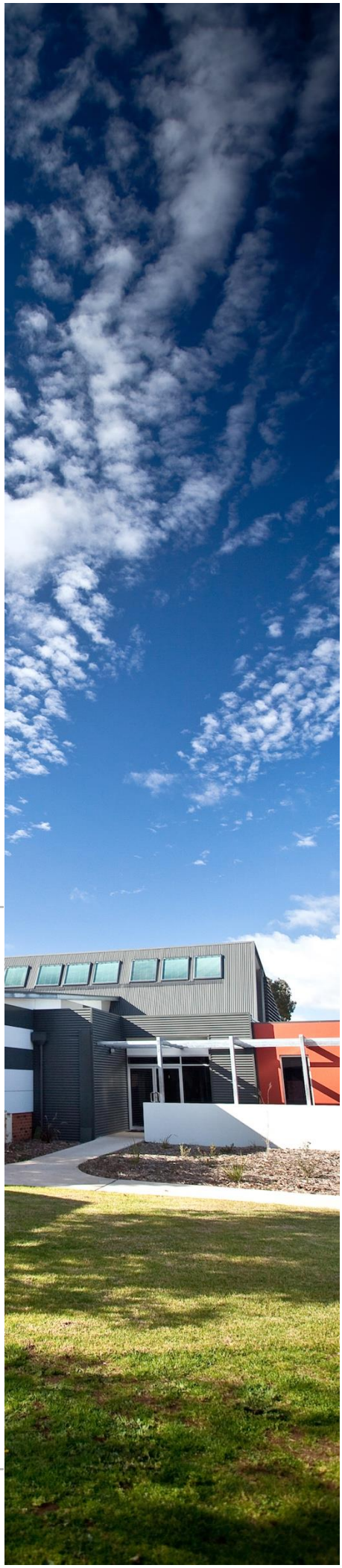

Preliminary Site Contamination Assessment

Baaka Cultural Centre
Reid Street, Wilcannia
NSW 2836

(Our Reference:38166 ER01)

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Project Name:	Preliminary Site Contamination Assessment Baaka Cultural Centre, Reid Street, Wilcannia, NSW 2836
Client:	Public Works Advisory
Project No.	38166
Report Reference	38166 ER01
Date:	21/02/2022
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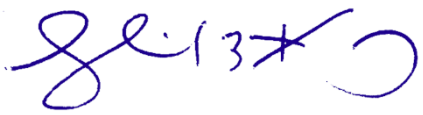
Prepared by:	Reviewed by:
	
Nardus Potgieter MSc(Chem) Environmental Scientist	Jim Sarantzouklis MAIBS MEHA RPIA Director

EXECUTIVE SUMMARY

Barnson was engaged by Public Works Advisory to undertake a preliminary contaminated site investigation in support of the development of a Baaka Cultural Centre at 44 Reid Street, Wilcannia, NSW 2836. The site that will be the focus point is Lot 2 DP 759091 (referred to as the Subject Site).

The investigation has as its objectives to identify contamination issues that may affect the suitability of the Subject Site for the future commercial use of the site for the Baaka Cultural Centre and assess the need for possible further investigations, and remediation or management of any contamination issues identified.

The investigation was based on a desktop review of information available for the Subject Site, as well as the findings of a site inspection and confirmatory sampling and analysis of surface soils collected at the site.

A review of the available historical information indicated that the historical buildings located at a Lot adjoining the Subject Site (Lot 1 DP 759091) included Asbestos Containing Material which is reasoned to have the potential to contaminate the Subject Site.

Activities associated with the historical and current use of the Subject Site were identified as having a potential to contaminate surface soil at the site. The following potential sources of contamination were identified:

- Historical structures (both on and at an adjoining Lot)
- Vehicles and equipment storage at the Site

A site inspection, supplemented with confirmatory sampling and analysis, was conducted to determine the presence and significance of potential contamination associated with the identified sources. This investigation revealed evidence of localised contamination associated with the historical structures and ineffective demolition of the structures at the Subject Site, with the presence of asbestos fibres as well as elevated concentrations of lead and zinc detected.

Based on the findings of the desktop review and site investigation it is concluded that the contamination identified at the Subject Site represent a potential risk to human health and the environment and the Site is not currently suitable for the proposed redevelopment.

It is recommended that a suitable contractor, licensed to manage and dispose hazardous materials, be appointed to remove all equipment, scrap and demolition waste from the site and complete the demolition of all buildings, which are to be removed, before commencement of any further investigation.

It is recommended that the residual contamination identified at the Subject Site be further investigated to determine the level and extent of contamination and to develop a plan for further remedial action, if required.

LIST OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

APPENDICES

1.0 INTRODUCTION

1.1 Background

Barnson Pty Ltd was engaged by the Public Works Advisory (the Client) to undertake a preliminary contaminated site investigation in support of the Baaka Cultural Centre at 42-44 Reid Street, Wilcannia, NSW 2836 (Lot 1 & 2 Section 13 DP 759091). The site of interest is Lot 2 Section 13 DP 759091 (hereafter referred to as the Subject Site).

The Client has submitted a request for an investigation of potential asbestos contamination at the Subject Site. A report of a previous assessment undertaken by Enviroscience (2019a) on a lot adjacent to the subject site was provided to Barnson as background. The Enviroscience report assessed the presence of asbestos located within the fire damaged Knox and Downs Building on the adjacent Lot (Lot 1 Section 13 DP 759091). It is believed that there was the possibility of cross contamination onto the Subject Site- causing there to be asbestos containing material onsite. The investigation will determine the severity of contamination onsite and provide a conclusion on whether cross-contamination has occurred.

In accordance with the State Environmental Planning Policy 55 (Remediation of Land) the consent authority must determine if land is contaminated and, if so, whether it is suitable for the intended purpose or require remediation. In addition to the evaluation of the potential asbestos contamination of the Subject Site, Barnson undertook a Preliminary Site Investigation (PSI) in support of the construction of the Baaka Cultural Centre and associated amenity. This report includes an evaluation of all areas of the Subject Site and considers other contaminants potentially relevant to the proposed development.

1.2 Objectives

The objectives of the investigation are:

- Identify contamination that may affect the site's suitability for Community development, and;
- Assess the need for possible further investigations, remediation or management of any contamination identified.

1.3 Scope of Work

To meet the objectives, Barnson completed the following scope of work:

- Site identification including a review of site history, site condition, surrounding environment, geology and, where available, hydrogeology.
- Desktop review of site history and assessment of potential sources of contamination.
- Development of a Conceptual Site Model (CSM) with information gathered from the data review and site inspection.
- Site inspection to assess site conditions.
- Collection of confirmatory soil samples and analysis to determine nature of possible contamination.
- Provide conclusions as to the suitability of the site for the intended future land use.
- Preparation of a report.

1.4 Purpose of this report

The purpose of this report is to document, with cognisance of the Guidelines of Consultants Reporting on Contaminated sites (NSW EPA, 2020), works undertaken, in accordance with the scope of works as described in Section 1.3, results of the desktop review and site inspection, and recommendations for further actions required to determine fitness of the site for the use.

1.5 Assumptions and Limitations

The following assumptions have been made in preparing this report:

- The future use of the site will be for a community facility in the form of the Baaka Cultural Centre, which is pursuant the *Central Darling Local Environmental Plan 2012*. This assumption forms the basis of the conceptual site model (Section 4).
- All information pertaining to the contamination status of the site has been obtained through public record searches, a preliminary site inspection and analysis of confirmatory samples collected at the Subject Site. All documents and information in relation to the Subject Site, which were obtained from public records, are accepted to be correct and has not been independently verified or checked.

It should be recognised that even the most comprehensive site assessments may fail to detect all contamination on a site. This, is because contaminants may be present in areas that were not previously surveyed or sampled or may migrate to areas that showed no signs of contamination when sampled. Investigative works undertaken at the Subject Site by Barnson identified actual conditions only at those locations in which sampling and analysis were performed. Opinions regarding the conditions of the site have been expressed based on historical information and analytical data obtained and interpreted from previous assessments of the site. Barnson does not take responsibility for any consequences as a result of variations in site conditions.

2.0 SITE DESCRIPTION

2.1 Site Identification

Table 2.1 presents a summary of the available information pertaining to the identification of the Subject Site. The locality of the development is comprised of 2 Lots; however, the Subject Site is only one lot (Lot 2 Section 13 DP 759091), it is zoned B2- Local Centre. The information regarding the Subject Site is in Table 2.1 below.

Table 2.1: Summary of Subject Site identification details.

Information	Details
Site address	42 Reid Street, Wilcannia, NSW, 2836
Lot/Section and Deposited Plan No.	Lot 2 Section 13 DP 759091
Zoning	B2- Local Centre
County	Young
Parish	Wilcannia
Local Government Area	Central Darling Shire Council

Figure 2.1 presents a map indicating the location of the Subject Site as well as presenting an outline of the larger development site, which includes a lot (Lot 1 Section 13 DP 759091) to the south-west of the Subject Site.

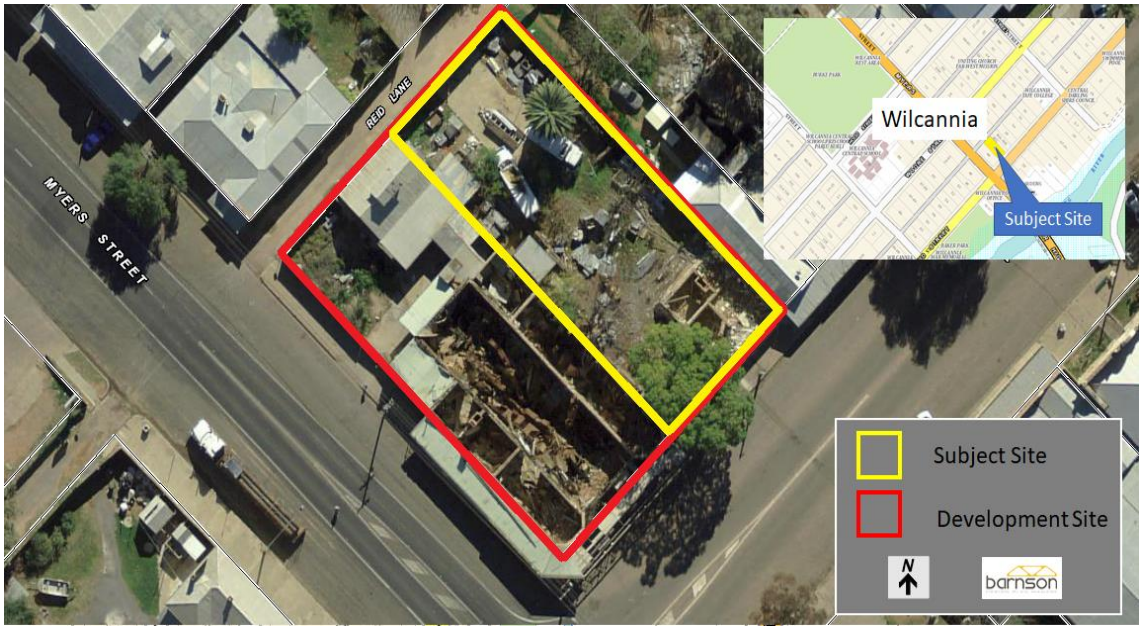


Figure 2.1: Location of the Subject Site.

2.2 Layout and Features

Figure 2.2 presents an aerial photo of the Subject Site with the features discussed indicated as sketch plan overlay.

Figure 2.2: Existing Subject Site layout.

The Subject Site is enclosed with high metal fencing (see Figure 2.3). The south-west boundary of the Site is a high sandstone wall that forms part of the historical buildings on with Lot 1 Section 13 DP 759091.

