Member of the Surbana Jurong Group

Phase 1 Contamination Assessment

130 Princes Highway, Ulladulla, NSW

Date: 20 December 2017

Document/Report Control Form

File Location Name:	G:\02 Projects\30012196 - Dapto Ulladulla\140 Site Investigation\6. Reporting\30012196. R3 Phase 1 Ulladulla\30012169_R3_Phase 1_Ulladulla.docx
Project Name:	Proposed Ulladulla Health Facility, 130 Princes Highway, Ulladulla
Project Number:	30012196
Revision Number:	Final

Revision History

Revision #	Date	Prepared by	Reviewed by	Approved for Issue by
Final	20/12/17	Alexander Williams	Manuel Fernandez	Manuel Fernandez

Issue Register

Distribution List	Date Issued	Number of Copies
Illawarra Shoalhaven Local Health District – Mr Vincenzo De Santis	20/12/2017	Electronic
SMEC Project Folder	20/12/2017	1 electronic
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ABBREVIATIONS & ACRONYMS

Abbreviation / Acronym	Description
ACM	Asbestos containing material
AEC	Area of environmental concern
ASS	Acid sulfate soils
BTEX	Benzene, toluene, ethylbenzene and xylenes
CoC	Contaminants of Concern
EPA	Environment Protection Authority
EPL	Environment Protection Licence
m	Metres
m bgl	Metres below ground level
OCP	Organochlorine pesticides
OPP	Organophosphorus pesticides
NEPC	National Environment Protection Council
NEPM	National Environment Protection (Assessment of Site Contamination) Measure
PAH	Polycyclic Aromatic Hydrocarbons
PCB	Polychlorinated biphenyls
POEO Act	Protection of the Environment Operations Act
TRH	Total recoverable hydrocarbons

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EXECUTIVE SUMMARY

SMEC Australia Pty Ltd (SMEC) was engaged by Mr Vincenzo De Santis on behalf of Illawarra Shoalhaven Local Health District (ISLHD) to carry out a combined contamination and geotechnical assessment for the site located at 130 Princes Highway, Ulladulla, NSW (the site). Our work was carried out in general accordance with SMEC Proposal reference 1029472-P01 Rev 1, dated 6 November 2017.

This report presents the Phase 1 Contamination assessment as per the aforementioned fee proposal. The geotechnical factual results and interpretation is presented in a separate SMEC report, reference 30012196.R1, dated 20 December 2017. SMEC understands that the two reports will form a contamination and geotechnical assessment required to assist in the development application (DA) for a proposed development at the site.

The site covers an area of approximately 1,420m^2 and is accessed via the Princes Highway. The site is located within the Shoalhaven City Council (Council) Local Government Area (LGA). Based on discussion with ISLHD, SMEC understands that the proposed development is to comprise a new double storey facility at the site. The new facility will be similar to a residential structure in size, replace the existing facility, and provide an upgraded working environment for ISLHD staff.

The objectives of the contamination assessment were to:

- Assess the potential for soil contamination to be present at the nominated sites;
- Assess if contamination potentially poses a risk to human health or the environment and/or has the potential to preclude development of the site for the proposed use; and
- Provide recommendations on the need for further investigations and/or management based on preliminary findings.

The scope of work included a site history review, site walkover, sampling of site soils, laboratory analysis and reporting.

The site history review suggested that the site had likely been used for rural/residential purposes prior to conversion to a health facility. The main site building was present prior to 1948. Since 1948, there did not appear to have been any modification or other structures present. Site levelling appears to have occurred with deeper fill placed downslope in the northern portion of the site, supported by a retaining wall along the northern site boundary. A previous hazardous materials survey report has identified that site structures contain non-friable asbestos, lead paint and PCBs in light capacitors.

Two areas of environmental concern (AEC) and potentially contamination sources were identified onsite including:

- AEC 1 – Site wide fill of unknown origin and quality
- AEC 2 – Ineffective removal/weathering of hazardous demolition materials (possibly also including services conduits).

The AECs were considered to have a moderate potential for soil contamination to be present. A conceptual site model was developed.

Preliminary soil sampling was carried out at the site in combination with a geotechnical investigation. Results did not record exceedances of the adopted criteria for the proposed commercial style land use at the locations tested. The results of samples were also compared to waste classification criteria and this suggested that the site fill soils are likely to classify as General Solid Waste if disposed at a licenced waste facility. Undisturbed natural deeper soils if unmixed may classify as Virgin Excavated Natural Material subject to visual confirmation of all surface fill being removed and observation by an

experienced environmental consultant. Based on the observations, some further confirmatory testing may be required.

We recommend that all site structures be appropriately demolished in accordance with all relevant guidance with respect to removal and clearance of hazardous building materials. A pre-demolition intrusive hazardous materials survey may also be required. This may also include tracing and chasing out any subsurface conduits that are made of hazardous materials (e.g. ACM piping). Completion of this prior to any bulk earthworks (along with a clearance) is recommended to avoid incidental damage and/or mixing of hazardous materials with site soils.

Considering the potential for unidentified structures to have been present prior to 1948, implementation of an unexpected finds protocol would also be prudent.

1.INTRODUCTION

1.1 General

SMEC Australia Pty Ltd (SMEC) was engaged by Mr Vincenzo De Santis on behalf of Illawarra Shoalhaven Local Health District (ISLHD) to carry out a combined contamination and geotechnical assessment for the site located at 130 Princes Highway and 82 South Street, Ulladulla, NSW (the site). Our work was carried out in general accordance with SMEC Proposal reference 1029472-P01 Rev 1, dated 6 November 2017.

This report presents the Phase 1 Contamination assessment as per the aforementioned fee proposal. The geotechnical factual results and interpretation is presented in a separate SMEC report, reference 30012196.R1, dated 20 December 2017. SMEC understands that the two reports will form a contamination and geotechnical assessment required to assist in the development application (DA) for a proposed development at the site.

The site covers an area of approximately 1,420m^2 and is accessed via the Princes Highway.

The site locality is shown in **Figure 1, Appendix A.**

1.2 Proposed Development

The site is located within the Shoalhaven City Council (Council) Local Government Area (LGA). Based on discussion with ISLHD, SMEC understands that the proposed development is to comprise a new two-storey building with ground floor parking and first floor commercial offices. The new facility will be similar to a residential structure in size, will replace the existing facility, and will provide an upgraded working environment for ISLHD staff. At present the proposed layout of the buildings and carparking have not been finalised.

1.3 Project Objectives

The objectives of the contamination assessment were to:

- Assess the potential for soil contamination to be present at the nominated sites;
- Assess if contamination potentially poses a risk to human health or the environment and/or has the potential to preclude development of the site for the proposed use; and
- Provide recommendations on the need for further investigations and/or management based on preliminary findings.

1.4 Scope of Works

To fulfil the above objectives, the following scope of work was carried out:

- A desktop review including review of:
    - Published information relating to the site including geological, soil landscape, topographical, and/or land use maps;
    - Review of previous environmental reports (if available);
    - Historical aerial photographs;
    - NSW Environmental Protection Authority (EPA) contaminated land and POEO licence online databases;

    - Section 149 Planning Certificates;
    - Interview with persons familiar with the Site (where available);
    - Search of nearby registered groundwater bores
    - Records made available by local Councils

- A site walkover by an experienced engineer to identify potentially contaminating activities or previous land uses.
- Soil sampling from combined geotechnical test locations and laboratory analysis of selected soil samples.
- A report presenting the findings of the preliminary assessment including:
    - Site history information gained during the desktop study and site walkover and
    - Identification of potential areas of environmental concern
    - Preliminary assessment of the likelihood for contamination
    - Laboratory analysis results and comparison to relevant criteria
    - Developing a conceptual site model
    - Making conclusions and recommendations as per the objectives.

1.5 Published Guidelines and Framework

The assessment has been undertaken in general accordance with applicable legislation and guidelines including:

- National Environment Protection Council, National Environmental Protection (Assessment of Site Contamination) Measure, 2013
- NSW EPA, Contaminated Sites – Guidelines for Consultants Reporting on Contaminated Sites, 1997
- State Environmental Planning Policy No.55 - Contaminated Land, 1998
- Acid Sulfate Soils Assessment Guidelines, NSW Acid Sulfate Soils Management Advisory Committee August 1998.
- Relevant Australian Standards (refer to Section 10).

2.SITE INFORMATION

2.1 Site Description and Zoning

The site is located on a commercial/industrial adjoining properties at 130 Princes Highway and 82 South Street, Ulladulla, NSW 2539, within a parcels of land identified as Lots 5 and 6 DP22193, respectively. Site layout and relevant site features are shown on **Figure 3, Appendix A**. A summary of site information is presented below in Table 2.1.

Table 2.1 Summary of site information

Title identifier	Lots 5 and 6 DP 22193
Address	130 Princes Highway and 82 South Street, Ulladulla, NSW 2539
Area	Approximately 1,420m^2
Owner	Illawarra Shoalhaven Local Health District (ISLHD)
Zoning	The site is located within the Shoalhaven City Council (Council) Local Government Area (LGA) and is presently zoned "B4 Mixed Use" under Council's, *Shoalhaven Local Environmental Plan, 2014 (as amended)*.
Current Land use	The site land use is currently used as a community health centre
Proposed land use	The proposed land use is commercial.
Surrounding land use	The site is presently surrounded by: ▪ South Street and then commercial properties to the north ▪ A commercial complex (restaurant, office spaces) to the south ▪ Residential dwellings to the east ▪ Princes Highway and commercial/retail outlets to the west

2.2 Topography and Landforms

The site is located on the sideslope (north-easterly gradient) of a sloping hill, where the Princes Highway rises up from the lower parts of Ulladulla central area and harbour. The site is at an elevation approximately between 30-40mAHD.

2.3 Vegetation

The site contains some landscaping trees and shrubs along the western and northern boundaries.

2.4 Regional Geology

Based on the published geology map 'Ulladalla 1:250,000 geological series sheet: S1 56-13, Ed.1, 1966', the site located on:

- Undifferentiated Sediments which may consist 'gravel, sand, clay, quartzite, sandstone and conglomerate'
- Underlain by the Conjola Formation, consisting of 'conglomerate, sandstone and silty sandstone'.

The map shows the Tertiary deposit overlying the Permian rock formation. A snapshot of the geological map is shown below, Figure 3-1.

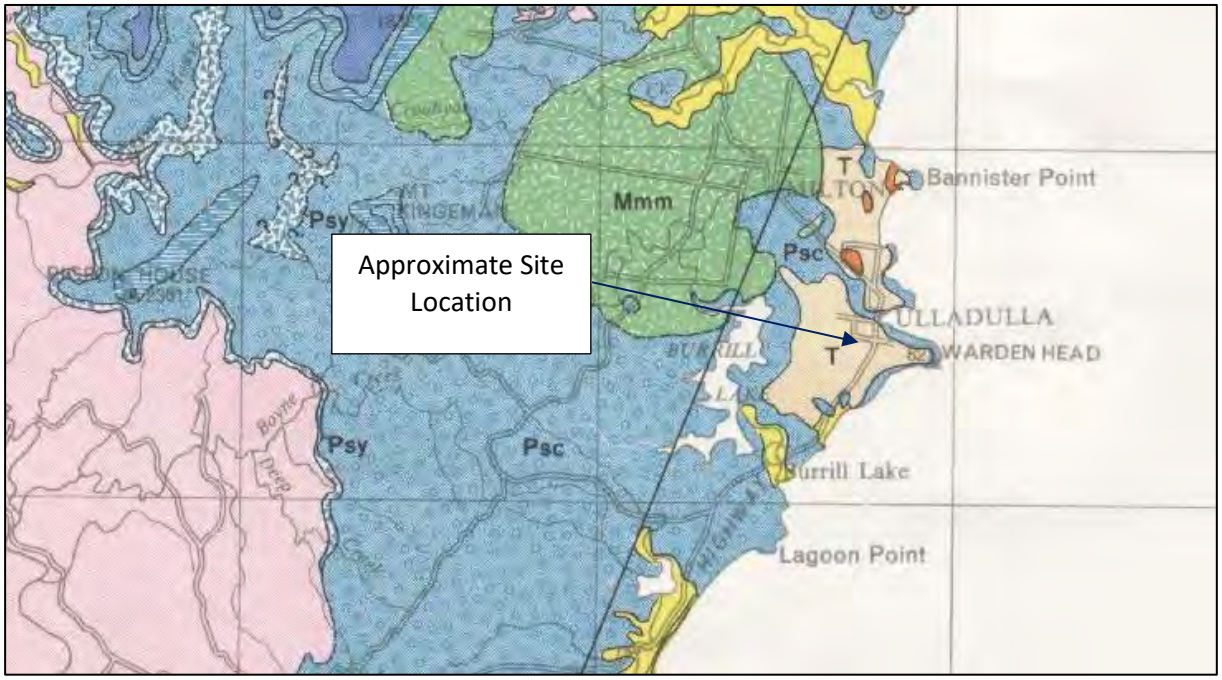

Figure 3-1: Site Geological Map (Referenced to Ulladulla Series Sheet S1 56-13).

2.5 Hydrology and hydrogeology

Based on site observations made by a SMEC Engineer during site investigation works, the inferred surface water runoff flow direction would be to the north-east toward South Street.

SMEC completed a preliminary search of the Department of Water and Energy Online Database to identify groundwater bores within the vicinity of the site. The search indicated there are no boreholes registered under the database within a 1 km radius of the site.

2.6 Acid Sulfate Soil Risk

Reference to the NSW Department of Land and Water Conservation 1:25,000 Ulladulla Acid Sulfate Soil Risk Map (December 1997) for Ulladulla indicates the Site was not mapped within an area of known occurrence for ASS.

3.SITE HISTORY AND OBSERVATIONS

3.1 General

Site history information was reviewed in the following information sources:

- Review of historical aerial photography (1949, 1967, 1987 and 2004).
- Publicly available Council records and Section 149 Certificates
- A search of NSW EPA Contaminated Land and POEO licence records
- Site inspection and interviews
- Review of a previous hazardous materials survey report

3.2 Aerial Photography

Historic aerial photos reviewed during this study are presented in **Figure 2A (1949), Figure 2B (1967),** and **Figure 2C (1987), Figure 2D (2004) Appendix A**. Site features and surrounding site conditions are summarised in Table 3.1

Table 3.1 Historical Aerial Photo Review

Year	Site Description and Surrounding Area
Aerial Photo 1949 B/W	**Onsite:** The photo appears to show a building of similar size and shape to the current building. No other structures are evident. **Offsite:** Surrounding areas appear to have structures, possibly a mix of commercial and residential dwellings.
Aerial photo 1967 B/W	**Onsite:** The site appears similar to the previous photo. **Offsite:** Surrounding areas appear similar with slightly more and alterations to some structures.
Aerial Photo 1987 B/W	**Onsite:** The site appears similar to the previous photo except that a possible driveway is evident on the northern side of the site. **Offsite:** Surrounding areas appear similar with slightly more and alterations to some structures.
Aerial Photo 2004 Colour	**Onsite:** The site appears similar to its present layout. **Offsite:** The surrounding area appears similar to the present layout.

