



STAGE 1: PRELIMINARY CONTAMINATION ASSESSMENT

Proposed Residential Rezoning

**23 Compton Drive, East Ballina NSW 2478
(Lot 1 DP781542 and Lot 3 DP525783)**

September 2019

Environmental Engineering Solutions

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Executive Summary

ENV Solutions Pty Ltd (ENV) has been engaged by Kristian Moon to undertake a Stage 1 Preliminary Contamination Assessment to support a planning proposal for residential rezoning at 23 Compton Drive, East Ballina NSW (Lot 1 DP781542 and Lot 3 DP525783).

The assessment included the following components:

- A review of the site conditions and surrounding environment;
- Preparation of a summary of the site history;
- Identification of past and present potentially contaminating activities and potential contaminant types;
- A preliminary assessment of potential site contamination, based on the desktop studies;
- Collection of soil samples from across the dwelling envelope;
- Assessment of the soil analytical results against relevant screening and investigation levels; and
- Assessment of the environmental suitability of the site for the proposed use (residential land use).

A desktop site history assessment of the property was undertaken. Information to assist in the site history was collated from several sources. A site inspection was also undertaken to identify potential areas of contamination at the property.

Based on the desktop site history assessment and site inspection, three (3) primary Activities of Environmental Concern (AEC) were identified as requiring further investigation:

- Possible historical broad-scale horticultural/agricultural use – use of pesticides and/or fertilisers within localised and surrounding areas;
- Asbestos fines in soils surrounding the main structure – as a product of fire damaged asbestos containing material; and,
- Lead in soil from possible lead-based paint from existing structures.

At the time of inspection, the site consisted of two blocks, one with a small concrete slab/garden area and the other with an existing building situated in the front portion (southern) of the property that borders Compton Drive, and a heavily vegetated rear portion. The building appeared to be fire damaged and remained unoccupied. The front portion of the property was predominantly concrete covered, with the exception of two small grassed/exposed areas on either side of the building. The rear portion consisted of a thick understorey throughout, with various medium sized established trees.

Systematic (grid-based) soil sampling was undertaken across both allotments, during which eight (8) individual samples were collected, along with two targeted sampling points to

incorporate areas of potential contamination (refer to Figure 2, **Attachment 1**). Samples were stored on ice in an esky and transported to the laboratory for analysis. The grid-based samples were composited into three sets of sub-samples (C1, C2 and C3) and analysed for the chemicals of potential concern (OCPs and heavy metals), while the two targeted samples were analysed for asbestos.

The analytical results for the composite soil samples were compared with relevant human health-based screening and investigation levels from the National Environment Protection (Assessment of Site Contamination) Measure 1999 (as amended 2013; the 'NEPM'). The human-health based assessment levels used were those for a low-density residential land use (HIL-A), reflecting the proposed residential development.

A review of the sampling results indicated that the concentrations of all analytes tested in the composite samples met the adopted human health-based screening and investigation levels.

The results from the targeted soil sample, 'AS1' obtained from the eastern perimeter, returned a positive result for bonded Chrysotile asbestos. It is believed that the 0.036g fragment originated from the adjacent building, which is known to contain ACM. As part of any future demolition works at the site, a post demolition soil scrape and asbestos clearance by a Licenced Asbestos Assessor (LAA) will be required. Taking this into account and the post demolition clearance, any asbestos fragments that are likely to exist in the shallow surface soils will be removed and therefore, are considered to pose negligible risk to future land users.

On the basis of the soil results and any future demolition works, the subject land proposed for residential rezoning is considered suitable from an environmental (contamination) perspective.

1. Introduction

ENV Solutions Pty Ltd (ENV) was engaged by Kristian Moon to undertake a Stage 1 Preliminary Contamination Assessment of the parcel of land (the 'site') identified as Lot 1 DP781542 and Lot 3 DP525783 located at 23 Compton Drive, East Ballina NSW. The relative location of the site is shown on Figure 1, **Attachment 1**. This assessment has been conducted to support the planning proposal for residential rezoning of the site.

2. Scope of Works

Clause 7(1) of State Environment Planning Policy No 55 – Remediation of Land (SEPP 55) states that:

- “(1) A consent authority must not consent to the carrying out of any development on land unless:*
- (a) it has considered whether the land is contaminated, and*
 - (b) if the land is contaminated, it is satisfied that the land is suitable in its contaminated state (or will be suitable, after remediation) for the purpose for which the development is proposed to be carried out, and*
 - (c) if the land requires remediation to be made suitable for the purpose for which the development is proposed to be carried out, it is satisfied that the land will be remediated before the land is used for that purpose.*
- (2) Before determining an application for consent to carry out development that would involve a change of use on any of the land specified in subclause (4), the consent authority must consider a report specifying the findings of a preliminary investigation of the land concerned carried out in accordance with the contaminated land planning guidelines.*
- (3) The applicant for development consent must carry out the investigation required by subclause (2) and must provide a report on it to the consent authority...”*

This assessment has been prepared to address these SEPP 55 requirements and has been prepared in accordance with the *Managing Land Contamination Planning Guidelines* (Department of Urban Affairs [DUAP] and Environment Protection Authority [EPA] 1998) and the *Guidelines for Consultants Reporting on Contaminated Sites* (EPA, 2011).

The assessment included the following components:

- A review of the site conditions and surrounding environment;
- Preparation of a summary of the site history;
- Identification of past and present potentially contaminating activities and potential contaminant types;
- A preliminary assessment of potential site contamination, based on the desktop studies;
- Collection of soil samples from across the investigation area;
- Assessment of the soil analytical results against relevant screening and investigation levels; and
- Assessment of the environmental suitability of the site for the proposed use (residential land use).

3. Site Identification Details

The site is identified as Lot 1 DP781542 and Lot 3 DP525783 and is located approximately 2.3 km east of the central business district (CBD) of Ballina, refer to Figure 1 and 2, **Attachment 1**. A contour and detail survey of the site is also included in **Attachment 1**.

Table 1 provides identification details for the site, relevant to the assessment.

Table 1: Site Identification Details

Site Address	23 Compton Drive, East Ballina, NSW 2478
Site Area	Total lot area is approximately: (SixMaps, 2019) Lot 1 DP781542 – 492 m ² Lot 3 DP525783 – 150 m ²
Real Property Description	Lot 1 DP781542 and Lot 3 DP525783
Local Government Area	Ballina Shire Council
Zoning	Environmental Protection (Scenic/Escarpment) Zone (BLEP (1987)) – BLEP (2012) (Figure 3, Attachment 1).
Site Features	The site consists of two lots, one with a small concrete slab and over grown garden area. The other a vacant building which occupies the front portion of the allotment followed by a retaining wall which separates the heavily vegetated rear portion. The building appeared to be fire damaged and remained unoccupied. The front portion of the property was predominantly concrete covered, with the exception of two small grassed/exposed areas on either side of the building. The rear portion consisted of a thick understorey throughout, with various medium sized established trees.
Elevation	The site elevation ranges between approximately 2 m to 10 m Australian Height Datum (AHD) (SixMaps, 2019).
Existing Land Use	Commercial – Restaurant/vacant
Proposed Land Use	Residential
Surrounding Environment	North: Residential properties followed by Pine Avenue. South: Compton Drive borders the property immediately to the south followed by Shaws Bay. East: Residential properties. West: Public walkway and toilet block.

4. Site Condition and Surrounding Environment

A desktop study was undertaken to establish the physical characteristics of the site and surrounding environment. The desktop-based information was supplemented by observations from the site inspection and sampling undertaken on 11th and 28th June 2019.

4.1. Site Features

At the time of investigation, the site consisted of a vacant concreted area and a building which occupies the front portion of the allotment followed by a retaining wall which separates the heavily vegetated rear portion.

The building appeared to be fire damaged and remained unoccupied. The front portion of the property was predominantly concrete covered, with the exception of two small grassed/exposed areas on either side of the building. The rear portion consisted of a thick understorey throughout, with various medium sized established trees.

4.2. Surrounding Environment

North: Residential properties followed by Pine Avenue.

South: Compton Drive borders the property immediately to the south followed by Shaws Bay.

East: Residential properties.

West: Public walkway and toilet block.

4.3. Topography

The elevation of the site ranges between approximately 2 m and 10 m Australian Height Datum (AHD) (Google Earth, 2018). The site was noted to have a steep slope to the front of the property (south).

4.4. Soils

Information regarding regional soils was collected using the NSW eSPADE mapping (www.environment.nsw.gov.au/eSpadeWebApp/). The closest soil sample information was obtained from a location approximately 650 m southeast of the site, at the "Profile 52" off McKinnon Street, East Ballina. The available soil information from this location is summarised as follows:

- Soil Physiography described as: "basalt lithology and used for urban. Surface condition is loose".
- Soil Type described as: "Red Podzolic Soil (GSG), Dr3.61 (PPF)"

- Soil description is: “very dark grey (brownish black) (2.5Y 3/1) [moist] sand with single grained (sandy), field pH is 6.0. Coarse fragments are common (10-20%), as parent material, fine gravel (2-6 mm). Layer notes are: Dune sand.”

Observations of the on-site soils made during the site inspection and sampling on 11 June 2019, indicated the soils were of fine grained sands, moist, white to grey in colour.

4.5. Flooding

With reference to the *Flood Planning Map - Sheet FLD_006* (Ballina Shire Council LEP, 2012) the property is not included in the flood planning area. The Ballina Shire Council flood planning map of the site is available for viewing in Figure 4, **Attachment 1**.

4.6. Acid Sulfate Soils (ASS)

With reference to the *Acid Sulfate Soils Map - Sheet ASS_006* (Ballina Shire Council LEP, 2012), the site is categorised as non ASS however is bordered by Class 5 ASS risk. Class 5 ASS are of significance for:

- Works within 500 metres of adjacent Class 1, 2, 3 or 4 land that is below 5 metres Australian Height Datum; and,
- Which the watertable is likely to be lowered below 1 metre Australian Height Datum on adjacent Class 1, 2, 3 or 4 land.