Figure 2.3: View of development site from Myers Street looking west. Metal fence surrounding the site and historical sandstone building on Lot 1 Section 13 DP 759091 visible

A gated vehicle entrance to the Subject site is located in Reid Lane to the north west (Figure 2.4), through which the site is accessed onto a concrete slab Figure 2.5.

Along the south west boundary of the site there is a small store room building (Figure 2.6, closest to the entry) as well as a toilet block (see Figure 2.7).

Shown in Figure 2.8 is a partially demolished residential dwelling that occupies the easternmost corner of the Subject Site.

Figure 2.4: Entry gate in Reid Lane.

Figure 2.5: Concrete slab at entrance to the Subject Site.

Figure 2.6: Store room building.

Figure 2.7: Toilet block.

Figure 2.8 Partially demolished residential structure in eastern corner of the Subject Site.

2.3 Proposed Development

Public Works Advisory approached Barnson Pty Ltd in support of the Development Application (DA) for the Baaka Cultural Centre within the township of Wilcannia on Lot 1 & 2 Section 13 DP 759091 (Subject Site is comprised of Lot 2 Section 13 DP 759091). The development will include associated parking, vegetation including a 'Story Tree', pathing, and covered areas. The proposed development can be deemed a Community Facility which is defined as:

"*…means a building or place-*

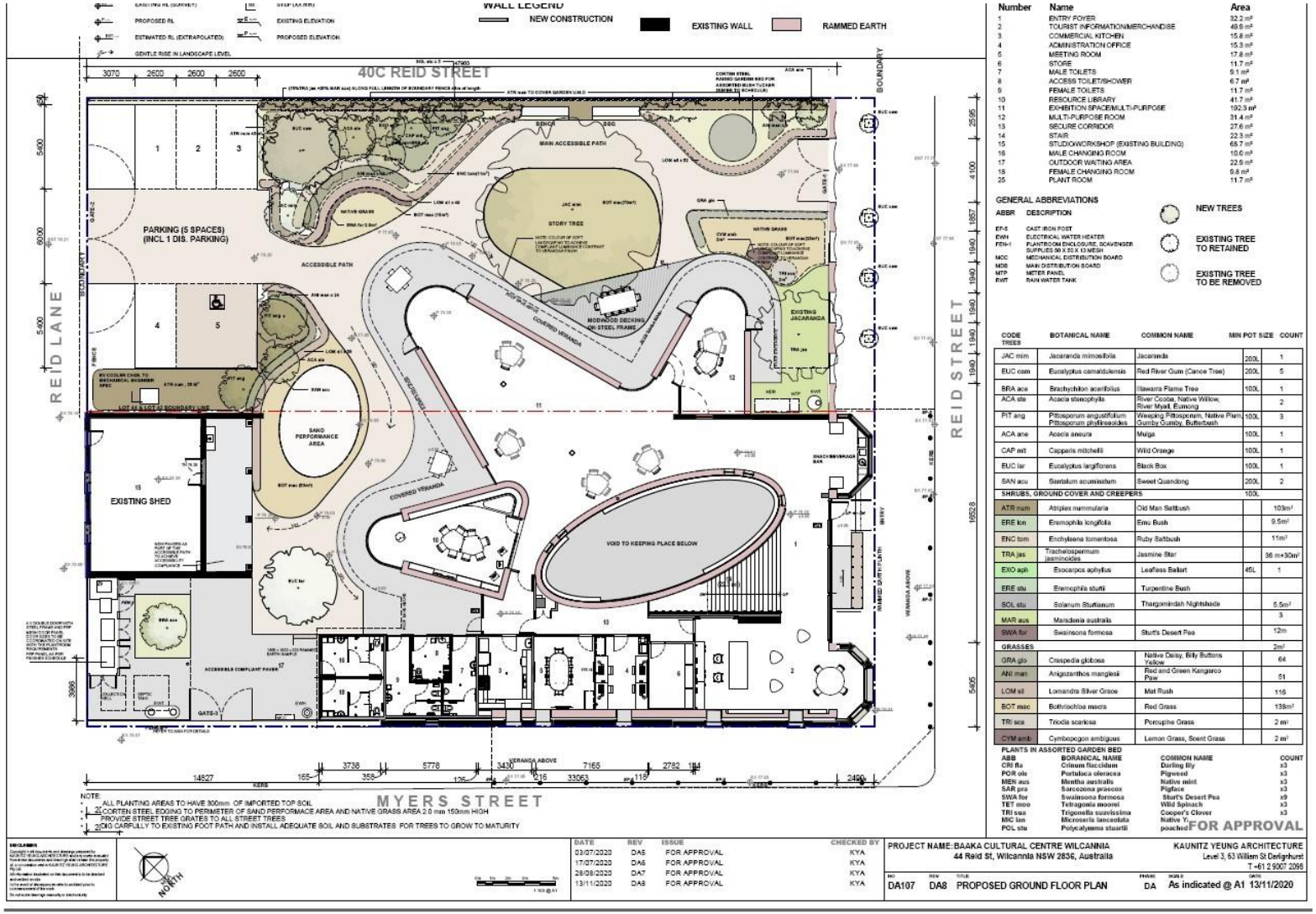
(a) Owned or controlled by a public authority or non-profit community organisation, and

(b) Used for the physical, social, cultural, or intellectual development or welfare of the community,

But does not include an educational establishment, hospital, retail premises, place of public worship, or residential accommodation."

The above development is not listed within the prohibited land uses for a B2 Zoned area; thus the development can be considered permissible with consent.

Figure 2.9 shows a detailed layout of the proposed community facility and its associated developments.



Number	Name	Area
1	ENTRY FOYER	32.2 m²
2	TOURIST INFORMATION/MERCHANDISE	49.6 m²
3	COMMERCIAL KITCHEN	15.8 m²
4	ADMINISTRATION OFFICE	15.3 m²
5	MEETING ROOM	17.8 m²
6	STORE	11.7 m²
7	MALE TOILETS	9.1 m²
8	ACCESS TOILET/SHOWER	6.7 m²
9	FEMALE TOILETS	11.7 m²
10	RESOURCE LIBRARY	41.7 m²
11	EXHIBITION SPACE/MULTI-PURPOSE	192.5 m²
12	MULTI-PURPOSE ROOM	31.4 m²
13	SECURE CORRIDOR	27.6 m²
14	STAIR	22.3 m²
15	STUDIO/WORKSHOP (EXISTING BUILDING)	68.7 m²
16	MALE CHANGING ROOM	10.0 m²
17	OUTDOOR WAITING AREA	22.9 m²
18	FEMALE CHANGING ROOM	9.8 m²
25	PLANT ROOM	11.7 m²

GENERAL ABBREVIATIONS

ABBR	DESCRIPTION
EF-S	CAST IRON POST
EWH	ELECTRICAL WATER HEATER
FEN-1	PLANTROOM ENCLOSURE, SCAVENGER SUPPLIES 50 X 50 X 13 MESH
MCC	MECHANICAL DISTRIBUTION BOARD
MDB	MAIN DISTRIBUTION BOARD
MTP	METER PANEL
RWT	RAIN WATER TANK

NEW TREES
EXISTING TREE TO RETAINED
EXISTING TREE TO BE REMOVED

CODE TREES	BOTANICAL NAME	COMMON NAME	MIN POT SIZE	COUNT
JAC mim	Jacaranda mimosifolia	Jacaranda	200L	1
EUC cam	Eucalyptus camaldulensis	Red River Gum (Canoe Tree)	200L	5
BRA ace	Brachychiton acerifolius	Illawarra Flame Tree	100L	1
ACA ste	Acacia stenophylla	River Cooba, Native Willow, River Myall, Eumong		2
PIT ang	Pittosporum angustifolium Pittosporum phillireoides	Weeping Pittosporum, Native Plum, Gumby Gumby, Butterbush	100L	3
ACA ane	Acacia aneura	Mulga	100L	1
CAP mit	Capparis mitchelii	Wild Orange	100L	1
EUC lar	Eucalyptus largiflorens	Black Box	100L	1
SAN acu	Santalum acuminatum	Sweet Quandong	200L	2
SHRUBS, GROUND COVER AND CREEPERS			100L	
ATR num	Atriplex nummularia	Old Man Saltbush		103m²
ERE lon	Eremophila longifolia	Emu Bush		9.5m²
ENC tom	Enchylaena tomentosa	Ruby Saltbush		11m²
TRA jas	Trachelospermum jasminoides	Jasmine Star		36 m+30m²
EXO aph	Exocarpos aphyllus	Leafless Ballart	45L	1
ERE stu	Eremophila sturtii	Turpentine Bush		
SOL stu	Solanum Sturtianum	Thargomindah Nightshade		5.5m²
MAR aus	Marsdenia australis			3
SWA for	Swainsona formosa	Sturt's Desert Pea		12m
GRASSES				2m²
GRA gla	Crespedia globosa	Native Daisy, Billy Buttons Yellow		64
ANI man	Anigozanthos manglesii	Red and Green Kangaroo Paw		51
LOM sil	Lomandra Silver Grace	Mat Rush		116
BOT mac	Bothriochloa macra	Red Grass		138m²
TRI sca	Triodia scariosa	Porcupine Grass		2 m²
CYM amb	Cymbopogon ambiguus	Lemon Grass, Scent Grass		2 m²

PLANTS IN ASSORTED GARDEN BED

ABB	BORANICAL NAME	COMMON NAME	COUNT
CRI fla	Crinum flaccidum	Darling lily	x3
POR ole	Portulaca oleracea	Pigweed	x3
MEN aus	Mentha australis	Native mint	x3
SAR pra	Sarcozona praecox	Pigface	x3
SWA for	Swainsona formosa	Sturt's Desert Pea	x9
TET moo	Tetragonia moorei	Wild Spinach	x3
TRI sua	Trigonella suavissima	Cooper's Clover	x3
MIC lan	Microseris lanceolata	Native Y	x3
POL stu	Polycalymma stuartii	poached	x3

Figure 2.9: Proposed development layout

Most of the buildings associated with the proposed development will be situated on the Myers street frontage while the Subject Site will house mainly parking and landscaping. It is accepted that the proposed development will not require significant disturbance to the surface soil of the Subject Site.

3.0 SITE SETTING

3.1 Geology

A review of the 1:250000 Geology map of Wilcannia (refer to Figure 3.1) shows that geologically, the Subject Site is underlain by Mesozoic age units of sandstone, siltstone and claystone; with flat to gently undulating plains of red and brown clayey sand, loam and lateritic soils.

