PRELIMINARY SITE (CONTAMINATION) ASSESSMENT

60 & 62-64 SHOWGROUND ROAD, GOSFORD

Prepared for CORNERSTONE DEVELOPMENT MANAGEMENT PTY LTD.

Prepared by RCA AUSTRALIA

RCA ref 16091-401/0

AUGUST 2022

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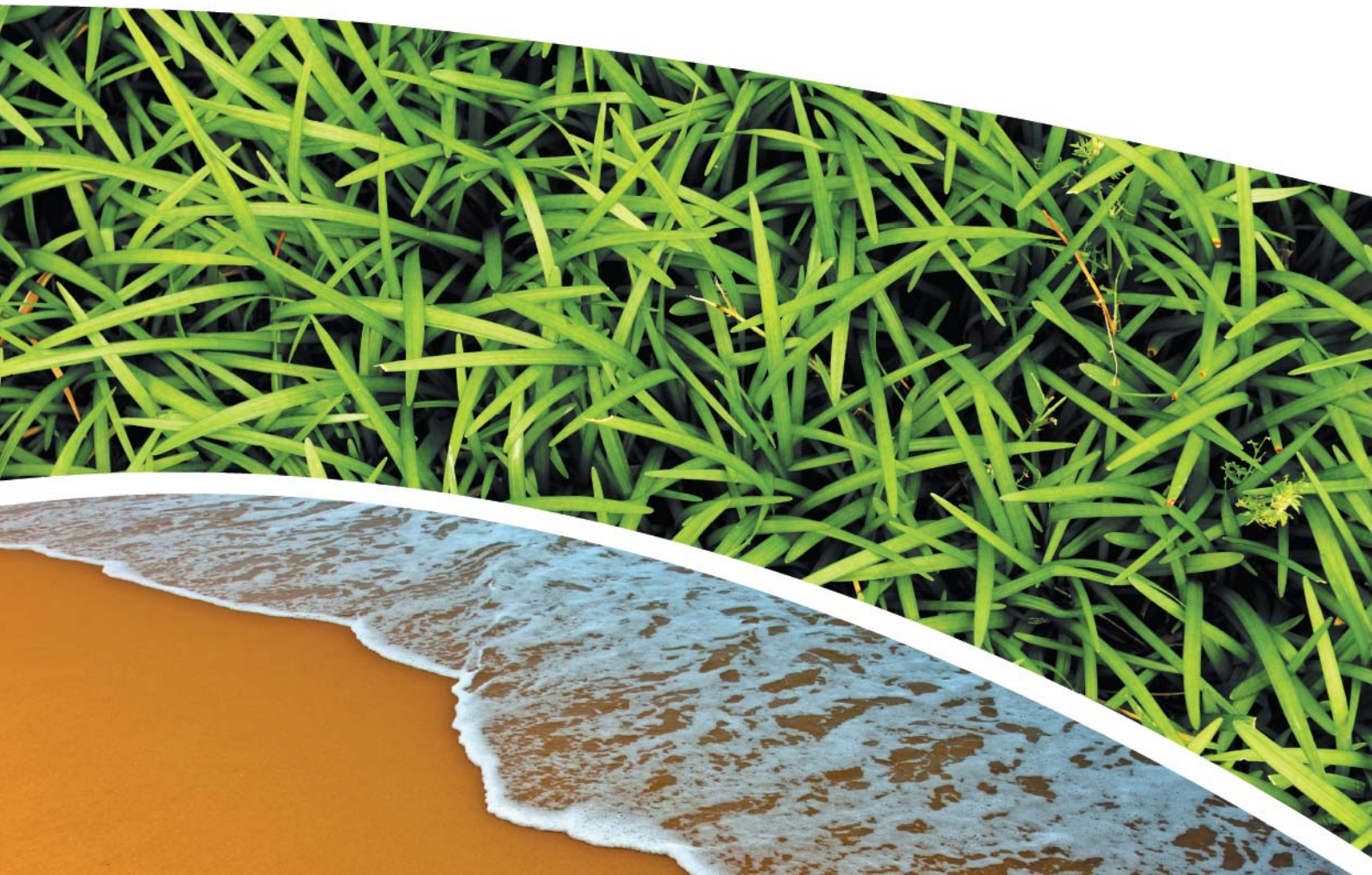

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PRELIMINARY SITE (CONTAMINATION) ASSESSMENT
60 & 62 - 64 SHOWGROUND RD, GOSFORD

EXECUTIVE SUMMARY

This report presents the findings of a preliminary site (contamination) assessment undertaken at 60 & 62 - 64 Showground Road, Gosford which has been undertaken to support the Development Application for an integrated medical office building with five above ground floors including residential units and four basement levels.

The assessment comprised a desktop assessment of site historical information comprising aerial images and government databases as well as surface soil sampling at a total of four (4) locations and analysis for potential contaminants of hydrocarbons, pesticides, metals and asbestos.

The site may have been used for residential purposes since as far back as 1888 and with the possible exception of localised filling and the use of hazardous building materials in since demolished structures was not considered likely to be contaminated.

No indications of contamination were observed during the fieldwork and no hydrocarbons, pesticides or asbestos were identified in the collected soil samples; concentrations of metals were detected however at low levels which are not considered to pose a constraint to the development or require more than standard management practices during the construction.

Based on this assessment it is considered that site is suitable for the proposed development without further assessment. RCA recommends, an unexpected finds protocol is implemented such that works cease in the event of odours / visually impacted material is encountered as this would not be consistent with the observations of this assessment.

The materials encountered at the site are likely to pass under the Excavated Natural Materials (ENM) Order 2014, however additional testing would be required to provide a full classification in accordance with the Order (Ref [4]).

Contents

1 INTRODUCTION

This report presents the findings of a preliminary site (contamination) assessment undertaken at 60, 62 & 64 Showground Road, Gosford.

Cornerstone Development Management Pty Ltd (Cornerstone) is seeking to construct an integrated medical office building, the construction of which will comprise:

- Demolition of multiple strata-titled residential units, vehicle carports/parking, associated driveways, retaining walls and landscaping.
- Bulk excavations of up to 12m below current ground level for a four (4) level underground carpark.
- Construction of six (6) above ground levels for commercial uses, and seven (7) residential units, on the top floor, with private and communal outdoor spaces.
- Construction of driveways and landscaping.

The purpose of this investigation is to provide data to assist with the development application to be submitted to Central Coast Council for the proposed development. The objective of this assessment is to identify the potential for contamination to be present at the site due to its location and prior use. If potential for contamination is identified, recommendations for further assessment to characterise and identify the need for remediation is also required.

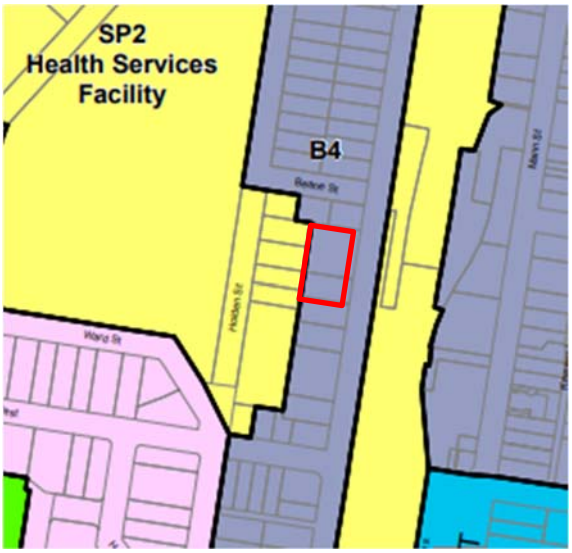
The assessment was undertaken at the request of Josh Peacock on behalf of Cornerstone Development Management Pty Ltd.

2 SITE IDENTIFICATION AND DESCRIPTION

The site is described as 60 and 62 - 64 Showground Road, Gosford NSW, and is identified as SP20095 and SP20058.

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

Table 1 *Site Details*

Current zoning: (Ref [1])	Zone B4 Mixed Use (Gosford City Centre) 
Current use(s) **Proposed use**	Residential Commercial and Residential
Size of site	0.244 Ha
Land use to the: **North**	Gosford Hospital
South	Health facility (58 Showground Rd), then medium density residential
East	Rail infrastructure (Newcastle to Sydney railway line), then commercial precinct.
West	Health facilities, then Gosford Hospital.
Nearest sensitive receptor (human health)	Residential: one Lot from the southern boundary.
Nearest sensitive receptor (environmental)	Historical aerial photographs indicate the presence of a drainage channel on the eastern side of Showground Road, 10m from the project site. With subsequent development it is believed this channel has been converted into a stormwater drain connected to Brisbane Water, approximately 1km to the south.

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

3 SITE HISTORY AND BACKGROUND INFORMATION

3.1 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.

The Section 10.7 planning certificates have been provided and reviewed for the two (2) Lots relevant to the proposed development: these are included within **Appendix B**.

Information relevant to this obtained from the 10.7 planning certificates and relevant to the site is contained in **Table 2**.

Table 2 *Planning Advice Contained in the 10.7 Certificate*

Part 2 relevant Information	• Multiple SEPP apply to the site including SEPP (Gosford City Centre) 2018. • Gosford City Centre Development Control Plan 2018 applies to the site. • The site is zoned as B4 Mixed Use. • The site is **not** declared as critical habitat. • The site is **not** within a conservation area. • There are **no** heritage items listed which are situated on the site. • The land is **not** affected by the zoning and land use under SEPP (Sydney Region Growth Centres) 2006. • The land is **not** affected by the zoning and land use under SEPP (Western Sydney Aerotropolis) 2020/ • The land is **not** affected by the Greenfield Housing Code • Housing Code – Complying development under the General Housing Code **may** be carried out on the land. • Rural Housing Code – Complying development under the Rural Housing Code **may** be carried out on the land. • Low Rise Medium Density Code – Complying development under the Low Rise Medium Density Housing Code **may** be carried out on the land. • Housing Alterations Code – Complying development under the Housing Alterations Code **may** be carried out on the land. • General Development Code – Complying development under the General Development Code **may** be carried out on the land. • Commercial and Industrial Alterations Code – Complying development under the Commercial and Industrial Alterations code **may** be carried out on the land. • Commercial and Industrial (New Buildings and Additions) Code – Complying development under the Commercial and Industrial (new buildings and additions) code **may** be carried out on the land. • Container Recycling Facilities Code – Complying development under the Container Recycling Facilities Code **may** be carried out on the land. • Subdivision Code – Complying development under the Subdivision Code **may** be carried out on the land. • Demolition Code – Complying development under the Demolition Code **may** be carried out on the land. • Fire Safety Code – Complying development under the Fire Safety code **may** be carried out on the land. • The land is **not** within a mine subsidence district proclaimed under Section 20 of the Mine Subsidence Compensation Act 2017. • The land is **not** affected by annual charges for coastal protection services under section 496B of the Local Government Act 1993.

Part 2 continued	• The land is **not** affected by road widening of realignment under Division 2 of Part 3 of the Roads Act 1993, under an environmental planning instrument or under a resolution of Council. • The land **is** affected by risk restrictions due to land slippage under Chapter 6.4 of the Gosford Development Control Plan (Geotechnical Requirements). • The land **is** within the flood planning area and **is** subject to flood related development controls. • The land or part of the land **is** between the flood planning area and the probable maximum flood and **is** subject to flood related development controls. • The land is **not** identified for acquisition by a public authority by any environmental planning instrument, current or proposed. • Section 94A contribution under the Gosford City Centre Development Contributions Plan **may** be imposed as a condition of development consent. • The land is **not** biodiversity certified land or under a biodiversity stewardship agreement. • The land is **not** affected by a set aside area under Section 60ZC of the Local Land Services Act 2013 (to Council knowledge). • The land **is not** wholly or partly, bush fire prone land. • The Native Vegetation Act 2003 does **not** apply to the land. • There are **no** known orders under the Trees (Disputes Between Neighbours) Act 2006. • There is **not** a direction by the Minister in force under section 75P (2) (c1) of the Act in relation to prohibiting or restricting the carrying out of a project or a stage of a project on the land under Part 3a of the Act. • The land is **not** affected by a valid site compatibility for seniors housing. • The land is **not** affected by a valid site compatibility certificate for • infrastructure, schools or TAFE. • The land is **not** affected by a valid compatibility certificate for affordable rental housing. • The land is **not** affected by any development plan that applies to the land or that is proposed to be subject to the consent ballet. • The land is **not** affected by a current site verification certificate for SEPP –Mining, Petroleum Production and Extractive Industries 2007. • Council have **not** been notified that the land includes any residential premises that are listed on the register of loose-fill asbestos insulation. • The land is **not** affected by any building notice, building product rectification order or outstanding notice of intention to make a building product rectification order under Part 4 of the Building Products (safety) Act 2017. • The land is **not** affected by any matters under section 59(2) of the Contaminated Land Management Act 1997. • No specific details are noted in regards to potential acid sulfate soils.
Part 5 relevant Information	• The property is subject to Environmental Planning and Assessment (Special Infrastructure Contribution - Gosford City Centre) Determination 2018 made by the Minister for Planning, pursuant to section 7.23 of the Environmental Planning and Assessment Act 1979 on 12 October 2018

RCA undertook a search of the Heritage NSW register[1] for Gosford and West Gosford and identified that there are no Aboriginal Places within vicinity of the site. There are multiple local and state heritage places:-

- 30 Racecourse Road (280m to the north) – Gosford High School buildings.
- Mann Street near Lindsey Street (380m to the north-east) – three (3) art deco building facades.
- Showground Road (240m to the south-east) – Gosford Railway Clock, Steam Locomotive Facilities & Signal Box.
- Showground Road (240m to the south-east) – Railway Station Clock with wooden frame.
- Racecourse Road and Etna Street (270m to the north) – Railway Bridge / Viaduct.
- Railway land off Showground Road (125m to the south-south-east) – Railway turntable.
- Railway land off Showground Road (100m to the south-south-east) – Signal Box, water column and tank.
- Central Coast Highway, West Gosford (4km to the west) – Multiple buildings within the youth detention centre.
- Central Coast Highway, West Gosford (3km to the west) – Kendall Glen's memorial.
- 25-27 Henry Kendall Street, West Gosford (2.5km to the west) – Henry Kendall museum.

The proposed works at the project site are considered unlikely to impact these heritage features.

RCA undertook a search of the Australian Heritage Database[2] for Gosford and identified that there are no Aboriginal within vicinity of the site. There were multiple national estate listings being:

- 50 Mann Street (720m to the south) – former Brisbane Water County Council building, 720m to the south.
- 45 Mann Street (750m to the south) – Gosford Courthouse – 750m to the south.
- 37 Mann Street (820m to the south) – Creighton Funeral Parlour – 820m to the south.
- Showground Road (660m north of 60, 62-64 Showground Road) – Gosford Showground – site of agricultural shows from 1888.

The proposed works at the project site are unlikely to impact these national estate features.

[1] http://www.environment.nsw.gov.au/heritageapp/heritagesearch.aspx

[2] http://www.environment.gov.au/heritage/publications/australian-heritage-database

3.2 HISTORICAL MAPS AND PHOTOGRAPHS

RCA undertook a search of the Historical Land Records Viewer[3] and identified the following images an 1888 Town of Gosford map which shows ten (10) residential sized lots orientated east-west bounded by Holden Street in the west, Beane Street to the north, Railway Street to the east and Faunce Street to the south. The location of Railway Street appears consistent with what is now known as Showground Road, with present-day 60 and 62 - 64 Showground Road corresponding to this residential area. The railway corridor is shown on the map, east of Railway Street and west of Mann Street. An extract is presented as **Figure 1**.

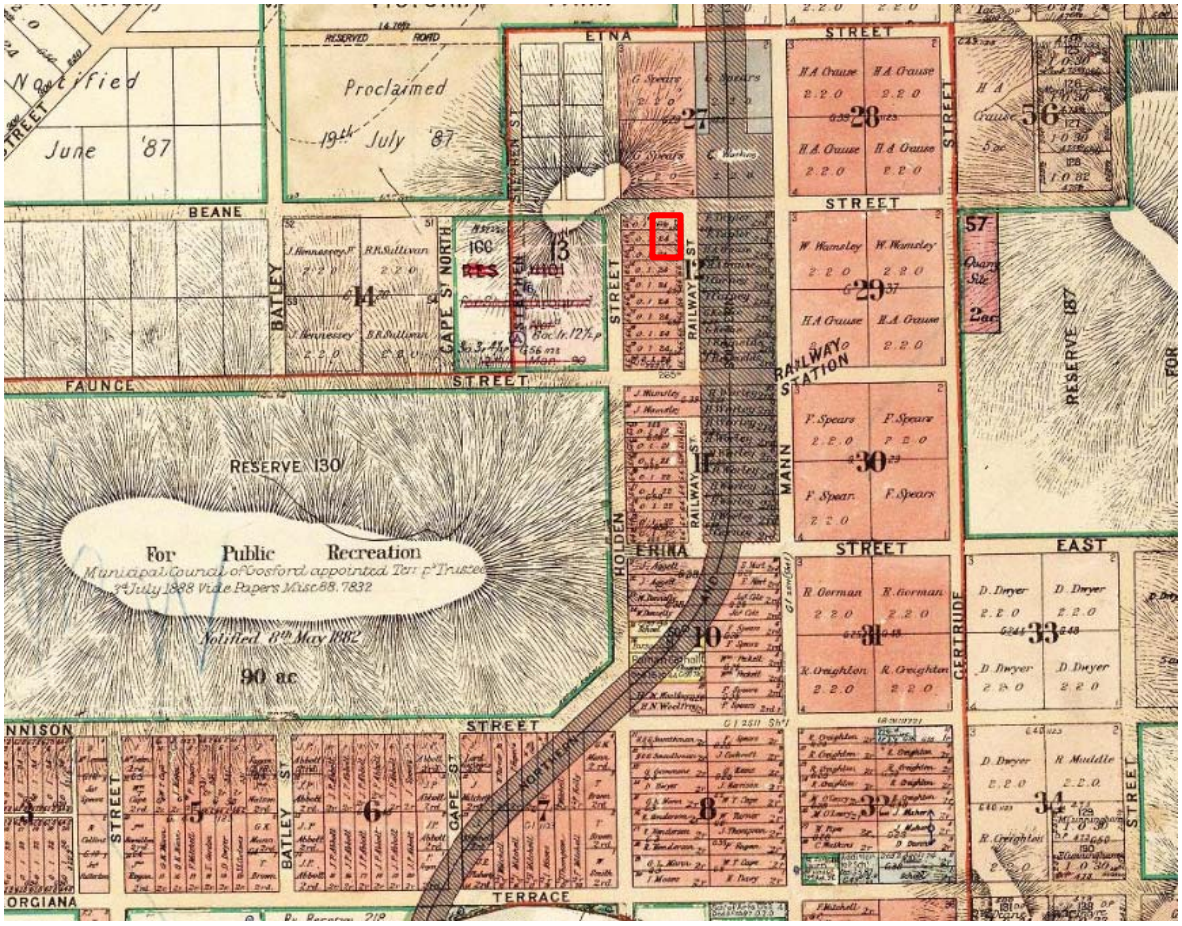


Figure 1 *Extract of 1888 Plan of the Town of Gosford dated 1888[4] with the red outline the approximate area of the site*

Further records comprised:

- The 1922 Town of Gosford map shows the railway line, station and turntable to the south-east of the site. The aforementioned residential lots remain unchanged.

