOUT
LOCATION PLAN
PRELIMINARY SITE
(CONTAMINATED) ASSESSMENT
10 LOMAS LANE, NULKABA

Appendix B

Plans of Proposed development

For Information

1. Dimensions are in millimetres unless otherwise shown.

2. Work to given dimensions. Do not scale from drawing.
3. Check all dimensions on site prior to construction and fabrication.

4. Bring any discrepancies to the attention of the proprietor & architect.

LEGEND

- EXISTING BUILDINGS
- PROPOSED BUILDINGS
- Site Boundary
- Lot Boundary
- EXISTING ROAD NETWORK & PARKING
- PROPOSED ROAD NETWORK & PARKING
- GRAVEL ROAD / OVERFLOW CAR PARKING
- FOOTPATHS / BUSH TRACKS
- EXISTING TREES
- BOOM GATE / CONTROLLED ACCESS
- MAIN ENTRY
A: JUNIOR / MIDDLE SCHOOL
B: SENIOR SCHOOL

- A - Junior School

B - Middle School

C - Senior School + Library

D - Admin & Welcome Centre

E - Trade Training Centre

F - Canteen / Cafe Hub

G - Performing Arts Centre

H - Sports Hall

I - Outdoor Meeting Circle

J - Narnia

K - Cafe

L - Boardwalks

M - Sports Field & Running Track
- N - D.A.L.E

O - Aquatic Centre

P - Existing Sports Fields

Q - Waste Management Depot

R - Existing Sheds

S - Existing House

PROJECT SCOPE

The following project stages are within this State Significant Development (SSD) Application:

- A3 - Junior School

A4 - Junior School

B1 - Middle School

B2 - Middle School

C2 - Senior School

C3 - Senior School

C4 - Library / Chapel

D - Admin & Welcome Centre

E2 - Trade Training Centre

F - Canteen / Cafe Hub

G - Performing Arts Centre

H2 - Sports Hall

H3 - Sports Hall

J - Narnia

K - Welcome Cafe

L - Boardwalks

N2 - D.A.L.E

O - Aquatic Centre

Q - Waste Management Depot

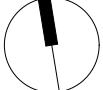
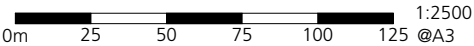


4347
CD1004

Proposed Site Plan (North)

St Philip's Christian College Cessnock
10 Lomas Lane, Nulkaba

RevB - WIP 03.12.21



SHAC

Nominated Architect Justin Hamilton (6160) | ABN 32 131 584 846

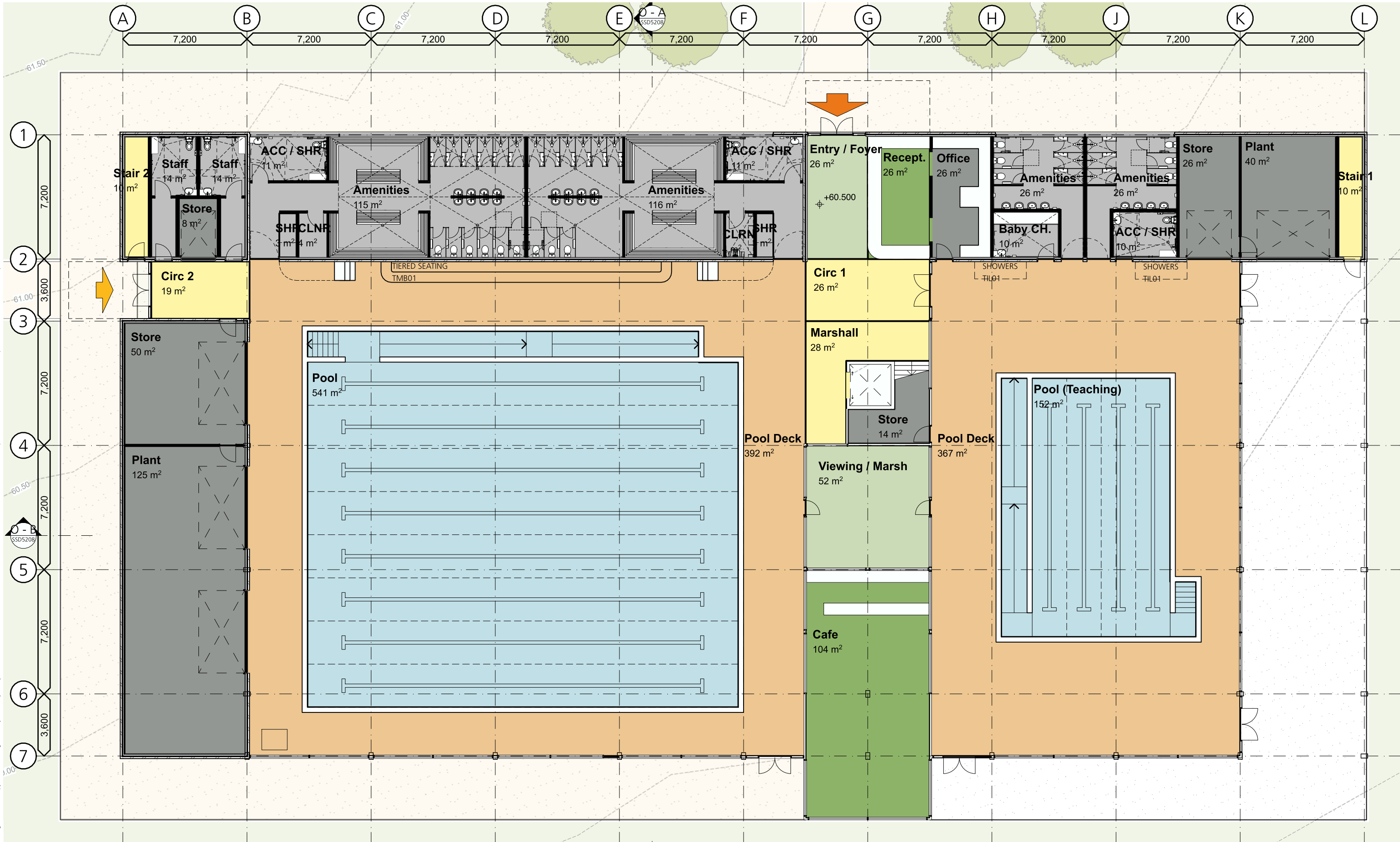
	EXISTING BUILDINGS
	PROPOSED BUILDINGS
	Site Boundary
	Lot Boundary
	EXISTING ROAD NETWORK & PARKING
	PROPOSED ROAD NETWORK & PARKING
	GRAVEL ROAD / OVERFLOW CAR PARKING
	FOOTPATHS / BUSH TRACKS
	EXISTING TREES
	BOOM GATE / CONTROLLED ACCESS

A - Junior School	N - D.A.L.E
B - Middle School	O - Aquatic Centre
C - Senior School + Library	P - Existing Sports Fields
D - Admin & Welcome Centre	Q - Waste Management
E - Trade Training Centre	R - Existing Sheds
F - Canteen / Cafe Hub	S - Existing House

The following project stages are within this State Significant Development (SSD) Application:

- A3** - Junior School
- A4** - Junior School
- B1** - Middle School
- B2** - Middle School
- C2** - Senior School
- C3** - Senior School
- C4** - Library / Chapel
- D** - Admin & Welcome Centre
- E2** - Trade Training Centre
- F** - Canteen / Cafe Hub
- G** - Performing Arts Centre
- H2** - Sports Hall
- H3** - Sports Hall
- J** - Narnia
- K** - Welcome Cafe
- L** - Boardwalks
- N2** - D.A.L.E
- O** - Aquatic Centre
- Q** - Waste Management Depot

Drawing and design © SHAC Pty Ltd. The signed control copy of this drawing is held by SHAC Pty Ltd. | Ref: BIMcloud: BIMSERVER24 - BIMcloud Basic for ARCHICAD 244347 SPCC Cessnock Campus SSD date: 18/12/22 time: 1:02 pm



Appendix C

Site History Documents and Registered
Groundwater Well Information



PLANNING CERTIFICATE

ISSUED UNDER SECTION 10.7(2) and (5)
ENVIRONMENTAL PLANNING & ASSESSMENT ACT 1979
and associated
ENVIRONMENTAL PLANNING & ASSESSMENT REGULATION 2000

Laura Robinson
Po Box 96 Carrington 2294

Applicants Reference
16NEW0010

CERTIFICATE DETAILS

CERTIFICATE NUMBER: 1876
DATE OF CERTIFICATE: 10/06/2021

PROPERTY DETAILS

ADDRESS: 210 Wine Country Drive NULKABA NSW
2325
TITLE: LOT: 518 DP: 837571
PARCEL NO.: 26037

BACKGROUND INFORMATION

This certificate provides information on how the relevant parcel of land may be developed, including the planning restrictions that apply to development of the land, as at the date the certificate is issued. The certificate contains information Council is aware of through its records and environmental plans, along with data supplied by the State Government. The details contained in this certificate are limited to that required by Section 10.7 of the *Environmental Planning and Assessment Act, 1979*.

TELEPHONE: (02) 4993 4100. FAX (02) 4993 2500
POSTAL ADDRESS: PO BOX 152, CESSNOCK, 2325 or DX 21502 CESSNOCK
EMAIL ADDRESS: council@cessnock.nsw.gov.au Visit us at: <http://www.cessnock.nsw.gov.au>
ABN 60 919 148 928



PLANNING CERTIFICATE

ISSUED UNDER SECTION 10.7(2) and (5)
ENVIRONMENTAL PLANNING & ASSESSMENT ACT 1979
and associated
ENVIRONMENTAL PLANNING & ASSESSMENT REGULATION 2000

1. Name of relevant planning instruments and DCPs

- (1) The name of each environmental planning instrument that applies to the carrying out of development on the land:

[Cessnock Local Environmental Plan 2011](#)

[Hunter Regional Plan 2036](#)

[State Environmental Planning Policy No 1—Development Standards](#)

[State Environmental Planning Policy No 19—Bushland in Urban Areas](#)

[State Environmental Planning Policy No 21—Caravan Parks](#)

[State Environmental Planning Policy No 33—Hazardous and Offensive Development](#)

[State Environmental Planning Policy No 36—Manufactured Home Estates](#)

[State Environmental Planning Policy No 55—Remediation of Land](#)

[State Environmental Planning Policy No 64—Advertising and Signage](#)

[State Environmental Planning Policy No 65—Design Quality of Residential Apartment Development](#)

[State Environmental Planning Policy No 70—Affordable Housing \(Revised Schemes\)](#)

[State Environmental Planning Policy \(Aboriginal Land\) 2019](#)

[State Environmental Planning Policy \(Affordable Rental Housing\) 2009](#)

[State Environmental Planning Policy \(Building Sustainability Index: BASIX\) 2004](#)

[State Environmental Planning Policy \(Coastal Management\) 2018](#)

[State Environmental Planning Policy \(Concurrences\) 2018](#)

[State Environmental Planning Policy \(Educational Establishments and Child Care Facilities\) 2017](#)

[State Environmental Planning Policy \(Exempt and Complying Development Codes\) 2008](#)

[State Environmental Planning Policy \(Housing for Seniors or People with a Disability\) 2004](#)

[State Environmental Planning Policy \(Infrastructure\) 2007](#)

[State Environmental Planning Policy \(Mining, Petroleum Production and Extractive Industries\) 2007](#)

[State Environmental Planning Policy \(Miscellaneous Consent Provisions\) 2007](#)

[State Environmental Planning Policy \(Primary Production and Rural Development\) 2019](#)

[State Environmental Planning Policy \(State and Regional Development\) 2011](#)

[State Environmental Planning Policy \(State Significant Precincts\) 2005](#)

[State Environmental Planning Policy \(Sydney Drinking Water Catchment\) 2011](#)

[State Environmental Planning Policy \(Sydney Region Growth Centres\) 2006](#)

[State Environmental Planning Policy \(Urban Renewal\) 2010](#)

[State Environmental Planning Policy \(Vegetation in Non-Rural Areas\) 2017](#)

PLANNING CERTIFICATE

ISSUED UNDER SECTION 10.7(2) and (5)
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ENVIRONMENTAL PLANNING & ASSESSMENT REGULATION 2000

- (2) **The name of each proposed environmental planning instrument that will apply to the carrying out of development on the land and that is or has been the subject of community consultation or on public exhibition under the Act (unless the Director-General has notified the council that the making of the proposed instrument has been deferred indefinitely or has not been approved):**

There are no Draft Local Environmental Plan/s affecting this land.

- (3) **The name of each development control plan that applies to the carrying out of development on the land.**

Cessnock Development Control Plan 2010

2. Zoning and land use under relevant LEPs

- (a) **The land is identified as being in:**

RU2 Rural Landscape under the Cessnock Local Environmental Plan 2011.

- (b) **The purpose for which development may be carried out without consent within the zone;**
(c) **The purposes for which development may not be carried out within the zone except with development consent; and**
(d) **The purpose for which development is prohibited within the zone.**

RU2 Rural Landscape

- 2) Permitted without consent

Extensive agriculture; Home occupations; Horticulture

- 3) Permitted with consent

Aquaculture; Cellar door premises; Dual occupancies; Dwelling houses; Environmental protection works; Farm buildings; Health consulting rooms; Home industries; Hospitals; Neighbourhood shops; Pubs; Restaurants or cafes; Roads; Roadside stalls; Rural supplies; Self-storage units; Any other development not specified in item 2 or 4.

- 4) Prohibited

Boat building and repair facilities; Car parks; Charter and tourism boating facilities; Commercial premises; Depots; Entertainment facilities; Exhibition homes; Exhibition villages; Freight transport facilities; Health services facilities; Heavy industrial storage establishments; Heliports; Highway service centres; Home occupations (sex services); Industrial retail outlets; Industrial training facilities; Industries; Marinas; Mooring pens; Moorings; Mortuaries; Passenger transport facilities; Recreation facilities (indoor); Residential accommodation; Restricted premises; Sex services premises; Storage premises; Transport depots; Truck depots; Vehicle bodrepair workshops; Vehicle repair stations; Warehouse or distribution centres; Wharf or boating facilities; Wholesale supplies

- (e) **Whether any development standards applying to the land fix minimum land dimensions for the erection of a dwelling-house on the land and, if so, the minimum land dimensions so fixed:**

PLANNING CERTIFICATE

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No

(f) Whether the land includes or comprises critical habitat:

The land is not land that includes or comprises critical habitat declared to be critical habitat under Part 3 of the Threatened Species Conservation Act 1995.

(g) Whether the land is a conservation area (however described):

The land is not a conservation area under the Cessnock Local Environmental Plan 2011.

(h) Whether an item of environmental heritage (however described) is situated on the land:

An item of environmental heritage identified in Cessnock Local Environmental Plan 2011 is not situated on the land.

3. Complying Development

- (1) Complying development may be carried out on the land under each of the following codes for complying development, to the extent stated, because of the provisions of clauses 1.17A (1) (c) to (e), (2), (3) and (4), 1.18 (1) (c3) and 1.19 of *State Environmental Planning Policy (Exempt and Complying Development Codes) 2008*.**
- (2) Complying development may not be carried out on the land under each of the following codes for complying development, to the extent and for the reasons stated under clauses 1.17A (1) (c) to (e), (2), (3) and (4), 1.18 (1) (c3) and 1.19 of *State Environmental Planning Policy (Exempt and Complying Development Codes) 2008*.**

Housing Code	Complying Development may not be carried out under the Housing Code as the subject land falls within a Local Environmental Plan zone that does not meet the requirements of the code.
Rural housing code	Complying Development may be carried out under the Rural Housing Code where it meets the requirements of Clause 3A.38 Complying development on flood control lots contained within the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008. Complying Development may be carried out under the Rural Housing Code where it meets the requirements of Clause 3A.37 Complying development on bush fire prone land contained within the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008.
Low Rise Housing Diversity Code	Complying Development may not be carried out under the Low Rise Housing Diversity Code as the subject land falls within a Local Environmental Plan zone that does not meet the requirements of the code.

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Greenfield Housing Code	Complying Development may not be carried out under the Greenfield Housing Code as the subject land falls within a Local Environmental Plan zone that does not meet the requirements of the code.
Housing Alterations Code	Complying Development may be carried out on the land under the Housing Alterations Code, subject to the development complying with the relevant standards contained within the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008.
General Development Code	Complying Development may be carried out on the land under the General Development Code, subject to the development complying with the relevant standards contained within the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008.
Commercial and Industrial Alterations Code	Complying Development may be carried out on the land under the Commercial and Industrial Alterations Code, subject to the development complying with the relevant standards contained within the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008.
Commercial and Industrial (New Buildings and Additions) Code	Complying Development may not be carried out under the Commercial & Industrial (New Buildings and Additions) Code as the subject land falls within a Local Environmental Plan zone that does not meet the requirements of the code.
Container Recycling Facilities Code	Complying Development may not be carried out under the Container Recycling Facilities Code as the subject land falls within a Local Environmental Plan zone that does not meet the requirements of the code.
Subdivisions Code	Complying Development may be carried out on the land under the Subdivision Code, subject to the development complying with the relevant standards contained within the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008.
Demolition Code	Complying Development may be carried out on the land under the Demolition Code, subject to the development complying with the relevant standards contained within the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008.
Fire Safety Code	Complying Development may be carried out on the



PLANNING CERTIFICATE

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	land under the Fire Safety Code, subject to the development complying with the relevant standards contained within the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008.
--	---

5. Mine subsidence

Whether or not the land is proclaimed to be a mine subsidence district within the meaning of the *Coal Mine Subsidence Compensation Act 2017*.

No

6. Road widening and road alignment

Whether or not the land is affected by any road widening or road realignment under:

- (a) Division 2 of Part 3 of the *Roads Act 1993*, or
- (b) any environmental planning instrument, or
- (c) any resolution of the council.

The land is not affected by a road widening or road realignment proposal under:

- (a) Division 2 of Part 3 of the *Roads Act 1993*, or
- (b) any environmental planning instrument, or
- (c) any resolution of the council.

7. Council and other public authority hazard risk restrictions

Whether or not the land is affected by a policy:

- (a) adopted by the council, or
- (b) adopted by any other public authority and notified to the council for the express purpose of its adoption by that authority being referred to in planning certificates issued by the council,

That restricts the development of the land because of the likelihood of:

- (1) Landslip

No

- (2) Bushfire

No

- (3) Tidal inundation

No

- (4) Subsidence



PLANNING CERTIFICATE

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No

(5) Acid Sulphate Soils

No

(6) Any other risk (other than flooding)

No

7A. Flood related development controls information

- (1) Whether or not development on the land or part of the land for the purposes of dwelling houses, dual occupancies, multi dwelling housing or residential flat buildings (not including development for the purposes of group homes or seniors housing) is subject to flood related development controls.**

Yes

- (2) Whether or not development on the land or part of the land for any other purpose subject to flood related development controls.**

Yes

Note: Words and expressions in this clause have the same meanings as in the instrument set out in the Schedule to the *Standard Instrument (Local Environmental Plans) Order 2006*.

8. Land reserved for acquisition

Whether or not any environmental planning instrument or proposed environmental planning instrument referred to in clause 1 (above) makes provision in relation to the acquisition of the land by a public authority, as referred to in section 3.15 of the *Environmental Planning & Assessment Act 1979*.

No

9. Contributions plans

The name of each contributions plan/s applying to the land.

Cessnock Section 7.12 Levy Contributions Plan 2017.

Cessnock City Wide Local Infrastructure Contributions Plan 2020.

9A. Biodiversity certified land

The land is not biodiversity certified land under Part 8 of the Biodiversity Conservation Act 2016.

Note. Biodiversity certified land includes land certified under Part 7AA of the *Threatened Species Conservation Act 1995* that is taken to be certified under Part 8 of the *Biodiversity Conservation Act 2016*.

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10. Biodiversity stewardship sites

The land is not a biodiversity stewardship site under a biodiversity stewardship agreement under Part 5 of the Biodiversity Conservation Act 2016, but only insofar as the Council has been notified of the existence of the agreement by the Chief Executive of the Office of Environment and Heritage.

Note. Biodiversity stewardship agreements include biobanking agreements under Part 7A of the *Threatened Species Conservation Act 1995* that are taken to be biodiversity stewardship agreements under Part 5 of the *Biodiversity Conservation Act 2016*.

10A. Native vegetation clearing set asides

The land is not a set aside area under section 60ZC of the Local Land Services Act 2013, but only insofar as the Council has been notified of the existence of the set aside area by Local Land Services or it is registered in the public register under that section.

11. Bush fire prone land

All of the land is bushfire prone land as defined in the Environmental Planning & Assessment Act 1979.

12. Property vegetation plans

The land is not land to which a property vegetation plan approved under Part 4 of the Native Vegetation Act 2003 (and that continues in force) applies, only insofar as the Council has been notified of the existence of the plan by the person or body that approved the plan under the Act.

13. Orders under *Trees (Disputes Between Neighbours) Act 2006*

Whether an order has been made under the *Trees (Disputes Between Neighbours) Act 2006* to carry out work in relation to a tree on the land (but only if the council has been notified of the order).

No

14. Directions under Part 3A

There is not a direction by the Minister in force under Section 75P(2)(c1) of the Environmental Planning & Assessment Act 1979 that a provision of an environmental planning instrument prohibiting or restricting the carrying out of a project or a stage of a project of the land under Part 4 of that Act does not have effect.

15. Site compatibility certificates and conditions for seniors housing

- (1) The land is not land to which the State Environmental Planning Policy (Housing for Seniors or People with a Disability) 2004 applies.

There is no current site compatibility certificate (senior's housing) of which Council is aware, in respect of proposed development on the land.

PLANNING CERTIFICATE

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- (2) There are no terms of a kind referred to in clause 18(2) of that policy that have been imposed as a condition of consent to a development application granted after 11 October 2007 in respect of the land.

16. Site compatibility certificates for infrastructure

There is not a valid site compatibility certificate (infrastructure) of which Council is aware, in respect of proposed development on the land.

17. Site compatibility certificates and conditions for affordable rental housing

- (1) There is not a current site compatibility certificate (affordable rental housing), of which the Council is aware, in respect of proposed development on the land.
- (2) There are no terms of a kind referred to in clause 17(1) or 38(1) of the State Environmental Planning Policy (Affordable Rental Housing) 2009 that have been imposed as a condition of consent to a development application in respect of the land.

18. Paper subdivision information

- (1) **There is no development plan adopted by a relevant authority that applies to the land of that is proposed to be subject to a consent ballot.**
- (2) **There is no subdivision order that applies to the land**

Note: words and expressions in this clause have the same meaning as they have in Part 16C of the *Environmental Planning and Assessment Regulation 2000*.

19. Site verification certificates

There is not a current site verification certificate, of which Council is aware, in respect of the land.

21. Affected building notices and building product rectification orders

- (1) There is not an affected building notice, as defined by the Building Products (Safety) Act 2017, in force in respect to the land.
- (2)(a) There is not an outstanding building product rectification order, as defined by the Building Products (Safety) Act 2017, in force in respect to the land.
- (2)(b) A notice of intent to make a building product rectification order, as defined by the Building Products (Safety) Act 2017, has not been served in respect to the land.