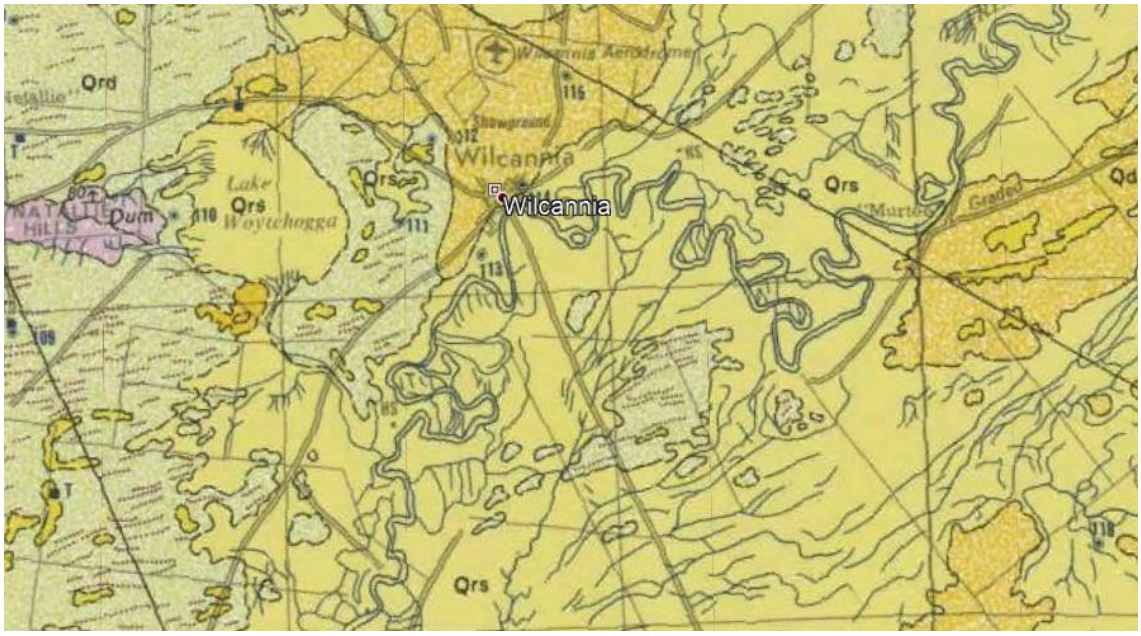


Figure 3.1: Wilcannia 1:250000 geology map showing the location of the Subject Site

An examination of the Geological Survey of NSW maps of Naturally Occurring Asbestos (accessed on 07th of December 2021), shows that the geological units underlaying the Subject Site has no asbestos potential.

3.2 Soils

The dominant soil type at the Subject Site is described as moderately deep sands and red earths with loamy sand to sandy loam topsoils. The site is amenable to water sheet erosion under low vegetation cover.

The Atlas of Australian Acid Sulfate Soil has the subject site in an area of 'very low' probability of occurrence (a 0-5% chance of occurrence).

3.3 Topography and Drainage

Figure 3.2 presents topographical information overlain on the map of the Subject Site. The presented data shows that the Subject Site is relatively flat throughout. There is a gradual fall to the south-east towards the Darling River.

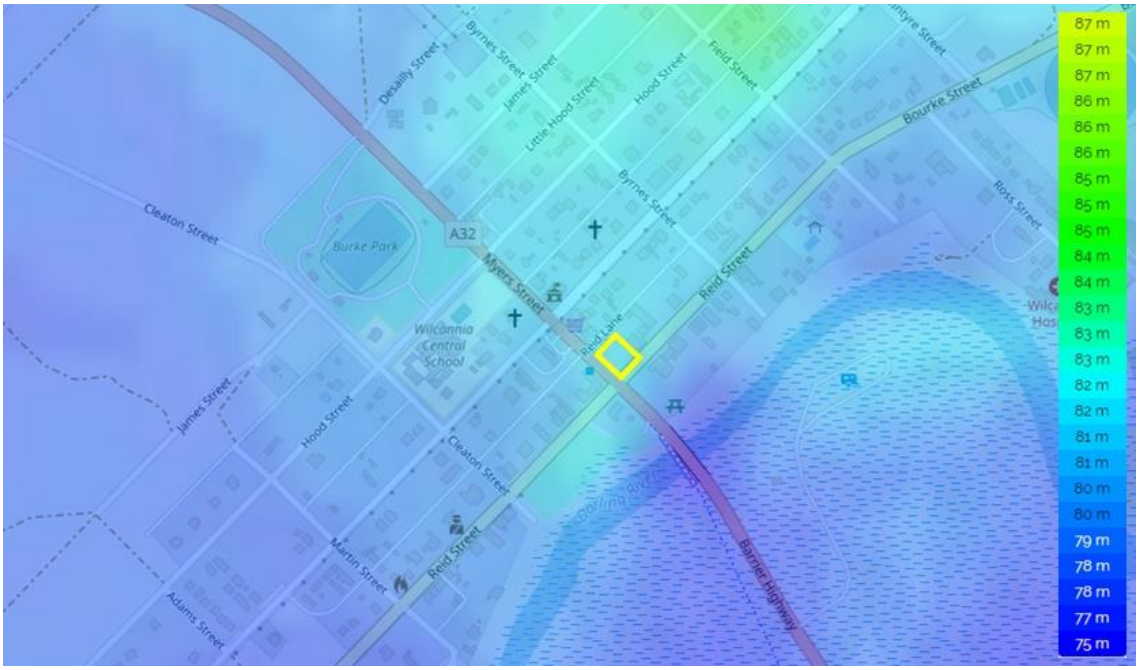


Figure 3.2: Subject Site topography.

The nearest natural water body to the Subject Site is the Darling River, which at is closest is located at a distance of approximately 150m to the south-east.

3.4 Groundwater Resources

A review of existing groundwater bore records (WaterNSW, 2021) indicate no registered groundwater bores inside the boundary of the Subject Site, and only one within 1km of the Subject Site. The only groundwater bore within 1km of the Subject Site is identified in Figure 3.3, it is located to the north-east of the site.

The information recorded in the database for the closest off-site bore indicate the depth of the bore is 35.10m with a Standing Water Level (SWL) of 12.20m. The shallowest water bearing zone for GW019002 was recorded at 33.50m. According to the database, the bore is for domestic/ general use purposes.

The *Central Darling Local Environmental Plan 2012* does not offer information regarding the locality's groundwater vulnerability.

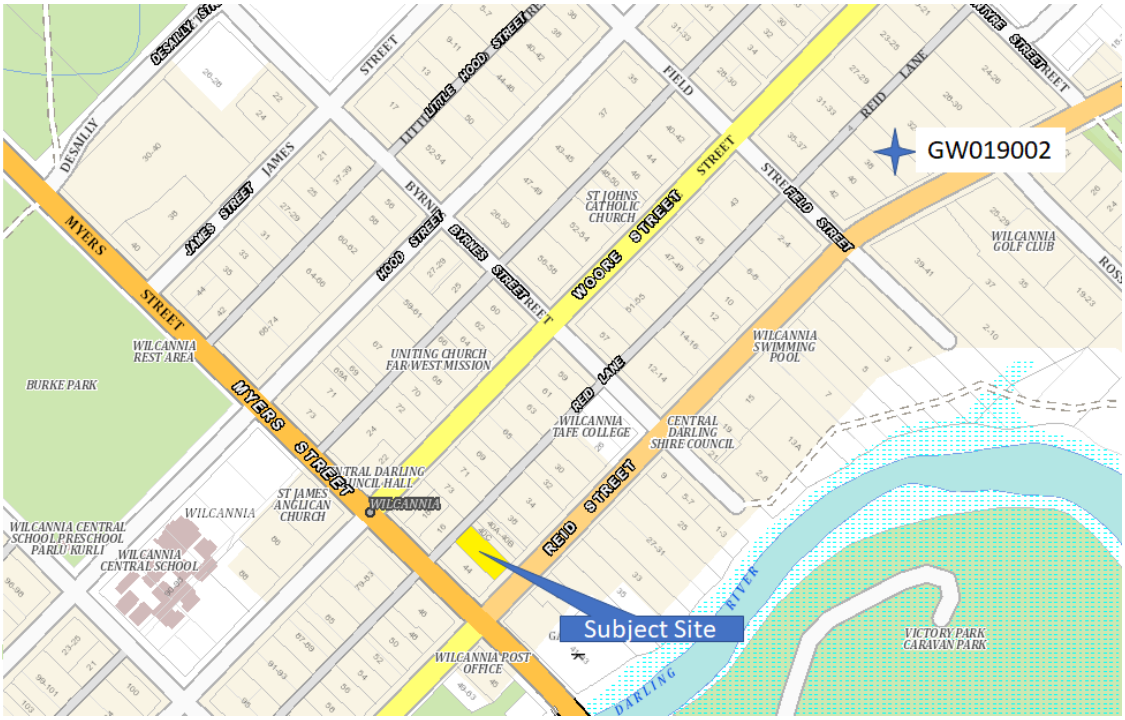


Figure 3.3: Groundwater bores near the Subject Site.

4.0 SITE HISTORY

4.1 Historical Land Use

Available information indicate that the Subject Site, historically was used for residential purposes but was more recently utilised to house refrigeration equipment for cold storage units inside the adjoining building (at Lot 1 Section 13 DP 759091) used for retail purposes, as well as to house vehicles and equipment.

4.2 Historical Record of Site Contamination

Datasets maintained by the Office of Environment and Heritage (OEH) including notices under CLM Act, POEO Environment Protection License Register and environmental incidents were reviewed.

- List of NSW contaminated sites notified to EPA – The sites appearing on the OEH "List of NSW contaminated sites notified to the EPA" indicate that the notifiers consider that the sites are contaminated and warrant reporting to EPA. However, the contamination may or may not be significant enough to warrant regulation by the EPA. The EPA needs to review information before it can make a determination as to whether the site warrants regulation. A search of the listing returned no record for the Subject Site.
- Contaminated Land Record of Notices – A site will be on the Contaminated Land Record of Notices only if the EPA has issued a regulatory notice in relation to the site under the *Contaminated Land Management Act* 1997. A search of the register in December 2021

returned no record for the Subject Site and indicated no listings for any site within a radius of 1,000m.

There is further no record of the Subject Site or within a radius of 1,000m from these areas, in any of the following databases:

- Former Gasworks database
- EPA PFAS Investigation Program
- Defence PFAS Investigation & Management Program
- Air services Australia National PFAS Management Program
- Defence 3 Year Regional Contamination Investigation Program

4.3 Previous Site Investigations

No information relating to any previous assessment of contamination at the Subject Site was available for review. The Asbestos Assessment report (EnviroScience, 2019a) for the adjoining fire damaged property at Lot 1 (Section 13 DP 759091) was reviewed. The report identified fire damaged (friable) asbestos containing materials at the former Knox and Downs Building. These materials were subsequently removed and a clearance report (EnviroScience, 2019b) for the site notes that the removal was successful, and that no visible asbestos material remain onsite.

5.0 CONCEPTUAL SITE MODEL

5.1 General

The conceptual site model (CSM) is intended to provide an understanding of the potential for contamination and exposure to contaminants within the investigation areas. The CSM draws together the available historical information for the site, with site specific geological, and hydrogeological information to identify potential contaminants, contamination sources, migration and exposure pathways and sensitive receptors.

5.2 Sources

The identification of sources presented here is based on the review of available historical information and photographs, as well as an understanding of current conditions at the Subject Site. The following is a summary of the potentially contaminated areas and sources of contamination identified:

- Historical structures

The Subject Site and the adjoining lot include remnants of former structures. Some of the former structures are known to have included asbestos and could potentially have also included other hazardous materials such as lead based paint. Deterioration and demolition of the former structures can result in the localised dispersion of hazardous materials over the surface of the Subject Site. The potential dispersion of fire damaged (friable) asbestos material from the adjoining former Knox and Downs Building is also considered.

- Equipment and vehicles storage and maintenance at the Site

Available aerial photographs of the site clearly show motorised vehicles entering and parking at the site and equipment being stored at the site. These vehicles and equipment require various potentially hazardous chemicals (e.g. fuels, lubricants, refrigerants etc.) for operation and maintenance. The use of these substances potentially could contribute to localised contamination of the surface soils in this area.

- Uncontrolled disposal of waste.

The Subject Site is fenced and there is no evidence to suggest that significant quantities of domestic or demolition waste has been disposed of at the Subject Site from elsewhere. Uncontrolled disposal of waste is therefore not considered a potential source of contamination.

5.3 Contaminants of Potential Concern

Considering the potential sources relevant to the Subject Site, a wide variety of contaminants may be present. With the demolition waste and vehicles/equipment at the site considered the primary potential sources of contamination, hazardous materials (i.e. asbestos and lead based paint) as well as heavy metals and hydrocarbons are accepted as the most likely contaminants.