[3] http://hlrv.nswlrs.com.au

[4] https://hlrv.nswlrs.com.au/

- The 1935 Town of Gosford map shows additional features within the rail precinct including a loading bank directly opposite present day 60, 62 & 64 Showground Road, but no changes to the residential lots. On the eastern side of the running lines, is a citrus fruit siding and packing shed.
- A 1958 map: no changes are evident in the vicinity of the project site.
- A 1968 map; the loading bank opposite the project site is no longer marked on the map. No other changes are evident in the vicinity of the project site.

RCA undertook a search through the collections of the Central Coast Library[5]) and identified on record as presented as **Figure 2.** It is apparent that the land to the north and south of Faunce Street West, west of Railway Street (now Showground Road) is being used for residential purposes which correlates with the residential lots shown in **Figure 1**.

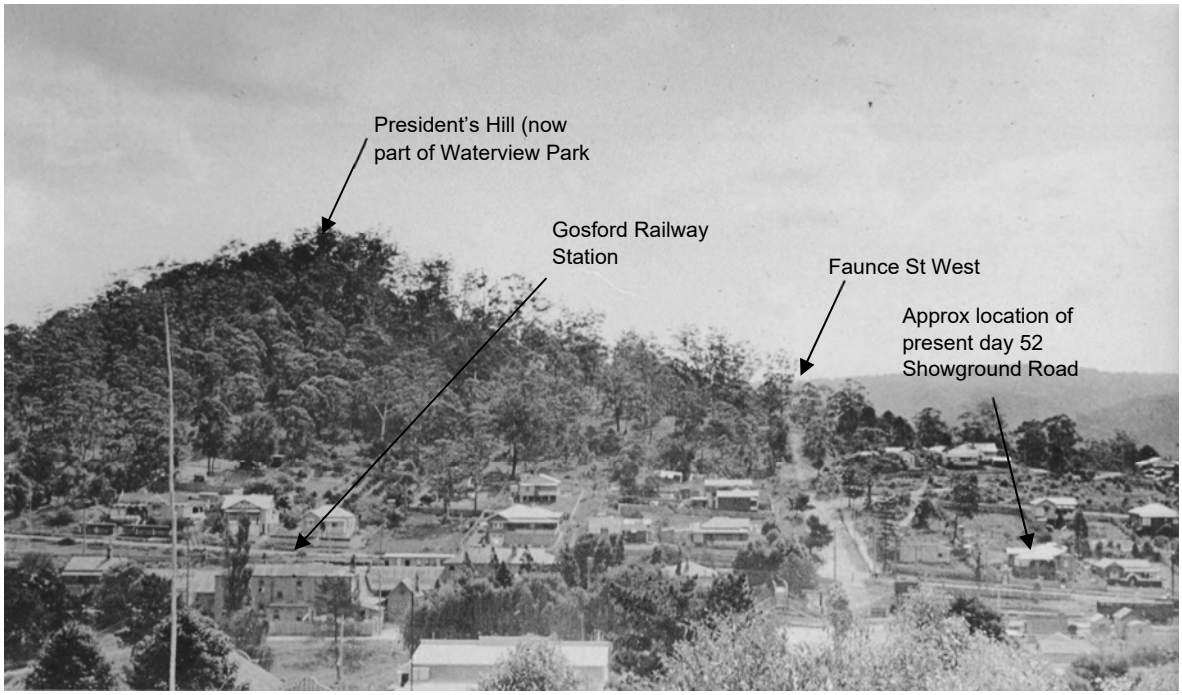


Figure 2 *View of Faunce Street west, Railway Station and President's Hill, Gosford[6].Circa 1920's*

RCA undertook a search through the State Library of NSW[7] for photographs relevant to the site but no relevant images were located.

RCA reviewed historical aerial photographs and **Table 3** summarises the observations at the site and the surrounding environment.

[5] https://centralcoast.contentdm.oclc.org/

[6] https://centralcoast.contentdm.oclc.org/digital/collection/p20041coll13/id/1864/rec/45

[7] http://archival.sl.nsw.gov.au/home

Table 3 *Aerial Photograph Review*

1953 Ref[8]	This photograph is taken from the north west of the site looking south east. While there are some current landmarks visible such as Gosford High School and the railway line, the exact location of the site is uncertain. There appears to be residential use of the site. The surrounding area appears to be a mix of residential and commercial structures, in general condition as currently although less densely populated.
1965	Single dwellings occupy 60, & 62 - 64 Showground Road. There appears to residential homes occupying each of the lots in the block bounded by Showground Rd, Beane St (to the north), Holden St (to the west) and Faunce Street West (to the south). Gosford hospital appears confined to the north west of the intersection of Holden and Beane Streets. To the north of Beane Street there are clusters of buildings interspersed with open space. On the eastern side of Showground Road there appears to be low lying vegetation which is possibly a drainage line referred to by a previous assessment (Ref [2], refer **Section 3.4**). To the south-east of the site, Gosford railway station consists of a central platform with running lines either side, and a second platform on the eastern side with one running line adjacent. To the south of Faunce Street West, and to the west of Holden Street it appears to be residential housing
1976	The Lots within the block surrounding 60-64 Showground Rd appear unchanged. Additional buildings appear to have been added to the north and west of the Gosford hospital complex. The vacant land on the north side of Beane Street has been replaced by multiple buildings. To the east of Showground Road, the previous vegetated drainage line has been replaced with an off-street carpark. A number of industrial buildings have been constructed to the east of the railway line on Mann Street immediately south of Etna Street.
1984	The house at 60 Showground Road appears to have been replaced with a new building set towards the rear of the block and carparking at the front. This is believed to be the current townhouse complex. The two residential houses on 62 and 64 Showground Road appear to have been replaced with two (2) mirror-image buildings which are believed to be the current townhouse complex. The Hospital Complex appears to have expanded with an expansive building replacing four (4) to five (5) houses on the southern side of Beane Street with further buildings in the immediate surrounds converted to carpark
1994	The townhouse complexes on site have remained unchanged since the 1984 photograph. The remaining residential houses in the block surrounding the project site appear to have been replaced with a mix of larger buildings with now minimal green open space. To the west, the newer hospital addition noted in the 1984 image has doubled in size with the building expanding towards the south. The housing immediately to the east and south of this expansion have been replaced with carparking. The density of built forms has increased between the new carparks and the northern side of Faunce Street West consistent with single dwellings being replaced with medium density housing complexes. To the east-north-east, additional structures have been built immediately east of the running lines, inside the rail complex. To the south-east, the railway station has been upgraded with a new structure spanning both platforms and the railway track in-between. What appears to be a covered walkway has been installed along the western side of the railway line, leading to a new carpark to the south

[8] https://www.brianhilton.com.au/blog/throw-back-thursday/613/

2006	The townhouse complexes on site have remained unchanged since the 1994 photograph. Minimal changes have occurred to the buildings on the block surrounding the site, with only a new rood installed on the building directly north. The hospital complex to the west – northwest has seen further additions. There have been minimal observable changes to the railway corridor to the east of the site. A new building now stands where small carparking area used to be. Further east, a few new buildings and houses have been erected.
2010	The townhouse complexes on site have remained unchanged since the 2006 photograph. The buildings on the block surrounding the site remain unchanged from the 2006 photograph. The hospital complex to the west – northwest has undergone some demolition to make way for further developments. The railway corridor and buildings to the east remain visibly unchanged since the 2006 photograph
2015	The site and the surrounding areas all appear largely unchanged since the 2010 photograph. Only some minor changes to the layout of some of the carparking spaces, the painting of what appears to be a heli-pad and the growth of trees appears to have changed at the hospital since the 2010 photograph. The train station to the southeast appears to have had some minor upgrades and some undercover areas adjacent to the trainline have been extended. Further south the construction of new buildings is underway
2017	The town house complexes on site remain unchanged since the 2015 photograph. The building directly north has been demolished and the land has been cleared. Similarly the buildings and houses on the block to the north have also been demolished and the land cleared. Initial stages of construction appear to be under way. The hospital is undergoing further construction in the north western corner of the complex with a several storey building and helipad being added. Minimal observable changes have occurred in the rail corridor or the buildings to the east of the site. Further south the construction of new buildings continues
2018	The town house complexes on the site remain unchanged since the 2017 photograph. The latest upgrades to the hospital observed in the 2017 photograph appear to be complete. The cleared land to the north of the site noted in the 2017 photograph have been combined and the road that separated the blocks has been demolished. Construction of the new Newcastle University - Gosford Precinct is underway with a crane visible. There are no visible changes to the railway corridor, railway station and the town to the east of the site. Further south the construction of new buildings continues.

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

3.3 CONTAMINATED LAND PUBLIC RECORD

RCA undertook a search of the NSW EPA public lands register[9] and did not find any record of Environment Protection licences, applications, notices, audits or pollution studies and reduction programmes applicable to the site. Licences were identified within Gosford as follows:

- Gosford Hospital, Holden Street Gosford. POEO licence issued to the Northern Sydney and Central Coast Health Service in May 2000 for hazardous, industrial or group A waste generation or storage. Prior to 2002 the hospital operated three (3) coal fired boilers that emitted gases / fumes to the environment via a stack. In March 2002 the boilers were decommissioned and replaced with gas fired heat and steam generators. As at September 2004, no monitoring or discharge points or areas are listed on the licence which remains current. This health facility occupies multiple buildings adjacent to the northern and western boundary of the project site.
- 2km section of rail line between Gosford and Narara Stations. POEO licence issued December 2013 for crushing, grinding and separating with the licence surrendered in May 2015. Monitoring requirements associated with the licence related to insoluble solids (dust) and pH, oil and grease and suspended solids in water. Given the nature of the activities, it is not considered to present a contamination risk to the project site.
- Ausgrid West Gosford Depot, Faunce Street and Racecourse Road, Gosford. POEO licence issued August 2004 for waste storage (hazardous, restricted solid, liquid, clinical and related waste and asbestos waste) and surrendered in June 2015. During this time, no specific monitoring requirements were associated with the licence, with the exception of recording pollution complaints and operating a telephone complaints line whilst the facility was operating. In the absence of any specific pollution monitoring requirements, coupled with the facility being located 850m west of the project site it is therefore not considered to present a contamination risk to the project site.
- F3 Sydney to Newcastle freeway, Jolls Bridge to Mount White. POEO licence issued October 2002 for crushing, grinding and separating with licence surrendered in July 2004. The freeway is 4km from the project site and is therefore not considered to present a contamination risk to the project site.
- North Gosford Private Hospital, 9 Burrabil Avenue, Gosford. POEO licence issued July 2004 for hazardous, industrial or group A waste generation or storage. No monitoring requirements were associated with the licence with the exception of noise. In the absence of any specific pollution monitoring requirements, it is therefore not considered to present a contamination risk to the project site.
- Boral Asphalt (Bitupave), Lot 1, Comserve Close, Gosford. POEO licence issued March 2000 for bitumen pre-mix and hot mix production. During this time, no specific monitoring requirements were associated with the licence, with the exception of recording pollution complaints and operating a telephone complaints line whilst the facility was operating. In the absence of any specific pollution monitoring requirements, coupled with the facility being located 1.75km west of the project site it is therefore not considered to present a contamination risk to the project site.

[9] http://www.epa.nsw.gov.au/publicregister/

- Gosford City Council, Mangrove Creek and Mooney Dams. POEO licence issued August 2006 for the application of algicides. These dams are in excess of 10km from the project site and are therefore not considered to present a contamination risk to the project site.
- Gosford Olympic Pool, Masons Parade, Gosford. POEO licence for the discharge of filter backwash from the swimming pool. The licence required monitoring of chlorine at two (2) discharge locations. This pool is located downgradient of the project site, 1.5km to the south of the project site and as such discharges are not considered to present a contamination risk to the project site.

RCA undertook a search of sites notified to the NSW EPA as potentially requiring regulation[10] (as updated 7 July 2022) and confirmed that the site is not notified. A number of nearby locations are listed, being:

- Hylton Moore Park, Althorp Street, East Gosford. A significantly contaminated land declaration was issued in 2020 relation to ammonia, per-and-polyfluoroalkyl substances (PFAS); and hazardous ground gases, including methane and carbon dioxide. These substances have been found in groundwater, surface water, onsite drainage channels and / or in the subsurface. This former landfill facility is 2km south east from the project site at a similar height of 10m AHD. Given the contaminants involved, the location of this contaminated land downgradient and 2km from the project site, it is unlikely to present a contamination risk to the project site.
- 42-44 Victoria Street, East Gosford. A significantly contaminated land declaration was issued in 2010 in relation to total petroleum hydrocarbons (TPH[11]), benzene, toluene, ethylbenzene, xylene (BTEX) and naphthalene. These substances had contaminated groundwater and was present at shallow depths near the site boundaries. The declaration was revoked in 2016. This former petrol station is located 2.1km southeast from the project site. Given the revocation of the declaration and the distance, it is not considered to present a contamination risk to the project site.
- Adcock Memorial Park, Central Coast Highway, West Gosford. A significantly contaminated land declaration was issued in 2020 relation to ammonia, PFAS; and hazardous ground gases, including methane and carbon dioxide. These substances have been found in groundwater and / or above the surface. This former landfill facility is 1.5km south west from the project site below 10m AHD. Given the contaminants involved, the location of this contaminated land downgradient and 1.5km from the project site, it is unlikely to present a contamination risk to the project site.
- Metro Meat, 356 Manns Road, West Gosford. A notice was issued under the Environmentally Hazardous Chemicals Act 1985 due to contamination of land by animal waste products. The contamination was remediated to the satisfaction of the NSW EPA in October 1997. This former meat works is 2km west of the project site and is not considered to present a contamination risk to the project site.

[10] http://www.epa.nsw.gov.au/clm/publiclist.htm as updated 7 July 2022

[11] Total petroleum hydrocarbons are now known as total recoverable hydrocarbons.

RCA undertook a search of enforceable undertakings issued by the NSW EPA[12] (as updated 10 August 2022) and confirmed that no enforceable undertakings have been issued in relation to the site. One location within the Gosford locality was listed being:

- An enforceable undertaking was issued in September 2020 to Southern Oil Collection Pty Ltd at 1 Daintree Place, Gosford West. It related to an incident whereby oils contaminated with polychlorinated biphenyls (PCB) were accepted at this facility before being transported to another location (outside of Gosford). An EPA cleanup notice was issued and complied with. The incident did not involve the uncontrolled discharge of PCBs and is not considered to present a contamination risk to the site.

RCA undertook a search of the NSW EPA gasworks database[13] and determined that there are no known gasworks within vicinity of the site.

RCA undertook a search of the NSW Office of Fair Trading asbestos insulation register[14] and determined the absence of loose-fill asbestos insulation in the buildings at the site (units 1-4, 60 Showground Road, and units 1-6, 62-64 Showground Road).

RCA undertook a search of the NSW Department of Primary Industries (NSW DPI) register for cattle dip sites[15] and determined that there are no known cattle dip sites on site or within vicinity of the site.

RCA undertook a search of the Department of Defence register for unexploded ordnance[16] and determined that there are no known unexploded ordnance on site or within vicinity of the site.

RCA undertook a search of the Department of Industry mapping of naturally occurring asbestos[17] and determined that there are no known point occurrences or geological units with medium to high asbestos potential.

3.4 PREVIOUS INVESTIGATIONS

In June 2001, D&N Geotechnical undertook a preliminary geotechnical investigation of the project site (Ref [2]) and noted the presence of fill deposits of variable composition, moisture and thickness in sites in the vicinity of the project site. One groundwater monitoring well was installed. Groundwater inflow was noted at 4.5m below ground level (6.33m AHD) however dry to moist bedrock was observed to a depth of 7.9m below the surface after which the drilling technique, which utilised fluids as part of the methodology, did not facilitate further observations. Groundwater was measured within the well at between 1.1 and 1.4m below the surface in six (6) measurements over a period of two (2) and a half weeks between end of May and mid June 2021.

No contamination assessment was included within the works (Ref [2]).

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[12] https://app.epa.nsw.gov.au/prpoeoapp/searchenforceableundertaking.aspx

[13] http://www.epa.nsw.gov.au/clm/gasworkslocation.htm

[14] https://www.fairtrading.nsw.gov.au/loose-fill-asbestos-insulation-register

[15] https://www.dpi.nsw.gov.au/animals-and-livestock/beef-cattle/health-and-disease/parasitic-and-protozoal-diseases/ticks/cattle-dip-site-locator

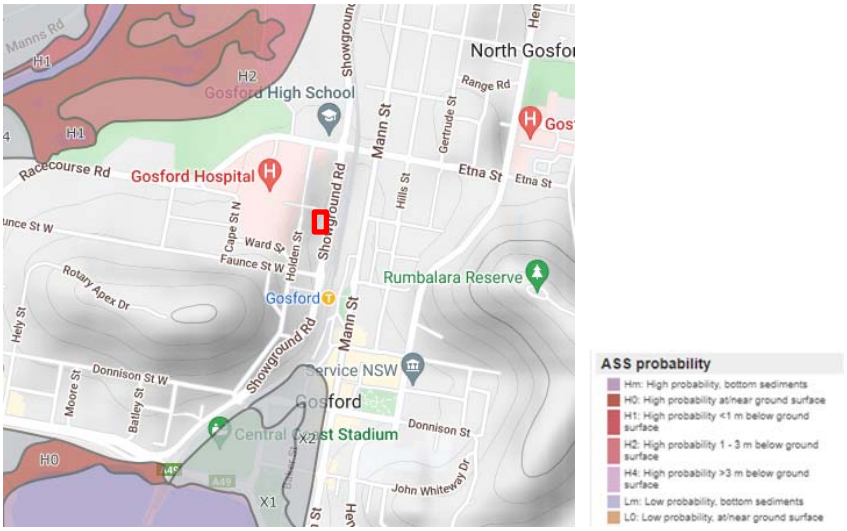
[16] https://www.whereisuxo.org.au/

[17] https://trade.maps.arcgis.com/apps/PublicInformation/index.html?appid=87434b6ec7dd4aba8cb664d8e646fb06

3.5 GEOLOGY AND HYDROGEOLOGY

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

Table 4 *Geology and Hydrogeology*

Geology	Terrigal Formation of the Narrabeen Group—lithic and quartz, sandstone and siltstone, minor sedimentary breccia, claystone and conglomerate.
Soil type	The Gosford-Lake Macquarie map18 indicates the site is underlain by yellow podzolic soils of the Erina landscape, generally described as undulating to rolling rises and low hills with local relief <25%.. Minor to moderate sheet erosion occurs in areas which have been disturbed by urban development. Slumping of steep roadside batters has occurred in many areas. Localised limitations which are present and can affect foundation stability include mass movement, steep slopes, highly weathered rock, high run-on, seepage (seasonal waterlogging) areas, soils with moderate shrink-swell, high plasticity and low wet bearing strength. The 1:100,000 Gosford-Lake Macquarie Soil Landscape Series Sheet (9131-9231, First Edition 1993) indicates the site is underlain by anthropogenic disturbed terrain generally described as level plain to hummocky terrain, extensively disturbed by human activity, including complete disturbance, removal or burial of soil. Local relief and slopes are highly variable, landfill includes soil, rock, building and waste material. Original vegetation is completely cleared and is replaced with turf or grassland
Acid sulfate soil	No known occurrence. 550m south-west of high probability acid sulfate soils 1-3m below ground. 
Groundwater use	There are two (2) groundwater wells within 500m of the site GW053790 GW100343. Groundwater use in within the vicinity of the site is listed as GENERAL USE

[18] Note that this soil landscape identified by RCA is different to the 'anthropogenic disturbed terrain' listed by D&N Technical (Ref [2]). The anthropogenic disturbed terrain is present to the south and east of Gosford Railway Station. The subject site is located to the north and west of the railway station.