The Ballina Shire Council Acid Sulfate Soils map of the site is presented in Figure 5, **Attachment 1**.

4.7. Groundwater Resources

A search of existing licensed groundwater bores was undertaken on 13th June 2019, using the WaterNSW (formally NSW Department of Primary Industries Office of Water) online groundwater database. The search indicated that four (4) licensed groundwater bores were situated within a 500 m radius of the site; with the closest situated approximately 450 m south-east of the site and is registered for general purposes. The other two groundwater bores are used for domestic purposes and one industrial bore installed to a maximum depth of 6.10 m (refer to Figure 6, **Attachment 1**).

5. Site History

5.1. Overview

A desktop site history assessment was undertaken to evaluate the chronological history of site occupation and possible sources and locations of contamination. Information used to assist in the desktop site history assessment was collected and collated from the following sources:

- NSW Land and Property Information (LPI) – available Town and Parish Maps for the Ballina area;
- NSW Office of Environment and Heritage’s (OEH) Protection of Environment Operations Act 1997 (POEO Act) Public Register;
- OEH’s Contaminated Land – Record of Notices;
- NSW Department of Primary Industries (DPI): cattle dip site locator.

The findings of the desktop site history assessment are summarised in the following sub-sections.

5.2. Anecdotal Information

Information supplied by Mr. Kristian Moon during the site investigation is summarised by the following:

- The building was damaged by an internal fire during 2012.
- Asbestos containing material (ACM) is present in the building, which is yet to be removed.
- The property is frequented by trespassers and vandalised on occasions.

5.3. Town and Parish Maps

The NSW Land Registry Services’ Town and Parish Maps were reviewed during the desktop assessment for the Ballina area. Three archived maps were obtained from 1922, 1929 and 1936, which suggest the property had been used for commercial/residential purposes since sometime around 1922. No information was provided prior to 1922 and the land use could not be determined. The historical parish maps from 1922 and 1936 of the site are available for viewing in Figure 7, **Attachment 1**.

5.4. POEO Act Public Register Search

The NSW EPA POEO Act Public Register contains information about environment protection licences, licence applications, notices issued under the POEO Act and pollution studies and reduction programs.

The EPA's POEO Act Public Register was searched for the East Ballina area on 13 June 2019. The search returned one (1) current POEO s.92 Clean Up Notice for the area. The notice was for Southern Cross School on Chickiba Drive (1.9 km north-east). Given the distance of the notice location from the subject site it is unlikely that any of these activities have had an adverse effect on the environmental conditions at the site.

5.5. Contaminated Land – Record of Notices Search

The OEH's Contaminated Land – Record of Notices was searched (accessed 13 June 2019) for the East Ballina area. The search did not list any previously issued or current notices.

5.6. Cattle Dip Site Locator

The NSW DPI's cattle dip site locator was accessed on 13 June 2019. A search of the East Ballina area indicated one (1) former cattle dip site located on Lee Street, approximately 760 m north-east of the subject site. The dip status is remediated, however when it was in use the contaminants used included arsenic, DDT, dioxathion. Given the distance from the subject site, the cattle dip site when operational, is considered to have negligible effect on the environmental conditions of the subject site.

5.7. Areas of Environmental Concern and Potential Contaminants

Based on the desktop site history assessment, the subject site is likely to have been used for commercial (restaurant) or residential purposes for a significant period of time and as such, no industrial activities are likely to have taken place at the site recently. However, prior to 1922 the property could have potentially been used for or subjected to surrounding agricultural activities.

Based on the desktop review, and an initial site inspection, the primary Areas or Activities of Environmental Concern (AEC) have been subsequently identified as:

- Possible previous broad-scale agricultural activities from localised and surrounding area – organochlorine pesticides (OCPs) and heavy metals associated with potential pesticide and fertiliser use – noting that any such activities would have occurred a significant time ago, prior to commercial/residential development;
- Asbestos fines in soils surrounding the main structure – as a product of fire damaged asbestos containing material; and,
- Lead in soil from potential use of lead-based paint on existing structures.

6. Site Inspection

ENV Solutions Environmental Engineer, Ollie Fick, undertook a site inspection with associated sampling on 11th and 28th June 2019. The purpose of the inspection was to obtain further information about AECs identified during the desktop site history assessment and to identify any additional AECs on the site.

At the time of inspection, the site consisted of two blocks, one with a concrete slab/garden area and the other with an existing building situated in the front portion (southern) of the property that borders Compton Drive, and a heavily vegetated rear portion. The building appeared to be fire damaged and remained unoccupied. The front portion of the property was predominantly concrete covered, with the exception of two small grassed/exposed areas on either side of the building. The rear portion consisted of a thick understorey throughout, with various medium sized established trees.

Photographs taken during the site inspection and sampling program are provided in **Attachment 2**.

7. Sampling and Analysis Plan

Section 2.1 of the *Sampling Design Guidelines* (EPA, 1995) states that a preliminary sampling and analysis program may be required where investigations indicate possible sources of contamination. Given the results of the site history assessment, sampling and analysis were undertaken at the site.

7.1. Sampling Objective

In accordance with *Sampling Design Guidelines* (EPA, 1995), the rationale behind sampling is to gather information concerning the location, nature, level and extent of contamination found within the proposed development area. The objective of the field sampling program was therefore to collect this information in order to evaluate the current environmental quality of the site soils in the context of the proposed residential dwelling.

7.2. Field Investigations

The field sampling investigation was conducted on 11th and 28th June 2019. Physical soil samples were collected directly by hand from shallow soils beneath the root zone of exposed soils or directly beneath the concrete slab (following concrete coring – S1 and S2).

Systematic (grid-based) soil sampling was undertaken across the both allotments, during which eight (8) individual samples were collected, along with two targeted sampling points ('AS1', 'AS2') to incorporate areas of potential contamination (refer to Figure 2, **Attachment 1**). A total of ten (10) individual contamination samples were collected. All samples were

stored on ice in an esky and transported to the laboratory for analysis with accompanying chain of custody (COC) documentation. This number of sampling locations was more than sufficient to meet the requirements of the NSW EPA *Sampling Design Guidelines* (1995) for the site area.

The laboratory was requested to prepare three composite samples ('C1', 'C2' and 'C3') from the 8 individual grid samples – refer to Table 2 below.

Table 2: Sample Details

Individual Sample No.	Depth (mm)	Composite Sample No.
S1	0 - 150	C1
S2	0 - 150	
S3	0 - 150	
S4	0 - 150	C2
S5	0 - 150	
S6	0 - 150	
S7	0 - 150	C3
S8	0 - 150	

7.3. Sampling Methodology and Field Quality Assurance/Quality Control

Using disposable nitrile gloves, the samples were collected by hand, a new glove was used at each location to minimise the potential for cross-contamination. Samples were sealed in glass sample jars (supplied by the laboratory) and chilled prior to dispatch to the laboratory. Laboratory documentation is available for viewing in **Attachment 3**.

7.4. Laboratory Analysis

Table 3 summarises the laboratory analysis conducted on the samples collected.

Table 3: Analytes Requested for Laboratory Analysis

Analytes Tested	Potential Contamination Source	Sample ID
Organo-chlorine pesticides (OCPs)	Agricultural pesticides	C1, C2, C3
Metals	Agricultural chemicals, pesticides, herbicides and fertilisers, paints and building materials	C1, C2, C3
Asbestos	Asbestos containing material used in building material	AS1, AS2

Pesticides/Herbicides

Herbicides and pesticides are used during agricultural and horticultural activities to kill organisms that are deemed to be harmful. Some pesticides are also applied beneath and adjacent to buildings to control termites.

Some pesticides contain heavy metals, OCPs and PCBs. Pesticides may cause acute and chronic health effects in those who are exposed. Pesticide exposure can cause a variety of adverse health effects. These effects can range from simple irritation of the skin and eyes to more severe effects such as those on the nervous system, mimicking hormones causing reproductive problems, or causing cancer.

Metals

Metals occur naturally in the environment with large variations in concentration. Anthropogenic sources of metals; from pollution, fertilisers, pesticides/herbicides and combustion products of fossil fuels; can be introduced to the environment.

Asbestos

Asbestos has been used historically within buildings in Australia up until its ban in 2003. Due to its versatility as a fire retardant and its high resilience as a building material, bonded asbestos sheeting was used significantly throughout buildings across Australia. Health risk associated to asbestos exposure are significant. Asbestosis, Mesothelioma and Lung Cancer are all known diseases caused by the inhalation of asbestos fibres. In its bonded state, asbestos is relatively harmless, yet if the material is broken apart and fibres become airborne, the risk is increased

8. Laboratory Analysis Results and Discussion

8.1. Soil Sampling

The laboratory certificates and associated documentation are presented in **Attachment 3**.

The analytical results for the composite soil and targeted samples were compared with relevant screening and investigation levels from the NEPM. The human-health based assessment levels used were those for a low-density residential land use (HIL-A), since these are the most conservative levels and meet the proposed residential land use of the subject site. The assessment levels were divided by two (2) or three (3) for comparison purposes to account for the composite sampling.

The results indicate the concentrations of all analytes tested in the composite samples met the adopted human health-based screening and investigation levels.

The results from the targeted soil sample, 'AS1' obtained from the eastern perimeter, returned a positive result for bonded Chrysotile asbestos. It is believed that the 0.036g fragment originated from the adjacent building, which is known to contain ACM. As part of the proposed demolition works at the site, a post demolition soil scrape and asbestos clearance by a Licensed Asbestos Assessor (LAA) will be required. Taking this into account, any asbestos fragments that exist in the shallow surface soils will be removed and therefore is considered to pose negligible risk to future land users.

The analytical results are available for viewing in **Attachment 4**.