Matters are prescribed by section 59 (2) of the *Contaminated Land Management Act 1997* as additional matters to be specified in a planning certificate:

- (a) The land or part of the land is not significantly contaminated land within the meaning of the Contaminated Land Management Act 1997 at the date this certificate is issued.
- (b) The land is not subject to a management order within the meaning of the Contaminated Land Management Act 1997 at the date this certificate is issued.



PLANNING CERTIFICATE

**ISSUED UNDER SECTION 10.7(2) and (5)
ENVIRONMENTAL PLANNING & ASSESSMENT ACT 1979
and associated**

ENVIRONMENTAL PLANNING & ASSESSMENT REGULATION 2000

- (c) The land is not the subject of an approved voluntary management proposal within the meaning of the Contaminated Land Management Act 1997 at the date this certificate is issued.
- (d) The land is not the subject of an ongoing maintenance order within the meaning of the Contaminated Land Management Act 1997 at the date this certificate is issued.
- (e) The land is not the subject of a site audit statement within the meaning of the Contaminated Land Management Act 1997 (if a copy of such a statement has been provided at any time) to the local authority issuing the certificate.



PLANNING CERTIFICATE

ISSUED UNDER SECTION 10.7(2) and (5)
ENVIRONMENTAL PLANNING & ASSESSMENT ACT 1979
and associated
ENVIRONMENTAL PLANNING & ASSESSMENT REGULATION 2000

Laura Robinson
Po Box 96 Carrington 2294

Applicants Reference
16NEW0010

CERTIFICATE DETAILS

CERTIFICATE NUMBER: 1876
DATE OF CERTIFICATE: 10/06/2021

PROPERTY DETAILS

ADDRESS: 210 Wine Country Drive NULKABA NSW
2325
TITLE: LOT: 518 DP: 837571
PARCEL NO.: 26037

BACKGROUND INFORMATION

This certificate provides information on how the relevant parcel of land may be developed, including the planning restrictions that apply to development of the land, as at the date the certificate is issued. The certificate contains information Council is aware of through its records and environmental plans, along with data supplied by the State Government. The details contained in this certificate are limited to that required by Section 10.7 of the *Environmental Planning and Assessment Act, 1979*.

TELEPHONE: (02) 4993 4100. FAX (02) 4993 2500
POSTAL ADDRESS: PO BOX 152, CESSNOCK, 2325 or DX 21502 CESSNOCK
EMAIL ADDRESS: council@cessnock.nsw.gov.au Visit us at: <http://www.cessnock.nsw.gov.au>
ABN 60 919 148 928



PLANNING CERTIFICATE

ISSUED UNDER SECTION 10.7(2) and (5)
ENVIRONMENTAL PLANNING & ASSESSMENT ACT 1979
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ENVIRONMENTAL PLANNING & ASSESSMENT REGULATION 2000

Additional information pursuant to Section 10.7(5) of the *Environmental Planning & Assessment Act 1979*

(5) A council may, in a planning certificate, include advice on such other relevant matters affecting the land of which it may be aware.

Council's records do not indicate that the land the subject of this Certificate is subject to Noise Exposure.

For further information, please contact Council's Strategic Land Use Planning unit, of the Planning and Environment directorate on 02 4993 4100.

A handwritten signature in black ink, appearing to read "P. Mickleson", with a stylized flourish at the end.

Peter Mickleson
Director Planning and Environment



PLANNING CERTIFICATE

ISSUED UNDER SECTION 10.7(2) and (5)
ENVIRONMENTAL PLANNING & ASSESSMENT ACT 1979
and associated
ENVIRONMENTAL PLANNING & ASSESSMENT REGULATION 2000

Laura Robinson
Po Box 96 Carrington 2294

Applicants Reference
16NEW0010

CERTIFICATE DETAILS

CERTIFICATE NUMBER: 1877
DATE OF CERTIFICATE: 10/06/2021

PROPERTY DETAILS

ADDRESS: 10 Lomas Lane NULKABA NSW 2325
TITLE: LOT: 1 DP: 126765
PARCEL NO.: 25869

BACKGROUND INFORMATION

This certificate provides information on how the relevant parcel of land may be developed, including the planning restrictions that apply to development of the land, as at the date the certificate is issued. The certificate contains information Council is aware of through its records and environmental plans, along with data supplied by the State Government. The details contained in this certificate are limited to that required by Section 10.7 of the *Environmental Planning and Assessment Act, 1979*.

TELEPHONE: (02) 4993 4100. FAX (02) 4993 2500
POSTAL ADDRESS: PO BOX 152, CESSNOCK, 2325 or DX 21502 CESSNOCK
EMAIL ADDRESS: council@cessnock.nsw.gov.au Visit us at: <http://www.cessnock.nsw.gov.au>
ABN 60 919 148 928



PLANNING CERTIFICATE

ISSUED UNDER SECTION 10.7(2) and (5)
ENVIRONMENTAL PLANNING & ASSESSMENT ACT 1979
and associated
ENVIRONMENTAL PLANNING & ASSESSMENT REGULATION 2000

1. Name of relevant planning instruments and DCPs

- (1) The name of each environmental planning instrument that applies to the carrying out of development on the land:

[Cessnock Local Environmental Plan 2011](#)

[Hunter Regional Plan 2036](#)

[State Environmental Planning Policy No 1—Development Standards](#)

[State Environmental Planning Policy No 19—Bushland in Urban Areas](#)

[State Environmental Planning Policy No 21—Caravan Parks](#)

[State Environmental Planning Policy No 33—Hazardous and Offensive Development](#)

[State Environmental Planning Policy No 36—Manufactured Home Estates](#)

[State Environmental Planning Policy No 55—Remediation of Land](#)

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[State Environmental Planning Policy No 65—Design Quality of Residential Apartment Development](#)

[State Environmental Planning Policy No 70—Affordable Housing \(Revised Schemes\)](#)

[State Environmental Planning Policy \(Aboriginal Land\) 2019](#)

[State Environmental Planning Policy \(Affordable Rental Housing\) 2009](#)

[State Environmental Planning Policy \(Building Sustainability Index: BASIX\) 2004](#)

[State Environmental Planning Policy \(Coastal Management\) 2018](#)

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[State Environmental Planning Policy \(Educational Establishments and Child Care Facilities\) 2017](#)

[State Environmental Planning Policy \(Exempt and Complying Development Codes\) 2008](#)

[State Environmental Planning Policy \(Housing for Seniors or People with a Disability\) 2004](#)

[State Environmental Planning Policy \(Infrastructure\) 2007](#)

[State Environmental Planning Policy \(Mining, Petroleum Production and Extractive Industries\) 2007](#)

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[State Environmental Planning Policy \(Primary Production and Rural Development\) 2019](#)

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- (2) **The name of each proposed environmental planning instrument that will apply to the carrying out of development on the land and that is or has been the subject of community consultation or on public exhibition under the Act (unless the Director-General has notified the council that the making of the proposed instrument has been deferred indefinitely or has not been approved):**

There are no Draft Local Environmental Plan/s affecting this land.

- (3) **The name of each development control plan that applies to the carrying out of development on the land.**

Cessnock Development Control Plan 2010

2. Zoning and land use under relevant LEPs

- (a) **The land is identified as being in:**

RU2 Rural Landscape under the Cessnock Local Environmental Plan 2011.

- (b) **The purpose for which development may be carried out without consent within the zone;**
(c) **The purposes for which development may not be carried out within the zone except with development consent; and**
(d) **The purpose for which development is prohibited within the zone.**

RU2 Rural Landscape

2) Permitted without consent

Extensive agriculture; Home occupations; Horticulture

3) Permitted with consent

Aquaculture; Cellar door premises; Dual occupancies; Dwelling houses; Environmental protection works; Farm buildings; Health consulting rooms; Home industries; Hospitals; Neighbourhood shops; Pubs; Restaurants or cafes; Roads; Roadside stalls; Rural supplies; Self-storage units; Any other development not specified in item 2 or 4.

4) Prohibited

Boat building and repair facilities; Car parks; Charter and tourism boating facilities; Commercial premises; Depots; Entertainment facilities; Exhibition homes; Exhibition villages; Freight transport facilities; Health services facilities; Heavy industrial storage establishments; Heliports; Highway service centres; Home occupations (sex services); Industrial retail outlets; Industrial training facilities; Industries; Marinas; Mooring pens; Moorings; Mortuaries; Passenger transport facilities; Recreation facilities (indoor); Residential accommodation; Restricted premises; Sex services premises; Storage premises; Transport depots; Truck depots; Vehicle bodrepair workshops; Vehicle repair stations; Warehouse or distribution centres; Wharf or boating facilities; Wholesale supplies

- (e) **Whether any development standards applying to the land fix minimum land dimensions for the erection of a dwelling-house on the land and, if so, the minimum land dimensions so fixed:**

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No

(f) Whether the land includes or comprises critical habitat:

The land is not land that includes or comprises critical habitat declared to be critical habitat under Part 3 of the Threatened Species Conservation Act 1995.

(g) Whether the land is a conservation area (however described):

The land is not a conservation area under the Cessnock Local Environmental Plan 2011.

(h) Whether an item of environmental heritage (however described) is situated on the land:

An item of environmental heritage identified in Cessnock Local Environmental Plan 2011 is not situated on the land.

3. Complying Development

- (1) Complying development may be carried out on the land under each of the following codes for complying development, to the extent stated, because of the provisions of clauses 1.17A (1) (c) to (e), (2), (3) and (4), 1.18 (1) (c3) and 1.19 of *State Environmental Planning Policy (Exempt and Complying Development Codes) 2008*.**
- (2) Complying development may not be carried out on the land under each of the following codes for complying development, to the extent and for the reasons stated under clauses 1.17A (1) (c) to (e), (2), (3) and (4), 1.18 (1) (c3) and 1.19 of *State Environmental Planning Policy (Exempt and Complying Development Codes) 2008*.**

Housing Code	Complying Development may not be carried out under the Housing Code as the subject land falls within a Local Environmental Plan zone that does not meet the requirements of the code.
Rural housing code	Complying Development may be carried out under the Rural Housing Code where it meets the requirements of Clause 3A.38 Complying development on flood control lots contained within the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008. Complying Development may be carried out under the Rural Housing Code where it meets the requirements of Clause 3A.37 Complying development on bush fire prone land contained within the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008.
Low Rise Housing Diversity Code	Complying Development may not be carried out under the Low Rise Housing Diversity Code as the subject land falls within a Local Environmental Plan zone that does not meet the requirements of the code.

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Greenfield Housing Code	Complying Development may not be carried out under the Greenfield Housing Code as the subject land falls within a Local Environmental Plan zone that does not meet the requirements of the code.
Housing Alterations Code	Complying Development may be carried out on the land under the Housing Alterations Code, subject to the development complying with the relevant standards contained within the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008.
General Development Code	Complying Development may be carried out on the land under the General Development Code, subject to the development complying with the relevant standards contained within the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008.
Commercial and Industrial Alterations Code	Complying Development may be carried out on the land under the Commercial and Industrial Alterations Code, subject to the development complying with the relevant standards contained within the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008.
Commercial and Industrial (New Buildings and Additions) Code	Complying Development may not be carried out under the Commercial & Industrial (New Buildings and Additions) Code as the subject land falls within a Local Environmental Plan zone that does not meet the requirements of the code.
Container Recycling Facilities Code	Complying Development may not be carried out under the Container Recycling Facilities Code as the subject land falls within a Local Environmental Plan zone that does not meet the requirements of the code.
Subdivisions Code	Complying Development may be carried out on the land under the Subdivision Code, subject to the development complying with the relevant standards contained within the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008.
Demolition Code	Complying Development may be carried out on the land under the Demolition Code, subject to the development complying with the relevant standards contained within the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008.
Fire Safety Code	Complying Development may be carried out on the



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	land under the Fire Safety Code, subject to the development complying with the relevant standards contained within the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008.
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5. Mine subsidence

Whether or not the land is proclaimed to be a mine subsidence district within the meaning of the *Coal Mine Subsidence Compensation Act 2017*.

No

6. Road widening and road alignment

Whether or not the land is affected by any road widening or road realignment under:

- (a) Division 2 of Part 3 of the *Roads Act 1993*, or
- (b) any environmental planning instrument, or
- (c) any resolution of the council.

The land is not affected by a road widening or road realignment proposal under:

- (a) Division 2 of Part 3 of the *Roads Act 1993*, or
- (b) any environmental planning instrument, or
- (c) any resolution of the council.

7. Council and other public authority hazard risk restrictions

Whether or not the land is affected by a policy:

- (a) adopted by the council, or
- (b) adopted by any other public authority and notified to the council for the express purpose of its adoption by that authority being referred to in planning certificates issued by the council,

That restricts the development of the land because of the likelihood of:

- (1) Landslip

No

- (2) Bushfire

No

- (3) Tidal inundation

No

- (4) Subsidence



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No

(5) Acid Sulphate Soils

No

(6) Any other risk (other than flooding)

No

7A. Flood related development controls information

- (1) Whether or not development on the land or part of the land for the purposes of dwelling houses, dual occupancies, multi dwelling housing or residential flat buildings (not including development for the purposes of group homes or seniors housing) is subject to flood related development controls.**

Yes

- (2) Whether or not development on the land or part of the land for any other purpose subject to flood related development controls.**

Yes

Note: Words and expressions in this clause have the same meanings as in the instrument set out in the Schedule to the *Standard Instrument (Local Environmental Plans) Order 2006*.

8. Land reserved for acquisition

Whether or not any environmental planning instrument or proposed environmental planning instrument referred to in clause 1 (above) makes provision in relation to the acquisition of the land by a public authority, as referred to in section 3.15 of the *Environmental Planning & Assessment Act 1979*.

No

9. Contributions plans

The name of each contributions plan/s applying to the land.

Cessnock Section 7.12 Levy Contributions Plan 2017.

Cessnock City Wide Local Infrastructure Contributions Plan 2020.

9A. Biodiversity certified land

The land is not biodiversity certified land under Part 8 of the Biodiversity Conservation Act 2016.

Note. Biodiversity certified land includes land certified under Part 7AA of the *Threatened Species Conservation Act 1995* that is taken to be certified under Part 8 of the *Biodiversity Conservation Act 2016*.



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10. Biodiversity stewardship sites

The land is not a biodiversity stewardship site under a biodiversity stewardship agreement under Part 5 of the Biodiversity Conservation Act 2016, but only insofar as the Council has been notified of the existence of the agreement by the Chief Executive of the Office of Environment and Heritage.

Note. Biodiversity stewardship agreements include biobanking agreements under Part 7A of the *Threatened Species Conservation Act 1995* that are taken to be biodiversity stewardship agreements under Part 5 of the *Biodiversity Conservation Act 2016*.

10A. Native vegetation clearing set asides

The land is not a set aside area under section 60ZC of the Local Land Services Act 2013, but only insofar as the Council has been notified of the existence of the set aside area by Local Land Services or it is registered in the public register under that section.

11. Bush fire prone land

Some of the land is bushfire prone land as defined in the Environmental Planning & Assessment Act 1979.

12. Property vegetation plans

The land is not land to which a property vegetation plan approved under Part 4 of the Native Vegetation Act 2003 (and that continues in force) applies, only insofar as the Council has been notified of the existence of the plan by the person or body that approved the plan under the Act.

13. Orders under *Trees (Disputes Between Neighbours) Act 2006*

Whether an order has been made under the *Trees (Disputes Between Neighbours) Act 2006* to carry out work in relation to a tree on the land (but only if the council has been notified of the order).

No

14. Directions under Part 3A

There is not a direction by the Minister in force under Section 75P(2)(c1) of the Environmental Planning & Assessment Act 1979 that a provision of an environmental planning instrument prohibiting or restricting the carrying out of a project or a stage of a project of the land under Part 4 of that Act does not have effect.

15. Site compatibility certificates and conditions for seniors housing

- (1) The land is not land to which the State Environmental Planning Policy (Housing for Seniors or People with a Disability) 2004 applies.

There is no current site compatibility certificate (senior's housing) of which Council is aware, in respect of proposed development on the land.

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- (2) There are no terms of a kind referred to in clause 18(2) of that policy that have been imposed as a condition of consent to a development application granted after 11 October 2007 in respect of the land.

16. Site compatibility certificates for infrastructure

There is not a valid site compatibility certificate (infrastructure) of which Council is aware, in respect of proposed development on the land.

17. Site compatibility certificates and conditions for affordable rental housing

- (1) There is not a current site compatibility certificate (affordable rental housing), of which the Council is aware, in respect of proposed development on the land.
- (2) There are no terms of a kind referred to in clause 17(1) or 38(1) of the State Environmental Planning Policy (Affordable Rental Housing) 2009 that have been imposed as a condition of consent to a development application in respect of the land.

18. Paper subdivision information

- (1) **There is no development plan adopted by a relevant authority that applies to the land of that is proposed to be subject to a consent ballot.**
- (2) **There is no subdivision order that applies to the land**

Note: words and expressions in this clause have the same meaning as they have in Part 16C of the *Environmental Planning and Assessment Regulation 2000*.

19. Site verification certificates

There is not a current site verification certificate, of which Council is aware, in respect of the land.

21. Affected building notices and building product rectification orders

- (1) There is not an affected building notice, as defined by the Building Products (Safety) Act 2017, in force in respect to the land.
- (2)(a) There is not an outstanding building product rectification order, as defined by the Building Products (Safety) Act 2017, in force in respect to the land.
- (2)(b) A notice of intent to make a building product rectification order, as defined by the Building Products (Safety) Act 2017, has not been served in respect to the land.

Matters are prescribed by section 59 (2) of the *Contaminated Land Management Act 1997* as additional matters to be specified in a planning certificate:

- (a) The land or part of the land is not significantly contaminated land within the meaning of the Contaminated Land Management Act 1997 at the date this certificate is issued.
- (b) The land is not subject to a management order within the meaning of the Contaminated Land Management Act 1997 at the date this certificate is issued.



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- (c) The land is not the subject of an approved voluntary management proposal within the meaning of the Contaminated Land Management Act 1997 at the date this certificate is issued.
- (d) The land is not the subject of an ongoing maintenance order within the meaning of the Contaminated Land Management Act 1997 at the date this certificate is issued.
- (e) The land is not the subject of a site audit statement within the meaning of the Contaminated Land Management Act 1997 (if a copy of such a statement has been provided at any time) to the local authority issuing the certificate.



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Laura Robinson
Po Box 96 Carrington 2294

Applicants Reference
16NEW0010

CERTIFICATE DETAILS

CERTIFICATE NUMBER: 1877
DATE OF CERTIFICATE: 10/06/2021

PROPERTY DETAILS

ADDRESS: 10 Lomas Lane NULKABA NSW 2325
TITLE: LOT: 1 DP: 126765
PARCEL NO.: 25869

BACKGROUND INFORMATION

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Additional information pursuant to Section 10.7(5) of the *Environmental Planning & Assessment Act 1979*

(5) A council may, in a planning certificate, include advice on such other relevant matters affecting the land of which it may be aware.

Council's records do not indicate that the land the subject of this Certificate is subject to Noise Exposure.

For further information, please contact Council's Strategic Land Use Planning unit, of the Planning and Environment directorate on 02 4993 4100.

A handwritten signature in black ink, appearing to read "P. Mickleson", with a stylized flourish at the end.

Peter Mickleson
Director Planning and Environment



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Laura Robinson
Po Box 96 Carrington 2294

Applicants Reference
16NEW0010

CERTIFICATE DETAILS

CERTIFICATE NUMBER: 1878
DATE OF CERTIFICATE: 10/06/2021

PROPERTY DETAILS

ADDRESS: Wine Country Drive NULKABA NSW 2325
TITLE: LOT: 1 DP: 744377
PARCEL NO.: 21502

BACKGROUND INFORMATION

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1. Name of relevant planning instruments and DCPs

- (1) **The name of each environmental planning instrument that applies to the carrying out of development on the land:**

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- (2) **The name of each proposed environmental planning instrument that will apply to the carrying out of development on the land and that is or has been the subject of community consultation or on public exhibition under the Act (unless the Director-General has notified the council that the making of the proposed instrument has been deferred indefinitely or has not been approved):**

There are no Draft Local Environmental Plan/s affecting this land.

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Cessnock Development Control Plan 2010

2. Zoning and land use under relevant LEPs

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(c) **The purposes for which development may not be carried out within the zone except with development consent; and**
(d) **The purpose for which development is prohibited within the zone.**

RU2 Rural Landscape

2) Permitted without consent

Extensive agriculture; Home occupations; Horticulture

3) Permitted with consent

Aquaculture; Cellar door premises; Dual occupancies; Dwelling houses; Environmental protection works; Farm buildings; Health consulting rooms; Home industries; Hospitals; Neighbourhood shops; Pubs; Restaurants or cafes; Roads; Roadside stalls; Rural supplies; Self-storage units; Any other development not specified in item 2 or 4.

4) Prohibited

Boat building and repair facilities; Car parks; Charter and tourism boating facilities; Commercial premises; Depots; Entertainment facilities; Exhibition homes; Exhibition villages; Freight transport facilities; Health services facilities; Heavy industrial storage establishments; Heliports; Highway service centres; Home occupations (sex services); Industrial retail outlets; Industrial training facilities; Industries; Marinas; Mooring pens; Moorings; Mortuaries; Passenger transport facilities; Recreation facilities (indoor); Residential accommodation; Restricted premises; Sex services premises; Storage premises; Transport depots; Truck depots; Vehicle bodypair workshops; Vehicle repair stations; Warehouse or distribution centres; Wharf or boating facilities; Wholesale supplies

- (e) **Whether any development standards applying to the land fix minimum land dimensions for the erection of a dwelling-house on the land and, if so, the minimum land dimensions so fixed:**

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No

(f) Whether the land includes or comprises critical habitat:

The land is not land that includes or comprises critical habitat declared to be critical habitat under Part 3 of the Threatened Species Conservation Act 1995.

(g) Whether the land is a conservation area (however described):

The land is not a conservation area under the Cessnock Local Environmental Plan 2011.

(h) Whether an item of environmental heritage (however described) is situated on the land:

An item of environmental heritage identified in Cessnock Local Environmental Plan 2011 is not situated on the land.

3. Complying Development

- (1) Complying development may be carried out on the land under each of the following codes for complying development, to the extent stated, because of the provisions of clauses 1.17A (1) (c) to (e), (2), (3) and (4), 1.18 (1) (c3) and 1.19 of *State Environmental Planning Policy (Exempt and Complying Development Codes) 2008*.**
- (2) Complying development may not be carried out on the land under each of the following codes for complying development, to the extent and for the reasons stated under clauses 1.17A (1) (c) to (e), (2), (3) and (4), 1.18 (1) (c3) and 1.19 of *State Environmental Planning Policy (Exempt and Complying Development Codes) 2008*.**

Housing Code	Complying Development may not be carried out under the Housing Code as the subject land falls within a Local Environmental Plan zone that does not meet the requirements of the code.
Rural housing code	Complying Development may be carried out under the Rural Housing Code where it meets the requirements of Clause 3A.38 Complying development on flood control lots contained within the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008. Complying Development may be carried out under the Rural Housing Code where it meets the requirements of Clause 3A.37 Complying development on bush fire prone land contained within the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008.
Low Rise Housing Diversity Code	Complying Development may not be carried out under the Low Rise Housing Diversity Code as the subject land falls within a Local Environmental Plan zone that does not meet the requirements of the code.