Number of monitoring wells on site	One to RCA's knowledge from the geotechnical investigation (Ref [2]).
Depth to groundwater	Approximately 4.5m below the surface (Ref [2] noting that this was considered to be perched groundwater and not part of the regional groundwater which is expected to >8m below the surface.
Estimated Groundwater flow direction	Unknown, but it is estimated that the groundwater flows to the south towards Broad Water/Brisbane Water
Background water quality	Background water quality is unknown, but is not expected to be significantly contaminated.

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

3.6 INTEGRITY ASSESSMENT

Information obtained from the Council and NSW EPA is presumed to be accurate, however is limited to information that has been obtained and documented.

Information obtained from aerial photography is limited in that it only provides a snapshot of the site in time. There are furthermore issues with resolution of some of the photographs.

Information regarding groundwater use is subject the third parties and may not be up to date.

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

RCA has determined, based on the reviewed historical information, that the site has been intended to used as residential use since 1888 and dwellings were present at the site since before 1965. At some point between 1976 and 1984 the former dwellings were demolished and the apartment buildings were constructed where they remain as such until the present day.

Based on RCA's understanding of the site, the potential contamination, exposure pathways, and receptors are considered as follows:

- Historical filling of the site:
    - Widespread filling of the site is not considered likely based on the ground level of the adjacent properties, however there has been some localised filing based on the previous geotechnical report (Ref [2]). Contaminants of concern are considered to be hydrocarbons and metals.
    - Depending on the type of fill, this may have contaminated the soil at the depth of the fill.
    - Depending on the type of fill, groundwater may have been contaminated through leaching and transported off site.
- Use of hazardous building materials
    - Based on the brick construction of the current buildings it is unlikely asbestos-based materials were used extensively. There may be asbestos in the 'wet' areas such as kitchens and bathrooms however. The building materials used in the former structures are unknown but may have included asbestos and/or lead based paints.
    - Depending on the materials used and the demolition practices utilised there may be contamination within the soils
    - Subsurface contamination may also be present if excess materials were inappropriately disposed of and buried on site.
    - The risks associated with this type of contamination is considered to be due to inhalation of fibres, inhalation of dust, ingestion and dermal contact.

5 SAMPLING AND ANALYTICAL QUALITY PLAN

No formal sampling and analytical quality plan (SAQP) was 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 Objective	Description
Step 1- State the Problem	Determination of the site history and characterisation of the potential contamination at the site is required as part of a development application to construct a health care facility with residential units and underground carparking on the site.
Step 2- Identify the Goal and Decisions	To adequately characterise the site and ensure that the site is suitable for the proposed uses. The key uncertainties that the investigation attempts to address are as follows: • What is the history of the site and is there any potential for contamination? • What is the extent of contamination within soils (if present)? • Do the concentrations of contaminants in soil exceed acceptable levels? • 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? • Is there any asbestos present within the fill materials? • Are the contaminant concentrations suitable for the proposed commercial/residential use of the site? • Is any further work required?
Step 3- Identify the Inputs to the decisions	Site history information, site inspection and soil sampling results. Guidelines for assessing risk to human health and the environment from contaminated soil. Full details of the relevant guidelines are included in **Appendix D**: criteria relevant to the 'commercial and industrial' exposure scenario has been used for this assessment based on the nature of the current and proposed site uses.
Step 4- Define the Boundaries of the investigation	The horizontal extent of the assessment has been defined by the area noted 'approximate site boundary' on **Drawing 1**, **Appendix A.** The vertical extent was based on consideration of the conceptual site model and was to be approximately 0.5m below the surface of the site. Groundwater was not to be assessed based on the understood depth of groundwater in the site area and the lack of registered groundwater wells within the area which is suggested to indicate groundwater is not a well used resource. No practical constraints that could have interfered with sampling were identified beyond requiring consent for the site works from the Body Corporate. No temporal constraint was initially associated with the provision of the works. No specific financial constrains were identified, noting that any variations to costs identified to client were to be confirmed with client prior to additional cost being incurred.

Data Quality Objective	Description
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 location(s) 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

Specific observations made by attending RCA personnel on 29 July 2022 are listed in **Table 6** and the photographs taken during the site inspection are attached as **Appendix F**.

Table 6 *General Site Conditions and Observations*

Topography	The site is gently sloping to the east.
Site condition	The site was in good conditions with no obvious signs of degradation.
Condition of Building and roads	The buildings and roads were both in good condition with no obvious signs of degradation.
Visual Signs of contamination	There were no visible signs of contamination at the site.
Signs of erosion	There were no visible signs of erosion at the site.
Presence of drums or waste	There were no indications of the presence of drums or waste at the site.
Identification of potential asbestos bearing materials	There were no indications of potential asbestos bearing materials at the site.
Visible signs of plant stress	There were no visible signs of plant stress at the site.
Odours noticeable on site	There were no noticeable odours at the site.
Evidence of current or former petroleum facilities	There was no evidence of current or former petroleum facilities at the site.
Chemicals stored on site	There were no indications of chemicals stored at the site.
Evidence of waste burial: (anecdotal or otherwise)	There was no evidence of waste buried at the site.

The scope of work included:

- The collection of four (4) soil samples from four (4) locations on the site:
  - Samples were collected from the surface (0.0 – 0.1m) using a hand auger. A further visual observation of material was conducted at a depth of 0.5m at all locations.
  - Samples were assessed with the photoionisation detector (PID) for the presence of volatile compounds.
- Re-instatement of all excavations.
- Logging of boreholes including description of samples for texture, colour, odour, moisture content (and well construction).
- Analysis of one (1) soil sample from each location (4 in total).
- All selected soil samples were laboratory analysed for total recoverable hydrocarbons (TRH), benzene toluene, ethylbenzene, xylene (BTEX), polycyclic aromatic hydrocarbons (PAH), metals (arsenic, cadmium, chromium, copper, nickel, lead, zinc, mercury) and asbestos.
  - One (1) sample was additionally laboratory analysed for pesticides (OCP, OPP).

No indications of contamination, including asbestos containing material were observed on the site. The PID reading for all samples was 0ppm.

Soil encountered at the site comprised rich brown clay based topsoil. The soil encountered at sample location HA4 had a slightly sandier consistency but was generally similar to the clay based topsoil encountered elsewhere on site.

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 results are compared to the relevant criteria in **Appendix G**. In summary:

- BTEX concentrations were not detected in any of the samples and are therefore considered below the relevant criteria.
- TRH concentrations were not detected in any of the samples and are therefore considered below the relevant criteria.
- PAH concentrations were not detected in any of the samples and are therefore below the relevant criteria.
- Metal concentrations were either not detected or detected at levels below the relevant criteria across all samples.
- Pesticides (Organochloride Pesticides (OCP) and Organophosphorus Pesticides (OPP)) were not detected in the sample in which they were analysed and are therefore considered below the relevant guidelines.
- Asbestos was not detected in any of the samples

9 SITE CONTAMINATION CHARACTERISATION

The desktop assessment has identified that the site may have been used for residential purpose, since as far back as 1888 and contained three (3) separate residential dwellings in 1965. The apartment buildings which are currently situated on the site were constructed between 1976 and 1984.

To the east of the site, the trainline and associated train station have been in operation since as far back as 1888. The Gosford hospital located directly west – northwest of the site has seen additional construction in every decade dating back to the 70s.

No potential for contamination was identified other than the possible presence of fill and the possible use of hazardous building materials used in previous construction sighted in 1965 which may have caused contamination could have entered the soil during the subsequent demolition of the previous dwellings.

No indications of contamination or hazardous materials were detected during the site investigation or hand augering process.

Four (4) samples were collected from four (4) locations across the site to characterise the potential of contamination within the area of the proposed development. This is below the minimum eight (8) sampling locations recommended by the NSW EPA guidelines (Ref [3]) for a site of 0.24ha and was reduced due to the preliminary nature of the investigation, the absence of contaminating activities at the site and in the area and the presence of residential buildings on the majority of the site.

Analysed soil samples did not indicate the presence of contamination. Metals were detected in all samples in low concentrations well below the relevant guidelines whereas no other analytes were detected in any of the samples.

Based on the assessment it is considered that there is unlikely to be significant contamination present at the site that would be a constraint to the development or require more than standard management practices during the construction.

RCA recommends that an unexpected finds protocol be implemented during construction. This protocol must provide for the cessation of works and further assessment in the event of odorous material or visual indications of contamination being encountered in the soil.

Any soils being removed from site will require classification in accordance with the NSW waste legislation; the results of the samples collected as part of this assessment indicate that the materials are likely to meet the requirements of excavated natural material (ENM) as per the resource recovery order (Ref [4]) however there is insufficient sampling to provide this classification. Currently the material has been provided an indicative general solid waste classification.

10 CONCLUSIONS

This report has presented the findings of an assessment undertaken at 60, 62 & 64 Showground Road, Gosford as part of a development application to the Central Coast Council for the proposed multi storey health care facility with residential units and underground carparking.

The site has been used as residential purpose since as far back as 1888 and has remained as such until the present day. The current buildings located on the site were constructed some time between 1976 and 1984. The nearby Gosford hospital complex has seen growth and construction every decade since the 70s.

No indications of contamination or hazardous materials were identified during the site investigation and hand augering process.

Soil samples collected from the site did not indicate the presence of contamination; no hydrocarbons or pesticides were detected and concentrations of metals were either not detected or detected at concentrations well below the relevant human health and ecological criteria (refer **Appendix D**) for commercial use.

RCA considers that the site is suitable for the proposed development based on the site history and the soil sample analysis. No further assessment works are considered to be required however RCA recommends an unexpected finds protocol is implemented such that works cease in the event of odours / visually impacted material is encountered as this would not be consistent with the observations of this assessment.

RCA notes that any 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. No formal assessment has been undertaken to classify the material however testing undertaken to date suggests that the material is consistent with ENM as defined by the NSW EPA (Ref [4]). In the event that material is removed from site, a full classification will be required and transportation 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 are suitable 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

11 LIMITATIONS

This report has been prepared for Cornerstone Development Management Pty Ltd in accordance with an agreement with RCA Australia (RCA) dated 14 March 2022. 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 Cornerstone Development Management Pty Ltd. The report may not contain sufficient information for purposes of other uses or for parties other than Cornerstone Development Management Pty 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

Richard Murray
Environmental Scientist

Fiona Brooker
Manager of Environmental Services

REFERENCES

[1] Gosford Local Environment Plan 2014 under the Environmental Planning and Assessment Act 1979, published August 2017.

[2] D&N Geotechnical *60 & 62-64 Showground Road Geotechnical Investigation Report,* June 2021.

[3] NSW EPA, *Sampling Design Guidelines*, September 1995.

[4] http://www.epa.nsw.gov.au/your-environment/recycling-and-reuse/resource-recovery-framework/current-orders-and-exemption

[5] NEPC, *National Environment Protection (Assessment of Site Contamination) Measure*, 1999 as amended 2013.

[6] CRC Care, *Technical Report 10, Health screening levels for petroleum in soil and groundwater*, September 2011.

[7] NSW EPA, *Waste Classification Guidelines*, *Part 1; Classifying Waste*, November 2014.

[8] 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.

GLOSSARY

95%UCL_{ave}	A statistical calculation – 95% Upper Confidence Limit of the arithmetic mean of the data set.
Aromatic	Ring formation of carbon atoms.
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.
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.
mg	milligram, 1/1000 gram.
NEPC	National Environment Protection Council.

NSW EPA	NSW Environment Protection Authority – made a separate entity in 2011 to regulates the contaminated land industry.
PID	Photoionisation detector. Measures volatile gases in air or emanating from soil or water.
PQL	Practical Quantitation Limit.
QA	Quality Assurance.
QC	Quality Control.
RPD	Relative Percentage Difference.
Chemical Compounds	
BTEX	Benzene, toluene, ethylbenzene, xylene.
OCP	Organochlorin pesticides.
OPP	Organophosphorous pesticides.
PAH	Polycyclic aromatic hydrocarbons. Multi-ring compounds found in fuels, oils and creosote. These are also common combustion products.
TRH	Total recoverable hydrocarbons

Appendix A

Drawing

LEGEND

Approximate site boundary

Approximate borehole location

NOTE: Aerial image taken from Nearmap, 17 June 2022
(used in accordance with commercial licence)

0 5 10 15 20 25
metres

N

RCA AUSTRALIA
GEOTECHNICAL • ENVIRONMENTAL

SITE LAYOUT, LOCALITY AND SAMPLE LOCATION PLAN
PRELIMINARY SITE (CONTAMINATION) ASSESSMENT
60, 62 AND 64 SHOWGROUND ROAD, GOSFORD

CLIENT	Cornerstone Development Management Pty Ltd			RCA Ref	16091-401/0
DRAWN BY	RM	SCALE	1:500 (A3)	DRAWING No 1	REV 0
APPROVED BY	FB	DATE	12/08/2022	OFFICE	NEWCASTLE

CDT-DWG-A3H-001/1

Appendix B

Site History Documents

Cornerstone Development Management Pty Ltd
Level 1 1642 Anzac Ave
NORTH LAKES QLD 4509

SECTION 10.7(2) AND (5) PLANNING CERTIFICATE

Under Section 10.7 of the Environmental Planning and Assessment Act, 1979

Fee paid:	$133.00
Receipt No:	16687279
Receipt Date:	15 March 2022
Property Address:	60 Showground Road, GOSFORD NSW 2250
Property Description:	Lot 0 SP 20095
Property Owner	The Owners Strata Plan No 20095
Certificate No:	45681
Reference No:	60 SHOWGROUND ROAD:202269
Date of issue:	15-Mar-2022

The information contained within this certificate relates to the land.

ADVICE PROVIDED PURSUANT TO S.10.7(2) OF THE ENVIRONMENTAL PLANNING AND ASSESSMENT ACT 1979

1	RELEVANT PLANNING INSTRUMENTS AND DEVELOPMENT CONTROL PLANS

(1) Environmental Planning Instruments which apply to the land

State Environmental Planning Policy (Gosford City Centre) 2018

State Environmental Planning Policy (Vegetation in Non-Rural Areas) 2017

ZONE B4 MIXED USE UNDER STATE ENVIRONMENTAL PLANNING POLICY (GOSFORD CITY CENTRE) 2018
State Environmental Planning Policy (State and Regional Development) 2011
State Environmental Planning Policy (Affordable Rental Housing) 2009
State Environmental Planning Policy (Exempt and Complying Development Codes) 2008
State Environmental Planning Policy (Infrastructure) 2007
State Environmental Planning Policy (Miscellaneous Consent Provisions) 2007
State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007
State Environmental Planning Policy (Major Development) 2005
State Environmental Planning Policy (Building Sustainability Index: BASIX) 2004
State Environmental Planning Policy (Housing for Seniors or People with a Disability) 2004
State Environmental Planning Policy No. 65 - Design Quality of Residential Flat Development
State Environmental Planning Policy No. 64 - Advertising and Signage
State Environmental Planning Policy No. 55 - Remediation of Land
State Environmental Planning Policy No. 50 - Canal Estate Development
State Environmental Planning Policy No. 36 - Manufactured Home Estates
State Environmental Planning Policy No. 33 - Hazardous and Offensive Development
State Environmental Planning Policy No 70 - Affordable Housing (Revised Schemes)
State Environmental Planning Policy (Koala Habitat Protection) 2020.
State Environmental Planning Policy No. 21 - Caravan Parks
State Environmental Planning Policy No. 19 - Bushland in Urban Areas
Sydney Regional Environmental Plan No. 9 - Extractive Industry (No 2-1995)
State Environmental Planning Policy (Educational Establishments and Child Care Facilities) 2017
State Environmental Planning Policy (Primary Production and Rural Development) 2019.

(2) Proposed Environmental Planning Instruments which will apply to the land and is or has been the subject of community consultation or public exhibition

Proposed State Environmental Planning Policy (Exempt & Complying Development Codes) 2008
Proposed State Environmental Planning Policy (Environment) 2017

Proposed State Environmental Planning Policy (Short-term Rental Accommodation) 2019

Proposed State Environmental Planning Policy (Infrastructure) 2007
Proposed Standard Instrument (Local Environmental Plans) Order 2006
Proposed State Environmental Planning Policy Design and Place
Proposed State Environmental Planning Policy (Educational Establishments and Child Care Facilities) 2017
Proposed State Environmental Planning Policy (State and Regional Development) 2011
Proposed State Environmental Planning Policy (Housing Diversity)

(3) Development Control Plans applying to the land

Gosford City Centre Development Control Plan 2018

2	ZONING AND LAND USE UNDER RELEVANT LOCAL ENVIRONMENTAL PLANS

(a) Identity of the Zone

Lot 0 SP 20095

ZONE B4 MIXED USE

For each of the environmental planning instruments referred to in clause 1, please refer to the attached land use table to determine (b), (c) and (d) listed below:

(b) development that may be carried out within the zone without the need for development consent,

(c) development which may not be carried out within the zone except with development consent and

(d) development which is prohibited within the zone

(e) Development Standards applying to the land that fix minimum land dimensions for the erection of a dwelling-house

Nil

There are no development standards applying to the land that fix minimum land dimensions for the erection of a dwelling-house on the land. However there are minimum lot sizes applying to the subdivision of land, and in some zones the entitlement to erect a dwelling-house, or carry out other types of residential development, is linked to that minimum lot size.

(f) Land includes or comprises critical habitat

No

(g) Land is in a conservation area

No

(h) Item of environmental heritage is situated on the land

None

2A	ZONING AND LAND USE UNDER STATE ENVIRONMENTAL PLANNING POLICY (SYDNEY REGION GROWTH CENTRES) 2006

Not applicable to Central Coast Local Government Area

3	COMPLYING DEVELOPMENT

Whether or not the land is land on which complying development can be carried out under each of the codes for complying development because of the provisions of clause 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?*

GENERAL HOUSING CODE

Complying Development under the General Housing Code **may** be carried out on the land. This information needs to be read in conjunction with the whole of the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008.

RURAL HOUSING CODE

Complying development under the Rural Housing Code **may** be carried out on the land. This information needs to be read in conjunction with the whole of the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008.

LOW RISE HOUSING DIVERSITY CODE

Complying Development under the Low Rise Housing Diversity Code **may** be carried out on the land. This information needs to be read in conjunction with the whole of the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008.

GREENFIELD HOUSING CODE

Greenfield Housing Code **is not** applicable to this land.

HOUSING ALTERATIONS CODE

Complying development under the Housing Alterations Code **may** be carried out on the land. This information needs to be read in conjunction with the whole of the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008.

GENERAL DEVELOPMENT CODE

Complying development under the General Development Code **may** be carried out on the land. This information needs to be read in conjunction with the whole of the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008.