3.3 Shoalhaven City Council Records

A review of information for the Site made available by Wollongong City Council under the Government Information (Public Access) Act 2009 (GIPA Act) was conducted on 6 November 2017. Key findings of the review are summarised as follows:

- 1969 – One building application for development consent (BA69/0456) proposing a 'brick garage' was approved.

The Section 149 Certificate for the properties did not indicated known contamination issues at the site. A copy of Council search results and Section 149 Certificate is included in **Appendix B.**

3.4 NSW EPA searches

3.4.1 Contaminated Land Search

A search of the NSW EPA Contaminated Land records on 6 December 2017 indicate there is three notified properties (operating services stations) located between 200m and 250m south of the Site. Two of the services stations do not require regulation by the NSW EPA under the Contaminated Lands Management Act 1997 (CLM Act) whilst one is under assessment. A summary of the notified properties is provided in Table 3.2, and a summary of the NSW EPA Contaminated Land records search results is provided in **Appendix C.**

Table 3.2: Summary of NSW EPA Notified Sites within 1km of the site

Site Name	Address	Contamination Activity Type	EPA Management Class
Caltex Service Station	Corner of Pioneer Street and Princes Highway, Ulladulla – located 200m South of the Site	Service Station	Under Assessment
Coles Express Service Station	153 Princes Highway, Ulladulla – located 225m south of the Site	Service Station	Regulation under CLM Act not required
Woolworths Petrol Station	155-157 Princes Highway, Ulladulla – located 250m south of the Site	Service Station	Regulation under CLM Act not required

3.4.2 POEO Database Search

A search of the NSW EPA Protection of the Environment Operations registers on 20 December 2017 showed there were no licences for the site and immediate surrounding areas identified within a 1km radius. A summary of the POEO Database search is provided in **Appendix C.**

3.5 Site interviews

A site interview was carried out with ISLHD worker (Norma), a staff member since 2007, who has been familiar with the Site since 1989. The following relevant information was noted:

- Originally, the two storey existing residential dwelling was built for residential use.
- The site has since been used as a Community Health Centre providing facility for services of nurses, counsellors and specialist doctors since at least 1989. The site is expected to accommodate mental health workers and dental practitioners soon.
- A 'brick garage' with low clearance is present beneath the north-eastern corner of the building. Within the garage there is an old 'water tank' and 'old toilet' beneath the building.
- In 2012, a small 'sink hole' (estimated 1m long) occurred in the driveway which was subsequently 'patched' with asphalt to permit continued driveway use.
- No known chemical storage or fuel tanks were noted to have been present.

Anecdotal information obtained during site interviews appeared to correlate with site observations and desktop information.

3.6 Previous hazardous materials survey report

ISLHD provided SMEC with a copy of a hazardous materials survey report (Clearsafe, 2015). The report indicated the presence of some lead paint and non-friable asbestos within the building and PCB was suspected in light capacitors. Some loose (non-friable) debris was noted in the internal subfloor space.

3.7 Site History Summary

The site history review suggested that the site had likely been used for residential purposes prior to conversion to a health facility. The main site building appears to have been present prior to 1948. Since 1948, there did not appear to have been knowledge of significant modification or other structures present. Site levelling appears to have occurred with deeper fill placed downslope in the northern portion of the site, supported by a retaining wall along the northern site boundary. A previous hazardous materials survey report has identified that site structures contain non-friable asbestos, lead paint and PCBs in light capacitors.

3.8 Site Observations

An Engineer from SMEC inspected the site on 29th November 2017 to make observations of the site.

The following relevant observations were made during the site walkover. Relevant site features are shown on **Figure 3, Appendix A** and site photographs included below:

- The site is used as Community Health Centre providing facility for services of various medical practitioners.
- The site has a medical facility and administration building fronting the Princes Highway (Photo 1 and 4).
- A part buried twin garage is present in the north-eastern side of the building (Photo 2).
- A brick retaining wall is observed along the northern property boundary and site terrain is elevated with respect to surrounding offsite areas (Photo 3).
- The building comprised old brickwork on all walls. Some flaking paint and fibre cement (suspected ACM) material on the underside of roof areas (Photo 5).
- Evidence of weed spraying was observed around the perimeter of the main building as dieback of grass was noted around edges (Photo 4).
- No apparent evidence of chemical storage, underground fuel tanks, staining, odours or significant vegetation die back was observed.

Photo 1 Looking east west from Princes Highway facing (Ref: Google Earth Pro)

Photo 2 Looking south on norther side of building

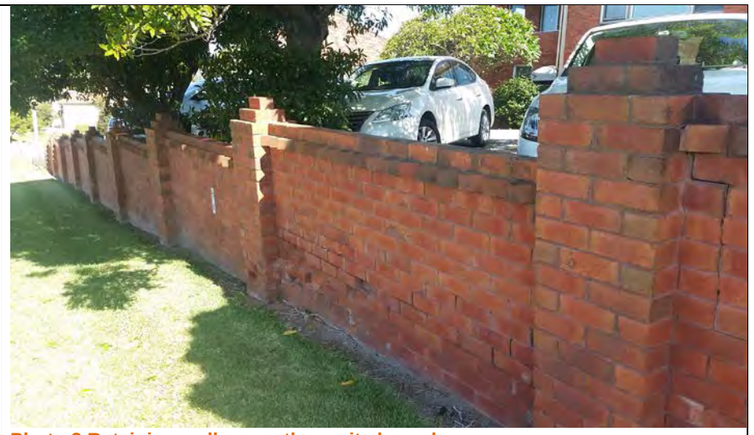

Photo 3 Retaining wall on northern site boundary

Photo 4 Facing north-east showing building and southern driveway

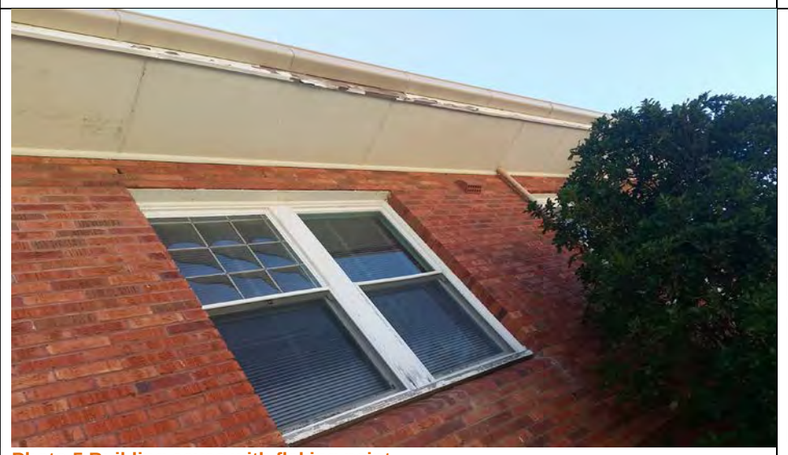

Photo 5 Building eaves with flaking paint

Photo 6 Site looking north-east from adjacent commercial premises driveway

4. POTENTIAL AREAS OF ENVIRONMENTAL CONCERN

4.1 Potential Sources of Contamination

Based on site history and observations made during the site inspection, the following activities have been identified as potential onsite sources for site contamination:

- Importation/placement of fill of unknown quality and origin
- Weathering and/or ineffective demolition of hazardous building materials within vicinity of former building structures

4.2 Potential Areas of Environmental Concern and Contaminants of Concern

Two potential areas of environmental concern (AECs) and associated contaminants of concern (CoCs) were identified and are summarised in Table 4-1. A preliminary assessment of the likelihood for contamination to be present within each AEC was based on desktop information, site observations and experience on similar sites.

Table 4.1 Identification of Areas of Environmental Concern and Contaminants of Concern

No.	Potential AECs	Potentially contaminating activity	CoCs	Likelihood of potential contamination
AEC 1	Site wide fill of unknown quality	Importation of shallow fill of unknown quality and origin Near surface soil media potentially affected	Metals, PAHs, TPH, BTEX, PCB, OCP, OPP, Phenols, asbestos	Moderate. Unknown quality and origin of fill used for dam embankment
AEC 2	Hazardous building materials (within vicinity of existing/former building structures and potentially underground services) from weathering and/or ineffective demolition.	Hazardous building materials were commonly used in residential structures prior to the 1970s and 1980s. Subject to weathering in place or ineffective demolition practices, these materials have the potential to impact near surface soils.	Asbestos, lead and zinc	Moderate. There is limited information available relating to demolition, clearance and demolition waste disposal practices.

5. CONCEPTUAL SITE MODEL

5.1 General

This preliminary conceptual site model (CSM) is made up of:

- Contaminants of Concern (CoCs);
- Receptors that could be exposed to the CoCs; and
- The exposure pathways between the CoCs and the receptors.

The preliminary CSM has been based on site information (Section 2) and a preliminary understanding of the proposed development at concept stage (Section 1.3). A further refined CSM may be considered upon more detailed understanding of the proposed development subsequent to this assessment.

5.2 Potential Sources of Soil Contamination

On the basis of our assessment the potential sources of soil contamination within each of the identified AECs are listed below:

AEC 1 – Site wide fill

- Importation of fill of unknown quality and origin; and

AEC 2 – Former and current structures

- Ineffective removal/weathering of hazardous demolition materials (possibly also including services conduits).

5.3 Potential Contaminants of Concern

Based on the desktop review, field observations and preliminary laboratory data, potential contaminants of concern (CoC) have been assessed as either primary or secondary as outlined below included:

- Heavy metals, including arsenic (As), cadmium (Cd), chromium (Cr), copper (Cu), mercury (Hg), nickel (Ni), lead (Pb) and zinc (Zn)
- Polycyclic Aromatic Hydrocarbons (PAHs)
- Total Petroleum Hydrocarbons (TPH). Conservatively these may be initially assessed as Total Recoverable Hydrocarbons (TRH).
- Benzene, toluene, ethylbenzene and xylene (BTEX)
- Organochlorine pesticides (OCPs)
- Organophosphorus Pesticides (OPPs)
- Polychlorinated biphenyls (PCBs)
- Asbestos

5.4 Potential Receptors

Based on the environmental setting, the potential receptors comprise:

Human receptors

- Site users;
- Intrusive maintenance workers within the site (i.e. maintenance of buried services);
- Future short-term construction workers associated with the proposed development;
- Future long-term commercial users of the ISHLD site

Ecological receptors

- Based on the contamination sources, it has been assessed that ecological receptors are not likely to be relevant for this site.

5.5 Exposure Pathways

The pathways of exposure consist of:

- A transport mechanism; and
- A route of exposure.

At this stage of the investigation, it is likely that the exposure pathways include:

- Disturbance of shallow soil contamination and exposure by ingestion, dermal contact or inhalation;
- Air transport of particulates (dust) or vapour intrusion/ground emissions of volatiles and exposure by inhalation; and

5.6 Persistence in the Environment

The potential contaminants of concern identified which have a relatively high degree of persistence in the environment are:

- OCPs and OPPs;
- Metals;
- Asbestos;
- Some PAHs; and
- Longer chain hydrocarbons (i.e. >C29).

5.7 Potential source-pathway-receptor linkages

Potential source-pathway-receptor linkages are where contamination (if any) were identified for the site. Soil contamination has the potential for adverse impact on human health for the site via these exposure pathways.

Human Receptors

Currently, site activities appear to be limited to health care inside buildings and car parking. Incomplete exposure pathways generally exist to potential soil contamination. Maintenance workers if excavating into the subsurface could have exposure.

In the future, the developed portion of the site will involve ground disturbance during earthworks and preparation of foundations. Construction workers are therefore likely to have a complete exposure pathway. Following construction, the future commercial workers of the facility are considered to have incomplete exposure pathways if contamination remains inaccessible beneath sealed areas of the site. Limited interaction with intrusive maintenance workers remains possible.

Ecological Receptors

There is unlikely to be a link between contamination and ecological receptors based on the type of contamination (if any) that is probable for this site.

6.ASSESSMENT CRITERIA

6.1 General

Evaluation against assessment criteria is used to identify levels of contamination that may pose ecological or health risks to potential receptors or future users of the site.

It is noted that a new, amended National Environment Protection (Assessment of Site Contamination) Measure (NEPM) has been approved by all Australian States. The NEPM was first published in 1999, and updated in 2013 by the National Environment Protection Council (NEPC) and provides national standards for a variety of environmental issues, including the assessment of site contamination in Schedule B(1) *Guideline on Investigation Levels for Soil and Groundwater*.

Adopted human health screening levels (HSL) assessment criteria have also been sourced from Friebel, E. and Nadebaum, P. (2011) CRC CARE Technical Report No.10 - Health Screening Levels for Petroleum Hydrocarbons in Soil and Groundwater.

The NEPM requires consideration be given to Health-based Investigation Levels (HIL), Health-based Screening Levels (HSL), Management Limits and Asbestos criteria. The following section outlines the rationale for the selection of the appropriate levels for this ESA.

The adopted assessment criteria for this ESA are presented in **Table D1, Appendix D** and selection rationale is outlined below.

6.2 Health Investigation Limits (HILs) and Health Screening Levels (HSLs)

Health investigation levels (HIL) are scientifically based, generic assessment criteria designed to be used in the first stage (Tier 1 or 'screening') of an assessment of potential risks to human health from chronic exposure to contaminants. Soil HILs apply to the first three metres below the surface for residential use. They are intentionally conservative and are based on a reasonable worst-case scenario for four generic land use settings:

- HIL A – residential with garden/accessible soil (home grown produce <10% fruit and vegetable intake, (no poultry), also includes children's day care centres, preschools and primary schools
- HIL B – residential with minimal opportunities for soil access includes dwellings with fully and permanently paved yard space such as high-rise buildings and flats
- HIL C – public open space such as parks, playgrounds, playing fields (e.g. ovals), secondary schools and footpaths. It does not include undeveloped public open space (such as urban bushland and reserves) which should be subject to a site-specific assessment where appropriate
- HIL D – commercial/industrial such as shops, offices, factories and industrial sites.

The relevance of Health Screening Levels (HSLs) depends upon potential petroleum hydrocarbon contamination and is applied for the purpose of human and ecological risk assessment. HSLs also consider vapour intrusion for chemicals in groundwater, and soil-vapour (i.e. can be used for non-petroleum sources). For preliminary screening, we have compared results to guidelines for an assumed 'sand' soil type and less than 1m depth.

In regard to soil, this project involves a proposed health facility, and therefore 'commercial/ industrial' land use (HSL-D) has been adopted as assessment criteria for this ESA. Both vapour intrusion and direct contact exposure scenarios are considered applicable.

NEPM also provides management limit guidelines and aesthetic issues will also be considered.