9. Conclusions

ENV Solutions has undertaken a Stage 1 Preliminary Contamination Assessment for the proposed residential rezoning at 23 Compton Drive, East Ballina NSW (Lot 1 DP781542 and Lot 3 DP525783).

- The assessment included the following components:
- A review of the site conditions and surrounding environment;
- Preparation of a summary of the site history;
- Identification of past and present potentially contaminating activities and potential contaminant types;
- A preliminary assessment of potential site contamination, based on the desktop studies;
- Collection of soil samples from across the site;
- Assessment of the soil analytical results against relevant screening and investigation levels; and
- Assessment of the environmental suitability of the site for the proposed use (residential land use).

From this information, the primary AEC were identified as:

- Possible previous broad-scale agricultural activities from localised and surrounding area– organochlorine pesticides (OCPs) and heavy metals associated with potential pesticide and fertiliser use – noting that any such activities would have occurred a significant time ago, prior to residential development;
- Asbestos fines in soils surrounding the main structure – as a product of incorrect asbestos removal or fire damaged asbestos containing material; and,
- Lead paint, which may have been used on former structures.

The results from the soil sampling indicate the concentrations of all analytes tested in the composite samples met the adopted human health-based screening and investigation levels.

The results from the targeted soil sample, 'AS1' obtained from the eastern perimeter, returned a positive result for bonded Chrysotile asbestos. It is believed that the 0.036g fragment originated from the adjacent building, which is known to contain ACM. As part of the proposed demolition works at the site, a post demolition soil scrape and asbestos clearance by a Licensed Asbestos Assessor (LAA) will be required. Taking this into account and the post demolition clearance, any asbestos fragments that exist in the shallow surface soils will be removed and therefore is considered to pose negligible risk to future land users.

On the basis of the soil results and any future demolition works, the planning proposal for residential rezoning is considered suitable from an environmental (contamination) perspective.

10. General Notes

General

Geotechnical and environmental reports present the results of investigations carried out for a specific project and usually for a specific phase of the project (e.g. preliminary design). The report is based specific criteria, such as the nature of the project, underground utilities or scope of service limitations imposed by the Client. The report may not be relevant for other phases of the project (e.g. construction), after some time or where project details and clients change.

Interpretation of Results

The discussion and recommendations in the accompanying report are based on extrapolation/interpolation from data obtained at discrete locations and other external sources and guidelines. The actual interface between the materials may be far more gradual or abrupt than indicated. Also, actual conditions in areas not sampled may differ from those predicted.

The report is based on significant background details that only the authors can be aware of, and therefore implementation of the recommendations by others may lead to misinterpretation and complications. Therefore, this company should be consulted to explain the reports implications to other involved parties.

Reporting relies on interpretation of often limited factual information based on judgment and opinion which has a level of uncertainty and ambiguity attached to it and is far less exact than other design disciplines. Users of the report when assessing the implications of the recommendations should consider this.

Change in Conditions

Subsurface conditions can change with time and can vary between test locations. Construction operations at or adjacent to the site and natural events such as floods, earthquakes or groundwater fluctuations can also affect subsurface conditions.

11. References

1. *Australian and New Zealand Environment and Conservation Council (ANZECC) and National Health and Medical Research Council (1992). Australian and New Zealand Guidelines for the Assessment and Management of Contaminated Sites. Australian and New Zealand Environment and Conservation Council, National Health and Medical Research Council, 57p.*
2. *Ballina Shire Council: Local Environmental Plan (LEP; 2012).*
3. *Department of Urban Affairs and Planning and the Environment Protection Authority (1998). Managing Land Contamination, Planning Guidelines SEPP 55 – Remediation of Land.*
4. *DIPMAC (1995) Guidelines to Assist Local Government in Assessing Development within 200 metres of Cattle Tick Dip Sites.*
5. *Environment Protection Authority (1995) Sampling Design Guidelines.*
6. *Environment Protection Authority (2000) Guidelines for Consultants Reporting on Contaminated Sites.*
7. *NSW Environment Protection Authority (2014) Waste Classification guidelines Part 3: Waste containing radioactive*
8. *Lancaster, G. (2006). ASSESSMENT OF TOTAL SOIL MANGANESE AND CHROMIUM IN BASALTIC SOILS OF THE NORTH COAST, NSW. An assessment of Manganese and Chromium possible soil contamination as required for State Environmental Planning Policy 55, 1-15. National Environment Protection Council (2013) National Environment Protection (Assessment of Site Contamination) Measure 1999 (as amended 2013).*
9. *USEPA (2015).ProUCL Version 5.1.002*

Glossary

Below is a list of commonly used abbreviations in the report:

AEC – Areas of Environmental Concern

ENV – ENV Solutions Pty Ltd

COC – Chain of Custody

DPI – Department of Primary Industries

EILs – Ecological Investigation Levels (for soil)

EPA – Environment Protection Authority (within the Office of Environment and Heritage (OEH))

HILs – Health Investigation Levels (for soil)

NEPM – National Environment Protection (Assessment of Site Contamination) Measure 1999 (as amended 2013)

mBGL – Metres Below Ground Level

OEH – Office of Environment & Heritage

QA/QC – Quality Assurance and Quality Control

12. Attachments

Attachment 1	Figures
Attachment 2	Photographs
Attachment 3	Laboratory Documentation
Attachment 4	Analytical Results Tables