Based on this understanding of the site history and activities, the contaminants of potential concern identified for the investigation include:

- heavy metals (As, Cd, Cr, Cu, Pb, Hg, Ni and Zn);
- hydrocarbons (mainly fuel and lubricants); and
- asbestos.

5.4 Pathways

The primary pathways by which receptors could be exposed to the contaminants outlined above include:

- Inhalation of dust or vapours.
- Dermal contact with contaminated soils.
- Incidental ingestion of contaminated soils.
- Surface runoff, sediment transport and discharge to surface waters.
- Vertical and horizontal migration of contamination through the soils into the underlying groundwater.

Of the listed potential pathways, the contamination of water resources through infiltration is considered the most unlikely. Although the Subject Site is most likely in a groundwater vulnerable zone due to its proximity to the Darling river, and the depth to groundwater in the general area is reported as >30m. This depth to groundwater would limit vertical migration of any contaminants which may be entering the surface soil from above.

5.5 Receptors

Potential receptors may include:

Human receptor populations

- Visitors to the site (e.g. members of the public making use of the facility, workers conducting maintenance, contractors,);
- Workers or volunteers at the facility; and
- Workers involved in the construction of the facility.

Environmental Receptors

- Local drainage channels and receiving surface water bodies; and
- Groundwater resources beneath the site (negligible likelihood of contamination expected).

5.6 Potential for Contamination

The Subject Site is not listed in any of the contaminated land databases. Based on the results of the desktop assessment, the overall likelihood for *significant* chemical contamination to be present within the site is low.

Although former land use and activities at the site is reasoned to have a potential for contaminating surface soils, the type and quantity of contaminants introduced through this land use is not expected to have led to significant contamination.

6.0 SITE INSPECTION

6.1 General

The objective of the investigation is to determine whether there are any environmental risks associated with the Subject Site that could affect the proposed future development and would require further investigation or action to render the site suitable for its intended use.

The desktop evaluation of the site history did not identify any significant risks in this regard but did identify both historical and recent land use activities that could contribute to contamination of the surface soils of the Subject Site.

Barnson conducted an inspection of the Subject Site on 17 January 2022. The purpose of the site inspection was to verify the findings of the desktop assessment, as well as to collect confirmatory samples of surface soil for chemical analysis. Based on the findings of the CSM the inspection and sampling were focussed on the surface soils (50-300mm). The site inspection included all accessible areas of the Subject Site.

During the site inspection the following observations were made:

- Most of the surface area of the Subject Site is covered with stacks of timber pallets, building materials and machinery (see Figure 6.1) as well as rubble of partially demolished buildings and scrap. Less than half of the surface of the subject site is accessible for inspections.

Figure 6.1: Building materials, stacks of pallets and equipment scrap covering the surface of the Subject Site.

Figure 6.2: Demolition rubble and scrap.

- There are vehicles in varying condition of repair parked along the north eastern boundary of the site. Both vehicles are without wheels and appear to have been at this location for an extended period of time.

Figure 6.3: Historical demolition waste.

- All accessible open ground and prominent features at the Subject Site were inspected. No visible discoloration or staining of soil was observed during the inspection.
- Sections of the site near existing structures are underlain by concrete slabs covered in a thick layer of plant material (fallen leaves and seeds) and windblown dust. This layer of accumulated material is thick enough to sustain vegetation.
- The partially demolished structure in the eastern corner of the Subject Site is surrounded with demolition rubble. The rubble consists mainly of bricks stones and mortar, with some pieces of roof timber also visible. Fragments of fibre cement sheeting was observed amongst the rubble around the western corner and south-western edge of the partially demolished structure (see Figure 6.4). Larger pieces and a higher concentration of fibre cement sheeting was observed at the entrance to the structure as well as inside (Figure 6.5).
- The fibre cement fragments radiate outward from the edge of the partially demolished structure and the number of fragments visible at the surface decrease with distance from the structure (see Figure 6.6), but is clearly visible on the surface.

Figure 6.4: Fragments of fibre cement among building rubble.

Figure 6.5: Larger pieces of fibre cement near entrance and inside the structure.

Figure 6.6: Fragments of fibre cement radiating out from the source are.

- A number of buried fragments was observed in shallow excavation into the surface material surrounding the partially demolished structure.
- The south western boundary of the Subject Site adjoining the remnants of the Knox and Downs Building was, where accessable, carefully inspected for fragments of fibre cement (see Figure 6.7). Fragments of fibre cement was observed only along the part of the boundary opposite the partially demolished residentail structure. The fragments of fibre cement observed were intact and similar in apperance to the fragments radiating from the partially demolished structure. The fragments did not appear fire damaged.

Figure 6.7: Surface of ground along a section of Knox and Downs Building outer wall

- Paint on the inside walls and wooden window frames of the partially demolished residential building was found to be deteriorated and peeling during the site inspection. Samples of paint chips were collected to determine if the painted surfaces contain lead-based paints
- Other accessible areas of the subject site were carefully inspected for hazardous materials. No evidence of any staining, associated with hydrocarbons, was observed near the vehicles or any of the refrigeration equipment observed at the site.
- In areas of the site further than 3 to 4m from the partially demolished residential building, very few fragments of fibre cement were observed.
- No evidence of any waste disposal was noted at the Subject Site and no general waste was observed in any other part of the Subject Site during the site inspection.

6.2 Confirmatory Sampling

The purpose of collecting confirmatory samples as part of the site inspection is to determine if any of the potential contaminants identified from the CSM are present. The samples are not intended for statistically valid characterisation or quantification of contamination levels. The collection of surface soil samples at the site was therefore focussed on areas where contamination of the surface soil could most likely have occurred or accumulated.

Samples of soil were collected from the areas of the site where surface soils were accessible. Since the objective of the investigation is to determine the presence of hazardous materials, specifically asbestos containing materials, the sample collection was focussed around the partially demolished residential building in the eastern corner of the site. Figure 6.8 presents an outline of the Subject Site with the approximate locations where surface soil samples were collected. In addition to the surface soil samples, fragments of fibre cement as well as pieces of flaking paint from the house and window frames were collected.

Figure 6.8: Approximate locations of confirmatory soil samples collected at the Subject Site

The pattern followed for the soil sampling can be described as Judgement Sampling, where points are selected on the basis of the investigator's knowledge of the proposed land use and likely distribution of contaminants at a site. It is an efficient sampling method for confirmatory sampling that utilises knowledge of the site history and field observations to direct sample collection (NSW EPA, 1995).

Table 6.1 present a summary description of the individual samples collected and the areas these samples represent.

Table 6.1: Summary of sample details.

Sample Number	Collected samples Reference - Figure 6.8	Description
BCW-01	1a	Soil sample collected from geotechnical drill cuttings for contamination analysis.
BCW-02	1b	Soil samples collected from geotechnical drill cuttings for asbestos analysis.
BCW-03	2	Soil sample collected from north western half of the site, near parked vehicles, for contamination analysis.
BCW-04	3	Soil sample collected from north-west of house for asbestos analysis.
BCW-05	4	Soil sample collected from south-west of house for asbestos analysis.
BCW-06	5	Soil sample collected from west of house for contamination analysis.
BCW-07	6	Soil sample collected from south of house for asbestos analysis.
BCW-08	7	Soil sample collected from south-east of house for asbestos analysis.
BCW-09	8	Soil sample collected from south of house for contamination analysis.
BCW-10	6+7	Composite of samples collected from south of house for contamination analysis.
BCW-11	9a+9b+9c	Combination of soil samples collected from rest of site for asbestos analysis.

All composite samples were submitted to the Australian Laboratory Services (ALS) laboratory in Mudgee, for determination of the following parameters:

- metallic element (cadmium, chromium, copper, lead, nickel and zinc) concentrations, including arsenic and mercury in soil;
- extraction with organic solvent and analysis of Total Recoverable Hydrocarbons (TRH) fractions C6 to C40, benzene, toluene, ethylbenzene and total xylene (BTEX), Polycyclic Aromatic Hydrocarbons (PAHs), polychlorinated biphenyls (PCBs); and
- the presence of asbestos fibres.

Although pesticides and herbicides are not considered potential contaminants for the Subject Site, the analytical package included extraction with organic solvent and analysis of Organochlorine (OCP) and Organophosphorus (OPP) pesticide compounds. The ALS laboratory is NATA accredited for all the analysis indicated above.

Four discrete samples of fibre cement fragment (numbered BCW-12 to BCW-15) were collected and submitted for identification of asbestos fibres. Three individual samples of paint flakes (numbered BCW-16 to BCW-18) were collected and submitted for the determination of lead concentration.

6.3 Analytical Results

The ALS report for the samples is attached as Appendix A. The laboratory report indicates that heavy metals, and trace quantities pesticides were detected in the soil. The concentrations of petroleum hydrocarbons, polycyclic organic compounds as well as total polychlorinated biphenyls are indicated as below the limits of detection in the surface soil samples.

The metals detected include arsenic (As), chromium (Cr), copper (Cu), lead (Pb), nickel (Ni), mercury (Hg) and zinc (Zn). Concentrations of cadmium and are reported to be below the limit of detection in all samples.

Table 6.2 presents a summary of the compounds and elements detected above the limit of detection.

Table 6.2: Summary of metal, hydrocarbon and pesticide concentrations detected in surface soil samples from the Subject Site.

Analyte	BCW-01	BCW-03	BCW-06	BCW-09	BCW-10
	mg.kg^{-1}				
Metals (mg.kg^{-1})					
Arsenic (As)	5	<5	<5	<5	<5
Cadmium (Cd)	<1	<1	<1	<1	<1
Chromium (Cr)	27	15	13	14	13
Copper (Cu)	20	23	18	16	30
Lead (Pb)	64	230	236	208	176
Mercury (Hg)	0.1	0.8	0.7	0.4	0.4
Nickel (Ni)	10	9	7	8	7
Zinc (Zn)	64	991	667	378	572
Pesticide (mg.kg^{-1})					
4.4`-DDE	<0.05	0.36	1.95	<0.05	0.12
Dieldrin	0.28	0.34	0.07	0.11	<0.05
Total Chlordane	<0.05	0.06	0.52	0.21	<0.05

The laboratory results further indicate that asbestos fibres were detected in two of the composite soil samples analysed, collected north-west (BCW-04) and south (BCW-07) of the partially demolished structure. The report further notes that asbestos fibres were identified in three (3) out of the four (4) fibre cement fragments submitted and that lead was detected in all three (3), paint samples analysed.

6.4 Analytical Data Quality

Samples were collected in new, clean containers using cleaned equipment and soils were placed in glass jars provided by the laboratory that were refrigerated after filling and transported in an insulated container to the laboratory. Chain of custody was recorded for all samples. A copy of the signed sheet is attached as Appendix A.

The analyses were undertaken at a NATA accredited laboratory. The laboratory quality control procedures in the form of duplicates as well as analyte and surrogate spikes were applied to all contaminant classes analysed. The results reported for the duplicate is within the Relative Percent Difference range of the acceptance criteria for a duplicate sample. The analyte spike recoveries

reported for the different sets of organic analytes are indicated as within the acceptance criteria (see Appendix A).

All media appropriate to the objectives of this investigation have been adequately analysed and no area of significant uncertainty exist. It is concluded the data is usable for the purposes of the contaminated site investigation.

7.0 ASSESSMENT

7.1 Assessment Criteria - Human Health and Environmental Risk

Screening for human health and ecological risk, utilises published human health investigation levels (HILs) and ecological screening and investigation levels (ESLs & EILs) from the National Environment Protection (Assessment of Site Contamination) Measure (NEPC, 1999) to identify contaminant concentrations in soil that may pose a risk to future residents, people visiting the site, or to ecological receptors.