6.3 Asbestos Criteria

The adopted site screening level in accordance with NEPM (2013) includes no visible asbestos for surface soil. Samples will be tested to assess if there is potential for asbestos containing materials (ACM) on the ground surface or in fill material. To verify the presence of asbestos, samples will be tested for asbestos presence/absence. If asbestos is present, then a further assessment would be required in accordance with NEPM (2013). If asbestos is absent, then a low potential for asbestos contamination may be assessed.

6.4 Waste classification

Waste classification was based on the NSW EPA (2014) Waste Classification Guidelines: Part 1 Classifying Waste.

As a preliminary assessment of natural soils to meet the classification of Virgin Excavated Natural Material (VENM), we have assumed organic contaminants and asbestos should be below the laboratory reporting limits, and metals to be within what would be expected background concentrations. Background heavy metals concentrations have been sourced from Trace Element Concentrations in Soils from Rural and Urban Areas of Australia, Contaminated Sites Monograph Series No. 4, South Australian Health Commission, 1995.

7. FIELD INVESTIGATIONS AND RESULTS

7.1 Investigation locations

The site investigation was carried out on the 30th November 2017. Two shallow surface samples (HA3 and HA4), and four auger boreholes (nominated BH05, BH06, BH07 and BH08) were drilled for the combined contamination and geotechnical assessment. The approximate location of the boreholes are presented in **Figure 3, Appendix A**. The boreholes were drilled using a 5-tonne rubber tracked excavator equipped with 200mm diameter augers at selected locations around the premises. Dynamic Cone Penetrometer (DCP) tests were carried out at each borehole location to assess the density and consistency of the subsurface soils.

The borehole drilling and DCP testing was carried out under the full-time presence of a SMEC Experienced Geotechnical Engineer. The depths of the boreholes and DCP tests for each location are summarised below in Table 2-1, along with the corresponding latitude and longitude:

Table 2-1: Summary of Borehole Drilling Techniques.

ID	Method and Achieved Depth bgsl* (m)	Achieved DCP Test Depth bgsl* (m)	Latitude**	Longitude**
BH05	Auger 2.80m	2.5m	35^{0}21.638’	150^{0}28.435’
BH06	Auger 2.80m	2.5m	35^{0}21.638’	150^{0}28.441’
BH07	Auger 2.80m	2.4m	35^{0}21.651’	150^{0}28.432’
BH08	Auger 2.80m	2.1m	35^{0}21.653’	150^{0}28.446’
HA3	Hand Auger 0.5m	-	35^{0}21.648’	150^{0}28.443’
HA4	Hand Auger 0.5m	-	35^{0}21.643’	150^{0}28.433’

**bgsl: below ground surface level.*

***Latitude and Longitude collected using a hand-held Garmin 64s GPS, accuracy of measurements is approximately ±5m.*

Boreholes and DCP tests were terminated at end of reach or refusal on dense ground or observed very slow progress. BH05 and BH06 were located within existing pavement for parking, the spray seal was initially augered to approximately 0.2m before DCP testing could commence.

Selected geotechnical and environmental soil samples were collected from within the boreholes for testing at NATA accredited laboratories. Geotechnical soil sample were selected from in-situ residual clays, and environmental samples targeting areas of potential environmental concern and observed fill material. A summary of laboratory test results is provided in Section 3.4 below.

The engineering borehole logs are presented in **Appendix B,** including subsurface conditions encountered, sampling depths, and DCP test results.

7.2 Summary of Subsurface Units

In summary, the soil and weathered rock units encountered from the borehole locations generally correspond well with published geological data and surface expressions of site feature. For ease of assessment at the site, the main geological units have been grouped into three separate units, as presented in Table 7-2.

The engineering borehole logs of each test location are presented in **Appendix B.**

Table 7-2: Subsurface Geotechnical Unit Descriptions.

Inferred Geotechnical Unit	Depth to Top of Unit from Ground Surface Level in Boreholes (m)	Approximate Unit Thickness (m)	Description
Unit 1: Fill	0.0	0.3 to 1.6	Wearing Surface, Topsoil, Sand, Silty Sand, dry (but moist to wet in the lower parts of the unit in BH05), loose to medium dense
Unit 2: Residual	0.3 to 1.6	1.2m to >2.2m	Clay: High plasticity, pale grey, wetter than the plastic limit, stiff to very stiff Silty Sand and Sandy Clay (encountered in BH08 only): fine to medium grained sand, medium plasticity clay, firm to stiff
Unit 3: Residual to Extremely Weathered (Only BH07 and BH08)	1.7 to 2.0	-	Clay: High plasticity, pale grey to red very stiff to hard

No water inflows were encountered during the investigation. It should be noted that the depth to top of inferred geotechnical unit is based off the four auger locations, the level and thickness of each geotechnical unit may vary across the site between locations.

7.3 Field PID Screening

Soil headspace screening for volatile organic compounds (VOCs) was carried out at each soil sample using a calibrated Photo-ionisation detector (PID). The screening results suggested negligible concentrations (i.e. below 5ppm were recorded) suggesting a low likelihood for volatile contamination to be present. The PID monitoring results for selected samples submitted for testing are summarised on engineering logs in **Appendix E.**

7.4 Soil analytical results

The results of laboratory analytical testing are summarised in **Appendix D** as follows:

- **Table D1, Appendix D** includes Soil Analytical results. Where exceedance of adopted assessment criteria, these are highlighted within the table.
- **Table D2, Appendix D** includes Asbestos analytical results
- **Table D3, Appendix D** includes relative percentage difference (RPD) of soil duplicate pairs.

Laboratory analytical reports are included in **Appendix F.**

7.5 Summary of Laboratory Analytical results

No exceedances were recorded above the adopted assessment criteria from the selected soil samples analysed.

Preliminary waste classification of site soil was based on the six-step waste classification process. Based on chemical assessment (including leachability assessment), the soils tested appear to meet the classification of General Solid Waste in their current form and assumes no inadvertent mixing with other waste or hazardous materials during demolition.

Preliminary samples of natural deeper soils did not show evidence of contamination and had contaminant concentrations within what would be expected of natural background levels. These soils may classify as Virgin Excavated Natural Material subject to visual confirmation of all surface fill being removed and observation by an experienced environmental consultant.

8. QUALITY CONTROL AND QUALITY ASSURANCE

8.1 Field QAQC

8.1.1 General

All fieldwork was performed by experienced SMEC staff and suitably qualified subcontractors in accordance with SMEC's standard operating procedures.

8.1.2 Sample Handling, Storage and Transportation

All samples were collected directly into laboratory supplied sample jars and bags. To avoid potential cross-contamination a clean pair of nitrile gloves was worn prior to the collection of each sample.

All sample jars were placed immediately in an ice-filled esky to maintain the samples below a recommended preservation temperature of less than 6 °C for the duration of fieldwork.

All samples were promptly transported to the laboratories with relevant Chain of custody (COC) documentation within 2 days of sampling. The COC form was completed with the sample names, sampling date and required analyses. The samples were sent in a sealed ice-filled esky to the laboratory for analysis within the prescribed analyte holding times.

8.1.3 Laboratories

Samples were submitted to a NATA accredited laboratory (Envirolab Services Pty Ltd) for environmental testing. Analytical methods complied with NEPM and NSW EPA requirements.

The laboratory Certificate of Analysis, Sample Receipt Advice and Chain of Custody (COC) information are provided in **Appendix F.**

8.1.4 Documentation

Chain of custody (COC) documentation was signed and dated by the laboratories, and laboratory Sample Receipt Advice was provided stating that all samples:

- Were received in good order.
- Were presented in adequate sample containers
- That all samples submitted for volatiles were correctly contained with no headspace
- That all samples were labelled appropriately according to current quality field sampling protocols.

Note: *The laboratory Sample Receipt Advice indicates samples were received at the primary laboratory at temperature of 9.2°C, exceeding the recommended preservation temperature of below 6°C. The laboratory noted they were received in 'cool' condition and 'ice' was present. This is not considered significant in regard to the usability of the data.*

8.1.5 *Field and laboratory Duplicates*

A total population of fifteen (15) primary soil samples were analysed for contaminants of concern for soils. The following duplicates were analysed:

- Two field duplicates including one intra-laboratory duplicate sample (QAQC2 for primary sample BH03/0.1) analysed at the primary laboratory and one inter-laboratory duplicate sample (QAQC1 for primary sample BH04/0.2) analysed at the secondary laboratory. This is within the target ratio of 1 duplicate per 10 primary samples.
- Two laboratory duplicates were analysed for heavy metals on primary sample BH02/0.2 and BH03/0.1m. This is within the target ratio of 1 duplicate per 10 primary samples.

Relative Percentage Differences (RPDs) are presented in **Table D2, Appendix D.** The following was assessed:

- Field duplicate RPDs were generally within the recognised quality control interval of ±50%.
- Laboratory duplicate RPDs recorded higher RPDs between 83% and 176% for copper, mercury and zinc within sample BH02/0.2m. Following confirmation testing, the laboratory confirmed reported heavy metals results as 'BH02/0.2m-TRIPLICATE'. By comparison with the original, higher RPDs were reported between 58% and 188%, above the recognised quality control interval of 50% for arsenic, copper, lead, mercury and zinc. The sample concentrations for these metals were well below adopted assessment criteria and therefore this variability is unlikely to affect the conclusions of this assessment.
- Variations in minor detections of analytes can also result in higher RPDs, however these have been disregarded where sample concentrations at less than 10 times the laboratory Practical Quantification Limit (PQL).

8.1.6 *Rinsate blanks*

One equipment rinsate sample (SB1) was collected off the hand auger used to facilitate soil sample collection. The rinsate blank was tested to assess the effectiveness of decontamination of reusable sampling equipment (i.e. hand auger, drill auger). The results of laboratory testing of the rinsate sample did not contain any detectable concentrations of heavy metals.

Based on these results, an assessment of the precision of the data is considered satisfactory for this preliminary ESA.

8.2 Laboratory QAQC

8.2.1 *Methods*

The laboratory used NATA accredited testing procedures. Analytical methods were in accordance with NEPC procedures. Refer to **Appendix F** Laboratory Reports for details on the analytical techniques.

8.2.2 *Accuracy*

Accuracy is the level of agreement between an experimental determination and the true value of the parameter being measured. Reference samples or matrix spikes were used to determine the accuracy of the analytical technique. The percentage recovery for spiked samples, calculated by the laboratory, should be within the acceptance limits described as follows for the methods used.

8.2.3 *Laboratory control spikes*

Laboratory control spikes were used during the analysis to check the quality of laboratory preparation techniques. The target frequency of one per analytical batch of 20 per analytical method with the laboratory acceptance criteria of generally:

- 70-130% for inorganics/metals
- 60-140% for organics (± 50% for surrogates)
- 10-140% for speciated phenols.

8.2.4 *Laboratory blanks*

Laboratory blanks were used during the laboratory analysis to identify whether contaminants of concern were introduced to the samples during laboratory analysis procedures.

Laboratory blanks are used to monitor unintentionally introduced contaminants to the sample in the laboratory, for example organic or inorganic residues contained on glassware or cleaning reagents. Laboratory method blanks are used as part of the precision process. The acceptance criteria of the method blank is not detected >95% of the reported EQL. No target analytes were detected in any of the laboratory blanks, indicating that the analytical method was satisfactory and no contamination occurred.

It is considered that the laboratory results reported represent the true values of contaminants in situ, and that bias has not been introduced:

- By chemicals during handling or transport
- From contaminated equipment
- From contaminated reagents
- During laboratory preparation and analysis.

8.2.5 *QA/QC decision error limits*

For the purposes of this investigation, an overall error limit of 95% (i.e. 5% outside acceptable limits) was adopted in line with industry standards.

8.3 Summary of QAQC assessment

The reported results indicate that the accuracy and precision of the analysis was satisfactory and constitutes an appropriate reflection of in-situ concentrations for soil, and are thus suitable to form an adequate basis for the assessment of site conditions.

9. CONCLUSIONS AND RECOMMENDATIONS

The site history review suggested that the site had likely been used for rural/residential purposes prior to conversion to a health facility. The main site building was present prior to 1948. Since 1948, there did not appear to have been any modification or other structures present. Site levelling appears to have occurred with deeper fill placed downslope in the northern portion of the site, supported by a retaining wall along the northern site boundary. A previous hazardous materials survey report has identified that site structures contain non-friable asbestos, lead paint and PCBs in light capacitors.

Two areas of environmental concern (AEC) and potentially contamination sources were identified onsite including:

- AEC 1 – Site wide fill of unknown origin and quality
- AEC 2 – Ineffective removal/weathering of hazardous demolition materials (possibly also including services conduits).

The AECs were considered to have a moderate potential for soil contamination to be present. A conceptual site model was developed.

Preliminary soil sampling was carried out at the site in combination with a geotechnical investigation. Results did not record exceedences of the adopted criteria for the proposed commercial style land use at the locations tested. The results of samples were also compared to waste classification criteria and this suggested that the site fill soils are likely to classify as General Solid Waste if disposed at a licenced waste facility. Undisturbed natural deeper soils if unmixed may classify as Virgin Excavated Natural Material subject to visual confirmation of all surface fill being removed and observation by an experienced environmental consultant. Based on the observations, some further confirmatory testing may be required.

We recommend that all site structures be appropriately demolished in accordance with all relevant guidance with respect to removal and clearance of hazardous building materials. A pre-demolition intrusive hazardous materials survey may also be required. This may also include tracing and chasing out any subsurface conduits that are made of hazardous materials (e.g. ACM piping). Completion of this prior to any bulk earthworks (along with a clearance) is recommended to avoid incidental damage and/or mixing of hazardous materials with site soils.

Considering the potential for unidentified structures to have been present prior to 1948, implementation of an unexpected finds protocol would also be prudent.

10. REFERENCES

National Environment Protection (Assessment of Site Contamination) Measure 1999, Amendment 2013

NSW EPA (1997), Contaminated Sites – Guidelines for Consultants Reporting on Contaminated Sites

NSW EPA (2017) (website) Contaminated Land Record of Notices URL: http://www.epa.nsw.gov.au/prclmapp/searchregister.aspx accessed November 2017

NSW EPA (2017) (website) POEO Public Register URL: http://www.epa.nsw.gov.au/prpoeo/index.htm accessed November 2017

NSW Department of Land and Water Conservation (1997), Ulladulla 1: 25,000 Acid Sulfate Soil Risk Map (December 1997)

NSW Government (website), Department of Primary Industries, Office of Water URL: http://realtimedata.water.nsw.gov.au/water.stm?ppbm=GROUND_WATER&gw&3&gwkm_url accessed November 2017

Rose G., 1966, Ulladulla 1:250 000 Geological Sheet SI/56-13, 1st edition, Geological Survey of New South Wales, Sydney

SMEC (2017) Geotechnical Investigation Report, 130 Princes Highway, Ulladulla NSW, Dapto, Ref: 30012196. R1, dated 20/12/2017

South Australian Health Commission (1995), Trace Element Concentrations in Soils from Rural and Urban Areas of Australia, Contaminated Sites Monograph Series No. 4

SEPP (1998), State Environmental Planning Policy No.55 – Remediation of Land, 1998.