ATTACHMENT 1

Figures 1, 2, 3, 4, 5, 6 & 7

Contour and Detail Survey Plan

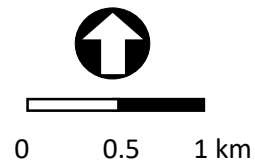


Figure 1 - Site Location
23 Compton Drive, East Ballina, NSW 2478

Kristian Moon
Contamination Assessment
Job No: 19209



Site area (approximate) – Boundary not shown in true location



Sample Locations

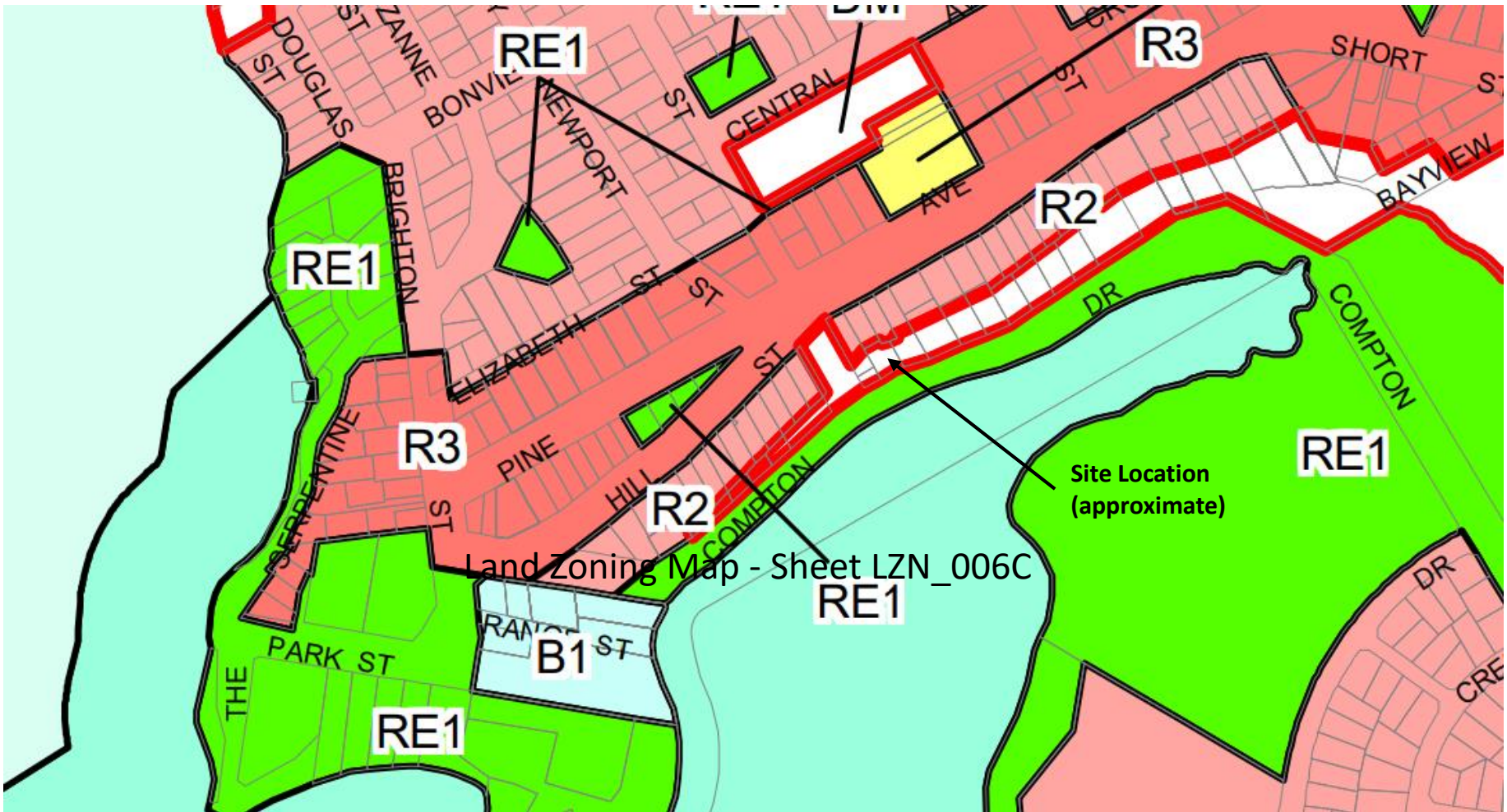


0 3 6 m



Figure 2 - Sample Locations
23 Compton Drive, East Ballina, NSW 2478

Kristian Moon
Contamination Assessment
Job No: 19209



Land Zoning Map - Sheet LZN_006C



Figure 3 – Land Zoning - Sheet LZN_006C
23 Compton Drive, East Ballina, NSW 2478

Kristian Moon
Contamination Assessment
Job No: 19209

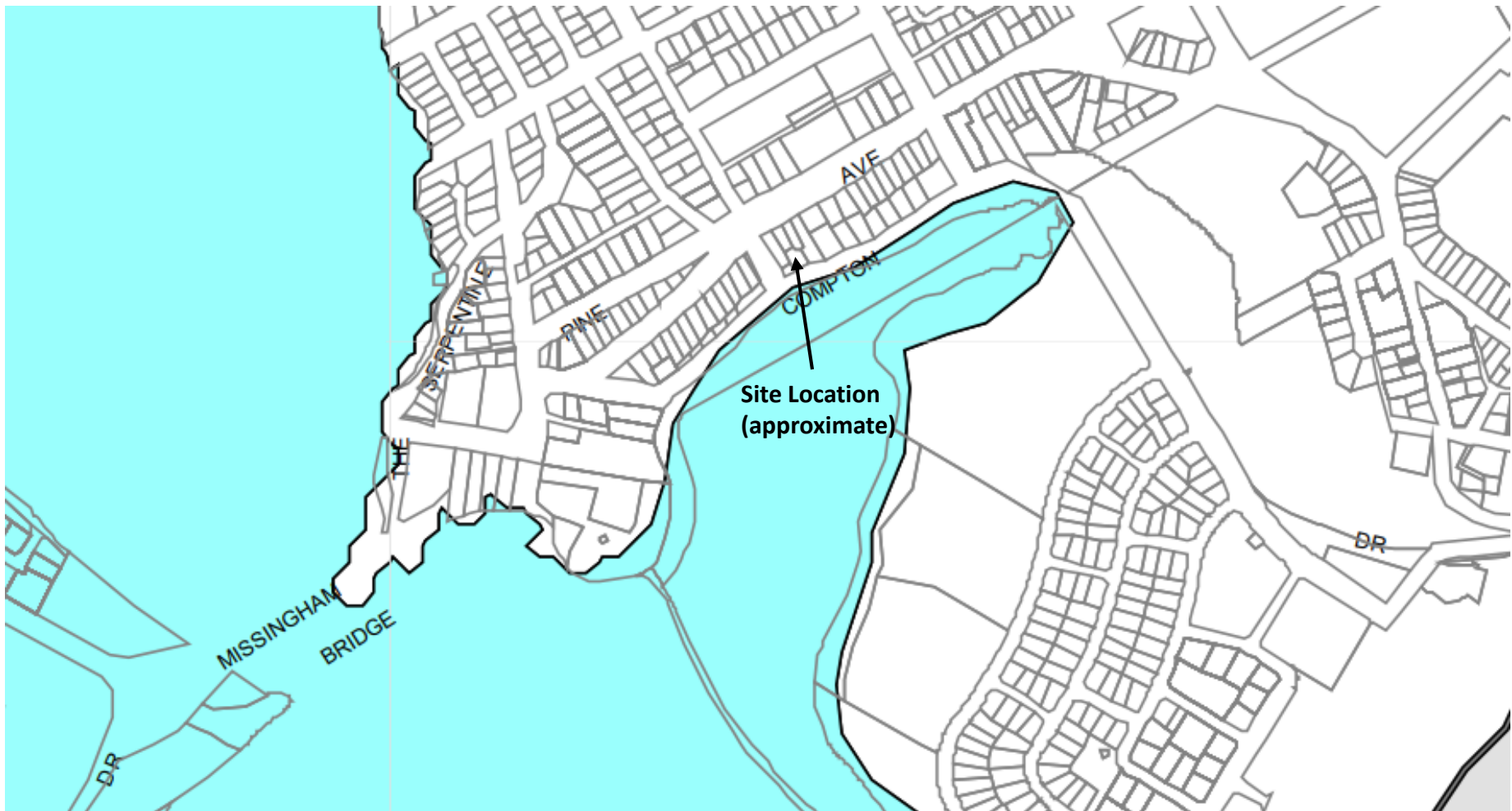


Figure 4 – Flood Planning - Sheet FLD_006
23 Compton Drive, East Ballina, NSW 2478

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Contamination Assessment
Job No: 19209

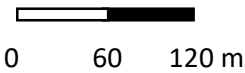
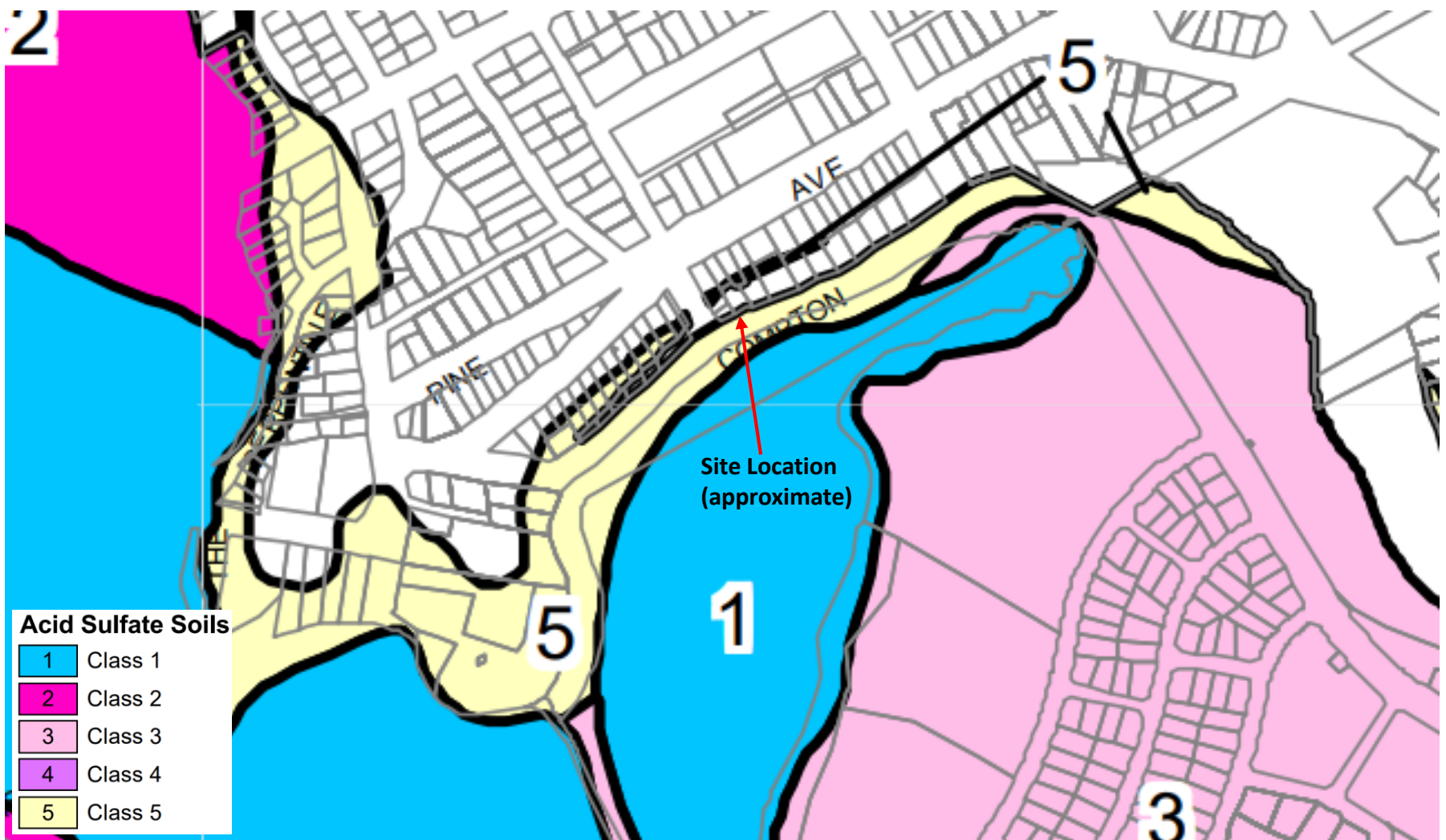


Figure 5 – Acid Sulfate Soils Map - Sheet ASS_006
 23 Compton Drive, East Ballina, NSW 2478