COMMERCIAL AND INDUSTRIAL ALTERATIONS CODE

Complying development under the Commercial and Industrial Alterations Code **may** be carried out on the land. This information needs to be read in conjunction with the whole of the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008.

COMMERCIAL AND INDUSTRIAL (NEW BUILDINGS AND ADDITIONS) CODE

Complying development under the Commercial and Industrial (New Buildings and Additions) Code **may** be carried out on the land. This information needs to be read in conjunction with the whole of the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008.

CONTAINER RECYCLING FACILITIES CODE

Complying Development under the Container Recycling Facilities Code **may** be carried out on the land. This information needs to be read in conjunction with the whole of the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008.

SUBDIVISIONS CODE

Complying Development under the General Housing Code **may** be carried out on the land. This information needs to be read in conjunction with the whole of the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008.

DEMOLITION CODE

Complying development under the Demolition code **may** be carried out on the land. This information needs to be read in conjunction with the whole of the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008.

FIRE SAFETY CODE

Complying development under the Fire Safety Code **may** be carried out on the land. This information needs to be read in conjunction with the whole of the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008.

4, 4A	**(Repealed)**

4B	**ANNUAL CHARGES FOR COASTAL PROTECTION SERVICES UNDER *LOCAL GOVERNMENT ACT 1993***

The owner (or any previous owner) of the land has not consented in writing to the land being subject to annual charges under section 496B of the *Local Government Act 1993* for coastal protection services that relate to existing coastal protection works.

5	**MINE SUBSIDENCE**

The land **IS NOT WITHIN** a Mine Subsidence District declared under section 20 of the *Coal Mine Subsidence Compensation Act 2017*.

6	**ROAD WIDENING AND ROAD ALIGNMENT**

(a) DIVISION 2 OF PART 3 OF THE *ROADS ACT 1993*

The land is not affected by road realignment or road widening under the above.

(b) ENVIRONMENTAL PLANNING INSTRUMENT

The land is **not** affected by road widening or road re-alignment under the above.

(c) COUNCIL RESOLUTIONS

The land is **not** affected by road widening or road re-alignment under the above.

7	COUNCIL AND OTHER PUBLIC AUTHORITY POLICIES TO RESTRICT DEVELOPMENT DUE TO RISK

This land **is** affected by a policy adopted by the council or other public authority that restricts the development of the land because of the likelihood of risk restrictions. This land **is** affected because:
Chapter 6.4 of Gosford Development Control Plan (Geotechnical Requirements) applies to the land and the land may be subject to slip. When considering a development application, each circumstance will be considered and development may be restricted.

7A	FLOOD RELATED DEVELOPMENT CONTROLS INFORMATION

(1) The land or part of the land **is** within the flood planning area and **is** subject to flood related development controls.

(2) The land or part of the land **is** between the flood planning area and the probable maximum flood and **is** subject to flood related development controls.

(3) A word or expression used in this clause has the same meaning as in the standard instrument set out in the *Standard Instrument (Local Environmental Plans) Order 2006.*

In this clause—

- flood planning area has the same meaning as in the Floodplain Development Manual.
- Floodplain Development Manual means the Floodplain Development Manual (ISBN 0 7347 5476 0) published by the NSW Government in April 2005.
- probable maximum flood has the same meaning as in the Floodplain Development Manual.

8	LAND RESERVED FOR ACQUISITION

The following environmental planning instruments and proposed environmental planning instruments make provisions for the acquisition of the land by a public authority as referred to in Section 3.15 of the Act:

Nil

9	CONTRIBUTION PLANS

Gosford City Council Section 94A Development Contributions Plan - Gosford City Centre

9A	BIODIVERSITY CERTIFIED LAND

The land **is not** biodiversity certified land within the meaning of 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*.

10	BIODIVERSITY STEWARDSHIP SITES

Council **has not** been notified by the Director-General of the Department of Planning, Industry and Environment that the land is a biodiversity stewardship site under a biodiversity stewardship agreement under Part 5 of the Biodiversity Conservation Act, 2016.

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

Council **has not** been notified by the Director-General of the Department of Planning, Industry and Environment that the land contains a set aside area under section 60ZC of the *Local Land Services Act 2013* and the land is **not** registered as a set aside area in the public register under that section.

11	BUSH FIRE PRONE LAND

The information currently available to Council indicates that this land **is not** bushfire prone land (as defined in the Act).

12	PROPERTY VEGETATION PLAN

Council **has not** been notified by Local Land Services – Greater Sydney that the land is subject to a property vegetation plan approved under Part 4 of the Native Vegetation Act 2003.

13	ORDERS UNDER *TREES (DISPUTES BETWEEN NEIGHBOURS) ACT 2006*

Council **has not** been notified of an Order issued under the Trees (Disputes between Neighbours) Act 2006.

NOTE: This advice is based on information provided by the Land and Environment Court

14	DIRECTIONS UNDER PART 3A

The Minister **has not** issued a direction under the former section 75P(2)(c1) of the Act that a provision of an environmental planning instrument prohibiting or restricting the carrying out of a project or a stage of a project on the land under Part 4 of the Act does not have effect.

15	SITE COMPATIBILITY CERTIFICATES AND CONDITIONS FOR SENIORS HOUSING

Council **is not** aware of there being a current Site Compatibility Certificate (seniors housing) issued by the Director-General of the Department of Planning, Industry and Environment in respect of the land.

NOTE: This advice is based on information provided by the NSW Department of Planning, Industry & Environment.

16	SITE COMPATIBILITY CERTIFICATES FOR INFRASTRUCTURE, SCHOOLS OR TAFE ESTABLISHMENTS

Council **is not** aware of there being a valid Site Compatibility Certificate (infrastructure) or Site Compatibility Certificate (schools or TAFE establishments) issued by the Director-General of the Department of Planning, Industry and Environment in respect of the land.

NOTE: This advice is based on information provided by the NSW Department of Planning, Industry & Environment.

17	SITE COMPATIBILITY CERTIFICATES AND CONDITIONS FOR AFFORDABLE RENTAL HOUSING

Council **is not** aware of there being a valid Site Compatibility Certificate (affordable rental housing) issued by the Director-General of the Department of Planning, Industry and Environment in respect of the land.

NOTE: This advice is based on information provided by the NSW Department of Planning, Industry & Environment.

18	PAPER SUBDIVISION INFORMATION

(1) The name of any development plan adopted by a relevant authority that applies to this land or that is proposed to be subject to a consent ballot.

Nil

(2) The date of any subdivision order that applies to this land.

Not applicable

Words and expressions used in this clause have the same meaning as they have in part 16C of the *Environmental Planning and Assessment Regulation 2000*.

19	SITE VERIFICATION CERTIFICATE

Council **is not** aware of a Site Verification Certificate having been issued by the Director-General of the Department of Planning, Industry and Environment in respect of the land.

A site verification certificate sets out the Director-General's opinion as to whether the land concerned is or is not biophysical strategic agricultural land or critical industry cluster land—see Division 3 of Part 4AA of *State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007.*

NOTE: This advice is based on information provided by the NSW Department of Planning, Industry and Environment.

20	LOOSE-FILL ASBESTOS INSULATION

This land does not include any residential premises (within the meaning of Division 1A of Part 8 of the *Home Building Act 1989*) that are listed on the register that is required to be maintained under that Division. That register lists residential premises that contain or have contained loose-fill asbestos insulation.

21	AFFECTED BUILDING NOTICES AND BUILDING PRODUCT RECTIFICATION ORDERS *(BUILDING PRODUCT SAFETY ACT 2017)*

(1) Is there any affected building notice of which the council is aware that is in force in respect of the land?

No

2 (a) Is there any building product rectification order of which the council is aware that is in force in respect of the land and has not been fully complied with?

No

2 (b) Is there any notice of intention to make a building product rectification order of which the council is aware has been given in respect of the land and is outstanding?

No

Note: In this clause 21:

affected building notice has the same meaning as in Part 4 of the *Building Products (Safety) Act 2017*.

building product rectification order has the same meaning as in the *Building Products (Safety) Act 2017*

22	STATE ENVIRONMENTAL PLANNING POLICY (WESTERN SYDNEY AEROTROPOLIS) 2020

Not applicable to Central Coast Local Government Area

NOTE

CONTAMINATED LAND MANAGEMENT ACT 1997

The following 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 to which the certificate relates is significantly contaminated land within the meaning of that Act - if the land (or part of the land) is significantly contaminated land at the date when the certificate is issued,

No

(b) The land to which the certificate relates is subject to a management order within the meaning of that Act - if it is subject to such an order at the date when the certificate is issued,

No

(c) The land to which the certificate relates is the subject of an approved voluntary management proposal within the meaning of that Act - if it is the subject of such an approved proposal at the date when the certificate is issued,

No

(d) The land to which the certificate relates is subject to an ongoing maintenance order within the meaning of that Act - if it is subject to such an order at the date when the certificate is issued,

No

(e) The land to which the certificate relates is the subject of a site audit statement within the meaning of that Act - if a copy of such a statement has been provided at any time to the local authority issuing the certificate.

No

ADVICE PROVIDED PURSUANT TO S.10.7(5) OF THE ENVIRONMENTAL PLANNING AND ASSESSMENT ACT 1979

NOTE: SECTION 10.7(6) OF THE ACT STATES THAT A COUNCIL SHALL NOT INCUR ANY LIABILITY IN RESPECT OF ANY ADVICE PROVIDED IN GOOD FAITH PURSUANT TO SUBSECTION (5).

23.2 The property is subject to Environmental Planning and Assessment (Special Infrastructure Contribution - Gosford City Centre) Determination 2018 made by the Minister for Planning, pursuant to section 7.23 of the Environmental Planning and Assessment Act 1979 on 12 October 2018 (enquiries to the Department of Planning Industry and Environment).

For any enquiries regarding this Certificate, please contact Council's Customer Contact Centre on 1300 463 954.

Karen Hansen
Signed on Behalf of Central Coast Council

LAND USE TABLE

Zone B5 Business Development
Gosford Local Environmental Plan 2014

1 Objectives of zone

- To enable a mix of business and warehouse uses, and specialised retail premises that require a large floor area, in locations that are close to, and that support the viability of, centres.
- To ensure that development is compatible with the desired future character of the zone
- To provide and protect land for employment-generating activities.
- To encourage the location of business and other premises requiring large floor plates in appropriate locations to ensure they do not sterilise commercial or residential areas.
- To recognise the importance of business lands at Erina and locations supporting Gosford City Centre at West Gosford and Wyoming.
- To recognise small isolated business and commercial areas located throughout Gosford.
- To recognise the range of service activities located in business areas that support business development.
- To ensure that business areas are not sterilised by residential development.

2 Permitted without consent

Nil

3 Permitted with consent

Centre-based childcare facilities; Garden centres; Hardware and building supplies; Hotel or motel accommodation; Landscaping material supplies; Light industries; Oyster aquaculture; Passenger transport facilities; Respite day care centres; Roads; Specialised retail premises; Tank-based aquaculture; Warehouse or distribution centres; Any other development not specified in item 2 or 4

4 Prohibited

Agriculture; Air transport facilities; Amusement centres; Biosolids treatment facilities; Boat building and repair facilities; Boat sheds; Camping grounds; Car parks; Caravan parks; Cemeteries; Charter and tourism boating facilities; Correctional centres; Crematoria; Depots; Eco-tourist facilities; Educational establishments; Electricity generating works; Entertainment facilities; Environmental facilities; Environmental protection works; Exhibition homes; Exhibition villages; Extractive industries; Farm buildings; Flood mitigation works; Forestry; Freight transport facilities; Heavy industrial storage establishments; Highway service centres; Home-based child care; Home

businesses; Home occupations; Home occupations (sex services); Hospitals; Industries; Marinas; Mooring pens; Moorings; Mortuaries; Open cut mining; Pond-based aquaculture Recreation areas; Recreation facilities (major); Recreation facilities (outdoor); Research stations; Residential accommodation; Resource recovery facilities; Restricted premises; Rural industries; Rural supplies; Sewage treatment plants; Sex services premises; Storage premises; Tourist and visitor accommodation; Transport depots; Vehicle body repair workshops; Vehicle repair stations; Waste disposal facilities; Water recreation structures; Water recycling facilities; Water supply systems

Cornerstone Development Management Pty Ltd
Level 1 1642 Anzac Ave
NORTH LAKES QLD 4509

SECTION 10.7(2) AND (5) PLANNING CERTIFICATE

Under Section 10.7 of the Environmental Planning and Assessment Act, 1979

Fee paid:	$133.00
Receipt No:	15032022
Receipt Date:	15 March 2022
Property Address:	62-64 Showground Road, GOSFORD NSW 2250
Property Description:	Lot 0 SP 20058
Property Owner	The Owners Strata Plan No 20058
Certificate No:	45710
Reference No:	SHOWGROUND:20232
Date of issue:	15-Mar-2022

The information contained within this certificate relates to the land.

ADVICE PROVIDED PURSUANT TO S.10.7(2) OF THE ENVIRONMENTAL PLANNING AND ASSESSMENT ACT 1979

1	RELEVANT PLANNING INSTRUMENTS AND DEVELOPMENT CONTROL PLANS

(1) Environmental Planning Instruments which apply to the land

State Environmental Planning Policy (Gosford City Centre) 2018

State Environmental Planning Policy (Vegetation in Non-Rural Areas) 2017

ZONE B4 MIXED USE UNDER STATE ENVIRONMENTAL PLANNING POLICY (GOSFORD CITY CENTRE) 2018
State Environmental Planning Policy (State and Regional Development) 2011
State Environmental Planning Policy (Affordable Rental Housing) 2009
State Environmental Planning Policy (Exempt and Complying Development Codes) 2008
State Environmental Planning Policy (Infrastructure) 2007
State Environmental Planning Policy (Miscellaneous Consent Provisions) 2007
State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007
State Environmental Planning Policy (Major Development) 2005
State Environmental Planning Policy (Building Sustainability Index: BASIX) 2004
State Environmental Planning Policy (Housing for Seniors or People with a Disability) 2004
State Environmental Planning Policy No. 65 - Design Quality of Residential Flat Development
State Environmental Planning Policy No. 64 - Advertising and Signage
State Environmental Planning Policy No. 55 - Remediation of Land
State Environmental Planning Policy No. 50 - Canal Estate Development
State Environmental Planning Policy No. 36 - Manufactured Home Estates
State Environmental Planning Policy No. 33 - Hazardous and Offensive Development
State Environmental Planning Policy No 70 - Affordable Housing (Revised Schemes)
State Environmental Planning Policy (Koala Habitat Protection) 2020.
State Environmental Planning Policy No. 21 - Caravan Parks
State Environmental Planning Policy No. 19 - Bushland in Urban Areas
Sydney Regional Environmental Plan No. 9 - Extractive Industry (No 2-1995)
State Environmental Planning Policy (Educational Establishments and Child Care Facilities) 2017
State Environmental Planning Policy (Primary Production and Rural Development) 2019.

(2) Proposed Environmental Planning Instruments which will apply to the land and is or has been the subject of community consultation or public exhibition

Proposed State Environmental Planning Policy (Exempt & Complying Development Codes) 2008
Proposed State Environmental Planning Policy (Environment) 2017

Proposed State Environmental Planning Policy (Short-term Rental Accommodation) 2019

Proposed State Environmental Planning Policy (Infrastructure) 2007
Proposed Standard Instrument (Local Environmental Plans) Order 2006
Proposed State Environmental Planning Policy Design and Place
Proposed State Environmental Planning Policy (Educational Establishments and Child Care Facilities) 2017
Proposed State Environmental Planning Policy (State and Regional Development) 2011
Proposed State Environmental Planning Policy (Housing Diversity)

(3) Development Control Plans applying to the land

Gosford City Centre Development Control Plan 2018

2	ZONING AND LAND USE UNDER RELEVANT LOCAL ENVIRONMENTAL PLANS

(a) Identity of the Zone

Lot 0 SP 20058

ZONE B4 MIXED USE

For each of the environmental planning instruments referred to in clause 1, please refer to the attached land use table to determine (b), (c) and (d) listed below:

(b) development that may be carried out within the zone without the need for development consent,

(c) development which may not be carried out within the zone except with development consent and

(d) development which is prohibited within the zone

(e) Development Standards applying to the land that fix minimum land dimensions for the erection of a dwelling-house

Nil

There are no development standards applying to the land that fix minimum land dimensions for the erection of a dwelling-house on the land. However there are minimum lot sizes applying to the subdivision of land, and in some zones the entitlement to erect a dwelling-house, or carry out other types of residential development, is linked to that minimum lot size.

(f) Land includes or comprises critical habitat

No

(g) Land is in a conservation area

No

(h) Item of environmental heritage is situated on the land

None

2A	ZONING AND LAND USE UNDER STATE ENVIRONMENTAL PLANNING POLICY (SYDNEY REGION GROWTH CENTRES) 2006

Not applicable to Central Coast Local Government Area

3	COMPLYING DEVELOPMENT

Whether or not the land is land on which complying development can be carried out under each of the codes for complying development because of the provisions of clause 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?*

GENERAL HOUSING CODE

Complying Development under the General Housing Code **may** be carried out on the land. This information needs to be read in conjunction with the whole of the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008.

RURAL HOUSING CODE

Complying development under the Rural Housing Code **may** be carried out on the land. This information needs to be read in conjunction with the whole of the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008.

LOW RISE HOUSING DIVERSITY CODE

Complying Development under the Low Rise Housing Diversity Code **may** be carried out on the land. This information needs to be read in conjunction with the whole of the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008.

GREENFIELD HOUSING CODE

Greenfield Housing Code **is not** applicable to this land.

HOUSING ALTERATIONS CODE

Complying development under the Housing Alterations Code **may** be carried out on the land. This information needs to be read in conjunction with the whole of the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008.

GENERAL DEVELOPMENT CODE

Complying development under the General Development Code **may** be carried out on the land. This information needs to be read in conjunction with the whole of the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008.

COMMERCIAL AND INDUSTRIAL ALTERATIONS CODE

Complying development under the Commercial and Industrial Alterations Code **may** be carried out on the land. This information needs to be read in conjunction with the whole of the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008.

COMMERCIAL AND INDUSTRIAL (NEW BUILDINGS AND ADDITIONS) CODE

Complying development under the Commercial and Industrial (New Buildings and Additions) Code **may** be carried out on the land. This information needs to be read in conjunction with the whole of the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008.

CONTAINER RECYCLING FACILITIES CODE

Complying Development under the Container Recycling Facilities Code **may** be carried out on the land. This information needs to be read in conjunction with the whole of the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008.

SUBDIVISIONS CODE

Complying Development under the General Housing Code **may** be carried out on the land. This information needs to be read in conjunction with the whole of the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008.

DEMOLITION CODE

Complying development under the Demolition code **may** be carried out on the land. This information needs to be read in conjunction with the whole of the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008.

FIRE SAFETY CODE

Complying development under the Fire Safety Code **may** be carried out on the land. This information needs to be read in conjunction with the whole of the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008.

4, 4A	**(Repealed)**

4B	**ANNUAL CHARGES FOR COASTAL PROTECTION SERVICES UNDER *LOCAL GOVERNMENT ACT 1993***

The owner (or any previous owner) of the land has not consented in writing to the land being subject to annual charges under section 496B of the *Local Government Act 1993* for coastal protection services that relate to existing coastal protection works.