Ulladulla 1:250,000 geological series sheet: S1 56-13, Ed.1, 1966'

APPENDIX A: SITE FIGURES

Image Reference: ADS40 Towns 2010
Source Reference: NSW Land and Property information, as viewed on Sixviewer, accessed 18/12/2017

Drawn	AW
Approved	MF
Date	20/12/17
Scale	As shown

Title:
Geotechnical Investigation
82 South Street, Ulladulla, NSW
Illawarra Shoalhaven Local Health District (ISLHD)

SMEC AUSTRALIA PTY LTD
A.C.N. 065 475 149

Site locality plan

Project No.: 30012196

Figure No: 1

Image Reference: Land & Property Information (2017)

Drawn	LB / AJW
Approved	MF
Date	20/12/17
Scale	As shown

Title:
Phase 1 Contamination Assessment
82 South Street, Ulladulla
Illawarra Shoalhaven Local Health District (ISLHD)

Member of the Surbana Jurong Group
SMEC AUSTRALIA PTY LTD
A.C.N. 065 475 149

Historical aerial photograph 1949

Project No.: 30012196

Figure No: 2A

Image Reference: Land & Property Information (2017)

Drawn	LB / AJW
Approved	MF
Date	20/12/17
Scale	As shown

Title:
Phase 1 Contamination Assessment
82 South Street, Ulladulla
Illawarra Shoalhaven Local Health District (ISLHD)

Member of the Surbana Jurong Group
SMEC AUSTRALIA PTY LTD
A.C.N. 065 475 149

Historical aerial photograph 1967

Project No.: 30012196

Figure No: 2B

Image Reference: Land & Property Information (2017)

Drawn	LB / AJW
Approved	MF
Date	20/12/17
Scale	As shown

Title:
Phase 1 Contamination Assessment
82 South Street, Ulladulla
Illawarra Shoalhaven Local Health District (ISLHD)

SMEC
Member of the Surbana Jurong Group
SMEC AUSTRALIA PTY LTD
A.C.N. 065 475 149

Historical aerial photograph 1987

Project No.: 30012196

Figure No: 2C

Image Reference: Digital Globe (2017) as viewed on Google Earth Pro, accessed 20/12/2017

Drawn	LB / AJW
Approved	MF
Date	20/12/17
Scale	As shown

Title:
Phase 1 Contamination Assessment
82 South Street, Ulladulla
Illawarra Shoalhaven Local Health District (ISLHD)

SMEC
Member of the Surbana Jurong Group
SMEC AUSTRALIA PTY LTD
A.C.N. 065 475 149

Historical aerial photograph 2004

Project No.: 30012196

Figure No: 2D

Image Reference: ADS40 Towns 2010
Source Reference: NSW Land and Property information, as viewed on Sixviewer, accessed 18/12/2017

Drawn	AJW
Approved	SRM / MF
Date	20/12/17
Scale	Not to scale

Title:
Geotechnical Investigation
82 South Street, Ulladulla, NSW
Illawarra Shoalhaven Local Health District (ISLHD)

SMEC AUSTRALIA PTY LTD
A.C.N. 065 475 149

Site layout and test locations

Project No: 30012196

Figure No: 3

APPENDIX B: COUNCIL SEARCH & SECTION 149 CERTIFICATES

Williams, Alex

From: Bollen, Lachlan
Sent: Wednesday, 22 November 2017 12:59 PM
To: Williams, Alex
Subject: FW: Request for Access to Development Application Information held by Council

Lachlan Bollen
Scientist
SMEC (Member of the Surbana Jurong Group)
T +61 2 9925 5482

From: Michael Goldsmith [mailto:Michael.Goldsmith@shoalhaven.nsw.gov.au]
Sent: Monday, 20 November 2017 9:26 AM
To: Bollen, Lachlan <Lachlan.Bollen@smec.com>
Subject: RE: Request for Access to Development Application Information held by Council

Lachlan,

I refer to your request below relating to the property at 82 South St, Ulladulla. For your information Council records show the site area shown in your attached map as being two properties, 82 South St Ulladulla (Lot 6 DP 22193) to the North and 130 Princes Highway, Ulladulla (Lot 5 DP 22193) to the South.

I have checked Council's GIS system for Development and Building applications and the only application listed for the properties is below.

BA69/0456 – Brick Garage – Decision: Approved

If you have any questions or require any further information please let me know.

Regards,

Michael Goldsmith
Information Officer - GIPA
Shoalhaven City Council

(02) 4429 3530
Bridge Rd (PO Box 42) Nowra NSW 2541
michael.goldsmith@shoalhaven.nsw.gov.au
www.shoalhaven.nsw.gov.au

From: Bollen, Lachlan [mailto:Lachlan.Bollen@smec.com]
Sent: Thursday, 16 November 2017 2:56 PM
To: Council Email <Council@shoalhaven.nsw.gov.au>
Subject: Request for Access to Development Application Information held by Council

To whom it may concern,

RE: 4 Marshall Street – Access to Development Application Information held by Council

Please find the attached:

- Signed Informal Access Application
- Map showing the Site area
- Letter of authorisation from site owner

Please supply a receipt for searches. We appreciate wherever the search can be expedited to ensure delivery to our client within the next 1 week.

Kind regards,

Lachlan Bollen
Scientist
T +61 2 9925 5482
E Lachlan.Bollen@smec.com

Local People, Global Experience
SMEC (Member of the Surbana Jurong Group)
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If you have received this email in error, please notify the sender immediately then destroy the original message.

Shoalhaven City Council

Bridge Rd, Nowra NSW 2541 **02 4429 3111**
Deering St, Ulladulla NSW 2539 **02 4429 8999**
Address all correspondence to
The General Manager, PO Box 42, Nowra NSW 2541 Australia
DX5323 Nowra Fax 02 4422 1816

PLANNING CERTIFICATE UNDER SECTION 149
ENVIRONMENTAL PLANNING AND ASSESSMENT ACT, 1979
Certificate No: 2017/04175

Applicant: Vince De Santis
Level 0 Lawson House
Cnr Darling and Crown Street
Wollongong NSW 2500

Assessment number: 01089.42500
Receipt No.: Ext: 78397
Date: 19/10/2017
Fee: $133
Urgency Fee: $0.00

Applicant reference: ISLHD

The land to which this Certificate relates is:
Lot 5 DP 22193, 130 Princes Hwy, ULLADULLA
Parish of ULLADULLA, County of ST. VINCENT

The above information is as recorded by Council.

DISCLAIMER AND CAUTION:

1. The information on zones, controls etc given below relates to the land for which the certificate was sought. If enquirers wish to know what zones, other controls, etc apply or are proposed on nearby land then they should make enquiries in person at Council's offices.

2. The information contained in this certificate is accurate as at the date of this certificate.

3. In providing this certificate Council has in good faith relied upon information provided to it or sourced from third parties. Where Council has obtained the information from third parties, either exclusively or in conjunction with information held by Council, the Certificate details the source of that third party information. Council cautions persons against relying upon information in the Certificate sourced from third parties as to its accuracy, applicability to specific lands and its currency without verification from the specified third party and, where appropriate, professional advice and the adoption of prudent land acquisition measures and appropriate professional advice. To the full extent permitted by law Council disclaims liability with respect to any information in this Certificate sourced from third parties.

The information contained in this certificate is prepared in accordance with the Environmental Planning and Assessment Act 1979 (as amended) and the Environmental Planning Assessment Regulation 2000 (as amended).

council@shoalhaven.nsw.gov.au | www.shoalhaven.nsw.gov.au

PLANNING CERTIFICATE UNDER SECTION 149
ENVIRONMENTAL PLANNING AND ASSESSMENT ACT, 1979
Certificate No: 2017/04175

SECTION 149(2):
As at the date of this certificate the following information in respect of the abovementioned land is supplied pursuant to Schedule 4 of the Regulations:

1 **Names of relevant planning instruments and DCP's**

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

Shoalhaven Local Environmental Plan 2014 (as amended)

State Environmental Planning Policies

No. 71 COASTAL PROTECTION - Gazetted 1st November 2002
The policy applies to land within the "coastal zone" and requires certain development applications to carry out development in sensitive coastal locations to be referred to the Director-General for comment, and identifies master plan requirements for certain development in the coastal zone.

VEGETATION IN NON-RURAL AREAS. Gazetted 25 August 2017 (& as amended) Is to protect the biodiversity values of trees and other vegetation in non-rural areas of the State and to preserve the amenity of non-rural areas of the State through the preservation of trees and other vegetation.

State Environmental Planning Policies affecting the City

State Environmental Planning Policy No. 21 – Caravan Parks
State Environmental Planning Policy No. 30 – Intensive Agriculture
State Environmental Planning Policy No. 33 – Hazardous and Offensive Development
State Environmental Planning Policy No. 36 – Manufactured Home Estates
State Environmental Planning Policy No. 44 – Koala Habitat Protection
State Environmental Planning Policy No. 50 – Canal Estate Development
State Environmental Planning Policy No. 55 – Remediation of Land
State Environmental Planning Policy No. 62 – Sustainable Aquaculture
State Environmental Planning Policy No. 64 - Advertising and Signage
State Environmental Planning Policy No. 65 – Design Quality of Residential Apartment Development

State Environmental Planning Policy (Housing for Seniors or People with a Disability) 2004
State Environmental Planning Policy (Building Sustainability Index: Basix) 2004
State Environmental Planning Policy (State Significant Precincts) 2005
State Environmental Planning Policy (Infrastructure) 2007
State Environmental Planning Policy (Mining Petroleum Production and Extractive Industries) 2007
State Environmental Planning Policy (Miscellaneous Consent Provisions) 2007
State Environmental Planning Policy (Rural Lands) 2008
State Environmental Planning Policy (Exempt and Complying Development Codes) 2008
State Environmental Planning Policy (Affordable Rental Housing) 2009
State Environmental Planning Policy (State and Regional Development) 2011
State Environmental Planning Policy (Educational Establishments and Child Care Facilities) 2017

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

Draft State Environmental Planning Policies

State Environmental Planning Policy No. 44 - Koala Habitat Protection - Review

State Environmental Planning Policy No. 64 - Advertising and Signage - Amendment 3

State Environmental Planning Policy (Exempt and Complying Development Codes) Amendment (Proposed Medium Density Codes)

State Environmental Planning Policy (Exempt and Complying Development Codes) Amendment (Proposed Greenfields Housing Code)

State Environmental Planning Policy (Infrastructure) Amendment Review 2016

State Environmental Planning Policy (Infrastructure) Amendment (Sport and Recreation)

State Environmental Planning Policy (Infrastructure) Amendment (Shooting Ranges)

Draft State Environmental Planning Policy (Coastal Management)

Draft Local Environmental Plans and planning proposals for Local Environmental Plans

PLANNING PROPOSAL - FALLS CREEK/WOOLLAMIA DEFERRED AREAS (LP406) EXHIBITED WEDNESDAY 24 MAY TO FRIDAY 23 JUNE 2017(38279E) (MIN17.376).
LP406 affects 15 properties at Woollamia and Seasongood Roads. It will potentially enable the creation of up to 16 additional rural residential lots. It will fulfil a requirement of Jervis Bay Settlement Strategy 2003 (JBSS) to investigate the potential for the 'deferred areas' to accommodate increased densities, subject to investigating environmental factors and potential cumulative impacts.
Properties are as follows: Lot 159A DP 15266, Lot 123 DP 15266, Lot 157 DP 15266, Lot 122A DP 15266, Lot 155A DP 15266, Lot 115 DP 15266, Lot 155 DP 15266, Lot 113A DP 15266, Lot 118A DP 15266, Lot 113 DP 15266, Lot 118 DP 15266, Lot 116A DP 15266, Lot 119A DP 15266, Lot 116 DP 15266, Lot 119 DP 15266

PLANNING PROPOSAL - PP022 - SHOALHAVEN LOCAL ENVIRONMENT PLAN 2014 HOUSEKEEPING 2016 - (MINOR MAPPING & INSTRUMENT CHANGES) - EXHIBITED 06 SEPTEMBER 2017 TO 06 OCTOBER 2017 (54634E) (MIN17.377)

The Planning Proposal (PP) Shoalhaven Local Environment Plan (LEP) 2014 - Housekeeping 2016 - Minor Mapping & Instrument Changes (PP022) explains the intent of, and justification for, an amendment to Shoalhaven LEP 2014. This PP covers a variety of relatively minor matters and seeks to amend Shoalhaven LEP 2014 to improve its operation and accuracy. The amendment responds to a range of issues that were identified during the 2016 calendar year.

(3) The name of each development control plan that applies to the carrying out of development on the land is:

Shoalhaven Development Control Plan 2014 (as amended)

2 **Zoning and land use under relevant LEPs**

For Shoalhaven Local Environmental Plan 2014 (as amended)

a. **Zone B4 Mixed Use**

b. **Permitted without consent**
Nil

c. **Permitted with consent**
Attached dwellings; Boarding houses; Building identification signs; Business identification signs; Centre-based child care facilities; Commercial premises; Community facilities; Educational establishments; Entertainment facilities; Function centres; Group homes; Hotel or motel accommodation; Information and education facilities; Medical centres; Multi dwelling housing; Passenger transport facilities; Recreation facilities (indoor); Registered clubs; Residential flat buildings; Respite day care centres; Restricted premises; Roads; Seniors housing; Shop top housing; Tourist and visitor accommodation; Any other development not specified in item b or d.

d. **Prohibited**
Agriculture; Air transport facilities; Airstrips; Boat building and repair facilities; Boat launching ramps; Boat sheds; Camping grounds; Caravan parks; Cemeteries; Crematoria; Depots; Eco-tourist facilities; Electricity generating works; Environmental facilities; Exhibition homes; Exhibition villages; Extractive industries; Farm buildings; Farm stay accommodation; Forestry; Freight transport facilities; Heavy industrial storage establishments; Helipads; Highway service centres; Home occupations (sex services); Industrial retail outlets; Industrial training facilities; Industries; Jetties; Marinas; Mooring pens; Moorings; Mortuaries; Open cut mining; Recreation facilities (outdoor); Research stations; Residential accommodation; Resource recovery facilities; Rural industries; Sex services premises; Signage; Storage premises; Transport depots; Truck depots; Vehicle body repair workshops; Warehouse or distribution centres; Waste disposal facilities; Wharf or boating facilities.

e. There is no development standard applying to the land fixing minimum land dimensions for the erection of a dual occupancy (attached) and dwelling house on the land.

f. The land **does not** include or comprise critical habitat.
(Note: "critical habitat" means habitat declared to be critical habitat under the Fisheries Management Act 1994.).

g. The land **is not** in a conservation area (however described).
(Note: this item relates to "heritage conservation areas" as defined in the LEP).

h. An item of environmental heritage (however described) **is not** situated on the land.
(Note: "environmental heritage" relates to matters/items of cultural heritage, for example, items listed on the State Register, items specifically listed in the LEP or matters subject to an "interim heritage order" under the Heritage Act 1977).