Kristian Moon
 Contamination Assessment
 Job No: 19209

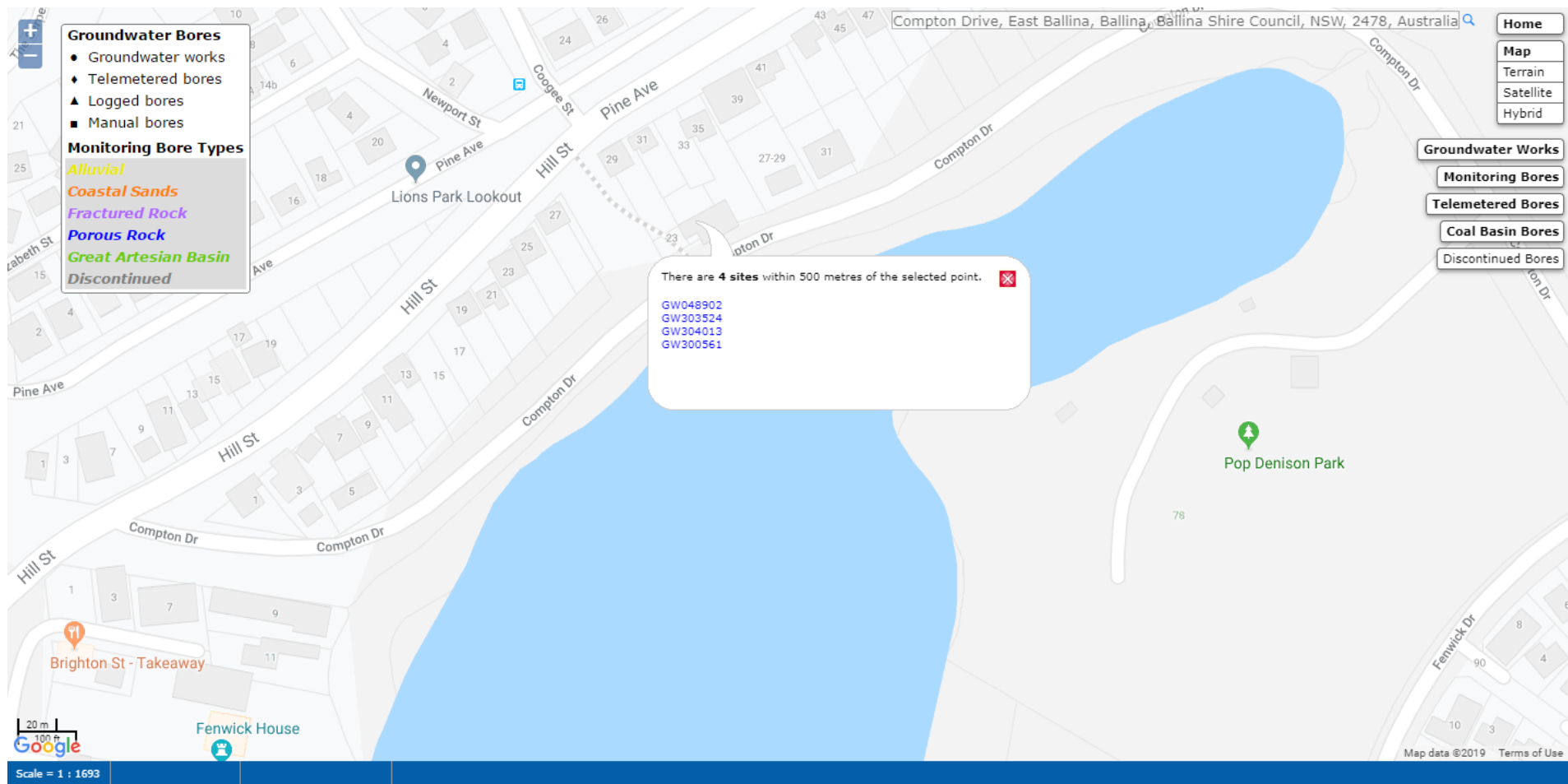


Figure 6 – Groundwater Resources (WaterNSW)
23 Compton Drive, East Ballina, NSW 2478

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Contamination Assessment
Job No: 19209



1922



1936



Approximate Site Location



Figure 7 – Town and Parish Maps
23 Compton Drive, East Ballina, NSW 2478

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Photographs



Image 1: View of the site looking from eastern corner of the property, where the vegetated rear garden is visible in the background. Location of sample 'AS1' visible in foreground.



Image 2: A view from the south-western corner of the property towards entrance of the restaurant.



Image 3: Looking west across the front entrance of the building where the location of sample 'S1' is visible next to the concrete corer stand. Fire damage is also visible in the background.



Image 4: A view of the western side of the building where sample 'AS2' was collected.



Image 5: A view towards the western boundary along the retaining wall that separates the building and rear yard.



Image 6: An image of where sample 'S3' was collected in the understorey of the rear yard, the fine dune sand is visible beneath the vegetation



Image 7: An image of the vacant concreted area and garden where 'S8' was collected (Lot 1 DP781542).



Image 8: An image of where sample 'S8' was collected adjacent to the concrete slab.

Laboratory Documentation

EAL Environmental Analysis Laboratory

PO Box 157 (Military Road)
 LISMORE NSW 2480
 T: 02 6620 3678 E: eal@scu.edu.au W: www.scu.edu.au

Submitting Client Details

Quote Id:
 Job Ref: 19209
 Company: ENV Solutions Pty Ltd
 Contact: OLLIE FICK
 Phone:
 Mobile: 0423 124 923
 Email: ollie@envsolutions.com.au
 Postal address:

Billing Client Details

Tick if same as submitting details
 ABN: 58 600 788 814
 Company: ENV Solutions Pty Ltd
 Contact: James Foster
 Phone:
 Mobile: 0421519354
 Email: james@envsolutions.com.au
 Postal address: PO Box 248 Ballina NSW 2478

Payment Method:

- Purchase Order
- Cheque
- Credit/Debit Card (EAL staff will phone for details)
- Invoice (prior approval)

Relinquished: O-FICK
 Received: 18

Date: 11-6-19
 Date: 11-6-19

Preservation:
 Condition on receipt:

none - freezer bricks - ice acidified - filtered - other
 ambient - cool - frozen - other

Comments:

Likelihood and nature of Hazardous material:

Lab ID	Sample ID	Sample Depth	Sampling Date	Sampler	Your Client	Crop ID	Sample Type (e.g. water, leaf, soil)	Sample Analysis Request							
								Price list code (e.g. SW-PACK-06)							
	S1	0-0.15	11-6-19	OF			SOIL	COMPOSITE (C1)	COMPOSITE (C2)						
	S2	↓	↓	↓			↓	✓							
	S3	↓	↓	↓			↓	✓							
	S4	↓	↓	↓			↓		✓						



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 PO Box 157 Lismore NSW 2480
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 E: eal@scu.edu.au
 www.scu.edu.au/eal
 ABN: 41 995 651 524

Sample Receipt Notification (SRN)

Project: **EAL/I2662**
 Customer: Env Solutions Pty Ltd
 Contact: Ollie Fick
 Client Job ID: 19209
 No. of Samples: 6 x soil; 2 x Composites.
 Date Received: 11 JUN 2019
 Comments: Standard Request

Bill: **Env Solutions Pty Ltd - Accounts Payable**

Test Request

Sample Text ID	Client Sample ID	Test Request	
		SS-PACK-008	SS-PREP-004
		Contaminated Site Assessment 3	Sample Compositing
I2662/(C)001	Samples(1,2,3)	1	0
I2662/(C)002	Samples(4,5,6)	1	0
I2662/001	S1	0	1



Sample Receipt Notification (SRN)

for EAL/I2662

		SS-PACK-008	SS-PREP-004
		Contaminated Site Assessment 3	Sample Compositing
I2662/002	S2	0	1
I2662/003	S3	0	1
I2662/004	S4	0	1
I2662/005	S5	0	1
I2662/006	S6	0	1
Total		2	6

Sample Receipt Notification (SRN)

for EAL/I2662

Page 3 of 3

Test Descriptions

Test List Item	Item Description
----------------	------------------

SS-PREP-004

Sample Compositing

EAL can composite samples and store the individual samples for at least 2 months to allow for individual testing if required. Charge per individual sample used in the composite.

SS-PACK-008

Contaminated Site Assessment 3

Dry and Grind Basic Texture

Metals (Cu, Pb, Cd, Zn, As, Se, Fe, Mn, Ag, Cr, Ni, Al, Hg, B, Co, Be)

Pesticides (OCs) SUBCONTRACTED

RESULTS OF SOIL ANALYSIS

6 soil samples supplied by Env Solutions Pty Ltd on 11th June, 2019 - Lab Job No. i2662

Soil samples supplied were composited by EAL into 2 composite samples for analysis

Analysis requested by Ollie Fick. Your Job: 19209

PO Box 248 BALLINA NSW 2478

ANALYTE	METHOD REFERENCE	Composite Sample 1	Composite Sample 2	MAX LEVELS	RESIDENTIAL A Guideline Limit		COMMERCIAL/ INDUSTRIAL D Guideline Limit		Background Range
		C1 (S1 - S3)	C2 (S4 - S6)		Composite - Column A	Individual - Column A	Composite - Column D	Individual - Column D	
	Job No.	i2662/C1	i2662/C2		See note 1a	See note 1a	See note 1d	See note 1d	See note 2
TEXTURE (SAND, CLAY, SILT)	** inhouse	Sand	Sand	..	..	..	..	..	..
MOISTURE %	** c	11	10	..	..	..	..	..	..
SILVER (mg/kg DW)	a	<1	<1	<1	na	na	na	na	na
ARSENIC (mg/kg DW)	a	<1	1	1	33	100	750	3,000	0.2-30
LEAD (mg/kg DW)	a	2	4	4	100	300	375	1,500	<2-200
CADMIUM (mg/kg DW)	a	<0.5	<0.5	<0.5	7	20	225	900	0.04-2.0
CHROMIUM (mg/kg DW)	a	1	4	4	(<33)	(<100)	(<900)	(<3,600)	0.5-110
COPPER (mg/kg DW)	a	4	8	8	2,000	6,000	60,000	240,000	1-190
MANGANESE (mg/kg DW)	a	23	139	139	1,267	3,800	15,000	60,000	4 - 12,600
NICKEL (mg/kg DW)	a	1	4	4	133	400	1,500	6,000	2-400
SELENIUM (mg/kg DW)	a	<1	<1	<1	67	200	2,500	10,000	na
ZINC (mg/kg DW)	a	30	88	88	2,467	7,400	100,000	400,000	2-180
MERCURY (mg/kg DW)	a	<0.05	<0.05	<0.05	13	40	183	730	0.001-0.1
IRON (% DW)	a	0.15	2.11	2	na	na	na	na	na
ALUMINIUM (% DW)	a	0.06	0.10	0	na	na	na	na	na
BERYLLIUM (mg/kg DW)	a	<1	<1	<1	20	60	125	500	na
BORON (mg/kg DW)	a	<1	<1	<1	1,500	4,500	75,000	300,000	na
COBALT (mg/kg DW)	a	<1	2	2	33	100	1,000	4,000	na
PESTICIDE ANALYSIS SCREEN									
DDT+DDE+DDD (mg/kg)	c	<0.1	<0.1	<0.1	80	240	900	3,600	<0.1
Aldrin + Dieldrin (mg/kg)	c	<0.2	<0.2	<0.2	2	6	11	45	<0.1
Chlordane (mg/kg)	c	<0.1	<0.1	<0.1	17	50	133	530	<0.1
Endosulfan (mg/kg)	c	<0.2	<0.2	<0.2	90	270	500	2,000	<0.1
Endrin (mg/kg)	c	<0.2	<0.2	<0.2	3	10	25	100	<0.1
Heptachlor (mg/kg)	c	<0.1	<0.1	<0.1	2	6	13	50	<0.1
HCB (mg/kg)	c	<0.1	<0.1	<0.1	3	10	20	80	<0.1
Methoxychlor (mg/kg)	c	<0.1	<0.1	<0.1	100	300	625	2,500	<0.1
Other Organochlorine Pesticides (mg/kg)	c	<0.1	<0.1	<0.1	..	..	..	..	<0.1

METHODS REFERENCE:a. ¹³Nitric/HCl digest - APHA 3125 ICPLMSb. ¹³Nitric/HCl digest - APHA 3120 ICPOES

c. Analysis sub-contracted - SGS report no. SE 194066

** denotes these test procedure or calculation are as yet not NATA accredited but quality control data is available

NOTES:

1a. HIL A ☐ Residential with garden/accessible soil (home grown produce <10% fruit and vegetable intake (no poultry), also includes childcare centres, preschools and primary schools.