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Greenfield Housing Code	Complying Development may not be carried out under the Greenfield Housing Code as the subject land falls within a Local Environmental Plan zone that does not meet the requirements of the code.
Housing Alterations Code	Complying Development may be carried out on the land under the Housing Alterations Code, subject to the development complying with the relevant standards contained within the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008.
General Development Code	Complying Development may be carried out on the land under the General Development Code, subject to the development complying with the relevant standards contained within the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008.
Commercial and Industrial Alterations Code	Complying Development may be carried out on the land under the Commercial and Industrial Alterations Code, subject to the development complying with the relevant standards contained within the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008.
Commercial and Industrial (New Buildings and Additions) Code	Complying Development may not be carried out under the Commercial & Industrial (New Buildings and Additions) Code as the subject land falls within a Local Environmental Plan zone that does not meet the requirements of the code.
Container Recycling Facilities Code	Complying Development may not be carried out under the Container Recycling Facilities Code as the subject land falls within a Local Environmental Plan zone that does not meet the requirements of the code.
Subdivisions Code	Complying Development may be carried out on the land under the Subdivision Code, subject to the development complying with the relevant standards contained within the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008.
Demolition Code	Complying Development may be carried out on the land under the Demolition Code, subject to the development complying with the relevant standards contained within the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008.
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	land under the Fire Safety Code, subject to the development complying with the relevant standards contained within the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008.
--	---

5. Mine subsidence

Whether or not the land is proclaimed to be a mine subsidence district within the meaning of the *Coal Mine Subsidence Compensation Act 2017*.

No

6. Road widening and road alignment

Whether or not the land is affected by any road widening or road realignment under:

- (a) Division 2 of Part 3 of the *Roads Act 1993*, or
- (b) any environmental planning instrument, or
- (c) any resolution of the council.

The land is affected by a road widening or road realignment proposal under:

- (a) Division 2 of Part 3 of the *Roads Act 1993*, or
- (b) any environmental planning instrument, or
- (c) any resolution of the council.

7. Council and other public authority hazard risk restrictions

Whether or not the land is affected by a policy:

- (a) adopted by the council, or
- (b) adopted by any other public authority and notified to the council for the express purpose of its adoption by that authority being referred to in planning certificates issued by the council,

That restricts the development of the land because of the likelihood of:

- (1) Landslip

No

- (2) Bushfire

No

- (3) Tidal inundation

No

- (4) Subsidence



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No

(5) Acid Sulphate Soils

No

(6) Any other risk (other than flooding)

No

7A. Flood related development controls information

- (1) Whether or not development on the land or part of the land for the purposes of dwelling houses, dual occupancies, multi dwelling housing or residential flat buildings (not including development for the purposes of group homes or seniors housing) is subject to flood related development controls.**

Yes

- (2) Whether or not development on the land or part of the land for any other purpose subject to flood related development controls.**

Yes

Note: Words and expressions in this clause have the same meanings as in the instrument set out in the Schedule to the *Standard Instrument (Local Environmental Plans) Order 2006*.

8. Land reserved for acquisition

Whether or not any environmental planning instrument or proposed environmental planning instrument referred to in clause 1 (above) makes provision in relation to the acquisition of the land by a public authority, as referred to in section 3.15 of the *Environmental Planning & Assessment Act 1979*.

No

9. Contributions plans

The name of each contributions plan/s applying to the land.

Cessnock Section 7.12 Levy Contributions Plan 2017.

Cessnock City Wide Local Infrastructure Contributions Plan 2020.

9A. Biodiversity certified land

The land is not biodiversity certified land under Part 8 of the Biodiversity Conservation Act 2016.

Note. Biodiversity certified land includes land certified under Part 7AA of the *Threatened Species Conservation Act 1995* that is taken to be certified under Part 8 of the *Biodiversity Conservation Act 2016*.

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10. Biodiversity stewardship sites

The land is not a biodiversity stewardship site under a biodiversity stewardship agreement under Part 5 of the Biodiversity Conservation Act 2016, but only insofar as the Council has been notified of the existence of the agreement by the Chief Executive of the Office of Environment and Heritage.

Note. Biodiversity stewardship agreements include biobanking agreements under Part 7A of the *Threatened Species Conservation Act 1995* that are taken to be biodiversity stewardship agreements under Part 5 of the *Biodiversity Conservation Act 2016*.

10A. Native vegetation clearing set asides

The land is not a set aside area under section 60ZC of the Local Land Services Act 2013, but only insofar as the Council has been notified of the existence of the set aside area by Local Land Services or it is registered in the public register under that section.

11. Bush fire prone land

All of the land is bushfire prone land as defined in the Environmental Planning & Assessment Act 1979.

12. Property vegetation plans

The land is not land to which a property vegetation plan approved under Part 4 of the Native Vegetation Act 2003 (and that continues in force) applies, only insofar as the Council has been notified of the existence of the plan by the person or body that approved the plan under the Act.

13. Orders under *Trees (Disputes Between Neighbours) Act 2006*

Whether an order has been made under the *Trees (Disputes Between Neighbours) Act 2006* to carry out work in relation to a tree on the land (but only if the council has been notified of the order).

No

14. Directions under Part 3A

There is not a direction by the Minister in force under Section 75P(2)(c1) of the Environmental Planning & Assessment Act 1979 that a provision of an environmental planning instrument prohibiting or restricting the carrying out of a project or a stage of a project of the land under Part 4 of that Act does not have effect.

15. Site compatibility certificates and conditions for seniors housing

- (1) The land is not land to which the State Environmental Planning Policy (Housing for Seniors or People with a Disability) 2004 applies.

There is no current site compatibility certificate (senior's housing) of which Council is aware, in respect of proposed development on the land.

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- (2) There are no terms of a kind referred to in clause 18(2) of that policy that have been imposed as a condition of consent to a development application granted after 11 October 2007 in respect of the land.

16. Site compatibility certificates for infrastructure

There is not a valid site compatibility certificate (infrastructure) of which Council is aware, in respect of proposed development on the land.

17. Site compatibility certificates and conditions for affordable rental housing

- (1) There is not a current site compatibility certificate (affordable rental housing), of which the Council is aware, in respect of proposed development on the land.
- (2) There are no terms of a kind referred to in clause 17(1) or 38(1) of the State Environmental Planning Policy (Affordable Rental Housing) 2009 that have been imposed as a condition of consent to a development application in respect of the land.

18. Paper subdivision information

- (1) **There is no development plan adopted by a relevant authority that applies to the land of that is proposed to be subject to a consent ballot.**
- (2) **There is no subdivision order that applies to the land**

Note: words and expressions in this clause have the same meaning as they have in Part 16C of the *Environmental Planning and Assessment Regulation 2000*.

19. Site verification certificates

There is not a current site verification certificate, of which Council is aware, in respect of the land.

21. Affected building notices and building product rectification orders

- (1) There is not an affected building notice, as defined by the Building Products (Safety) Act 2017, in force in respect to the land.
- (2)(a) There is not an outstanding building product rectification order, as defined by the Building Products (Safety) Act 2017, in force in respect to the land.
- (2)(b) A notice of intent to make a building product rectification order, as defined by the Building Products (Safety) Act 2017, has not been served in respect to the land.

Matters are prescribed by section 59 (2) of the *Contaminated Land Management Act 1997* as additional matters to be specified in a planning certificate:

- (a) The land or part of the land is not significantly contaminated land within the meaning of the Contaminated Land Management Act 1997 at the date this certificate is issued.
- (b) The land is not subject to a management order within the meaning of the Contaminated Land Management Act 1997 at the date this certificate is issued.



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- (c) The land is not the subject of an approved voluntary management proposal within the meaning of the Contaminated Land Management Act 1997 at the date this certificate is issued.
- (d) The land is not the subject of an ongoing maintenance order within the meaning of the Contaminated Land Management Act 1997 at the date this certificate is issued.
- (e) The land is not the subject of a site audit statement within the meaning of the Contaminated Land Management Act 1997 (if a copy of such a statement has been provided at any time) to the local authority issuing the certificate.



PLANNING CERTIFICATE

ISSUED UNDER SECTION 10.7(2) and (5)
ENVIRONMENTAL PLANNING & ASSESSMENT ACT 1979
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ENVIRONMENTAL PLANNING & ASSESSMENT REGULATION 2000

Laura Robinson
Po Box 96 Carrington 2294

Applicants Reference
16NEW0010

CERTIFICATE DETAILS

CERTIFICATE NUMBER: 1878
DATE OF CERTIFICATE: 10/06/2021

PROPERTY DETAILS

ADDRESS: Wine Country Drive NULKABA NSW 2325
TITLE: LOT: 1 DP: 744377
PARCEL NO.: 21502

BACKGROUND INFORMATION

This certificate provides information on how the relevant parcel of land may be developed, including the planning restrictions that apply to development of the land, as at the date the certificate is issued. The certificate contains information Council is aware of through its records and environmental plans, along with data supplied by the State Government. The details contained in this certificate are limited to that required by Section 10.7 of the *Environmental Planning and Assessment Act, 1979*.

TELEPHONE: (02) 4993 4100. FAX (02) 4993 2500
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EMAIL ADDRESS: council@cessnock.nsw.gov.au Visit us at: <http://www.cessnock.nsw.gov.au>
ABN 60 919 148 928



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Additional information pursuant to Section 10.7(5) of the *Environmental Planning & Assessment Act 1979*

(5) A council may, in a planning certificate, include advice on such other relevant matters affecting the land of which it may be aware.

Council's records do not indicate that the land the subject of this Certificate is subject to Noise Exposure.

For further information, please contact Council's Strategic Land Use Planning unit, of the Planning and Environment directorate on 02 4993 4100.

A handwritten signature in black ink, appearing to read "P. Mickleson", is written over a light blue horizontal line.

Peter Mickleson
Director Planning and Environment



PLANNING CERTIFICATE

ISSUED UNDER SECTION 10.7(2) and (5)
ENVIRONMENTAL PLANNING & ASSESSMENT ACT 1979
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Laura Robinson
Po Box 96 Carrington 2294

Applicants Reference
16NEW0010

CERTIFICATE DETAILS

CERTIFICATE NUMBER: 1879
DATE OF CERTIFICATE: 10/06/2021

PROPERTY DETAILS

ADDRESS: Wine Country Drive NULKABA NSW 2325
TITLE: LOT: 2 DP: 600895
PARCEL NO.: 19494

BACKGROUND INFORMATION

This certificate provides information on how the relevant parcel of land may be developed, including the planning restrictions that apply to development of the land, as at the date the certificate is issued. The certificate contains information Council is aware of through its records and environmental plans, along with data supplied by the State Government. The details contained in this certificate are limited to that required by Section 10.7 of the *Environmental Planning and Assessment Act, 1979*.

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1. Name of relevant planning instruments and DCPs

- (1) **The name of each environmental planning instrument that applies to the carrying out of development on the land:**

[Cessnock Local Environmental Plan 2011](#)

[Hunter Regional Plan 2036](#)

[State Environmental Planning Policy No 1—Development Standards](#)

[State Environmental Planning Policy No 19—Bushland in Urban Areas](#)

[State Environmental Planning Policy No 21—Caravan Parks](#)

[State Environmental Planning Policy No 33—Hazardous and Offensive Development](#)

[State Environmental Planning Policy No 36—Manufactured Home Estates](#)

[State Environmental Planning Policy No 55—Remediation of Land](#)

[State Environmental Planning Policy No 64—Advertising and Signage](#)

[State Environmental Planning Policy No 65—Design Quality of Residential Apartment Development](#)

[State Environmental Planning Policy No 70—Affordable Housing \(Revised Schemes\)](#)

[State Environmental Planning Policy \(Aboriginal Land\) 2019](#)

[State Environmental Planning Policy \(Affordable Rental Housing\) 2009](#)

[State Environmental Planning Policy \(Building Sustainability Index: BASIX\) 2004](#)

[State Environmental Planning Policy \(Coastal Management\) 2018](#)

[State Environmental Planning Policy \(Concurrences\) 2018](#)

[State Environmental Planning Policy \(Educational Establishments and Child Care Facilities\) 2017](#)

[State Environmental Planning Policy \(Exempt and Complying Development Codes\) 2008](#)

[State Environmental Planning Policy \(Housing for Seniors or People with a Disability\) 2004](#)

[State Environmental Planning Policy \(Infrastructure\) 2007](#)

[State Environmental Planning Policy \(Mining, Petroleum Production and Extractive Industries\) 2007](#)

[State Environmental Planning Policy \(Miscellaneous Consent Provisions\) 2007](#)

[State Environmental Planning Policy \(Primary Production and Rural Development\) 2019](#)

[State Environmental Planning Policy \(State and Regional Development\) 2011](#)

[State Environmental Planning Policy \(State Significant Precincts\) 2005](#)

[State Environmental Planning Policy \(Sydney Drinking Water Catchment\) 2011](#)

[State Environmental Planning Policy \(Sydney Region Growth Centres\) 2006](#)

[State Environmental Planning Policy \(Urban Renewal\) 2010](#)

[State Environmental Planning Policy \(Vegetation in Non-Rural Areas\) 2017](#)

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- (2) **The name of each proposed environmental planning instrument that will apply to the carrying out of development on the land and that is or has been the subject of community consultation or on public exhibition under the Act (unless the Director-General has notified the council that the making of the proposed instrument has been deferred indefinitely or has not been approved):**

There are no Draft Local Environmental Plan/s affecting this land.

- (3) **The name of each development control plan that applies to the carrying out of development on the land.**

Cessnock Development Control Plan 2010

2. Zoning and land use under relevant LEPs

- (a) **The land is identified as being in:**

RU2 Rural Landscape under the Cessnock Local Environmental Plan 2011.

- (b) **The purpose for which development may be carried out without consent within the zone;**
(c) **The purposes for which development may not be carried out within the zone except with development consent; and**
(d) **The purpose for which development is prohibited within the zone.**

RU2 Rural Landscape

2) Permitted without consent

Extensive agriculture; Home occupations; Horticulture

3) Permitted with consent

Aquaculture; Cellar door premises; Dual occupancies; Dwelling houses; Environmental protection works; Farm buildings; Health consulting rooms; Home industries; Hospitals; Neighbourhood shops; Pubs; Restaurants or cafes; Roads; Roadside stalls; Rural supplies; Self-storage units; Any other development not specified in item 2 or 4.

4) Prohibited

Boat building and repair facilities; Car parks; Charter and tourism boating facilities; Commercial premises; Depots; Entertainment facilities; Exhibition homes; Exhibition villages; Freight transport facilities; Health services facilities; Heavy industrial storage establishments; Heliports; Highway service centres; Home occupations (sex services); Industrial retail outlets; Industrial training facilities; Industries; Marinas; Mooring pens; Moorings; Mortuaries; Passenger transport facilities; Recreation facilities (indoor); Residential accommodation; Restricted premises; Sex services premises; Storage premises; Transport depots; Truck depots; Vehicle bodypair workshops; Vehicle repair stations; Warehouse or distribution centres; Wharf or boating facilities; Wholesale supplies

- (e) **Whether any development standards applying to the land fix minimum land dimensions for the erection of a dwelling-house on the land and, if so, the minimum land dimensions so fixed:**

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No

(f) Whether the land includes or comprises critical habitat:

The land is not land that includes or comprises critical habitat declared to be critical habitat under Part 3 of the Threatened Species Conservation Act 1995.

(g) Whether the land is a conservation area (however described):

The land is not a conservation area under the Cessnock Local Environmental Plan 2011.

(h) Whether an item of environmental heritage (however described) is situated on the land:

An item of environmental heritage identified in Cessnock Local Environmental Plan 2011 is not situated on the land.

3. Complying Development

- (1) Complying development may be carried out on the land under each of the following codes for complying development, to the extent stated, because of the provisions of clauses 1.17A (1) (c) to (e), (2), (3) and (4), 1.18 (1) (c3) and 1.19 of *State Environmental Planning Policy (Exempt and Complying Development Codes) 2008*.**
- (2) Complying development may not be carried out on the land under each of the following codes for complying development, to the extent and for the reasons stated under clauses 1.17A (1) (c) to (e), (2), (3) and (4), 1.18 (1) (c3) and 1.19 of *State Environmental Planning Policy (Exempt and Complying Development Codes) 2008*.**

Housing Code	Complying Development may not be carried out under the Housing Code as the subject land falls within a Local Environmental Plan zone that does not meet the requirements of the code.
Rural housing code	Complying Development may be carried out under the Rural Housing Code where it meets the requirements of Clause 3A.38 Complying development on flood control lots contained within the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008. Complying Development may be carried out under the Rural Housing Code where it meets the requirements of Clause 3A.37 Complying development on bush fire prone land contained within the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008.
Low Rise Housing Diversity Code	Complying Development may not be carried out under the Low Rise Housing Diversity Code as the subject land falls within a Local Environmental Plan zone that does not meet the requirements of the code.

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Greenfield Housing Code	Complying Development may not be carried out under the Greenfield Housing Code as the subject land falls within a Local Environmental Plan zone that does not meet the requirements of the code.
Housing Alterations Code	Complying Development may be carried out on the land under the Housing Alterations Code, subject to the development complying with the relevant standards contained within the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008.
General Development Code	Complying Development may be carried out on the land under the General Development Code, subject to the development complying with the relevant standards contained within the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008.
Commercial and Industrial Alterations Code	Complying Development may be carried out on the land under the Commercial and Industrial Alterations Code, subject to the development complying with the relevant standards contained within the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008.
Commercial and Industrial (New Buildings and Additions) Code	Complying Development may not be carried out under the Commercial & Industrial (New Buildings and Additions) Code as the subject land falls within a Local Environmental Plan zone that does not meet the requirements of the code.
Container Recycling Facilities Code	Complying Development may not be carried out under the Container Recycling Facilities Code as the subject land falls within a Local Environmental Plan zone that does not meet the requirements of the code.
Subdivisions Code	Complying Development may be carried out on the land under the Subdivision Code, subject to the development complying with the relevant standards contained within the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008.
Demolition Code	Complying Development may be carried out on the land under the Demolition Code, subject to the development complying with the relevant standards contained within the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008.
Fire Safety Code	Complying Development may be carried out on the



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	land under the Fire Safety Code, subject to the development complying with the relevant standards contained within the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008.
--	---

5. Mine subsidence

Whether or not the land is proclaimed to be a mine subsidence district within the meaning of the *Coal Mine Subsidence Compensation Act 2017*.

No

6. Road widening and road alignment

Whether or not the land is affected by any road widening or road realignment under:

- (a) Division 2 of Part 3 of the *Roads Act 1993*, or
- (b) any environmental planning instrument, or
- (c) any resolution of the council.

The land is not affected by a road widening or road realignment proposal under:

- (a) Division 2 of Part 3 of the *Roads Act 1993*, or
- (b) any environmental planning instrument, or
- (c) any resolution of the council.

7. Council and other public authority hazard risk restrictions

Whether or not the land is affected by a policy:

- (a) adopted by the council, or
- (b) adopted by any other public authority and notified to the council for the express purpose of its adoption by that authority being referred to in planning certificates issued by the council,

That restricts the development of the land because of the likelihood of:

- (1) Landslip

No

- (2) Bushfire

No

- (3) Tidal inundation

No

- (4) Subsidence



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No

(5) Acid Sulphate Soils

No

(6) Any other risk (other than flooding)

No

7A. Flood related development controls information

- (1) Whether or not development on the land or part of the land for the purposes of dwelling houses, dual occupancies, multi dwelling housing or residential flat buildings (not including development for the purposes of group homes or seniors housing) is subject to flood related development controls.**

Yes

- (2) Whether or not development on the land or part of the land for any other purpose subject to flood related development controls.**

Yes

Note: Words and expressions in this clause have the same meanings as in the instrument set out in the Schedule to the *Standard Instrument (Local Environmental Plans) Order 2006*.

8. Land reserved for acquisition

Whether or not any environmental planning instrument or proposed environmental planning instrument referred to in clause 1 (above) makes provision in relation to the acquisition of the land by a public authority, as referred to in section 3.15 of the *Environmental Planning & Assessment Act 1979*.

No

9. Contributions plans

The name of each contributions plan/s applying to the land.

Cessnock Section 7.12 Levy Contributions Plan 2017.

Cessnock City Wide Local Infrastructure Contributions Plan 2020.

9A. Biodiversity certified land

The land is not biodiversity certified land under Part 8 of the Biodiversity Conservation Act 2016.

Note. Biodiversity certified land includes land certified under Part 7AA of the *Threatened Species Conservation Act 1995* that is taken to be certified under Part 8 of the *Biodiversity Conservation Act 2016*.

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10. Biodiversity stewardship sites

The land is not a biodiversity stewardship site under a biodiversity stewardship agreement under Part 5 of the Biodiversity Conservation Act 2016, but only insofar as the Council has been notified of the existence of the agreement by the Chief Executive of the Office of Environment and Heritage.

Note. Biodiversity stewardship agreements include biobanking agreements under Part 7A of the *Threatened Species Conservation Act 1995* that are taken to be biodiversity stewardship agreements under Part 5 of the *Biodiversity Conservation Act 2016*.

10A. Native vegetation clearing set asides

The land is not a set aside area under section 60ZC of the Local Land Services Act 2013, but only insofar as the Council has been notified of the existence of the set aside area by Local Land Services or it is registered in the public register under that section.

11. Bush fire prone land

All of the land is bushfire prone land as defined in the Environmental Planning & Assessment Act 1979.

12. Property vegetation plans

The land is not land to which a property vegetation plan approved under Part 4 of the Native Vegetation Act 2003 (and that continues in force) applies, only insofar as the Council has been notified of the existence of the plan by the person or body that approved the plan under the Act.

13. Orders under *Trees (Disputes Between Neighbours) Act 2006*

Whether an order has been made under the *Trees (Disputes Between Neighbours) Act 2006* to carry out work in relation to a tree on the land (but only if the council has been notified of the order).

No

14. Directions under Part 3A

There is not a direction by the Minister in force under Section 75P(2)(c1) of the Environmental Planning & Assessment Act 1979 that a provision of an environmental planning instrument prohibiting or restricting the carrying out of a project or a stage of a project of the land under Part 4 of that Act does not have effect.

15. Site compatibility certificates and conditions for seniors housing

- (1) The land is not land to which the State Environmental Planning Policy (Housing for Seniors or People with a Disability) 2004 applies.

There is no current site compatibility certificate (senior's housing) of which Council is aware, in respect of proposed development on the land.

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- (2) There are no terms of a kind referred to in clause 18(2) of that policy that have been imposed as a condition of consent to a development application granted after 11 October 2007 in respect of the land.

16. Site compatibility certificates for infrastructure

There is not a valid site compatibility certificate (infrastructure) of which Council is aware, in respect of proposed development on the land.

17. Site compatibility certificates and conditions for affordable rental housing

- (1) There is not a current site compatibility certificate (affordable rental housing), of which the Council is aware, in respect of proposed development on the land.
- (2) There are no terms of a kind referred to in clause 17(1) or 38(1) of the State Environmental Planning Policy (Affordable Rental Housing) 2009 that have been imposed as a condition of consent to a development application in respect of the land.