Other provisions in SLEP 2014 may also apply to the development of this land. You can view the SLEP at the website www.legislation.nsw.gov.au or at Council's offices.

3 **Complying development**

Qualifying Statement on Council Data Affecting this Item
Shoalhaven City Council does not have sufficient information to ascertain the extent to which complying development may or may not be carried out on the land, however specific land restrictions may not apply to all of the land. The information included in this Planning Certificate is provided in accordance with the Environmental Planning & Assessment Regulation 2000 (as amended). It is strongly suggested that you review the State Environmental Planning Policy (Exempt and Complying Developments Codes) 2008 and supporting information before proceeding with the lodgement of a Complying Development Certificate application to either Council or a private certifier. The NSW Department of Planning and Environment has provided a series of information sheets on its website
http://www.planning.nsw.gov.au/exemptandcomplying

Specific land exemptions for General Housing Code and Rural Housing Code

Complying development under the General Housing Code and the Rural Housing Code **MAY** be carried out on this land because of the provisions of clauses 1.17A (1)(c) to (e), (2), (3) and (4), 1.18(1) (c3) and 1.19 of State Environmental Planning Policy (Exempt and Complying Development Codes) 2008 as amended.

Specific land exemptions for Housing Alterations Code and General Development Code

Complying development under the Housing Alterations Code and the General development Code **MAY** be carried out on this land because of the provisions of clauses 1.17A (1)(c) to (e), (2), (3) and (4), 1.18(1) (c3) and 1.19 of State Environmental Planning Policy (Exempt and Complying Development Codes) 2008 as amended.

Specific land exemptions for Commercial and Industrial (New Buildings and Additions) Code

Complying development under the Commercial and Industrial (New Buildings and Additions) **MAY** be carried out on this land because of the provisions of clauses 1.17A (1)(c) to (e), (2), (3) and (4), 1.18(1) (c3) and 1.19 of State Environmental Planning Policy (Exempt and Complying Development Codes) 2008 as amended.

4 **Coastal protection**

The Council **has not** received any notification from the Department of Finances, Services, Technology and Innovation that the land is affected by the operation of Sections 38 or 39 of the Coastal Protection Act, 1979.

(a) **Certain information relating to beaches and coasts**

(1) An order **has not** been made under Part 4D of the Coastal Protection Act 1979 in relation to temporary coastal protection works (within the meaning of that Act) on the land (or on public land adjacent to that land).

(2)(a) The council **has not** been notified under section 55X of the Coastal Protection Act 1979 that temporary coastal protection works (within the meaning of that Act) have been placed on the land (or on public land adjacent to that land)

(b) **Annual charges under Local Government Act 1993 for coastal protection services that relate to existing coastal protection works**

The owner (or any previous owner) of the land **has not** consented in writing to the land being subject to annual charges under section 496B of the Local Government Act 1993 for coastal protection services that relate to existing coastal protection works (within the meaning of section 553B of that Act).

5 **Mine subsidence**

The land **has not** been proclaimed to be a mine subsidence district within the meaning of section 15 of the Mine Subsidence Compensation Act, 1961.

6 **Road widening and road alignment**

(a) The land is **NOT** affected by any road widening or road realignment under Division 2 of Part 3 of the Roads Act 1993

(b) If affected by any environmental planning instrument it will be listed below.

(c) The land **NOT affected by any road widening or road realignment under any resolution of Council.**

Note: Information in item 6, relates to Council's road proposals; other authorities e.g. NSW Roads and Maritime Services, may have proposals not set out herein.

7 **Council and other public authority policies on hazard risk restrictions**

(a) The land **IS** affected by the following policy or policies adopted by the Council that restrict the development of the land because of the likelihood of land slip, bushfire, tidal inundation, subsidence, acid sulfate soils or any other risk (other than flooding).

Shoalhaven Development Control Plan 2014

Contaminated Land Policy 2013

(b) The land **IS NOT** affected by a policy adopted by a public authority (other than the Council) and notified to the Council for the express purpose of its adoption by that authority being referred to in planning certificates issued by the Council, that restricts the development of the land because of the likelihood of land slip, bushfire, tidal inundation, subsidence, acid sulfate soils or any other risk (other than flooding).

7A **Flood related development controls information**

(1) Development on the land subject of this planning certificate for the purposes of dwelling houses, dual occupancies, multi dwelling housing or residential flat buildings (provided that such development is permissible on the land with or without development consent) ***IS*** *subject to flood related development controls.*

(2)) Development on the land subject of this planning certificate for purposes other than dwelling houses, dual occupancies, multi dwelling housing or residential flat buildings (provided that such development is permissible on the land with or without development consent) ***IS*** *subject to flood related development controls.*

(3)The expressions "dwelling houses", "dual occupancies", "multi dwelling housing" and "residential flat buildings" as used in subclauses (1) and (2) above have the same meanings as in the standard instrument set out in the Standard Instrument (Local Environmental Plans) Order 2006

Council does not know whether or not development on the land or part of the land is subject to flood related development controls in Shoalhaven Local Environmental Plan 2014 (LEP) or Shoalhaven Development Control Plan 2014 (DCP). The land is not located within the *Flood Planning Area* (FPA) within the meaning of Shoalhaven Local Environmental Plan 2014 (LEP), but may be affected by the *Flood Planning Level* (FPL) as defined in the LEP, or may be flood prone land within the meaning of Shoalhaven Development Control Plan (DCP) 2014.

If the land is within 40 metres of a creek; or is within 10 metres of a major drainage system, local overland flow path or drainage easement; or has a history of flooding then a flood assessment report will need to be submitted with any development application under the requirements of the DCP.

The flood assessment report is to identify whether or not the land is flood prone and determine, if flood prone, the flood planning level. For further information please contact Council's Natural Resources Unit.

8 **Land reserved for acquisition**

The land **IS NOT** reserved for acquisition by a public authority, as referred to in section 27 of the Act under any environmental planning instrument, or proposed environmental planning instrument referred to in clause 1.

9 **Contributions plans**

SHOALHAVEN CONTRIBUTIONS PLAN 2010 (as amended)
Shoalhaven Contributions Plan 2010 allows Council to levy contributions on new (future) development to fund proportions of the cost of providing essential community infrastructure. The Plan will be regularly amended and those amendments will form part of the Plan. Amendments may include a revised contribution project rate and new contribution projects. Contact Council for contributions applicable at a particular date.

(Note that where development of a lot involves an increased demand for water and/or sewerage services, an increased contribution for these are not included in the contributions plan, but will be required under the Local Government Act and the Water Management Act - contact Shoalhaven Water within Council for further details)

9a **Biodiversity certified land**

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

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

10 **Biobanking stewardship sites**

The council **has not** been notified by the Chief Executive of the Office of Environment and Heritage whether or not the land is a biodiversity stewardship site.

10a **Native vegetation clearing set asides**
The land **does not** contain a set aside area under section 60ZC of the Local Land Services Act 2013.

11 **Bush fire prone land**
The land **IS NOT** bushfire prone (as defined in the Environmental Planning and Assessment Act 1979).

12 **Property vegetation plans**
The Council **HAS NOT** been notified that the land is land to which a property vegetation plan approved under Part 4 of the Native Vegetation Act 2003 (and that continues in force) applies.

13 **Orders under Trees (Disputes Between Neighbours) Act 2006**
The Council **has not** been notified that an order has been made under the Trees (Disputes Between Neighbours) Act 2006 to carry out work in relation to a tree on the land.

14 **Directions under Part 3A**
There is no direction by the Minister in force under section 75P (2) (c1) of the Act that a provision of an environmental planning instrument prohibiting or restricting the carrying out of a project or a stage of a project on the land under Part 4 of the Act does not have effect.

15 **Site compatibility certificates and conditions for seniors housing**
The Council **is not** aware of any current site compatibility certificate (seniors housing) in respect of proposed development on the land.

16 **Site compatibility certificates for infrastructure**
The Council **is not** aware of a current site compatibility certificate (Infrastructure), in respect of proposed development on the land.

17 **Site compatibility certificates and conditions for affordable rental housing**
The Council **is not** aware of a current site compatibility certificate (affordable rental housing), in respect of proposed development on the land.

18 **Paper subdivision information**
The land **is not** affected by a development plan (proposed or adopted) or subdivision order as defined under Part 16C of the Environmental Planning & Assessment Regulation 2000

19 **Site verification certificates**
The Council **is not** aware of a current site verification certificate (mining, petroleum production and extractive industries), in respect of this land.

20 **Loose-filled asbestos insulation**
NSW Fair Trading maintains a Register of residential dwellings that are affected by loose-fill asbestos insulation.
Council **HAS NOT** received notification from NSW Fair Trading that this property is identified on the Loose-Fill Asbestos Insulation Register.

Note: The following matters are prescribed by Section 59(2) of the Contaminated Land Management Act 1997 as additional matters to be specified in a planning certificate:

(a) The land **is NOT** significantly contaminated land within the meaning of the Act

(b) The land **is NOT** subject to a management order within the meaning of that Act.

(c) The land **is NOT** the subject of an approved voluntary management proposal within the meaning of the Act

(d) The land **is NOT** the subject of an ongoing maintenance order within the meaning of the Act

(e) The land **is NOT** the subject of a site audit statement within the meaning of the Contaminated Land Act 1997 that has been provided to the Council.

Note: Section 26 of the *Nation Building and Jobs Plan (State Infrastructure Delivery) Act 2009* provides that a planning certificate must include advice about any exemption under section 23 or authorisation under section 24 of that Act if the council is provided with a copy of the exemption or authorisation by the Co-ordinator General under that Act.

Information under Section 149(5)

As at the date of this certificate, the abovementioned land is also affected as follows:
(**NOTE:** SECTION 149(6) STATES THAT A COUNCIL SHALL NOT INCUR ANY LIABILITY IN RESPECT OF ANY ADVICE PROVIDED IN GOOD FAITH PURSUANT TO SECTION 149(5))

DRAFT PLANNING AGREEMENT NO 12 - ENTERPRISE AVENUE, SOUTH NOWRA PUBLICLY EXHIBITED 17 MAY 2017 - 16 JUNE 2017 (MIN 17.375)

Council resolved on 9 May 2017 to enter into a Draft Planning Agreement. The aim of this Draft Planning Agreement is to facilitate the half width construction of the southern end of Enterprise Avenue, South Nowra. (MIN 16.619)

MATTERS AFFECTING THE WHOLE OF THE CITY

ACID SULFATE SOILS - Large areas of the coastal zone of NSW have the potential to be affected by acid sulfate soils which become problematic if exposed during excavations or similar activities. The Dept of Land & Water Conservation have maps which indicate the potential occurrence of acid sulfate soils. Prior to undertaking work which involves substantial soil disturbance, you should ascertain the possibility of acid sulfate soils existing on your property. Enquiries to NSW Department of Planning & Environment.

Council policy "Provision of Water and Sewerage Infrastructure - Development Not Included in Development Servicing Plans" shall apply to all lands which have not been included in its water supply and/or sewerage services development servicing plans.

CATS AND DOGS: IMPACTS ON NATIVE FAUNA
Council resolved on 20 Dec 05 in order to protect populations of native fauna, including threatened species, from impacts associated with the keeping of domestic cats and dogs within certain development, in accordance with the *Environmental Planning & Assessment Act, 1979* and the *Threatened Species Conservation Act, 1995.*
- "That Council not prohibit or restrict the keeping of companion animals eg (cats and dogs) for the purpose of imposing conditions of development consent; and
-That appropriate measures for the management of companion animals may be applied in sensitive environmental locations." (file 23139E)

INFORMATION REGARDING LOOSE-FILLED ASBESTOS INSULATON
Some residential homes located in NSW have been identified as containing loose-fill asbestos insulation, for example in the roof space. NSW Fair Trading maintains a Register of homes that are affected by loose-fill asbestos insulation.

You should make your own enquiries as to the age of the buildings on the land to which this certificate relates and, if it contains a building constructed prior to 1980, Council recommends that any potential purchaser obtain advice from a licensed asbestos assessor to determine whether loose-fill asbestos is present in any building on the land and, if so, the health risks (if any) this may pose for the building's occupants.

Contact NSW Fair Trading for further information.

DEVELOPMENT CONTROL PLAN - DCP 2014_17 SHOALHAVEN DEVELOPMENT PLAN 2014 - (AMENDMENT 17) CHAPTER N16 FALLS CREEK/WOOLAMIA DEFERRED AREAS - EXHIBITED 24 MAY to 23 JUNE 2017 (54648E) (MIN17.376)

Chapter N16 will be a new site-specific chapter in Shoalhaven Development Control Plan (DCP) 2014 (Amendment No. 17) and affects 15 properties at Woollamia and Seasongood Roads. Chapter N16 will provide additional planning controls to support Planning Proposal LP406.
Properties are as follows: 111 Woollamia Rd (Lot 159A DP 15266) 59 Woollamia Rd (Lot 157 DP 15266) 53 Woollamia Rd (Lot 155A DP 15266) 49 Woollamia Rd (Lot 155 DP 15266) 7 Seasongood Rd (Lot 118A DP 15266) 5 Seasongood Rd (Lot 118 DP 15266) 3 Seasongood Rd (Lot 119A DP 15266) 1 Seasongood Rd (Lot 119 DP 15266) 20 Seasongood Rd (Lot 123 DP 15266) 18 Seasongood Rd (Lot 122A DP 15266) 13 Seasongood Rd (Lot 115 DP 15266) 23 Seasongood Rd (Lot 113A DP 15266) 21 Seasongood Rd (Lot 113 DP 15266) 11 Seasongood Rd (Lot 116A DP 15266) 9 Seasongood Rd (Lot 116 DP 15266)

for R D Pigg,
GENERAL MANAGER

Title

InfoTrack
An Approved LPI NSW Information Broker

Title Search

LAND AND PROPERTY INFORMATION NEW SOUTH WALES - TITLE SEARCH

FOLIO: 5/22193

SEARCH DATE	TIME	EDITION NO	DATE
21/4/2016	2:25 PM	-	-

VOL 6467 FOL 165 IS THE CURRENT CERTIFICATE OF TITLE

LAND

LOT 5 IN DEPOSITED PLAN 22193
AT ULLADULLA
LOCAL GOVERNMENT AREA SHOALHAVEN
PARISH OF ULLADULLA COUNTY OF ST VINCENT
TITLE DIAGRAM DP22193

FIRST SCHEDULE

HEALTH ADMINISTRATION CORPORATION (AP V259013)

SECOND SCHEDULE (2 NOTIFICATIONS)

1 RESERVATIONS AND CONDITIONS IN THE CROWN GRANT(S)
2 V177723 EASEMENT TO DRAIN WATER AFFECTING THE PART OF THE LAND ABOVE DESCRIBED SHOWN 3 METRES WIDE IN PLAN WITH V177723

NOTATIONS

UNREGISTERED DEALINGS: NIL

*** END OF SEARCH ***

RCNS56 PRINTED ON 21/4/2016

* Any entries preceded by an asterisk do not appear on the current edition of the Certificate of Title. Warning: the information appearing under notations has not been formally recorded in the Register. InfoTrack an approved NSW Information Broker hereby certifies that the information contained in this document has been provided electronically by the Registrar General in accordance with Section 96B(2) of the Real Property Act 1900.