HILs are scientifically based, generic assessment criteria designed to be used in the screening of potential risks to human health from chronic exposure to contaminants. HIL's are conservatively derived and are designed to be protective of human health under the majority of circumstances, soil types and human susceptibilities and thus represent a reasonable 'worst-case' scenario for specific land-use settings. The HILs selected for evaluation of the Subject Site, and its intended use as Cultural Centre, are those derived for recreational land use (HIL-C), which assumes a public open space land use such as parks, playgrounds, playing fields (e.g. ovals) and footpaths. With associated levels of access to potentially contaminated soil.

Although the primary concern in most site assessments is protection of human health, the assessment should also include consideration of ecological risks and protection of groundwater resources that may result from site contamination. EILs provide screening criteria to assess the effect of contaminants on a soil ecosystem and afford species level protection for organisms that frequent or inhabit soil and protect essential soil processes.

Ecological investigation levels (EILs) have been derived for common metallic contaminants in soil. The values selected for the evaluation of the heavy metals detected in the soil samples from the Subject Site considers the physicochemical properties of soil and contaminants and the capacity of the soil to accommodate increases in contaminant levels above natural background while maintaining ecosystem protection for identified land uses.

Table 7.1 presents a summary of the health-risk based criteria and ecological investigation levels selected for assessment of the detected metal and pesticide concentrations. Screening values for recreational and public open space land use are presented.

It was confirmed that limits of detection reported by the laboratory are below the criteria values. All other contaminants analysed for in the soil samples that are reported below the limit of detection by the laboratory can therefore be excluded from further assessment.

Table 7.1: Human health and ecological risk screening levels for metals.

Element	Health-based Investigation Levels HIL C Recreational mg.kg^{-1}	Ecological Investigation Levels (EIL) Urban residential and public open space mg.kg^{-1}
Arsenic (As)	300	100
Cadmium (Cd)	90	NA
Chromium	NR	190
Copper (Cu)	17,000	65
Lead (Pb)	600	1,100
Mercury (Hg)	80	NA
Nickel (Ni)	1200	270
Zinc (Zn)	30,000	700
4.4`-DDE	400	NA
Dieldrin	9	
Total Chlordane	80	NA

Note: NR=not relevant due to low human toxicity of Cr(III). NA=No applicable screening level. EILs selected for urban residential and public open space scenario.

7.2 Findings

- Direct comparison of the analytical results presented in Table 6.2 with the assessment criteria for recreational and public open space land use (refer Table 7.1) show that concentrations for all elements and compounds detected in the samples of soil collected at the Subject Site are well below the health-risk based screening values used for the assessment.
- Concentrations of lead and zinc detected in surface soils near the partially demolished dwelling, although not exceeding health-risk based screening values, are elevated relative to other metals and samples from elsewhere on site. The most likely source of the elevated lead is the lead-based paint in which elevated concentrations of lead were detected. Similarly, the elevated zinc may be related to pigments in the paint as well as from oxidation of a corrosion preventative coating applied to the metal roof sheeting observed at the site. The detected concentrations of zinc exceed the ecological screening guideline for public open space.
- The general low concentrations of other heavy metals detected in the soil samples at the Subject Site suggest naturally occurring element abundance and are most likely not related to contamination.
- Asbestos fibres were identified in three (3) of the four (4) fragments of fibre cement submitted for analysis as well as in soil collected near the partially demolished structure. Results indicate that asbestos contamination is in the form of non-friable, asbestos containing material (ACM), and suggest that this is largely localised around the eastern corner of the

Subject Site. Although isolated fragments of ACM were observed in other locations at the site, no free fibres were detected in soil samples collected elsewhere.

- The ACM observed at the Subject Site clearly originates from the partially demolished structure on site. It is considered unlikely that the ACM previously reported at the adjoining Knox and Downs Building would have been transferred to the Subject Site and in the unlikely event it has, would not make a significant contribution to the quantity of ACM fragments observed.
- Due to the historical widespread use of persistent pesticides in Australia, it is common to detect trace quantities of these substances in the surface soils at sites that have been occupied for an extended period of time. The concentrations detected at the Subject site are low at just over the laboratory limits of reporting. The detected concentrations are well below conservative screening levels and are not considered to present a risk in terms of the proposed use of the subject site.
- The confirmatory soil samples support the assertion that significant and widespread chemical contamination is unlikely to be present within the Subject Site. The contamination detected relates to hazardous materials (lead-based paint and asbestos) and dissemination of these materials onto the surface soils of the Subject Site through ineffective demolition.

8.0 CONCLUSIONS AND RECOMMENDATIONS

8.1 Conclusions

In accordance with the objectives stated in Section 1.2, and based on the information contained within this assessment, the following conclusions are presented (subject to the limitations noted in Section 1.5):

- Activities associated with the historical and current use of the Subject Site were identified as having a potential to contaminate surface soil at the site.
- The following potential sources of contamination were identified:
    - Historical structures (both on and at an adjoining Lot)
    - Vehicles and equipment storage at the Site
- A site investigation and confirmatory sampling conducted to determine the presence and significance of potential contamination associated with the identified sources, revealed evidence of localised contamination associated with the historical structures and ineffective demolition of the structures at the Subject Site, with the presence of asbestos fibres as well as elevated concentrations of lead and zinc detected.
- The concentrations of all other contaminants investigated were below screening criteria in all surface soil samples collected from the remainder of the Subject Site.
- The screening criteria used in the evaluation of the contaminant concentrations were appropriately conservative and suitable for assessment of both the proposed education and training, and public open space land use categories.

- The samples of paint and fibre cement collected from the demolition waste at the Subject Site were confirmed to contain hazardous substances, specifically lead based paint and asbestos materials. Special precautions should be implemented during any removal of these materials from the Subject Site, i.e. *NSW Government – Code of Practice – How to Safely Remove Asbestos,* (SafeWork NSW, 2019) *and AS/NZS 4361.2:2017 - Guide to hazardous paint management, Part 2: Lead paint in residential, public and commercial buildings* (Australian Standard, 2017).
- Based on the findings of the desktop review and site investigation it is concluded that the contamination identified at the Subject Site represent a potential risk to human health and the environment and the Site is not currently suitable for the proposed redevelopment.
- The Subject Site is not currently subject to a Statutory Site Audit, and in terms of the Guidelines for the NSW Site Auditor Scheme (NSW EPA, 2017), the EPA may recommend that any remedial work proposed as a result of this assessment be independently verified.

8.2 Recommendations

- It is recommended that a suitable contractor, licensed to manage and dispose hazardous materials, be appointed to remove all equipment, scrap and demolition waste from the site and complete the demolition of all buildings, which are to be removed, before commencement of any further investigation.
- It is recommended that the residual contamination identified at the Subject Site be further investigated to determine the level and extent of contamination and to develop a plan for further remedial action, if required.
- This further investigation should conclude whether the contamination must be reported to the EPA based on consideration of the findings in relation to the notification triggers listed in Section 2.3 of the Guidelines on the Duty to Report Contamination (NSW EPA, 2015)
- It is also recommended that during removal of painted surfaces or Lead Based Paint contaminated soils, appropriate safety precautions to reduce the risk of dust generation and ingestion, be adopted by the contractor or persons undertaking the remediation works, and disposal of lead based painted objects/soils, should be deposited at a licensed landfill.
- The asbestos containing material (ACM) and lead based paint identified at the Subject Site, requires specialist attention during any removal or remedial action. It is recommended that during any removal of waste from this area, the ACM be removed and transported to a landfill, licensed to accept the waste, for disposal. The removal and disposal task can be undertaken by either a competent person or a licensed asbestos removalist.
- Clearance inspection of the asbestos removal area must be undertaken following completion of removal work. The clearance inspection is to be carried out by a licensed, independent, asbestos assessor. A clearance certificate must be obtained from the asbestos assessor.
- Notification to SafeWork of the asbestos removal works will be required if the ACM to be removed is more than $10m^2$.
- Tracking of the collected ACM will be required. Transport of asbestos waste is regulated under EPA legislation. Disposal sites are regulated by the NSW EPA and local government

regulations. Each load of asbestos waste must be tracked to the landfill facility using the EPA *WasteLocate* application.

9.0 REFERENCES

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NSW EPA. (1995). *Contaminated Sites: Sampling Guidelines.* NSW Environmental Protection Agency.

NSW EPA. (2015). *Guidelines on the Duty to Report Contamination under the Contaminated Land Management Act 1997.* Sydney, NSW: State of NSW, Environment Protection Authority.

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WaterNSW. (2021). *Real Time Data*. Retrieved June 17, 2021, from Water NSW: https://realtimedata.waternsw.com.au/water.stm

SafeWork NSW: Code of Practice: How to Safely Remove Asbestos 2019

SafeWork NSW: Code of Practice: How to Manage and Control Asbestos in the Workplace 2019

Safe Work Australia, (2019). Workplace Exposure Standards for Airborne Contaminants.

Australian Standard, (2017). AS/NZS 4361.2:2017 Guide to Hazardous Paint Management Lead paint in residential, public and commercial buildings.

Appendix A - Chain of Custody and Laboratory Report

barnson
DESIGN PLAN MANAGE
a Unit 4 / 108-110 Market Street
Mudgee NSW 2850
t 1300 BARNSON (1300 227 676)
e generalenquiry@barnson.com.au
w www.barnson.com.au

Environmental Division
Mudgee
Work Order Reference
ME2200127

Telephone : 02 6372 6735

CHAIN OF CUSTODY AND ANALYTICAL REQUEST

Job Number	38166	Date	20/01/2022
Laboratory	ALS Mudgee	Report to	Nardus Potgieter npotgieter@barnson.com.au
Sample Temperature on Receipt		Notes	
11 °C	Signature:		

Sample ID	Description	Sample Date	Sample Matrix	Analysis request					
				1	2	3	4	5	6
BCW-01	Soil bore composite for contamination	18/01/2022	Soil	X					
BCW-02a	Soil bore composite for asbestos	18/01/2022	Soil		X				
BCW-03	Soil composite sample N half for contamination	18/01/2022	Soil	X					
BCW-04a	Soil composite NW house for asbestos	18/01/2022	Soil			X			
BCW-05a	Soil composite SW house for asbestos	18/01/2022	Soil			X			
BCW-06	Soil composite W of house for contamination	18/01/2022	Soil	X					
BCW-07a	Soil composite S of house for asbestos	18/01/2022	Soil			X			
BCW-08a	Soil composite SE of house for asbestos	18/01/2022	Soil			X			
BCW-09	Soil composite S of house for contamination	18/01/2022	Soil	X					
BCW-10	Soil composite sample S half for contamination	18/01/2022	Soil	X					
BCW-11a	Soil composite for asbestos	18/01/2022	Soil		X				
BCW-12 to 15	Four (4) individual samples of fibre cement	18/01/2022					X		
BCW-16 to 18	Three (3) individual samples of paint flakes	18/01/2022						X	

Analysis request		Method Code
1	TRH (C6-C40) / BTEXN / PAH / OC / OP / PCB / 8 Metals	S-16
2	Asbestos in Soil includes presence/absence free fibres	EA200G
3	Friable Asbestos (FA+AF) Weight and calculated % as Asbestos in Soil plus Free Fibres	EA200F
4	Asbestos in Bulk solids	EA200B
5	Lead in paint	EG05P

Relinquished by / Affiliation	Accepted by / Affiliation	Date
/ Barnson	/ ALS Mudgee	20/01/2022