5	**MINE SUBSIDENCE**

The land **IS NOT WITHIN** a Mine Subsidence District declared under section 20 of the *Coal Mine Subsidence Compensation Act 2017*.

6	**ROAD WIDENING AND ROAD ALIGNMENT**

(a) DIVISION 2 OF PART 3 OF THE *ROADS ACT 1993*

The land is not affected by road realignment or road widening under the above.

(b) ENVIRONMENTAL PLANNING INSTRUMENT

The land is **not** affected by road widening or road re-alignment under the above.

(c) COUNCIL RESOLUTIONS

The land is **not** affected by road widening or road re-alignment under the above.

7	COUNCIL AND OTHER PUBLIC AUTHORITY POLICIES TO RESTRICT DEVELOPMENT DUE TO RISK

This land **is** affected by a policy adopted by the council or other public authority that restricts the development of the land because of the likelihood of risk restrictions. This land **is** affected because:
Chapter 6.4 of Gosford Development Control Plan (Geotechnical Requirements) applies to the land and the land may be subject to slip. When considering a development application, each circumstance will be considered and development may be restricted.

7A	FLOOD RELATED DEVELOPMENT CONTROLS INFORMATION

(1) The land or part of the land **is** within the flood planning area and **is** subject to flood related development controls.

(2) The land or part of the land **is** between the flood planning area and the probable maximum flood and **is** subject to flood related development controls.

(3) A word or expression used in this clause has the same meaning as in the standard instrument set out in the *Standard Instrument (Local Environmental Plans) Order 2006.*

In this clause—

- flood planning area has the same meaning as in the Floodplain Development Manual.
- Floodplain Development Manual means the Floodplain Development Manual (ISBN 0 7347 5476 0) published by the NSW Government in April 2005.
- probable maximum flood has the same meaning as in the Floodplain Development Manual.

8	LAND RESERVED FOR ACQUISITION

The following environmental planning instruments and proposed environmental planning instruments make provisions for the acquisition of the land by a public authority as referred to in Section 3.15 of the Act:

Nil

9	CONTRIBUTION PLANS

Gosford City Council Section 94A Development Contributions Plan - Gosford City Centre

9A	BIODIVERSITY CERTIFIED LAND

The land **is not** biodiversity certified land within the meaning of 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*.

10	BIODIVERSITY STEWARDSHIP SITES

Council **has not** been notified by the Director-General of the Department of Planning, Industry and Environment that the land is a biodiversity stewardship site under a biodiversity stewardship agreement under Part 5 of the Biodiversity Conservation Act, 2016.

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

Council **has not** been notified by the Director-General of the Department of Planning, Industry and Environment that the land contains a set aside area under section 60ZC of the *Local Land Services Act 2013* and the land is **not** registered as a set aside area in the public register under that section.

11	BUSH FIRE PRONE LAND

The information currently available to Council indicates that this land **is not** bushfire prone land (as defined in the Act).

12	PROPERTY VEGETATION PLAN

Council **has not** been notified by Local Land Services – Greater Sydney that the land is subject to a property vegetation plan approved under Part 4 of the Native Vegetation Act 2003.

13	ORDERS UNDER *TREES (DISPUTES BETWEEN NEIGHBOURS) ACT 2006*

Council **has not** been notified of an Order issued under the Trees (Disputes between Neighbours) Act 2006.

NOTE: This advice is based on information provided by the Land and Environment Court

14	DIRECTIONS UNDER PART 3A

The Minister **has not** issued a direction under the former section 75P(2)(c1) of the Act that a provision of an environmental planning instrument prohibiting or restricting the carrying out of a project or a stage of a project on the land under Part 4 of the Act does not have effect.

15	SITE COMPATIBILITY CERTIFICATES AND CONDITIONS FOR SENIORS HOUSING

Council **is not** aware of there being a current Site Compatibility Certificate (seniors housing) issued by the Director-General of the Department of Planning, Industry and Environment in respect of the land.

NOTE: This advice is based on information provided by the NSW Department of Planning, Industry & Environment.

16	SITE COMPATIBILITY CERTIFICATES FOR INFRASTRUCTURE, SCHOOLS OR TAFE ESTABLISHMENTS

Council **is not** aware of there being a valid Site Compatibility Certificate (infrastructure) or Site Compatibility Certificate (schools or TAFE establishments) issued by the Director-General of the Department of Planning, Industry and Environment in respect of the land.

NOTE: This advice is based on information provided by the NSW Department of Planning, Industry & Environment.

17	SITE COMPATIBILITY CERTIFICATES AND CONDITIONS FOR AFFORDABLE RENTAL HOUSING

Council **is not** aware of there being a valid Site Compatibility Certificate (affordable rental housing) issued by the Director-General of the Department of Planning, Industry and Environment in respect of the land.

NOTE: This advice is based on information provided by the NSW Department of Planning, Industry & Environment.

18	PAPER SUBDIVISION INFORMATION

(1) The name of any development plan adopted by a relevant authority that applies to this land or that is proposed to be subject to a consent ballot.

Nil

(2) The date of any subdivision order that applies to this land.

Not applicable

Words and expressions used in this clause have the same meaning as they have in part 16C of the *Environmental Planning and Assessment Regulation 2000*.

19	SITE VERIFICATION CERTIFICATE

Council **is not** aware of a Site Verification Certificate having been issued by the Director-General of the Department of Planning, Industry and Environment in respect of the land.

A site verification certificate sets out the Director-General's opinion as to whether the land concerned is or is not biophysical strategic agricultural land or critical industry cluster land—see Division 3 of Part 4AA of *State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007.*

NOTE: This advice is based on information provided by the NSW Department of Planning, Industry and Environment.

20	LOOSE-FILL ASBESTOS INSULATION

This land does not include any residential premises (within the meaning of Division 1A of Part 8 of the *Home Building Act 1989*) that are listed on the register that is required to be maintained under that Division. That register lists residential premises that contain or have contained loose-fill asbestos insulation.

21	AFFECTED BUILDING NOTICES AND BUILDING PRODUCT RECTIFICATION ORDERS *(BUILDING PRODUCT SAFETY ACT 2017)*

(1) Is there any affected building notice of which the council is aware that is in force in respect of the land?

No

2 (a) Is there any building product rectification order of which the council is aware that is in force in respect of the land and has not been fully complied with?

No

2 (b) Is there any notice of intention to make a building product rectification order of which the council is aware has been given in respect of the land and is outstanding?

No

Note: In this clause 21:

affected building notice has the same meaning as in Part 4 of the *Building Products (Safety) Act 2017*.

building product rectification order has the same meaning as in the *Building Products (Safety) Act 2017*

22	STATE ENVIRONMENTAL PLANNING POLICY (WESTERN SYDNEY AEROTROPOLIS) 2020

Not applicable to Central Coast Local Government Area

NOTE

CONTAMINATED LAND MANAGEMENT ACT 1997

The following 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 to which the certificate relates is significantly contaminated land within the meaning of that Act - if the land (or part of the land) is significantly contaminated land at the date when the certificate is issued,

No

(b) The land to which the certificate relates is subject to a management order within the meaning of that Act - if it is subject to such an order at the date when the certificate is issued,

No

(c) The land to which the certificate relates is the subject of an approved voluntary management proposal within the meaning of that Act - if it is the subject of such an approved proposal at the date when the certificate is issued,

No

(d) The land to which the certificate relates is subject to an ongoing maintenance order within the meaning of that Act - if it is subject to such an order at the date when the certificate is issued,

No

(e) The land to which the certificate relates is the subject of a site audit statement within the meaning of that Act - if a copy of such a statement has been provided at any time to the local authority issuing the certificate.

No

ADVICE PROVIDED PURSUANT TO S.10.7(5) OF THE ENVIRONMENTAL PLANNING AND ASSESSMENT ACT 1979

NOTE: SECTION 10.7(6) OF THE ACT STATES THAT A COUNCIL SHALL NOT INCUR ANY LIABILITY IN RESPECT OF ANY ADVICE PROVIDED IN GOOD FAITH PURSUANT TO SUBSECTION (5).

23.2 The property is subject to Environmental Planning and Assessment (Special Infrastructure Contribution - Gosford City Centre) Determination 2018 made by the Minister for Planning, pursuant to section 7.23 of the Environmental Planning and Assessment Act 1979 on 12 October 2018 (enquiries to the Department of Planning Industry and Environment).

For any enquiries regarding this Certificate, please contact Council's Customer Contact Centre on 1300 463 954.

Karen Hansen
Signed on Behalf of Central Coast Council

LAND USE TABLE

Zone B4 Mixed Use

State Environmental Planning Policy (Gosford City Centre) 2018

1 Objectives of zone

- To provide a mixture of compatible land uses.
- To integrate suitable business, office, residential, retail and other development in accessible locations so as to maximise public transport patronage and encourage walking and cycling.
- To encourage a diverse and compatible range of activities, including commercial and retail development, cultural and entertainment facilities, tourism, leisure and recreation facilities, social, education and health services and higher density residential development.
- To allow development in Point Frederick to take advantage of and retain view corridors while avoiding a continuous built edge along the waterfront.
- To create opportunities to improve the public domain and pedestrian links of Gosford City Centre.
- To enliven the Gosford waterfront by allowing a wide range of commercial, retail and residential activities immediately adjacent to it and increase opportunities for more interaction between public and private domains.
- To protect and enhance the scenic qualities and character of Gosford City Centre.

2 Permitted without consent

Nil

3 Permitted with consent

Boarding houses; Centre-based childcare facilities; Commercial premises; Community facilities; Educational establishments; Entertainment facilities; Function centres; Hotel or motel accommodation; Information and education facilities; Medical centres; Passenger transport facilities; Recreation facilities (indoor); Registered clubs; Respite day care centres; Restricted premises; Roads; Seniors housing; Shop top housing; Any other development not specified in item 2 or 4

4 Prohibited

Agriculture; Air transport facilities; Amusement centres; Animal boarding or training establishments; Biosolids treatment facilities; Boat building and repair facilities; Boat sheds; Camping grounds; Car parks; Caravan parks; Cemeteries; Charter and tourism boating facilities; Correctional centres; Crematoria; Depots; Dual occupancies; Dwelling houses; Eco-tourist facilities; Electricity generating works; Environmental facilities; Environmental protection works; Exhibition homes; Exhibition villages; Extractive industries; Farm buildings; Flood mitigation works; Forestry; Freight transport facilities; Group homes (transitional); Heavy industrial storage

establishments; Highway service centres; Home-based child care; Home businesses; Home occupations (sex services); Hospitals; Hostels; Industrial retail outlets; Industries; Marinas; Mooring pens; Moorings; Mortuaries; Open cut mining; Recreation facilities (major); Recreation facilities (outdoor); Research stations; Resource recovery facilities; Rural industries; Rural workers' dwellings; Secondary dwellings; Semi-detached dwellings; Service stations; Sewage treatment plants; Sex services premises; Storage premises; Transport depots; Vehicle body repair workshops; Vehicle repair stations; Veterinary hospitals; Warehouse or distribution centres; Waste disposal facilities; Water recreation structures; Water recycling facilities; Water supply systems; Wholesale supplies


N
1965


N
1976


N
1984


N
1994


N
2006


2010
N

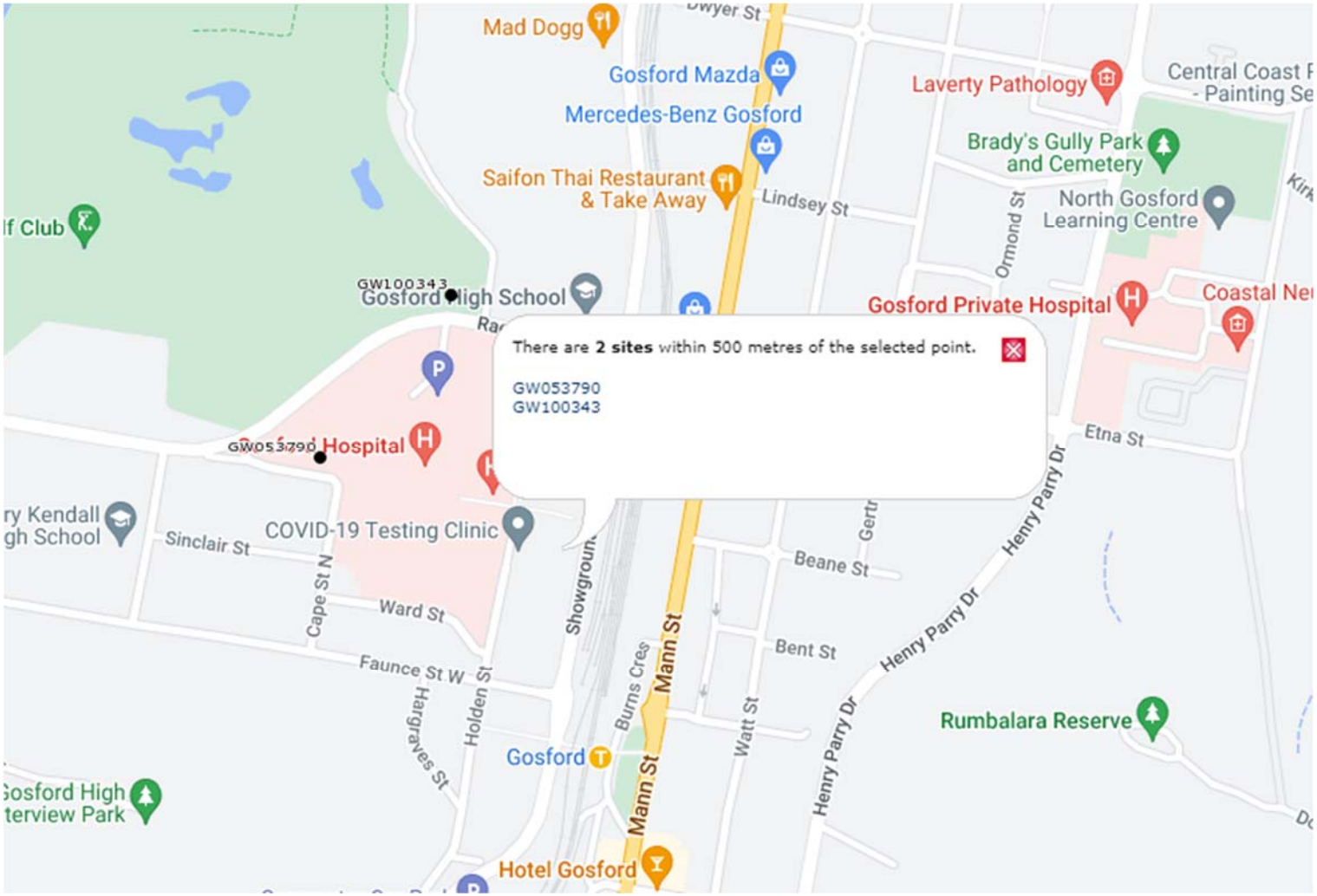

2015
N


2017
N
necrm


N
2018

Appendix C

Registered Groundwater Well Information


Mad Dogg
Gosford Mazda
Mercedes-Benz Gosford
Laverty Pathology
Central Coast
- Painting Se
Brady's Gully Park
and Cemetery
Saifon Thai Restaurant
& Take Away
Lindsey St
North Gosford
Learning Centre
Ormond St
GW100343
Gosford High School
Gosford Private Hospital
Coastal Ne
There are 2 sites within 500 metres of the selected point.
GW053790
GW100343
GW053790
Hospital
Etna St
Henry Parry Dr
COVID-19 Testing Clinic
Sinclair St
Cape St N
Ward St
Showground
Beane St
Bent St
Faunce St W
Holden St
Hargraves St
Burns Cres
Mann St
Watt St
Gosford
Rumbalara Reserve
Hotel Gosford

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 on site were sourced from the National Environment Protection Measure for the Assessment of Site Contamination (ASC NEPM, Ref [5]). 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.

  Based on the proposed use, and including the intention to have an underground car park, RCA has considered that the HIL 'D' land use setting is the most appropriate. The exposure scenario for the derivation of the relevant land use setting is set out in the table below.

  Health screening levels (HSL) have been determined for risks associated from vapour intrusion from petroleum[19] 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 [5]), however these are provided in CRC Care Technical Report 10 (Ref [6]) which is the source document for the HSL.

  HSL have also been determined for asbestos containing materials. The HSL for bonded asbestos containing material is based on the land use settings detailed above, however the following HSL also apply:

  - Total of Fibrous asbestos and Asbestos fines – less than 0.001%.

[19] 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.

- No visible asbestos in surface soil – or where an area is likely to be disturbed during any proposed works.

- 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.

  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%.

  Based on the proposed use, and including the intention to have an underground car park, RCA has considered that the commercial and industrial criteria are the most appropriate. Methodology for the derivation of EIL for other contaminants is available in the ASC NEPM (Ref [5]) and requires additional soil character data.

  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 consider 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 [5]) 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 [5]) to illustrate the assessment methodology in regards to petroleum contamination.

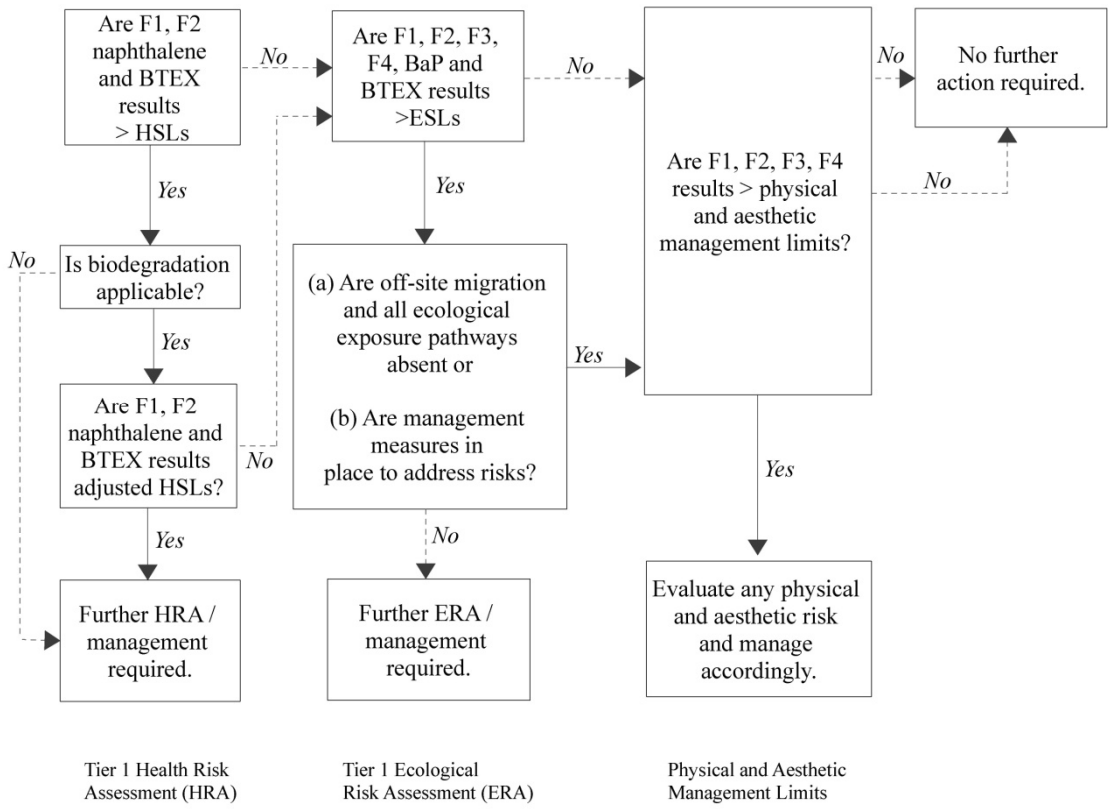


Figure 3 *Flowchart for the Tier 1 human and ecological risk assessment of petroleum hydrocarbon contamination – application of HSL and ESL and consideration of management limits*

NSW EPA 2014, WASTE CLASSIFICATION GUIDELINES

The waste classification guidelines (Ref [7]) are designed to ensure waste streams are managed appropriately and in accordance with the Protection of the Environment Operations Act 1997 (the POEO Act) and its associated regulations. The guidelines classify waste into groups which pose similar risks to the environment and human health; and facilitate their management and appropriate disposal.