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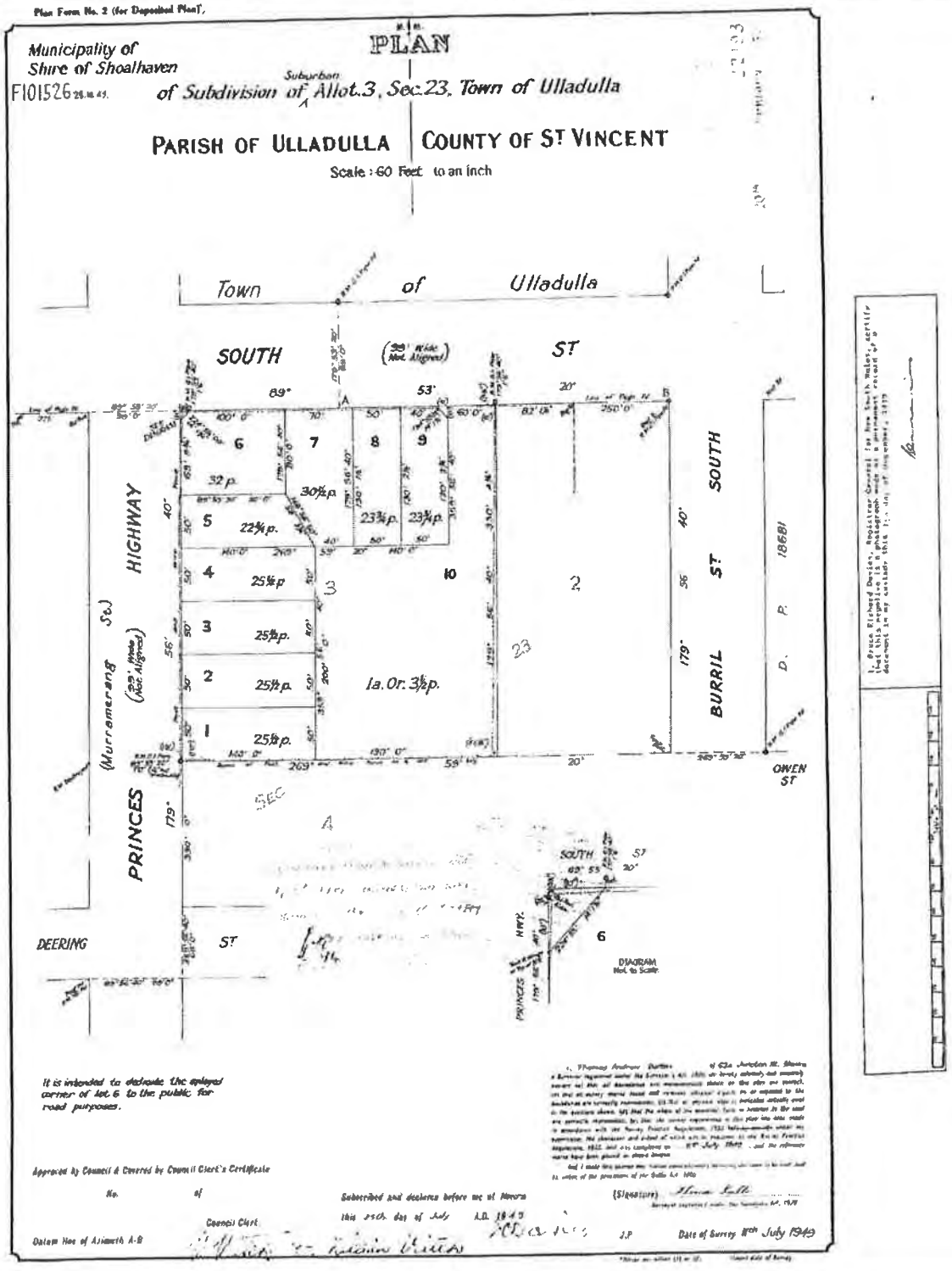
Deposited Plan



APPENDIX C: NSW EPA SEARCHES

Search results

Your search for:Suburb: ULLADULLA

Search Again
Refine Search

did not find any records in our database.

If a site does not appear on the record it may still be affected by contamination. For example:

- Contamination may be present but the site has not been regulated by the EPA under the Contaminated Land Management Act 1997 or the Environmentally Hazardous Chemicals Act 1985.
- The EPA may be regulating contamination at the site through a licence or notice under the Protection of the Environment Operations Act 1997 (POEO Act).
- Contamination at the site may be being managed under the planning process.

Search TIP

To search for a specific site, search by LGA (local government area) and carefully review all sites listed.

... more search tips

More information about particular sites may be available from:

- The POEO public register
- The appropriate planning authority: for example, on a planning certificate issued by the local council under section 149 of the Environmental Planning and Assessment Act.

See What's in the record and What's not in the record.

If you want to know whether a specific site has been the subject of notices issued by the EPA under the CLM Act, we suggest that you search by Local Government Area only and carefully review the sites that are listed.
This public record provides information about sites regulated by the EPA under the Contaminated Land Management Act 1997, including sites currently and previously regulated under the Environmentally Hazardous Chemicals Act 1985. Your inquiry using the above search criteria has not matched any record of current or former regulation. You should consider searching again using different criteria. The fact that a site does not appear on the record does not necessarily mean that it is not affected by contamination. The site may have been notified to the EPA but not yet assessed, or contamination may be present but the site is not yet being regulated by the EPA. Further information about particular sites may be available from the appropriate planning authority, for example, on a planning certificate issued by the local council under section 149 of the Environmental Planning and Assessment Act. In addition the EPA may be regulating contamination at the site through a licence under the Protection of the Environment Operations Act 1997. You may wish to search the POEO public register.POEO public register

20 November 2017

Suburb	Site Name	Site Address	Contamination Activity Type	EPA Management Class	Latitude	Longitude
TUMUT	Former Telstra Depot	22-26 Carey STREET	Other Industry	Regulation under CLM Act not required	-35.29873079	148.2191122
TUROSS HEAD	Tern Inn Restaurant (abandoned UPSS)	2 Trafalgar ROAD	Service Station	Regulation under CLM Act not required	-36.05871059	150.1308443
TURRAMURRA	7-Eleven (former Mobil) Service Station Turramurra	1408 Pacific HIGHWAY	Service Station	Regulation under CLM Act not required	-33.73326389	151.1264194
TURRAMURRA	Woolworths (Former Mobil) Service Station	1233 Pacific HIGHWAY	Service Station	Regulation under CLM Act not required	-33.73317594	151.1313195
TURRELLA	Tulloch Australia Pty Limited	61 Turrella STREET	Chemical Industry	Contamination currently regulated under CLM Act	-33.92857213	151.1475387
TURVEY PARK	Former Mobil Depot Wagga Wagga	97 - 99 Coleman STREET	Other Petroleum	Under assessment	-35.12173871	147.3576651
TWEED HEADS	Former Mobil Quix Service Station	60 Pacific HIGHWAY	Service Station	Regulation under CLM Act not required	-28.20143775	153.5445381
TWEED HEADS	Francis Street Road Reserve adjacent to 79-81 Wharf Street,	79-81 Wharf STREET	Other Petroleum	Regulation under CLM Act not required	-28.17351959	153.542262
TWEED HEADS SOUTH	Coles Express Service Station	Corner Minjungbal Drive and Heffron STREET	Service Station	Regulation under CLM Act not required	-28.19459987	153.5419978
TWEED HEADS SOUTH	Former BP Depot	142 Minjungbal DRIVE	Other Petroleum	Regulation under CLM Act not required	-28.20860702	153.5455932
TWEED HEADS SOUTH	Woolworths Plus Petrol (Woolworths Caltex Tweed Heads	98-102 Pacific (100 Minjungbal Drive) HIGHWAY	Service Station	Regulation under CLM Act not required	-28.20488521	153.5448675
TWEED HEADS WEST	Caltex Service Station	96 to 98 Kennedy DRIVE	Service Station	Regulation being finalised	-28.1871486	153.5229866
ULAN	Ulan Coal Mine	3600 Ulan ROAD	Other Industry	Under assessment	-32.25620603	149.7558075
ULLADULLA	Caltex Service Station	Princes Hwy Cnr Deering STREET	Service Station	Under assessment	-35.36258645	150.4727798
ULLADULLA	Coles Express Ulladulla	153 Princes HIGHWAY	Service Station	Regulation under CLM Act not required	-35.36288274	150.47272
ULLADULLA	Woolworths Petrol Station	155-157 Princes HIGHWAY	Service Station	Regulation under CLM Act not required	-35.36316263	150.4725668
ULTIMO	Shell Coles Express Service Station	387-429 Wattle STREET	Service Station	Regulation under CLM Act not required	-33.88138825	151.1966791
UNANDERRA	BlueScope Stainless Steel	13 Marley PLACE	Metal Industry	Contamination currently regulated under CLM Act	-34.44959798	150.8571632
UNANDERRA	Caltex Service Station	86-98 Princes HIGHWAY	Service Station	Under assessment	-34.45414951	150.845165
UNANDERRA	Endeavour Energy Springhill Field Service Centre	195 Five Island ROAD	Other Industry	Regulation under CLM Act not required	-34.45837706	150.8598825
UNANDERRA	Former Prime Service Station and adjoining lands	41-49 Princes HIGHWAY	Service Station	Contamination formerly regulated under the CLM Act	-34.45056105	150.8490833
UNANDERRA	Unanderra Weekend Detention Centre	34-40 Lady Penryhn DRIVE	Landfill	Regulation under CLM Act not required	-34.4620226	150.8473821
UNANDERRA	Veolia Environmental Services	9 Waynote PLACE	Other Industry	Regulation under CLM Act not required	-34.46042393	150.863232
URALLA	Caltex Service Station	103 Bridge STREET	Service Station	Regulation under CLM Act not required	-30.64524911	151.4934484
URALLA	Phoenix Foundry	44 Duke STREET	Metal Industry	Regulation under CLM Act not required	-30.65093272	151.5004479

Search results

Your search for: **POEO Licences** with the following criteria

Suburb - Ulladulla

returned 4 results

Export to excel 1 of 1 Pages Search Again

Number	Name	Location	Type	Status	Issued date
1	CSR LIMITED	LOT 342 AROO ROAD, ULLADULLA, NSW 2539	POEO licence	Surrendered	10 Nov 1999
3477	HANSON CONSTRUCTION MATERIALS PTY LTD	CAMDEN STREET, ULLADULLA, NSW 2539	POEO licence	No longer in force	27 Sep 1999
3557	SHOALHAVEN CITY COUNCIL	94 PIRRALEA ROAD, ULLADULLA, NSW 2539	POEO licence	Issued	02 Jan 2001
446	SHOALHAVEN CITY COUNCIL	KINGS POINT DRIVE, ULLADULLA, NSW 2539	POEO licence	Issued	05 Jan 2001

20 December 2017

APPENDIX D: LABORATORY SUMMARY TABLE

				Asbestos	BTEXN							TRH							
				Asbestos Identification in soil	Benzene	Toluene	Ethylbenzene	Xylene (m & p)	Xylene (o)	Total Xylenes	Naphthalene	TPH C6 - C10 less BTEX (F1)	TRH C6 - C10	TRH >C10 - C16 less Naphthalene (F2)	TRH >C10-C16	TRH >C16-C34	TRH >C34-C40	Total C10-C36
Units					mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	
PQL					0.2	0.5	1	2	1	1	1	25	25	50	50	100	100	
NEPM 2013 Table 1A(1) HIL D (Commercial/Industrial)																		
NEPM 2013 Table 1A(3) HSLs for Vapour Intrusion (Commercial / Industrial, Sand, 0-<1 m)					3	NL	NL			230	NL	260		NL				
CRC CARE 2011 Table A4 HSLs for Direct Contact (Commercial / Industrial)					430	99,000	27,000			81,000	11,000	26,000		20,000		27,000	38,000	
NEPM 2013 Table 1B(7) Management Limits in Commercial Industrial (Coarse soil) [a]												700		1,000		3,500	10,000	
NSW EPA 2014 General Solid Waste - Contaminant threshold (CT1) / Specific Contaminant Concentration (SC					10	288	600			1,000								10,000
NSW EPA 2014 General Solid Waste - Leachable concentration threshold (TCLP1)																		
NSW EPA 2014 Restricted Solid Waste - Contaminant threshold (CT2) / Specific Contaminant Concentration (S					40	1,152	2,400			4,000								40,000
NSW EPA 2014 Restricted Solid Waste - Leachable concentration threshold (TCLP2)																		
SEHC 1995 - Published background metals concentrations (not applicable to fill materials)																		
Sample ID	**Depth**	**Date**	**Soil Type (Description)**															
Dapto Site																		
BH01	0.05	29/11/2017	Fill / topsoil (Sandy Clay)	-	<0.2	<0.5	<1	<2	<1	<1	<1	<25	<25	<50	<50	<100	<100	<250
BH01	0.8-1.0	29/11/2017	Alluvium (Clay)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH02	0.2	29/11/2017	Coalwash fill (Silty clayey sand)	ND	<0.2	<0.5	<1	<2	<1	<1	<1	<25	<25	<50	<50	<100	<100	<250
BH02 - [TRIPLICATE]	0.2	29/11/2017	Coalwash fill (Silty clayey sand)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH03	0.1	29/11/2017	Fill / topsoil (Silty Clay)	-	<0.2	<0.5	<1	<2	<1	<1	<1	<25	<25	<50	<50	<100	<100	<250
QAQC2 (#1 Intra-laboratory duplicate of BH03/0.1)	-	29/11/2017	Fill / topsoil (Silty Clay)	-	<0.2	<0.5	<1	<2	<1	<1	<1	<25	<25	<50	<50	<100	<100	<250
BH04	0.2	29/11/2017	Fill (Silty Clay)	ND	-	-	-	-	-	-	-	-	-	-	-	-	-	-
QAQC1 (Inter-laboratory duplicate of BH04/0.2)	-	29/11/2017	Fill (Silty Clay)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH04	0.5	29/11/2017	Fill (Silty Sand)	-	<0.2	<0.5	<1	<2	<1	<1	<1	<25	<25	<50	<50	<100	<100	<250
HA1	0.05	29/11/2017	-	ND	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA2	0.05	29/11/2017	-	ND	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ulladulla Site																		
BH05	0.1	30/11/2017	Fill (Sand)	ND	<0.2	<0.5	<1	<2	<1	<1	<1	<25	<25	<50	<50	<100	<100	<250
BH05	1.4	30/11/2017	Residual (Clay)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH06	1.0	30/11/2017	Fill (Sand)	ND	<0.2	<0.5	<1	<2	<1	<1	<1	<25	<25	<50	<50	<100	<100	<250
BH07	0.1	30/11/2017	Fill / topsoil (Silty Sand)	-	<0.2	<0.5	<1	<2	<1	<1	<1	<25	<25	<50	<50	<100	<100	<250
BH08	0.1	30/11/2017	Fill / topsoil (Silty Sand)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA3	0.05	30/11/2017	-	ND	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HA4	0.05	30/11/2017	-	ND	-	-	-	-	-	-	-	-	-	-	-	-	-	-