1430

Ice bricks

Esky x 1

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ME2200127**	Page	: 1 of 19
Client	: **BARNSON**	Laboratory	: Environmental Division Mudgee
Contact	: Nardus Potgieter	Contact	: Mary Monds (ALS Mudgee Sampler)
Address	: Unit 4 108-110 Market Street MUDGEE NSW 2850	Address	: 1/29 Sydney Road Mudgee NSW Australia 2850
Telephone	: 0429 464 067	Telephone	: +61 2 6372 6735
Project	: Soil	Date Samples Received	: 20-Jan-2022 14:30
Order number	: ----	Date Analysis Commenced	: 21-Jan-2022
C-O-C number	: ----	Issue Date	: 28-Jan-2022 16:17
Sampler	: Client Sampler		
Site	: ----		
Quote number	: SY/053/14		
No. of samples received	: 18		
No. of samples analysed	: 18		

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*
Alana Smylie	Asbestos Identifier	Newcastle - Asbestos, Mayfield West, NSW
Brendan Schrader	Laboratory Technician	Newcastle - Asbestos, Mayfield West, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Ivan Taylor	Analyst	Sydney Inorganics, Smithfield, NSW

General Comments

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

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

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

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

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

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

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

- 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.
- EA200: Asbestos Identification Samples were analysed by Polarised Light Microscopy including dispersion staining.
- 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.
- EG035: Positive Mercury results ME2200127 #3 and #6 have been confirmed by reanalysis.
- **EA200 Legend**
- EA200 'Am' Amosite (brown asbestos)
- EA200 'Cr' Crocidolite (blue asbestos)
- 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: Analysis of asbestos from swabs and tapes is not covered under the current scope of NATA accreditation.
- EG005P: ALS is not NATA accredited for the analysis of metals in Paint matrix.
- EA200N: Asbestos weights and percentages are not covered under the Scope of NATA Accreditation.
  Weights of Asbestos are based on extracted bulk asbestos, fibre bundles, and/or ACM and do not include respirable fibres (if present)
  The Asbestos (Fines and Fibrous) weight is calculated from the extracted Fibrous Asbestos and Asbestos Fines as an equivalent weight of 100% Asbestos
  Percentages for Asbestos content in ACM are based on the 2013 NEPM default values.
  All calculations of percentage Asbestos under this method are approximate and should be used as a guide only.
- 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
- EA200N: ALS laboratory procedures and methods used for the identification and quantitation of asbestos are consistent with AS4964-2004 and the requirements of the 2013 NEPM for Assessment of Site Contamination
- 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.
- EA200: N/A - Not Applicable

Analytical Results

Sub-Matrix: **PAINT** (Matrix: **SOIL**)			Sample ID	**BCW-16 Three (3) individual samples of paint flakes**	**BCW-17 Three (3) individual samples of paint flakes**	**BCW-18 Three (3) individual samples of paint flakes**	**----**	**----**
			Sampling date / time	18-Jan-2022 00:00	18-Jan-2022 00:00	18-Jan-2022 00:00	----	----
Compound	*CAS Number*	*LOR*	*Unit*	**ME2200127-016**	**ME2200127-017**	**ME2200127-018**	**--------**	**--------**
				Result	Result	Result	----	----
EG005(ED093)T: Total Metals by ICP-AES								
ø **Lead**	7439-92-1	5	mg/kg	**1240**	**107000**	**2000**	**----**	**----**

Analytical Results

Sub-Matrix: **SOIL**
(Matrix: **SOIL**)

Compound	CAS Number	LOR	Unit	Sample ID	BCW-01 Soil bore composite for contamination	BCW-02a Soil bore composite for asbestos	BCW-03 Soil composite sample N half for contamination	BCW-04a Soil composite NW house for asbestos	BCW-05a Soil composite SW house for asbestos
				Sampling date / time	18-Jan-2022 00:00	18-Jan-2022 00:00	18-Jan-2022 00:00	18-Jan-2022 00:00	18-Jan-2022 00:00
					ME2200127-001	ME2200127-002	ME2200127-003	ME2200127-004	ME2200127-005
					Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		**5.4**	----	**6.9**	----	----
EA200: AS 4964 - 2004 Identification of Asbestos in Soils									
Asbestos Detected	1332-21-4	0.1	g/kg		----	**No**	----	**Yes**	**No**
Asbestos (Trace)	1332-21-4	5	Fibres		----	**No**	----	**No**	**No**
Asbestos Type	1332-21-4	-	--		----	**-**	----	**Ch**	**-**
Sample weight (dry)	----	0.01	g		----	**278**	----	**220**	**228**
APPROVED IDENTIFIER:	----	-	--		----	**A. SMYLIE**	----	**A. SMYLIE**	**A. SMYLIE**
Synthetic Mineral Fibre	----	0.1	g/kg		----	**No**	----	**No**	**No**
Organic Fibre	----	0.1	g/kg		----	**No**	----	**No**	**No**
EA200N: Asbestos Quantification (non-NATA)									
ø Asbestos (Fines and Fibrous <7mm)	1332-21-4	0.0004	g		----	----	----	**0.0389**	<0.0004
ø Asbestos (Fines and Fibrous FA+AF)	----	0.001	% (w/w)		----	----	----	**0.018**	<0.001
ø Weight Used for % Calculation	----	0.0001	kg		----	----	----	**0.220**	**0.228**
ø Fibrous Asbestos >7mm	----	0.0004	g		----	----	----	<0.0004	<0.0004
EG005(ED093)T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		**5**	----	<5	----	----
Cadmium	7440-43-9	1	mg/kg		<1	----	<1	----	----
Chromium	7440-47-3	2	mg/kg		**27**	----	**15**	----	----
Copper	7440-50-8	5	mg/kg		**20**	----	**23**	----	----
Lead	7439-92-1	5	mg/kg		**64**	----	**230**	----	----
Nickel	7440-02-0	2	mg/kg		**10**	----	**9**	----	----
Zinc	7440-66-6	5	mg/kg		**64**	----	**991**	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		**0.1**	----	**0.8**	----	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		<0.1	----	<0.1	----	----
EP068A: Organochlorine Pesticides (OC)									
alpha-BHC	319-84-6	0.05	mg/kg		<0.05	----	<0.05	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg		<0.05	----	<0.05	----	----
beta-BHC	319-85-7	0.05	mg/kg		<0.05	----	<0.05	----	----
gamma-BHC	58-89-9	0.05	mg/kg		<0.05	----	<0.05	----	----

Analytical Results

Sub-Matrix: **SOIL**
(Matrix: **SOIL**)

				Sample ID	BCW-01 Soil bore composite for contamination	BCW-02a Soil bore composite for asbestos	BCW-03 Soil composite sample N half for contamination	BCW-04a Soil composite NW house for asbestos	BCW-05a Soil composite SW house for asbestos
				Sampling date / time	18-Jan-2022 00:00	18-Jan-2022 00:00	18-Jan-2022 00:00	18-Jan-2022 00:00	18-Jan-2022 00:00
Compound	CAS Number	LOR	Unit		ME2200127-001	ME2200127-002	ME2200127-003	ME2200127-004	ME2200127-005
					Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued									
delta-BHC	319-86-8	0.05	mg/kg		<0.05	----	<0.05	----	----
Heptachlor	76-44-8	0.05	mg/kg		<0.05	----	<0.05	----	----
Aldrin	309-00-2	0.05	mg/kg		<0.05	----	<0.05	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg		<0.05	----	<0.05	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg		<0.05	----	**0.06**	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg		<0.05	----	**0.06**	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg		<0.05	----	<0.05	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg		<0.05	----	<0.05	----	----
Dieldrin	60-57-1	0.05	mg/kg		<0.05	----	**0.36**	----	----
4.4`-DDE	72-55-9	0.05	mg/kg		**0.28**	----	**0.34**	----	----
Endrin	72-20-8	0.05	mg/kg		<0.05	----	<0.05	----	----
beta-Endosulfan	33213-65-9	0.05	mg/kg		<0.05	----	<0.05	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg		<0.05	----	<0.05	----	----
4.4`-DDD	72-54-8	0.05	mg/kg		<0.05	----	<0.05	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg		<0.05	----	<0.05	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg		<0.05	----	<0.05	----	----
4.4`-DDT	50-29-3	0.2	mg/kg		<0.2	----	<0.2	----	----
Endrin ketone	53494-70-5	0.05	mg/kg		<0.05	----	<0.05	----	----
Methoxychlor	72-43-5	0.2	mg/kg		<0.2	----	<0.2	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg		<0.05	----	**0.36**	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg		**0.28**	----	**0.34**	----	----
EP068B: Organophosphorus Pesticides (OP)									
Dichlorvos	62-73-7	0.05	mg/kg		<0.05	----	<0.05	----	----
Demeton-S-methyl	919-86-8	0.05	mg/kg		<0.05	----	<0.05	----	----
Monocrotophos	6923-22-4	0.2	mg/kg		<0.2	----	<0.2	----	----
Dimethoate	60-51-5	0.05	mg/kg		<0.05	----	<0.05	----	----
Diazinon	333-41-5	0.05	mg/kg		<0.05	----	<0.05	----	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg		<0.05	----	<0.05	----	----
Parathion-methyl	298-00-0	0.2	mg/kg		<0.2	----	<0.2	----	----
Malathion	121-75-5	0.05	mg/kg		<0.05	----	<0.05	----	----
Fenthion	55-38-9	0.05	mg/kg		<0.05	----	<0.05	----	----

Analytical Results

Sub-Matrix: **SOIL**
(Matrix: **SOIL**)

Compound	CAS Number	LOR	Unit	Sample ID	BCW-01 Soil bore composite for contamination	BCW-02a Soil bore composite for asbestos	BCW-03 Soil composite sample N half for contamination	BCW-04a Soil composite NW house for asbestos	BCW-05a Soil composite SW house for asbestos
				Sampling date / time	18-Jan-2022 00:00	18-Jan-2022 00:00	18-Jan-2022 00:00	18-Jan-2022 00:00	18-Jan-2022 00:00
					ME2200127-001	ME2200127-002	ME2200127-003	ME2200127-004	ME2200127-005
					Result	Result	Result	Result	Result
EP068B: Organophosphorus Pesticides (OP) - Continued									
Chlorpyrifos	2921-88-2	0.05	mg/kg		<0.05	----	<0.05	----	----
Parathion	56-38-2	0.2	mg/kg		<0.2	----	<0.2	----	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg		<0.05	----	<0.05	----	----
Chlorfenvinphos	470-90-6	0.05	mg/kg		<0.05	----	<0.05	----	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg		<0.05	----	<0.05	----	----
Fenamiphos	22224-92-6	0.05	mg/kg		<0.05	----	<0.05	----	----
Prothiofos	34643-46-4	0.05	mg/kg		<0.05	----	<0.05	----	----
Ethion	563-12-2	0.05	mg/kg		<0.05	----	<0.05	----	----
Carbophenothion	786-19-6	0.05	mg/kg		<0.05	----	<0.05	----	----
Azinphos Methyl	86-50-0	0.05	mg/kg		<0.05	----	<0.05	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	----	<0.5	----	----
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	----	<0.5	----	----
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	----	<0.5	----	----
Fluorene	86-73-7	0.5	mg/kg		<0.5	----	<0.5	----	----
Phenanthrene	85-01-8	0.5	mg/kg		<0.5	----	<0.5	----	----
Anthracene	120-12-7	0.5	mg/kg		<0.5	----	<0.5	----	----
Fluoranthene	206-44-0	0.5	mg/kg		<0.5	----	<0.5	----	----
Pyrene	129-00-0	0.5	mg/kg		<0.5	----	<0.5	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg		<0.5	----	<0.5	----	----
Chrysene	218-01-9	0.5	mg/kg		<0.5	----	<0.5	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg		<0.5	----	<0.5	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		<0.5	----	<0.5	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg		<0.5	----	<0.5	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		<0.5	----	<0.5	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		<0.5	----	<0.5	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		<0.5	----	<0.5	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		<0.5	----	<0.5	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		<0.5	----	<0.5	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		**0.6**	----	**0.6**	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		**1.2**	----	**1.2**	----	----
EP080/071: Total Petroleum Hydrocarbons									