18. Paper subdivision information

- (1) **There is no development plan adopted by a relevant authority that applies to the land of that is proposed to be subject to a consent ballot.**
- (2) **There is no subdivision order that applies to the land**

Note: words and expressions in this clause have the same meaning as they have in Part 16C of the *Environmental Planning and Assessment Regulation 2000*.

19. Site verification certificates

There is not a current site verification certificate, of which Council is aware, in respect of the land.

21. Affected building notices and building product rectification orders

- (1) There is not an affected building notice, as defined by the Building Products (Safety) Act 2017, in force in respect to the land.
- (2)(a) There is not an outstanding building product rectification order, as defined by the Building Products (Safety) Act 2017, in force in respect to the land.
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Matters are prescribed by section 59 (2) of the *Contaminated Land Management Act 1997* as additional matters to be specified in a planning certificate:

- (a) The land or part of the land is not significantly contaminated land within the meaning of the Contaminated Land Management Act 1997 at the date this certificate is issued.
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- (c) The land is not the subject of an approved voluntary management proposal within the meaning of the Contaminated Land Management Act 1997 at the date this certificate is issued.
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CERTIFICATE DETAILS

CERTIFICATE NUMBER: 1879
DATE OF CERTIFICATE: 10/06/2021

PROPERTY DETAILS

ADDRESS: Wine Country Drive NULKABA NSW 2325
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ENVIRONMENTAL PLANNING & ASSESSMENT ACT 1979
and associated

ENVIRONMENTAL PLANNING & ASSESSMENT REGULATION 2000

Additional information pursuant to Section 10.7(5) of the *Environmental Planning & Assessment Act 1979*

(5) A council may, in a planning certificate, include advice on such other relevant matters affecting the land of which it may be aware.

Council's records do not indicate that the land the subject of this Certificate is subject to Noise Exposure.

For further information, please contact Council's Strategic Land Use Planning unit, of the Planning and Environment directorate on 02 4993 4100.

A handwritten signature in black ink, appearing to read "P. Mickleson", is written over a horizontal line.

Peter Mickleson
Director Planning and Environment



2010





2011





2012





2014



2016

N



2017

N



2018



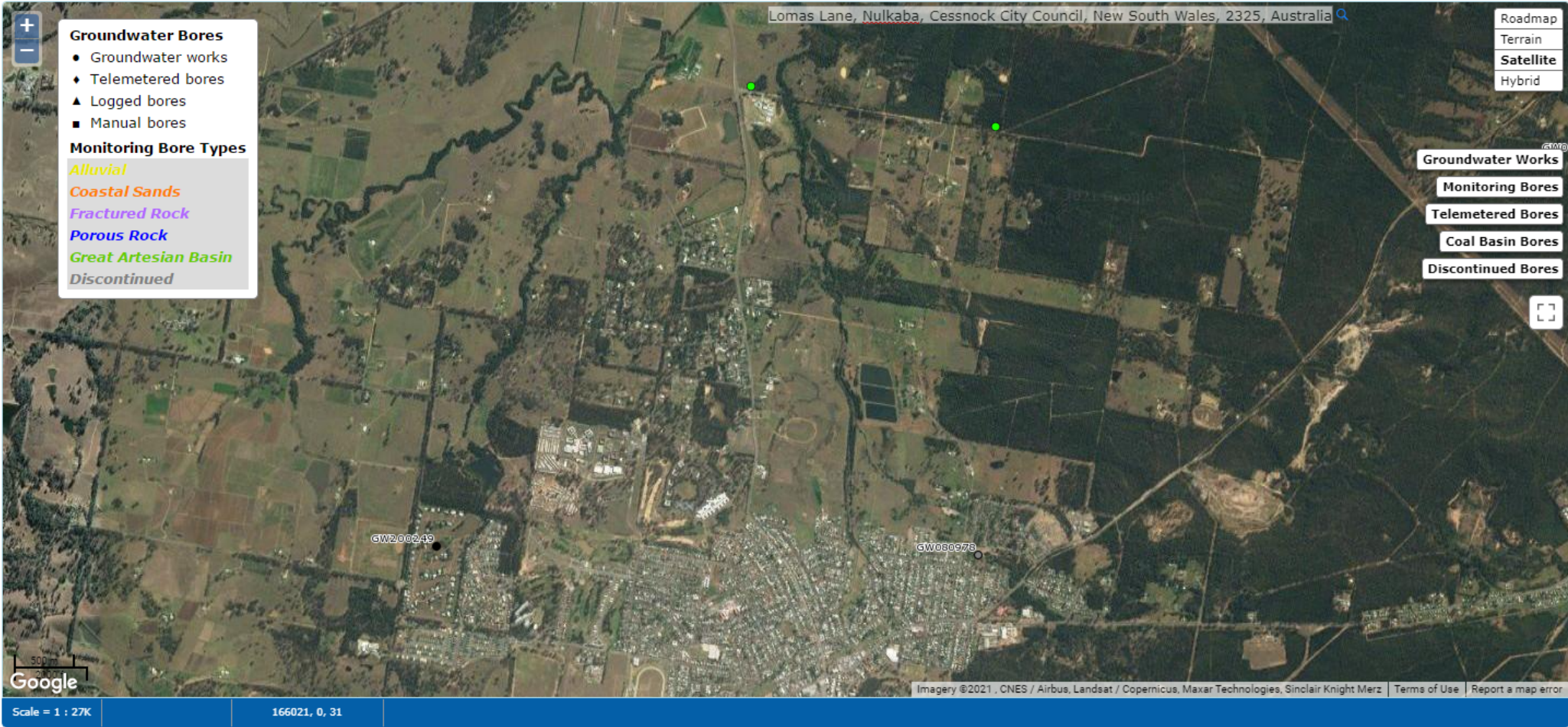


HUNTER REGION

[bookmark this page](#)

All data times are Eastern Standard Time

Map



WaterNSW

Work Summary

GW080978

Licence: 20BL170112

Licence Status: ACTIVE

Authorised Purpose(s): MONITORING BORE
Intended Purpose(s): MONITORING BORE

Work Type: Bore

Work Status: Manual Observations,6-12 Months

Construct.Method: Rotary Air

Owner Type: NSW Office of Water

Commenced Date: 07/12/2005

Completion Date: 07/12/2005

Final Depth: 30.00 m

Drilled Depth: 30.00 m

Contractor Name: Central West Water Drillers

Driller: Christopher Howard Roy Reynolds

Assistant Driller:

Property: NA 70-76 Anzac Ave CESSNOCK
2325 NSW

GWMA: -

GW Zone: -

Standing Water Level 6.000
(m):

Salinity Description:

Yield (L/s): 0.450

Site Details

Site Chosen By:

County	Parish	Cadastre
Form A: NORTHUMBERLAND	CESSN	15/11020
Licensed: NORTHUMBERLAND	CESSNOCK	Whole Lot 15//11020

Region: 20 - Hunter

CMA Map: 9132-2N

River Basin: 210 - HUNTER RIVER

Grid Zone:

Scale:

Area/District:

Elevation: 67.50 m (A.H.D.)

Northing: 6367010.400

Latitude: 32°49'27.1"S

Elevation R.L. at W.L.M.Pt.

Easting: 347242.300

Longitude: 151°22'05.1"E

Source:

GS Map: -

MGA Zone: 56

Coordinate SURV,ACC.MAP
Source:

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack; PC-Pressure Cemented; S-Sump; CE-Centralisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1		Hole	Hole	0.00	0.40	500			Other
1		Annulus	Waterworn/Rounded	1.00	30.00				Graded, Q:0.400m3
1	1	Casing	Pvc Class 12	0.00	30.00	110	100		Seated on Bottom, Riveted and Glued
1	1	Casing	Steel	0.00	0.10	180	160		Seated on Bottom
1	1	Opening	Slots - Vertical	6.00	12.00	110		0	Slotted In Hole, PVC Class 12, SL: 100.0mm, A: 1.00mm

Water Bearing Zones

From (m)	To (m)	Thickness (m)	WBZ Type	S.W.L. (m)	D.D.L. (m)	Yield (L/s)	Hole Depth (m)	Duration (hr)	Salinity (mg/L)
9.00	9.20	0.20	Unknown	6.00		0.45	30.00	01:00:00	

Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	0.10	0.10	Topsoil	Topsoil	
0.10	6.00	5.90	Clay	Clay	
6.00	10.00	4.00	Shale, brown	Shale	
10.00	30.00	20.00	Pyroclastics, grey tuff	Pyroclastic	

Remarks

22/12/2009: AHD established top lid RL 67.497 from PM 18665 (w:\dipnr\maitland\survey\satellite\bores\gw080978)

25/08/2010: Site survey report archived on hydstra database.

26/09/2012: Primary Client changed from GWH to GWA on 26/09/2012.

04/03/2016: Primary Client changed from GWA to IPART on 04/03/2016.

*** End of GW080978 ***

Warning To Clients: This raw data has been supplied to the WaterNSW by drillers, licensees and other sources. WaterNSW does not verify the accuracy of this data. The data is presented for use by you at your own risk. You should consider verifying this data before relying on it. Professional hydrogeological advice should be sought in interpreting and using this data.

WaterNSW

Work Summary

GW200249

Licence: 20BL168525

Licence Status: ACTIVE

Authorised Purpose(s): TEST BORE
Intended Purpose(s): TEST BORE

Work Type: Bore

Work Status: Filled

Construct.Method: Rotary - Percu

Owner Type:

Commenced Date:

Completion Date: 06/12/2002

Final Depth: 18.00 m

Drilled Depth: 18.00 m

Contractor Name: Slade Drilling

Driller: Paul Edwin Slade

Assistant Driller:

Property: N/A Oakey Creek Rd POKOLBIN
2320 NSW

GWMA: -
GW Zone: -

Standing Water Level
(m):

Salinity Description:
Yield (L/s): 1.200

Site Details

Site Chosen By:

County Parish Cadastre
Form A: NORTHUMBERLAND POKOL 1/270158
Licensed: NORTHUMBERLAND POKOLBIN Whole Lot 1//270158

Region: 20 - Hunter

CMA Map:

River Basin: - Unknown

Grid Zone:

Scale:

Area/District:

Elevation: 0.00 m (A.H.D.)

Northing: 6367023.000

Latitude: 32°49'25.1"S

Elevation Unknown

Easting: 343249.000

Longitude: 151°19'31.6"E

Source:

GS Map: -

MGA Zone: 56

Coordinate Source: Map Interpre

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack; PC-Pressure Cemented; S-Sump; CE-Centralisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1		Hole	Hole	0.00	18.00	150			Rotary - Percussion (Down Hole H

Water Bearing Zones

From (m)	To (m)	Thickness (m)	WBZ Type	S.W.L. (m)	D.D.L. (m)	Yield (L/s)	Hole Depth (m)	Duration (hr)	Salinity (mg/L)
16.00	18.00	2.00	Unknown			1.20			

Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	0.40	0.40	Topsoil	Topsoil	
0.40	6.00	5.60	clay	Clay	
6.00	18.00	12.00	silt	Silt	

Remarks

06/12/2002: Form A Remarks:

When getting the coordinates for the bore on this property, there were none provided so a rough estimate was taken according to a map view of the property. There was no room in the form to say that this bore was backfilled with drilled cuttings from depth 1 to 18m and sealed with concrete from 0 to 1m.

*** End of GW200249 ***

Warning To Clients: This raw data has been supplied to the WaterNSW by drillers, licensees and other sources. WaterNSW does not verify the accuracy of this data. The data is presented for use by you at your own risk. You should consider verifying this data before relying on it. Professional hydrogeological advice should be sought in interpreting and using this data.

Appendix D

Screening Levels and Guidelines

NATIONAL ENVIRONMENT PROTECTION (ASSESSMENT OF SITE CONTAMINATION) MEASURE 1999 AS AMENDED 2013

Soil

The investigation and screening levels (ISL) utilised for the assessment of the soil onsite were sourced from the National Environment Protection Measure for the Assessment of Site Contamination (ASC NEPM, Ref [7]). These ISL are not derived as acceptance criteria for contamination at a site, but as levels above which specific consideration of risk, based on the site use and potential exposure, is required. If a risk is determined as present, then remediation and/or management must be undertaken.

Assessment ISL are based on:

- Human Health.

Intentionally conservative health investigation levels (HIL) have been derived for four (4) generic land use settings.

- HIL 'A' - Residential with garden/accessible soil (home grown produce <10% fruit and vegetable intake (no poultry). This category includes children's day care centres, preschools and primary schools.
- HIL 'B' - Residential with minimal opportunities for soil access includes dwellings with fully and permanently paved yard space such as high rise buildings and flats.
- HIL 'C' - Public open space such as parks, playgrounds, playing fields (e.g. ovals) secondary schools and footpaths. It does not include undeveloped public open space (such as urban bushland and reserves).
- HIL 'D' - Commercial/industrial such as shops, offices, factories and industrial sites.

The exposure scenarios for the derivation of the relevant land use setting are set out in the table below. Best practice in alignment with council's requirements under SEPP55 (Ref [6]) prescribes assessment on the basis of the most sensitive allowable site use. RCA considers the human health criteria as defined (Ref [7]) for the residential land use with soil access is the most appropriate for the College site.

Health screening levels (HSL) have been determined for risks associated from vapour intrusion from petroleum⁸ compound contamination for the same land use settings. These HSL are additionally based on the fraction of compound, the soil texture and the depth of the encountered soil.

Direct hydrocarbon contact criteria are not provided in the ASC NEPM (Ref [7]), however these are provided in CRC Care Technical Report 10 (Ref [8]) which is the source document for the HSL.

- Ecological Health

These levels are considered to apply to soil within two (2) metres of the surface, the root zone and habitation zone of many species.

⁸ Laboratory analysis of hydrocarbons is being reported as total recoverable hydrocarbons (TRH). This testing method includes all forms of hydrocarbons, not just petroleum hydrocarbons and therefore can be considered a conservative measure against the chosen TPH criteria. Further laboratory analysis using a silica gel clean up (TRH_{sg}) is considered to enable a better identification of the extent of petroleum based contamination.

Ecological investigation levels (EIL) have been determined for arsenic, copper, chromium III, DDT, naphthalene, nickel, lead and zinc in soil based on species sensitivity model and for three (3) generic land use settings:

- Areas of ecological significance – for areas where the primary intention is for the conservation and protection of the natural environment. Protection level of 99%.
- Urban residential areas and public open space – broadly equivalent to the HIL A, HIL B and HIL C land use settings. Protection level of 80%.
- Commercial and industrial land uses – considered to be broadly equivalent to HIL D land use setting. Protection level of 60%.

Methodology for the derivation of EIL for other contaminants is available in the ASC NEPM (Ref [7]) and requires additional soil character data.

RCA considers the ecological criteria as defined (Ref [7]) for urban residential and public open space is the most appropriate soil criteria for the College site.

Ecological screening levels (ESL) have been determined for petroleum compound contamination. Due to limitations in the data only moderate reliability ESL have been determined for fractions $<C_{16}$, applied generically in fine- and coarse-grained soils. ESL for petroleum fractions $> C_{16}$, BTEX and naphthalene are considered low reliability.

- Aesthetics

Aesthetic considerations operate separately to the HIL/HSL and EIL/ESL assessment. Issues to be considered include:

- Highly malodorous soils or extracted groundwater (e.g., strong residual petroleum hydrocarbon odours, hydrogen sulphide in soil or extracted groundwater, organosulfur compounds).
- Hydrocarbon sheen on surface water.
- Discoloured chemical deposits or soil staining with chemical waste other than of a very minor nature.
- Large monolithic deposits of otherwise low-risk material, e.g., gypsum as powder or plasterboard, cement kiln dust.
- Presence of putrescible refuse including material that may generate hazardous levels of methane such as a deep-fill profile of green waste or large quantities of timber waste.
- Soils containing residue from animal burial (e.g., former abattoir sites).

Site assessment requires consideration of the quantity, type and distribution of foreign material or odours in relation to the specific land use and its sensitivity. For example, higher expectations for soil quality would apply to residential properties with gardens compared with industrial settings.

Tier 1 assessment comprises the comparison of the soil data with the HIL/HSL and EIL/ESL. In the event that some concentrations are in excess of the relevant criteria, the summary statistics of the data set may be utilised for assessment purpose. Consideration of a range of statistics is recommended; at a minimum the 95%UCL_{ave} should be compared to the relevant criteria as long as:

- No single value exceeds 250% of the relevant criterion.
- The standard deviation of the results for each analyte is less than 50% of the relevant criterion.

In addition to appropriate consideration and application of the HSL and ESL, there are a number of policy considerations which reflect the nature and properties of petroleum hydrocarbons:

- Formation of observable light non-aqueous phase liquids (LNAPL).
- Fire and explosive hazards.
- Effects on buried infrastructure e.g., penetration of, or damage to, in-ground services by hydrocarbons.

The ASC NEPM (Ref [7]) has therefore provided management limits, the application of which will require consideration of site-specific factors such as the depth of building basements and services and depth to groundwater, to determine the maximum depth to which the limits should apply. The management limits may have less relevance at operating industrial sites (including mine sites) which have no or limited sensitive receptors in the area of potential impact. When the management limits are exceeded, further site-specific assessment and management may enable any identified risk to be addressed.

The presence of site hydrocarbon contamination at the levels of the management limits does not imply that there is no need for administrative notification or controls in accordance with jurisdiction requirements.

The following figure has been taken from the ASC NEPM (Ref [7]) to illustrate the assessment methodology in regard to petroleum contamination.

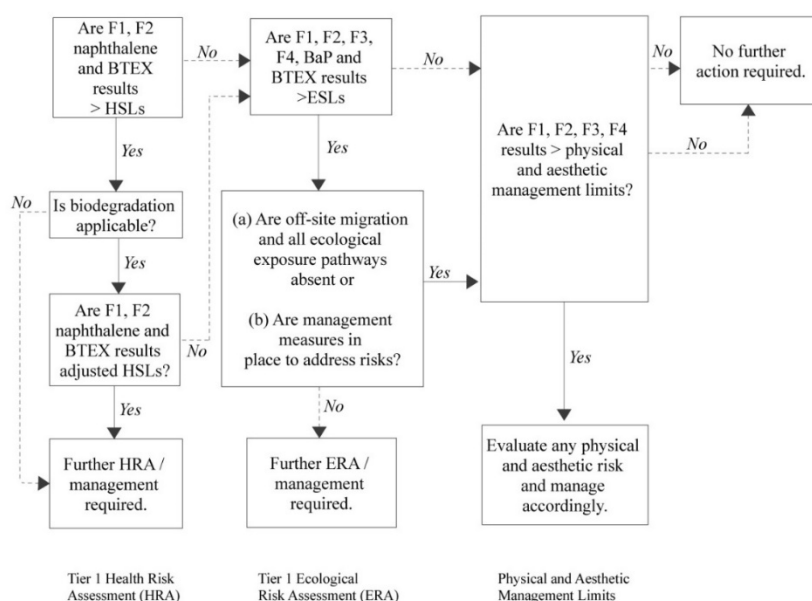


Figure 1 *Flowchart for the Tier 1 human and ecological risk assessment of petroleum hydrocarbon contamination – application of HSL and ESL and consideration of management limits*

AUSTRALIAN and NEW ZEALAND GUIDELINES for FRESH and MARINE WATER QUALITY

The ANZG (Ref [9]) are complex guidelines that consider not only the level of protection (e.g., 99% or 95%) but also the state of the receiving water (e.g., moderately disturbed). For the protection of aquatic ecosystems, the ANZG (Ref [9]) recommend the use of 95% protection for all analytes with the exception of carcinogenic and bio accumulative analytes for which the 99% protection value should be used. The following comments are additionally made:

- Where the existing generic GIL is below the naturally occurring background concentration of a particular contaminant, the background concentration becomes the default GIL.
- Where PQL are greater than the recommended GIL the PQL is adopted as the GIL. Where background concentrations are proven to be greater than the GIL, the background concentration is adopted as the GIL.
- Where there is insufficient data for the derivation of marine water criteria it is allowable to use fresh water criteria as low reliability criteria.
- No adjustment to the criteria for water hardness has been made; criteria for cadmium, chromium, copper, lead, nickel and zinc are based on a water hardness of 30mg/L as CaCO₃ which is the most stringent of the criteria.

DRINKING WATER GUIDELINES

The ADWG (Ref [17]) document provides a framework for drinking water quality management and assessment. The framework provided in this document has been adopted for the evaluation of contaminants in groundwater where groundwater can be, or is being, extracted and used for drinking water purpose.

Residential with Garden/Accessible soil

Summary of Exposure Pathways	Abbreviations	Units	Parameters	
			Adult	Child
Body weight	BW _A or BW _C	kg	70	15
Exposure duration	ED _A or ED _C	years	29	6
Exposure frequency	EF	days	365	365
Soil/dust ingestion rate ¹	IR _{SA} or IR _{SC}	mg/day	50 ²	100 ²
Soil/dust to skin adherence factor	AF	mg/cm ² /day	0.5	0.5
Skin surface area	SA _A or SA _C	cm ²	20 000	6100
Fraction of skin exposed	F _s	%	31.5	44.3
Dermal absorption factor	DAF	%	Chemical specific values applied	
Time spent indoors on site each day	ET _i	hours	20	20
Time spent outdoors on site each day	ET _o	hours	4	4
Home-grown fraction of vegetables consumed	F _{HG}	%	10	10
Vegetable & fruit consumption rate	C _y (veg and fruit)	g/day	400	280
Averaging time for carcinogens ('lifetime')	AT _{NT}	years	70	70
Dust lung retention factor	RF	%	37.5	37.5

Soil ingestion rates for children are based on a child aged 2-3 years where normal hand-to-mouth activity is assumed and does not account for pica behaviour

Soil ingestion rates for the HIL A scenario include the ingestion of both outdoor soil, including soil adhering to home-grown produce, and indoor dust (derived from outdoor soil tracked indoors)

Appendix E

Quality Assurance and Quality Control

The collection of all soil and water samples was undertaken as detailed in **Section 6**.

One (1) intralaboratory soil duplicate sample was submitted blind to the laboratory for this project. This represents a percentage of 6%, which is less than the frequency recommended by the Australian Standard AS 4482.1 (Ref [10]) and RCA protocol. This slight shortfall is not considered to be significant due to the preliminary nature of the assessment, the low/non detect concentrations reported in most samples and the good performance of other QA/QC.

One (1) trip blank and one (1) trip spike were also submitted. This submission is in accordance with than the frequency recommended by the Australian Standard AS 4482.1 (Ref [10]) and RCA protocol.

RCA omitted the field blank due to the low potential for cross contamination from the field conditions and the soil equipment wash due to the low potential for cross contamination from the sampling equipment.

RCA omitted quality assurance samples associated with water samples due to the limited scope.

Results, as shown further in this **Appendix**, indicate a total of three (3) soil analyses which report RPD in excess of the acceptance criteria:

- HA11/QA1 The arsenic, chromium, and nickel RPD were 104%, 77% and 82.4% respectively. This sample is described as silty sandy clay and it is therefore considered that sample heterogeneity is the likely cause of the high RPD. There is some uncertainty associated with the concentrations reported by the laboratory for sample HA11, however the primary sample exhibited the highest concentrations in all analytes, which are all less than 10% of the guideline criteria and the uncertainty is not considered significant.