NOTES:

NEPM 2013 National Environment Protection (Assessment of Site Contamination) Measure (1999, amended 2013), Schedule B1 Investigation Levels for Soil and Groundwater

CRC Care Friebel and Nadebaum 2011, CRC CARE Technical Report No. 10 Health screening levels for petroleum hydrocarbons in soil and groundwater. Part 2: Application Document

NSW EPA 2014 Waste Classification Guidelines, Part 1: Classifying Waste, Table 1 and Table 2

SEHC 1995 South Australian Health Commission (1995), Trace Element Concentrations in Soils from Rural and Urban Areas of Australia, Contaminated Sites Monograph Series No. 4 - High traffic, old suburbs (adopted 25%ile)

a Separate management limits for BTEX and napthalene are not available hence these were not be subtracted from the relevant fractions to obtain F1 & F2

b Based on Chromium (VI)

c Where specific contaminant concentration applies where TCLP

ND No asbestos detected at reporting limit of 0.1g/kg

NL Non limiting

- Not tested

BTEXN Benzene, Toluene, Ethylbenzen and Xylene and Naphthalene

TRH Total recoverable hydrocarbons

PAH Polycyclic aromatic hydrocarbons

OC / OPP Organochlorine pesticides / Organophosphorus pesticides

PCB Polychlorinated biphenyls

HIL /HSL Health investigation level / health screening level

PQL Practical quantification limit

				PAHs				Metals								
				Naphthalene	Benzo(a)anthracene	Benzo(a)pyrene TEQ calc(PQL)	Total Positive PAHs	Arsenic	Cadmium	Chromium (Total)	Copper	Lead	TCLP Lead	Mercury	Nickel	Zinc
Units				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/L	mg/kg	mg/kg	mg/kg
PQL				0.1	0.1	0.5	0.05	4	0.4	1	1	1	0.1	0.1	1	1
NEPM 2013 Table 1A(1) HIL D (Commercial/Industrial)						40	4,000	3,000	900	3,600[b]	240,000	1,500		730	6,000	400,000
NEPM 2013 Table 1A(3) HSLs for Vapour Intrusion (Commercial / Industrial, Sand, 0-<1 m)				NL												
CRC CARE 2011 Table A4 HSLs for Direct Contact (Commercial / Industrial)																
NEPM 2013 Table 1B(7) Management Limits in Commercial Industrial (Coarse soil)[a]																
NSW EPA 2014 General Solid Waste - Contaminant threshold (CT1) / Specific Contaminant Concentration (SC					0.8			100	20			100 / 1,500		4	40	
NSW EPA 2014 General Solid Waste - Leachable concentration threshold (TCLP1)													5			
NSW EPA 2014 Restricted Solid Waste - Contaminant threshold (CT2) / Specific Contaminant Concentration (S					3.2			400	80			400 / 6,000		16	160	
NSW EPA 2014 Restricted Solid Waste - Leachable concentration threshold (TCLP2)													20			
SEHC 1995 - Published background metals concentrations (not applicable to fill materials)								5	0.25	13	28	163		0.05	5	122
Sample ID	**Depth**	**Date**	**Soil Type (Description)**													
Dapto Site																
BH01	0.05	29/11/2017	Fill / topsoil (Sandy Clay)	<0.1	<0.1	<0.5	<0.05	7	<0.4	11	58	130	0.06	0.2	4	80
BH01	0.8-1.0	29/11/2017	Alluvium (Clay)	-	-	-	-	<4	<0.4	14	7	17	-	<0.1	2	12
BH02	0.2	29/11/2017	Coalwash fill (Silty clayey sand)	<0.1	0.1	<0.5	0.8	21	0.9	17	5400	770	1.1	1.6	13	350
BH02 - [TRIPLICATE]	0.2	29/11/2017	Coalwash fill (Silty clayey sand)	-	-	-	-	7	0.7	15	300	1400	-	<0.1	7	400
BH03	0.1	29/11/2017	Fill / topsoil (Silty Clay)	<0.1	<0.1	<0.5	<0.05	10	5	16	270	720	0.32	<0.1	22	1100
QAQC2 (#1 Intra-laboratory duplicate of BH03/0.1)	-	29/11/2017	Fill / topsoil (Silty Clay)	<0.1	<0.1	<0.5	<0.05	7	3	17	280	1200	0.34	<0.1	24	1100
BH04	0.2	29/11/2017	Fill (Silty Clay)	-	-	-	-	5	<0.4	13	46	260	0.38	0.3	4	170
QAQC1 (Inter-laboratory duplicate of BH04/0.2)	-	29/11/2017	Fill (Silty Clay)	-	-	-	-	6	<1	10	40	247	-	0.2	4	188
BH04	0.5	29/11/2017	Fill (Silty Sand)	<0.1	<0.1	<0.5	<0.05	<4	<0.4	7	8	51	-	0.1	2	49
HA1	0.05	29/11/2017	-	-	-	-	-	8	0.5	16	73	240	-	0.1	8	290
HA2	0.05	29/11/2017	-	-	-	-	-	5	<0.4	14	48	140	-	<0.1	5	370
Ulladulla Site																
BH05	0.1	30/11/2017	Fill (Sand)	<0.1	<0.1	<0.5	<0.05	<4	<0.4	6	100	22	-	<0.1	4	50
BH05	1.4	30/11/2017	Residual (Clay)	-	-	-	-	<4	<0.4	12	<1	4	-	<0.1	<1	1
BH06	1.0	30/11/2017	Fill (Sand)	<0.1	<0.1	<0.5	<0.05	<4	<0.4	5	2	3	-	<0.1	1	4
BH07	0.1	30/11/2017	Fill / topsoil (Silty Sand)	<0.1	<0.1	<0.5	<0.05	<4	<0.4	7	13	160	0.1	<0.1	1	20
BH08	0.1	30/11/2017	Fill / topsoil (Silty Sand)	-	-	-	-	<4	<0.4	15	7	16	-	<0.1	2	66
HA3	0.05	30/11/2017	-	-	-	-	-	<4	<0.4	14	380	170	0.1	<0.1	6	130
HA4	0.05	30/11/2017	-	-	-	-	-	11	0.6	21	220	96	-	0.3	9	100

NOTES:

NEPM 2013 National Environment Protection (Assessment of Site Contamination) Measure (1999, amended 2013), Schedule B1 Investigation Levels for Soil and Groundwater

CRC Care Friebel and Nadebaum 2011, CRC CARE Technical Report No. 10 Health screening levels for petroleum hydrocarbons in soil and groundwater. Part 2: Application Document

NSW EPA 2014 Waste Classification Guidelines, Part 1: Classifying Waste, Table 1 and Table 2

SEHC 1995 South Australian Health Commission (1995), Trace Element Concentrations in Soils from Rural and Urban Areas of Australia, Contaminated Sites Monograph Series No. 4 - High traffic, old suburbs (adopted 25%ile)

a Separate management limits for BTEX and napthalene are not available hence these were not be subtracted from the relevant fractions to obtain F1 & F2

b Based on Chromium (VI)

c Where specific contaminant concentration applies where TCLP

ND No asbestos detected at reporting limit of 0.1g/kg

NL Non limiting

- Not tested

BTEXN Benzene, Toluene, Ethylbenzen and Xylene and Naphthalene

TRH Total recoverable hydrocarbons

PAH Polycyclic aromatic hydrocarbons

OC / OPP Organochlorine pesticides / Organophosphorus pesticides

PCB Polychlorinated biphenyls

HIL /HSL Health investigation level / health screening level

PQL Practical quantification limit

				OCPs							OPPs	PCBs
				Aldrin + Dieldrin	DDT+DDE+DDD	Endrin	Heptachlor	Hexachlorobenzene	Methoxychlor	Total OCPss	Total OPPs	Total PCBs
Units				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
PQL				0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
NEPM 2013 Table 1A(1) HIL D (Commercial/Industrial)				45	3,600	100	50	80	2,500		4,500	7
NEPM 2013 Table 1A(3) HSLs for Vapour Intrusion (Commercial / Industrial, Sand, 0-<1 m)												
CRC CARE 2011 Table A4 HSLs for Direct Contact (Commercial / Industrial)												
NEPM 2013 Table 1B(7) Management Limits in Commercial Industrial (Coarse soil) [a]												
NSW EPA 2014 General Solid Waste - Contaminant threshold (CT1) / Specific Contaminant Concentration (SC										50	250	50
NSW EPA 2014 General Solid Waste - Leachable concentration threshold (TCLP1)												
NSW EPA 2014 Restricted Solid Waste - Contaminant threshold (CT2) / Specific Contaminant Concentration (S										50	100	50
NSW EPA 2014 Restricted Solid Waste - Leachable concentration threshold (TCLP2)												
SEHC 1995 - Published background metals concentrations (not applicable to fill materials)												
Sample ID	**Depth**	**Date**	**Soil Type (Description)**									
Dapto Site												
BH01	0.05	29/11/2017	Fill / topsoil (Sandy Clay)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	< LOR	< LOR	-
BH01	0.8-1.0	29/11/2017	Alluvium (Clay)	-	-	-	-	-	-		-	-
BH02	0.2	29/11/2017	Coalwash fill (Silty clayey sand)	-	-	-	-	-	-		-	< 0.1
BH02 - [TRIPLICATE]	0.2	29/11/2017	Coalwash fill (Silty clayey sand)	-	-	-	-	-	-		-	-
BH03	0.1	29/11/2017	Fill / topsoil (Silty Clay)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	< LOR	< LOR	< 0.1
QAQC2 (#1 Intra-laboratory duplicate of BH03/0.1)	-	29/11/2017	Fill / topsoil (Silty Clay)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	< LOR	< LOR	< 0.1
BH04	0.2	29/11/2017	Fill (Silty Clay)	-	-	-	-	-	-		-	-
QAQC1 (Inter-laboratory duplicate of BH04/0.2)	-	29/11/2017	Fill (Silty Clay)	-	-	-	-	-	-		-	-
BH04	0.5	29/11/2017	Fill (Silty Sand)	-	-	-	-	-	-		-	-
HA1	0.05	29/11/2017	-	-	-	-	-	-	-		-	-
HA2	0.05	29/11/2017	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	< LOR	< LOR	< 0.1
Ulladulla Site												
BH05	0.1	30/11/2017	Fill (Sand)	-	-	-	-	-	-		-	-
BH05	1.4	30/11/2017	Residual (Clay)	-	-	-	-	-	-		-	-
BH06	1.0	30/11/2017	Fill (Sand)	-	-	-	-	-	-		-	-
BH07	0.1	30/11/2017	Fill / topsoil (Silty Sand)	-	-	-	-	-	-		-	-
BH08	0.1	30/11/2017	Fill / topsoil (Silty Sand)	-	-	-	-	-	-		-	-
HA3	0.05	30/11/2017	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	< LOR	< LOR	< 0.1
HA4	0.05	30/11/2017	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	< LOR	< LOR	< 0.1

NOTES:

NEPM 2013 National Environment Protection (Assessment of Site Contamination) Measure (1999, amended 2013), Schedule B1 Investigation Levels for Soil and Groundwater

CRC Care Friebel and Nadebaum 2011, CRC CARE Technical Report No. 10 Health screening levels for petroleum hydrocarbons in soil and groundwater. Part 2: Application Document

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a Separate management limits for BTEX and napthalene are not available hence these were not be subtracted from the relevant fractions to obtain F1 & F2

b Based on Chromium (VI)

c Where specific contaminant concentration applies where TCLP

ND No asbestos detected at reporting limit of 0.1g/kg

NL Non limiting

- Not tested

BTEXN Benzene, Toluene, Ethylbenzen and Xylene and Naphthalene

TRH Total recoverable hydrocarbons

PAH Polycyclic aromatic hydrocarbons

OC / OPP Organochlorine pesticides / Organophosphorus pesticides

PCB Polychlorinated biphenyls

HIL /HSL Health investigation level / health screening level

PQL Practical quantification limit

				BTEXN							TRH							PAHs			
				Benzene	Toluene	Ethylbenzene	Xylene (m & p)	Xylene (o)	Total Xylenes	Naphthalene	TPH C6 - C10 less BTEX (F1)	TRH C6 - C10	TRH >C10 - C16 less Naphthalene (F2)	TRH >C10-C16	TRH >C16-C34	TRH >C34-C40	Total C10-C36	Naphthalene	Benzo(a)anthracene	Benzo(a)pyrene TEQ calc(PQL)	Total Positive PAHs
Units				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg		mg/kg	mg/kg	mg/kg	mg/kg
PQL				0.2	0.5	1	2	1	1	1	25	25	50	50	100	100		0.1	0.1	0.5	0.05
Sample ID	**Depth**	**Date**	**Lab Report**																		
BH02	0.2	29/11/2017	181286	<0.2	<0.5	<1	<2	<1	<1	<1	<25	<25	<50	<50	<100	<100	<250	<0.1	0.1	<0.5	0.8
BH02 - [TRIPLICATE]	0.2	29/11/2017	181286	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			RPDs	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH03	0.1	29/11/2017	181286 / 181286-A	<0.2	<0.5	<1	<2	<1	<1	<1	<25	<25	<50	<50	<100	<100	<250	<0.1	<0.1	<0.5	<0.05
QAQC2 (#1 Intra-laboratory duplicate of BH03/0.1)	0.1	29/11/2017	181286 / 181286-A	<0.2	<0.5	<1	<2	<1	<1	<1	<25	<25	<50	<50	<100	<100	<250	<0.1	<0.1	<0.5	<0.05
			RPDs	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BH04	0.2	29/11/2017	181286-A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
QAQC1 (Inter-laboratory duplicate of BH04/0.2)	0.2	29/11/2017	ES1731689	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			RPDs	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

NOTES:

Highlighted cells indicate that RPDs exceed the control limits below:
-If less than 5 times PQL, then no limit.
-If greater than 5 times PQL, then control limit of 50%.