Analytical Results

Sub-Matrix: **SOIL**
(Matrix: **SOIL**)

Compound	CAS Number	LOR	Unit	Sample ID	BCW-01 Soil bore composite for contamination	BCW-02a Soil bore composite for asbestos	BCW-03 Soil composite sample N half for contamination	BCW-04a Soil composite NW house for asbestos	BCW-05a Soil composite SW house for asbestos
			Sampling date / time		18-Jan-2022 00:00	18-Jan-2022 00:00	18-Jan-2022 00:00	18-Jan-2022 00:00	18-Jan-2022 00:00
					ME2200127-001	ME2200127-002	ME2200127-003	ME2200127-004	ME2200127-005
					Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons - Continued									
C6 - C9 Fraction	----	10	mg/kg		<10	----	<10	----	----
C10 - C14 Fraction	----	50	mg/kg		<50	----	<50	----	----
C15 - C28 Fraction	----	100	mg/kg		<100	----	<100	----	----
C29 - C36 Fraction	----	100	mg/kg		<100	----	<100	----	----
^ **C10 - C36 Fraction (sum)**	----	50	mg/kg		<50	----	<50	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	----	<10	----	----
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	10	mg/kg		<10	----	<10	----	----
>C10 - C16 Fraction	----	50	mg/kg		<50	----	<50	----	----
>C16 - C34 Fraction	----	100	mg/kg		<100	----	<100	----	----
>C34 - C40 Fraction	----	100	mg/kg		<100	----	<100	----	----
^ **>C10 - C40 Fraction (sum)**	----	50	mg/kg		<50	----	<50	----	----
^ **>C10 - C16 Fraction minus Naphthalene (F2)**	----	50	mg/kg		<50	----	<50	----	----
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	----	<0.2	----	----
Toluene	108-88-3	0.5	mg/kg		<0.5	----	<0.5	----	----
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	----	<0.5	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	----	<0.5	----	----
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	----	<0.5	----	----
^ **Sum of BTEX**	----	0.2	mg/kg		<0.2	----	<0.2	----	----
^ **Total Xylenes**	----	0.5	mg/kg		<0.5	----	<0.5	----	----
Naphthalene	91-20-3	1	mg/kg		<1	----	<1	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		**75.4**	----	**92.1**	----	----
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.05	%		**130**	----	**111**	----	----
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.05	%		**111**	----	**64.2**	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		**81.9**	----	**88.4**	----	----

Analytical Results

Sub-Matrix: **SOIL**
(Matrix: **SOIL**)

Compound	CAS Number	LOR	Unit	Sample ID	BCW-01 Soil bore composite for contamination	BCW-02a Soil bore composite for asbestos	BCW-03 Soil composite sample N half for contamination	BCW-04a Soil composite NW house for asbestos	BCW-05a Soil composite SW house for asbestos
				Sampling date / time	18-Jan-2022 00:00	18-Jan-2022 00:00	18-Jan-2022 00:00	18-Jan-2022 00:00	18-Jan-2022 00:00
					ME2200127-001	ME2200127-002	ME2200127-003	ME2200127-004	ME2200127-005
					Result	Result	Result	Result	Result
EP075(SIM)S: Phenolic Compound Surrogates - Continued									
2-Chlorophenol-D4	93951-73-6	0.5	%		**81.8**	**----**	**88.0**	**----**	**----**
2.4.6-Tribromophenol	118-79-6	0.5	%		**64.4**	**----**	**69.9**	**----**	**----**
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		**89.3**	**----**	**94.2**	**----**	**----**
Anthracene-d10	1719-06-8	0.5	%		**94.8**	**----**	**102**	**----**	**----**
4-Terphenyl-d14	1718-51-0	0.5	%		**83.0**	**----**	**88.1**	**----**	**----**
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		**83.4**	**----**	**83.7**	**----**	**----**
Toluene-D8	2037-26-5	0.2	%		**87.9**	**----**	**89.2**	**----**	**----**
4-Bromofluorobenzene	460-00-4	0.2	%		**83.3**	**----**	**85.1**	**----**	**----**

Analytical Results

Sub-Matrix: **SOIL**
(Matrix: **SOIL**)

Compound	CAS Number	LOR	Unit	Sample ID	BCW-06 Soil composite W of house for contamination	BCW-07a Soil composite S of house for asbestos	BCW-08a Soil composite SE of house for asbestos	BCW-09 Soil composite S of house for contamination	BCW-10 Soil composite sample S half for contamination
				Sampling date / time	18-Jan-2022 00:00	18-Jan-2022 00:00	18-Jan-2022 00:00	18-Jan-2022 00:00	18-Jan-2022 00:00
					ME2200127-006	ME2200127-007	ME2200127-008	ME2200127-009	ME2200127-010
					Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		**3.4**	----	----	**4.0**	**6.6**
EA200: AS 4964 - 2004 Identification of Asbestos in Soils									
Asbestos Detected	1332-21-4	0.1	g/kg		----	**Yes**	**No**	----	----
Asbestos (Trace)	1332-21-4	5	Fibres		----	**No**	**No**	----	----
Asbestos Type	1332-21-4	-	--		----	**Ch**	**-**	----	----
Sample weight (dry)	----	0.01	g		----	**265**	**227**	----	----
APPROVED IDENTIFIER:	----	-	--		----	**A. SMYLIE**	**A. SMYLIE**	----	----
Synthetic Mineral Fibre	----	0.1	g/kg		----	**No**	**No**	----	----
Organic Fibre	----	0.1	g/kg		----	**No**	**No**	----	----
EA200N: Asbestos Quantification (non-NATA)									
ø **Asbestos (Fines and Fibrous <7mm)**	1332-21-4	0.0004	g		----	<0.0004	<0.0004	----	----
ø **Asbestos (Fines and Fibrous FA+AF)**	----	0.001	% (w/w)		----	<0.001	<0.001	----	----
ø **Weight Used for % Calculation**	----	0.0001	kg		----	**0.265**	**0.227**	----	----
ø **Fibrous Asbestos >7mm**	----	0.0004	g		----	<0.0004	<0.0004	----	----
ø **Asbestos Containing Material**	1332-21-4	0.1	g		----	**2.6**	----	----	----
EG005(ED093)T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		<5	----	----	<5	<5
Cadmium	7440-43-9	1	mg/kg		<1	----	----	<1	<1
Chromium	7440-47-3	2	mg/kg		**13**	----	----	**14**	**13**
Copper	7440-50-8	5	mg/kg		**18**	----	----	**16**	**30**
Lead	7439-92-1	5	mg/kg		**236**	----	----	**208**	**176**
Nickel	7440-02-0	2	mg/kg		**7**	----	----	**8**	**7**
Zinc	7440-66-6	5	mg/kg		**667**	----	----	**378**	**572**
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		**0.7**	----	----	**0.4**	**0.4**
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		<0.1	----	----	<0.1	<0.1
EP068A: Organochlorine Pesticides (OC)									
alpha-BHC	319-84-6	0.05	mg/kg		<0.05	----	----	<0.05	<0.05
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg		<0.05	----	----	<0.05	<0.05
beta-BHC	319-85-7	0.05	mg/kg		<0.05	----	----	<0.05	<0.05

Analytical Results

Sub-Matrix: **SOIL**
(Matrix: **SOIL**)

Compound	CAS Number	LOR	Unit	Sample ID	BCW-06 Soil composite W of house for contamination	BCW-07a Soil composite S of house for asbestos	BCW-08a Soil composite SE of house for asbestos	BCW-09 Soil composite S of house for contamination	BCW-10 Soil composite sample S half for contamination
			Sampling date / time		18-Jan-2022 00:00	18-Jan-2022 00:00	18-Jan-2022 00:00	18-Jan-2022 00:00	18-Jan-2022 00:00
					ME2200127-006	ME2200127-007	ME2200127-008	ME2200127-009	ME2200127-010
					Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued									
gamma-BHC	58-89-9	0.05	mg/kg		<0.05	----	----	<0.05	<0.05
delta-BHC	319-86-8	0.05	mg/kg		<0.05	----	----	<0.05	<0.05
Heptachlor	76-44-8	0.05	mg/kg		<0.05	----	----	<0.05	<0.05
Aldrin	309-00-2	0.05	mg/kg		<0.05	----	----	<0.05	<0.05
Heptachlor epoxide	1024-57-3	0.05	mg/kg		<0.05	----	----	<0.05	<0.05
^ Total Chlordane (sum)	----	0.05	mg/kg		**0.52**	----	----	**0.21**	<0.05
trans-Chlordane	5103-74-2	0.05	mg/kg		**0.36**	----	----	**0.12**	<0.05
alpha-Endosulfan	959-98-8	0.05	mg/kg		<0.05	----	----	<0.05	<0.05
cis-Chlordane	5103-71-9	0.05	mg/kg		**0.16**	----	----	**0.09**	<0.05
Dieldrin	60-57-1	0.05	mg/kg		**1.95**	----	----	<0.05	**0.12**
4.4`-DDE	72-55-9	0.05	mg/kg		**0.07**	----	----	**0.11**	<0.05
Endrin	72-20-8	0.05	mg/kg		<0.05	----	----	<0.05	<0.05
beta-Endosulfan	33213-65-9	0.05	mg/kg		<0.05	----	----	<0.05	<0.05
^ Endosulfan (sum)	115-29-7	0.05	mg/kg		<0.05	----	----	<0.05	<0.05
4.4`-DDD	72-54-8	0.05	mg/kg		<0.05	----	----	<0.05	<0.05
Endrin aldehyde	7421-93-4	0.05	mg/kg		<0.05	----	----	<0.05	<0.05
Endosulfan sulfate	1031-07-8	0.05	mg/kg		<0.05	----	----	<0.05	<0.05
4.4`-DDT	50-29-3	0.2	mg/kg		<0.2	----	----	<0.2	<0.2
Endrin ketone	53494-70-5	0.05	mg/kg		<0.05	----	----	<0.05	<0.05
Methoxychlor	72-43-5	0.2	mg/kg		<0.2	----	----	<0.2	<0.2
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg		**1.95**	----	----	<0.05	**0.12**
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg		**0.07**	----	----	**0.11**	<0.05
EP068B: Organophosphorus Pesticides (OP)									
Dichlorvos	62-73-7	0.05	mg/kg		<0.05	----	----	<0.05	<0.05
Demeton-S-methyl	919-86-8	0.05	mg/kg		<0.05	----	----	<0.05	<0.05
Monocrotophos	6923-22-4	0.2	mg/kg		<0.2	----	----	<0.2	<0.2
Dimethoate	60-51-5	0.05	mg/kg		<0.05	----	----	<0.05	<0.05
Diazinon	333-41-5	0.05	mg/kg		<0.05	----	----	<0.05	<0.05
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg		<0.05	----	----	<0.05	<0.05
Parathion-methyl	298-00-0	0.2	mg/kg		<0.2	----	----	<0.2	<0.2
Malathion	121-75-5	0.05	mg/kg		<0.05	----	----	<0.05	<0.05

Analytical Results

Sub-Matrix: **SOIL**
(Matrix: **SOIL**)