Results for the trip spike and trip spike control samples reported RPD of <30% for BTEX.

ALS was chosen as the primary laboratory. This laboratory is NATA accredited and is experienced in the analytical requirements for potentially contaminated soil and water.

ALS undertook internal quality assurance testing. Results are contained within the laboratory report sheets, included in this **Appendix**. **Table 9** presents a summary of their review.

Table 9 *Internal Quality Assurance Review*

	Number Samples (including QA)	Laboratory Duplicates	Spikes	Laboratory Control Samples	Laboratory Blanks
Requirement		10%	5%	One every batch	One every batch
Soil					
Metals (As, Cd, Cr, Cu, Ni, Hg, Pb, Zn)	18	1 (3)	0 (2)	2	2
TRH C ₆ -C ₉	21	2 (2)	1 (1)	2	2
BTEX	21	2 (2)	1 (1)	2	2
TRH >C ₁₀ -C ₄₀	18	2 (0)	1 (0)	1	1
PAH	18	2 (0)	1 (0)	1	1
Herbicides	4	2 (2)	1 (0)	1	1
Water					
Metals (As, Cd, Cr, Cu, Ni, Pb, Zn)	5	1 (1)	0 (1)	1	1
Mercury	5	1 (2)	0 (1)	2	2
TRH C ₆ -C ₁₀	5	1 (1)	0 (1)	1	1
BTEX	5	1 (1)	0 (1)	1	1
TRH >C ₁₀ -C ₄₀	5	0	0	1	1
PAH	5	0	0	1	1

Numbers in brackets refer the tests undertaken on samples not from this project but within the same laboratory batch.

Examination of the above table reveals that ALS have undertaken laboratory quality assurance testing in accordance with the ASC NEPM (Ref [7]).

With regards to the results of other testing

- Recoveries of Surrogates were within acceptance criteria of 70-130% with the exception of:
 - The surrogate for phenoxy acid herbicides in samples HA10, HA13 and HA15 which reported recoveries between 52.8% and 61%. This is considered to indicate some uncertainty with the results however as there was no detected results and the detection limits are <0.05% of the guideline the uncertainty is not considered significant.
 - The surrogates for PAH in samples SW3 and SW4 reported recoveries between 62.9% and 71.4%. This is considered to indicate some uncertainty with the results however as there was no PAH detected in SW3 it is not considered that the uncertainty is significant. There is the potential for PAH concentrations to be present in association with the SW4 TRH concentrations.

It is noted that there were several phenolic compound surrogates which reported low recoveries however as phenolic compounds were not part of the analytical suite for this assessment, these low recoveries are not considered to be significant.

- Holding Times were within laboratory specified time frames.
- Recoveries of laboratory control samples were within the acceptance criteria of 70-130% with the exception of:
 - Several herbicide compounds reported low recoveries. This is considered to indicate some uncertainty with the results. The results are all well within the relevant criteria and as such the uncertainty is not considered significant.
- Recoveries of Spikes were within acceptance criteria of 70-130% with the exception of:
 - Phenoxyacid herbicides in HA15 for five (5) compounds was <70% with the highest result 49%. These are considered minor non-compliance and not significant due to the non detected results being significantly below the criteria.
- Relative Percentage Differences for duplicates were within 30% acceptance criteria with the exception of copper in an anonymous sample. As the sample was not collected by RCA, no comment can be made about the cause of the high RPD however it is not considered that the poor RPD necessarily reflects uncertainty on the remainder of the samples within the batch.
- No Laboratory Blank result was detected above the practical quantification limit (PQL).

RCA have assessed the data in accordance with the DQI as specified in the **Section 5** as follows:

- Accuracy
 - The accuracy of the data has been assessed by internal means (surrogates, laboratory control samples, matrix spikes and method blanks) as being acceptable. All results were within the acceptance criteria with the exception of some low recoveries for herbicides. Assessment of herbicides was limited with only four (4) samples being submitted for this analysis. All samples reported concentrations below the laboratory detection limit, and therefore well below the relevant criteria therefore any uncertainty associated with these low recoveries was not considered to be significant.
 - The external assessment of the accuracy of the data has been assessed by external means (trip spike) as being acceptable. All results were within the acceptance criteria as detailed earlier in this **Appendix**.
- Precision
 - The precision of the data has been assessed by internal means (duplicates) as being acceptable.
 - The precision of the data has been assessed by external means (intralaboratory duplicates) as being acceptable. Some variation was identified however the uncertainty was considered conservative

- Completeness
 - All data that was sought during the investigation was able to be retrieved. Chain of custody were completed for all samples. As such, completeness is considered 100%.
- Representativeness
 - This assessment has considered soil contaminant concentrations on-site. The method of sampling was appropriate for the sampling of semi and non-volatile compounds within soil. There is potential for the loss of volatile compounds due to the disturbance of soil during the sampling however in the absence of any indications of contamination, via site history and field observations, the soil data is considered representative of the concentrations at the site.
 - This assessment has considered water contaminant concentrations in a number of areas on-site. The method of sampling was is appropriate for the sampling of volatile to non-volatile compounds within water. As such the water data is considered representative of the concentrations at the site.
- Comparability
 - Works were undertaken by personnel experienced in the sampling of potentially contaminated soil and water.
 - All samples were appropriately preserved for the requested analysis and were kept on ice or in the refrigerator between sampling and analysis.
 - All laboratory analyses have been conducted by NATA accredited methodologies that comply with the international standard methods.
 - Comparable analytes such as TRH C₆-C₁₀ and BTEX show some concurrence between analytical results.

As such it is considered that the comparability of the data is appropriate.

It is therefore considered that the data obtained from this testing is accurate and reliable in as far as it can be ascertained.

Quality Assurance Type		Primary PQL	Intralaboratory Duplicate		RPD %	Trip Spike		RPD%	Trip Blank
Sample Identification			HA11	QA1		TS1	TSC		TB1
Sample Depth (m)			0			NA			NA
Date			21/7/21			14/07/2021			16/7/21
Sample Profile			Silty sandy clay			Sand			Sand
Sample Purpose		Characterisation		Quality Assurance		Quality Assurance			
Sample collected by		RCA-AK		Laboratory		Laboratory			
Benzene, Toluene, Ethylbenzene, Xylene (BTEX)									
Benzene	0.2		<u>0.1</u>	<u>0.1</u>	0.0	<u>0.1</u>	<u>0.1</u>	0.0	<0.2
Toluene	0.5		<u>0.25</u>	<u>0.25</u>	0.0	13.4	14.2	5.8	<0.5
Ethylbenzene	0.5		<u>0.25</u>	<u>0.25</u>	0.0	2.3	2.5	8.3	<0.5
meta- and para-Xylene	0.5		<u>0.25</u>	<u>0.25</u>	0.0	11.1	11.8	6.1	<0.5
ortho-Xylene	0.5		<u>0.25</u>	<u>0.25</u>	0.0	4.8	5.1	6.1	<0.5
Polycyclic Aromatic Hydrocarbons (PAH)									
Naphthalene	1		<u>0.5</u>	<u>0.5</u>	0.0	<u>0.5</u>	<u>0.5</u>	0.0	<1
Total Recoverable Hydrocarbons (TRH)									
TRH C ₆ -C ₁₀	10		<u>5</u>	<u>5</u>	0.0	--	--	--	<10
TRH >C ₁₀ -C ₁₆	50		<u>25</u>	<u>25</u>	0.0	--	--	--	--
TRH >C ₁₆ -C ₃₄	100		<u>50</u>	<u>50</u>	0.0	--	--	--	--
TRH >C ₃₄ -C ₄₀	100		<u>50</u>	<u>50</u>	0.0	--	--	--	--
Polycyclic Aromatic Hydrocarbons (PAH)									
Naphthalene	0.5		<u>0.25</u>	<u>0.25</u>	0.0	--	--	--	--
Acenaphthylene	0.5		<u>0.25</u>	<u>0.25</u>	0.0	--	--	--	--
Acenaphthene	0.5		<u>0.25</u>	<u>0.25</u>	0.0	--	--	--	--
Fluorene	0.5		<u>0.25</u>	<u>0.25</u>	0.0	--	--	--	--
Phenanthrene	0.5		<u>0.25</u>	<u>0.25</u>	0.0	--	--	--	--
Anthracene	0.5		<u>0.25</u>	<u>0.25</u>	0.0	--	--	--	--
Fluoranthene	0.5		<u>0.25</u>	<u>0.25</u>	0.0	--	--	--	--
Pyrene	0.5		<u>0.25</u>	<u>0.25</u>	0.0	--	--	--	--
Benz(a)anthracene	0.5		<u>0.25</u>	<u>0.25</u>	0.0	--	--	--	--
Chrysene	0.5		<u>0.25</u>	<u>0.25</u>	0.0	--	--	--	--
Benzo(b)&(j)fluoranthene	0.5		<u>0.25</u>	<u>0.25</u>	0.0	--	--	--	--
Benzo(k)fluoranthene	0.5		<u>0.25</u>	<u>0.25</u>	0.0	--	--	--	--
Benzo(a) pyrene	0.5		<u>0.25</u>	<u>0.25</u>	0.0	--	--	--	--
Indeno(1,2,3-c,d)pyrene	0.5		<u>0.25</u>	<u>0.25</u>	0.0	--	--	--	--
Dibenz(a,h)anthracene	0.5		<u>0.25</u>	<u>0.25</u>	0.0	--	--	--	--
Benzo(g,h,i)perylene	0.5		<u>0.25</u>	<u>0.25</u>	0.0	--	--	--	--
Metals									
Arsenic	5		8	<u>2.5</u>	104.8	--	--	--	--
Cadmium	1		<u>0.5</u>	<u>0.5</u>	0.0	--	--	--	--
Chromium	2		34	15	77.6	--	--	--	--
Copper	5		<u>2.5</u>	<u>2.5</u>	0.0	--	--	--	--
Lead	5		12	11	8.7	--	--	--	--
Mercury	0.1		<u>0.5</u>	<u>0.5</u>	0.0	--	--	--	--
Nickel	2		12	5	82.4	--	--	--	--
Zinc	5		18	17	5.7	--	--	--	--

All units in mg/kg

PQL = Practical Quantitation Limit. Where PQL is for a summation, PQL of all components is summed and may be different from that presented by laboratory

Results underlined were not detected and are reported as half the detection limit for statistical purpose.

BOLD identifies where RPD results >30%

BOLD identifies where blank results >PQL

CERTIFICATE OF ANALYSIS

Work Order : **ES2127121**
Client : **ROBERT CARR & ASSOCIATES P/L**
Contact : MS FIONA BROOKER
Address : 92 HILL STREET
 CARRINGTON NSW 2294
Telephone : +61 02 4902 9200
Project : 15613
Order number : ----
C-O-C number : ----
Sampler : Adeleh Khoshzaban
Site : ----
Quote number : SYBQ/400/20
No. of samples received : 26
No. of samples analysed : 26

Page : 1 of 20
Laboratory : Environmental Division Sydney
Contact : Juliana Gonzalez
Address : 277-289 Woodpark Road Smithfield NSW Australia 2164

Telephone : +61-2-8784 8555
Date Samples Received : 23-Jul-2021 15:39
Date Analysis Commenced : 27-Jul-2021
Issue Date : 30-Jul-2021 15:32



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

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

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

Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Alex Rossi	Organic Chemist	Sydney Organics, Smithfield, NSW
Edwandy Fadjjar	Organic Coordinator	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Ivan Taylor	Analyst	Sydney Inorganics, Smithfield, NSW



General Comments

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

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

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

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

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

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

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

- EP202: Poor matrix spike recovery for particular compounds due to matrix interferences.
- EP075 (SIM): Where reported, Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) per the NEPM (2013) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) per the NEPM (2013) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.
- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP075(SIM): Where reported, Total Cresol is the sum of the reported concentrations of 2-Methylphenol and 3- & 4-Methylphenol at or above the LOR.
- EP080: The trip spike and its control have been analysed for volatile TPH and BTEXN only. The trip spike and control were prepared in the lab using reagent grade sand spiked with petrol. The spike was dispatched from the lab and the control retained.



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	HA1	HA2	HA3	HA4	HA5
Sampling date / time					21-Jul-2021 00:00	21-Jul-2021 00:00	21-Jul-2021 00:00	21-Jul-2021 00:00	21-Jul-2021 00:00
Compound	CAS Number	LOR	Unit		ES2127121-001	ES2127121-002	ES2127121-003	ES2127121-004	ES2127121-005
					Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		7.7	15.8	15.2	17.4	10.0
EG005(ED093)T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		<5	<5	7	<5	<5
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg		42	22	24	33	10
Copper	7440-50-8	5	mg/kg		35	10	10	20	<5
Lead	7439-92-1	5	mg/kg		<5	13	20	6	<5
Nickel	7440-02-0	2	mg/kg		28	15	16	35	10
Zinc	7440-66-6	5	mg/kg		54	41	44	45	15
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)anthracene	56-55-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		0.6	0.6	0.6	0.6	0.6
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		1.2	1.2	1.2	1.2	1.2
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	<10	<10	<10	<10



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	HA1	HA2	HA3	HA4	HA5
Sampling date / time					21-Jul-2021 00:00	21-Jul-2021 00:00	21-Jul-2021 00:00	21-Jul-2021 00:00	21-Jul-2021 00:00
Compound	CAS Number	LOR	Unit		ES2127121-001	ES2127121-002	ES2127121-003	ES2127121-004	ES2127121-005
					Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued									
C10 - C14 Fraction	----	50	mg/kg		<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	<10	<10	<10
>C10 - C16 Fraction	----	50	mg/kg		<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	<50	<50	<50	<50
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	<50	<50	<50
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	<1
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		84.0	83.3	87.6	86.7	89.3
2-Chlorophenol-D4	93951-73-6	0.5	%		84.7	82.9	85.2	84.1	84.9
2,4,6-Tribromophenol	118-79-6	0.5	%		62.5	64.1	66.6	61.2	63.6
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		80.0	89.3	93.7	87.8	91.4
Anthracene-d10	1719-06-8	0.5	%		112	109	110	109	110
4-Terphenyl-d14	1718-51-0	0.5	%		115	112	115	114	112
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.2	%		111	108	124	129	125
Toluene-D8	2037-26-5	0.2	%		93.1	91.0	103	104	114



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	HA1	HA2	HA3	HA4	HA5
Sampling date / time					21-Jul-2021 00:00	21-Jul-2021 00:00	21-Jul-2021 00:00	21-Jul-2021 00:00	21-Jul-2021 00:00
Compound	CAS Number	LOR	Unit		ES2127121-001	ES2127121-002	ES2127121-003	ES2127121-004	ES2127121-005
					Result	Result	Result	Result	Result
EP080S: TPH(V)/BTEX Surrogates - Continued									
4-Bromofluorobenzene	460-00-4	0.2	%		97.0	94.8	107	108	120



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	HA6	HA7	HA8	HA9	HA10
Sampling date / time					21-Jul-2021 00:00	21-Jul-2021 00:00	21-Jul-2021 00:00	21-Jul-2021 00:00	21-Jul-2021 00:00
Compound	CAS Number	LOR	Unit		ES2127121-006	ES2127121-007	ES2127121-008	ES2127121-009	ES2127121-010
					Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		10.6	11.8	17.2	7.5	14.3
EG005(ED093)T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		<5	<5	5	7	11
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg		13	14	22	24	32
Copper	7440-50-8	5	mg/kg		<5	6	11	<5	<5
Lead	7439-92-1	5	mg/kg		10	7	13	14	17
Nickel	7440-02-0	2	mg/kg		2	16	15	14	11
Zinc	7440-66-6	5	mg/kg		<5	15	47	62	52
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)anthracene	56-55-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		0.6	0.6	0.6	0.6	0.6
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		1.2	1.2	1.2	1.2	1.2
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	<10	<10	<10	<10



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	HA6	HA7	HA8	HA9	HA10
Sampling date / time					21-Jul-2021 00:00	21-Jul-2021 00:00	21-Jul-2021 00:00	21-Jul-2021 00:00	21-Jul-2021 00:00
Compound	CAS Number	LOR	Unit		ES2127121-006	ES2127121-007	ES2127121-008	ES2127121-009	ES2127121-010
					Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued									
C10 - C14 Fraction	----	50	mg/kg		<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	<10	<10	<10
>C10 - C16 Fraction	----	50	mg/kg		<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	<50	<50	<50	<50
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	<50	<50	<50
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	<1
EP202A: Phenoxyacetic Acid Herbicides by LCMS									
4-Chlorophenoxy acetic acid	122-88-3	0.02	mg/kg		----	----	----	----	<0.02
2,4-DB	94-82-6	0.02	mg/kg		----	----	----	----	<0.02
Dicamba	1918-00-9	0.02	mg/kg		----	----	----	----	<0.02
Mecoprop	93-65-2	0.02	mg/kg		----	----	----	----	<0.02
MCPA	94-74-6	0.02	mg/kg		----	----	----	----	<0.02
2,4-DP	120-36-5	0.02	mg/kg		----	----	----	----	<0.02
2,4-D	94-75-7	0.02	mg/kg		----	----	----	----	<0.02
Triclopyr	55335-06-3	0.02	mg/kg		----	----	----	----	<0.02
2,4,5-TP (Silvex)	93-72-1	0.02	mg/kg		----	----	----	----	<0.02
2,4,5-T	93-76-5	0.02	mg/kg		----	----	----	----	<0.02
MCPB	94-81-5	0.02	mg/kg		----	----	----	----	<0.02



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	HA6	HA7	HA8	HA9	HA10
Sampling date / time					21-Jul-2021 00:00	21-Jul-2021 00:00	21-Jul-2021 00:00	21-Jul-2021 00:00	21-Jul-2021 00:00
Compound	CAS Number	LOR	Unit		ES2127121-006	ES2127121-007	ES2127121-008	ES2127121-009	ES2127121-010
					Result	Result	Result	Result	Result
EP202A: Phenoxyacetic Acid Herbicides by LCMS - Continued									
Picloram	1918-02-1	0.02	mg/kg		----	----	----	----	<0.02
Clopyralid	1702-17-6	0.02	mg/kg		----	----	----	----	<0.02
Fluroxypyr	69377-81-7	0.02	mg/kg		----	----	----	----	<0.02
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		83.3	84.6	84.0	99.8	81.1
2-Chlorophenol-D4	93951-73-6	0.5	%		83.9	85.3	88.9	89.5	81.2
2,4,6-Tribromophenol	118-79-6	0.5	%		67.7	63.2	59.0	68.8	57.2
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		88.5	84.0	75.8	95.9	72.8
Anthracene-d10	1719-06-8	0.5	%		101	103	104	110	104
4-Terphenyl-d14	1718-51-0	0.5	%		128	121	119	123	117
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.2	%		128	129	97.7	121	125
Toluene-D8	2037-26-5	0.2	%		104	105	87.1	108	112
4-Bromofluorobenzene	460-00-4	0.2	%		109	110	84.1	117	114
EP202S: Phenoxyacetic Acid Herbicide Surrogate									
2,4-Dichlorophenyl Acetic Acid	19719-28-9	0.02	%		----	----	----	----	52.8



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	HA11	HA12	HA13	HA14	HA15
Sampling date / time					21-Jul-2021 00:00	21-Jul-2021 00:00	21-Jul-2021 00:00	21-Jul-2021 00:00	21-Jul-2021 00:00
Compound	CAS Number	LOR	Unit		ES2127121-011	ES2127121-012	ES2127121-013	ES2127121-014	ES2127121-015
					Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		20.5	15.4	15.6	12.9	19.9
EG005(ED093)T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		8	12	<5	7	<5
Cadmium	7440-43-9	1	mg/kg		<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg		34	56	20	12	11
Copper	7440-50-8	5	mg/kg		<5	<5	<5	<5	<5
Lead	7439-92-1	5	mg/kg		12	16	11	9	8
Nickel	7440-02-0	2	mg/kg		12	11	7	<2	4
Zinc	7440-66-6	5	mg/kg		18	12	14	6	24
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)anthracene	56-55-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		0.6	0.6	0.6	0.6	0.6
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		1.2	1.2	1.2	1.2	1.2
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	<10	<10	<10	<10



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	HA11	HA12	HA13	HA14	HA15
Sampling date / time					21-Jul-2021 00:00	21-Jul-2021 00:00	21-Jul-2021 00:00	21-Jul-2021 00:00	21-Jul-2021 00:00
Compound	CAS Number	LOR	Unit		ES2127121-011	ES2127121-012	ES2127121-013	ES2127121-014	ES2127121-015
					Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued									
C10 - C14 Fraction	----	50	mg/kg		<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	<10	<10	<10
>C10 - C16 Fraction	----	50	mg/kg		<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	<50	<50	<50	<50
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	<50	<50	<50
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	<1
EP202A: Phenoxyacetic Acid Herbicides by LCMS									
4-Chlorophenoxy acetic acid	122-88-3	0.02	mg/kg		----	<0.02	<0.02	----	<0.02
2,4-DB	94-82-6	0.02	mg/kg		----	<0.02	<0.02	----	<0.02
Dicamba	1918-00-9	0.02	mg/kg		----	<0.02	<0.02	----	<0.02
Mecoprop	93-65-2	0.02	mg/kg		----	<0.02	<0.02	----	<0.02
MCPA	94-74-6	0.02	mg/kg		----	<0.02	<0.02	----	<0.02
2,4-DP	120-36-5	0.02	mg/kg		----	<0.02	<0.02	----	<0.02
2,4-D	94-75-7	0.02	mg/kg		----	<0.02	<0.02	----	<0.02
Triclopyr	55335-06-3	0.02	mg/kg		----	<0.02	<0.02	----	<0.02
2,4,5-TP (Silvex)	93-72-1	0.02	mg/kg		----	<0.02	<0.02	----	<0.02
2,4,5-T	93-76-5	0.02	mg/kg		----	<0.02	<0.02	----	<0.02
MCPB	94-81-5	0.02	mg/kg		----	<0.02	<0.02	----	<0.02



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	HA11	HA12	HA13	HA14	HA15
Sampling date / time					21-Jul-2021 00:00	21-Jul-2021 00:00	21-Jul-2021 00:00	21-Jul-2021 00:00	21-Jul-2021 00:00
Compound	CAS Number	LOR	Unit		ES2127121-011	ES2127121-012	ES2127121-013	ES2127121-014	ES2127121-015
					Result	Result	Result	Result	Result
EP202A: Phenoxyacetic Acid Herbicides by LCMS - Continued									
Picloram	1918-02-1	0.02	mg/kg		----	<0.02	<0.02	----	<0.02
Clopyralid	1702-17-6	0.02	mg/kg		----	<0.02	<0.02	----	<0.02
Fluroxypyr	69377-81-7	0.02	mg/kg		----	<0.02	<0.02	----	<0.02
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		79.9	85.0	85.0	89.9	85.7
2-Chlorophenol-D4	93951-73-6	0.5	%		85.0	85.4	89.5	84.0	85.8
2,4,6-Tribromophenol	118-79-6	0.5	%		55.0	59.6	53.3	57.1	52.1
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		78.7	81.7	86.1	84.2	88.5
Anthracene-d10	1719-06-8	0.5	%		106	109	109	105	108
4-Terphenyl-d14	1718-51-0	0.5	%		118	120	120	117	120
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.2	%		127	126	122	130	124
Toluene-D8	2037-26-5	0.2	%		102	100	95.2	104	95.6
4-Bromofluorobenzene	460-00-4	0.2	%		107	104	99.3	106	101
EP202S: Phenoxyacetic Acid Herbicide Surrogate									
2,4-Dichlorophenyl Acetic Acid	19719-28-9	0.02	%		----	55.4	61.0	----	55.6