				Metals									OCPs							OPPs	PCBs
				Arsenic	Cadmium	Chromium (Total)	Copper	Lead	TCLP Lead	Mercury	Nickel	Zinc	Aldrin + Dieldrin	DDT+DDE+DDD	Endrin	Heptachlor	Hexachlorobenzene	Methoxychlor	Total OCPss	Total OPPs	Total PCBs
Units				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/L	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
PQL				4	0.4	1	1	1	0.1	0.1	1	1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Sample ID	**Depth**	**Date**	**Lab Report**																		
BH02	0.2	29/11/2017	181286	21	0.9	17	5400	770	1.1	1.6	13	350	-	-	-	-	-	-		-	< 0.1
BH02 - [TRIPLICATE]	0.2	29/11/2017	181286	7	0.7	15	300	1400	-	<0.1	7	400	-	-	-	-	-	-		-	-
			RPDs	100	25	13	179	58	-	188	60	13	-	-	-	-	-	-		-	-
BH03	0.1	29/11/2017	181286 / 181286-A	10	5	16	270	720	0.32	<0.1	22	1100	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	< LOR	< LOR	< 0.1
QAQC2 (#1 Intra-laboratory duplicate of BH03/0.1)	0.1	29/11/2017	181286 / 181286-A	7	3	17	280	1200	0.34	<0.1	24	1100	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	< LOR	< LOR	< 0.1
			RPDs	35	50	6	4	50	6	0	9	0	0	0	0	0	0	0	0	0	0
BH04	0.2	29/11/2017	181286-A	5	<0.4	13	46	260	0.38	0.3	4	170	-	-	-	-	-	-		-	-
QAQC1 (Inter-laboratory duplicate of BH04/0.2)	0.2	29/11/2017	ES1731689	6	<1	10	40	247	-	0.2	4	188	-	-	-	-	-	-		-	-
			RPDs	18	0	26	14	5	-	40	0	10	-	-	-	-	-	-		-	-

NOTES:

Highlighted cells indicate that RPDs exceed the control limits below:
-If less than 5 times PQL, then no limit.
-If greater than 5 times PQL, then control limit of 50%.

APPENDIX E: ENGINEERING BOREHOLE LOGS WITH EXPLANATORY NOTES

EXCAVATION - GEOLOGICAL LOG

PIT NO : BH01

FILE / JOB NO : 30012196
SHEET : 1 OF 1

CLIENT : ISLHD
LOCATION : 4 Marshall Street Dapto
PROJECT : Proposed Infrastructure Upgrade

POSITION :
SURFACE ELEVATION :
EQUIPMENT TYPE : 5T Excavator
METHOD : Auger - TC Bit
DATE EXCAVATED : 29/11/2017
LOGGED BY : RB
CHECKED BY : SM
EXCAVATION DIMENSIONS :

DRILLING | MATERIAL

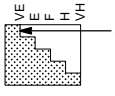
DEPTH (m)	SAMPLES & FIELD TESTS	GROUND WATER LEVELS	SUPPORT	PENETRATION VE E F H	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION (SOIL NAME : plasticity or particle characteristic, colour, secondary and minor components; ROCK NAME : grain size, colour, texture and fabric, features, inclusion and minor components)	MOISTURE CONDITION	CONSISTENCY RELATIVE DENSITY	DCP BLOWS PER 100 mm	STRUCTURE & Other Observations
0.0	0.05m ES; 0.12m: PID 1.6ppm	Not Observed					**FILL: Sandy CLAY**: low plasticity, dark brown, fine to medium grained sand, trace of tile fragments, trace tree roots	W <PL	F		FILL / TOPSOIL
0.20m	0.40m ES; 0.47m: PID 0.8ppm						**FILL: Silty SAND**: fine - coarse grained, pale brown, trace high plasticity clay balls	M	L		FILL
0.5											
0.60m	0.80m B						**CLAY**: high plasticity, pale brown to dark brown, trace of fine grained sand At 0.8m attempt U50, No sample recovered.				ALLUVIUM
1.0						CH			F to St		
1.5											1.40: PP In-situ =160 kPa
1.80m								W >PL			
2.0							**CLAY**: high plasticity, pale grey, mottled w/ red		St		
2.5						CH			VSt		2.20: PP In-situ =200 kPa
2.80m							Hole Terminated at 2.80 m End of Reach				
3.0											
3.5											
4.0											

PHOTOGRAPHS NOTES ☐ YES ☐ NO

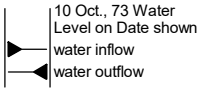
METHOD
- N Natural Exposure
- X Existing Excavation
- BB Backhoe Bucket
- B Bulldozer Blade
- R Ripper
- EX Hydraulic Excavator
- EH Excavator with Hammer

SUPPORT
- T Timbering

PENETRATION



WATER



SAMPLES & FIELD TESTS
- U Undisturbed Sample
- D Disturbed Sample
- B Bulk Disturbed Sample
- MC Moisture Content
- HP Hand Penetrometer (kPa)
- VS Vane Shear; P-Peak, R-Remouded (uncorrected kPa)
- PBT Plate Bearing Test

CLASSIFICATION SYMBOLS & SOIL DESCRIPTION
Based on Unified Classification System

MOISTURE
- D Dry
- M Moist
- W Wet

CONSISTENCY/ RELATIVE DENSITY

VS	Very Soft
S	Soft
F	Firm
St	Stiff
VSt	Very Stiff
H	Hard
VL	Very Loose
L	Loose
MD	Medium Dense
D	Dense
VD	Very Dense

See Explanatory Notes for details of abbreviations & basis of descriptions.

SMEC

File: 30012196 BH01 1 OF 1

EXCAVATION - GEOLOGICAL LOG

PIT NO : BH02

CLIENT : ISLHD
LOCATION : 4 Marshall Street Dapto
PROJECT : Proposed Infrastructure Upgrade
FILE / JOB NO : 30012196
SHEET : 1 OF 1

POSITION :	SURFACE ELEVATION :
EQUIPMENT TYPE : 5T Excavator	METHOD : Auger - TC Bit
DATE EXCAVATED : 29/11/2017	LOGGED BY : RB — CHECKED BY : SM
EXCAVATION DIMENSIONS :	

DRILLING | MATERIAL

DEPTH (m)	SAMPLES & FIELD TESTS	GROUNDWATER LEVELS	SUPPORT	PENETRATION VE E F H	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION (SOIL NAME : plasticity or particle characteristic, colour, secondary and minor components; ROCK NAME : grain size, colour, texture and fabric, features, inclusion and minor components)	MOISTURE CONDITION	CONSISTENCY RELATIVE DENSITY	DCP BLOWS PER 100 mm	STRUCTURE & Other Observations
0.0	0.05m ES 0.08m: PID 1.4ppm 0.20m ES 0.25m: PID 4.1ppm 0.40m ES	Not Observed					0.02m **ASPHALT**: black 0.10m **SAND**: fine grained, pale grey, trace fine to medium sub-granular gravel	D	VD	0 5 10 15 20	ROAD SURFACE BASECOURSE 0.07: (stabilised)
							0.30m **FILL: Silty Clayey SAND**: medium grained, pale brown to dark grey, low to medium plasticity clay, trace fine to medium sub-angular gravel	M / W	MD		FILL 0.20: Coal wash. No odour or visual staining. 0.30: FILL No odour or visual staining.
0.5							**FILL: Silty SAND**: fine to medium grained, pale brown, trace high plasticity clay balls, small wire observed @ 0.4m	W	L		
	0.80m U50						0.70m **CLAY**: high plasticity, brown w/ mottled iron staining (red/brown), trace fine grained sand		St		ALLUVIUM 0.90: PP In-situ =500 kPa
1.0						CH					
1.5									VSt		
								W >PL			
2.0							2.10m **CLAY**: high plasticity, orange brown w/ trace grey, trace rounded fine to medium gravel				RESIDUAL SOIL to EXTREMELY WEATHERED MATERIAL
2.5						CH	2.65m		VSt to H		
							Hole Terminated at 2.65 m Auger Slow Progress				
3.0											
3.5											
4.0											

PHOTOGRAPHS NOTES ☐ YES ☐ NO

METHOD
- N Natural Exposure
- X Existing Excavation
- BB Backhoe Bucket
- B Bulldozer Blade
- R Ripper
- EX Hydraulic Excavator
- EH Excavator with Hammer

SUPPORT
- T Timbering

PENETRATION

VE E F H VH — No Resistance

WATER

10 Oct., 73 Water Level on Date shown
water inflow
water outflow

SAMPLES & FIELD TESTS
- U Undisturbed Sample
- D Disturbed Sample
- B Bulk Disturbed Sample
- MC Moisture Content
- HP Hand Penetrometer (kPa)
- VS Vane Shear; P-Peak, R-Remouded (uncorrected kPa)
- PBT Plate Bearing Test

CLASSIFICATION SYMBOLS & SOIL DESCRIPTION
Based on Unified Classification System

MOISTURE
- D Dry
- M Moist
- W Wet

CONSISTENCY/ RELATIVE DENSITY

VS	Very Soft
S	Soft
F	Firm
St	Stiff
VSt	Very Stiff
H	Hard
VL	Very Loose
L	Loose
MD	Medium Dense
D	Dense
VD	Very Dense

See Explanatory Notes for details of abbreviations & basis of descriptions.

SMEC

EXCAVATION - GEOLOGICAL LOG

PIT NO : BH03

FILE / JOB NO : 30012196
SHEET : 1 OF 1

CLIENT : ISLHD
LOCATION : 4 Marshall Street Dapto
PROJECT : Proposed Infrastructure Upgrade

POSITION :
SURFACE ELEVATION :
EQUIPMENT TYPE : 5T Excavator
METHOD : Auger - TC Bit
DATE EXCAVATED : 29/11/2017
LOGGED BY : RB
CHECKED BY : SM
EXCAVATION DIMENSIONS :

DRILLING | MATERIAL

DEPTH (m)	SAMPLES & FIELD TESTS	GROUND WATER LEVELS	SUPPORT	PENETRATION (VE E F H)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION (SOIL NAME : plasticity or particle characteristic, colour, secondary and minor components; ROCK NAME : grain size, colour, texture and fabric, features, inclusion and minor components)	MOISTURE CONDITION	CONSISTENCY RELATIVE DENSITY	DCP BLOWS PER 100 mm	STRUCTURE & Other Observations
0.0	0.10m ES; 0.20m: PID 0ppm	Not Observed					**FILL: Silty CLAY**: low plasticity, dark brown, with fine to coarse sand, trace fragement of tile, trace grass roots	W >PL / W	S	0 5 10 15 20	FILL / TOPSOIL
0.30m	0.40m ES; 0.50m: PID 0.2ppm						**FILL: Silty SAND**: fine to medium grained, pale brown, trace high plasticity clay balls	W	VL		FILL
0.80m						CH	**CLAY**: high plasticity, pale brown	W >PL	F		ALLUVIUM 0.90: PP In-situ =70 kPa 0.95: PP In-situ =70 kPa
1.00m						CH-MH	**Sandy CLAY**: medium to high plasticity, orange brown, fine-grained sand, trace fine to medium sub-angular gravel	W <PL	VSt		RESIDUAL SOIL to EXTREMELY WEATHERED MATERIAL
1.60m							Hole Terminated at 1.60 m Auger Refusal or Very Slow Progress				
2.0											
2.5											
3.0											
3.5											
4.0											

PHOTOGRAPHS NOTES ☐ YES ☐ NO

METHOD
- N Natural Exposure
- X Existing Excavation
- BB Backhoe Bucket
- B Bulldozer Blade
- R Ripper
- EX Hydraulic Excavator
- EH Excavator with Hammer

SUPPORT
- T Timbering

PENETRATION
VE E F H VH — No Resistance

WATER
10 Oct., 73 Water Level on Date shown
water inflow
water outflow

SAMPLES & FIELD TESTS
- U Undisturbed Sample
- D Disturbed Sample
- B Bulk Disturbed Sample
- MC Moisture Content
- HP Hand Penetrometer (kPa)
- VS Vane Shear; P-Peak, R-Remouded (uncorrected kPa)
- PBT Plate Bearing Test

CLASSIFICATION SYMBOLS & SOIL DESCRIPTION
Based on Unified Classification System

MOISTURE
- D Dry
- M Moist
- W Wet

CONSISTENCY/ RELATIVE DENSITY

VS	Very Soft
S	Soft
F	Firm
St	Stiff
VSt	Very Stiff
H	Hard
VL	Very Loose
L	Loose
MD	Medium Dense
D	Dense
VD	Very Dense

See Explanatory Notes for details of abbreviations & basis of descriptions.

SMEC

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EXCAVATION - GEOLOGICAL LOG

PIT NO : BH04

FILE / JOB NO : 30012196
SHEET : 1 OF 1

CLIENT : ISLHD
LOCATION : 4 Marshall Street Dapto

PROJECT : Proposed Infrastructure Upgrade

POSITION :	SURFACE ELEVATION :
EQUIPMENT TYPE : 5T Excavator	METHOD : Auger - TC bit
DATE EXCAVATED : 29/11/2017	LOGGED BY : RB — CHECKED BY : SM
EXCAVATION DIMENSIONS :	

DRILLING | MATERIAL

DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION (SOIL NAME : plasticity or particle characteristic, colour, secondary and minor components; ROCK NAME : grain size, colour, texture and fabric, features, inclusion and minor components)	MOISTURE CONDITION	CONSISTENCY RELATIVE DENSITY	DCP BLOWS PER 100 mm	STRUCTURE & Other Observations
0.0			0.02m **ASPHALT**: black	D	VD		ROAD SURFACE
			0.08m **Sandy GRAVEL**: fine to coarse, brown, fine to coarse grained sand sand	D			BASECOURSE
			FILL: Silty CLAY: low to medium plasticity, dark brown, trace fine to medium sand, trace of grass roots	W >PL	F		FILL 0.15: PP In-situ =100 kPa 0.20: PP In-situ =50 kPa
			0.40m				0.30: PP In-situ =60 kPa
0.5			**FILL: Silty SAND**: fine to medium grained, brown, trace high plasticity clay balls	W >PL	L		0.50: No Odour No Staining
			0.90m				ALLUVIUM
1.0		CH	**CLAY**: high plasticity, brown w/ mottled iron staining (red/brown), trace fine grained sand		VSt		1.30: PP In-situ =350 kPa
1.5			1.60m				RESIDUAL SOIL to EXTREMELY WEATHERED MATERIAL
2.0		CH	**CLAY**: high plasticity, orange, brown with trace grey, trace sub-rounded fine to medium gravel	W >PL	H		
2.5			2.80m				
3.0			Hole Terminated at 2.80 m End of Reach - Terminated on Steady Progress				
3.5							
4.0							

SAMPLES & FIELD TESTS: 0.20m ES 0.25m: PID 1.5ppm; 0.50m ES 0.55m: PID 0.6ppm

GROUNDWATER LEVELS: Not Observed

SUPPORT: T

PENETRATION: VE E F H VH — No Resistance

PHOTOGRAPHS NOTES ☐ YES ☐ NO

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See Explanatory Notes for details of abbreviations & basis of descriptions.

SMEC

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