Compound	CAS Number	LOR	Unit	Sample ID	BCW-06 Soil composite W of house for contamination	BCW-07a Soil composite S of house for asbestos	BCW-08a Soil composite SE of house for asbestos	BCW-09 Soil composite S of house for contamination	BCW-10 Soil composite sample S half for contamination
			Sampling date / time		18-Jan-2022 00:00	18-Jan-2022 00:00	18-Jan-2022 00:00	18-Jan-2022 00:00	18-Jan-2022 00:00
					ME2200127-006	ME2200127-007	ME2200127-008	ME2200127-009	ME2200127-010
					Result	Result	Result	Result	Result
EP068B: Organophosphorus Pesticides (OP) - Continued									
Fenthion	55-38-9	0.05	mg/kg		<0.05	----	----	<0.05	<0.05
Chlorpyrifos	2921-88-2	0.05	mg/kg		<0.05	----	----	<0.05	<0.05
Parathion	56-38-2	0.2	mg/kg		<0.2	----	----	<0.2	<0.2
Pirimphos-ethyl	23505-41-1	0.05	mg/kg		<0.05	----	----	<0.05	<0.05
Chlorfenvinphos	470-90-6	0.05	mg/kg		<0.05	----	----	<0.05	<0.05
Bromophos-ethyl	4824-78-6	0.05	mg/kg		<0.05	----	----	<0.05	<0.05
Fenamiphos	22224-92-6	0.05	mg/kg		<0.05	----	----	**0.05**	<0.05
Prothiofos	34643-46-4	0.05	mg/kg		<0.05	----	----	<0.05	<0.05
Ethion	563-12-2	0.05	mg/kg		<0.05	----	----	<0.05	<0.05
Carbophenothion	786-19-6	0.05	mg/kg		<0.05	----	----	<0.05	<0.05
Azinphos Methyl	86-50-0	0.05	mg/kg		<0.05	----	----	<0.05	<0.05
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	----	----	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	----	----	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	----	----	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg		<0.5	----	----	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg		<0.5	----	----	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg		<0.5	----	----	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg		<0.5	----	----	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg		<0.5	----	----	<0.5	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg		<0.5	----	----	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg		<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
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		<0.5	----	----	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg		<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
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		<0.5	----	----	<0.5	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		<0.5	----	----	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		<0.5	----	----	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		<0.5	----	----	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		**0.6**	----	----	**0.6**	**0.6**
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		**1.2**	----	----	**1.2**	**1.2**

Analytical Results

Sub-Matrix: **SOIL**
(Matrix: **SOIL**)

Compound	CAS Number	LOR	Unit	Sample ID	BCW-06 Soil composite W of house for contamination	BCW-07a Soil composite S of house for asbestos	BCW-08a Soil composite SE of house for asbestos	BCW-09 Soil composite S of house for contamination	BCW-10 Soil composite sample S half for contamination
			Sampling date / time		18-Jan-2022 00:00	18-Jan-2022 00:00	18-Jan-2022 00:00	18-Jan-2022 00:00	18-Jan-2022 00:00
					ME2200127-006	ME2200127-007	ME2200127-008	ME2200127-009	ME2200127-010
					Result	Result	Result	Result	Result
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	----	----	<10	<10
C10 - C14 Fraction	----	50	mg/kg		<50	----	----	<50	<50
C15 - C28 Fraction	----	100	mg/kg		<100	----	----	<100	<100
C29 - C36 Fraction	----	100	mg/kg		<100	----	----	<100	<100
^ **C10 - C36 Fraction (sum)**	----	50	mg/kg		<50	----	----	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	----	----	<10	<10
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	10	mg/kg		<10	----	----	<10	<10
>C10 - C16 Fraction	----	50	mg/kg		<50	----	----	<50	<50
>C16 - C34 Fraction	----	100	mg/kg		<100	----	----	<100	<100
>C34 - C40 Fraction	----	100	mg/kg		<100	----	----	<100	<100
^ **>C10 - C40 Fraction (sum)**	----	50	mg/kg		<50	----	----	<50	<50
^ **>C10 - C16 Fraction minus Naphthalene (F2)**	----	50	mg/kg		<50	----	----	<50	<50
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	----	----	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg		<0.5	----	----	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	----	----	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	----	----	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	----	----	<0.5	<0.5
^ **Sum of BTEX**	----	0.2	mg/kg		<0.2	----	----	<0.2	<0.2
^ **Total Xylenes**	----	0.5	mg/kg		<0.5	----	----	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg		<1	----	----	<1	<1
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		**95.0**	----	----	**90.4**	**88.1**
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.05	%		**121**	----	----	**108**	**106**
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.05	%		**86.3**	----	----	**86.7**	**96.3**
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		**88.4**	----	----	**88.4**	**91.5**

Analytical Results

Sub-Matrix: **SOIL**
(Matrix: **SOIL**)

Compound	CAS Number	LOR	Unit	Sample ID	BCW-06 Soil composite W of house for contamination	BCW-07a Soil composite S of house for asbestos	BCW-08a Soil composite SE of house for asbestos	BCW-09 Soil composite S of house for contamination	BCW-10 Soil composite sample S half for contamination
				Sampling date / time	18-Jan-2022 00:00	18-Jan-2022 00:00	18-Jan-2022 00:00	18-Jan-2022 00:00	18-Jan-2022 00:00
					ME2200127-006	ME2200127-007	ME2200127-008	ME2200127-009	ME2200127-010
					Result	Result	Result	Result	Result
EP075(SIM)S: Phenolic Compound Surrogates - Continued									
2-Chlorophenol-D4	93951-73-6	0.5	%		**87.0**	**----**	**----**	**87.0**	**90.6**
2.4.6-Tribromophenol	118-79-6	0.5	%		**68.4**	**----**	**----**	**69.2**	**72.7**
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		**92.6**	**----**	**----**	**93.9**	**96.7**
Anthracene-d10	1719-06-8	0.5	%		**100**	**----**	**----**	**101**	**106**
4-Terphenyl-d14	1718-51-0	0.5	%		**86.8**	**----**	**----**	**86.9**	**90.4**
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		**98.8**	**----**	**----**	**91.4**	**90.6**
Toluene-D8	2037-26-5	0.2	%		**106**	**----**	**----**	**96.7**	**94.8**
4-Bromofluorobenzene	460-00-4	0.2	%		**100**	**----**	**----**	**92.4**	**90.7**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	BCW-11a Soil composite for asbestos	----	----	----	----
				Sampling date / time	18-Jan-2022 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ME2200127-011	--------	--------	--------	--------
					Result	----	----	----	----
EA200: AS 4964 - 2004 Identification of Asbestos in Soils									
Asbestos Detected	1332-21-4	0.1	g/kg		**No**	----	----	----	----
Asbestos (Trace)	1332-21-4	5	Fibres		**No**	----	----	----	----
Asbestos Type	1332-21-4	-	--		**-**	----	----	----	----
Sample weight (dry)	----	0.01	g		**263**	----	----	----	----
APPROVED IDENTIFIER:	----	-	--		**A. SMYLIE**	----	----	----	----
Synthetic Mineral Fibre	----	0.1	g/kg		**No**	----	----	----	----
Organic Fibre	----	0.1	g/kg		**No**	----	----	----	----

Analytical Results

Sub-Matrix: **SOLID**
(Matrix: **SOLID**)

Compound	CAS Number	LOR	Unit	Sample ID	BCW-12 Four (4) individual samples of fibre cement	BCW-13 Four (4) individual samples of fibre cement	BCW-14 Four (4) individual samples of fibre cement	BCW-15 Four (4) individual samples of fibre cement	----
				Sampling date / time	18-Jan-2022 00:00	18-Jan-2022 00:00	18-Jan-2022 00:00	18-Jan-2022 00:00	----
					ME2200127-012	ME2200127-013	ME2200127-014	ME2200127-015	--------
					Result	Result	Result	Result	----
EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples									
Asbestos Detected	1332-21-4	0.1	g/kg		**Yes**	**Yes**	**No**	**Yes**	**----**
Asbestos Type	1332-21-4	-	--		**Ch**	**Ch**	**-**	**Ch**	**----**
Asbestos (Trace)	1332-21-4	5	Fibres		**N/A**	**N/A**	**No**	**N/A**	**----**
Sample weight (dry)	----	0.01	g		**57.2**	**49.2**	**140**	**20.2**	**----**
Synthetic Mineral Fibre	----	0.1	g/kg		**No**	**No**	**No**	**No**	**----**
Organic Fibre	----	0.1	g/kg		**Yes**	**Yes**	**Yes**	**Yes**	**----**
APPROVED IDENTIFIER:	----	-	--		**B.SCHRADER**	**B.SCHRADER**	**B.SCHRADER**	**B.SCHRADER**	**----**

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	BCW-02aSoil bore composite for asbestos - 18-Jan-2022 00:00	Soil sample.
EA200: Description	BCW-04aSoil composite NW house for asbestos - 18-Jan-2022 00:00	Soil sample containing several pieces of asbestos cement sheeting approximately 7x5x2mm.
EA200: Description	BCW-05aSoil composite SW house for asbestos - 18-Jan-2022 00:00	Soil sample.
EA200: Description	BCW-07aSoil composite S of house for asbestos - 18-Jan-2022 00:00	Soil sample containing three pieces of asbestos cement sheeting approximately 20x10x5mm.
EA200: Description	BCW-08aSoil composite SE of house for asbestos - 18-Jan-2022 00:00	Soil sample.
EA200: Description	BCW-11aSoil composite for asbestos - 18-Jan-2022 00:00	Soil sample.

Sub-Matrix: **SOLID**

Method: Compound	Sample ID - Sampling date / time	Analytical Results
EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples		
EA200: Description	BCW-12Four (4) individual samples of fibre cement - 18-Jan-2022 00:00	One piece of asbestos cement sheeting approximately 100x50x5mm.
EA200: Description	BCW-13Four (4) individual samples of fibre cement - 18-Jan-2022 00:00	One piece of asbestos cement sheeting approximately 100x75x5mm.
EA200: Description	BCW-14Four (4) individual samples of fibre cement - 18-Jan-2022 00:00	One piece of cement sheeting.
EA200: Description	BCW-15Four (4) individual samples of fibre cement - 18-Jan-2022 00:00	One piece of asbestos cement sheeting approximately 70x40x5mm.

Surrogate Control Limits

Sub-Matrix: **SOIL**

Compound	CAS Number	Recovery Limits (%) Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	39	149
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

(SOIL) EA200N: Asbestos Quantification (non-NATA)

(SOLID) EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples

Analysis conducted by ALS Sydney, NATA accreditation no. 825, site no. 10911 (Chemistry) 14913 (Biology).

(SOIL) EP080: BTEXN

(SOIL) EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions

(SOIL) EP080S: TPH(V)/BTEX Surrogates

(SOIL) EP075(SIM)B: Polynuclear Aromatic Hydrocarbons

(SOIL) EP075(SIM)S: Phenolic Compound Surrogates

(SOIL) EP075(SIM)T: PAH Surrogates

(SOIL) EP068A: Organochlorine Pesticides (OC)

(SOIL) EP068B: Organophosphorus Pesticides (OP)

(SOIL) EP068T: Organophosphorus Pesticide Surrogate

(SOIL) EP068S: Organochlorine Pesticide Surrogate

(SOIL) EA055: Moisture Content (Dried @ 105-110°C)

(SOIL) EP066: Polychlorinated Biphenyls (PCB)

(SOIL) EP066S: PCB Surrogate

(SOIL) EG035T: Total Recoverable Mercury by FIMS

(SOIL) EG005(ED093)T: Total Metals by ICP-AES

(SOIL) EP080/071: Total Petroleum Hydrocarbons