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	HA17	SP2	TB1	TS1	TSC
Sampling date / time					21-Jul-2021 00:00	21-Jul-2021 00:00	16-Jul-2021 00:00	14-Jul-2021 00:00	14-Jul-2021 00:00
Compound	CAS Number	LOR	Unit		ES2127121-016	ES2127121-017	ES2127121-023	ES2127121-024	ES2127121-025
					Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		13.5	12.2	----	----	----
EG005(ED093)T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		7	6	----	----	----
Cadmium	7440-43-9	1	mg/kg		<1	<1	----	----	----
Chromium	7440-47-3	2	mg/kg		20	15	----	----	----
Copper	7440-50-8	5	mg/kg		9	18	----	----	----
Lead	7439-92-1	5	mg/kg		13	14	----	----	----
Nickel	7440-02-0	2	mg/kg		16	8	----	----	----
Zinc	7440-66-6	5	mg/kg		46	50	----	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	<0.5	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	<0.5	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	<0.5	----	----	----
Fluorene	86-73-7	0.5	mg/kg		<0.5	<0.5	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg		<0.5	<0.5	----	----	----
Anthracene	120-12-7	0.5	mg/kg		<0.5	<0.5	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg		<0.5	<0.5	----	----	----
Pyrene	129-00-0	0.5	mg/kg		<0.5	<0.5	----	----	----
Benzo(a)anthracene	56-55-3	0.5	mg/kg		<0.5	<0.5	----	----	----
Chrysene	218-01-9	0.5	mg/kg		<0.5	<0.5	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg		<0.5	<0.5	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		<0.5	<0.5	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg		<0.5	<0.5	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		<0.5	<0.5	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		<0.5	<0.5	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		<0.5	<0.5	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		<0.5	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		<0.5	<0.5	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		0.6	0.6	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		1.2	1.2	----	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	<10	<10	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	HA17	SP2	TB1	TS1	TSC
Sampling date / time					21-Jul-2021 00:00	21-Jul-2021 00:00	16-Jul-2021 00:00	14-Jul-2021 00:00	14-Jul-2021 00:00
Compound	CAS Number	LOR	Unit		ES2127121-016	ES2127121-017	ES2127121-023	ES2127121-024	ES2127121-025
					Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued									
C10 - C14 Fraction	----	50	mg/kg		<50	<50	----	----	----
C15 - C28 Fraction	----	100	mg/kg		<100	<100	----	----	----
C29 - C36 Fraction	----	100	mg/kg		<100	<100	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	<50	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	<10	<10	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	<10	----	----
>C10 - C16 Fraction	----	50	mg/kg		<50	<50	----	----	----
>C16 - C34 Fraction	----	100	mg/kg		<100	<100	----	----	----
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	<50	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	----	----	----
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	13.4	14.2
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	2.3	2.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	11.1	11.8
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	4.8	5.1
^ Sum of BTEX	----	0.2	mg/kg		<0.2	<0.2	<0.2	31.6	33.6
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	<0.5	15.9	16.9
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	<1
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		90.2	101	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%		85.9	90.9	----	----	----
2,4,6-Tribromophenol	118-79-6	0.5	%		53.9	48.8	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		82.8	89.1	----	----	----
Anthracene-d10	1719-06-8	0.5	%		104	102	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%		114	105	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.2	%		131	126	131	129	123
Toluene-D8	2037-26-5	0.2	%		101	108	114	104	109



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	HA17	SP2	TB1	TS1	TSC
Sampling date / time					21-Jul-2021 00:00	21-Jul-2021 00:00	16-Jul-2021 00:00	14-Jul-2021 00:00	14-Jul-2021 00:00
Compound	CAS Number	LOR	Unit		ES2127121-016	ES2127121-017	ES2127121-023	ES2127121-024	ES2127121-025
					Result	Result	Result	Result	Result
EP080S: TPH(V)/BTEX Surrogates - Continued									
4-Bromofluorobenzene	460-00-4	0.2	%		108	111	116	104	107



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)		Sample ID		QA1	----	----	----	----
		Sampling date / time		21-Jul-2021 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2127121-026	-----	-----	-----	-----
				Result	----	----	----	----
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	1.0	%	16.6	----	----	----	----
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	<5	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	<1	----	----	----	----
Chromium	7440-47-3	2	mg/kg	15	----	----	----	----
Copper	7440-50-8	5	mg/kg	<5	----	----	----	----
Lead	7439-92-1	5	mg/kg	11	----	----	----	----
Nickel	7440-02-0	2	mg/kg	5	----	----	----	----
Zinc	7440-66-6	5	mg/kg	17	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	<0.5	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	<0.5	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	<0.5	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	<0.5	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	----	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	----	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	QA1	----	----	----	----
Sampling date / time					21-Jul-2021 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2127121-026	-----	-----	-----	-----
					Result	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons - Continued									
C10 - C14 Fraction	----	50	mg/kg		<50	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg		<100	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg		<100	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	----	----	----	----
>C10 - C16 Fraction	----	50	mg/kg		<50	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg		<100	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg		<100	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	----	----	----	----
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	----	----	----	----
Toluene	108-88-3	0.5	mg/kg		<0.5	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg		<0.2	----	----	----	----
^ Total Xylenes	----	0.5	mg/kg		<0.5	----	----	----	----
Naphthalene	91-20-3	1	mg/kg		<1	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		83.8	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%		86.2	----	----	----	----
2,4,6-Tribromophenol	118-79-6	0.5	%		57.4	----	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		76.9	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%		103	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%		117	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	0.2	%		100	----	----	----	----
Toluene-D8	2037-26-5	0.2	%		107	----	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	QA1	----	----	----	----
				Sampling date / time	21-Jul-2021 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2127121-026	-----	-----	-----	-----
					Result	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates - Continued									
4-Bromofluorobenzene	460-00-4	0.2	%		98.2	----	----	----	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				SW1	SW2	SW3	SW4	SW5
Sampling date / time				21-Jul-2021 00:00	21-Jul-2021 00:00	21-Jul-2021 00:00	21-Jul-2021 00:00	21-Jul-2021 00:00
Compound	CAS Number	LOR	Unit	ES2127121-018	ES2127121-019	ES2127121-020	ES2127121-021	ES2127121-022
				Result	Result	Result	Result	Result
EG020T: Total Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	<0.001	0.004	<0.001
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium	7440-47-3	0.001	mg/L	0.001	<0.001	0.002	0.003	<0.001
Copper	7440-50-8	0.001	mg/L	0.002	<0.001	0.002	0.006	0.003
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	0.003	<0.001
Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.002	0.005	0.004
Zinc	7440-66-6	0.005	mg/L	0.007	0.007	<0.005	0.033	0.018
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Acenaphthylene	208-96-8	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Acenaphthene	83-32-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Fluorene	86-73-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Phenanthrene	85-01-8	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Anthracene	120-12-7	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Fluoranthene	206-44-0	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Pyrene	129-00-0	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(a)anthracene	56-55-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Chrysene	218-01-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(g,h,i)perylene	191-24-2	1.0	µg/L	<1.0	<1.0	<1.0	<1.0	<1.0
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	<20	<20
C10 - C14 Fraction	----	50	µg/L	<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	µg/L	<100	<100	<100	1220	<100
C29 - C36 Fraction	----	50	µg/L	<50	<50	<50	780	<50
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	<50	<50	2000	<50



Analytical Results

Sub-Matrix: **WATER**
 (Matrix: **WATER**)

Sample ID

				SW1	SW2	SW3	SW4	SW5
Sampling date / time				21-Jul-2021 00:00	21-Jul-2021 00:00	21-Jul-2021 00:00	21-Jul-2021 00:00	21-Jul-2021 00:00
Compound	CAS Number	LOR	Unit	ES2127121-018	ES2127121-019	ES2127121-020	ES2127121-021	ES2127121-022
				Result	Result	Result	Result	Result
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	<20	<20
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	<20	<20
>C10 - C16 Fraction	----	100	µg/L	<100	<100	<100	<100	<100
>C16 - C34 Fraction	----	100	µg/L	<100	<100	<100	1830	<100
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	260	<100
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	<100	<100	2090	<100
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	<100	<100	<100
EP080: BTEXN								
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	<1
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	<2
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	<2
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	<2
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	<2
^ Total Xylenes	----	2	µg/L	<2	<2	<2	<2	<2
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	<1	<1
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	1.0	%	29.4	31.9	26.5	28.8	30.7
2-Chlorophenol-D4	93951-73-6	1.0	%	55.6	58.7	46.2	47.8	58.0
2,4,6-Tribromophenol	118-79-6	1.0	%	59.8	73.8	48.5	63.8	69.7
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	1.0	%	71.9	79.7	65.3	62.9	74.0
Anthracene-d10	1719-06-8	1.0	%	76.2	83.8	66.6	62.9	73.1
4-Terphenyl-d14	1718-51-0	1.0	%	82.2	89.1	71.4	65.7	79.2
EP080S: TPH(V)/BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	2	%	135	107	114	116	109
Toluene-D8	2037-26-5	2	%	112	108	110	114	112
4-Bromofluorobenzene	460-00-4	2	%	103	106	111	114	104



Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	63	123
2-Chlorophenol-D4	93951-73-6	66	122
2,4,6-Tribromophenol	118-79-6	40	138
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	70	122
Anthracene-d10	1719-06-8	66	128
4-Terphenyl-d14	1718-51-0	65	129
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	73	133
Toluene-D8	2037-26-5	74	132
4-Bromofluorobenzene	460-00-4	72	130
EP202S: Phenoxyacetic Acid Herbicide Surrogate			
2,4-Dichlorophenyl Acetic Acid	19719-28-9	45	139

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	44
2-Chlorophenol-D4	93951-73-6	14	94
2,4,6-Tribromophenol	118-79-6	17	125
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	20	104
Anthracene-d10	1719-06-8	27	113
4-Terphenyl-d14	1718-51-0	32	112
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	71	137
Toluene-D8	2037-26-5	79	131
4-Bromofluorobenzene	460-00-4	70	128

QUALITY CONTROL REPORT

Work Order	: ES2127121	Page	: 1 of 14
Client	: ROBERT CARR & ASSOCIATES P/L	Laboratory	: Environmental Division Sydney
Contact	: MS FIONA BROOKER	Contact	: Juliana Gonzalez
Address	: 92 HILL STREET CARRINGTON NSW 2294	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: +61 02 4902 9200	Telephone	: +61-2-8784 8555
Project	: 15613	Date Samples Received	: 23-Jul-2021
Order number	: ----	Date Analysis Commenced	: 27-Jul-2021
C-O-C number	: ----	Issue Date	: 30-Jul-2021
Sampler	: Adeleh Khoshzaban		
Site	: ----		
Quote number	: SYBQ/400/20		
No. of samples received	: 26		
No. of samples analysed	: 26		



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

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Alex Rossi	Organic Chemist	Sydney Organics, Smithfield, NSW
Edwandy Fadjjar	Organic Coordinator	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Ivan Taylor	Analyst	Sydney Inorganics, Smithfield, NSW



General Comments

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

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

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

Key :
 Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 3816050)									
ES2127120-021	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	7	7	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	3	10	110	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	17	17	0.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	89	99	10.6	0% - 50%
		EG005T: Zinc	7440-66-6	5	mg/kg	78	78	0.0	0% - 50%
ES2127121-007	HA7	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	14	14	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	16	14	12.4	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	6	5	0.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	7	8	21.8	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	15	13	11.3	No Limit
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 3816676)									
ES2126414-002	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	10	11	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	<2	<2	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	14	19	30.2	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	12	14	13.1	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	6	6	0.0	No Limit
ES2127261-002	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	14	13	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	3	3	0.0	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 3816676) - continued									
ES2127261-002	Anonymous	EG005T: Arsenic	7440-38-2	5	mg/kg	6	6	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	8	8	0.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	21	22	0.0	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	9	8	14.2	No Limit
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 3816053)									
ES2127120-023	Anonymous	EA055: Moisture Content	----	0.1	%	18.7	16.0	15.3	0% - 50%
ES2127121-010	HA10	EA055: Moisture Content	----	0.1	%	14.3	12.1	16.6	0% - 50%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 3816677)									
ES2127121-026	QA1	EA055: Moisture Content	----	0.1	%	16.6	14.2	15.8	0% - 50%
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3816051)									
ES2127120-021	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	0.2	0.1	0.0	No Limit
ES2127121-007	HA7	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3816675)									
ES2126414-002	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
ES2127261-002	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3812246)									
ES2127121-001	HA1	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
			205-82-3						
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		ES2127121-011	HA11	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5
EP075(SIM): Acenaphthylene	208-96-8			0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP075(SIM): Acenaphthene	83-32-9			0.5	mg/kg	<0.5	<0.5	0.0	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3812246) - continued									
ES2127121-011	HA11	EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
			205-82-3						
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3812247)									
ES2127121-001	HA1	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
ES2127121-011	HA11	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3813087)									
ES2127121-001	HA1	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
ES2127121-011	HA11	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3813091)									
ES2127120-001	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
ES2127120-019	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 3812247)									
ES2127121-001	HA1	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
ES2127121-011	HA11	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 3813087)									
ES2127121-001	HA1	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 3813087) - continued									
ES2127121-011	HA11	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 3813091)									
ES2127120-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
ES2127120-019	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
EP080: BTEXN (QC Lot: 3813087)									
ES2127121-001	HA1	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
ES2127121-011	HA11	EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit
		EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit
EP080: BTEXN (QC Lot: 3813091)									
ES2127120-001	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
ES2127120-019	Anonymous	EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit
		EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit
EP202A: Phenoxyacetic Acid Herbicides by LCMS (QC Lot: 3813967)									
ES2127121-015	HA15	EP202: 4-Chlorophenoxy acetic acid	122-88-3	0.02	mg/kg	<0.02	<0.02	0.0	No Limit
		EP202: 2,4-DB	94-82-6	0.02	mg/kg	<0.02	<0.02	0.0	No Limit
		EP202: Dicamba	1918-00-9	0.02	mg/kg	<0.02	<0.02	0.0	No Limit
		EP202: Mecoprop	93-65-2	0.02	mg/kg	<0.02	<0.02	0.0	No Limit
		EP202: MCPA	94-74-6	0.02	mg/kg	<0.02	<0.02	0.0	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report							
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)		
EP202A: Phenoxyacetic Acid Herbicides by LCMS (QC Lot: 3813967) - continued											
ES2127121-015	HA15	EP202: 2.4-DP	120-36-5	0.02	mg/kg	<0.02	<0.02	0.0	No Limit		
		EP202: 2.4-D	94-75-7	0.02	mg/kg	<0.02	<0.02	0.0	No Limit		
		EP202: Triclopyr	55335-06-3	0.02	mg/kg	<0.02	<0.02	0.0	No Limit		
		EP202: 2.4.5-TP (Silvex)	93-72-1	0.02	mg/kg	<0.02	<0.02	0.0	No Limit		
		EP202: 2.4.5-T	93-76-5	0.02	mg/kg	<0.02	<0.02	0.0	No Limit		
		EP202: MCPB	94-81-5	0.02	mg/kg	<0.02	<0.02	0.0	No Limit		
		EP202: Picloram	1918-02-1	0.02	mg/kg	<0.02	<0.02	0.0	No Limit		
		EP202: Clopyralid	1702-17-6	0.02	mg/kg	<0.02	<0.02	0.0	No Limit		
		EP202: Fluroxypyr	69377-81-7	0.02	mg/kg	<0.02	<0.02	0.0	No Limit		
ES2127121-010	HA10	EP202: 4-Chlorophenoxy acetic acid	122-88-3	0.02	mg/kg	<0.02	<0.02	0.0	No Limit		
		EP202: 2.4-DB	94-82-6	0.02	mg/kg	<0.02	<0.02	0.0	No Limit		
		EP202: Dicamba	1918-00-9	0.02	mg/kg	<0.02	<0.02	0.0	No Limit		
		EP202: Mecoprop	93-65-2	0.02	mg/kg	<0.02	<0.02	0.0	No Limit		
		EP202: MCPA	94-74-6	0.02	mg/kg	<0.02	<0.02	0.0	No Limit		
		EP202: 2.4-DP	120-36-5	0.02	mg/kg	<0.02	<0.02	0.0	No Limit		
		EP202: 2.4-D	94-75-7	0.02	mg/kg	<0.02	<0.02	0.0	No Limit		
		EP202: Triclopyr	55335-06-3	0.02	mg/kg	<0.02	<0.02	0.0	No Limit		
		EP202: 2.4.5-TP (Silvex)	93-72-1	0.02	mg/kg	<0.02	<0.02	0.0	No Limit		
		EP202: 2.4.5-T	93-76-5	0.02	mg/kg	<0.02	<0.02	0.0	No Limit		
		EP202: MCPB	94-81-5	0.02	mg/kg	<0.02	<0.02	0.0	No Limit		
		EP202: Picloram	1918-02-1	0.02	mg/kg	<0.02	<0.02	0.0	No Limit		
		EP202: Clopyralid	1702-17-6	0.02	mg/kg	<0.02	<0.02	0.0	No Limit		
		EP202: Fluroxypyr	69377-81-7	0.02	mg/kg	<0.02	<0.02	0.0	No Limit		
		Sub-Matrix: WATER									
		Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EG020T: Total Metals by ICP-MS (QC Lot: 3813722)											
ES2125776-001	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	0.0002	0.0002	0.0	No Limit		
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	0.001	0.002	0.0	No Limit		
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.0	No Limit		
		EG020A-T: Copper	7440-50-8	0.001	mg/L	0.002	0.002	0.0	No Limit		
		EG020A-T: Lead	7439-92-1	0.001	mg/L	0.002	0.002	0.0	No Limit		
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	0.144	0.145	0.0	0% - 20%		
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	0.216	0.223	3.4	0% - 20%		
		ES2127121-019	SW2	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
EG020A-T: Arsenic	7440-38-2	0.001		mg/L	<0.001	<0.001	0.0	No Limit			
EG020A-T: Chromium	7440-47-3	0.001		mg/L	<0.001	<0.001	0.0	No Limit			
EG020A-T: Copper	7440-50-8	0.001		mg/L	<0.001	<0.001	0.0	No Limit			
EG020A-T: Lead	7439-92-1	0.001		mg/L	<0.001	<0.001	0.0	No Limit			
EG020A-T: Nickel	7440-02-0	0.001		mg/L	<0.001	<0.001	0.0	No Limit			
EG020A-T: Zinc	7440-66-6	0.005		mg/L	0.007	0.006	0.0	No Limit			

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 Work Order : ES2127121
 Client : ROBERT CARR & ASSOCIATES P/L
 Project : 15613



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3813305)									
ES2127121-018	SW1	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3815124)									
ES2127117-085	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
ES2127259-002	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3813168)									
ES2127113-001	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
ES2127121-019	SW2	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 3813168)									
ES2127113-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit
ES2127121-019	SW2	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit
EP080: BTEXN (QC Lot: 3813168)									
ES2127113-001	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.0	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit
ES2127121-019	SW2	EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.0	No Limit
		EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.0	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.0	No Limit



Method Blank (MB) and Laboratory Control Sample (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Sample (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 3816050)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	121.1 mg/kg	112	88.0	113
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	0.74 mg/kg	104	70.0	130
EG005T: Chromium	7440-47-3	2	mg/kg	<2	19.6 mg/kg	116	68.0	132
EG005T: Copper	7440-50-8	5	mg/kg	<5	52.9 mg/kg	110	89.0	111
EG005T: Lead	7439-92-1	5	mg/kg	<5	60.8 mg/kg	97.0	82.0	119
EG005T: Nickel	7440-02-0	2	mg/kg	<2	15.3 mg/kg	104	80.0	120
EG005T: Zinc	7440-66-6	5	mg/kg	<5	139.3 mg/kg	127	66.0	133
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 3816676)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	121.1 mg/kg	96.0	88.0	113
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	0.74 mg/kg	79.8	70.0	130
EG005T: Chromium	7440-47-3	2	mg/kg	<2	19.6 mg/kg	103	68.0	132
EG005T: Copper	7440-50-8	5	mg/kg	<5	52.9 mg/kg	100	89.0	111
EG005T: Lead	7439-92-1	5	mg/kg	<5	60.8 mg/kg	95.6	82.0	119
EG005T: Nickel	7440-02-0	2	mg/kg	<2	15.3 mg/kg	94.1	80.0	120
EG005T: Zinc	7440-66-6	5	mg/kg	<5	139.3 mg/kg	88.8	66.0	133
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3816051)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	0.087 mg/kg	125	70.0	125
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3816675)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	0.087 mg/kg	103	70.0	125
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3812246)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	6 mg/kg	102	77.0	125
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	6 mg/kg	87.0	72.0	124
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	6 mg/kg	104	73.0	127
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	6 mg/kg	98.6	72.0	126
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	6 mg/kg	101	75.0	127
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	6 mg/kg	105	77.0	127
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	6 mg/kg	126	73.0	127
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	6 mg/kg	122	74.0	128
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	6 mg/kg	90.3	69.0	123
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	6 mg/kg	96.0	75.0	127
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	0.5	mg/kg	<0.5	6 mg/kg	88.8	68.0	116
	205-82-3							
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	6 mg/kg	94.3	74.0	126
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	6 mg/kg	98.2	70.0	126



Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result			Low	High
EP075(SIM): Polynuclear Aromatic Hydrocarbons (QCLot: 3812246) - continued								
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	6 mg/kg	82.9	61.0	121
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	6 mg/kg	85.5	62.0	118
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	6 mg/kg	78.6	63.0	121
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3812247)								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	300 mg/kg	106	75.0	129
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	450 mg/kg	103	77.0	131
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	300 mg/kg	95.2	71.0	129
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3813087)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	94.4	68.4	128
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3813091)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	97.5	68.4	128
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3812247)								
EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	375 mg/kg	102	77.0	125
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	525 mg/kg	102	74.0	138
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	225 mg/kg	74.8	63.0	131
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3813087)								
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	97.7	68.4	128
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3813091)								
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	100	68.4	128
EP080: BTEXN (QCLot: 3813087)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	106	62.0	116
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	98.8	67.0	121
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	99.1	65.0	117
EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	2 mg/kg	96.8	66.0	118
	106-42-3							
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	97.9	68.0	120
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	88.2	63.0	119
EP080: BTEXN (QCLot: 3813091)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	94.9	62.0	116
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	95.4	67.0	121
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	95.9	65.0	117
EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	2 mg/kg	93.9	66.0	118
	106-42-3							
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	93.3	68.0	120
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	92.6	63.0	119
EP202A: Phenoxyacetic Acid Herbicides by LCMS (QCLot: 3813967)								
EP202: 4-Chlorophenoxy acetic acid	122-88-3	0.02	mg/kg	<0.02	0.1 mg/kg	61.1	54.4	128