Six waste classes are used:

- Special waste:
  - Clinical or related waste, asbestos waste, waste tyres.
- Liquid waste:
  - As defined by angle of repose, temperature at which it is free flowing and physical composition.
- Hazardous waste.
- Restricted solid waste.
- General solid waste (putrescible).
- General solid waste (non-putrescible).

Classification begins with determination of whether the waste is 'special waste'. If not determination of whether material is classified as liquid waste is then required. Material which is not liquid waste, or is special waste due to asbestos content, must be compared to pre-classification definitions. Without pre-classification, the potential for hazardous characteristics (such as explosives, gases, flammable materials, oxidising, toxic and corrosive substances) must be established. If material cannot be classified as hazardous, assessment by chemical analysis must be undertaken. Without assessment, material must be managed as if hazardous waste.

Chemical classification is two tiered. The first set of criteria is based on total contaminant concentrations, whereas the second set of criteria is based on a leachable (TCLP) concentration and a total contaminant concentration. The total concentrations criteria are generally higher in conjunction with TCLP testing than if it was not undertaken.

RESOURCE RECOVERY ORDERS AND EXEMPTIONS

Resource recovery orders (orders) and resource recovery exemptions (exemptions) allow some wastes to be beneficially and safely re-used independent of the usual NSW laws that control applying waste to land, using waste as a fuel, or using waste in connection with a process of thermal treatment.

Existing Orders and Exemptions (Ref [4]) can be used without NSW EPA approval as long as all the conditions of the Order and Exemption being utilised are met in regards to the material and the proposed use. Record keeping requirements apply.

A specific Order/Exemption can be sought from the NSW EPA where there is none available for the material. If granted, the specific Order/Exemption will identify what the material is and how it can be used: the specific Order/Exemption cannot be applied to other material.

Commercial/Industrial Premises

Summary of Exposure Pathways	Abbreviations	Units	Parameters
			Adult
Body weight	BW_A or BW_C	kg	70
Exposure duration	ED_A or ED_C	years	30
Exposure frequency	EF	days	240
Soil/dust ingestion rate[1]	IR_{SA} or IR_{SC}	mg/day	25 [5]
Soil/dust to skin adherence factor	AF	$mg/cm^2/day$	0.5
Skin surface area	SA_A or SA_C	cm^2	20 000
Fraction of skin exposed	F_s	%	19
Dermal absorption factor	DAF	%	Chemical specific values applied
Time spent indoors on site each day	ET_i	hours	8
Time spent outdoors on site each day	ET_o	hours	1
Home-grown fraction of vegetables consumed	F_{HG}	%	0
Vegetable & fruit consumption rate	C_y (veg and fruit)	g/day	-
Averaging time for carcinogens ('lifetime')	AT_{NT}	years	70
Dust lung retention factor	RF	%	37.5

Soil ingestion rates for the HIL D scenario are based on the default soil/dust ingestion rates, corrected for an 8 hr/day daily exposure duration (50% of total waking hours)

Appendix E

Quality Assurance Review and Laboratory Report Sheets

One (1) trip blank and one (1) trip spike were submitted. This submission is in accordance with the frequency recommended by the Australian Standard AS 4482.1 (Ref [8]) and RCA protocol.

RCA omitted the duplicate due to the small number of samples, field blank due to the low potential for cross contamination during the sampling process and equipment wash due to the low potential for cross contamination from the sampling equipment.

Results show the trip spike with RPD of within the <30% acceptance criteria with the control retained at the laboratory.

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

ALS undertook internal quality assurance testing. Results are contained within the laboratory report sheets, included in this **Appendix**. **Table 7** presents a summary of their review.

Table 7 *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, Pb, Zn)	4	0 (2)	0 (1)	1	1
Mercury	4	0 (2)	0 (1)	1	1
TRH C_6-C_{10}	5	0 (3)	0 (2)	2	2
TRH >C_{10}-C_{40}	4	1 (0)	1 (0)	1	1
BTEX	7	0 (3)	0 (2)	2	2
PAH	4	1 (0)	1 (0)	1	1
OCP	1	1 (0)	1 (0)	1	1
OPP	1	1 (0)	1 (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 [3]).

- Recoveries of Surrogates were within acceptance criteria of 70-130%.
- Holding Times were within laboratory specified time frames.
- Recoveries of laboratory control samples were within the acceptance criteria of 70-130%.
- Recoveries of Spikes were within acceptance criteria of 70-130%.

- Relative Percentage Differences for duplicates were within 30% acceptance criteria as defined for intralaboratory duplicates further in this **Appendix** except for five (5) metals results in duplicates of anonymous samples. RCA cannot comment on the cause of the high RPD however note that uncertainty with duplicates does not necessarily convey uncertainty with the remainder of the samples in the laboratory 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 **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 as detailed earlier in this **Appendix**.
  - The external assessment of the accuracy of the data has not been assessed by external means.
- Precision
  - The precision of the data has been assessed by internal means (duplicates) as being acceptable.
  - The prevision of the data has been assessed by external means (intralaboratory duplicates) as being acceptable.
- 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 potential contaminants of concern.

  As such the soil data is considered representative of the concentrations at the site.
- Comparability
  - Works were undertaken by personnel experienced in the sampling of potentially contaminated soil.
  - All samples were appropriately preserved for the requested analysis and all soil samples 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 C_6-C_{10} and BTEX shown some concurrence between analytical results. The detected concentrations show some concurrence with field observations of the presence of contamination.

  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 Blank
Sample Identification			Trip Spike	TSC		Trip Blank
Date			28/7/22			28/7/22
Sample Purpose			Quality Assurance			Quality Assurance
Sample collected by			Laboratory - ALS			Laboratory - ALS
Benzene, Toluene, Ethylbenzene, Xylene (BTEX)						
Benzene	0.2		0.1	0.1	*0.0*	--
Toluene	0.5		7.1	7.8	*9.4*	--
Ethylbenzene	0.5		2	2.2	*9.5*	--
meta- and para-Xylene	0.5		11.2	11.7	*4.4*	--
ortho-Xylene	0.5		5.4	5.4	*0.0*	--
Total Recoverable Hydrocarbons (TRH)						
C_6-C_{10}	10		--	--	--	<10

All units in mg/kg

PQL = Practical Quantitation Limit.

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 result >PQL*

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES2227075**	Page	: 1 of 8
Client	: **ROBERT CARR & ASSOCIATES P/L**	Laboratory	: Environmental Division Sydney
Contact	: MS FIONA BROOKER	Contact	: Customer Services ES
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	: 16091	Date Samples Received	: 01-Aug-2022 14:05
Order number	: ----	Date Analysis Commenced	: 02-Aug-2022
C-O-C number	: ----	Issue Date	: 05-Aug-2022 18:22
Sampler	: RICHARD MURRAY		
Site	: ----		
Quote number	: SYBQ/400/21		
No. of samples received	: 7		
No. of samples analysed	: 7		

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
- Descriptive 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.

Signatories	*Position*	*Accreditation Category*
Ankit Joshi	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Jake Spooner	Laboratory Technician	Newcastle - Asbestos, Mayfield West, NSW
Sanjeshni Jyoti	Senior Chemist Volatiles	Sydney Organics, 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 Contract 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.

- 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.
- EP068: Where reported, Total Chlordane (sum) is the sum of the reported concentrations of cis-Chlordane and trans-Chlordane at or above the LOR.
- EP068: Where reported, Total OCP is the sum of the reported concentrations of all Organochlorine Pesticides at or above 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.
- EA200 'Am' Amosite (brown asbestos)
- EA200 'Cr' Crocidolite (blue asbestos)
- EA200 'Trace' - Asbestos fibres ("Free Fibres") detected by trace analysis per AS4964. The result can be interpreted that the sample contains detectable 'respirable' asbestos fibres
- EA200: Asbestos Identification Samples were analysed by Polarised Light Microscopy including dispersion staining.
- EA200 Legend
- EA200 'Ch' Chrysotile (white asbestos)
- EA200: 'UMF' Unknown Mineral Fibres. "-" indicates fibres detected may or may not be asbestos fibres. Confirmation by alternative techniques is recommended.
- EA200: For samples larger than 30g, the <2mm fraction may be sub-sampled prior to trace analysis as outlined in ISO23909:2008(E) Sect 6.3.2-2
- EA200: 'Yes' - Asbestos detected by polarised light microscopy including dispersion staining.
- EA200: 'No*' - No asbestos found, at the reporting limit of 0.1g/kg, by polarised light microscopy including dispersion staining. Asbestos material was detected and positively identified at concentrations estimated to be below 0.1g/kg.
- EA200: 'No' - No asbestos found at the reporting limit 0.1g/kg, by polarised light microscopy including dispersion staining.

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Sample ID	HA - 1	HA - 2	HA - 3b	HA - 4	Trip Spike
			Sampling date / time	29-Jul-2022 00:00	29-Jul-2022 00:00	29-Jul-2022 00:00	29-Jul-2022 00:00	28-Jul-2022 00:00
Compound	CAS Number	LOR	Unit	ES2227075-001	ES2227075-002	ES2227075-003	ES2227075-004	ES2227075-005
				Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)								
Moisture Content	----	0.1	%	----	----	----	----	6.8
Moisture Content	----	1.0	%	25.6	36.9	23.6	18.0	----
EA200: AS 4964 - 2004 Identification of Asbestos in Soils								
Asbestos Detected	1332-21-4	0.1	g/kg	No	No	No	No	----
Asbestos (Trace)	1332-21-4	5	Fibres	No	No	No	No	----
Asbestos Type	1332-21-4	-	--	-	-	-	-	----
Sample weight (dry)	----	0.01	g	8.56	10.7	4.86	12.2	----
APPROVED IDENTIFIER:	----	-	--	J.SPOONER	J.SPOONER	J.SPOONER	J.SPOONER	----
Synthetic Mineral Fibre	----	0.1	g/kg	No	No	No	No	----
Organic Fibre	----	0.1	g/kg	No	No	No	No	----
EG005(ED093)T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	5	<5	<5	<5	----
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	----
Chromium	7440-47-3	2	mg/kg	18	9	11	9	----
Copper	7440-50-8	5	mg/kg	37	12	6	26	----
Lead	7439-92-1	5	mg/kg	62	30	25	57	----
Nickel	7440-02-0	2	mg/kg	6	3	3	4	----
Zinc	7440-66-6	5	mg/kg	127	101	29	86	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	----	<0.05	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	----	<0.05	----
beta-BHC	319-85-7	0.05	mg/kg	----	----	----	<0.05	----
gamma-BHC	58-89-9	0.05	mg/kg	----	----	----	<0.05	----
delta-BHC	319-86-8	0.05	mg/kg	----	----	----	<0.05	----
Heptachlor	76-44-8	0.05	mg/kg	----	----	----	<0.05	----
Aldrin	309-00-2	0.05	mg/kg	----	----	----	<0.05	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	----	<0.05	----
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	----	<0.05	----
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	----	<0.05	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	----	<0.05	----
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	----	<0.05	----
Dieldrin	60-57-1	0.05	mg/kg	----	----	----	<0.05	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	HA - 1	HA - 2	HA - 3b	HA - 4	Trip Spike
				Sampling date / time	29-Jul-2022 00:00	29-Jul-2022 00:00	29-Jul-2022 00:00	29-Jul-2022 00:00	28-Jul-2022 00:00
Compound	CAS Number	LOR	Unit		ES2227075-001	ES2227075-002	ES2227075-003	ES2227075-004	ES2227075-005
					Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued									
4.4`-DDE	72-55-9	0.05	mg/kg		----	----	----	<0.05	----
Endrin	72-20-8	0.05	mg/kg		----	----	----	<0.05	----
beta-Endosulfan	33213-65-9	0.05	mg/kg		----	----	----	<0.05	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg		----	----	----	<0.05	----
4.4`-DDD	72-54-8	0.05	mg/kg		----	----	----	<0.05	----
Endrin aldehyde	7421-93-4	0.05	mg/kg		----	----	----	<0.05	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg		----	----	----	<0.05	----
4.4`-DDT	50-29-3	0.2	mg/kg		----	----	----	<0.2	----
Endrin ketone	53494-70-5	0.05	mg/kg		----	----	----	<0.05	----
Methoxychlor	72-43-5	0.2	mg/kg		----	----	----	<0.2	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg		----	----	----	<0.05	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-29-3	0.05	mg/kg		----	----	----	<0.05	----
EP068B: Organophosphorus Pesticides (OP)									
Dichlorvos	62-73-7	0.05	mg/kg		----	----	----	<0.05	----
Demeton-S-methyl	919-86-8	0.05	mg/kg		----	----	----	<0.05	----
Monocrotophos	6923-22-4	0.2	mg/kg		----	----	----	<0.2	----
Dimethoate	60-51-5	0.05	mg/kg		----	----	----	<0.05	----
Diazinon	333-41-5	0.05	mg/kg		----	----	----	<0.05	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg		----	----	----	<0.05	----
Parathion-methyl	298-00-0	0.2	mg/kg		----	----	----	<0.2	----
Malathion	121-75-5	0.05	mg/kg		----	----	----	<0.05	----
Fenthion	55-38-9	0.05	mg/kg		----	----	----	<0.05	----
Chlorpyrifos	2921-88-2	0.05	mg/kg		----	----	----	<0.05	----
Parathion	56-38-2	0.2	mg/kg		----	----	----	<0.2	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg		----	----	----	<0.05	----
Chlorfenvinphos	470-90-6	0.05	mg/kg		----	----	----	<0.05	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg		----	----	----	<0.05	----
Fenamiphos	22224-92-6	0.05	mg/kg		----	----	----	<0.05	----
Prothiofos	34643-46-4	0.05	mg/kg		----	----	----	<0.05	----
Ethion	563-12-2	0.05	mg/kg		----	----	----	<0.05	----
Carbophenothion	786-19-6	0.05	mg/kg		----	----	----	<0.05	----
Azinphos Methyl	86-50-0	0.05	mg/kg		----	----	----	<0.05	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	HA - 1	HA - 2	HA - 3b	HA - 4	Trip Spike
				Sampling date / time	29-Jul-2022 00:00	29-Jul-2022 00:00	29-Jul-2022 00:00	29-Jul-2022 00:00	28-Jul-2022 00:00
Compound	CAS Number	LOR	Unit		ES2227075-001	ES2227075-002	ES2227075-003	ES2227075-004	ES2227075-005
					Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Fluorene	86-73-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Phenanthrene	85-01-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Anthracene	120-12-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Fluoranthene	206-44-0	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Pyrene	129-00-0	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Benz(a)anthracene	56-55-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	----
Chrysene	218-01-9	0.5	mg/kg		<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	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		<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	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		<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	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		<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	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		<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**	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		**1.2**	**1.2**	**1.2**	**1.2**	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	<10	<10	<10	----
C10 - C14 Fraction	----	50	mg/kg		<50	<50	<50	<50	----
C15 - C28 Fraction	----	100	mg/kg		<100	<100	<100	<100	----
C29 - C36 Fraction	----	100	mg/kg		<100	<100	<100	<100	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	<50	<50	<50	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	<10	<10	<10	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	<10	<10	----
>C10 - C16 Fraction	----	50	mg/kg		<50	<50	<50	<50	----
>C16 - C34 Fraction	----	100	mg/kg		<100	<100	<100	<100	----
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	<100	<100	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	<50	<50	<50	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	<50	<50	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	HA - 1	HA - 2	HA - 3b	HA - 4	Trip Spike
				Sampling date / time	29-Jul-2022 00:00	29-Jul-2022 00:00	29-Jul-2022 00:00	29-Jul-2022 00:00	28-Jul-2022 00:00
Compound	CAS Number	LOR	Unit		ES2227075-001	ES2227075-002	ES2227075-003	ES2227075-004	ES2227075-005
					Result	Result	Result	Result	Result
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
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	**7.1**
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	**2.0**
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	**11.2**
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	**5.4**
^ **Sum of BTEX**	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	**25.7**
^ **Total Xylenes**	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	**16.6**
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	<1
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.05	%		**----**	**----**	**----**	**87.0**	**----**
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.05	%		**----**	**----**	**----**	**81.7**	**----**
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		**87.7**	**82.3**	**86.6**	**84.9**	**----**
2-Chlorophenol-D4	93951-73-6	0.5	%		**94.8**	**88.6**	**92.8**	**92.4**	**----**
2.4.6-Tribromophenol	118-79-6	0.5	%		**83.6**	**77.4**	**79.8**	**74.7**	**----**
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		**96.7**	**91.2**	**94.6**	**95.5**	**----**
Anthracene-d10	1719-06-8	0.5	%		**97.0**	**90.9**	**95.6**	**94.3**	**----**
4-Terphenyl-d14	1718-51-0	0.5	%		**98.6**	**93.6**	**97.5**	**97.7**	**----**
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		**88.9**	**89.5**	**95.2**	**93.7**	**96.0**
Toluene-D8	2037-26-5	0.2	%		**87.4**	**86.8**	**89.5**	**96.6**	**88.8**
4-Bromofluorobenzene	460-00-4	0.2	%		**90.6**	**89.5**	**97.1**	**99.1**	**102**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	Trip Blank	TSC	----	----	----
				Sampling date / time	28-Jul-2022 00:00	28-Jul-2022 00:00	----	----	----
Compound	CAS Number	LOR	Unit		ES2227075-006	ES2227075-007	--------	--------	--------
					Result	Result	----	----	----
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	0.1	%		**----**	**8.6**	**----**	**----**	**----**
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	**----**	**----**	**----**	**----**
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	**----**	**----**	**----**	**----**
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	**----**	**----**	**----**
Toluene	108-88-3	0.5	mg/kg		<0.5	**7.8**	**----**	**----**	**----**
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	**2.2**	**----**	**----**	**----**
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	**11.7**	**----**	**----**	**----**
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	**5.4**	**----**	**----**	**----**
^ **Sum of BTEX**	----	0.2	mg/kg		<0.2	**27.1**	**----**	**----**	**----**
^ **Total Xylenes**	----	0.5	mg/kg		<0.5	**17.1**	**----**	**----**	**----**
Naphthalene	91-20-3	1	mg/kg		<1	<1	**----**	**----**	**----**
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		**83.1**	**96.2**	**----**	**----**	**----**
Toluene-D8	2037-26-5	0.2	%		**80.3**	**94.9**	**----**	**----**	**----**
4-Bromofluorobenzene	460-00-4	0.2	%		**91.9**	**101**	**----**	**----**	**----**

Analytical Results

Descriptive Results

Sub-Matrix: **SOIL**

Method: Compound	Sample ID - Sampling date / time	Analytical Results
EA200: AS 4964 - 2004 Identification of Asbestos in Soils		
EA200: Description	HA - 1 - 29-Jul-2022 00:00	Soil sample.
EA200: Description	HA - 2 - 29-Jul-2022 00:00	Soil sample.
EA200: Description	HA - 3b - 29-Jul-2022 00:00	Soil sample.
EA200: Description	HA - 4 - 29-Jul-2022 00:00	Soil sample.

Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	49	147
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	35	143
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

Inter-Laboratory Testing

Analysis conducted by ALS Newcastle, NATA accreditation no. 825, site no. 1656 (Chemistry) 9854 (Biology).

(SOIL) EA200: AS 4964 - 2004 Identification of Asbestos in Soils

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **ES2227075**	Page	: 1 of 10
Client	: **ROBERT CARR & ASSOCIATES P/L**	Laboratory	: Environmental Division Sydney
Contact	: MS FIONA BROOKER	Contact	: Customer Services ES
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	: 16091	Date Samples Received	: 01-Aug-2022
Order number	: ----	Date Analysis Commenced	: 02-Aug-2022
C-O-C number	: ----	Issue Date	: 05-Aug-2022
Sampler	: RICHARD MURRAY		
Site	: ----		
Quote number	: SYBQ/400/21		
No. of samples received	: 7		
No. of samples analysed	: 7		

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 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.

Signatories	*Position*	*Accreditation Category*
Ankit Joshi	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Jake Spooner	Laboratory Technician	Newcastle - Asbestos, Mayfield West, NSW
Sanjeshni Jyoti	Senior Chemist Volatiles	Sydney Organics, 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.

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**

				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: 4496692)									
ES2226885-001	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	17	8	68.1	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	58	60	3.0	0% - 20%
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	34	58	50.0	0% - 50%
		EG005T: Lead	7439-92-1	5	mg/kg	8	5	45.3	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	46	39	14.4	No Limit
ES2226963-002	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	23	18	25.4	0% - 50%
		EG005T: Nickel	7440-02-0	2	mg/kg	37	45	17.9	0% - 20%
		EG005T: Arsenic	7440-38-2	5	mg/kg	8	<5	40.2	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	11	17	44.3	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	13	13	0.0	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	39	38	0.0	No Limit
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 4496703)									
ES2226885-003	Anonymous	EA055: Moisture Content	----	0.1	%	23.6	22.7	4.2	0% - 20%
ES2227027-001	Anonymous	EA055: Moisture Content	----	0.1	%	16.4	16.8	2.5	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 4496704)									
ES2227147-002	Anonymous	EA055: Moisture Content	----	0.1	%	3.6	3.8	5.6	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 4498971)									
ES2226753-001	Anonymous	EA055: Moisture Content	----	0.1	%	17.7	19.2	8.2	0% - 50%
ES2226880-019	Anonymous	EA055: Moisture Content	----	0.1	%	7.5	7.7	3.0	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 4496691)									

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 (%)*
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 4496691) - continued									
ES2226885-001	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
ES2226963-002	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EP068A: Organochlorine Pesticides (OC) (QC Lot: 4494373)									
ES2227075-004	HA - 4	EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
EP068B: Organophosphorus Pesticides (OP) (QC Lot: 4494373)									
ES2227075-004	HA - 4	EP068: Dichlorvos	62-73-7	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Dimethoate	60-51-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Diazinon	333-41-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Malathion	121-75-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Fenthion	55-38-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Prothiofos	34643-46-4	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Ethion	563-12-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Carbophenothion	786-19-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit

Sub-Matrix: **SOIL**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP068B: Organophosphorus Pesticides (OP) (QC Lot: 4494373) - continued									
ES2227075-004	HA - 4	EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP068: Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP068: Parathion	56-38-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 4494371)									
ES2227075-004	HA - 4	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	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		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: 4494372)									
ES2227075-004	HA - 4	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: 4495836)									
ES2226877-001	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
ES2227066-001	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 4495837)									
ES2227351-001	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 4494372)									
ES2227075-004	HA - 4	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: 4495836)									

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: 4495836) - continued									
ES2226877-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
ES2227066-001	Anonymous	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: 4495837)									
ES2227351-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
EP080: BTEXN (QC Lot: 4495836)									
ES2226877-001	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	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		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
ES2227066-001	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	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		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: 4495837)									
ES2227351-001	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	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		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

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**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 4496692)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	121.1 mg/kg	109	88.0	113
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	0.74 mg/kg	109	70.0	130
EG005T: Chromium	7440-47-3	2	mg/kg	<2	19.6 mg/kg	113	68.0	132
EG005T: Copper	7440-50-8	5	mg/kg	<5	52.9 mg/kg	106	89.0	111
EG005T: Lead	7439-92-1	5	mg/kg	<5	60.8 mg/kg	106	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	102	66.0	133
EG035T: Total Recoverable Mercury by FIMS (QCLot: 4496691)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	0.087 mg/kg	86.2	70.0	125
EP068A: Organochlorine Pesticides (OC) (QCLot: 4494373)								
EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	0.5 mg/kg	90.6	69.0	113
EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	0.5 mg/kg	94.5	65.0	117
EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	0.5 mg/kg	89.0	67.0	119
EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	0.5 mg/kg	90.9	68.0	116
EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	88.4	65.0	117
EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	0.5 mg/kg	100	67.0	115
EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	0.5 mg/kg	100	69.0	115
EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	0.5 mg/kg	101	62.0	118
EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	0.5 mg/kg	102	63.0	117
EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	0.5 mg/kg	97.6	66.0	116
EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	0.5 mg/kg	101	64.0	116
EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	0.5 mg/kg	99.4	66.0	116
EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	0.5 mg/kg	98.4	67.0	115
EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	0.5 mg/kg	102	67.0	123
EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	0.5 mg/kg	93.4	69.0	115
EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	0.5 mg/kg	104	69.0	121
EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	0.5 mg/kg	89.8	56.0	120
EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	0.5 mg/kg	98.0	62.0	124
EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	0.5 mg/kg	94.8	66.0	120
EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	0.5 mg/kg	96.3	64.0	122
EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	0.5 mg/kg	93.0	54.0	130
EP068B: Organophosphorus Pesticides (OP) (QCLot: 4494373)								
EP068: Dichlorvos	62-73-7	0.05	mg/kg	<0.05	0.5 mg/kg	90.6	59.0	119
EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	94.2	62.0	128

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Acceptable Limits (%)	
				Result	Concentration	LCS	Low	High
EP068B: Organophosphorus Pesticides (OP) (QCLot: 4494373) - continued								
EP068: Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	0.5 mg/kg	84.0	54.0	126
EP068: Dimethoate	60-51-5	0.05	mg/kg	<0.05	0.5 mg/kg	93.6	67.0	119
EP068: Diazinon	333-41-5	0.05	mg/kg	<0.05	0.5 mg/kg	92.4	70.0	120
EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	0.5 mg/kg	99.5	72.0	120
EP068: Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	0.5 mg/kg	103	68.0	120
EP068: Malathion	121-75-5	0.05	mg/kg	<0.05	0.5 mg/kg	104	68.0	122
EP068: Fenthion	55-38-9	0.05	mg/kg	<0.05	0.5 mg/kg	103	69.0	117
EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	0.5 mg/kg	102	76.0	118
EP068: Parathion	56-38-2	0.2	mg/kg	<0.2	0.5 mg/kg	104	64.0	122
EP068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	0.5 mg/kg	99.8	70.0	116
EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	0.5 mg/kg	102	69.0	121
EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	0.5 mg/kg	95.2	66.0	118
EP068: Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	0.5 mg/kg	96.3	68.0	124
EP068: Prothiofos	34643-46-4	0.05	mg/kg	<0.05	0.5 mg/kg	102	62.0	112
EP068: Ethion	563-12-2	0.05	mg/kg	<0.05	0.5 mg/kg	103	68.0	120
EP068: Carbophenothion	786-19-6	0.05	mg/kg	<0.05	0.5 mg/kg	98.4	65.0	127
EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	0.5 mg/kg	92.0	41.0	123
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 4494371)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	6 mg/kg	106	77.0	125
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	6 mg/kg	101	72.0	124
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	6 mg/kg	100	73.0	127
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	6 mg/kg	100	72.0	126
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	6 mg/kg	103	75.0	127
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	6 mg/kg	101	77.0	127
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	6 mg/kg	102	73.0	127
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	6 mg/kg	101	74.0	128
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	6 mg/kg	98.4	69.0	123
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	6 mg/kg	101	75.0	127
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	6 mg/kg	96.9	68.0	116
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	6 mg/kg	102	74.0	126
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	6 mg/kg	83.5	70.0	126
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	6 mg/kg	82.8	61.0	121
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	6 mg/kg	81.4	62.0	118
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	6 mg/kg	82.4	63.0	121
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4494372)								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	300 mg/kg	100	75.0	129
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	450 mg/kg	101	77.0	131
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	300 mg/kg	101	71.0	129

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4495836)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	108	68.4	128
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4495837)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	82.4	68.4	128
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4494372)								
EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	375 mg/kg	99.3	77.0	125
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	525 mg/kg	101	74.0	138
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	225 mg/kg	107	63.0	131
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4495836)								
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	107	68.4	128
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4495837)								
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	83.5	68.4	128
EP080: BTEXN (QCLot: 4495836)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	93.9	62.0	116
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	99.4	67.0	121
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	100	65.0	117
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	2 mg/kg	99.1	66.0	118
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	98.2	68.0	120
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	106	63.0	119
EP080: BTEXN (QCLot: 4495837)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	99.2	62.0	116
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	94.7	67.0	121
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	92.2	65.0	117
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	2 mg/kg	90.9	66.0	118
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	99.1	68.0	120
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	101	63.0	119

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	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Acceptable Limits (%): Low	Acceptable Limits (%): High
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 4496692)							
ES2226885-001	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	104	70.0	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	93.0	70.0	130

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 4496692) - continued							
ES2226885-001	Anonymous	EG005T: Chromium	7440-47-3	50 mg/kg	93.6	68.0	132
		EG005T: Copper	7440-50-8	250 mg/kg	121	70.0	130
		EG005T: Lead	7439-92-1	250 mg/kg	94.6	70.0	130
		EG005T: Nickel	7440-02-0	50 mg/kg	105	70.0	130
		EG005T: Zinc	7440-66-6	250 mg/kg	89.6	66.0	133
EG035T: Total Recoverable Mercury by FIMS (QCLot: 4496691)							
ES2226885-001	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	92.0	70.0	130
EP068A: Organochlorine Pesticides (OC) (QCLot: 4494373)							
ES2227075-004	HA - 4	EP068: gamma-BHC	58-89-9	0.5 mg/kg	90.1	70.0	130
		EP068: Heptachlor	76-44-8	0.5 mg/kg	94.9	70.0	130
		EP068: Aldrin	309-00-2	0.5 mg/kg	90.0	70.0	130
		EP068: Dieldrin	60-57-1	0.5 mg/kg	92.8	70.0	130
		EP068: Endrin	72-20-8	2 mg/kg	85.0	70.0	130
		EP068: 4.4`-DDT	50-29-3	2 mg/kg	88.3	70.0	130
EP068B: Organophosphorus Pesticides (OP) (QCLot: 4494373)							
ES2227075-004	HA - 4	EP068: Diazinon	333-41-5	0.5 mg/kg	81.6	70.0	130
		EP068: Chlorpyrifos-methyl	5598-13-0	0.5 mg/kg	90.9	70.0	130
		EP068: Pirimphos-ethyl	23505-41-1	0.5 mg/kg	88.8	70.0	130
		EP068: Bromophos-ethyl	4824-78-6	0.5 mg/kg	86.7	70.0	130
		EP068: Prothiofos	34643-46-4	0.5 mg/kg	81.4	70.0	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 4494371)							
ES2227075-004	HA - 4	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	109	70.0	130
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	112	70.0	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4494372)							
ES2227075-004	HA - 4	EP071: C10 - C14 Fraction	----	480 mg/kg	115	73.0	137
		EP071: C15 - C28 Fraction	----	3100 mg/kg	118	53.0	131
		EP071: C29 - C36 Fraction	----	2060 mg/kg	128	52.0	132
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4495836)							
ES2226877-001	Anonymous	EP080: C6 - C9 Fraction	----	32.5 mg/kg	120	70.0	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 4495837)							
ES2227351-001	Anonymous	EP080: C6 - C9 Fraction	----	32.5 mg/kg	72.4	70.0	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4494372)							
ES2227075-004	HA - 4	EP071: >C10 - C16 Fraction	----	860 mg/kg	107	73.0	137
		EP071: >C16 - C34 Fraction	----	4320 mg/kg	122	53.0	131
		EP071: >C34 - C40 Fraction	----	890 mg/kg	127	52.0	132
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4495836)							

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4495836) - continued							
ES2226877-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	120	70.0	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 4495837)							
ES2227351-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	73.5	70.0	130
EP080: BTEXN (QCLot: 4495836)							
ES2226877-001	Anonymous	EP080: Benzene	71-43-2	2.5 mg/kg	96.1	70.0	130
		EP080: Toluene	108-88-3	2.5 mg/kg	92.6	70.0	130
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	96.1	70.0	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2.5 mg/kg	96.2	70.0	130
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	94.3	70.0	130
		EP080: Naphthalene	91-20-3	2.5 mg/kg	90.0	70.0	130
EP080: BTEXN (QCLot: 4495837)							
ES2227351-001	Anonymous	EP080: Benzene	71-43-2	2.5 mg/kg	80.3	70.0	130
		EP080: Toluene	108-88-3	2.5 mg/kg	78.3	70.0	130
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	78.8	70.0	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2.5 mg/kg	78.4	70.0	130
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	83.0	70.0	130
		EP080: Naphthalene	91-20-3	2.5 mg/kg	85.0	70.0	130

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2227075**	Page	: 1 of 5
Client	: **ROBERT CARR & ASSOCIATES P/L**	Laboratory	: Environmental Division Sydney
Contact	: MS FIONA BROOKER	Telephone	: +61-2-8784 8555
Project	: 16091	Date Samples Received	: 01-Aug-2022
Site	: ----	Issue Date	: 05-Aug-2022
Sampler	: RICHARD MURRAY	No. of samples received	: 7
Order number	: ----	No. of samples analysed	: 7

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.**
- **NO Matrix Spike outliers occur.**
- **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

- **NO Quality Control Sample Frequency Outliers exist.**

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 / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA055: Moisture Content (Dried @ 105-110°C)							
Soil Glass Jar - Unpreserved (EA055)							
Trip Spike, TSC	**28-Jul-2022**	**----**	----	----	**04-Aug-2022**	11-Aug-2022	✓
Soil Glass Jar - Unpreserved (EA055)							
HA - 1, HA - 2, HA - 3b, HA - 4	**29-Jul-2022**	**----**	----	----	**03-Aug-2022**	12-Aug-2022	✓
EA200: AS 4964 - 2004 Identification of Asbestos in Soils							
Snap Lock Bag - ACM/Asbestos Grab Bag (EA200)							
HA - 1, HA - 2, HA - 3b, HA - 4	**29-Jul-2022**	**----**	----	----	**02-Aug-2022**	25-Jan-2023	✓
EG005(ED093)T: Total Metals by ICP-AES							
Soil Glass Jar - Unpreserved (EG005T)							
HA - 1, HA - 2, HA - 3b, HA - 4	**29-Jul-2022**	**03-Aug-2022**	25-Jan-2023	✓	**04-Aug-2022**	25-Jan-2023	✓
EG035T: Total Recoverable Mercury by FIMS							
Soil Glass Jar - Unpreserved (EG035T)							
HA - 1, HA - 2, HA - 3b, HA - 4	**29-Jul-2022**	**03-Aug-2022**	26-Aug-2022	✓	**04-Aug-2022**	26-Aug-2022	✓
EP068A: Organochlorine Pesticides (OC)							
Soil Glass Jar - Unpreserved (EP068)							
HA - 4	**29-Jul-2022**	**03-Aug-2022**	12-Aug-2022	✓	**04-Aug-2022**	12-Sep-2022	✓
EP068B: Organophosphorus Pesticides (OP)							
Soil Glass Jar - Unpreserved (EP068)							
HA - 4	**29-Jul-2022**	**03-Aug-2022**	12-Aug-2022	✓	**04-Aug-2022**	12-Sep-2022	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved (EP075(SIM))							
HA - 1, HA - 2, HA - 3b, HA - 4	**29-Jul-2022**	**03-Aug-2022**	12-Aug-2022	✓	**04-Aug-2022**	12-Sep-2022	✓

Matrix: **SOIL**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Petroleum Hydrocarbons							
Soil Glass Jar - Unpreserved (EP080)							
Trip Blank	**28-Jul-2022**	**03-Aug-2022**	11-Aug-2022	✓	**04-Aug-2022**	11-Aug-2022	✓
Soil Glass Jar - Unpreserved (EP080)							
HA - 1, HA - 2, HA - 3b, HA - 4	**29-Jul-2022**	**03-Aug-2022**	12-Aug-2022	✓	**04-Aug-2022**	12-Aug-2022	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Soil Glass Jar - Unpreserved (EP080)							
Trip Blank	**28-Jul-2022**	**03-Aug-2022**	11-Aug-2022	✓	**04-Aug-2022**	11-Aug-2022	✓
Soil Glass Jar - Unpreserved (EP080)							
HA - 1, HA - 2, HA - 3b, HA - 4	**29-Jul-2022**	**03-Aug-2022**	12-Aug-2022	✓	**04-Aug-2022**	12-Aug-2022	✓
EP080: BTEXN							
Soil Glass Jar - Unpreserved (EP080)							
Trip Spike, Trip Blank, TSC	**28-Jul-2022**	**03-Aug-2022**	11-Aug-2022	✓	**04-Aug-2022**	11-Aug-2022	✓
Soil Glass Jar - Unpreserved (EP080)							
HA - 1, HA - 2, HA - 3b, HA - 4	**29-Jul-2022**	**03-Aug-2022**	12-Aug-2022	✓	**04-Aug-2022**	12-Aug-2022	✓

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	5	43	**11.63**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	1	10	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	1	**100.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	10	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	3	29	**10.34**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
PAH/Phenols (SIM)	EP075(SIM)	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	1	**100.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	**5.00**	**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	2	29	**6.90**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
PAH/Phenols (SIM)	EP075(SIM)	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	1	**100.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	**5.00**	**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	2	29	**6.90**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
PAH/Phenols (SIM)	EP075(SIM)	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	1	**100.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	**5.00**	**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	2	29	**6.90**	**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).
Asbestos Identification in Soils	EA200	SOIL	AS 4964 Method for the qualitative identification of asbestos in bulk samples Analysis by Polarised Light Microscopy including dispersion staining
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 APHA 3112 Hg - B (Flow-injection (SnCl2) (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 SnCl2 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)
Pesticides by GCMS	EP068	SOIL	In house: Referenced to USEPA SW 846 - 8270 Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique 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.

Preparation Methods	Method	Matrix	Method Descriptions
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).
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.