1b. HIL B ☐ Residential with minimal opportunities for soil access; includes dwellings with fully and permanently paved yard space such as high-rise buildings and apartments.

1c. HIL C ☐ Public open space such as parks, playgrounds, playing fields (e.g. ovals), secondary schools and footpaths. This does not include undeveloped public open space.

1d. HIL D ☐ Commercial/industrial, includes premises such as shops, offices, factories and industrial sites.

(REFERENCE: Health Investigation Guidelines from NEPM (National Environmental Protection, Assessment of Site Contamination, Measure), 2013; Schedule B1).

2. Environmental Soil Quality Guidelines, Page 40, ANZECC, 1992.

3a. Table 1 Maximum values of specific contaminant concentrations for classification without TCLP (NSW EPA 2014, Waste Classification Guidelines Part 1: Classifying Waste)

3b. Table 2 Maximum values for leachable concentrations and specific contaminant concentrations when used together (NSW EPA 2014, Waste Classification Guidelines Part 1: Classifying Waste)

4. Analysis conducted between sample arrival date and reporting date.

5. ** NATA accreditation does not cover the performance of this service.

6. ... Denotes not requested.

7. This report is not to be reproduced except in full.

8. All services undertaken by EAL are covered by the EAL Laboratory Services Terms and Conditions (refer scu.edu.au/eal or on request).

9. Results relate only to the samples tested.

10. This report was issued on 24/06/2019.

Additional NOTES:

DW = Dry Weight. na = no guidelines available

Organochlorine pesticide (OC's) screen:

(HCB, alpha-BHC, Heptachlor, delta-BHC, Aldrin, Heptachlor Epoxide, gamma-Chlordane, alpha-chlordane, Lindane, trans-Nonachlor, Endrin Ketone, Isodrin, Mirex
Alpha Endosulfan, p,p'-DDE, Dieldrin, Endrin, p,p'-DDD, Beta Endosulfan, p,p'-DDT, Endrin Aldehyde, Endosulfan Sulphate, Methoxychlor)

EAL Environmental Analysis Laboratory

PO Box 157 (Military Road)
 LISMORE NSW 2480
 T: 02 6620 3678 E: eal@scu.edu.au W: www.scu.edu.au

Submitting Client Details

Quote Id:
 Job Ref: **19209**
 Company: ENV Solutions Pty Ltd
 Contact: **OLLIE FICK**
 Phone:
 Mobile: **0423 124 923**
 Email: **OLLIE@envsolutions.com.au**
 Postal address:

Billing Client Details

Tick if same as submitting details
 ABN: 58 600 788 814
 Company: ENV Solutions Pty Ltd
 Contact: James Foster
 Phone:
 Mobile: 0421519354
 Email: james@envsolutions.com.au
 Postal address: PO Box 248 Ballina NSW 2478

Payment Method:

- Purchase Order
- Cheque
- Credit/Debit Card (EAL staff will phone for details)
- Invoice (prior approval)

Relinquished: **O. FICK**
 Received: **Is**

Date: **[Signature]**
 Date: **2.7.19**

Preservation:
 Condition on receipt:

none freezer bricks ice - acidified - filtered - other
 ambient - cool - frozen - other

Comments:

Likelihood and nature of Hazardous material: **NONE**

Lab ID	Sample ID	Sample Depth	Sampling Date	Sampler	Your Client	Crop ID	Sample Type (e.g. water, leaf, soil)	Sample Analysis Request							
								Total number of samples	Price list code (e.g. SW-PACK-06)						
								Composite	SS-PACK-008						
1	S7	0-0.15	28/6	OF	KM		SOIL	<input checked="" type="checkbox"/>							
2	S8	0-0.15	28/6	OF	KM		SOIL	<input checked="" type="checkbox"/>							
	C3								<input checked="" type="checkbox"/>						



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 ABN: 41 995 651 524

Sample Receipt Notification (SRN)

Project: **EAL/I3353**
 Customer: Env Solutions Pty Ltd
 Contact: Ollie Fick
 Client Job ID: 19209
 No. of Samples: 2 x soil; 1 x Composites.
 Date Received: 02 JUL 2019
 Comments: C1=1,2

Bill: **Env Solutions Pty Ltd - Accounts Payable**

Sample Text ID	Client Sample ID	Test Request	
		SS-PACK-008	SS-PREP-004
		Contaminated Site Assessment 3	Sample Compositing
I3353/(C)001	Samples(1,2)	1	0
I3353/001	S7	0	1
I3353/002	S8	0	1
Total		1	2



Sample Receipt Notification (SRN)

for EAL/I3353

Page 2 of 2

Test Descriptions

Test List Item

Item Description

SS-PREP-004

Sample Compositing

EAL can composite samples and store the individual samples for at least 2 months to allow for individual testing if required. Charge per individual sample used in the composite.

SS-PACK-008

Contaminated Site Assessment 3

Dry and Grind Basic Texture

Metals (Cu, Pb, Cd, Zn, As, Se, Fe, Mn, Ag, Cr, Ni, Al, Hg, B, Co, Be)

Pesticides (OCs) SUBCONTRACTED

RESULTS OF SOIL ANALYSIS

2 soil samples supplied by Env Solutions Pty Ltd on 2nd July, 2019 - Lab Job No. i3353

Soil samples supplied were composited by EAL into 1 composite sample for analysis

Analysis requested by Ollie Fick. Your Job: 19209

PO Box 248 BALLINA NSW 2478

ANALYTE	METHOD REFERENCE	Composite Sample 1 C1 (S7 - S8)	RESIDENTIAL A Guideline Limit		COMMERCIAL/ INDUSTRIAL D Guideline Limit		Background Range
			Composite - Column A	Individual - Column A	Composite - Column D	Individual - Column D	
	Job No.	i3353/C1	See note 1a	See note 1a	See note 1d	See note 1d	See note 2
TEXTURE (SAND, CLAY, SILT)	** inhouse	Sand	..	..	..	..	..
MOISTURE %	** C	15	..	..	..	..	..
SILVER (mg/kg DW)	a	<1	na	na	na	na	na
ARSENIC (mg/kg DW)	a	25	50	100	750	3,000	0.2-30
LEAD (mg/kg DW)	a	26	150	300	375	1,500	<2-200
CADMIUM (mg/kg DW)	a	<0.5	10	20	225	900	0.04-2.0
CHROMIUM (mg/kg DW)	a	26	(<50)	(<100)	(<900)	(<3,600)	0.5-110
COPPER (mg/kg DW)	a	39	3,000	6,000	60,000	240,000	1-190
MANGANESE (mg/kg DW)	a	83	1,900	3,800	15,000	60,000	4 - 12,600
NICKEL (mg/kg DW)	a	29	200	400	1,500	6,000	2-400
SELENIUM (mg/kg DW)	a	<1	100	200	2,500	10,000	na
ZINC (mg/kg DW)	a	86	3,700	7,400	100,000	400,000	2-180
MERCURY (mg/kg DW)	a	<0.05	20	40	183	730	0.001-0.1
IRON (% DW)	a	0.43	na	na	na	na	na
ALUMINIUM (% DW)	a	0.33	na	na	na	na	na
BERYLLIUM (mg/kg DW)	a	<1	30	60	125	500	na
BORON (mg/kg DW)	a	<1	2,250	4,500	75,000	300,000	na
COBALT (mg/kg DW)	a	2	50	100	1,000	4,000	na
PESTICIDE ANALYSIS SCREEN							
DDT+DDE+DDD (mg/kg)	c	<0.1	120	240	900	3,600	<0.1
Aldrin + Dieldrin (mg/kg)	c	<0.2	3	6	11	45	<0.1
Chlordane (mg/kg)	c	<0.1	25	50	133	530	<0.1
Endosulfan (mg/kg)	c	<0.2	135	270	500	2,000	<0.1
Endrin (mg/kg)	c	<0.2	5	10	25	100	<0.1
Heptachlor (mg/kg)	c	<0.1	3	6	13	50	<0.1
HCB (mg/kg)	c	<0.1	5	10	20	80	<0.1
Methoxychlor (mg/kg)	c	<0.1	150	300	625	2,500	<0.1
Other Organochlorine Pesticides (mg/kg)	c	<0.1	..	..	..	..	<0.1

METHODS REFERENCE:

a. ¹³Nitric/HCl digest - APHA 3125 ICPMS

b. ¹³Nitric/HCl digest - APHA 3120 ICPOES

c. Analysis sub-contracted - SGS report no. SE 194858

** denotes these test procedure or calculation are as yet not NATA accredited but quality control data is available

NOTES:

1a. HIL A ☐ Residential with garden/accessible soil (home grown produce <10% fruit and vegetable intake (no poultry), also includes childcare centres, preschools and primary schools.