Sub-Matrix: **SOIL**

				Report	Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP202A: Phenoxyacetic Acid Herbicides by LCMS (QCLot: 3813967) - continued								
EP202: 2,4-DB	94-82-6	0.02	mg/kg	<0.02	0.1 mg/kg	49.3	45.5	130
EP202: Dicamba	1918-00-9	0.02	mg/kg	<0.02	0.1 mg/kg	70.5	51.7	135
EP202: Mecoprop	93-65-2	0.02	mg/kg	<0.02	0.1 mg/kg	68.6	60.0	130
EP202: MCPA	94-74-6	0.02	mg/kg	<0.02	0.1 mg/kg	63.2	56.8	131
EP202: 2,4-DP	120-36-5	0.02	mg/kg	<0.02	0.1 mg/kg	68.9	50.0	141
EP202: 2,4-D	94-75-7	0.02	mg/kg	<0.02	0.1 mg/kg	74.6	68.5	131
EP202: Triclopyr	55335-06-3	0.02	mg/kg	<0.02	0.1 mg/kg	69.1	50.8	141
EP202: 2,4,5-TP (Silvex)	93-72-1	0.02	mg/kg	<0.02	0.1 mg/kg	55.5	40.8	126
EP202: 2,4,5-T	93-76-5	0.02	mg/kg	<0.02	0.1 mg/kg	80.9	57.4	139
EP202: MCPB	94-81-5	0.02	mg/kg	<0.02	0.1 mg/kg	56.5	38.9	137
EP202: Picloram	1918-02-1	0.02	mg/kg	<0.02	0.1 mg/kg	54.5	48.7	129
EP202: Clopyralid	1702-17-6	0.02	mg/kg	<0.02	0.1 mg/kg	80.5	49.4	106
EP202: Fluroxypyr	69377-81-7	0.02	mg/kg	<0.02	0.1 mg/kg	63.8	53.2	128

Sub-Matrix: **WATER**

				Report	Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG020T: Total Metals by ICP-MS (QCLot: 3813722)								
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	90.8	82.0	114
EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	92.2	84.0	112
EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	92.1	86.0	116
EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	90.6	83.0	118
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	90.9	85.0	115
EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	89.4	84.0	116
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	89.6	79.0	117
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3813305)								
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	96.6	77.0	111
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3815124)								
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	95.7	77.0	111
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3812137)								
EP075(SIM): Naphthalene	91-20-3	1	µg/L	<1.0	5 µg/L	71.6	50.0	94.0
EP075(SIM): Acenaphthylene	208-96-8	1	µg/L	<1.0	5 µg/L	76.1	63.6	114
EP075(SIM): Acenaphthene	83-32-9	1	µg/L	<1.0	5 µg/L	78.1	62.2	113
EP075(SIM): Fluorene	86-73-7	1	µg/L	<1.0	5 µg/L	77.0	63.9	115
EP075(SIM): Phenanthrene	85-01-8	1	µg/L	<1.0	5 µg/L	83.8	62.6	116
EP075(SIM): Anthracene	120-12-7	1	µg/L	<1.0	5 µg/L	75.8	64.3	116
EP075(SIM): Fluoranthene	206-44-0	1	µg/L	<1.0	5 µg/L	86.1	63.6	118
EP075(SIM): Pyrene	129-00-0	1	µg/L	<1.0	5 µg/L	86.7	63.1	118
EP075(SIM): Benz(a)anthracene	56-55-3	1	µg/L	<1.0	5 µg/L	80.4	64.1	117



Sub-Matrix: **WATER**

Method: Compound				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
						LCS	Low	High
CAS Number	LOR	Unit	Result					
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3812137) - continued								
EP075(SIM): Chrysene	218-01-9	1	µg/L	<1.0	5 µg/L	82.3	62.5	116
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2	1	µg/L	<1.0	5 µg/L	78.5	61.7	119
	205-82-3							
EP075(SIM): Benzo(k)fluoranthene	207-08-9	1	µg/L	<1.0	5 µg/L	87.7	63.0	115
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	5 µg/L	73.8	63.3	117
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L	<1.0	5 µg/L	74.8	59.9	118
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	1	µg/L	<1.0	5 µg/L	76.2	61.2	117
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	1	µg/L	<1.0	5 µg/L	78.7	59.1	118
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3812136)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	400 µg/L	76.5	55.8	112
EP071: C15 - C28 Fraction	----	100	µg/L	<100	600 µg/L	78.2	71.6	113
EP071: C29 - C36 Fraction	----	50	µg/L	<50	400 µg/L	92.6	56.0	121
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3813168)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	260 µg/L	87.3	75.0	127
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3812136)								
EP071: >C10 - C16 Fraction	----	100	µg/L	<100	500 µg/L	68.8	57.9	119
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	700 µg/L	76.2	62.5	110
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	300 µg/L	69.8	61.5	121
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3813168)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	310 µg/L	89.2	75.0	127
EP080: BTEXN (QCLot: 3813168)								
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	98.0	70.0	122
EP080: Toluene	108-88-3	2	µg/L	<2	10 µg/L	95.3	69.0	123
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	97.4	70.0	120
EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	10 µg/L	94.7	69.0	121
	106-42-3							
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	96.3	72.0	122
EP080: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	87.5	70.0	120

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

Laboratory sample ID				Matrix Spike (MS) Report			
				Spike Concentration	Spike Recovery(%)	Acceptable Limits (%)	
					MS	Low	High
Sample ID	Method: Compound	CAS Number					
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 3816050)							
ES2127120-021	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	102	70.0	130

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 Work Order : ES2127121
 Client : ROBERT CARR & ASSOCIATES P/L
 Project : 15613



Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3813305) - continued							
ES2127121-020	SW3	EG035T: Mercury	7439-97-6	0.01 mg/L	91.1	70.0	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3815124)							
ES2127117-086	Anonymous	EG035T: Mercury	7439-97-6	0.01 mg/L	81.6	70.0	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3813168)							
ES2127113-001	Anonymous	EP080: C6 - C9 Fraction	----	325 µg/L	99.4	70.0	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3813168)							
ES2127113-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	99.5	70.0	130
EP080: BTEXN (QCLot: 3813168)							
ES2127113-001	Anonymous	EP080: Benzene	71-43-2	25 µg/L	91.0	70.0	130
		EP080: Toluene	108-88-3	25 µg/L	94.1	70.0	130
		EP080: Ethylbenzene	100-41-4	25 µg/L	103	70.0	130
		EP080: meta- & para-Xylene	108-38-3	25 µg/L	99.3	70.0	130
			106-42-3				
		EP080: ortho-Xylene	95-47-6	25 µg/L	105	70.0	130
		EP080: Naphthalene	91-20-3	25 µg/L	101	70.0	130

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES2127121	Page	: 1 of 10
Client	: ROBERT CARR & ASSOCIATES P/L	Laboratory	: Environmental Division Sydney
Contact	: MS FIONA BROOKER	Telephone	: +61-2-8784 8555
Project	: 15613	Date Samples Received	: 23-Jul-2021
Site	: ----	Issue Date	: 30-Jul-2021
Sampler	: Adeleh Khoshzaban	No. of samples received	: 26
Order number	: ----	No. of samples analysed	: 26

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- Matrix Spike outliers exist - please see following pages for full details.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- **NO** Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers exist - please see following pages for full details.



Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EP202A: Phenoxyacetic Acid Herbicides by LCMS	ES2127121--015	HA15	Mecoprop	93-65-2	58.4 %	60.0-140%	Recovery less than lower data quality objective
EP202A: Phenoxyacetic Acid Herbicides by LCMS	ES2127121--015	HA15	MCPA	94-74-6	48.4 %	57.0-143%	Recovery less than lower data quality objective
EP202A: Phenoxyacetic Acid Herbicides by LCMS	ES2127121--015	HA15	2,4-D	94-75-7	58.7 %	68.0-139%	Recovery less than lower data quality objective
EP202A: Phenoxyacetic Acid Herbicides by LCMS	ES2127121--015	HA15	Clopyralid	1702-17-6	40.0 %	49.0-149%	Recovery less than lower data quality objective

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
PAH/Phenols (GC/MS - SIM)	0	5	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	10	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
PAH/Phenols (GC/MS - SIM)	0	5	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	10	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for **VOC in soils** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **SOIL**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA055: Moisture Content (Dried @ 105-110°C)							
Soil Glass Jar - Unpreserved (EA055)							
HA1, HA3, HA5, HA7, HA9, HA11, HA13, HA15, SP2, HA2, HA4, HA6, HA8, HA10, HA12, HA14, HA17, QA1	21-Jul-2021	----	----	----	28-Jul-2021	04-Aug-2021	✓
EG005(ED093)T: Total Metals by ICP-AES							
Soil Glass Jar - Unpreserved (EG005T)							
HA1, HA3, HA5, HA7, HA9, HA11, HA13, HA15, SP2, HA2, HA4, HA6, HA8, HA10, HA12, HA14, HA17, QA1	21-Jul-2021	28-Jul-2021	17-Jan-2022	✓	28-Jul-2021	17-Jan-2022	✓
EG035T: Total Recoverable Mercury by FIMS							
Soil Glass Jar - Unpreserved (EG035T)							
HA1, HA3, HA5, HA7, HA9, HA11, HA13, HA15, SP2, HA2, HA4, HA6, HA8, HA10, HA12, HA14, HA17, QA1	21-Jul-2021	28-Jul-2021	18-Aug-2021	✓	29-Jul-2021	18-Aug-2021	✓

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP075(SIM))								
HA1, HA3, HA5, HA7, HA9, HA11, HA13, HA15, SP2,	HA2, HA4, HA6, HA8, HA10, HA12, HA14, HA17, QA1	21-Jul-2021	27-Jul-2021	04-Aug-2021	✓	27-Jul-2021	05-Sep-2021	✓
EP080/071: Total Petroleum Hydrocarbons								
Soil Glass Jar - Unpreserved (EP080)								
TB1		16-Jul-2021	27-Jul-2021	30-Jul-2021	✓	27-Jul-2021	30-Jul-2021	✓
Soil Glass Jar - Unpreserved (EP080)								
HA1, HA3, HA5, HA7, HA9, HA11, HA13, HA15, SP2,	HA2, HA4, HA6, HA8, HA10, HA12, HA14, HA17, QA1	21-Jul-2021	27-Jul-2021	04-Aug-2021	✓	27-Jul-2021	04-Aug-2021	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
Soil Glass Jar - Unpreserved (EP080)								
TB1		16-Jul-2021	27-Jul-2021	30-Jul-2021	✓	27-Jul-2021	30-Jul-2021	✓
Soil Glass Jar - Unpreserved (EP080)								
HA1, HA3, HA5, HA7, HA9, HA11, HA13, HA15, SP2,	HA2, HA4, HA6, HA8, HA10, HA12, HA14, HA17, QA1	21-Jul-2021	27-Jul-2021	04-Aug-2021	✓	27-Jul-2021	04-Aug-2021	✓

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Matrix: **WATER** Evaluation: **x** = Holding time breach ; **✓** = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG020T: Total Metals by ICP-MS							
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG020A-T) SW1, SW3, SW5 SW2, SW4,	21-Jul-2021	27-Jul-2021	17-Jan-2022	✓	27-Jul-2021	17-Jan-2022	✓
EG035T: Total Recoverable Mercury by FIMS							
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG035T) SW1, SW3, SW5 SW2, SW4,	21-Jul-2021	----	----	----	28-Jul-2021	18-Aug-2021	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP075(SIM)) SW1, SW3, SW5 SW2, SW4,	21-Jul-2021	27-Jul-2021	28-Jul-2021	✓	28-Jul-2021	05-Sep-2021	✓

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Petroleum Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP071) SW1, SW3, SW5 SW2, SW4,	21-Jul-2021	27-Jul-2021	28-Jul-2021	✓	28-Jul-2021	05-Sep-2021	✓
Amber VOC Vial - Sulfuric Acid (EP080) SW1, SW3, SW5 SW2, SW4,	21-Jul-2021	27-Jul-2021	04-Aug-2021	✓	27-Jul-2021	04-Aug-2021	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Amber Glass Bottle - Unpreserved (EP071) SW1, SW3, SW5 SW2, SW4,	21-Jul-2021	27-Jul-2021	28-Jul-2021	✓	28-Jul-2021	05-Sep-2021	✓
Amber VOC Vial - Sulfuric Acid (EP080) SW1, SW3, SW5 SW2, SW4,	21-Jul-2021	27-Jul-2021	04-Aug-2021	✓	27-Jul-2021	04-Aug-2021	✓
EP080: BTEXN							
Amber VOC Vial - Sulfuric Acid (EP080) SW1, SW3, SW5 SW2, SW4,	21-Jul-2021	27-Jul-2021	04-Aug-2021	✓	27-Jul-2021	04-Aug-2021	✓



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Moisture Content	EA055	3	26	11.54	10.00	✔	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	2	18	11.11	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Phenoxyacetic Acid Herbicides (LCMS - Standard DL)	EP202	2	17	11.76	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	4	34	11.76	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	4	34	11.76	10.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	2	18	11.11	10.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	4	40	10.00	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
PAH/Phenols (SIM)	EP075(SIM)	1	18	5.56	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Phenoxyacetic Acid Herbicides (LCMS - Standard DL)	EP202	1	17	5.88	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	34	5.88	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	3	34	8.82	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	18	5.56	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	40	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
PAH/Phenols (SIM)	EP075(SIM)	1	18	5.56	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Phenoxyacetic Acid Herbicides (LCMS - Standard DL)	EP202	1	17	5.88	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	34	5.88	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	34	5.88	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	18	5.56	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	40	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
PAH/Phenols (SIM)	EP075(SIM)	1	18	5.56	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Phenoxyacetic Acid Herbicides (LCMS - Standard DL)	EP202	1	17	5.88	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	34	5.88	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	34	5.88	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	18	5.56	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	40	5.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	5	0.00	10.00	✖	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	3	29	10.34	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	2	16	12.50	10.00	✔	NEPM 2013 B3 & ALS QC Standard



Matrix: **WATER**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP) - Continued							
TRH - Semivolatile Fraction	EP071	0	10	0.00	10.00	✖	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	16	12.50	10.00	✔	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	5	20.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	29	6.90	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	16	6.25	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	10	10.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	16	6.25	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	5	20.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	29	6.90	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	16	6.25	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	10	10.00	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	16	6.25	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	5	0.00	5.00	✖	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	29	6.90	5.00	✔	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	16	6.25	5.00	✔	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	10	0.00	5.00	✖	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	16	6.25	5.00	✔	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM Schedule B(3).
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂) (Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM Schedule B(3)
TRH - Semivolatile Fraction	EP071	SOIL	In house: Referenced to USEPA SW 846 - 8015 Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40. Compliant with NEPM Schedule B(3).
PAH/Phenols (SIM)	EP075(SIM)	SOIL	In house: Referenced to USEPA SW 846 - 8270. Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM Schedule B(3)
TRH Volatiles/BTEX	EP080	SOIL	In house: Referenced to USEPA SW 846 - 8260. Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. Compliant with NEPM Schedule B(3) amended.
Phenoxyacetic Acid Herbicides (LCMS - Standard DL)	EP202	SOIL	In house: LCMS (Electrospray in negative mode). Residues of acid herbicides are extracted from soil samples under the alkaline condition. An aliquot of the alkaline aqueous phase is taken and acidified before a SPE cleanup. After eluting off from the SPE cartridge, residues of acid herbicides are dissolved in HPLC mobile phase prior to instrument analysis.
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Mercury by FIMS	EG035T	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the unfiltered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM Schedule B(3).
TRH - Semivolatile Fraction	EP071	WATER	In house: Referenced to USEPA SW 846 - 8015 The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM Schedule B(3)



<i>Analytical Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	In house: Referenced to USEPA SW 846 - 8270 Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM Schedule B(3)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260 Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM Schedule B(3)
<i>Preparation Methods</i>	<i>Method</i>	<i>Matrix</i>	<i>Method Descriptions</i>
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM Schedule B(3).
Extraction for Phenoxy Acid Herbicides in Soils.	EP202-PR	SOIL	In-House: Alkaline extract followed by SPE clean up of acidified portion of the sample extract.
Methanolic Extraction of Soils for Purge and Trap	ORG16	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids	ORG17	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.
Digestion for Total Recoverable Metals	EN25	WATER	In house: Referenced to USEPA SW846-3005. Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM Schedule B(3)
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for purging.

30.07.2

 HAIN OF JSTODY ALS Laboratory: please tick →		ADELAIDE 21 Burne Road Pooraka SA 5095 Ph: 08 8350 0960 E: adelaide@alsglobal.com		MACKAY 78 Harbour Road Mackay Q.L.D 4740 Ph: 07 4944 0177 E: mackay@alsglobal.com		NEWCASTLE 5/565 Maitland Rd Mayfield West NSW 2304 Ph: 02 4014 2500 E: samples.newcastle@alsglobal.com		SYDNEY 277-280 Woodpark Road Smithfield NSW 2164 Ph: 02 8784 8555 E: samples.sydney@alsglobal.com		
BRISBANE 32 Shend Street Stafford QLD 4053 Ph: 07 3243 7222 E: samples.brisbane@alsglobal.com		MELBOURNE 2-4 Westall Road Springvale VIC 3171 Ph: 03 8549 0650 E: samples.melbourne@alsglobal.com		NOWRA 4/13 Geary Place North Nowra NSW 2541 Ph: 024423 2063 E: nowra@alsglobal.com		TOWNSVILLE 14-15 Desma Court Bohle QLD 4818 Ph: 07 4768 0800 E: townsville.environmental@alsglobal.com		WOLLONGONG 99 Kenny Street Wollongong NSW 2509 Ph: 02 4225 3125 E: portkemps@alsglobal.com		
GLADSTONE 48 Callemondah Drive Clinton QLD 4880 Ph: 07 7471 5600 E: gladstone@alsglobal.com		MUDGEE 27 Sydney Road Mudgee NSW 2850 Ph: 02 6372 6735 E: mudgee@mail@alsglobal.com		PERTH 10 Hod Way Malaga WA 6009 Ph: 08 9209 7655 E: samples.perth@alsglobal.com						
CLIENT: RCA Australia		TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g., Ultra Trace Organics)				FOR LABORATORY USE ONLY (Circle)				
OFFICE: 92 Hill Street, Carrington		Standard TAT				Custody Seal Intact? Yes No ☒ N/A				
RCA Ref No: 15613		ALS QUOTE NO.: SYBQ_400_18				Pres ice / frozen ice broke present upon receipt? Yes No N/A				
						Random Sample Temperature on Receipt 8.0 °C				
PROJECT MANAGER: Fiona Brooker		CONTACT PH: 0408 687 529				Other comment				
SAMPLER: Adeleh Khoshzaban		SAMPLER MOBILE: 0478037141		RELINQUISHED BY:		RELINQUISHED BY:		RECEIVED BY:		
COC emailed to ALS? (No)		EDD FORMAT (or default):		DATE/TIME: Adeleh.Kh		DATE/TIME: 23/7/21		DATE/TIME: 3:39pm		
Email Reports to: administrator@rca.com.au + enviro@rca.com.au								23/7/21		
Email Invoice to: as above										
COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:										
soy gum - Aus - 23/7/21 1000 800										
ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).				Additional Information
LAB ID	Sample ID	Date / Time	Matrix	Type & Preservative (refer to codes below)	Total Containers	Suite 26 (TRI/C6-C36/40), BTEX, PAH, & metals	Phenoxyacid herbicides			Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
1	HA1	21/07/2021	Soil	Unpreserved jar	1	X				
2	HA2	21/07/2021	Soil	Unpreserved jar	1	X				
3	HA3	21/07/2021	Soil	Unpreserved jar	1	X				
4	HA4	21/07/2021	Soil	Unpreserved jar	1	X				
5	HA5	21/07/2021	Soil	Unpreserved jar	1	X				
6	HA6	21/07/2021	Soil	Unpreserved jar	1	X				
7	HA7	21/07/2021	Soil	Unpreserved jar	1	X				
8	HA8	21/07/2021	Soil	Unpreserved jar	1	X				
9	HA9	21/07/2021	Soil	Unpreserved jar	1	X				
10	HA10	21/07/2021	Soil	Unpreserved jar	1	X	X			
11	HA11	21/07/2021	Soil	Unpreserved jar	1	X				
12	HA12	21/07/2021	Soil	Unpreserved jar	1	X	X			
13	HA13	21/07/2021	Soil	Unpreserved jar	1	X	X			
14	HA14	21/07/2021	Soil	Unpreserved jar	1	X				
15	HA15	21/07/2021	Soil	Unpreserved jar	1	X	X			
16	HA17	21/07/2021	Soil	Unpreserved jar	1	X				
17	SP2	21/07/2021	Soil	Unpreserved jar	1	X				
TOTAL					17	17	4			
Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Ca Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Solis; B = Unpreserved Bag.										

Environmental Division
Sydney
Work Order Reference
ES2127121



Telephone: +61-2-8794 0555



EWOLLONGONG 99 Kenny Street Wollongong NSW 2500
Ph: 02 4225 3125 E: nordkimble@niglobal.com

DATE/TIME:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Disulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; F = Formaldehyde Preserved Speciation Bottle; E = EDTA Reserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : ES2127121

Client	: ROBERT CARR & ASSOCIATES P/L	Laboratory	: Environmental Division Sydney
Contact	: MS FIONA BROOKER	Contact	: Juliana Gonzalez
Address	: 92 HILL STREET CARRINGTON NSW 2294	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: fionab@rca.com.au	E-mail	: juliana.gonzalez@alsglobal.com
Telephone	: +61 02 4902 9200	Telephone	: +61-2-8784 8555
Facsimile	: +61 02 4902 9299	Facsimile	: +61-2-8784 8500
Project	: 15613	Page	: 1 of 3
Order number	: ----	Quote number	: ES2017ROBCAR0004 (SYBQ/400/20)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: ----		
Sampler	: Adeleh Khoshzaban		

Dates

Date Samples Received	: 23-Jul-2021 15:39	Issue Date	: 26-Jul-2021
Client Requested Due Date	: 30-Jul-2021	Scheduled Reporting Date	: 30-Jul-2021

Delivery Details

Mode of Delivery	: Undefined	Security Seal	: Not Available
No. of coolers/boxes	: ----	Temperature	: 8.0° C - Ice present
Receipt Detail	:	No. of samples received / analysed	: 26 / 26

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- **Sample(s) requiring volatile organic compound analysis received in airtight containers (ZHE).**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.



Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- No sample container / preservation non-compliance exists.