CHAIN OF CUSTODY

ALS Laboratory: please tick →

ADELAIDE 21 Burma Road Pooraka SA 5095 Ph: 08 8359 0890 E: adelaide@alsglobal.com

BRISBANE 32 Shand Street Stafford QLD 4053 Ph: 07 3243 7222 E: samples.brisbane@alsglobal.com

GLADSTONE 46 Callemondah Drive Clinton QLD 4680 Ph: 07 7471 5600 E: gladstone@alsglobal.com

MACKAY 78 Harbour Road Mackay QLD 4740 Ph: 07 4944 0177 E: mackay@alsglobal.com

MELBOURNE 2-4 Westall Road Springvale VIC 3171 Ph: 03 8549 9600 E: samples.melbourne@alsglobal.com

MUDGEE 27 Sydney Road Mudgee NSW 2850 Ph: 02 6372 6735 E: mudgee.mail@alsglobal.com

NEWCASTLE 5/585 Maitland Rd Mayfield West NSW 2304 Ph: 02 4014 2500 E: samples.newcastle@alsglobal.com

NOWRA 4/13 Geary Place North Nowra NSW 2541 Ph: 024423 2063 E: nowra@alsglobal.com

PERTH 10 Hod Way Malaga WA 6090 Ph: 08 9209 7655 E: samples.perth@alsglobal.com

SYDNEY 277-289 Woodpark Road Smithfield NSW 2164 Ph: 02 8784 8555 E: samples.sydney@alsglobal.com

TOWNSVILLE 14-15 Desma Court Bohle QLD 4818 Ph: 07 4796 0600 E: townsville.environmental@alsglobal.com

WOLLONGONG 99 Kenny Street Wollongong NSW 2500 Ph: 02 4225 3125 E: portkembla@alsglobal.com

CLIENT:	RCA Australia (ROBCAR)	TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g., Ultra Trace Organics)	☐ Standard TAT (List due date): 5/8/22 ☐ Non Standard or urgent TAT (List due date):
OFFICE:	92 Hill Street, Carrington		
RCA Ref No:	16091	ALS QUOTE NO.:	SYBQ_400_18
PROJECT MANAGER: Fiona Brooker		CONTACT PH: 4902 9225	
SAMPLER: Richard Murray		SAMPLER MOBILE: 0403 875 769	
COC emailed to ALS? (YES / NO)		EDD FORMAT (or default):	
Email Reports to: administrator@rca.com.au + enviro@rca.com.au			
Email Invoice to: as above			

COC SEQUENCE NUMBER (Circle)

COC:	1	2	3	4	5	6	7
OF:	1	2	3	4	5	6	7

FOR LABORATORY USE ONLY (Circle)

Custody Seal Intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt	15.7 °C		
Other comment:			

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE/TIME: 1/8/22	DATE/TIME: 1/8/22 1:36pm	DATE/TIME: 1/8/22	DATE/TIME: 1-8-22 7:35am

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

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	S26 - TRH(C6-C36/40) / BTEXN / PAH plus 8 metals	Asbestos - Absence / Presence	S12 - OC/OP Pesticides						Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
1	HA - 1	29/07/2022	Soil	Jar	1	X	X							
2	HA - 2	29/07/2022	Soil	Jar	1	X	X							
3	HA - 3b	29/07/2022	Soil	Jar	1	X	X							
4	HA - 4	29/07/2022	Soil	Jar	1	X	X	X						
5	Trip Spike	29/07/2022	Soil	Jar	1	X	X							
6	Trip Blank	29/07/2022	Soil	Jar	1	X	X							
				ASB@EN										
TOTAL					6	6	6	1	0	0	0	0	0	

LAB OF ORIGIN: NEWCASTLE

Environmental Division Sydney
Work Order Reference
ES2227075

Telephone : +61-2-8784 8555

Please report Naphthalene results in BOTH BTEXN and PAH suites

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 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 Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2227075**

Client	: **ROBERT CARR & ASSOCIATES P/L**	Laboratory	: Environmental Division Sydney
Contact	: MS FIONA BROOKER	Contact	: Customer Services ES
Address	: 92 HILL STREET CARRINGTON NSW 2294	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: fionab@rca.com.au	E-mail	: ALSEnviro.Sydney@ALSGlobal.com
Telephone	: +61 02 4902 9200	Telephone	: +61-2-8784 8555
Facsimile	: +61 02 4902 9299	Facsimile	: +61-2-8784 8500
Project	: 16091	Page	: 1 of 2
Order number	: ----	Quote number	: ES2017ROBCAR0004 (SYBQ/400/21)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: ----		
Sampler	: RICHARD MURRAY		

Dates

Date Samples Received	: 01-Aug-2022 14:05	Issue Date	: 01-Aug-2022
Client Requested Due Date	: 05-Aug-2022	Scheduled Reporting Date	: **05-Aug-2022**

Delivery Details

Mode of Delivery	: Undefined	Security Seal	: Not Available
No. of coolers/boxes	: 1	Temperature	: 15.7'C
Receipt Detail	:	No. of samples received / analysed	: 7 / 7

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
- **Due to asbestos bag not being supplied for sample Trip Spike and Trip Blank, therefore asbestos could not be conducted.**
- **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).**
- **Asbestos analysis will be conducted by ALS Newcastle.**
- 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 - EA200G Asbestos Identification in Soils -	SOIL - EP080 BTEXN	SOIL - S-12 OC/OP Pesticides	SOIL - S-18 (NO MOIST) TRH(C6-C9)/BTEXN with No Moisture for TBs	SOIL - S-26 8 metals/TRH/BTEXN/PAH
ES2227075-001	29-Jul-2022 00:00	HA - 1	✓	✓				✓
ES2227075-002	29-Jul-2022 00:00	HA - 2	✓	✓				✓
ES2227075-003	29-Jul-2022 00:00	HA - 3b	✓	✓				✓
ES2227075-004	29-Jul-2022 00:00	HA - 4	✓	✓		✓		✓
ES2227075-005	28-Jul-2022 00:00	Trip Spike	✓		✓			
ES2227075-006	28-Jul-2022 00:00	Trip Blank					✓	
ES2227075-007	28-Jul-2022 00:00	TSC	✓		✓			

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

ENVIRO

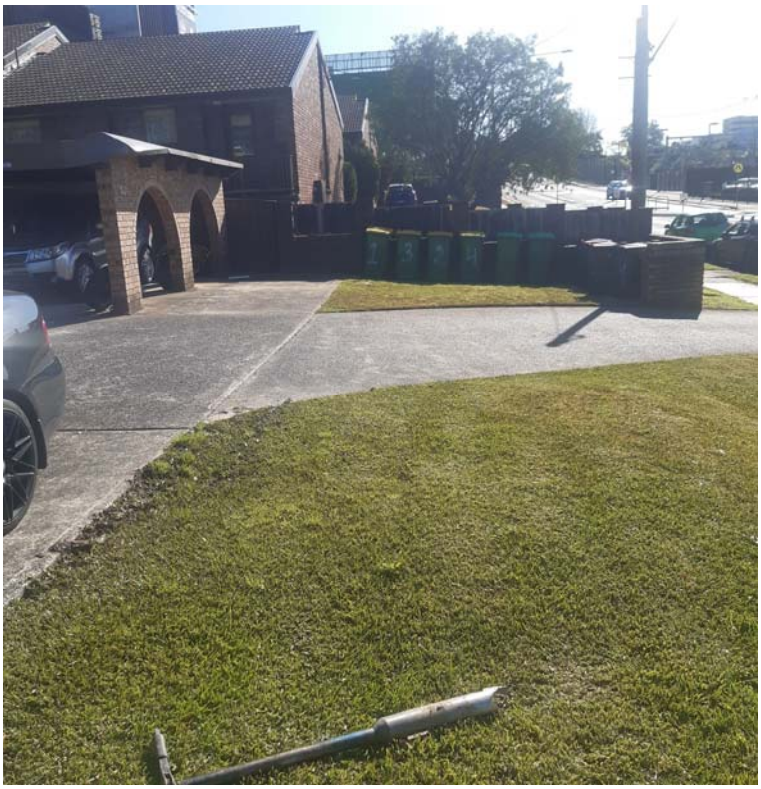
- *AU Certificate of Analysis - NATA (COA)	Email	enviro@rca.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	enviro@rca.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	enviro@rca.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	enviro@rca.com.au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

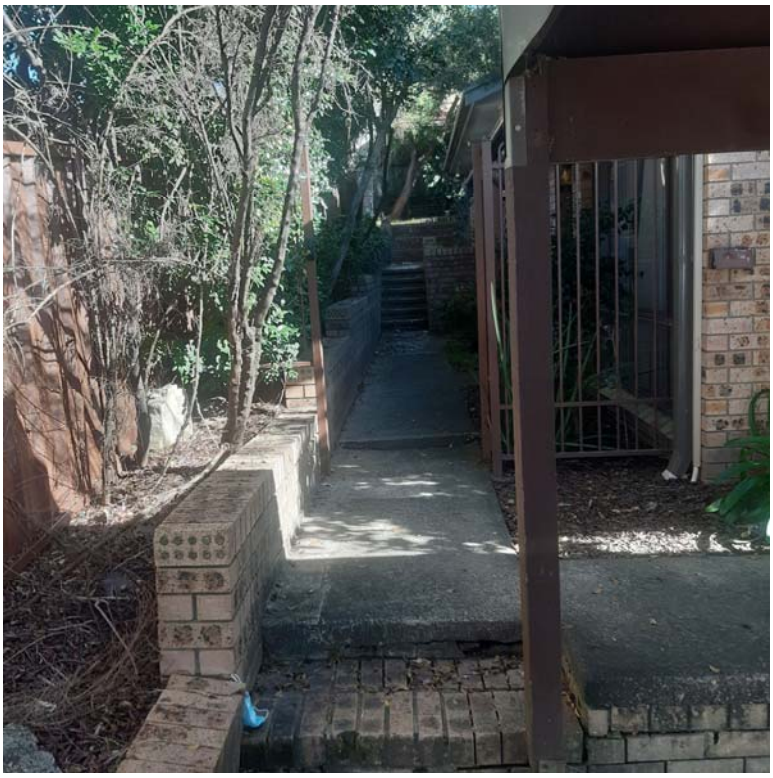
Appendix F

Photographs



PHOTOGRAPH 1 *View from HA2 facing north.*

PHOTOGRAPH 2 *HA1. Well grassed lawn that covered the sampling locations at HA1, HA2 and HA3.*



PHOTOGRAPH 3 *Shaded side walkway along the southern end of 60 Showground Road. Location of sample HA4.*

PHOTOGRAPH 4 *Well maintained lawn. Location of sample HA3, view facing west.*

PHOTOGRAPH 5 *Rich clay based soil typical of HA1, HA2 and HA3.*

PHOTOGRAPH 6 *Sandier clay based soil encountered at HA4.*

Appendix G

Summary of Results

Sample Identification	PQL	Guideline [A]				HA - 1	HA - 2	HA - 3b	HA - 4
Sample Depth (m) [B]		HSL 'D'	ESL C&I	Non-sensitive ML	DC D	0.1	0.1	0.1	0.1
Date		CLAY 0-<1m	Fine	Fine		29/7/22	29/7/22	29/7/22	29/7/22
Sample Profile						Rich brown silty clay based topsoil.	Rich brown clay based topsoil.	Rich brown clay based topsoil.	Rich brown clay based topsoil.
Dominant Stratum [C]						Clay	Clay	Clay	Clay
PID (ppm)						0	0	0	0
Sample Purpose						Assessment	Assessment	Assessment	Assessment
Sample collected by						RCA -RM	RCA -RM	RCA -RM	RCA -RM
Benzene, Toluene, Ethylbenzene, Xylene (BTEX)									
Benzene	0.2	4	95		430	<0.2	<0.2	<0.2	<0.2
Toluene	0.5	NL	135		99000	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	0.5	NL	185		27000	<0.5	<0.5	<0.5	<0.5
meta- and para-Xylene	0.5					<0.5	<0.5	<0.5	<0.5
ortho-Xylene	0.5					<0.5	<0.5	<0.5	<0.5
Total Xylenes	1	NL	95		81000	0.5	0.5	0.5	0.5
Polycyclic Aromatic Hydrocarbons (PAH)									
Naphthalene	0.5	NL	370		11000	<0.5	<0.5	<0.5	<0.5
Total Recoverable Hydrocarbons (TRH)									
TRH C_6-C_{10}	10			800	26000	<10	<10	<10	<10
TRH >C_{10}-C_{16}	50		170	1000	20000	<50	<50	<50	<50
TRH >C_{16}-C_{34}	100		2500	5000	27000	<100	<100	<100	<100
TRH >C_{34}-C_{40}	100		6600	10000	38000	<100	<100	<100	<100
F1	10	310	215			<10	<10	<10	<10
F2	50	NL				<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 C_6-C_{10} minus BTEX. F1 PQL deemed equal TRH C_6-C_{10}.
F2 = TRH >C_{10}-C_{16} minus naphthalene. F2 PQL deemed = TRH >C_{10}-C_{16}.
[A] ASC NEPM 1999 (amended April 2013) Vapour Based Health Screening Levels (HSL) 'D' (Commercial/Industrial)
[A] ASC NEPM 1999 (amended April 2013) Ecological Screening Levels (ESL) C&I (Commercial and Industrial)
[A] ASC NEPM 1999 (amended April 2013) Management Limits (ML) Non-Sensitive Sites (Commercial and Industrial)
[A] CRC Care Technical Report 10, September 2011 Direct Contact (DC) Health Screening Levels 'D' (Commercial/Industrial)
[B] Start of sample, generally over a 0.1m interval
[C] Note that this is a generalisation for the purpose of comparing to the HSL criteria. Where two strata equally represented, most conservative criterion used
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 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 >C_{16}-C_{34} and >C_{34}-C_{40} are low reliability
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.

Sample Identification	PQL	Guideline [A]		HA - 1	HA - 2	HA - 3b	HA - 4
Sample Depth (m) [B]		HIL 'D'	EIL C&I	0.1	0.1	0.1	0.1
Date				29/7/22	29/7/22	29/7/22	29/7/22
Sample Profile				Rich brown silty clay based topsoil.	Rich brown clay based topsoil.	Rich brown clay based topsoil.	Rich brown clay based topsoil.
Sample Purpose				Assessment	Assessment	Assessment	Assessment
Sample collected by				RCA -RM	RCA -RM	RCA -RM	RCA -RM
Polycyclic Aromatic Hydrocarbons (PAH)							
Naphthalene	0.5		370	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	0.5			<0.5	<0.5	<0.5	<0.5
Acenaphthene	0.5			<0.5	<0.5	<0.5	<0.5
Fluorene	0.5			<0.5	<0.5	<0.5	<0.5
Phenanthrene	0.5			<0.5	<0.5	<0.5	<0.5
Anthracene	0.5			<0.5	<0.5	<0.5	<0.5
Fluoranthene	0.5			<0.5	<0.5	<0.5	<0.5
Pyrene	0.5			<0.5	<0.5	<0.5	<0.5
Benz(a)anthracene	0.5			<0.5	<0.5	<0.5	<0.5
Chrysene	0.5			<0.5	<0.5	<0.5	<0.5
Benzo(b)&(j)fluoranthene	0.5			<0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	0.5			<0.5	<0.5	<0.5	<0.5
Benzo(a) pyrene	0.5		1.4	<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
Dibenz(a,h)anthracene	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
Carcinogenic PAH (B(a)P equivalent)	1.21	40		0.605	0.605	0.605	0.605
Sum of reported PAH	8	4000		4	4	4	4
Metals							
Arsenic	5	3000	160	5	<5	<5	<5
Cadmium	1	900		<1	<1	<1	<1
Chromium	2	3600	310	18	9	11	9
Copper	5	240000	400	37	12	6	26
Mercury	0.1	730		<0.1	<0.1	<0.1	<0.1
Lead	5	1500	1800	62	30	25	57
Nickel	2	6000	55	6	3	3	4
Zinc	5	400000	360	127	101	29	86
Organochlorine Pesticides (OCP)							
alpha-BHC	0.05			--	--	--	<0.05
HCB	0.05	80		--	--	--	<0.05
b-BHC	0.05			--	--	--	<0.05
g-BHC (Lindane)	0.05			--	--	--	<0.05
d-BHC	0.05			--	--	--	<0.05
Heptachlor	0.05	50		--	--	--	<0.05
Aldrin	0.05			--	--	--	<0.05
Heptachlor epoxide	0.05			--	--	--	<0.05
trans-Chlordane	0.05			--	--	--	<0.05
alpha-Endosulfan	0.05			--	--	--	<0.05
cis-Chlordane	0.05			--	--	--	<0.05
Dieldrin	0.05			--	--	--	<0.05
DDE	0.05			--	--	--	<0.05
Endrin	0.05	100		--	--	--	<0.05
beta-Endosulfan	0.05			--	--	--	<0.05
DDD	0.05			--	--	--	<0.05
Endrin Aldehyde	0.05			--	--	--	<0.05
Endosulfan sulfate	0.05			--	--	--	<0.05
DDT	0.2		640	--	--	--	<0.2
Endrin Ketone	0.05			--	--	--	<0.05
Methoxychlor	0.2	2500		--	--	--	<0.2
Chlordane (cis + trans)	0.1	530		--	--	--	0.05
DDT+DDD+DDE	0.3	3600		--	--	--	0.15
Aldrin + Dieldrin	0.1	45		--	--	--	0.05
Endosulfan (aplha+beta)	0.1	2000		--	--	--	0.05
Organophosphorous Pesticides (OPP)							
Chlorpyrifos	0.05	2000		--	--	--	<0.05
Dichlorvos	0.05			--	--	--	<0.05
Demeton-S-methyl	0.05			--	--	--	<0.05
Monocrotophos	0.2			--	--	--	<0.2
Dimethoate	0.05			--	--	--	<0.05
Diazinon	0.05			--	--	--	<0.05
Chlorpyrifos-methyl	0.05			--	--	--	<0.05
Parathion-methyl	0.2			--	--	--	<0.2
Malathion	0.05			--	--	--	<0.05
Fenthion	0.05			--	--	--	<0.05
Parathion	0.2			--	--	--	<0.2
Pirimphos-ethyl	0.05			--	--	--	<0.05
Chlorfenvinphos	0.05			--	--	--	<0.05
Bromophos-ethyl	0.05			--	--	--	<0.05
Fenamiphos	0.05			--	--	--	<0.05
Prothiofos	0.05			--	--	--	<0.05
Ethion	0.05			--	--	--	<0.05
Carbophenothion	0.05			--	--	--	<0.05
Azinphos Methyl	0.05			--	--	--	<0.05
Asbestos							
Detected Asbestos Weight (g)	0.1			Nil detected	Nil detected	Nil detected	Nil detected
Sample weight (g)	0.01			8.56g	10.7g	4.86g	12.2g

All results are in units of mg/kg, except for asbestos.
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) 'D' (Commercial/Industrial).
[A] ASC NEPM 1999 (amended April 2013) Ecological Investigation Levels (EIL) C&I (Commercial and Industrial).
[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
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 1% clay, the most conservative of the criteria.
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 the most conservative of the criteria.
EIL for Zinc are the added contaminant limit for aged (>2years) Zinc in soils of 5% CEC and pH of 6.5, the most conservative of the criteria at pH 6.5.
EIL for DDT are for fresh (<2years) DDT
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
Where summation required (PAH, OCP) calculation includes components reported as non detected as 1/2 PQL.