1b. HIL B ☐ Residential with minimal opportunities for soil access; includes dwellings with fully and permanently paved yard space such as high-rise buildings and apartments.

1c. HIL C ☐ Public open space such as parks, playgrounds, playing fields (e.g. ovals), secondary schools and footpaths. This does not include undeveloped public open space.

1d. HIL D ☐ Commercial/industrial, includes premises such as shops, offices, factories and industrial sites.

(REFERENCE: Health Investigation Guidelines from NEPM (National Environmental Protection, Assessment of Site Contamination, Measure), 2013; Schedule B1).

2. Environmental Soil Quality Guidelines, Page 40, ANZECC, 1992.

3a. Table 1 Maximum values of specific contaminant concentrations for classification without TCLP (NSW EPA 2014, Waste Classification Guidelines Part 1: Classifying Waste)

3b. Table 2 Maximum values for leachable concentrations and specific contaminant concentrations when used together (NSW EPA 2014, Waste Classification Guidelines Part 1: Classifying Waste)

4. Analysis conducted between sample arrival date and reporting date.

5. ** NATA accreditation does not cover the performance of this service.

6. ... Denotes not requested.



7. This report is not to be reproduced except in full.
8. All services undertaken by EAL are covered by the EAL Laboratory Services Terms and Conditions (refer scu.edu.au/eal or on request).
9. Results relate only to the samples tested.
10. This report was issued on 10/07/2019.

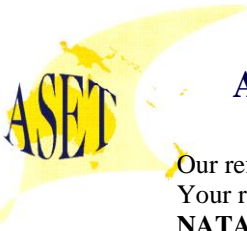
Additional NOTES:

DW = Dry Weight. na = no guidelines available

Organochlorine pesticide (OC's) screen:

(HCB, alpha-BHC, Heptachlor, delta-BHC, Aldrin, Heptachlor Epoxide, gamma-Chlordane, alpha-chlordane, Lindane, trans-Nonachlor, Endrin Ketone, Isodrin, Mirex
Alpha Endosulfan, p,p'-DDE, Dieldrin, Endrin, p,p'-DDD, Beta Endosulfan, p,p'-DDT, Endrin Aldehyde, Endosulfan Sulphate, Methoxychlor)





Our ref: ASET74131/ 77311/ 1 - 2
Your ref: 19209 - Compton Dr, Ballina
NATA Accreditation No: 14484

14 June 2019

ENV Solutions
PO Box 248
Ballina NSW 2478

Attn: Mr Jake Rozyn

Dear Jake

Asbestos Identification

This report presents the results of two samples, forwarded by ENV Solutions on 14 June 2019, for analysis for asbestos.

1.Introduction:Two samples forwarded were examined and analysed for the presence of asbestos.

2. Methods : The samples were examined under a Stereo Microscope and selected fibres were analysed by Polarized Light Microscopy in conjunction with Dispersion Staining method(Australian Standard AS 4964 - 2004 and Safer Environment Method 1 as the supplementary work instruction) (Qualitative Analysis only).

3. Results : **Sample No. 1. ASET74131 / 77311 / 1. 19209 - AS1 - Eastern Perimeter.**
Approx dimensions 6.0 cm x 6.0 cm x 3.5 cm
The sample consisted of a mixture of clayish sandy soil, shale, sand, stones, plant matter, fragments of fibre cement*, plaster and paint flakes.
Chrysotile* (Approximate weight of ACM = 0.036) asbestos detected.

Sample No. 2. ASET74131 / 77311 / 2. 19209 - AS2 - Western Perimeter.
Approx dimensions 6.0 cm x 6.0 cm x 5.0 cm
The sample consisted of a mixture of clayish soil, stones, wood chips, plant matter, fragments of paint flakes and glass.
No asbestos detected.

Reported by,



Mahen De Silva. BSc, MSc, Grad Dip (Occ Hyg)
Occupational Hygienist / Approved Identifier. Accredited for compliance with ISO/IEC 17025 - Testing.
Approved Signatory

The results contained in this report relate only to the sample/s submitted for testing. Australian Safer Environment & Technology accepts no responsibility for whether or not the submitted sample/s is/are representative. Results indicating "No asbestos detected" indicates a reporting limit specified in AS4964 -2004 which is 0.1g/ Kg (0.01%). Any amounts detected at assumed lower level than that would be reported, however those assumed lower levels may be treated as "No asbestos detected" as specified and recommended by A4964-2004. Trace / respirable level asbestos will be reported only when detected and trace analysis have been performed on each sample as required by AS4964-

SUITE 710 / 90 GEORGE STREET, HORNSBY NSW 2077 – P.O. BOX 1644 HORNSBY WESTFIELD NSW 1635
PHONE: (02) 99872183 FAX: (02)99872151 EMAIL: info@ausset.com.au WEBSITE: www.Ausset.com.au

2004. When loose asbestos fibres/ fibre bundles are detected and reported that means they are larger handpicked fibres/ fibre bundles, and they do not represent respirable fibres. Dust/soil samples are always subjected to trace analysis except where the amounts involved are extremely minute and trace analysis is not possible to be carried out. When trace analysis is not performed on dust samples it will be indicated in the report that trace analysis has not been carried out due to the volume of the sample being extremely minute.

Estimation of asbestos weights involves the use of following assumptions;
Volume of each kind of Asbestos present in broken edges have been visually estimated and it has been assumed that volumes remain similar throughout the binding matrix and those volumes are only approximate and not exact. Material densities have been assumed to be similar to commonly found similar materials and may not be exact.

The approx weights given above can be used only as a guide. They do not represent absolute weights of each kind of asbestos, as it is impossible to extract all loose fibres from soil and other asbestos containing building material samples using this method. However above figures may be used as closest approximations to the exact values in each case. Estimation and/ or reporting of asbestos fibre weights in asbestos containing materials and soil is out of the Scope of the NATA Accreditation. NATA Accreditation only covers the qualitative part of the results reported. This weight disclaimer also covers weight / weight percentages given.

^ denotes loose fibres of relevant asbestos types detected in soil/dust.

*** denotes asbestos detected in ACM in bonded form.**

denotes friable asbestos as soft fibro plaster and/or highly weathered ACM that will easily crumble.



AUSTRALIAN SAFER ENVIRONMENT & TECHNOLOGY PTY LTD

Suite 710/ 90 George Street Hornsby NSW 2077 PO Box 1644 Hornsby Westfield NSW 1635

Ph: 02 9987 2183 Fax: 02 9987 2151 Email: aset@bigpond.net.au

ASET JOB NO: ASET74131/77311/1-2					Contact Name: OLLIE FICK		Asbestos in Material	Asbestos in Soil	Asbestos in Dust	Asbestos Fibre Count	Asbestos in Water	Asbestos WA/NEPM
Company Name & Address: ENV Solutions PO Box 248 Ballina NSW 2478					Job No: 19209							
Contact Ph: 0423 124 923					Project Name: COMPTON DR, BALLINA							
					Email Results to: OLLIE@ENVOLUTIONS.COM.AU							
	Sample ID	Date	Type	Container	Sample Location							
1	AS 1	11/6	SOIL	BAG	EASTERN PERIMETER			X				
2	AS 2	11/6	SOIL	BAG	WESTERN PERIMETER			X				
3												
4												
5												
6												
7												
8												
9												
10												
11												
12												
13												
14												
15												
16												
17												
18												
19												
20												
21												
Relinquished By: O. Fick					Received By: Kubon		Turn around time		Method of Shipment			
Date & Time: 12/6 8:20					Date & Time: 14/6/19 10am		24 Hrs	3 Days				
Signature: <i>[Signature]</i>					Signature: <i>[Signature]</i>		48 Hrs	5 Days				

RECEIVED
14 JUN 2019
BY: *[Signature]*

Analytical Results Tables

RESULTS OF SOIL ANALYSIS

6 soil samples supplied by Env Solutions Pty Ltd on 11th June, 2019 - Lab Job No. i2662

Soil samples supplied were composited by EAL into 2 composite samples for analysis