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: SOIL

Laboratory sample ID	Sampling date / time	Sample ID	SOIL - EA055-103 Moisture Content	SOIL - EP080 BTEXN	SOIL - EP202(solids) Phenoxyacetic acids	SOIL - S-18 (NO MOIST) TRH(C6-C9)/BTEXN with No Moisture for TBs	SOIL - S-26 8 metals/TRH/BTEXN/PAH
ES2127121-001	21-Jul-2021 00:00	HA1	✓				✓
ES2127121-002	21-Jul-2021 00:00	HA2	✓				✓
ES2127121-003	21-Jul-2021 00:00	HA3	✓				✓
ES2127121-004	21-Jul-2021 00:00	HA4	✓				✓
ES2127121-005	21-Jul-2021 00:00	HA5	✓				✓
ES2127121-006	21-Jul-2021 00:00	HA6	✓				✓
ES2127121-007	21-Jul-2021 00:00	HA7	✓				✓
ES2127121-008	21-Jul-2021 00:00	HA8	✓				✓
ES2127121-009	21-Jul-2021 00:00	HA9	✓				✓
ES2127121-010	21-Jul-2021 00:00	HA10	✓		✓		✓
ES2127121-011	21-Jul-2021 00:00	HA11	✓				✓
ES2127121-012	21-Jul-2021 00:00	HA12	✓		✓		✓
ES2127121-013	21-Jul-2021 00:00	HA13	✓		✓		✓
ES2127121-014	21-Jul-2021 00:00	HA14	✓				✓
ES2127121-015	21-Jul-2021 00:00	HA15	✓		✓		✓
ES2127121-016	21-Jul-2021 00:00	HA17	✓				✓
ES2127121-017	21-Jul-2021 00:00	SP2	✓				✓
ES2127121-023	16-Jul-2021 00:00	TB1				✓	
ES2127121-024	14-Jul-2021 00:00	TS1		✓			
ES2127121-025	14-Jul-2021 00:00	TSC		✓			
ES2127121-026	21-Jul-2021 00:00	QA1	✓				✓



Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - W-26T TRH/BTEXN/PAH/Total 8 Metals
ES2127121-018	21-Jul-2021 00:00	SW1	✓
ES2127121-019	21-Jul-2021 00:00	SW2	✓
ES2127121-020	21-Jul-2021 00:00	SW3	✓
ES2127121-021	21-Jul-2021 00:00	SW4	✓
ES2127121-022	21-Jul-2021 00:00	SW5	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ADMINISTRATOR

- *AU Certificate of Analysis - NATA (COA)	Email	administrator@rca.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	administrator@rca.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	administrator@rca.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	administrator@rca.com.au
- Chain of Custody (CoC) (COC)	Email	administrator@rca.com.au
- EDI Format - ENMRG (ENMRG)	Email	administrator@rca.com.au

ALL INVOICES

- A4 - AU Tax Invoice (INV)	Email	administrator@rca.com.au
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ENVIRO

- *AU Certificate of Analysis - NATA (COA)	Email	enviro@rca.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	enviro@rca.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	enviro@rca.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	enviro@rca.com.au
- Chain of Custody (CoC) (COC)	Email	enviro@rca.com.au
- EDI Format - ENMRG (ENMRG)	Email	enviro@rca.com.au

FIONA BROOKER

- *AU Certificate of Analysis - NATA (COA)	Email	fionab@rca.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	fionab@rca.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	fionab@rca.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	fionab@rca.com.au
- Chain of Custody (CoC) (COC)	Email	fionab@rca.com.au
- EDI Format - ENMRG (ENMRG)	Email	fionab@rca.com.au

Appendix F

Site Photographs

	
1. HA1 between demountable buildings to west and east.	2. HA2 looking towards west junior school and north towards dam (SW2 sample).
	
3. HA3 looking west to junior school & north to Lomas Lane	4. SW1 location looking north west

	
5. SW3 location looking south east	6. Example residual material
	
7. SW4 sample location looking north east	8. SW5 sample location looking north (Black Creek)
	
9. HA16 sampling location looking east, west and south west.	

	
10. HA4 sampling location looking south east to sports hall	11. Looking north east to sports hall
	
12. Looking north east to senior school from western boundary	13. Looking south to senior school



14. Looking east and south east to admin office and car park from western boundary



15. Looking south and along western boundary with Wine Country Drive

16. Looking southwest to the demountable area (left) and junior school (right)



17. Looking south towards demountable buildings. No hazardous materials within exterior.

18. Looking east and in alley, showing exterior of demountable buildings. No hazardous materials within exterior.



19. Insulation within E4 demountable ceiling cavities contains SMF.



20. Interior of another demountable building: SMF contained within insulation concealed within ceiling cavity. No hazardous materials within interior.



21. Looking southeast towards Building A1 (junior school). No hazardous materials within exterior.



22. Looking west within Building A1 (junior school). No hazardous materials within interior.



27. Looking southeast towards Building H1 (sports hall). No hazardous materials within exterior.



28. Sports Hall (H1 building) lower floor room (gymnasium) ceiling; SMF understood to be present within cavity based on discussion with maintenance personnel



29. Looking west towards Building K (switch building / proposed café). No hazardous materials within exterior.



30. Looking northeast within Building K (switch building / proposed café). No hazardous materials within interior. Note that there is no insulation underneath the ceiling 'sarking', therefore no SMF.



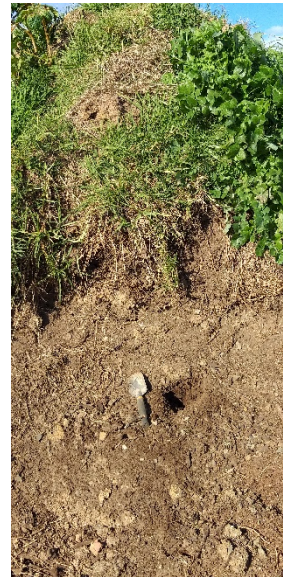
**31. Looking northeast across Areas A3 and A4 (proposed extensions to building A1
No hazardous materials within exterior.**



32. Sheep enclosure location looking south



33. Looking west to fuel station and Fast 'n Fresh Cafe



34. SP1 material

	
35. SP2 material	36. SP3 looking west and SP3 material
	
37. SP4 looking east and SP4 material	38. Looking southeast at waste stockpile located near eastern boundary
	
39. Concrete slab along western boundary	

Appendix G

Summary of Results

Sample Identification	PQL	Guideline ^A				HA1	HA2	HA3	HA4	HA5	HA6	HA7	HA8	HA9	HA10	HA11	HA12	HA13	HA14	HA15	HA17	SP2	
Sample Depth (m) ^B		HSL 'A' HSL 'B'	ESL URPOS	Sensitive ML	DC A	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	NA	
Date		SAND 0-<1m	Coarse	Coarse		21/7/21	21/7/21	21/7/21	21/7/21	21/7/21	21/7/21	21/7/21	21/7/21	21/7/21	21/7/21	21/7/21	21/7/21	21/7/21	21/7/21	21/7/21	21/7/21	21/7/21	21/7/21
Sample Profile						Silty sandy clay brown, with gravel, moist	Silty sandy clay, brown, medium to high plasticity, rootlets, moist	Silty sandy clay, brown mottled orange, moist	Silty sandy clay, dark brown, moist	Clayey sand, pale brown, moist	Silty sandy clay, brown, moist	Silty sandy clay, brown, moist	Silty sandy clay, dark brown, moist	Silty sandy clay, orange mottled grey, dry	Silty sandy clay, brown mottled orange, dry	Silty sandy clay, brown, moist	Silty sandy clay, brown, moist	Silty sandy clay, brown mottled orange,	Silty sandy clay, dark brown, moist	Silty sandy clay, brown, moist	Silty sandy clay, brown, moist	Silty sandy clay, brown, moist	
Dominant Stratum ^C						Sand	Sand	Sand	Sand	Sand	Sand	Sand	Sand	Sand	Sand	Sand	Sand	Sand	Sand	Sand	Sand	Sand	Sand
PID (ppm)						0	0.1	0.1	0.1	0.1	0	0	0	0.1	0.1	0.1	0	0	0	0	0	0	0.1
Sample Purpose						Characterisation of in-Situ Soils	Characterisation of in-Situ Soils	Characterisation of in-Situ Soils	Characterisation of in-Situ Soils	Characterisation of in-Situ Soils	Characterisation of in-Situ Soils	Characterisation of in-Situ Soils	Characterisation of in-Situ Soils	Characterisation of in-Situ Soils	Characterisation of in-Situ Soils	Characterisation of in-Situ Soils	Characterisation of in-Situ Soils	Characterisation of in-Situ Soils	Characterisation of in-Situ Soils	Characterisation of in-Situ Soils	Characterisation of in-Situ Soils	Characterisation of in-Situ Soils	
Sample collected by						RCA-AK	RCA-AK	RCA-AK	RCA-AK	RCA-AK	RCA-AK	RCA-AK	RCA-AK	RCA-AK	RCA-AK	RCA-AK	RCA-AK	RCA-AK	RCA-AK	RCA-AK	RCA-AK	RCA-AK	
Benzene, Toluene, Ethylbenzene, Xylene (BTEX)																							
Benzene	0.2	0.5	50		100	<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	
Toluene	0.5	160	85		14000	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
Ethylbenzene	0.5	55	70		4500	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
meta- and para-Xylene	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
ortho-Xylene	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
Total Xylenes	1	40	105		12000	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
Polycyclic Aromatic Hydrocarbons (PAH)																							
Naphthalene	1	3	170		1400	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
Total Recoverable Hydrocarbons (TRH)																							
TRH C ₆ -C ₁₀	10			700	4400	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	
TRH >C ₁₀ -C ₁₆	50		120	1000	3300	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	
TRH >C ₁₆ -C ₃₄	100		300	2500	4500	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	
TRH >C ₃₄ -C ₄₀	100		2800	10000	6300	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	
F1	10	45	180			<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	
F2	50	110				<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	

All results are in units of mg/kg.

Blank Cell indicates no criterion available

PQL = Practical Quantitation Limit. Where PQL is for a summation, PQL of all components is summed and may be different from that presented by laboratory

F1 = TRH C₆-C₁₀ minus BTEX. F1 PQL deemed equal TRH C₆-C₁₀.

F2 = TRH >C₁₀-C₁₈ minus naphthalene. F2 PQL deemed = TRH>C₁₀-C₁₆.

^A ASC NEPM 1999 (amended April 2013) Vapour Based Health Screening Levels (HSL) 'A' (Residential)

^A ASC NEPM 1999 (amended April 2013) Ecological Screening Levels (ESL) URPOS (Urban Residential)

^A ASC NEPM 1999 (amended April 2013) Management Limits (ML) Sensitive Sites (Residential, open space)

^A CRC Care Technical Report 10, September 2011 Direct Contact (DC) Health Screening Levels 'A' (Residential)

^B Start of sample, generally over a 0.1m interval

Results for TRH have been compared to TPH guidelines.

Presented ESL for naphthalene is an Ecological Investigation Level

ESL are applicable for material at less than 2m depths below finished surface/ground level

For the purpose of the Tier 1 ESL/EIL assessment, all background concentrations are assumed to be zero

ESL for TRH >C₁₆-C₃₄ and >C₃₄-C₄₀ are low reliability

NL designates 'Not Limiting' indicating that the pore water concentration required to constitute a vapour risk is higher than the solubility capacity for that compound based on a petroleum mixture. Vapour is therefore not a risk for this compound.

Results shown in **BOLD** are in excess of the vapour based HSL

Results shown in shading are >250% of the vapour based HSL

Results shown in underline are in excess of the ESL

Results shown in *italics* are in excess of the management limit

Results shown in patterned cells are in excess of the direct contact HSL

Where summation required (Xylene, F1, F2) calculation includes components reported as non detected as 1/2 PQL.

Soil Results Summary
HIL/EIL Comparison

Sample Identification	PQL	Guideline ^A		HA1	HA2	HA3	HA4	HA5	HA6	HA7	HA8	HA9	HA10	HA11	HA12	HA13	HA14	HA15	HA17	SP2
Sample Depth (m) ^B		HIL 'A'	EIL URPOS	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	NA
Date				21/7/21	21/7/21	21/7/21	21/7/21	21/7/21	21/7/21	21/7/21	21/7/21	21/7/21	21/7/21	21/7/21	21/7/21	21/7/21	21/7/21	21/7/21	21/7/21	21/7/21
Sample Profile				Silty sandy clay brown, with gravel, moist	Silty sandy clay, brown, medium to high plasticity, rootlets, moist	Silty sandy clay, brown mottled orange, moist	Silty sandy clay, dark brown, moist	Clayey sand, pale brown, moist	Silty sandy clay, brown, moist	Silty sandy clay, brown, moist	Silty sandy clay, dark brown, medium to high plasticity, moist	Silty sandy clay, orange mottled grey, dry	Silty sandy clay, brown mottled orange, dry	Silty sandy clay, brown, moist	Silty sandy clay, brown, moist	Silty sandy clay, brown mottled orange, medium to high plasticity	Silty sandy clay, dark brown, moist	Silty sandy clay, brown, moist	Silty sandy clay, brown, moist	Silty sandy clay, brown, moist
Sample Purpose				Characterisation of in-Situ Soils	Characterisation of in-Situ Soils	Characterisation of in-Situ Soils	Characterisation of in-Situ Soils	Characterisation of in-Situ Soils	Characterisation of in-Situ Soils	Characterisation of in-Situ Soils	Characterisation of in-Situ Soils	Characterisation of in-Situ Soils	Characterisation of in-Situ Soils	Characterisation of in-Situ Soils	Characterisation of in-Situ Soils	Characterisation of in-Situ Soils	Characterisation of in-Situ Soils	Characterisation of in-Situ Soils	Characterisation of in-Situ Soils	Characterisation of in-Situ Soils
Sample collected by				RCA-AK	RCA-AK	RCA-AK	RCA-AK	RCA-AK	RCA-AK	RCA-AK	RCA-AK	RCA-AK	RCA-AK	RCA-AK	RCA-AK	RCA-AK	RCA-AK	RCA-AK	RCA-AK	RCA-AK
Polycyclic Aromatic Hydrocarbons (PAH)																				
Naphthalene	0.5		170	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	0.5			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	0.5			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	0.5			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	0.5			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	0.5			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	0.5			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	0.5			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Benz(a)anthracene	0.5			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	0.5			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b)&(j)fluoranthene	0.5			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	0.5			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a) pyrene	0.5		0.7	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1,2,3-c,d)pyrene	0.5			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a,h)anthracene	0.5			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g,h,i)perylene	0.5			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Carcinogenic PAH (B(a)P equivalent)	1.21	3		0.605	0.605	0.605	0.605	0.605	0.605	0.605	0.605	0.605	0.605	0.605	0.605	0.605	0.605	0.605	0.605	0.605
Sum of reported PAH	8	300		4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
Metals																				
Arsenic	5	100	100	<5	<5	7	<5	<5	<5	<5	5	7	11	8	12	<5	7	<5	7	6
Cadmium	1	20		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Chromium	2	100	190	42	22	24	33	10	13	14	22	24	32	34	56	20	12	11	20	15
Copper	5	6000	280	35	10	10	20	<5	<5	6	11	<5	<5	<5	<5	<5	<5	<5	9	18
Lead	5	300	1100	<5	13	20	6	<5	10	7	13	14	17	12	16	11	9	8	13	14
Nickel	2	400	30	28	15	16	35	10	2	16	15	14	11	12	11	7	<2	4	16	8
Zinc	5	7400	230	54	41	44	45	15	<5	15	47	62	52	18	12	14	6	24	46	50
Herbicides																				
4-Chlorophenoxy acetic acid	0.02			--	--	--	--	--	--	--	--	--	<0.02	--	<0.02	<0.02	--	<0.02	--	--
2,4-DB	0.02			--	--	--	--	--	--	--	--	--	<0.02	--	<0.02	<0.02	--	<0.02	--	--
Dicamba	0.02			--	--	--	--	--	--	--	--	--	<0.02	--	<0.02	<0.02	--	<0.02	--	--
Mecoprop	0.02	600		--	--	--	--	--	--	--	--	--	<0.02	--	<0.02	<0.02	--	<0.02	--	--
MCPA	0.02	600		--	--	--	--	--	--	--	--	--	<0.02	--	<0.02	<0.02	--	<0.02	--	--
2,4-DP	0.02			--	--	--	--	--	--	--	--	--	<0.02	--	<0.02	<0.02	--	<0.02	--	--
2,4-D	0.02	900		--	--	--	--	--	--	--	--	--	<0.02	--	<0.02	<0.02	--	<0.02	--	--
Triclopyr	0.02			--	--	--	--	--	--	--	--	--	<0.02	--	<0.02	<0.02	--	<0.02	--	--
2,4,5-TP (Silvex)	0.02			--	--	--	--	--	--	--	--	--	<0.02	--	<0.02	<0.02	--	<0.02	--	--
2,4,5-T	0.02	600		--	--	--	--	--	--	--	--	--	<0.02	--	<0.02	<0.02	--	<0.02	--	--
MCPB	0.02	600		--	--	--	--	--	--	--	--	--	<0.02	--	<0.02	<0.02	--	<0.02	--	--
Picloram	0.02	4500		--	--	--	--	--	--	--	--	--	<0.02	--	<0.02	<0.02	--	<0.02	--	--
Clopyralid	0.02			--	--	--	--	--	--	--	--	--	<0.02	--	<0.02	<0.02	--	<0.02	--	--
Fluroxypyr	0.02			--	--	--	--	--	--	--	--	--	<0.02	--	<0.02	<0.02	--	<0.02	--	--

All results are in units of mg/kg.

Blank Cell indicates no criterion available

PQL = Practical Quantitation Limit. Where PQL is for a summation, PQL of all components is summed and may be different from that presented by laboratory

^A ASC NEPM 1999 (amended April 2013) Health Investigation Levels (HIL) 'A' (Residential).

^A ASC NEPM 1999 (amended April 2013) Ecological Investigation Levels (EIL) URPOS (Urban Residential and Public Open Space).

^B Start of sample, generally over a 0.1m interval

The Carcinogenic PAH value is calculated by multiplying the concentration of each of the 8 carcinogenic PAH compounds by its B(a)P toxic equivalence factor and summing these products.

HIL for Chromium are for Chromium VI

Presented ecological value for benzo(a)pyrene is a low reliability Ecological Screening Level

ESL are applicable for material at less than 2m depths below finished surface/ground level

For the purpose of the Tier 1 ESL/EIL assessment, all background concentrations are assumed to be zero

Where summation required (PAH) calculation includes components reported as non detected as 1/2 PQL.

EIL for Naphthalene are for fresh (<2years) Naphthalene

EIL for Arsenic are for aged (>2years) Arsenic

EIL for Chromium are the added contaminant limit for aged (>2years) Chromium III in soils of 10% clay based on limited testing.

EIL for Copper are the added contaminant limit for aged (>2years) Copper in soils of pH 6.5.

EIL for Lead are the added contaminant limit for aged (>2years) Lead.

EIL for Nickel are the added contaminant limit for aged (>2years) Nickel in soils of 5% CEC based on limited testing.

EIL for Zinc are the added contaminant limit for aged (>2years) Zinc in soils of 5% CEC and pH of 5.5, based on limited testing.

EIL for Zinc are the added contaminant limit for aged (>2years) Zinc in soils of 5% CEC and pH of 5.5, based on limited testing.

Results shown in **BOLD** are in excess of the HIL

Results shown in shading are >250% of the HIL

Results shown in underline are in excess of EIL

Sample Identification	PQL	Aquatic Ecosystem Guideline ^A		Human Health (Ingestion) Guideline ^B	SW1	SW2	SW3	SW4	SW5
Date		99% Fresh	95% Fresh		21/07/2021	21/07/2021	21/07/2021	21/07/2021	21/07/2021
Sample Description					Clear, no sheen or odour	Clear, no sheen or odour	Clear, slight organic odour, slight sheen	Clear, no sheen or odour	Clear, no sheen or odour
Sample Purpose					Characterisation	Characterisation	Characterisation	Characterisation	Characterisation
Sample collected by					RCA - AK	RCA - AK	RCA - AK	RCA - AK	RCA - AK
Benzene, Toluene, Ethylbenzene, Xylene (BTEX)									
Benzene	1		950	1	<1	<1	<1	<1	<1
Toluene	2		180	800	<2	<2	<2	<2	<2
Ethylbenzene	2		80	300	<2	<2	<2	<2	<2
meta- and para-Xylene	2		275		<2	<2	<2	<2	<2
ortho-Xylene	2		350		<2	<2	<2	<2	<2
Total Xylenes	4			600	2	2	2	2	2
Total Recoverable Hydrocarbons (TRH)									
TRH C ₆ -C ₁₀	20				<20	<20	<20	<20	<20
TRH >C ₁₀ -C ₁₆	100				<100	<100	<100	<100	<100
TRH >C ₁₆ -C ₃₄	100				<100	<100	<100	1830	<100
TRH >C ₃₄ -C ₄₀	100				<100	<100	<100	260	<100
TRH C ₆ -C ₄₀	320		7		160	160	160	2150	160
Polycyclic Aromatic Hydrocarbons (PAH)									
Naphthalene	1		16		<1.0	<1.0	<1.0	<1.0	<1.0
Acenaphthylene	1				<1.0	<1.0	<1.0	<1.0	<1.0
Acenaphthene	1				<1.0	<1.0	<1.0	<1.0	<1.0
Fluorene	1				<1.0	<1.0	<1.0	<1.0	<1.0
Phenanthrene ^C	1	0.6			<1.0	<1.0	<1.0	<1.0	<1.0
Anthracene ^C	1	0.01			<1.0	<1.0	<1.0	<1.0	<1.0
Fluoranthene ^C	1	1			<1.0	<1.0	<1.0	<1.0	<1.0
Pyrene	1				<1.0	<1.0	<1.0	<1.0	<1.0
Benz(a)anthracene	1				<1.0	<1.0	<1.0	<1.0	<1.0
Chrysene	1				<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(b)&(j)fluoranthene	1				<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(k)fluoranthene	1				<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(a) pyrene ^C	0.5	0.1		0.01	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1,2,3-c,d)pyrene	1				<1.0	<1.0	<1.0	<1.0	<1.0
Dibenz(a,h)anthracene	1				<1.0	<1.0	<1.0	<1.0	<1.0
Benzo(g,h,i)perylene	1				<1.0	<1.0	<1.0	<1.0	<1.0
Metals									
Arsenic	1		13	10	<1	<1	<1	4	<1
Cadmium	0.1		0.2	2	<0.1	<0.1	<0.1	<0.1	<0.1
Chromium	1		1	50	1	<1	2	3	<1
Copper	1		1.4	2000	2	<1	2	6	3
Lead	0.1		3.4	10	<1	<1	<1	3	<1
Mercury ^C	1	0.06		1	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	1		11		<1	<1	2	5	4
Zinc	5		8		7	7	<5	33	18

All results are in units of µg/L

Blank Cell indicates no criterion available

PQL = Practical Quantitation Limit. Where PQL is for a summation, PQL of all components is summed and may be different from that presented by laboratory

^A % Protection Level for Receiving Water Type.

^B Australian Drinking Water Guidelines, 2011.

^C Bioaccumulative Compounds

Ecological guidelines in *italics* are low level reliability guidelines

Ecological arsenic guideline based on As (V) for fresh, the lowest of presented guidelines.

Drinking water arsenic guidelines are based on total arsenic

Guidelines for chromium are based on Cr (VI)

Ecological guidelines for mercury are based on inorganic mercury.

Drinking water guidelines for mercury are based on total mercury.

Results for TRH have been compared to TPH guidelines.

Results shown in shading are in excess of the 99% aquatic ecosystems guidelines

Results shown in **BOLD** are in excess of the 95% aquatic ecosystems guidelines

Results shown in underline are in excess of the human health (ingestion) guideline

Where summation required (Xylene, TRH, PAH) calculation includes components reported as non detected as 1/2 PQL.