Analysis requested by Ollie Fick. Your Job: 19209

PO Box 248 BALLINA NSW 2478

ANALYTE	METHOD REFERENCE	Composite Sample 1	Composite Sample 2	MAX LEVELS	RESIDENTIAL A Guideline Limit		COMMERCIAL/ INDUSTRIAL D Guideline Limit		Background Range
		C1 (S1 - S3)	C2 (S4 - S6)		Composite - Column A	Individual - Column A	Composite - Column D	Individual - Column D	
	Job No.	i2662/C1	i2662/C2		See note 1a	See note 1a	See note 1d	See note 1d	See note 2
TEXTURE (SAND, CLAY, SILT)	** inhouse	Sand	Sand	..	..	..	..	..	..
MOISTURE %	** c	11	10	..	..	..	..	..	..
SILVER (mg/kg DW)	a	<1	<1	<1	na	na	na	na	na
ARSENIC (mg/kg DW)	a	<1	1	1	33	100	750	3,000	0.2-30
LEAD (mg/kg DW)	a	2	4	4	100	300	375	1,500	<2-200
CADMIUM (mg/kg DW)	a	<0.5	<0.5	<0.5	7	20	225	900	0.04-2.0
CHROMIUM (mg/kg DW)	a	1	4	4	(<33)	(<100)	(<900)	(<3,600)	0.5-110
COPPER (mg/kg DW)	a	4	8	8	2,000	6,000	60,000	240,000	1-190
MANGANESE (mg/kg DW)	a	23	139	139	1,267	3,800	15,000	60,000	4 - 12,600
NICKEL (mg/kg DW)	a	1	4	4	133	400	1,500	6,000	2-400
SELENIUM (mg/kg DW)	a	<1	<1	<1	67	200	2,500	10,000	na
ZINC (mg/kg DW)	a	30	88	88	2,467	7,400	100,000	400,000	2-180
MERCURY (mg/kg DW)	a	<0.05	<0.05	<0.05	13	40	183	730	0.001-0.1
IRON (% DW)	a	0.15	2.11	2	na	na	na	na	na
ALUMINIUM (% DW)	a	0.06	0.10	0	na	na	na	na	na
BERYLLIUM (mg/kg DW)	a	<1	<1	<1	20	60	125	500	na
BORON (mg/kg DW)	a	<1	<1	<1	1,500	4,500	75,000	300,000	na
COBALT (mg/kg DW)	a	<1	2	2	33	100	1,000	4,000	na
PESTICIDE ANALYSIS SCREEN									
DDT+DDE+DDD (mg/kg)	c	<0.1	<0.1	<0.1	80	240	900	3,600	<0.1
Aldrin + Dieldrin (mg/kg)	c	<0.2	<0.2	<0.2	2	6	11	45	<0.1
Chlordane (mg/kg)	c	<0.1	<0.1	<0.1	17	50	133	530	<0.1
Endosulfan (mg/kg)	c	<0.2	<0.2	<0.2	90	270	500	2,000	<0.1
Endrin (mg/kg)	c	<0.2	<0.2	<0.2	3	10	25	100	<0.1
Heptachlor (mg/kg)	c	<0.1	<0.1	<0.1	2	6	13	50	<0.1
HCB (mg/kg)	c	<0.1	<0.1	<0.1	3	10	20	80	<0.1
Methoxychlor (mg/kg)	c	<0.1	<0.1	<0.1	100	300	625	2,500	<0.1
Other Organochlorine Pesticides (mg/kg)	c	<0.1	<0.1	<0.1	..	..	..	..	<0.1

METHODS REFERENCE:

- a. ¹³Nitric/HCl digest - APHA 3125 ICPLMS
b. ¹³Nitric/HCl digest - APHA 3120 ICPOES
c. Analysis sub-contracted - SGS report no. SE 194066

** denotes these test procedure or calculation are as yet not NATA accredited but quality control data is available

NOTES:

- 1a. HIL A ☐ Residential with garden/accessible soil (home grown produce <10% fruit and vegetable intake (no poultry), also includes childcare centres, preschools and primary schools.
1b. HIL B ☐ Residential with minimal opportunities for soil access; includes dwellings with fully and permanently paved yard space such as high-rise buildings and apartments.
1c. HIL C ☐ Public open space such as parks, playgrounds, playing fields (e.g. ovals), secondary schools and footpaths. This does not include undeveloped public open space.
1d. HIL D ☐ Commercial/industrial, includes premises such as shops, offices, factories and industrial sites.
(REFERENCE: Health Investigation Guidelines from NEPM (National Environmental Protection, Assessment of Site Contamination, Measure), 2013; Schedule B1).
2. Environmental Soil Quality Guidelines, Page 40, ANZECC, 1992.
3a. Table 1 Maximum values of specific contaminant concentrations for classification without TCLP (NSW EPA 2014, Waste Classification Guidelines Part 1: Classifying Waste)
3b. Table 2 Maximum values for leachable concentrations and specific contaminant concentrations when used together (NSW EPA 2014, Waste Classification Guidelines Part 1: Classifying Waste)
4. Analysis conducted between sample arrival date and reporting date.
5. ** NATA accreditation does not cover the performance of this service.
6. ... Denotes not requested.
7. This report is not to be reproduced except in full.
8. All services undertaken by EAL are covered by the EAL Laboratory Services Terms and Conditions (refer scu.edu.au/eal or on request).
9. Results relate only to the samples tested.
10. This report was issued on 24/06/2019.

Additional NOTES:

DW = Dry Weight. na = no guidelines available

Organochlorine pesticide (OC's) screen:

(HCB, alpha-BHC, Heptachlor, delta-BHC, Aldrin, Heptachlor Epoxide, gamma-Chlordane, alpha-chlordane, Lindane, trans-Nonachlor, Endrin Ketone, Isodrin, Mirex
Alpha Endosulfan, p,p'-DDE, Dieldrin, Endrin, p,p'-DDD, Beta Endosulfan, p,p'-DDT, Endrin Aldehyde, Endosulfan Sulphate, Methoxychlor)

RESULTS OF SOIL ANALYSIS

2 soil samples supplied by Env Solutions Pty Ltd on 2nd July, 2019 - Lab Job No. i3353

Soil samples supplied were composited by EAL into 1 composite sample for analysis

Analysis requested by Ollie Fick. Your Job: 19209

PO Box 248 BALLINA NSW 2478

ANALYTE	METHOD REFERENCE	Composite Sample 1 C1 (S7 - S8)	RESIDENTIAL A Guideline Limit		COMMERCIAL/ INDUSTRIAL D Guideline Limit		Background Range
			Composite - Column A	Individual - Column A	Composite - Column D	Individual - Column D	
	Job No.	i3353/C1	See note 1a	See note 1a	See note 1d	See note 1d	See note 2
TEXTURE (SAND, CLAY, SILT)	** inhouse	Sand	..	..	..	..	..
MOISTURE %	** c	15	..	..	..	..	..
SILVER (mg/kg DW)	a	<1	na	na	na	na	na
ARSENIC (mg/kg DW)	a	25	50	100	750	3,000	0.2-30
LEAD (mg/kg DW)	a	26	150	300	375	1,500	<2-200
CADMIUM (mg/kg DW)	a	<0.5	10	20	225	900	0.04-2.0
CHROMIUM (mg/kg DW)	a	26	(<50)	(<100)	(<900)	(<3,600)	0.5-110
COPPER (mg/kg DW)	a	39	3,000	6,000	60,000	240,000	1-190
MANGANESE (mg/kg DW)	a	83	1,900	3,800	15,000	60,000	4 - 12,600
NICKEL (mg/kg DW)	a	29	200	400	1,500	6,000	2-400
SELENIUM (mg/kg DW)	a	<1	100	200	2,500	10,000	na
ZINC (mg/kg DW)	a	86	3,700	7,400	100,000	400,000	2-180
MERCURY (mg/kg DW)	a	<0.05	20	40	183	730	0.001-0.1
IRON (% DW)	a	0.43	na	na	na	na	na
ALUMINIUM (% DW)	a	0.33	na	na	na	na	na
BERYLLIUM (mg/kg DW)	a	<1	30	60	125	500	na
BORON (mg/kg DW)	a	<1	2,250	4,500	75,000	300,000	na
COBALT (mg/kg DW)	a	2	50	100	1,000	4,000	na
PESTICIDE ANALYSIS SCREEN							
DDT+DDE+DDD (mg/kg)	c	<0.1	120	240	900	3,600	<0.1
Aldrin + Dieldrin (mg/kg)	c	<0.2	3	6	11	45	<0.1
Chlordane (mg/kg)	c	<0.1	25	50	133	530	<0.1
Endosulfan (mg/kg)	c	<0.2	135	270	500	2,000	<0.1
Endrin (mg/kg)	c	<0.2	5	10	25	100	<0.1
Heptachlor (mg/kg)	c	<0.1	3	6	13	50	<0.1
HCB (mg/kg)	c	<0.1	5	10	20	80	<0.1
Methoxychlor (mg/kg)	c	<0.1	150	300	625	2,500	<0.1
Other Organochlorine Pesticides (mg/kg)	c	<0.1	..	..	..	..	<0.1

METHODS REFERENCE:a. ¹³Nitric/HCl digest - APHA 3125 ICPMSb. ¹³Nitric/HCl digest - APHA 3120 ICPOES

c. Analysis sub-contracted - SGS report no. SE 194858

** denotes these test procedure or calculation are as yet not NATA accredited but quality control data is available

NOTES:

1a. HIL A Residential with garden/accessible soil (home grown produce <10% fruit and vegetable intake (no poultry), also includes childcare centres, preschools and primary schools.

1b. HIL B Residential with minimal opportunities for soil access; includes dwellings with fully and permanently paved yard space such as high-rise buildings and apartments.

1c. HIL C Public open space such as parks, playgrounds, playing fields (e.g. ovals), secondary schools and footpaths. This does not include undeveloped public open space.

1d. HIL D Commercial/industrial, includes premises such as shops, offices, factories and industrial sites.

(REFERENCE: Health Investigation Guidelines from NEPM (National Environmental Protection, Assessment of Site Contamination, Measure), 2013; Schedule B1).

2. Environmental Soil Quality Guidelines, Page 40, ANZECC, 1992.

3a. Table 1 Maximum values of specific contaminant concentrations for classification without TCLP (NSW EPA 2014, Waste Classification Guidelines Part 1: Classifying Waste)

3b. Table 2 Maximum values for leachable concentrations and specific contaminant concentrations when used together (NSW EPA 2014, Waste Classification Guidelines Part 1: Classifying Waste)

4. Analysis conducted between sample arrival date and reporting date.

5. ** NATA accreditation does not cover the performance of this service.

6. ... Denotes not requested.



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8. All services undertaken by EAL are covered by the EAL Laboratory Services Terms and Conditions (refer scu.edu.au/eal or on request).
9. Results relate only to the samples tested.
10. This report was issued on 10/07/2019.

Additional NOTES:

DW = Dry Weight. na = no guidelines available

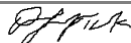


Organochlorine pesticide (OC's) screen:

(HCB, alpha-BHC, Heptachlor, delta-BHC, Aldrin, Heptachlor Epoxide, gamma-Chlordane, alpha-chlordane, Lindane, trans-Nonachlor, Endrin Ketone, Isodrin, Mirex
Alpha Endosulfan, p,p'-DDE, Dieldrin, Endrin, p,p'-DDD, Beta Endosulfan, p,p'-DDT, Endrin Aldehyde, Endosulfan Sulphate, Methoxychlor)



13.Document Control

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